

*NRSC  
REPORT*

# NATIONAL RADIO SYSTEMS COMMITTEE

## NRSC-R50 Digital Audio Radio IBOC Laboratory Tests

Transmission Quality Failure Characterization  
and Analog Compatibility of IBOC Systems

August 11, 1995

Part IV – Appendices AD through  
AR



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## **NRSC-R50**

### **FOREWORD**

NRSC-R50, Digital Audio Radio – IBOC Laboratory Tests – Transmission Quality Failure Characterization and Analog Compatibility of IBOC Systems, presents the results of digital radio system tests conducted jointly by the Electronics Industries Association (EIA, precursor to CEA) Subcommittee on Digital Audio Radio (DAR) and the NRSC Digital Audio Broadcasting (DAB) Subcommittee (now the DRB Subcommittee).

Seven different digital radio systems were involved in the joint EIA/NRSC test program—three FM in-band/on-channel (IBOC) systems, one FM in-band/adjacent channel (IBAC) system, one AM IBOC system, the Eureka-147 DAB system (operating at L-band), and a satellite system (operating at S-band). The FM and AM band systems were the only ones considered by the NRSC and consequently the L-band and S-band test results are not included in NRSC-R50. The NRSC chairman at the time of the submission of NRSC-R-50 was Charles Morgan.

The NRSC is jointly sponsored by the Consumer Electronics Association and the National Association of Broadcasters. It serves as an industry-wide standards-setting body for technical aspects of terrestrial over-the-air radio broadcasting systems in the United States.

**Appendix AD – Digital Test Results  
AT&T / Amati IBOC LSB**

EIA Digital Audio Radio Test Laboratory

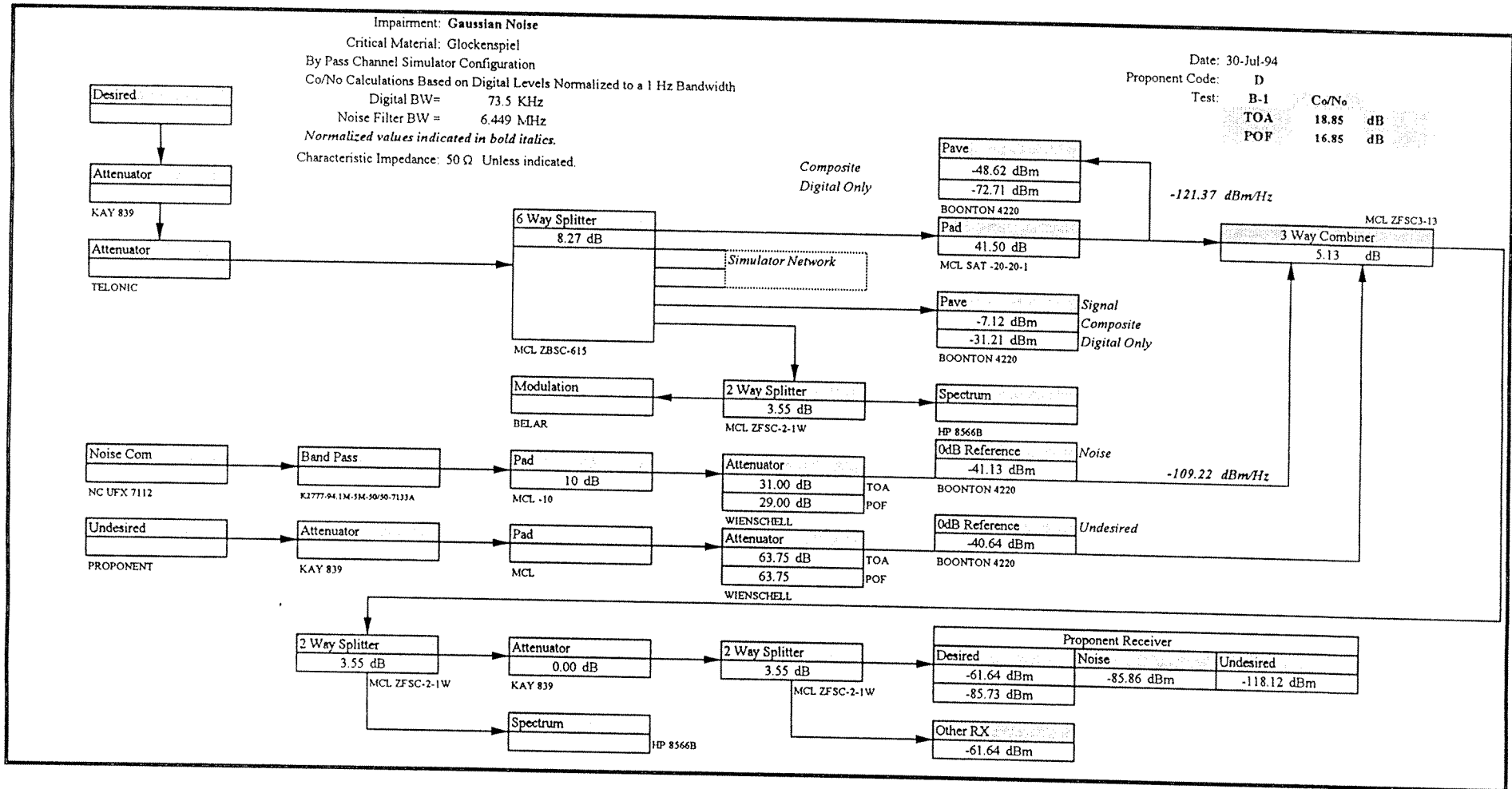
Proponent: AT&T Amati LSB  
Code: D  
Digital Band Width: 7.35E+04 Hz  
Composite Band Width: 2.74E+05 Hz  
Peak/Average Composite: 1.67 dB  
Peak/Average Digital: 9.85 dB



## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-1	<b>Gaussian Noise</b>		
<b>Proponent Code:</b>	D			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	31.00	29.00	dB
	Co/No	18.85	16.85	dB
	EO&C			
	TOA	Small drop out.		
	POF	Many drop out or mutes.		
<b>Soprano</b>		TOA	POF	
	Attenuator	29.75	28.50	dB
	Co/No	17.60	16.35	dB
	EO&C			
	TOA	Small drop out.		
	POF	Many drop out or mutes.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	30.25	28.75	dB
	Co/No	18.10	16.60	dB
	EO&C			
	TOA	Small drop out.		
	POF	Many drop out or mutes.		
<b>Notes:</b>	Recording Reference: DAR30217.DAT			
	Testers: DML,ST			
	Date: 30-Jul-94			

# EIA Digital Audio Radio Test Laboratory



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #			Description	Attn
	Start	Stop					
DAR30217.DAT 30-Jul-94			1	2		Glockenspiel Clear Channel	63.75
			3	4			32.50
			5	6		32.00	
			7	8		31.50	
			9	10		TOA lab	31.00
			11	12			30.50
			13	14			30.00
			15	16			29.50
			17	18		POF lab	29.00
			19	20		Sync	63.75
			21	22			28.50
			23	24		Soprano Clear Channel	63.75
			25	26			31.25
			27	28			30.75
			29	30			30.25
			31	32		TOA lab	29.75
			33	34			29.25
			35	36			28.75
			37	38		POF lab	28.50
			39	40		Sync	63.75
			41	42			28.00
			43	44		Clarinet Clear Channel	63.75
			45	46			31.75
			47	48			31.25
			49	50			30.75
			51	52	53	TOA lab	30.25
			54	55			29.75
			56	57			29.25
			58	59		POF lab	28.75
			60	61		Sync	63.75
			62	63			28.25

Code: D  
Impairment: Gaussian Noise

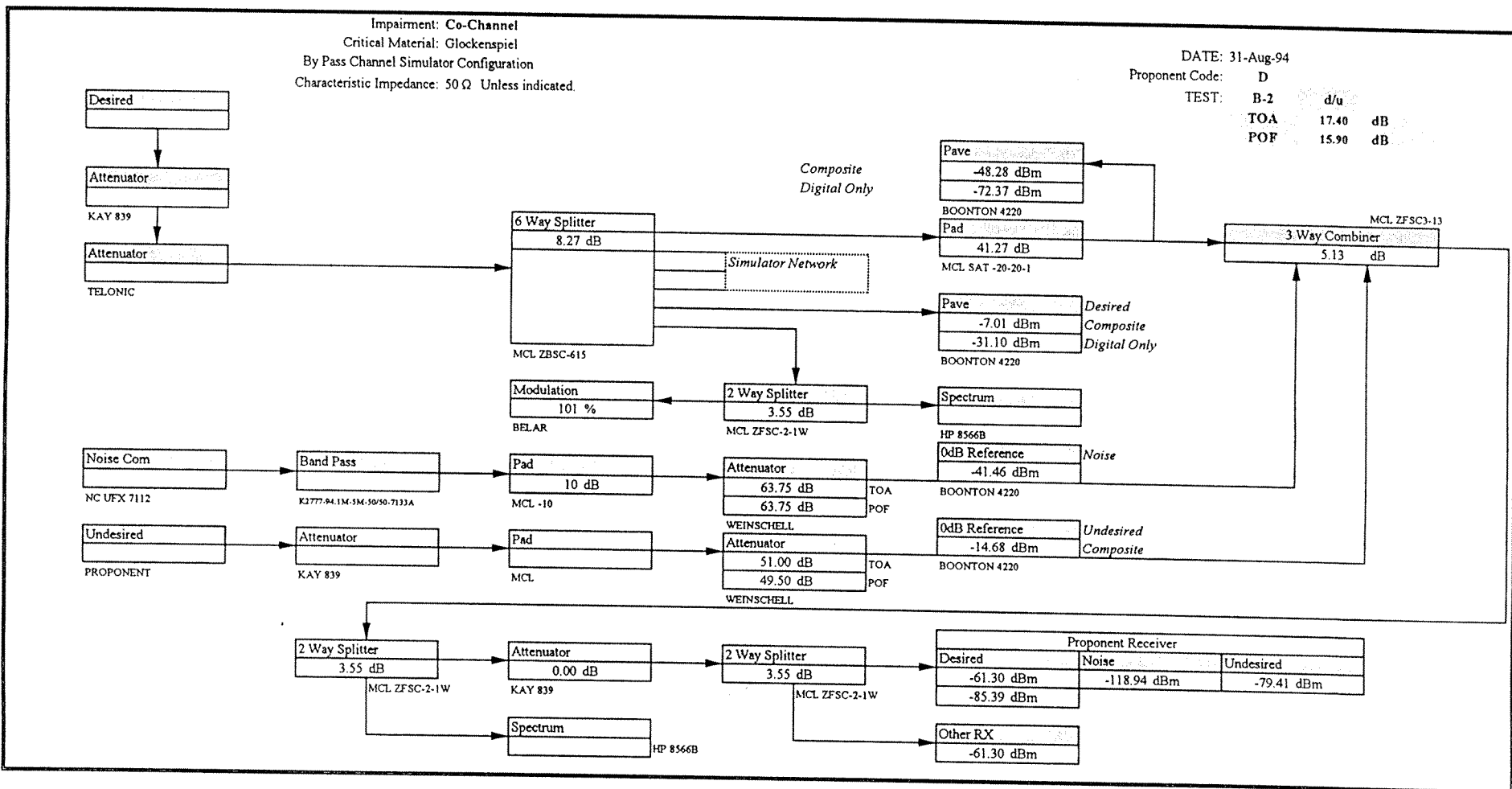
## EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-2 D	<b>Co-Channel</b>	
			Units
<b>Glockenspiel</b>		TOA	POF
Attenuator		51.00	49.50
d/u		17.40	15.90
EO&C		TOA Small drop out.	
		POF Many mutes or drop outs.	
<b>Soprano</b>		TOA	POF
Attenuator		50.75	49.25
d/u		17.15	15.65
EO&C		TOA Small drop out.	
		POF Many mutes or drop outs.	
<b>Clarinet</b>		TOA	POF
Attenuator		51.00	49.50
d/u		17.40	15.90
EO&C		TOA Small drop out.	
		POF Many mutes or drop outs.	
Notes:	Recording Reference: DAR30237.DAT Testers: DML,DS Date: 31-Aug-94		

# EIA Digital Audio Radio Test Laboratory

Impairment: Co-Channel  
 Critical Material: Glockenspiel  
 By Pass Channel Simulator Configuration  
 Characteristic Impedance: 50 Ω Unless indicated.

DATE: 31-Aug-94  
 Proponent Code: D  
 TEST: B-2 d/u  
 TOA 17.40 dB  
 POF 15.90 dB



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID#			Description	Attn
	Start	Stop					
DAR30237.DAT			1	2		Glockenspiel Clear Channel	63.75
31-Aug-94			3	4			52.50
			5	6			52.00
			7	8			51.50
			9	10		TOA lab	51.00
			11	12			50.50
			13	14			50.00
			15	16		POF lab	49.50
			17	18		Sync	63.75
			19	20			49.00
			21	22		Soprano Clear Channel	63.75
			23	24			52.25
			25	26			51.75
			27	28			51.25
			29	30	31 32 33	TOA lab	50.75
			34	35			50.25
			36	37			49.75
			38	39		POF lab	49.25
			40	41		Sync	63.75
			42	43			48.75
			44	45		Clarinet Clear Channel	63.75
			46	47			52.50
			48	49			52.00
			50	51			51.50
			52	53		TOA lab	51.00
			54	55			50.50
			56	57			50.00
			58	59		POF lab	49.50
			60	61		Sync	63.75
			62	63			49.00

Code: D  
Impairment: Co-Channel

# EIA Digital Audio Radio Test Laboratory

Test	B-3	<b>Urban Slow Rayleigh</b>				
Proponent						Units
Code:	D					
<b>Glockenspiel</b>						
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Drop outs less than 1 second in duration.				
	EO&C					
	POF					
<b>Soprano</b>						
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Drop outs less than 1 second in duration.				
	EO&C					
	POF					
<b>Clarinet</b>						
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Drop outs less than 1 second in duration.				
	EO&C					
	POF					
Recording Reference: DAR30259.DAT Testers: DML,TK Test Date: 24-Aug-94						
Notes:						

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30259.DAT 24-Aug-94			1	2	3			Glockenspiel Clear Channel	63.75
			4	5	6	7	8	Urban Slow no added noise	63.75
			9	10	11			Soprano Clear Channel	63.75
			12	13	14	15	16	Urban Slow no added noise	63.75
			17	18	19			Clarinet Clear Channel	63.75
			20	21	22	23	24	Urban Slow no added noise	63.75

Proponent Code: D  
 Impairment: Urban Slow Rayleigh



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Fast Rayleigh</b>				
<b>Proponent</b>						
<b>Code:</b>	D					Units
<b>Glockenspiel</b>			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.59		52.59	dB
	TOA	Small to medium duration drop outs.				
	EO&C					
	POF					
<b>Soprano</b>			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.59		52.59	dB
	TOA	Small to medium duration drop outs with occasional pops or click.				
	EO&C					
	POF					
<b>Clarinet</b>			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.59		52.59	dB
	TOA	Pitch flutter less than 1 second in duration..				
	EO&C					
	POF					
Recording Reference: DAR30260.DAT						
Notes: Testers: DML,TK						
Test Date: 24-Aug-94						

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs						Description	Attn
	Start	Stop	1	2	3	4	5	6		
DAR30260.DAT 24-Aug-94			1	2	3				Glockenspiel Clear Channel	63.75
			4	5	6	7	8		Urban Fast no added noise	63.75
			9	10	11				Soprano Clear Channel	63.75
			12	13	14	15	16		Urban Fast no added noise	63.75
			17	18	19				Clarinete Clear Channel	63.75
			20	21	22	23	24		Urban Fast no added noise	63.75

Proponent Code: D  
Impairment: Urban Fast Rayleigh

# EIA Digital Audio Radio Test Laboratory

Test	B-3	<b>Rural Fast Rayleigh</b>				
Proponent						Units
Code:	D					
<b>Glockenspiel</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Many short drop outs, level of impairment approaching POF. Continuuous flutter like sound is coming from an under water source.				
	EO&C					
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Many short drop outs, level of impairment approaching POF. Continuuous flutter like sound is coming from an under water source.				
	EO&C					
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.59		52.59		dB
	TOA	Many short drop outs, level of impairment approaching POF.				
	EO&C					
	POF					
Notes:	Recording Reference: DAR30261.DAT Testers: DML TK Test Date: 24-Aug-95					

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop							
DAR30261.DAT			1	2	3			Glockenspiel Clear Channel	63.75
24-Aug-95			4	5	6	7	8	Rural Fast no added noise	63.75
			9	10	11			Disregard	63.75
			12	13	14			Soprano Clear Channel	63.75
			15	16	17	18	19	Rural Fast no added noise	63.75
			20	21	22			Clarinet Clear Channel	63.75
			23	24	25	26	27	Urban Fast no added noise	63.75

Proponent Code: D  
Impairment: Rural Fast Rayleigh

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Terrain Obstructed Rayleigh</b>				
<b>Proponent</b>						<b>Units</b>
<b>Code:</b>	D					
<b>Glockenspiel</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.59		52.59		dB
	<b>TOA</b>	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.				
<b>EO&amp;C</b>						
	<b>POF</b>	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.				
<b>Soprano</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.59		52.59		dB
	<b>TOA</b>	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.				
<b>EO&amp;C</b>						
	<b>POF</b>					
<b>Clarinet</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.59		52.59		dB
	<b>TOA</b>	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.				
<b>EO&amp;C</b>						
	<b>POF</b>					
<b>Notes:</b>	Recording Reference: DAR30262.DAT Testers: DML,TK Test Date: 24-Aug-95					

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop							
DAR30262.DAT			1	2	3			Glockenspiel Clear Channel	63.75
24-Aug-95			4	5	6	7	8	Suburban / Terrain Obstructed Fast no added noise	63.75
			9	10	11			Soprano Clear Channel	63.75
			12	13	14	15	16	Suburban / Terrain Obstructed Fast no added noise	63.75
			17	18	19			Clarinet Clear Channel	63.75
			20	21	22	23	24	Suburban / Terrain Obstructed Fast no added noise	63.75

Proponent Code: D  
 Impairment: Terrain Obstructed Rayleigh

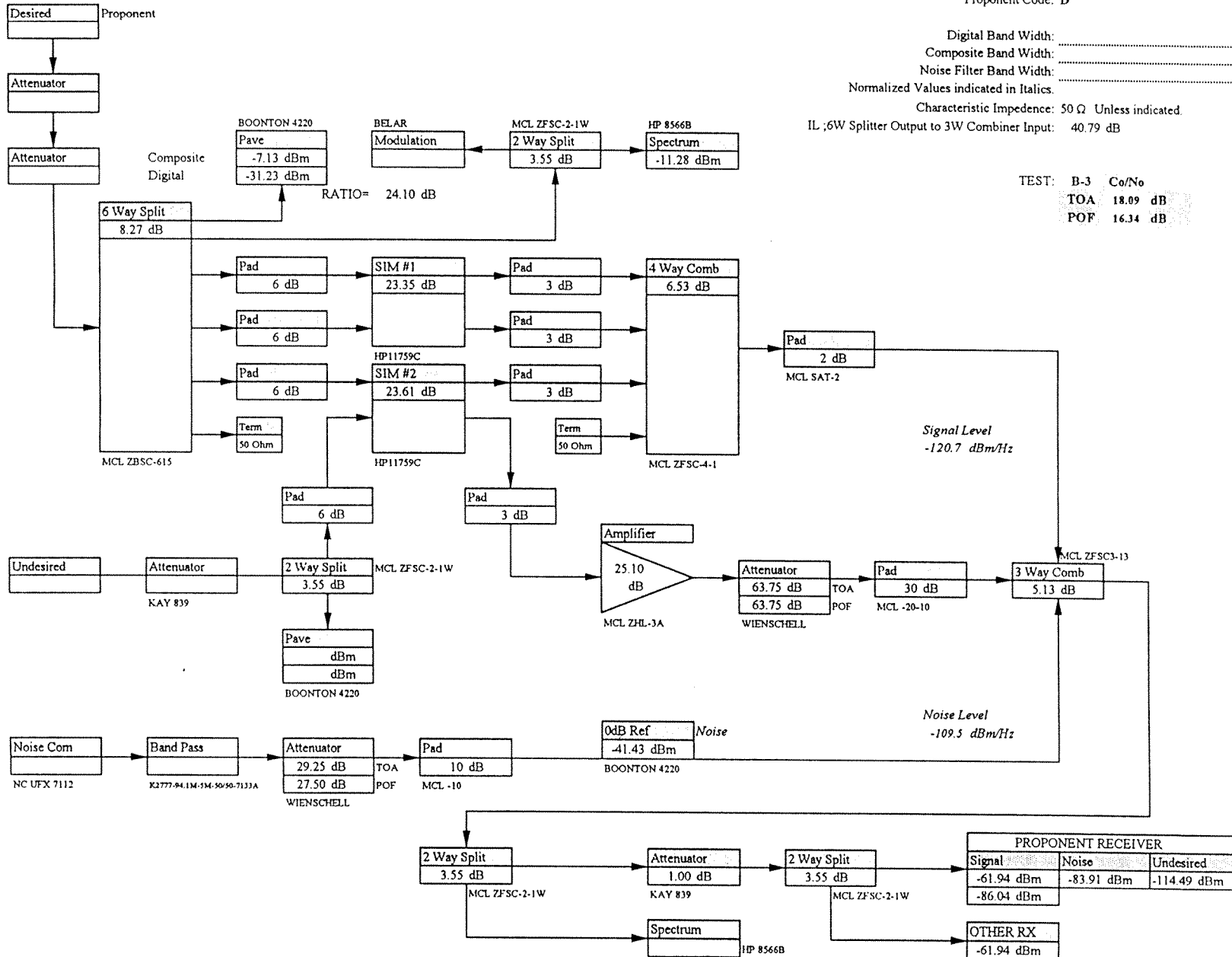
# EIA Digital Audio Radio Test Laboratory

Proponent Code: D

Digital Band Width: ..... 73500 Hz  
 Composite Band Width: ..... 273500 Hz  
 Noise Filter Band Width: ..... 6449000 Hz

Normalized Values indicated in Italics.  
 Characteristic Impedance: 50 Ω Unless indicated.  
 IL ;6W Splitter Output to 3W Combiner Input: 40.79 dB

TEST: B-3 Co/No  
 TOA 18.09 dB  
 POF 16.34 dB



# EIA Digital Audio Radio Test Laboratory

Test	C-1 Impulse Response		5 Vp-p at attenuator input. 10.00 ns wide pulse		
AT&T Amati LSB	Glockenspiel				
Program Material	Glockenspiel				
Pulse Repetition (Hz)	Attn at TOA (dB)	(Vp-p)	Attn at POF (dB)	(Vp-p)	EO&C
100	16.25	0.77	4.50	2.98	TOA small drop out, POF many drop outs.
200	18.00	0.63	16.75	0.73	TOA small drop out, POF many drop outs.
333	19.25	0.55	17.75	0.65	TOA small drop out, POF many drop outs.
666	20.00	0.50	18.75	0.58	TOA small drop out, POF many drop outs.
1000	21.00	0.45	19.25	0.55	TOA small drop out, POF many drop outs.
Additional Comments:					
Test Date: 26-Sep-94					
Testers: DML, TK, RMc					



# EIA Digital Audio Radio Test Laboratory

Test <span style="margin-left: 20px;">C-2</span> <span style="margin-left: 20px;">CW Response</span> AT&T Amati LSB Program Material <span style="margin-left: 20px;">Mozart (track 67 SQAM Disk)</span>									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12
1	93.85	0	0	0	27	94.11	0	0	0
2	93.86	0	0	0	28	94.12	0	0	0
3	93.87	0	0	0	29	94.13	0	0	0
4	93.88	0	0	0	30	94.14	0	0	0
5	93.89	0	0	0	31	94.15	0	0	0
6	93.90	0	2	2	32	94.16	0	0	0
7	93.91	0	1	2	33	94.17	0	0	0
8	93.92	1	2	2	34	94.18	0	0	0
9	93.93	2	2	2	35	94.19	0	0	0
10	93.94	0	2	2	36	94.20	0	0	0
11	93.95	1	2	2	37	94.21	0	0	0
12	93.96	2	2	2	38	94.22	0	0	0
13	93.97	0	0	1	39	94.23	0	0	0
14	93.98	0	0	1	40	94.24	0	0	0
15	93.99	0	0	0	41	94.25	0	0	0
16	94.00	0	0	0	42	94.26	0	0	0
17	94.01	0	0	0	43	94.27	0	0	0
18	94.02	0	0	0	44	94.28	0	0	0
19	94.03	0	0	0	45	94.29	0	0	0
20	94.04	0	0	0	46	94.30	0	0	0
21	94.05	0	0	0	47	94.31	0	0	0
22	94.06	0	0	0	48	94.32	0	0	0
23	94.07	0	0	0	49	94.33	0	0	0
24	94.08	0	0	0	50	94.34	0	0	0
25	94.09	0	0	0	51	94.35	0	0	0
26	94.10	0	0	0					

Test Date: 27-Sep-94 0 dB Attenuator Reference: -30.4 dBm

0=CLEAN AUDIO 1=APPROXIMATE TOA 2 ≥ POF  
 POF Attn=53.50dB POF d/u= 35.45 dB

# EIA Digital Audio Radio Test Laboratory

Test C-3 Airplane Flutter		
AT&T Amati LSB		
Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  8.00 dB	TOA 8.00 dB
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  6.00 dB	TOA 6.00 dB
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  4.00 dB	TOA 4.00 dB
POF level of impairment. Many drop outs.		
TOA level of impairment. Small drop out or flutter. DAR30500.DAT #001-003		
TOA level of impairment. Small drop out or flutter. DAR30500.DAT #004-006		
Test Date: 27-Sep-94 Testers: DML, TK, RMc		

# EIA Digital Audio Radio Test Laboratory

Test	C-4	Weak Signal Sensitivity				
AT&T Amati LSB						
Program Material	Glockenspiel					
<table border="1"><thead><tr><th>TOA (dBm)</th><th>POF (dBm)</th></tr></thead><tbody><tr><td><math>-75 \leq \text{TOA} &lt; -74</math></td><td><math>-77 &lt; \text{POF} \leq -76</math></td></tr></tbody></table>			TOA (dBm)	POF (dBm)	$-75 \leq \text{TOA} < -74$	$-77 < \text{POF} \leq -76$
TOA (dBm)	POF (dBm)					
$-75 \leq \text{TOA} < -74$	$-77 < \text{POF} \leq -76$					
Test Date: 20-Oct-94 Testers: DML, RMc						

## EIA Digital Audio Radio Test Laboratory

Test C-6 Additional Multipath Doppler Simulations AT&T Amati LSB Program Material: Glockenspiel																	
Scenario																	
	Level	Attn	Co/No	Units	EO&C												
#1 Urban Slow	TOA	63.75	52.57	dB	Approximate 4 second drop outs.												
	POF	63.75	52.57	dB	TOA and POF are the same.												
#2 Urban Fast	TOA	63.75	52.57	dB	Small drop out.												
	POF	32.00	20.82	dB	Excessive flutter / drop outs.												
#3 Rural Fast	TOA	38.00	26.82	dB	Small drop out.												
	POF	33.00	21.82	dB	Excessive flutter / drop outs.												
#4 Terrain Obstructed	TOA	63.75	52.57	dB	Numerous medium to long duration drop outs.												
	POF	63.75	52.57	dB	same as TOA												
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 20-Oct-94</td> <td style="width: 30%; text-align: center;">Desired</td> <td style="width: 30%; text-align: right;">Noise</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal -7.06 dBm</td> <td></td> </tr> <tr> <td>DAT Reference: DAR30550.DAT</td> <td>IL 40.79 dB</td> <td>BW 6.45E+06 Hz</td> </tr> <tr> <td></td> <td>3WIN -47.85 dBm</td> <td>0dB Ref -41.33 dBm</td> </tr> </table>						Test Date: 20-Oct-94	Desired	Noise	Testers: DML, RMc	Signal -7.06 dBm		DAT Reference: DAR30550.DAT	IL 40.79 dB	BW 6.45E+06 Hz		3WIN -47.85 dBm	0dB Ref -41.33 dBm
Test Date: 20-Oct-94	Desired	Noise															
Testers: DML, RMc	Signal -7.06 dBm																
DAT Reference: DAR30550.DAT	IL 40.79 dB	BW 6.45E+06 Hz															
	3WIN -47.85 dBm	0dB Ref -41.33 dBm															

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn	
	Start	Stop							
DAR30550.DAT 20-Oct-94	DSB	1	2				Urban Slow		
		3	4				Urban Fast, TOA	63.75	
		5	6				Rural Fast, TOA	29.00	
		7	8				Terrain Obstructed	26.75	
								63.75	
		LSB	9	10				Urban Slow	
			11	12				Urban Fast	63.75
			13	14				Rural Fast	63.75
	15		16				Terrain Obstructed	38.00	
							63.75		

Additional Multipath Doppler Simulations  
Code: D  
Test C-6

EIA Digital Audio Radio Test Laboratory

Test D-Series Co-Channel, 1st and 2nd Adjacent					
AT&T Amati LSB					
Program Material: Glockenspiel					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	27.00	16.99	dB	Small drop out or flutter.
	POF	25.50	15.49	dB	Excessive muting.
D-2 Lower 1st Adjacent	TOA	62.25	42.72	dB	Small drop outs or flutters.
	POF	58.25	38.72	dB	Excessive Muting.
Upper 1st Adjacent					NA
D-3 Lower 2nd Adjacent	TOA	2.75	-16.78	dB	Small drop outs or flutters.
	POF	0.00	-19.53	dB	Excessive Muting.
Lower 2nd Adj	TOA	21.75	2.22	dB	Small drop outs or flutters.
Upper SB Mode Undesired	POF	17.25	-2.28	dB	Excessive Muting.
Undesired signal for co-channel =					-38.63 dBm
DAT Reference: DAR30403.DAT					
By Pass Simulator Configuration.					
Test Date: 22-Sep-94				Desired	Undesired
Testers: DML, TK, ST, DS		6WOUT		-7.21 dBm	
		IL		41.43 dB	
		3WIN		-48.64 dBm	
					-29.11 dBm
					1st & 2nd Adj



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>E-Series</b>		
AT&T Amati LSB			
Program Material:	Glockenspiel		
<p>E-Series tests were unnecessary due to the effected performance of this system with multipath impairment.</p>			
Test Date: 22-Sep-94		Desired	Undesired
Testers: DML, TK,ST, DS	Signal	-7.15 dBm	
	IL	40.79 dB	
	3WIN	-47.94 dBm	



# EIA Digital Audio Radio Test Laboratory

Test	J-1	Re-Acquisition		
AT&T Amati LSB				
Program Material		Mozart (Track 67 on SQAM disk)		
Toff (s)	POF-2	Re-Acquisition Time (s)		POF-6
		POF-4		
30	3	2	2	
	3	3	1	
	1	2	1	
	3	4	2	
	3	3	1	
<u>Average</u>	2.6	2.8	1.4	
POF Attenuator Setting	: 28.00 dB			
Desired Signal Level	: -48.48 dBm			
Noise 0 dB Reference	: -41.45 dBm			
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 0.5 seconds.				
Test Date: 26-Sep-95				
Testers: DML, TK, RMc				

## EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati LSB		Urban Slow Rayleigh		
Program Material		Mozart (Track 67 on SQAM disk)		
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	_____	_____	_____	
10	_____	_____	_____	
15	_____	_____	_____	
20	_____	_____	_____	
25	_____	_____	_____	
Average	0	0	0	
POF Attenuator Setting		: 63.75 dB		
Desired Signal Level		: -48.45 dBm		
Noise 0 dB Reference		: -41.42 dBm		
Additional Comments:				
Audio is at POF or beyond with out added noise. It was not feasible to take this data.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati LSB		Urban Fast Rayleigh		
Program Material		Mozart (Track 67 on SQAM disk)		
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	<u>2</u>	<u>1</u>	<u>2</u>	
10	<u>2</u>	<u>3</u>	<u>3</u>	
15	<u>2</u>	<u>3</u>	<u>3</u>	
20	<u>2</u>	<u>2</u>	<u>2</u>	
25	<u>2</u>	<u>1</u>	<u>2</u>	
Average	2.0	2.0	2.4	
POF Attenuator Setting	:	45.75 dB		
Desired Signal Level	:	-48.45 dBm		
Noise 0 dB Reference	:	-41.42 dBm		
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath	
AT&T Amati LSB		Rural Fast Rayleigh	
Program Material		Mozart (Track 67 on SQAM disk)	
Tsim (s)		Re-Acquisition Time (s) POF	
5		2	
10		1	
15		3	
20		1	
25		2	
<u>Average</u>		1.8	
POF Attenuator Setting	:	63.75 dB	
Desired Signal Level	:	-48.45 dBm	
Noise 0 dB Reference	:	-41.42 dBm	
Additional Comments:			
Re-Acquisition time is the value listed $\pm$ 1 second.			
Test Date: 27-Sep-94			
Testers: DML, TK, ST		This scenerio tested at 1 level because addition of noise would impair to a level beyond POF.	

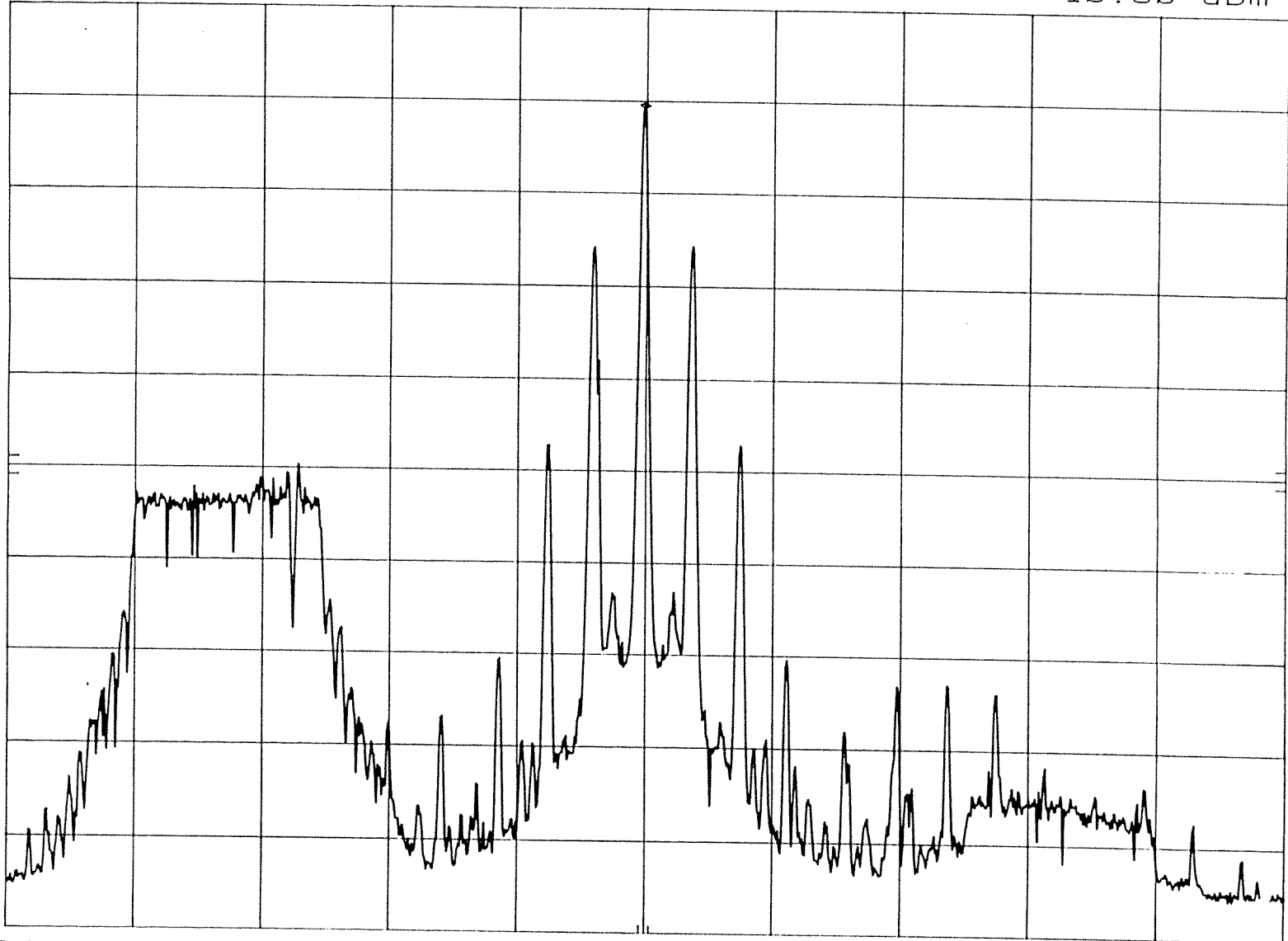
# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati LSB		Suburban / Terrain Obstructed Rayleigh		
Program Material		Mozart (Track 67 on SQAM disk)		
Tsim (s)	POF-2	Re-Acquisition Time (s)		POF-6
		POF-4		
5	_____	_____		_____
10	_____	_____		_____
15	_____	_____		_____
20	_____	_____		_____
25	_____	_____		_____
<u>Average</u>	0	0		0
POF Attenuator Setting	:	63.75 dB		
Desired Signal Level	:	-48.45 dBm		
Noise 0 dB Reference	:	-41.42 dBm		
Additional Comments:				
Audio is at POF or beyond with out added noise. It was not feasible to take this data.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

AMATI / AT&T 6/29/94 LSB  
REF 0.0 dBm ATTEN 10 dB

MKR 94.099 0 MHz  
-10.50 dBm

hp  
10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

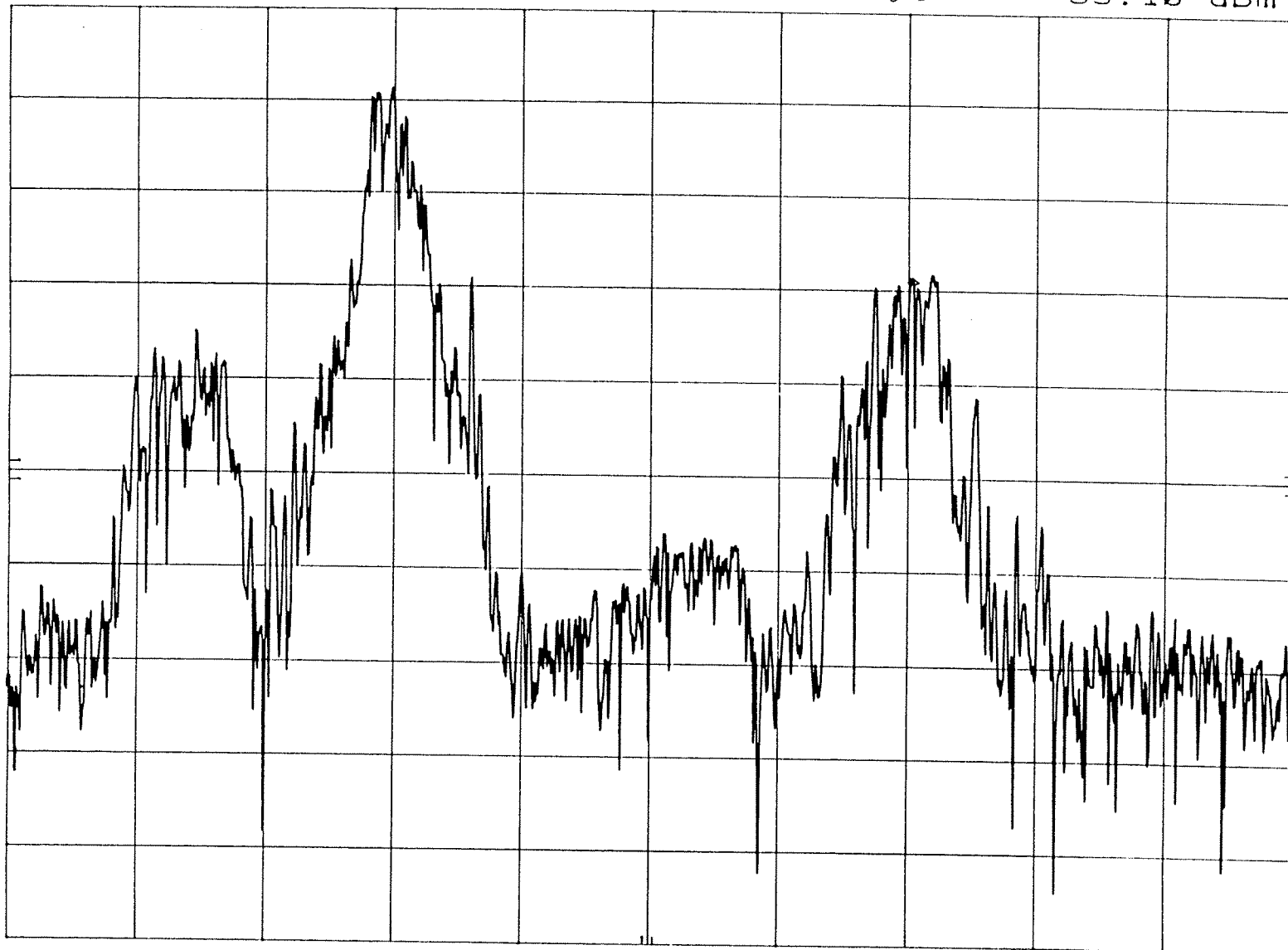
VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

AMATI LOWER 2nd Adj AT TOA 9/22/94 16:12 L<sub>s</sub>B MKR 94.101 MHz  
EIA REF -30.0 dBm ATTEN 10 dB D-3 -59.10 dBm

10 dB/



CENTER 93.89 MHz

RES BW 10 kHz

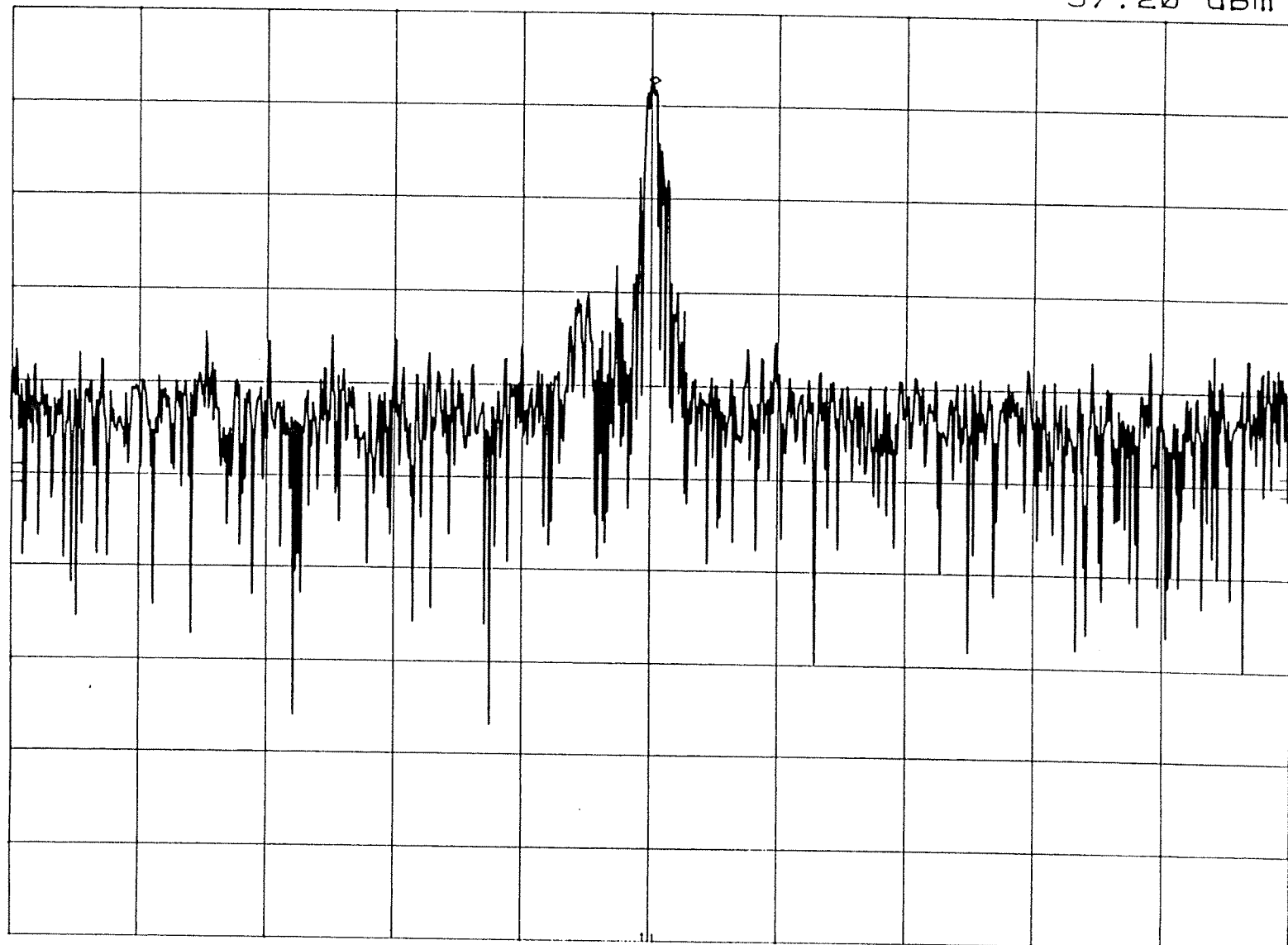
VBW 30 kHz

SPAN 1.00 MHz  
SWP 30.0 msec

AMATI / AT&T LSB C1 TOA 9/26/94 16:56  
EIA REF -50.0 dBm ATTEN 10 dB

MKR 94.106 MHz  
-57.20 dBm

10 dB/



CENTER 94.10 MHz

RES BW 30 kHz

VBW 100 kHz

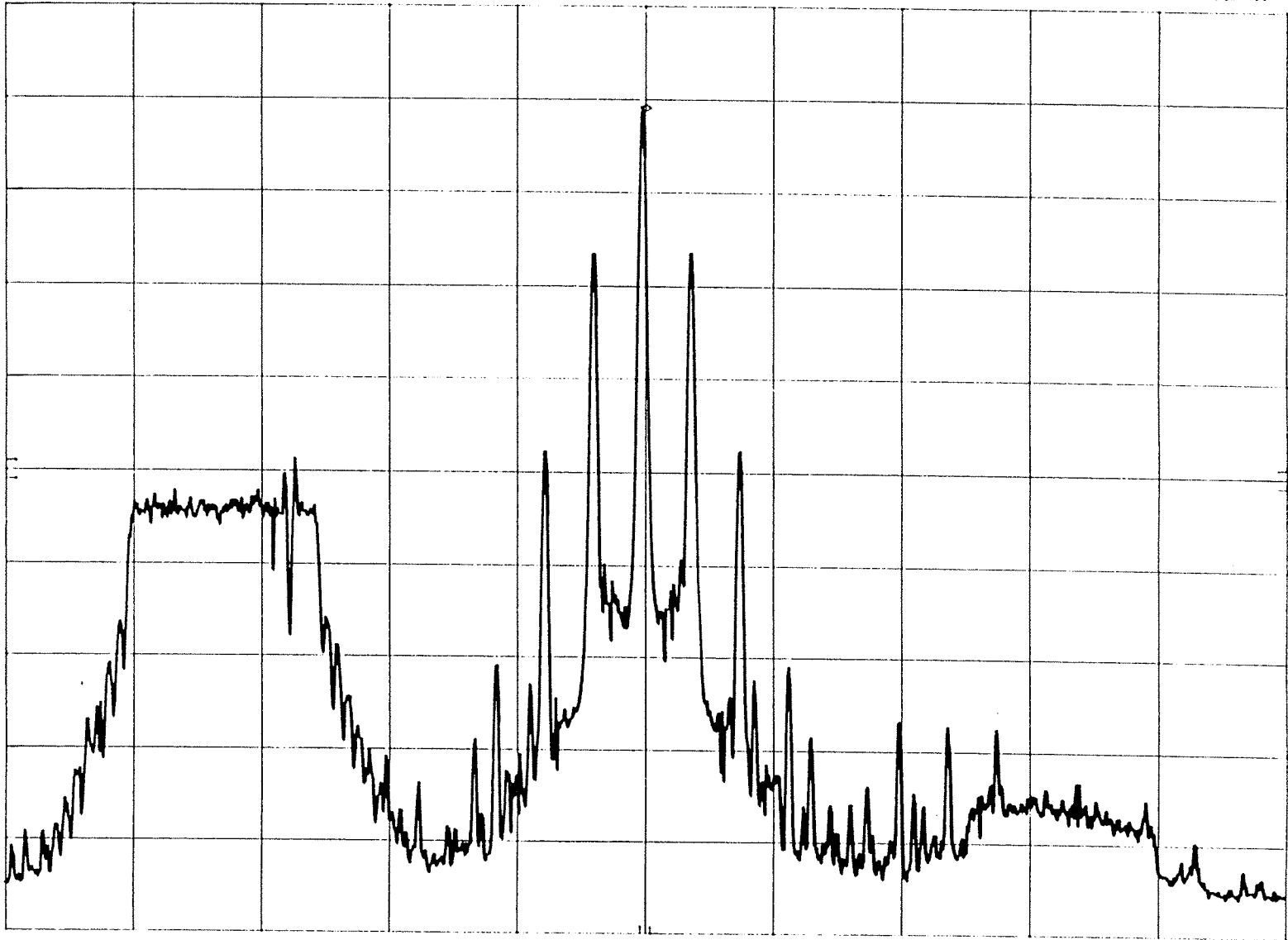
SPAN 3.00 MHz  
SWP 20.0 msec



AMATI / AT&T LSB 10/20/94 16:46  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-10.90 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

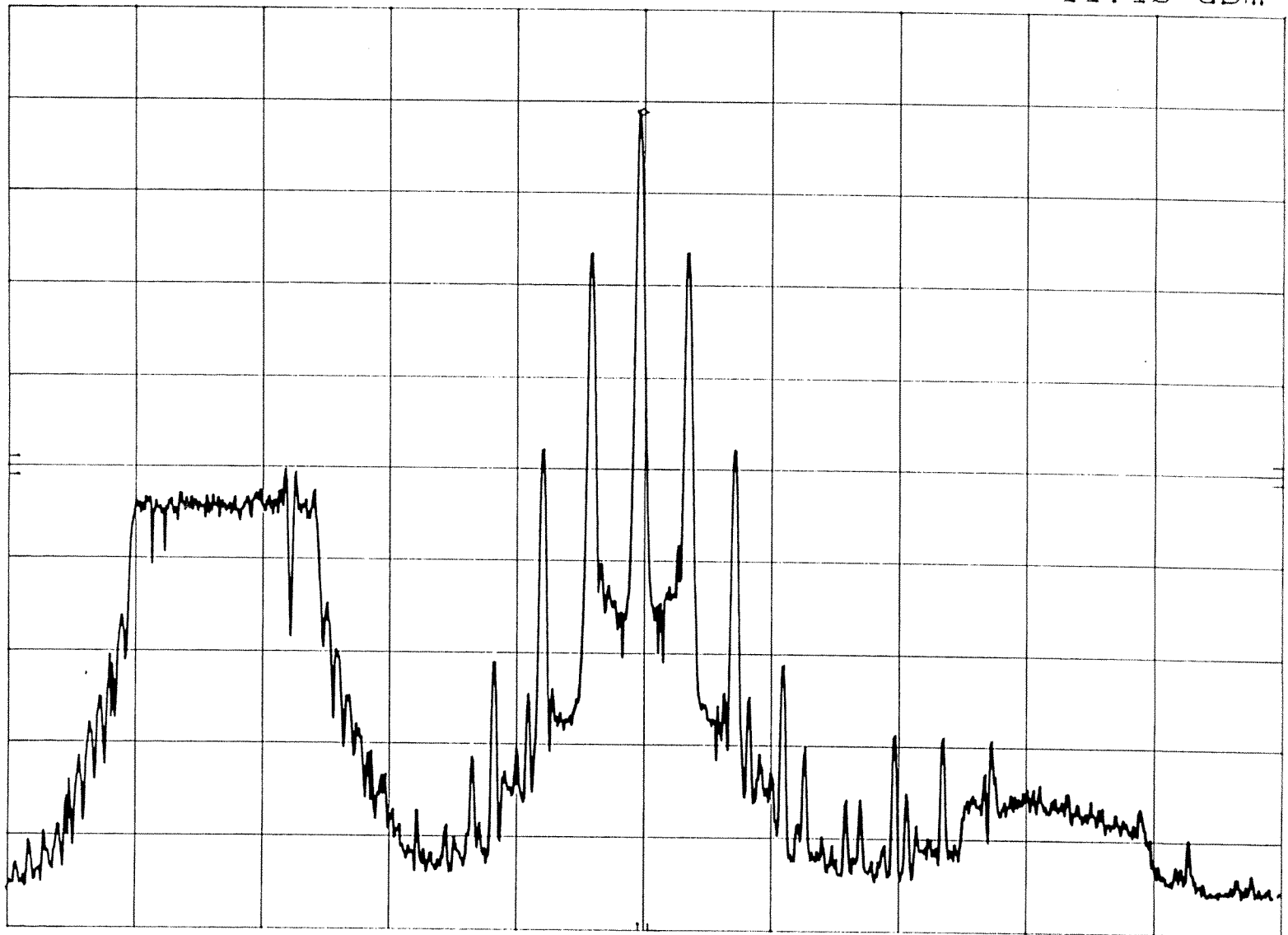
SPAN 500 kHz

SWP 50.0 sec

AMATI / AT&T LSB 8/24/94 10:30  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.0990 MHz  
-11.10 dBm

10 dB/

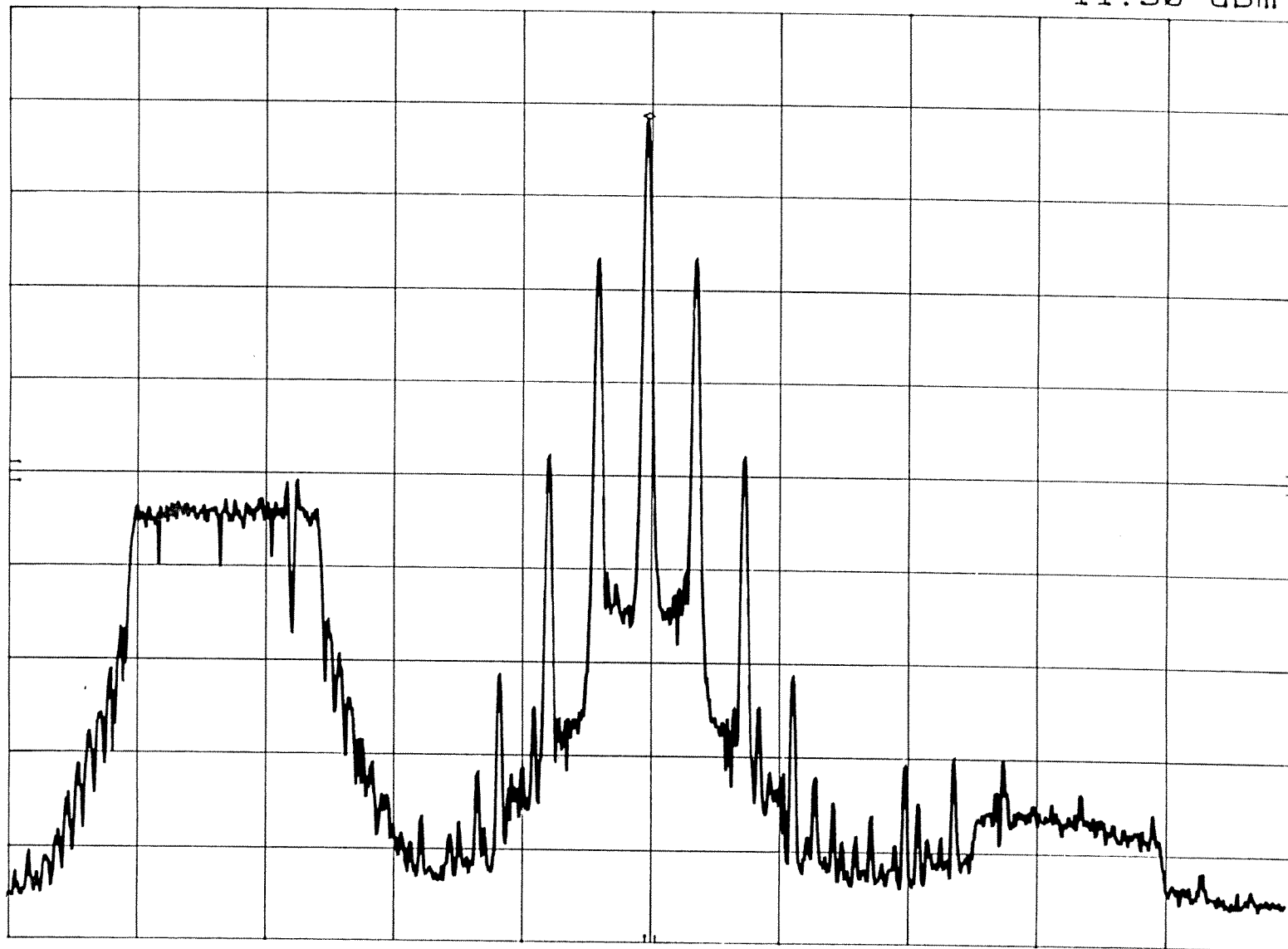


CENTER 94.100 MHz SPAN 500 kHz  
RES BW 1 kHz VBW 30 Hz SWP 50.0 sec

AMATI / AT&T LSB 8/31/94 09:32  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.098 5 MHz  
-11.30 dBm

10 dB/



CENTER 94.100 MHz

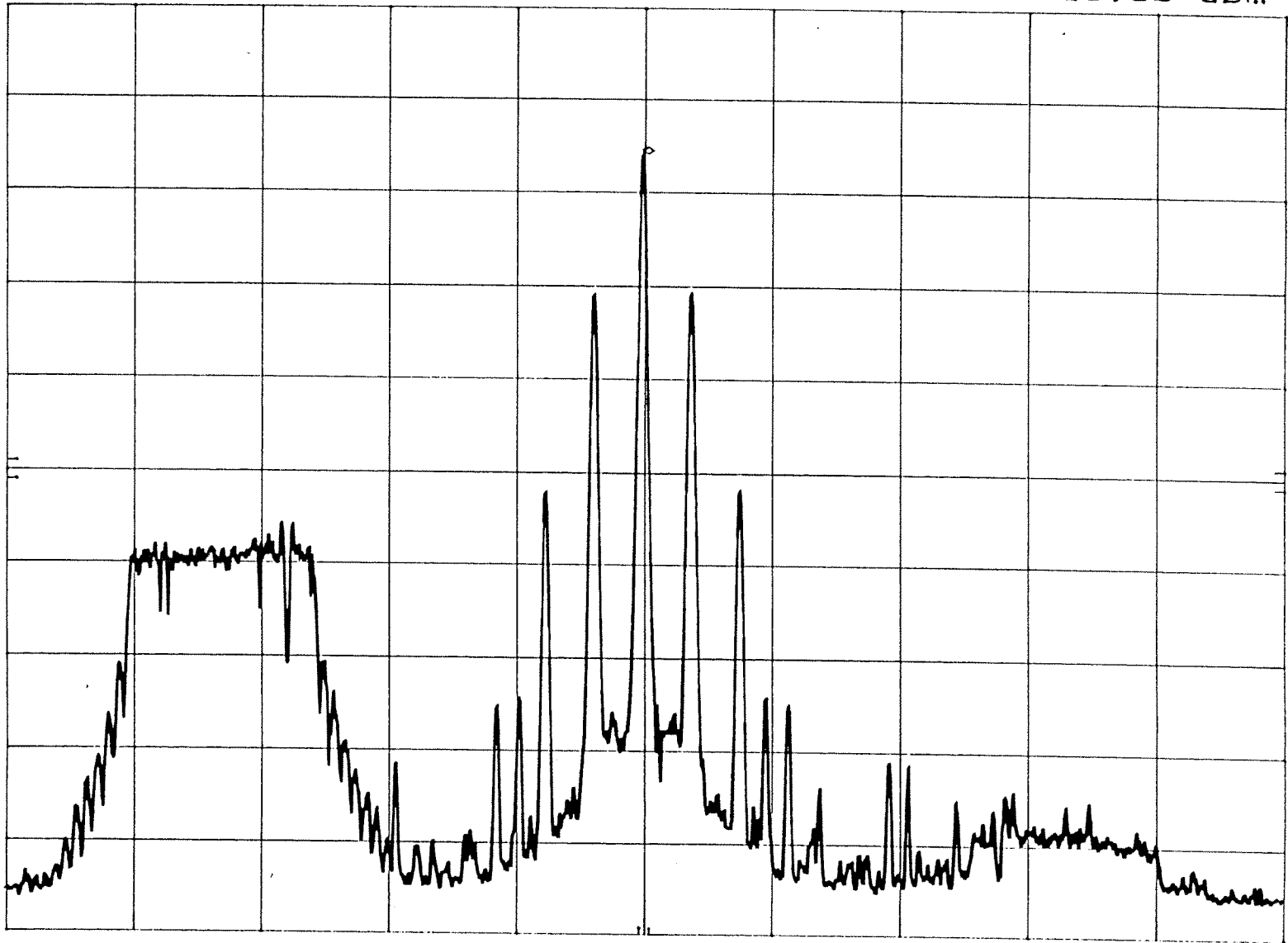
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

AMATI / AT&T LSB CO CHANNEL 8/31/94 09:36 MKR 94.101 0 MHz  
EIA REF 0.0 dBm ATTEN 10 dB -15.50 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

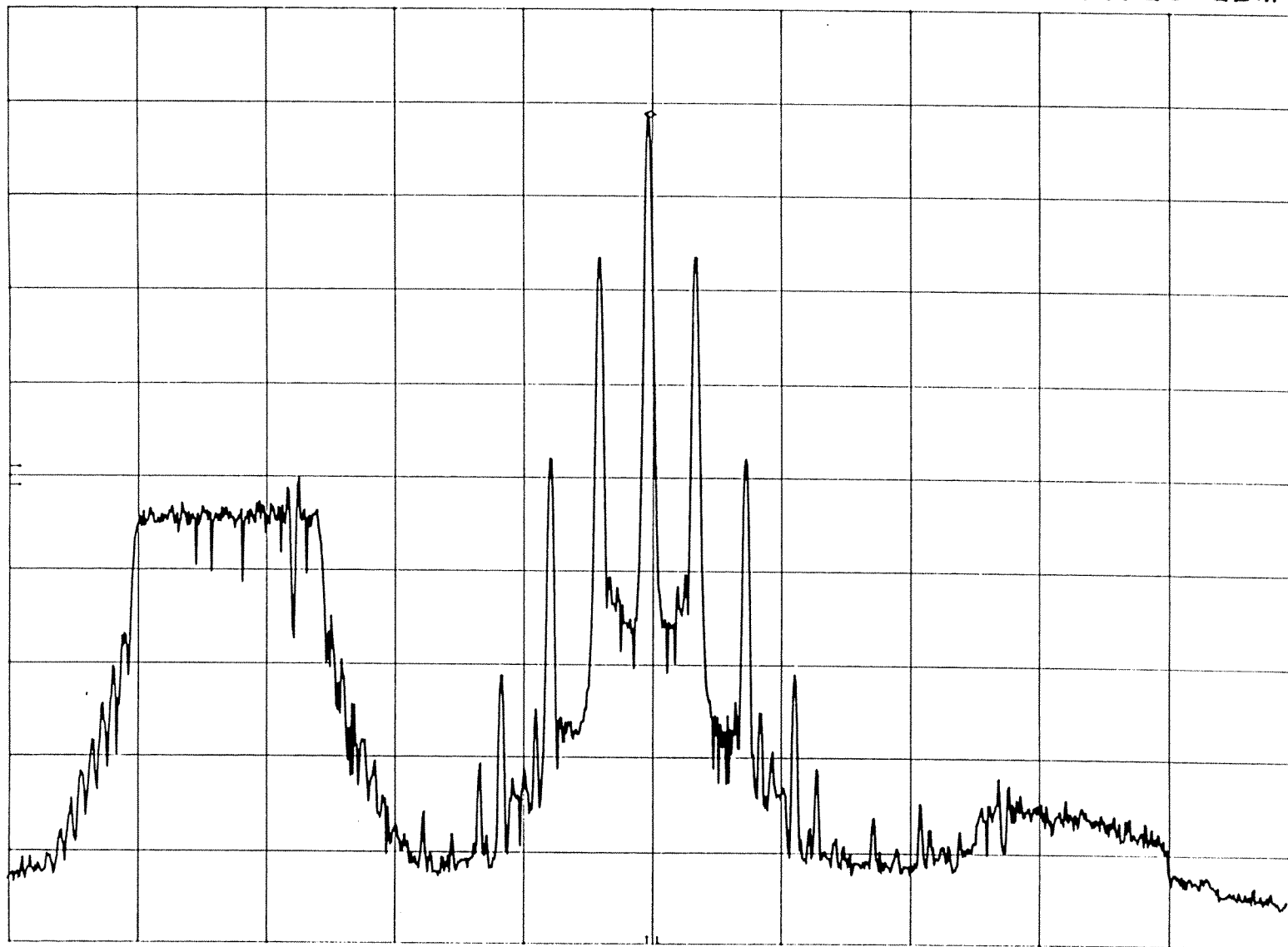
SPAN 500 kHz

SWP 50.0 sec

AMATI / AT&T LSB 9/26/94 15:41  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.099 0 MHz  
-11.20 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

**Appendix AE – Digital Test Results  
AT&T / Amati IBOC DSB**

# EIA Digital Audio Radio Test Laboratory

AE

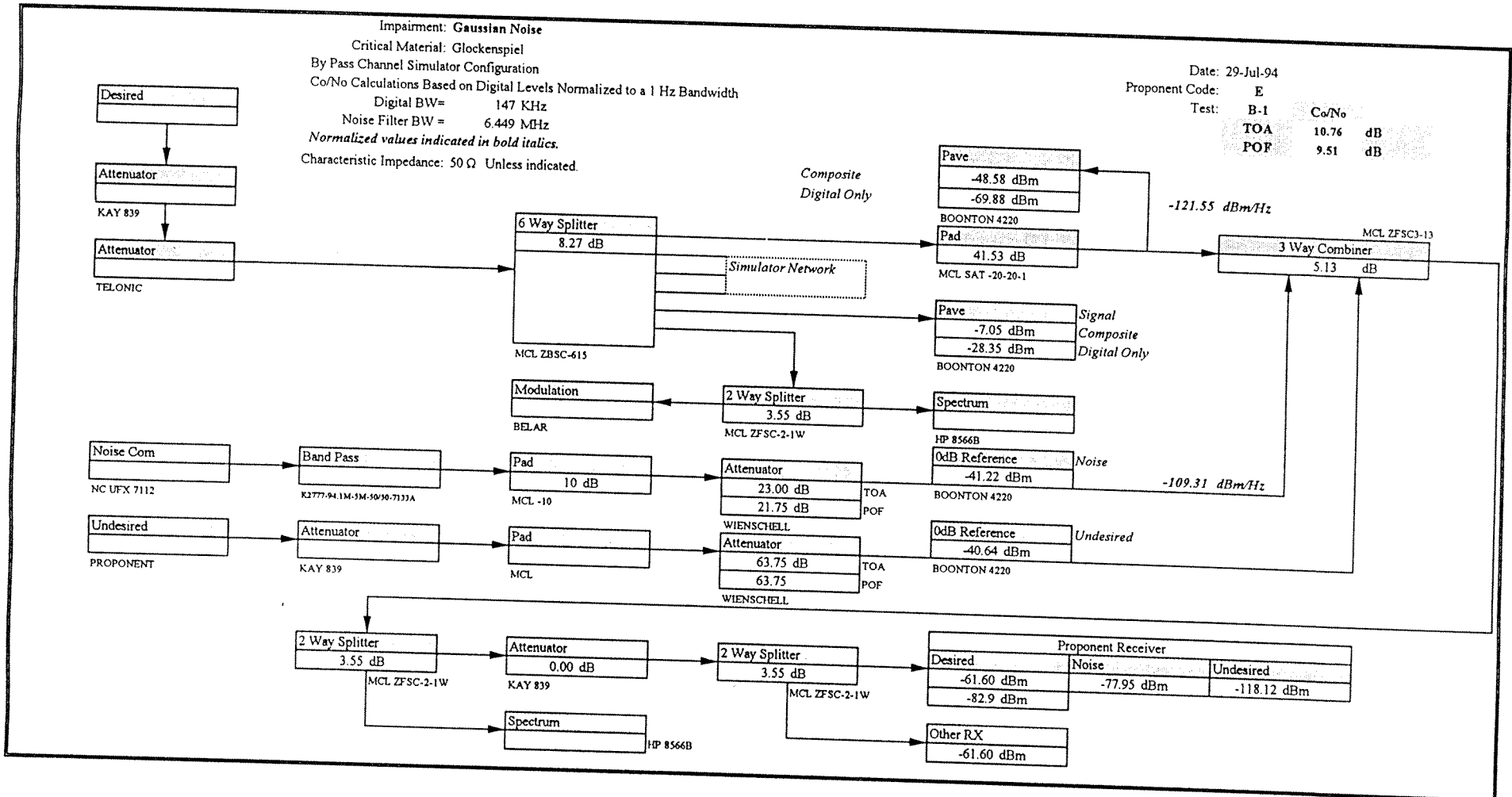
Proponent: AT&T Amati DSB Rev A.	
Code:	E
Digital Band Width:	1.47E+05 Hz
Composite Band Width:	4.00E+05 Hz
Peak/Average Composite:	2.06 dB
Peak/Average Digital:	11.76 dB

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-1	<b>Gaussian Noise</b>		
<b>Proponent Code:</b>	E			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	23.00	21.75	dB
	Co/No	10.76	9.51	dB
	EO&C	TOA Small flutter or ringing and a small drop out. POF Big pop and much flutter or muting.		
<b>Soprano</b>		TOA	POF	
	Attenuator	22.75	21.75	dB
	Co/No	10.51	9.51	dB
	EO&C	TOA Small drop out. POF Big pops overload DAT level meters, many drop outs.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	23.00	21.75	dB
	Co/No	10.76	9.51	dB
	EO&C	TOA Small Drop out. POF Many drop outs or mutes.		
<b>Notes:</b>				
	Recording Reference:	DAR30216.DAT		
	Testers:	DML,EB		
	Date:	29-Jul-94		



# EIA Digital Audio Radio Test Laboratory



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn	
	Start	Stop							
DAR30216.DAT 29-Jul-94			1	2			Glockenspiel Clear Channel	63.75	
			3	4				24.50	
			5	6				24.00	
			7	8				23.50	
			9	10	11		TOA lab	23.00	
			12	13				22.50	
			14	15				22.25	
			16	17				22.00	
			18	19			POF lab	21.75	
			20	21			Sync	63.75	
			22	23				21.50	
			24	25			Soprano Clear Channel	63.75	
			26	27				24.25	
			28	29				23.75	
			30	31				23.25	
			32	33	34	35	36	TOA lab	22.75
			37	38				22.50	
			39	40				22.25	
			41	42				22.00	
			43	44			POF lab	21.75	
			45	46			Sync	63.75	
			47	48				21.50	
			49	50			Clarinet Clear Channel	63.75	
			51	52				24.50	
			53	54				24.00	
			55	56				23.50	
			57	58			TOA lab	23.00	
			59	60				22.50	
			61	62				22.25	
			63	64				22.00	
			65	66			POF lab	21.75	
			67	68			Sync	63.75	
			69	70				21.50	

Code: E  
Impairment: Gaussian Noise

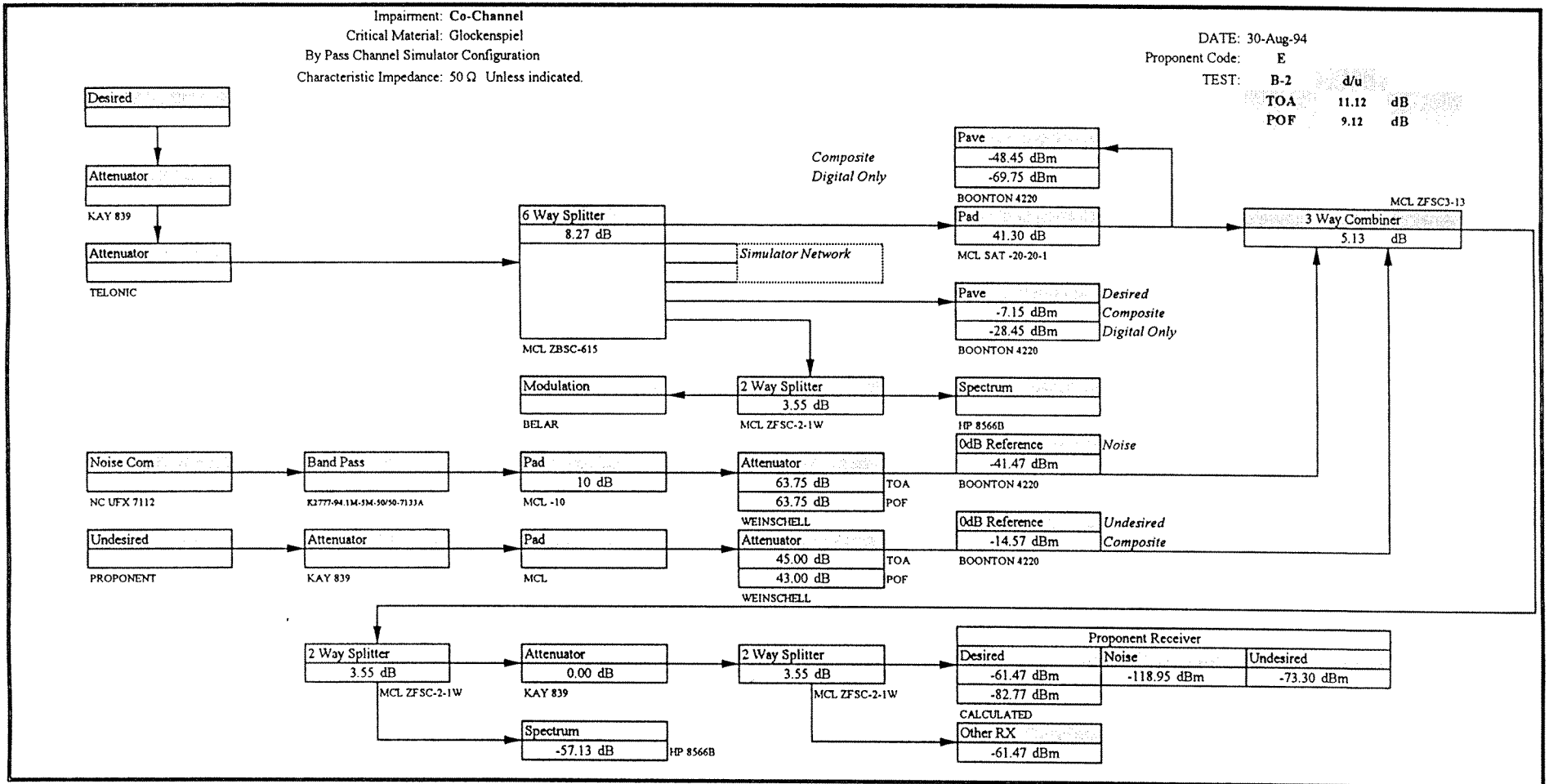
# EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-2 E	<b>Co-Channel</b>				Units
<b>Glockenspiel</b>		TOA	POF			
	Attenuator	45.00	43.00			dB
	d/u	11.12	9.12			dB
	EO&C TOA	Small drop out.				
	POF	Many drop outs or mutes.				
<b>Soprano</b>		TOA	POF			
	Attenuator	44.75	43.25			dB
	d/u	10.87	9.37			dB
	EO&C TOA	Small drop out.				
	POF	Many drop outs or mutes.				
<b>Clarinet</b>		TOA	POF			
	Attenuator	44.75	43.25			dB
	d/u	10.87	9.37			dB
	EO&C TOA	Small drop out.				
	POF	Many drop outs or mutes.				
Notes:	Recording Reference: DAR30236.DAT Testers: DML,ST Date: 30-Aug-94					

# EIA Digital Audio Radio Test Laboratory

Impairment: Co-Channel  
 Critical Material: Glockenspiel  
 By Pass Channel Simulator Configuration  
 Characteristic Impedance: 50 Ω Unless indicated.

DATE: 30-Aug-94  
 Proponent Code: E  
 TEST: B-2 d/u  
 TOA 11.12 dB  
 POF 9.12 dB



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn	
	Start	Stop							
DAR30236.DAT 30-Aug-94			1	2			Glockenspiel Clear Channel	63.75	
			3	4				46.50	
			5	6				46.00	
			7	8				45.50	
			9	10	11	12	13	TOA lab	45.00
			14	15	16				44.50
			17	18	19				44.00
			20	21					43.50
			22	23				POF lab	43.00
			24	25				Sync	63.75
			26	27					42.50
			28	29				Soprano Clear Channel	63.75
			30	31					46.25
			32	33					45.75
			34	35					45.25
			36	37	38	39	40	TOA lab	44.75
			41	42					44.25
			43	44					43.75
			45	46				POF lab	43.25
			47	48				Sync	63.75
			49	50					42.75
			51	52				Clarinet Clear Channel	63.75
			53	54					46.25
			55	56					45.75
			57	58					45.25
			59	60				TOA lab	44.75
			61	62					44.25
			63	64					43.75
			65	66				POF lab	43.25
			67	68				Sync	63.75
			69	70					42.75

Code: E  
Impairment: Co-Channel

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Slow Rayleigh</b>				
<b>Proponent Code:</b>	E	<b>Impairment Level</b>				
					<b>Units</b>	
<b>Glockenspiel</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.37		52.37		dB
	<b>TOA</b>	Two drop outs and a small flutter.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Soprano</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.37		52.37		dB
	<b>TOA</b>	A small drop out (< 1second) and a small click.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Clarinet</b>						
	<b>Attenuator</b>	TOA		POF		
		63.75		63.75		dB
	<b>Co/No</b>	52.37		52.37		dB
	<b>TOA</b>	Small drop out and and attenuated attack.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Notes:</b>	Recording Reference: DAR30251.DAT		DAR30252.DAT			
	Testers: DML,TK, ST		DAR30253.DAT			
	Test Date: 3-Aug-94					

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs						Description	Attn	
	Start	Stop	1	2	3						
DAR30251.DAT 3-Aug-94			1 4	2 5	3 6					Glockenspiel Clear Channel with multipath only	63.75 63.75
DAR30252.DAT 3-Aug-94			1 4	2 5	3 6					Soprano Clear Channel with multipath only	63.75 63.75
DAR30253.DAT 3-Aug-94			1 4	2 5	3 6					Clarinet Clear Channel with multipath only	63.75 63.75

Proponent Code: E  
Impairment: Urban Slow Rayleigh

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Fast Rayleigh</b>				
<b>Proponent Code:</b>	E	<b>Impairment Level</b>				
						Units
<b>Glockenspiel</b>						
	Attenuator	TOA		POF		
		37.50		32.00		dB
	Co/No	26.12		20.62		dB
	TOA	Small drop out.				
	EO&C					
	POF	Excessive muting and some static pops.				
<b>Soprano</b>						
	Attenuator	TOA		POF		
		36.25		30.50		dB
	Co/No	24.87		19.12		dB
	TOA	Small flutter or warble.				
	EO&C					
	POF	Excessive muting.				
<b>Clarinet</b>						
	Attenuator	TOA		POF		
		36.50		30.50		dB
	Co/No	25.12		19.12		dB
	TOA	Small pops or clicks.				
	EO&C					
	POF	Excessive muting.				
Recording Reference: DAR30254.DAT Testers: DML,TK,ST Test Date: 25-Aug-94						
Notes:						



# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attr
	Start	Stop	1	2	3				
DAR30254.DAT 25-Aug-94			1	2	3			Glockenspiel Clear Channel	63.75
			4	5	6				38.50
			7	8	9	10		Disregard #7	38.00
			11	12	13	14	15	TOA lab	37.50
			16	17	18				37.00
			19	20	21				36.00
			22	23	24				34.00
			25	26	27			POF lab	32.00
			28	29	30			Soprano Clear Channel	63.75
			31	32	33				37.25
			34	35	36				36.75
			37	38	39	40	41	TOA lab	36.25
			42	43	44				35.75
			45	46	47				34.50
			48	49	50			Disregard #49	32.50
			51	52	53			POF lab	30.50
			54	55	56			Clarinet Clear Channel	63.75
			57	58	59				37.50
			60	61	62				37.00
			63	64	65	66	67	TOA lab	36.50
			68	69	70				36.00
			71	72	73				34.50
			74	75	76				32.50
			77	78	79			POF lab	30.50

Proponent Code: E  
 Impairment: Urban Fast Rayleigh

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs				Description	Attn
	Start	Stop	1	2	3			
DAR30293.DAT 2-Dec-94			1	2	3		Glockenspiel Clear Channel	63.75
			4	5	6			38.50
			7	8	9		TOA confirmed	38.00
			10	11	12		TOA lab	37.50
			13	14	15			37.00
			16	17	18			36.50
			19	20	21			36.00
			22	23	24			35.00
			25	26	27			34.00
			28	29	30			33.00
			31	32	33		POF lab	32.00

Proponent Code: E

Impairment: Urban Fast Rayleigh Retest Addendum

# EIA Digital Audio Radio Test Laboratory

Test	B-3	<b>Rural Fast Rayleigh</b>				
Proponent		<b>Impairment Level</b>				
Code:	E					Units
<b>Glockenspiel</b>						
	Attenuator	TOA		POF		
		43.00		36.50		dB
	Co/No	31.62		25.12		dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting.				
<b>Soprano</b>						
	Attenuator	TOA		POF		
		42.00		36.00		dB
	Co/No	30.62		24.62		dB
	TOA	Small noise burst.				
EO&C						
	POF	Excessive muting.				
<b>Clarinet</b>						
	Attenuator	TOA		POF		
		42.00		36.00		dB
	Co/No	30.62		24.62		dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting with some static pops.				
Notes:						
Recording Reference: DAR30263.DAT						
Testers: DML,TK						
Test Date: 25-Aug-95						

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs				Description	Attn	
	Start	Stop	1	2	3				
DAR30263.DAT 25-Aug-95			1	2	3		Glockenspiel Clear Channel	63.75	
			4	5	6			44.00	
			7	8	9	10	Disregard #8	43.50	
			11	12	13	14	15	TOA lab	43.00
			16	17	18	19		42.50	
			20	21	22			41.00	
			23	24	25			39.00	
			26	27	28		POF lab	36.50	
		29	30	31		Soprano Clear Channel	63.75		
		32	33	34		Disregard #30	43.00		
		35	36	37			42.50		
		38	39	40	41	42	TOA lab	42.00	
		43	44	45			41.50		
		46	47	48			40.00		
		49	50	51			38.00		
		52	53	54		POF lab	36.00		
		55	56	57		Clarinet Clear Channel	63.75		
		58	59	60			43.00		
		61	62	63			42.50		
		64	65	66	67		Disregard 64-67	42.00	
		68	69	70	71		TOA lab	42.00	
		72	73	74			41.50		
		75	76	77			40.00		
		78	79	80			38.00		
		81	82	83		POF lab	36.00		

Proponent Code: E  
Impairment: Rural Fast Rayleigh

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Terrain Obstructed Rayleigh</b>				
<b>Proponent Code:</b>	E	<b>Impairment Level</b>				
<b>Units</b>						
<b>Glockenspiel</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.37		52.37		dB
	TOA	Small drop out and small flutter.				
EO&C						
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.37		52.37		dB
	TOA	Small flutter.				
EO&C						
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	52.37		52.37		dB
	TOA	Small drop out / flutter.				
EO&C						
	POF					
<b>Notes:</b>		Recording Reference: DAR30251.DAT				
		Testers: DML,ST				
		Test Date: 3-Aug-95				

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs			Description	Attn
	Start	Stop	1	2	3		
DAR30251.DAT			1	2	3	Glockenspiel Clear Channel	63.75
3-Aug-94			37	38	39	with multipath only	63.75
DAR30252.DAT			1	2	3	Soprano Clear Channel	63.75
3-Aug-94			37	38	39	with multipath only	63.75
DAR30253.DAT			1	2	3	Clarinet Clear Channel	63.75
3-Aug-94			43	44	45	with multipath only	63.75

Proponent Code: E  
Impairment: Terrain Obstructed Rayleigh

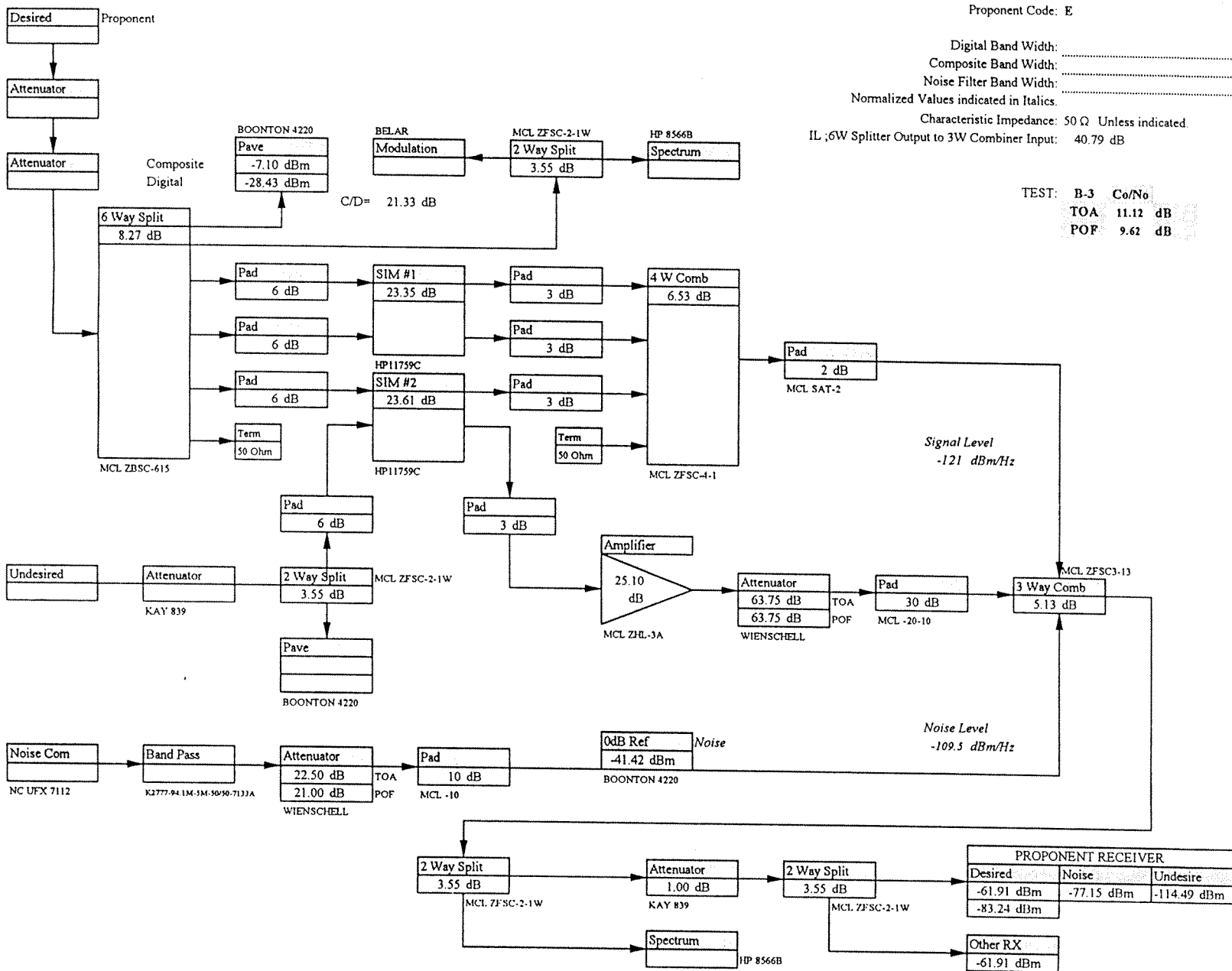
EIA Digital Audio Radio Test Laboratory

Proponent Code: E

Digital Band Width: ..... 147000 Hz  
 Composite Band Width: ..... 400000 Hz  
 Noise Filter Band Width: ..... 6449000 Hz  
 Normalized Values indicated in Italics.

Characteristic Impedance: 50 Ω Unless indicated.  
 IL ,6W Splitter Output to 3W Combiner Input: 40.79 dB

TEST: B-3 Co/No  
 TOA 11.12 dB  
 POF 9.62 dB



# EIA Digital Audio Radio Test Laboratory

Test	C-1 Impulse Response				
AT&T Amati DSB Rev A.		5 Vp-p at attenuator input.			
Program Material	Glockenspiel	10.00 ns wide pulse			
Pulse Repetition (Hz)	Attn at TOA	(Vp-p)	Attn at POF	(Vp-p)	EO&C
100	0.00	5.00	NA		TOA small drop out, POF not attainable.
200	13.25	1.09	12.00	1.26	TOA small drop out, POF excessive drop outs / flutter.
333	14.75	0.92	13.25	1.09	TOA small drop out, POF excessive drop outs / flutter.
666	15.25	0.86	14.75	0.92	TOA small drop out, POF excessive drop outs / flutter.
1000	15.50	0.84	15.00	0.89	TOA small drop out, POF excessive drop outs / flutter.
Additional Comments:					
Test Date: 26-Sep-94					
Testers: DML, TK, RMc					



## EIA Digital Audio Radio Test Laboratory

Test C-2 CW Response									
AT&T Amati DSB Rev A.									
Program Material Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12
1	93.85	0	0	0	27	94.11	0	0	0
2	93.86	0	0	0	28	94.12	0	0	0
3	93.87	0	0	0	29	94.13	0	0	0
4	93.88	0	0	0	30	94.14	0	0	0
5	93.89	0	0	0	31	94.15	0	0	0
6	93.90	1	2	2	32	94.16	0	0	0
7	93.91	1	2	2	33	94.17	0	0	0
8	93.92	2	2	2	34	94.18	0	0	0
9	93.93	2	2	2	35	94.19	0	0	0
10	93.94	2	2	2	36	94.20	0	0	0
11	93.95	2	2	2	37	94.21	0	0	0
12	93.96	2	2	2	38	94.22	0	1	2
13	93.97	0	0	2	39	94.23	0	0	1
14	93.98	0	1	2	40	94.24	2	2	2
15	93.99	0	0	0	41	94.25	2	2	2
16	94.00	0	0	0	42	94.26	1	2	2
17	94.01	0	0	0	43	94.27	2	2	2
18	94.02	0	0	0	44	94.28	2	2	2
19	94.03	0	0	0	45	94.29	0	2	2
20	94.04	0	0	0	46	94.30	1	2	2
21	94.05	0	0	0	47	94.31	0	0	0
22	94.06	0	0	0	48	94.32	0	0	0
23	94.07	0	0	0	49	94.33	0	0	0
24	94.08	0	0	0	50	94.34	0	0	0
25	94.09	0	0	0	51	94.35	0	0	0
26	94.10	0	0	0					

Test Date: 27-Sep-94      0 dB Attenuator Reference: -30.4 dBm

0=CLEAN AUDIO      1=APPROXIMATE TOA      2 ≥ POF

POF Attn=32.25dB      POF d/u=      14.2 dB

EIA Digital Audio Radio Test Laboratory

Test C-3 Airplane Flutter		
AT&T Amati DSB Rev A.		
Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  8.00 dB	TOA 4.10 dB  Small drop out or flutter.
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  6.00 dB	TOA 1.80 dB  Small drop out or flutter.
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  4.00 dB	TOA 0.30 dB  Small drop out or flutter.
Test Date: 27-Sep-94 Testers: DML, TK, ST		

EIA Digital Audio Radio Test Laboratory

Test	C-4	Weak Signal Sensitivity				
AT&T Amati DSB Rev A.						
Program Material	Glockenspiel					
<table border="1" style="display: inline-table; margin-right: 20px;"><thead><tr><th>TOA (dBm)</th></tr></thead><tbody><tr><td><math>-82 \leq \text{TOA} &lt; -81</math></td></tr></tbody></table> <table border="1" style="display: inline-table;"><thead><tr><th>POF (dBm)</th></tr></thead><tbody><tr><td><math>-83 &lt; \text{POF} \leq -82</math></td></tr></tbody></table>			TOA (dBm)	$-82 \leq \text{TOA} < -81$	POF (dBm)	$-83 < \text{POF} \leq -82$
TOA (dBm)						
$-82 \leq \text{TOA} < -81$						
POF (dBm)						
$-83 < \text{POF} \leq -82$						
Test Date: 20-Oct-94						
Testers: DML,RMc						

# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler									
Code:	E	Bad Urban 1									
Program Material		Mozart (Track 67 on SQAM disk)									
<p>Delay Spread (us)</p>											
EO&C		30 sec minimum listening time. 0 = Unimpaired 1 = Small Impairment 2 ≥ POF Level of Impairment									
		Small Impairments consisted of occasional, brief (short duration) dropouts.									
Test Date:		19-Oct-94									
Testers:		DML, RMc									

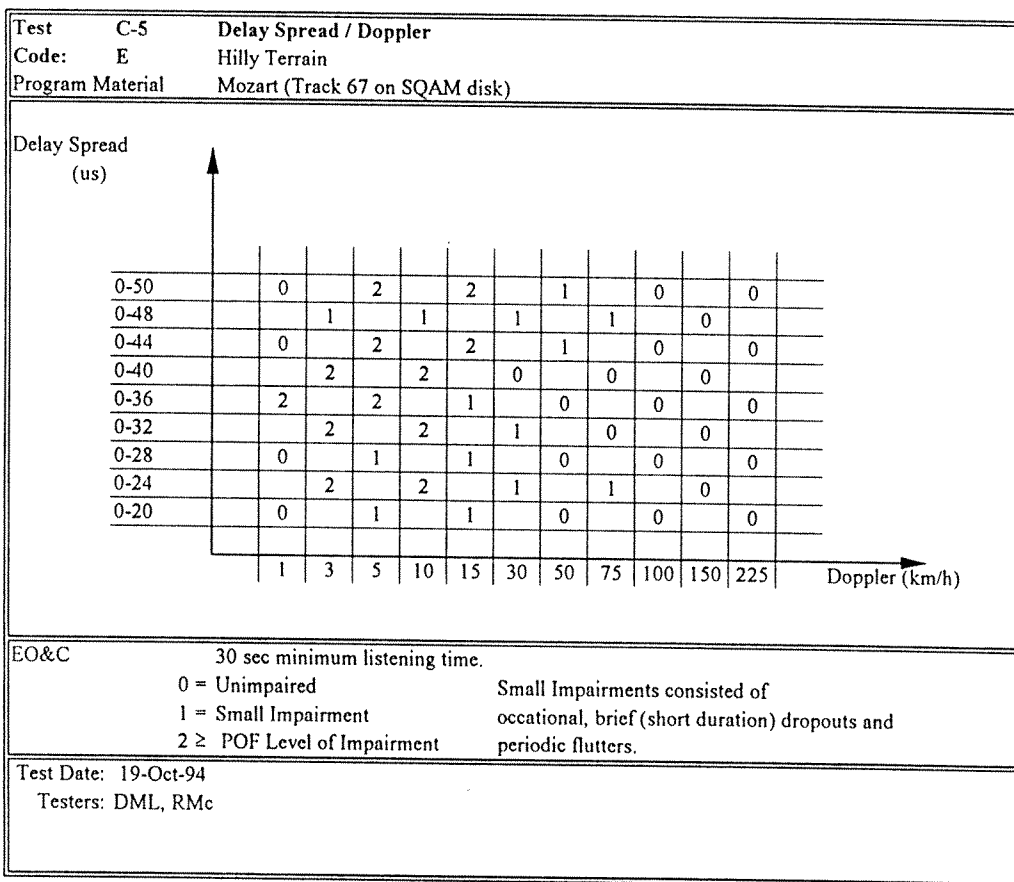
## EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler																																																																																																																																																											
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Program Material	Mozart (Track 67 on SQAM disk)																																																																																																																																																												
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# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																														
<b>Code:</b>	E	Typical Urban																																																																																																																																														
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Delay Spread (us) <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px;">0-10</td><td style="padding: 2px;">0</td><td style="padding: 2px;">1</td><td style="padding: 2px;">1</td><td style="padding: 2px;">1</td><td style="padding: 2px;">1</td><td style="padding: 2px;">1</td><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;">0-9</td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;">0-8</td><td style="padding: 2px;">1</td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;">0-7</td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;"></td></tr> <tr> <td style="padding: 2px;">0-6</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td></tr> <tr> <td style="padding: 2px;">0-5</td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;">0-4</td><td style="padding: 2px;"></td><td style="padding: 2px;">2</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td></tr> <tr> <td style="padding: 2px;">0-3</td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;">0-2</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td></tr> <tr> <td style="padding: 2px;">0-1</td><td style="padding: 2px;">0</td><td style="padding: 2px;">1</td><td style="padding: 2px;">2</td><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td><td style="padding: 2px;"></td><td style="padding: 2px;">0</td></tr> <tr> <td style="padding: 2px;"></td><td style="padding: 2px;"></td><td style="padding: 2px;">1</td><td style="padding: 2px;">3</td><td style="padding: 2px;">5</td><td style="padding: 2px;">10</td><td style="padding: 2px;">15</td><td style="padding: 2px;">30</td><td style="padding: 2px;">50</td><td style="padding: 2px;">75</td><td style="padding: 2px;">100</td><td style="padding: 2px;">150</td><td style="padding: 2px;">225</td></tr> </table>												0-10	0	1	1	1	1	1	0	0	0	0	0	0-9	0		1		1		0		0		0	0-8	1	1			0						0	0-7	0		1		0			0				0-6		1		1		1		0		0		0-5	0		1		0			0			0	0-4		2		1		0		0		0		0-3	0		1		0			0			0	0-2		1		1		1		0		0		0-1	0	1	2	0	0		0		0		0			1	3	5	10	15	30	50	75	100	150	225
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Test Date: 19-Oct-94 Testers: DML, RMc																																																																																																																																																

# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler											
Code:	E	Rural Area											
Program Material		Mozart (Track 67 on SQAM disk)											
Delay Spread (us)													
0-1.0			1		0		0		0		0		
0-0.9		0		0		1		0		0	0		
0-0.8			0		0		0		0		0		
0-0.7		1		1		0		0		0	0		
0-0.6			2		1		0		0		0		
0-0.5		0		0		0		0		0	0		
0-0.4			1		0		0		0		0		
0-0.3		0		1		0		0		0	0		
0-0.2			1		0		0		0		0		
0-0.1		2		0		0		0		0	0		
			1	3	5	10	15	30	50	75	100	150	225
			Doppler (km/h)										
EO&C		30 sec minimum listening time.											
		0 = Unimpaired					Small Impairments consisted of						
		1 = Small Impairment					occasional, brief (short duration) dropouts.						
		2 ≥ POF Level of Impairment											
Test Date:		19-Oct-94											
Testers:		DML, RMc											



## EIA Digital Audio Radio Test Laboratory

Test C-6 Additional Multipath Doppler Simulations																	
AT&T Amati DSB Rev A.																	
Program Material: Glockenspiel																	
Scenario					EO&C												
	Level	Attn	Co/No	Units													
#1 Urban Slow	TOA	63.75	52.38	dB	No added noise, 1 to 2 sec drop out. followed by pop.												
	POF	63.75	52.38	dB	Same as TOA.												
#2 Urban Fast	TOA	29.00	17.63	dB	Small warble.												
	POF	26.50	15.13	dB	Excessive flutter / drop outs.												
#3 Rural Fast	TOA	26.75	15.38	dB	Mild drop out												
	POF	23.25	11.88	dB	Excessive flutter / drop outs and a large pop.												
#4 Terrain Obstructed	TOA	63.75	52.38	dB	Numerous short to medium duration drop outs.												
	POF	30.50	19.13	dB	Excessive flutter / drop outs and a large pop.												
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Test Date: 20-Oct-94</td> <td style="width: 33%;">Desired</td> <td style="width: 33%;">Noise</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal -7.02 dBm</td> <td></td> </tr> <tr> <td>DAT Reference: DAR30550.DAT</td> <td>IL 40.79 dB</td> <td>BW 6.45E+06 Hz</td> </tr> <tr> <td></td> <td>3WIN -47.81 dBm</td> <td>0dB Ref -41.38 dBm</td> </tr> </table>						Test Date: 20-Oct-94	Desired	Noise	Testers: DML, RMc	Signal -7.02 dBm		DAT Reference: DAR30550.DAT	IL 40.79 dB	BW 6.45E+06 Hz		3WIN -47.81 dBm	0dB Ref -41.38 dBm
Test Date: 20-Oct-94	Desired	Noise															
Testers: DML, RMc	Signal -7.02 dBm																
DAT Reference: DAR30550.DAT	IL 40.79 dB	BW 6.45E+06 Hz															
	3WIN -47.81 dBm	0dB Ref -41.38 dBm															

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn	
	Start	Stop							
DAR30550.DAT 20-Oct-94	DSB	1	2				Urban Slow	63.75	
		3	4				Urban Fast, TOA	29.00	
		5	6				Rural Fast, TOA	26.75	
		7	8				Obstructed Fast	63.75	
		LSB	9	10				Urban Slow	63.75
			11	12				Urban Fast	63.75
			13	14				Rural Fast	38.00
			15	16				Obstructed Fast	63.75

Additional Multipath Doppler Simulations  
Code: E  
Test C-6

EIA Digital Audio Radio Test Laboratory

Test D-Series Co-Channel, 1st and 2nd Adjacent					
AT&T Amati DSB Rev A.					
Program Material: Glockenspiel					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	20.50	10.72	dB	Small drop out or flutter.
	POF	19.25	9.47	dB	Excessive Muting.
D-2 Lower 1st Adjacent	TOA	41.25	31.47	dB	Small drop outs or flutters.
	POF	39.25	29.47	dB	Excessive Muting.
Upper 1st Adjacent	TOA	41.25	31.31	dB	Small drop outs or flutters.
	POF	39.25	29.31	dB	Excessive flutter or drop outs.
D-3 Lower 2nd Adjacent	TOA	4.00	-15.47	dB	Small drop outs or flutters.
	POF	0.00	-19.47	dB	Excessive flutter or drop outs.
	TOA				Not necessary due to symmetry.
	POF				
Undesired signal for co-channel and Low 1st adj= -38.80 dBm Undesired signal for Upper 1st Adjacent = -38.64 dBm Undesired signal for Lower 2nd Adjacent = -29.11 dBm DAT Reference: DAR30403.DAT By Pass Simulator Configuration.					
Test Date: 22-Sep-94				Desired	Undesired
Testers: DML, ST		6WOUT		-7.15 dBm	
		IL		41.43 dB	
		3WIN		-48.58 dBm	

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30403.DAT 22-Sep-94			1	2	3			DSB Co-Channel TOA	20.50
			4	5	6			DSB Lower 1st Adj TOA	41.25
			7	8	9	10	11	DSB Upper 1st Adj	41.50
			12	13				Disregard	41.25
			14	15	16			TOA	41.25
			17	18	19			DSB Lower 2nd Adjacent TOA	4.00
			20	21	22			LSB Lower 2nd Adjacent TOA	2.75
			23	24	25	26		LSB Lower 2nd Adjacent USB undesired TOA	21.75
			27	28	29			LSB Lower 1st Adjacent TOA	62.25
			30	31	32			LSB Co-Channel TOA	27.00

Code: E  
D-Series Recordings

## EIA Digital Audio Radio Test Laboratory

<b>Test</b> <b>E-1</b> <b>Co-Channel with Multipath (Rayleigh)</b> <b>AT&amp;T Amati DSB Rev A.</b> <b>Program Material:    Glockenspiel</b>																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																
	POF	63.75	54.01	dB	NA																
#2 Urban Fast	TOA	43.00	33.26	dB	Small drop out.																
	POF	37.50	27.76	dB	Excessive muting.																
#3 Rural Fast	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																
	POF	63.75	54.01	dB	NA																
#4 Terrain Obstructed	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																
	POF	63.75	54.01	dB	NA																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; border: none;">Test Date: 22-Sep-94</td> <td style="width: 10%; border: none;"></td> <td style="width: 10%; border: none; text-align: center;">Desired</td> <td style="width: 50%; border: none;"></td> </tr> <tr> <td style="border: none;">Testers: DML, TK, ST, DS</td> <td style="border: none;">Signal</td> <td style="border: none; text-align: center;">-7.15 dBm</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">IL</td> <td style="border: none; text-align: center;">40.79 dB</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">3WIN</td> <td style="border: none; text-align: center;">-47.94 dBm</td> <td style="border: none; text-align: right;">Undesired -38.20 dBm</td> </tr> </table>						Test Date: 22-Sep-94		Desired		Testers: DML, TK, ST, DS	Signal	-7.15 dBm			IL	40.79 dB			3WIN	-47.94 dBm	Undesired -38.20 dBm
Test Date: 22-Sep-94		Desired																			
Testers: DML, TK, ST, DS	Signal	-7.15 dBm																			
	IL	40.79 dB																			
	3WIN	-47.94 dBm	Undesired -38.20 dBm																		

## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Rayleigh)</span> AT&T Amati DSB Rev A. Program Material: Glockenspiel																									
Scenario																									
	Level	Attn	D/U	Units	EO&C																				
#1 Urban Slow	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																				
	POF	63.75	54.01	dB	NA																				
#2 Urban Fast	TOA	58.50	48.76	dB	Small drop out.																				
	POF	49.50	39.76	dB	Excessive muting.																				
#3 Rural Fast	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																				
	POF	63.75	54.01	dB	NA																				
#4 Terrain Obstructed	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																				
	POF	63.75	54.01	dB	NA																				
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 22-Sep-94</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Desired</td> <td style="width: 10%;"></td> <td style="width: 30%; text-align: center;">Undesired</td> </tr> <tr> <td>Testers: DML, TK, ST, DS</td> <td>Signal</td> <td style="text-align: center;">-7.15 dBm</td> <td></td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: center;">40.79 dB</td> <td></td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: center;">-47.94 dBm</td> <td></td> <td style="text-align: center;">-38.20 dBm</td> </tr> </table>						Test Date: 22-Sep-94		Desired		Undesired	Testers: DML, TK, ST, DS	Signal	-7.15 dBm				IL	40.79 dB				3WIN	-47.94 dBm		-38.20 dBm
Test Date: 22-Sep-94		Desired		Undesired																					
Testers: DML, TK, ST, DS	Signal	-7.15 dBm																							
	IL	40.79 dB																							
	3WIN	-47.94 dBm		-38.20 dBm																					

## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-3 Lower 2nd Adjacent with Multipath (Rayleigh)</span> AT&T Amati DSB Rev A. Program Material: Glockenspiel																													
Scenario					EO&C																								
	Level	Attn	D/U	Units																									
#1 Urban Slow	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																								
	POF	63.75	54.01	dB	NA																								
#2 Urban Fast	TOA	18.25	8.51	dB	Small drop out.																								
	POF	9.25	-0.49	dB	Excessive muting.																								
#3 Rural Fast	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																								
	POF	63.75	54.01	dB	NA																								
#4 Terrain Obstructed	TOA	63.75	54.01	dB	Simulation by itself produces defects in the recovered audio.																								
	POF	63.75	54.01	dB	NA																								
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 22-Sep-94</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Desired</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Undesired</td> <td style="width: 10%;"></td> </tr> <tr> <td>Testers: DML, TK, ST, DS</td> <td>Signal</td> <td></td> <td style="text-align: center;">-7.15 dBm</td> <td></td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td></td> <td style="text-align: center;">40.79 dB</td> <td></td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td></td> <td style="text-align: center;">-47.94 dBm</td> <td></td> <td style="text-align: center;">-38.20 dBm</td> </tr> </table>						Test Date: 22-Sep-94		Desired		Undesired		Testers: DML, TK, ST, DS	Signal		-7.15 dBm				IL		40.79 dB				3WIN		-47.94 dBm		-38.20 dBm
Test Date: 22-Sep-94		Desired		Undesired																									
Testers: DML, TK, ST, DS	Signal		-7.15 dBm																										
	IL		40.79 dB																										
	3WIN		-47.94 dBm		-38.20 dBm																								

EIA Digital Audio Radio Test Laboratory

Test E-1 Co-Channel with Multipath (Doppler)																	
AT&T Amati DSB Rev A.																	
Program Material: Glockenspiel																	
Scenario					EO&C												
	Level	Attn	D/U	Units													
#1 Urban Slow	TOA	63.75	67.30	dB	Impairment detected with simulation.												
	POF	63.75	67.30	dB	NA												
#2 Urban Fast	TOA	19.75	23.30	dB	Small drop out.												
	POF	13.75	17.30	dB	Excessive drop outs and flutter.												
#3 Rural Fast	TOA	14.50	18.05	dB	Small drop out or flutter.												
	POF	12.00	15.55	dB	Excessive drop outs and flutter.												
#4 Terrain Obstructed	TOA	63.75	67.30	dB	Impairment detected with simulation.												
	POF	63.75	67.30	dB	NA												
Test Date: 21-Oct-94 Testers: DML, RM, ST <table style="width: 100%; border: none;"> <tr> <td style="width: 30%;"></td> <td style="width: 20%;">Signal</td> <td style="width: 20%;">Desired</td> <td style="width: 30%;">Undesired</td> </tr> <tr> <td></td> <td>IL</td> <td>-7.06 dBm</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>-47.85 dBm</td> <td>-51.40 dBm</td> </tr> </table>							Signal	Desired	Undesired		IL	-7.06 dBm			3WIN	-47.85 dBm	-51.40 dBm
	Signal	Desired	Undesired														
	IL	-7.06 dBm															
	3WIN	-47.85 dBm	-51.40 dBm														



## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Doppler)</span> AT&T Amati DSB Rev A. Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	63.75	67.30	dB	Impairment detected with simulation.																
	POF	63.75	67.30	dB	NA																
#2 Urban Fast	TOA	34.25	37.80	dB	Small drop out.																
	POF	28.25	31.80	dB	Excessive drop outs and flutter.																
#3 Rural Fast	TOA	34.75	38.30	dB	Small drop out or flutter.																
	POF	28.25	31.80	dB	Excessive drop outs and flutter.																
#4 Terrain Obstructed	TOA	63.75	67.30	dB	Impairment detected with simulation.																
	POF	63.75	67.30	dB	NA																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 21-Oct-94</td> <td style="width: 20%;"></td> <td style="width: 20%;">Desired</td> <td style="width: 20%;">Undesired</td> </tr> <tr> <td>Testers: DML, RM, ST</td> <td>Signal</td> <td style="text-align: center;">-7.06 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: center;">40.79 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: center;">-47.85 dBm</td> <td style="text-align: center;">-51.40 dBm</td> </tr> </table>						Test Date: 21-Oct-94		Desired	Undesired	Testers: DML, RM, ST	Signal	-7.06 dBm			IL	40.79 dB			3WIN	-47.85 dBm	-51.40 dBm
Test Date: 21-Oct-94		Desired	Undesired																		
Testers: DML, RM, ST	Signal	-7.06 dBm																			
	IL	40.79 dB																			
	3WIN	-47.85 dBm	-51.40 dBm																		

EIA Digital Audio Radio Test Laboratory

Test E-3 Lower 2nd Adjacent with Multipath (Doppler)																					
AT&T Amati DSB Rev A.																					
Program Material: Glockenspiel																					
Scenario					EO&C																
	Level	Attn	D/U	Units																	
#1 Urban Slow	TOA	63.75	40.90	dB	Impairment detected with simulation.																
	POF	63.75	40.90	dB	NA																
#2 Urban Fast	TOA	23.00	0.15	dB	Small drop out.																
	POF	15.50	-7.35	dB	Excessive drop outs and flutter.																
#3 Rural Fast	TOA	16.50	-6.35	dB	Small drop out or flutter.																
	POF	11.00	-11.85	dB	Excessive drop outs and flutter.																
#4 Terrain Obstructed	TOA	63.75	40.90	dB	Impairment detected with simulation.																
	POF	63.75	40.90	dB	NA																
Test Date: 21-Oct-94 Testers: DML, RM, ST <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"></td> <td style="width: 20%;">Signal</td> <td style="width: 20%;">Desired</td> <td style="width: 20%;">Undesired</td> </tr> <tr> <td></td> <td>IL</td> <td>-7.06 dBm</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>40.79 dB</td> <td></td> </tr> <tr> <td></td> <td></td> <td>-47.85 dBm</td> <td>-25.00 dBm</td> </tr> </table>							Signal	Desired	Undesired		IL	-7.06 dBm			3WIN	40.79 dB				-47.85 dBm	-25.00 dBm
	Signal	Desired	Undesired																		
	IL	-7.06 dBm																			
	3WIN	40.79 dB																			
		-47.85 dBm	-25.00 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test J-1 Re-Acquisition			
AT&T Amati DSB Rev A.			
Program Material Mozart (Track 67 on SQAM disk)			
Toff (s)	Re-Acquisition Time (s)		
	POF-2	POF-4	POF-6
30	4	3	4
	2	2	2
	4	5	5
	2	2	1
	1	6	4
Average	2.6	3.6	3.2
POF Attenuator Setting : 21.25 dB			
Desired Signal Level : -48.57 dBm			
Noise 0 dB Reference : -41.45 dBm			
Additional Comments: Re-Acquisition time is the value listed ± 0.5 seconds.			
Test Date: 26-Sep-94			
Testers: DML, RMc			

## EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB R	Urban Slow Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	1	3	1	
10	6	6	4	
15	3	3	2	
20	3	1	2	
25	5	5	7	
Average	3.6	3.6	3.2	
POF Attenuator Setting	:	25.75dB		
Desired Signal Level	:	-48.45 dBm		
Noise 0 dB Reference	:	-41.42 dBm		
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

## EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB R	Urban Fast Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	POF-2	Re-Acquisition Time (s)		POF-6
		POF-4		
5	2	1	4	4
10	5	1	4	4
15	2	1	1	1
20	3	1	4	4
25	6	3	1	1
Average	3.6	1.4	2.8	
POF Attenuator Setting	: 30.00 dB			
Desired Signal Level	: -48.45 dBm			
Noise 0 dB Reference	: -41.42 dBm			
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB R	Rural Fast Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	Re-Acquisition Time (s)			
	POF-2	POF-4	POF-6	
5	1	2	1	
10	2	5	6	
15	5	5	2	
20	1	1	5	
25	2	2	2	
<u>Average</u>	2.2	3	3.2	
POF Attenuator Setting	: 35.00 dB			
Desired Signal Level	: -48.45 dBm			
Noise 0 dB Reference	: -41.42 dBm			
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	<b>Re-Acquisition with Multipath</b>		
<b>AT&amp;T Amati DSB R</b>		Terrain Obstructed Rayleigh		
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)		
Re-Acquisition Time (s)				
Tsim (s)	POF-2	POF-4	POF-6	
5	1	1	1	
10	2	3	2	
15	4	1	3	
20	2	1	5	
25	4	5	2	
<u>Average</u>	2.6	2.2	2.6	
POF Attenuator Setting : 33.00 dB				
Desired Signal Level : -48.45 dBm				
Noise 0 dB Reference : -41.42 dBm				
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Sep-94				
Testers: DML, TK, ST				

EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath
AT&T Amati DSB R	Urban Slow Doppler	
Program Material	Mozart (Track 67 on SQAM disk)	
	Tsim (s)	Re-Acquisition Time (s) POF
	5	<u>2</u>
	10	<u>1</u>
	15	<u>3</u>
	20	<u>2</u>
	25	<u>1</u>
	Average	<u>1.8</u>
	POF Attenuator Setting	: 63.75 dB
	Desired Signal Level	: -47.85 dBm
	Noise 0 dB Reference	: -41.40 dBm
Additional Comments: Re-Acquisition time is the value listed $\pm$ 1 second.		
Test Date: 21-Oct-94 Testers: DML, ST		



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2 Re-Acquisition with Multipath</b>		
<b>AT&amp;T Amati DSB R</b>	<b>Urban Fast Doppler</b>		
<b>Program Material</b>	<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>		
	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>
5	5	2	3
10	3	3	3
15	4	4	2
20	2	2	2
25	2	3	2
<b>Average</b>	<b>3.2</b>	<b>2.8</b>	<b>2.4</b>
<b>POF Attenuator Setting</b>	: 24.75 dB		
<b>Desired Signal Level</b>	: -47.85 dBm		
<b>Noise 0 dB Reference</b>	: -41.40 dBm		
<b>Additional Comments:</b>			
Re-Acquisition time is the value listed $\pm$ 1 second.			
<b>Test Date:</b> 21-Oct-94			
<b>Testers:</b> DML, ST			

EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB R		Rural Fast Doppler		
Program Material		Mozart (Track 67 on SQAM disk)		
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	2	2	6	
10	5	4	1	
15	2	2	4	
20	2	3	2	
25	5	6	1	
Average	3.2	3.4	2.8	
POF Attenuator Setting	:	21.75 dB		
Desired Signal Level	:	-47.85 dBm		
Noise 0 dB Reference	:	-41.40 dBm		
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 21-Oct-94				
Testers: DML, ST				

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2 Re-Acquisition with Multipath</b>		
<b>AT&amp;T Amati DSB R</b>	<b>Terrain Obstructed Doppler</b>		
<b>Program Material</b>	<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>		
	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
<b>Average</b>	1	1	1
<b>POF Attenuator Setting</b>	: 27.00 dB		
<b>Desired Signal Level</b>	: -47.85 dBm		
<b>Noise 0 dB Reference</b>	: -41.40 dBm		
<b>Additional Comments:</b>			
Re-Acquisition time is the value listed $\pm$ 1 second.			
<b>Test Date:</b> 21-Oct-94			
<b>Testers:</b> DML, ST			

## EIA Digital Audio Radio Test Laboratory

Test	Proponent	Ancillary Data Channel Demonstration Gaussian Noise BER					Units
B-1	E						
		TOA			POF		
	Attenuator	22.50	22.25	22.00	21.50	21.00	dB
	Co/No	11.25	11.00	10.75	10.25	9.75	dB
	Log(BER)	-∞	-4.194	-3.283	-2.415	-1.861	
	BER	0.00E+00	6.39E-05	5.21E-04	3.85E-03	1.38E-02	
Test	Proponent	Ancillary Data Channel Demonstration Co-Channel BER					Units
B-2							
		TOA			POF		
	Attenuator	10.50	9.75	9.50	9.00	8.50	dB
	d/u	10.97	10.22	9.97	9.47	8.97	dB
	Log(BER)	-∞	-3.420	-3.784	-2.193	-1.549	
	BER	0.00E+00	3.80E-04	1.64E-04	6.42E-03	2.83E-02	
Testers: DML, RMc		TOA and POF levels have been approximated for					
Date: 9-Dec-94		this demonstration.					

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Ancillary Data Channel</b>		
<b>Proponent</b>		<b>Demonstration</b>		
<b>Code:</b>	E	<b>Multipath</b>		
		<b>BER</b>		
		<b>Doppler</b>		Units
<b>Urban Slow</b>		No Added Noise		
	Attenuator	63.75		dB
	Co/No	52.50		dB
	Log(BER)	-2.019		
	BER	9.58E-03		
<b>Urban Fast</b>		TOA	POF	
	Attenuator	29.00	26.50	dB
	Co/No	17.75	15.25	dB
	Log(BER)	-2.843	-1.703	
	BER	1.44E-03	1.98E-02	
<b>Rural Fast</b>		TOA	POF	
	Attenuator	26.75	23.25	dB
	Co/No	15.50	12.00	dB
	Log(BER)	-3.292	-2.146	
	BER	5.11E-04	7.15E-03	
<b>Terrain Obstructed</b>		No Added Noise		
	Attenuator	63.75		dB
	Co/No	52.50		dB
	Log(BER)	-1.553		
	BER	2.80E-02		
<b>Testers:</b>	DML, RMc	TOA and POF levels have been approximated for this demonstration.		
<b>Date:</b>	9-Dec-94			

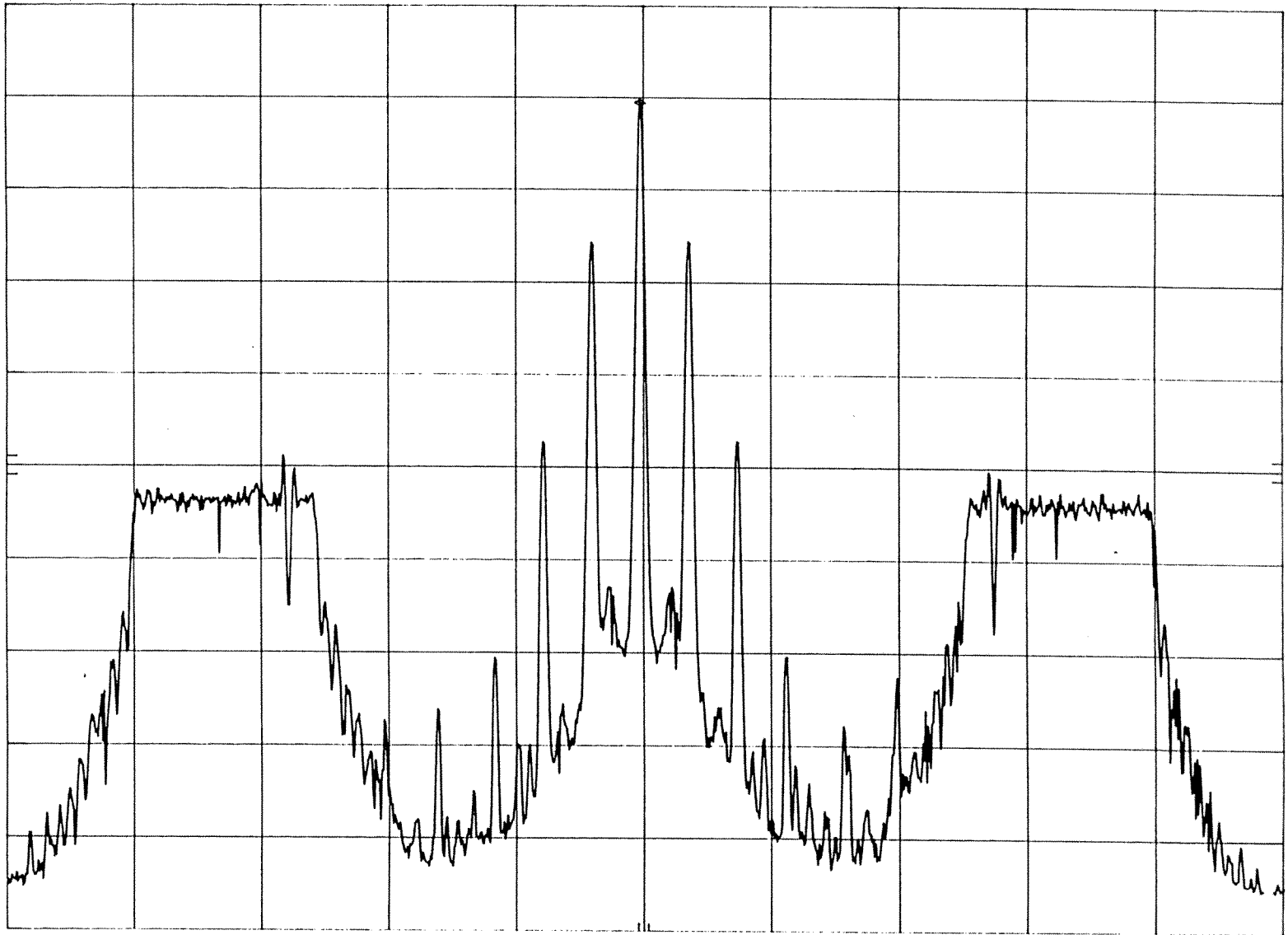
# EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-3 E	<b>Ancillary Data Channel Demonstration Multipath BER Special</b>		Units
<b>Obstructed Path</b>		TOA	POF (San Fran 4)	
Attenuator		32.25	27.75	dB
Co/No		32.10	27.60	dB
Log(BER)		-2.346	-1.710	
BER		4.50E-03	1.95E-02	
<b>Rural Highway</b>		TOA	POF (SLC)	
Attenuator		24.00	22.50	dB
Co/No		23.85	22.35	dB
Log(BER)		-3.084	-1.947	
BER		8.24E-04	1.13E-02	
<b>Suburban</b>		TOA	POF (WSHW9)	
Attenuator		34.75	29.75	dB
Co/No		34.60	29.60	dB
Log(BER)		--	-1.999	
BER		0.00E+00	1.00E-02	
<b>Terrain Obstructed</b>		TOA	POF (NOVA 4)	
Attenuator		33.25	28.75	dB
Co/No		33.10	28.60	dB
Log(BER)		-2.119	-1.725	
BER		7.60E-03	1.88E-02	
Testers: DML, RMc                      TOA and POF levels have been approximated for Date: 9-Dec-94                            this demonstration.				

AMATI / AT&T 6/29/94 DSB  
REF 0.0 dBm ATTEN 10 dB

MKR 94.098 5 MHz  
-10.60 dBm

hp  
10 dB/



CENTER 94.100 MHz SPAN 500 kHz  
RES BW 1 kHz VBW 30 Hz SWP 50.0 sec

AMATI / AT&T DSB 8/30/94 13:49

MKR 94.099 0 MHz

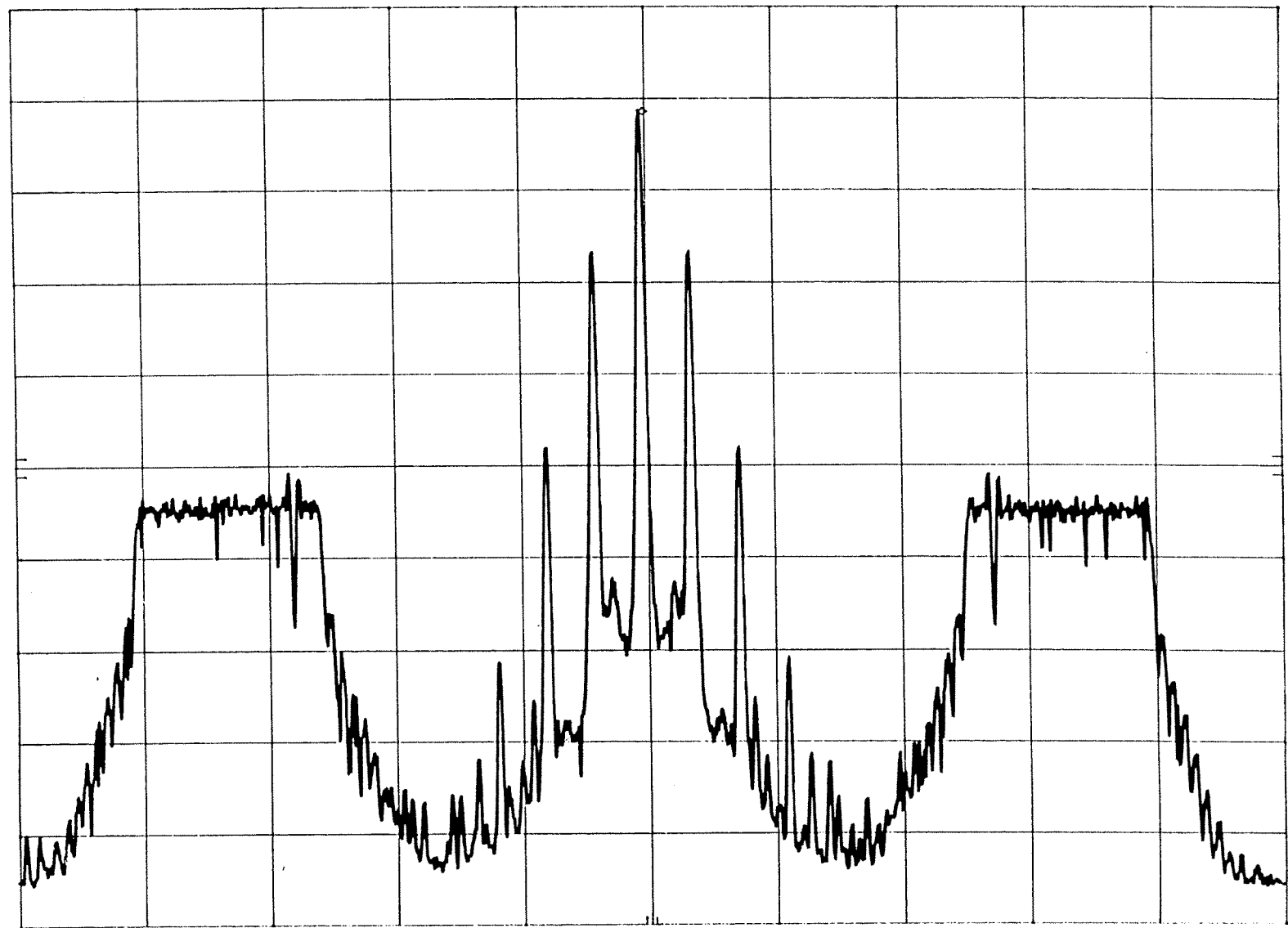
hp

REF 0.0 dBm

ATTEN 10 dB

-11.40 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

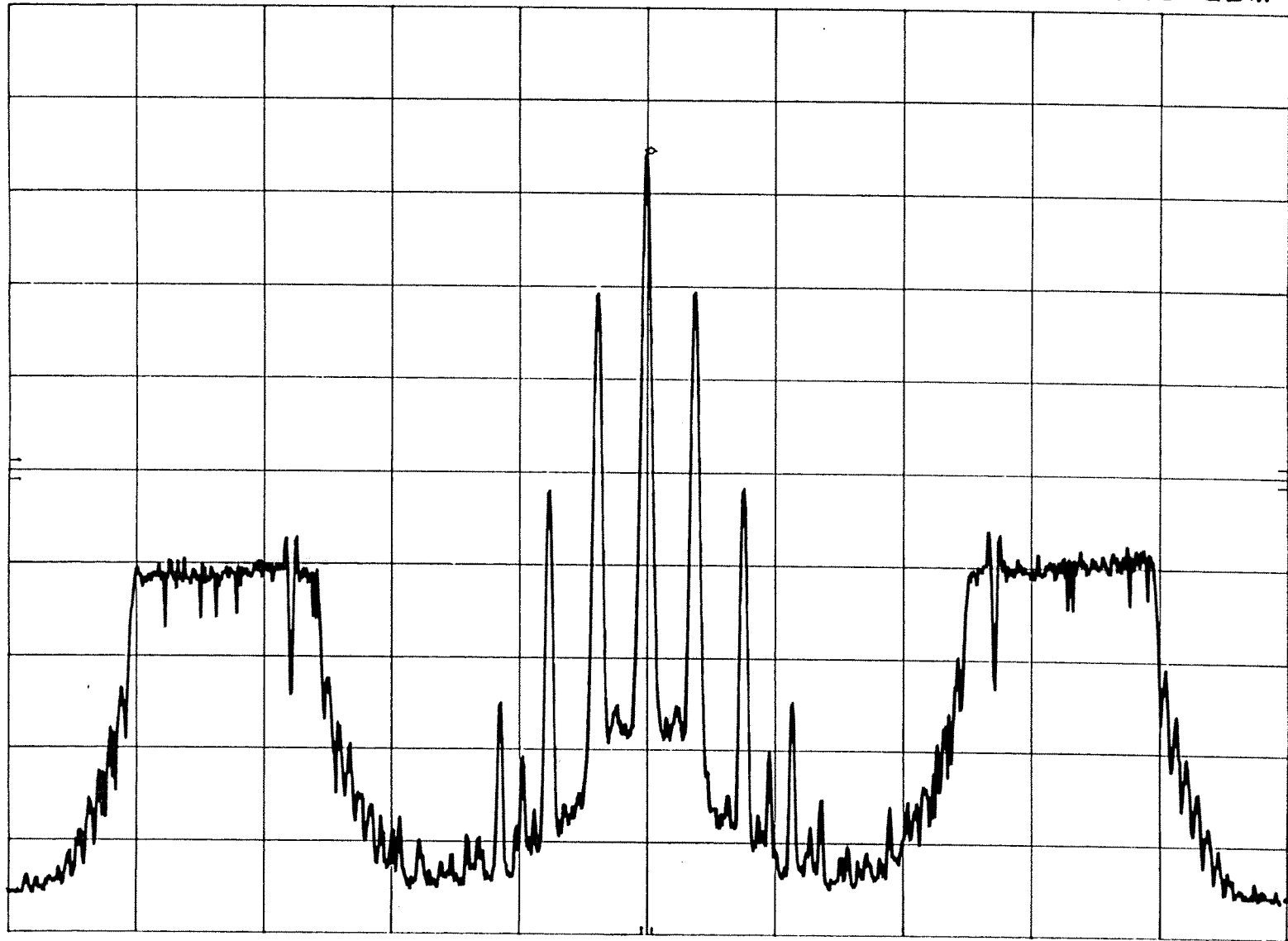
SPAN 500 kHz  
SWP 50.0 sec



AMATI / AT&T CO CHANNEL 8/30/94 14:00  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.101 0 MHz  
-15.40 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

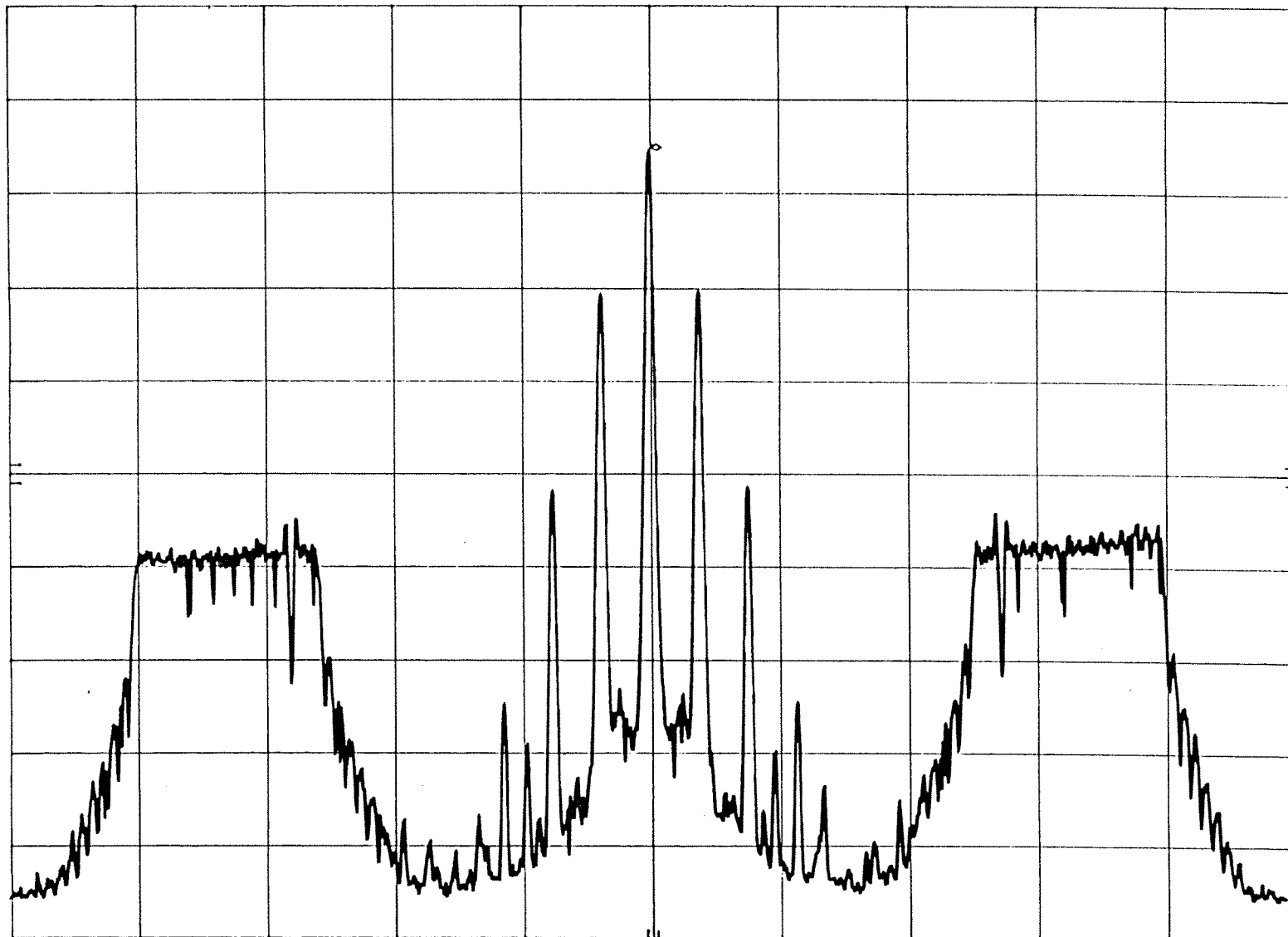
SWP 50.0 sec

MARKER LEVEL ADJUSTMENT

AMATI / AT&T CO CHANNEL 8/30/94 16:00  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.102 0 MHz  
-15.10 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

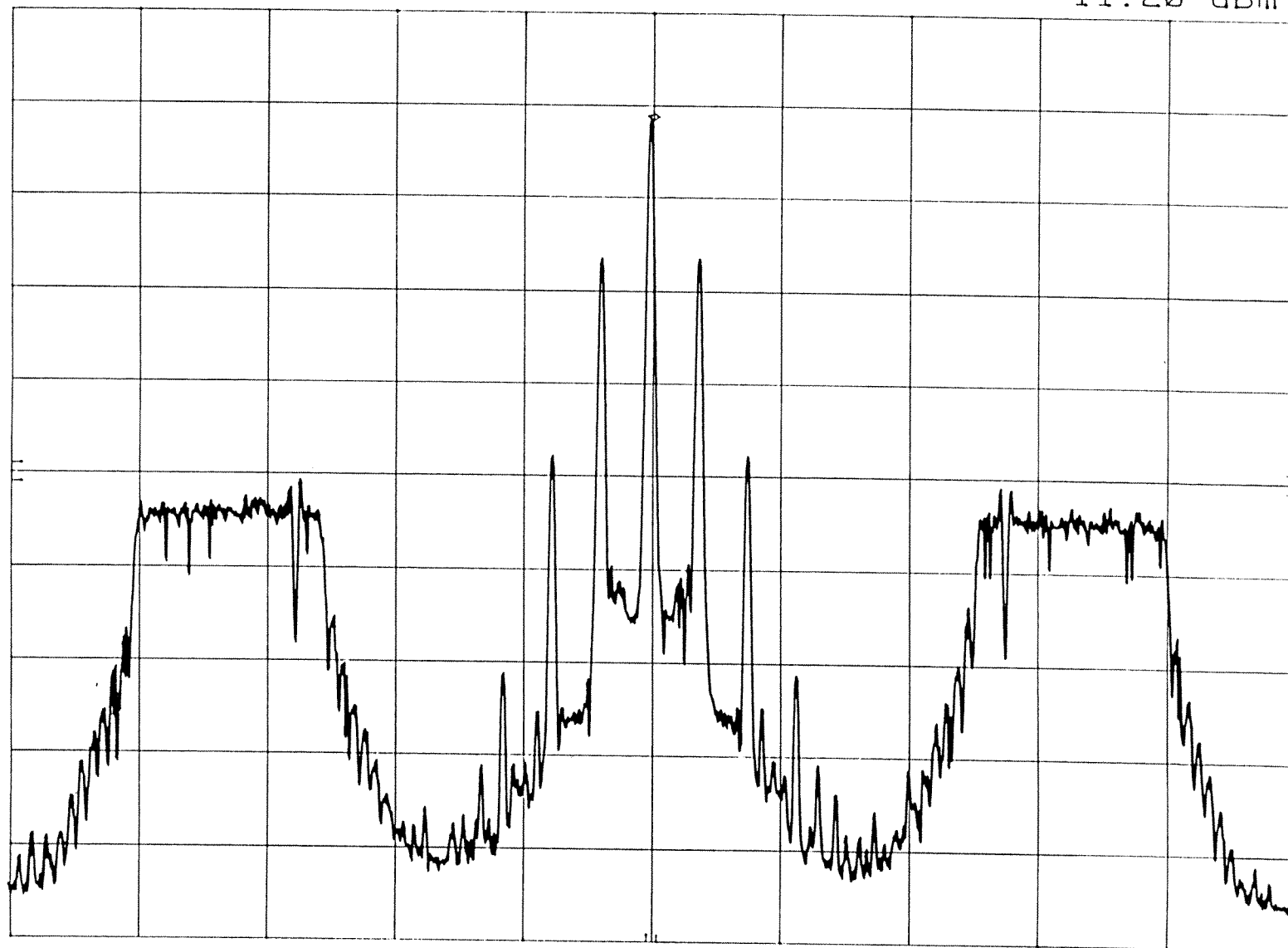
SWP 50.0 sec

AFTER LEVEL ADJUSTMENT

AMATI / AT&T DSB 9/22/94 09:18  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.1000 MHz  
-11.20 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

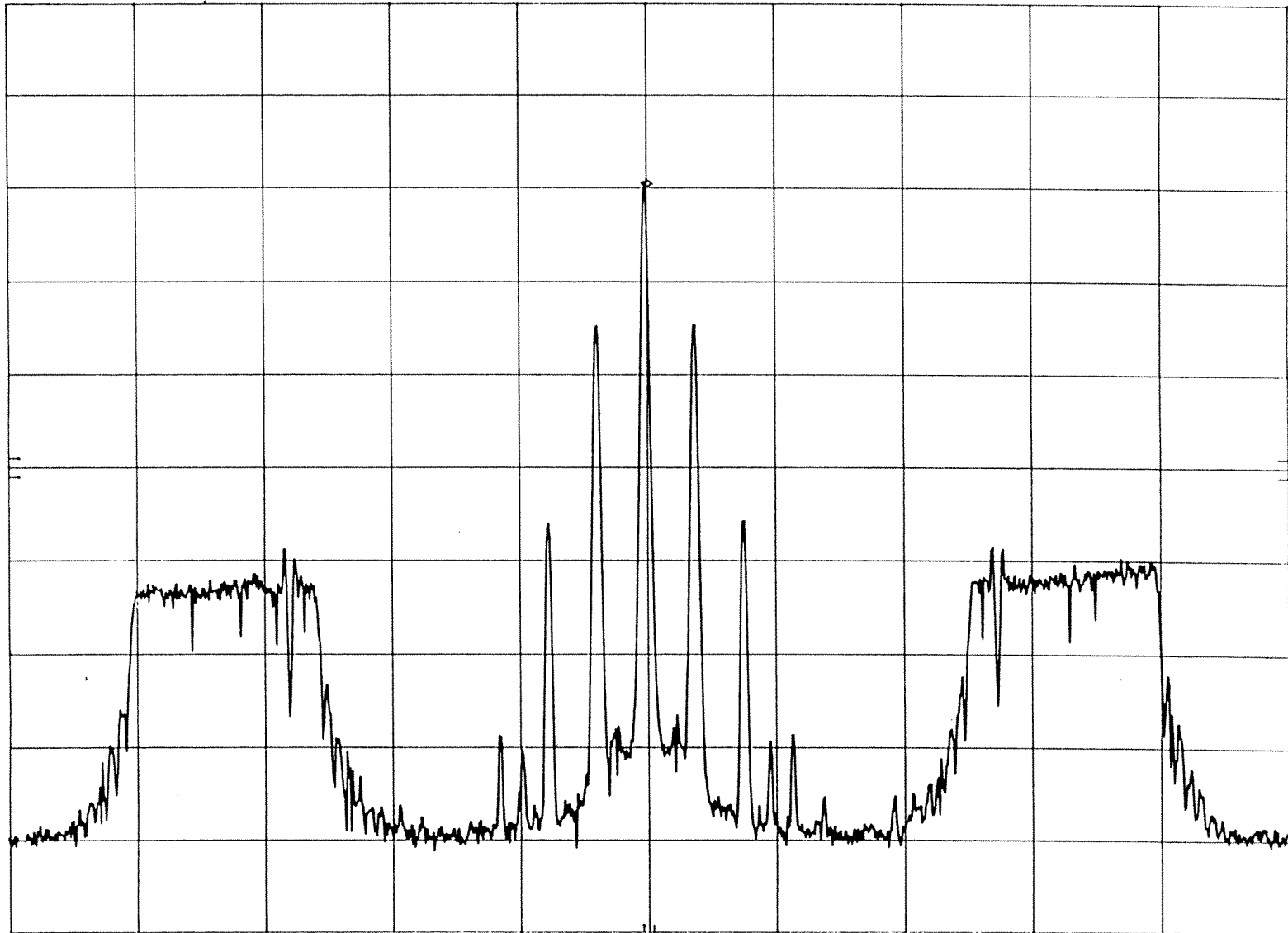
SPAN 500 kHz

SWP 50.0 sec

AMATI / AT&T CO-CHANNEL 9/22/94 10:56  
EIA REF -20.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-39.50 dBm

10 dB/



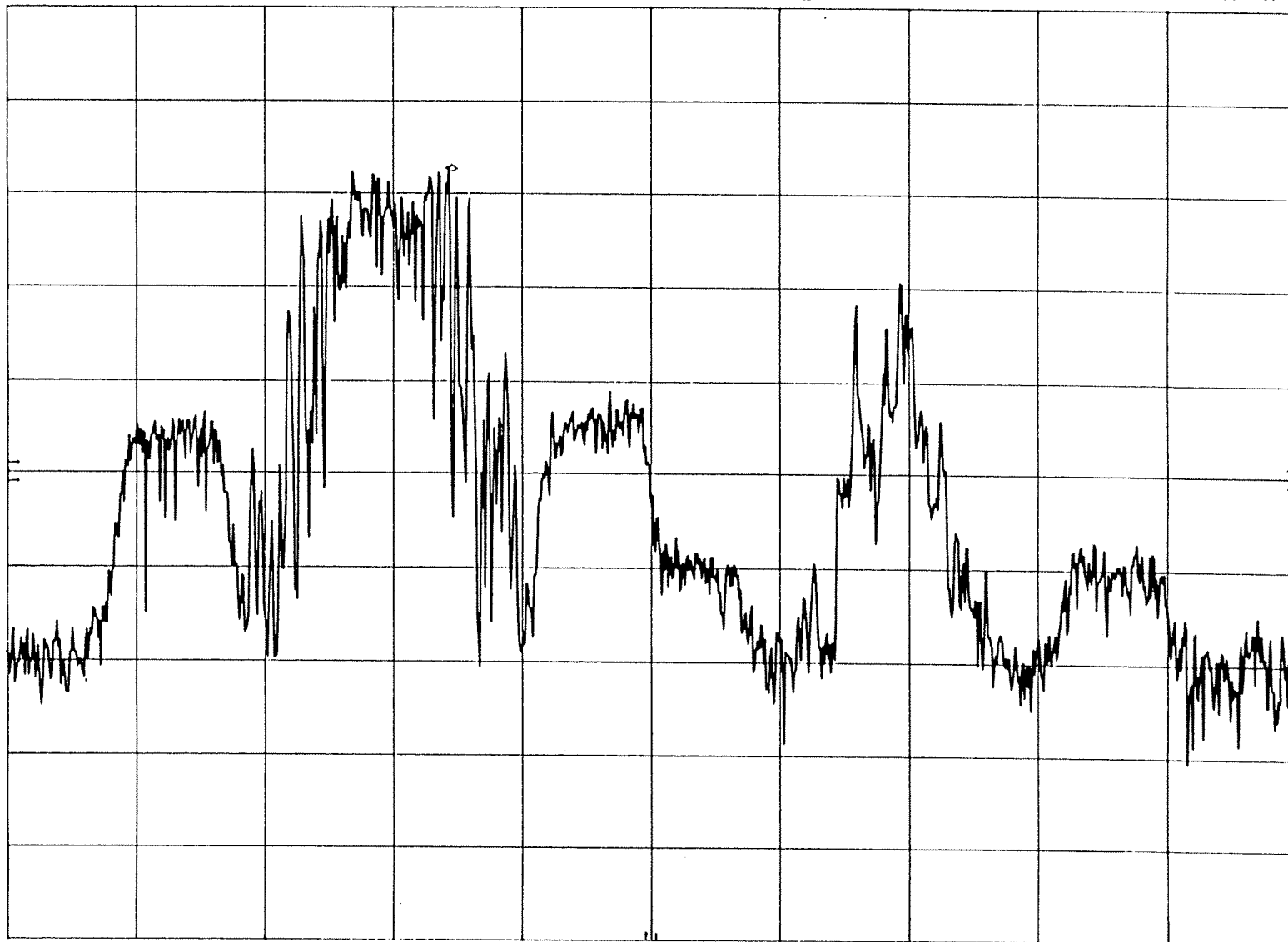
CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

AMATI LOWER 2nd Adj AT TOA 15:34 ΔSB 9/22/99 MKR 93.749 MHz  
ETA REF -30.0 dBm ATTEN 10 dB b-3 -47.30 dBm

10 dB/

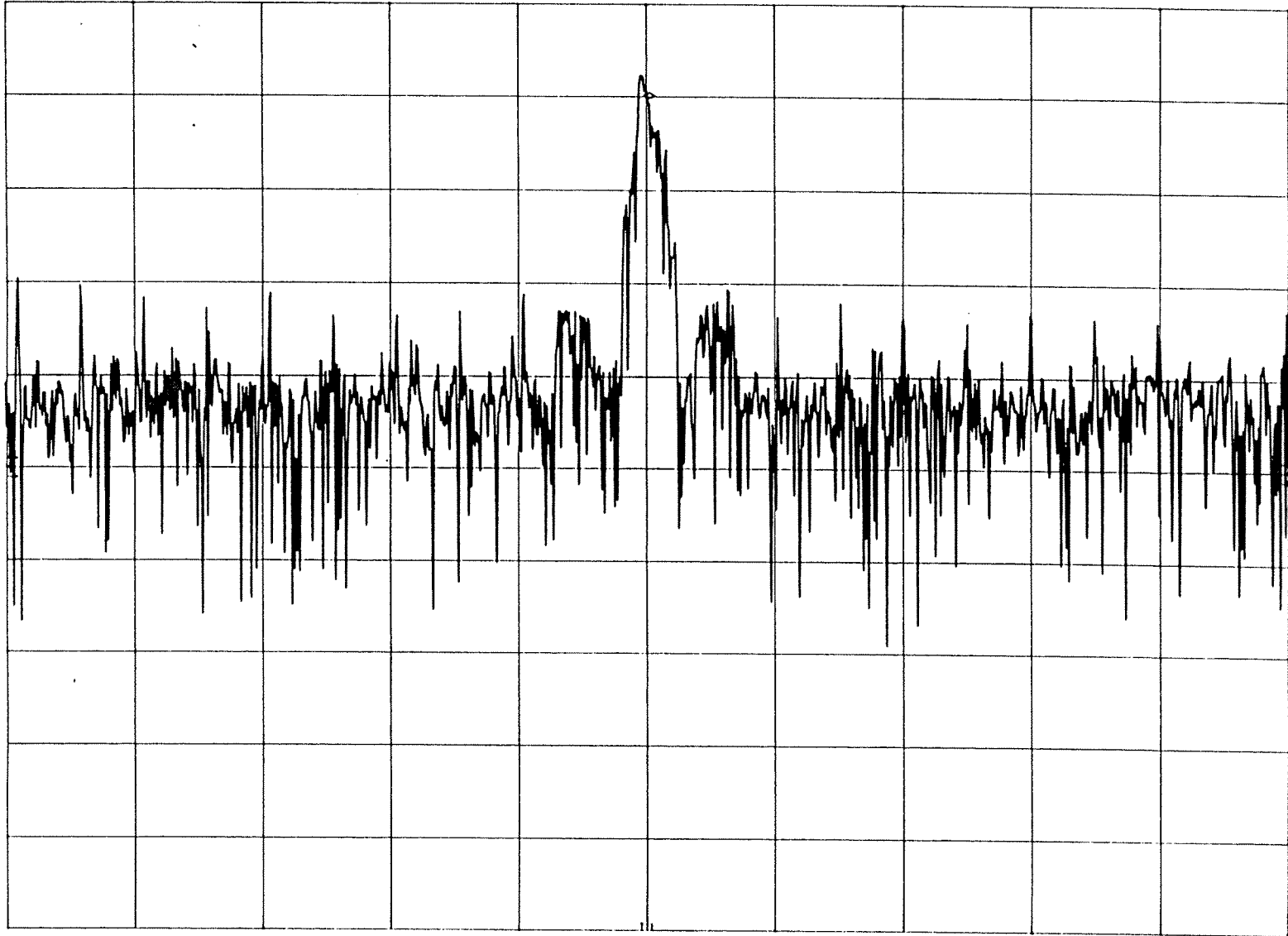


CENTER 93.90 MHz RES BW 10 KHZ VBW 3 KHZ SPAN 1.00 MHz  
SWP 100 msec

AMATI / AT&T DSB C1 TOA 9/26/94  
EIA REF -50.0 dBm ATTEN 10 dB

MKR 94.106 MHz  
-59.90 dBm

10 dB/



CENTER 94.10 MHz  
RES BW 30 kHz

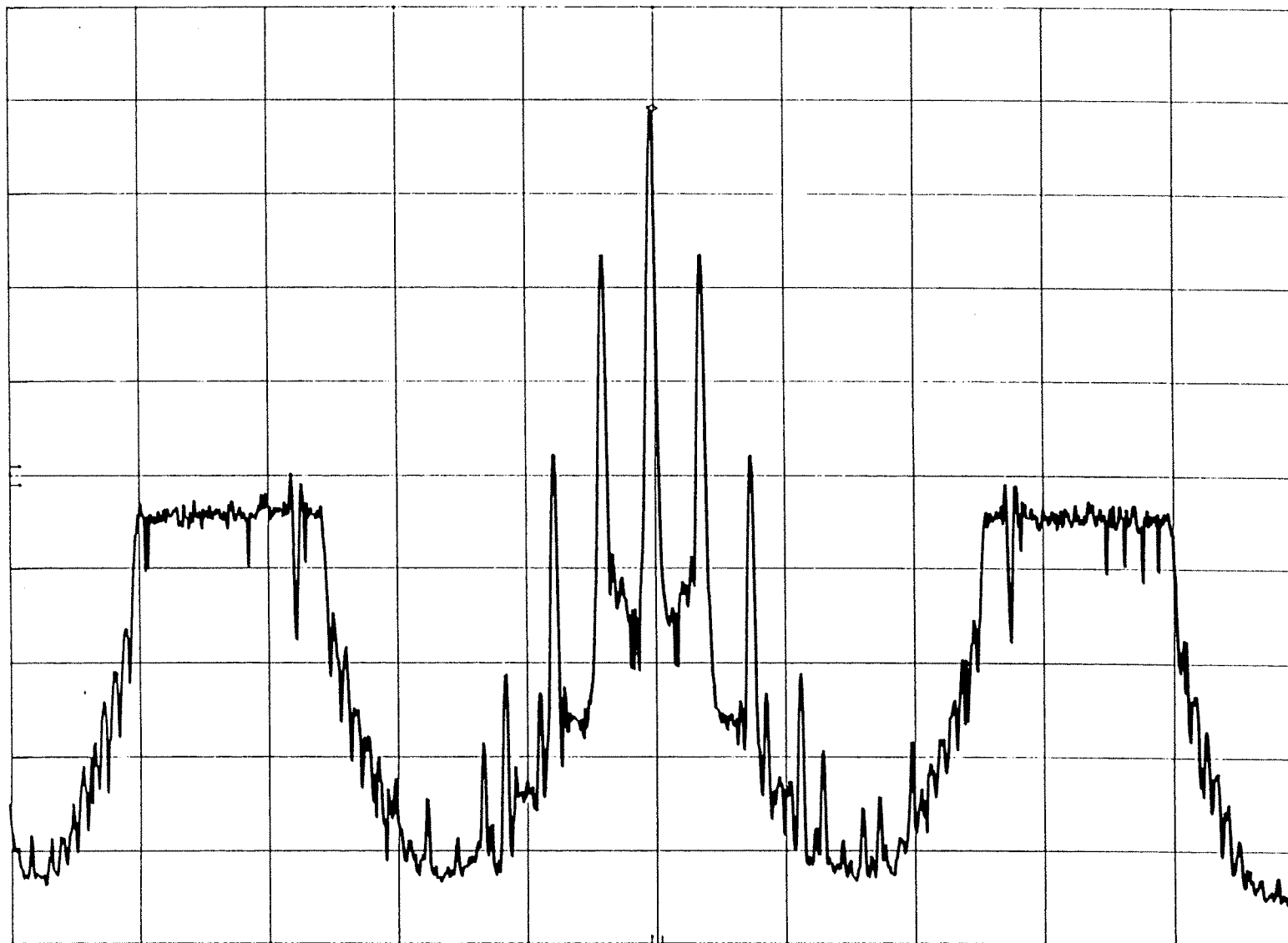
VBW 100 kHz

SPAN 3.00 MHz  
SWP 20.0 msec

AMATI / AT&T 10/19/94 18:21  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.0995 MHz  
-10.90 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

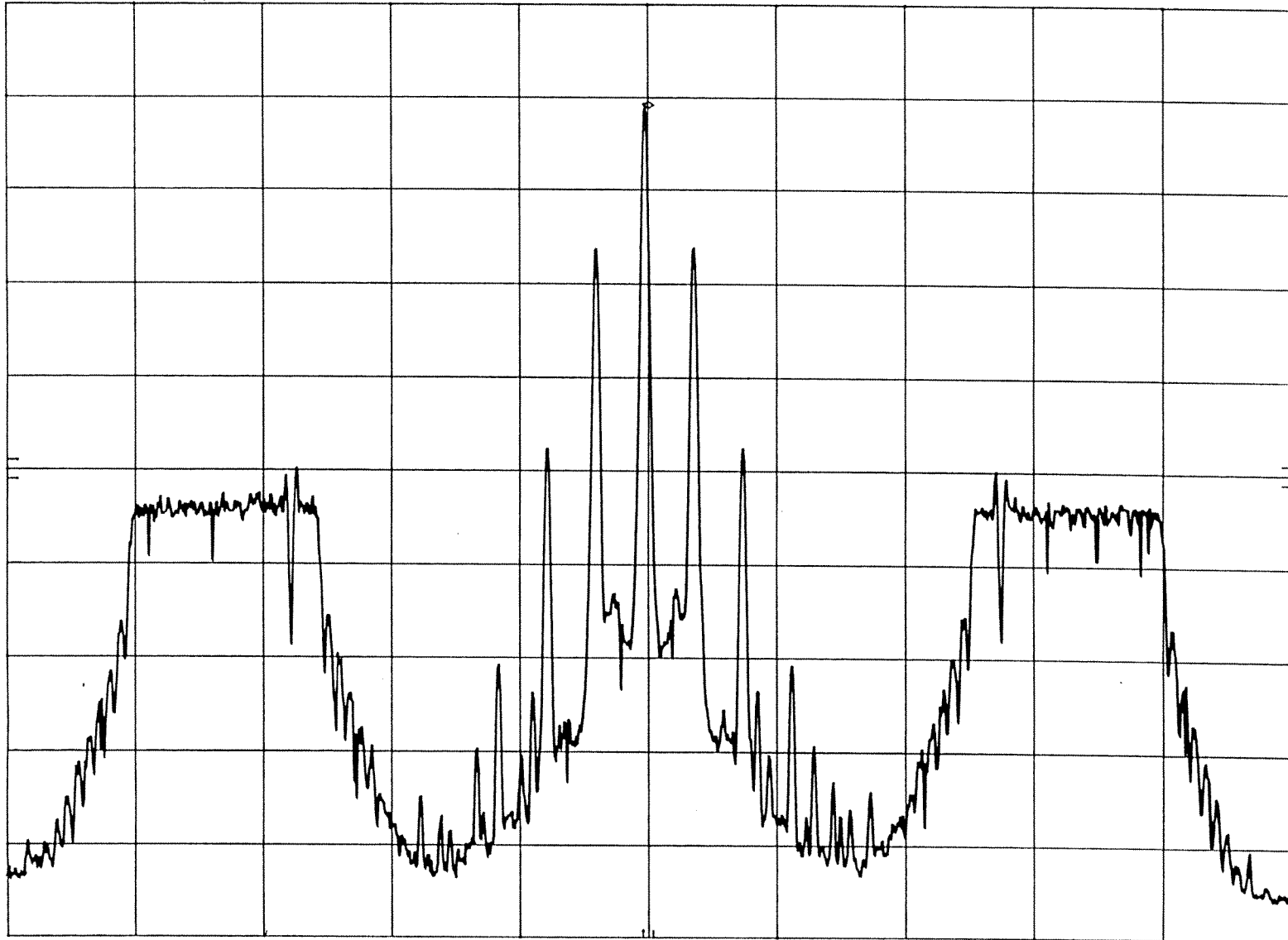
VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

AMATI/AT&T DSB 12/02/94 14:34  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-10.80 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

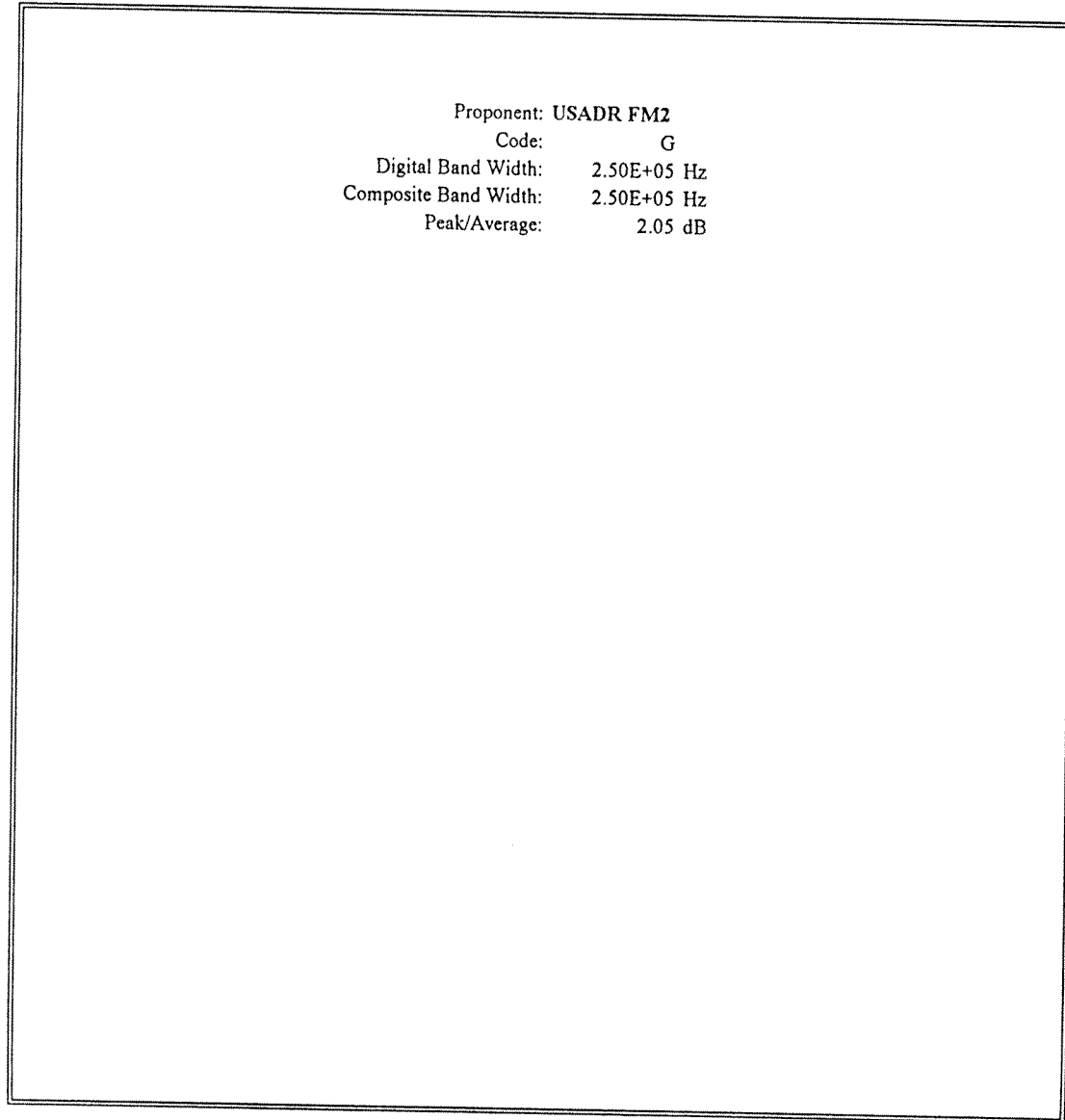
VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec



**Appendix AG – Digital Test Results  
USA Digital Radio FM 2**

# EIA Digital Audio Radio Test Laboratory

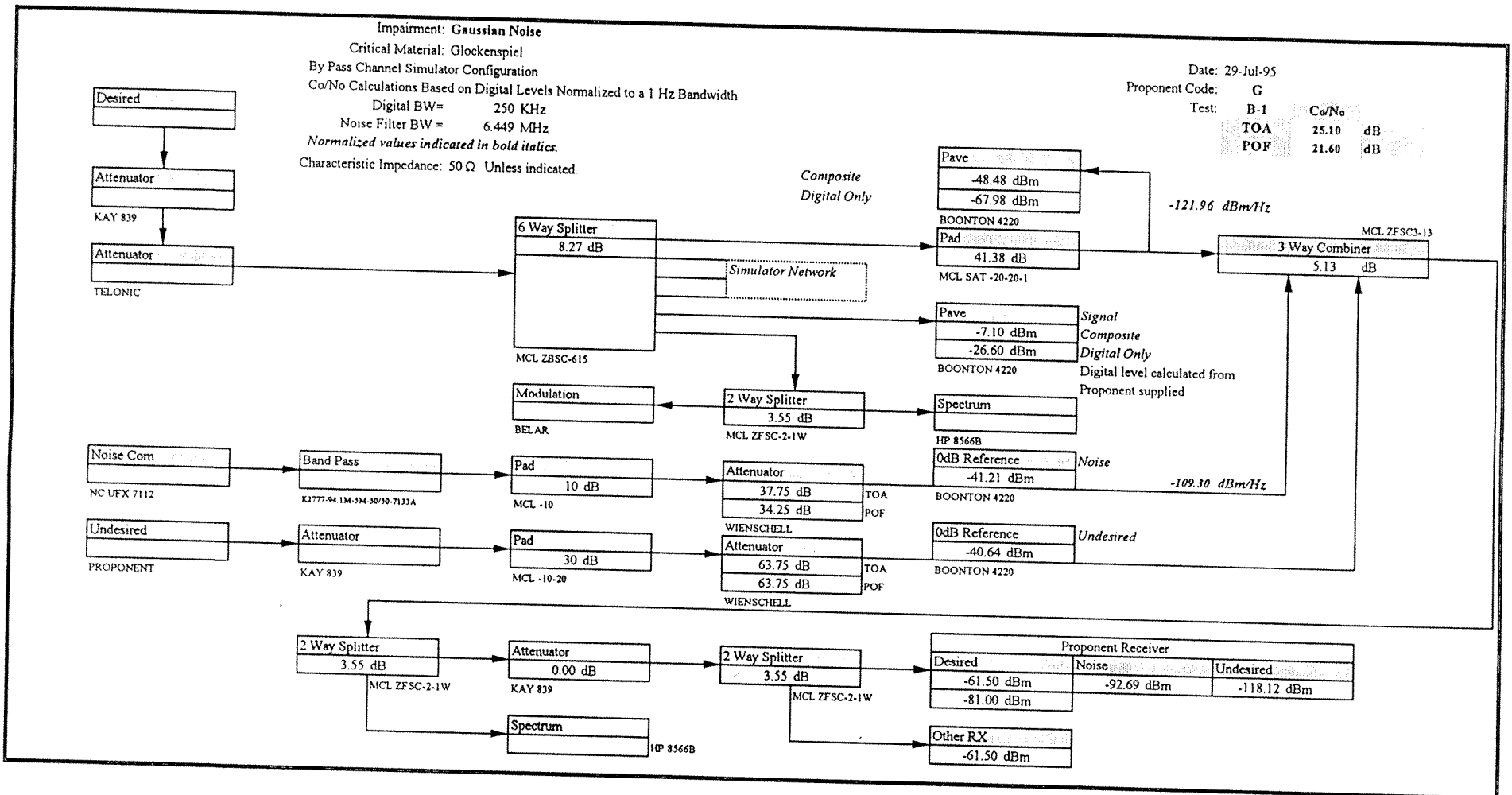


AG

## EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-1 G	<b>Gaussian Noise</b>		
		TOA	POF	Units
		Attenuator	37.75	34.25
		Co/No	25.10	21.60
		TOA EO&C	Occasional pops and clicks.	
		POF	Severely distorted audio with warbles, snaps and pops.	
		TOA	POF	dB
		Attenuator	37.75	34.00
		Co/No	25.10	21.35
		TOA EO&C	Small pops and clicks with some high cut.	
		POF	Many pops and clicks, heavy distortion and high cut.	
		TOA	POF	dB
		Attenuator	39.00	35.00
		Co/No	26.35	22.35
		TOA EO&C	Intermittent pops and clicks ( warbles).	
		POF	High Frequency roll off, many pops and clicks, heavily distorted.	
Notes:		Recording Reference:	DAR30215.DAT	
		Testers:	DML,DS,EB	
		Date:	29-Jul-95	

# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID#				Description	Attn
	Start	Stop	1	2				
DAR30215.DAT 29-Jul-95			1	2			Glockenspiel Clear Channel	63.75
			3	4				39.25
			5	6				38.75
			7	8			38.25	
			9	10			TOA lab	37.75
			11	12				37.25
			13	14				36.75
			15	16				36.25
			17	18				35.75
			19	20				35.25
			21	22				34.75
			23	24			Sync	63.75
			25	26			POFlab	34.25
			27	28				33.75
			29	30			Soprano Clear Channel	63.75
			31	32				39.25
			33	34				38.75
			35	36				38.25
			37	38			TOA lab	37.75
			39	40				37.25
			41	42				36.75
			43	44				36.25
			45	46				35.75
			47	48				35.25
			49	50				34.50
			51	52			Sync	63.75
			53	54			POFlab	34.00
			55	56				33.50

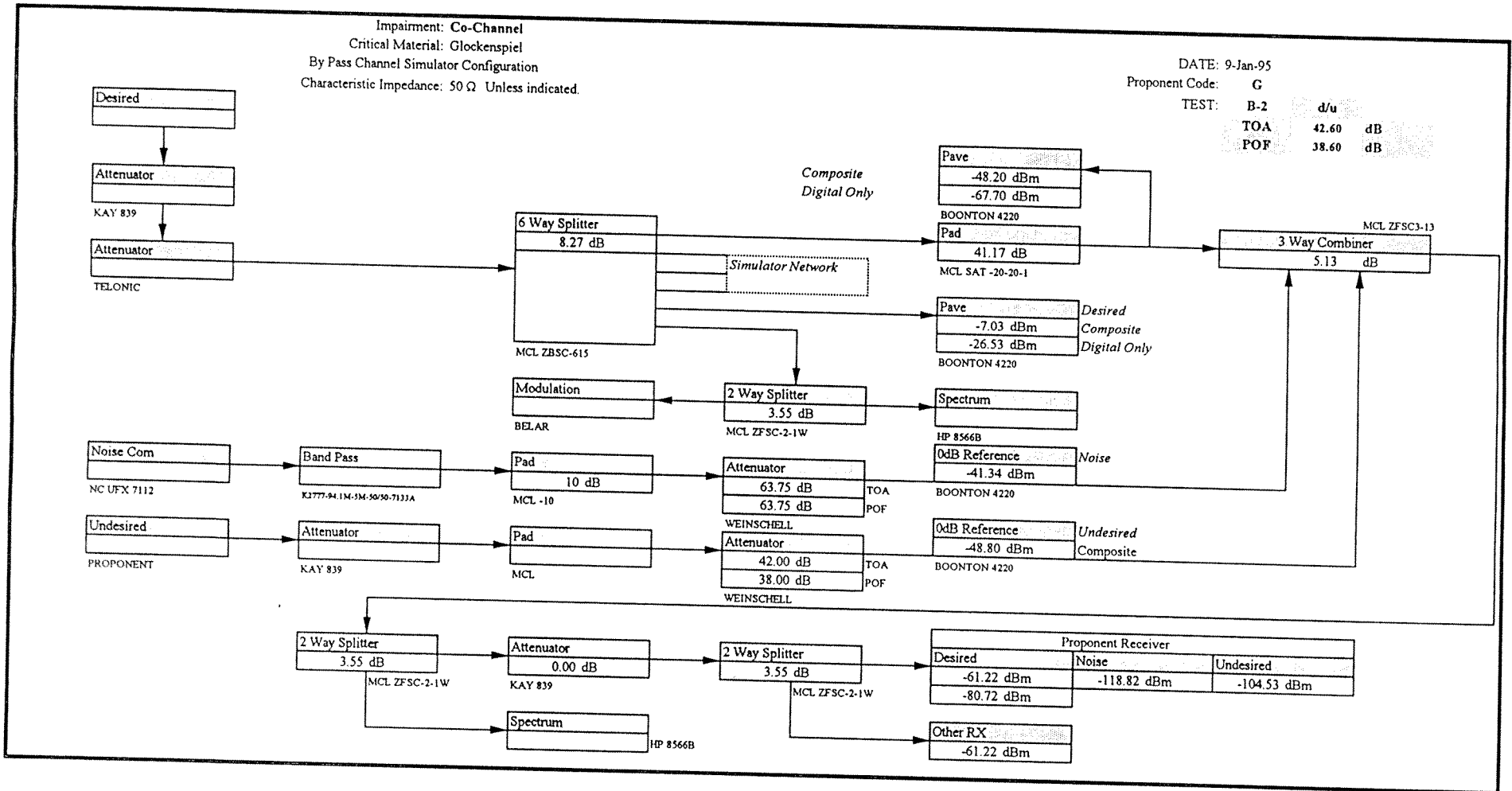
Code: G  
Impairment: Gaussian Noise



## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-2	<b>Co-Channel</b>		
<b>Proponent</b>				
<b>Code:</b>	G			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	42.00	38.00	dB
	d/u	42.60	38.60	dB
	TOA	Small warble.		
EO&C	POF	High cut, heavy distortion and background noise.		
<b>Soprano</b>		TOA	POF	
	Attenuator	40.50	38.00	dB
	d/u	41.10	38.60	dB
	TOA	Small warble and high cut.		
EO&C	POF	Static pops, high cut and background noise.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	42.00	38.50	dB
	d/u	42.60	39.10	dB
	TOA	Small warble.		
EO&C	POF	High cut and heavy distortion.		
<b>Notes:</b>		Recording Reference:	DAR30243.DAT	DAR30244.DAT
		Testers:	DML,RMC	
		Date:	9-Jan-95	

# EIA Digital Audio Radio Test Laboratory





# EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn
	Start	Stop	1	2	3			
DAR30243.DAT 9-Jan-95			1	2	3		Glockenspiel Clear Channel	63.75
			4	5	6			43.00
			7	8	9			42.50
			10	11	12		TOA lab	42.00
			13	14	15			41.50
			16	17	18			41.00
			19	20	21			40.50
			22	23	24			40.00
		25	26	27			39.50	
		28	29	30			39.00	
		31	32	33			38.50	
		34	35	36		POFlab	38.00	
		37	38	39			37.50	
		40	41	42		Soprano Clear Channel	63.75	
		43	44	45			43.00	
		46	47	48			42.50	
		49	50	51			42.00	
		52	53	54	55	56	Possible High Cut	41.50
		57	58	59	60	61	Possible High Cut	41.00
		62	63	64			TOA lab	40.50
		65	66	67				40.00
		68	69	70				39.50
		71	72	73				39.00
		74	75	76				38.50
		77	78	79			POFlab	38.00
		80	81	82				37.50

Code: G  
Impairment: Co-Channel



# EIA Digital Audio Radio Test Laboratory

Test	B-3	<b>Urban Slow Rayleigh</b>							
Proponent Code:	G								
Units									
<b>Glockenspiel</b>		TOA		POF					
Attenuator									
Co/No									
TOA		The simulation was allowed to run 5 minutes during which no recovered audio was observed.							
EO&C									
POF									
<b>Soprano</b>		TOA		POF					
Attenuator									
Co/No									
TOA		Due to performance as indicated above this test was assumed to be unnecessary.							
EO&C									
POF									
<b>Clarinet</b>		TOA		POF					
Attenuator									
Co/No									
TOA		Due to performance as indicated above this test was assumed to be unnecessary.							
EO&C									
POF									
Notes:                      Recording Reference: None Testers: DML, RMc Test Date: 15-Dec-94									

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Fast Rayleigh</b>					
<b>Proponent</b>	G						Units
<b>Glockenspiel</b>		TOA		POF			
	<b>Attenuator</b>						
	<b>Co/No</b>						
	<b>TOA</b>	The simulation was allowed to run 5 minutes during which no recovered audio was observed.					
	<b>EO&amp;C</b>						
	<b>POF</b>						
<b>Soprano</b>		TOA		POF			
	<b>Attenuator</b>						
	<b>Co/No</b>						
	<b>TOA</b>	Due to performance as indicated above this test was assumed to be unnecessary.					
	<b>EO&amp;C</b>						
	<b>POF</b>						
<b>Clarinet</b>		TOA		POF			
	<b>Attenuator</b>						
	<b>Co/No</b>						
	<b>TOA</b>	Due to performance as indicated above this test was assumed to be unnecessary.					
	<b>EO&amp;C</b>						
	<b>POF</b>						
<b>Notes:</b>	Recording Reference: None Testers: DML, RMc Test Date: 15-Dec-94						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Rural Fast Rayleigh</b>				
<b>Proponent Code:</b>	G					<b>Units</b>
<b>Glockenspiel</b>		TOA		POF		
	<b>Attenuator</b>					
	<b>Co/No</b>					
	<b>TOA</b>	The simulation was allowed to run 5 minutes during which no recovered audio was observed.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Soprano</b>		TOA		POF		
	<b>Attenuator</b>					
	<b>Co/No</b>					
	<b>TOA</b>	Due to performance as indicated above this test was assumed to be unnecessary.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Clarinet</b>		TOA		POF		
	<b>Attenuator</b>					
	<b>Co/No</b>					
	<b>TOA</b>	Due to performance as indicated above this test was assumed to be unnecessary.				
	<b>EO&amp;C</b>					
	<b>POF</b>					
<b>Notes:</b> Recording Reference: None Testers: DML, RMc Test Date: 15-Dec-94						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Terrain Obstructed Rayleigh</b>				
<b>Proponent Code:</b>	G					Units
<b>Glockenspiel</b>		TOA		POF		
	Attenuator					
	Co/No					
	TOA	The simulation was allowed to run 5 minutes during which no recovered audio was observed.				
	EO&C					
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator					
	Co/No					
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.				
	EO&C					
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator					
	Co/No					
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.				
	EO&C					
	POF					
<b>Notes:</b>		Recording Reference: None Testers: DML, RMc Test Date: 15-Dec-94				

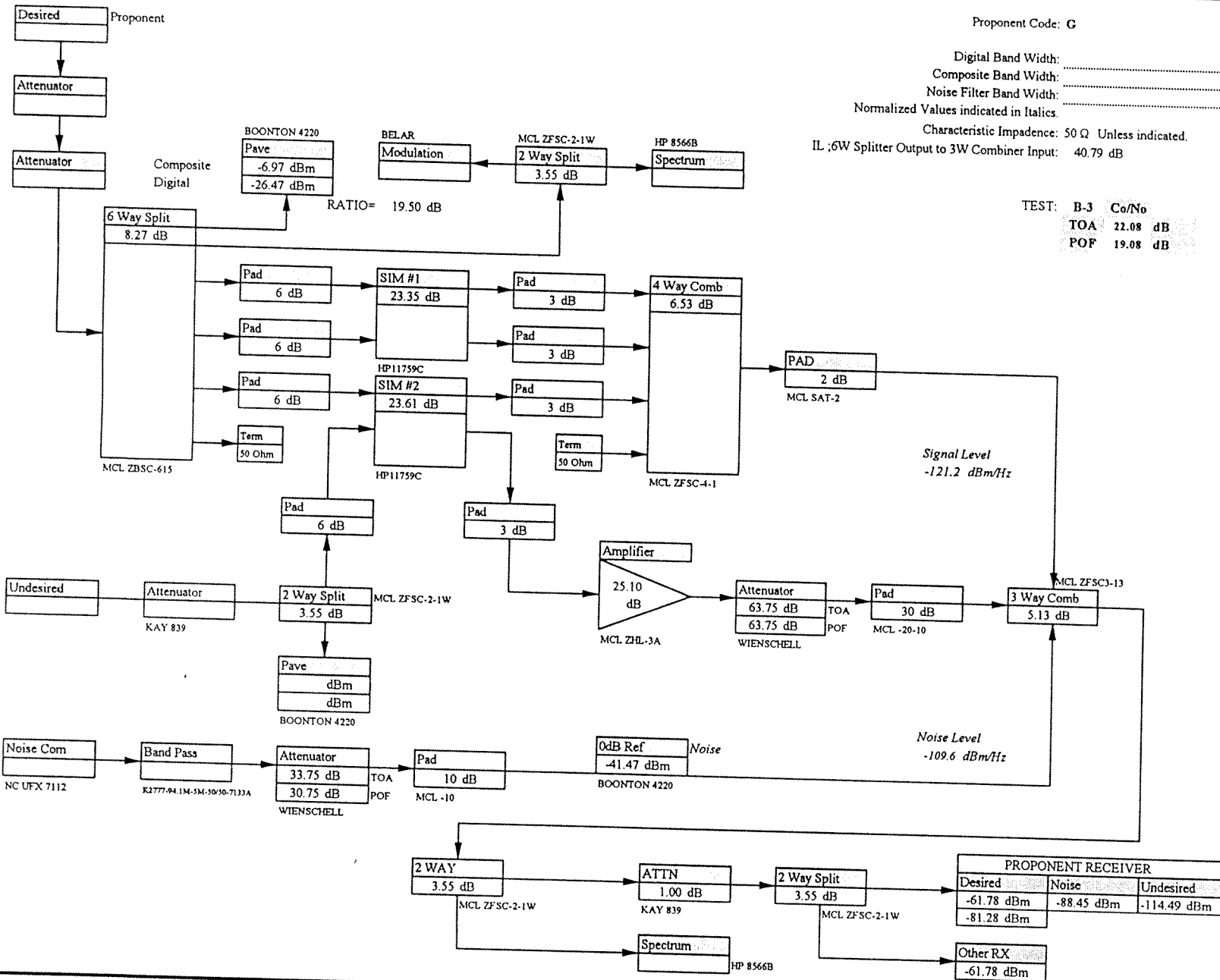
# EIA Digital Audio Radio Test Laboratory

Proponent Code: **G**

Digital Band Width: ..... 250000 Hz  
 Composite Band Width: ..... NA Hz  
 Noise Filter Band Width: ..... 6449000 Hz  
 Normalized Values indicated in Italics.

Characteristic Impedance: 50  $\Omega$  Unless indicated.  
 IL ;6W Splitter Output to 3W Combiner Input: 40.79 dB

TEST: B-3 Co/No  
 TOA 22.08 dB  
 POF 19.08 dB



# EIA Digital Audio Radio Test Laboratory

Test	C-1	Impulse Response				
USADR FM2		1.00 Vp-p at attenuator input. 10.00 ns wide pulse				
Program Material	Glockenspiel					
Pulse Repetition (Hz)	Attn at TOA	(Vp-p)	Attn at POF	(Vp-p)	EO&C	
100	20.75	0.09	13.00	0.22	TOA random chirping , POF excessive noise and high cut.	
200	19.75	0.10	12.75	0.23	TOA random chirping, POF excessive noise and high cut.	
333	20.75	0.09	13.50	0.21	TOA small pops and clicks, POF excessive noise and high cut.	
666	21.75	0.08	16.00	0.16	TOA small pops and clicks, POF excessive noise and high cut.	
1000	22.75	0.07	16.00	0.16	TOA small pops and clicks, POF excessive noise and high cut.	
Additional Comments:						
Test Date: 29-Jul-94						
Testers: DML, DS, EB		Signal Level at Receiver: -62.00 dBm				



# EIA Digital Audio Radio Test Laboratory

Test C-2 CW Response									
USADR FM2									
Program Material Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12
1	93.85	0	0	1	27	94.11	2	2	2
2	93.86	0	0	1	28	94.12	2	2	2
3	93.87	0	0	1	29	94.13	2	2	2
4	93.88	0	0	0	30	94.14	2	2	2
5	93.89	0	0	0	31	94.15	2	2	2
6	93.90	0	0	0	32	94.16	1	2	2
7	93.91	0	0	1	33	94.17	1	2	2
8	93.92	0	0	1	34	94.18	1	2	2
9	93.93	0	0	2	35	94.19	1	2	2
10	93.94	0	1	2	36	94.20	1	2	2
11	93.95	0	1	2	37	94.21	1	2	2
12	93.96	0	1	2	38	94.22	1	2	2
13	93.97	1	2	2	39	94.23	1	1	2
14	93.98	1	2	2	40	94.24	0	1	2
15	93.99	1	2	2	41	94.25	0	1	2
16	94.00	1	2	2	42	94.26	0	1	2
17	94.01	1	2	2	43	94.27	0	0	2
18	94.02	1	2	2	44	94.28	0	0	1
19	94.03	1	2	2	45	94.29	0	0	1
20	94.04	1	2	2	46	94.30	0	0	0
21	94.05	1	2	2	47	94.31	0	0	0
22	94.06	1	2	2	48	94.32	0	0	1
23	94.07	2	2	2	49	94.33	0	0	1
24	94.08	2	2	2	50	94.34	0	0	1
25	94.09	2	2	2	51	94.35	0	0	1
26	94.10	2	2	2					

Test Date: 5-Oct-94      0 dB Attenuator Reference: -31.06 dBm

Testers: DML, RMc      0=CLEAN AUDIO      1=APPROXIMATE TOA      2 ≥ POF

POF Attn=56.25dB      POF d/u= 38.72 dB

EIA Digital Audio Radio Test Laboratory

Test C-3 Airplane Flutter		
USADR FM2		
Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  8.00 dB  TOA 8.00 dB	No recovered audio. Level of reflected path must be reduced by 43 dB for clean audio to be recovered.
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  6.00 dB  TOA 6.00 dB	No recovered audio.
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  4.00 dB  TOA 4.00 dB	No recovered audio.
Test Date: 15-Dec-94 Testers: DML,RMc		

EIA Digital Audio Radio Test Laboratory

Test	C-4	Weak Signal Sensitivity				
USADR FM2						
Program Material	Glockenspiel					
<table border="1" style="display: inline-table; margin-right: 20px;"><thead><tr><th>TOA (dBm)</th></tr></thead><tbody><tr><td><math>-74 \leq \text{TOA} &lt; -73</math></td></tr></tbody></table> <table border="1" style="display: inline-table;"><thead><tr><th>POF (dBm)</th></tr></thead><tbody><tr><td><math>-76 &lt; \text{POF} \leq -75</math></td></tr></tbody></table>			TOA (dBm)	$-74 \leq \text{TOA} < -73$	POF (dBm)	$-76 < \text{POF} \leq -75$
TOA (dBm)						
$-74 \leq \text{TOA} < -73$						
POF (dBm)						
$-76 < \text{POF} \leq -75$						
Test Date: 15-Dec-94						
Testers: DML, RMc						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																					
<b>Code:</b>	G	Bad Urban 1																																																																																																																																					
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)																																																																																																																																						
<p>Delay Spread (us)</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th>Delay Spread (us)</th> <th>1</th> <th>3</th> <th>5</th> <th>10</th> <th>15</th> <th>30</th> <th>50</th> <th>75</th> <th>100</th> <th>150</th> <th>225</th> </tr> </thead> <tbody> <tr><td>0-40</td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></tr> <tr><td>0-36</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-32</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-28</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-24</td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></tr> <tr><td>0-20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-16</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-12</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>0-4</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td></tr> </tbody> </table>				Delay Spread (us)	1	3	5	10	15	30	50	75	100	150	225	0-40			2								2	0-36												0-32												0-28												0-24			2								2	0-20												0-16												0-12												0-8												0-4	2								2		
Delay Spread (us)	1	3	5	10	15	30	50	75	100	150	225																																																																																																																												
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<b>EO&amp;C</b>		30 sec minimum listening time.																																																																																																																																					
		0 = Unimpaired																																																																																																																																					
		1 = Small Impairment																																																																																																																																					
		2 ≥ POF Level of Impairment																																																																																																																																					
Test Date: 15-Dec-94																																																																																																																																							
Testers: DML, RMc																																																																																																																																							

# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler
Code:	G	Bad Urban 2
Program Material	Mozart (Track 67 on SQAM disk)	

Delay Spread (us)

Delay Spread (us)	1	3	5	10	15	30	50	75	100	150	225
0-80											2
0-76											
0-72											
0-68											
0-64			2			2				2	
0-60											
0-56											
0-52											
0-48											
0-44	2										2

Doppler (km/h)

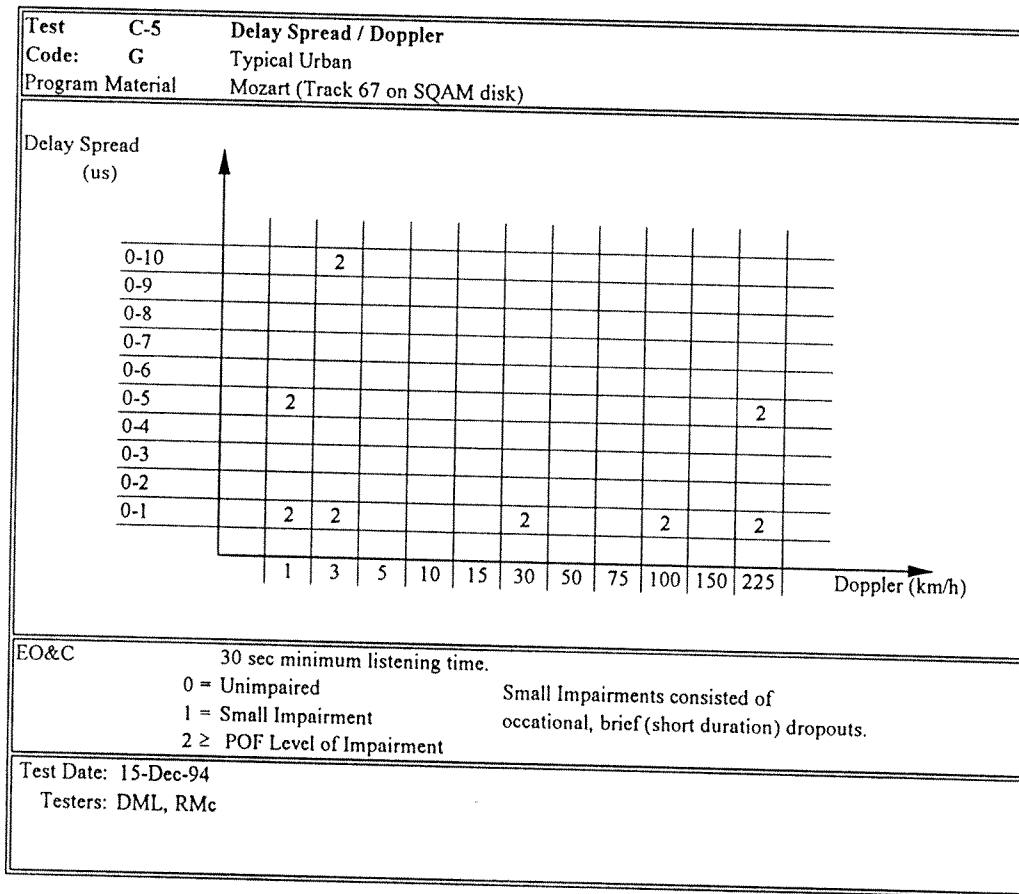
  

EO&C	30 sec minimum listening time.
	0 = Unimpaired
	1 = Small Impairment
	2 ≥ POF Level of Impairment

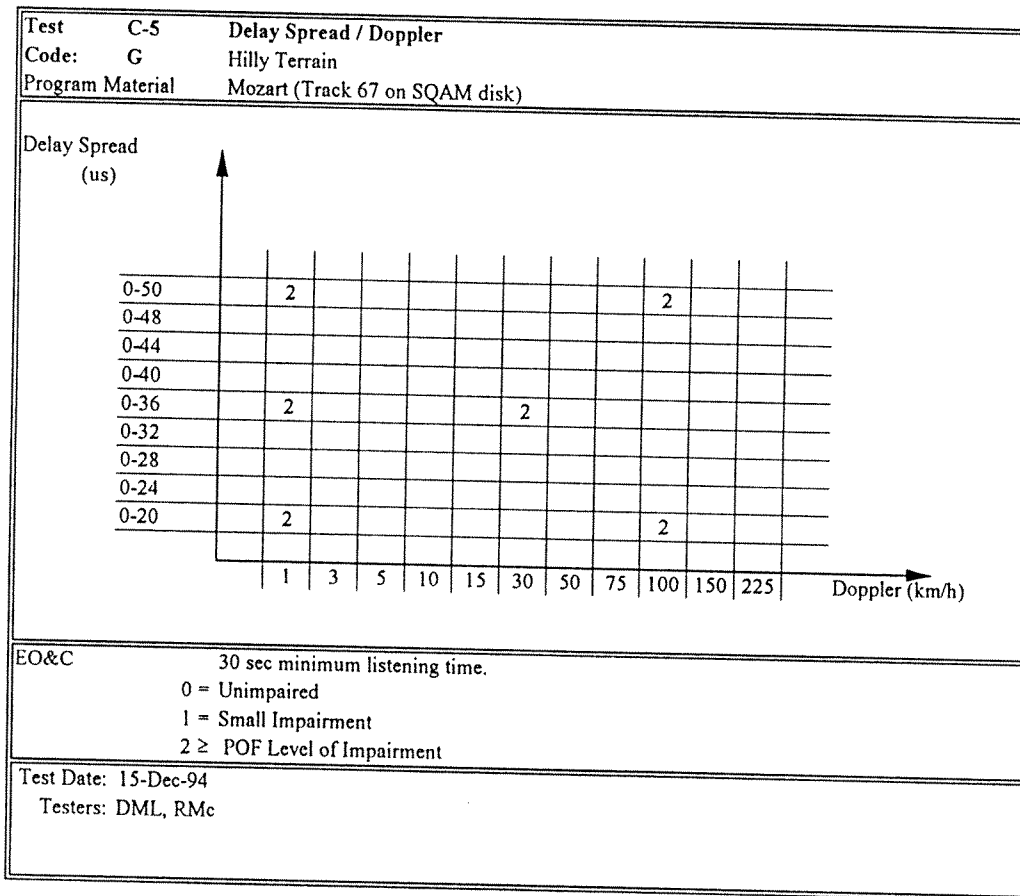
  

Test Date: 15-Dec-94
Testers: DML, RMc

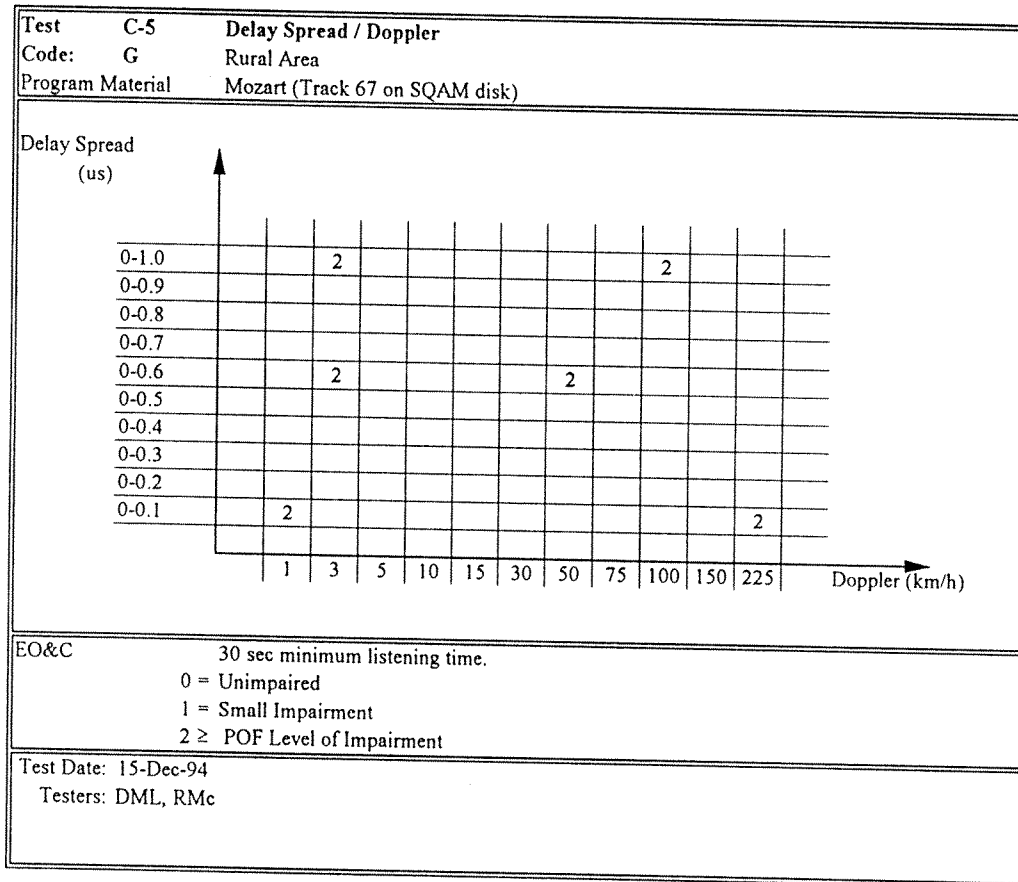
# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio Test Laboratory





# EIA Digital Audio Radio Test Laboratory

Test C-6 Additional Multipath Doppler Simulations USADR FM2 Program Material: Glockenspiel					
Scenario					
	Level	Attn	Co/No	Units	EO&C
#1 Urban Slow	TOA	63.75	52.08	dB	No recovered audio.
	POF	63.75	52.08	dB	
#2 Urban Fast	TOA	63.75	52.08	dB	No recovered audio.
	POF	63.75	52.08	dB	
#3 Rural Fast	TOA	63.75	52.08	dB	No recovered audio.
	POF	63.75	52.08	dB	
#4 Terrain Obstructed Fast	TOA	63.75	52.08	dB	No recovered audio.
	POF	63.75	52.08	dB	

Test Date: 15-Dec-94 Testers: DML, RMc DAT Reference: None	Desired Signal -6.97 dBm IL 40.79 dB 3WIN -47.76 dBm	Noise BW 6.45E+06 Hz 0dB Ref -41.47 dBm
--	---	---

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">D-Series Co-Channel, 1st and 2nd Adjacent</span> USADR FM2 Program Material: Glockenspiel																					
	Level	Attn	D/U	Units	EO&C																
D-1 Co-Channel	TOA	51.00	44.31	dB	Small warbles.																
	POF	47.50	40.81	dB	Excessive noise.																
D-2 Lower 1st Adjacent	TOA	36.75	30.06	dB	Drop out.																
	POF	35.50	28.81	dB	Excessive muting.																
Upper 1st Adjacent	TOA	37.00	30.31	dB	Drop out.																
	POF	35.75	29.06		Excessive muting.																
D-3 Lower 2nd Adjacent	TOA				Symmetry exists.																
	POF																				
Upper 2nd Adjacent	TOA	37.25	30.56		Drop out.																
	POF	35.50			Excessive muting.																
Additional Comments:  DAT Reference: No Recording By Pass Simulator Configuration.																					
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 16-Dec-95</td> <td style="width: 20%;"></td> <td style="width: 20%; text-align: center;">Desired</td> <td style="width: 30%; text-align: center;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td style="text-align: center;">6WOUT</td> <td style="text-align: center;">-7.00 dBm</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">IL</td> <td style="text-align: center;">41.07 dB</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">3WIN</td> <td style="text-align: center;">-48.07 dBm</td> <td style="text-align: center;">-41.38 dBm</td> </tr> </table>						Test Date: 16-Dec-95		Desired	Undesired	Testers: DML, RMc	6WOUT	-7.00 dBm			IL	41.07 dB			3WIN	-48.07 dBm	-41.38 dBm
Test Date: 16-Dec-95		Desired	Undesired																		
Testers: DML, RMc	6WOUT	-7.00 dBm																			
	IL	41.07 dB																			
	3WIN	-48.07 dBm	-41.38 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test	E-Series
USADR FM2	J-Series
<p data-bbox="768 467 1329 548">E-1, E-2 and E-3 in both Rayleigh and Doppler simulation modes were unnecessary due to system performance with multipath simulations in tests B-3 and C-6 (see B-3 and C-6).</p> <p data-bbox="768 581 1308 630">For similar reasons the J-2 tests for both Rayleigh and Doppler simulations were unnecessary.</p>	

# EIA Digital Audio Radio Test Laboratory

Test	J-1	Re-Acquisition		
USADR FM2				
Program Material		Mozart (Track 67 on SQAM disk)		
Toff (s)	POF-2	Re-Acquisition Time (s)		POF-6
		POF-4		
30	6	4		3
	4	1		4
	4	9		10
	4	11		2
	3	3		2
<u>Average</u>	4.2	5.6		4.2
POF Attenuator Setting	:	31.00 dB		
Desired Signal Level	:	-48.59 dBm		
Noise 0 dB Reference	:	-41.34 dBm		
Additional Comments:				
Re-Acquisition time is the value listed $\pm$ 0.5 seconds.				
Test Date: 5-Oct-94				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>B-1</b>	<b>Ancillary Data Channel</b>				
<b>Proponent</b>		<b>Demonstration</b>				
<b>Code:</b>	<b>G</b>	<b>Gaussian Noise</b>				
		<b>BER</b>				Units
			TOA		POF	
	Attenuator	34.75	33.75	32.25	30.75	dB
	Co/No	23.08	22.08	20.58	19.08	dB
	Log(BER)	-∞	-4.153	-2.590	-1.519	
	BER	0.00E+00	7.04E-05	2.57E-03	3.03E-02	
<b>Test</b>	<b>B-2</b>	<b>Ancillary Data Channel</b>				
		<b>Demonstration</b>				
		<b>Co-Channel</b>				
		<b>BER</b>				Units
			TOA		POF	
	Attenuator		51.00		47.50	dB
	d/u		44.31		40.81	dB
	Log(BER)		-3.205		-1.398	
	BER		6.23E-04		4.00E-02	
<b>Testers:</b>	DML, RMc	TOA and POF levels have been approximated for this demonstration.				
<b>Date:</b>	15-Dec-95					

USA DR FM2 6/30/94

hp

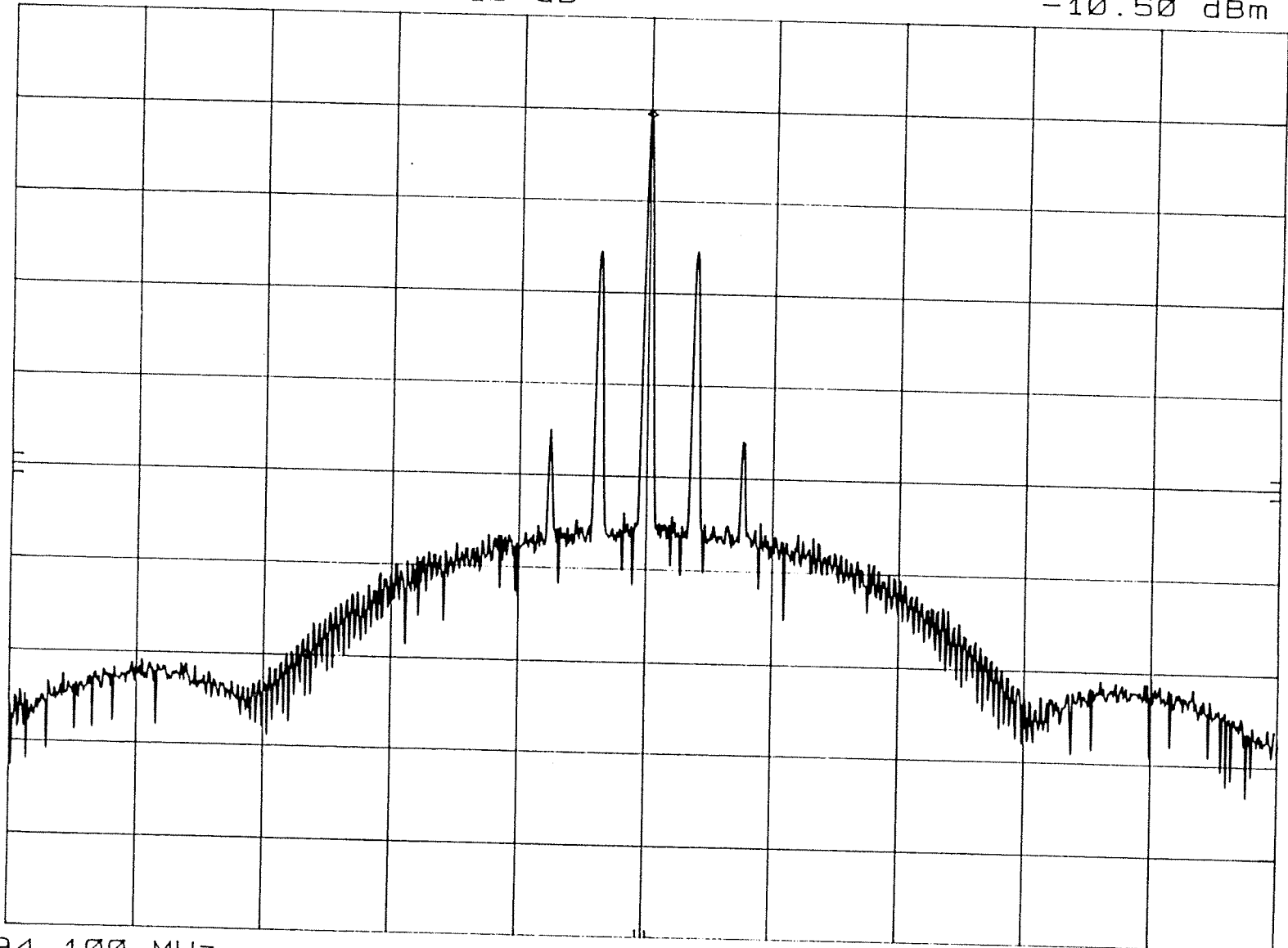
REF 0.0 dBm

ATTEN 10 dB

MKR 94.1000 MHz

-10.50 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

USA DR FM2 7/29/94

hp

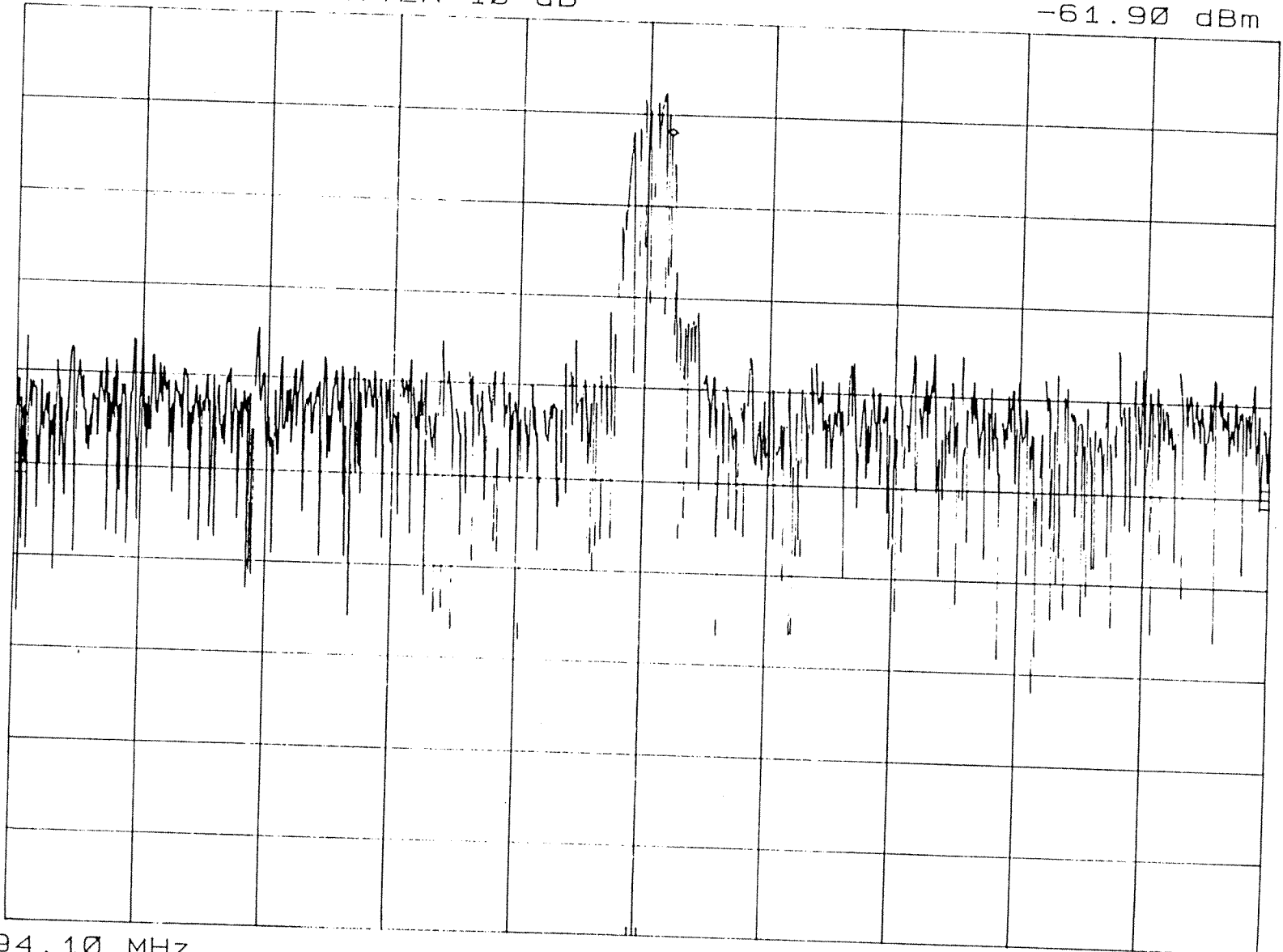
REF -50.0 dBm ATTEN 10 dB

MKR 94.154 MHz

-61.90 dBm

10 dB/

C-1  
Impulse  
Response  
PoF



CENTER 94.10 MHz

RES BW 30 kHz

VBW 100 kHz

SPAN 3.00 MHz

SWP 20.0 msec

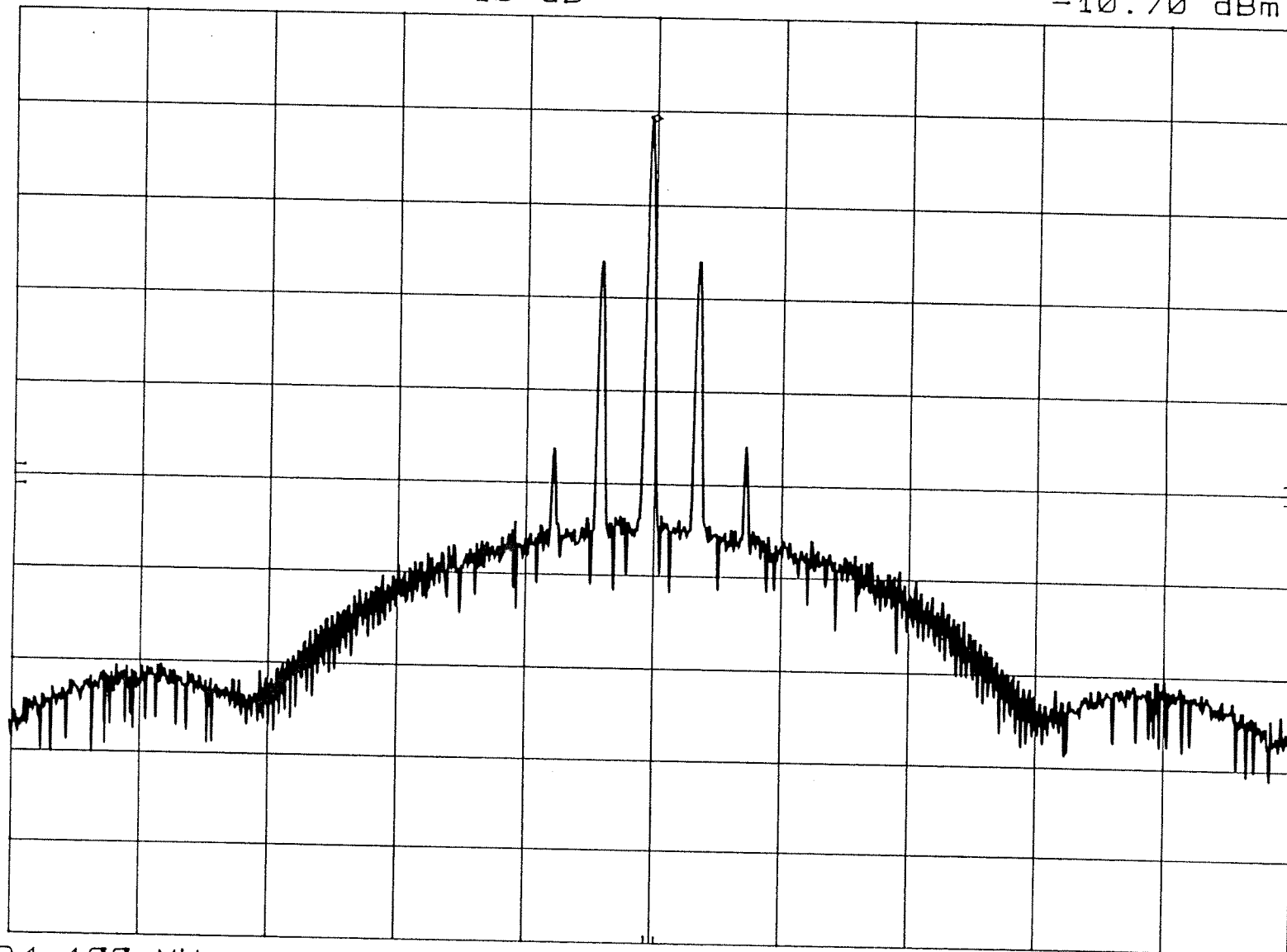
USADR FM2 11/10/94 10:59

EIA REF 0.0 dBm

ATTEN 10 dB

MKR 94.099 0 MHz  
-10.70 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

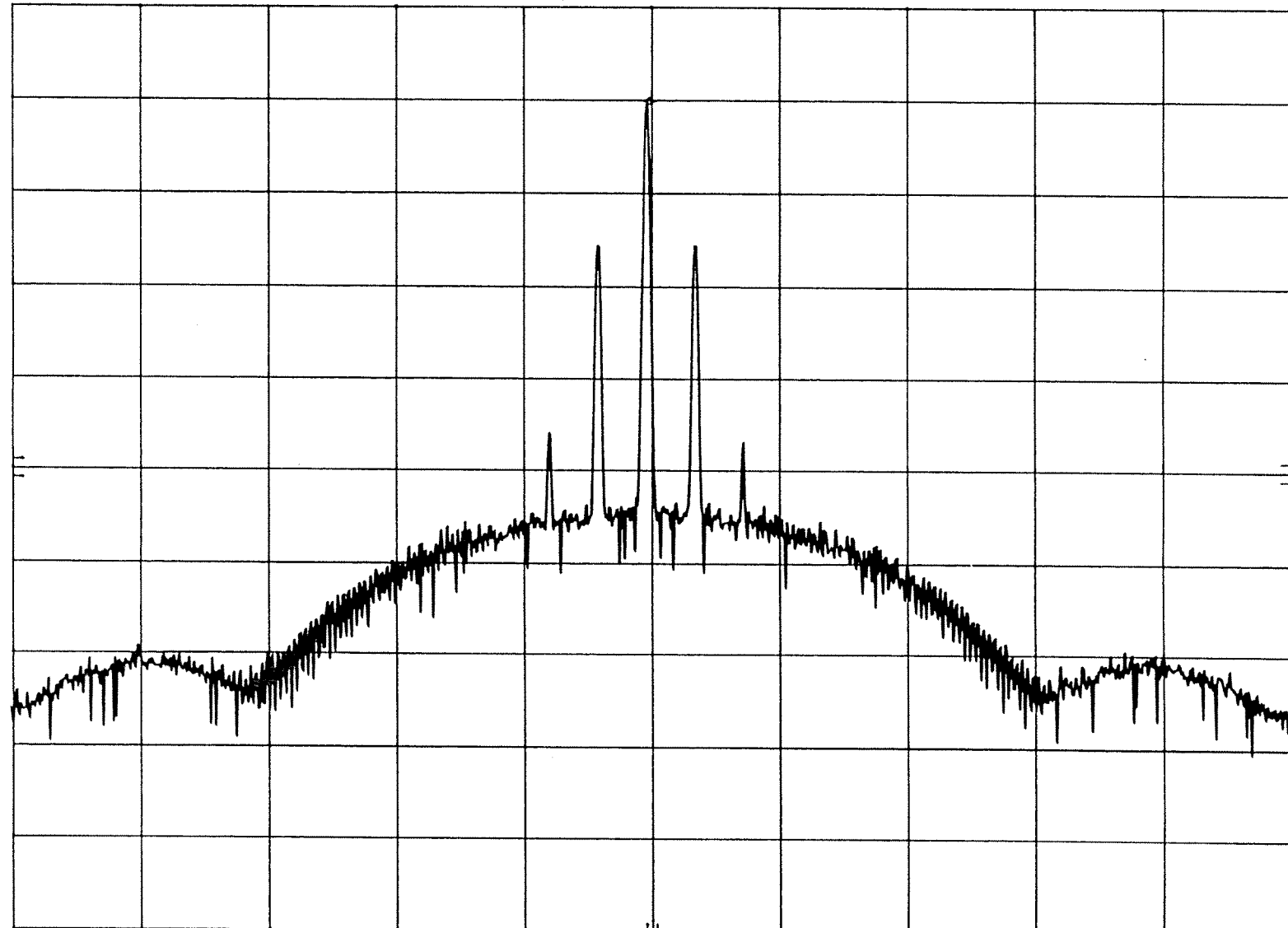
SWP 50.0 sec



USADR FM2 12/15/94 10: 10  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.099 0 MHz  
-10.10 dBm

10 dB/

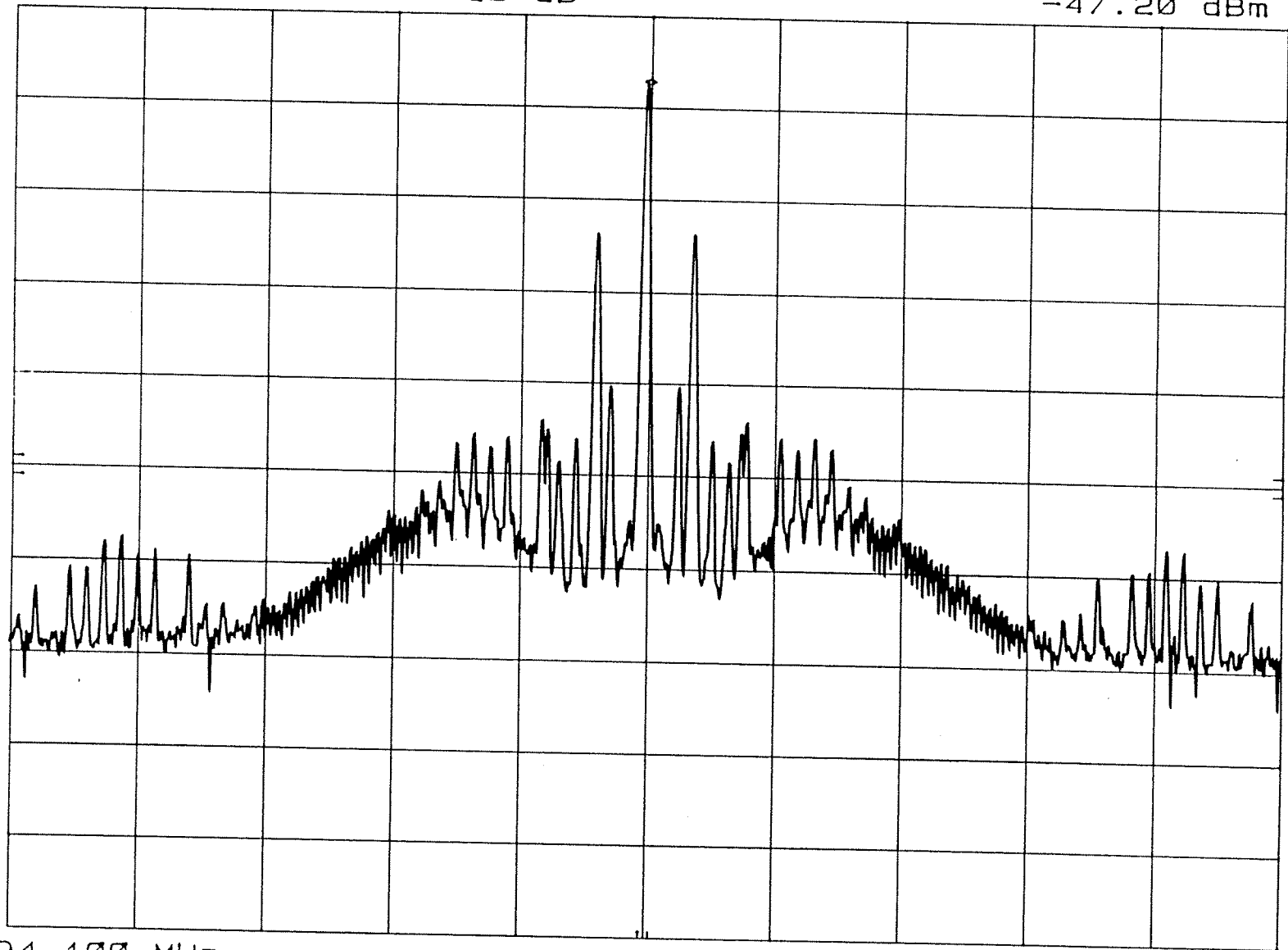


CENTER 94.100 MHz SPAN 500 kHz  
RES BW 1 kHz VBW 30 Hz SWP 50.0 sec

USADR FM2 CO-CHANNEL 12/15/94 10:24  
EIA REF -40.0 dBm ATTEN 10 dB

MKR 94.099 5 MHz  
-47.20 dBm

10 dB/



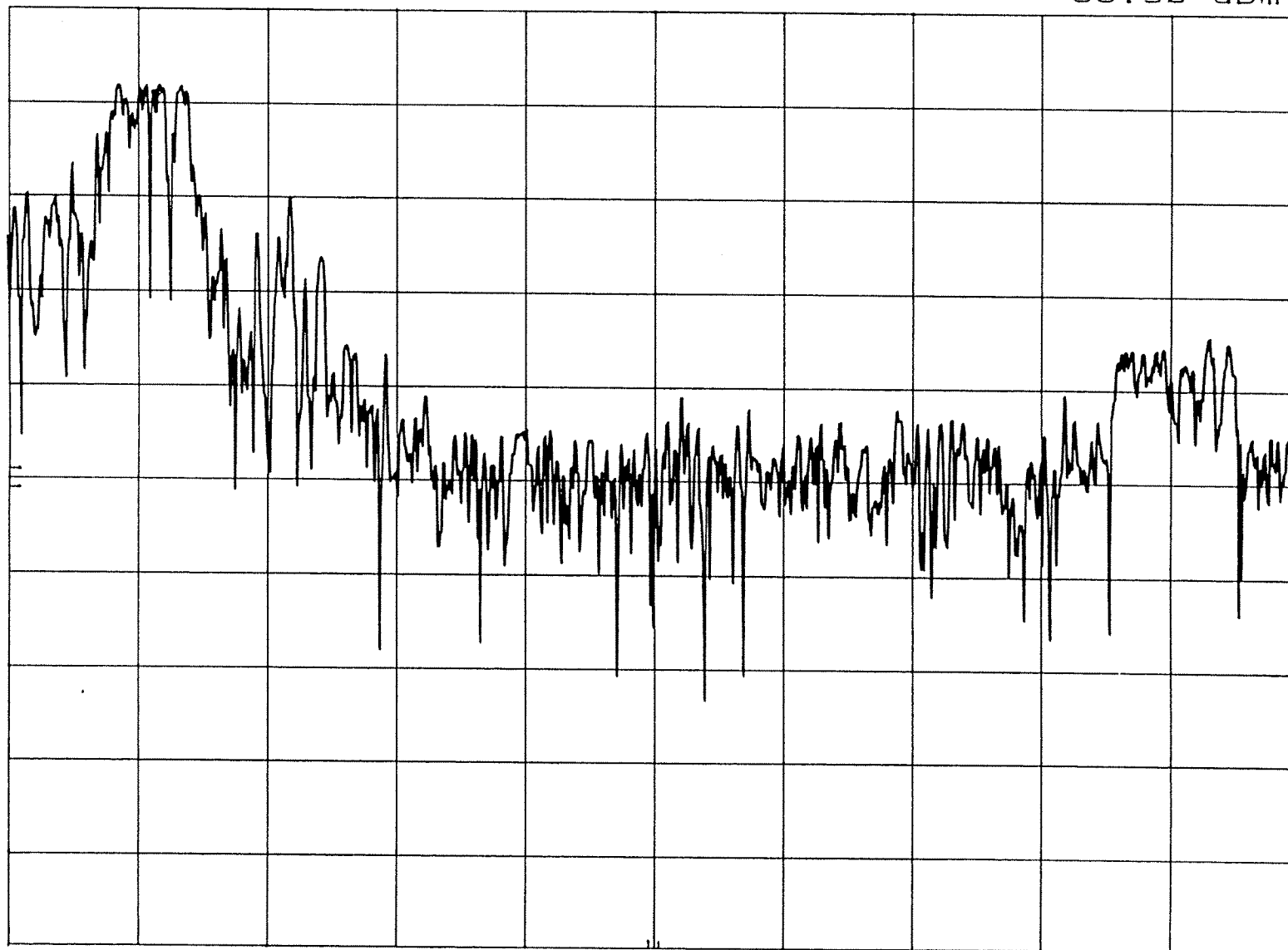
CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM2 UPPER 2nd Adj TOA 12/16/94 14:20MKR 94.107 0 MHz  
EIA REF -50.0 dBm ATTEN 10 dB -58.90 dBm

10 dB/



CENTER 94.300 MHz  
RES BW 10 kHz

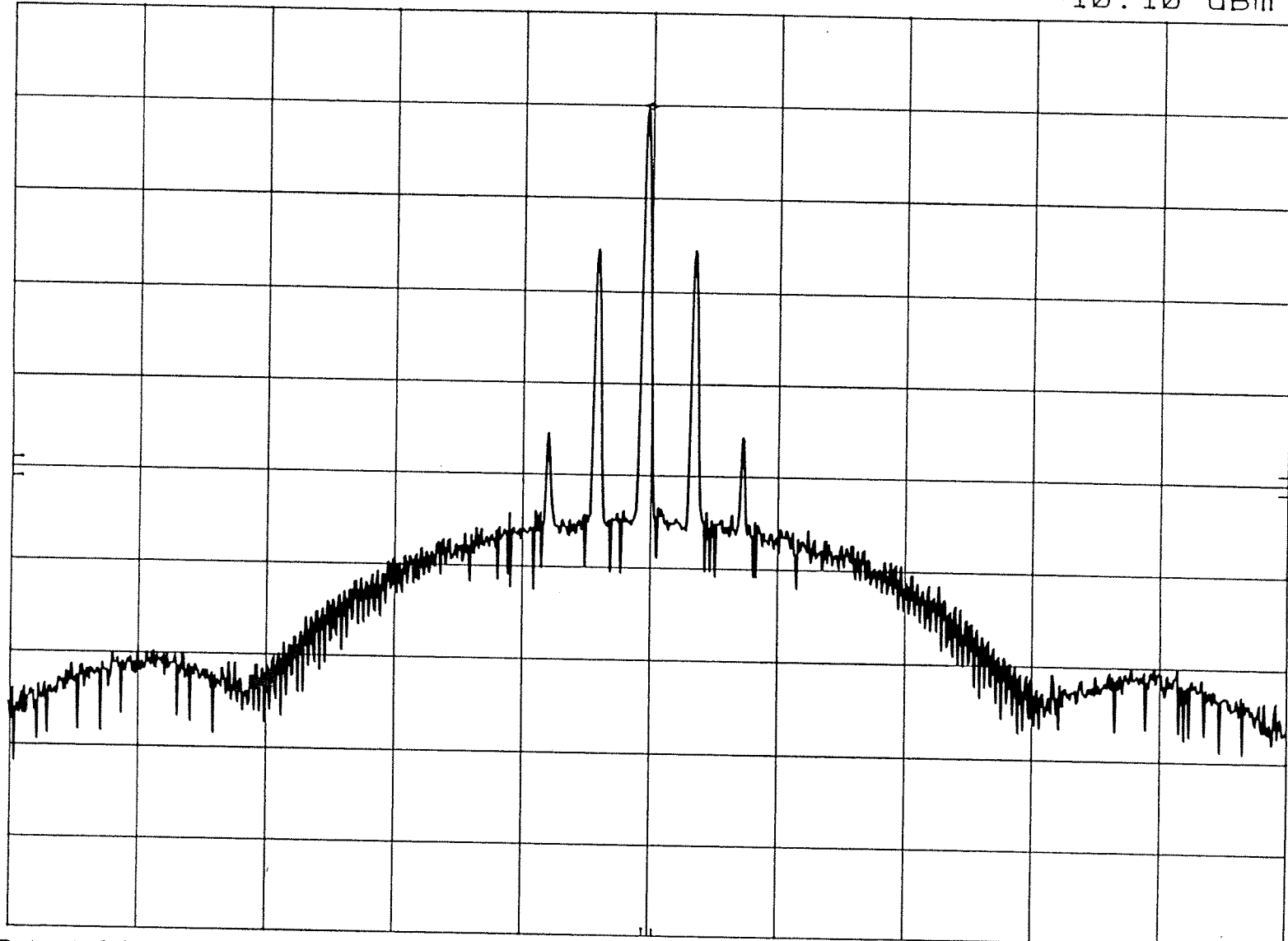
VBW 30 kHz

SPAN 500 kHz  
SWP 30.0 msec

USADR FM2 12\16\94 09:28  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.099 0 MHz  
-10.10 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

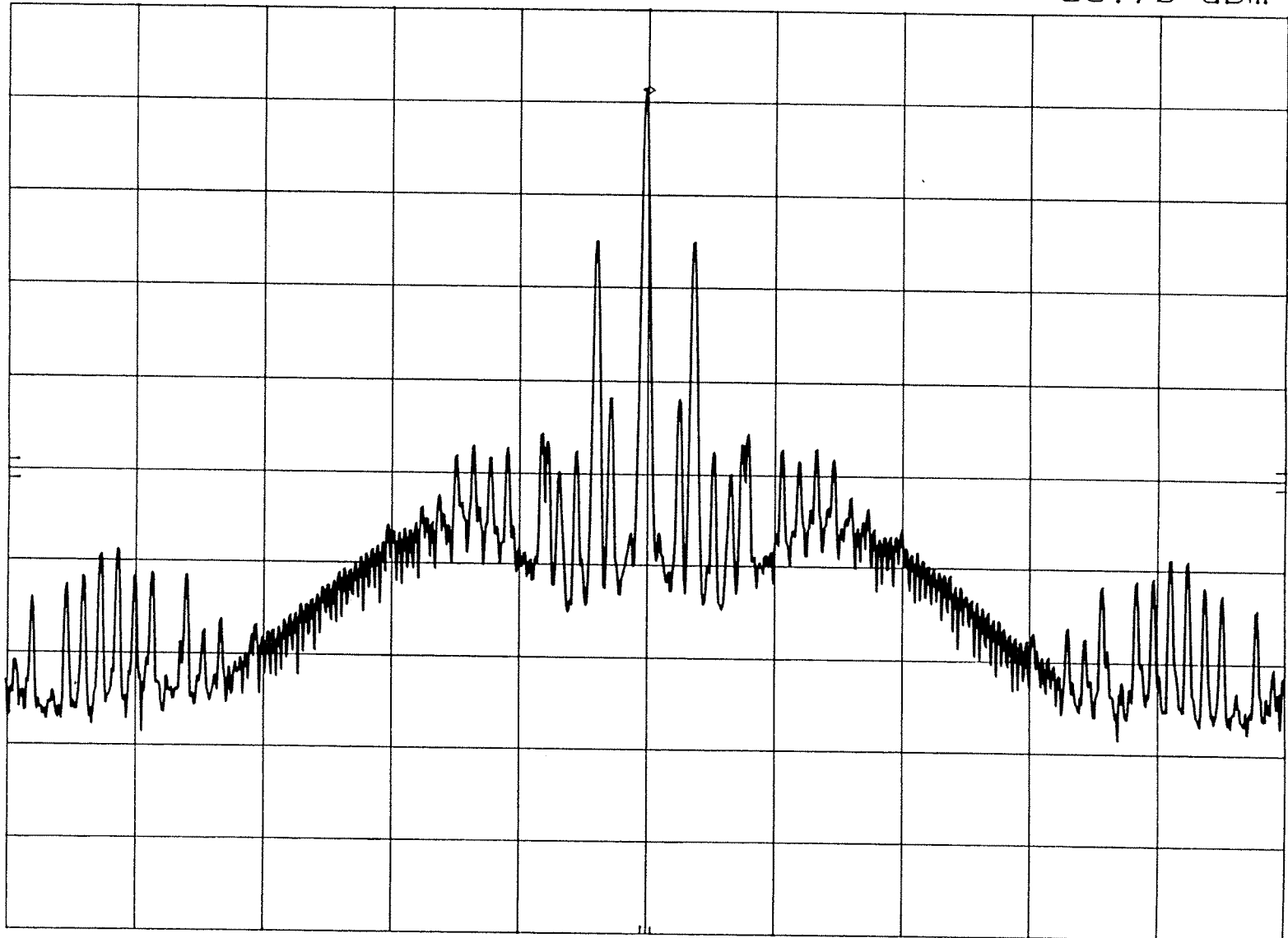
VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM2 CO-CHANNEL 12/16/94 09:58  
EIA REF -30.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-38.70 dBm

10 dB/



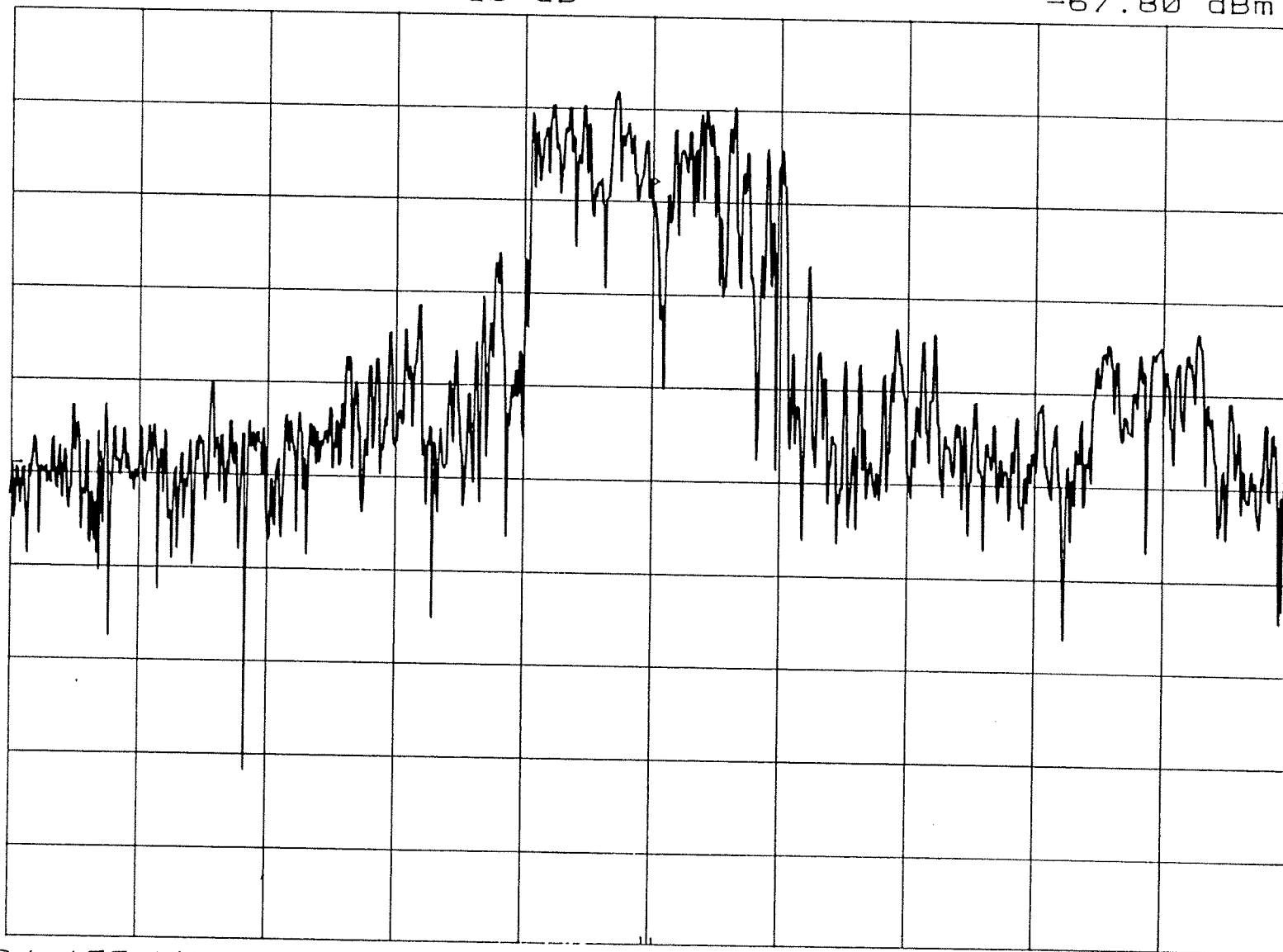
CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM2 UPPER 1st Adj TOA 12/15/94 13:52MKR 94.100 0 MHz  
EIA REF -50.0 dBm ATTEN 10 dB -67.80 dBm

10 dB/



CENTER 94.100 MHz

RES BW 10 KHZ

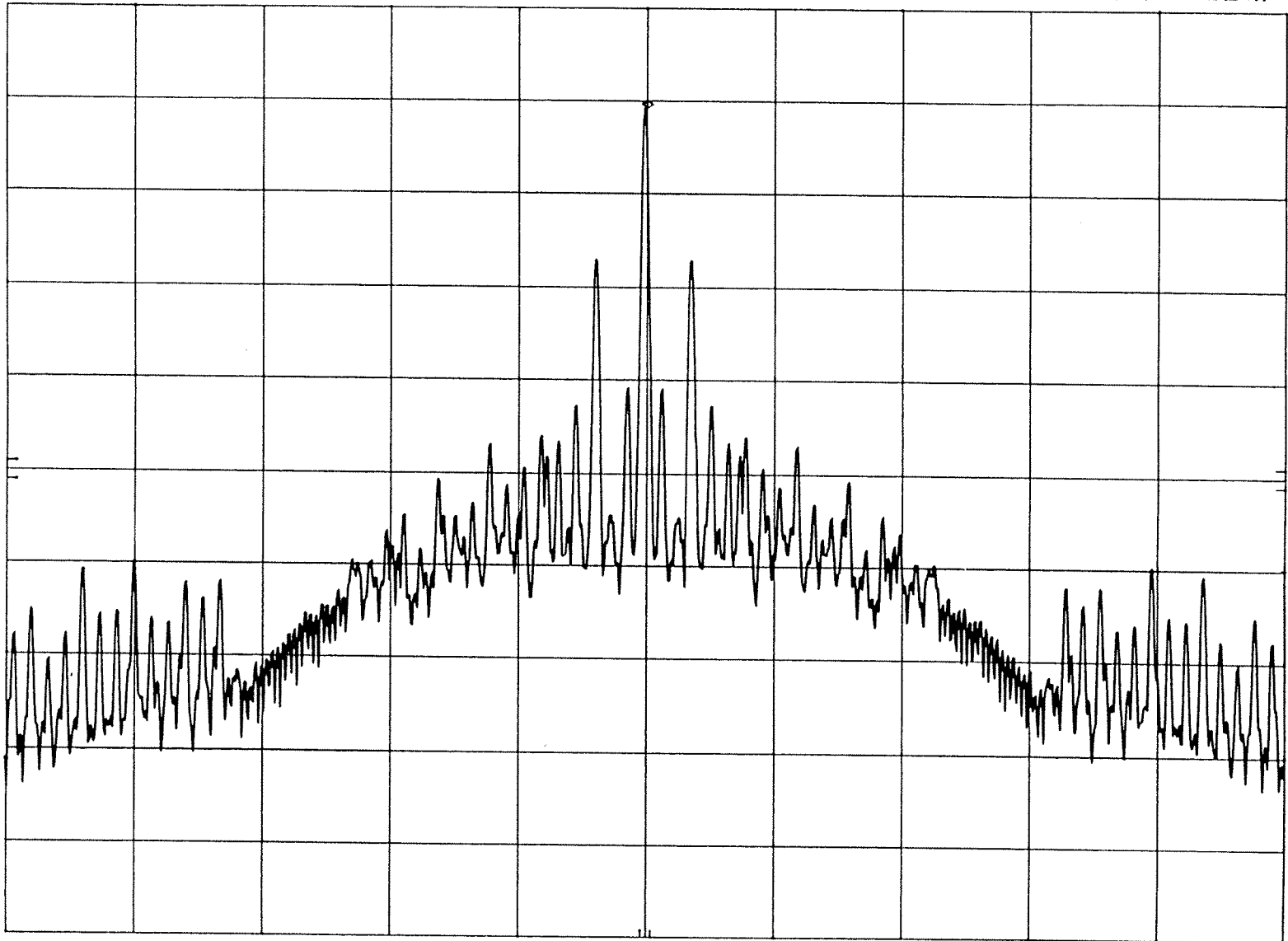
VBW 30 KHZ

SPAN 500 KHZ  
SWP 30.0 msec

USADR FM2 CO-CHANNEL 1/9/95 11:44  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-10.40 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM2 1/9/94 11:18

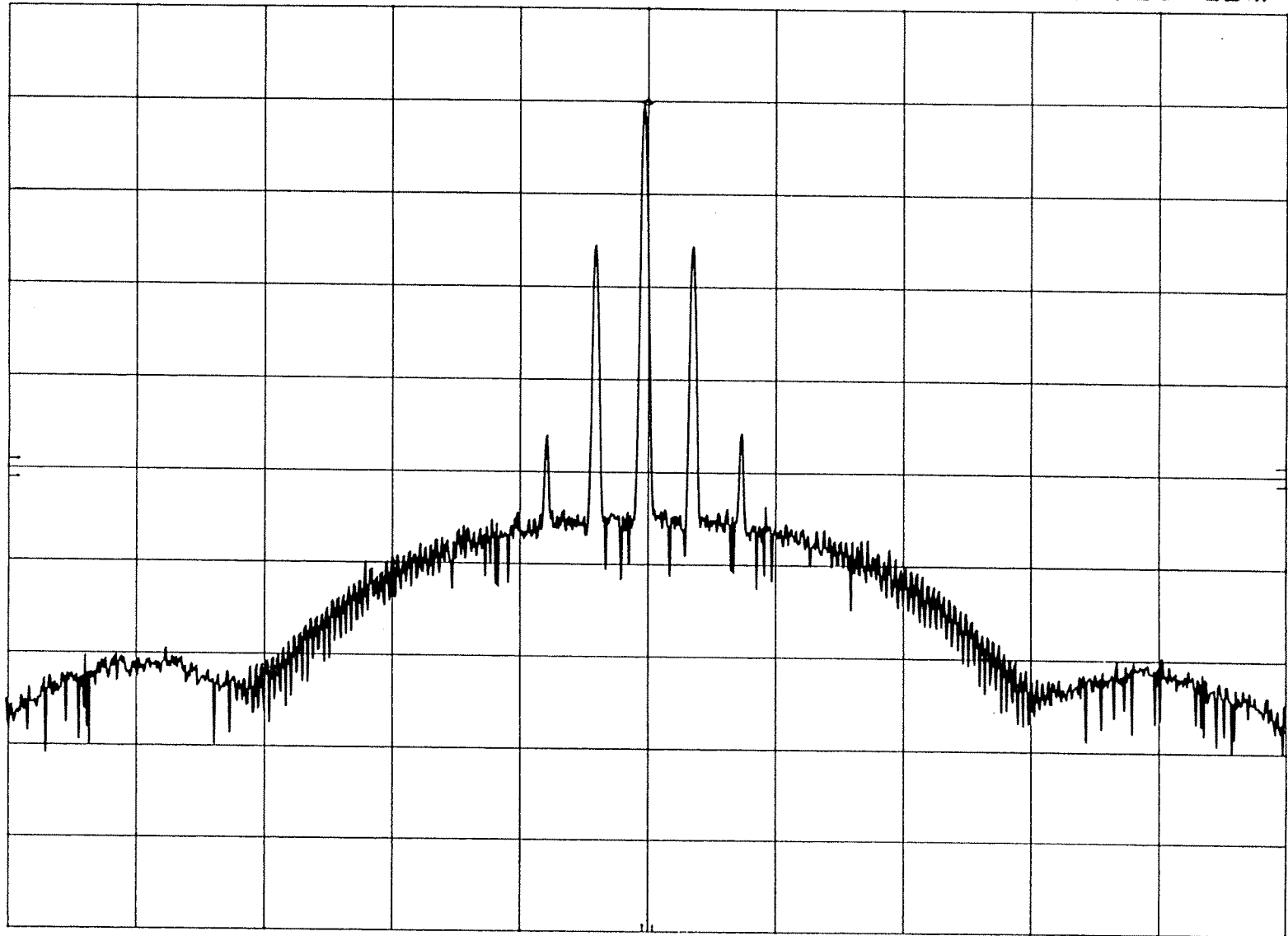
MKR 94.099 5 MHz

EIA REF 0.0 dBm

ATTEN 10 dB

-10.10 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec



**Appendix AH – Digital Test Results  
USA Digital Radio FM 1**

# EIA Digital Audio Radio Test Laboratory

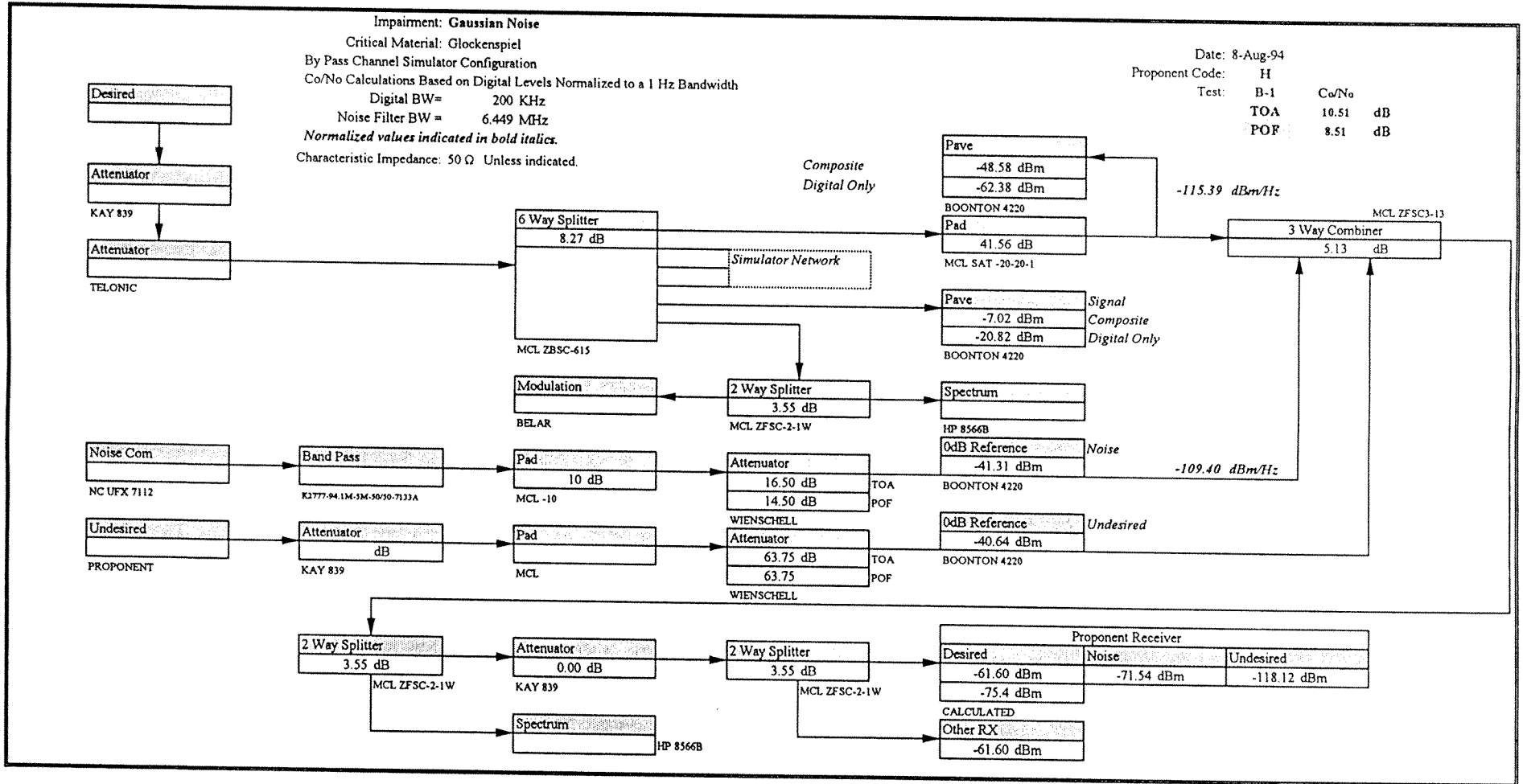
Proponent:	USADR FM1 Rev A.
Code:	H
Digital Band Width:	2.00E+05 Hz
Composite Band Width:	4.50E+05 Hz
Peak/Average Composite:	3.51 dB
Peak/Average Digital:	8.58 dB

AH

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>B-1</b>	<b>Gaussian Noise</b>		
<b>Proponent</b>				
<b>Code:</b>	<b>H</b>			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	16.50	14.50	dB
	Co/No	10.51	8.51	dB
	TOA	Small pops and some high cut.		
EO&C				
	POF	Severe high cut and warbles.		
<b>Soprano</b>		TOA	POF	
	Attenuator	16.00	14.50	dB
	Co/No	10.01	8.51	dB
	TOA	Small pops.		
EO&C				
	POF	Excessive noise and high cut.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	16.50	14.50	dB
	Co/No	10.51	8.51	dB
	TOA	Small pop or click.		
EO&C				
	POF	Severe high cut and warbles.		
<b>Notes:</b>		Recording Reference: DAR30218.DAT		
		Testers: DML,DS,EB		
		Date: 8-Aug-94		

# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn
	Start	Stop						
DAR30218.DAT 8-Aug-94			1	2			Glockenspiel Clear Channel	63.75
			3	4				18.00
			5	6				17.50
			7	8				17.00
			9	10	11		TOA lab	16.50
			12	13				16.00
			14	15				15.50
			16	17				15.00
			18	19	20		POF lab	14.50
			21	22			Sync	63.75
			23	24				14.00
			25	26			Soprano Clear Channel	63.75
			27	28				17.50
			29	30				17.00
			31	32				16.50
			33	34			TOA lab	16.00
			35	36				15.50
			37	38				15.00
			39	40			POF lab	14.50
			41	42			Sync	63.75
			43	44				14.00
			45	46			Clarinet Clear Channel	63.75
			47	48				18.00
			49	50				17.50
			51	52				17.00
			53	54	55	56	TOA lab	16.50
			57	58				16.00
			59	60				15.50
			61	62				15.00
			63	64			POF lab	14.50
			65	66			Sync	63.75
			67	68				14.00

Code: H  
Impairment: Gaussian Noise

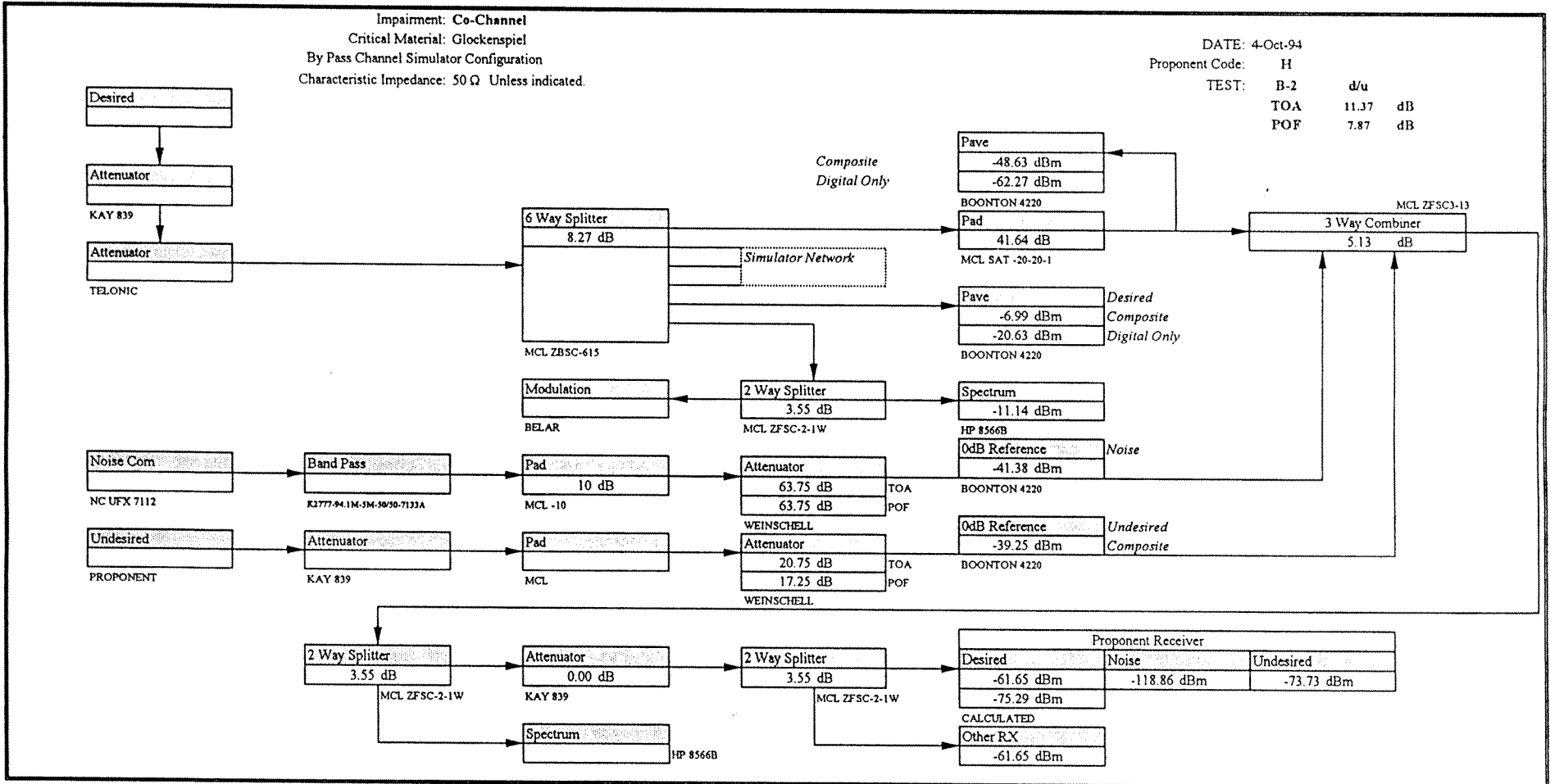
# EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-2 H	<b>Co-Channel</b>	
			Units
<b>Glockenspiel</b>		TOA	POF
Attenuator		20.75	17.25
d/u		11.37	7.87
EO&C		Small pops in left ear.	
POF		High cut, warbles and some muting.	
<b>Soprano</b>		TOA	POF
Attenuator		20.25	16.75
d/u		10.87	7.37
EO&C		Small pops.	
POF		Excessive noise, high cut and some muting..	
<b>Clarinet</b>		TOA	POF
Attenuator		20.25	16.25
d/u		10.87	6.87
EO&C		Small background pops and clicks.	
POF		Excessive noise and high cut.	
Notes:	Recording Reference: DAR30238.DAT Testers: DML,RMc Date: 4-Oct-94		

# EIA Digital Audio Radio Test Laboratory

Impairment: Co-Channel  
 Critical Material: Glockenspiel  
 By Pass Channel Simulator Configuration  
 Characteristic Impedance: 50 Ω Unless indicated.

DATE: 4-Oct-94  
 Proponent Code: H  
 TEST: B-2 d/u  
 TOA 11.37 dB  
 POF 7.87 dB



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn		
	Start	Stop								
DAR30238.DAT 4-Oct-94			1	2			Glockenspiel Clear Channel	63.75		
			3	4				22.25		
			5	6				21.75		
			7	8				21.25		
			9	10	11	12		TOA lab	20.75	
			13	14					20.25	
			15	16					19.75	
			17	18					19.25	
			19	20					18.75	
			21	22					18.25	
			23	24					17.75	
			25	26				POF lab	17.25	
			27	28					16.75	
			29	30				Soprano Clear Channel	63.75	
			31	32					21.75	
			33	34					21.25	
			35	36					20.75	
			37	38	39	40		41	TOA lab	20.25
			42	43					19.75	
			44	45					19.25	
			46	47					18.75	
			48	49					18.25	
			50	51					17.75	
			52	53					17.25	
			54	55				POF lab	16.75	
			56	57					16.25	

Code: H  
Impairment: Co-Channel



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn
	Start	Stop						
DAR30238.DAT			58	49			Clarinnet Clear Channel	63.75
4-Oct-94			60	61				21.75
			62	63				21.25
			64	65				20.75
			66	67	68		TOA lab	20.25
			69	70				19.75
			71	72				19.25
			73	74				18.75
			75	76				18.25
			77	78				17.75
			79	80				17.25
			81	82				16.75
			83	84			POF lab	16.25
			85	86				15.75

Code: H  
Impairment: Co-Channel

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Slow Rayleigh</b>				
<b>Proponent</b>		<b>Impairment Level</b>				
<b>Code:</b>	H					Units
<b>Glockenspiel</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	58.44		58.44		dB
	TOA	Small burst of noise, high cut and small pop in left ear.				
	EO&C					
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	High frequency roll off.				
	EO&C					
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	High frequency roll off.				
	EO&C					
	POF					
Recording Reference: DAR30277.DAT Testers: DML,RMc Test Date: 27-Oct-94						
Notes:						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Fast Rayleigh</b>				
<b>Proponent Code:</b>	H	<b>Impairment Level</b>				
					Units	
<b>Glockenspiel</b>						
	Attenuator		TOA		POF	
			63.75		63.75	dB
	Co/No		58.44		58.44	dB
	TOA	99.5% Mute, virtually no recovered audio.				
<b>EO&amp;C</b>						
	POF					
<b>Soprano</b>						
	Attenuator		TOA		POF	
			63.75			dB
	Co/No		58.44			dB
	TOA	Due to performance as indicated above this test was not necessary.				
<b>EO&amp;C</b>						
	POF					
<b>Clarinet</b>						
	Attenuator		TOA		POF	
			63.75			dB
	Co/No		58.44			dB
	TOA	Due to performance as indicated above this test was not necessary.				
<b>EO&amp;C</b>						
	POF					
Recording Reference: DAR30277.DAT						
Testers: DML,RMc						
Test Date: 27-Oct-94						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Rural Fast Rayleigh</b>				
<b>Proponent Code:</b>	H	<b>Impairment Level</b>				<b>Units</b>
<b>Glockenspiel</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	58.44		58.44		dB
	TOA	No recovered audio. System software had to be re-loaded for re-acquisition to occur in a clear channel.				
	EO&C					
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	Due to performance as indicated above this test was not necessary.				
	EO&C					
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	Due to performance as indicated above this test was not necessary.				
	EO&C					
	POF					
<b>Notes:</b>	Recording Reference: DAR30277.DAT Testers: DML,RMc Test Date: 27-Oct-94					

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Terrain Obstructed Rayleigh</b>				
<b>Proponent Code:</b>	H	<b>Impairment Level</b>				
<b>Units</b>						
<b>Glockenspiel</b>		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	58.44		58.44		dB
	TOA	Virtually no recovered audio. Small burst of heavily distorted audio.				
EO&C						
	POF					
<b>Soprano</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	Due to performance as indicated above this test was not necessary.				
EO&C						
	POF					
<b>Clarinet</b>		TOA		POF		
	Attenuator	63.75				dB
	Co/No	58.44				dB
	TOA	Due to performance as indicated above this test was not necessary.				
EO&C						
	POF					
Recording Reference: DAR30277.DAT						
Notes: Testers: DML,RMc						
Test Date: 27-Oct-94						

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30277.DAT 27-Oct-94			1	2	3	4	5	Glockenspiel Urban Slow	63.75
			6					Disregard	
			7	8	9	10	11	Soprano Urban Slow	63.75
			12	13	14	15	16	Clarinet Urban Slow	63.75
			17	18				Disregard	
			19	20	21	22	23	Glockenspiel Urban Fast	63.75
			24	25	26	27	28	Glockenspiel Rural Fast	63.75
			29	30	31	32	33	Glockenspiel Terrain Obstructed	63.75

Proponent Code: H  
Impairment: Urban Slow Rayleigh

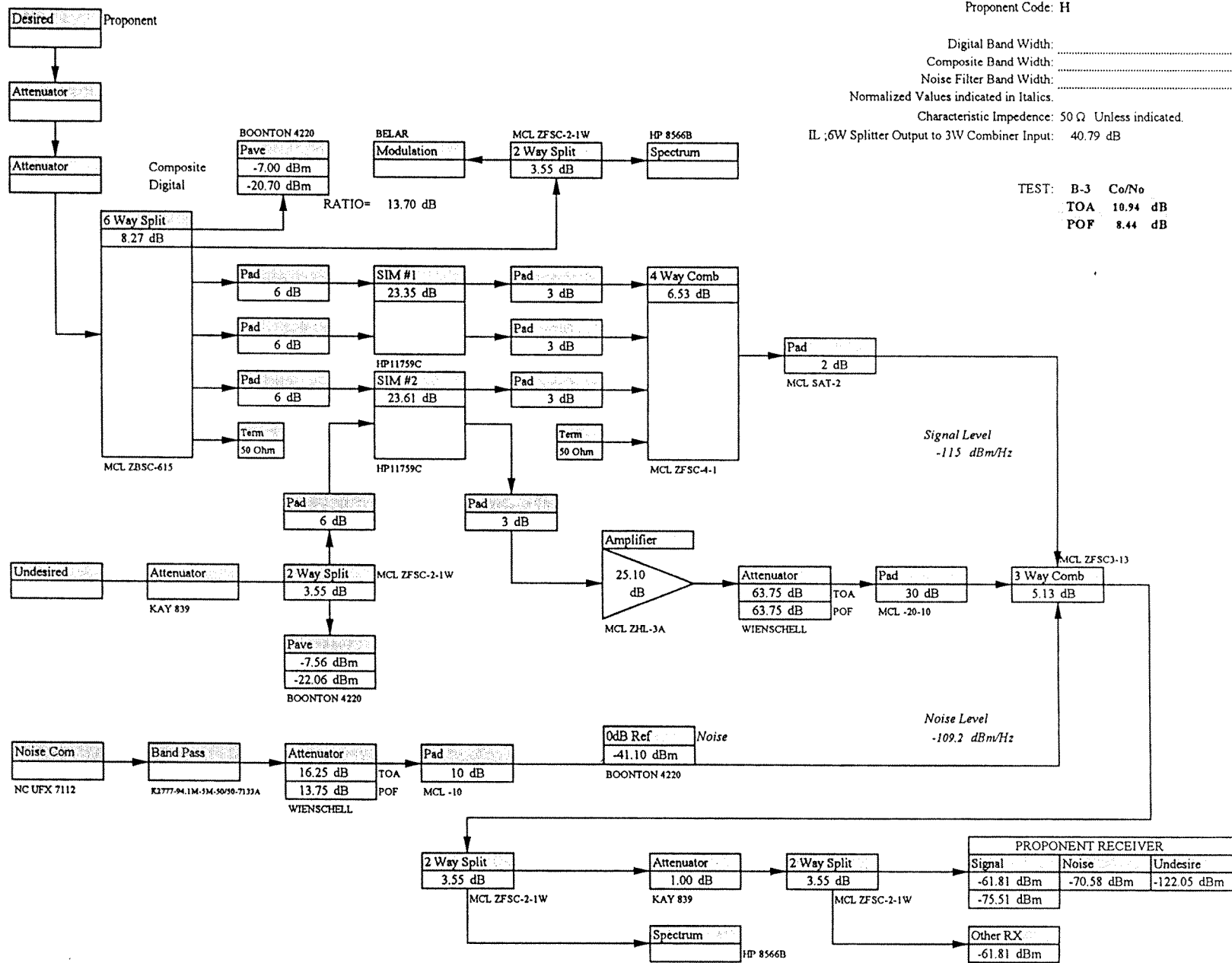
# EIA Digital Audio Radio Test Laboratory

Proponent Code: H

Digital Band Width: ..... 200000 Hz  
 Composite Band Width: ..... NA Hz  
 Noise Filter Band Width: ..... 6449000 Hz

Normalized Values indicated in Italics.  
 Characteristic Impedance: 50 Ω Unless indicated.  
 IL ;6W Splitter Output to 3W Combiner Input: 40.79 dB

TEST: B-3 Co/No  
 TOA 10.94 dB  
 POF 8.44 dB



# EIA Digital Audio Radio Test Laboratory

Test	C-1	Impulse Response				
USADR FM1 Rev A.						1.00 Vp-p at attenuator input.
Program Material		Glockenspiel				10.00 ns wide pulse
Pulse Repetition (Hz)	Attn at TOA	(Vp-p)	Attn at POF	(Vp-p)	EO&C	
100	0.00	1.00	0.00	1.00	Could not achieve TOA or POF with this configuration.	
200	1.75	0.82	0.00	1.00	TOA small pop, click / high cut, POF could not attain.	
333	0.75	0.92	0.00	1.00	TOA small pop, click / high cut, POF could not attain.	
666	5.25	0.55	1.75	0.82	TOA small pop, click / high cut, POF excessive noise with muting.	
1000	8.25	0.39	4.50	0.60	TOA small pop, click / high cut, POF excessive noise with muting.	
Additional Comments:						
Test Date: 25-Jul-94						
Testers: TK, DS						



### EIA Digital Audio Radio Test Laboratory

Test C-2 CW Response USADR FM1 Rev A. Program Material Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12
1	93.85	0	0	0	27	94.11	0	0	0
2	93.86	0	0	0	28	94.12	0	0	0
3	93.87	2	2	2	29	94.13	0	0	0
4	93.88	2	2	2	30	94.14	0	0	0
5	93.89	2	2	2	31	94.15	0	0	0
6	93.90	2	2	2	32	94.16	0	0	0
7	93.91	2	2	2	33	94.17	0	0	0
8	93.92	2	2	2	34	94.18	0	0	0
9	93.93	2	2	2	35	94.19	0	0	0
10	93.94	1	2	2	36	94.20	0	0	1
11	93.95	2	2	2	37	94.21	0	2	2
12	93.96	2	2	2	38	94.22	0	0	0
13	93.97	2	2	2	39	94.23	2	2	2
14	93.98	0	0	2	40	94.24	2	2	2
15	93.99	0	0	2	41	94.25	2	2	2
16	94.00	0	0	2	42	94.26	1	1	2
17	94.01	0	0	2	43	94.27	2	2	2
18	94.02	0	0	2	44	94.28	2	2	2
19	94.03	0	0	2	45	94.29	2	2	2
20	94.04	0	0	2	46	94.30	1	1	1
21	94.05	0	0	2	47	94.31	2	2	2
22	94.06	0	0	0	48	94.32	2	2	2
23	94.07	0	0	0	49	94.33	2	2	2
24	94.08	0	0	0	50	94.34	0	0	0
25	94.09	0	0	0	51	94.35	0	1	0
26	94.10	0	0	0					

Test Date:	17-Oct-94	0 dB Attenuator Reference:	-32.86 dBm
Testers:	DML, RMc	0=CLEAN AUDIO	1=APPROXIMATE TOA
		POF Attn=29.75dB	2 ≥ POF
			POF d/u= 14.13 dB

# EIA Digital Audio Radio Test Laboratory

<b>Test</b> C-3    Airplane Flutter <b>USADR FM1 Rev A.</b> <b>Program Material</b> Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  <div style="display: flex; justify-content: space-between;"> <span>8.00 dB</span> <span>TOA 8.00 dB</span> </div>	Excessive noise and high cut. Level of impairment approaching POF.  <div style="text-align: right;">DAR30500.DAT PI # 16,17 and 18</div>
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  <div style="display: flex; justify-content: space-between;"> <span>6.00 dB</span> <span>TOA 6.00 dB</span> </div>	Virtually no recovered audio. Beyond POF level of impairment. Small drop out or flutter.  Not recorded.
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  <div style="display: flex; justify-content: space-between;"> <span>4.00 dB</span> <span>TOA 4.00 dB</span> </div>	Virtually no recovered audio. Had to reload receiver software after this simulation .  Not recorded.
Test Date: 27-Oct-94 Testers: DML, RMc		

EIA Digital Audio Radio Test Laboratory

Test	C-4	Weak Signal Sensitivity				
USADR FM1 Rev A.						
Program Material	Glockenspiel					
<table border="1" style="display: inline-table; margin-right: 20px;"><thead><tr><th>TOA (dBm)</th></tr></thead><tbody><tr><td><math>-86 \leq \text{TOA} &lt; -85</math></td></tr></tbody></table> <table border="1" style="display: inline-table;"><thead><tr><th>POF (dBm)</th></tr></thead><tbody><tr><td><math>-89 &lt; \text{POF} \leq -88</math></td></tr></tbody></table>			TOA (dBm)	$-86 \leq \text{TOA} < -85$	POF (dBm)	$-89 < \text{POF} \leq -88$
TOA (dBm)						
$-86 \leq \text{TOA} < -85$						
POF (dBm)						
$-89 < \text{POF} \leq -88$						
Test Date: 27-Oct-94 Testers: DML,RMc						

EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler
Code:	H	Bad Urban 1
Program Material	Mozart (Track 67 on SQAM disk)	

Delay Spread (us)	1	3	5	10	15	30	50	75	100	150	225	Doppler (km/h)
0-40			2		2		2		2		2	
0-36		2		2		2		2		2		2
0-32			2		2		2		2		2	
0-28		1		2		1		2		2		2
0-24			2		1		2		2		2	
0-20		1		1		1		2		2		2
0-16			1		1		1		2		2	
0-12		0		1		1		2		2		2
0-8			0		1		2		2		2	
0-4		0		0		1		2		2		2

EO&C	30 sec minimum listening time.
0 = Unimpaired	Small Impairments consisted of
1 = Small Impairment	occasional, brief (short duration) dropouts.
2 ≥ POF Level of Impairment	

Test Date: 27-Oct-94
Testers: DML, RMc

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																																																																																																					
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<p>Delay Spread (us)</p> <table border="1" style="margin: auto; border-collapse: collapse;"> <tr><td>0-80</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-76</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-72</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-68</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-64</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-60</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-56</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-52</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-48</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-44</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td></td><td></td><td></td><td>1</td><td></td><td>3</td><td></td><td>5</td><td></td><td>10</td><td></td><td>15</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>30</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>50</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>75</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>100</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>225</td></tr> </table> <p style="text-align: right;">Doppler (km/h)</p>												0-80			2		2		2		2		2	0-76		2		2		2		2		2		0-72			2		2		2		2		2	0-68		2		2		2		2		2		0-64			2		2		2		2		2	0-60		2		2		2		2		2		0-56			2		2		2		2		2	0-52		2		2		2		2		2		0-48			2		2		2		2		2	0-44		2		2		2		2		2					1		3		5		10		15												30												50												75												100												150												225
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<b>Testers:</b>		DML, RMc																																																																																																																																																																																																																					

# EIA Digital Audio Radio Test Laboratory

Test	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																																								
Code:	H	Typical Urban																																																																																																																																																								
Program Material	Mozart (Track 67 on SQAM disk)																																																																																																																																																									
<div style="display: flex; align-items: flex-start;"> <div style="margin-right: 20px;"> <p>Delay Spread (us)</p> <p style="font-size: 2em;">↑</p> </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>0-10</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-9</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-8</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-7</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-6</td><td></td><td></td><td>0</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-5</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-4</td><td></td><td></td><td>0</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-3</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-2</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-1</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr> <td></td><td></td><td>1</td><td>3</td><td>5</td><td>10</td><td>15</td><td>30</td><td>50</td><td>75</td><td>100</td><td>150</td><td>225</td> </tr> </table> <div style="margin-left: 20px;"> <p style="font-size: 2em;">→</p> <p>Doppler (km/h)</p> </div> </div>												0-10			1		1		2		2		2		0-9		0		1		1		2		2		2	0-8			1		1		2		2		2		0-7		0		1		1		2		2		2	0-6			0		1		2		2		2		0-5		0		1		1		2		2		2	0-4			0		1		2		2		2		0-3		0		1		1		2		2		2	0-2			1		1		2		2		2		0-1		0		1		1		2		2		2			1	3	5	10	15	30	50	75	100	150	225
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EO&C		<p>30 sec minimum listening time.</p> <p>0 = Unimpaired                      Small Impairments consisted of</p> <p>1 = Small Impairment            occasional, brief (short duration) dropouts.</p> <p>2 ≥ POF Level of Impairment</p>																																																																																																																																																								
Test Date:		27-Oct-94																																																																																																																																																								
Testers:		DML, RMc																																																																																																																																																								

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																																					
<b>Code:</b>	H	Hilly Terrain																																																																																																																																																					
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)																																																																																																																																																					
<p>Delay Spread (us)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr><td>0-50</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-48</td><td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-44</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-40</td><td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-36</td><td></td><td>2</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-32</td><td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-28</td><td></td><td>0</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td>0-24</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-20</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr><td></td><td></td><td>1</td><td></td><td>3</td><td></td><td>5</td><td></td><td>10</td><td></td><td>15</td><td></td><td>30</td><td></td><td>50</td><td></td><td>75</td><td></td><td>100</td><td></td><td>150</td><td></td><td>225</td></tr> </table> <p style="text-align: right;">Doppler (km/h)</p>												0-50		1		1		2		2		2		2	0-48			2		1		2		2		2		0-44		1		1		1		2		2		2	0-40			2		1		2		2		2		0-36		2		1		2		2		2		2	0-32			2		1		1		2		2		0-28		0		2		2		2		2		2	0-24			2		2		2		2		2		0-20		0		1		1		2		2		2			1		3		5		10		15		30		50		75		100		150		225
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<b>Testers:</b>		DML, RMc																																																																																																																																																					

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																																																													
<b>Code:</b>	H	Rural Area																																																																																																																																																																													
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)																																																																																																																																																																														
<p>Delay Spread (us)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr><td>0-1.0</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>0-0.9</td><td></td><td>0</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-0.8</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>0-0.7</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-0.6</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>0-0.5</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-0.4</td><td></td><td></td><td>0</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>0-0.3</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td>0-0.2</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>0-0.1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>1</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td></tr> <tr><td></td><td></td><td></td><td>1</td><td></td><td>3</td><td></td><td>5</td><td></td><td>10</td><td></td><td>15</td><td></td><td>30</td><td></td><td>50</td><td></td><td>75</td><td></td><td>100</td><td></td><td>150</td><td></td><td>225</td></tr> </table> <p style="text-align: right;">Doppler (km/h)</p>												0-1.0			1		1		2		2		2			0-0.9		0		1		2		2		2		2		0-0.8			1		1		2		2		2			0-0.7		0		1		1		2		2		2		0-0.6			1		1		2		2		2			0-0.5		0		1		1		2		2		2		0-0.4			0		1		2		2		2			0-0.3		0		1		1		2		2		2		0-0.2			1		1		2		2		2			0-0.1		1		0		1		2		2		2					1		3		5		10		15		30		50		75		100		150		225
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<b>Testers:</b> DML, RMc																																																																																																																																																																															



## EIA Digital Audio Radio Test Laboratory

<b>Test</b> C-6    Additional Multipath Doppler Simulations <b>USADR FM1 Rev A.</b> <b>Program Material:</b> Glockenspiel																													
Scenario																													
	Level	Attn	Co/No	Units	EO&C																								
#1 Urban Slow	TOA	32.50	27.31	dB	High cut and other pops and clicks.																								
	POF	22.50	17.31	dB	Excessive noise and muting.																								
#2 Urban Fast	TOA	63.75	58.56	dB	Background noise and high cut.																								
	POF	21.50	16.31	dB	Excessive noise.																								
#3 Rural Fast	TOA	63.75	58.56	dB	System never re-acquires. Total mute.																								
	POF	63.75	58.56	dB																									
#4 Terrain Obstructed Fast	TOA	63.75	58.56	dB	High cut and other pops and clicks some muting POF level.																								
	POF	63.75	58.56	dB																									
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">Test Date: 26-Oct-94</td> <td style="width: 33%;"></td> <td style="width: 33%; text-align: right;">Desired</td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%; text-align: right;">Noise</td> </tr> <tr> <td>Testers: DML, RMc</td> <td></td> <td>Signal</td> <td style="text-align: right;">-7.00 dBm</td> <td></td> <td></td> </tr> <tr> <td>DAT Reference: DAR30552.DAT</td> <td></td> <td>IL</td> <td style="text-align: right;">40.79 dB</td> <td></td> <td style="text-align: right;">BW 6.45E+06 Hz</td> </tr> <tr> <td></td> <td></td> <td>3WIN</td> <td style="text-align: right;">-47.79 dBm</td> <td></td> <td style="text-align: right;">0dB Ref -41.38 dBm</td> </tr> </table>						Test Date: 26-Oct-94		Desired			Noise	Testers: DML, RMc		Signal	-7.00 dBm			DAT Reference: DAR30552.DAT		IL	40.79 dB		BW 6.45E+06 Hz			3WIN	-47.79 dBm		0dB Ref -41.38 dBm
Test Date: 26-Oct-94		Desired			Noise																								
Testers: DML, RMc		Signal	-7.00 dBm																										
DAT Reference: DAR30552.DAT		IL	40.79 dB		BW 6.45E+06 Hz																								
		3WIN	-47.79 dBm		0dB Ref -41.38 dBm																								

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop	1	2	3			
DAR30552.DAT			1	2	3		Urban Slow	63.75
26-Oct-94			4	5	6		Urban Slow	63.75
			7	8	9		Urban Slow with noise	32.50
			10	11	12		Disregard	63.75
			13	14	15		Urban Fast	63.75
			16	17	18		Rural Fast	63.75
			19	20	21		Obstructed Fast	63.75

Additional Multipath Doppler Simulations  
Code: H  
Test C-6

EIA Digital Audio Radio Test Laboratory

Test D-Series Co-Channel, 1st and 2nd Adjacent					
USADR FM1 Rev A.					
Program Material: Glockenspiel					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	30.50	11.96	dB	Small pop.
	POF	26.00	7.46	dB	Excessive noise and high cut.
D-2 Lower 1st Adjacent	TOA	50.00	31.46	dB	Small drop outs or flutters.
	POF	38.00	19.46	dB	Excessive Muting.
Upper 1st Adjacent	TOA	49.75	31.21	dB	Small pop.
	POF	37.75	19.21	dB	Excessive noise, high cut and crackling.
D-3 Lower 2nd Adjacent	TOA	28.00	9.46	dB	Small pop.
	POF	19.75	1.21	dB	Excessive noise, high cut and mute.
	TOA				Not necessary due to symmetry.
	POF				
DAT Reference: DAR30405.DAT By Pass Simulator Configuration.					
Test Date: 17-Oct-94				Desired	Undesired
Testers: DML, RMc		6WOUT		-6.99 dBm	
		IL		41.49 dB	
		3WIN		-48.48 dBm	-29.94 dBm

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop	0	1	2			
DAR30405.DAT			0	1	2		USADR FMI Co-Channel TOA	30.50
17-Oct-94			3	4	5		Upper 1st Adjacent, TOA	49.75
			6	7	8		Lower 2nd Adjacent TOA	28.00

Code: H  
D-Series Recordings

# EIA Digital Audio Radio Test Laboratory

Test E-1 Co-Channel with Multipath (Rayleigh)																					
USADR FM1 Rev A.																					
Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	63.75	67.38	dB	High cut and small pop.																
	POF	27.25	30.88	dB	Excessive noise and muting.																
#2 Urban Fast	TOA	63.75	67.38	dB	Never re-acquires.																
#3 Rural Fast	TOA	63.75	67.38	dB	Never re-acquires.																
#4 Terrain Obstructed	TOA	63.75	67.38	dB	Never re-acquires.																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 27-Oct-94</td> <td style="width: 20%;"></td> <td style="width: 20%;">Desired</td> <td style="width: 30%;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td>-7.00 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td>40.79 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>-47.79 dBm</td> <td>-51.42 dBm</td> </tr> </table>						Test Date: 27-Oct-94		Desired	Undesired	Testers: DML, RMc	Signal	-7.00 dBm			IL	40.79 dB			3WIN	-47.79 dBm	-51.42 dBm
Test Date: 27-Oct-94		Desired	Undesired																		
Testers: DML, RMc	Signal	-7.00 dBm																			
	IL	40.79 dB																			
	3WIN	-47.79 dBm	-51.42 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Rayleigh)</span> USADR FMI Rev A. Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	63.75	67.38	dB	Small pop.																
	POF	41.25	44.88	dB	Excessive noise and high cut.																
#2 Urban Fast	TOA	63.75	67.38	dB	Never re-acquires.																
#3 Rural Fast	TOA	63.75	67.38	dB	Never re-acquires.																
#4 Terrain Obstructed	TOA	63.75	67.38	dB	Never re-acquires.																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 27-Oct-94</td> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">Desired</td> <td style="width: 20%; text-align: right;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td style="text-align: right;">-7.00 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: right;">40.79 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: right;">-47.79 dBm</td> <td style="text-align: right;">-51.42 dBm</td> </tr> </table>						Test Date: 27-Oct-94		Desired	Undesired	Testers: DML, RMc	Signal	-7.00 dBm			IL	40.79 dB			3WIN	-47.79 dBm	-51.42 dBm
Test Date: 27-Oct-94		Desired	Undesired																		
Testers: DML, RMc	Signal	-7.00 dBm																			
	IL	40.79 dB																			
	3WIN	-47.79 dBm	-51.42 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-3 Lower 2nd Adjacent with Multipath (Rayleigh)</span> USADR FM1 Rev A. Program Material: Glockenspiel																				
Scenario																				
	Level	Attn	D/U	Units	EO&C															
#1 Urban Slow	TOA	63.75	67.38	dB	Small pop.															
	POF	19.75	23.38	dB	Excessive noise and small mute.															
#2 Urban Fast	TOA	63.75	67.38	dB	Never re-acquires.															
#3 Rural Fast	TOA	63.75	67.38	dB	Never re-acquires.															
#4 Terrain Obstructed	TOA	63.75	67.38	dB	Never re-acquires.															
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%; border: none;">Test Date: 27-Oct-94</td> <td style="width: 30%; border: none; text-align: center;">Desired</td> <td style="width: 40%; border: none; text-align: right;">Undesired</td> </tr> <tr> <td style="border: none;">Testers: DML, RMc</td> <td style="border: none;">Signal</td> <td style="border: none; text-align: right;">-7.00 dBm</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">IL</td> <td style="border: none; text-align: right;">40.79 dB</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;">3WIN</td> <td style="border: none; text-align: right;">-47.79 dBm</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none; text-align: right;">-51.42 dBm</td> </tr> </table>						Test Date: 27-Oct-94	Desired	Undesired	Testers: DML, RMc	Signal	-7.00 dBm		IL	40.79 dB		3WIN	-47.79 dBm			-51.42 dBm
Test Date: 27-Oct-94	Desired	Undesired																		
Testers: DML, RMc	Signal	-7.00 dBm																		
	IL	40.79 dB																		
	3WIN	-47.79 dBm																		
		-51.42 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-1 Co-Channel with Multipath (Doppler)</span> USADR FM1 Rev A. Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	32.00	35.81	dB	Small pop. DAR30552.DAT #23																
	POF	18.00	21.81	dB	Excessive noise and high cut.																
#2 Urban Fast	TOA	63.75	67.56	dB	Background noise and high cut.																
	POF	21.50	25.31	dB	Excessive noise.																
#3 Rural Fast	TOA	63.75	67.56	dB	Never re-acquires.																
#4 Terrain Obstructed	TOA	63.75	67.56	dB	Excessive noise and high cut. POF level of impairment .																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 26-Oct-94</td> <td style="width: 10%;"></td> <td style="width: 15%;">Desired</td> <td style="width: 45%;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td>-7.00 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td>40.65 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>-47.65 dBm</td> <td>-51.46 dBm</td> </tr> </table>						Test Date: 26-Oct-94		Desired	Undesired	Testers: DML, RMc	Signal	-7.00 dBm			IL	40.65 dB			3WIN	-47.65 dBm	-51.46 dBm
Test Date: 26-Oct-94		Desired	Undesired																		
Testers: DML, RMc	Signal	-7.00 dBm																			
	IL	40.65 dB																			
	3WIN	-47.65 dBm	-51.46 dBm																		



# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Doppler)</span> USADR FM1 Rev A. Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
#1 Urban Slow	TOA	63.75	67.42	dB	High cut with small pops and clicks.																
	POF	31.00	34.67	dB	Excessive noise, high cut and mutes.																
#2 Urban Fast					Background noise and high cut.																
#3 Rural Fast					Never re-acquires.																
#4 Terrain Obstructed Fast					Excessive noise and high cut. POF level of impairment .																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 21-Oct-94</td> <td style="width: 20%;"></td> <td style="width: 10%;">Desired</td> <td style="width: 30%;">Undesired</td> </tr> <tr> <td>Testers: DML, RM, ST</td> <td>Signal</td> <td>-7.00 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td>40.79 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>-47.79 dBm</td> <td>-51.46 dBm</td> </tr> </table>						Test Date: 21-Oct-94		Desired	Undesired	Testers: DML, RM, ST	Signal	-7.00 dBm			IL	40.79 dB			3WIN	-47.79 dBm	-51.46 dBm
Test Date: 21-Oct-94		Desired	Undesired																		
Testers: DML, RM, ST	Signal	-7.00 dBm																			
	IL	40.79 dB																			
	3WIN	-47.79 dBm	-51.46 dBm																		

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-3 Lower 2nd Adjacent with Multipath (Doppler)</span> USADR FM1 Rev A. Program Material: Glockenspiel																									
Scenario																									
	Level	Attn	D/U	Units	EO&C																				
#1 Urban Slow	TOA	20.50	24.17	dB	Small click.																				
	POF	10.50	14.17	dB	Excessive noise and mutes.																				
#2 Urban Fast					Background noise and high cut.																				
#3 Rural Fast					Never re-acquires.																				
#4 Terrain Obstructed Fast					Excessive noise and high cut. POF level of impairment .																				
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 26-Oct-94</td> <td style="width: 20%;"></td> <td style="width: 10%; text-align: center;">Desired</td> <td style="width: 30%;"></td> <td style="width: 10%; text-align: center;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td style="text-align: center;">-7.00 dBm</td> <td></td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: center;">40.79 dB</td> <td></td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: center;">-47.79 dBm</td> <td></td> <td style="text-align: center;">-51.46 dBm</td> </tr> </table>						Test Date: 26-Oct-94		Desired		Undesired	Testers: DML, RMc	Signal	-7.00 dBm				IL	40.79 dB				3WIN	-47.79 dBm		-51.46 dBm
Test Date: 26-Oct-94		Desired		Undesired																					
Testers: DML, RMc	Signal	-7.00 dBm																							
	IL	40.79 dB																							
	3WIN	-47.79 dBm		-51.46 dBm																					

# EIA Digital Audio Radio Test Laboratory

<b>Test</b> J-1      Re-Acquisition			
USADR FM1 Rev A.			
Program Material		Mozart (Track 67 on SQAM disk)	
Toff (s)	POF-2	Re-Acquisition Time (s) POF-4	POF-6
30	5	5	8
	7	6	5
	8	5	4
	6	5	6
	3	7	4
<u>Average</u>	5.8	5.6	5.4
POF Attenuator Setting : 12.00 dB			
Desired Signal Level : -48.48 dBm			
Noise 0 dB Reference : -41.41 dBm			
Additional Comments:			
Re-Acquisition time is the value listed ± 0.5 seconds.			
Test Date: 17-Oct-94			
Testers: DML, RMc			

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev A.</b>	<b>Urban Slow Rayleigh</b>			
<b>Program Material</b>	<b>Mozart (Track 67 on SQAM disk)</b>			
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>			
	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>	
5	8	6	3	
10	6	3	3	
15	6	7	7	
20	12	6	6	
25	6	6	2	
<b>Average</b>	7.6	5.6	4.2	
<b>POF Attenuator Setting</b>	: 26.75dB			
<b>Desired Signal Level</b>	: -48.48 dBm			
<b>Noise 0 dB Reference</b>	: -41.15 dBm			
<b>Additional Comments:</b>				
Re-Acquisition time is the value listed $\pm$ 1 second. Rayleigh Urban Slow is the only Rayleigh simulation where re-acquisition occurs. Other environments not tested for this reason.				
<b>Test Date: 27-Sep-94</b>				
<b>Testers: DML, ST</b>				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	<b>Re-Acquisition with Multipath</b>		
USADR FM1 Rev A.	Urban Slow Doppler			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	Re-Acquisition Time (s)			
	POF-2	POF-4	POF-6	
5	8	3	7	
10	8	6	4	
15	7	6	5	
20	6	10	5	
25	3	10	7	
<u>Average</u>	6.4	7	5.6	
POF Attenuator Setting	: 22.5 dB			
Desired Signal Level	: -47.65 dBm			
Noise 0 dB Reference	: -41.15 dBm			
<b>Additional Comments:</b>				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 26-Oct-94				
Testers: DML, ST				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev A.</b>	Urban Fast Doppler			
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)			
<b>Re-Acquisition Time (s)</b>				
<b>Tsim (s)</b>	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>	
5	3	4	9	
10	4	7	7	
15	5	6	6	
20	3	4	2	
25	5	10	10	
<b>Average</b>	4	6.2	6.8	
POF Attenuator Setting : 21.50 dB				
Desired Signal Level : -47.65 dBm				
Noise 0 dB Reference : -41.15 dBm				
<b>Additional Comments:</b>				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 21-Oct-94				
Testers: DML, ST				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>
<b>USADR FM1 Rev A.</b>	<b>Terrain Obstructed Doppler</b>	
<b>Program Material</b>	<b>Mozart (Track 67 on SQAM disk)</b>	
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>	
	<b>POF</b>	
5	14	
10	4	
15	5	
20	7	
25	5	
<u>Average</u>	<u>7</u>	
POF Attenuator Setting : 63.75 dB		
Desired Signal Level : -47.65 dBm		
Noise 0 dB Reference : -41.15 dBm		
Additional Comments:		
Re-Acquisition time is the value listed $\pm$ 1 second.		
Test Date: 21-Oct-94		
Testers: DML, ST		

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>B-1</b>	<b>Ancillary Data Channel Demonstration Gaussian Noise BER</b>				
<b>Proponent</b>						Units
<b>Code:</b>	H					
		TOA		POF		
Attenuator	16.25	15.75	14.75	13.75		dB
Co/No	11.10	10.60	9.60	8.60		dB
Log(BER)	--	-3.895	-2.517	-1.472		
BER	0.00E+00	1.27E-04	3.04E-03	3.37E-02		
<b>Test</b>	<b>B-2</b>	<b>Ancillary Data Channel Demonstration Co-Channel BER</b>				
						Units
		TOA		POF		
Attenuator		15.00		11.50		dB
d/u		11.02		7.52		dB
Log(BER)		--		-1.231		
BER		0.00E+00		5.88E-02		
<b>Testers:</b>	DML, RMc	TOA and POF levels have been approximated for this demonstration.				
<b>Date:</b>	12-Dec-94					



# EIA Digital Audio Radio Test Laboratory

Test Proponent Code:	B-3 H	Ancillary Data Channel Demonstration Multipath BER Doppler	Units
<b>Urban Slow</b>		No Added Noise	
Attenuator		63.75	dB
Co/No		58.60	dB
Log(BER)		-1.785	
BER		1.64E-02	
<b>Urban Fast</b>		No Added Noise	
Attenuator		63.75	dB
Co/No		58.60	dB
Log(BER)		-1.186	
BER		6.51E-02	
<b>Rural Fast</b>		No Added Noise	
Attenuator		63.75	dB
Co/No		58.60	dB
Log(BER)			
BER		No Valid data received.	
<b>Terrain Obstructed</b>		No Added Noise	
Attenuator		63.75	dB
Co/No		58.60	dB
Log(BER)		-0.918	
BER		1.21E-01	
Testers:	DML, RMc	TOA and POF levels have been approximated for this demonstration.	
Date:	12-Dec-94		

# EIA Digital Audio Radio Test Laboratory

Test	B-3	Ancillary Data Channel Demonstration Multipath BER Special			Units
Proponent	H				
Code:	H				
<b>Obstructed Path</b>		No Added Noise (San Fran 4)			
Attenuator		63.75			dB
Co/No		58.60			dB
Log(BER)		-5.759			
BER		1.74E-06			
<b>Rural Highway</b>		TOA	POF	(SLC)	
Attenuator		16.75	14.25		dB
Co/No		11.60	9.10		dB
Log(BER)		-3.557	-1.446		
BER		2.77E-04	3.58E-02		
<b>Suburban</b>		No Added Noise (WSHW9)			
Attenuator		63.75			dB
Co/No		58.60			dB
Log(BER)		-1.188			
BER		6.49E-02			
<b>Terrain Obstructed</b>		No Added Noise		POF (NOVA 4)	
Attenuator		63.75		28.75	dB
Co/No		58.60		23.60	dB
Log(BER)		-1.026		-1.725	
BER		9.43E-02		1.88E-02	
Testers:	DML, RMc	TOA and POF levels have been approximated for			
Date:	12-Dec-94	this demonstration.			

USA DR FM1 6/30/94

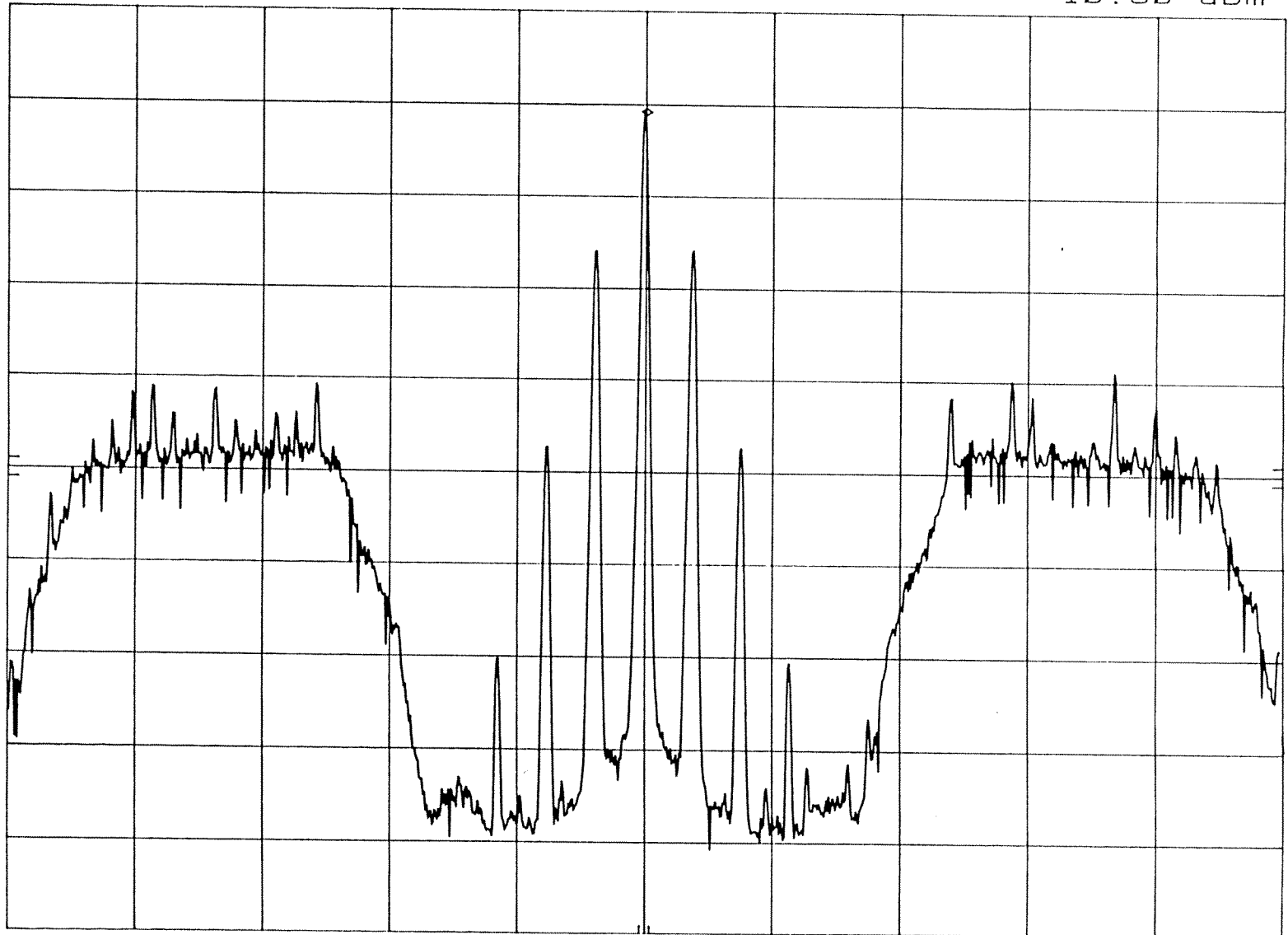
MKR 94.100 0 MHz  
-10.80 dBm

hp

REF 0.0 dBm

ATTEN 10 dB

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

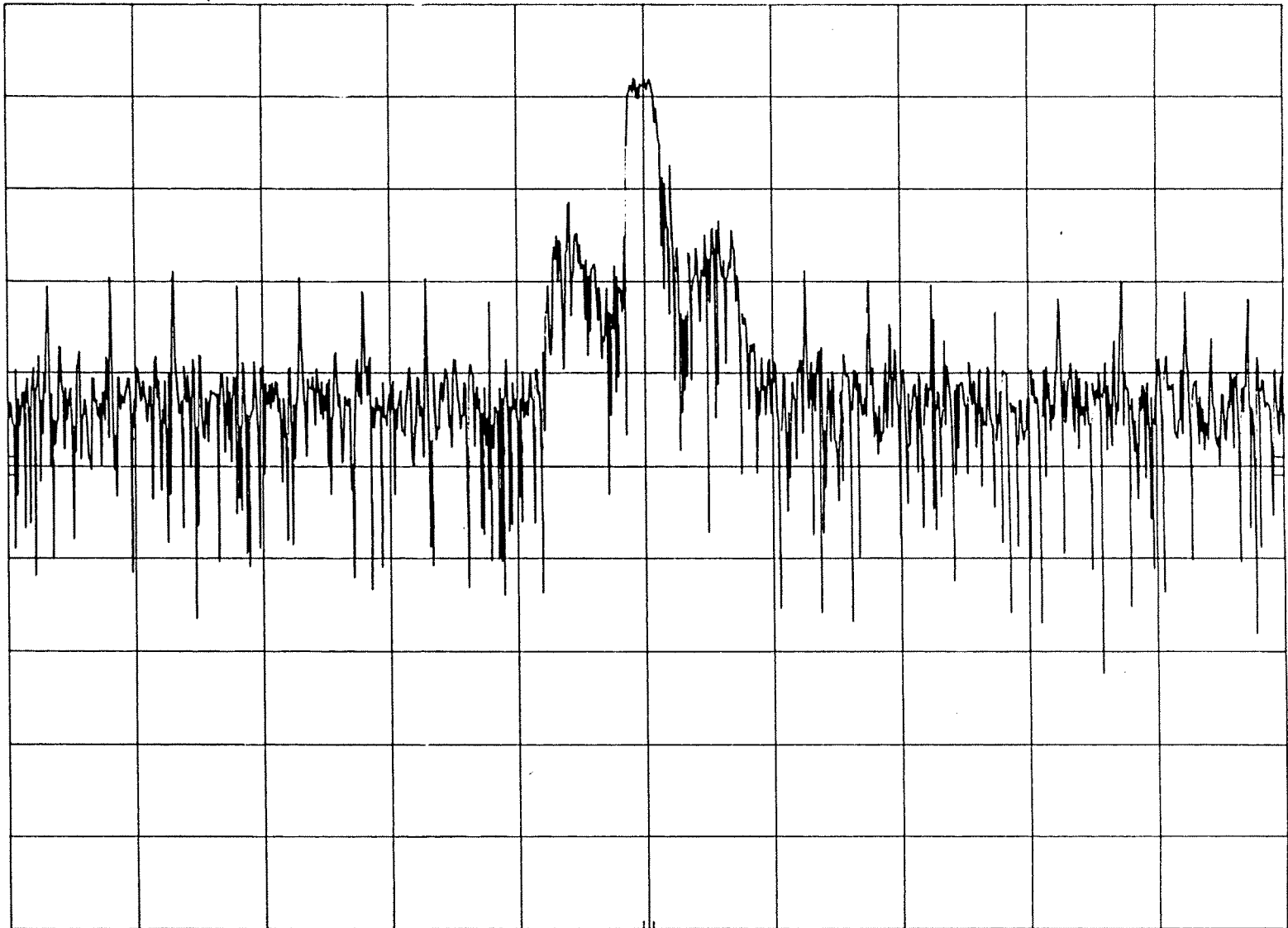
SWP 50.0 sec

USA DR FM1 TEST C1 1V 8.25dB TOA 7/25/94

*hp* REF -50.0 dBm ATTEN 10 dB

10 dB/

1KHz



CENTER 94.10 MHz

RES BW 30 kHz

VBW 100 kHz

SPAN 3.00 MHz

SWP 20.0 msec

USA DR FM1 7/28/94

MKR 94.100 0 MHz

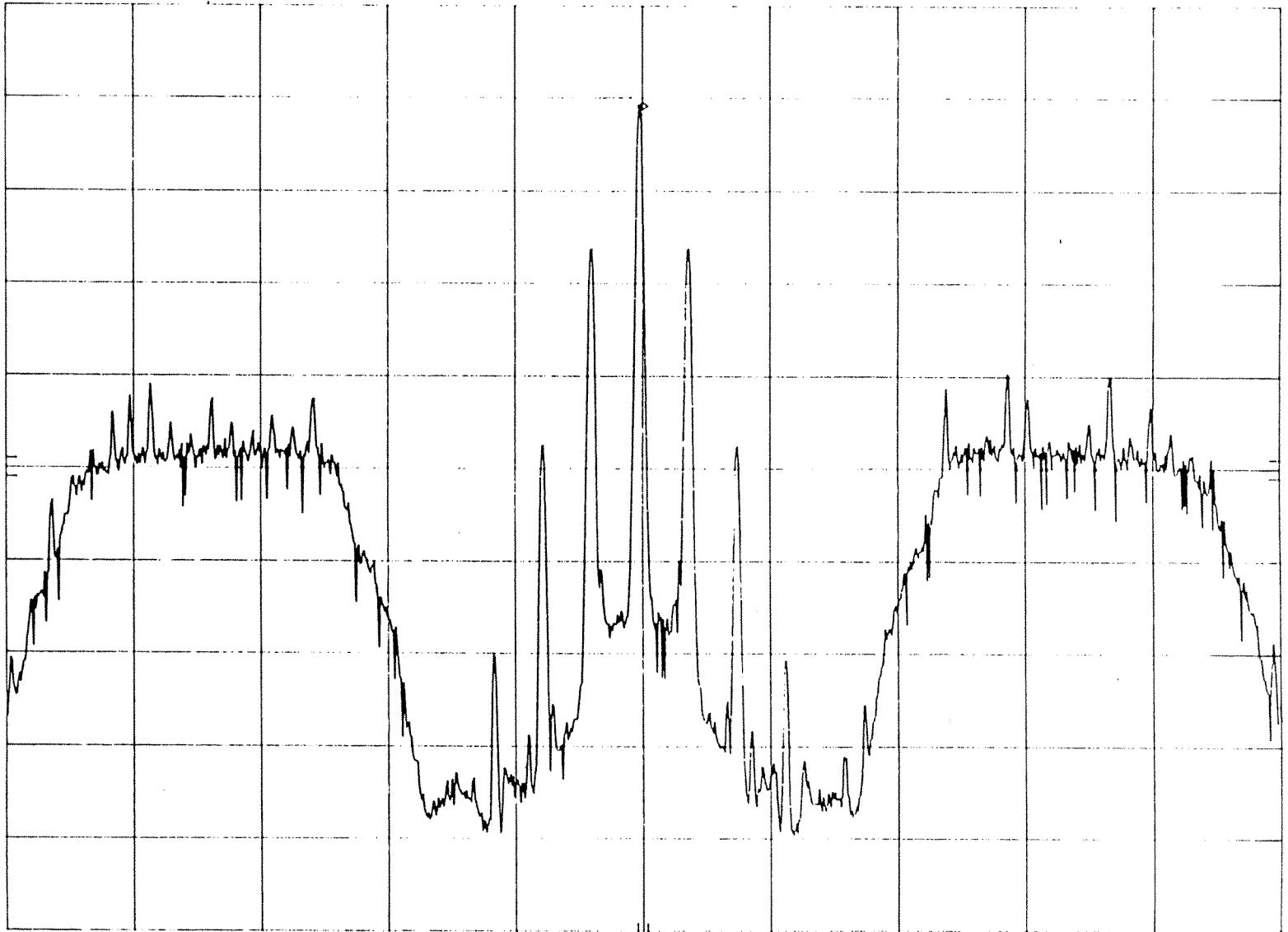
hp

REF 0.0 dBm

ATTEN 10 dB

-10.90 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

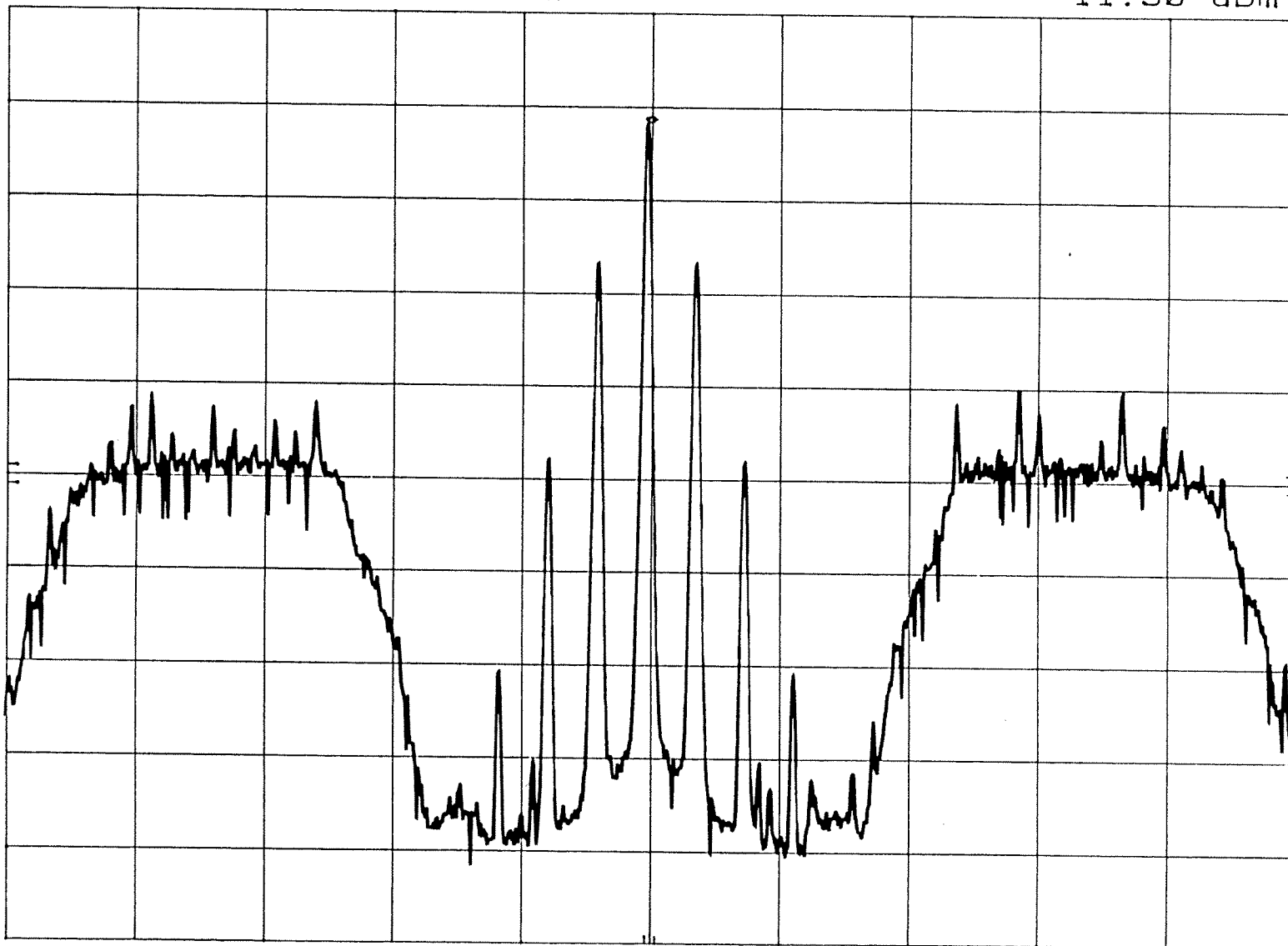
SPAN 500 kHz

SWP 50.0 sec

USADR FM1 9/1/94 10:17  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.099 5 MHz  
-11.30 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

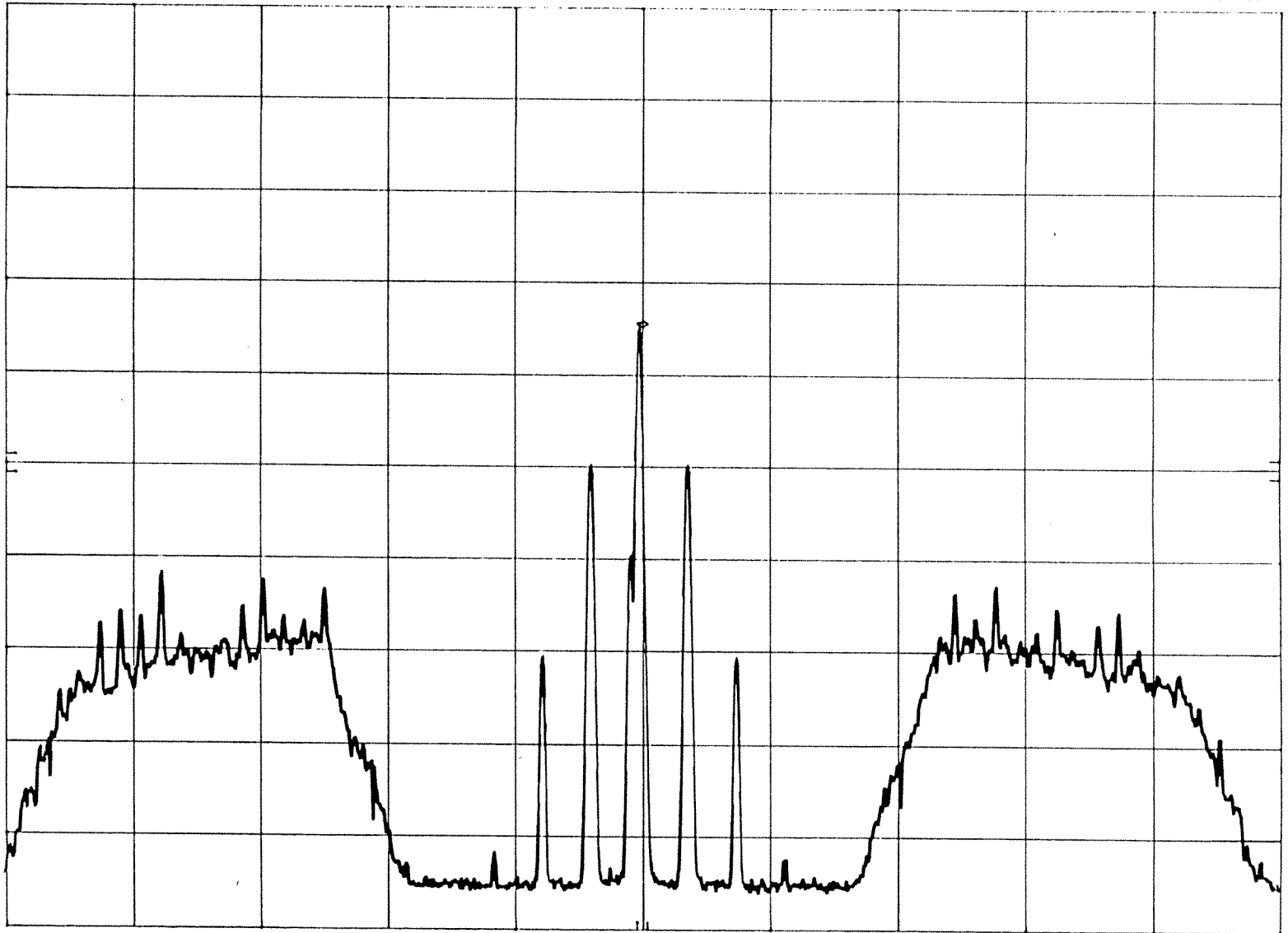
VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM1 CO CHANNEL 9/1/94 11: 12  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.100 0 MHz  
-34.50 dBm

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

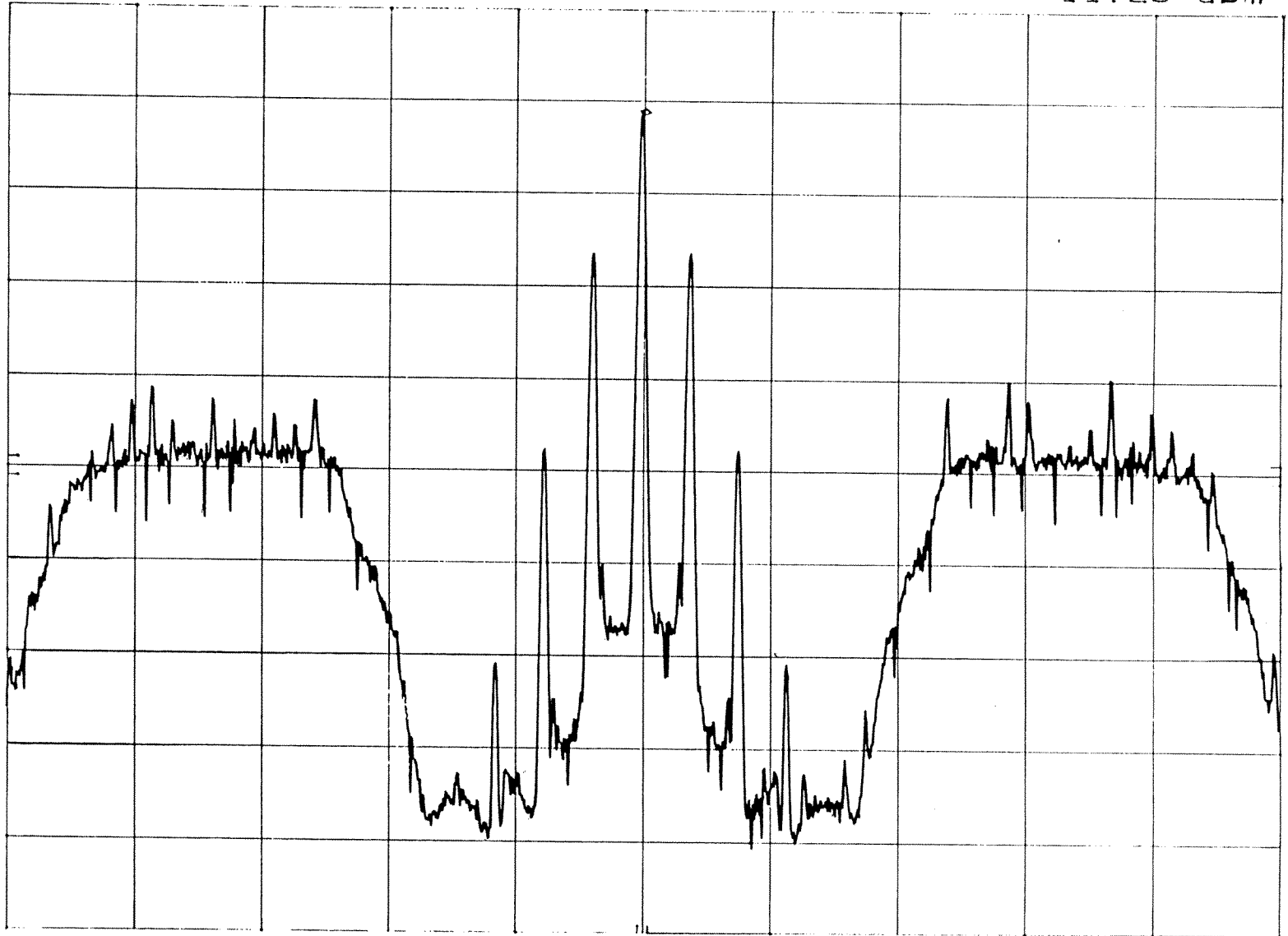
SPAN 500 kHz  
SWP 50.0 sec

USADR FM1 10/17/94 09:53

MKR 94.100 0 MHz  
-11.20 dBm

EIA REF 0.0 dBm ATTEN 10 dB

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec



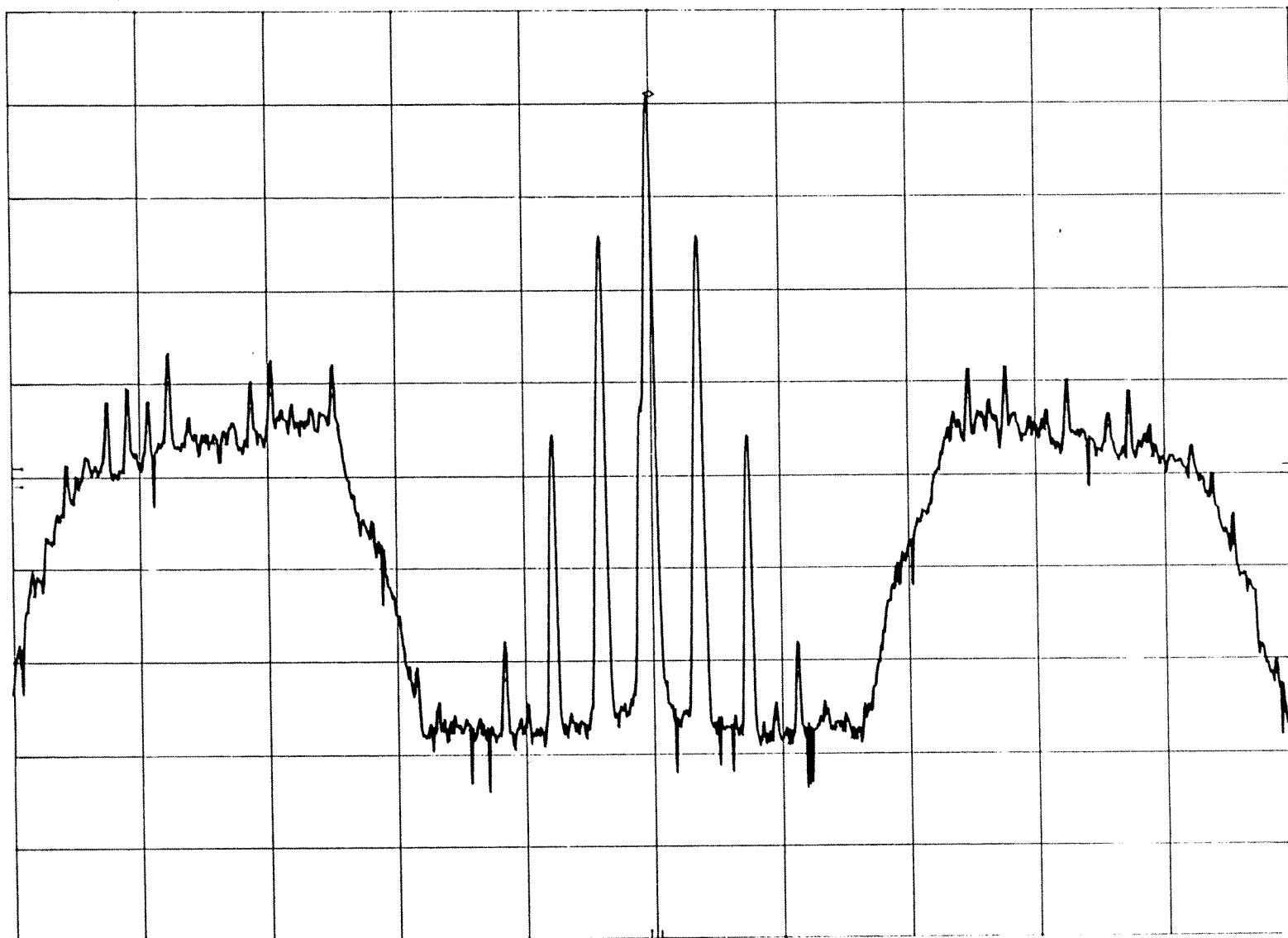
USADR FM1 CO-CHANNEL 10/17/94 10:23

MKR 94.100 0 MHz

EIA REF -30.0 dBm ATTN 10 dB

-39.00 dBm

10 dB/



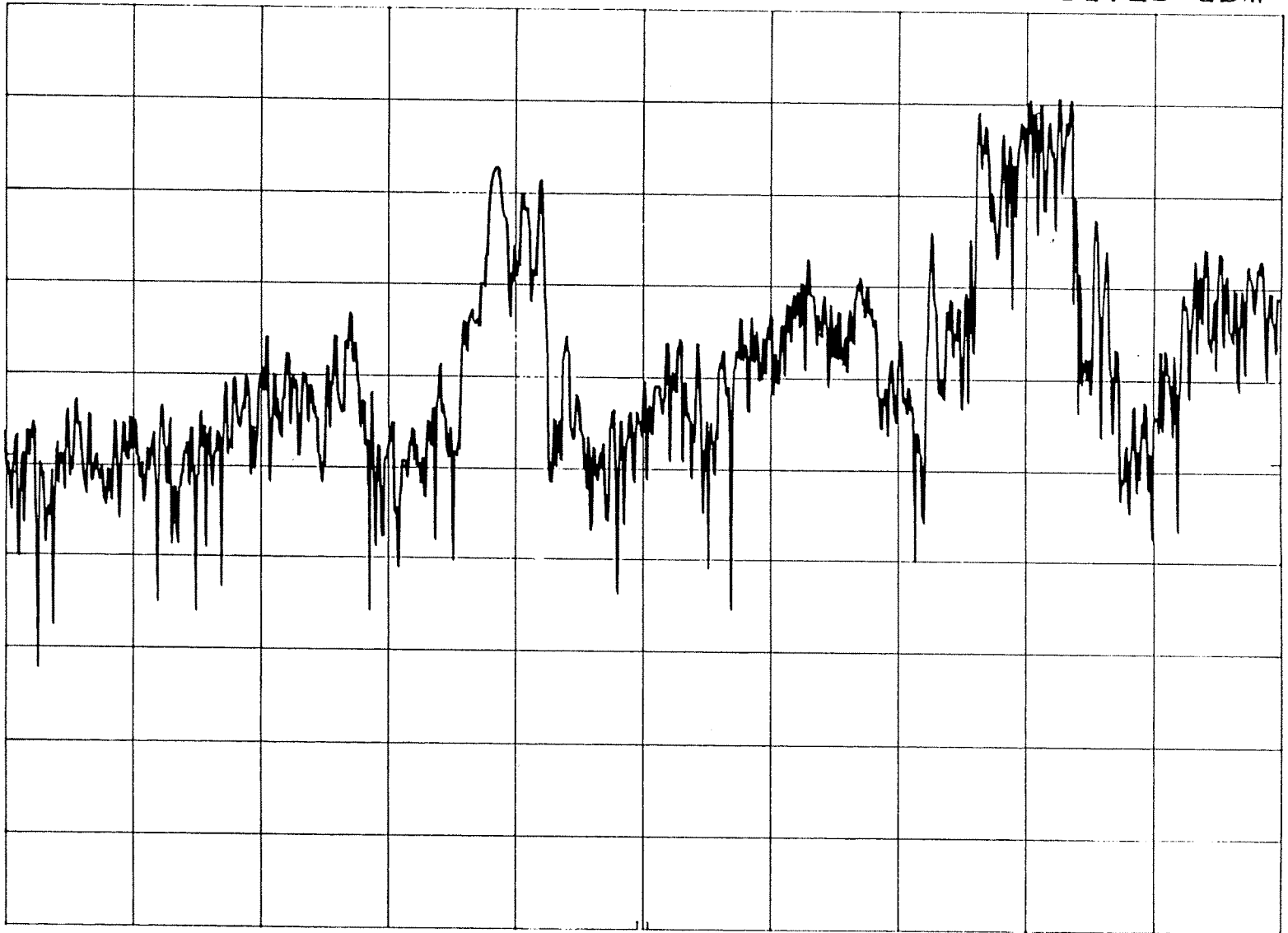
CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

USADR FM1 LOWER 2nd ADJ TOA D-3 10/17/94 16:08R 94.108 MHz  
EIA REF -50.0 dBm ATTEN 10 dB -61.20 dBm

10 dB/



CENTER 93.80 MHz

RES BW 10 kHz

VBW 30 kHz

SPAN 1.00 MHz

SWP 30.0 msec

USADR FM1 10/26/94 09:48

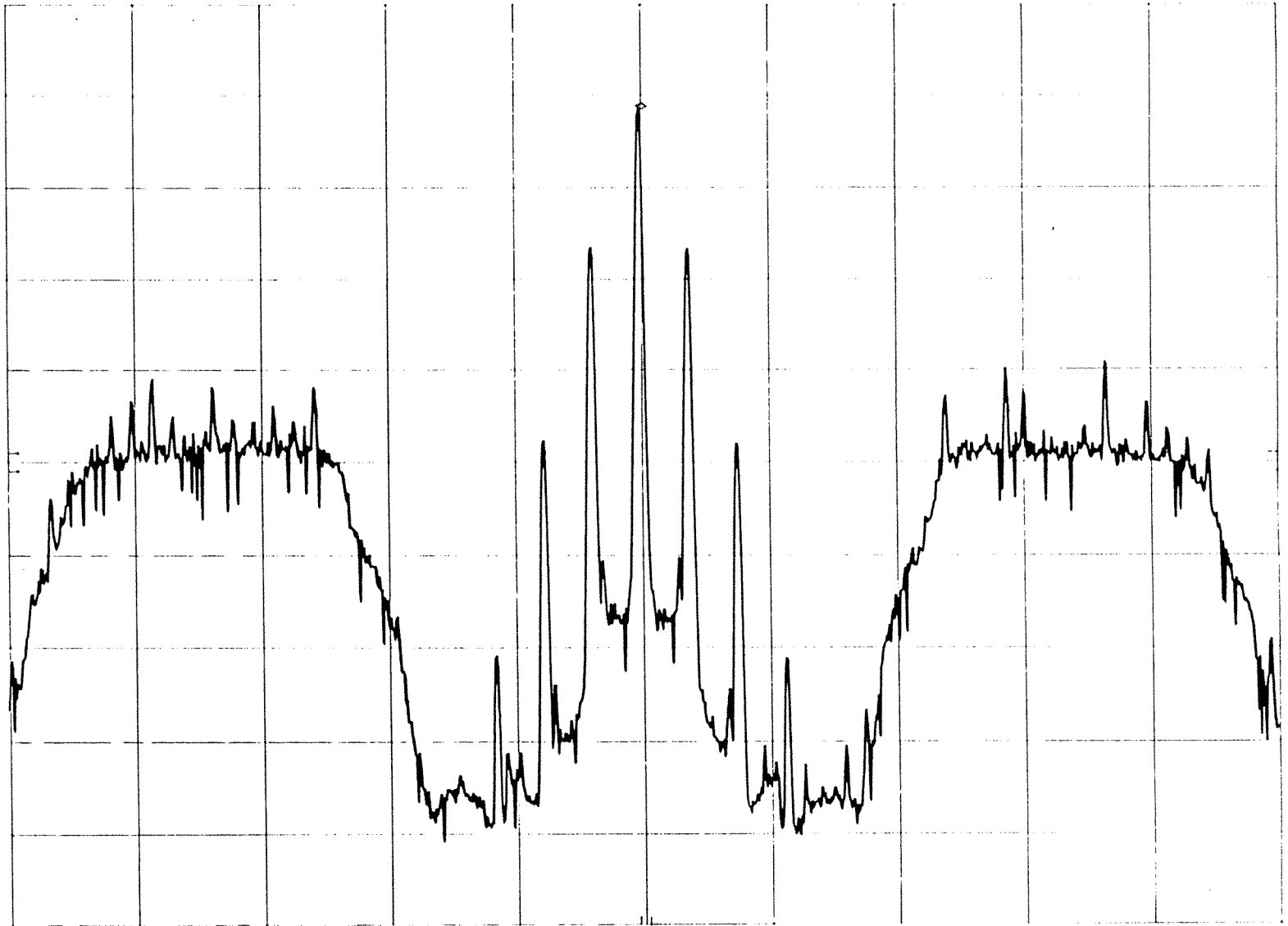
MKR 94.100 0 MHz

EIA REF 0.0 dBm

ATTEN 10 dB

-11.20 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

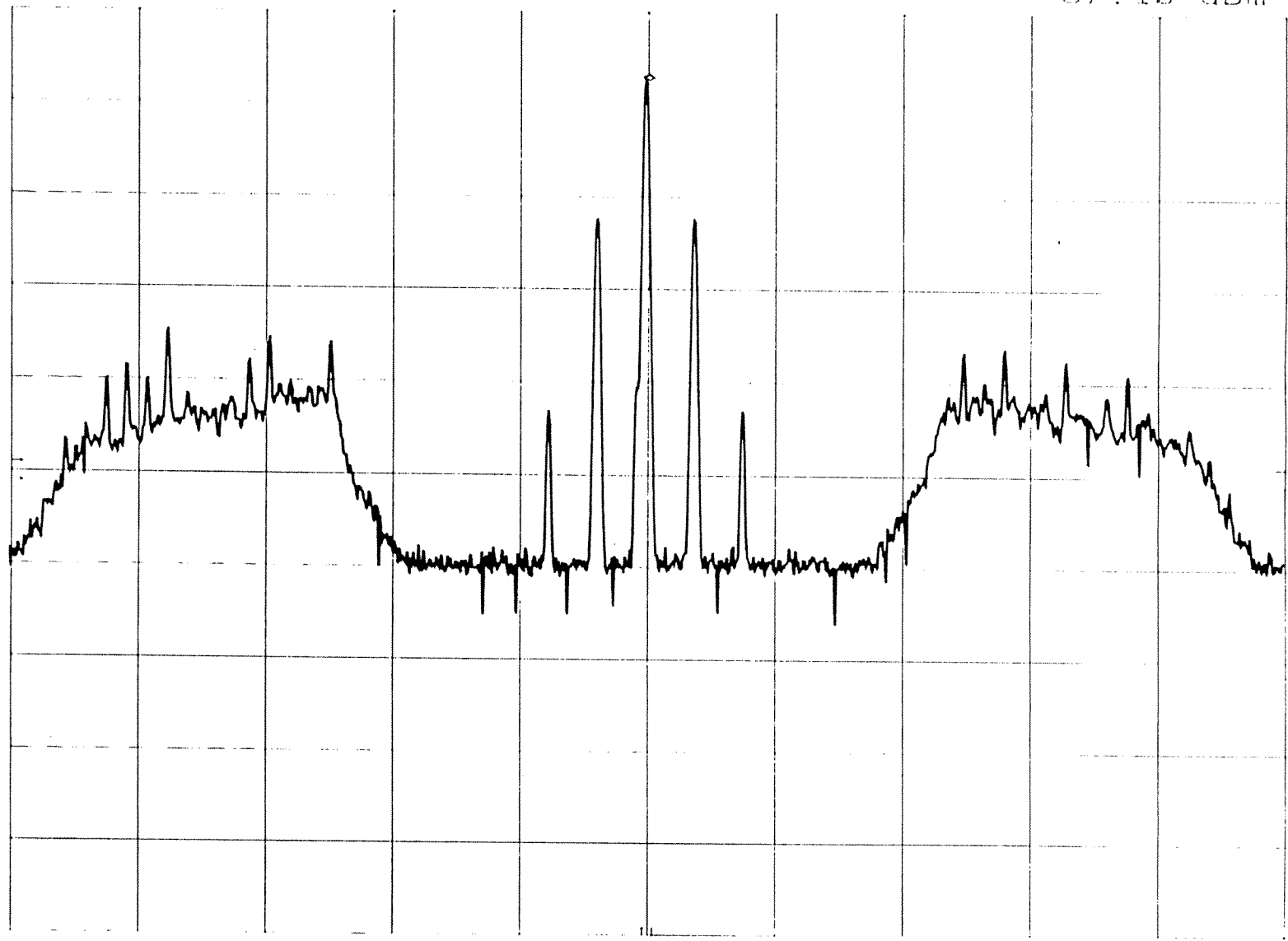
VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

USADR FM1 CO-CHANNEL AT 3W IN 10/26/94 09:00:00 EIR 94.100 0 MHz  
EIA REF -50.0 dBm ATTEN 10 dB -57.10 dBm

10 dB/



CENTER 94.100 MHz SPAN 500 kHz  
RES BW 1 kHz VBW 30 Hz SWP 50.0 sec

USADR FM1 12/12/94 13:31

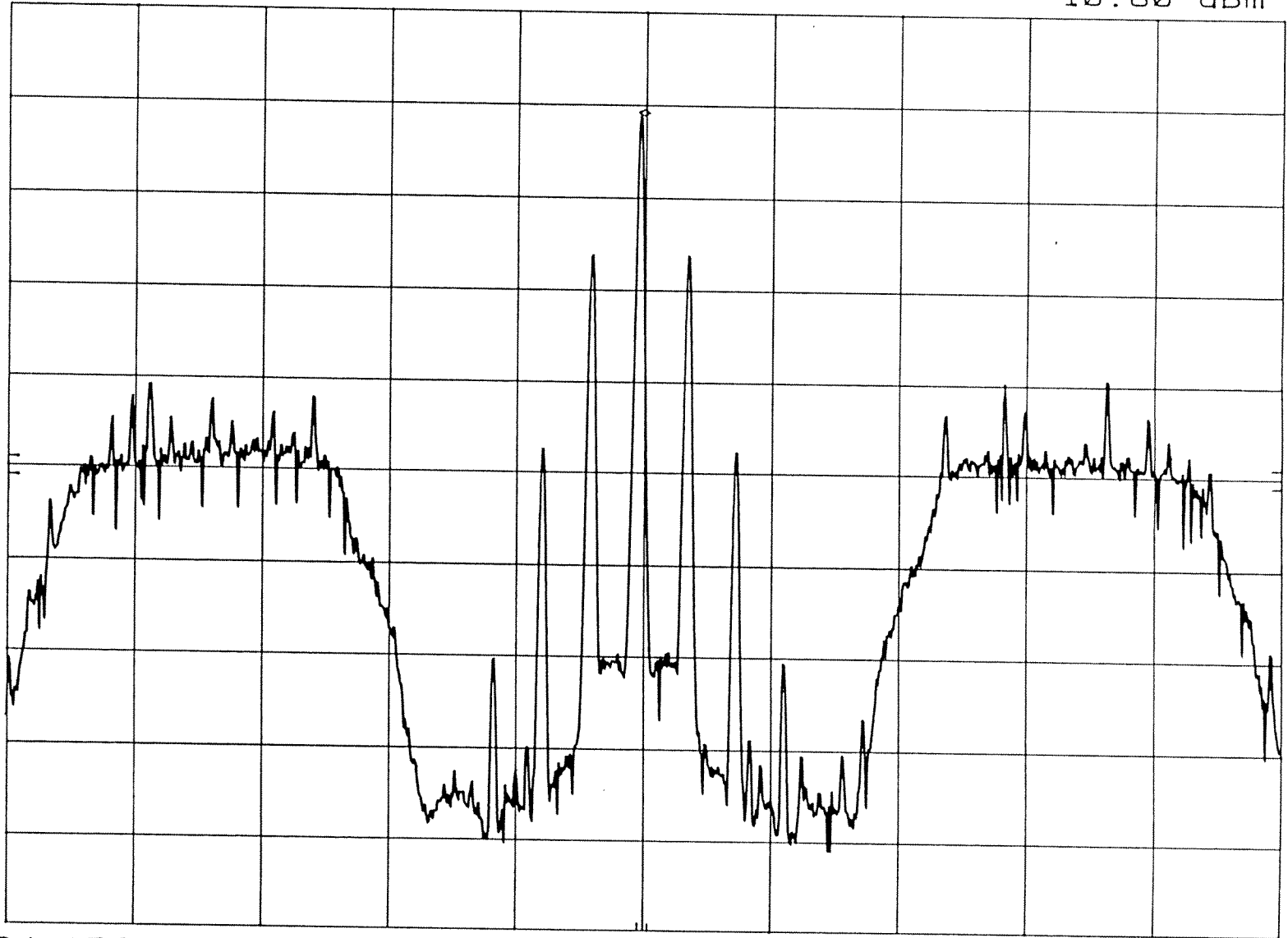
EIA REF 0.0 dBm

ATTEN 10 dB

MKR 94.099 0 MHz

-10.80 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

# **Appendix A1 – Digital Test Results USA Digital Radio AM**

# EIA Digital Audio Radio Test Laboratory

Proponent: <b>USADR AM</b>	
Code:	I
Digital Band Width:	4.00E+04 Hz
Composite Band Width:	4.00E+04 Hz

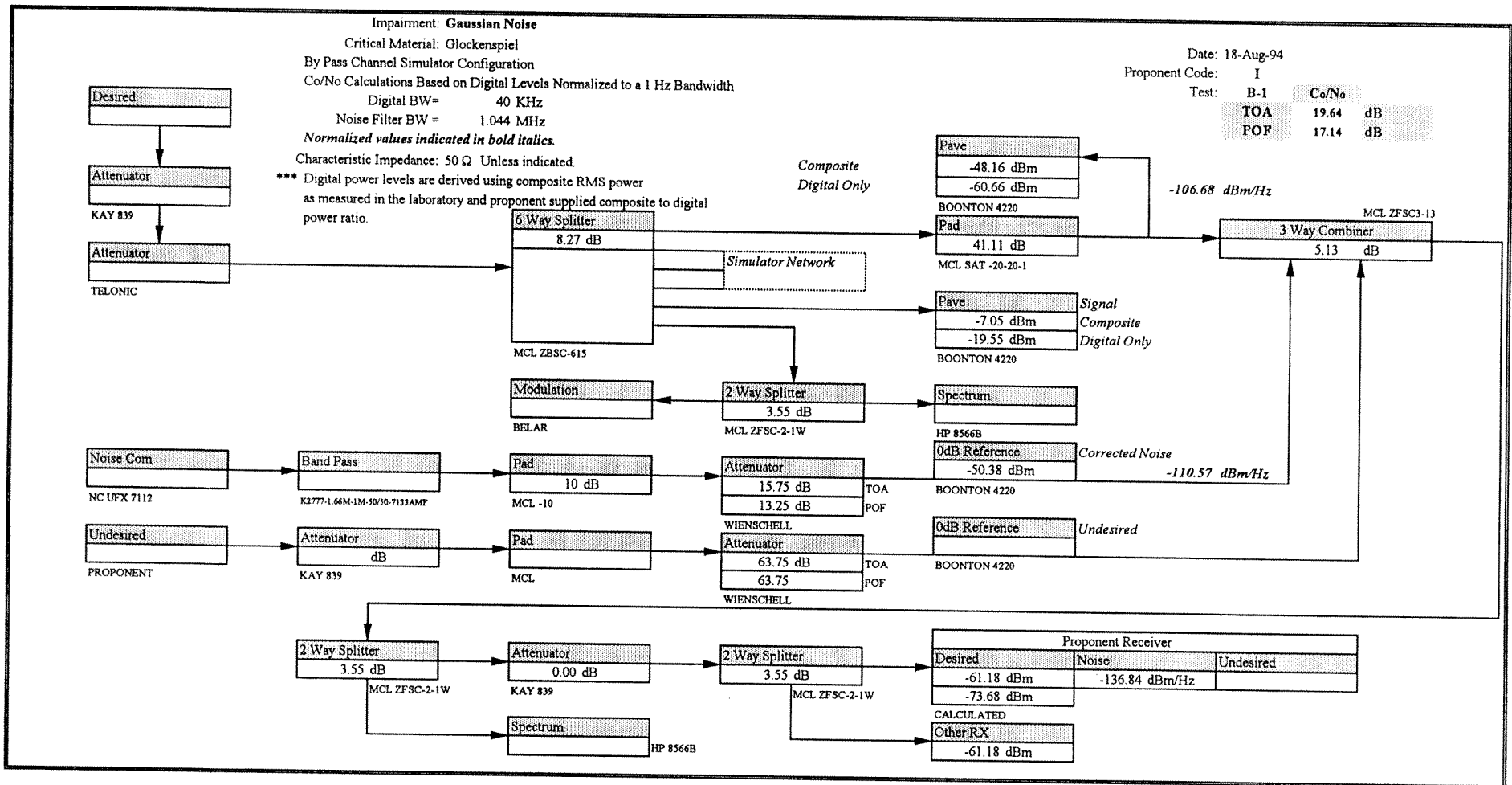
AI

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-1	<b>Gaussian Noise</b>		
<b>Proponent</b>				
<b>Code:</b>	I			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	15.75	13.25	dB
	Co/No	19.64	17.14	dB
	EO&C	TOA      Small pops and clicks.		
	POF	POF      Muting as well as large pops and clicks.		
<b>Soprano</b>		TOA	POF	
	Attenuator	15.75	13.75	dB
	Co/No	19.64	17.64	dB
	EO&C	TOA      Small pop or click.		
	POF	POF      Muting as well as large pops and clicks.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	16.00	14.00	dB
	Co/No	19.89	17.89	dB
	EO&C	TOA      Small pop.		
	POF	POF      Muting as well as large pops and clicks.		
<b>Notes:</b> Recording Reference:      DAR30222.DAT Testers:                              DML,DS,EB Date:                                      18-Aug-94				



# EIA Digital Audio Radio Test Laboratory



# EIA Digital Audio Radio DAT Recording Log

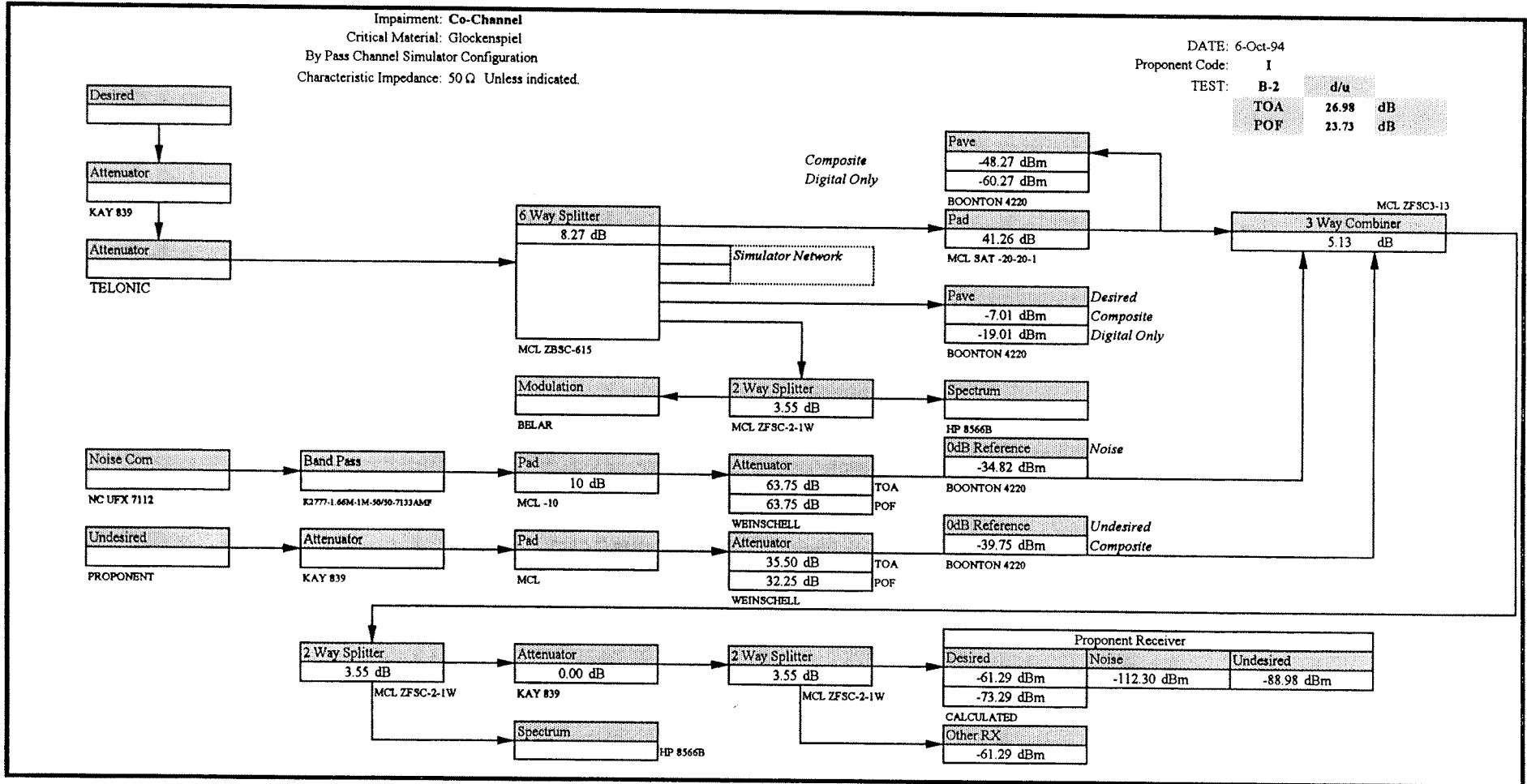
DAT File Number	Time Code		Program ID #		Description	Attn
	Start	Stop				
DAR30222.DAT 18-Aug-94			1	2	Glockenspiel Clear Channel	63.75
			3	4		17.25
			5	6		16.75
			7	8		16.25
			9	10	TOA lab	15.75
			11	12		15.25
			13	14		14.75
			15	16		14.25
			17	18		13.75
			19	20	POF lab	13.25
			21	22		63.75
			23	24	Sync	12.75
			25	26	Soprano Clear Channel	63.75
			27	28		17.25
			29	30		16.75
			31	32		16.25
			33	34	TOA lab	15.75
			35	36		15.25
			37	38		14.75
			39	40		14.25
			41	42	POF lab	13.75
			43	44		63.75
			45	46	Sync	13.25
			47	48	Clarinet Clear Channel	63.75
			49	50		17.50
			51	52		17.00
			53	54		16.50
			55	56	TOA lab	16.00
			57	58		15.50
			59	60		15.00
			61	62		14.50
			63	64	POF lab	14.00
			65	66		63.75
			67	68	Sync	13.50

Code: I  
Impairment: Gaussian Noise

## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-2	<b>Co-Channel</b>		
<b>Proponent</b>				
<b>Code:</b>	I			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	34.50	32.25	dB
	d/u	25.98	23.73	dB
	TOA	Small pops in left ear.		
EO&C	POF	High cut, warbles and some muting.		
<b>Soprano</b>		TOA	POF	
	Attenuator	34.75	32.25	dB
	d/u	26.23	23.73	dB
	TOA	Small pops.		
EO&C	POF	High cut, warbles and some muting.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	35.25	32.75	dB
	d/u	26.73	24.23	dB
	TOA	Small background pops and clicks.		
EO&C	POF	High cut and warbles.		
<b>Notes:</b> Recording Reference:    DAR30240.DAT Testers:                            DML,RMc Date:                                6-Oct-94				

# EIA Digital Audio Radio Test Laboratory



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn
	Start	Stop						
DAR30240.DAT 6-Oct-94			1	2			Glockenspiel Clear Channel	63.75
			3	4				36.00
			5	6			35.50	
			7	8			35.00	
			9	10			TOA lab	34.50
			11	12			34.00	
			13	14			33.50	
			15	16			33.00	
			17	18			32.50	
			19	20			POF lab	32.25
			21	22			31.75	
			23	24			Soprano Clear Channel	63.75
			25	26			36.25	
			27	28			35.75	
			29	30			35.25	
			31	32	33	34	TOA lab	34.75
			35	36			34.25	
			37	38			33.75	
			39	40			33.25	
			41	42			32.75	
			43	44			POF lab	32.25
			45	46			31.75	
			47	48			Clarinet Clear Channel	63.75
			49	50			36.75	
			51	52			36.25	
			53	54			35.75	
			55	56	57	58	TOA lab	35.25
			59	60			34.75	
			61	62			34.25	
			63	64			33.75	
			65	66			33.25	
			67	68			POF lab	32.75
			69	70			32.25	

Code: I  
Impairment: Co-Channel

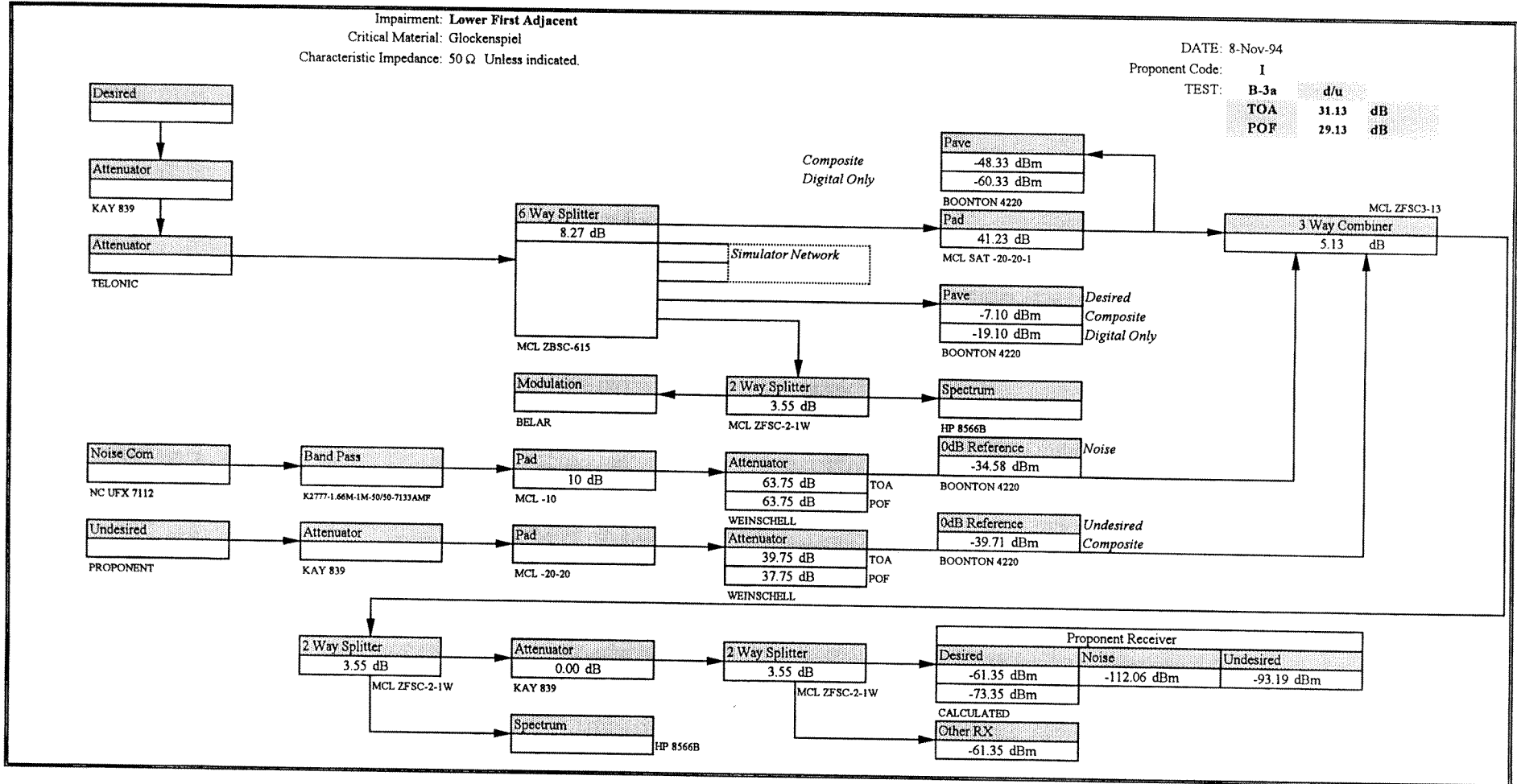
## EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>B-3a</b>	<b>Lower First Adjacent</b>		
<b>Proponent</b>				
<b>Code:</b>	<b>I</b>			Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	39.75	37.75	dB
	d/u	31.13	29.13	dB
	TOA	Small chirp / burst of pops or clicks.		
EO&C	POF	Excessive background noise and muting.		
<b>Soprano</b>		TOA	POF	
	Attenuator	39.75	36.75	dB
	d/u	31.13	28.13	dB
	TOA	Small burst of pops.		
EO&C	POF	Excessive background noise and muting.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	39.75	38.25	dB
	d/u	31.13	29.63	dB
	TOA	Drop out or mute.		
EO&C	POF	Excessive muting and background noise.		
<b>Notes:</b>		Recording Reference:	DAR30278.DAT	DAR30279.DAT
		Testers:	DML,RMc	
		Date:	8-Nov-94	

# EIA Digital Audio Radio Test Laboratory

Impairment: Lower First Adjacent  
 Critical Material: Glockenspiel  
 Characteristic Impedance: 50 Ω Unless indicated.

DATE: 8-Nov-94  
 Proponent Code: I  
 TEST: B-3a d/u  
 TOA 31.13 dB  
 POF 29.13 dB



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID#				Description	Attn	
	Start	Stop	1	2	3				
DAR30278.DAT 8-Nov-94			1	2	3		Glockenspiel Clear Channel	63.75	
			4	5	6			41.25	
			7	8	9			40.75	
			10	11	12			40.25	
			13	14	15	16	17	TOA lab	39.75
			18	19	20				39.25
			21	22	23				38.75
			24	25	26				38.25
			27	28	29				37.75
			30	31	32			POF lab	37.25
			33	34	35				36.75
			36	37	38			Glockenspiel Clear Channel	63.75
			39	40	41				42.25
			42	43	44				41.75
			45	46	47				41.25
			48	49	50				40.75
			51	52	53				40.25
			54	55	56	57	58	TOA lab	39.75
			59	60	61				39.25
			62	63	64				38.75
			65	66	67				38.25
		68	69	70			POF lab	37.75	
		71	72	73				37.25	

Code: I  
Impairment: Lower First Adjacent



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID#				Description	Attn
	Start	Stop	1	2	3	4		
DAR30279.DAT 8-Nov-94			1	2	3	4	Soprano Clear Channel, Disregard #3	63.75
			5	6	7			42.25
			8	9	10			41.75
			11	12	13			41.25
			14	15	16		40.75	
			17	18	19	20	40.25	
			21	22	23	24	25 TOA lab	39.75
			26	27	28		39.25	
			29	30	31		38.75	
			32	33	34		38.25	
			35	36	37		37.75	
			38	39	40		37.25	
			41	42	43		POF lab	36.75
			44	45	46		36.25	
			47	48	49		Clarinet Clear Channel	63.75
			50	51	52			42.25
			53	54	55			41.75
			56	57	58			41.25
			59	60	61		40.75	
			62	63	64		40.25	
			65	66	67	68	69 TOA lab	39.75
		70	71	72		39.25		
		73	74	75		38.75		
		76	77	78		POF lab	38.25	
		79	80	81		37.75		

Code: I  
Impairment: Lower First Adjacent

# EIA Digital Audio Radio Test Laboratory

Test	C-1 Impulse Response				
USADR AM			1 Vp-p at attenuator input.		
Program Material	Glockenspiel		10.00 ns wide pulse		
Pulse Repetition (Hz)	Attn at TOA (dB)	(Vp-p)	Attn at POF (dB)	(Vp-p)	EO&C
100	3.25	0.69	1.75	0.82	TOA small pop or click, POF Excessive noise with some muting.
200	4.50	0.60	3.25	0.69	TOA small pop or click, POF Excessive noise with some muting.
333	5.50	0.53	4.25	0.61	TOA small pop or click, POF Excessive noise with some muting.
666	9.25	0.34	8.25	0.39	TOA small pop or click, POF Excessive noise with some muting.
1000	11.50	0.27	10.25	0.31	TOA small pop or click, POF Excessive noise with some muting.
Additional Comments:					
Test Date: 26-Jul-94					
Testers: DML, TK, DS		Signal Level at Receiver: -70.00 dBm			

EIA Digital Audio Radio Test Laboratory

Test C-2 CW Response									
USADR AM									
Program Material Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF + 12
1	1.630	0	0	0	17	1.662	0	0	1
2	1.632	0	0	0	18	1.664	0	0	1
3	1.634	0	0	0	19	1.666	0	1	2
4	1.636	0	0	0	20	1.668	0	1	2
5	1.638	0	0	0	21	1.670	0	0	0
6	1.640	0	0	0	22	1.672	0	2	2
7	1.642	2	2	2	23	1.674	1	2	2
8	1.644	2	2	2	24	1.676	1	2	2
9	1.646	2	2	2	25	1.678	1	2	2
10	1.648	2	2	2	26	1.680	0	0	0
11	1.650	0	0	0	27	1.682	0	0	0
12	1.652	0	0	2	28	1.684	0	0	0
13	1.654	0	1	2	29	1.686	0	0	0
14	1.656	0	0	2	30	1.688	0	0	0
15	1.658	0	0	1	31	1.690	0	0	0
16	1.660	0	0	0					

Test Date: 7-Oct-94                      0 dB Attenuator Reference: -39.5 dBm

Testers: DML, ST, EB                      0=CLEAN AUDIO                      1=APPROXIMATE TOA                      2 ≥ POF

    POF Attn=55.75 dB                      POF d/u=                      46.95 dB

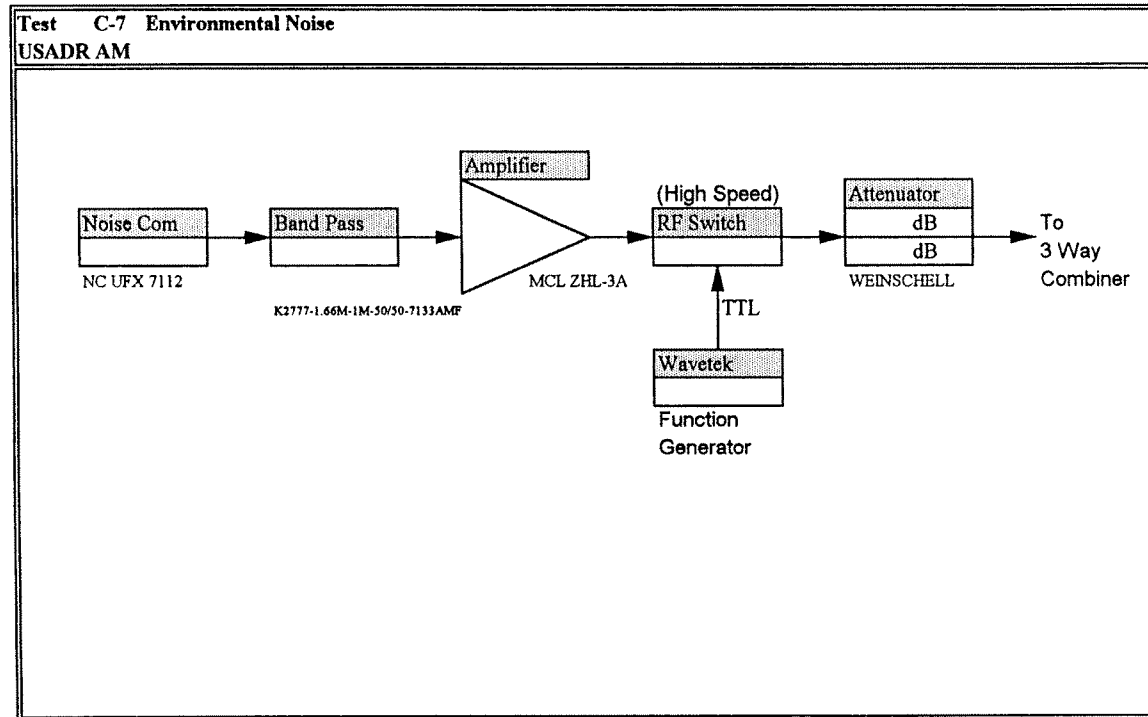
EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>C-4</b>	<b>Weak Signal Sensitivity</b>				
<b>USADR AM</b>						
<b>Program Material</b>	<b>Glockenspiel</b>					
<table border="1"><tr><td style="text-align: center;">TOA (dBm)</td><td style="text-align: center;">POF (dBm)</td></tr><tr><td style="text-align: center;"><math>-89 \leq \text{TOA} &lt; -88</math></td><td style="text-align: center;"><math>-91 &lt; \text{POF} \leq -90</math></td></tr></table>			TOA (dBm)	POF (dBm)	$-89 \leq \text{TOA} < -88$	$-91 < \text{POF} \leq -90$
TOA (dBm)	POF (dBm)					
$-89 \leq \text{TOA} < -88$	$-91 < \text{POF} \leq -90$					
Test Date: 7-Oct-94						
Testers: DML, ST, EB						

EIA Digital Audio Radio Test Laboratory

Test C-7 Environmental Noise						
USADR AM						
Program Material			Glockenspiel			
	Pulse Width	Period	Digital	EO&C	Analog	
1	500 us	1.33 s	No effect			
2	1 ms	128 ms	No effect			
3	1.8 ms	68.5 ms	Pops and clicks. Level of impairment between TOA and POF.		Spark gap noise.	
4	3.3 ms	1.33 s	Occasional mutes, pops and clicks. Level of impairment between TOA and POF.		Record Scatches	
Test Date: 6-Dec-94						
Testers: DML, RMc			Noise -38.86 dBm	Desired -48.50 dBm	ATTN	TOA 27.50 POF 25.00

# EIA Digital Audio Radio Test Laboratory



EIA Digital Audio Radio Test Laboratory

Test D-Series Co-Channel, 1st and 2nd Adjacent					
USADR AM					
Program Material: Glockenspiel					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	35.25	26.75	dB	Small pop or click.
	POF	32.25	23.75	dB	Excessive noise some muting.
D-2 Lower 1st Adjacent	TOA	41.25	32.75	dB	Small pop or click.
	POF	37.50	29.00	dB	Excessive noise some muting.
Upper 1st Adjacent	TOA	40.25	31.75	dB	Small pop or click.
	POF	36.50	28.00	dB	Excessive noise some muting.
D-3 Lower 2nd Adjacent	TOA	39.75	31.25	dB	Small drop out.
	POF	36.75	28.25	dB	Excessive noise some muting.
Upper 2nd Adjacent	TOA				Symmetry exists.
	POF				
Additional Comments:					
DAT Reference: None					
By Pass Simulator Configuration.					
Test Date:	7-Oct-94			Desired	Undesired
Testers:	DML, ST, EB	6WOUT		-6.78 dBm	
		IL		41.52 dB	
		3WIN		-48.30 dBm	-39.8 dBm

# EIA Digital Audio Radio Test Laboratory

Test USADR AM Program Material: Glockenspiel																					
Scenario																					
	Level	Attn	D/U	Units	EO&C																
With out Fader  RX RF Level -61.0 dBm	TOA	37.25	27.75	dB	Small warble or burst of pops.																
	POF	33.00	23.50	dB	Excessive noise with some muting.																
With Fader	TOA	40.25	30.75	dB	Small warble or burst of pops.																
	POF	36.00	26.50	dB	Excessive noise with some muting.																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 7-Dec-94</td> <td style="width: 20%;"></td> <td style="width: 20%;">Desired</td> <td style="width: 20%;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td>-7.10 dBm</td> <td></td> </tr> <tr> <td></td> <td>IL</td> <td>41.40 dB</td> <td></td> </tr> <tr> <td></td> <td>3WIN</td> <td>-48.50 dBm</td> <td>-39.0 dBm</td> </tr> </table>						Test Date: 7-Dec-94		Desired	Undesired	Testers: DML, RMc	Signal	-7.10 dBm			IL	41.40 dB			3WIN	-48.50 dBm	-39.0 dBm
Test Date: 7-Dec-94		Desired	Undesired																		
Testers: DML, RMc	Signal	-7.10 dBm																			
	IL	41.40 dB																			
	3WIN	-48.50 dBm	-39.0 dBm																		



## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Fading Simulator</span> USADR AM Program Material: Glockenspiel						
Scenario					EO&C	
	Level	Attn	D/U	Units		
With out Fader	TOA	44.50	35.00	dB	Small burst of pops.	
	RX RF Level -61.0 dBm	POF	39.50	30.00	dB	Excessive noise with some muting.
With Fader	TOA	44.50	35.00	dB	Small burst of pops.	
		POF	39.50	30.00	dB	Excessive noise with some muting.
Test Date: 7-Dec-94 <span style="float: right;">Desired</span> Testers: DML, RMc <span style="float: right;">Undesired</span>						
				Signal	-7.10 dBm	
				IL	41.40 dB	
				3WIN	-48.50 dBm	-39.0 dBm

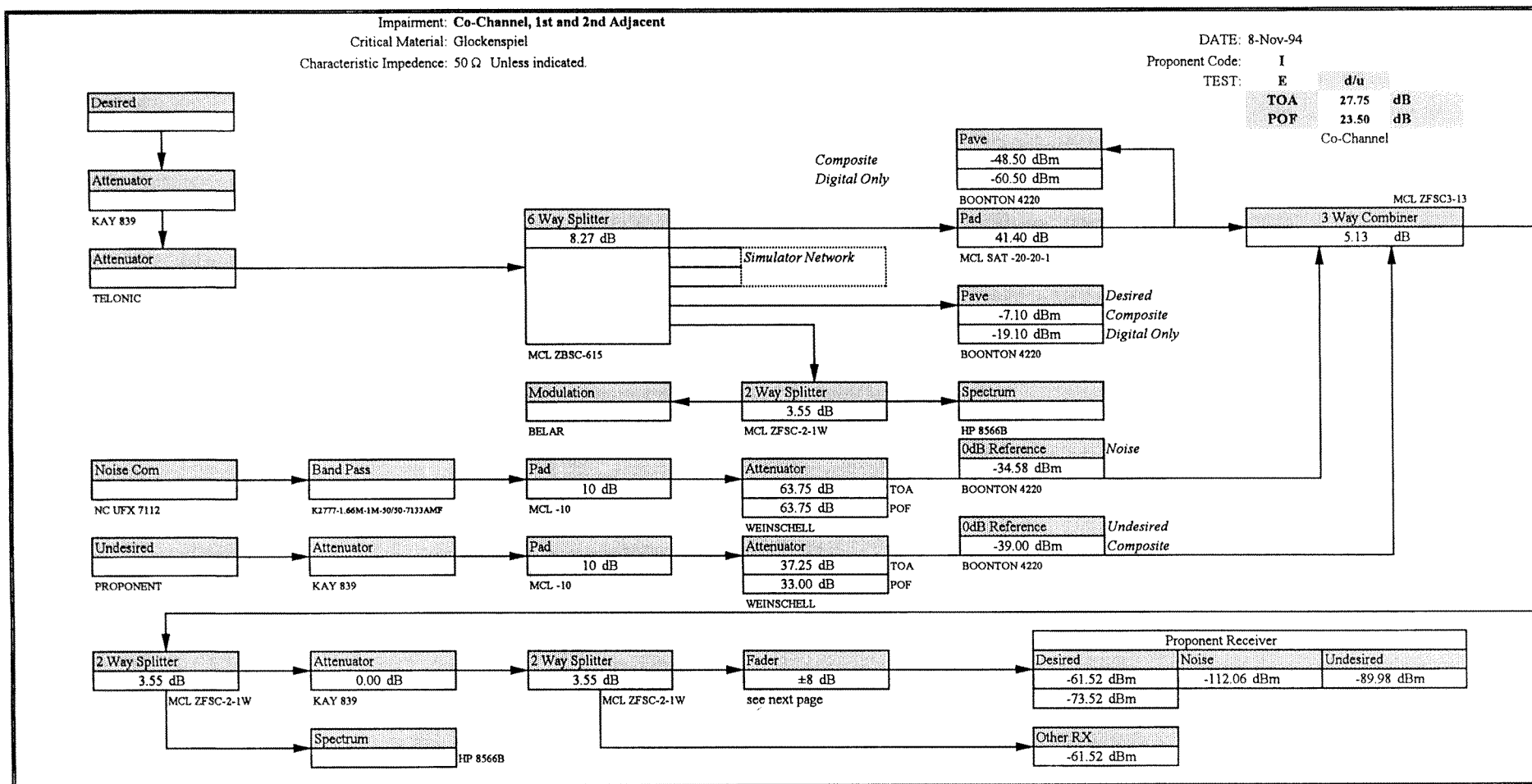
# EIA Digital Audio Radio Test Laboratory

Test E-3 Lower 2nd Adjacent with Fading Simulator																													
USADR AM																													
Program Material: Glockenspiel																													
Scenario																													
	Level	Attn	D/U	Units	EO&C																								
With out Fader	TOA	40.50	31.00	dB	Small burst of pops.																								
	POF	35.50	26.00	dB	Excessive noise with some muting.																								
RX RF Level -61.0 dBm																													
With Fader	TOA	42.50	33.00	dB	Small burst of pops.																								
	POF	37.50	28.00	dB	Excessive noise with some muting.																								
RX RF Level ± 8 dB																													
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 7-Dec-94</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;">Desired</td> <td style="width: 10%;"></td> <td style="width: 30%;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td></td> <td></td> <td>Signal</td> <td>-7.10 dBm</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>IL</td> <td>41.40 dB</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>3WIN</td> <td>-48.50 dBm</td> <td>-39.0 dBm</td> </tr> </table>						Test Date: 7-Dec-94			Desired		Undesired	Testers: DML, RMc			Signal	-7.10 dBm					IL	41.40 dB					3WIN	-48.50 dBm	-39.0 dBm
Test Date: 7-Dec-94			Desired		Undesired																								
Testers: DML, RMc			Signal	-7.10 dBm																									
			IL	41.40 dB																									
			3WIN	-48.50 dBm	-39.0 dBm																								

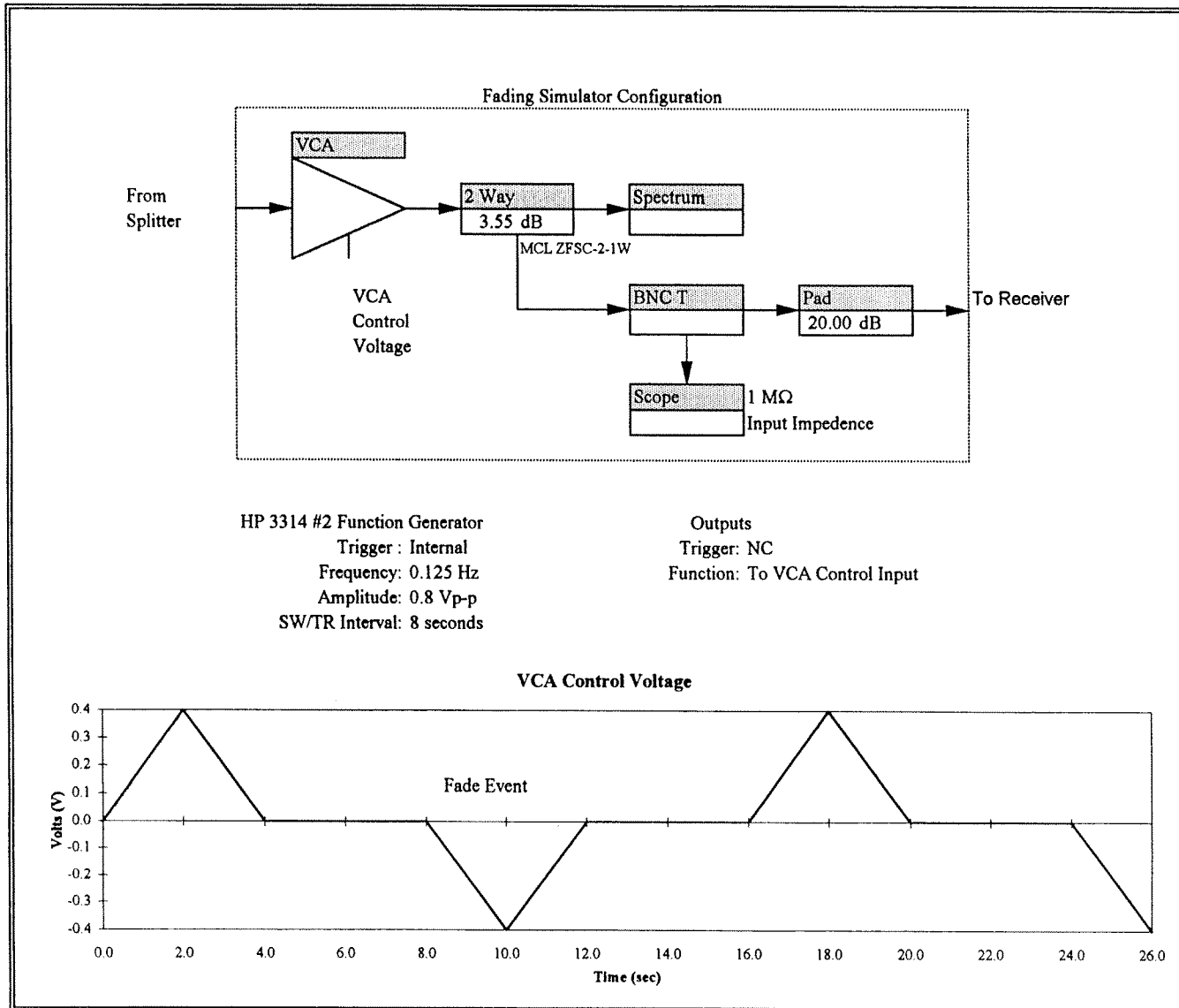
# EIA Digital Audio Radio Test Laboratory

Impairment: Co-Channel, 1st and 2nd Adjacent  
 Critical Material: Glockenspiel  
 Characteristic Impedance: 50 Ω Unless indicated.

DATE: 8-Nov-94  
 Proponent Code: I  
 TEST: E d/u  
 TOA 27.75 dB  
 POF 23.50 dB  
 Co-Channel



# EIA Digital Audio Radio Test Laboratory



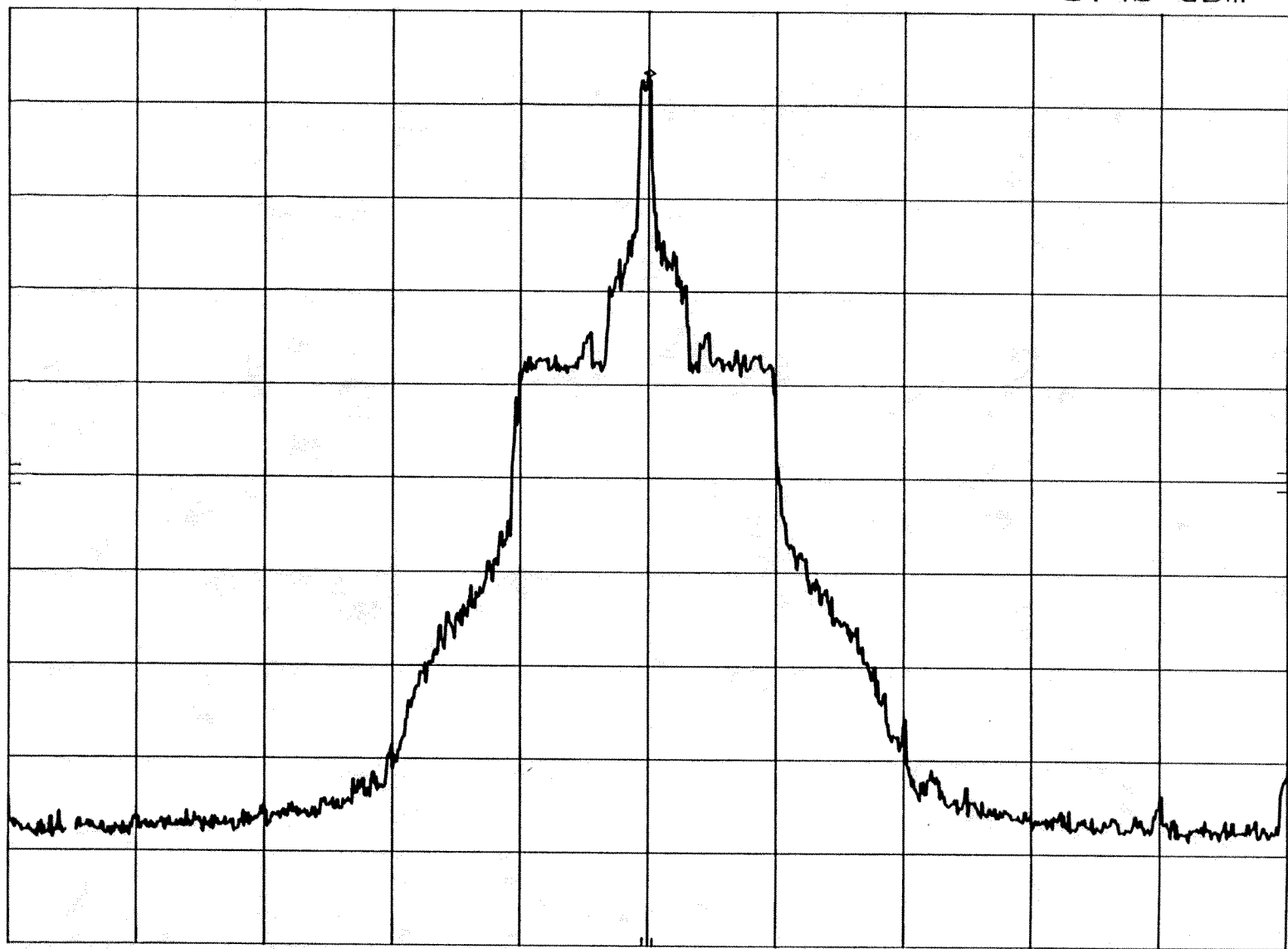
# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-1</b>	<b>Re-Acquisition</b>		
<b>USADR AM</b>				
<b>Program Material</b>		<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Toff (s)</b>		<b>Re-Acquisition Time (s)</b>		
		POF-2	POF-4	POF-6
30		3	3	4
		6	3	3
		4	5	3
		3	3	4
		6	3	4
		Average	4.4	3.4
			3.6	
		POF Attenuator Setting	:	13.25 dB
		Desired Signal Level	:	-48.30 dBm
		Noise 0 dB Reference	:	-34.78 dBm
<b>Additional Comments:</b>				
Re-Acquisition time is the value listed $\pm$ 0.5 seconds.				
<b>Test Date:</b> 7-Oct-94				
<b>Testers:</b> DML, ST, EB				

USA DR AM 5/9/94 MAX HOLD  
REF 10.0 dBm ATTEN 20 dB

MKR 1.660 0 MHz  
3.40 dBm

hp  
10 dB/



CENTER 1.660 MHz  
RES BW 300 Hz  
VBW 300 kHz  
SPAN 200 kHz  
SWP 6.00 sec

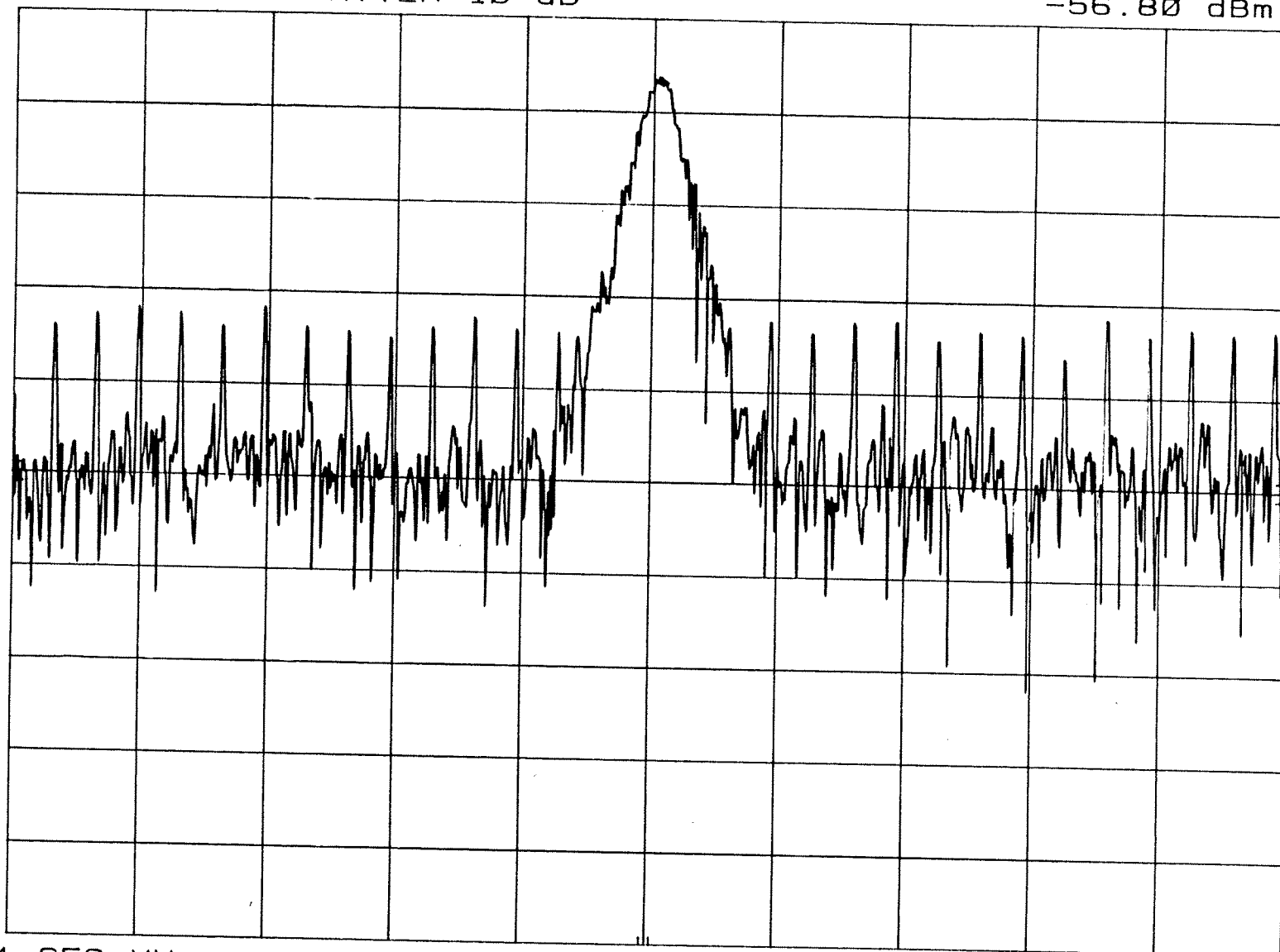
USA DR AM 7/26/94

hp

REF -50.0 dBm ATTEN 10 dB

MKR 1.662 0 MHz  
-56.80 dBm

10 dB/



CENTER 1.659 MHz

RES BW 10 kHz

VBW 30 kHz

SPAN 500 kHz  
SWP 30.0 msec

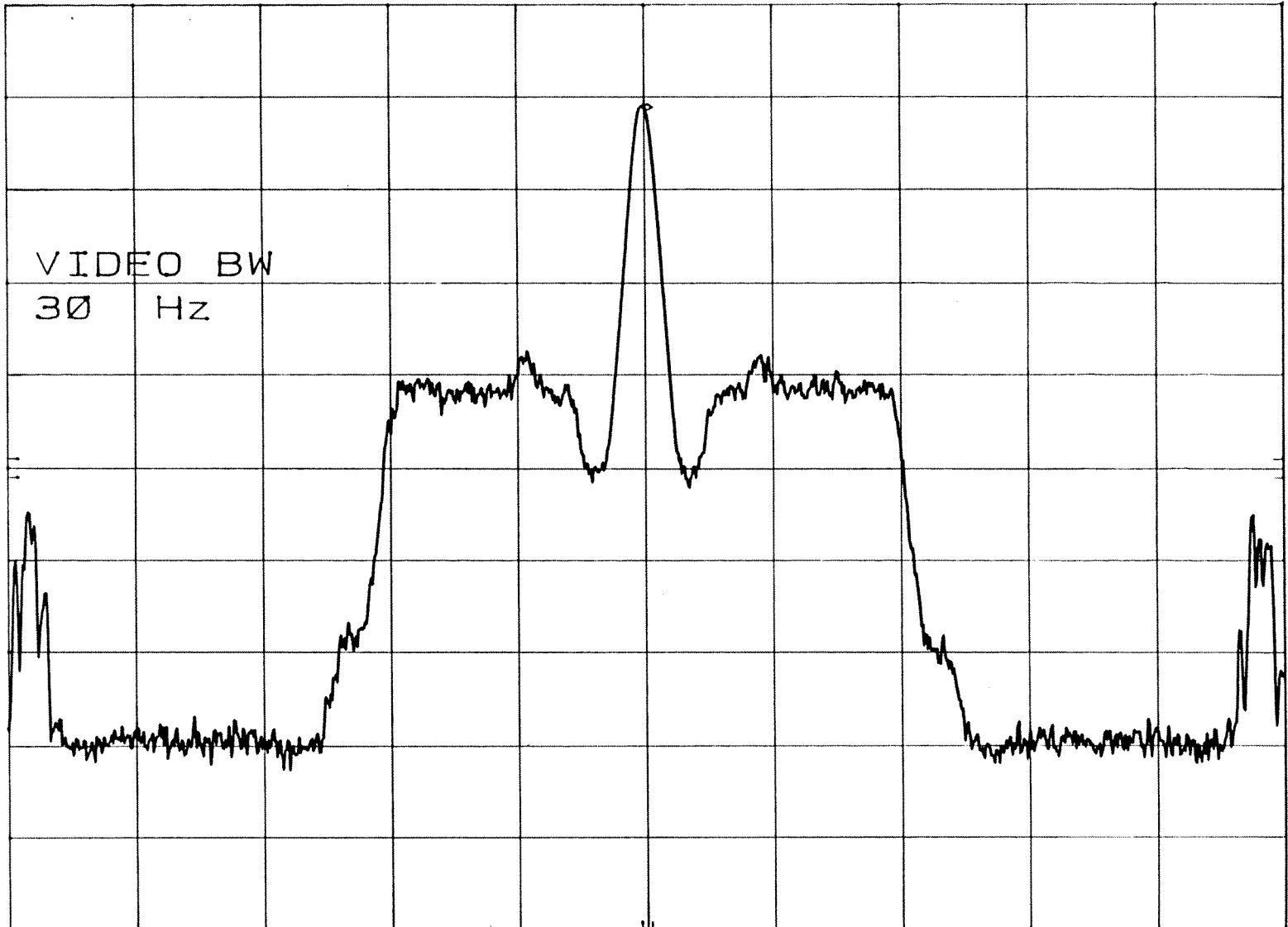
USADR AM CO-CHANNEL 10/6/94 15:38

MKR 1.660 2 MHz

EIA REF -30.0 dBm ATTN 10 dB

-41.10 dBm

10 dB/



CENTER 1.660 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 100 kHz

SWP 10.0 sec

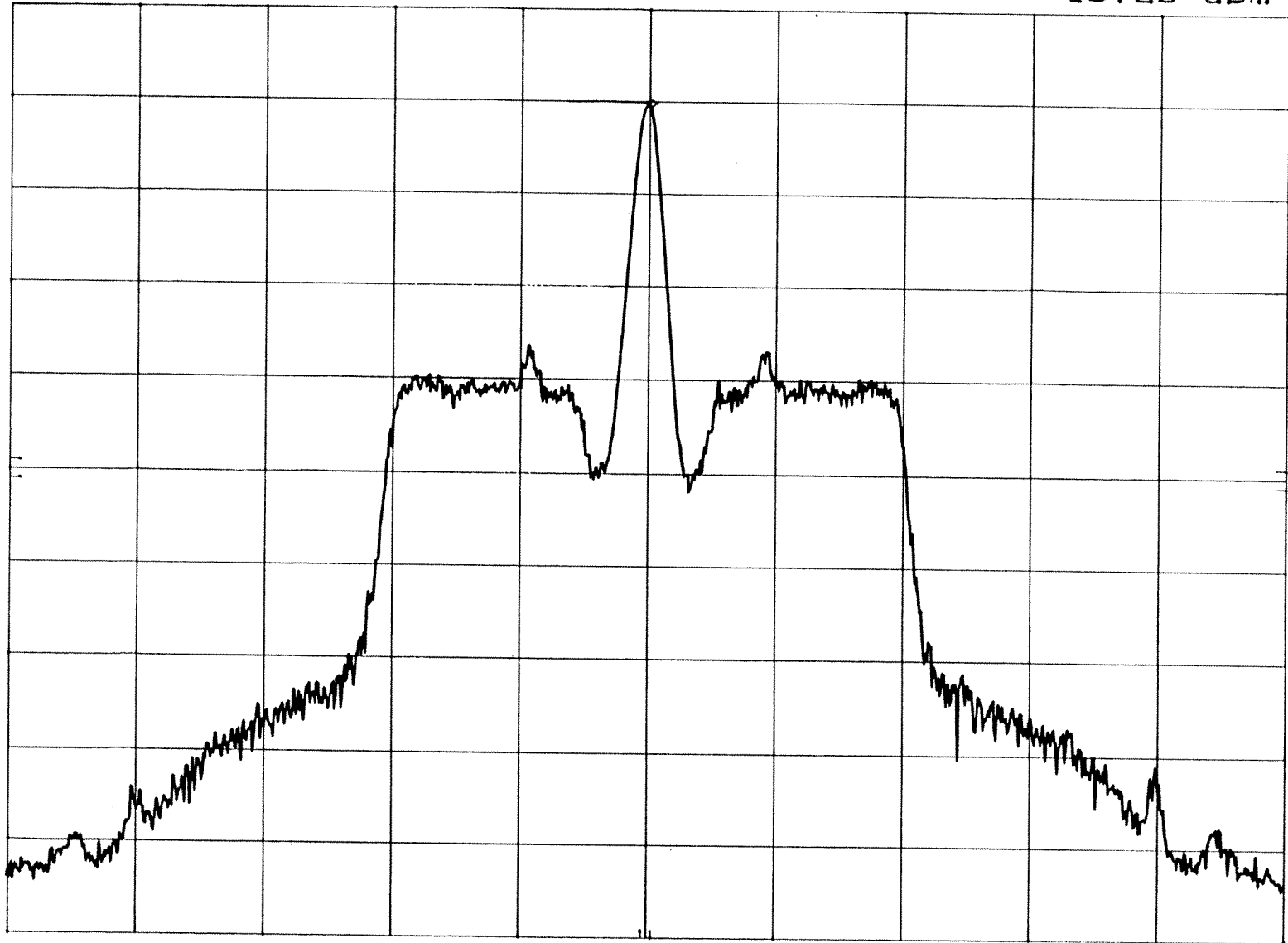


USADR AM 10/6/94 14:57

MKR 1.660 1 MHz  
-10.20 dBm

EIA REF 0.0 dBm ATTN 10 dB

10 dB/



CENTER 1.660 MHz

RES BW 1 kHz

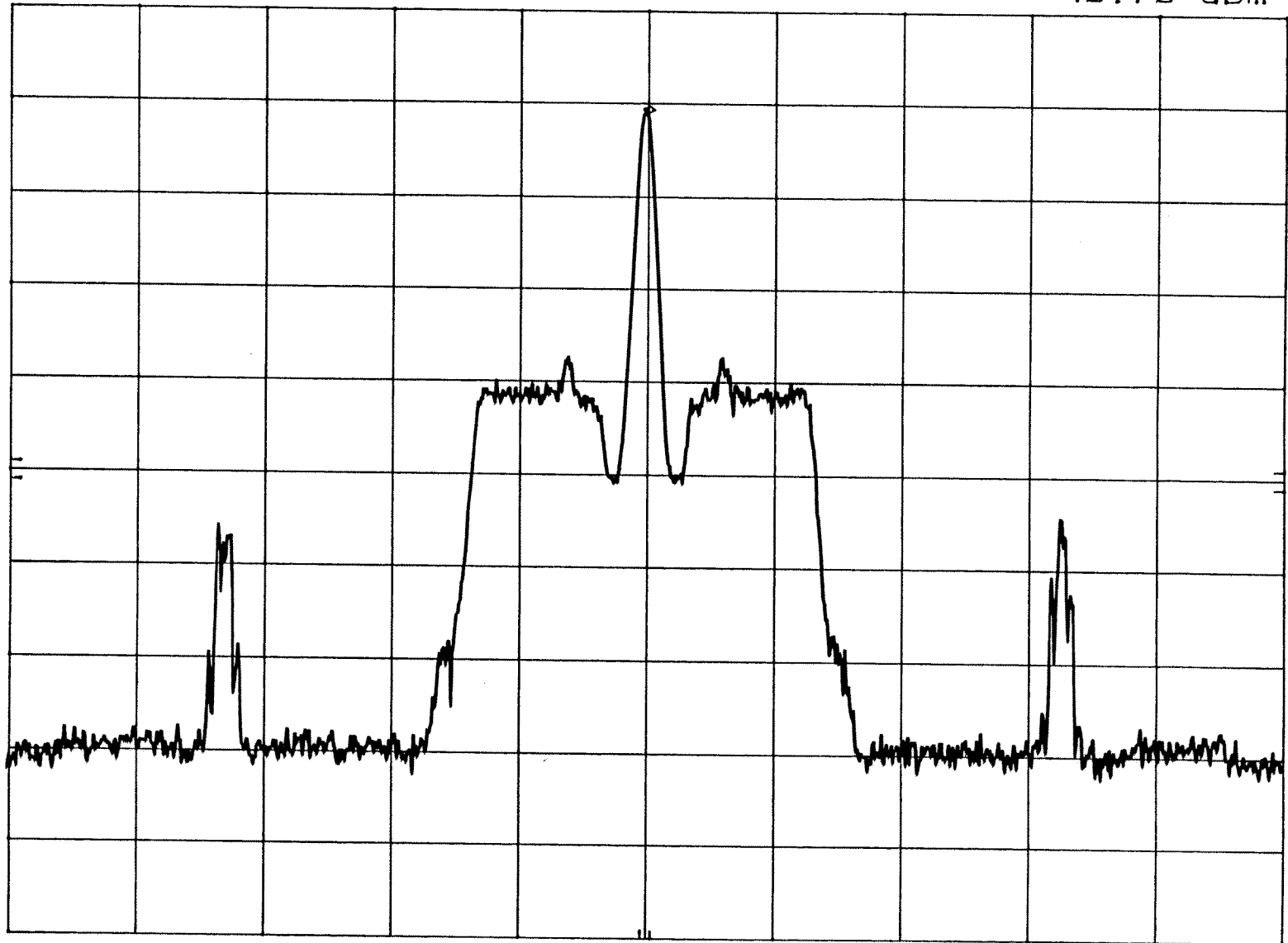
VBW 30 Hz

SPAN 100 kHz  
SWP 10.0 sec

USADR AM LOWER 1st ADJ 11/8/94 11:25  
EIA REF -30.0 dBm ATTEN 10 dB

MKR 1.650 0 MHz  
-40.70 dBm

10 dB/



CENTER 1.650 MHz

RES BW 1 kHz

VBW 30 Hz

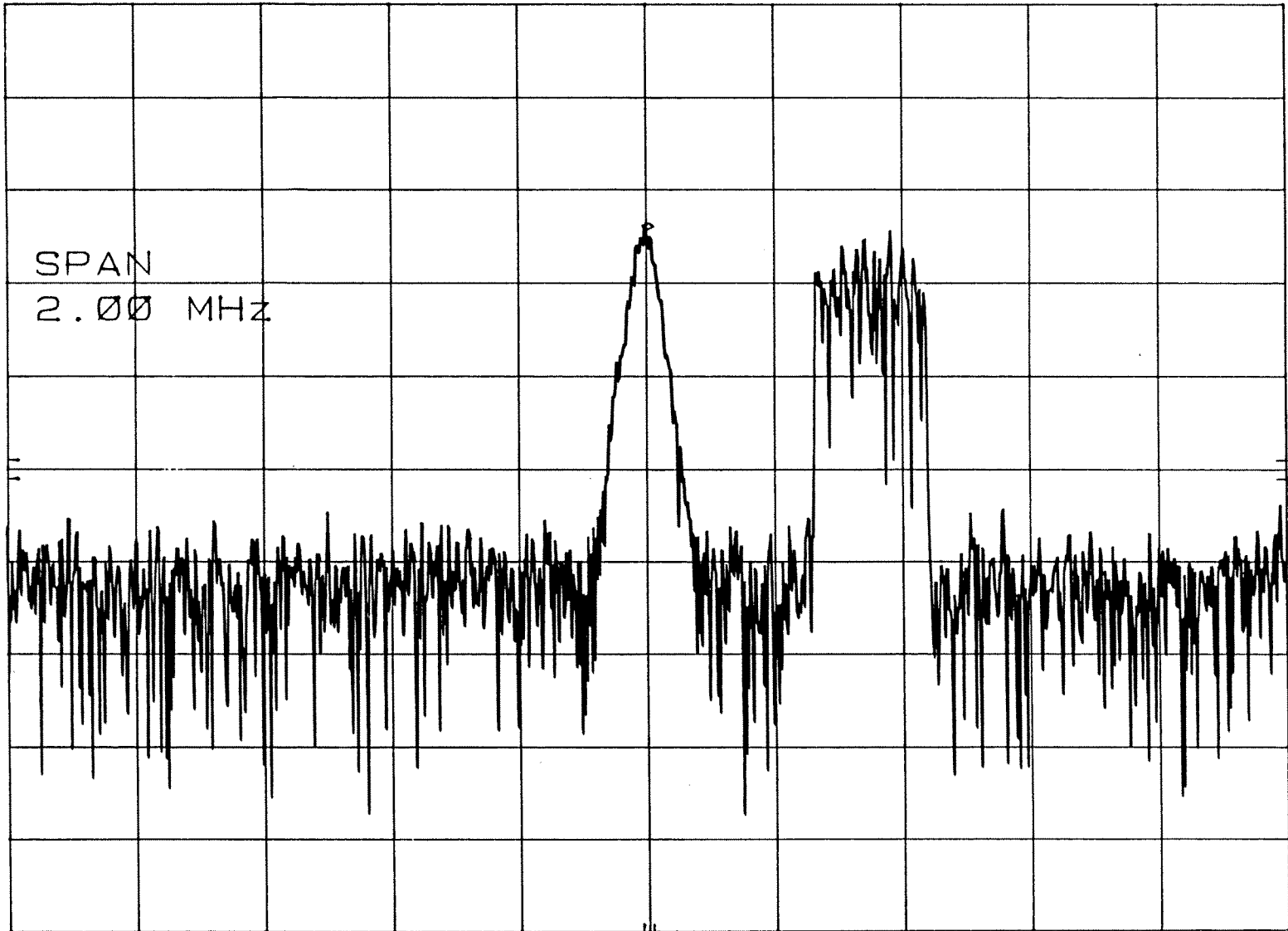
SPAN 150 kHz

SWP 15.0 sec

USADR-AM 12/06/94 C7 NOISE PULSE 10:00  
EIA REF -31.4 dBm ATTEN 10 dB

MKR 1.662 MHz  
-55.40 dBm

10 dB/



CENTER 1.66 MHz  
RES BW 30 kHz

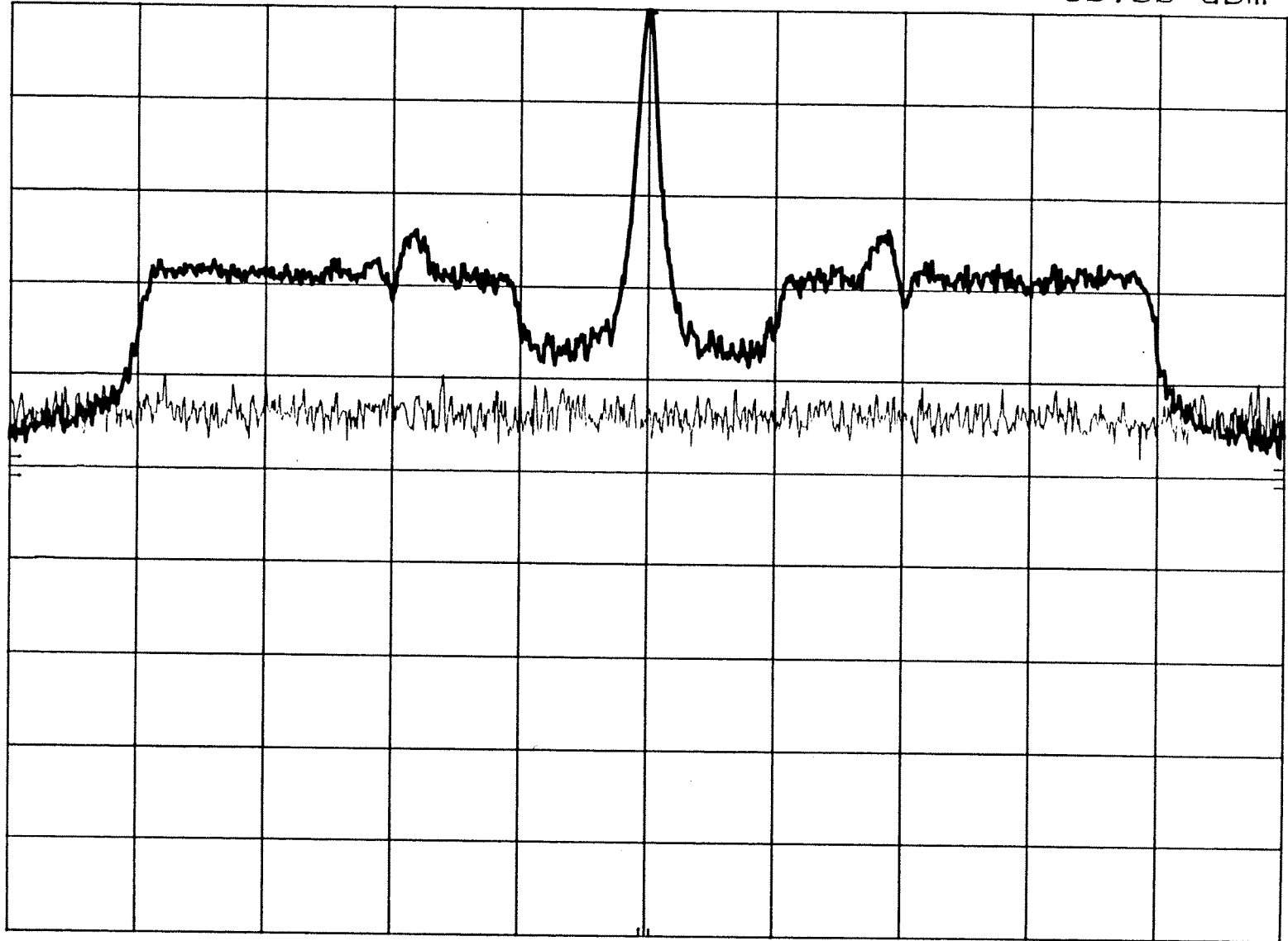
VBW 100 kHz

SPAN 2.00 MHz  
SWP 20.0 msec

USA DR AM 8/8/95 17:29  
REF -60.0 dBm ATTEN 10 dB

MKR 1.660 05 MHz  
-60.30 dBm

hp  
10 dB/



CENTER 1.660 0 MHz  
RES BW 300 Hz

VBW 1 kHz

SPAN 50.0 kHz  
SWP 1.50 sec

USADR AM 10 MIN MAX HOLD 8/9/95 11:00

MKR 1.659 95 MHz

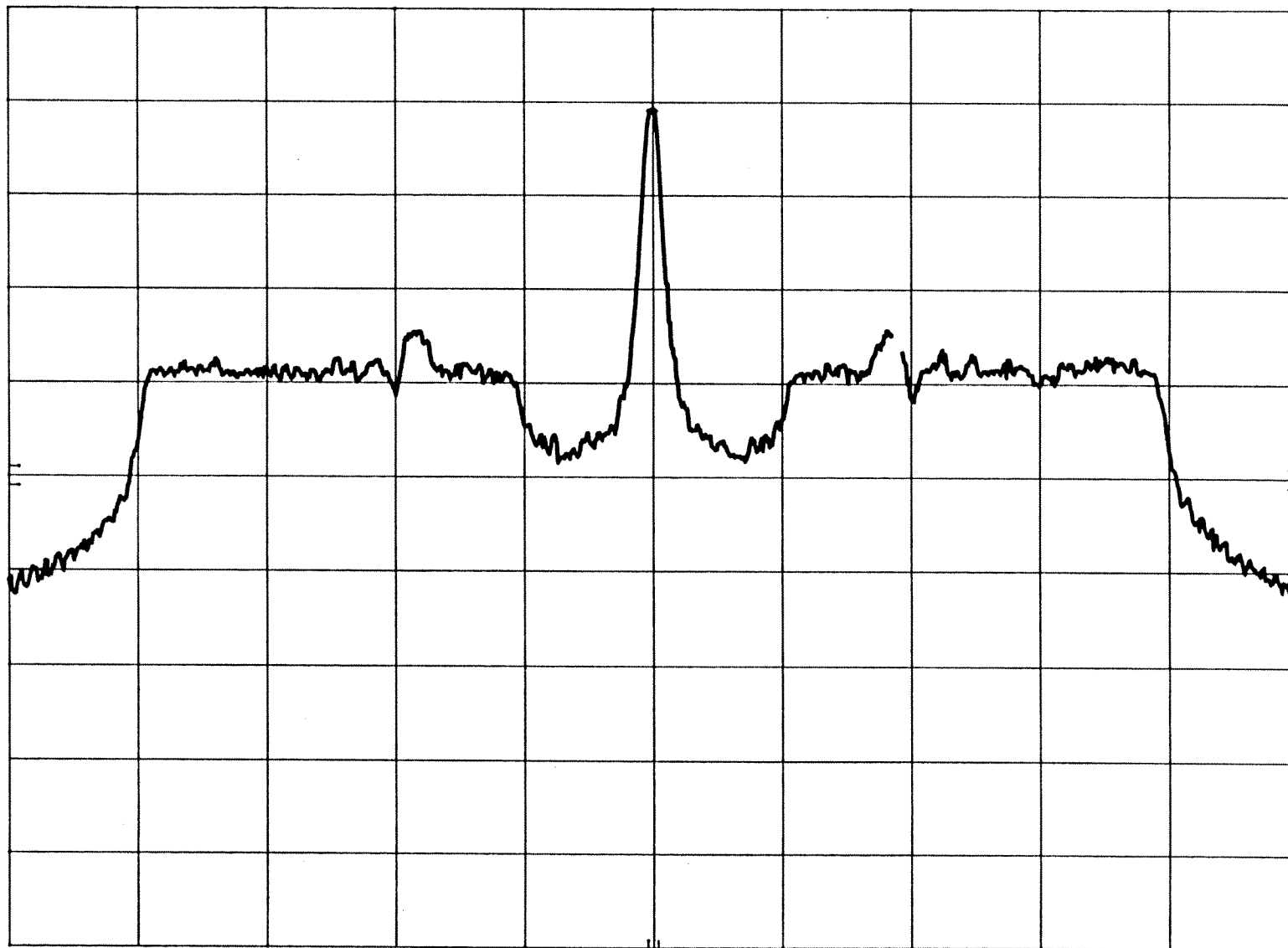
hp

REF 0.0 dBm

ATTEN 10 dB

-10.90 dBm

10 dB/



CENTER 1.660 MHz

RES BW 300 Hz

VBW 1 kHz

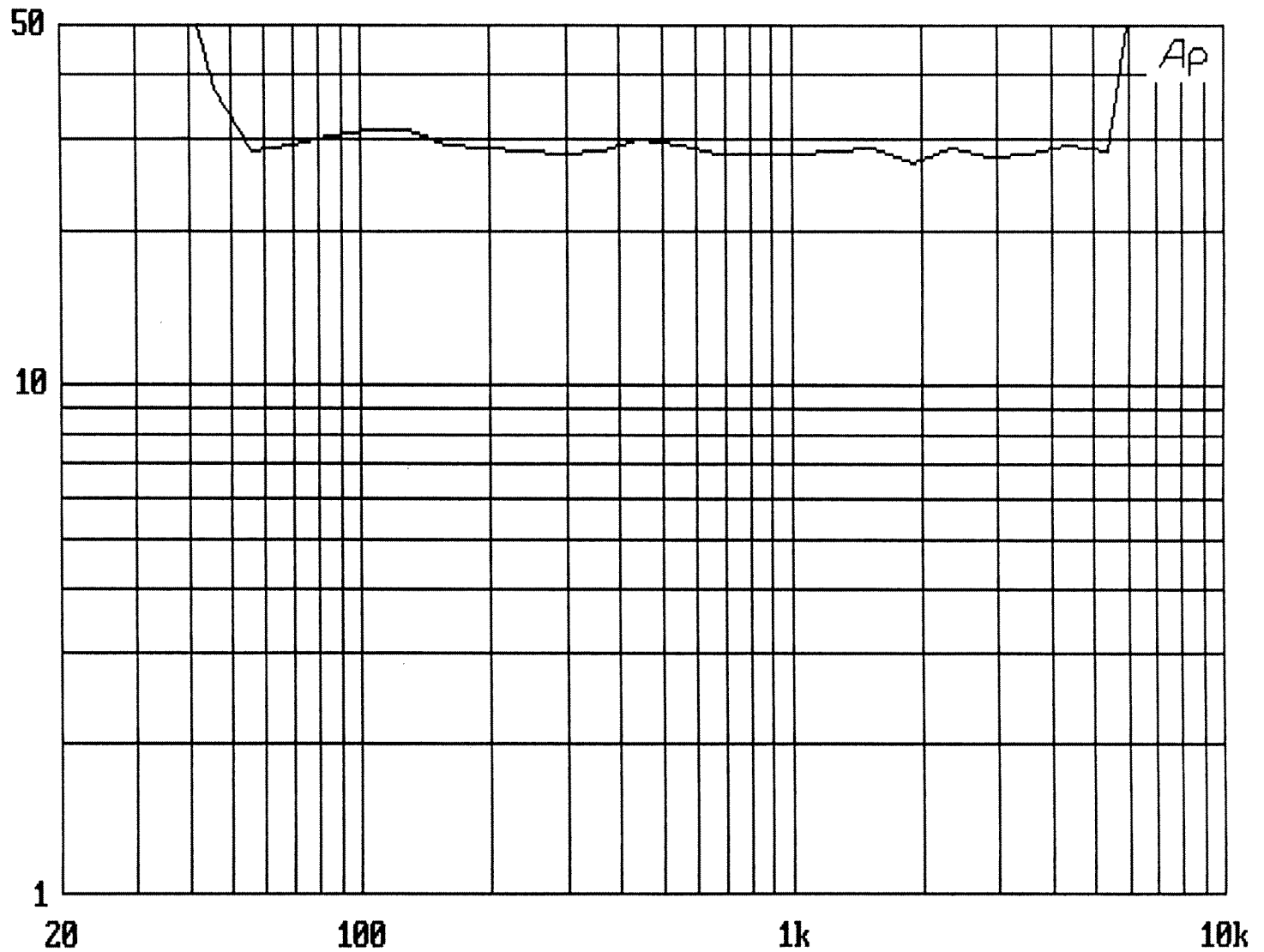
SPAN 50.0 kHz

SWP 1.50 sec

USADR AM DISTORTION PROOF

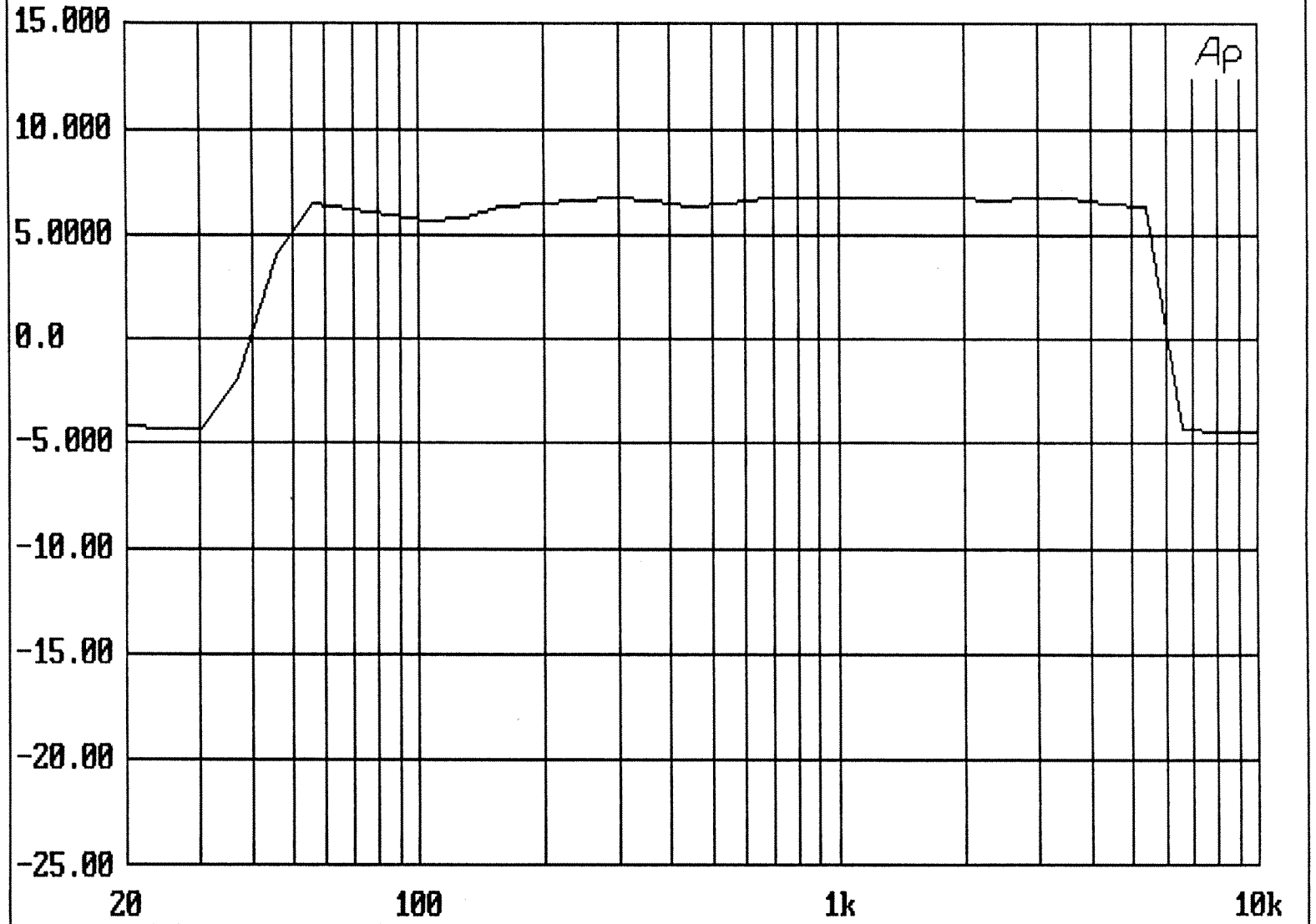
THD+N(%) vs FREQ(Hz)

09 AUG 95 14:12:10



USADR AM FREQUENCY RESPONSE PROOF AMPL(dBu) vs FREQ(Hz)

09 AUG 95 13:58:49



**Appendix AK – Digital Test Results  
AT&T / Amati IBOC DSB Revision B**



EIA Digital Audio Radio Test Laboratory

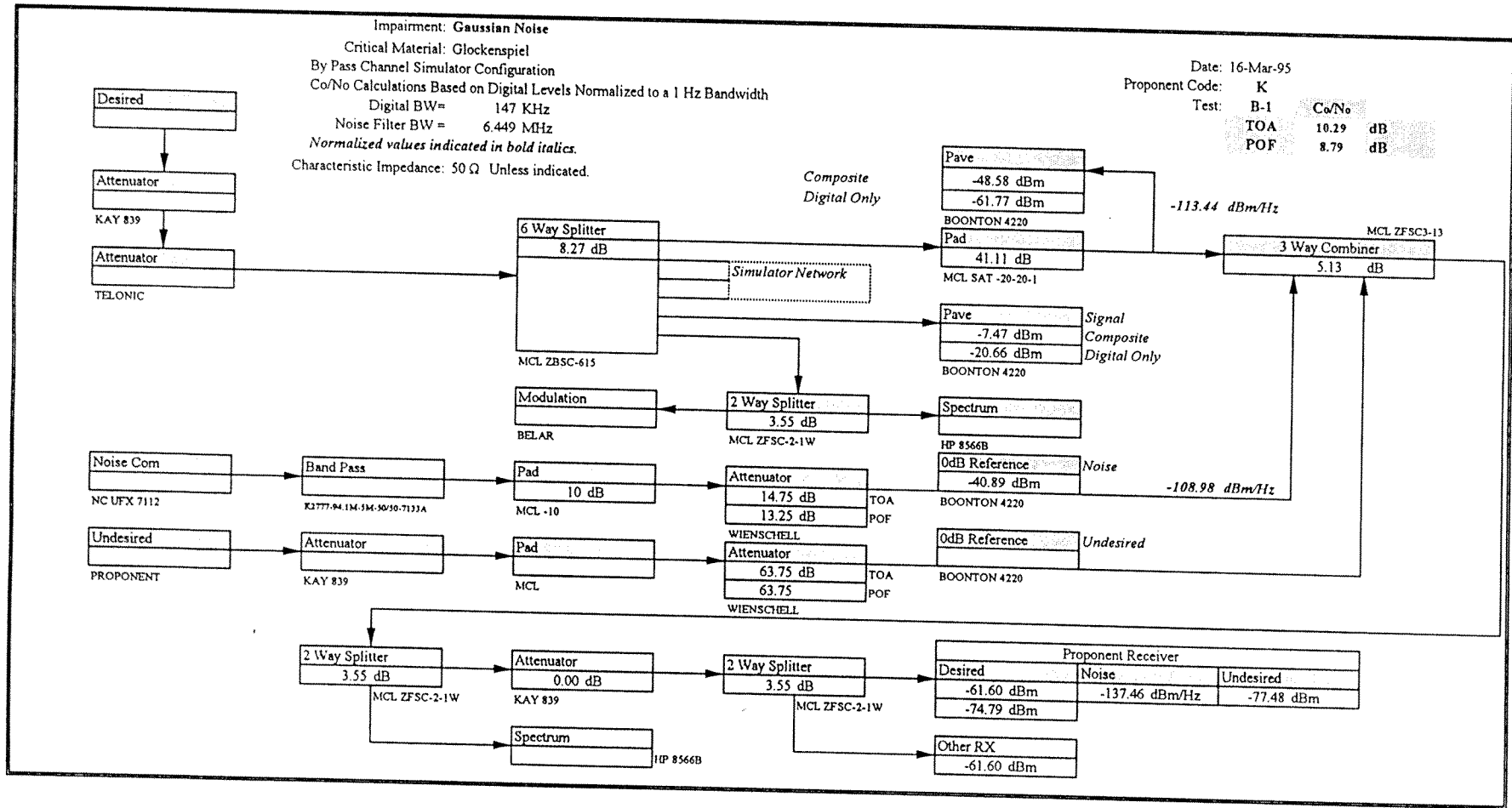
Proponent: AT&T Amati DSB Rev B.	
Code:	K
Digital Band Width:	1.47E+05 Hz
Composite Band Width:	4.00E+05 Hz
Peak/Average Composite:	3.09 dB
Peak/Average Digital:	11.76 dB

AK

# EIA Digital Audio Radio Test Laboratory

Test Propnent Code:	B-1 K	<b>Gaussian Noise</b>		
Material				Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	14.75	13.25	dB
	Co/No	10.29	8.79	dB
	TOA	Small drop out.		
EO&C	POF	Many small and medium duration drop outs.		
<b>Soprano</b>		TOA	POF	
	Attenuator	14.50	13.25	dB
	Co/No	10.04	8.79	dB
	TOA	Small drop out.		
EO&C	POF	Many small and medium duration drop outs.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	14.50	13.25	dB
	Co/No	10.04	8.79	dB
	TOA	Small drop out.		
EO&C	POF	Many small and medium duration drop outs.		
Notes:	Recording Reference:	DAR30223.DAT		
	Testers:	DML,RMC		
	Date:	16-Mar-95		

# EIA Digital Audio Radio Test Laboratory



EIA Digital Audio Radio Test Laboratory

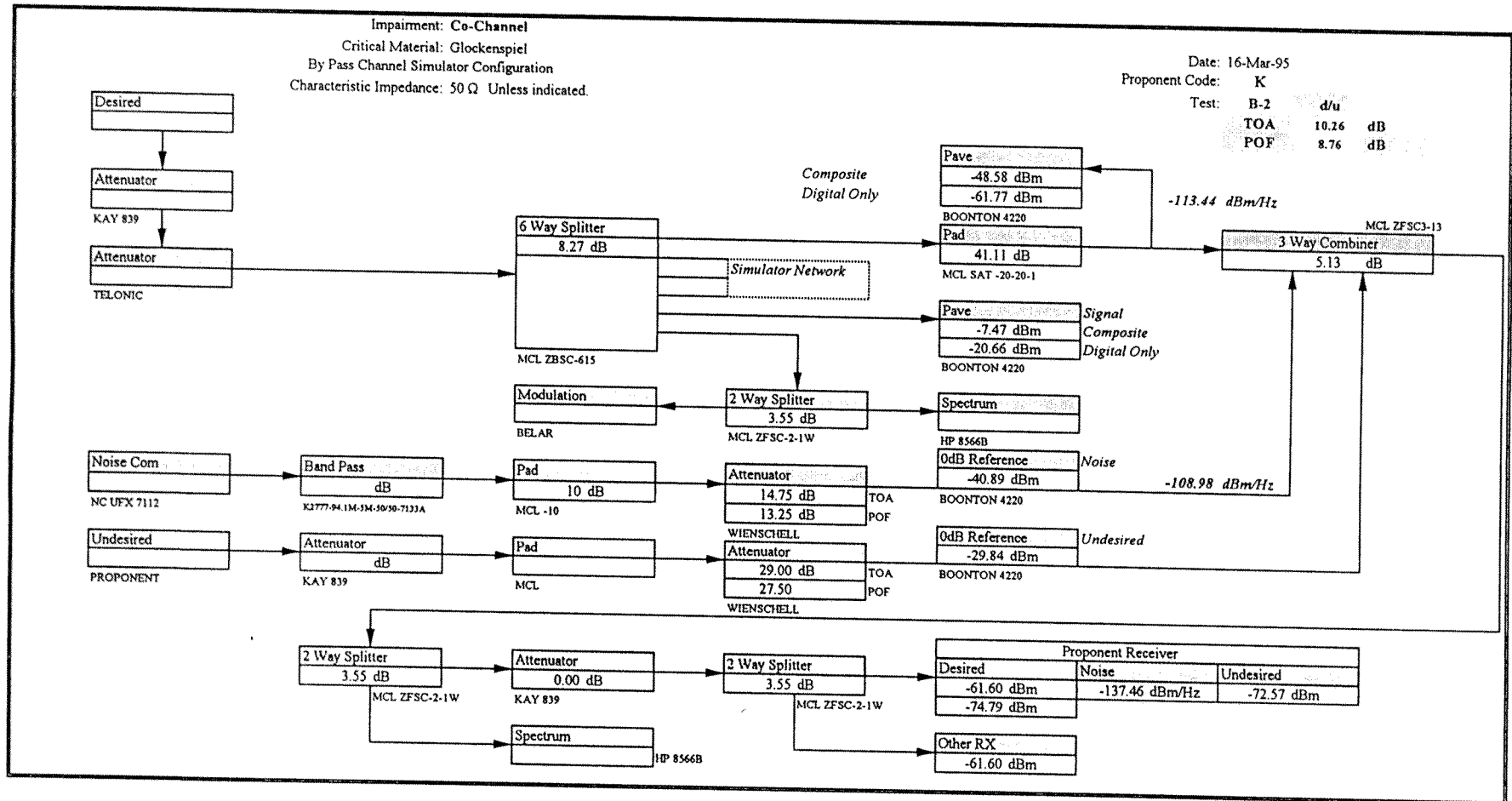
DAT File Number	Time Code		Start IDs				Description	Artn
	Start	Stop	1	2	3			
DAR30223.DAT 16-Mar-95			1	2	3		Glockenspiel Clear Channel	63.75
			4	5	6			16.25
			7	8	9			15.75
			10	11	12			15.25
			13	14	15	16 17	TOA lab	14.75
			18	19	20			14.25
			21	22	23			13.75
			24	25	26		POF lab	13.25
		27	28	29			12.75	
		30	31	32		Soprano Clear Channel	63.75	
		33	34	35			16.00	
		36	37	38			15.50	
		39	40	41			15.00	
		42	43	44		TOA lab	14.50	
		45	46	47			14.00	
		48	49	50			13.50	
		51	52	53		POF lab	13.25	
		54	55	56			12.75	
		57	58	59		Clarinet Clear Channel	63.75	
		60	61	62			16.00	
		63	64	65			15.50	
		66	67	68			15.00	
		69	70	71		TOA lab	14.50	
		72	73	74			14.00	
		75	76	77			13.50	
		78	79	80		POF lab	13.25	
		81	82	83			12.75	

Proponent Code: K  
 Impairment: Gaussian Noise

EIA Digital Audio Radio Test Laboratory

Test Propnent Code:	B-2 K	Co-Channel		
Material				Units
Glockenspiel		TOA	POF	
Attenuator		29.00	27.50	dB dB
d/u		10.26	8.76	
EO&C TOA POF		Small flutter or drop out. Many small to medium duration drop outs.		
Soprano		TOA	POF	
Attenuator		28.50	27.75	dB dB
d/u		9.76	9.01	
EO&C TOA POF		Flutter or small drop outs. Many small to medium duration drop outs.		
Clarinet		TOA	POF	
Attenuator		28.75	27.75	dB dB
d/u		10.01	9.01	
EO&C TOA POF		Small drop outs. Many small to medium duration drop outs.		
Notes:	Recording Reference: DAR30245.DAT Testers: DML,RMC Date: 16-Mar-95			

# EIA Digital Audio Radio Test Laboratory



EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop						
DAR30245.DAT 16-Mar-95			1	2	3		Glockenspiel Clear Channel	63.75
			4	5	6			30.50
			7	8	9			30.00
			10	11	12			29.50
			13	14	15		TOA lab	29.00
			16	17	18			28.50
			19	20	21			28.00
			22	23	24		POF lab	27.50
			25	26	27			27.00
			28	29	30		Soprano Clear Channel	63.75
			31	32	33			30.00
			34	35	36			29.50
			37	38	39			29.00
			40	41	42		TOA lab	28.50
			43	44	45			28.25
			46	47	48			28.00
			49	50	51		POF lab	27.75
			52	53	54			27.50
			55	56	57		Clarinet Clear Channel	63.75
			58	59	60			30.25
			61	62	63			29.75
		64	65	66			29.25	
		67	68	69		TOA lab	28.75	
		70	71	72			28.25	
		73	74	75			28.00	
		76	77	78		POF lab	27.75	
		79	80	81			27.50	

Proponent Code: K  
Impairment: Co-Channel

## EIA Digital Audio Radio Test Laboratory

Test Propnent Code:	B-3 K	Urban Slow Rayleigh			
				Units	
<b>Glockenspiel</b>		TOA	POF		
	Attenuator	38.00	28.00		dB
	Co/No	33.94	23.94		dB
	EO&C	TOA Small drop out.			
		POF Excessive Muting			
<b>Soprano</b>		TOA	POF		
	Attenuator	37.00	28.00		dB
	Co/No	32.94	23.94		dB
	EO&C	TOA #36 Unconfirmed flutter on "do", #39 obvious drop out.			
		POF Excessive Muting			
<b>Clarinet</b>		TOA	POF		
	Attenuator	37.00	28.00		dB
	Co/No	32.94	23.94		dB
	EO&C	TOA Small drop out.			
		POF Excessive Muting			
Recording Reference: DAR30305.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 21-Apr-95					



## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Atm
	Start	Stop	1	2	3	4	5		
DAR30305.DAT 21-Apr-95			1	2	3	4	5	Glockenspiel No Added Noise	63.75
			6	7	8				39.00
			9	10	11			TOA lab	38.00
			12	13	14				37.00
			15	16	17				34.00
			18	19	20				31.00
			21	22	23			POF lab	28.00
			24	25	26	27	28	Soprano No Added Noise	63.75
			29	30	31				39.00
			32	33	34				38.00
			35	36	37	38	39	TOA lab	37.00
			40	41	42				34.00
			43	44	45				31.00
			46	47	48			POF lab	28.00
			49	50	51			Clarinet No Added Noise	63.75
			52	53	54				39.00
			55	56	57				38.00
			58	59				DISREGARD 49-59	
			60	61	62	63	64	Clarinet No Added Noise	63.75
			65	66	67				39.00
			68	69	70			TOA lab	38.00
		71	72	73				37.00	
		74	75	76				34.00	
		77	78	79				31.00	
		80	81	82			POF lab	28.00	

Proponent Code: K  
Impairment: Urban Slow Rayleigh

EIA Digital Audio Radio Test Laboratory

Test Propnent Code:	B-3 K	<b>Urban Fast Rayleigh</b>		
				Units
<b>Glockenspiel</b>		TOA	POF	
Attenuator		27.00	23.00	dB
Co/No		22.94	18.94	dB
EO&C		TOA Small Flutter		
		POF Excessive Muting		
<b>Soprano</b>		TOA	POF	
Attenuator		27.00	23.00	dB
Co/No		22.94	18.94	dB
EO&C		TOA Small Break or Flutter		
		POF Excessive Muting		
<b>Clarinet</b>		TOA	POF	
Attenuator		27.00	23.00	dB
Co/No		22.94	18.94	dB
EO&C		TOA Small Drop Out		
		POF Excessive Muting		
Recording Reference: DAR30306.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 21-Apr-95				

### EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30306.DAT 21-Apr-95			1	2	3	4	5	Glockenspiel No Added Noise	63.75
			6	7	8				29.00
			9	10	11				28.00
			12	13	14			TOA lab	27.00
			15	16	17				26.00
			18	19	20				24.00
			21	22	23			POF lab	23.00
			24	25	26	27	28	Soprano No Added Noise	63.75
			29	30	31				29.00
			32	33	34				28.00
			35	36	37			TOA lab	27.00
			38	39	40				26.00
			41	42	43				24.00
			44	45	46			POF lab	23.00
			47	48	49	50	51	Clarinet No Added Noise	63.75
			52	53	54				29.00
			55	56	57				28.00
			58	59	60			TOA lab	27.00
			61	62	63				26.00
			64	65	66				24.00
			67	68	69			POF lab	23.00

Proponent Code: K  
 Impairment: Urban Fast Rayleigh

# EIA Digital Audio Radio Test Laboratory

Test Propnent Code:	B-3  K	<b>Rural Fast Rayleigh</b>		
				Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	32.00	27.00	dB
	Co/No	27.94	22.94	dB
	TOA EO&C	Small Drop Out		
	POF	Excessive Muting		
<b>Soprano</b>		TOA	POF	
	Attenuator	31.00	27.00	dB
	Co/No	26.94	22.94	dB
	TOA EO&C	Small Drop Out		
	POF	Excessive Muting and Overloads.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	31.00	27.00	dB
	Co/No	26.94	22.94	dB
	TOA EO&C	Small Drop Out		
	POF	Excessive Muting and Overloads.		
Recording Reference: DAR30307.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 21-Apr-95				

### EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30307.DAT			1	2	3	4	5	Glockenspiel No Added Noise	63.75
21-Apr-95			6	7	8				34.00
			9	10	11				33.00
			12	13	14			TOA lab	32.00
			15	16	17				31.00
			18	19	20				30.00
			21	22	23				29.00
			24	25	26				28.00
			27	28	29			POF lab	27.00
			30	31	32	33	34	Soprano No Added Noise	63.75
			35	36	37				34.00
			38	39	40				33.00
			41	42	43				32.00
			44	45	46			TOA lab	31.00
			47	48	49				30.00
			50	51	52				29.00
			53	54	55				28.00
			56	57	58			POF lab	27.00
			59	60	61	62	63	Clarinet No Added Noise	63.75
			64	65	66				34.00
			67	68	69				33.00
			70	71	72				32.00
			73	74	75			TOA lab	31.00
			76	77	78				30.00
			79	80	81				29.00
			82	83	84				28.00
			85	86	87			POF lab	27.00

Proponent Code: K  
 Impairment: Rural Fast Rayleigh

EIA Digital Audio Radio Test Laboratory

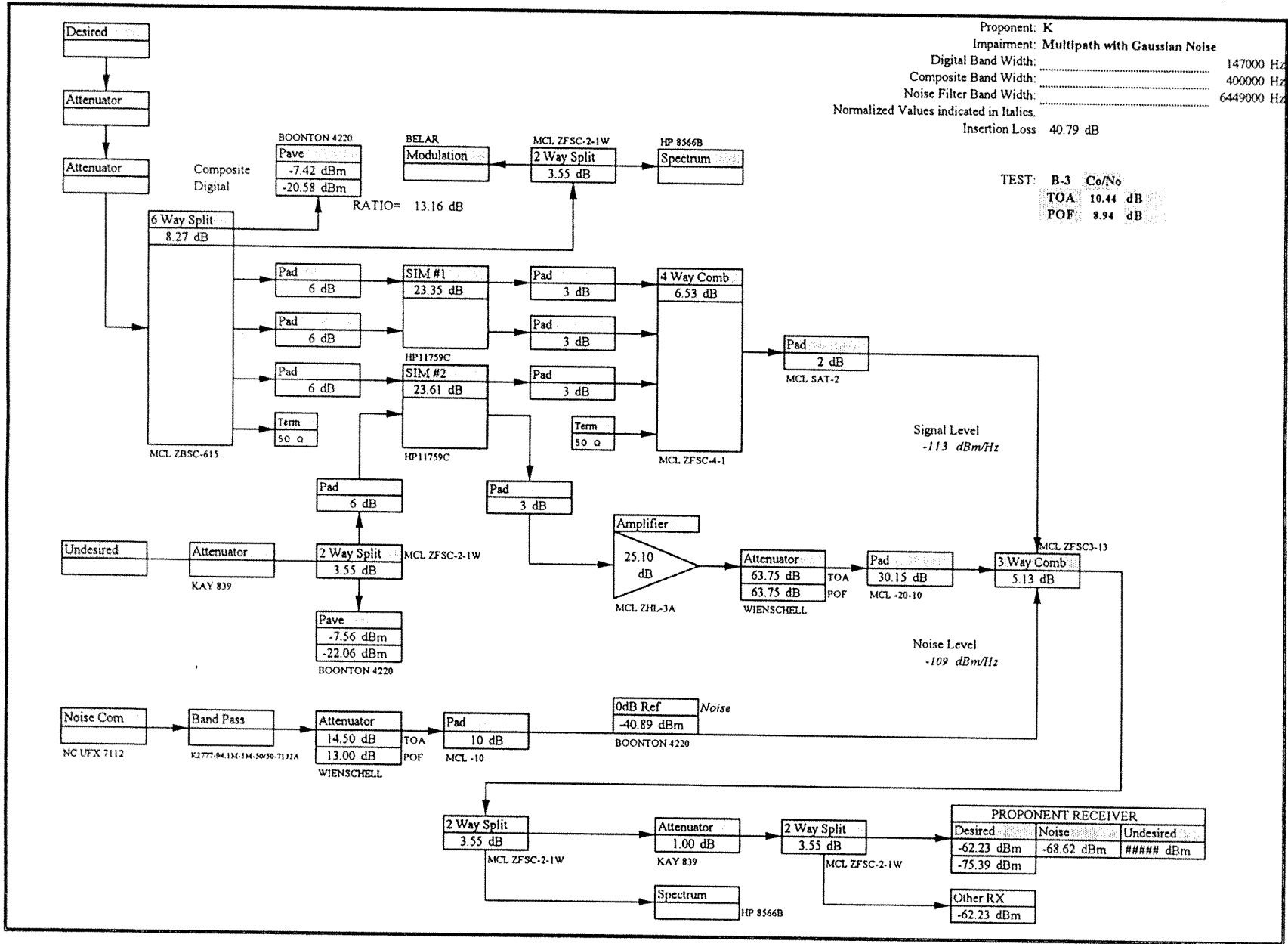
Test Propnent Code:	B-3 K	<b>Terrain Obstructed Rayleigh</b>		
Material				Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	30.00	26.00	dB
	Co/No	25.94	21.94	dB
	EO&C	TOA	Small Flutter	
		POF	Excessive Muting, Overloads	
<b>Soprano</b>		TOA	POF	
	Attenuator	29.00	25.00	dB
	Co/No	24.94	20.94	dB
	EO&C	TOA	Drop Out	
		POF	Excessive muting.	
<b>Clarinet</b>		TOA	POF	
	Attenuator	30.00	25.00	dB
	Co/No	25.94	20.94	dB
	EO&C	TOA	Small Drop Out	
		POF	Many Drop Outs	
<p style="text-align: center;">Recording Reference: DAR30308.DAT                  Notes: Impairment: Multipath with Gaussian Noise                  Testers: DML,RMC                  Test Date: 21-Apr-95</p>				

### EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn	
	Start	Stop	1	2	3	4	5			
DAR30308.DAT 21-Apr-95			1	2	3	4	5	Glockenspiel No Added Noise	63.75	
			6	7	8				34.00	
			9	10	11				33.00	
			12	13	14				32.00	
			15	16	17				31.00	
			18	19	20				TOA lab	30.00
			21	22	23				29.00	
			24	25	26				28.00	
			27	28	29				27.00	
			30	31	32			POF lab	26.00	
			33	34	35	36	37	Soprano No Added Noise	63.75	
			38	39	40				33.00	
			41	42	43				32.00	
			44	45	46				31.00	
			47	48	49				30.00	
			50	51	52				TOA lab	29.00
			53	54	55				28.00	
			56	57	58				27.00	
			59	60	61				26.00	
			62	63	64			POF lab	25.00	
			65	66	67	68	69	Clarinet No Added Noise	63.75	
			70	71	72				31.00	
			73	74	75				TOA lab	30.00
			76	77	78					29.00
			79	80	81					28.00
			82	83	84					27.00
			85	86	87				26.00	
			88	89	90			POF lab	25.00	

Proponent Code: K  
 Impairment: Terrain Obstructed Rayleigh

# EIA Digital Audio Radio Test Laboratory





# EIA Digital Audio Radio Test Laboratory

Test	C-1 Impulse Response					
AT&T Amati DSB Rev B.			5 Vp-p at attenuator input.			
Program Material		Glockenspiel				
Pulse Repetition (Hz)	Attn at TOA	(Vp-p)	Attn at POF	(Vp-p)	EO&C	
100	0.00	5.00	0.00	5.00	Could not achieve TOA or POF with this repetition rate.	
200	0.00	5.00	0.00	5.00	TOA level of impairment. Small drop outs or flutters.	
333	6.25	2.43	0.00	5.00	TOA occasional drop outs. POF many drop outs.	
666	6.75	2.30	6.00	2.51	TOA occasional drop out. POF many drop outs.	
1000	6.75	2.30	6.50	2.37	TOA occasional drop out. POF many drop outs.	

Test Date: 8-May-95  
Testers: DML,RMc

# EIA Digital Audio Radio Test Laboratory

Test C-2 CW Response AT&T Amati DSB Rev B. Program Material Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12	Test Point	Frequency MHz	LEV 1 POF	LEV 2 POF+6	LEV 3 POF+12
1	93.85	0	0	0	27	94.11	0	0	0
2	93.86	0	0	0	28	94.12	0	0	0
3	93.87	0	0	0	29	94.13	0	0	0
4	93.88	0	0	0	30	94.14	0	0	0
5	93.89	0	0	0	31	94.15	0	0	0
6	93.90	0	0	2	32	94.16	0	0	0
7	93.91	0	1	2	33	94.17	0	0	0
8	93.92	0	2	2	34	94.18	0	0	0
9	93.93	1	2	2	35	94.19	0	0	0
10	93.94	0	2	2	36	94.20	0	0	0
11	93.95	0	2	2	37	94.21	0	0	0
12	93.96	2	2	2	38	94.22	0	0	0
13	93.97	0	0	0	39	94.23	0	0	0
14	93.98	0	0	0	40	94.24	2	2	2
15	93.99	0	0	0	41	94.25	0	2	2
16	94.00	0	0	0	42	94.26	0	0	2
17	94.01	0	0	0	43	94.27	1	2	2
18	94.02	0	0	0	44	94.28	1	2	2
19	94.03	0	0	0	45	94.29	0	0	2
20	94.04	0	0	0	46	94.30	0	0	2
21	94.05	0	0	0	47	94.31	0	0	0
22	94.06	0	0	0	48	94.32	0	0	0
23	94.07	0	0	0	49	94.33	0	0	0
24	94.08	0	0	0	50	94.34	0	0	0
25	94.09	0	0	0	51	94.35	0	0	0
26	94.10	0	0	0					

Test Date: 8-May-95      0 dB Attenuator Reference: -33.32 dBm

0=CLEAN AUDIO      1=APPROXIMATE TOA      2 ≥ POF

POF at 93.96 MHz Attn=29.75dB      POF d/u= 14.57 dB

Composite

EIA Digital Audio Radio Test Laboratory

Test C-3 Airplane Flutter AT&T Amati DSB Rev B. Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  8.00 dB  TOA 3.20	Scenario as programmed has no defects in the recovered audio. TOA small flutter or drop out # 36.  19:30 - 21:12 Recorded TOA PI #'s 34,35,36 DAR30500.DAT
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  6.00 dB  TOA 0.00	With the reflected path level maximized recorded for the record PI #'s 37,38 and 39. No defects in the recovered audio. 21:17 - 23:01
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  4.00 dB  TOA 0.00	With the reflected path level maximized recorded for the record PI #'s 40,41 and 42. No defects in the recovered audio. 23:05 - 24:46
Test Date: 26-Apr-95 Testers: DML, RMc		

EIA Digital Audio Radio Test Laboratory

Test	C-4	Weak Signal Sensitivity				
AT&T Amati DSB Rev B.						
Program Material	Glockenspiel					
<table border="1" style="display: inline-table; margin-right: 20px;"><tr><td>TOA (dBm)</td></tr><tr><td><math>-90 \leq \text{TOA} &lt; -89</math></td></tr></table> <table border="1" style="display: inline-table;"><tr><td>POF (dBm)</td></tr><tr><td><math>-92 &lt; \text{POF} \leq -91</math></td></tr></table>			TOA (dBm)	$-90 \leq \text{TOA} < -89$	POF (dBm)	$-92 < \text{POF} \leq -91$
TOA (dBm)						
$-90 \leq \text{TOA} < -89$						
POF (dBm)						
$-92 < \text{POF} \leq -91$						
Test Date: 21-Apr-95 Testers: DML,RMc						

# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler																																																																																																																																																																																																																														
Code:	K	Bad Urban 1																																																																																																																																																																																																																														
Program Material	Mozart (Track 67 on SQAM disk)																																																																																																																																																																																																																															
<p>Delay Spread (us)</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr><td>0-40</td><td></td><td></td><td>1</td><td></td><td>2</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td></tr> <tr><td>0-36</td><td></td><td>0</td><td></td><td>0</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td></tr> <tr><td>0-32</td><td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td></tr> <tr><td>0-28</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td></tr> <tr><td>0-24</td><td></td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td></tr> <tr><td>0-20</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td></tr> <tr><td>0-16</td><td></td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td></tr> <tr><td>0-12</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td></tr> <tr><td>0-8</td><td></td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td></tr> <tr><td>0-4</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td></tr> <tr><td></td><td></td><td></td><td>1</td><td></td><td>3</td><td></td><td>5</td><td></td><td>10</td><td></td><td>15</td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>30</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>50</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>75</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>100</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>150</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>225</td></tr> </table> <p style="text-align: right; margin-right: 50px;">Doppler (km/h)</p>				0-40			1		2		1		0		0		0-36		0		0		1		0		0		0	0-32			2		1		0		0		0		0-28		0		1		1		0		0		0	0-24			0		0		0		0		0		0-20		0		0		0		0		0		0	0-16			0		0		0		0		0		0-12		0		0		0		0		0		0	0-8			0		0		0		0		0		0-4		0		0		0		0		0		0				1		3		5		10		15														30													50													75													100													150													225
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Test Date: 25-Apr-95																																																																																																																																																																																																																																
Testers: DML, RMc																																																																																																																																																																																																																																

# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler																																																																																																																																																										
Code:	K	Bad Urban 2																																																																																																																																																										
Program Material	Mozart (Track 67 on SQAM disk)																																																																																																																																																											
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Test Date: 25-Apr-95		Testers: DML, RMc																																																																																																																																																										

# EIA Digital Audio Radio Test Laboratory

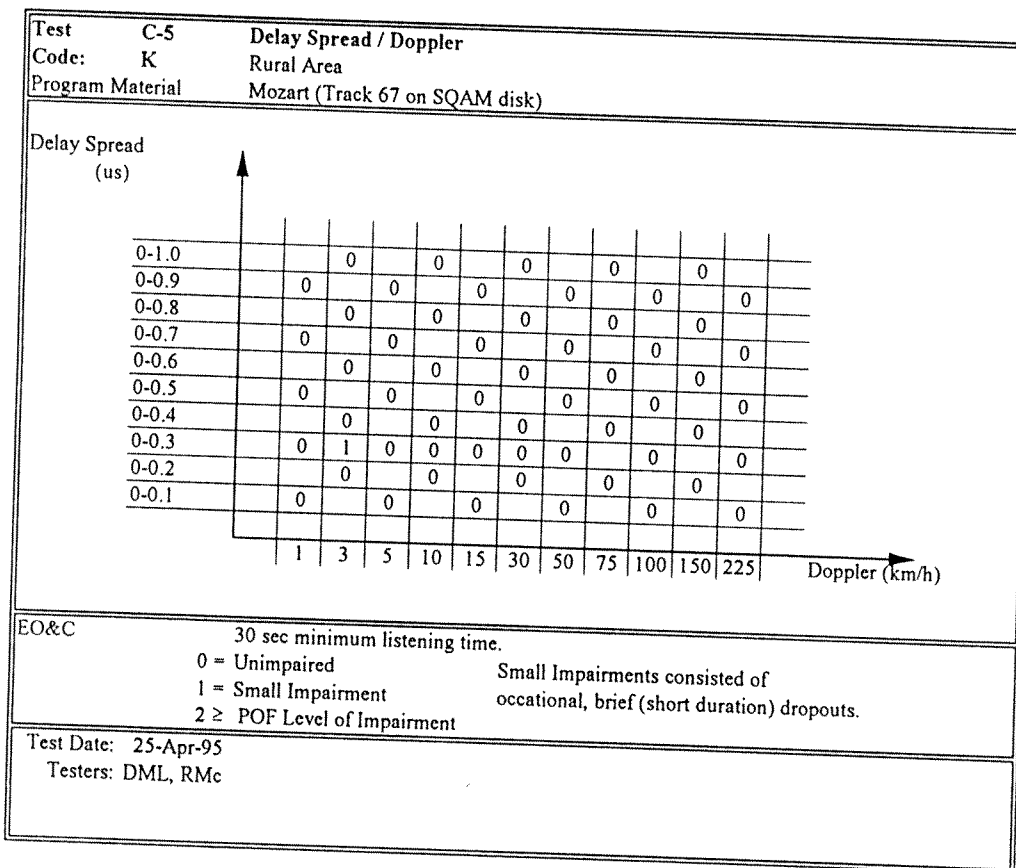
<b>Test Code:</b>	C-5 K	<b>Delay Spread / Doppler</b> Typical Urban																																																																																																																
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)																																																																																																																	
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Test Date: 25-Apr-95 Testers: DML, RMc																																																																																																																		

# EIA Digital Audio Radio Test Laboratory

Test	C-5	Delay Spread / Doppler																																																																																		
Code:	K	Hilly Terrain																																																																																		
Program Material	Mozart (Track 67 on SQAM disk)																																																																																			
Delay Spread (us) <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr><td>0-50</td><td>0</td><td>2</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-48</td><td>1</td><td>2</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-44</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-40</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-36</td><td>2</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-32</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-28</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-24</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0-20</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> </div>				0-50	0	2	0	0	0	0	0	0	0-48	1	2	1	0	0	0	0	0	0-44	0	0	0	0	0	0	0	0	0-40	0	1	0	0	0	0	0	0	0-36	2	1	1	0	0	0	0	0	0-32	0	0	0	0	0	0	0	0	0-28	0	0	0	0	0	0	0	0	0-24	0	0	0	0	0	0	0	0	0-20	0	0	0	0	0	0	0	0
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Test Date: 25-Apr-95 Testers: DML, RMc																																																																																				



# EIA Digital Audio Radio Test Laboratory



EIA Digital Audio Radio Test Laboratory

Test C-6 Additional Multipath Doppler Simulations				
AT&T Amati DSB Rev B.				
Program Material: Glockenspiel				
Scenario	Level	Attn	Co/No Units	EO&C
#1 Urban Slow				Recorded for the record No Added Noise #2 Static Pops. #4 Small drop out #5 Medium duration mute.
#2 Urban Fast	TOA	21.00	16.80 dB	Small drop out or flutter.
	POF	17.00	12.80 dB	Excessive flutter / muting.
#3 Rural Fast	TOA	18.00	13.80 dB	Small drop out or flutter.
	POF	15.00	10.80 dB	Excessive flutter / muting.
#4 Terrain Obstructed Fast	TOA	24.00	19.80 dB	Small drop out or flutter.
	POF	19.00	14.80 dB	Excessive flutter / muting.
Test Date: 26-Apr-95 Testers: DML, RMc DAT Reference: DAR30561.DAT				
		6WOUT	Desired -7.44 dBm	Noise
		IL	40.79 dB	BW 6.45E+06 Hz
		3WIN	-48.23 dBm	0dB Ref -40.77 dBm

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30561.DAT 26-Apr-95	0:12	3:02	1	2	3	4	5	Urban Slow Doppler No Added Noise	63.75
	3:10	6:02	6	7	8	9	10	Urban Fast Doppler No Added Noise	63.75
			11	12	13				23.00
			14	15	16			Unconfirmed TOA # 15	22.00
			17	18	19			TOA #18 Small Flutter or drop out.	21.00
			20	21	22				20.00
			23	24	25				19.00
			26	27	28				18.00
		18:20	29	30	31			POF, Excessive Muting	17.00
	18:28	21:19	32	33	34	35	36	Rural Fast Doppler No Added Noise	63.75
			37	38	39				19.00
			40	41	42			#42 TOA Small Flutter or drop out	18.00
			43	44	45				17.00
			46	47	48				16.00
		30:06	49	50	51			POF, many flutters and drop outs or mutes.	15.00
	30:14	37:25	52	53	54	55	56	Obstructed Path Doppler No Added Noise	63.75
			57	58	59				26.00
			60	61	62				25.00
			63	64	65			TOA, #64 Flutter and Drop outs.	24.00
			66	67	68				23.00
			69	70	71				22.00
			72	73	74				21.00
			75	76	77				20.00
			78	79	80			POF, excessive muting.	19.00

Additional Multipath Doppler Simulations

Code: K

Test: C-6

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">D-Series Co-Channel, 1st and 2nd Adjacent</span> AT&T Amati DSB Rev B. Program Material: Glockenspiel					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	33.25	10.46	dB	Small drop out.
	POF	31.75	8.96	dB	Excessive muting.
D-2 Lower 1st Adjacent	TOA	26.75	23.96	dB	Small drop outs or flutters.
	POF	23.25	20.46	dB	Excessive Muting.
Upper 1st Adjacent	TOA	27.00	24.21	dB	Small drop outs or flutters.
	POF	23.00	20.21	dB	Excessive Muting.
D-3 Lower 2nd Adjacent	TOA	6.00	-16.79	dB	Small drop out or flutter.
	POF	2.25	-20.54	dB	Muting and flutter.
Upper 2nd Adjacent	TOA	4.75	-18.04	dB	Small drop out or flutter.
	POF	1.00	-21.79	dB	Excessive muting.
Additional Comments: Tests conducted through the multipath simulators with one path on the desired and one path on the undesired channels.  DAT Reference: DAR30410.DAT					
Test Date: 1-May-95 Testers: DML, RMc		Signal IL 3WIN	Desired -7.44 dBm 40.79 dB -48.23 dBm	Undesired -7.76 dBm 37.68 dB -45.44 dBm	

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs					Description	Atm
	Start	Stop	1	2	3	4	5		
DAR30410.DAT 1-May-95	0:06	2:58	1	2	3	4	5	Lower 1st Adjacent TOA	26.75
	3:04		6	7	8	9	10	Lower 2nd Adjacent TOA, # 10 at very end small drop out.	6.00
	7:42		11	12	13				5.75
	7:46		14	15	16	17	18	Upper 2nd Adjacent TOA Nothing apparent	4.75
			19	20	21	22	23		4.50
		16:30	24	25	26	27	28	#27 Small drop out.	4.25
	16:33	19:26	29	30	31	32	33	Co-Channel TOA, #30 small flutter	33.25

Code: K  
D-Series Recordings

# EIA Digital Audio Radio Test Laboratory

Test <span style="margin-left: 50px;">E-1</span> <span style="margin-left: 50px;">Co-Channel with Multipath (Rayleigh)</span> AT&T Amati DSB Rev B. Program Material: Glockenspiel																					
Scenario					EO&C																
	Level	Attn	D/U	Units																	
#1 Urban Slow	TOA	43.00	39.06	dB	Small drop out or flutter.																
	POF	30.00	26.06	dB	Excessive Muting.																
#2 Urban Fast	TOA	29.00	25.06	dB	Small drop out.																
	POF	26.00	22.06	dB	Excessive muting.																
#3 Rural Fast	TOA	35.00	31.06	dB	Small Drop Out																
	POF	31.00	27.06	dB	Excessive muting																
#4 Terrain Obstructed	TOA	35.00	31.06	dB	Small drop out or flutter.																
	POF	30.00	26.06	dB	Excessive muting.																
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 27-Apr-95</td> <td style="width: 20%;"></td> <td style="width: 20%;">Desired</td> <td style="width: 20%;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td>-7.44 dBm</td> <td>-6.61 dBm</td> </tr> <tr> <td></td> <td>IL</td> <td>40.79 dB</td> <td>37.68 dB</td> </tr> <tr> <td></td> <td>3WIN</td> <td>-48.23 dBm</td> <td>-44.29 dBm</td> </tr> </table>						Test Date: 27-Apr-95		Desired	Undesired	Testers: DML, RMc	Signal	-7.44 dBm	-6.61 dBm		IL	40.79 dB	37.68 dB		3WIN	-48.23 dBm	-44.29 dBm
Test Date: 27-Apr-95		Desired	Undesired																		
Testers: DML, RMc	Signal	-7.44 dBm	-6.61 dBm																		
	IL	40.79 dB	37.68 dB																		
	3WIN	-48.23 dBm	-44.29 dBm																		

## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Rayleigh)</span> AT&T Amati DSB Rev B. Program Material: Glockenspiel																										
Scenario	Level	Attn	D/U	Units	EO&C																					
#1 Urban Slow	TOA	55.00	52.21	dB	Small flutter.																					
	POF	38.00	35.21	dB	Excessive muting.																					
#2 Urban Fast	TOA	41.00	38.21	dB	Small flutter.																					
	POF	34.00	31.21	dB	Excessive muting.																					
#3 Rural Fast	TOA	45.00	42.21	dB	Small drop out or flutter.																					
	POF	37.00	34.21	dB	Excessive muting																					
#4 Terrain Obstructed Fast	TOA	45.00	42.21	dB	Small drop outs.																					
	POF	35.00	32.21	dB	Excessive muting.																					
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 1-May-95</td> <td style="width: 30%; text-align: center;">Desired</td> <td style="width: 30%; text-align: right;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td style="text-align: right;">-7.44 dBm</td> </tr> <tr> <td></td> <td>1L</td> <td style="text-align: right;">40.79 dB</td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: right;">-48.23 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-7.76 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">37.68 dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-45.44 dBm</td> </tr> </table>						Test Date: 1-May-95	Desired	Undesired	Testers: DML, RMc	Signal	-7.44 dBm		1L	40.79 dB		3WIN	-48.23 dBm			-7.76 dBm			37.68 dB			-45.44 dBm
Test Date: 1-May-95	Desired	Undesired																								
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	1L	40.79 dB																								
	3WIN	-48.23 dBm																								
		-7.76 dBm																								
		37.68 dB																								
		-45.44 dBm																								

## EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-3 Lower 2nd Adjacent with Multipath (Rayleigh)</span> AT&T Amati DSB Rev B. Program Material: Glockenspiel																										
Scenario	Level	Attn	D/U	Units	EO&C																					
#1 Urban Slow	TOA	38.00	15.21	dB	1 medium duration drop out and a small flutter.																					
	POF	21.00	-1.79	dB	Excessive muting.																					
#2 Urban Fast	TOA	22.00	-0.79	dB	Slight flutter or drop out.																					
	POF	14.00	-8.79	dB	Excessive muting.																					
#3 Rural Fast	TOA	26.00	3.21	dB	Small drop out or flutter.																					
	POF	17.00	-5.79	dB	Excessive muting																					
#4 Terrain Obstructed Fast	TOA	30.00	7.21	dB	Small drop outs.																					
	POF	17.00	-5.79	dB	Excessive drop outs and an overload.																					
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 1-May-95</td> <td style="width: 30%; text-align: center;">Desired</td> <td style="width: 40%; text-align: center;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td style="text-align: right;">-7.44 dBm</td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: right;">40.79 dB</td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: right;">-48.23 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-7.76 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">17.68 dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-25.44 dBm</td> </tr> </table>						Test Date: 1-May-95	Desired	Undesired	Testers: DML, RMc	Signal	-7.44 dBm		IL	40.79 dB		3WIN	-48.23 dBm			-7.76 dBm			17.68 dB			-25.44 dBm
Test Date: 1-May-95	Desired	Undesired																								
Testers: DML, RMc	Signal	-7.44 dBm																								
	IL	40.79 dB																								
	3WIN	-48.23 dBm																								
		-7.76 dBm																								
		17.68 dB																								
		-25.44 dBm																								



EIA Digital Audio Radio Test Laboratory

Test E-1 Co-Channel with Multipath (Doppler)					
AT&T Amati DSB Rev B.					
Program Material: Glockenspiel					
Scenario					EO&C
	Level	Attn	D/U	Units	
#1 Urban Slow	TOA				Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of occasional mutes and flutters. The level of impairment is between TOA and POF closer to TOA.
	POF				
#2 Urban Fast	TOA	27.00	24.06	dB	Small drop out.
	POF	19.00	16.06	dB	Excessive muting.
#3 Rural Fast	TOA	20.00	17.06	dB	Small drop out or flutter.
	POF	17.00	14.06	dB	Excessive muting
#4 Terrain Obstructed Fast	TOA	26.00	23.06	dB	Small drop outs.
	POF	22.00	19.06	dB	Excessive muting.
Test Date: 28-Apr-95		Desired		Undesired	
Testers: DML, RMc		Signal	-7.44 dBm	-7.61 dBm	
		IL	40.79 dB	37.68 dB	
		3WIN	-48.23 dBm	-45.29 dBm	

# EIA Digital Audio Radio Test Laboratory

Test <span style="float: right;">E-2 Lower 1st Adjacent with Multipath (Doppler)</span> AT&T Amati DSB Rev B. Program Material: Glockenspiel																										
Scenario					EO&C																					
	Level	Attn	D/U	Units																						
#1 Urban Slow	TOA				Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of occasional mutes and flutters. The level of impairment is between TOA and POF closer to TOA.																					
	POF																									
#2 Urban Fast	TOA	33.00	30.06	dB	Small drop out.																					
	POF	26.00	23.06	dB	Excessive muting.																					
#3 Rural Fast	TOA	32.00	29.06	dB	Small drop out or flutter.																					
	POF	26.00	23.06	dB	Excessive muting																					
#4 Terrain Obstructed Fast	TOA	41.00	38.06	dB	Small drop outs.																					
	POF	30.00	27.06	dB	Excessive muting.																					
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 28-Apr-95</td> <td style="width: 30%; text-align: center;">Desired</td> <td style="width: 30%; text-align: right;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal</td> <td style="text-align: right;">-7.44 dBm</td> </tr> <tr> <td></td> <td>IL</td> <td style="text-align: right;">40.79 dB</td> </tr> <tr> <td></td> <td>3WIN</td> <td style="text-align: right;">-48.23 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-7.61 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">37.68 dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-45.29 dBm</td> </tr> </table>						Test Date: 28-Apr-95	Desired	Undesired	Testers: DML, RMc	Signal	-7.44 dBm		IL	40.79 dB		3WIN	-48.23 dBm			-7.61 dBm			37.68 dB			-45.29 dBm
Test Date: 28-Apr-95	Desired	Undesired																								
Testers: DML, RMc	Signal	-7.44 dBm																								
	IL	40.79 dB																								
	3WIN	-48.23 dBm																								
		-7.61 dBm																								
		37.68 dB																								
		-45.29 dBm																								

# EIA Digital Audio Radio Test Laboratory

Test E-3 2nd Adjacent with Multipath (Doppler) AT&T Amati DSB Rev B. Program Material: Glockenspiel					
Scenario	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA				Scenario with no 2nd Adjacent creates defects in the recovered audio. Defects consist of occasional mutes and flutters. The level of impairment is between TOA and POF closer to TOA.
	POF				
#2 Urban Fast	TOA	12.00	-10.79	dB	Small flutter or drop out.
	POF	5.00	-17.79	dB	Excessive muting.
#3 Rural Fast	TOA	12.00	-10.79	dB	Small drop out or flutter.
	POF	6.00	-16.79	dB	Excessive muting
#4 Terrain Obstructed Fast	TOA	20.00	-2.79	dB	Small drop outs.
	POF	9.00	-13.79	dB	Excessive muting.
Test Date: 1-May-95 Testers: DML, RMc					
		Signal	Desired	Undesired	
		IL	-7.44 dBm	-7.76 dBm	
		3WIN	40.79 dB	17.68 dB	
			-48.23 dBm	-25.44 dBm	

# EIA Digital Audio Radio Test Laboratory

<b>Test</b> J-1    Re-Acquisition			
AT&T Amati DSB Rev B.			
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)	
Toff (s)	Re-Acquisition Time (s)		
	POF-2	POF-4	POF-6
30	4	2	2
	2	3	5
	5	2	6
	2	3	2
	5	3	4
<u>Average</u>	3.6	2.6	3.8
POF Attenuator Setting : 13.25 dB			
Desired Signal Level : -48.24 dBm			
Noise 0 dB Reference : -40.84 dBm			
<b>EO&amp;C</b>			
Re-Acquisition time is the value listed $\pm$ 0.5 seconds.			
Test Date: 8-May-95			
Testers: DML, RMc			

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	<b>Re-Acquisition with Multipath</b>		
<b>AT&amp;T Amati DSB Rev</b>	Urban	Slow Rayleigh		
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)			
		<b>Re-Acquisition Time (s)</b>		
<b>Tsim (s)</b>	POF-2	POF-4	POF-6	
5	3	2	6	
10	6	4	7	
15	7	2	3	
20	3	2	2	
25	4	4	4	
<u>Average</u>	4.6	2.8	4.4	
POF Attenuator Setting : 28.00 dB				
Desired Signal Level : -48.26 dBm				
Noise 0 dB Reference : -40.77 dBm				
<b>EO&amp;C</b>				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 26-Apr-95				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB Rev	Urban Fast Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
	Tsim (s)	Re-Acquisition Time (s)		
		POF-2	POF-4	POF-6
	5	2	6	3
	10	3	2	5
	15	4	3	7
	20	5	5	2
	25	2	5	3
	Average	3.2	4.2	4.0
	POF Attenuator Setting	: 23.00 dB		
	Desired Signal Level	: -48.23 dBm		
	Noise 0 dB Reference	: -40.78 dBm		
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Apr-95				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB Rev	Rural Fast Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	Re-Acquisition Time (s)			
	POF-2	POF-4	POF-6	
5	2	4	2	
10	8	6	3	
15	2	3	4	
20	6	5	2	
25	4	3	5	
Average	4.4	4.2	3.2	
POF Attenuator Setting	: 27.00 dB			
Desired Signal Level	: -48.23 dBm			
Noise 0 dB Reference	: -40.78 dBm			
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Apr-95				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB Rev	Terrain Obstructed Rayleigh			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	POF-2	Re-Acquisition Time (s)		POF-6
		POF-4		
5	2	5	4	
10	3	2	2	
15	2	7	4	
20	6	5	3	
25	4	2	5	
<u>Average</u>	3.4	4.2	3.6	
POF Attenuator Setting : 25.00 dB				
Desired Signal Level : -48.23 dBm				
Noise 0 dB Reference : -40.78 dBm				
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 27-Apr-95				
Testers: DML, RMc				



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	<b>Re-Acquisition with Multipath</b>
<b>AT&amp;T Amati DSB Rev</b>	Urban Slow Doppler	
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)	
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>	
	POF	
5	5	
10	5	
15	5	
20	5	
25	3	
<u>Average</u>	4.6	
<b>POF Attenuator Setting</b>	:	Defects without added noise
<b>Desired Signal Level</b>	:	-48.26 dBm
<b>Noise 0 dB Reference</b>	:	-40.77 dBm
<b>EO&amp;C</b>		
Re-Acquisition time is the value listed $\pm$ 1 second.		
Test Date: 26-Apr-95		
Testers: DML, RMc		

EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB Rev	Urban	Fast Doppler		
Program Material	Mozart	(Track 67 on SQAM disk)		
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	6	5	6	
10	5	3	2	
15	4	7	6	
20	2	2	6	
25	3	2	3	
Average	4.0	3.8	4.6	
POF Attenuator Setting	:	17.00 dB		
Desired Signal Level	:	-48.26 dBm		
Noise 0 dB Reference	:	-40.77 dBm		
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 26-Apr-95				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2 Re-Acquisition with Multipath</b>		
<b>AT&amp;T Amati DSB Rev</b>	<b>Rural Fast Doppler</b>		
<b>Program Material</b>	<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>		
	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>
5	3	2	2
10	5	3	5
15	2	4	2
20	6	2	6
25	2	2	3
<u>Average</u>	3.6	2.6	3.6
<b>POF Attenuator Setting</b>	: 15.00 dB		
<b>Desired Signal Level</b>	: -48.26 dBm		
<b>Noise 0 dB Reference</b>	: -40.77 dBm		
<b>EO&amp;C</b>	Re-Acquisition time is the value listed $\pm$ 1 second.		
<b>Test Date:</b>	26-Apr-95		
<b>Testers:</b>	DML, RMc		

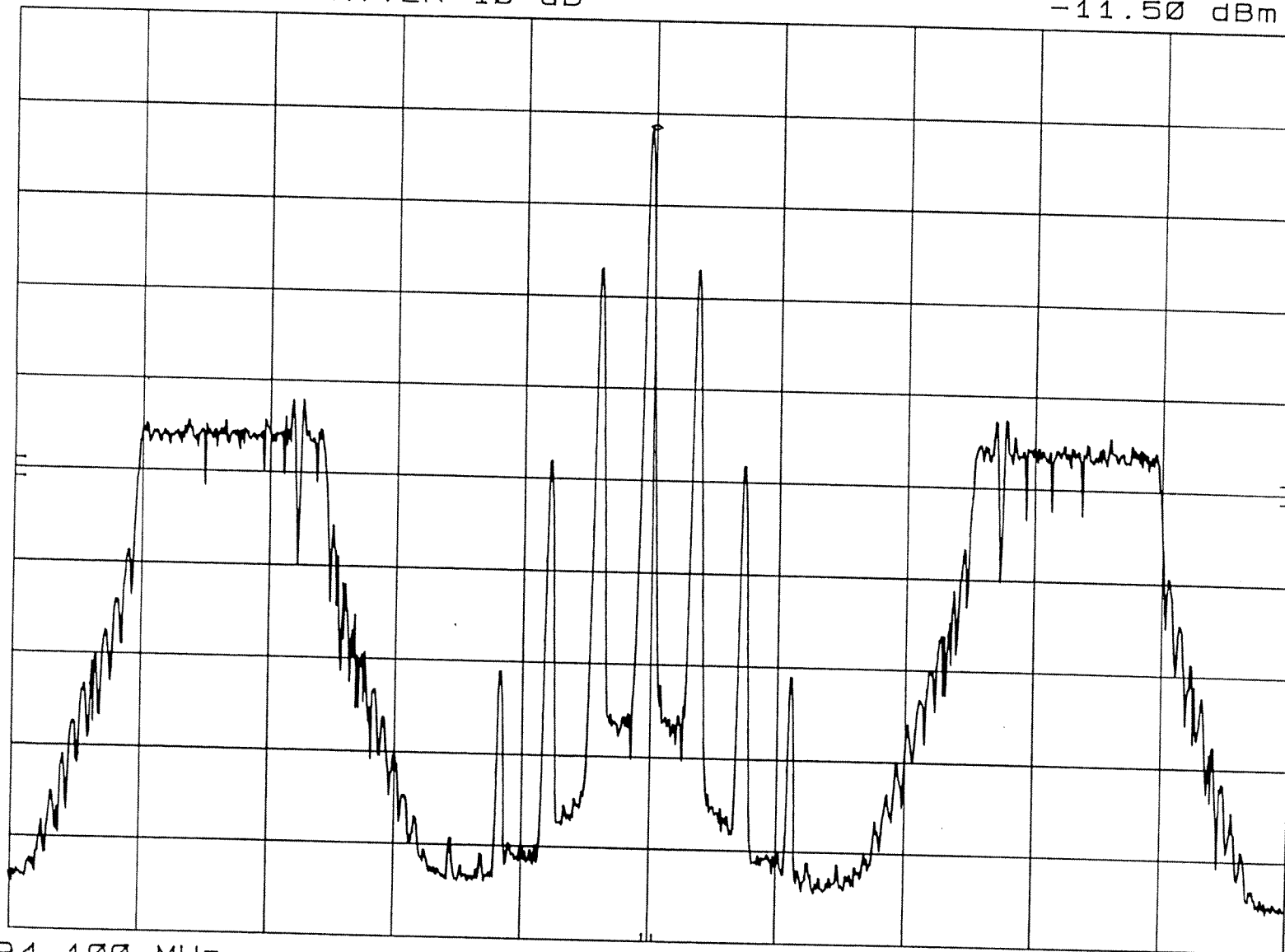
# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
AT&T Amati DSB Rev	Terrain Obstructed Doppler			
Program Material	Mozart (Track 67 on SQAM disk)			
Tsim (s)	Re-Acquisition Time (s)			
	POF-2	POF-4	POF-6	
5	8	2	6	
10	5	3	2	
15	3	3	4	
20	4	5	7	
25	5	3	3	
Average	5.0	3.2	4.4	
POF Attenuator Setting		: 19.00 dBm		
Desired Signal Level		: -48.26 dBm		
Noise 0 dB Reference		: -40.77 dBm		
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 26-Apr-95				
Testers: DML, RMc				

AT&T AMATI DSB 3/16/95 09:31  
EIA REF 0.0 dBm ATTEN 10 dB

MKR 94.0995 MHz  
-11.50 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

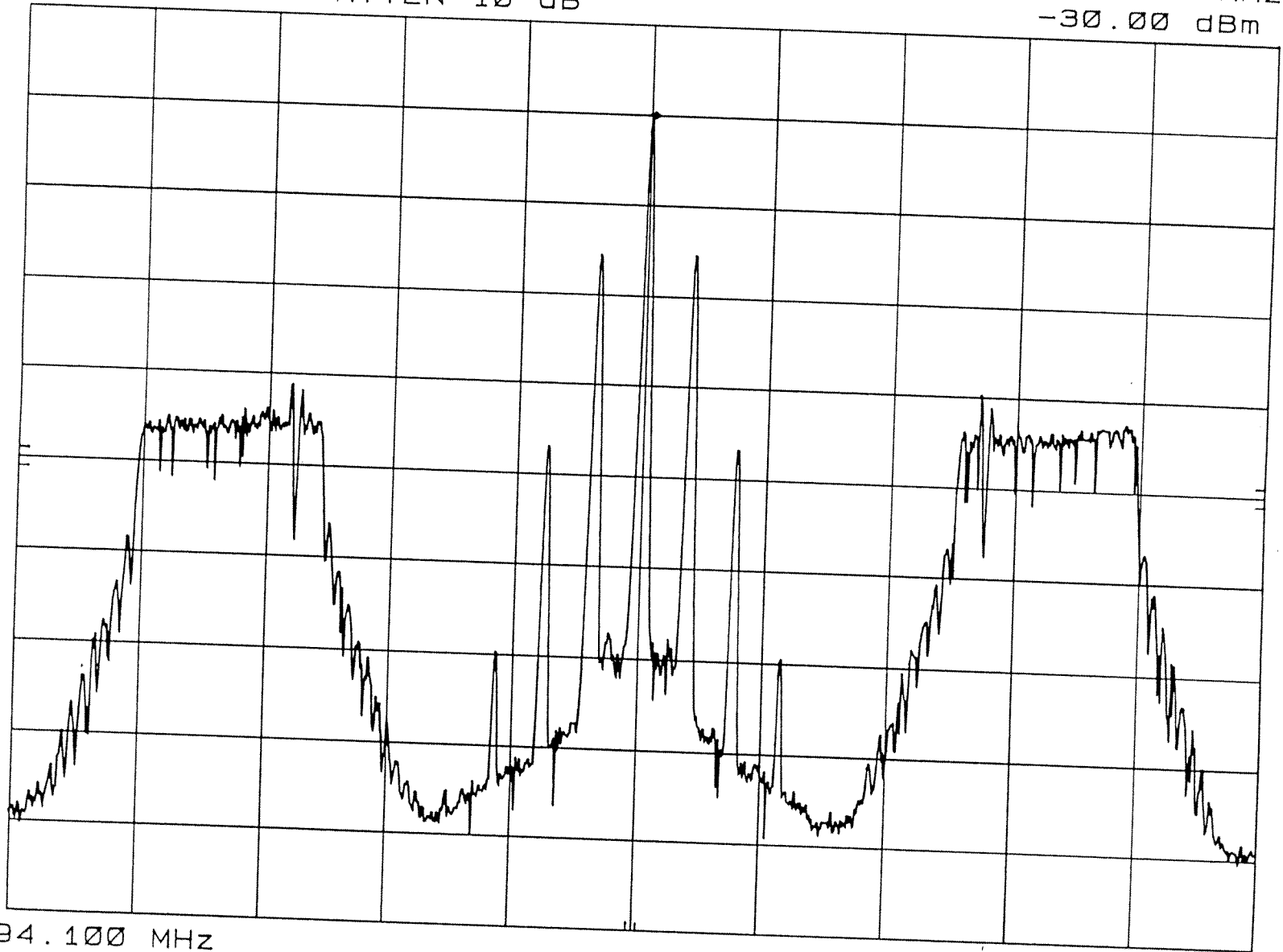
VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

AT&T AMATI DSB CO-CHANNEL 3/16/95 10:17  
EIA REF -20.0 dBm ATTEN 10 dB

MKR 94.101 0 MHz  
-30.00 dBm

10 dB/



CENTER 94.100 MHz

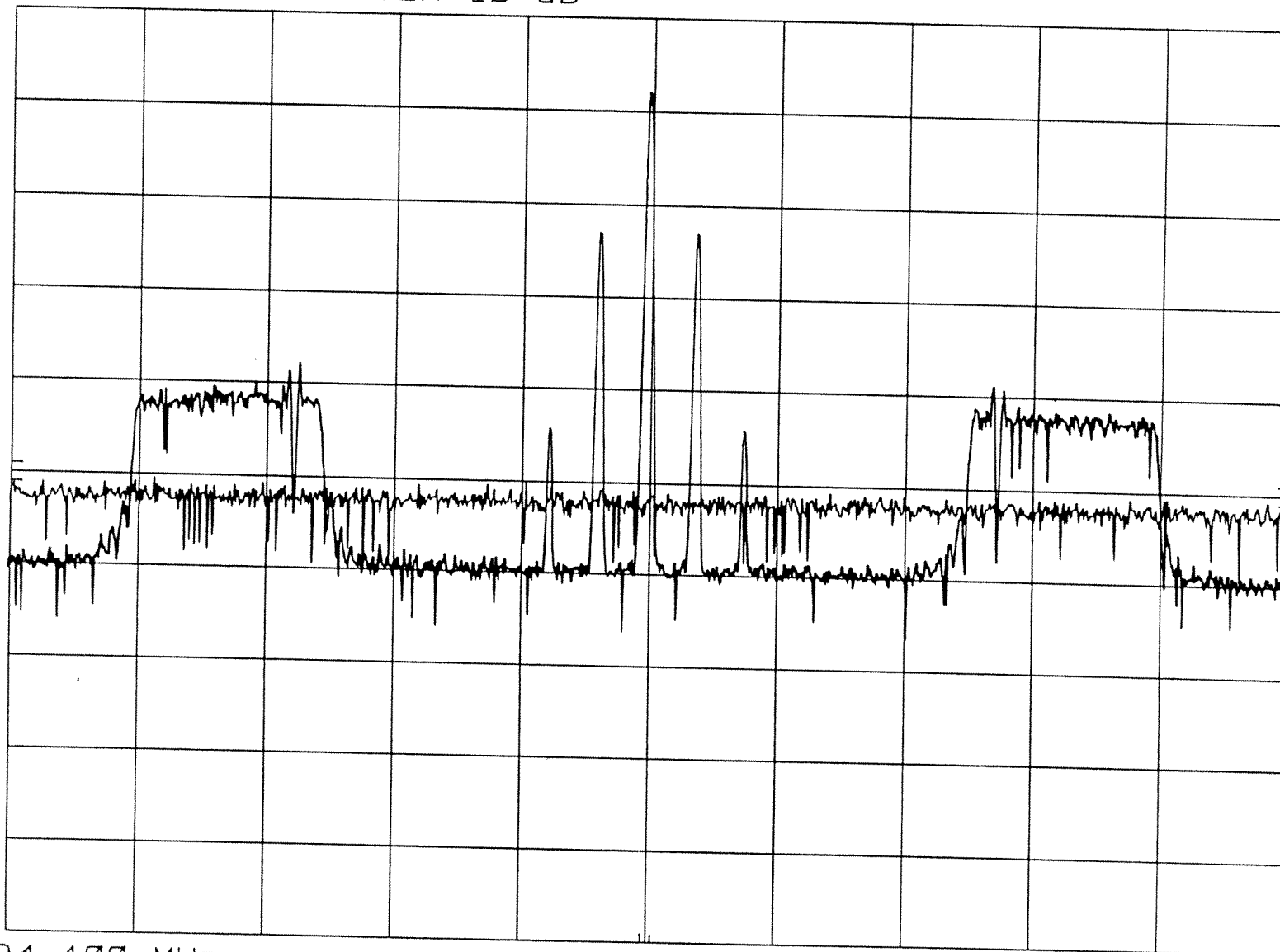
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

AT&T AMATI DSB GAUSSIAN NOISE Co/No AT ATTN=14.5 3/16/95 1  
EIA REF -50.0 dBm ATTN 10 dB

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

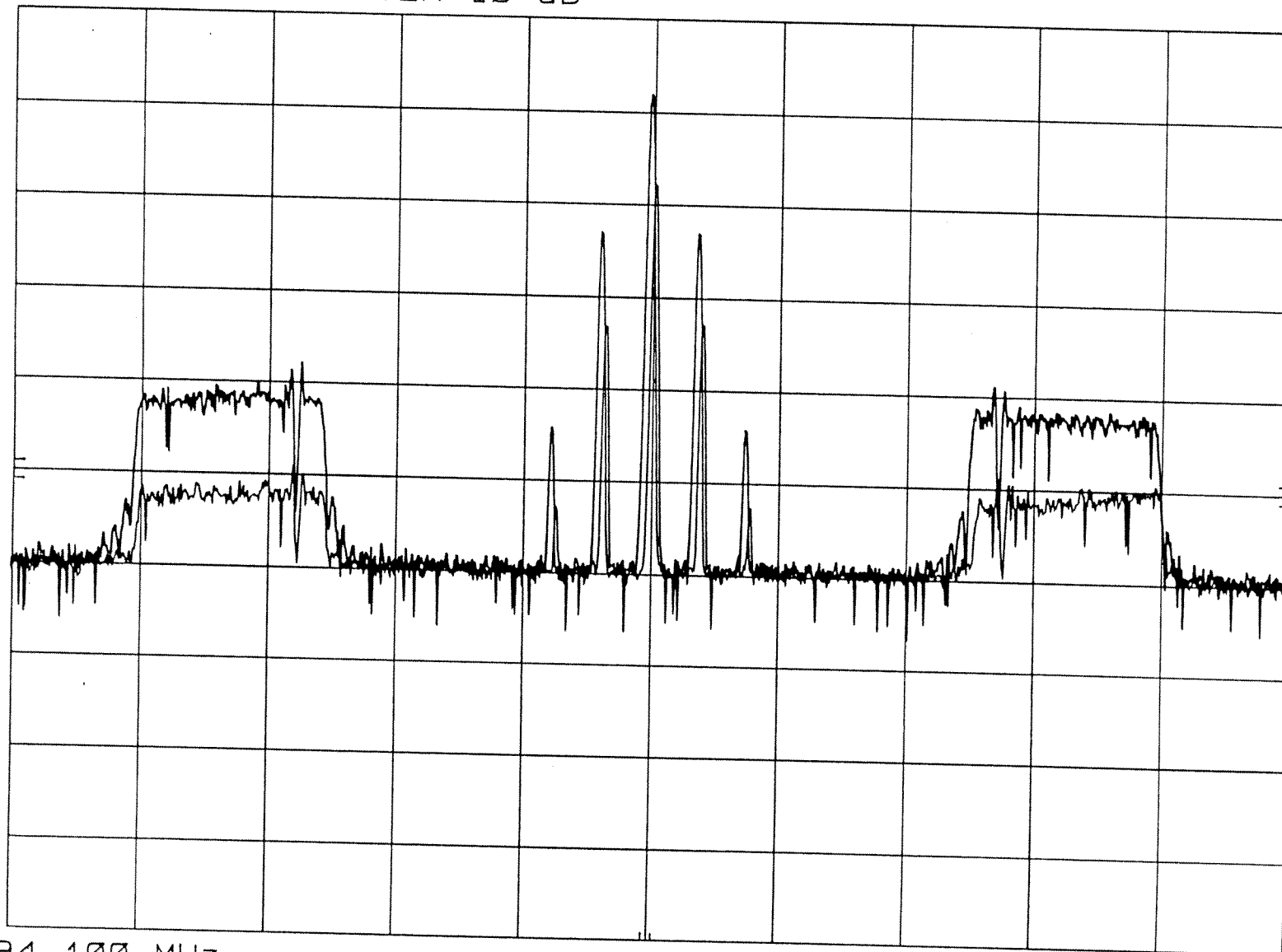
VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

AT&T AMATI CO-CHANNEL d/u AT ATTN = 28.75 3/16/95 18:44  
EIA REF -50.0 dBm ATTN 10 dB

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

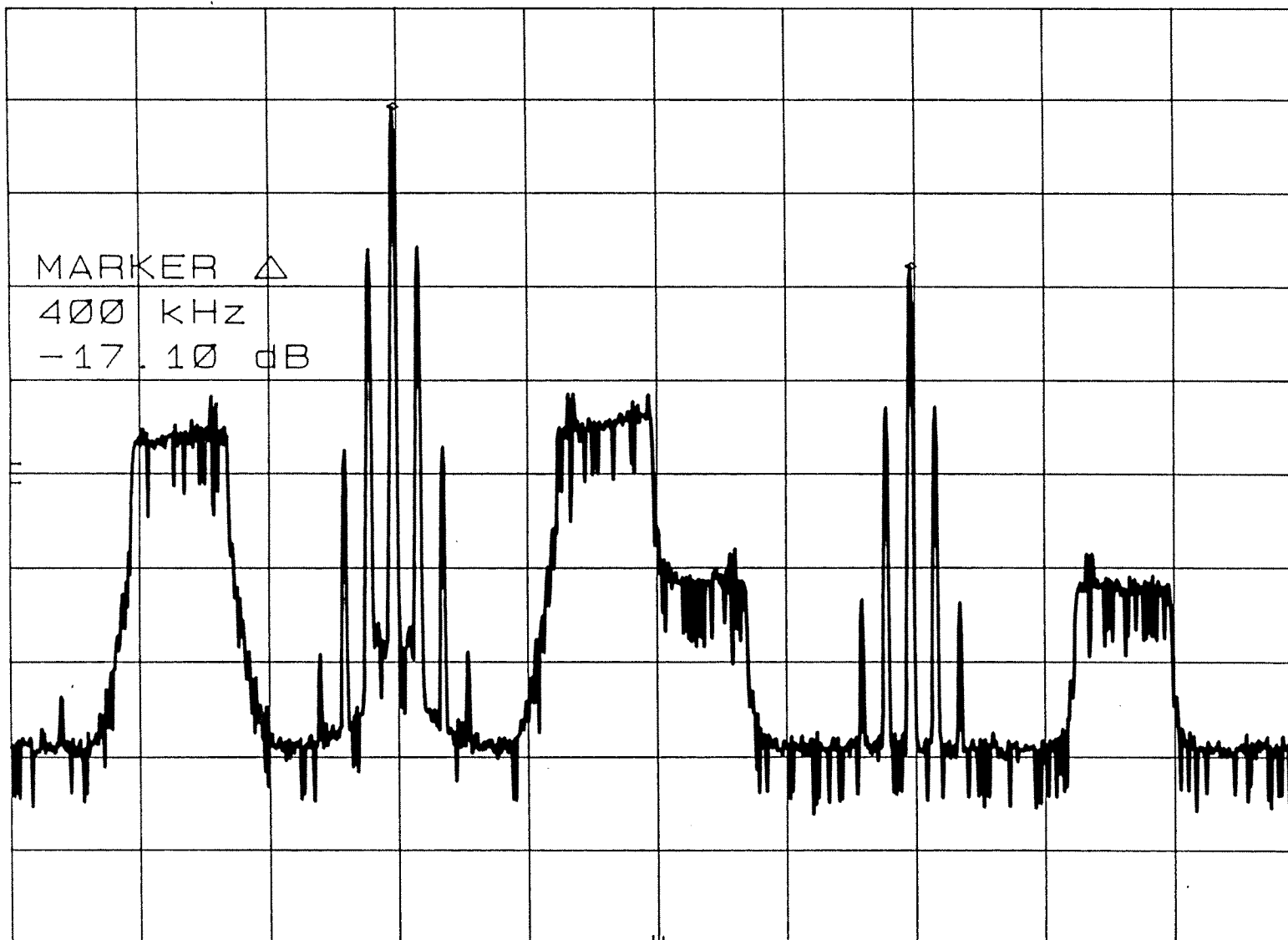
SPAN 500 kHz  
SWP 50.0 sec



AT&T AMATI D3 TOA 5/1/95 15:04  
EIA REF -30.0 dBm ATTEN 10 dB

MKR  $\Delta$  400 kHz  
-17.10 dB

10 dB/



MARKER  $\Delta$   
400 kHz  
-17.10 dB

CENTER 93.90 MHz

RES BW 1 kHz

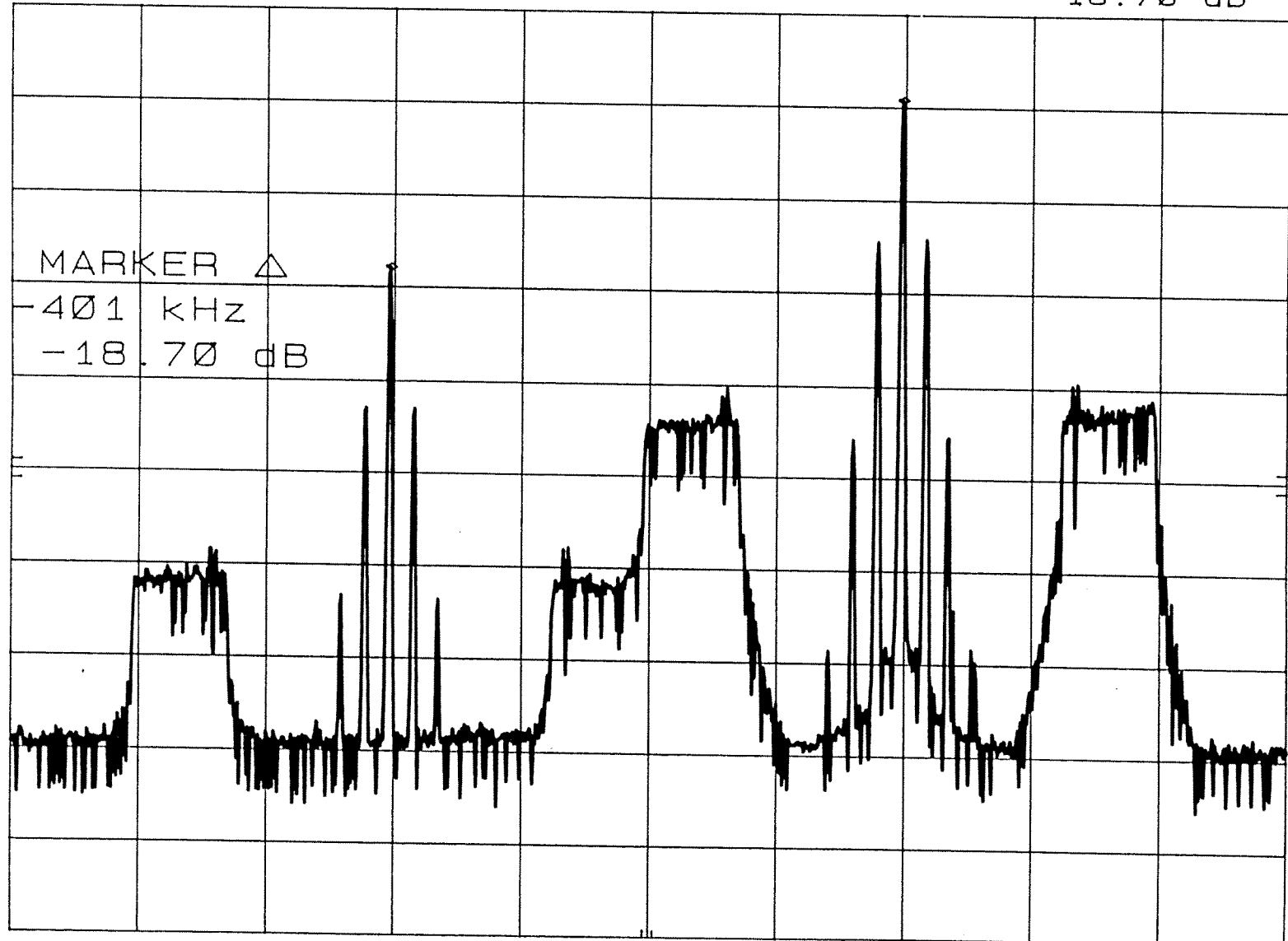
VBW 30 Hz

SPAN 1.00 MHz

SWP 100.0 sec

AT&T AMATI D3 TOA (upper 2nd) 5/2/95 11:37 MKR  $\Delta$ -401 kHz  
EIA REF -30.0 dBm ATTEN 10 dB -18.70 dB

10 dB/

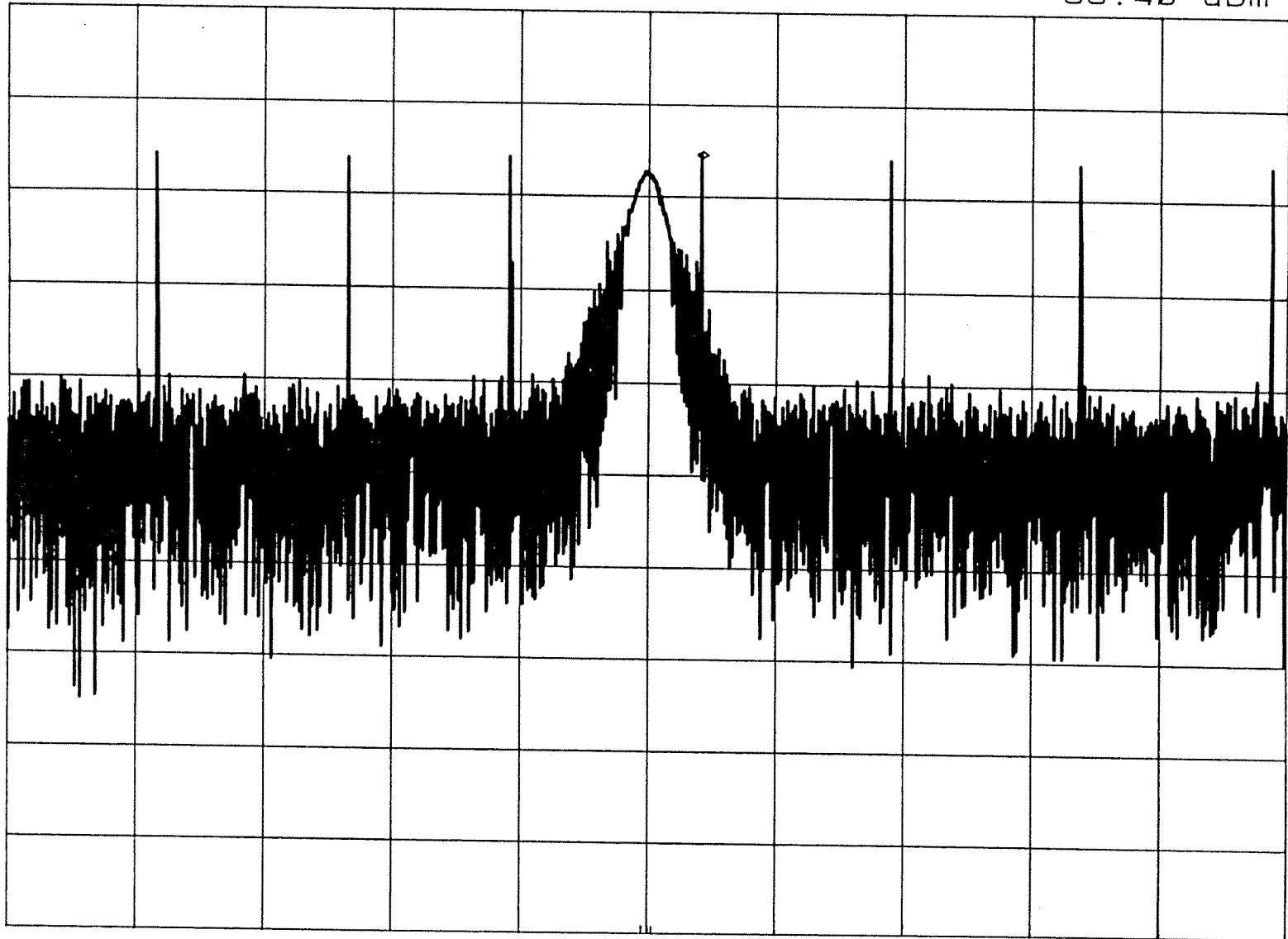


CENTER 94.30 MHz SPAN 1.00 MHz  
RES BW 1 kHz VBW 30 Hz SWP 100 sec

AT&T AMATI DSB C-1 333Hz TOA 5/8/95 14:15  
EIA REF -40.0 dBm ATTEN 10 dB

MKR 94.310 MHz  
-55.40 dBm

10 dB/



CENTER 94.10 MHz

RES BW 100 kHz

VBW 300 kHz

SPAN 5.00 MHz

SWP 20.0 msec

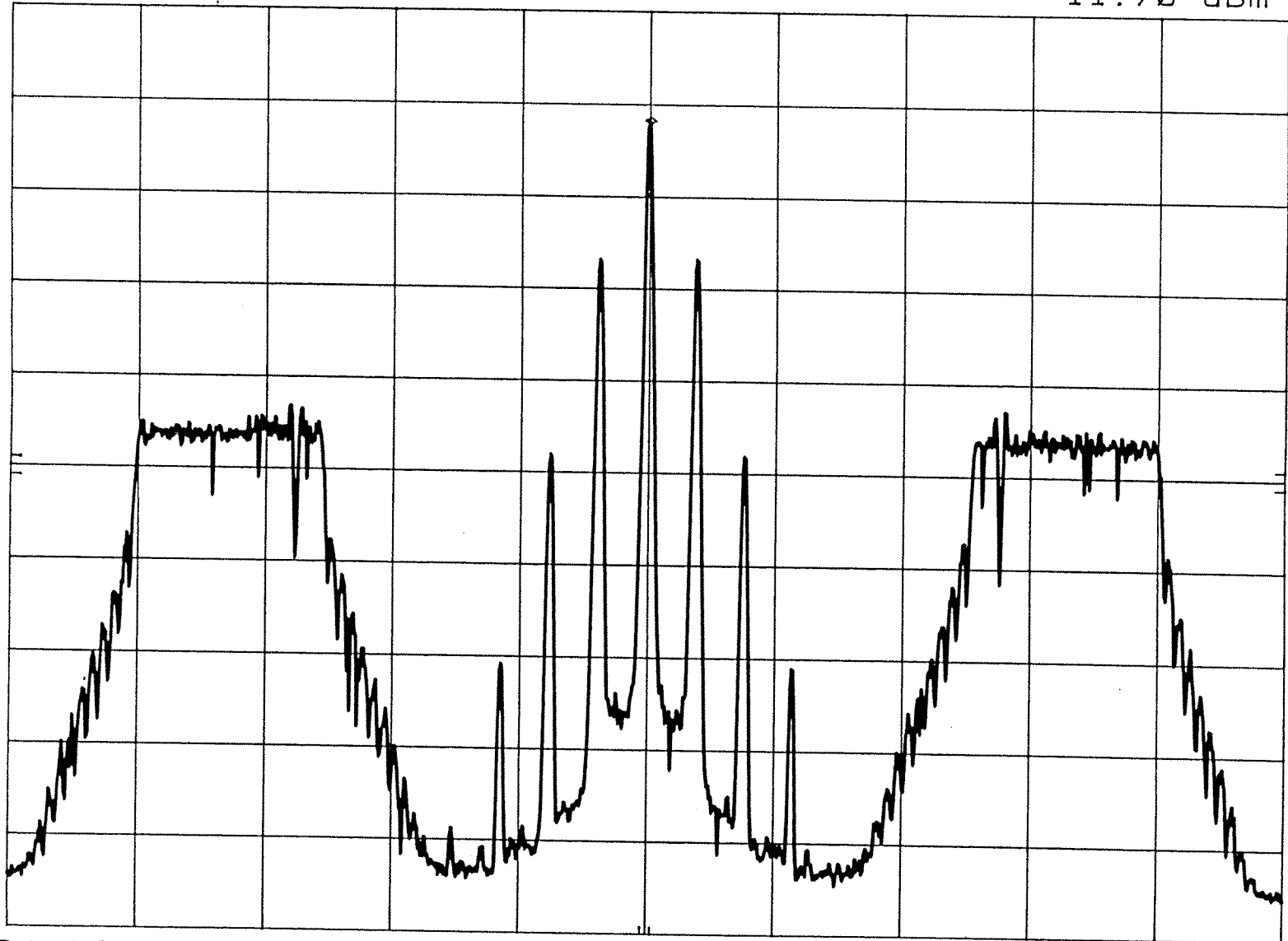
AMATI DSB 5/8/95 10:36

MKR 94.1000 MHz

EIA REF 0.0 dBm ATTEN 10 dB

-11.70 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

**Appendix AL – Digital Test Results  
USA Digital Radio FM 1 Revision B**

# EIA Digital Audio Radio Test Laboratory

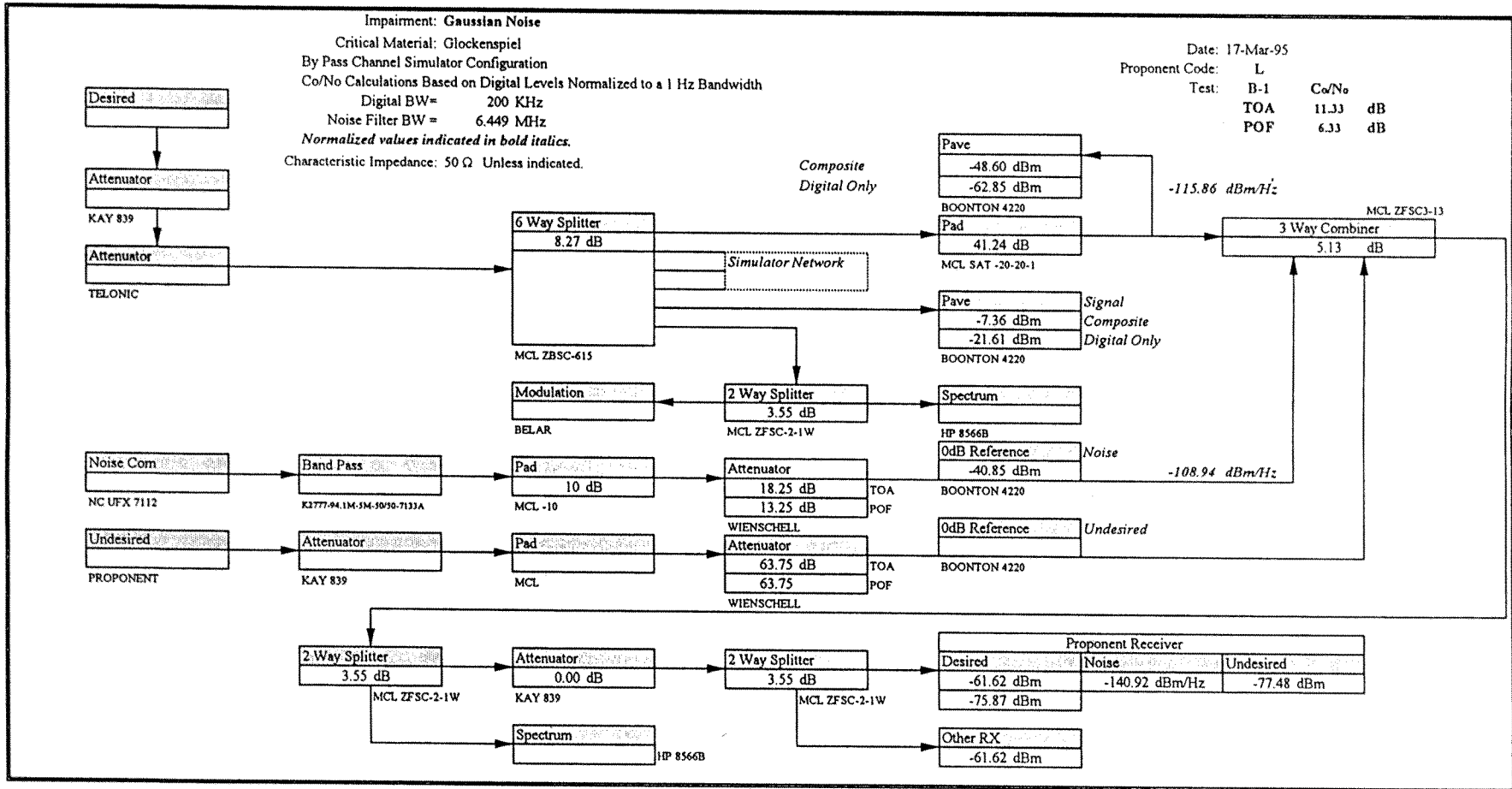
Proponent:	USADR FM1 Rev B.
Code:	L
Digital Band Width:	2.00E+05 Hz
Composite Band Width:	4.50E+05 Hz
Peak / Average Composite:	3.57 dB
Peak / Average Digital:	8.58 dB

AL

# EIA Digital Audio Radio Test Laboratory

<b>Test Proponent Code:</b>	B-1 L	<b>Gaussian Noise</b>		
<b>Units</b>				
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	18.25	13.25	dB
	Co/No	11.33	6.33	dB
	TOA	Small burst of pops at end of first arpeggio. Small warble.		
EO&C				
	POF	High Frequency roll off, many pops and clicks, some muting.		
<b>Soprano</b>		TOA	POF	
	Attenuator	17.75	13.75	dB
	Co/No	10.83	6.83	dB
	TOA	Small burst of pops.		
EO&C				
	POF	High Frequency Roll off, many pops and clicks and some muting.		
<b>Clarinet</b>		TOA	POF	
	Attenuator	18.00	13.50	dB
	Co/No	11.08	6.58	dB
	TOA	Small bursts of pops or clicks.		
EO&C				
	POF	High Frequency roll off, many pops and clicks, some muting.		
Notes:	Recording Reference:	DAR30224.DAT		
	Testers:	DML,RMC		
	Date:	17-Mar-95		

# EIA Digital Audio Radio Test Laboratory





# EIA Digital Audio Radio DAT Recording Log

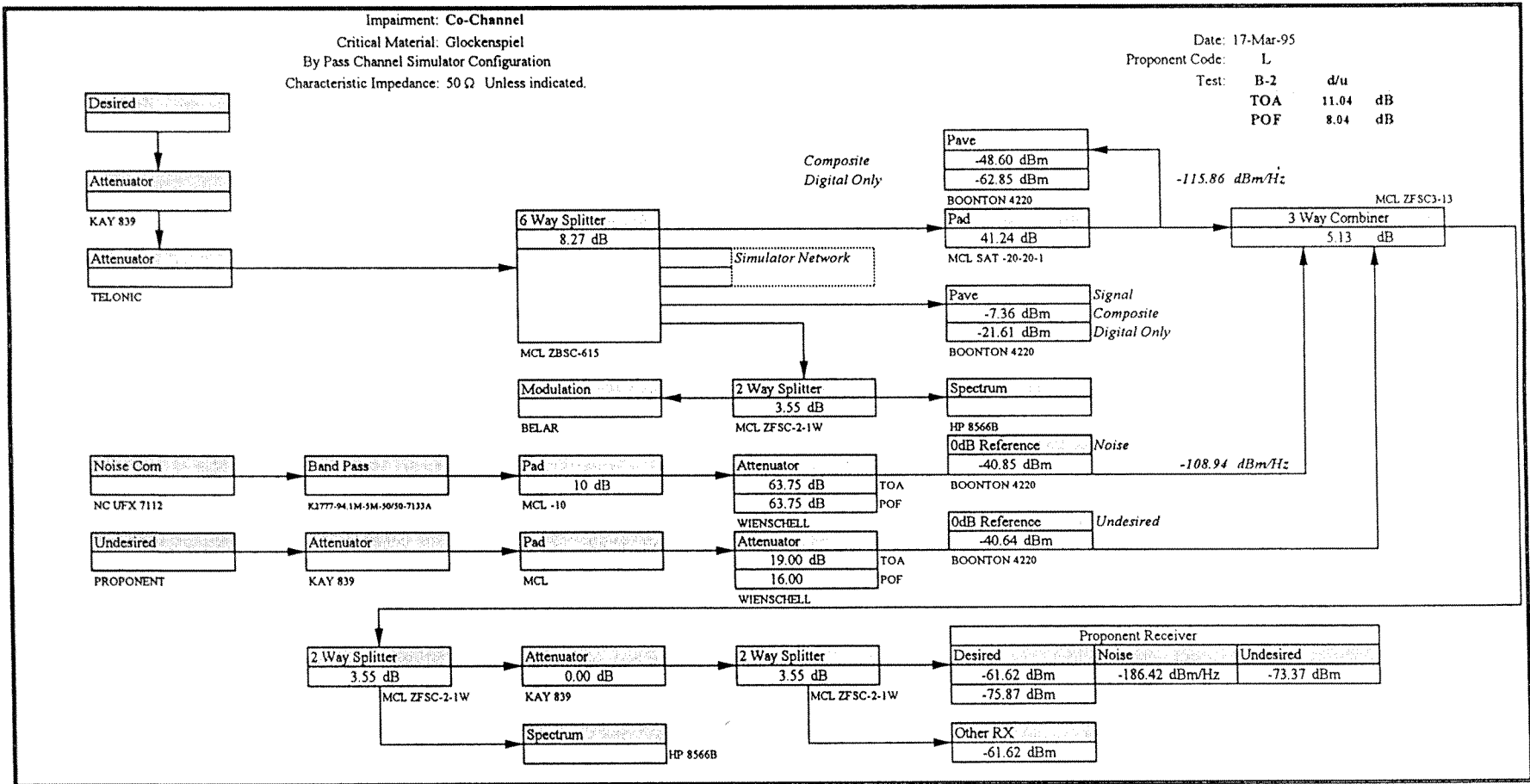
DAT File Number	Time Code		Program ID #				Description	Attn
	Start	Stop	1	2	3			
DAR30224.DAT 17-Mar-95			1	2	3		Glockenspiel Clear Channel	63.75
			4	5	6			19.75
			7	8	9			19.25
			10	11	12			18.75
			13	14	15		TOA lab	18.25
			16	17	18			17.25
			19	20	21			16.25
			22	23	24			15.25
			25	26	27			14.25
			28	29	30		POF lab	13.25
			31	32	33			12.75
			34	35	36		Soprano Clear Channel	63.75
			37	38	39			19.25
			40	41	42			18.75
			43	44	45			18.25
			46	47	48		TOA lab	17.75
			49	50	51			16.75
			52	53	54			15.75
			55	56	57			14.75
			58	59	60		POF lab	13.75
			61	62	63			13.25
			64	65	66		Clarinet Clear Channel	63.75
			67	68	69			19.50
			70	71	72			19.00
			73	74	75		TOA-0.5 #75 Unconfirmed TOA	18.50
			76	77	78		TOA lab	18.00
			79	80	81			17.00
			82	83	84			16.00
			85	86	87			15.00
			88	89	90			14.00
			91	92	93		POF lab	13.50
			94	95	96			13.00

Code: L  
Impairment: Gaussian Noise

# EIA Digital Audio Radio Test Laboratory

<b>Test</b> B-2 <b>Proponent</b> <b>Code:</b> L	<b>Co-Channel</b>		
			Units
<b>Glockenspiel</b>	TOA	POF	
Attenuator	19.00	14.00	dB
d/u	11.04	6.04	dB
EO&C	TOA	Small burst of pops. Warble or chirp 1st arpeggio 1st note.	
	POF	Many pops and clicks with high cut and some muting.	
<b>Soprano</b>	TOA	POF	
Attenuator	18.50	14.00	dB
d/u	10.54	6.04	dB
EO&C	TOA	High Cut and small burst of pops.	
	POF	Many pops and clicks with high cut and some muting.	
<b>Clarinet</b>	TOA	POF	
Attenuator	19.00	14.75	dB
d/u	11.04	6.79	dB
EO&C	TOA	Small burst of pops.	
	POF	Many pops and clicks with high cut and some muting.	
<b>Notes:</b>	Recording Reference: DAR30246.DAT Testers: DML,RMC Date: 17-Mar-95		

# EIA Digital Audio Radio Test Laboratory



## EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Start IDs					Description	Attn
	Start	Stop	1	2	3				
DAR30246.DAT	0:05		1	2	3			Glockenspiel Clear Channel	63.75
17-Mar-95			4	5	6				20.50
			7	8	9				20.00
			10	11	12				19.50
			13	14	15	16	17	TOA lab	19.00
			18	19	20				18.00
			21	22	23				17.00
			24	25	26				16.00
			27	28	29				15.00
			30	31	32			POF lab	14.00
		20:27	33	34	35				13.50
	20:30		36	37	38			Soprano Clear Channel	63.75
			39	40	41				20.00
			42	43	44				19.50
			45	46	47				19.00
			48	49	50	51	52	TOA lab	18.50
			53	54	55				18.00
			56	57	58				17.00
			59	60	61				16.00
			62	63	64			POF lab	15.00
		37:48	65	66	67				14.50
	38:05		68	69	70			Clarinet Clear Channel	63.75
			71	72	73				20.50
			74	75	76				20.00
			77	78	79				19.50
			80	81	82	83	84	TOA lab	19.00
			85	86	87				18.50
			88	89	90				17.50
			91	92	93				16.50
			94	95	96				15.50
			97	98	99			POF lab	14.75
		57:15	100	101	102				14.25

Code: L  
Impairment: Co-Channel

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Slow Rayleigh</b>		
<b>Proponent</b>				
<b>Code:</b>	L			
<b>Material</b>				Units
<b>Glockenspiel</b>	Attenuator C/N	TOA	POF	dB dB
		Defects in recovered audio apparent without any added noise. Small bursts of pops and clicks and some High Frequency roll off. Level of impairment between TOA and POF.		
		TOA	POF	
<b>EO&amp;C</b>				
		TOA	POF	
<b>Soprano</b>	Attenuator C/N			dB dB
		Defects in recovered audio apparent without any added noise. Small bursts of pops and clicks and some High Frequency roll off. Level of impairment between TOA and POF. Not as perceptible as with glockenspiel.		
		TOA	POF	
<b>EO&amp;C</b>				
		TOA	POF	
<b>Clarinet</b>	Attenuator C/N			dB dB
		Defects in recovered audio apparent without any added noise. Small bursts of pops and clicks and some High Frequency roll off. Level of impairment between TOA and POF. Not as perceptible as with glockenspiel. More perceptible than Soprano.		
		TOA	POF	
<b>EO&amp;C</b>				
		TOA	POF	
<b>Recording Reference: DAR30301.DAT</b> <b>Notes: Impairment: Multipath with Gaussian Noise</b> <b>Testers: DML,RMC</b> <b>Test Date: 13-Apr-95</b>				



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	B-3	<b>Urban Fast Rayleigh Impairment Level</b>		
<b>Proponent Code:</b>	L			
<b>Material</b>				Units
<b>Glockenspiel</b>		TOA	POF	
	Attenuator	38.00	24.00	dB
	C/N	31.17	17.17	dB
	TOA	Click.		
EO&C		High Cut , pops, clicks and occasional mutes.		
	POF			
<b>Soprano</b>		TOA	POF	
	Attenuator	35.00	24.00	dB
	C/N	28.17	17.17	dB
	TOA	Small burst of pops.		
EO&C		High Frequency Roll off, many pops and clicks and some muting.		
	POF			
<b>Clarinet</b>		TOA	POF	
	Attenuator	38.00	24.00	dB
	C/N	31.17	17.17	dB
	TOA	Small warble or burst of pops or clicks.		
EO&C		Many small duration mutes with background noise.		
	POF			
Recording Reference: DAR30302.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 13-Apr-95				

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs				Description	Attn
	Start	Stop	1	2	3			
DAR30302.DAT			1	2	3		Glockenspiel No Added Noise	63.75
13-Apr-95			4	5	6			40.00
			7	8	9	10	TOA Unconfirmed	39.00
			12	13	14	15	TOA lab	38.00
			17	18	19			34.00
			20	21	22			29.00
			23	24	25		POF lab	24.00
			26	27	28		Soprano No Added Noise	63.75
			29	30	31			39.00
			32	33	34			38.00
			35	36	37			37.00
			38	39	40			36.00
			41	42	43		TOA lab	35.00
			44	45	46			32.00
			47	48	49			28.00
			50	51	52			26.00
			53	54	55		POF lab	24.00
			56	57	58		Clarinet No Added Noise	63.75
			59	60	61		TOA Unconfirmed	39.00
			62	63	64		TOA lab	38.00
			65	66	67		TOA+4	34.00
			68	69	70		TOA+9	28.00
			71	72	73		POF lab	24.00

Proponent Code: L  
 Impairment: Urban Fast Rayleigh



# EIA Digital Audio Radio Test Laboratory

<b>Test</b> B-3 <b>Proponent</b> <b>Code:</b> L  <b>Material</b>	<b>Rural Fast Rayleigh Impairment Level</b>	
<b>Glockenspiel</b>  Attenuator C/N  TOA EO&C POF	Defects in recovered audio apparent without any added noise. Small bursts of pops and clicks and some High Frequency roll off. Level of impairment approximately TOA.	Units
<b>Soprano</b>  Attenuator C/N  TOA EO&C POF	On "You" small burst of clicks. Other defects include high cut and various pops.	
<b>Clarinet</b>  Attenuator C/N  TOA EO&C POF	1st arpeggio high cut, pops and clicks (warbles)	
Recording Reference: DAR30303.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 14-Apr-95		

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30303.DAT 14-Apr-95			1	2	3	4	5	Glockenspiel No Added Noise	63.75
			6	7	8	9	10	Soprano No Added Noise	63.75
			11	12	13	14	15	Clarinet No Added Noise	63.75

Proponent Code: L  
Impairment: Rural Fast Rayleigh

# EIA Digital Audio Radio Test Laboratory

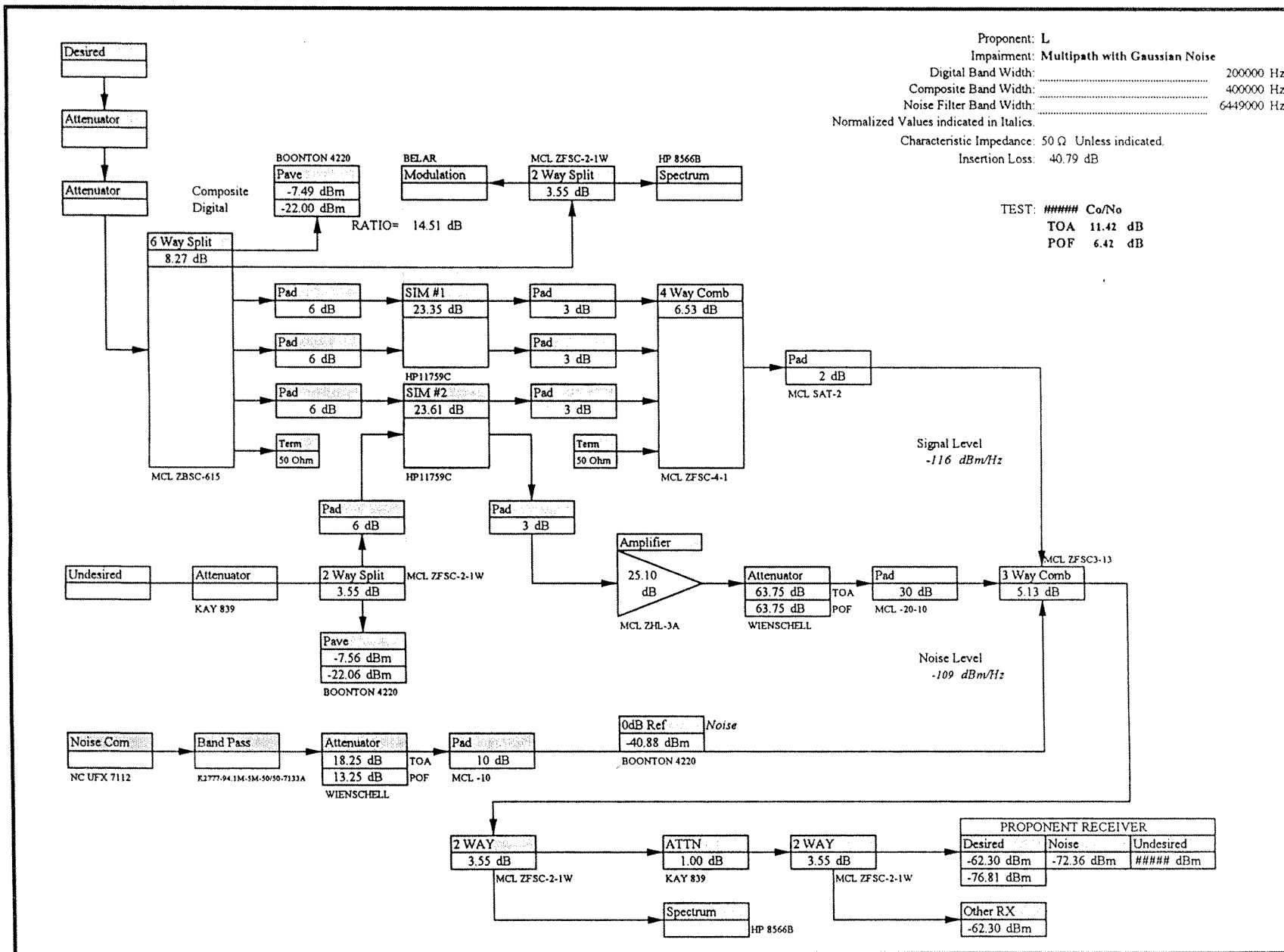
<b>Test</b>	B-3	<b>Terrain Obstructed Rayleigh</b>	
<b>Proponent Code:</b>	L		
<b>Material</b>			Units
<b>Glockenspiel</b>	Attenuator C/N	Level of impairment detected between TOA and POF, closer to POF.	
EO&C	TOA POF		
<b>Soprano</b>	Attenuator C/N	POF level of impairment.	
EO&C	TOA POF		
<b>Clarinet</b>	Attenuator C/N	POF level of impairment.	
EO&C	TOA POF		
Recording Reference: DAR30304.DAT Notes: Impairment: Multipath with Gaussian Noise Testers: DML,RMC Test Date: 14-Apr-95			

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Program IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30304.DAT 14-Apr-95	0:07	3:00	1	2	3	4	5	Glockenspiel No Added Noise	63.75
	3:06	5:45	6	7	8	9	10	Soprano No Added Noise	63.75
	5:47	8:30	11	12	13	14	15	Clarinet No Added Noise	63.75

Proponent Code: L  
 Impairment: Terrain Obstructed Rayleigh

# EIA Digital Audio Radio Test Laboratory



EIA Digital Audio Radio Test Laboratory

Test		C-1		Impulse Response		
USADR FM1 Rev B.						5 Vp-p at attenuator input.
Program Material		Glockenspiel				
Pulse Repetition (Hz)	Attn at TOA (dB)	(Vp-p)	Attn at POF (dB)	(Vp-p)	EO&C	
100	17.50	0.59	0.00	4.46	TOA, small warble. POF, not attainable.	
200	20.50	0.42	15.00	0.79	TOA, small warble. POF,numerous warbles,high cut and mutes.	
333	14.00	0.89	0.00	4.46	TOA, small warble. POF not attainable.	
666	16.00	0.71	0.00	4.46	TOA, Buzz mute. POF, not attainable.	
1000	21.00	0.40	17.50	0.59		

Test Date: 9-May-95  
 Testers: DML,RMc

# EIA Digital Audio Radio Test Laboratory

<b>Test</b> C-2      CW Response USADR FM1 Rev B. Program Material      Mozart (track 67 SQAM Disk)									
Test Point	Frequency MHz	POF	POF+6	POF+12	Test Point	Frequency MHz	POF	POF+6	POF+12
1	93.85	0	0	0	27	94.11	0	0	0
2	93.86	0	0	0	28	94.12	0	0	0
3	93.87	0	0	1	29	94.13	0	0	0
4	93.88	2	2	2	30	94.14	0	0	0
5	93.89	2	2	2	31	94.15	0	0	0
6	93.90	1	2	2	32	94.16	0	0	0
7	93.91	2	2	2	33	94.17	0	0	0
8	93.92	1	2	2	34	94.18	0	0	0
9	93.93	2	2	2	35	94.19	0	0	0
10	93.94	1	1	2	36	94.20	0	0	0
11	93.95	1	2	2	37	94.21	0	0	0
12	93.96	1	2	2	38	94.22	0	0	0
13	93.97	1	2	2	39	94.23	1	2	2
14	93.98	0	0	0	40	94.24	2	2	2
15	93.99	0	0	0	41	94.25	1	2	2
16	94.00	0	0	0	42	94.26	1	2	2
17	94.01	0	0	0	43	94.27	2	2	2
18	94.02	0	0	0	44	94.28	1	2	2
19	94.03	0	0	0	45	94.29	2	2	2
20	94.04	0	0	0	46	94.30	2	2	2
21	94.05	0	0	0	47	94.31	2	2	2
22	94.06	0	0	0	48	94.32	2	2	2
23	94.07	0	0	0	49	94.33	0	0	1
24	94.08	0	0	0	50	94.34	0	0	0
25	94.09	0	0	0	51	94.35	0	0	0
26	94.10	0	0	0					

Test Date: 9-May-95      0 dB Attenuator Reference: -33.38 dBm

0=CLEAN AUDIO      1=APPROXIMATE TOA      2 ≥ POF

POF at 93.96 MHz Attn=38.50dB

POF = High Cut, warbles and occasional buzz mutes.

# EIA Digital Audio Radio Laboratory

Test C-3 Airplane Flutter USADR FM1 Rev B. Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 $\mu$ s Delay  8.00 dB	High Frequency roll off with background noise. Level of impairment approaching POF. No clear audio segments. Recorded for the Record. DAR30500.DAT PI #s 19, 20, 21, 22 and 23
#2	200 Km/h Doppler 13.7 $\mu$ s Delay  6.00 dB	High Frequency roll off with background noise. Level of impairment equal to POF. No clear audio segments. Recorded for the Record. DAR30500.DAT PI #s 24, 25, 26, 27 and 28
#3	100 Km/h Doppler 6.8 $\mu$ s Delay  4.00 dB	High Frequency roll off with background noise. Level of impairment equal to POF. No clear audio segments. Recorded for the Record. DAR30500.DAT PI #s 29, 30, 31, 32 and 33
Test Date: 14-Apr-95 Testers: DML, RMc		



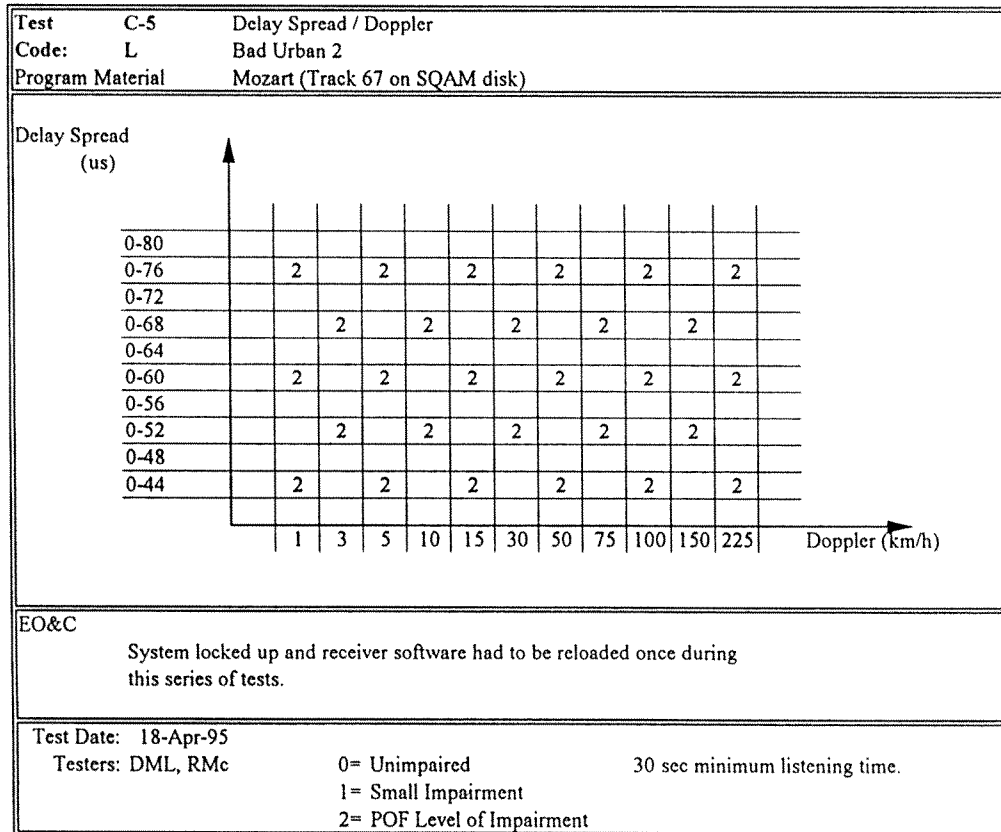
EIA Digital Audio Radio Laboratory

Test	C-4	Weak Signal Sensitivity				
USADR FM1 Rev B.						
Program Material	Glockenspiel					
<table border="1"><tr><td>TOA (dBm)</td><td>POF (dBm)</td></tr><tr><td><math>-87 \leq \text{TOA} &lt; -86</math></td><td><math>-92 &lt; \text{POF} \leq -91</math></td></tr></table>			TOA (dBm)	POF (dBm)	$-87 \leq \text{TOA} < -86$	$-92 < \text{POF} \leq -91$
TOA (dBm)	POF (dBm)					
$-87 \leq \text{TOA} < -86$	$-92 < \text{POF} \leq -91$					
Test Date: 4-May-95						
Testers: DML, RMc						

# EIA Digital Audio Radio Laboratory

<b>Test</b>	C-5	<b>Delay Spread / Doppler</b>																																																																																																																																														
<b>Code:</b>	L	Bad Urban 1																																																																																																																																														
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)																																																																																																																																														
Delay Spread (us) <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr> <td style="padding: 2px;">0-40</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr> <td style="padding: 2px;">0-36</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td>2</td></tr> <tr> <td style="padding: 2px;">0-32</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td></tr> <tr> <td style="padding: 2px;">0-28</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td>2</td></tr> <tr> <td style="padding: 2px;">0-24</td><td></td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>1</td><td></td><td>2</td></tr> <tr> <td style="padding: 2px;">0-20</td><td></td><td>2</td><td></td><td>2</td><td></td><td>2</td><td></td><td>1</td><td></td><td>2</td><td>2</td></tr> <tr> <td style="padding: 2px;">0-16</td><td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td></tr> <tr> <td style="padding: 2px;">0-12</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td>1</td></tr> <tr> <td style="padding: 2px;">0-8</td><td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td></tr> <tr> <td style="padding: 2px;">0-4</td><td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td>1</td></tr> <tr> <td></td><td></td><td>1</td><td>3</td><td>5</td><td>10</td><td>15</td><td>30</td><td>50</td><td>75</td><td>100</td><td>150</td><td>225</td> </tr> </table> Doppler (km/h)												0-40			2		2		2		2		2	0-36		2		2		2		2		2	2	0-32			2		2		2		2		2	0-28		2		2		2		2		2	2	0-24			2		2		2		1		2	0-20		2		2		2		1		2	2	0-16			2		1		1		1		1	0-12		1		1		1		1		1	1	0-8			1		1		1		1		1	0-4		1		1		0		0		0	1			1	3	5	10	15	30	50	75	100	150	225
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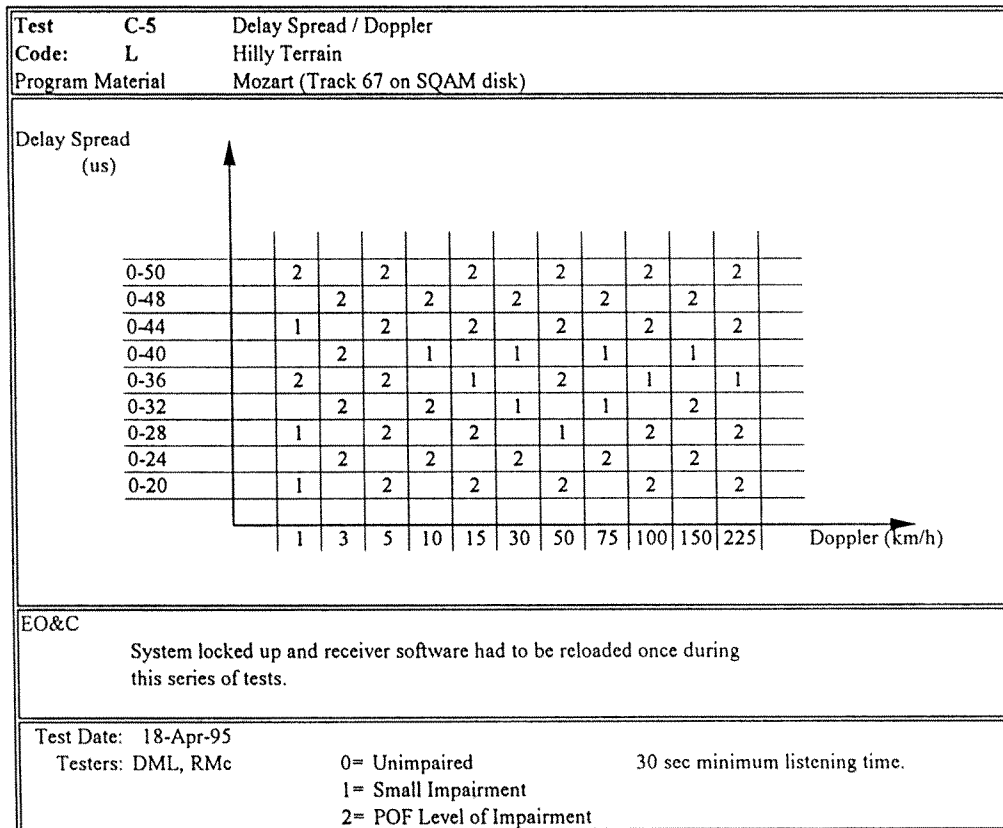
# EIA Digital Audio Radio Laboratory



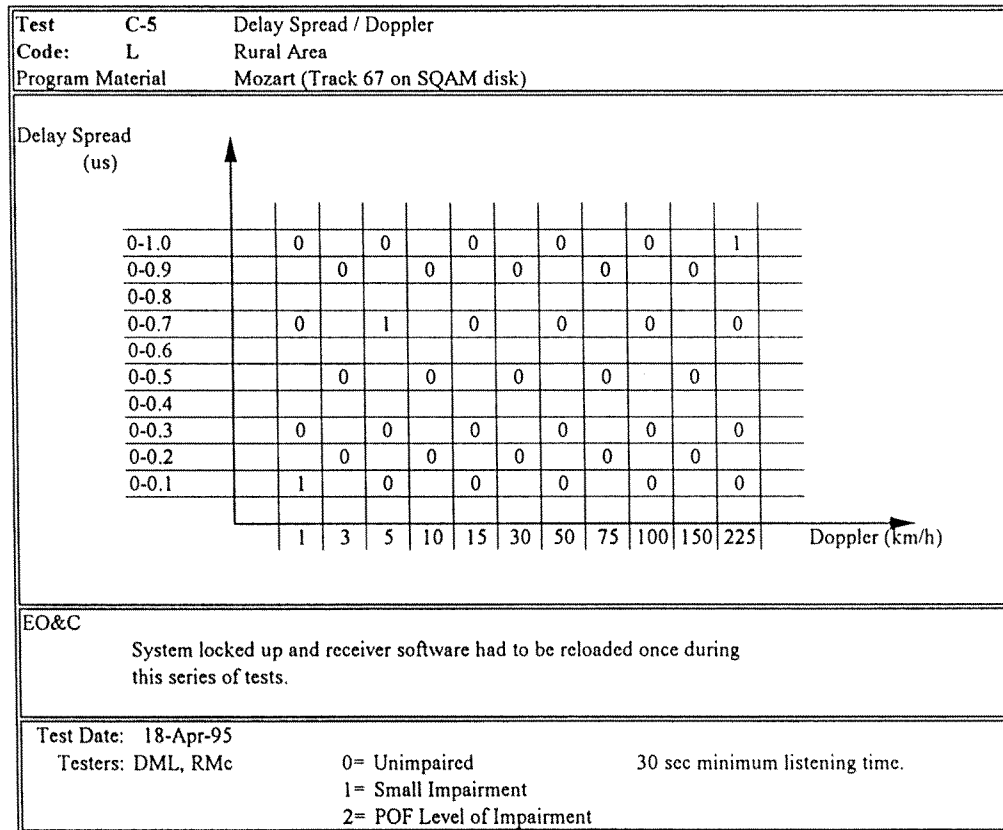
# EIA Digital Audio Radio Laboratory

<b>Test</b>	C-5	Delay Spread / Doppler																																																																																																																																											
<b>Code:</b>	L	Typical Urban																																																																																																																																											
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)																																																																																																																																												
Delay Spread (us) <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 10px;">↑</div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;">0-10</td> <td></td><td></td><td>2</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td> </tr> <tr> <td>0-9</td> <td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td> </tr> <tr> <td>0-8</td> <td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>1</td><td></td><td>0</td><td></td><td>1</td> </tr> <tr> <td>0-7</td> <td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td> </tr> <tr> <td>0-6</td> <td></td><td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td> </tr> <tr> <td>0-5</td> <td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>1</td> </tr> <tr> <td>0-4</td> <td></td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td> </tr> <tr> <td>0-3</td> <td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>1</td> </tr> <tr> <td>0-2</td> <td></td><td></td><td>1</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td><td>0</td><td></td> </tr> <tr> <td>0-1</td> <td></td><td>0</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td><td></td><td>1</td> </tr> </table> <div style="margin-left: 10px; text-align: center;">→</div> </div> <div style="margin-top: 10px; text-align: right;">Doppler (km/h)</div>												0-10			2		1		1		1		1		0-9	1		1		1		1		1		0		0-8		1		1		0		1		0		1	0-7		1		1		0		1		1		1	0-6			1		1		0		0		0		0-5		1		1		1		0		0		1	0-4			1		0		0		0		0		0-3		0		0		0		0		0		1	0-2			1		0		0		0		0		0-1		0		1		1		1		1		1
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# EIA Digital Audio Radio Laboratory



# EIA Digital Audio Radio Laboratory



# EIA Digital Audio Radio Laboratory

<b>Test</b> C-6 Additional Multipath Doppler Simulations <b>USADR FM1 Rev B.</b> <b>Program Material:</b> Glockenspiel		
Scenario	Attn Co/No Units	EO&C
#1 Urban Slow	No Added Noise	Mutes on severe fades. High Frequency roll off and warbleing. Level of impairment between TOA and POF closer to TOA.
#2 Urban Fast	TOA  29.00 22.21 dB	TOA Small Static pop on ID # 19
	POF  16.00 9.21 dB	POF Many warbles, High Cut and a mute.
#3 Rural Fast	TOA  24.00 17.21 dB	TOA Small Static pop on ID # 49
	POF  14.00 7.21 dB	POF Many warbles, High Cut and a mute.
#4 Terrain Obstructed Fast	No Added Noise	Mutes on severe fades. High Frequency roll off and warbleing. POF level of impairment.
Test Date: 19-Apr-95 Testers: DML, RMc DAT Reference: DAR30560.DAT		

EIA Digital Audio Radio Laboratory

DAT File Number	Time Code		Start IDs					Description	Attn
	Start	Stop	1	2	3	4	5		
DAR30560.DAT 19-Apr-95	0:20	3:13	1	2	3	4	5	Urban Slow Doppler No Added Noise	63.75
	3:17	6:11	6	7	8	9	10	Urban Fast Doppler No Added Noise	63.75
			11	12	13				31.00
			14	15	16				30.00
			17	18	19			TOA	29.00
			20	21	22				25.00
			23	24	25				21.00
			26	27	28			POF	17.00
			33	34	35	36	37	Rural Fast Doppler No Added Noise	63.75
			38	39	40				26.00
			41	42	43	44	45	TOA unconfirmed	25.00
			46	47	48	49	50	TOA confirmed	24.00
			51	52	53				21.00
			54	55	56				18.00
			57	58	59			POF	14.00
		37:25	60	61	62	63	64	Obstructed Path Doppler No Added Noise	63.75

Propnent Code: L  
Additional Multi Path



# EIA Digital Audio Radio Laboratory

<b>Test</b> <b>D-Series Co-Channel, 1st and 2nd Adjacent</b> <b>USADR FM1 Rev B.</b> <b>Program Material: Glockenspiel</b>					
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	13.75	10.78	dB	Small warble.
	POF	10.25	7.28	dB	Many pops, clicks and some muting.
D-2 Lower 1st Adjacent	TOA	30.25	27.28	dB	Small chirp.
	POF	25.75	22.78	dB	Many pops, clicks and some muting.
Upper 1st Adjacent	TOA	29.75	26.78	dB	High Cut and warble.
	POF	25.75	22.78	dB	Many pops, clicks and some muting.
D-3 Lower 2nd Adjacent	TOA	26.75	3.78	dB	Small warble or chirp.
	POF	18.25	-4.72	dB	Many pops and clicks high cut and slight mute.
Upper 2nd Adjacent	TOA	28.25	5.28	dB	Small chirp.
	POF	21.50	-1.47	dB	Pops, clicks, high cut and mute.
Additional Comments: Tests conducted through the multipath simulators with one path on the desired and one path on the undesired channels.  DAT Reference: DAR30411.DAT					
Test Date: 2-May-95		Desired		Undesired	
Testers: DML, RMc		Signal	-7.40 dBm	-7.54	
		IL	40.79 dB	37.68 dB	
		3WIN	-48.19 dBm	-45.22 dBm	

EIA Digital Audio Radio Laboratory

DAT File Number	Time Code		Start IDs							Description	Attn			
	Start	Stop												
DAR30411.DAT 2-May-95	0:05	2:58	1	2	3	4	5	6	7	8	9	10	Co-Channel, #	14.25
			6	7	8	9	10						Various defects in 7 and 10 unconfirmed.	14.00
		8:11	11	12	13	14							Confirmed TOA	13.75
	8:20		15	16	17	18	19						Lower 2nd Adjacent, #19 very end slight warble.	26.75
		14:05	20	21	22	23	24						#23 2nd arpeggio at the end.	
	14:10	17:04	25	26	27	28	29						Lower 1st Adjacent,TOA #28 very end	30.25
	17:08	20:01	30	31	32	33	34						Upper 2nd Adjacent #33 TOA	28.25
	20:04	22:57	35	36	37	38	39						Upper 1st Adjacent TOA #39 warble	29.75

Proponent Code: L  
D-Series Recordings Co, 1st and 2nd Adjacent

# EIA Digital Audio Radio Laboratory

Test                    E-1    Co-Channel with Multipath (Rayleigh) USADR FM1 Rev B. Program Material:    Glockenspiel					
Scenario					EO&C
	Level	Attn	D/U	Units	
#1 Urban Slow					Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF closer to TOA.
#2 Urban Fast	TOA	37.00	34.03	dB	Small drop out.
	POF	24.00	21.03	dB	Excessive muting.
#3 Rural Fast					Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of broken glass, high cut and pops. The level of impairment is between TOA and POF closer to TOA.
#4 Terrain Obstructed					Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of mutes, pops and high cut. The level of impairment is between TOA and POF closer to POF.
Test Date: 2-May-95		Signal		Desired	Undesired
Testers: DML, RMc		Insertion Loss		-7.40 dBm	-7.54 dBm
		Level at 3 way combiner		40.79 dB	37.68 dB
				-48.19 dBm	-45.22 dBm

## EIA Digital Audio Radio Laboratory

<b>Test</b> <b>E-2    Lower 1st Adjacent with Multipath (Rayleigh)</b> <b>USADR FM1 Rev B.</b> <b>Program Material:    Glockenspiel</b>								
Scenario					EO&C			
	Level	Attn	D/U	Units				
#1 Urban Slow					Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF closer to TOA.			
#2 Urban Fast	TOA	55.00	52.02	dB	Burst of pops.			
	POF	40.00	37.02	dB	High Cut, pops, clicks and buzz mute.			
#3 Rural Fast					Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of broken glass, high cut and pops. The level of impairment is between TOA and POF closer to TOA.			
#4 Terrain Obstructed					Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of mutes, pops and high cut. The level of impairment is between TOA and POF closer to POF.			
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <b>Test Date:</b> 4-May-95  <b>Testers:</b> DML, RMc                 </td> <td style="width: 25%; border: none; text-align: center;"> <b>Desired</b>                      Signal            -7.46 dBm                      Insertion Loss    40.79 dB                      Level at 3 way combiner -48.25 dBm                 </td> <td style="width: 25%; border: none; text-align: center;"> <b>Undesired</b>                      -7.59 dBm                      37.68 dB                      -45.27 dBm                 </td> </tr> </table>						<b>Test Date:</b> 4-May-95 <b>Testers:</b> DML, RMc	<b>Desired</b> Signal            -7.46 dBm Insertion Loss    40.79 dB Level at 3 way combiner -48.25 dBm	<b>Undesired</b> -7.59 dBm 37.68 dB -45.27 dBm
<b>Test Date:</b> 4-May-95 <b>Testers:</b> DML, RMc	<b>Desired</b> Signal            -7.46 dBm Insertion Loss    40.79 dB Level at 3 way combiner -48.25 dBm	<b>Undesired</b> -7.59 dBm 37.68 dB -45.27 dBm						

EIA Digital Audio Radio Laboratory

Test E-3 Lower 2nd Adjacent with Multipath (Rayleigh)					
USADR FM1 Rev B.					
Program Material: Glockenspiel					
Scenario					EO&C
	Level	Attn	D/U	Units	
#1 Urban Slow					Scenario with no 2nd Adjacent creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF closer to TOA.
#2 Urban Fast	TOA	53.00	29.99	dB	Shattering.
	POF	35.00	11.99	dB	Pops, clicks, high cut and muting.
#3 Rural Fast					Scenario with no 2nd Adjacent creates defects in the recovered audio. Defects consist of broken glass, high cut and pops. The level of impairment is between TOA and POF closer to TOA.
#4 Terrain Obstructed					Scenario with no 2nd Adjacent creates defects in the recovered audio. Defects consist of mutes, pops and high cut. The level of impairment is between TOA and POF closer to POF.
Test Date: 3-May-95		Desired		Undesired	
Testers: DML, RMc		Signal	-7.44 dBm	-7.54 dBm	
		Insertion Loss	40.79 dB	37.68 dB	
		Level at 3 way combiner	-48.23 dBm	-45.22 dBm	

EIA Digital Audio Radio Laboratory

Test E-1 Co-Channel with Multipath (Doppler)					
USADR FM1 Rev B.					
Program Material: Glockenspiel					
Scenario					EO&C
	Level	Attn	D/U	Units	
#1 Urban Slow					Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of high cut, warbles and mutes. The level of impairment is between TOA and POF closer to TOA.
#2 Urban Fast	TOA	26.00	23.03	dB	High cut, broken glass and warbling.
	POF	17.00	14.03	dB	Excessive high cut, muting and some background noise.
#3 Rural Fast	TOA	23.00	20.03	dB	High cut, broken glass and warbling.
	POF	18.00	15.03	dB	Excessive high cut, muting and background noise.
#4 Terrain Obstructed					Scenario with No Co-Channel creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF.
Test Date: 2-May-95				Desired	Undesired
Testers: DML, RMc				Signal	-7.54 dBm
				Insertion Loss	37.68 dB
Level at 3 way combiner				-48.19 dBm	-45.22 dBm

## EIA Digital Audio Radio Laboratory

<b>Test</b> <b>E-2    Lower 1st Adjacent with Multipath (Doppler)</b> <b>USADR FM1 Rev B.</b> <b>Program Material:    Glockenspiel</b>																									
Scenario					EO&C																				
	Level	Attn	D/U	Units																					
#1 Urban Slow					Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of high cut, warbles and mutes. The level of impairment is between TOA and POF closer to TOA.																				
#2 Urban Fast	TOA	46.00	43.02	dB	Static Pop and warble.																				
	POF	31.00	28.02	dB	Warbles, shatters, pops, clicks, high cuts and mutes.																				
#3 Rural Fast	TOA	39.00	36.02	dB	Static Pop and warble.																				
	POF	30.00	27.02	dB	Warbles, shatters, pops, clicks, high cuts and mutes.																				
#4 Terrain Obstructed					Scenario with no 1st Adjacent creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF.																				
<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">Test Date: 4-May-95</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Desired</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td></td> <td style="text-align: center;">Signal</td> <td style="text-align: center;">-7.46 dBm</td> <td style="text-align: center;">-7.59 dBm</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">Insertion Loss</td> <td style="text-align: center;">40.79 dB</td> <td style="text-align: center;">37.68 dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">Level at 3 way combiner</td> <td style="text-align: center;">-48.25 dBm</td> <td style="text-align: center;">-45.27 dBm</td> </tr> </table>						Test Date: 4-May-95		Desired		Undesired	Testers: DML, RMc		Signal	-7.46 dBm	-7.59 dBm			Insertion Loss	40.79 dB	37.68 dB			Level at 3 way combiner	-48.25 dBm	-45.27 dBm
Test Date: 4-May-95		Desired		Undesired																					
Testers: DML, RMc		Signal	-7.46 dBm	-7.59 dBm																					
		Insertion Loss	40.79 dB	37.68 dB																					
		Level at 3 way combiner	-48.25 dBm	-45.27 dBm																					

EIA Digital Audio Radio Laboratory

Test E-3 2nd Adjacent with Multipath (Doppler)																	
USADR FM1 Rev B.																	
Program Material: Glockenspiel																	
Scenario					EO&C												
	Level	Attn	D/U	Units													
#1 Urban Slow					Scenario with No 2nd Adjacent creates defects in the recovered audio. Defects consist of high cut, warbles and mutes. The level of impairment is between TOA and POF closer to TOA.												
#2 Urban Fast	TOA	39.00	15.99	dB	Static Pop and warble.												
	POF	24.00	0.99	dB	Warbles, shatters, pops, clicks, high cuts and buzz mutes.												
#3 Rural Fast	TOA	36.00	12.99	dB	Static Pop and warble.												
	POF	24.00	0.99	dB	Warbles, shatters, pops, clicks, high cuts and mutes.												
#4 Terrain Obstructed					Scenario with No 2nd Adjacent creates defects in the recovered audio. Defects consist of high cut and warbles. The level of impairment is between TOA and POF.												
<table border="0" style="width:100%"> <tr> <td>Test Date: 3-May-95</td> <td>Desired</td> <td>Undesired</td> </tr> <tr> <td>Testers: DML, RMc</td> <td>Signal -7.44 dBm</td> <td>-7.54 dBm</td> </tr> <tr> <td></td> <td>Insertion Loss 40.79 dB</td> <td>37.68 dB</td> </tr> <tr> <td></td> <td>Level at 3 way combiner -48.23 dBm</td> <td>-45.22 dBm</td> </tr> </table>						Test Date: 3-May-95	Desired	Undesired	Testers: DML, RMc	Signal -7.44 dBm	-7.54 dBm		Insertion Loss 40.79 dB	37.68 dB		Level at 3 way combiner -48.23 dBm	-45.22 dBm
Test Date: 3-May-95	Desired	Undesired															
Testers: DML, RMc	Signal -7.44 dBm	-7.54 dBm															
	Insertion Loss 40.79 dB	37.68 dB															
	Level at 3 way combiner -48.23 dBm	-45.22 dBm															



EIA Digital Audio Radio Test Laboratory

Test	J-1	Re-Acquisition		
USADR FM1 Rev B.				
Program Material	Mozart (Track 67 on SQAM disk)			
		Re-Acquisition Time (s)		
Toff (s)	POF-2dB	POF-4dB	POF-62dB	
30	<u>7</u>	<u>9</u>	<u>10</u>	
	<u>5</u>	<u>6</u>	<u>3</u>	
	<u>14</u>	<u>2</u>	<u>3</u>	
	<u>11</u>	<u>10</u>	<u>7</u>	
	<u>10</u>	<u>9</u>	<u>5</u>	
Average	9.4	7.2	5.6	
POF Attenuator Setting	:	<u>13.00 dB</u>		
Desired Signal Level	:	<u>-48.27 dBm</u>		
Noise 0 dB Reference	:	<u>-40.87 dBm</u>		
EO&C				
Re-acquisition time is the value listed $\pm$ 0.5 seconds.				
Test Date: 8-May-95				
Testers: DML, RMc				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev B.</b>		Urban Slow Rayleigh		
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)		
Re-Acquisition Time (s)				
Tsim (s)	POF-2	POF-4	POF-6	
5	10	6	6	
10	6	10	5	
15	5	6	8	
20	8	6	38	
25	11 *	10	10	
<u>Average</u>	8.0	7.6	13.4	
POF Attenuator Setting : <u>28.00 dB</u>				
Desired Signal Level : <u>-48.25 dBm</u>				
Noise 0 dB Reference : <u>-40.87 dBm</u>				
<b>EO&amp;C</b>	The recovered audio exhibits high cut and warbleing while running the simulation by itself. Approximately a TOA level of impairment.			
	Re-Acquisition time is the value listed $\pm$ 1 second.			
Test Date: 5-May-95				
Testers: DML, RMc				
	* Indicates receiver software was reloaded after a one minute period with signal and with out recovered audio.			

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev B.</b>		<b>Urban Fast Rayleigh</b>		
<b>Program Material</b>		<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Re-Acquisition Time (s)</b>				
<b>Tsim (s)</b>	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>	
5	<u>6</u>	<u>6</u>	<u>7</u>	
10	<u>9</u>	<u>11</u>	<u>9</u>	
15	<u>8</u>	<u>8</u>	<u>7</u>	
20	<u>5</u>	<u>11</u>	<u>5</u>	
25	<u>11</u>	<u>11</u>	<u>11</u>	
<b>Average</b>	<b>7.8</b>	<b>9.4</b>	<b>7.8</b>	
<b>POF Attenuator Setting</b>	<b>: <u>22.00 dB</u></b>			
<b>Desired Signal Level</b>	<b>: <u>-48.25 dBm</u></b>			
<b>Noise 0 dB Reference</b>	<b>: <u>-40.87 dBm</u></b>			
<b>EO&amp;C</b>				
Re-Acquisition time is the value listed $\pm$ 1 second.				
<b>Test Date: 5-May-95</b>				
<b>Testers: DML, RMc</b>				

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev B.</b>		<b>Rural Fast Rayleigh</b>		
<b>Program Material</b>		<b>Mozart (Track 67 on SQAM disk)</b>		
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>			
	<b>POF-2</b>	<b>POF-4</b>	<b>POF-6</b>	
5	<u>11</u>	<u>5</u>	<u>7</u>	
10	<u>6</u>	<u>15</u>	<u>12</u>	
15	<u>31</u>	<u>8</u>	<u>7</u>	
20	<u>11</u>	<u>6</u>	<u>7</u>	
25	<u>9</u>	<u>11</u>	<u>10</u>	
<b>Average</b>	<u>13.6</u>	<u>9.0</u>	<u>8.6</u>	
	<b>POF Attenuator Setting</b>	: <u>28.00 dB</u>		
	<b>Desired Signal Level</b>	: <u>-48.25 dBm</u>		
	<b>Noise 0 dB Reference</b>	: <u>-40.87 dBm</u>		
<b>EO&amp;C</b>	Recovered Audio is approximately at a TOA level of impairment with the simulation running with no added noise. Re-Acquisition time is the value listed $\pm$ 1 second.			
<b>Test Date:</b> 5-May-95				
<b>Testers:</b> DML, RMc				

EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	Re-Acquisition with Multipath																				
<b>USADR FM1 Rev B.</b>		Terrain Obstructed Rayleigh																				
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)																				
<table border="1"> <thead> <tr> <th>Tsim (s)</th> <th>Re-Acquisition Time (s) POF</th> </tr> </thead> <tbody> <tr> <td>5</td> <td><u>8</u></td> </tr> <tr> <td>10</td> <td><u>10</u></td> </tr> <tr> <td>15</td> <td><u>5</u></td> </tr> <tr> <td>20</td> <td><u>4</u></td> </tr> <tr> <td>25</td> <td><u>4</u></td> </tr> <tr> <td><b>Average</b></td> <td><u>6.2</u></td> </tr> <tr> <td>POF Attenuator Setting</td> <td>: <u>63.75 dB</u></td> </tr> <tr> <td>Desired Signal Level</td> <td>: <u>-48.25 dBm</u></td> </tr> <tr> <td>Noise 0 dB Reference</td> <td>: <u>-40.87 dBm</u></td> </tr> </tbody> </table>			Tsim (s)	Re-Acquisition Time (s) POF	5	<u>8</u>	10	<u>10</u>	15	<u>5</u>	20	<u>4</u>	25	<u>4</u>	<b>Average</b>	<u>6.2</u>	POF Attenuator Setting	: <u>63.75 dB</u>	Desired Signal Level	: <u>-48.25 dBm</u>	Noise 0 dB Reference	: <u>-40.87 dBm</u>
Tsim (s)	Re-Acquisition Time (s) POF																					
5	<u>8</u>																					
10	<u>10</u>																					
15	<u>5</u>																					
20	<u>4</u>																					
25	<u>4</u>																					
<b>Average</b>	<u>6.2</u>																					
POF Attenuator Setting	: <u>63.75 dB</u>																					
Desired Signal Level	: <u>-48.25 dBm</u>																					
Noise 0 dB Reference	: <u>-40.87 dBm</u>																					
<b>EO&amp;C</b>	<p>The recovered audio exhibits high cut and warbleing while running the simulation by itself. Static and mutes (buzzing) also occur. Approximately a POF level of impairment.</p> <p>Re-Acquisition time is the value listed <math>\pm</math> 1 second.</p>																					
<p>Test Date: 5-May-95 Testers: DML, RMc</p>																						

# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	Re-Acquisition with Multipath		
<b>USADR FM1 Rev B.</b>	Urban Slow Doppler			
<b>Program Material</b>	Mozart (Track 67 on SQAM disk)			
<b>Tsim (s)</b>	<b>Re-Acquisition Time (s)</b>			
	POF-2	POF-4	POF-6	
5	4	4	34	
10	11	4	10	
15	9	5	10	
20	5	5	17	
25	9	7	11	
<b>Average</b>	7.6	5.0	16.4	
	<b>POF Attenuator Setting</b>	: 23.00 dB		
	<b>Desired Signal Level</b>	: -48.25 dBm		
	<b>Noise 0 dB Reference</b>	: -40.87 dBm		
<b>EO&amp;C</b>	Recovered audio exhibits defects which are consistent with a level of impairment between TOA and POF, closer to TOA.			
	Re-Acquisition time is the value listed $\pm$ 1 second.			
<b>Test Date:</b>	5-May-95			
<b>Testers:</b>	DML, RMc			

# EIA Digital Audio Radio Test Laboratory

Test	J-2	Re-Acquisition with Multipath		
USADR FM1 Rev B.	Urban Fast Doppler			
Program Material	Mozart (Track 67 on SQAM disk)			
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	8	5	11	
10	11	6	14	
15	5	10	4	
20	8	7	37	
25	10	8	16	
<u>Average</u>	8.4	7.2	16.4	
POF Attenuator Setting	:	16.00 dBm		
Desired Signal Level	:	-48.25 dBm		
Noise 0 dB Reference	:	-40.87 dBm		
EO&C				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 5-May-95				
Testers: DML, RMc				

EIA Digital Audio Radio Test Laboratory

<b>Test</b>	<b>J-2</b>	<b>Re-Acquisition with Multipath</b>		
<b>USADR FM1 Rev B.</b>		<b>Rural Fast Doppler</b>		
<b>Program Material</b>		<b>Mozart (Track 67 on SQAM disk)</b>		
		Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6	
5	<u>7</u>	<u>9</u>	<u>11</u>	
10	<u>7</u>	<u>6</u>	<u>5</u>	
15	<u>5</u>	<u>8</u>	<u>33</u>	
20	<u>9 *</u>	<u>6</u>	<u>10</u>	
25	<u>7</u>	<u>10</u>	<u>8</u>	
<u>Average</u>	7.0	7.8	13.4	
POF Attenuator Setting	:	<u>14.00 dB</u>		
Desired Signal Level	:	<u>-48.25 dBm</u>		
Noise 0 dB Reference	:	<u>-40.87 dBm</u>		
<b>EO&amp;C</b>				
Re-Acquisition time is the value listed $\pm$ 1 second.				
Test Date: 5-May-95				
Testers: DML, RMc				
* Indicates receiver software was reloaded after a one minute period with signal and with out recovered audio.				



# EIA Digital Audio Radio Test Laboratory

<b>Test</b>	J-2	Re-Acquisition with Multipath
<b>USADR FM1 Rev B.</b>		Terrain Obstructed Doppler
<b>Program Material</b>		Mozart (Track 67 on SQAM disk)
Tsim (s)		Re-Acquisition Time (s) POF
5		5
10		5
15		2
20		4
25		3
<u>Average</u>		<u>3.8</u>
	POF Attenuator Setting :	<u>63.75 dB</u>
	Desired Signal Level :	<u>-48.25 dBm</u>
	Noise 0 dB Reference :	<u>-40.87 dBm</u>
<b>EO&amp;C</b>	The recovered audio exhibits high cut and warbleing while running the simulation by itself. Static and mutes also occur. Approximately a POF level of impairment.	
	Re-Acquisition time is the value listed $\pm$ 1 second.	
Test Date: 5-May-95		
Testers: DML, RMc		

USADR FM1 3/17/95 12:01

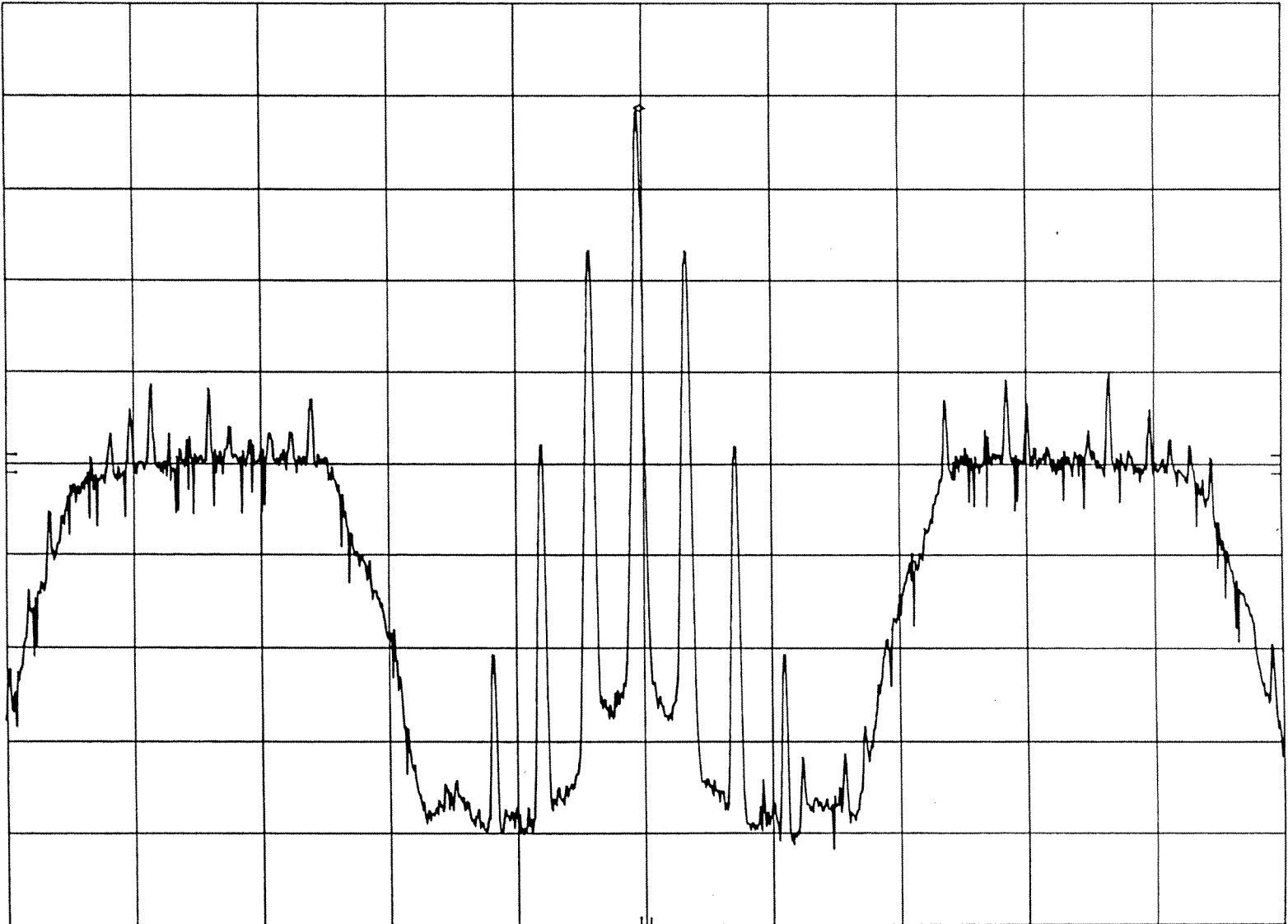
MKR 94.099 0 MHz

EIA REF 0.0 dBm

ATTEN 10 dB

-11.30 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

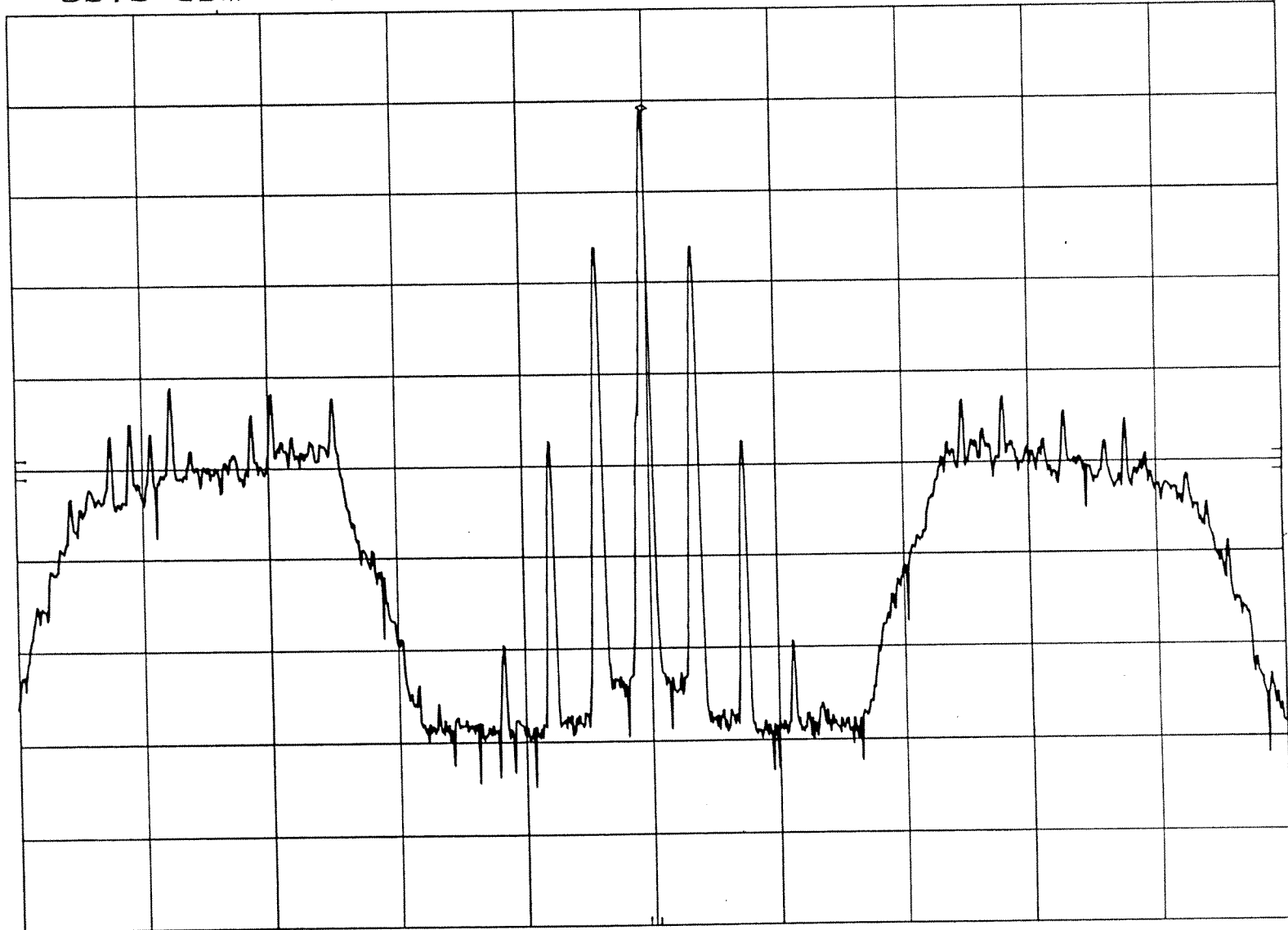
USADR FM1 CO-CHANNEL 3/17/95 11:52

MKR 94.099 5 MHz

EIA REF -30.0 dBm ATTEN 10 dB

-40.80 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

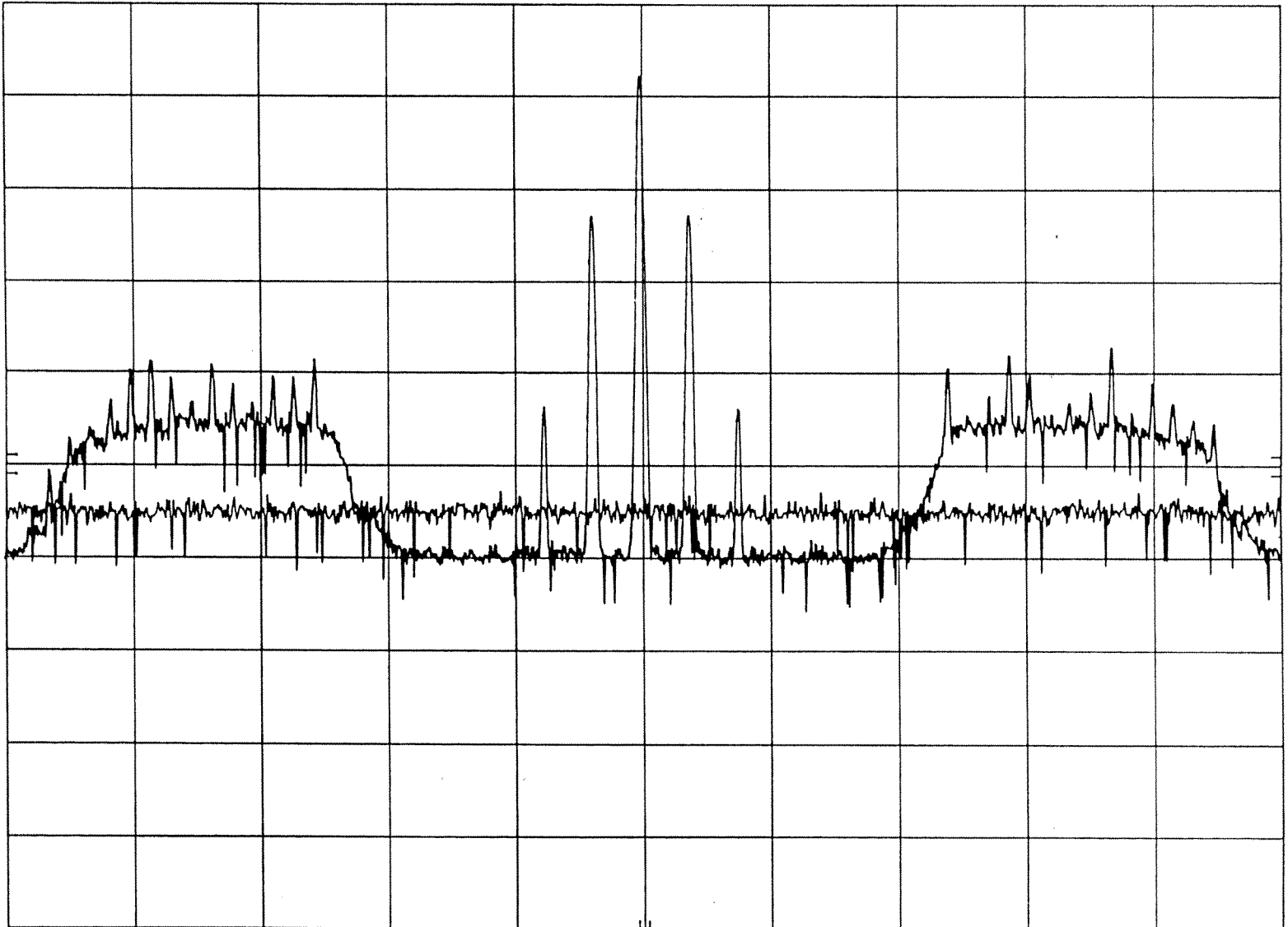
VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

USADR FM1 GAUSSIAN NOISE Co/No AT ATTN=18.00 3/17/95 18:25  
EIA REF -50.0 dBm ATTEN 10 dB

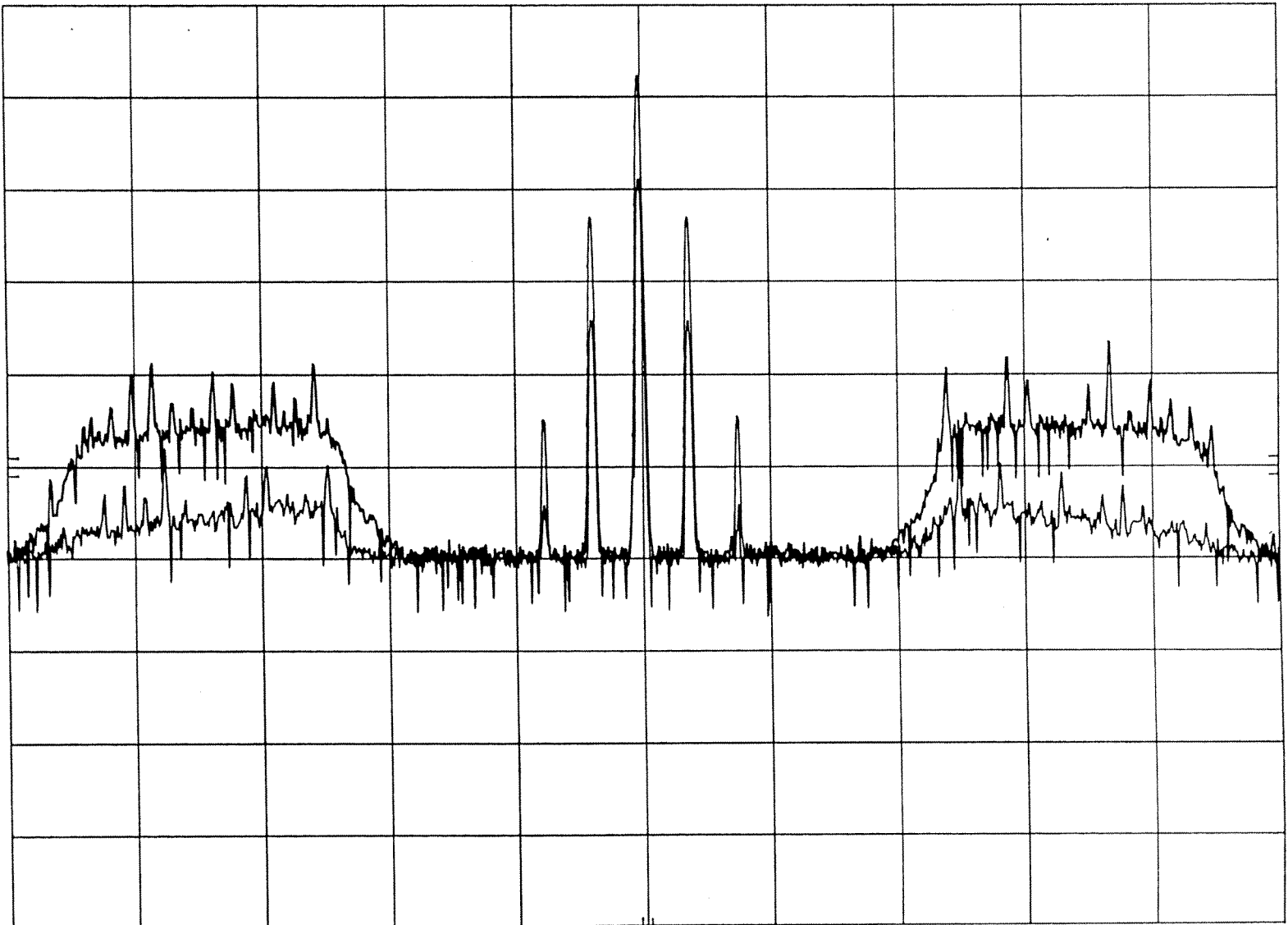
10 dB/



CENTER 94.100 MHz SPAN 500 kHz  
RES BW 1 kHz VBW 30 Hz SWP 50.0 sec

USADR FM1 CO-CHANNEL d/u ATTN=19.00 3/17/95 18:11  
EIA REF -50.0 dBm ATTEN 10 dB

10 dB/



CENTER 94.100 MHz  
RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz  
SWP 50.0 sec

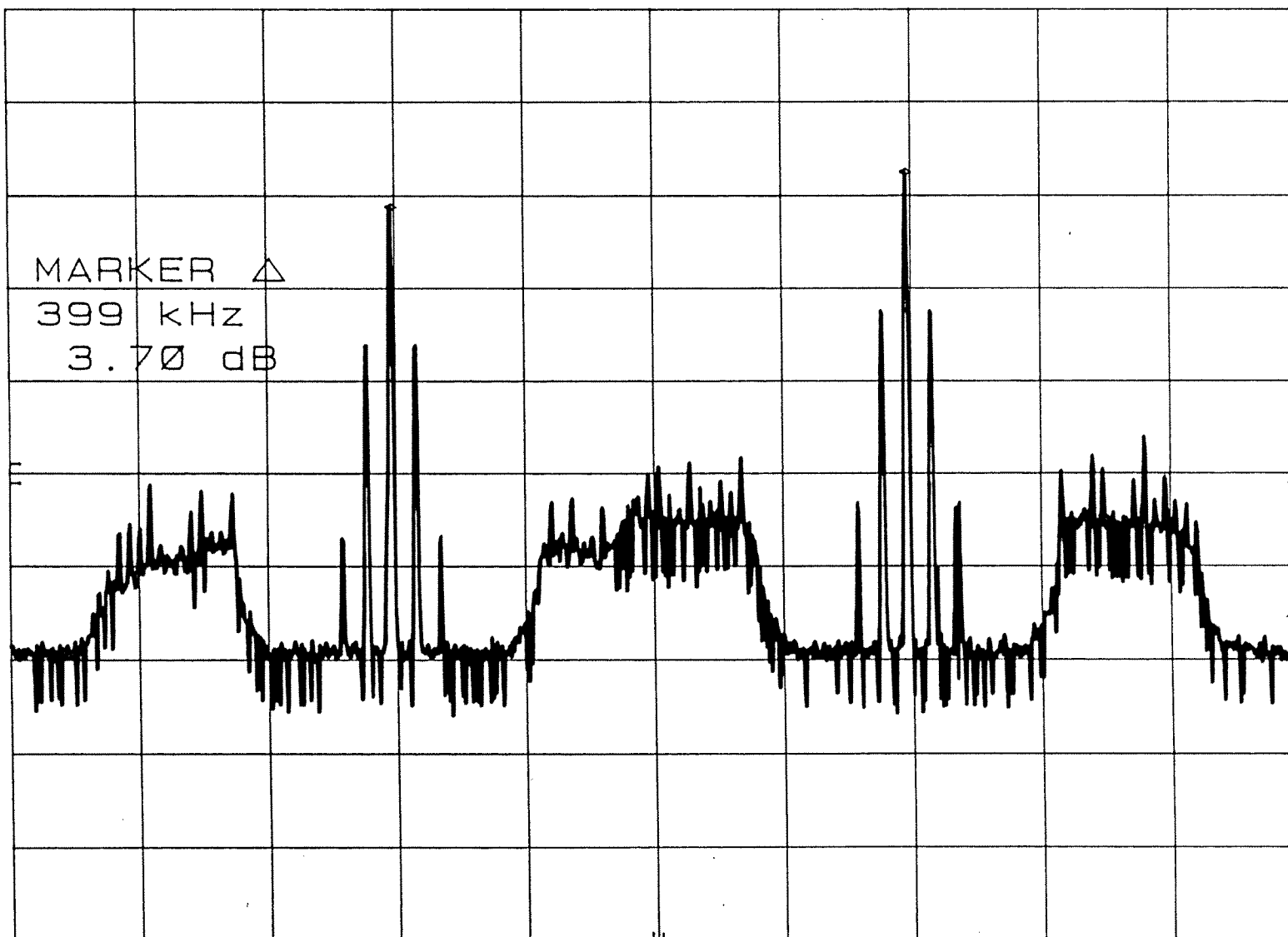
USADR FM1 D3 TOA LOWER 5/3/95 11:20

MKR  $\Delta$  399 kHz

EIA REF -40.0 dBm ATTEN 10 dB

3.70 dB

10 dB/



MARKER  $\Delta$   
399 kHz  
3.70 dB

CENTER 93.90 MHz

RES BW 1 kHz

VBW 30 Hz

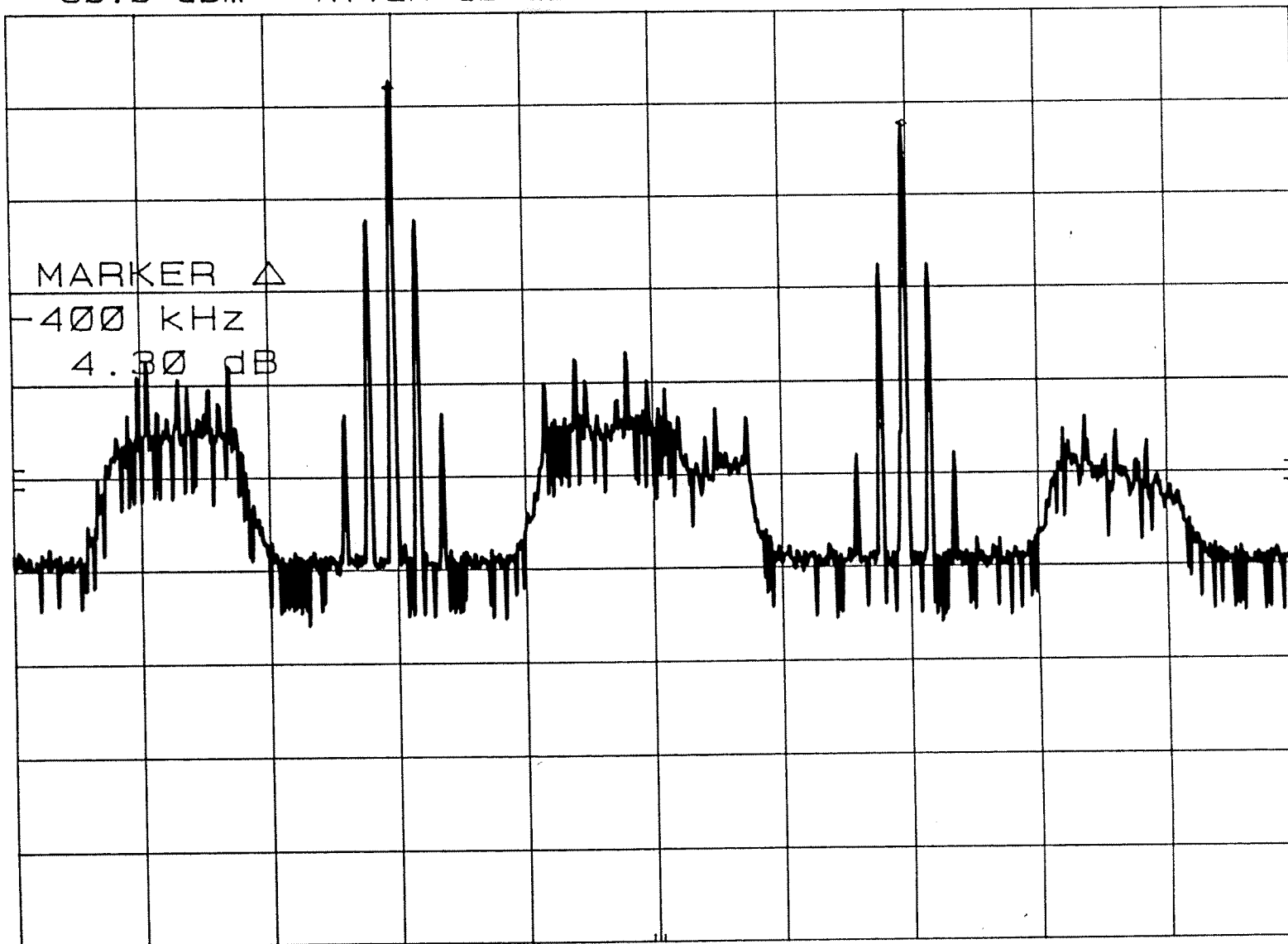
SPAN 1.00 MHz

SWP 100 sec

USADR FM1 D3 (upper) TOA 5/4/95 15:09  
EIA REF -50.0 dBm ATTEN 10 dB

MKR  $\Delta$ -400 kHz  
4.30 dB

10 dB/



CENTER 94.30 MHz  
RES BW 1 kHz

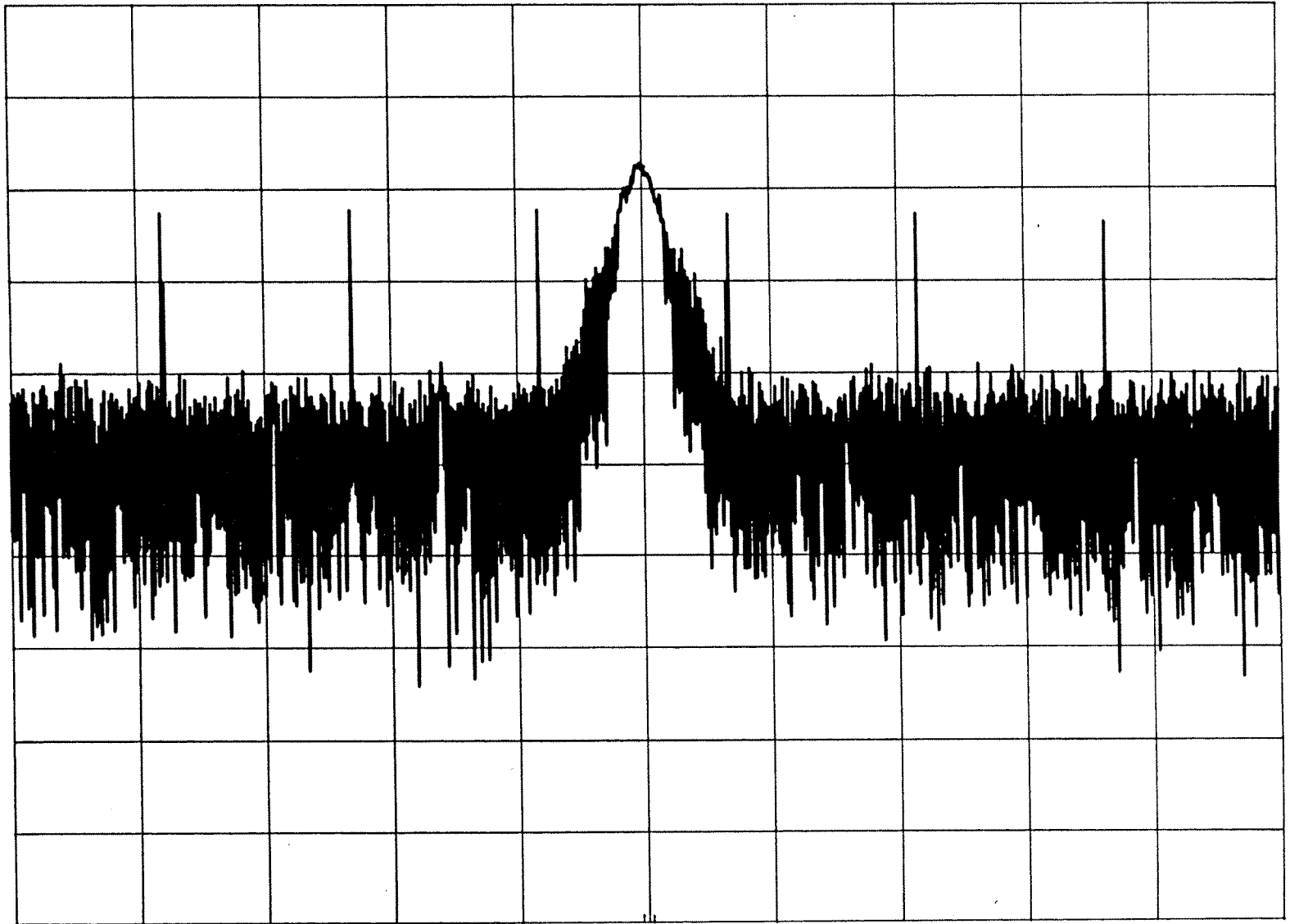
VBW 30 Hz

SPAN 1.00 MHz  
SWP 100 sec

USADR FM1 C-1 333Hz TOA 5/9/95 14:20  
EIA REF -40.0 dBm ATTN 10 dB

MKR 94.090 MHz  
-57.50 dBm

10 dB/



CENTER 94.10 MHz

RES BW 100 kHz

VBW 300 kHz

SPAN 5.00 MHz

SWP 20.0 msec



USADR FM1 5/9/95 09:23

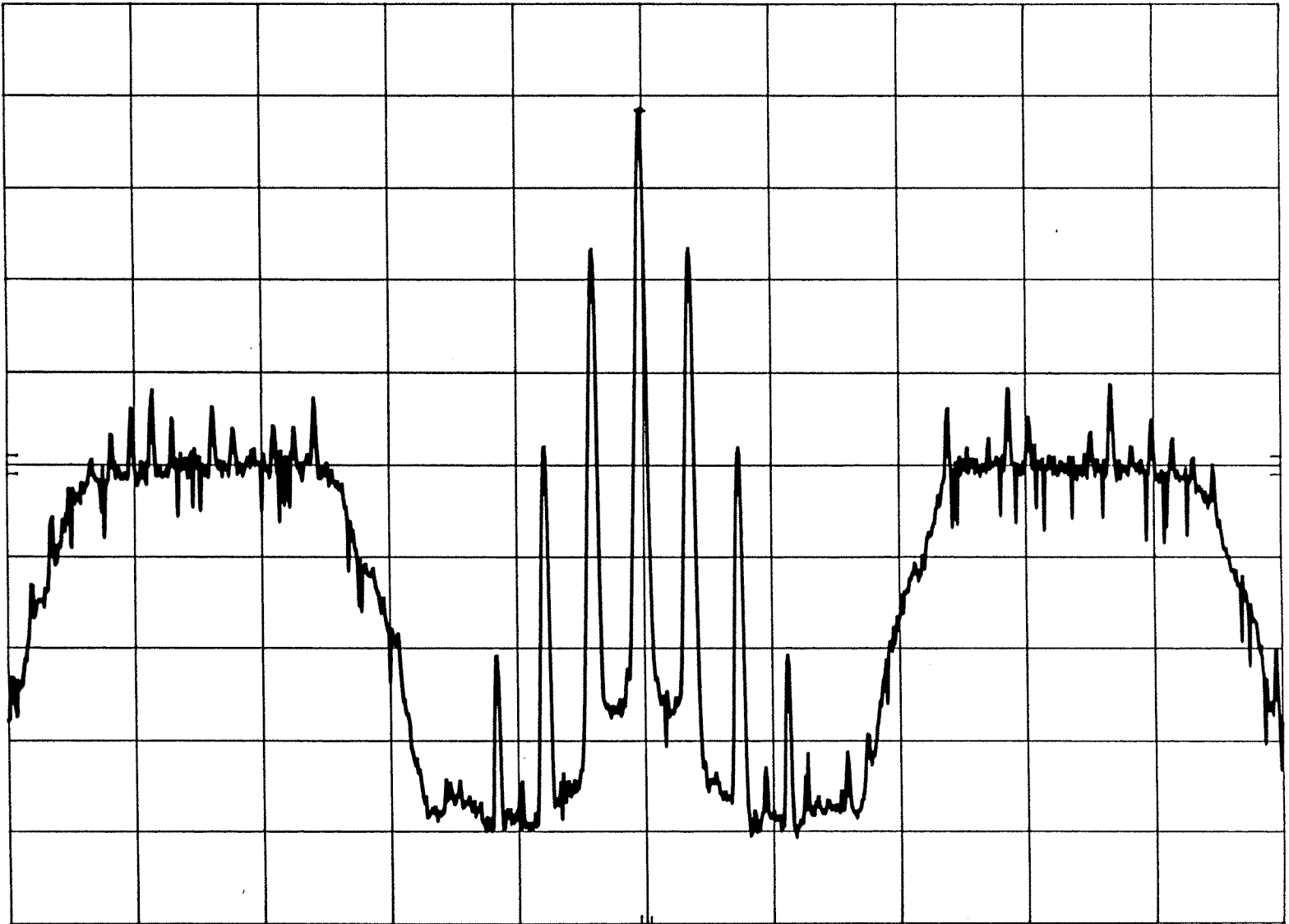
MKR 94.099 5 MHz

EIA REF 0.0 dBm

ATTEN 10 dB

-11.60 dBm

10 dB/



CENTER 94.100 MHz

RES BW 1 kHz

VBW 30 Hz

SPAN 500 kHz

SWP 50.0 sec

**Appendix AM – Tests F-1, F-4 and G-1  
Co-Channel DAR to Analog**

# EIA Digital Audio Radio Test Laboratory

## Tests F1, F4 and G1

### Receiver

Rx No.: #1  
Mfg.: DELCO  
Model: 16192463  
Serial: 1000499

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio with the Digital Proponent on the desired frequency (Co-channel)
3	DAR -> Analog interference at a 35dB signal to noise ratio with the Digital Proponent on the desired frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA DAR Test Lab DAT Recording Log

Test F-1, F-4 and G-1 45 dB S/N Receiver #1 DELCO 16192463	Measurements	F-1 d/u in dB	F-4 Co-Channel DAR to Analog EO&C	G-1 Urban Slow Rayleigh Co-Channel DAR to Analog with Multipath EO&C	G-1 Urban Fast Rayleigh Co-Channel DAR to Analog with Multipath EO&C
Analog Reference	desired -8.80 Loss 40.71 undesired -41.43	36.17	Interfering Audio detectable and tracks with ABBA beat		
RX Level -62.00 dBm	Loss 21.75 Attn 22.50				
AT&T Amati DSB IBOC	desired -8.80 Loss 40.71 undesired -7.00	36.67	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 31.50				
AT&T Amati LSB IBOC	desired -8.80 Loss 40.71 undesired -7.11	36.78	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 31.50				
USADR FM1 IBOC	desired -8.80 Loss 40.71 undesired -9.73	35.40	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 27.50				
USADR FM2 IBOC	desired -8.80 Loss 40.71 undesired -6.05	35.47	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 31.25				
<b>Notes:</b> Subcarrier Group B on interferers and desired analog Clipped Pink Noise as Main Ch. modulation on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to 6 dB Tests conducted February 17, 1995				DAT REF No. DAR40110.DAT  Best case S/N ratio: 49dB	

## EIA DAR Test Lab DAT Recording Log

Test F-1 35 dB S/N Receiver #1 DELCO 16192463	Measurements	F-1 d/u in dB	Test F-1 (Weak) 35 dB S/N Receiver #1 DELCO 16192463	Measurements	F-1 d/u in dB	Test F-1 (Weak) 45 dB S/N Receiver #1 DELCO 16192463	Measurements	F-1 d/u in dB
Analog to Analog Reference	desired -8.80 Loss 40.71 undesired -41.43	<b>23.67</b>	Analog to Analog Reference	desired -8.80 Loss 40.71 undesired -41.42	<b>22.91</b>	Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -41.45	NA
Desired Signal Level -62.00 dBm	Loss 21.75 Attn 10.00		RX Level -77.00 dBm	Loss 21.75 Attn 9.25		RX Level -77.00 dBm	Loss 21.75 Attn 9.25	
AT&T Amati DSB IBOC	desired -8.80 Loss 40.71 undesired -8.01 RX Level -62.00 dBm	<b>24.43</b>	AT&T Amati DSB IBOC	desired -8.80 Loss 40.71 undesired -8.00 RX Level -77.00	<b>23.67</b>	AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.84 RX Level -77.00 dBm	NA
	Loss 47.68 Attn 18.25			Loss 47.68 Attn 17.50			Loss 47.68 Attn 17.00	
AT&T Amati LSB IBOC	desired -8.80 Loss 40.71 undesired -8.13 RX Level -62.00 dBm	<b>24.80</b>	AT&T Amati LSB IBOC	desired -8.80 Loss 40.71 undesired -8.10 RX Level -77.00 dBm	<b>24.02</b>	AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.00 RX Level -77.00 dBm	NA
	Loss 47.68 Attn 18.50			Loss 47.68 Attn 17.75			Loss 47.68 Attn 16.75	
USADR FM1 IBOC	desired -8.80 Loss 40.71 undesired -9.49 RX Level -62.00 dBm	<b>23.91</b>	USADR FM1 IBOC	desired -8.80 Loss 40.71 undesired -9.50 RX Level -77.00 dBm	<b>21.67</b>	USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.49 RX Level -77.00 dBm	NA
	Loss 47.68 Attn 16.25			Loss 47.68 Attn 14.00			Loss 47.68 Attn 15.00	
USADR FM2 IBOC	desired -8.80 Loss 40.71 undesired -6.05 RX Level -62.00 dBm	<b>23.97</b>	USADR FM2 IBOC	desired -8.80 Loss 40.71 undesired -6.09 RX Level -77.00 dBm	<b>22.26</b>	USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.07 RX Level -77.00 dBm	NA
	Loss 47.68 Attn 19.75			Loss 47.68 Attn 18.00			Loss 47.68 Attn 18.50	
Notes: Best Case S/N = -43.5 dB								

# EIA Digital Audio Radio Test Laboratory

## Tests F1, F4 and G1

### Receiver

Rx No.: #2  
Mfg.: DENON  
Model: TU-380RD  
Serial: 4056301149

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio with the Digital Proponent on the desired frequency (Co-channel)
3	DAR -> Analog interference at a 35dB signal to noise ratio with the Digital Proponent on the desired frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-1, F-4 and G-1 45 dB S/N Receiver #2 DENON TU-380RD	Measurements	F-1 d/u in dB	F-4 Co-Channel DAR to Analog EO&C	G-1 Urban Slow Rayleigh Co-Channel DAR to Analog with Multipath EO&C	G-1 Urban Fast Rayleigh Co-Channel DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -41.37 Loss 21.75 Attn 29.75	43.39	Interfering Audio detectable and tracks with ABBA beat		
RX Level -62.00 dBm					
AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.84 Loss 47.68 Attn 36.75	42.79	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm			d/u attn= 37.35 dB		
AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.00 Loss 47.68 Attn 36.75	42.95	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm			d/u attn= 37.19 dB		
USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.44 Loss 47.68 Attn 35.25	42.89	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm			d/u attn= 35.75 dB		
USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -5.99 Loss 47.68 Attn 38.75	42.94	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm			d/u attn= 39.20 dB		
Notes:			Subcarrier Group B on interferers and desired analog		
			Clipped Pink Noise on interferers		
			Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to 6 dB		
			Tests conducted February 17, 1995		
			DAT REF No. DAR40112.DAT		

### EIA Digital Audio Radio Test Laboratory

Test F-1 35 dB S/N Receiver #2 DENON TU-380RD	Measurements	F-1 d/u in dB	Test F-1 (Weak) 35 dB S/N Receiver #2 DENON TU-380RD	Measurements	F-1 d/u in dB	Test F-1 (Weak) 45 dB S/N Receiver #2 DENON TU-380RD	Measurements	F-1 d/u in dB
Analog to Analog Reference	desired Loss undesired	-8.77 32.14 40.71	Analog to Analog Reference	desired Loss undesired	-8.77 35.14 40.71	Analog to Analog Reference	desired Loss undesired	NA
RX Level -62.00 dBm	Loss Attn	-41.37 21.75 18.50	RX Level -77.00 dBm	Loss Attn	21.75 21.50	RX Level -77.00 dBm	Loss Attn	
AT&T Amati DSB IBOC	desired Loss undesired	-8.77 31.54 40.71	AT&T Amati DSB IBOC	desired Loss undesired	-8.77 35.04 40.71	AT&T Amati DSB IBOC	desired Loss undesired	NA
RX Level -62.00 dBm	Loss Attn	-7.84 47.68 25.50	RX Level -77.00 dBm	Loss Attn	47.68 29.00	RX Level -77.00 dBm	Loss Attn	
AT&T Amati LSB IBOC	desired Loss undesired	-8.77 31.70 40.71	AT&T Amati LSB IBOC	desired Loss undesired	-8.77 35.45 40.71	AT&T Amati LSB IBOC	desired Loss undesired	NA
RX Level -62.00 dBm	Loss Attn	-8.00 47.68 25.50	RX Level -77.00 dBm	Loss Attn	47.68 29.25	RX Level -77.00 dBm	Loss Attn	
USADR FM1 IBOC	desired Loss undesired	-8.77 31.64 40.71	USADR FM1 IBOC	desired Loss undesired	-8.77 35.39 40.71	USADR FM1 IBOC	desired Loss undesired	NA
RX Level -62.00 dBm	Loss Attn	-9.44 47.68 24.00	RX Level -77.00 dBm	Loss Attn	47.68 27.75	RX Level -77.00 dBm	Loss Attn	
USADR FM2 IBOC	desired Loss undesired	-8.77 31.94 40.71	USADR FM2 IBOC	desired Loss undesired	-8.77 35.44 40.71	USADR FM2 IBOC	desired Loss undesired	NA
RX Level -62.00 dBm	Loss Attn	-5.99 47.68 27.75	RX Level -77.00 dBm	Loss Attn	47.68 31.25	RX Level -77.00 dBm	Loss Attn	



# EIA Digital Audio Radio Test Laboratory

## Tests F1, F4 and G1

### Receiver

Rx No.: #3  
Mfg.: PANASONIC  
Model: RX-FS430  
Serial: GR3J01184

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio with the Digital Proponent on the desired frequency (Co-channel)
3	DAR -> Analog interference at a 35dB signal to noise ratio with the Digital Proponent on the desired frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-1, F-4 and G-1 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-1 d/u in dB	F-4 Co-Channel DAR to Analog EO&C	G-1 Urban Slow Rayleigh Co-Channel DAR to Analog with Multipath EO&C	G-1 Urban Fast Rayleigh Co-Channel DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.81 Loss 40.71 undesired -41.46	<b>40.94</b>	Interfering Audio detectable and tracks with ABBA beat		
RX Level -62.00 dBm	Loss 21.75 Attn 27.25				
AT&T Amati DSB IBOC	desired -8.81 Loss 40.71 undesired -8.00	<b>40.91</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 34.75				
AT&T Amati LSB IBOC	desired -8.81 Loss 40.71 undesired -8.12	<b>41.03</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 34.75				
USADR FM1 IBOC	desired -8.81 Loss 40.71 undesired -9.48	<b>41.14</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 33.50				
USADR FM2 IBOC	desired -8.81 Loss 40.71 undesired -6.07	<b>40.98</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 36.75				
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -3.5dB Tests conducted February 22, 1995				DAT REF No. DAR40114.DAT Best Case S/N =51dB	

## EIA Digital Audio Radio Test Laboratory

Test F-1 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements		F-1	Test F-1 (Weak) 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements		F-1	Test F-1 (Weak) 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements		F-1
			d/u in dB				d/u in dB				d/u in dB
Analog to Analog Reference	desired Loss undesired	-8.81 40.71 -41.46	29.94	Analog to Analog Reference	desired Loss undesired	-8.81 40.71 -41.46	32.69	Analog to Analog Reference	desired Loss undesired	-8.81 40.71 -41.44	NA
Desired Signal Level	Loss	21.75		RX Level	Loss	21.75		RX Level	Loss	21.75	
-62.00 dBm	Attn	16.25		-77.00 dBm	Attn	19.00		-77.00 dBm	Attn	11.25	
AT&T Amati DSB IBOC	desired Loss undesired	-8.81 40.71 -8.00	29.66	AT&T Amati DSB IBOC	desired Loss undesired	-8.81 40.71 -8.00	32.16	AT&T Amati DSB IBOC	desired Loss undesired	-8.81 40.71 -8.00	NA
RX Level	Loss	47.68		RX Level	Loss	47.68		RX Level	Loss	47.68	
-62.00 dBm	Attn	23.50		-77.00 dBm	Attn	26.00		-77.00 dBm	Attn	37.50	
AT&T Amati LSB IBOC	desired Loss undesired	-8.81 40.71 -8.12	29.78	AT&T Amati LSB IBOC	desired Loss undesired	-8.81 40.71 -8.12	32.28	AT&T Amati LSB IBOC	desired Loss undesired	-8.81 40.71 -8.12	NA
RX Level	Loss	47.68		RX Level	Loss	47.68		RX Level	Loss	47.68	
-62.00 dBm	Attn	23.50		-77.00 dBm	Attn	26.00		-77.00 dBm	Attn	37.75	
USADR FM1 IBOC	desired Loss undesired	-8.81 40.71 -9.48	29.89	USADR FM1 IBOC	desired Loss undesired	-8.81 40.71 -9.48	32.39	USADR FM1 IBOC	desired Loss undesired	-8.81 40.71 -9.48	NA
RX Level	Loss	47.68		RX Level	Loss	47.68		RX Level	Loss	47.68	
-62.00 dBm	Attn	22.25		-77.00 dBm	Attn	24.75		-77.00 dBm	Attn	36.00	
USADR FM2 IBOC	desired Loss undesired	-8.81 40.71 -6.07	29.73	USADR FM2 IBOC	desired Loss undesired	-8.81 40.71 -6.07	32.48	USADR FM2 IBOC	desired Loss undesired	-8.81 40.71 -6.07	NA
RX Level	Loss	47.68		RX Level	Loss	47.68		RX Level	Loss	47.68	
-62.00 dBm	Attn	25.50		-77.00 dBm	Attn	28.25		-77.00 dBm	Attn	39.50	
Notes: Best Case S/N = 38.5 dB											

# EIA Digital Audio Radio Test Laboratory

## Tests F1, F4 and G1

### Receiver

Rx No.: #4  
Mfg.: PIONEER  
Model: SX-201  
Serial: OA3965843C

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio with the Digital Proponent on the desired frequency (Co-channel)
3	DAR -> Analog interference at a 35dB signal to noise ratio with the Digital Proponent on the desired frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-1, F-4 and G-1 45 dB S/N Receiver #4 <b>PIONEER SX-201</b>	Measurements	F-1 <b>d/u in dB</b>	F-4 Co-Channel DAR to Analog EO&C	G-1 <b>Urban Slow Rayleigh</b> Co-Channel DAR to Analog with Multipath EO&C	G-1 <b>Urban Fast Rayleigh</b> Co-Channel DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired -41.42	<b>44.18</b>	Interfering Audio detectable and tracks with ABBA beat		
RX Level -62.00 dBm	Loss 21.75 Attn 30.50				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.00	<b>43.69</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 37.50		d/u attn= 37.99 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.04	<b>43.98</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 37.75		d/u attn= 37.95 dB		
USADR FMI IBOC	desired -8.78 Loss 40.71 undesired -9.51	<b>43.70</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 36.00		d/u attn= 36.48 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.01	<b>43.70</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 39.50		d/u attn= 39.98 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to 6 dB Tests conducted February 16, 1995					DAT REF No. DAR40111.DAT

EIA Digital Audio Radio Test Laboratory

Test F-1 35 dB S/N Receiver #4 PIONEER SX-201	Measurements	F-1 d/u in dB	Test F-1 (Weak) 35 dB S/N Receiver #4 PIONEER SX-201	Measurements	F-1 d/u in dB	Test F-1 (Weak) 45 dB S/N Receiver #4 PIONEER SX-201	Measurements	F-1 d/u in dB
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired -41.42	32.68	Analog to Analog Reference	desired -8.78 Loss 40.71 undesired -41.42	34.18	Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -41.45	NA
Desired Signal Level -62.00 dBm	Loss 21.75 Attn 19.00		RX Level -77.00 dBm	Loss 21.75 Attn 20.50		RX Level -77.00 dBm	Loss 21.75 Attn 9.25	
AT&T Amati DSB IBOC	desired -8.80 Loss 40.71 undesired -8.00	32.17	AT&T Amati DSB IBOC	desired -8.80 Loss 40.71 undesired -8.00	33.67	AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.84	NA
RX Level -62.00 dBm	Loss 47.68 Attn 26.00		RX Level -77.00 dBm	Loss 47.68 Attn 27.50		RX Level -77.00 dBm	Loss 47.68 Attn 17.00	
AT&T Amati LSB IBOC	desired -8.80 Loss 40.71 undesired -8.04	32.21	AT&T Amati LSB IBOC	desired -8.80 Loss 40.71 undesired -8.04	33.96	AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.00	NA
RX Level -62.00 dBm	Loss 47.68 Attn 26.00		RX Level -77.00 dBm	Loss 47.68 Attn 27.75		RX Level -77.00 dBm	Loss 47.68 Attn 16.75	
USADR FM1 IBOC	desired -8.80 Loss 40.71 undesired -9.51	32.18	USADR FM1 IBOC	desired -8.80 Loss 40.71 undesired -9.51	33.68	USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.49	NA
RX Level -62.00 dBm	Loss 47.68 Attn 24.50		RX Level -77.00 dBm	Loss 47.68 Attn 26.00		RX Level -77.00 dBm	Loss 47.68 Attn 15.00	
USADR FM2 IBOC	desired -8.80 Loss 40.71 undesired -6.01	32.18	USADR FM2 IBOC	desired -8.80 Loss 40.71 undesired -6.01	33.68	USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.07	NA
RX Level -62.00 dBm	Loss 47.68 Attn 28.00		RX Level -77.00 dBm	Loss 47.68 Attn 29.50		RX Level -77.00 dBm	Loss 47.68 Attn 18.50	
						Notes:		

# EIA Digital Audio Radio Test Laboratory

## Tests F1, F4 and G1

### Receiver

Rx No.: #5

Mfg.: FORD

Model: F4XF-19B132-CB

Serial: 281150B010

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio with the Digital Proponent on the desired frequency (Co-channel)
3	DAR -> Analog interference at a 35dB signal to noise ratio with the Digital Proponent on the desired frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

## EIA Digital Audio Radio Test Laboratory

Test F-1, F-4 and G-1 45 dB S/N Receiver #5 <b>FORD</b> <b>F4XF</b>	Measurements	F-1 d/u in dB	F-4 Co-Channel DAR to Analog EO&C	G-1 Urban Slow Rayleigh Co-Channel DAR to Analog with Multipath EO&C	G-1 Urban Fast Rayleigh Co-Channel DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -41.45	<b>35.22</b>	Interfering Audio detectable and tracks with ABBA beat		
RX Level -62.00 dBm	Loss 21.75 Attn 21.50				
AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -8.00	<b>35.20</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 29.00		d/u attn= 29.02 dB		
AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.11	<b>35.31</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 29.00		d/u attn= 28.91 dB		
USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.49	<b>35.19</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 27.50		d/u attn= 27.53 dB		
USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.07	<b>35.27</b>	Same as Analog Reference	FM-> FM same as DAR-> FM	FM-> FM same as DAR-> FM
RX Level -62.00 dBm	Loss 47.68 Attn 31.00		d/u attn= 30.95 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to 2.3 dB					DAT REF No. DAR40113.DAT



EIA Digital Audio Radio Test Laboratory

Test F-1 35 dB S/N Receiver #5 FORD F4XF			F-1	Test F-1 (Weak) 35 dB S/N Receiver #5 FORD F4XF			F-1	Test F-1 (Weak) 45 dB S/N Receiver #5 FORD F4XF			F-1
		Measurements	d/u in dB			Measurements	d/u in dB			Measurements	d/u in dB
Analog to Analog Reference	desired	-8.77	24.22	Analog to Analog Reference	desired	-8.77	11.97	Analog to Analog Reference	desired	-8.77	22.97
	Loss	40.71			Loss	40.71			Loss	40.71	
	undesired	-41.45			undesired	-31.45			undesired	-41.45	
Desired Signal Level -62.00 dBm	Loss	21.75		RX Level -77.00 dBm	Loss	21.75		RX Level -77.00 dBm	Loss	21.75	
	Attn	10.50			Attn	8.25			Attn	9.25	
AT&T Amati DSB IBOC	desired	-8.77	23.95	AT&T Amati DSB IBOC	desired	-8.77	11.54	AT&T Amati DSB IBOC	desired	-8.77	23.04
	Loss	40.71			Loss	40.71			Loss	40.71	
	undesired	-8.00			undesired	-7.84			undesired	-7.84	
RX Level -62.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68	
	Attn	17.75			Attn	5.50			Attn	17.00	
AT&T Amati LSB IBOC	desired	-8.77	24.20	AT&T Amati LSB IBOC	desired	-8.77	11.70	AT&T Amati LSB IBOC	desired	-8.77	22.95
	Loss	40.71			Loss	40.71			Loss	40.71	
	undesired	-8.00			undesired	-8.00			undesired	-8.00	
RX Level -62.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68	
	Attn	18.00			Attn	5.50			Attn	16.75	
USADR FM1 IBOC	desired	-8.77	23.94	USADR FM1 IBOC	desired	-8.77	11.69	USADR FM1 IBOC	desired	-8.77	22.69
	Loss	40.71			Loss	40.71			Loss	40.71	
	undesired	-9.49			undesired	-9.49			undesired	-9.49	
RX Level -62.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68	
	Attn	16.25			Attn	4.00			Attn	15.00	
USADR FM2 IBOC	desired	-8.77	24.02	USADR FM2 IBOC	desired	-8.77	11.77	USADR FM2 IBOC	desired	-8.77	22.77
	Loss	40.71			Loss	40.71			Loss	40.71	
	undesired	-6.07			undesired	-6.07			undesired	-6.07	
RX Level -62.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68		RX Level -77.00 dBm	Loss	47.68	
	Attn	19.75			Attn	7.50			Attn	18.50	

**Appendix AN – Tests F-2, F-5 and G-2  
First Adjacent DAR to Analog**

AN

# EIA Digital Audio Radio Test Laboratory

## Tests F2, F5 and G2

### Receiver

Rx No.: #1  
Mfg.: DELCO  
Model: 16192463  
Serial: 1000499

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #1 DELCO 16192463	Measurements	F-2 d/u in dB	F-5 Lower First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.86 Loss 40.71 undesired -21.41	4.09	Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 10.50				
AT&T Amati DSB IBOC	desired -8.86 Loss 40.71 undesired -8.01	18.37	DAR-> FM more annoying Hiss with interer modulation peaks detected S/N eq d/u 31.5 dB d/u attn= 17.97 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 32.25				
AT&T Amati LSB IBOC	desired -8.86 Loss 40.71 undesired -8.14	4.25	DAR->FM same as FM->FM S/N eq d/u 43 dB d/u attn= 17.84 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 18.00				
USADR FM1 IBOC	desired -8.86 Loss 40.71 undesired -9.51	16.12	S/N eq d/u 33 dB d/u attn= 16.47 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 28.50				
USADR FM2 IBOC	desired -8.86 Loss 40.71 undesired -6.10	4.71	S/N eq d/u 43.5 dB d/u attn= 19.88 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 20.50				
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted February 23, 1995				DAT Ref.: DAR40120.DAT Best Case S/N = 49 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #1 DELCO 16192463		F-2		Effects without Digital Modulation	
Measurements	d/u in dB	d/u in dB @		d/u in dB @	
		Silence	S/N=45dB	Silence	S/N=35dB
Analog to Analog Reference	desired -8.86 Loss 40.71 undesired -21.41	3.34		NA	
Desired Signal Level -62.00 dBm	Loss 21.75 Attn 9.75				
AT&T Amati DSB IBOC	desired -8.86 Loss 40.71 undesired -8.01 Loss 27.68 Attn 20.75	6.87		No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 17.25				
AT&T Amati LSB IBOC	desired -8.86 Loss 40.71 undesired -8.14 Loss 27.68 Attn 17.25	3.50		No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 18.00				
USADR FM1 IBOC	desired -8.86 Loss 40.71 undesired -9.51 Loss 27.68 Attn 18.00	5.62		No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 19.75				
USADR FM2 IBOC	desired -8.86 Loss 40.71 undesired -6.10 Loss 27.68 Attn 19.75	3.96		No Difference	
Notes:	Same as "Lower 45dB"				

# EIA Digital Audio Radio Test Laboratory

<b>Test F-2, F-5 and G-2</b> 45 dB S/N Receiver #1 DELCO 16192463	Measurements	F-2 d/u in dB	F-5 Upper First Adjacent DAR to Analog EO&C	G-2 <b>Urban Slow Rayleigh</b> Upper First Adjacent DAR to Analog with Multipath EO&C	<b>Urban Fast Rayleigh</b> Upper First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.82 Loss 40.71 undesired -21.44 Loss 21.75 Attn 11.75	<b>5.41</b>	Measurement varies between 43 - 47 dB		
RX Level -62.00 dBm					
AT&T Amati DSB IBOC	desired -8.82 Loss 40.71 undesired -7.97 Loss 27.68 Attn 35.25	<b>21.37</b>	S/N eq d/u 29.5 dB d/u attn= 19.29 dB		
RX Level -62.00 dBm					
AT&T Amati LSB IBOC	desired -8.82 Loss 40.71 undesired -8.09 Loss 27.68 Attn 35.00	<b>21.24</b>	S/N eq d/u 31.5 dB d/u attn= 19.17 dB		
RX Level -62.00 dBm					
USADR FM1 IBOC	desired -8.82 Loss 40.71 undesired -9.47 Loss 27.68 Attn 31.25	<b>18.87</b>	S/N eq d/u 31.75 dB d/u attn= 17.79 dB		
RX Level -62.00 dBm					
USADR FM2 IBOC	desired -8.82 Loss 40.71 undesired -6.06 Loss 27.68 Attn 21.75	<b>5.96</b>	S/N eq d/u 40.5 dB d/u attn= 21.20 dB		
RX Level -62.00 dBm					
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 8, 1995					
				DAT Ref.: DAR40140.DAT Best Case S/N = 49 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #1 DELCO 16192463		F-2		Effects with out Digital Modulation	
Measurements		d/u in dB	Silence	d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.82 40.71 -21.41	4.88	NA	
Desired Signal Level -62.00 dBm	Loss Attn	21.75 11.25			
AT&T Amati DSB IBOC	desired Loss undesired	-8.82 40.71 -7.97	9.62	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 23.50			
AT&T Amati LSB IBOC	desired Loss undesired	-8.82 40.71 -8.09	9.74	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 23.50			
USADR FM1 IBOC	desired Loss undesired	-8.82 40.71 -9.47	7.62	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 20.00			
USADR FM2 IBOC	desired Loss undesired	-8.82 40.71 -6.06	4.96	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 20.75			
Notes: Same as "Upper 45dB"					
*					

# EIA Digital Audio Radio Test Laboratory

## Tests F2, F5 and G2

### Receiver

Rx No.: #2  
Mfg.: DENON  
Model: TU-380RD  
Serial: 4056301149

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.



# EIA Digital Audio Radio Test Laboratory

<b>Test F-2, F-5 and G-2</b> 45 dB S/N Receiver #2 <b>DENON</b> <b>TU-380RD</b>			<b>F-2</b> Lower First Adjacent DAR to Analog EO&C	<b>F-5</b> Lower First Adjacent DAR to Analog EO&C	<b>G-2 Urban Slow Rayleigh</b> Lower First Adjacent DAR to Analog with Multipath EO&C	<b>Urban Fast Rayleigh</b> Lower First Adjacent DAR to Analog with Multipath EO&C
Measurements		d/u in dB				
Analog to Analog Reference	desired -8.84 Loss 40.71 undesired -21.41	<b>23.61</b>		Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 30.00					
AT&T Amati DSB IBOC	desired -8.84 Loss 40.71 undesired -7.97	<b>29.10</b>		DAR-> FM more annoying Hiss with interer modulation peaks detected		
RX Level -62.00 dBm	Loss 27.68 Attn 43.00			S/N at d/u 40.5 dB d/u attn= 37.51 dB		
AT&T Amati LSB IBOC	desired -8.84 Loss 40.71 undesired -8.09	<b>23.47</b>		DAR->FM same as FM->FM		
RX Level -62.00 dBm	Loss 27.68 Attn 37.25			S/N at d/u 45 dB d/u attn= 37.39 dB		
USADR FM1 IBOC	desired -8.84 Loss 40.71 undesired -9.50	<b>27.38</b>				
RX Level -62.00 dBm	Loss 27.68 Attn 39.75			S/N at d/u 41.8 dB d/u attn= 35.98 dB		
USADR FM2 IBOC	desired -8.84 Loss 40.71 undesired -6.05	<b>23.93</b>				
RX Level -62.00 dBm	Loss 27.68 Attn 39.75			S/N at d/u 44.7 dB d/u attn= 39.43 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted February 24, 1995					DAT Ref: DAR40121.DAT  Best Case S/N = 51.5 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #2 DENON TU-380RD	Measurements	F-2		Effects with out Digital Modulation			
		d/u in dB		Silence	d/u in dB S/N=45dB	Silence	d/u in dB S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.84 40.71 -21.41	12.61		NA		
Desired Signal Level -62.00 dBm	Loss Attn	21.75 19.00					
AT&T Amati DSB IBOC	desired Loss undesired	-8.84 40.71 -7.97	17.60		No Difference		
RX Level -62.00 dBm	Loss Attn	27.68 31.50					
AT&T Amati LSB IBOC	desired Loss undesired	-8.84 40.71 -8.09	12.47		No Difference		
RX Level -62.00 dBm	Loss Attn	27.68 26.25					
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.50	16.38		No Difference		
RX Level -62.00 dBm	Loss Attn	27.68 28.75					
USADR FM2 IBOC	desired Loss undesired	-8.86 40.71 -6.05	12.91		No Difference		
RX Level -62.00 dBm	Loss Attn	27.68 28.75					
Notes: Same as "Lower 45dB"							

# EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #1 <b>DENON</b> <b>TU-380RD</b>	Measurements	F-2 d/u in dB	F-5 Upper First Adjacent DAR to Analog EO&C	G-2 <b>Urban Slow Rayleigh</b> Upper First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -21.44	<b>12.46</b>	Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 18.75				
AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.97	<b>26.67</b>	S/N at d/u 31.9 dB d/u attn= 26.29 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 40.50				
AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.11	<b>26.81</b>	S/N at d/u 31.8 dB d/u attn= 26.15 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 40.50				
USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.48	<b>24.43</b>	S/N at d/u 34 dB d/u attn= 24.78 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 36.75				
USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.08	<b>13.53</b>	S/N at d/u 44.1 dB d/u attn= 28.18 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 29.25				
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 8, 1995				DAT Ref.: DAR40141.DAT  Best Case S/N = 51.5 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #2 DENON TU-380RD		F-2		Effects with out Digital Modulation	
Measurements		d/u in dB		d/u in dB @ Silence S/N=45dB Silence S/N=35dB	
Analog to Analog Reference	desired Loss undesired	-8.77 40.71 -21.42	1.69	NA	
Desired Signal Level -62.00 dBm	Loss Attn	21.75 8.00			
AT&T Amati DSB IBOC	desired Loss undesired	-8.77 40.71 -7.97	15.67	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 29.50			
AT&T Amati LSB IBOC	desired Loss undesired	-8.77 40.71 -8.11	15.81	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 29.50			
USADR FM1 IBOC	desired Loss undesired	-8.77 40.71 -9.48	13.68	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 26.00			
USADR FM2 IBOC	desired Loss undesired	-8.77 40.71 -6.08	2.78	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 18.50			
Notes: Same as "Upper 45dB"					

# EIA Digital Audio Radio Test Laboratory

## Tests F2, F5 and G2

### Receiver

Rx No.: #3  
Mfg.: PANASONIC  
Model: RX-FS430  
Serial: GR3J01184

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-2 d/u in dB	F-5 Lower First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.87 Loss 40.71 undesired -21.41	27.33	Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 33.75				
AT&T Amati DSB IBOC	desired -8.87 Loss 40.71 undesired -8.02	29.87	DAR-> FM more annoying Hiss with interer modulation peaks detected S/N at d/u 43 dB d/u attn= 41.21 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 43.75				
AT&T Amati LSB IBOC	desired -8.87 Loss 40.71 undesired -8.09	26.19	DAR->FM same as FM->FM S/N at d/u 45.5 dB d/u attn= 41.14 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 40.00				
USADR FM1 IBOC	desired -8.87 Loss 40.71 undesired -9.47	28.82	S/N at d/u 44 dB d/u attn= 39.76 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 41.25				
USADR FM2 IBOC	desired -8.87 Loss 40.71 undesired -6.04	26.64	S/N at d/u 45.25 dB d/u attn= 43.19 dB		
RX Level -62.00 dBm	Loss 27.68 Attn 42.50				
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted February 24, 1995				DAT Ref.: DAR40122.DAT Best Case S/N = 49 dBr	

# EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-2 d/u in dB	Effects without Digital Modulation	S/N 45dB	S/N 35dB
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -21.41	14.83	NA	
Desired Signal Level -62.00 dBm	Loss Attn	21.75 21.25			
AT&T Amati DSB IBOC	desired Loss undesired	-8.87 40.71 -8.02	17.87	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 31.75			
AT&T Amati LSB IBOC	desired Loss undesired	-8.87 40.71 -8.09	14.69	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 28.50			
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.47	16.85	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 29.25			
USADR FM2 IBOC	desired Loss undesired	-8.87 40.71 -6.04	14.89	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 30.75			
Notes: Same as "Lower 45dB"					

EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-2 d/u in dB	F-5 Upper First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired -21.43	27.19			
RX Level -62.00 dBm	Loss 21.75 Attn 33.50				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -7.98	29.17			
RX Level -62.00 dBm	Loss 27.68 Attn 43.00		S/N at d/u 43.5 dB d/u attn= 41.02 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.09	29.28			
RX Level -62.00 dBm	Loss 27.68 Attn 43.00		S/N at d/u 43.5 dB d/u attn= 40.91 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.50	28.44			
RX Level -62.00 dBm	Loss 27.68 Attn 40.75		S/N at d/u 44.2 dB d/u attn= 39.50 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.08	27.02			
RX Level -62.00 dBm	Loss 27.68 Attn 42.75		S/N at d/u 45.2 dB d/u attn= 42.92 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 8, 1995					DAT Ref: DAR40142.DAT Best Case S/N = 49 dB



EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-2		Effects without Digital Modulation	
		d/u in dB		Silence	Silence
				d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss	-8.78 40.71	<b>15.94</b>	NA	
	undesired	-21.43			
Desired Signal Level	Loss	21.75			
-62.00 dBm	Attn	22.25			
AT&T Amati DSB IBOC	desired Loss	-8.78 40.71	<b>17.92</b>	No Difference	
	undesired	-7.98			
RX Level	Loss	27.68			
-62.00 dBm	Attn	31.75			
AT&T Amati LSB IBOC	desired Loss	-8.78 40.71	<b>18.03</b>	No Difference	
	undesired	-8.09			
RX Level	Loss	27.68			
-62.00 dBm	Attn	31.75			
USADR FM1 IBOC	desired Loss	-8.78 40.71	<b>17.19</b>	No Difference	
	undesired	-9.50			
RX Level	Loss	27.68			
-62.00 dBm	Attn	29.50			
USADR FM2 IBOC	desired Loss	-8.78 40.71	<b>15.77</b>	No Difference	
	undesired	-6.08			
RX Level	Loss	27.68			
-62.00 dBm	Attn	31.50			
Notes: Same as "Upper 45dB"					

# EIA Digital Audio Radio Test Laboratory

## Tests F2, F5 and G2

### Receiver

Rx No.: #4  
Mfg.: PIONEER  
Model: SX-201  
Serial: OA3965843C

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-2 d/u in dB	F-5 Lower First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.87 Loss 40.71 undesired -21.45	31.87	Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 38.25				
AT&T Amati DSB IBOC	desired -8.87 Loss 40.71 undesired -8.00	32.60	DAR-> FM more annoying Hiss with interer modulation peaks detected		
RX Level -62.00 dBm	Loss 27.68 Attn 46.50			S/N at d/u 44.5 dB d/u attn= 45.77 dB	
AT&T Amati LSB IBOC	desired -8.87 Loss 40.71 undesired -8.09	31.44	DAR->FM same as FM->FM		
RX Level -62.00 dBm	Loss 27.68 Attn 45.25			S/N at d/u 45.4 dB d/u attn= 45.68 dB	
USADR FM1 IBOC	desired -8.87 Loss 40.71 undesired -9.46	32.31			
RX Level -62.00 dBm	Loss 27.68 Attn 44.75			S/N at d/u 44.8 dB d/u attn= 44.31 dB	
USADR FM2 IBOC	desired -8.87 Loss 40.71 undesired -6.06	31.91			
RX Level -62.00 dBm	Loss 27.68 Attn 47.75			S/N at d/u 45 dB d/u attn= 47.71 dB	
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted February 28, 1995				DAT Ref.: DAR40122.DAT Best Case S/N = 51 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-2		Effects without Digital Modulation	
		d/u in dB		d/u in dB @ Silence S/N=45dB	d/u in dB @ Silence S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -21.45	<b>20.62</b>	NA	
Desired Signal Level -62.00 dBm	Loss Attn	21.75 27.00			
AT&T Amati DSB IBOC	desired Loss undesired	-8.87 40.71 -8.00	<b>21.60</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 35.50			
AT&T Amati LSB IBOC	desired Loss undesired	-8.87 40.71 -8.09	<b>20.44</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 34.25			
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.46	<b>21.09</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 33.50			
USADR FM2 IBOC	desired Loss undesired	-8.87 40.71 -6.06	<b>20.41</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	27.68 36.25			
Notes: Same as "Lower 45dB"					

# EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-2 d/u in dB	F-5 Upper First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.79 Loss 40.71 undesired -21.47	<b>21.22</b>			
RX Level -62.00 dBm	Loss 21.75 Attn 27.50				
AT&T Amati DSB IBOC	desired -8.79 Loss 40.71 undesired -7.97	<b>28.65</b>			
RX Level -62.00 dBm	Loss 27.68 Attn 42.50		S/N at d/u 38.6 dB d/u attn= 35.07 dB		
AT&T Amati LSB IBOC	desired -8.79 Loss 40.71 undesired -8.05	<b>28.73</b>			
RX Level -62.00 dBm	Loss 27.68 Attn 42.50		S/N at d/u 38.6 dB d/u attn= 34.99 dB		
USADR FM1 IBOC	desired -8.79 Loss 40.71 undesired -9.44	<b>26.87</b>			
RX Level -62.00 dBm	Loss 27.68 Attn 39.25		S/N at d/u 40.4 dB d/u attn= 33.60 dB		
USADR FM2 IBOC	desired -8.79 Loss 40.71 undesired -6.05	<b>21.48</b>			
RX Level -62.00 dBm	Loss 27.68 Attn 37.25		S/N at d/u 44.8 dB d/u attn= 36.99 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 9, 1995				DAT Ref.: DAR40143.DAT Best Case S/N = 51.5 dB	

EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-2 d/u in dB	Effects with out Digital Modulation	
			Silence d/u in dB @ S/N=45dB	Silence d/u in dB @ S/N=35dB
Analog to Analog Reference	desired -8.79 Loss 40.71 undesired -21.47	10.22	NA	
Desired Signal Level -62.00 dBm	Loss 21.75 Attn 16.50			
AT&T Amati DSB IBOC	desired -8.79 Loss 40.71 undesired -7.97	17.40	No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 31.25			
AT&T Amati LSB IBOC	desired -8.79 Loss 40.71 undesired -8.05	17.48	No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 31.25			
USADR FM1 IBOC	desired -8.79 Loss 40.71 undesired -9.44	15.62	No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 28.00			
USADR FM2 IBOC	desired -8.79 Loss 40.71 undesired -6.05	10.23	No Difference	
RX Level -62.00 dBm	Loss 27.68 Attn 26.00			
Notes: Same as "Upper 45dB"				

# EIA Digital Audio Radio Test Laboratory

## Tests F2, F5 and G2

### Receiver

Rx No.: #5

Mfg.: FORD

Model: F4XF-19B132-CB

Serial: 281150B010

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower first adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper first adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #5 Ford Auto F4XF-19B132-CB	Measurements	F-2 d/u in dB	F-5 Lower First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Lower First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.87 Loss 40.71 undesired -1.40	<b>-6.18</b>	Interferer Mod peaks detected		
RX Level -62.00 dBm	Loss 21.75 Attn 20.25				
AT&T Amati DSB IBOC	desired -8.87 Loss 40.71 undesired -7.98	<b>19.33</b>	DAR-> FM more annoying Hiss with interer modulation peaks detected S/N at d/u 26.8 dB d/u attn= 27.74 dB		
RX Level -62.00 dBm	Loss 7.68 Attn 53.25				
AT&T Amati LSB IBOC	desired -8.87 Loss 40.71 undesired -8.09	<b>-5.56</b>	DAR->FM same as FM->FM S/N at d/u 43.8 dB d/u attn= 27.63 dB		
RX Level -62.00 dBm	Loss 7.68 Attn 28.25				
USADR FM1 IBOC	desired -8.87 Loss 40.71 undesired -9.46	<b>17.31</b>	S/N at d/u 27.5 dB d/u attn= 26.26 dB		
RX Level -62.00 dBm	Loss 7.68 Attn 49.75				
USADR FM2 IBOC	desired -8.87 Loss 40.71 undesired -6.01	<b>0.36</b>	S/N at d/u 38.8 dB d/u attn= 29.71 dB		
RX Level -62.00 dBm	Loss 7.68 Attn 36.25				
Notes:	Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted February 28, 1995			DAT Ref.: DAR40124.DAT Best Case S/N = 51.5 dB	



EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #5 Ford Auto F4XF-19B132-CB	Measurements	F-2		Effects without Digital Modulation	
		d/u in dB		Silence d/u in dB @ S/N=45dB	Silence d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -1.45	<b>-16.88</b>	NA	
Desired Signal Level -62.00 dBm	Loss Attn	21.75 9.50			
AT&T Amati DSB IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.87 40.71 -7.98 7.68 42.00	<b>8.08</b>	No Difference	
AT&T Amati LSB IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.87 40.71 -8.09 7.68 17.00	<b>-16.81</b>	No Difference	
USADR FM1 IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.84 40.71 -9.46 7.68 38.50	<b>6.09</b>	No Difference	
USADR FM2 IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.87 40.71 -6.01 7.68 24.75	<b>-11.14</b>	No Difference	
Notes: Same as "Lower 45dB"					

EIA Digital Audio Radio Test Laboratory

Test F-2, F-5 and G-2 45 dB S/N Receiver #5 Ford Auto F4XF-19B132-CB	Measurements	F-2 d/u in dB	F-5 Upper First Adjacent DAR to Analog EO&C	G-2 Urban Slow Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C	Urban Fast Rayleigh Upper First Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired -1.37	-6.12			
RX Level -62.00 dBm	Loss 21.75 Attn 20.25				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -7.95	19.39			
RX Level -62.00 dBm	Loss 7.68 Attn 53.25		S/N at d/u 27.2 dB d/u attn= 27.74 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.05	19.74			
RX Level -62.00 dBm	Loss 7.68 Attn 53.50		S/N at d/u 27.2 dB d/u attn= 27.64 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.44	17.38			
RX Level -62.00 dBm	Loss 7.68 Attn 49.75		S/N at d/u 26.8 dB d/u attn= 26.25 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.03	-0.03			
RX Level -62.00 dBm	Loss 7.68 Attn 35.75		S/N at d/u 40 dB d/u attn= 29.66 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 9, 1995					DAT Ref.: DAR40144.DAT Best Case S/N = 51.5 dB

# EIA Digital Audio Radio Test Laboratory

Test F-2 35 dB S/N Receiver #5 Ford Auto F4XF-19B132-CB	Measurements	F-2		Effects with out Digital Modulation		
		d/u in dB		Silence	Silence	
				d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB	
Analog to Analog Reference	desired Loss undesired	-8.78 40.71 -1.37	<b>-17.37</b>			
Desired Signal Level -62.00 dBm	Loss Attn	21.75 9.00				
AT&T Amati DSB IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.78 40.71 -7.95 7.68 42.00	<b>8.14</b>			
AT&T Amati LSB IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.78 40.71 -8.05 7.68 42.25		<b>8.49</b>		
USADR FM1 IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.78 40.71 -9.44 7.68 38.50			<b>6.13</b>	
USADR FM2 IBOC RX Level -62.00 dBm	desired Loss undesired Loss Attn	-8.78 40.71 -6.03 7.68 23.75	<b>-12.03</b>			
Notes: Same as Upper 45dB"						

**Appendix AO – Tests F-3, F-6 and G-3  
Second Adjacent DAR to Analog**

# EIA Digital Audio Radio Test Laboratory

## Tests F3, F6 and G3

### Receiver

Rx No.: #1  
Mfg.: DELCO  
Model: 16192463  
Serial: 1000499

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.
- \* In certain cases portions of the second adjacent test can not be performed due to narrow band characteristics of some receivers.

# EIA Digital Audio Radio Test Laboratory

<b>Test F-3, F-6 and G-3</b> 47 dB S/N Receiver #1 Delco 16192463		<b>F-3</b> d/u in dB	<b>F-6</b> Lower Second Adjacent DAR to Analog EO&C	<b>G-3 Urban Slow Rayleigh</b> Lower Second Adjacent DAR to Analog with Multipath EO&C	<b>G-3 Urban Fast Rayleigh</b> Lower Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference RX Level -62.00 dBm	desired -8.78 Loss 40.71 undesired 8.43 Loss 11.75 Attn 22.00	-24.17			
AT&T Amati DSB IBOC RX Level -62.00 dBm	desired -8.78 Loss 40.71 undesired -8.01 Loss 7.68 Attn 9.75	-24.05	S/N at d/u 46.6 dB d/u attn= 9.63 dB		
AT&T Amati LSB IBOC RX Level -62.00 dBm	desired -8.78 Loss 40.71 undesired -8.11 Loss 7.68 Attn 9.50	-24.20	S/N at d/u 46.5 dB d/u attn= 9.53 dB		
USADR FM1 IBOC RX Level -62.00 dBm	desired -8.78 Loss 40.71 undesired -9.44 Loss 7.68 Attn 8.25	-24.12	S/N at d/u 45.4 dB d/u attn= 8.20 dB		
USADR FM2 IBOC RX Level -62.00 dBm	desired -8.78 Loss 40.71 undesired -6.03 Loss 7.68 Attn 11.50	-24.28	S/N at d/u 38.6 dB d/u attn= 11.61 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 1, 1995 Due to the narrow band receiver characteristics d/u at S/N of 45dB not accomplished					DAT Ref.: DAR40130.DAT Best Case S/N = 49 dB

# EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #1 Delco 16192463		F-3		Effects with out Digital Modulation	
Measurements		d/u in dB		d/u in dB @	
				Silence	S/N=45dB
				Silence	S/N=35dB
Analog to Analog Reference	desired	-8.87	NA	NA	
	Loss	40.71			
	undesired	-1.45			
Desired Signal Level	Loss	11.75			
-62.00 dBm	Attn	9.50			
AT&T Amati DSB IBOC	desired	-8.87	NA		
	Loss	40.71			
	undesired	-7.98			
RX Level	Loss	7.68			
-62.00 dBm	Attn	42.00			
AT&T Amati LSB IBOC	desired	-8.87	NA		
	Loss	40.71			
	undesired	-8.09			
RX Level	Loss	7.68			
-62.00 dBm	Attn	17.00			
USADR FM1 IBOC	desired	-8.84	NA		
	Loss	40.71			
	undesired	-9.46			
RX Level	Loss	7.68			
-62.00 dBm	Attn	38.50			
USADR FM2 IBOC	desired	-8.87	NA		
	Loss	40.71			
	undesired	-6.01			
RX Level	Loss	7.68			
-62.00 dBm	Attn	24.75			
Notes: Due to the narrow band receiver characteristics d/u at S/N of 35dB not accomplished					

# EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 47 dB S/N Receiver #1 Delco 16192463	Measurements	F-3 d/u in dB	F-6 Upper Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired 8.43	-24.17			
RX Level -62.00 dBm	Loss 11.75 Attn 22.00				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.00	-24.06			
RX Level -62.00 dBm	Loss 7.68 Attn 9.75		S/N at d/u 46.4 dB d/u attn= 9.64 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.10	-24.21			
RX Level -62.00 dBm	Loss 7.68 Attn 9.50		S/N at d/u 46.4 dB d/u attn= 9.54 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.52	-24.29			
RX Level -62.00 dBm	Loss 7.68 Attn 8.00		S/N at d/u 45.4 dB d/u attn= 8.12 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.10	-24.21			
RX Level -62.00 dBm	Loss 7.68 Attn 11.50		S/N at d/u 37 dB d/u attn= 11.54 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 14, 1995 Due to the narrow band receiver characteristics d/u at S/N of 45dB not accomplished					DAT Ref: DAR40150.DAT  Best Case S/N = 49 dB



EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #1 Delco 16192463	Measurements	F-3 d/u in dB	Effects with out Digital Modulation				
			Silence	d/u in dB D/N=47dB	Silence	d/u in dB @ S/N=35dB	
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -1.45	NA			NA	
Desired Signal Level -62.00 dBm	Loss Attn	11.75 9.50					
AT&T Amati DSB IBOC	desired Loss undesired	-8.87 40.71 -7.98	NA				
RX Level -62.00 dBm	Loss Attn	7.68 42.00					
AT&T Amati LSB IBOC	desired Loss undesired	-8.87 40.71 -8.09	NA				
RX Level -62.00 dBm	Loss Attn	7.68 17.00					
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.46	NA				
RX Level -62.00 dBm	Loss Attn	7.68 38.50					
USADR FM2 IBOC	desired Loss undesired	-8.87 40.71 -6.01	NA				
RX Level -62.00 dBm	Loss Attn	7.68 24.75					
Notes: Due to the narrow band receiver characteristics d/u at S/N of 35dB not accomplished							

# EIA Digital Audio Radio Test Laboratory

## Tests F3, F6 and G3

### Receiver

Rx No.: #2  
Mfg.: DENON  
Model: TU-380RD  
Serial: 4056301149

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #2 Denon TU-380RD	Measurements	F-3 d/u in dB	F-6 Lower Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired 8.43	-24.67			
RX Level -62.00 dBm	Loss 11.75 Attn 21.50				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.02	-16.54			
RX Level -62.00 dBm	Loss 7.68 Attn 17.25		S/N at d/u 20.75 dB d/u attn= 9.12 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.10	-19.71			
RX Level -62.00 dBm	Loss 7.68 Attn 14.00		S/N at d/u 28.6 dB d/u attn= 9.04 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.42	-4.64			
RX Level -62.00 dBm	Loss 7.68 Attn 27.75		S/N at d/u 20.75 dB d/u attn= 7.72 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.00	-4.06			
RX Level -62.00 dBm	Loss 7.68 Attn 31.75		S/N at d/u 24.5 dB d/u attn= 11.14 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 2, 1995					DAT Ref.: DAR40131.DAT  Best Case S/N = 51.5 dB

# EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #2 Denon TU-380RD	Measurements	F-3 d/u in dB	Effects with out Digital Modulation			
			Silence	d/u in dB @ S/N=45dB	Silence	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -1.45	NA	NA		
Desired Signal Level -62.00 dBm	Loss Attn	11.75 9.50				
AT&T Amati DSB IBOC	desired Loss undesired	-8.87 40.71 -7.98	NA			
RX Level -62.00 dBm	Loss Attn	7.68 42.00				
AT&T Amati LSB IBOC	desired Loss undesired	-8.87 40.71 -8.09	NA			
RX Level -62.00 dBm	Loss Attn	7.68 17.00				
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.46	NA			
RX Level -62.00 dBm	Loss Attn	7.68 38.50				
USADR FM2 IBOC	desired Loss undesired	-8.87 40.71 -6.01	NA			
RX Level -62.00 dBm	Loss Attn	7.68 24.75				
Notes: Due to receiver characteristics d/u at S/N of 35dB not accomplished						

EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #2 Denon TU-380RD	Measurements	F-3 d/u in dB	F-6 Upper Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.77 Loss 40.71 undesired 8.45	-33.18			
RX Level -62.00 dBm	Loss 11.75 Attn 13.00				
AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.98	-21.02			
RX Level -62.00 dBm	Loss 7.68 Attn 22.50		S/N at d/u 15 dB d/u attn= 10.34 dB		
AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.11	-21.89			
RX Level -62.00 dBm	Loss 7.68 Attn 21.50		S/N at d/u 17.4 dB d/u attn= 10.21 dB		
USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.52	-15.98			
RX Level -62.00 dBm	Loss 7.68 Attn 26.00		S/N at d/u 17.5 dB d/u attn= 8.80 dB		
USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.07	-5.93			
RX Level -62.00 dBm	Loss 7.68 Attn 39.50		S/N at d/u 18.5 dB d/u attn= 12.25 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 14, 1995 2-3 KHz off in Undesired Analog reference center frequency yields 2-3 dB difference in S/N.					DAT Ref.: DAR40151.DAT Best Case S/N = 51 dB

EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #2 Denon TU-380RD	Measurements	F-3		Effects with out Digital Modulation	
		d/u in dB		d/u in dB @ Silence S/N=45dB	d/u in dB @ Silence S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.77 40.71 8.45	-36.68		
Desired Signal Level -62.00 dBm	Loss Attn	11.75 9.50			
AT&T Amati DSB IBOC	desired Loss undesired	-8.77 40.71 -7.98	-25.27		
RX Level -62.00 dBm	Loss Attn	7.68 18.25			
AT&T Amati LSB IBOC	desired Loss undesired	-8.77 40.71 -8.11	-26.14		
RX Level -62.00 dBm	Loss Attn	7.68 17.25			
USADR FM1 IBOC	desired Loss undesired	-8.77 40.71 -9.52	-24.73		
RX Level -62.00 dBm	Loss Attn	7.68 17.25			
USADR FM2 IBOC	desired Loss undesired	-8.77 40.71 -6.07	-16.68		
RX Level -62.00 dBm	Loss Attn	7.68 28.75			
Notes:					

# EIA Digital Audio Radio Test Laboratory

## Tests F3, F6 and G3

### Receiver

Rx No.: #3  
Mfg.: PANASONIC  
Model: RX-FS430  
Serial: GR3J01184

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-3 d/u in dB	F-6 Lower Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired 8.42	<b>-22.41</b>			
RX Level -62.00 dBm	Loss 11.75 Attn 23.75				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.00	<b>-14.81</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 19.00		S/N at d/u 36.2 dB d/u attn= 11.40 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.11	<b>-20.45</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 13.25		S/N at d/u 42.8 dB d/u attn= 11.29 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.42	<b>-4.39</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 28.00		S/N at d/u 28 dB d/u attn= 9.98 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.00	<b>-5.81</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 30.00		S/N at d/u 29.2 dB d/u attn= 13.40 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 3, 1995					DAT Ref: DAR40132.DAT Best Case S/N = 51 dB



EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-3		Effects with out Digital Modulation	
		d/u in dB		Silence	Silence
				d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.78 40.71 8.42	<b>-26.16</b>	NA	
Desired Signal Level -62.00 dBm	Loss Attn	11.75 20.00			
AT&T Amati DSB IBOC	desired Loss undesired	-8.78 40.71 -8.00	<b>-22.56</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 11.25			
AT&T Amati LSB IBOC	desired Loss undesired	-8.78 40.71 -8.11	<b>-25.20</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 8.50			
USADR FM1 IBOC	desired Loss undesired	-8.78 40.71 -9.42	<b>-15.64</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 16.75			
USADR FM2 IBOC	desired Loss undesired	-8.78 40.71 -5.98	<b>-16.83</b>	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 19.00			
Notes:					

# EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-3 d/u in dB	F-6 Upper Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.77 Loss 40.71 undesired -11.39	2.16			
RX Level -62.00 dBm	Loss 11.75 Attn 28.50				
AT&T Amati DSB IBOC	desired -8.77 Loss 40.71 undesired -7.97	5.17			
RX Level -62.00 dBm	Loss 7.68 Attn 39.00		S/N at d/u 42.4 dB d/u attn= 35.99 dB		
AT&T Amati LSB IBOC	desired -8.77 Loss 40.71 undesired -8.04	5.24			
RX Level -62.00 dBm	Loss 7.68 Attn 39.00		S/N at d/u 42.6 dB d/u attn= 35.92 dB		
USADR FM1 IBOC	desired -8.77 Loss 40.71 undesired -9.48	8.68			
RX Level -62.00 dBm	Loss 7.68 Attn 41.00		S/N at d/u 39.5 dB d/u attn= 34.48 dB		
USADR FM2 IBOC	desired -8.77 Loss 40.71 undesired -6.09	3.04			
RX Level -62.00 dBm	Loss 7.68 Attn 38.75		S/N at d/u 44.2 dB d/u attn= 37.87 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 15, 1995					DAT Ref.: DAR40152.DAT Best Case S/N = 51 dB

EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #3 Panasonic RX-FS430	Measurements	F-3		Effects with out Digital Modulation	
		d/u in dB		Silence	Silence
				d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.77 40.71 -11.39	-9.09	NA	
Desired Signal Level -62.00 dBm	Loss Attn	11.75 17.25			
AT&T Amati DSB IBOC	desired Loss undesired	-8.77 40.71 -7.97	-4.83	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 29.00			
AT&T Amati LSB IBOC	desired Loss undesired	-8.77 40.71 -8.04	-6.01	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 27.75			
USADR FM1 IBOC	desired Loss undesired	-8.77 40.71 -9.48	-2.57	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 29.75			
USADR FM2 IBOC	desired Loss undesired	-8.77 40.71 -6.09	-7.96	No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 27.75			
Notes:					

# EIA Digital Audio Radio Test Laboratory

## Tests F3, F6 and G3

### Receiver

Rx No.: #4  
Mfg.: PIONEER  
Model: SX-201  
Serial: OA3965843C

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency

### Notes:

- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-3 d/u in dB	F-6 Lower Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired 8.42	<b>-15.16</b>			
RX Level -62.00 dBm	Loss 11.75 Attn 31.00				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.01	<b>1.95</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 35.75		S/N at d/u 29 dB d/u attn= 18.64 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.09	<b>-14.72</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 19.00		S/N at d/u 44.5 dB d/u attn= 18.56 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.42	<b>9.86</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 42.25		S/N at d/u 18.6 dB d/u attn= 17.23 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.00	<b>-2.06</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 33.75		S/N at d/u 33 dB d/u attn= 20.65 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 3, 1995				DAT Ref: DAR40133.DAT Best Case S/N = 51 dB	

EIA Digital Audio Radio Test Laboratory

Test F-3 45 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-3 d/u in dB	Effects with out Digital Modulation			
			Silence	d/u in dB @ S/N=45dB	Silence	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.78 40.71 8.42	-25.66		NA	
Desired Signal Level -62.00 dBm	Loss Attn	11.75 20.50				
AT&T Amati DSB IBOC	desired Loss undesired	-8.78 40.71 -8.01	-9.05		No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 24.75				
AT&T Amati LSB IBOC	desired Loss undesired	-8.78 40.71 -8.09	-24.72		No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 9.00				
USADR FM1 IBOC	desired Loss undesired	-8.78 40.71 -9.42	1.36		No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 33.75				
USADR FM2 IBOC	desired Loss undesired	-8.78 40.71 -6.00	-13.06		No Difference	
RX Level -62.00 dBm	Loss Attn	7.68 22.75				
Notes:						

# EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 45 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-3 d/u in dB	F-6 Upper Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.76 Loss 40.71 undesired 8.45	<b>-14.92</b>			
RX Level -62.00 dBm	Loss 11.75 Attn 31.25				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -7.98	<b>-8.83</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 25.00		S/N at d/u 39.8 dB d/u attn= 18.91 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.09	<b>-8.47</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 25.25		S/N at d/u 39.5 dB d/u attn= 18.80 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.47	<b>-1.09</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 31.25		S/N at d/u 32.3 dB d/u attn= 17.42 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.08	<b>-3.48</b>			
RX Level -62.00 dBm	Loss 7.68 Attn 32.25		S/N at d/u 34.4 dB d/u attn= 20.81 dB		
Notes: Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Tests conducted March 14, 1995					DAT Ref.: DAR40153.DAT  Best Case S/N = 51 dB

# EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #4 Pioneer SX-201	Measurements	F-3 d/u in dB	Effects with out Digital Modulation	
			Silence d/u in dB @ S/N=45dB	Silence d/u in dB @ S/N=35dB
Analog to Analog Reference	desired -8.76 Loss 40.71 undesired 8.45	-25.67	NA	
Desired Signal Level -62.00 dBm	Loss 11.75 Attn 20.50			
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -7.98	-19.83	No Difference	
RX Level -62.00 dBm	Loss 7.68 Attn 14.00			
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.09	-19.72	No Difference	
RX Level -62.00 dBm	Loss 7.68 Attn 14.00			
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.47	-12.09	No Difference	
RX Level -62.00 dBm	Loss 7.68 Attn 20.25			
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.08	-14.48	No Difference	
RX Level -62.00 dBm	Loss 7.68 Attn 21.25			
Notes:				



# EIA Digital Audio Radio Test Laboratory

## Tests F3, F6 and G3

### Receiver

Rx No.: #5

Mfg.: FORD

Model: F4XF-19B132-CB

Serial: 281150B010

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Page	Description
1	Cover sheet
2	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
3	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the lower second adjacent frequency
4	DAR -> Analog interference at a 45dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency
5	DAR -> Analog interference at a 35dB signal to noise ratio. Digital Proponent on the upper second adjacent frequency

### Notes:

- \* **Due to narrow-band receiver characteristics, unable to get 45dB S/N ratio with interference. Results are at a 49dB S/N ratio w/interference as a demonstration onl**
- \* Clipped pink noise used as modulation of the analog channel of the undesired (Proponent) signal in test F1
- \* ABBA used as modulation of the undesired analog channel (F4)
- \* SCA group B included on both desired and undesired (proponent) signals
- \* Total modulation on analog channels: 110% (SCA group level at 20%)
- \* Receiver audio routed through a 15KHz low pass filter
- \* Audio measurements made using quasi-peak detection and a CCIR wieghting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.
- \* In certain cases portions of the second adjacent test can not be performed due to narrow band characteristics of some receivers.

# EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 49 dB S/N Receiver #5 Ford F4XF-19B132-CB	CAUTION  Measurements	F-3  d/u in dB	F-6 Lower Second Adjacent DAR to Analog  EO&C	G-3 Urban Slow Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Lower Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference	desired -8.78 Loss 40.71 undesired 8.42	-43.16			
RX Level -62.00 dBm	Loss 11.75 Attn 3.00				
AT&T Amati DSB IBOC	desired -8.78 Loss 40.71 undesired -8.00	-33.81			
RX Level -62.00 dBm	Loss 7.68 Attn 0.00		S/N at d/u 36.2 dB d/u attn= -9.35 dB		
AT&T Amati LSB IBOC	desired -8.78 Loss 40.71 undesired -8.11	-33.70			
RX Level -62.00 dBm	Loss 7.68 Attn 0.00		S/N at d/u 42.8 dB d/u attn= -9.46 dB		
USADR FM1 IBOC	desired -8.78 Loss 40.71 undesired -9.42	-32.39			
RX Level -62.00 dBm	Loss 7.68 Attn 0.00		S/N at d/u 28 dB d/u attn= -10.77 dB		
USADR FM2 IBOC	desired -8.78 Loss 40.71 undesired -6.00	-35.81			
RX Level -62.00 dBm	Loss 7.68 Attn 0.00		S/N at d/u 29.2 dB d/u attn= -7.35 dB		
<b>Notes:</b> Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Due to narrow-band receiver characteristics, unable to get 45dB S/N ratio with interference. Results are at a 49dB S/N ratio w/interference as a demonstration only. Tests conducted March 3, 1995					DAT Ref: None  Best Case S/N = 51.75 dB

EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #5 Ford F4XF-19B132-CB	F-3		Effects with out Digital Modulation	
	Measurements	d/u in dB	Silence	Silence
			d/u in dB @ S/N=45dB	d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.78 40.71 8.42	NA	NA
Desired Signal Level -62.00 dBm	Loss Attn	11.75		
AT&T Amati DSB IBOC	desired Loss undesired	-8.78 40.71 -8.00	NA	
RX Level -62.00 dBm	Loss Attn	7.68		
AT&T Amati LSB IBOC	desired Loss undesired	-8.78 40.71 -8.11	NA	
RX Level -62.00 dBm	Loss Attn	7.68		
USADR FM1 IBOC	desired Loss undesired	-8.78 40.71 -9.42	NA	
RX Level -62.00 dBm	Loss Attn	7.68		
USADR FM2 IBOC	desired Loss undesired	-8.78 40.71 -5.98	NA	
RX Level -62.00 dBm	Loss Attn	7.68		
<b>Notes:</b> Could not achieve target S/N on second adj. test				

EIA Digital Audio Radio Test Laboratory

Test F-3, F-6 and G-3 48 dB S/N Receiver #5 Ford F4XF-19B132-CB	CAUTION  Measurements	F-3  d/u in dB	F-6 Upper Second Adjacent DAR to Analog EO&C	G-3 Urban Slow Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C	G-3 Urban Fast Rayleigh Upper Second Adjacent DAR to Analog with Multipath EO&C
Analog to Analog Reference RX Level -62.00 dBm	desired -8.77 Loss 40.71 undesired 8.45 Loss 11.75 Attn 0.00	-46.18			
AT&T Amati DSB IBOC RX Level -62.00 dBm	desired -8.77 Loss 40.71 undesired -8.00 Loss 7.68 Attn 7.75	-26.05			
AT&T Amati LSB IBOC RX Level -62.00 dBm	desired -8.77 Loss 40.71 undesired -8.12 Loss 7.68 Attn 7.75	-25.93			
USADR FM1 IBOC RX Level -62.00 dBm	desired -8.77 Loss 40.71 undesired -9.51 Loss 7.68 Attn 11.50	-20.79			
USADR FM2 IBOC RX Level -62.00 dBm	desired -8.77 Loss 40.71 undesired -6.09 Loss 7.68 Attn 26.00	-9.71			
Notes:	Subcarrier Group B on interferers and desired analog Clipped Pink Noise on interferers Standard SCA Test Signal yields -20dB on Sony 7010 Input Monitor with Input Gain Set to -4.0dB Could not achieve target S/N on second adj. test Tests conducted March 14, 1995				DAT Ref.: None  Best Case S/N = 51.75 dB

# EIA Digital Audio Radio Test Laboratory

Test F-3 35 dB S/N Receiver #5 Ford F4XF-19B132-CB	Measurements	F-3 d/u in dB	Effects with out Digital Modulation		
			Silence	d/u in dB D/N=47dB	Silence
					d/u in dB @ S/N=35dB
Analog to Analog Reference	desired Loss undesired	-8.87 40.71 -1.45	NA	NA	
Desired Signal Level -62.00 dBm	Loss Attn	11.75			
AT&T Amati DSB IBOC	desired Loss undesired	-8.87 40.71 -7.98	NA		
RX Level -62.00 dBm	Loss Attn	7.68			
AT&T Amati LSB IBOC	desired Loss undesired	-8.87 40.71 -8.09	NA		
RX Level -62.00 dBm	Loss Attn	7.68			
USADR FM1 IBOC	desired Loss undesired	-8.84 40.71 -9.46	NA		
RX Level -62.00 dBm	Loss Attn	7.68			
USADR FM2 IBOC	desired Loss undesired	-8.87 40.71 -6.01	NA		
RX Level -62.00 dBm	Loss Attn	7.68			
<b>Notes:</b> Could not achieve target S/N on second adj. test					

# **Appendix AP – Tests H and I Analog to DAR**

EIA Digital Audio Radio Test Laboratory

**Tests H & I, Sections 1-5**

**Proponent:** USADR FM1

**Index**

<b>Page</b>	<b>Description</b>
1	Cover sheet
2	Analog -> DAR interference tests H and I (with multipath) including: 1) Co-Channel 2) Lower first adjacent or upper first adjacent tests 3) Simultaneous lower and upper first adjacent tests 4) Lower second adjacent or upper second adjacent tests 5) Simultaneous lower and upper second adjacent tests

**Notes:**

- \* Clipped pink noise used as the modulation signal on the analog interfering signal
- \* ABBA used as modulation on the IBOC host analog channel (100% mod. lev.)
- \* When required, SCA groups A or B included on undesired signal. Only group A used in test I (Multipath)
- \* Total modulation on analog channels: 100% without SCA's, 110% with SCA's (SCA group level at 20%)
- \* In the H series only, additional paths in the multipath simulator were turned on to provide a higher undesired signal level when required. The simulator paths were used for gain only, no multipath events were running.
- \* "2P" indicates 2 paths for a 6dB increase. "3P" indicates 3 paths for a 9 dB increase in undesired signal.
- \* Multipath setup includes nine paths for the desired signal and three paths for the undesired signal
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

H and I Series		H Series Tests								I Series Tests					
USADR FMI	D IL	-7.47 40.77	SCAs					Co, 1st and 2nd->DAR EO&C	Attn	D/U	Analog -> DAR w/multipath Group A SCA's Urban Slow Rayleigh		Analog -> DAR w/multipath Group A SCA's Urban Fast Rayleigh		
			None D/U	Group A Attn	Group A D/U	Group B Attn	Group B D/U				Attn	D/U	Attn	D/U	
1	Co-Channel Boonton	U	-7.77												
		IL	11.27												
		TOA Attn	17.75	-11.45	26.75	-2.45	26.50	-2.70							
		POF Attn	11.00	-18.20	21.25	-7.95	22.50	-6.70							
2	Lower 1st Adj Boonton	U	-7.77												
		IL	11.27												
		TOA Attn	24.25	25.05	23.75	24.55	23.75	24.55	No Change with SCAs 30 dB pad in interfering path						
POF Attn	19.00	19.80	19.50	20.30	19.50	20.30									
2	Upper 1st Adj Boonton	U	-7.74												
		IL	11.27												
		TOA Attn	24.00	24.77											
		POF Attn	18.50	19.27											
3	Lower+Upper 1st Adj	U													
		IL													
		TOA Attn							NA						
		POF Attn													
4	Lower 2nd Adj Harris	U	-7.74												
		IL	11.27	2P		2P		2P							
		TOA Attn	4.25	-30.98	8.75	-26.48	6.50	-28.73							
		POF Attn	1.75	-33.48	4.00	-31.23	3.00	-32.23							
4	Upper 2nd Adj Boonton	U	-7.74												
		IL	11.27	3P											
		TOA Attn	5.75	-32.48											
		POF Attn	0.00	-38.23											
5	Lower+Upper 2nd Adj	U	-7.83												
		IL	11.27												
		TOA Attn	19.25	-15.90	19.50	-15.65	19.50	-15.65	Hook Occurs						
POF Attn	15.00	-20.15	15.00	-20.15	14.00	-21.15									

Notes: Clipped Pink Noise only at 100%

W/SCA's: Clipped Pink Noise at 90% SCA Groups A or B at 20%

ABBA on IBOC Host

"Hook" refers to a non-linear condition caused by wideband AGC affecting results due to the unusually high level of second adjacent interfering signal required for TOA. Other related terms are hysteresis or foldback. This is an unstable condition that will cause variability in the test results.

DAT Ref.: DAR40180.DAT



# EIA Digital Audio Radio Test Laboratory

## Tests H & I, Sections 1-5

**Proponent:** AT&T Amati DSB

### Index

Page	Description
1	Cover sheet
2	Analog -> DAR interference tests H and I (with multipath) including: 1) Co-Channel 2) Lower first adjacent or upper first adjacent tests 3) Simultaneous lower and upper first adjacent tests 4) Lower second adjacent or upper second adjacent tests 5) Simultaneous lower and upper second adjacent tests

### Notes:

- \* Clipped pink noise used as the modulation signal on the analog interfering signal
- \* ABBA used as modulation on the IBOC host analog channel (100% mod. lev.)
- \* When required, SCA groups A or B included on undesired signal. Only group A used in test I (Multipath)
- \* Total modulation on analog channels: 100% without SCA's, 110% with SCA's (SCA group level at 20%)
- \* In the H series only, additional paths in the multipath simulator were turned on to provide a higher undesired signal level when required. The simulator paths were used for gain only, no multipath events were running.
- \* "2P" indicates 2 paths for a 6dB increase. "3P" indicates 3 paths for a 9 dB increase in undesired signal.
- \* Multipath setup includes nine paths for the desired signal and three paths for the undesired signal
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

H and I Series		H Series Tests								I Series Tests					
		D IL	-7.50 40.77	SCAs					Co, 1st and 2nd->DAR EO&C	Attn	D/U	Analog -> DAR w/multipath Group A SCA's Urban Slow Rayleigh		Analog -> DAR w/multipath Group A SCA's Urban Fast Rayleigh	
				None	Group A		Group B					Attn	D/U	Attn	D/U
			D/U	Attn	D/U	Attn	D/U								
3/30/95	1	Co-Channel Boonton	U	-7.77											
			IL	11.27						49.00	19.77	Medium	42.00	12.77	Medium
			TOA Attn	10.75	-18.48	25.25	-3.98	21.25	-7.98	39.00	9.77		34.00	4.77	Medium
		POF Attn	8.50	-20.73	22.75	-6.48	18.00	-11.23			Weak			Weak	
											Impairment between TOA and POF			Weak	
														TOA without impairment	
3/31/95	2	Lower 1st Adj Boonton	U	-7.77											
			IL	11.27								Medium			Medium
			TOA Attn	22.00	22.77	22.00	22.77	22.00	22.77	No Change with SCAs	52.00	52.77		38.00	38.77
		POF Attn	20.00	20.77	20.00	20.77	20.00	20.77	34.00	34.77		31.00	31.77		
2	Upper 1st Adj Boonton	U	-7.77												
		IL	11.27								Medium			Medium	
		TOA Attn	22.25								NA			NA	
		POF Attn	20.50											NA	
3	Lower+Upper 1st Adj	TOA									Medium			Medium	
		POF									NA			NA	
3/31/95	4	Lower 2nd Adj Boonton	U	-7.77	3P		3P		3P						
			IL	11.27	3P		3P		3P			Medium			Medium
			TOA Attn	2.00	-36.23	5.75	-32.48	3.25	-34.98	POF could just be achieved	25.00	-4.23		14.00	-15.23
		POF Attn	0.00	-38.23	4.00	-34.23	1.00	-37.23	13.00	-16.23		8.00	-21.23		
4	Upper 2nd Adj Boonton	U	-7.77												
		IL	11.27	3P							Medium			Medium	
		TOA Attn	0.00	-38.23					TOA could just be achieved						
		POF Attn													
3/31/95	5	Lower+Upper 2nd Adj	U	-7.85	3P		3P		3P						
			IL	11.27	3P		3P		3P			Medium			Medium
			TOA Attn	3.75	-34.41	8.25	-29.91	5.00	-33.16		26.00	-3.16		16.00	-13.16
		POF Attn	2.50	-35.66	6.25	-31.91	3.50	-34.66	15.00	-14.16		8.00	-21.16		

Notes: Clipped Pink Noise only at 100%  
W/SCA's: Clipped Pink Noise at 90% SCA Groups A or B at 20%  
ABBA on IBOC Host  
3P indicates 3 Paths for a 9 dB increase in power  
Multipath Tests Conducted 4/5/95

DAT Ref.: DAR40181.DAT

# EIA Digital Audio Radio Test Laboratory

## Tests H & I, Sections 1-5

Proponent: AT&T Amati LSB

### Index

Page	Description
1	Cover sheet
2	Analog -> DAR interference tests H and I (with multipath) including: 1) Co-Channel 2) Lower first adjacent or upper first adjacent tests 3) Simultaneous lower and upper first adjacent tests 4) Lower second adjacent or upper second adjacent tests 5) Simultaneous lower and upper second adjacent tests

### Notes:

- \* Clipped pink noise used as the modulation signal on the analog interfering signal
- \* ABBA used as modulation on the IBOC host analog channel (100% mod. lev.)
- \* When required, SCA groups A or B included on undesired signal. Only group A used in test I (Multipath)
- \* Total modulation on analog channels: 100% without SCA's, 110% with SCA's (SCA group level at 20%)
- \* In the H series only, additional paths in the multipath simulator were turned on to provide a higher undesired signal level when required. The simulator paths were used for gain only, no multipath events were running.
- \* "2P" indicates 2 paths for a 6dB increase. "3P" indicates 3 paths for a 9 dB increase in undesired signal.
- \* Multipath setup includes nine paths for the desired signal and three paths for the undesired signal
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

EIA Digital Audio Radio Test Laboratory

H and I Series		H Series Tests								I Series Tests					
		D	-7.54	SCAs				Co, 1st and 2nd->DAR		Analog -> DAR w/multipath		Analog -> DAR w/multipath			
AT&T Amati LSB		IL	40.77	None	Group A		Group B		EO&C		Group A SCA's		Group A SCA's		
				D/U	Attn	D/U	Attn	D/U		Attn	D/U	Urban Slow Rayleigh	Attn	D/U	Urban Fast Rayleigh
4/5/95	1	U	-7.77									Medium	54.00	24.73	Medium
		IL	11.27									TOA with no added interference	42.00	12.73	Medium
		TOA Attn	18.75	-10.52	32.25	2.98	30.25	0.98				Weak			Weak
		POF Attn	15.50	-13.77	29.75	0.48	25.25	-4.02				POF with no added interference			POF with no added noise
4/5/95	2	U	-7.77									Medium			Medium
		IL	11.27									TOA occurs with no added noise	53.00	53.73	
		TOA Attn	29.75	30.48	30.25	30.98	30.25	30.98					42.00	42.73	
		POF Attn	28.00	28.73	28.50	29.23	28.25	28.98							
4/5/95	2	U	-7.77									Medium			Medium
		IL	11.27									TOA occurs with no added noise	35.00	5.73	
		TOA Attn	10.50	-18.77	10.50	-18.77	10.75	-18.52					28.00	-1.27	
		POF Attn	8.50	-20.77	8.25	-21.02	8.25	-21.02							
4/5/95	3	U	-7.77						NA			Medium			Medium
		IL	11.27									NA			NA
		TOA Attn													
		POF Attn													
4/4/95	4	U	-7.77									Medium			Medium
		IL	11.27									TOA occurs with no added noise	27.00	-2.27	
		TOA Attn	2.50	-26.77	6.75	-22.52	3.75	-25.52					19.00	-10.27	
		POF Attn	0.00	-29.27	4.00	-25.27	1.25	-28.02							
4/4/95	4	U	-7.77									Medium			Medium
		IL	11.27	3P		3P		3P				TOA occurs with no added noise	18.00	-11.27	
		TOA Attn	2.00	-36.27	1.50	-36.77	1.50	-36.77					10.00	-19.27	
		POF Attn	0.25	-38.02	0.00	-38.27	0.00	-38.27							
4/4/95	5	U	-7.84									Medium			Medium
		IL	11.27									TOA occurs with no added noise	29.00	-0.20	
		TOA Attn	2.75	-26.45	6.75	-22.45	4.00	-25.20					18.00	-11.20	
		POF Attn	0.50	-28.70	4.25	-24.95	1.25	-27.95							

Notes: Clipped Pink Noise only at 100%  
W/SCA's: Clipped Pink Noise at 90% SCA Groups A or B at 20%  
ABBA on IBOC Host  
3P indicates 3 Paths for a 9 dB increase in power  
Tests conducted 4/5/95

DAT Ref.: DAR40182.DAT

# EIA Digital Audio Radio Test Laboratory

## Tests H & I, Sections 1-5

Proponent: USADR FM2

### Index

Page	Description
1	Cover sheet
2	Analog -> DAR interference tests H and I (with multipath) including: 1) Co-Channel 2) Lower first adjacent or upper first adjacent tests 3) Simultaneous lower and upper first adjacent tests 4) Lower second adjacent or upper second adjacent tests 5) Simultaneous lower and upper second adjacent tests

### Notes:

- \* Clipped pink noise used as the modulation signal on the analog interfering signal
- \* ABBA used as modulation on the IBOC host analog channel (100% mod. lev.)
- \* When required, SCA groups A or B included on undesired signal. Only group A used in test I (Multipath)
- \* Total modulation on analog channels: 100% without SCA's, 110% with SCA's (SCA group level at 20%)
- \* In the H series only, additional paths in the multipath simulator were turned on to provide a higher undesired signal level when required. The simulator paths were used for gain only, no multipath events were running.
- \* "2P" indicates 2 paths for a 6dB increase. "3P" indicates 3 paths for a 9 dB increase in undesired signal.
- \* Multipath setup includes nine paths for the desired signal and three paths for the undesired signal
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA DAR Test Laboratory

H and I Series Tests		H Series Tests								I Series Tests										
		D IL	-7.42 40.76	SCAs						Co, 1st and 2nd->DAR EO&C	Analog -> DAR w/multipath Group A SCA's Urban Slow Rayleigh		Analog -> DAR w/multipath Group A SCA's Urban Fast Rayleigh							
				None D/U	Group A Attn		Group B D/U		Attn		Attn	D/U	Attn	D/U						
5/23/95	U	-7.95																		
	IL	11.36																		
1	TOA	Attn	43.00	44.13	43.25	44.38	42.75	43.88	Small chirp or shattering. High cut, warbling and occasional mute.			Medium No recovered Audio.			Medium No recovered Audio					
	POF	Attn	37.50	38.63	37.50	38.63	37.50	38.63								Weak NA	Weak NA			
5/23/95	U	-7.95																		
	IL	11.36																		
2	TOA	Attn	31.00	32.13	31.75	32.88	31.25	32.38	Small warble. High cut, warbling and occasional mute.			NA			NA					
	POF	Attn	24.75	25.88	24.75	25.88	25.00	26.13								NA	NA			
4/4/95	U	-7.95																		
	IL	11.36																		
2	TOA	Attn	31.25	32.38					NA			NA			NA					
	POF	Attn	25.50	26.63												NA	NA			
3	TOA	Attn							NA			NA			NA					
	POF	Attn														NA	NA			
5/24/95	U	-7.99																		
	IL	11.36																		
4	TOA	Attn	24.00	25.17	24.25	25.42	24.00	25.17	Small warble. High cut, warbling and occasional mute.			NA			NA					
	POF	Attn	17.00	18.17	17.00	18.17	17.75	18.92								NA	NA			
4	TOA	Attn	25.25	26.42					NA			NA			NA					
	POF	Attn	17.75	18.92												NA	NA			
5/24/95	U	-7.95																		
	IL	11.36																		
5	TOA	Attn	27.50	28.63	27.50	28.63	27.75	28.88	Small warble. High cut, warbling and occasional mute.			NA			NA					
	POF	Attn	23.25	24.38	23.00	24.13	23.00	24.13								NA	NA			

Notes: Clipped Pink Noise only at 100%  
W/SCA's: Clipped Pink Noise at 90% SCA Groups A or B at 20%  
ABBA on IBOC Host

DAT Ref.: DAR40184.DAT

## **Appendix AQ – Test L**

AG

# EIA Digital Audio Radio Test Laboratory

## Tests L2, L3 & L4

### Receiver

Rx No.: #1  
 Mfg.: DELCO  
 Model: 16192463  
 Serial: 1000499

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog Host interference at both strong and weak signal levels.
3	Digital Audio Tape recording log of test L2
4	DAR -> Analog Host interference at both strong and weak signal levels under Urban Slow multipath conditions.
5	DAR -> Analog Host interference at both strong and weak signal levels under Urban Fast multipath conditions.
6	Digital Audio Tape recording log of test L4

### Notes:

- \* Total modulation on analog channels: 100% when no SCA's are included. 110% with SCA's (SCA group level at 20%)
- \* Signal/Noise Ratio measurement 0dB taken with 1KHz at 91%, Pilot at 9%, noSCA's. With SCA groups included, 0dB is accordingly re-adjusted to accomodate the reduced main channel modulation.
- \* Automobile receivers operated into a four ohm load at the standard output level of 1 Watt
- \* Receiver audio routed through a 15KHz low pass filter
- \* Weighted audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.



## EIA Digital Audio Radio Test Laboratory

Test(s) L-2 & L3 DAR -> Analog Strong & Weak Signal Receiver : DELCO		Date : 3/21/95 Engineers: DML/RMc		TEST L-2		Radio Audio Quality		TEST L-3	
		SCA GROUP	S/N Ratio Measurement (dB)		GRADE		EO&C		
			RMS	Weighted					
Strong Signal Level (-47 dBm)	ANALOG TRANSMITTER ONLY	None A B	60.0	50.5 50.5 50.4	NA				
	AT&T / Amati DSB DAR -> HOST	None A B	60.7	50.5 50.5 50.4	0 NA NA				
	AT&T / Amati LSB	None A B	60.7	50.5 50.5 50.4	0 NA NA				
	USADR FM1	None A B	60.3	50.5 50.5 50.3	0 NA NA				
	USADR FM2	None A B	57.0	48.8 48.6 48.3	0 NA NA				
Weak Signal Level (-77 dBm)	ANALOG TRANSMITTER ONLY	None A B	54.8	47.0 46.9 46.6	NA				
	AT&T / Amati DSB	None A B	54.2	47.0 47.0 46.6	0				
	AT&T / Amati LSB	None A B	54.3	47.0 47.0 46.7	0				
	USADR FM1	None A B	54.0	47.1 47.0 46.7	0				
	USADR FM2	None A B	53.3	46.2 46.2 45.7	0				
<p>NOTES: * S/N Ratio 0dB Reference with 1KHz audio @ 91% modulation (pilot @ 9%) no SCA's            * External 15KHz low pass filter used for all audio measurements            * Audio measurements are either RMS unweighted or Qpeak detected with CCIR weighting filter as indicated            * Test L-3 Grading Scale:           0: No difference from Analog Reference           -1: Worse than Analog Reference           -2: Much Worse than Analog Reference</p> <p style="text-align: right;">DAT REF No. DAR40160.DAT Audio program material: Harp, ABBA, Female voice</p>									

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs					Description	Attn
	Start	Stop							
DAR40160.DAT									
3/23/95									
	0:03	1:07	1				AMATI LSB (STRONG)		
	1:12	2:15	2				AMATI LSB (WEAK)		
DISREGARD	2:20	2:47	3				FM1 (STRONG)		
	2:52	3:55	4				FM1 (STRONG)		
DISREGARD	4:00	4:16	5				FM1 (WEAK)		
	4:22	5:25	6				FM1 (WEAK)		
	5:29	6:31	7				FM2 (STRONG)		
	6:36	7:37	8				FM2 (WEAK)		
DISREGARD	7:42	8:36	9				AMATI DSB (STRONG)		
	8:40	9:42	10				AMATI DSB (STRONG)		
DISREGARD	9:46	10:27	11				AMATI DSB (WEAK)		
	10:30	11:32	12				AMATI DSB (WEAK)		

# EIA Digital Audio Radio Test Laboratory

Test L-4 DAR -> Analog With Multipath Strong & Weak Signal Receiver: DELCO		Date: 3/24/95 Engineers: DML/RMc		Radio Audio Quality	
		SCA GROUP	GRADE	TEST L-4	Multipath Type: Urban Slow Rayleigh
		Subjective EO&C			
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	NA	Fades are slightly noticable	
		B		Interference from SCA's not detected	
None		0 -1	Might be slightly worse		
B		0 -1			
None		0 -1			
B		-1			
None		0 -1			
B		-1	Noticed slightly more break-up during fades with SCA's added		
None		-1	Fades are more hissy		
B		-1			
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	NA	Could detect radio in "blend" (mono) mode	
		B		Interference from SCA's not detected	
None		0			
B		0			
None		0			
B		0			
None		0			
B		0			
None		0			
B		0			

NOTES: \* SCA group A not used for multipath tests

DAT REF No. DAR40170.DAT

Audio program material: Harp, ABBA, Female voice

\* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

# EIA Digital Audio Radio Test Laboratory

Test L-4		Date : 3/24/95		
DAR -> Analog		Engineers: DML/RMc		
With Multipath		Radio Audio Quality		
Strong & Weak Signal		TEST L-4		
Receiver : DELCO		Multipath Type: Urban Fast Rayleigh		
		SCA GROUP	GRADE	
		Subjective EO&C		
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	NA	
		B		
None		-1	More frequent events which take on longer, more annoying characteristics	
B		-1	No additional contribution to noise from SCA's	
None		0		
B		0		
None		-1	More frequent events which take on longer, more annoying characteristics	
B		-1	No additional contribution to noise from SCA's	
None		-1	Noisier	
B		-1		
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	NA	
		B		
None		0		
B		0		
None		0		
B		0		
None		0		
B		0		
None		0		
B		0		

NOTES: \* SCA group A not used for multipath tests  
 \* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

DAT REF No. DAR40170.DAT  
 Audio program material: Harp, ABBA, Female voice

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop						
DAR40170.DAT							<b>STRONG SIGNAL W/MULTIPATH (URBAN SLOW)</b>	
24-Mar-95	0:04	1:06	1				AMATI DSB	
	1:12	2:14	2				AMATI DSB W/SCA GRP B	
	2:20	3:21	3				FM1	
	3:28	4:29	4				FM1 W/SCA GRP B	
	4:34	5:36	5				FM2	
	5:41	6:43	6				FM2 W/SCA GRP B	
	6:48	7:51	7				AMATI LSB	
	7:57	8:59	8				AMATI LSB W/SCA GRP B	
							<b>WEAK SIGNAL W/MULTIPATH (URBAN SLOW)</b>	
	9:05	10:09	9				AMATI LSB	
	10:14	11:16	10				AMATI LSB W/SCA GRP B	
	11:21	12:23	11				FM1	
	12:29	13:30	12				FM1 W/SCA GRP B	
	13:36	14:39	13				FM2	
	14:45	15:47	14				FM2 W/SCA GRP B	
	15:53	16:56	15				AMATI DSB	
	17:01	18:03	16				AMATI DSB W/SCA GRP B	
							<b>STRONG SIGNAL W/MULTIPATH (URBAN FAST)</b>	
	18:09	19:11	17				AMATI DSB	
	19:17	20:19	18				AMATI DSB W/SCA GRP B	
	20:25	21:27	19				FM1	
	21:33	22:34	20				FM1 W/SCA GRP B	
	22:40	23:41	21				FM2	
	24:45	24:49	22				FM2 W/SCA GRP B	
	24:54	25:57	23				AMATI LSB	
	26:03	27:05	24				AMATI LSB W/SCA GRP B	
							<b>WEAK SIGNAL W/MULTIPATH (URBAN FAST)</b>	
	27:12	28:15	25				AMATI LSB	
	28:20	29:23	26				AMATI LSB W/SCA GRP B	
	29:28	30:30	27				FM1	
	30:35	31:37	28				FM1 W/SCA GRP B	
	31:42	32:44	29				FM2	
	32:50	33:52	30				FM2 W/SCA GRP B	
	33:58	34:59	31				AMATI DSB	
	35:06	36:07	32				AMATI DSB W/SCA GRP B	

# EIA Digital Audio Radio Test Laboratory

## Tests L2, L3 & L4

### Receiver

Rx No.: #2  
Mfg.: DENON  
Model: TU-380RD  
Serial: 4056301149

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog Host interference at both strong and weak signal levels.
3	Digital Audio Tape recording log of test L2
4	DAR -> Analog Host interference at both strong and weak signal levels under Urban Slow multipath conditions.
5	Digital Audio Tape recording log of test L4

### Notes:

- \* Total modulation on analog channels: 100% when no SCA's are included. 110% with SCA's (SCA group level at 20%)
- \* Signal/Noise Ratio measurement 0dB taken with 1KHz at 91%, Pilot at 9%, noSCA's. With SCA groups included, 0dB is accordingly re-adjusted to accomodate the reduced main channel modulation.
- \* Receiver audio routed through a 15KHz low pass filter
- \* Weighted audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

## EIA Digital Audio Radio Test Laboratory

Test(s) L-2 & L3		Date: 3/22/95		Engineers: DML/RMc		
DAR -> Analog Strong & Weak Signal Receiver: DENON		SCA GROUP	TEST L-2		Radio Audio Quality	
			S/N Ratio Measurement (dB)		TEST L-3	
			RMS	Weighted	GRADE	
					EO&C	
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	68.0	62.3	NA	
		A		57.4		
		B		60.3		
AT&T / Amati DSB DAR -> HOST		None	50.0	40.2	-2	
		A		39.9	NA	
		B		40.0	NA	
AT&T / Amati LSB		None	50.7	41.0	-2	
		A		40.7	NA	
		B		40.8	NA	
USADR FM1		None	44.9	33.2	-2	
	A		33.2	NA		
	B		33.2	NA		
USADR FM2	None	53.4	42.5	-1		
	A		42.3	NA		
	B		42.3	NA		
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	50.0	38.9	NA	
		A		38.9		
		B		38.9		
AT&T / Amati DSB		None	47.0	36.5	-1	
		A		36.3		
		B		36.3		
AT&T / Amati LSB		None	47.2	36.3	-1	
		A		36.2		
		B		36.2		
USADR FM1		None	43.1	31.4	-2	
	A		31.4			
	B		31.4			
USADR FM2	None	48.5	37.2	0		
	A		36.9			
	B		36.8			

NOTES: \* S/N Ratio 0dB Reference with 1KHz audio @ 91% modulation (pilot @ 9%) no SCA's  
 \* External 15KHz low pass filter used for all audio measurements  
 \* Audio measurements are either RMS unweighted or Qpeak detected with CCIR weighting filter as indicated  
 \* Test L-3 Grading Scale: 0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

DAT REF No. DAR40161.DAT  
 Audio program material: Harp, ABBA, Female voice





# EIA Digital Audio Radio Test Laboratory

Test L-4 DAR -> Analog With Multipath Strong & Weak Signal Receiver : DENON		Date: 3/24/95 Engineers: DML/RMc		Radio Audio Quality TEST L-4		Multipath Type: Urban Slow Rayleigh
		SCA GROUP	GRADE		Subjective EO&C	
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	NA	Clean audio		
		B				
AT&T / Amati DSB DAR -> HOST		None	0			
		B	0			
AT&T / Amati LSB		None	0			
		B	0			
USADR FM1		None	0			
		B	0			
USADR FM2		None	0			
		B	0			
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	NA	Birdies		
		B				
AT&T / Amati DSB		None	0			
		B	0			
AT&T / Amati LSB		None	0			
		B	0			
USADR FM1		None	0			
		B	0			
USADR FM2		None	0			
		B	0			
NOTES: * SCA group A not used for multipath tests * * * Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference						



## EIA Digital Audio Radio Test Laboratory

### Tests L2, L3 & L4

#### Receiver

Rx No.: #3  
Mfg.: PANASONIC  
Model: RX-FS430  
Serial: GR3J01184

#### Index

Page	Description
1	Cover sheet
2	DAR -> Analog Host interference at both strong and weak signal levels.
3	Digital Audio Tape recording log of test L2
4	DAR -> Analog Host interference at both strong and weak signal levels under Urban Slow multipath conditions.
5	Digital Audio Tape recording log of test L4

#### Notes:

- \* Total modulation on analog channels: 100% when no SCA's are included. 110% with SCA's (SCA group level at 20%)
- \* Signal/Noise Ratio measurement 0dB taken with 1KHz at 91%, Pilot at 9%, noSCA's. With SCA groups included, 0dB is accordingly re-adjusted to accomodate the reduced main channel modulation.
- \* Receiver audio routed through a 15KHz low pass filter
- \* Weighted audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test(s) L-2 & L3		Date: 3/21/95					
DAR -> Analog		Engineers: DML/RMc/TBK					
Strong & Weak Signal				TEST L-2		Radio Audio Quality	
Receiver: PANASONIC		SCA GROUP	S/N Ratio Measurement (dB)		GRADE	TEST L-3	
			RMS	Weighted		EO&C	
Strong Signal Level (-47 dBm)	ANALOG TRANSMITTER ONLY	None	67.5	57.1	NA		
		A		54.5			
		B		55.5			
	AT&T / Amati DSB DAR -> HOST	None	44.2	33.6	-2		
		A		33.6	NA		
	B		33.6	NA			
Weak Signal Level (-77 dBm)	AT&T / Amati LSB	None	51.2	41.0	-1		
		A		40.8	NA		
		B		40.8	NA		
	USADR FM1	None	42.0	29.7	-2		
		A		29.7	NA		
	B		29.7	NA			
Strong Signal Level (-47 dBm)	USADR FM2	None	51.0	40.0	-1		
		A		39.8	NA		
		B		39.8	NA		
	ANALOG TRANSMITTER ONLY	None	49.2	38.3	NA		
		A		38.3			
	B		38.3				
Weak Signal Level (-77 dBm)	AT&T / Amati DSB	None	43.0	32.3	-1		
		A		32.2	NA		
		B		32.2	NA		
	AT&T / Amati LSB	None	47.0	36.2	-1		
		A		36.2	NA		
	B		36.2	NA			
Strong Signal Level (-47 dBm)	USADR FM1	None	41.4	29.2	-1		
		A		29.2	NA		
		B		29.2	NA		
	USADR FM2	None	47.1	36.1	0		
		A		36.0	NA		
	B		36.0	NA			

NOTES: \* S/N Ratio 0dB Reference with 1KHz audio @ 91% modulation (pilot @ 9%) no SCA's

\* External 15KHz low pass filter used for all audio measurements

\* Audio measurements are either RMS unweighted or Qpeak detected with CCIR weighting filter as indicated

\* Test L-3 Grading Scale: 0: No difference from Analog Reference

-1: Worse than Analog Reference

-2: Much Worse than Analog Reference

DAT REF No. DAR40162.DAT

Audio program material: Harp, ABBA, Female voice



# EIA Digital Audio Radio Test Laboratory

Test L-4		Date: 3/24/95		Engineers: DML/RMc	
DAR -> Analog With Multipath Strong & Weak Signal Receiver: PANASONIC		Radio Audio Quality		TEST L-4	
		SCA GROUP	GRADE	Subjective EO&C	
Strong Signal Level (-47 dBm)	ANALOG TRANSMITTER ONLY	None	NA		
		B		Could detect a low level tone or beat note from the addition of SCA's	
	AT&T / Amati DSB DAR -> HOST	None	-2	Noticeable increase in noise floor	
		B	-2	No additional contribution to noise from SCA's	
	AT&T / Amati LSB	None	-1	Slight increase in audio noise floor	
		B	-1	No additional contribution to noise from SCA's	
	USADR FM1	None	-2	Noticeable increase in noise floor with the addition of tone or beat note	
		B	-2	No additional contribution to noise from SCA's	
	USADR FM2	None	-2	Increase in noise floor with the addition of tone or beat note	
		B	-2	No additional contribution to noise from SCA's	
Weak Signal Level (-77 dBm)	ANALOG TRANSMITTER ONLY	None	NA		
		B			
	AT&T / Amati DSB	None	-1		
		B	-1		
	AT&T / Amati LSB	None	0		
		B	0		
	USADR FM1	None	0		
		B	0		
	USADR FM2	None	0		
		B	0		

NOTES: \* SCA group A not used for multipath tests

DAT REF No. DAR40172.DAT

Audio program material: Harp, ABBA, Female voice

\* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference



# EIA Digital Audio Radio Test Laboratory

## Tests L2, L3 & L4

### Receiver

Rx No.: #4  
Mfg.: PIONEER  
Model: SX-201  
Serial: OA3965843C

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog Host interference at both strong and weak signal levels.
3	Digital Audio Tape recording log of test L2
4	DAR -> Analog Host interference at both strong and weak signal levels under Urban Slow multipath conditions.
5	Digital Audio Tape recording log of test L4

### Notes:

- \* Total modulation on analog channels: 100% when no SCA's are included. 110% with SCA's (SCA group level at 20%)
- \* Signal/Noise Ratio measurement 0dB taken with 1KHz at 91%, Pilot at 9%, noSCA's. With SCA groups included, 0dB is accordingly re-adjusted to accomodate the reduced main channel modulation.
- \* Receiver audio routed through a 15KHz low pass filter
- \* Weighted audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.



## EIA Digital Audio Radio Test Laboratory

Test(s) L-2 & L3 DAR -> Analog Strong & Weak Signal Receiver : PIONEER		Date: 3/21/95 Engineers: DML/RMc		TEST L-2		Radio Audio Quality		TEST L-3	
		SCA GROUP	S/N Ratio Measurement (dB)		GRADE				
			RMS	Weighted					
Strong Signal Level (-47 dBm)	ANALOG TRANSMITTER ONLY	None	66.0	61.0	NA				
		A		53.2					
		B		54.8					
	AT&T / Amati DSB DAR -> HOST	None	40.0	29.6	-2	Noticeable increase in noise floor No additional contribution to noise from SCA's No additional contribution to noise from SCA's			
		A		29.6					
	B		29.6						
	AT&T / Amati LSB	None	40.2	29.9	-2	Noticeable increase in noise floor No additional contribution to noise from SCA's No additional contribution to noise from SCA's			
		A		29.8					
		B		29.8					
	USADR FM1	None	39.2	27.5	-2	Noticeable increase in noise floor No additional contribution to noise from SCA's No additional contribution to noise from SCA's			
		A		27.5					
		B		27.5					
	USADR FM2	None	57.0	45.6	-1	Some increase in noise floor Slight contribution to noise level with SCA's Slight contribution to noise level with SCA's			
		A		44.8	-1				
		B		44.9	-1				
Weak Signal Level (-77 dBm)	ANALOG TRANSMITTER ONLY	None	52.3	41.5	NA				
		A		41.3					
		B		41.3					
	AT&T / Amati DSB	None	39.7	29.2	-1				
		A		29.2					
	B		29.2						
	AT&T / Amati LSB	None	39.8	29.5	-1				
		A		29.4					
		B		29.4					
	USADR FM1	None	38.9	27.2	-2				
		A		27.2					
		B		27.2					
	USADR FM2	None	50.9	39.8	0				
		A		39.5					
		B		39.5					

NOTES: \* S/N Ratio 0dB Reference with 1KHz audio @ 91% modulation (pilot @ 9%) no SCA's

\* External 15KHz low pass filter used for all audio measurements

\* Audio measurements are either RMS unweighted or Qpeak detected with CCIR weighting filter as indicated

\* Test L-3 Grading Scale: 0: No difference from Analog Reference

-1: Worse than Analog Reference

-2: Much Worse than Analog Reference

DAT REF No. DAR40163.DAT

Audio program material: Harp, ABBA, Female voice



# EIA Digital Audio Radio Test Laboratory

Test L-4		Date: 3/24/95		
DAR -> Analog		Engineers: DML/RMc		
With Multipath		Radio Audio Quality		
Strong & Weak Signal		TEST L-4		
Receiver : PIONEER		Multipath Type: Urban Slow Rayleigh		
		SCA GROUP	GRADE	
		Subjective EO&C		
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	NA	
		B		
None		-2	Noticeable increase in noise floor	
B		-2	No additional contribution to noise from SCA's	
None		-2	Noticeable increase in noise floor	
B		-2	No additional contribution to noise from SCA's	
None		-2	Noticeable increase in noise floor	
B		-2	No additional contribution to noise from SCA's	
None		-1	Slight increase in noise floor	
B		-1	No additional contribution to noise from SCA's	
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	NA	
		B		
None		0		
B		0		
None		0		
B		0		
None		0		
B		0		
None		0		
B		0		

NOTES: \* SCA group A not used for multipath tests

DAT REF No. DAR40173.DAT  
Audio program material: Harp, ABBA, Female voice

\* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

# EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop						
DAR40173.DAT							STRONG SIGNAL W/MULTIPATH (URBAN SLOW)	
3/24/95			1				AMATI DSB	
			2				AMATI DSB W/SCA GRP B	
			3				FM1	
			4				FM1 W/SCA GRP B	
			5				FM2	
			6				FM2 W/SCA GRP B	
			7				AMATI LSB	
			8				AMATI LSB W/SCA GRP B	
							WEAK SIGNAL W/MULTIPATH (URBAN SLOW)	
			9				AMATI LSB	
			10				AMATI LSB W/SCA GRP B	
			11				FM1	
			12				FM1 W/SCA GRP B	
			13				FM2	
			14				FM2 W/SCA GRP B	
			15				AMATI DSB	
			16				AMATI DSB W/SCA GRP B	

# EIA Digital Audio Radio Test Laboratory

## Tests L2, L3 & L4

### Receiver

Rx No.: #5  
Mfg.: FORD  
Model: F4XF-19B132-CB  
Serial: 281150B010

### Index

Page	Description
1	Cover sheet
2	DAR -> Analog Host interference at both strong and weak signal levels.
3	Digital Audio Tape recording log of test L2
4	DAR -> Analog Host interference at both strong and weak signal levels under Urban Slow multipath conditions.
5	DAR -> Analog Host interference at both strong and weak signal levels under Urban Fast multipath conditions.
6	Digital Audio Tape recording log of test L4

### Notes:

- \* Total modulation on analog channels: 100% when no SCA's are included. 110% with SCA's (SCA group level at 20%)
- \* Signal/Noise Ratio measurement 0dB taken with 1KHz at 91%, Pilot at 9%, noSCA's. With SCA groups included, 0dB is accordingly re-adjusted to accommodate the reduced main channel modulation.
- \* Automobile receivers operated into a four ohm load at the standard output level of 1 Watt
- \* Receiver audio routed through a 15KHz low pass filter
- \* Weighted audio measurements made using quasi-peak detection and a CCIR weighting filter
- \* Recording gain adjusted to yield the same recording levels to make up for the "0dB" level differences from receiver to receiver.
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

Test(s) L-2 & L3		Date: 3/21/95			
DAR -> Analog		Engineers: DML/RMc/TBK			
Strong & Weak Signal				Radio Audio Quality	
Receiver : FORD		SCA GROUP	TEST L-2		TEST L-3
			S/N Ratio Measurement (dB)		GRADE
			RMS	Weighted	EO&C
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	65.2	55.7	NA
		A		51.9	
		B		52.5	
AT&T / Amati DSB DAR -> HOST	Strong Signal Level (-47 dBm)	None	64.0	54.0	0
		A		52.3	0
		B		52.9	0
AT&T / Amati LSB	Strong Signal Level (-47 dBm)	None	64.0	55.0	0
		A		52.0	0
		B		52.5	0
USADR FM1	Strong Signal Level (-47 dBm)	None	62.7	52.2	0
		A		52.1	0
		B		52.8	0
USADR FM2	Strong Signal Level (-47 dBm)	None	59.3	48.9	-1
		A		46.9	-1
		B		47.0	-1
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	64.0	53.3	NA
		A		53.7	
		B		53.7	
AT&T / Amati DSB	Weak Signal Level (-77 dBm)	None	63.3	53.1	0
		A		53.5	
		B		53.5	
AT&T / Amati LSB	Weak Signal Level (-77 dBm)	None	63.5	53.1	0
		A		53.5	
		B		53.5	
USADR FM1	Weak Signal Level (-77 dBm)	None	63.0	52.8	0
		A		53.5	
		B		53.5	
USADR FM2	Weak Signal Level (-77 dBm)	None	62.8	52.9	0
		A		53.4	
		B		53.4	

NOTES: \* S/N Ratio 0dB Reference with 1KHz audio @ 91% modulation (pilot @ 9%) no SCA's  
 \* External 15KHz low pass filter used for all audio measurements  
 \* Audio measurements are either RMS unweighted or Qpeak detected with CCIR weighting filter as indicated  
 \* Test L-3 Grading Scale: 0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

DAT REF No. DAR40164.DAT  
 Audio program material: Harp, ABBA, Female voice

### EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop						
DAR40164.DAT								
3/23/95			1				AMATI DSB (STRONG)	
			2				AMATI DSB (WEAK)	
			3				AMATI DSB W/SCA GRP A (STRONG)	
			4				AMATI DSB W/SCA GRP B (STRONG)	
			5				FM1 (STRONG)	
			6				FM1 (WEAK)	
			7				FM1 W/SCA GRP A (STRONG)	
			8				FM1 W/SCA GRP B (STRONG)	
DISREGARD			9				FM2 (STRONG)	
			10				FM2 (STRONG)	
			11				FM2 (WEAK)	
			12				FM2 W/SCA GRP A (STRONG)	
			13				FM2 W/SCA GRP B (STRONG)	
			14				AMATI LSB (STRONG)	
			15				AMATI LSB (WEAK)	
			16				AMATI LSB W/SCA GRP A (STRONG)	
			17				AMATI LSB W/SCA GRP B (STRONG)	

# EIA Digital Audio Radio Test Laboratory

Test L-4 DAR -> Analog With Multipath Strong & Weak Signal Receiver: FORD		Date: 3/2395 Engineers: DML/RMc		Radio Audio Quality TEST L-4		Multipath Type: Urban Slow Rayleigh
		SCA GROUP	GRADE	Subjective EO&C		
ANALOG TRANSMITTER ONLY	Strong Signal Level (-47 dBm)	None	NA	Multipath fade events slightly noticeable as noise increase with slight tone or beat note		
		B				
AT&T / Amati DSB DAR -> HOST		None	0	Multipath fade events slightly noticeable No additional contribution to noise from SCA's		
		B	0			
AT&T / Amati LSB		None	0	Multipath fade events slightly noticeable No additional contribution to noise from SCA's		
		B	0			
USADR FM1		None	-1	No additional contribution to noise from SCA's		
		B	-1			
USADR FM2		None	-2	No additional contribution to noise from SCA's		
		B	-2			
ANALOG TRANSMITTER ONLY	Weak Signal Level (-77 dBm)	None	NA			
		B				
AT&T / Amati DSB		None	0			
		B	0			
AT&T / Amati LSB		None	0			
		B	0			
USADR FM1		None	0			
		B	0			
USADR FM2		None	0			
		B	0			

NOTES: \* SCA group A not used for multipath tests  
\*  
\*  
\* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

DAT REF No. DAR40174.DAT  
Audio program material: Harp, ABBA, Female voice



# EIA Digital Audio Radio Test Laboratory

Test L-4 DAR -> Analog With Multipath Strong & Weak Signal Receiver : FORD		Date: 3/23/95 Engineers: DML/RMc		Radio Audio Quality <b>TEST L-4</b>		Multipath Type: Urban Fast Rayleigh
		SCA GROUP	GRADE	Subjective EO&C		
Strong Signal Level (-47 dBm)	ANALOG TRANSMITTER ONLY	None	NA			
		B				
	AT&T / Amati DSB DAR -> HOST	None	0			
		B	0			
	AT&T / Amati LSB	None	0			
Weak Signal Level (-77 dBm)		B	0			
	USADR FM1	None	0			
		B	0			
	USADR FM2	None	-1			
		B	-1			
Weak Signal Level (-77 dBm)	ANALOG TRANSMITTER ONLY	None	NA			
		B				
	AT&T / Amati DSB	None	0			
		B	0			
	AT&T / Amati LSB	None	0			
Weak Signal Level (-77 dBm)		B	0			
	USADR FM1	None	0			
		B	0			
	USADR FM2	None	0			
		B	0			

NOTES: \* SCA group A not used for multipath tests

DAT REF No. DAR40174.DAT  
Audio program material: Harp, ABBA, Female voice

\* Test L-3 Grading Scale:      0: No difference from Analog Reference      -1: Worse than Analog Reference      -2: Much Worse than Analog Reference

## EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code		Start IDs				Description	Attn
	Start	Stop						
DAR40174.DAT							<b>STRONG SIGNAL W/MULTIPATH (URBAN SLOW)</b>	
3/23/95			1				AMATI DSB	
DISREGARD			2				AMATI DSB W/SCA GRP B	
			3				AMATI DSB W/SCA GRP B	
			4				FM1	
			5				FM1 W/SCA GRP B	
			6				FM2	
			7				FM2 W/SCA GRP B	
			8				AMATI LSB W/SCA GRP B	
			9				AMATI LSB	
							<b>WEAK SIGNAL W/MULTIPATH (URBAN SLOW)</b>	
			10				AMATI LSB	
DISREGARD			11				AMATI LSB W/SCA GRP B	
			12				AMATI LSB W/SCA GRP B	
			13				FM1	
DISREGARD			14				FM1 W/SCA GRP B	
			15				FM1 W/SCA GRP B	
			16				FM2	
			17				FM2 W/SCA GRP B	
			18				AMATI DSB	
			19				AMATI DSB W/SCA GRP B	
							<b>STRONG SIGNAL W/MULTIPATH (URBAN FAST)</b>	
			20				AMATI DSB	
			21				AMATI DSB W/SCA GRP B	
			22				FM1	
			23				FM1 W/SCA GRP B	
			24				FM2	
			25				FM2 W/SCA GRP B	
			26				AMATI LSB	
			27				AMATI LSB W/SCA GRP B	
							<b>WEAK SIGNAL W/MULTIPATH (URBAN FAST)</b>	
			28				AMATI LSB	
			29				AMATI LSB W/SCA GRP B	
			30				FM1	
			31				FM1 W/SCA GRP B	
			32				FM2	
			33				FM2 W/SCA GRP B	
			34				AMATI DSB	
			35				AMATI DSB W/SCA GRP B	

# EIA Digital Audio Radio Test Laboratory

Tests L2, L3 & L4  
Subcarrier specific

## Index

Page	Description
1	Cover sheet
2	L-2 and L3, DAR -> Analog Host Subcarrier interference at both strong and weak signal levels.
3	L-4, DAR -> Analog Host interference at both strong and weak signal levels under multipath conditions. Including both Urban slow and Urban fast scenarios

## Notes:

- \* Total modulation on analog channel: 110% with SCA's (SCA group level at 20%)
- \* Main channel program material: ABBA
- \* SCA receivers used:
  - 57KHz RDS: Denon TU-380RD modified to provide clock and data signals for use by the RDS Checkup software utility.
  - 66.6KHz Seiko: Seiko RPA (Receptor Protocol Analyzer) receiver & software utility.
  - 67KHz Analog: Compol SCA receiver, Unit No. 1 67KHz/94.1MHz
  - 92KHz Analog: Compol SCA receiver, Unit No. 2 92KHz/94.1MHz
  - 92KHz Digital: Mainstream Data, Intelligent Data Receiver

# EIA Digital Audio Radio Test Laboratory

Test Subcarriers DAR -> Host SC	L-2 & L-3	Composite Subcarrier Group A			Composite Subcarrier Group B		Group D		
		57 KHz RBDS 3% ERRORS MAX:(%)	66.5 KHz HS Data 8.5% ERRORS log BER	92KHz Analog 8.5% S/N (dB)	57KHz RBDS 10% ERRORS MAX:(%)	67KHz Analog 10% S/N (dB)	92KHz Digital 10% SS # FEC1 #FEC2 #UNC		
FM	Strong Signal Level (-47 dBm)	0	-6	46	0	45.3	210		170
AT&T / Amati DSB		0	-5.95	20	0	41	0	0	0
AT&T / Amati LSB		0	-6	27	0	43	209		92-130
USADR FM1		0	-5	20	0	41	1290	4558	455
USADR FM2		0	-5.3	32.5	0	43.2	209		76-130
USADR FM2	0	-5.3	32.5	0	43.2	1310	4272	475	
FM	Weak Signal Level (-77 dBm)	0	NA	22.4	0	35.4	209		58-109
AT&T / Amati DSB		0	NA	16	0	34	1350	6199	288
AT&T / Amati LSB		0	NA	18	0	34.5	210		167
USADR FM1		0	NA	16	0	33.5	0	0	0
USADR FM2		0	NA	19.9	0	34.6	113		0
USADR FM2	0	NA	19.9	0	34.6	NA	NA	NA	

NOTES: \* Digital SCA's graded as the number of observed errors within a five minute period.

\* 57KHz RDS: Error = Percentage of maximum block errors indicated by MAX:(%) in the RDS CHECKUP utility

\* 66.5KHz Seiko: Error = Average log BER observed on the Seiko RPA utility with a print-out of a typical 20 sec. segment

\* 92KHz Mainstream: Error = # FEC1, # FEC2, # Blocks Uncorrected(#UNC) figures, as indicated on the Mainstream receiver. Failure considered as > 5 first layer errors (# FEC1) in a five minute period.

\* Main channel modulation: Abba

\* NA = RF level too low for proper operation

EIA Digital Audio Radio Test Laboratory

Test Subcarriers DAR -> Host SC Moderate Signal Level	L-4	Composite Subcarrier Group A			Composite Subcarrier Group B		Group D		
		57 KHz RBDS 3% ERRORS	66.5 KHz HS Data 8.5% (log BER)	92KHz Analog 8.5% EO&C	57KHz RBDS 10% ERRORS	67KHz Analog 10% EO&C	92KHz Digital 10% ERRORS		
							# FEC1	# FEC2	# UNC
FM	Urban Slow Rayleigh	2	-5.5	Good audio. medium noise and some main chan. audio noise detected during fades	0	Good audio with mild noise during fades. Weak main ch. audio noise heard during fades	110	142	3
AT&T / Amati DSB		4	-5.2	Poor audio (raspy) with main chan. audio noise heard at all times - worse during fades Unusable audio	2	Good audio with mild main channel audio noise heard during the fades Usable audio	1274	4608	524
AT&T / Amati LSB		4	-4.8	Fair audio quality with main channel audio noise heard in background most of the time Usability: Marginal	3	Good audio with mild main channel audio heard during the fades Usable audio	1334	1325	219
USADR FM1		3	-4.5	Poor audio (raspy) with main chan. audio noise heard at all times - worse during fades Unusable audio	3	Fair audio with mild main channel audio at all times - more during fades Usable audio	1333	5494	626
USADR FM2		2	-3.8	Fair audio - noisy (hiss) most of the time - worse during fades usable audio	1	Good audio with mild noise during fades Usable audio	965	1023	106
FM	Urban Fast Rayleigh	11	-2.6	Good audio with medium multipath type spits Usable audio	8	Good audio with mild multipath type spits Usable audio	271	527	245
AT&T / Amati DSB		12	-2.3	Poor raspy audio with severe tearing sounds. Main chan. audio noise heard at all times Unusable audio	9	Fair audio with medium multipath type spits Usable audio	318	684	300
AT&T / Amati LSB		12	-2.4	Fair audio quality - noisy with some main channel audio noise Usability: Marginal	11	Fair audio with medium multipath type spits Usable audio	273	644	249
USADR FM1		13	-2.1	Poor raspy audio with severe tearing sounds. Main chan. audio noise heard at all times Unusable audio	9	Fair audio with medium to heavy spitting or tearing noise Usability: Marginal	294	716	257
USADR FM2		1	-1.9	Fair audio quality -noisy with faint whine in background Usable audio	0	Good audio with medium multipath type spits Usable audio	254	405	238

NOTES: \* Digital SCA's graded as the number of observed errors within a five minute period.  
 \* 57KHz RDS: Error = Percentage of maximum block errors indicated by MAX:(%) in the RDS CHECKUP utility  
 \* 66.5KHz Seiko: Error = Average log BER observed on the Seiko RPA utility with a print-out of a typical 20 sec. segment  
 \* 92KHz Mainstream: Error = # FEC1, # FEC2, # Blocks Uncorrected(#UNC) figures, as indicated on the Mainstream receiver. Failure considered as > 5first layer errors (# FEC1) in a five minute period  
 \* Analog SCA quality: EO&C of 1KHz audio quality  
 \* Main channel modulation : Abba  
 \* Mainstream data not valid - Rx not in lock during multipath

## **Appendix AR – Test M**

AR

# EIA Digital Audio Radio Test Laboratory

## Tests M1 & M2

Analog to IBOC Host Interference

### Index

Page	Description
1	Cover sheet
2	Overhead data used for calculations in tests M1. These numbers are required for calculating the C0/N0 figures and include: Signal level, Noise level, Digital Signal band width, Noise filter bandwidth and Testbed Path loss.
3	M1 test results.
4	AT&T Amati LSB DAT log of M1 tests
5	AT&T Amati DSB DAT log of M1 tests
6	USADR FM1 DAT log of M1 tests
7	USADR FM2 DAT log of M1 tests
8	Overhead data used for making calculations in tests M2.
9	M2 test results with Urban Slow Rayleigh multipath events
10	M2 test results with Urban Fast Rayleigh multipath events
11	M2 test results with Rural Fast Rayleigh multipath events
12	M2 test results with Terrain Obstructed Rayleigh multipath events
13	M2 test results with Urban Slow Doppler multipath events
14	M2 test results with Urban Fast Doppler multipath events
15	M2 test results with Rural Fast Doppler multipath events
16	M2 test results with Terrain Obstructed Doppler multipath events

### Notes:

- \* Clipped pink noise used as the FM modulation signal on the analog signal
- \* When required, SCA groups A, B, and D included on analog signal.
- \* Total modulation on analog channels: 100% without SCA's, 110% with SCA's
- \* In areas where EO&C or grade evaluation does not appear, subjective evaluator comments will be used.

# EIA Digital Audio Radio Test Laboratory

## M-1 OVERHEAD DATA SHEET

Keypoint data used by (linked to) M1 test sheet for calculations

Test	M-1	Digital BW Hz	Noise dBm	Signal dBm	Path Loss dB	Noise Filter BW Hz	Date
AT&T Amati Digital only	DSB	1.47E+05	-40.78	-7.40 -20.59	40.79	6.45E+06	15-May-95
AT&T Amati Digital only	LSB	7.35E+04	-40.77	-7.53 -23.39	40.79	6.45E+06	15-May-95
USADR FM1 Digital only		2.00E+05	-40.84	-7.45 -21.97	40.79	6.45E+06	12-May-95
USADR FM2 Digital only		3.00E+05	-40.75	-7.38 -26.88	40.79	6.45E+06	16-May-95 TK,DL,RM



EIA Digital Audio Radio Test Laboratory

Test	M-1									
	Signal Strength					M-1-1				
	MOD	Medium		Weak		FM w/ SCA GRP	Medium		Weak	
TOA Co/No (dB)		EO&C	TOA Co/No (dB)	EO&C	TOA Co/No (dB)		EO&C	TOA Co/No (dB)	EO&C	
AT&T Amati DSB DAR40202.DAT	CW	Attn 14.50	Small drop out	Attn 14.50	Small drop out	A	15.25	Small Drop out	15.75	Small Drop out
		Co/No 10.32		Co/No 10.32			11.07		11.57	
							13.25		15.25	
	FM	Attn 14.50	Small drop out	Attn 14.75	Small drop out	B	11.07	Small Drop out	11.07	Small Drop out
		Co/No 10.32		Co/No 10.57			13.30		15.25	
							11.32		11.07	
AT&T Amati LSB DAR40203.DAT	CW	Attn 21.25	Small drop out	Attn 22.50	Small drop out	A	63.65	With no added noise TOA level of impairment.	63.75	With no added noise TOA level of impairment.
		Co/No 17.27		Co/No 18.52			59.67		59.77	
							24.75		27.75	
	FM	Attn 21.25	Small drop out	Attn 22.50	Small drop out	B	20.77	Small drop out	23.77	Small drop out.
		Co/No 17.27		Co/No 18.52			63.75		63.75	
							59.77		59.77	
USADR FM1 DAR40201.DAT	CW	Attn 18.25	Small warble.	Attn 18.75	Small warble.	A	19.50	Wind Chime effect/ signal shattering.	20.25	Shattering and warbles.
		Co/No 11.41		Co/No 11.91			12.66		13.41	
							19.75		20.75	
	FM	Attn 18.25	Small warble.	Attn 18.75	Small warble.	B	12.91	Shattering.	13.91	Warble or chirp.
		Co/No 11.41		Co/No 11.91			19.25		20.00	
							12.41		13.16	
USADR FM2 DAR40204.DAT	CW	Attn 36.50	Small warble.	Attn 63.75	Could not achieve TOA. Level of impairment between TOA and POF.	A	39.25	Small warble.	63.75	NA
		Co/No 22.90		Co/No 50.15			25.65		50.15	
							39.25		63.75	
	FM	Attn 39.25	Small warble.	Attn 63.75	Could not achieve TOA. Level of impairment between TOA and POF.	B	25.65	Small warble.	50.15	NA
		Co/No 25.65		Co/No 50.15			39.30		63.75	
							25.90		50.15	

Notes:

Testers: DML, RMc

Medium Signal Strength= -62.00 dBm  
Weak Signal Strength= -77.00 dBm





# EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #					Description	Attn
	Start	Stop							
DAR40201.DAT									
12-May-95									
		Medium Signal Strength -62 dBm	1	2	3	4	5	USADR FM1 CPN@100% #4 at end of 1st arpeggio	18.25
			6	7	8			USADR FM1 CPN@90@ Group A @ 20% With the addition of SCAs high cut in addition to more warbles were heard.	18.25
			9	10	11			USADR FM1 CPN@90% Group B @ 20% With the addition of SCAs high cut, shattering and warbles were detected	18.25
			12	13	14			USADR FM1 CPN@100% Group D @ 10% Increase in warbles and error indicator frequency detected.	18.25
		Weak Signal Strength -77 dBm	15	16	17	18	19	USADR FM1 CPN@100% #16 end of 1st arpeggio	18.75
			20	21	22			USADR FM1 CPN@100% Group D @ 10% Increase in warbles, high cut and error light frequency.	18.75
			23	24	25			USADR FM1 CPN@90% Group B @ 20% Increase in warbles, high cut and error light frequency.	18.75
			26	27	28			USADR FM1 CPN@90@ Group A @ 20% Buzz mute increase in warbles and error light detected.	18.75
								Impairment: FM, SCA and Gaussian Noise	

# EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code		Program ID #				Description	Attn	
	Start	Stop							
DAR40204.DAT 16-May-95	Medium Signal Strength -62 dBm		1	2	3		USADR FM2 CPN @ 100% Shattering and warbles.	39.25	
			4	5	6		USADR FM2 CPN @ 100% Group D @10%	39.25	
								USADR FM2 CPN @ 90% Group A @ 20% No Difference detected.	39.25
								USADR FM2 CPN @ 90% Group B @ 20% No difference detected.	39.25
	Weak Signal Strength -77 dBm		7	8	9		USADR FM2 CPN @ 100% Insufficient receiver sensitivity. Level of impairment between TOA and POF.	63.75	
Impairment: FM, SCA and Gaussian Noise									

# EIA Digital Audio Radio Test Laboratory

## M-2 OVERHEAD DATA SHEET

Keypoint data used by (linked to) M2 test sheet for calculations

Test	M-2	Digital BW Hz	Noise dBm	Signal dBm	Path Loss dB	Noise Filter BW Hz	Date
AT&T Amati Digital only	DSB	1.47E+05	-40.71	-7.42 -20.60	40.79	6.45E+06	18-May-95
AT&T Amati Digital only	LSB	7.35E+04	-40.65	-7.55 -23.38	40.79	6.45E+06	19-May-95
USADR FM1 Digital only		2.00E+05	-40.60	-7.41 -21.93	40.79	6.45E+06	22-May-95
USADR FM2 Digital only		3.00E+05	-40.64	-7.40 -26.90	40.79	6.45E+06	23-May-95

EIA Digital Audio Radio Test Laboratory

Test		Urban Slow Rayleigh											
Signal Strength Impairment		Medium Multipath + Noise				Weak Multipath + Noise				Urban Slow Rayleigh			
		Medium Multipath + Noise + SCA		Weak Multipath + Noise + SCA		Medium Multipath + Noise + SCA		Weak Multipath + Noise + SCA					
Mod	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	FM w/ SCA GRP	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C				
AT&T Amati DSB	CW	Attn 38.00	Small drop out	Attn 63.75	Excessive muting POF level of impairment.	A	41.00	Medium drop out	63.75	NA			
		Co/No 33.74		Co/No 59.49			Co/No 36.74		Co/No 59.49				
	FM	Attn 38.00	Small drop out	Attn 63.75	Excessive muting POF level of impairment.	D	42.00	Small drop out	63.75	NA			
		Co/No 33.74		Co/No 59.49			Co/No 37.74		Co/No 59.49				
AT&T Amati LSB	CW	Attn 63.75	Level of impairment consistent with POF.	Attn 0.00	NA	A	0.00	NA	0.00	NA			
		Co/No 59.66		Co/No -4.09			Co/No -4.09		Co/No -4.09				
	FM	Attn 63.75	Level of impairment consistent with POF.	Attn 0.00	NA	B	0.00	NA	0.00	NA			
		Co/No 59.66		Co/No -4.09			Co/No -4.09		Co/No -4.09				
USADR FM1	CW	Attn 63.75	High cut and warbles level of impairment Between TOA and POF closer to TOA.	Attn 0.00	NA	A	0.00	NA	0.00	NA			
		Co/No 56.71		Co/No -7.04			Co/No -7.04		Co/No -7.04				
	FM	Attn 0.00	NA	Attn 0.00	NA	B	0.00	NA	0.00	NA			
		Co/No -7.04		Co/No -7.04			Co/No -7.04		Co/No -7.04				
USADR FM2	CW	Attn 63.75	Long mutes with brief periods of recovered audio with warbles and high cut, beyond POF.	Attn 0.00	NA	A	0.00	NA	0.00	NA			
		Co/No 50.02		Co/No -13.73			Co/No -13.73		Co/No -13.73				
	FM	Attn 0.00	NA	Attn 0.00	NA	B	0.00	NA	0.00	NA			
		Co/No -13.73		Co/No -13.73			Co/No -13.73		Co/No -13.73				
Notes:													
Testers: DMI, RMc						Medium Signal Strength=		-62 dBm					
						Weak Signal Strength=		-77 dBm					

## EIA Digital Audio Radio Test Laboratory

Test	M-2	Urban Fast Rayleigh						FM w/ SCA GRP	Urban Fast Rayleigh					
		Medium Multipath + Noise			Weak Multipath + Noise				Medium Multipath + Noise + SCA			Weak Multipath + Noise + SCA		
		Mod	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	TOA Co/No (dB)		EO&C	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	
AT&T Amati DSB	CW	Attn 28.00	Small flutter.	Attn 63.75	Small drop out. TOA level of impairment without added noise.	A	28.00	Small flutter.	63.75	NA				
		Co/No 23.74		Co/No 59.49			Co/No 23.74		Co/No 59.49					
		Attn 28.00		Attn 63.75			28.00		63.75					
	FM	Co/No 23.74	Small drop out.	Co/No 59.49	Small drop out. TOA level of impairment without added noise.	D	29.00	Small drop out.	63.75	NA				
		Attn 28.00	Attn 63.75	29.00	63.75									
		Co/No 23.74	Co/No 59.49	Co/No 24.74	Co/No 59.49									
AT&T Amati LSB	CW	Attn 39.00	Small flutter.	Attn 63.75	Without added noise worse than POF level of impairment.	A	63.75	Level of impairment between TOA and POF closer to TOA.	0.00	NA				
		Co/No 34.91		Co/No 59.66			Co/No 59.66		Co/No -4.09					
		Attn 40.00		Attn 63.75			63.75		0.00					
	FM	Co/No 35.91	Small drop out.	Co/No 59.66	Without added noise worse than POF level of impairment.	D	63.75	Level of impairment between TOA and POF closer to TOA.	0.00	NA				
		Attn 40.00	Attn 63.75	63.75	0.00									
		Co/No 35.91	Co/No 59.66	Co/No 59.66	Co/No -4.09									
USADR FM1	CW	Attn 37.00	Slight high cut.	Attn 63.75	High cut and warbles Impairment level between TOA and POF closer to POF.	A	63.75	Small chirp	63.75	High Cut and background noise				
		Co/No 29.96		Co/No 56.71			Co/No 56.71		Co/No 56.71					
		Attn 41.00		Attn 63.75			63.75		0.00					
	FM	Co/No 33.96	Small chirp.	Co/No 56.71	High cut, warbles and slight mute impairment level between TOA and POF.	D	63.75	Small chirp	63.75	High Cut and background noise				
		Attn 41.00	Attn 63.75	63.75	0.00									
		Co/No 33.96	Co/No 56.71	Co/No 56.71	Co/No 56.71									
USADR FM2	CW	Attn 63.75	Virtually no recovered audio, beyond a POF level of impairment.	Attn 0.00	NA	A	0.00	NA	0.00	NA				
		Co/No 50.02		Co/No -13.73			Co/No -13.73		Co/No -13.73					
		Attn 0.00		Attn 0.00			0.00		0.00					
	FM	Co/No -13.73	NA	Co/No -13.73	NA	D	0.00	NA	0.00	NA				
		Attn 0.00	Attn 0.00	0.00	0.00									
		Co/No -13.73	Co/No -13.73	Co/No -13.73	Co/No -13.73									

Notes:

Testers: DMI, RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm



EIA Digital Audio Radio Test Laboratory

Test	M-2	Rural Fast Rayleigh										
		Medium Multipath + Noise				Weak Multipath + Noise		FM w/ SCA GRP	Rural Fast Rayleigh			
		TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C		TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C
AT&T Amati DSB	CW	Attn 32.00	Small drop out.	Attn 63.75	Many flutters and mutes. Level of impairment between TOA and POF, closer to POF.	A	32.00	Small flutter.	0.00	NA		
		Co/No 27.74		Co/No 27.74			-4.26					
	FM	Attn 32.00	Small drop out.	Attn 63.75	Many flutters and mutes. Level of impairment between TOA and POF, closer to POF.	B	32.00	Medium drop out.	0.00	NA		
		Co/No 27.74		Co/No 27.74			-4.26					
AT&T Amati LSB	CW	Attn 59.00	Small flutter.	Attn 63.75	No recovered Audio.	A	63.75	Level of impairment between TOA and POF closer to POF.	0.00	NA		
		Co/No 54.91		Co/No 59.66			-4.09					
	FM	Attn 59.00	Small flutter.	Attn 63.75	No recovered Audio.	B	63.75	Level of impairment between TOA and POF closer to POF.	0.00	NA		
		Co/No 54.91		Co/No 59.66			-4.09					
USADR FM1	CW	Attn 63.75	TOA level of impairment. Occasional chirp.	Attn 0.00	NA	A	0.00	NA	0.00	NA		
		Co/No 56.71		Co/No -7.04			-7.04					
	FM	Attn 0.00	NA	Attn 0.00	NA	B	0.00	NA	0.00	NA		
		Co/No -7.04		Co/No -7.04			-7.04					
USADR FM2	CW	Attn 63.75	Virtually no recovered audio. Beyond a POF level of impairment.	Attn 0.00	NA	A	0.00	NA	0.00	NA		
		Co/No 50.02		Co/No -13.73			-13.73					
	FM	Attn 0.00	NA	Attn 0.00	NA	B	0.00	NA	0.00	NA		
		Co/No -13.73		Co/No -13.73			-13.73					

Notes:

Testers: DML,RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm

EIA Digital Audio Radio Test Laboratory

Test	M-2	Terrain Obstructed Rayleigh										
		Medium Multipath + Noise				Weak Multipath + Noise		FM w/ SCA GRP	Terrain Obstructed Rayleigh			
		TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	Medium Multipath + Noise + SCA			Weak Multipath + Noise + SCA			
Mod	Attn Co/No		Attn Co/No		TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C				
AT&T Amati DSB	CW	Attn 30.00	Small drop out.	Attn 63.75	Many drop outs. Without added noise Level of impairment between TOA and POF.	A	32.00	Small drop out.	0.00	NA		
		Co/No 25.74		Co/No 59.49			27.74		Co/No -4.26			
							31.00		0.00			
	FM	Attn 31.00	Small drop out	Attn 63.75	Many drop outs. Without added noise Level of impairment between TOA and POF.	B	26.74	Medium drop out.	Co/No -4.26	NA		
		Co/No 26.74		Co/No 59.49			32.00		0.00			
							27.74		Co/No -4.26			
AT&T Amati LSB	CW	Attn 63.75	Level of impairment between TOA and POF Closer ro TOA.	Attn 63.75	NA	A	0.00	NA	0.00	NA		
		Co/No 59.66		Co/No 59.66			Co/No -4.09		Co/No -4.09			
							0.00		0.00			
	FM	Attn 63.75	Level of impairment between TOA and POF Closer ro TOA.	Attn 63.75	NA	B	Co/No -4.09	NA	Co/No -4.09	NA		
		Co/No 59.66		Co/No 59.66			0.00		0.00			
							Co/No -4.09		Co/No -4.09			
USADR FM1	CW	Attn 63.75	POF level of imairment. High cut, warbles and occasional mutes.	Attn 0.00	NA	A	0.00	NA	0.00	NA		
		Co/No 56.71		Co/No -7.04			Co/No -7.04		Co/No -7.04			
							0.00		0.00			
	FM	Attn 0.00	NA	Attn 0.00	NA	B	Co/No -7.04	NA	Co/No -7.04	NA		
		Co/No -7.04		Co/No -7.04			0.00		0.00			
							Co/No -7.04		Co/No -7.04			
USADR FM2	CW	Attn 63.75	No recovered audio. Beyond a POF level of impairment.	Attn 0.00	NA	A	0.00	NA	0.00	NA		
		Co/No 50.02		Co/No -13.73			Co/No -13.73		Co/No -13.73			
							0.00		0.00			
	FM	Attn 0.00	NA	Attn 0.00	NA	B	Co/No -13.73	NA	Co/No -13.73	NA		
		Co/No -13.73		Co/No -13.73			0.00		0.00			
							Co/No -13.73		Co/No -13.73			

Notes:

Testers: DML, RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm

## EIA Digital Audio Radio Test Laboratory

Test		Urban Slow Doppler									
M-2		Medium Multipath + Noise					Weak Multipath + Noise				
Signal Strength Impairment		Urban Slow Doppler					Urban Slow Doppler				
Mod	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	FM w/ SCA GRP	Medium Multipath + Noise + SCA			Weak Multipath + Noise + SCA		
						TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C		
AT&T Amati DSB	CW	Attn 63.75	Static Pop and mute. Level of impairment between TOA and POF, closer to TOA.	Attn 0.00	Medium duration mute. Level of impairment between TOA and POF, closer to POF.	A	0.00	NA	0.00	NA	
		Co/No 59.49		Co/No -4.26	Co/No -4.26						
	FM	Attn 63.75	Flutter and mute. Level of impairment between TOA and POF, closer to TOA.	Attn 0.00	Long duration mute. Level of impairment between TOA and POF, closer to POF.	B	0.00	NA	0.00	NA	
		Co/No 59.49		Co/No -4.26	Co/No -4.26						
AT&T Amati LSB	CW	Attn 63.75	With no added noise recovered audio is consistent with POF at deepest mp fades.	Attn 0.00	NA	A	0.00	NA	0.00	NA	
		Co/No 59.66		Co/No -4.09			Co/No -4.09				
	FM	Attn 63.75	With no added noise recovered audio is consistent with POF at deepest mp fades.	Attn 0.00	NA	B	0.00	NA	0.00	NA	
		Co/No 59.66		Co/No -4.09			Co/No -4.09				
USADR FM1	CW	Attn 0.00		Attn 0.00		A	0.00		0.00		
		Co/No -7.04		Co/No -7.04			Co/No -7.04				
	FM	Attn 0.00		Attn 0.00		B	0.00		0.00		
		Co/No -7.04		Co/No -7.04			Co/No -7.04				
USADR FM2	CW	Attn 0.00		Attn 0.00		A	0.00		0.00		
		Co/No -13.73		Co/No -13.73			Co/No -13.73				
	FM	Attn 0.00		Attn 0.00		B	0.00		0.00		
		Co/No -13.73		Co/No -13.73			Co/No -13.73				
					D	0.00		0.00			
						Co/No -13.73	Co/No -13.73				

Notes:

Testers: DML,RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm

# EIA Digital Audio Radio Test Laboratory

Test		Urban Fast Doppler											
Signal Strength Impairment		Medium Multipath + Noise				Weak Multipath + Noise				Urban Fast Doppler			
		TOA		EO&C	TOA		EO&C	FM w/ SCA GRP	Medium Multipath + Noise + SCA		Weak Multipath + Noise + SCA		
Mod	Co/No (dB)	Attn	Co/No (dB)		Attn	Co/No (dB)			EO&C	Co/No (dB)	EO&C		
AT&T Amati DSB	CW	Attn	21.00	Small flutter.	Attn	22.00	Small flutter.	A	0.00	NA	0.00	NA	
		Co/No	16.74		Co/No	17.74			-4.26		-4.26		
	FM	Attn	22.00	Small flutter.	Attn	22.00	Small flutters.		B	0.00	NA	0.00	NA
		Co/No	17.74		Co/No	17.74				-4.26		-4.26	
AT&T Amati LSB	CW	Attn	0.00		Attn	0.00	A	0.00			0.00		
		Co/No	-4.09		Co/No	-4.09		-4.09			-4.09		
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-4.09		Co/No	-4.09			-4.09		-4.09		
USADR FM1	CW	Attn	0.00		Attn	0.00	A		0.00		0.00		
		Co/No	-7.04		Co/No	-7.04			-7.04		-7.04		
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-7.04		Co/No	-7.04			-7.04		-7.04		
USADR FM2	CW	Attn	0.00		Attn	0.00	A		0.00		0.00		
		Co/No	-13.73		Co/No	-13.73			-13.73		-13.73		
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-13.73		Co/No	-13.73			-13.73		-13.73		
Notes:													

Testers: DML, RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm

# EIA Digital Audio Radio Test Laboratory

Test	Rural Fast Doppler													
	Medium Multipath + Noise					Weak Multipath + Noise								
	Mod	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	FM w/ SCA GRP	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C				
AT&T Amati DSB	CW	Attn	Small drop out and flutter.	Attn	Small drop out.	A	0.00	NA	0.00	NA				
		Co/No		18.00			0.00		Co/No					
		Co/No		13.74			-4.26		Co/No					
	FM	Attn	Small flutter.	Attn	Small flutter.		B		0.00		NA	0.00	NA	
		Co/No		19.00					0.00			Co/No		
		Co/No		14.74					-4.26			Co/No		
AT&T Amati LSB	CW	Attn		Attn		A		0.00		0.00				
		Co/No		0.00				0.00		Co/No				
		Co/No		-4.09				-4.09		Co/No				
	EM	Attn		Attn			B	0.00			0.00			
		Co/No		0.00				0.00			Co/No			
		Co/No		-4.09				-4.09			Co/No			
USADR FM1	CW	Attn		Attn		A		0.00			0.00			
		Co/No		0.00				0.00			Co/No			
		Co/No		-7.04				-7.04			Co/No			
	FM	Attn		Attn			B	0.00			0.00			
		Co/No		0.00				0.00			Co/No			
		Co/No		-7.04				-7.04			Co/No			
USADR FM2	CW	Attn		Attn		A		0.00			0.00			
		Co/No		0.00				0.00			Co/No			
		Co/No		-13.73				-13.73			Co/No			
	FM	Attn		Attn			B	0.00			0.00			
		Co/No		0.00				0.00			Co/No			
		Co/No		-13.73				-13.73			Co/No			
Notes:														
Testers: DML,RMc								Medium Signal Strength= -62 dBm						
								Weak Signal Strength= -77 dBm						

# EIA Digital Audio Radio Test Laboratory

Test		Terrain Obstructed Doppler											
Signal Strength Impairment		Medium Multipath + Noise					Weak Multipath + Noise						
Mod	TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C	FM w/ SCA GRP	Medium Multipath + Noise + SCA			Weak Multipath + Noise + SCA				
						TOA Co/No (dB)	EO&C	TOA Co/No (dB)	EO&C				
AT&T Amati DSB	CW	Attn	25.00	Small drop out.	Attn	24.00	Small drop out.	A	0.00	NA	0.00	NA	
		Co/No	20.74		Co/No	19.74		Co/No	-4.26		Co/No		-4.26
	FM	Attn	24.00	Small drop out.	Attn	24.00	Small flutter.	B	0.00	NA	0.00	NA	
		Co/No	19.74		Co/No	19.74		Co/No	-4.26		Co/No		-4.26
AT&T Amati LSB	CW	Attn	0.00		Attn	0.00		A	0.00		0.00		
		Co/No	-4.09		Co/No	-4.09		Co/No	-4.09		Co/No		-4.09
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-4.09		Co/No	-4.09		Co/No	-4.09		Co/No		-4.09
USADR FM1	CW	Attn	0.00		Attn	0.00		A	0.00		0.00		
		Co/No	-7.04		Co/No	-7.04		Co/No	-7.04		Co/No		-7.04
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-7.04		Co/No	-7.04		Co/No	-7.04		Co/No		-7.04
USADR FM2	CW	Attn	0.00		Attn	0.00		A	0.00		0.00		
		Co/No	-13.73		Co/No	-13.73		Co/No	-13.73		Co/No		-13.73
	FM	Attn	0.00		Attn	0.00		B	0.00		0.00		
		Co/No	-13.73		Co/No	13.17		Co/No	-13.73		Co/No		-13.73

Notes:

Testers: DMI, RMc

Medium Signal Strength= -62 dBm  
Weak Signal Strength= -77 dBm

NRSC-R50

NRSC Document Improvement Proposal

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