NRSC REPORT

NATIONAL RADIO SYSTEMS COMMITTEE

NRSC-R58
Digital Audio Radio IBOC Laboratory Tests
Transmission Quality Failure Characterization and Analog Compatibility
August 11, 1995

Part V – Appendices AC through AG

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FOREWORD

NRSC-R58, *Digital Audio Radio IBOC Laboratory Tests – Transmission Quality Failure Characterization and Analog Compatibility*, documents the first comprehensive testing of in-band/on-channel digital radio systems. This report was prepared for Working Group B and the Combined EIA DAR and NRSC DAB Subcommittees.

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.

Contents

APPENDIX AC

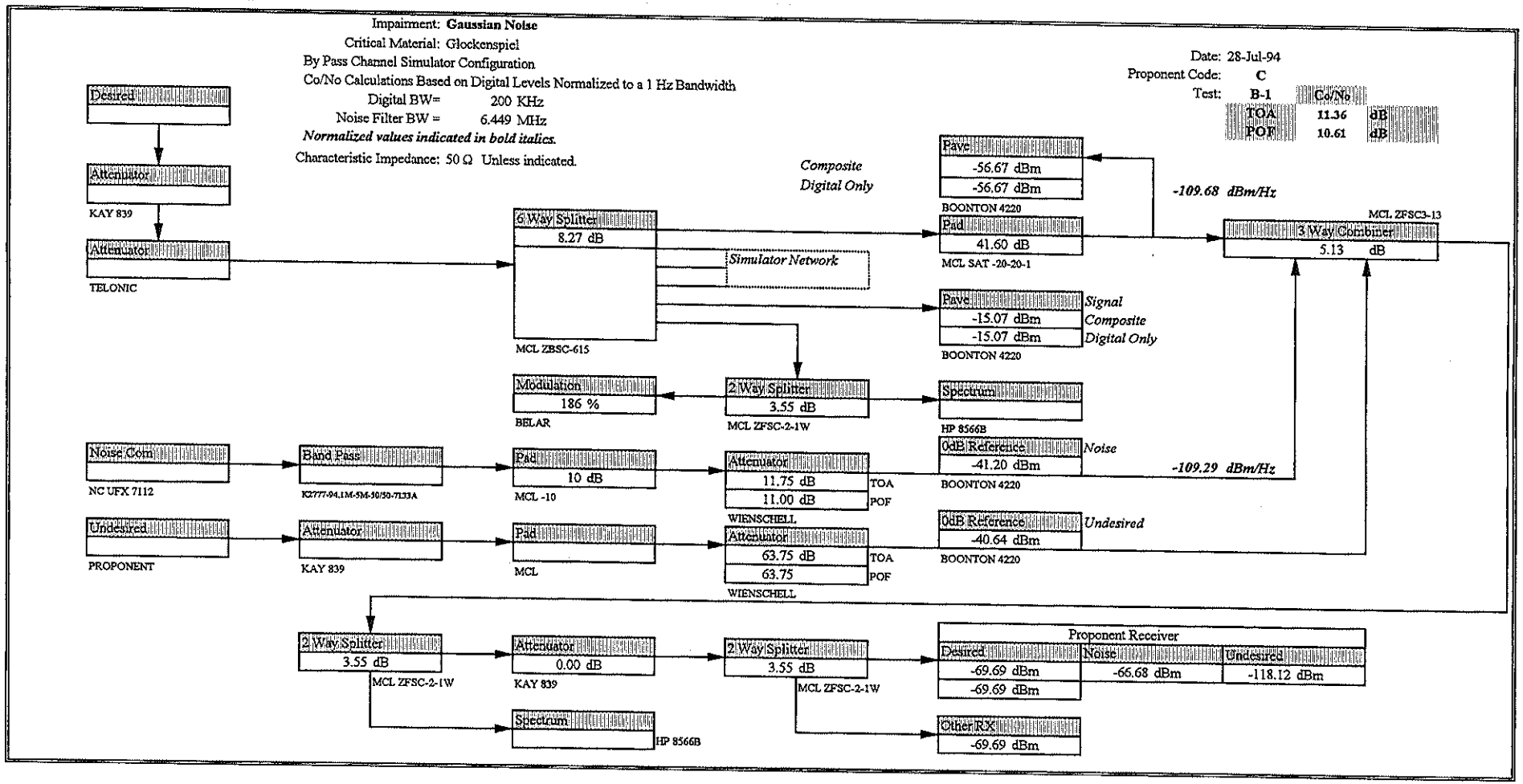
Digital Test Results AT&T IBAC

EIA Digital Audio Radio Test Laboratory

Proponent:	**AT&T**
Code:	C
Digital Band Width:	2.00E+05 Hz
Peak/Average:	6.03 dB

Test	B-1	Gaussian Noise		Units
Proponent Code:	C			
Glockenspiel		TOA	POF	
	Attenuator	11.75	11.00	dB
	Co/No	11.36	10.61	dB
EO&C	TOA	Small drop out.		
	POF	Excessive muting.		
Soprano		TOA	POF	
	Attenuator	11.50	10.75	dB
	Co/No	11.11	10.36	dB
EO&C	TOA	Small drop out.		
	POF	Excessive muting.		
Clarinet		TOA	POF	
	Attenuator	11.50	10.75	dB
	Co/No	11.11	10.36	dB
EO&C	TOA	Small drop out.		
	POF	Excessive muting.		

Notes:		
	Recording Reference:	DAR30213.DAT
	Testers:	DML,ST,DS,EB
	Date:	28-Jul-94


Impairment: Gaussian Noise
Critical Material: Glockenspiel
By Pass Channel Simulator Configuration
Co/No Calculations Based on Digital Levels Normalized to a 1 Hz Bandwidth
Digital BW= 200 KHz
Noise Filter BW = 6.449 MHz
Normalized values indicated in bold italics.
Characteristic Impedance: 50 Ω Unless indicated.
Date: 28-Jul-94
Proponent Code: C
Test: B-1
Co/No
TOA 11.36 dB
POF 10.61 dB
Composite Digital Only
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Pave
-56.67 dBm
-56.67 dBm
BOONTON 4220
-109.68 dBm/Hz
Pad
41.60 dB
MCL SAT -20-20-1
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pave
-15.07 dBm
-15.07 dBm
BOONTON 4220
Signal
Composite
Digital Only
Modulation
186 %
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
KZ777-94.1M-5M-30/50-7L33A
Pad
10 dB
MCL -10
Attenuator
11.75 dB TOA
11.00 dB POF
WIENSCHELL
0dB Reference
-41.20 dBm
BOONTON 4220
Noise
-109.29 dBm/Hz
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
63.75 dB TOA
63.75 POF
WIENSCHELL
0dB Reference
-40.64 dBm
BOONTON 4220
Undesired
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-69.69 dBm
-69.69 dBm
Noise
-66.68 dBm
Undesired
-118.12 dBm
Spectrum
HP 8566B
Other RX
-69.69 dBm

EIA Digital Audio Radio DAT Recording Log

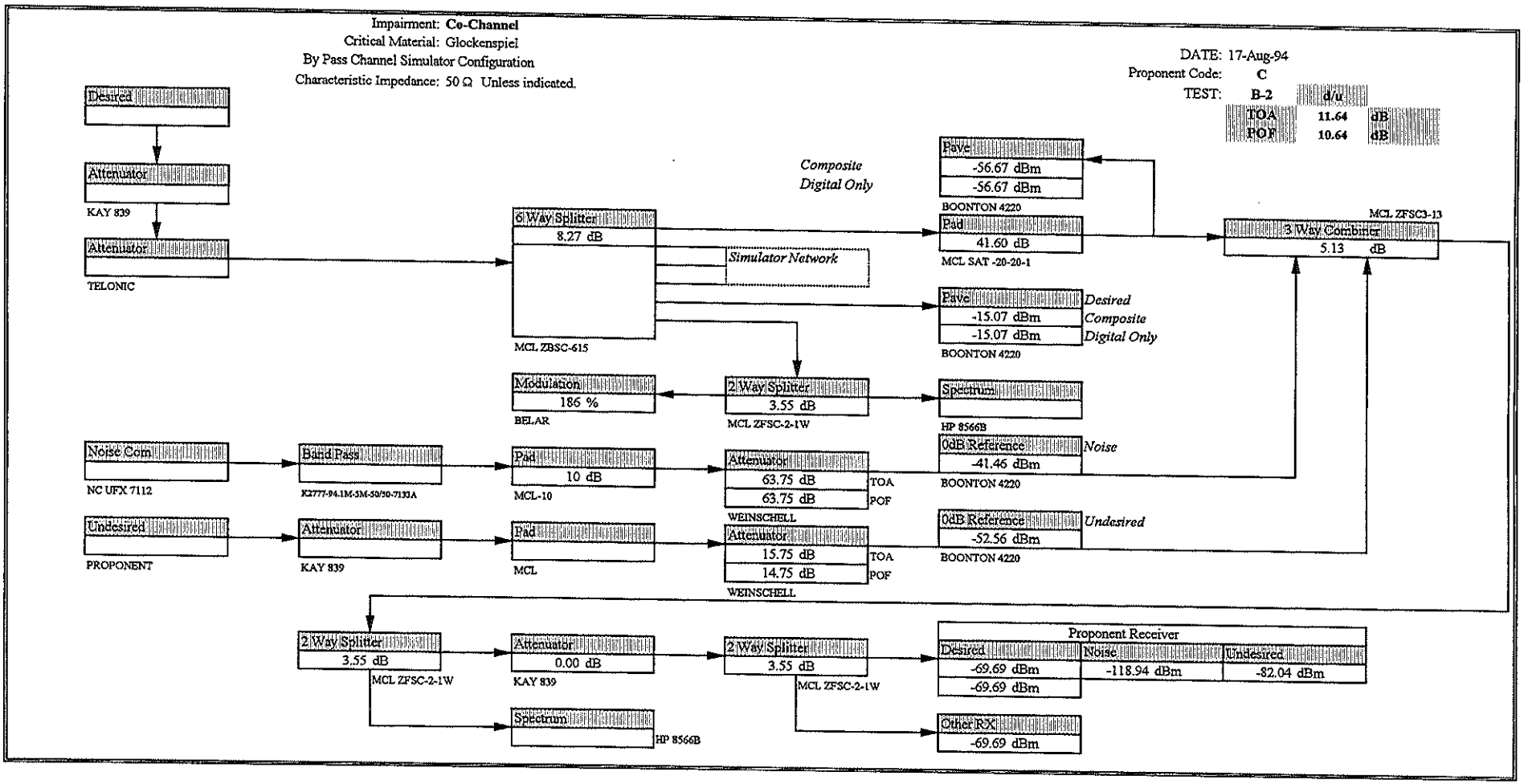
DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30213.DAT			1	2				Glockenspiel Clear Channel	63.75
28-Jul-94			3	4					13.25
			5	6					12.75
			7	8					12.25
			9	10				TOA lab	11.75
			11	12					11.50
			13	14					11.25
			15	16				Sync	63.75
			17	18				POF lab	11.00
			19	20					10.75
			21	22				Soprano Clear Channel	63.75
			23	24					13.00
			25	26					12.50
			27	28					12.00
			29	30				TOA lab	11.50
			31	32					11.25
			33	34					11.00
			35	36				Sync	63.75
			37	38				POF lab	10.75
			39	40					10.50
			41	42				Clarinet Clear Channel	63.75
			43	44					13.00
			45	46					12.50
			47	48					12.00
			49	50				TOA lab	11.50
			51	52					11.25
			53	54					11.00
			55	56				Sync	63.75
			57	58				POF lab	10.75
			59	60					10.50

Code: C
Impairment: Gaussian Noise

EIA Digital Audio Radio Test Laboratory

Test	B-2	Co-Channel		Units
Proponent Code:	C			
Glockenspiel		TOA	POF	
	Attenuator	15.75	14.75	dB
	d/u	11.64	10.64	dB
	TOA	Small drop out.		
EO&C				
	POF	Excessive muting.		
Soprano		TOA	POF	
	Attenuator	15.50	14.75	dB
	d/u	11.39	10.64	dB
	TOA	Small drop out.		
EO&C				
	POF	Excessive muting.		
Clarinet		TOA	POF	
	Attenuator	15.75	14.75	dB
	d/u	11.64	10.64	dB
	TOA	Small drop out.		
EO&C				
	POF	Excessive muting.		

Notes:		
	Recording Reference:	DAR30234.DAT
	Testers:	DML,DS
	Date:	17-Aug-94


Impairment: Co-Channel
Critical Material: Glockenspiel
By Pass Channel Simulator Configuration
Characteristic Impedance: 50 Ω Unless indicated.
DATE: 17-Aug-94
Proponent Code: C
TEST: B-2
d/u
TOA 11.64 dB
POF 10.64 dB
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Composite
Digital Only
Pave
-56.67 dBm
-56.67 dBm
BOONTON 4220
Pad
41.60 dB
MCL SAT -20-20-1
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pave
-15.07 dBm
-15.07 dBm
BOONTON 4220
Desired
Composite
Digital Only
Modulation
186 %
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
K2777-94-1M-5M-50/50-7130A
Pad
10 dB
MCL-10
Attenuator
63.75 dB TOA
63.75 dB POF
WEINSCHELL
0dB Reference
-41.46 dBm
BOONTON 4220
Noise
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
15.75 dB TOA
14.75 dB POF
WEINSCHELL
0dB Reference
-52.56 dBm
BOONTON 4220
Undesired
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-69.69 dBm
-69.69 dBm
Noise
-118.94 dBm
Undesired
-82.04 dBm
Spectrum
HP 8566B
Other RX
-69.69 dBm

EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30234.DAT			1	2				Glockenspiel Clear Channel	63.75
17-Aug-94			3	4					17.25
			5	6					16.75
			7	8					16.25
			9	10	11	12	13	TOA lab	15.75
			14	15					15.50
			16	17					15.25
			18	19					15.00
			20	21				POF lab	14.75
			22	23				Sync	63.75
			24	25					14.25
			26	27				Soprano Clear Channel	63.75
			28	29					17.00
			30	31					16.50
			32	33					16.00
			34	35	36	37	38	TOA lab	15.50
			39	40					15.25
			41	42					15.00
			43	44				POF lab	14.75
			45	46				Sync	63.75
			47	48					14.50
			49	50					14.25
			51	52				Clarinet Clear Channel	63.75
			53	54					17.25
			55	56					16.75
			57	58					16.25
			59	60				TOA lab	15.75
			61	62					15.50
			63	64					15.25
			65	66					15.00
			67	68				POF lab	14.75
			69	70				Sync	63.75
			71	72					14.50
			73	74					14.25

Code: C
Impairment: Co-Channel

Test B-3 Proponent Code: C	Urban Slow Rayleigh					Units
Glockenspiel		TOA		POF		
	Attenuator	31.00		24.00		dB
	Co/No	31.64		24.64		dB
EO&C	TOA	Small drop out.				
	POF	Excessive muting.				
Soprano		TOA		POF		
	Attenuator	31.00		24.00		dB
	Co/No	31.64		24.64		dB
EO&C	TOA	Small drop out.				
	POF	Excessive muting.				
Clarinet		TOA		POF		
	Attenuator	31.00		24.00		dB
	Co/No	31.64		24.64		dB
EO&C	TOA	Small drop out.				
	POF	Excessive muting.				

Notes:
Recording Reference: DAR30255.DAT
Testers: DML,DS
Test Date: 23-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30255.DAT			1	2	3			Glockenspiel Clear Channel	63.75
23-Aug-94			4	5	6				32.00
			7	8	9	10		Disregard # 7	31.50
			11	12	13			TOA lab	31.00
			14	15	16				30.50
			17	18	19				29.00
			20	21	22				27.00
			23	24	25			POF lab	24.00
			26	27	28			Soprano Clear Channel	63.75
			29	30	31				32.00
			32	33	34				31.50
			35	36	37			TOA lab	31.00
			38	39	40				30.50
			41	42	43				29.00
			44	45	46				27.00
			47	48	49			POF lab	24.00
			50	51	52			Clarinet Clear Channel	63.75
			53	54	55				32.00
			56	57	58				31.50
			59	60	61	62		TOA lab	31.00
			63	64	65				30.50
			66	67	68				29.00
			69	70	71				27.00
			72	73	74			POF lab	24.00

Proponent Code: C
Impairment: Urban Slow Rayleigh

Test B-3 Proponent Code: C	Urban Fast Rayleigh					Units
Glockenspiel		TOA		POF		
	Attenuator	26.00		20.00		dB
	Co/No	26.64		20.64		dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting.				
Soprano		TOA		POF		
	Attenuator	26.00		20.00		dB
	Co/No	26.64		20.64		dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting.				
Clarinet		TOA		POF		
	Attenuator	25.50		20.00		dB
	Co/No	26.14		20.64		dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting.				

Notes:
Recording Reference: DAR30256.DAT
Testers: DML,DS
Test Date: 23-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30256.DAT			1	2	3			Glockenspiel Clear Channel	63.75
23-Aug-94			4	5	6	7		Disregard #4	27.00
			8	9	10				26.50
			11	12	13	14		TOA lab	26.00
			14	15	16	17			25.50
			18	19	20				24.00
			21	22	23				22.00
			24	25	26			POF lab	20.00
			27	28	29			Soprano Clear Channel	63.75
			30	31	32	33		Disregard #30	27.00
			34	35	36				26.50
			37	38	39			TOA lab	26.00
			40	41	42				25.50
			43	44	45				24.00
			46	47	48				22.00
			49	50	51			POF lab	20.00
			52	53	54			Clarinet Clear Channel	63.75
			55	56	57				26.50
			58	59	60				26.00
			61	62	63			TOA lab	25.50
			64	65	66				25.00
			67	68	69				24.00
			70	71	72				22.00
			73	74	75			POF lab	20.00

Proponent Code: C
Impairment: Urban Fast Rayleigh

Test B-3 Proponent Code: C	Rural Fast Rayleigh					Units
Glockenspiel		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	64.39		64.39		dB
EO&C	TOA	Simulation without added noise produces defects in the recovered audio. Small infrequent attenuated attacks.				
	POF					
Soprano		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	64.39		64.39		dB
EO&C	TOA	see DAT Log				
	POF					
Clarinet		TOA		POF		
	Attenuator	63.75		63.75		dB
	Co/No	64.39		64.39		dB
EO&C	TOA	see DAT Log				
	POF					
Notes:	Recording Reference: DAR30257.DAT Testers: DML,DS Test Date: 23-Aug-94					

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30257.DAT			1	2	3			Glockenspiel Clear Channel	63.75
23-Aug-94			4	5	6				30.50
			7	8	9				30.00
			10	11	12			TOA lab	29.50
			13	14	15				29.00
			16	17	18				28.50
			19	20	21				27.00
			22	23	24			POF lab	25.50
			25	26	27			Soprano Clear Channel	63.75
			28	29	30				31.00
			31	32	33				30.50
			34	35	36			TOA lab	30.00
			37	38	39				29.50
			40	41	42				28.50
			43	44	45				27.00
			46	47	48			POF lab	25.50
			49	50	51			Clarinet Clear Channel	63.75
			52	53	54				31.50
			55	56	57				31.00
			58	59	60			TOA lab	30.50
			61	62	63				30.00
			64	65	66				29.00
			67	68	69				27.50
			70	71	72			POF lab	25.50
								See DAR30404.DAT E-Series recordings for	
								Glockenspiel without added noise. see pg. 31, 49	
								Soprano and Clarinet were not sent to CRC for evaluation.	

Proponent Code: C
Impairment: Rural Fast Rayleigh

Test B-3 Proponent Code: C	Terrain Obstructed Rayleigh					Units
Glockenspiel		TOA		POF		
Attenuator		63.75		63.75		dB
Co/No		64.39		64.39		dB
TOA	Simulation produces defects (pops,clicks and small drop outs) in the recovered audio, without added noise.					
EO&C						
POF						
Soprano		TOA		POF		
Attenuator		63.75		63.75		dB
Co/No		64.39		64.39		dB
TOA	Simulation produces defects (pops,clicks and small drop outs) in the recovered audio, without added noise.					
EO&C						
POF						
Clarinet		TOA		POF		
Attenuator		24.00		21.00		dB
Co/No		24.64		21.64		dB
TOA	Small drop outs and flutter.					
EO&C						
POF	Excessive muting and flutter.					

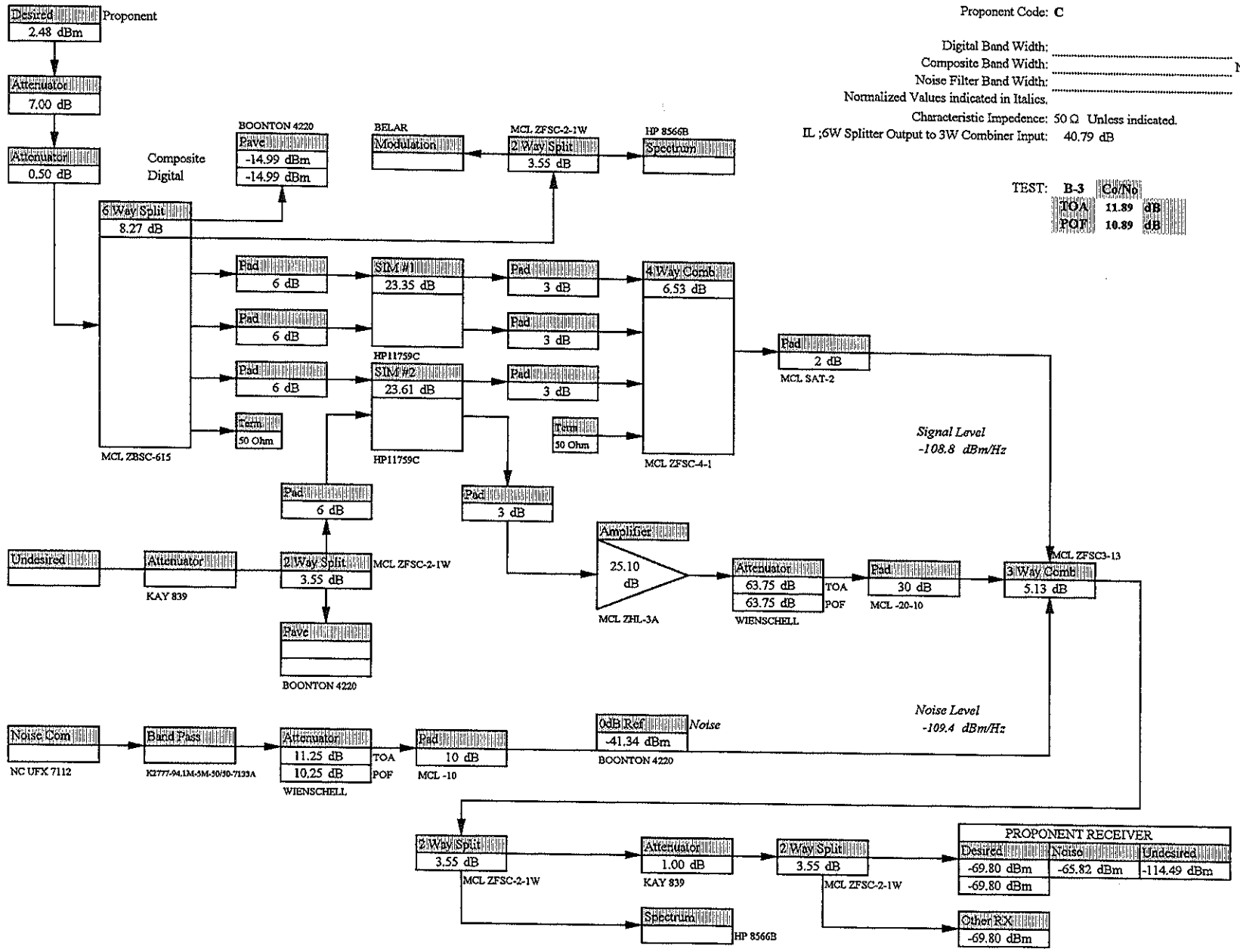
Notes:
Recording Reference: DAR30258.DAT
Testers: DML,DS
Test Date: 23-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30258.DAT			1	2	3			Glockenspiel Clear Channel	63.75
23-Aug-94			4	5	6	7	8	With multipath.	63.75
			9	10	11	12			
			13	14	15	16	17	Disregard #9-#17	
			18	19	20			Sopranno Clear Channel	63.75
			21	22	23	24	25	With Multipath.	63.75
			26	27	28			Clarinet Clear Channel	63.75
			29	30	31	32	33	With Multipath.	63.75
			34	35	36	37	38	With Multipath.	63.75
			39	40	41	42	43	With Multipath.	63.75
			44	45	46			Clarinet Clear Channel	63.75
			47	48	49				25.00
			50	51	52				24.50
			53	54	55			TOA lab	24.00
			56	57	58				23.00
			59	60	61				22.00
			62	63	64			POF lab	21.00

Proponent Code: C

Impairment: Terrain Obstructed Rayleigh



Proponent Code: **C**

Digital Band Width: ..... 200000 Hz
Composite Band Width: ..... NA Hz
Noise Filter Band Width: ..... 6449000 Hz
Normalized Values indicated in Italics.
Characteristic Impedence: 50 Ω Unless indicated.
IL ;6W Splitter Output to 3W Combiner Input: 40.79 dB

TEST: **B-3** Co/No
TOA **11.89** dB
POT **10.89** dB

Test	C-1	Impulse Response				
AT&T						
Program Material		Glockenspiel		1 Vp-p at attenuator input. 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 repetition rate.
200		0.00	1.00	0.00	1.00	Could not achieve TOA or POF with this repetition rate.
333		0.00	1.00	0.00	1.00	Could not achieve TOA or POF with this repetition rate.
666		10.50	0.30	0.00	1.00	TOA occasional drop out, POF could not be achieved.
1000		10.50	0.30	0.00	1.00	TOA occasional drop out, POF could not be achieved.

Additional Comments: Very difficut to determine TOA with consistency.
The audio would break up once at many discrete levels on the attenuator
but would not repeat at that level. Attenuator switch transients may have caused these break ups.
There appears to be error correction occuring at a fast enough rate to yield these test results inconclusive.

Test Date: 27-Jul-94
Testers: DML,DS,ST

Signal Level at Receiver: -85.00 dBm

Test	C-1	Impulse Response				
AT&T				1 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
200		7.50	0.42	0.00	1.00	TOA occasional drop out, POF could not be achieved.
333		16.50	0.15	12.00	0.25	TOA occasional drop out, POF excessive muting.

Additional Comments: Very difficut to determine TOA with consistency.
The audio would break up once at many discrete levels on the attenuator
but would not repeat at that level. Attenuator switch transients may have caused these break ups.
There appears to be error correction occuring at a fast enough rate to yield these test results inconclusive.

Test Date: 27-Jul-94
Testers: DML,DS,ST

Signal Level at Receiver: -90.00 dBm

Test C-2 **CW Response**
AT&T
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				27	94.11	2	2	2
2	93.86				28	94.12	1	2	2
3	93.87				29	94.13	0	2	2
4	93.88				30	94.14	1	2	2
5	93.89				31	94.15	1	2	2
6	93.90				32	94.16	0	2	2
7	93.91				33	94.17	0	1	2
8	93.92				34	94.18	0	2	2
9	93.93				35	94.19	0	2	2
10	93.94				36	94.20	0	1	1
11	93.95	0	0	0	37	94.21	0	0	0
12	93.96	0	0	0	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	0	0	0
15	93.99	0	0	0	41	94.25	0	0	0
16	94.00	0	0	2	42	94.26			
17	94.01	0	2	2	43	94.27			
18	94.02	0	1	2	44	94.28			
19	94.03	2	1	2	45	94.29			
20	94.04	2	2	2	46	94.30			
21	94.05	2	1	2	47	94.31			
22	94.06	0	2	2	48	94.32			
23	94.07	2	2	2	49	94.33			
24	94.08	0	2	2	50	94.34			
25	94.09	0	2	2	51	94.35			
26	94.10	0	2	2					

Test Date: 29-Sep-94 0 dB Attenuator Reference: -30.43 dBm
Testers: DML, TK 0=CLEAN AUDIO 1=APPROXIMATE TOA 2 ≥ POF
POF Attn=34.00dB POF d/u= 7.81 dB

-56.62

final atten setting in delay path

initial atten setting in delay path

Test C-3 Airplane Flutter AT&T Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 µs Delay 8.00 dB TOA 5.60 dB	Small drop out.
#2	200 Km/h Doppler 13.7 µs Delay 6.00 dB TOA 4.10 dB	Attenuated attack on first note as well as small drop out.
#3	100 Km/h Doppler 6.8 µs Delay 4.00 dB TOA 4.00 dB	Attenuated attack on first note as well as small clicks and pops. 3:30-8:45 DAR30500.DAT ID #7-15
Test Date: 28-Sep-94 Testers: DML,TK,ST,RMc		

Increasing level of reflected path

Test	C-4	Weak Signal Sensitivity
AT&T		
Program Material		Glockenspiel

TOA (dBm)	POF (dBm)
-106 ≤ TOA < -105	-107 < POF ≤ -106

Test Date: 7-Sep-94
Testers: DML, ST

Test	**C-5**	**Delay Spread / Doppler**
Code:	**C**	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
0-40		0		0		0		0		0	
0-36	0		0		0		0		0		2
0-32		0		0		0		0		0	
0-28	0		0		0		0		0		2
0-24		0		0		0		0		0	
0-20	0		0		0		0		0		1
0-16		0		0		0		0		0	
0-12	0		0		0		0		0		1
0-8		0		0		0		0		0	
0-4	0		0		0		0		0		1

Doppler (km/h)

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

Test Date: 24-Oct-94
Testers: DML, RMc

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

Delay Spread (us)

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

Doppler (km/h)

EO&C

30 sec minimum listening time.

0 = Unimpaired

1 = Small Impairment

2 ≥ POF Level of Impairment

Small Impairments consisted of occational, brief (short duration) dropouts.

Test Date: 24-Oct-94

Testers: DML, RMc

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

Delay Spread (us)

	1	3	5	10	15	30	50	75	100	150	225
0-10		0		0		0		0		0	
0-9	0		0		0		0		0		1
0-8		0		0		0		0		0	
0-7	0		0		0		0		0		1
0-6		1		0		0		0		0	
0-5	0		0		1		0		0		0
0-4		1		0		0		0		0	
0-3	0		0		0		0		0		0
0-2		0		0		0		0		0	
0-1	0		0		0		0		0		0

Doppler (km/h)

EO&C 30 sec minimum listening time.

0 = Unimpaired

1 = Small Impairment

2 ≥ POF Level of Impairment

Small Impairments consisted of occational, brief (short duration) dropouts.

Test Date: 24-Oct-94

Testers: DML, RMc

Test	**C-5**	**Delay Spread / Doppler**
Code:	**C**	Hilly Terrain
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
0-50	0		0		0		0		0		2
0-48		0		0		0		0		0	
0-44	2		0		0		0		0		2
0-40		0		0		0		0		0	
0-36	0		0		0		0		0		1
0-32		0		0		0		0		0	
0-28	0		0		0		0		0		1
0-24		0		0		0		0		0	
0-20	0		0		0		0		0		1

Doppler (km/h)

EO&C 30 sec minimum listening time.

0 = Unimpaired

1 = Small Impairment

2 ≥ POF Level of Impairment

Small Impairments consisted of occational, brief (short duration) dropouts and periodic flutters.

Test Date: 24-Oct-94

Testers: DML, RMc

Test	C-5	**Delay Spread / Doppler**
Code:	**C**	Rural Area
Program Material		Mozart (Track 67 on SQAM disk)

Delay Spread (us)

	1	3	5	10	15	30	50	75	100	150	225
0-1.0		0		0		0		0		0	
0-0.9	0		0		0		0		0		0
0-0.8		0		0		0		0		0	
0-0.7	0		0		0		0		0		0
0-0.6		0		0		0		0		0	
0-0.5	0		0		0		0		0		0
0-0.4		0		0		0		0		0	
0-0.3	0		0		0		0		0		0
0-0.2		0		0		0		0		0	
0-0.1	0		0		0		0		0		0

Doppler (km/h)

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

Test Date: 24-Oct-94
Testers: DML, RMc

Test	C-6	Additional Multipath Doppler Simulations			
AT&T					
Program Material:	Glockenspiel				
Scenario	Level	Attn	Co/No	Units	EO&C
#1 Urban Slow	TOA	28.00	28.62	dB	Small drop out at end of 1st arpeggio ID #7
	POF	20.00	20.62	dB	Excessive muting.
#2 Urban Fast	TOA	15.50	16.12	dB	Small flutter / drop out at end of 2nd Arpeggio ID #10
	POF	13.50	14.12	dB	Excessive flutter / drop outs.
#3 Rural Fast	TOA	17.00	17.62	dB	First note attack is attenuated ID #13, also drop out.
	POF	12.00	12.62	dB	Excessive flutter / drop outs.
#4 Terrain Obstructed	TOA	16.50	17.12	dB	Break up of first note ID #22
	POF	14.50	15.12	dB	Excessive flutter / drop outs.

		Desired		Noise	
Test Date:	25-Oct-94				
Testers:	DML, RMc	Signal	-15.08 dBm		
DAT Reference:	DAR30551.DAT	IL	40.63 dB	BW	6.45E+06 Hz
		3WIN	-55.71 dBm	0dB Ref	-41.25 dBm

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DAT File Number	Time Code Start	Time Code Stop	Start IDs					Description	Attn
DAR30551.DAT			1	2					Disregard
25-Oct-94			3	4	5				Disregard
			6	7	8			Urban Slow Doppler, TOA	28.00
			9	10	11			Urban Fast Doppler, TOA	15.50
			12	13	14			Rural Fast Doppler, TOA	17.00
			15	16	17			Terrain Obstructed Doppler	17.50
			18	19	20				17.00
			21	22	23			Terrain Obstructed Doppler, TOA	16.50

Additional Multipath Doppler Simulations

Code: C

Test C-6

Test	D-Series Co-Channel, 1st and 2nd Adjacent				
AT&T					
Program Material:	Glockenspiel				
	Level	Attn	D/U	Units	EO&C
D-1 Co-Channel	TOA	15.25	11.40	dB	Small drop out.
	POF	14.25	10.40	dB	Excessive muting.
D-2 Lower 1st Adjacent	TOA	8.50	-15.35	dB	Small drop outs or flutters.
	POF	8.00	-15.85	dB	Excessive Muting.
Upper 1st Adjacent	TOA	6.00	-17.85	dB	Small drop outs or flutters.
	POF	5.25	-18.60	dB	Excessive Muting.
D-3 Lower 2nd Adjacent	TOA	0.00	-23.85	dB	Not attainable with these hardware settings.
	POF	0.00	-23.85	dB	
Upper 2nd Adjacent	TOA	0.00	-23.85	dB	Not attainable with these hardware settings.
	POF	0.00	-23.85	dB	

Additional Comments:

DAT Reference: DAR30401.DAT
By Pass Simulator Configuration.

Test Date: 7-Sep-94		Desired	Undesired
Testers: DML, ST	6WOUT	-15.20 dBm	
	IL	41.60 dB	
	3WIN	-56.80 dBm	-52.95 dBm

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DAT File Number	Time Code Start	Time Code Stop	Start IDs					Description	Attn
DAR30401.DAT			1	2				Glockenspiel Clear Channel	63.75
7-Sep-94			3	4	5	6	7	TOA, Co-Channel	15.25
			8		17			Disregard #8-17	
			18	19				Soprano Clear Channel	63.75
			20	21	22	23	24	TOA, Co-Channel	15.00
			25	26				Clarinet Clear Channel	63.75
			27	28	29			Beyond TOA	15.00
			30	31				Clarinet Clear Channel	63.75
			32	33				Beyond TOA	15.25
			34	35				Clarinet Clear Channel	63.75
			36	37	38			TOA, Co-Channel	15.50
			39	40	41			Glockenspiel Upper 1st Adjacent TOA	6.00
			42	43	44			Soprano Upper 1st Adjacent TOA	6.00
			45	46	47			Clarinet Upper 1st Adjacent TOA	6.25
			48	49	50	51	52	Disregard #48-52	
			53	54				Glockenspiel Lower 1st Adjacent TOA	8.50
			55	56				Soprano Lower 1st Adjacent TOA	8.75
			57	58	59	60	61	Clarinet Lower 1st Adjacent TOA	8.25

Code: C

D-Series Recordings

Test	E-1	Co-Channel with Multipath (Rayleigh)			
AT&T					
Program Material:	Glockenspiel				
Scenario	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	49.75	40.71	dB	Small drop out or flutter. Without multipath audio is clean.
	POF	40.00	30.96	dB	Excessive Muting.
#2 Urban Fast	TOA	48.75	39.71	dB	Small drop out. Without multipath audio is clean.
	POF	38.00	28.96	dB	Excessive muting.
#3 Rural Fast	TOA	63.75	54.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 1-3
	POF	63.75	54.71	dB	
#4 Terrain Obstructed	TOA	63.75	54.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 4-6
	POF	63.75	54.71	dB	

Test Date: 28-Sep-94		Desired	Undesired
Testers: DML, RMc	Signal	-15.03 dBm	-15.28 dBm
	IL	40.79 dB	31.50 dB
	3WIN	-55.82 dBm	-46.78 dBm

Test	E-2	Lower 1st Adjacent with Multipath (Rayleigh)			
AT&T					
Program Material:	Glockenspiel				
Scenario	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	15.75	8.71	dB	Small drop out or flutter.
	POF	5.75	-1.29	dB	Excessive Muting. Without multipath audio is clean.
#2 Urban Fast	TOA	13.25	6.21	dB	Small drop out.
	POF	4.25	-2.79	dB	Excessive muting. Without multipath audio is clean.
#3 Rural Fast	TOA	63.75	56.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 1-3
	POF	63.75	56.71	dB	
#4 Terrain Obstructed	TOA	63.75	56.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 4-6
	POF	63.75	56.71	dB	

Test Date: 28-Sep-94		Desired	Undesired
Testers: DML, RMc	Signal	-15.03 dBm	-17.28 dBm
	IL	40.79 dB	31.50 dB
	3WIN	-55.82 dBm	-48.78 dBm

Test	E-3	Lower 2nd Adjacent with Multipath (Rayleigh)			
AT&T					
Program Material:	Glockenspiel				
Scenario					
	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	0.00	-7.04	dB	Insufficient undesired signal level Not attainable
	POF	0.00	-7.04	dB	
#2 Urban Fast	TOA	0.00	-7.04	dB	Insufficient undesired signal level Not attainable
	POF	0.00	-7.04	dB	
#3 Rural Fast	TOA	63.75	56.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 1-3
	POF	63.75	56.71	dB	
#4 Terrain Obstructed	TOA	63.75	56.71	dB	Simulation by itself produces defects in the recovered audio. DAR30404.DAT ID # 4-6
	POF	63.75	56.71	dB	

		Desired	Undesired
Test Date: 28-Sep-94			
Testers: DML, RMc	Signal	-15.03 dBm	-17.28 dBm
	IL	40.79 dB	31.50 dB
	3WIN	-55.82 dBm	-48.78 dBm

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DAT File Number	Time Code Start	Time Code Stop	Start IDs					Description	Attn
DAR30404.DAT			1	2	3			Rural Fast Rayleigh No Added Interference	63.75
28-Sep-94									
			4	5	6			Terrain Obstructed Rayleigh No Added Interference	63.75

Code: C
Test E-Series

Test	E-1	Co-Channel with Multipath (Doppler)			
AT&T					
Program Material:	Glockenspiel				
Scenario					
	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	25.75	29.47	dB	Small drop out.
	POF	15.00	18.72	dB	Excessive muting with some pops.
#2 Urban Fast	TOA	22.50	26.22	dB	Small drop out.
	POF	17.00	20.72	dB	Excessive muting with some pops.
#3 Rural Fast	TOA	25.00	28.72	dB	Small drop out or flutter.
	POF	14.00	17.72	dB	Excessive muting
#4 Terrain Obstructed	TOA	26.50	30.22	dB	Small drop outs.
	POF	15.50	19.22	dB	Excessive muting.

Test Date: 25-Oct-94		Desired	Undesired
Testers: DML, RMc	Signal	-15.08 dBm	-15.43 dBm
	IL	40.63 dB	44.00 dB
	3WIN	-55.71 dBm	-59.43 dBm

Test	E-2	Lower 1st Adjacent with Multipath (Doppler)			
AT&T					
Program Material:	Glockenspiel				
Scenario	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	24.00	1.22	dB	Small drop out.
	POF	8.50	-14.28	dB	Excessive muting.
#2 Urban Fast	TOA	24.50	1.72	dB	Small drop out.
	POF	9.50	-13.28	dB	Excessive muting with some pops.
#3 Rural Fast	TOA	25.50	2.72	dB	Small drop out or flutter.
	POF	11.00	-11.78	dB	Excessive muting
#4 Terrain Obstructed	TOA	26.00	3.22	dB	Small drop outs.
	POF	10.50	-12.28	dB	Excessive muting.

Test Date: 25-Oct-94		Desired	Undesired
Testers: DML, RMc	Signal	-15.08 dBm	-15.43 dBm
	IL	40.63 dB	17.50 dB
	3WIN	-55.71 dBm	-32.93 dBm

Test	E-3	Lower 2nd Adjacent with Multipath (Doppler)			
AT&T					
Program Material:	Glockenspiel				
Scenario					
	Level	Attn	D/U	Units	EO&C
#1 Urban Slow	TOA	0.00	-22.78	dB	Not attainable
	POF	0.00	-22.78	dB	Not attainable
#2 Urban Fast	TOA	0.00	-22.78	dB	Not attainable
	POF	0.00	-22.78	dB	Not attainable
#3 Rural Fast	TOA	0.00	-22.78	dB	Not attainable
	POF	0.00	-22.78	dB	Not attainable
#4 Terrain Obstructed	TOA	0.00	-22.78	dB	Small drop outs.
	POF	0.00	-22.78	dB	Not attainable

Test Date: 25-Oct-94		Desired	Undesired
Testers: DML, RMc	Signal	-15.08 dBm	-15.43 dBm
	IL	40.63 dB	17.50 dB
	3WIN	-55.71 dBm	-32.93 dBm

Test J-1 Re-Acquisition
AT&T
Program Material Mozart (Track 67 on SQAM disk)

Toff (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
30	1	1	1
	1	1	1
	1	1	1
	1	1	1
	1	1	1
Average	1	1	1

POF Attenuator Setting : 10.50 dB
Desired Signal Level : -55.50 dBm
Noise 0 dB Reference : -41.41 dBm

Additional Comments:
Re-Acquisition time is the value listed ± 0.5 seconds.

Test Date: 29-Sep-95
Testers: DML, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Urban Slow Rayleigh
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	1	1	1
10	1	1	0
15	0	1	1
20	0	1	1
25	1	1	1
Average	0.6	1	0.8

POF Attenuator Setting : 18.50 dB
Desired Signal Level : -55.50 dBm
Noise 0 dB Reference : -41.41 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 28-Sep-94
Testers: DML, TK, ST, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Urban 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	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1.2	1

POF Attenuator Setting	:	19.00 dB
Desired Signal Level	:	-55.50 dBm
Noise 0 dB Reference	:	-41.41 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 28-Sep-94

Testers: DML, TK, ST, RMc

Test	**J-2**	**Re-Acquisition with Multipath**
AT&T		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	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting : 30.75 dB
Desired Signal Level : -55.50 dBm
Noise 0 dB Reference : -41.41 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 28-Sep-94
Testers: DML, TK, ST, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Terrain Obstructed Rayleigh
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting : 21.50 dB
Desired Signal Level : -55.50 dBm
Noise 0 dB Reference : -41.41 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 28-Sep-94
Testers: DML, TK, ST, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Urban Slow Doppler
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting	:	20.00 dB
Desired Signal Level	:	-55.71 dBm
Noise 0 dB Reference	:	-41.18 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 25-Oct-94
Testers: DML, RMc

Test	**J-2**	**Re-Acquisition with Multipath**
AT&T		Urban Fast Doppler
Program Material		Mozart (Track 67 on SQAM disk)

	Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting : 13.50 dB
Desired Signal Level : -55.71 dBm
Noise 0 dB Reference : -41.18 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 25-Oct-94
Testers: DML, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Rural Fast Doppler
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting : 12.00 dB
Desired Signal Level : -55.71 dBm
Noise 0 dB Reference : -41.18 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 25-Oct-94
Testers: DML, RMc

Test	J-2	**Re-Acquisition with Multipath**
AT&T		Terrain Obstructed Doppler
Program Material		Mozart (Track 67 on SQAM disk)

	Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting : 14.50 dB
Desired Signal Level : -55.71 dBm
Noise 0 dB Reference : -41.18 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 25-Oct-94
Testers: DML, RMc

Test	B-1	Ancillary Data Channel Demonstration Gaussian Noise BER				
Proponent Code:	C					
						Units
		TOA			POF	
	Attenuator	12.00	11.50	11.00	10.50	dB
	Co/No	11.85	11.35	10.85	10.35	dB
	Log(BER)	$-\infty$	-5.078	-2.509	-1.715	
	BER	0.00E+00	8.36E-06	3.10E-03	1.93E-02	

Test	B-2	Ancillary Data Channel Demonstration Co-Channel BER					
							Units
			TOA			POF	
	Attenuator	26.50	26.00	25.50	25.00	24.50	dB
	d/u	13.21	12.71	12.21	11.71	11.21	dB
	Log(BER)	$-\infty$	-3.730	-2.649	-2.485	-1.535	
	BER	0.00E+00	1.86E-04	2.25E-03	3.27E-03	2.92E-02	

Testers:	DML, RMc	TOA and POF levels have been approximated for this demonstration.
Date:	13-Dec-94	

Test Proponent Code: B-3 C	Ancillary Data Channel Demonstration Multipath BER Doppler		Units
Urban Slow	TOA	POF	
Attenuator	28.00	20.00	dB
Co/No	27.85	19.85	dB
Log(BER)	-2.854	-2.253	
BER	1.40E-03	5.58E-03	
Urban Fast	TOA	POF	
Attenuator	15.50	13.50	dB
Co/No	15.35	13.35	dB
Log(BER)	-2.447	-1.741	
BER	3.57E-03	1.81E-02	
Rural Fast	TOA	POF	
Attenuator	17.00	12.00	dB
Co/No	16.85	11.85	dB
Log(BER)	-1.681	-1.467	
BER	2.09E-02	3.41E-02	
Terrain Obstructed	TOA	POF	
Attenuator	16.50	14.50	dB
Co/No	16.35	14.35	dB
Log(BER)	-1.704	-1.372	
BER	1.98E-02	4.24E-02	

Testers: DML, RMc
Date: 13-Dec-94

TOA and POF levels have been approximated for this demonstration.

Test	B-3	Ancillary Data Channel Demonstration Multipath BER Rayleigh		Units
Proponent Code:	C			
Urban Slow		TOA	POF	
	Attenuator	31.00	24.00	dB
	Co/No	30.85	23.85	dB
	Log(BER)	-2.908	-1.613	
	BER	1.24E-03	2.44E-02	
Urban Fast		TOA	POF	
	Attenuator	26.00	20.00	dB
	Co/No	25.85	19.85	dB
	Log(BER)	-2.060	-1.376	
	BER	8.71E-03	4.20E-02	
Rural Fast		TOA	No Added Noise	
	Attenuator	63.75		dB
	Co/No	63.60		dB
	Log(BER)	-2.186		
	BER	6.51E-03		
Terrain Obstructed		TOA	No Added Noise	
	Attenuator	63.75		dB
	Co/No	63.60		dB
	Log(BER)	-1.573		
	BER	2.67E-02		

Testers: DML, RMc
Date: 13-Dec-94

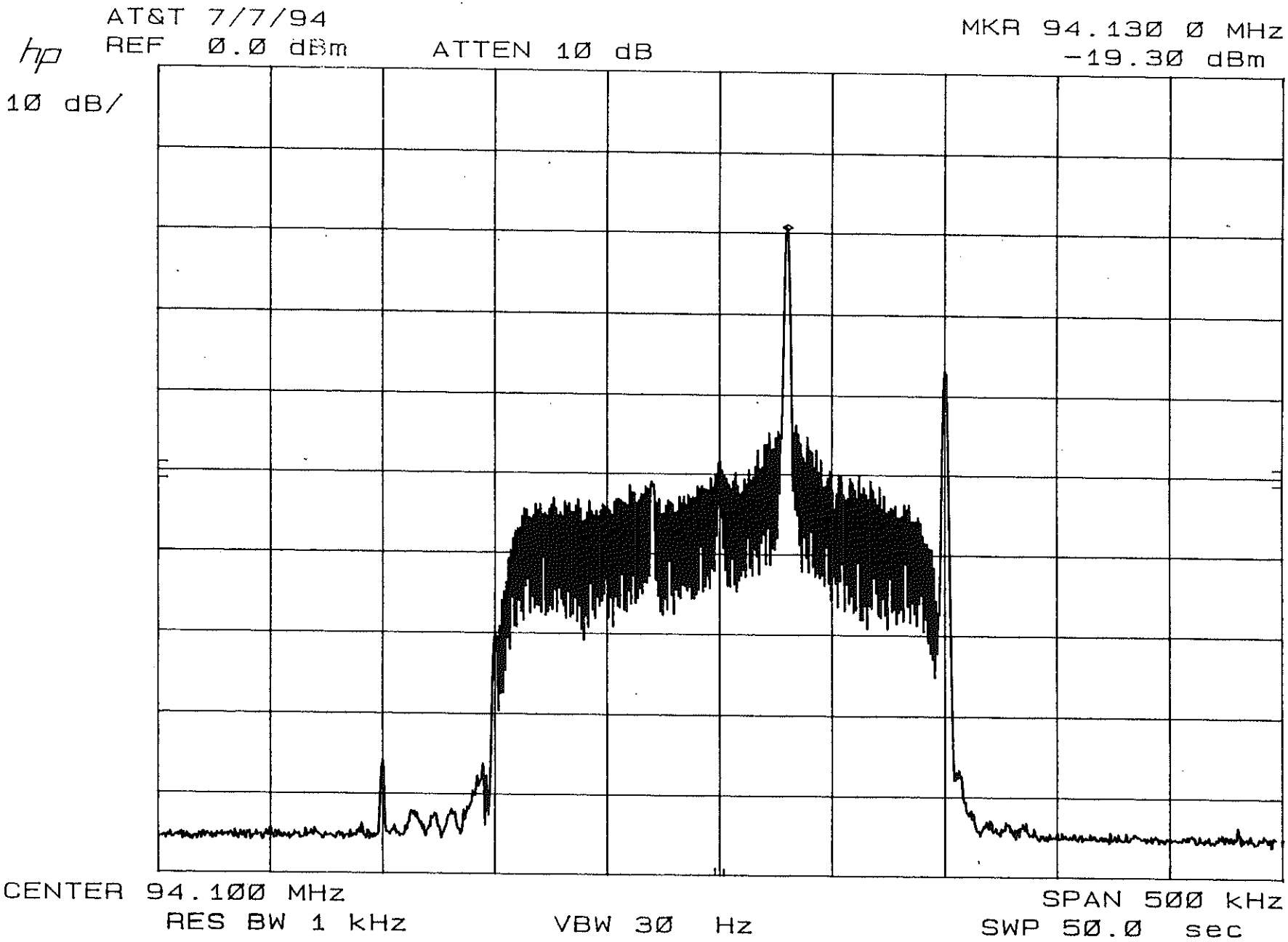
TOA and POF levels have been approximated for this demonstration.

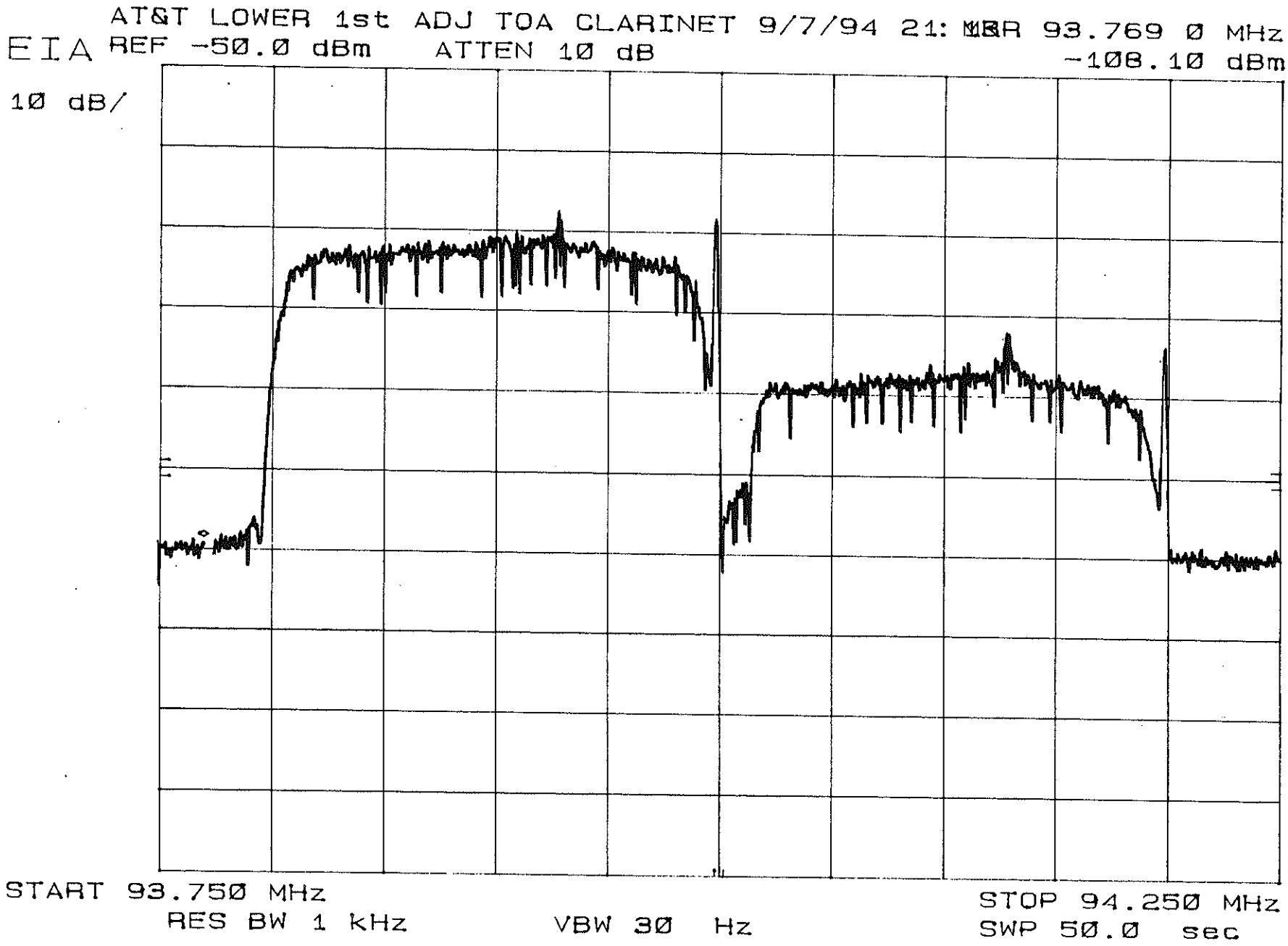
error with no added noise just fading.

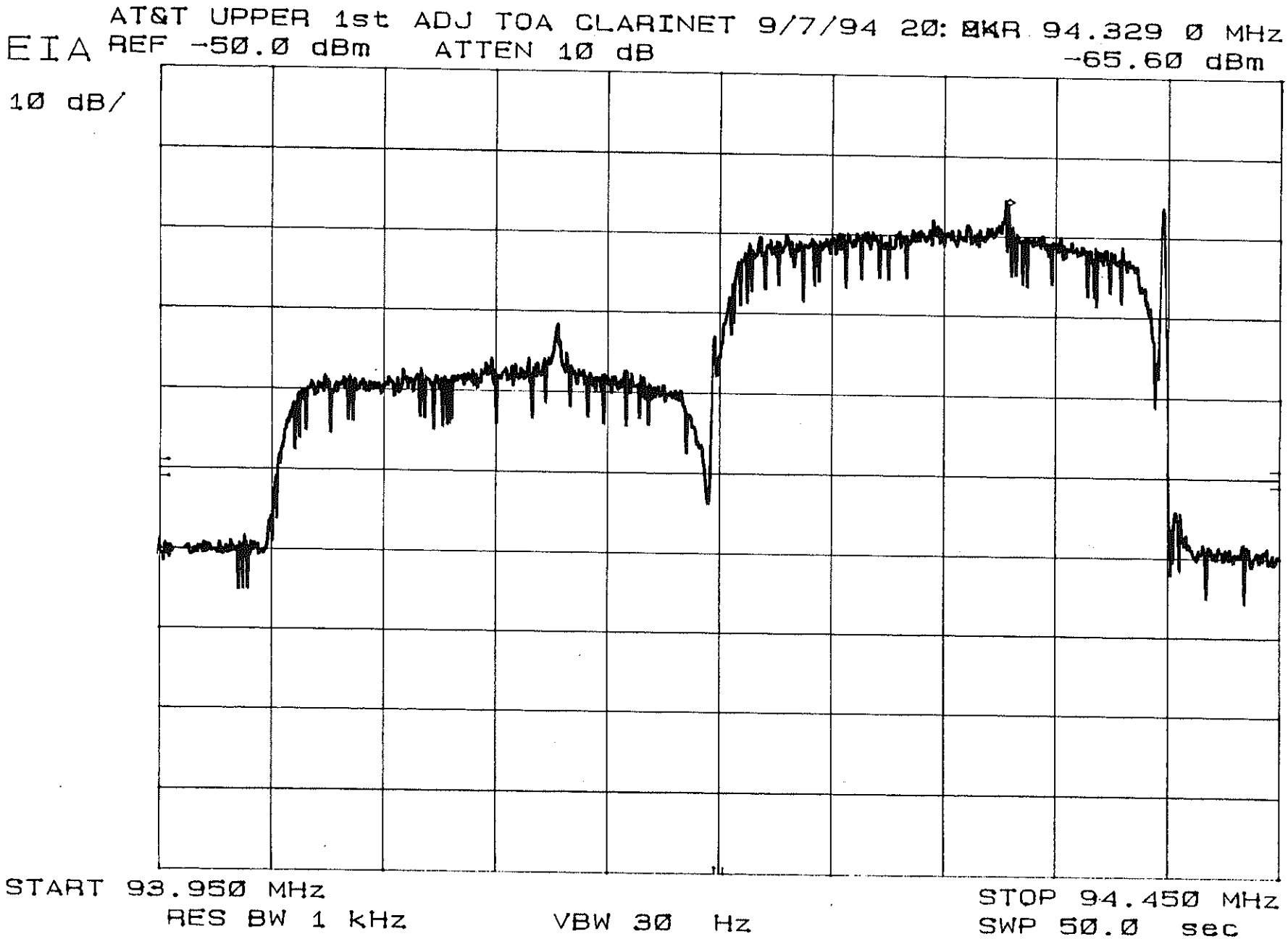
Test	B-3	Ancillary Data Channel Demonstration Multipath BER Special			Units
Proponent Code:	C				
Obstructed Path		No Added Noise		(San Fran 4)	
	Attenuator	63.75			dB
	Co/No	63.60			dB
	Log(BER)	-3.178			
	BER	6.63E-04			
Rural Highway		TOA	POF	(SLC)	
	Attenuator	12.75	11.75		dB
	Co/No	12.60	11.60		dB
	Log(BER)				
	BER				
Suburban		No Added Noise		(WSHW9)	
	Attenuator	63.75			dB
	Co/No	63.60			dB
	Log(BER)	-2.311			
	BER	4.89E-03			
Terrain Obstructed		No Added Noise 5 min	No Noise Added 10 min		
	Attenuator	63.75	63.75		dB
	Co/No	63.60	63.60		dB
	Log(BER)	-2.398	-1.930	(NOVA 4)	
	BER	4.00E-03	1.18E-02		

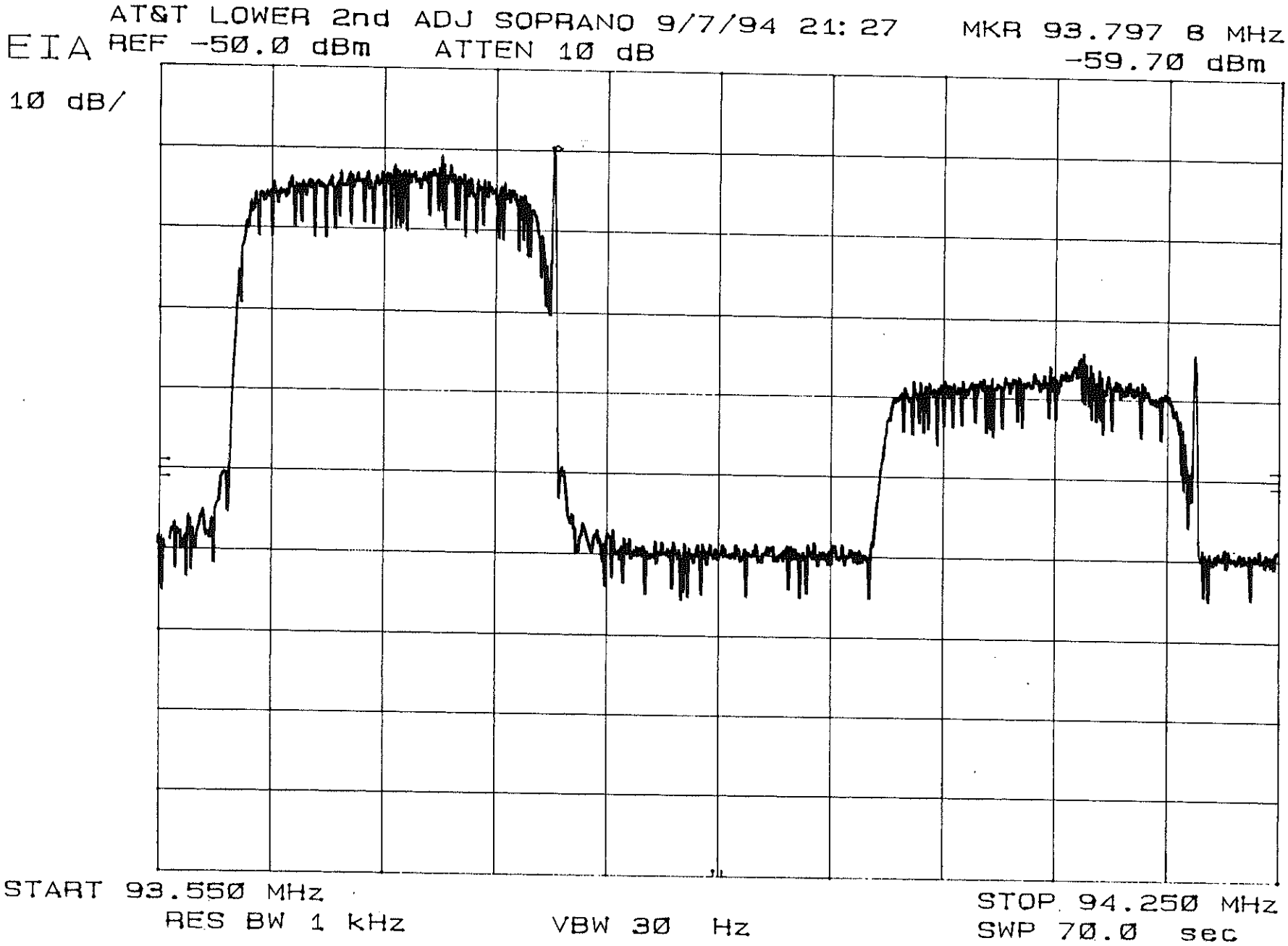
Testers: DML, RMc
Date: 13-Dec-94

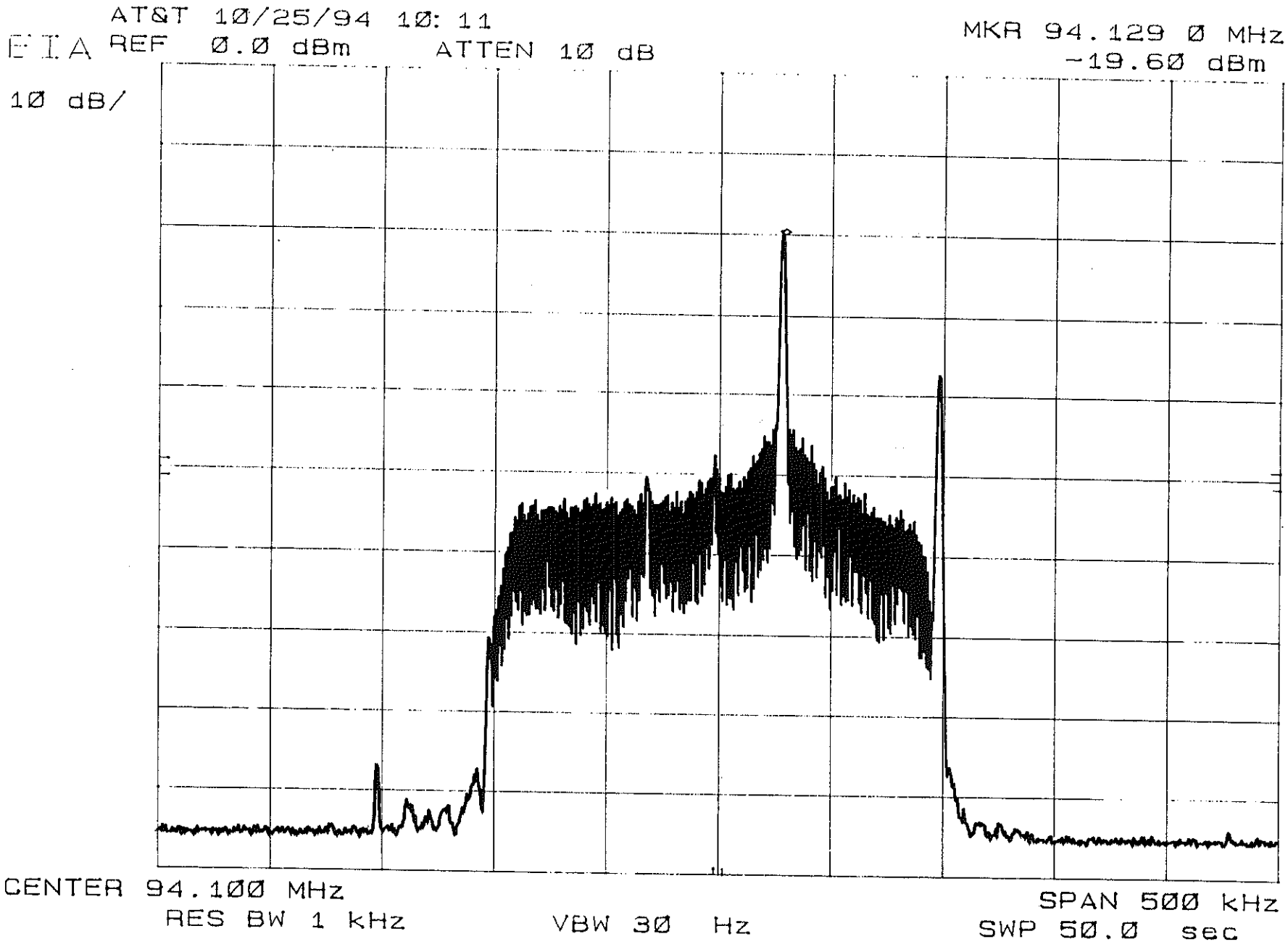
TOA and POF levels have been approximated for this demonstration.

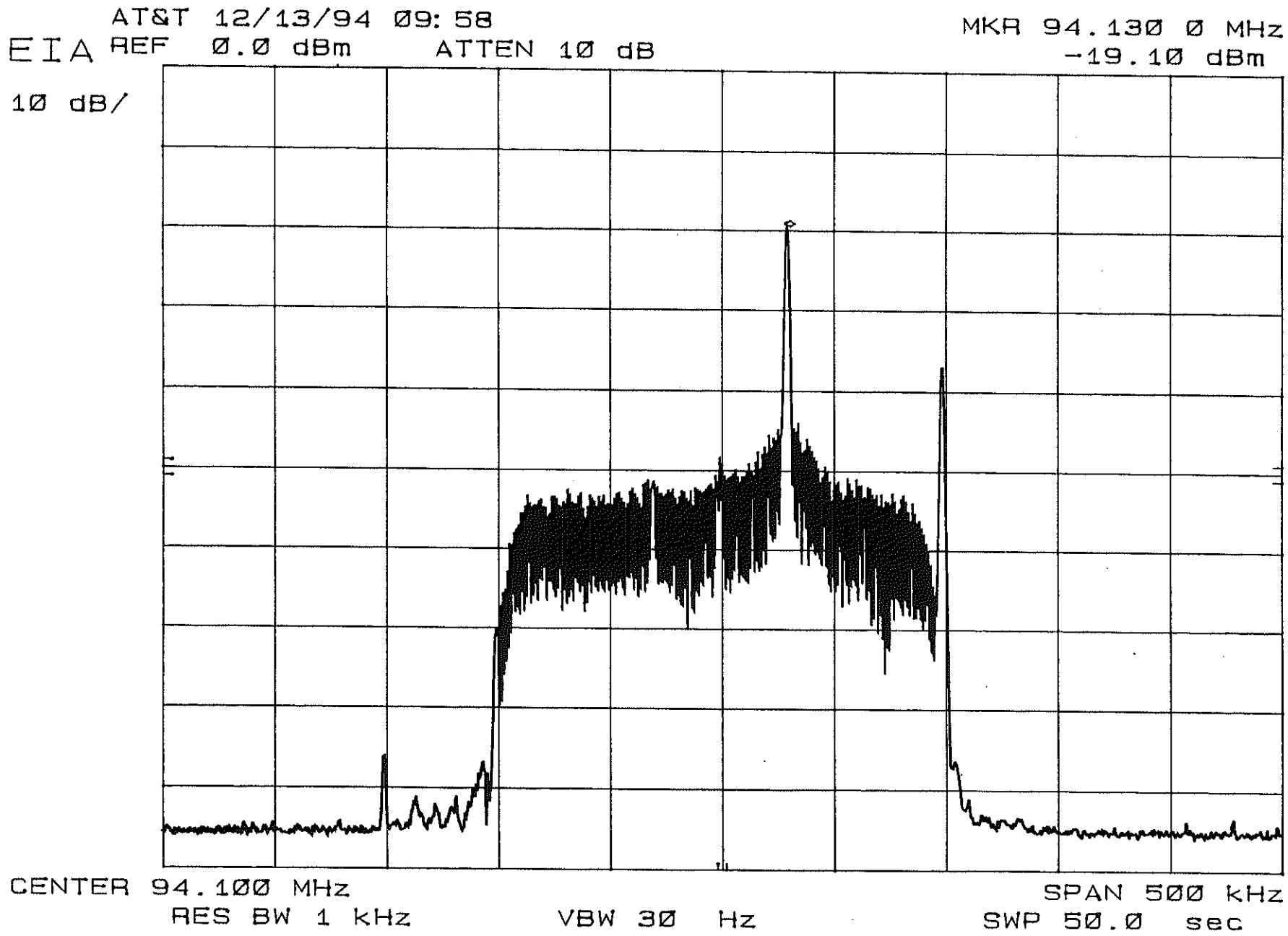

AT&T 7/7/94
REF 0.0 dBm
ATTEN 10 dB
MKR 94.130 0 MHz
-19.30 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec


AT&T LOWER 1st ADJ TOA CLARINET 9/7/94 21:
MKR 93.769 0 MHz
EIA REF -50.0 dBm ATTEN 10 dB
-108.10 dBm
10 dB/
START 93.750 MHz
RES BW 1 kHz
VBW 30 Hz
STOP 94.250 MHz
SWP 50.0 sec


AT&T UPPER 1st ADJ TOA CLARINET 9/7/94 20:
MKR 94.329 0 MHz
EIA REF -50.0 dBm ATTEN 10 dB
-65.60 dBm
10 dB/
START 93.950 MHz
RES BW 1 kHz
VBW 30 Hz
STOP 94.450 MHz
SWP 50.0 sec


AT&T LOWER 2nd ADJ SOPRANO 9/7/94 21:27
EIA REF -50.0 dBm
ATTEN 10 dB
MKR 93.797 8 MHz
-59.70 dBm
10 dB/
START 93.550 MHz
RES BW 1 kHz
VBW 30 Hz
STOP 94.250 MHz
SWP 70.0 sec


AT&T 10/25/94 10: 11
MKR 94.129 0 MHz
-19.60 dBm
E I A REF 0.0 dBm
ATTEN 10 dB
10 dB/
CENTER 94.100 MHz
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
SWP 50.0 sec


AT&T 12/13/94 09:58
EIA REF 0.0 dBm
ATTEN 10 dB
MKR 94.130 0 MHz
-19.10 dBm
10 dB/
CENTER 94.100 MHz
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
SWP 50.0 sec

APPENDIX AD

Digital Test Results AT&T/Amati IBOC LSB

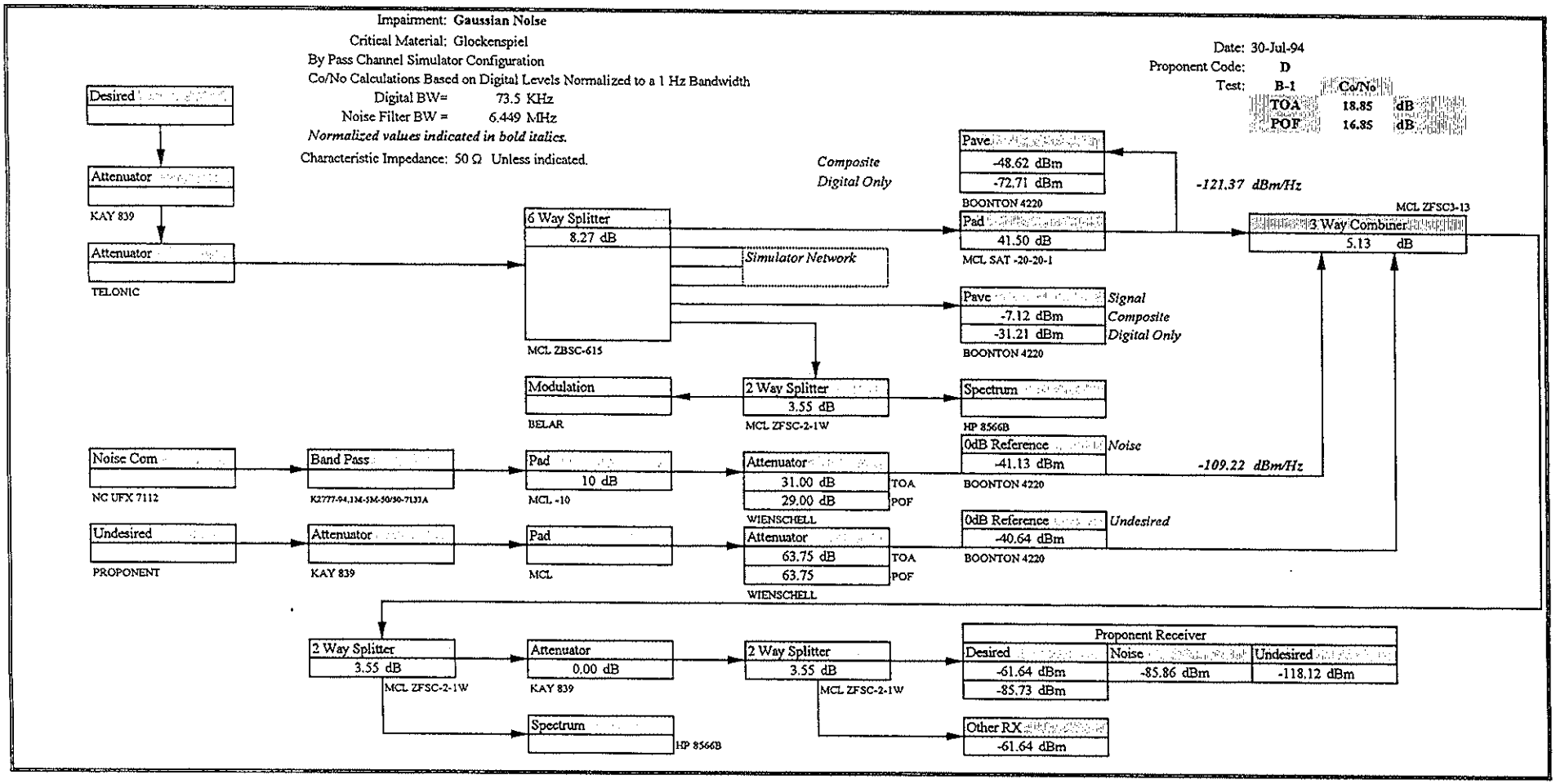
EIA Digital Audio Radio Test Laboratory

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

Test	B-1	Gaussian Noise		Units
Proponent Code:	D			
Glockenspiel		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.		
Soprano		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.		
Clarinet		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.		

Notes:		
	Recording Reference:	DAR30217.DAT
	Testers:	DML,ST
	Date:	30-Jul-94


Impairment: Gaussian Noise
Critical Material: Glockenspiel
By Pass Channel Simulator Configuration
Co/No Calculations Based on Digital Levels Normalized to a 1 Hz Bandwidth
Digital BW= 73.5 KHz
Noise Filter BW = 6.449 MHz
Normalized values indicated in bold italics.
Characteristic Impedance: 50 Ω Unless indicated.
Date: 30-Jul-94
Proponent Code: D
Test: B-1
Co/No
TOA 18.85 dB
POF 16.85 dB
Composite
Digital Only
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Pave
-48.62 dBm
-72.71 dBm
BOONTON 4220
-121.37 dBm/Hz
Pad
41.50 dB
MCL SAT -20-20-1
3 Way Combiner
5.13 dB
MCL ZFSC3-13
Pave
-7.12 dBm
-31.21 dBm
BOONTON 4220
Signal
Composite
Digital Only
Modulation
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
K2777-94,1M-5M-50/50-7137A
Pad
10 dB
MCL -10
Attenuator
31.00 dB TOA
29.00 dB POF
WIENSCHELL
0dB Reference
-41.13 dBm
BOONTON 4220
Noise
-109.22 dBm/Hz
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
63.75 dB TOA
63.75 POF
WIENSCHELL
0dB Reference
-40.64 dBm
BOONTON 4220
Undesired
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-61.64 dBm
-85.73 dBm
Noise
-85.86 dBm
Undesired
-118.12 dBm
Spectrum
HP 8566B
Other RX
-61.64 dBm

EIA Digital Audio Radio DAT Recording Log

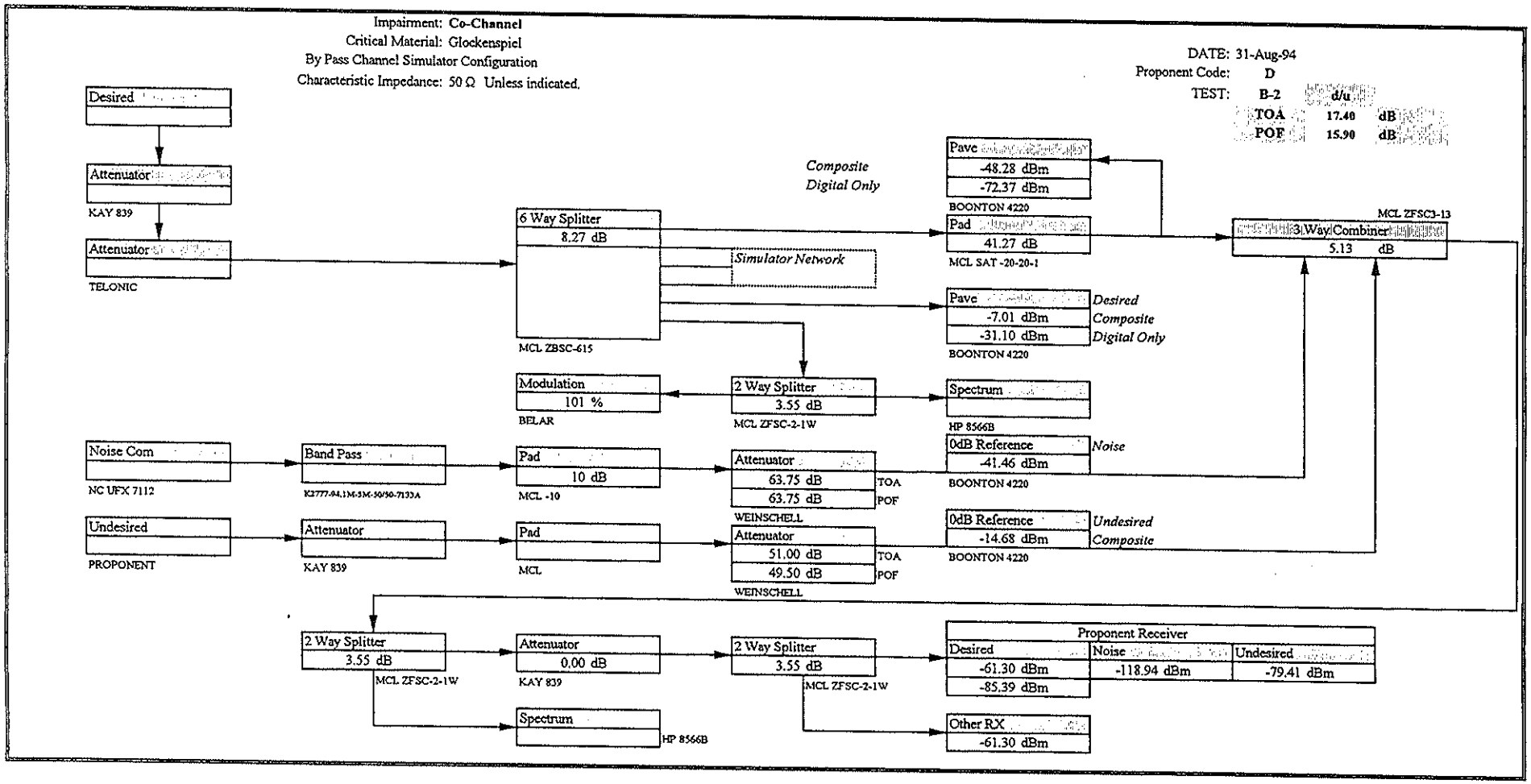
DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30217.DAT			1	2				Glockenspiel Clear Channel	63.75
30-Jul-94			3	4					32.50
			5	6					32.00
			7	8					31.50
			9	10				TOA lab	31.00
			11	12					30.50
			13	14					30.00
			15	16					29.50
			17	18				POF lab	29.00
			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	B-2	Co-Channel		Units
Proponent Code:	D			
Glockenspiel		TOA	POF	
	Attenuator	51.00	49.50	dB
	d/u	17.40	15.90	dB
	TOA	Small drop out.		
EO&C				
	POF	Many mutes or drop outs.		
Soprano		TOA	POF	
	Attenuator	50.75	49.25	dB
	d/u	17.15	15.65	dB
	TOA	Small drop out.		
EO&C				
	POF	Many mutes or drop outs.		
Clarinet		TOA	POF	
	Attenuator	51.00	49.50	dB
	d/u	17.40	15.90	dB
	TOA	Small drop out.		
EO&C				
	POF	Many mutes or drop outs.		

Notes:	Recording Reference:	DAR30237.DAT
	Testers:	DML,DS
	Date:	31-Aug-94


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
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Composite
Digital Only
Pave
-48.28 dBm
-72.37 dBm
BOONTON 4220
Pad
41.27 dB
MCL SAT-20-20-1
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pave
-7.01 dBm
-31.10 dBm
BOONTON 4220
Desired
Composite
Digital Only
Modulation
101 %
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
K2777-94.1M-5M-50/50-7133A
Pad
10 dB
MCL -10
Attenuator
63.75 dB
63.75 dB
TOA
POF
WEINSCHELL
0dB Reference
-41.46 dBm
BOONTON 4220
Noise
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
51.00 dB
49.50 dB
TOA
POF
WEINSCHELL
0dB Reference
-14.68 dBm
BOONTON 4220
Undesired
Composite
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-61.30 dBm
-85.39 dBm
Noise
-118.94 dBm
Undesired
-79.41 dBm
Spectrum
HP 8566B
Other RX
-61.30 dBm

EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
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	Urban Slow Rayleigh				
Proponent Code:	D					Units
Glockenspiel			TOA		POF	
	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					
Soprano			TOA		POF	
	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					
Clarinet			TOA		POF	
	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					

Notes:

Recording Reference: DAR30259.DAT
Testers: DML,TK
Test Date: 24-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30259.DAT			1	2	3			Glockenspiel Clear Channel	63.75
24-Aug-94			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

Test	B-3	Urban Fast Rayleigh					Units
Proponent Code:	D						
Glockenspiel			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
EO&C	TOA	Small to medium duration drop outs.					
	POF						
Soprano			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
EO&C	TOA	Small to medium duration drop outs with occasional pops or click.					
	POF						
Clarinet			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
EO&C	TOA	Pitch flutter less than 1 second in duration..					
	POF						

Notes:
Recording Reference: DAR30260.DAT
Testers: DML,TK
Test Date: 24-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30260.DAT			1	2	3			Glockenspiel Clear Channel	63.75
24-Aug-94			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			Clarinet Clear Channel	63.75
			20	21	22	23	24	Urban Fast no added noise	63.75

Proponent Code: D
Impairment: Urban Fast Rayleigh

Test	B-3	Rural Fast Rayleigh					Units
Proponent Code:	D						
Glockenspiel			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. Continuaous flutter like sound is coming from an under water source.					
EO&C							
	POF						
Soprano			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. Continuaous flutter like sound is coming from an under water source.					
EO&C							
	POF						
Clarinet			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 Start	Time Code Stop	Program IDs					Description	Attn
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

Test	B-3	Terrain Obstructed Rayleigh					Units
Proponent Code:	D						
Glockenspiel			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
	TOA	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.					
EO&C							
	POF	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.					
Soprano			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
	TOA	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.					
EO&C							
	POF						
Clarinet			TOA		POF		
	Attenuator		63.75		63.75		dB
	Co/No		52.59		52.59		dB
	TOA	Continuous flutter with drop outs approaching 1 second in duration. Level of impairment consistent with POF.					
EO&C							
	POF						

Notes:

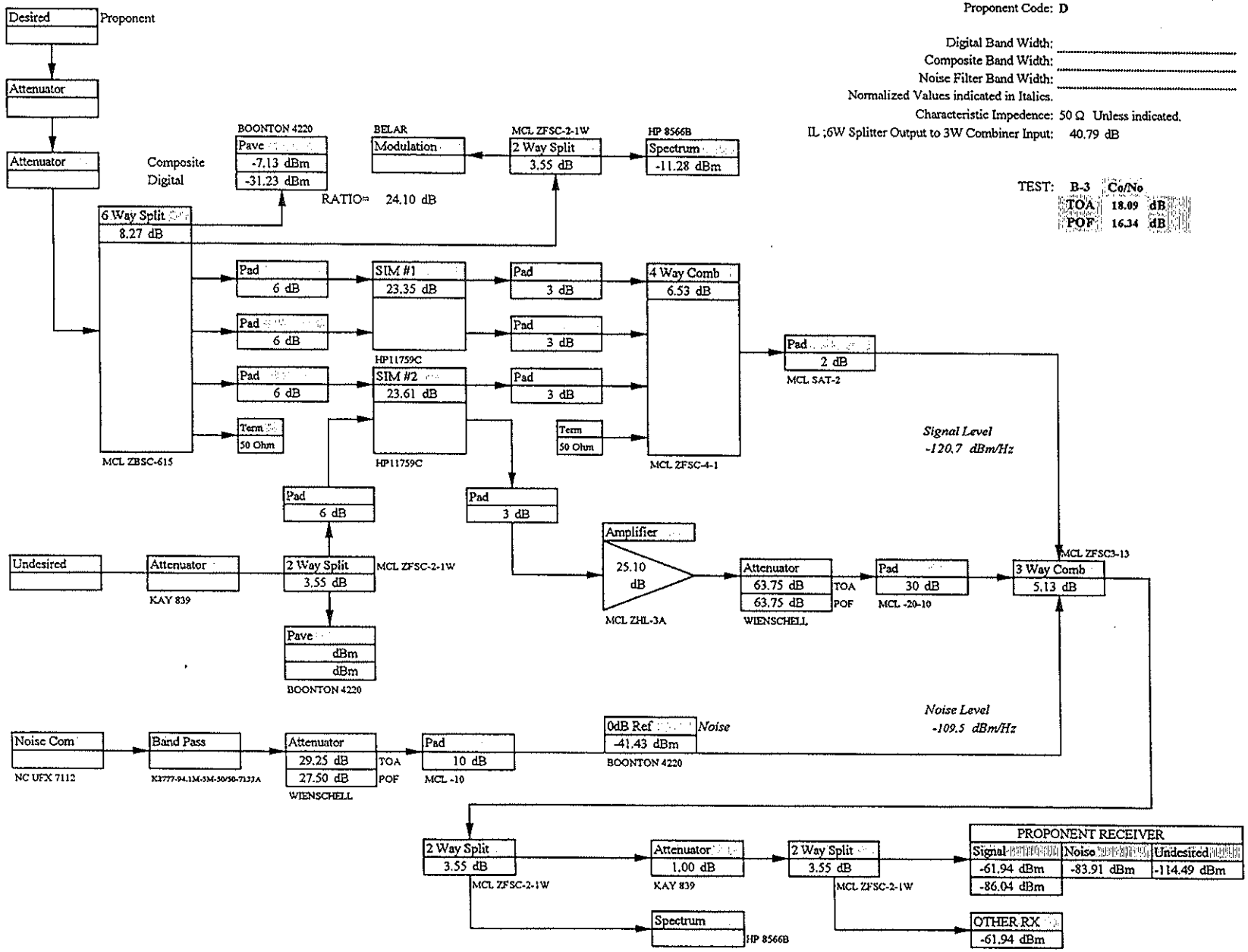
Recording Reference: DAR30262.DAT
Testers: DML,TK
Test Date: 24-Aug-95

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
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


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 Impedence: 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
Desired
Proponent
Attenuator
Attenuator
Composite
Digital
BOONTON 4220
Pave
-7.13 dBm
-31.23 dBm
RATIO= 24.10 dB
BELAR
Modulation
MCL ZFSC-2-1W
2 Way Split
3.55 dB
HP 8566B
Spectrum
-11.28 dBm
6 Way Split
8.27 dB
MCL ZBSC-615
Pad
6 dB
Pad
6 dB
Pad
6 dB
Term
50 Ohm
SIM #1
23.35 dB
HP11759C
SIM #2
23.61 dB
HP11759C
Pad
3 dB
Pad
3 dB
Pad
3 dB
Term
50 Ohm
4 Way Comb
6.53 dB
MCL ZFSC-4-1
Pad
2 dB
MCL SAT-2
Signal Level
-120.7 dBm/Hz
MCL ZFSC3-13
Pad
6 dB
Pad
3 dB
Undesired
Attenuator
KAY 839
2 Way Split
3.55 dB
MCL ZFSC-2-1W
Pave
dBm
dBm
BOONTON 4220
Amplifier
25.10
dB
MCL ZHL-3A
Attenuator
63.75 dB
63.75 dB
TOA
POF
WIENSCHELL
Pad
30 dB
MCL -20-10
3 Way Comb
5.13 dB
Noise Level
-109.5 dBm/Hz
Noise Com
NC UFX 7112
Band Pass
K3777-94.1M-5M-50/50-7133A
Attenuator
29.25 dB
27.50 dB
TOA
POF
WIENSCHELL
Pad
10 dB
MCL -10
0dB Ref
-41.43 dBm
Noise
BOONTON 4220
2 Way Split
3.55 dB
MCL ZFSC-2-1W
Attenuator
1.00 dB
KAY 839
2 Way Split
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
PROPONENT RECEIVER
Signal
Noise
Undesired
-61.94 dBm
-83.91 dBm
-114.49 dBm
-86.04 dBm
OTHER RX
-61.94 dBm

Test C-1	Impulse Response				
AT&T Amati LSB					
Program Material	Glockenspiel		5 Vp-p at attenuator input. 10.00 ns wide pulse		
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

Test C-2 CW Response
AT&T Amati LSB
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	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

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

Test	C-4	Weak Signal Sensitivity
AT&T Amati LSB		
Program Material		Glockenspiel

TOA (dBm)	POF (dBm)
-75 ≤ TOA < -74	-77 < POF ≤ -76

Test Date: 20-Oct-94
Testers: DML, RMc

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

		Desired		Noise	
Test Date:	20-Oct-94				
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

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

Additional Multipath Doppler Simulations

Code: D

Test C-6

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 Upper SB Mode Undesired	TOA	21.75	2.22	dB	Small drop outs or flutters.
	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

DAT File Number	Time Code Start	Time Code Stop	Start IDs					Description	Attn
DAR30403.DAT			1	2	3			DSB Co-Channel TOA	20.50
22-Sep-94									
			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: D
D-Series Recordings

Test	E-Series
AT&T Amati LSB	
Program Material:	Glockenspiel

E-Series tests were unnecessary due
to the effected performance of this system with multipath
impairment.

Test Date: 22-Sep-94		Desired	Undesired
Testers: DML, TK,ST, DS	Signal	-7.15 dBm	
	IL	40.79 dB	
	3WIN	-47.94 dBm	

Test	J-1	Re-Acquisition
AT&T Amati LSB		
Program Material		Mozart (Track 67 on SQAM disk)

	Re-Acquisition Time (s)		
Toff (s)	POF-2	POF-4	POF-6
30	3	2	2
	3	3	1
	1	2	1
	3	4	2
	3	3	1
Average	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 ± 0.5 seconds.

Test Date: 26-Sep-95

Testers: DML, TK, RMc

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

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	2	1	2
10	2	3	3
15	2	3	3
20	2	2	2
25	2	1	2
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 ± 1 second.

Test Date: 27-Sep-94
Testers: DML, TK, ST

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
Average	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 ± 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.

Test	J-2	**Re-Acquisition with Multipath**
AT&T Amati LSB		Suburban / Terrain Obstructed Rayleigh
Program Material		Mozart (Track 67 on SQAM disk)

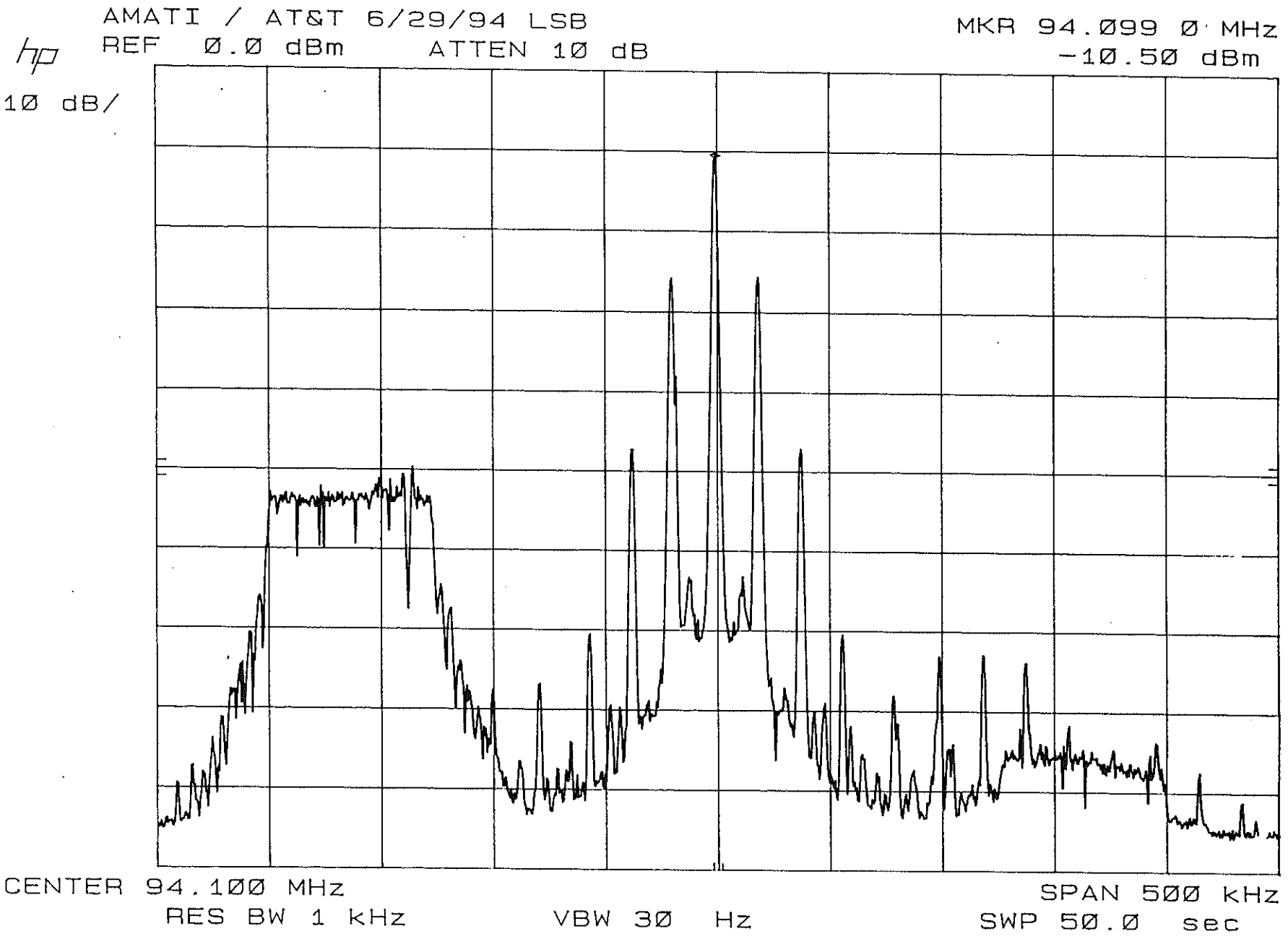
	Re-Acquisition Time (s)		
Tsim (s)	POF-2	POF-4	POF-6
5			
10			
15			
20			
25			
Average	0	0	0

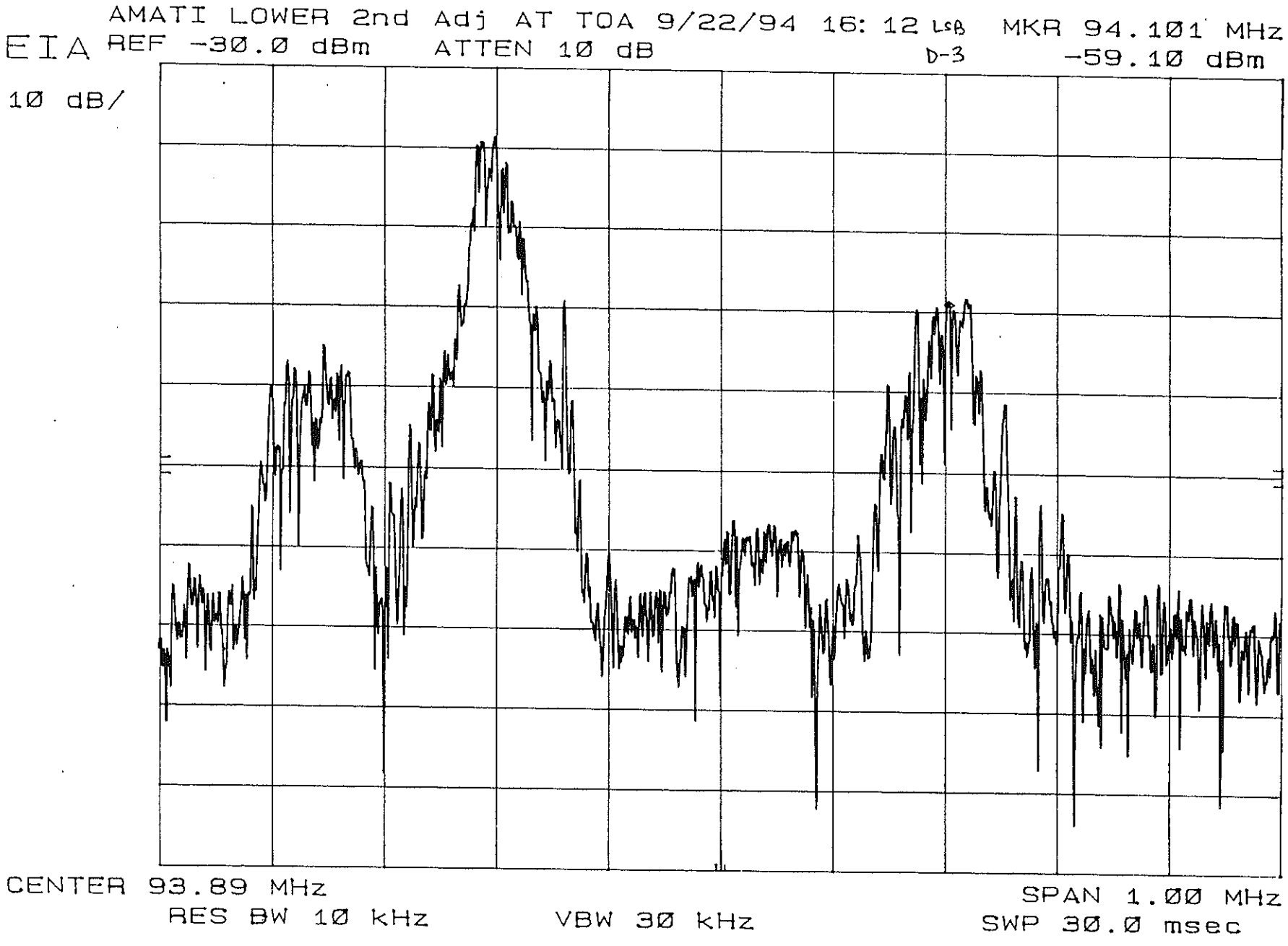
POF Attenuator Setting	:	63.75 dB
Desired Signal Level	:	-48.45 dBm
Noise 0 dB Reference	:	-41.42 dBm

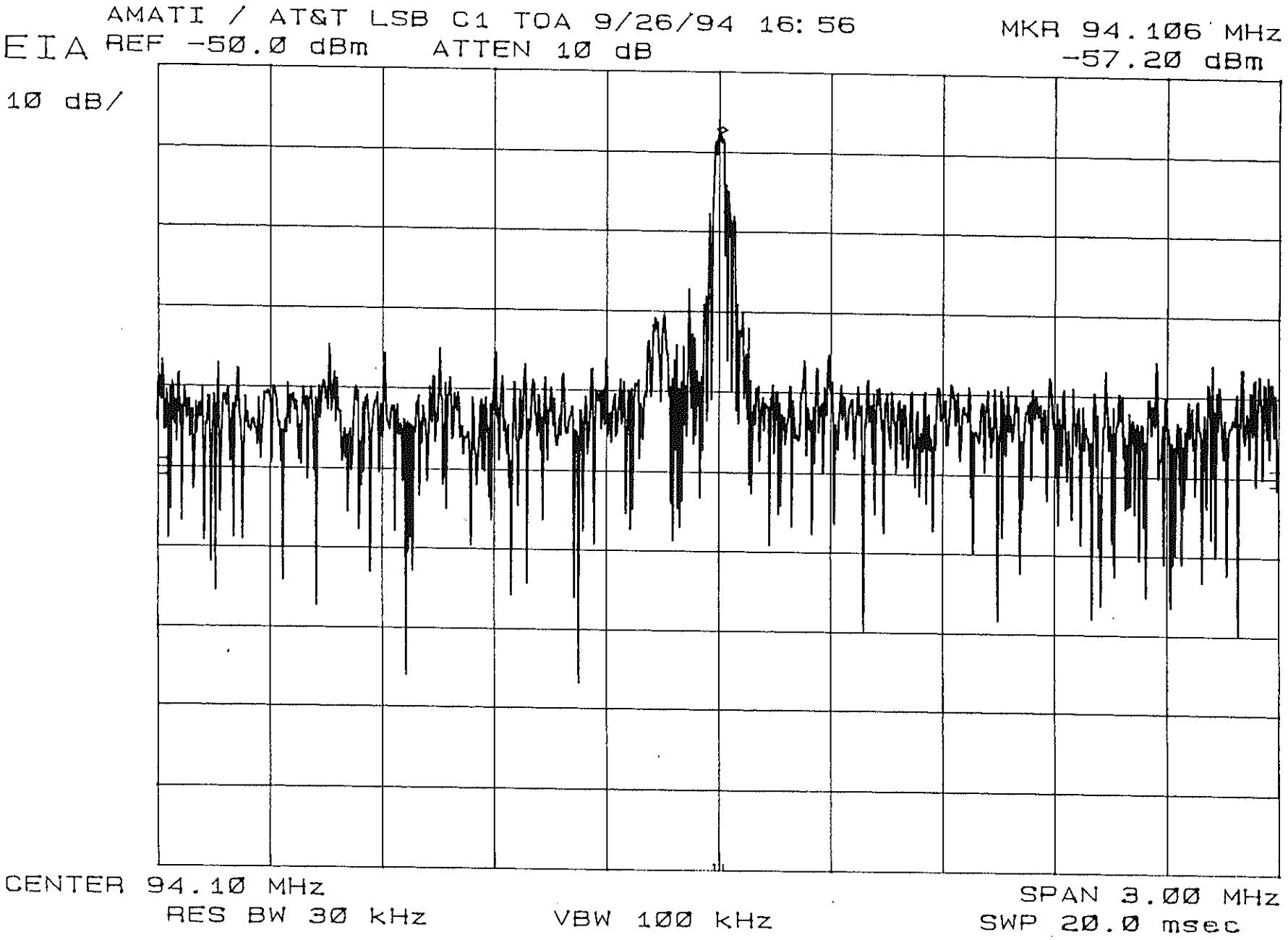
Additional Comments:

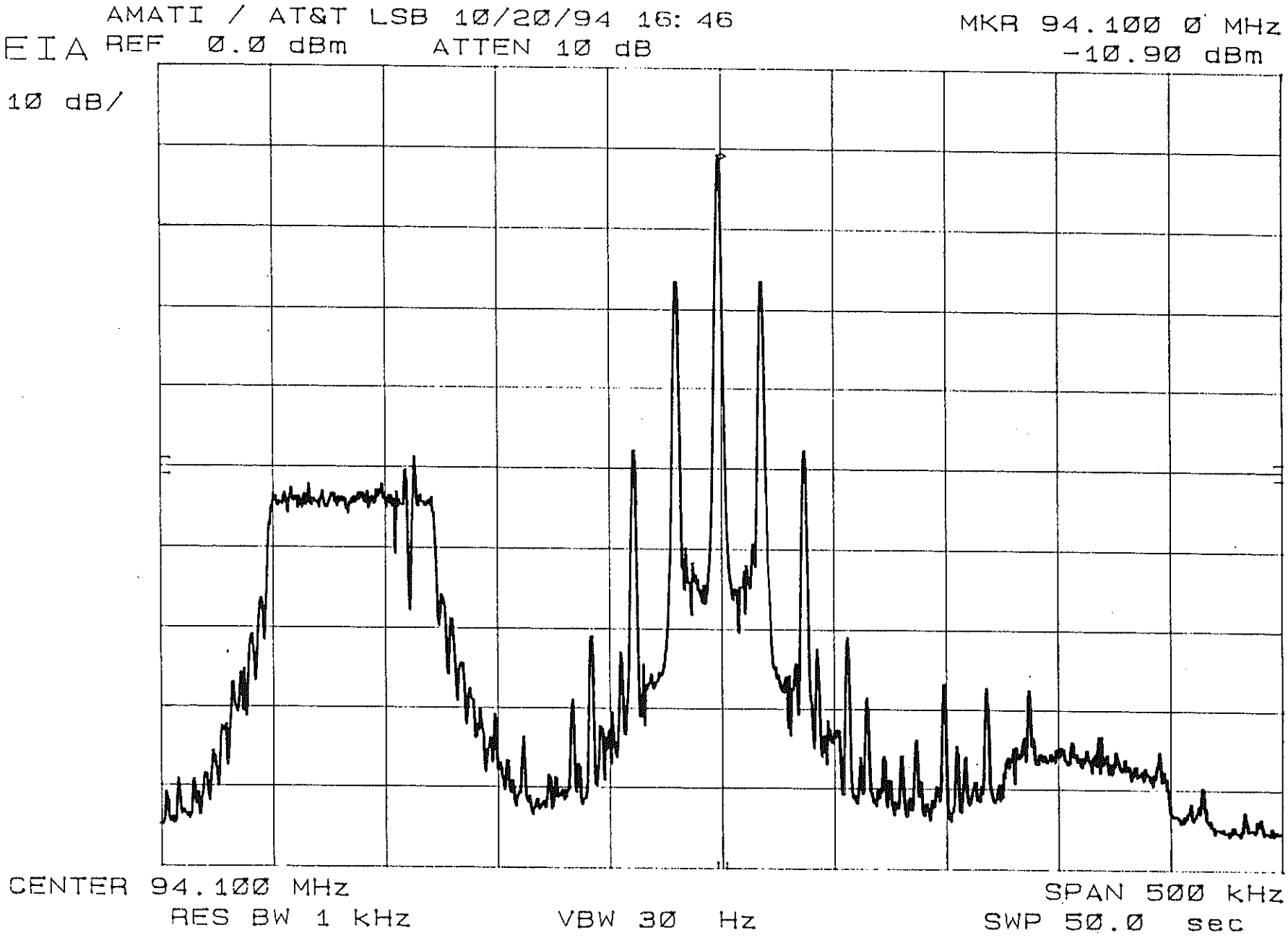
Audio is at POF or beyond with out added noise.
It was not feasible to take this data.

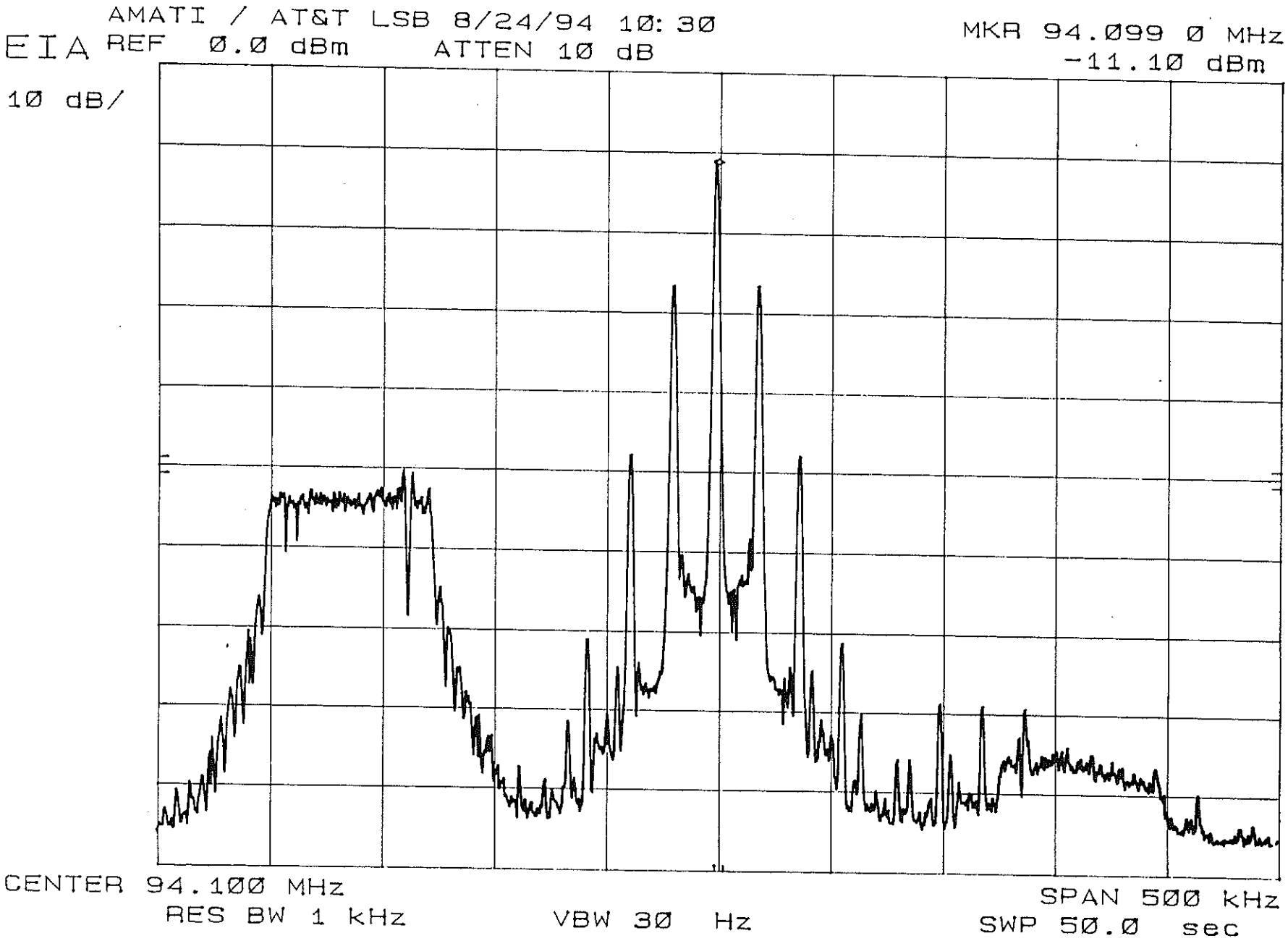
Test Date: 27-Sep-94
Testers: DML, TK, ST

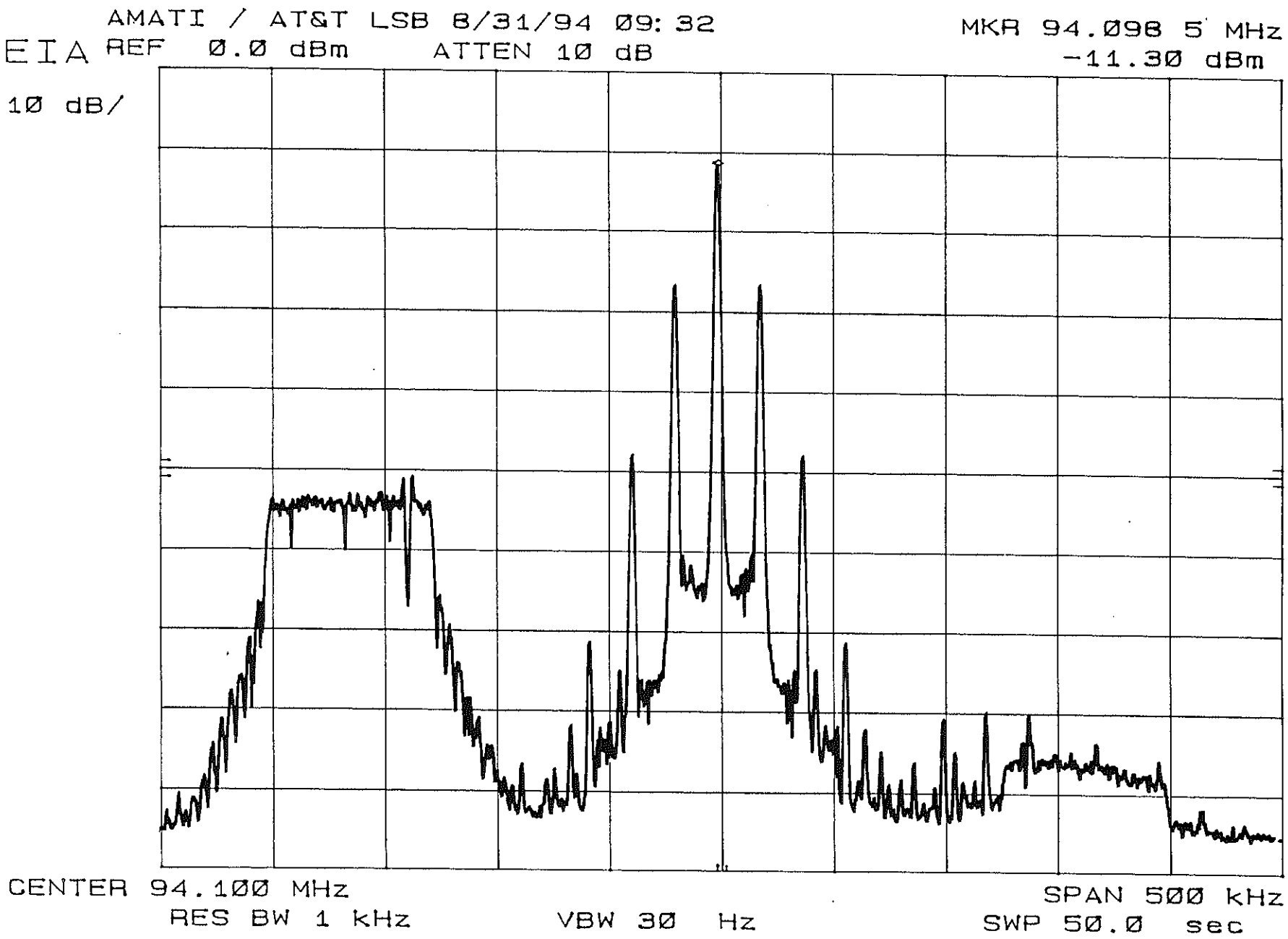

AMATI / AT&T 6/29/94 LSB
REF 0.0 dBm
ATTEN 10 dB
MKR 94.099 0 MHz
-10.50 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

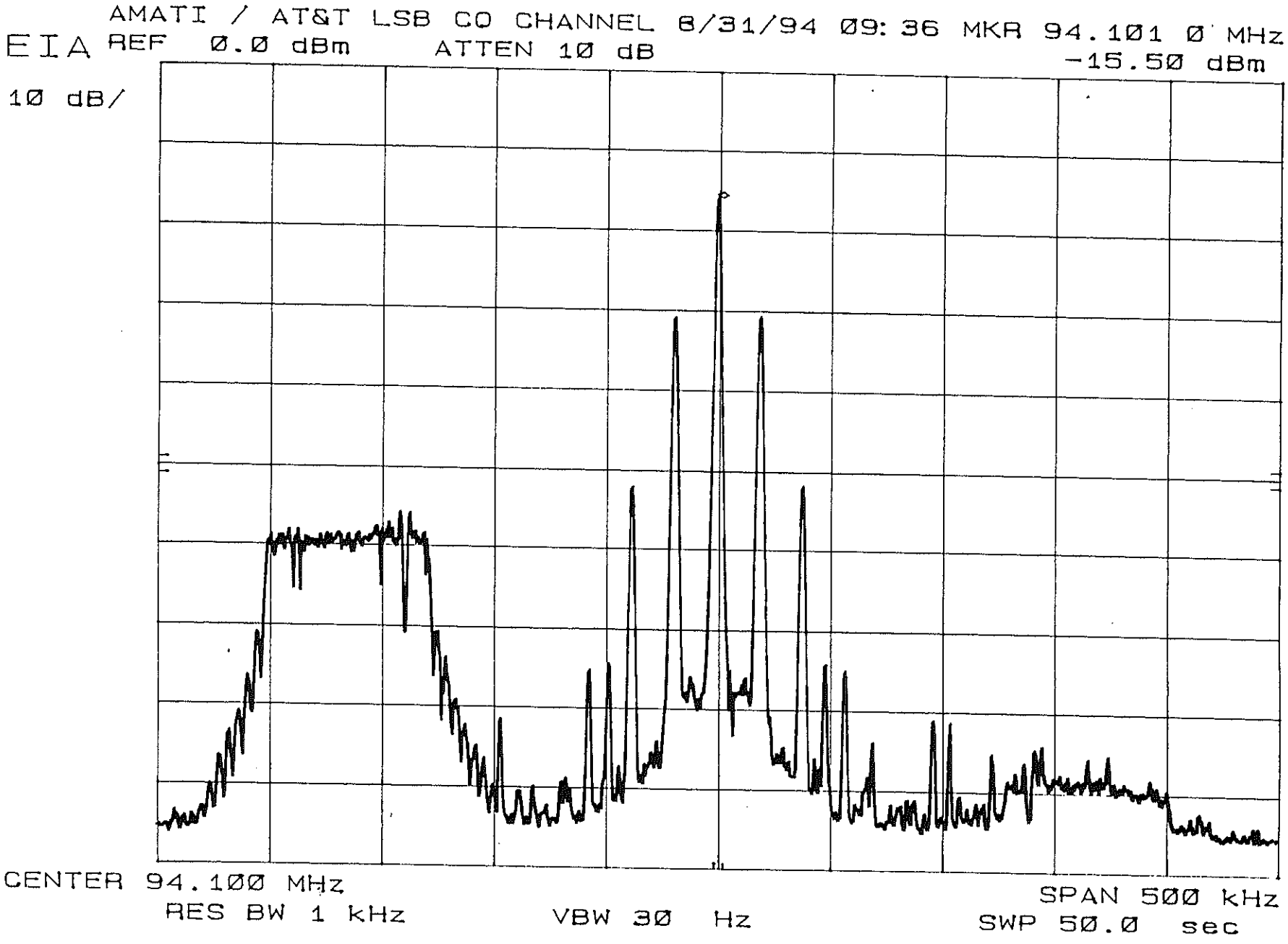

AMATI LOWER 2nd Adj AT TOA 9/22/94 16: 12 LSB
MKR 94.101 MHz
EIA REF -30.0 dBm
ATTEN 10 dB
D-3
-59.10 dBm
10 dB/
CENTER 93.89 MHz
SPAN 1.00 MHz
RES BW 10 kHz
VBW 30 kHz
SWP 30.0 msec

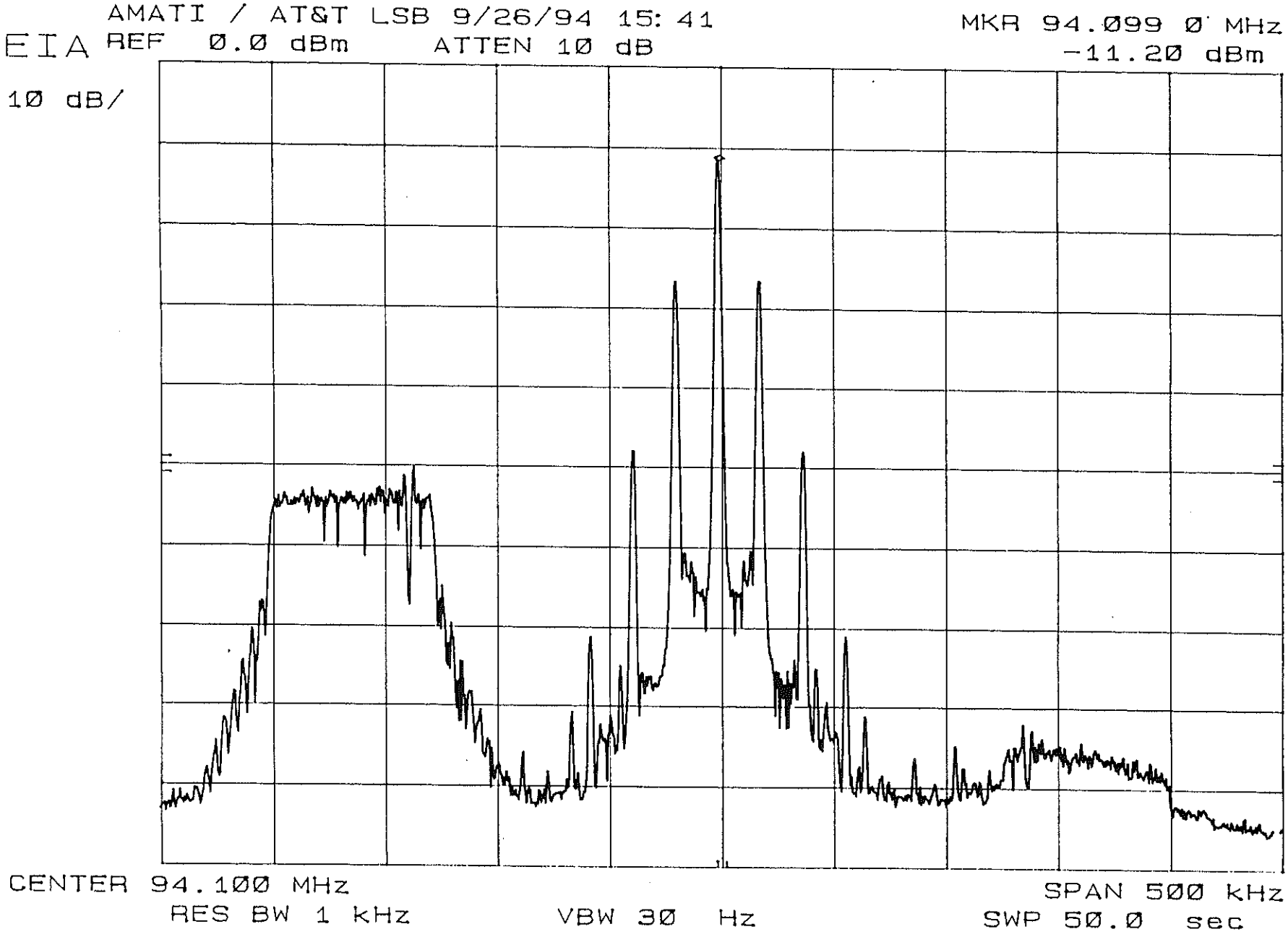

AMATI / AT&T LSB C1 TOA 9/26/94 16:56
EIA REF -50.0 dBm ATTEN 10 dB
MKR 94.106 MHz
-57.20 dBm
10 dB/
CENTER 94.10 MHz
RES BW 30 kHz
VBW 100 kHz
SPAN 3.00 MHz
SWP 20.0 msec


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 94.099 0 MHz
-11.10 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 8/31/94 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
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
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

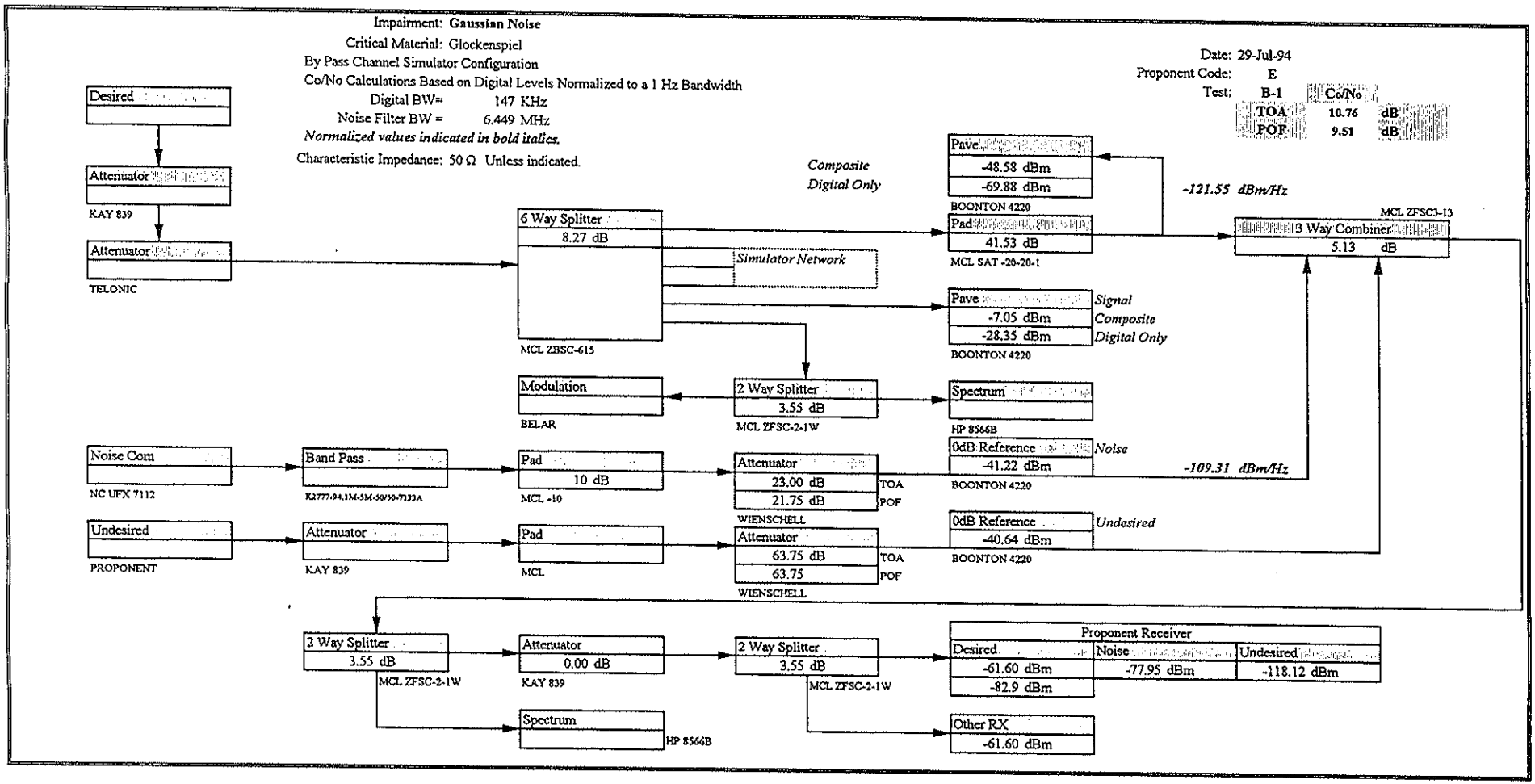
Digital Test Results AT&T/Amati IBOC DSB

EIA Digital Audio Radio Test Laboratory

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

Test	B-1	Gaussian Noise		Units
Proponent Code:	E			
Glockenspiel		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.		
Soprano		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.		
Clarinet		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.		

Notes:		
	Recording Reference:	DAR30216.DAT
	Testers:	DML,EB
	Date:	29-Jul-94


Impairment: Gaussian Noise
Critical Material: Glockenspiel
By Pass Channel Simulator Configuration
Co/No Calculations Based on Digital Levels Normalized to a 1 Hz Bandwidth
Digital BW= 147 KHz
Noise Filter BW = 6.449 MHz
Normalized values indicated in bold italics.
Characteristic Impedance: 50 Ω Unless indicated.
Date: 29-Jul-94
Proponent Code: E
Test: B-1
Co/No
TOA 10.76 dB
POF 9.51 dB
Composite
Digital Only
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Pave
-48.58 dBm
-69.88 dBm
BOONTON 4220
-121.55 dBm/Hz
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pad
41.53 dB
MCL SAT -20-20-1
Pave
-7.05 dBm
-28.35 dBm
BOONTON 4220
Signal
Composite
Digital Only
Modulation
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
Pad
10 dB
MCL -10
Attenuator
23.00 dB
21.75 dB
TOA
POF
WIENSCHELL
0dB Reference
-41.22 dBm
BOONTON 4220
Noise
-109.31 dBm/Hz
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
63.75 dB
63.75
TOA
POF
WIENSCHELL
0dB Reference
-40.64 dBm
BOONTON 4220
Undesired
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-61.60 dBm
-82.9 dBm
Noise
-77.95 dBm
Undesired
-118.12 dBm
Spectrum
HP 8566B
Other RX
-61.60 dBm

EIA Digital Audio Radio DAT Recording Log

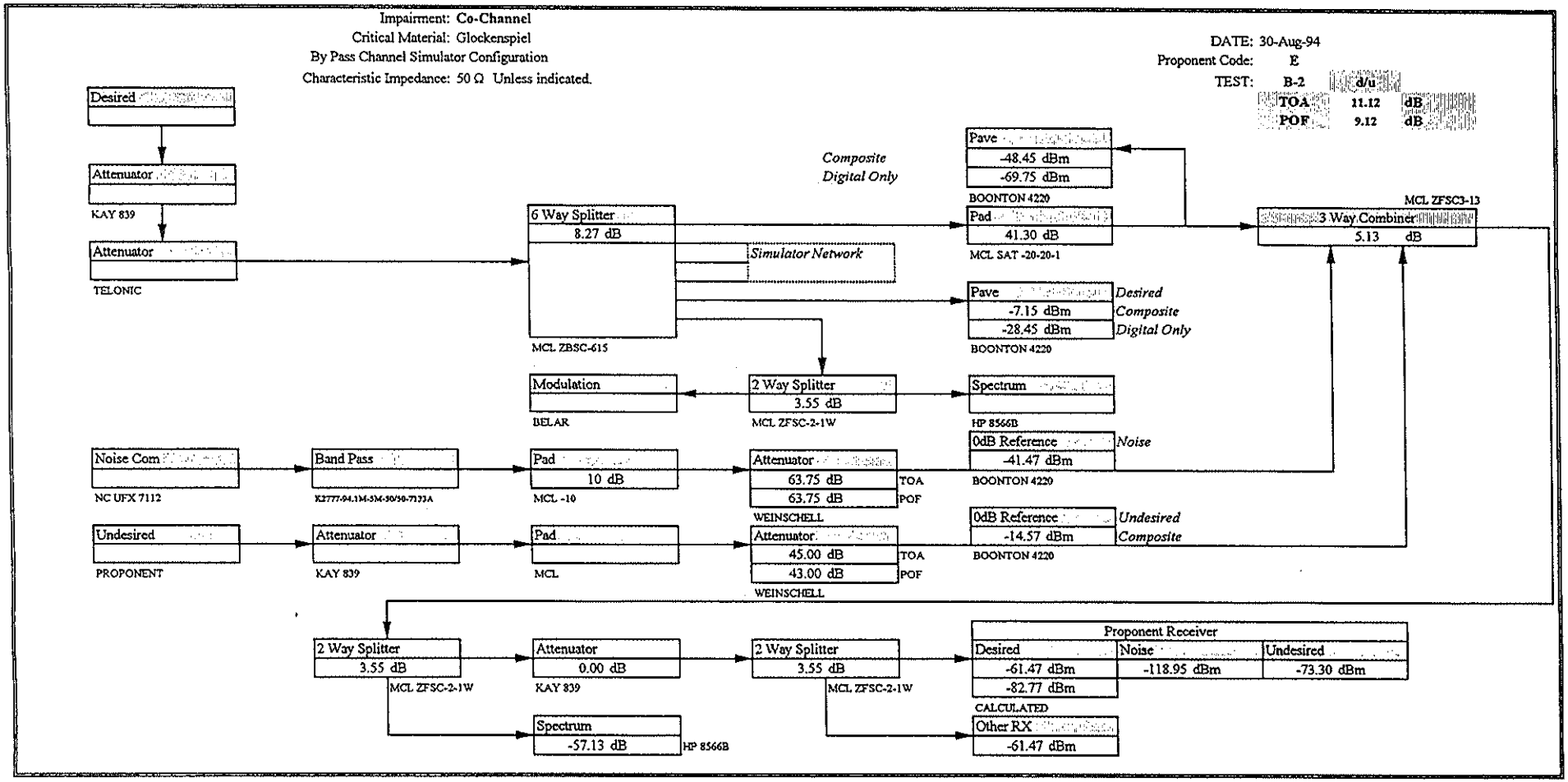
DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30216.DAT			1	2				Glockenspiel Clear Channel	63.75
29-Jul-94			3	4					24.50
			5	6					24.00
			7	8					23.50
			9	10	11			TOA lab	23.00
			12	13					22.50
			14	15					22.25
			16	17					22.00
			18	19				POF lab	21.75
			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	B-2	Co-Channel		Units
Proponent Code:	E			
Glockenspiel		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.		
Soprano		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.		
Clarinet		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


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
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Composite
Digital Only
Pave
-48.45 dBm
-69.75 dBm
BOONTON 4220
Pad
41.30 dB
MCL SAT -20-20-1
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pave
-7.15 dBm
-28.45 dBm
BOONTON 4220
Desired
Composite
Digital Only
Modulation
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
Pad
10 dB
MCL -10
Attenuator
63.75 dB
63.75 dB
WEINSCHELL
TOA
POF
0dB Reference
-41.47 dBm
BOONTON 4220
Noise
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
45.00 dB
43.00 dB
WEINSCHELL
TOA
POF
0dB Reference
-14.57 dBm
BOONTON 4220
Undesired
Composite
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-61.47 dBm
-82.77 dBm
CALCULATED
Noise
-118.95 dBm
Undesired
-73.30 dBm
Spectrum
-57.13 dB
HP 8566B
Other RX
-61.47 dBm

EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30236.DAT			1	2				Glockenspiel Clear Channel	63.75
30-Aug-94			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

Test	B-3	Urban Slow Rayleigh				
Proponent Code:	E	Impairment Level				Units
Glockenspiel			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	Two drop outs and a small flutter.				
EO&C						
	POF					
Soprano			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	A small drop out (< 1second) and a small click.				
EO&C						
	POF					
Clarinet			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	Small drop out and and attenuated attack.				
EO&C						
	POF					

Notes:
Recording Reference: DAR30251.DAT DAR30252.DAT
Testers: DML,TK, ST DAR30253.DAT
Test Date: 3-Aug-94

atten at max means that POF observed with no noise, due to multipaths alone without noise.

EIA Digital Audio Radio Test Laboratory

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

Proponent Code: E

Impairment: Urban Slow Rayleigh

EIA Digital Audio Radio Test Laboratory

Test	B-3	Urban Fast Rayleigh				
Proponent Code:	E	Impairment Level				Units
Glockenspiel		TOA		POF		
	Attenuator	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.				
Soprano		TOA		POF		
	Attenuator	36.25		30.50		dB
	Co/No	24.87		19.12		dB
	TOA	Small flutter or warble.				
EO&C						
	POF	Excessive muting.				
Clarinet		TOA		POF		
	Attenuator	36.50		30.50		dB
	Co/No	25.12		19.12		dB
	TOA	Small pops or clicks.				
EO&C						
	POF	Excessive muting.				

Notes:

Recording Reference: DAR30254.DAT
Testers: DML,TK,ST
Test Date: 25-Aug-94

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
DAR30254.DAT			1	2	3			Glockenspiel Clear Channel	63.75
25-Aug-94			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 Start	Time Code Stop	Program IDs					Description	Attn
DAR30293.DAT			1	2	3			Glockenspiel Clear Channel	63.75
2-Dec-94			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	Rural Fast Rayleigh				
Proponent Code:	E	Impairment Level				Units
Glockenspiel			TOA		POF	
	Attenuator		43.00		36.50	dB
	Co/No		31.62		25.12	dB
	TOA	Small drop out.				
EO&C						
	POF	Excessive muting.				
Soprano			TOA		POF	
	Attenuator		42.00		36.00	dB
	Co/No		30.62		24.62	dB
	TOA	Small noise burst.				
EO&C						
	POF	Excessive muting.				
Clarinet			TOA		POF	
	Attenuator		42.00		36.00	dB
	Co/No		30.62		24.62	dB
	TOA	Small drop out.				
EO&C						
	POF	Excesssive 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 Start	Time Code Stop	Program IDs					Description	Attn
DAR30263.DAT			1	2	3			Glockenspiel Clear Channel	63.75
25-Aug-95			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

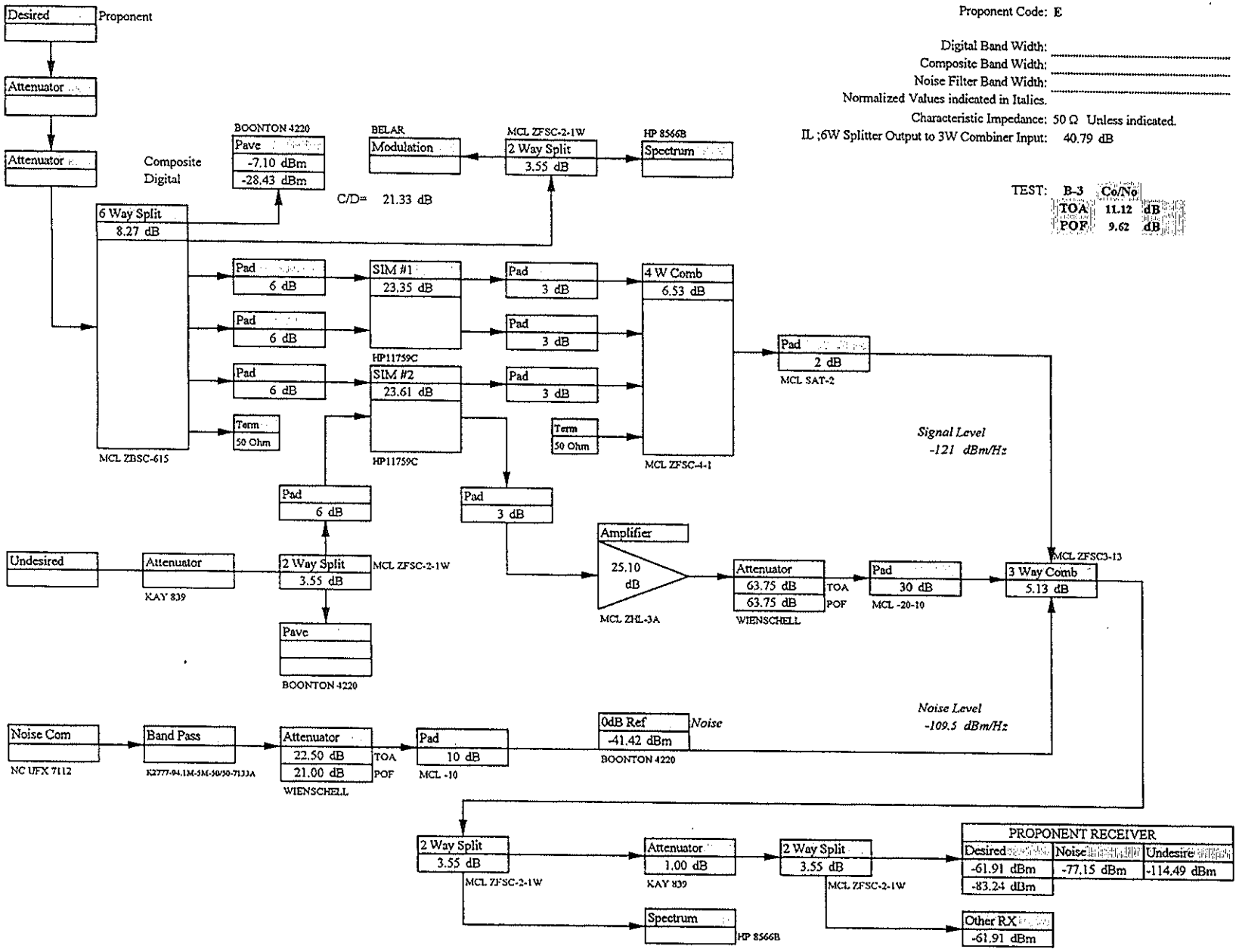
Test	B-3	Terrain Obstructed Rayleigh				
Proponent Code:	E	Impairment Level				Units
Glockenspiel			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	Small drop out and small flutter.				
EO&C						
	POF					
Soprano			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	Small flutter.				
EO&C						
	POF					
Clarinet			TOA		POF	
	Attenuator		63.75		63.75	dB
	Co/No		52.37		52.37	dB
	TOA	Small drop out / flutter.				
EO&C						
	POF					

Notes:
Recording Reference: DAR30251.DAT
Testers: DML,ST
Test Date: 3-Aug-95

EIA Digital Audio Radio Test Laboratory

DAT File Number	Time Code Start	Time Code Stop	Program IDs					Description	Attn
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



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

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

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

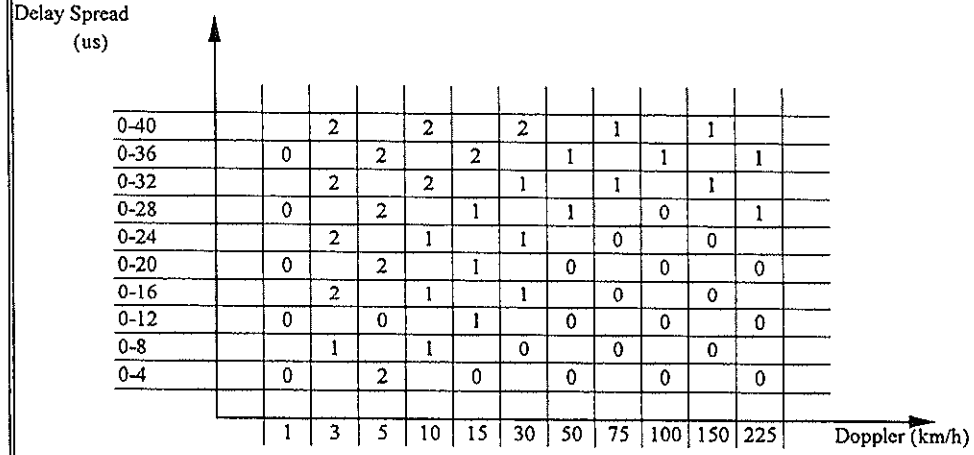
Test C-3 Airplane Flutter AT&T Amati DSB Rev A. Program Material Glockenspiel		
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 µs Delay 8.00 dB TOA 4.10 dB	Small drop out or flutter.
#2	200 Km/h Doppler 13.7 µs Delay 6.00 dB TOA 1.80 dB	Small drop out or flutter.
#3	100 Km/h Doppler 6.8 µs Delay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

Test	C-4	Weak Signal Sensitivity
AT&T Amati DSB Rev A.		
Program Material	Glockenspiel	

TOA (dBm)	POF (dBm)
-82 ≤ TOA < -81	-83 < POF ≤ -82

Test Date: 20-Oct-94
Testers: DML,RMc

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



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

Test Date: 19-Oct-94
Testers: DML, RMc

Test	C-5	**Delay Spread / Doppler**
Code:	E	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		2		2		2		2	
0-76	2		2		2		2		2		2
0-72		2		2		2		2		2	
0-68	2		2		2		2		2		2
0-64		2		2		2		2		2	
0-60	2		2		2		2		2		2
0-56		2		2		2		2		2	
0-52	2		2		2		2		2		2
0-48		2		2		2		2		1	
0-44	0		2		2		2		1		1

Doppler (km/h)

EO&C 30 sec minimum listening time.

0 = Unimpaired

1 = Small Impairment

2 ≥ POF Level of Impairment

Small Impairments consisted of occational, brief (short duration) dropouts.

Test Date: 20-Oct-94

Testers: DML, RMc

Test	C-5	**Delay Spread / Doppler**
Code:	E	Typical Urban
Program Material		Mozart (Track 67 on SQAM disk)

Delay Spread (us)

	1	3	5	10	15	30	50	75	100	150	225
0-10	0	1	1	1	1	1	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

Doppler (km/h)

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

Test Date: 19-Oct-94
Testers: DML, RMc

Test	C-5	**Delay Spread / Doppler**
Code:	E	Hilly Terrain
Program Material		Mozart (Track 67 on SQAM disk)

Delay Spread (us)

	1	3	5	10	15	30	50	75	100	150	225
0-50	0		2		2		1		0		0
0-48		1		1		1		1		0	
0-44	0		2		2		1		0		0
0-40		2		2		0		0		0	
0-36	2		2		1		0		0		0
0-32		2		2		1		0		0	
0-28	0		1		1		0		0		0
0-24		2		2		1		1		0	
0-20	0		1		1		0		0		0

Doppler (km/h)

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

Test Date: 19-Oct-94
Testers: DML, RMc

Test Code:	C-5	Delay Spread / Doppler
	E	Rural Area
Program Material		Mozart (Track 67 on SQAM disk)

Delay Spread (us)

	1	3	5	10	15	30	50	75	100	150	225
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

Doppler (km/h)

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

Test Date: 19-Oct-94
Testers: DML, RMc

Test C-6 **Additional Multipath Doppler Simulations**					
AT&T Amati DSB Rev A.					
Program Material: Glockenspiel					
Scenario	Level	Attn	Co/No	Units	EO&C
#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.

		Desired		Noise	
Test Date: 20-Oct-94					
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

DAT File Number	Time Code Start	Time Code Stop	Start IDs					Description	Attn
DAR30550.DAT		DSB	1	2				Urban Slow	63.75
20-Oct-94			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

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	Time Code Stop	Start IDs					Description	Attn
DAR30403.DAT			1	2	3			DSB Co-Channel TOA	20.50
22-Sep-94									
			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

Test	E-1	Co-Channel with Multipath (Rayleigh)			
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	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

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	E-2	Lower 1st Adjacent with Multipath (Rayleigh)			
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

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 E-3 Lower 2nd Adjacent with Multipath (Rayleigh)
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	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

Test Date: 22-Sep-94
Testers: DML, TK, ST, DS

	Desired	Undesired
Signal	-7.15 dBm	
IL	40.79 dB	
3WIN	-47.94 dBm	-38.20 dBm

Test E-1 Co-Channel with Multipath (Doppler) 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	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		Desired	Undesired
Testers: DML, RM, ST	Signal	-7.06 dBm	
	IL	40.79 dB	
	3WIN	-47.85 dBm	-51.40 dBm

Test	E-2	Lower 1st Adjacent with Multipath (Doppler)			
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

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	E-3	Lower 2nd Adjacent with Multipath (Doppler)			
AT&T Amati DSB Rev A.					
Program Material:	Glockenspiel				
Scenario					
	Level	Attn	D/U	Units	EO&C
#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		Desired	Undesired
Testers: DML, RM, ST	Signal	-7.06 dBm	
	IL	40.79 dB	
	3WIN	-47.85 dBm	-25.00 dBm

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

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 ± 1 second.

Test Date: 27-Sep-94

Testers: DML, TK, ST

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)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	2	1	4
10	5	1	4
15	2	1	1
20	3	1	4
25	6	3	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 ± 1 second.

Test Date: 27-Sep-94
Testers: DML, TK, ST

Test	J-2	Re-Acquisition with Multipath
AT&T Amati DSB R		Rural Fast Rayleigh
Program Material		Mozart (Track 67 on SQAM disk)

	Re-Acquisition Time (s)		
Tsim (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
Average	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 ± 1 second.

Test Date: 27-Sep-94

Testers: DML, TK, ST

Test	J-2	Re-Acquisition with Multipath
AT&T Amati DSB R		Terrain Obstructed Rayleigh
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (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
Average	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 ± 1 second.

Test Date: 27-Sep-94
Testers: DML, TK, ST

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	2
10	1
15	3
20	2
25	1
Average	1.8

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 ± 1 second.

Test Date: 21-Oct-94
Testers: DML, ST

Test	J-2	**Re-Acquisition with Multipath**
AT&T Amati DSB R		Urban Fast Doppler
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	5	2	3
10	3	3	3
15	4	4	2
20	2	2	2
25	2	3	2
Average	3.2	2.8	2.4

POF Attenuator Setting : 24.75 dB
Desired Signal Level : -47.85 dBm
Noise 0 dB Reference : -41.40 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 21-Oct-94
Testers: DML, ST

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 ± 1 second.

Test Date: 21-Oct-94
Testers: DML, ST

Test	J-2	Re-Acquisition with Multipath
AT&T Amati DSB R		Terrain Obstructed Doppler
Program Material		Mozart (Track 67 on SQAM disk)

Tsim (s)	Re-Acquisition Time (s) POF-2	POF-4	POF-6
5	1	1	1
10	1	1	1
15	1	1	1
20	1	1	1
25	1	1	1
Average	1	1	1

POF Attenuator Setting	:	27.00 dB
Desired Signal Level	:	-47.85 dBm
Noise 0 dB Reference	:	-41.40 dBm

Additional Comments:

Re-Acquisition time is the value listed ± 1 second.

Test Date: 21-Oct-94

Testers: DML, ST

Test	B-1	Ancillary Data Channel Demonstration Gaussian Noise BER					
Proponent Code:	E						Units
		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	B-2	Ancillary Data Channel Demonstration Co-Channel BER					
							Units
		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
Date: 9-Dec-94

TOA and POF levels have been approximated for this demonstration.

Test	B-3	Ancillary Data Channel Demonstration Multipath BER Doppler		Units
Proponent Code:	E			
Urban Slow		No Added Noise		
	Attenuator	63.75		dB
	Co/No	52.50		dB
	Log(BER)	-2.019		
	BER	9.58E-03		
Urban Fast		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	
Rural Fast		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	
Terrain Obstructed		No Added Noise		
	Attenuator	63.75		dB
	Co/No	52.50		dB
	Log(BER)	-1.553		
	BER	2.80E-02		

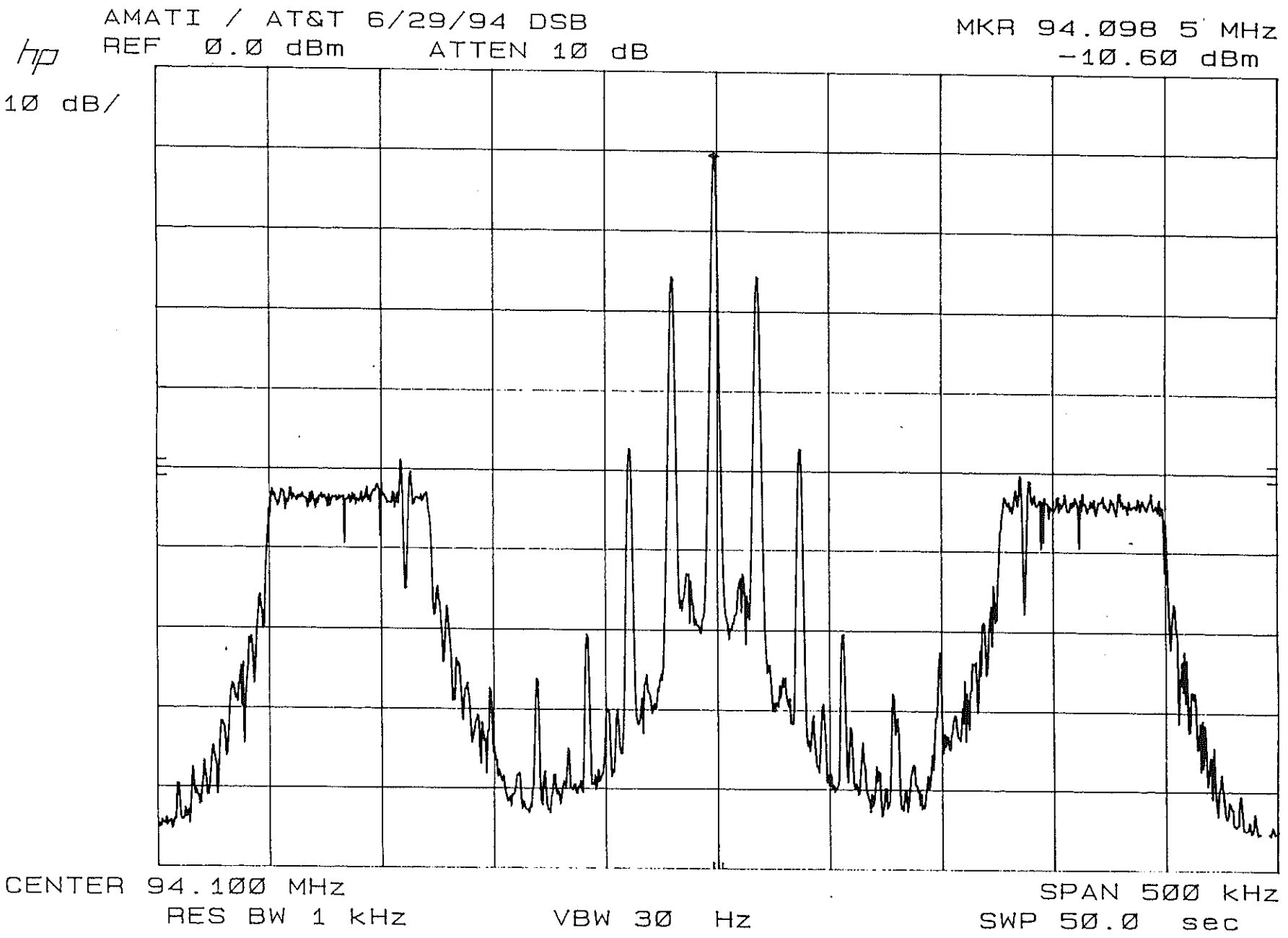
Testers: DML, RMc
Date: 9-Dec-94

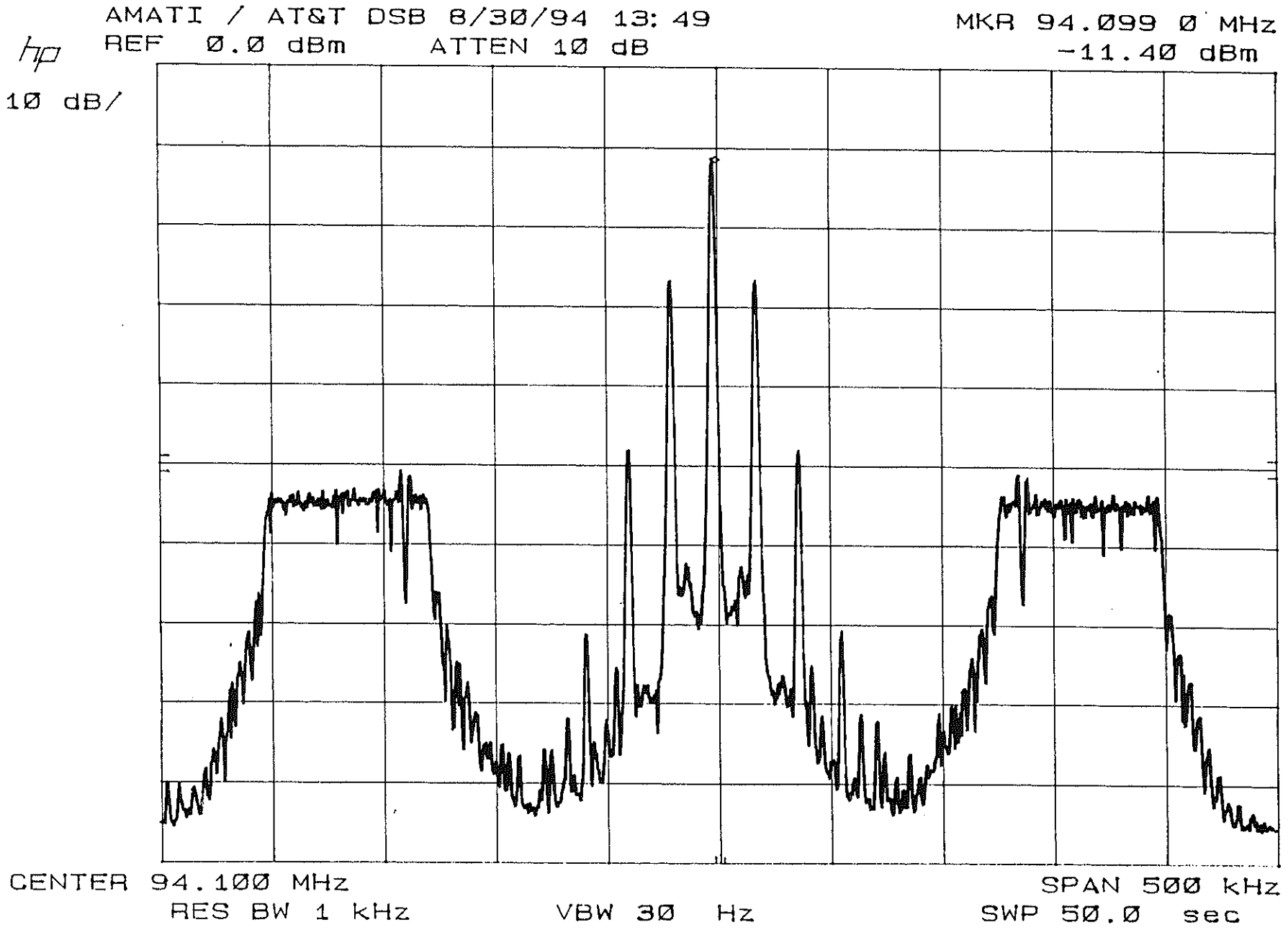
TOA and POF levels have been approximated for this demonstration.

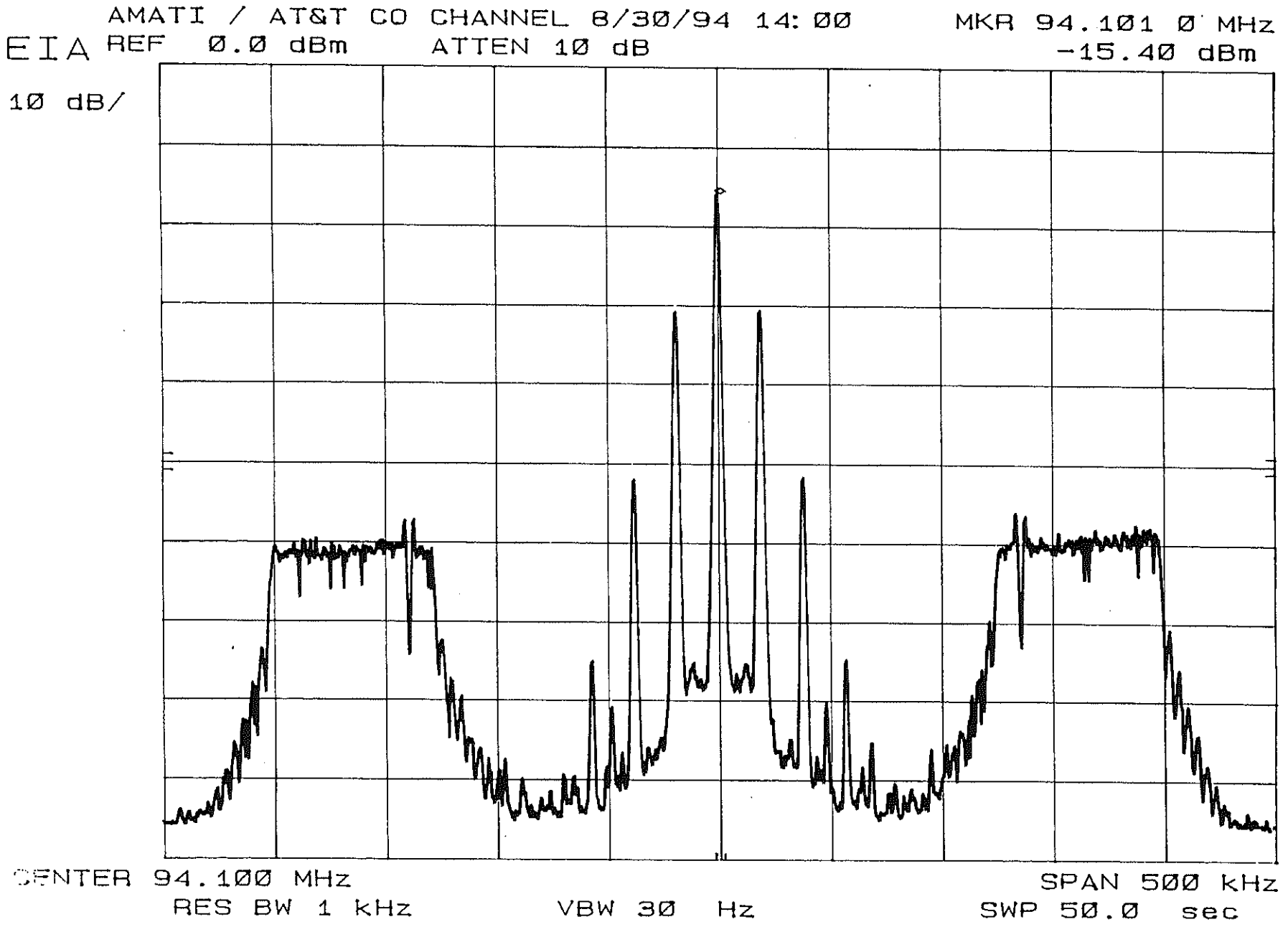
Test	B-3	Ancillary Data Channel Demonstration Multipath BER Special			Units
Proponent Code:	E				
Obstructed Path		TOA	POF	(San Fran 4)	
	Attenuator	32.25	27.75		dB
	Co/No	32.10	27.60		dB
	Log(BER)	-2.346	-1.710		
	BER	4.50E-03	1.95E-02		
Rural Highway		TOA	POF	(SLC)	
	Attenuator	24.00	22.50		dB
	Co/No	23.85	22.35		dB
	Log(BER)	-3.084	-1.947		
	BER	8.24E-04	1.13E-02		
Suburban		TOA	POF	(WSHW9)	
	Attenuator	34.75	29.75		dB
	Co/No	34.60	29.60		dB
	Log(BER)	$-\infty$	-1.999		
	BER	0.00E+00	1.00E-02		
Terrain Obstructed		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
Date: 9-Dec-94

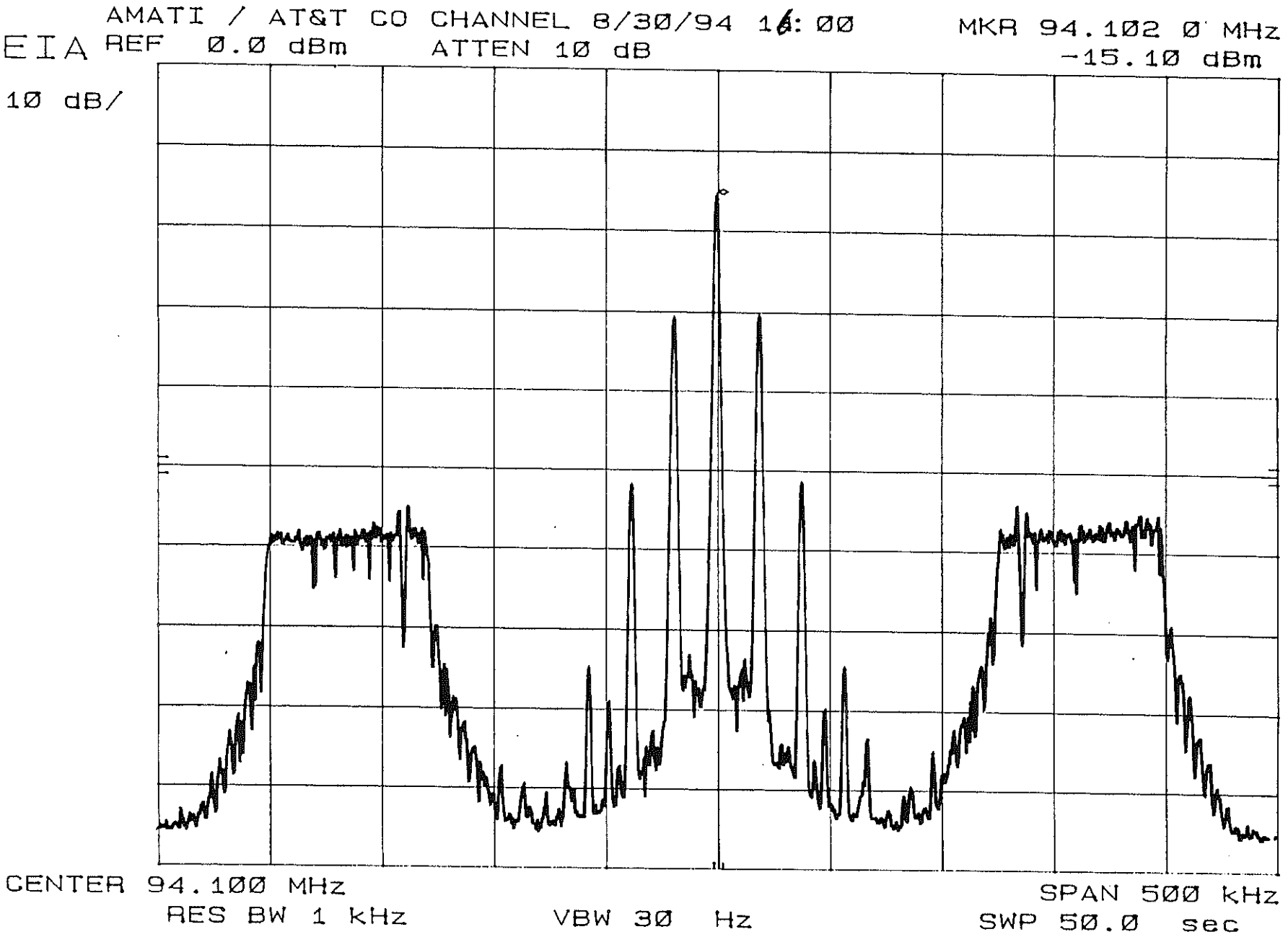
TOA and POF levels have been approximated for this demonstration.


AMATI / AT&T 6/29/94 DSB
REF 0.0 dBm
ATTEN 10 dB
MKR 94.098 5 MHz
-10.60 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

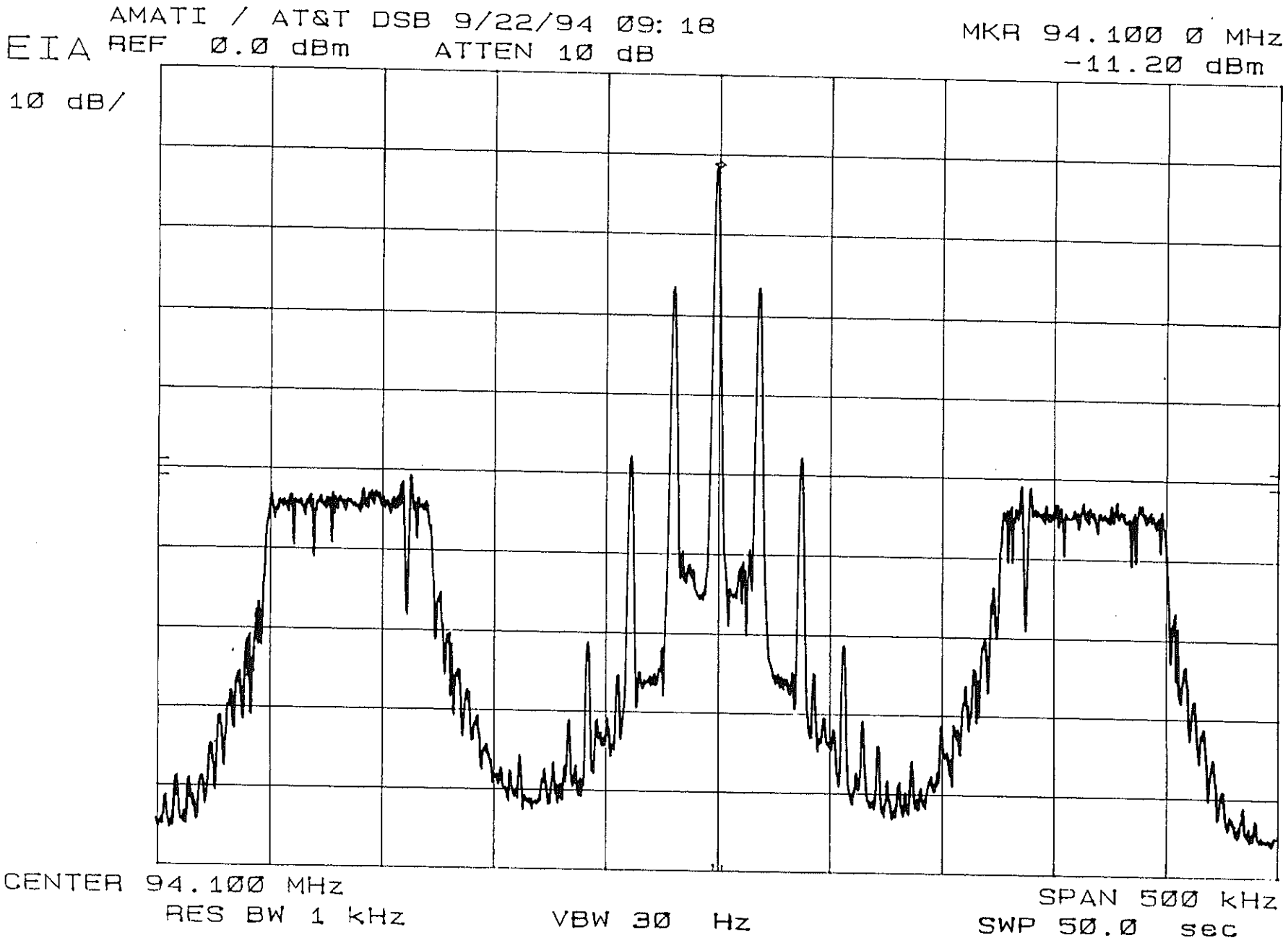

AMATI / AT&T DSB 8/30/94 13: 49
MKR 94.099 0 MHz
REF 0.0 dBm
ATTEN 10 dB
-11.40 dBm
10 dB/
CENTER 94.100 MHz
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
SWP 50.0 sec

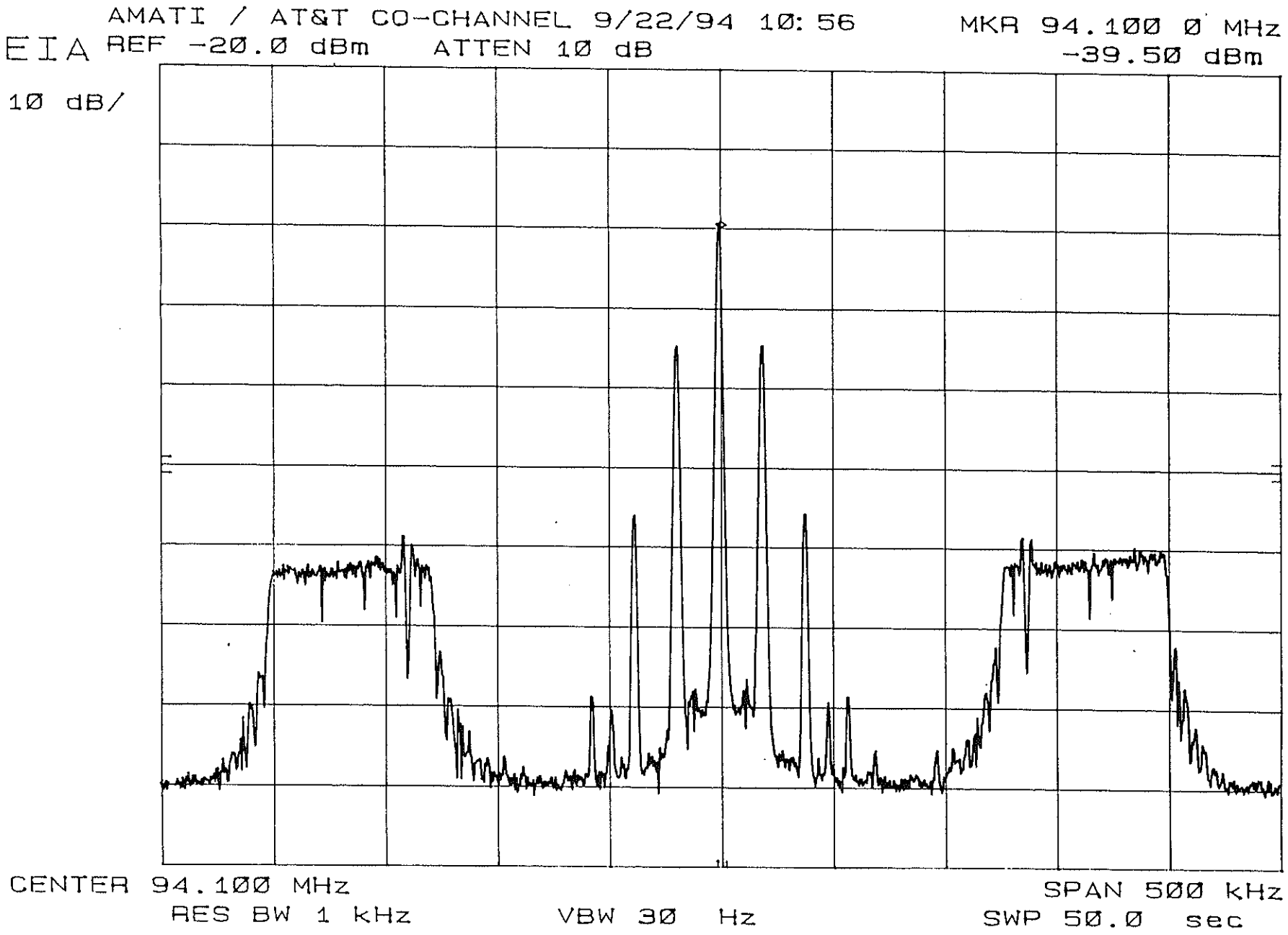


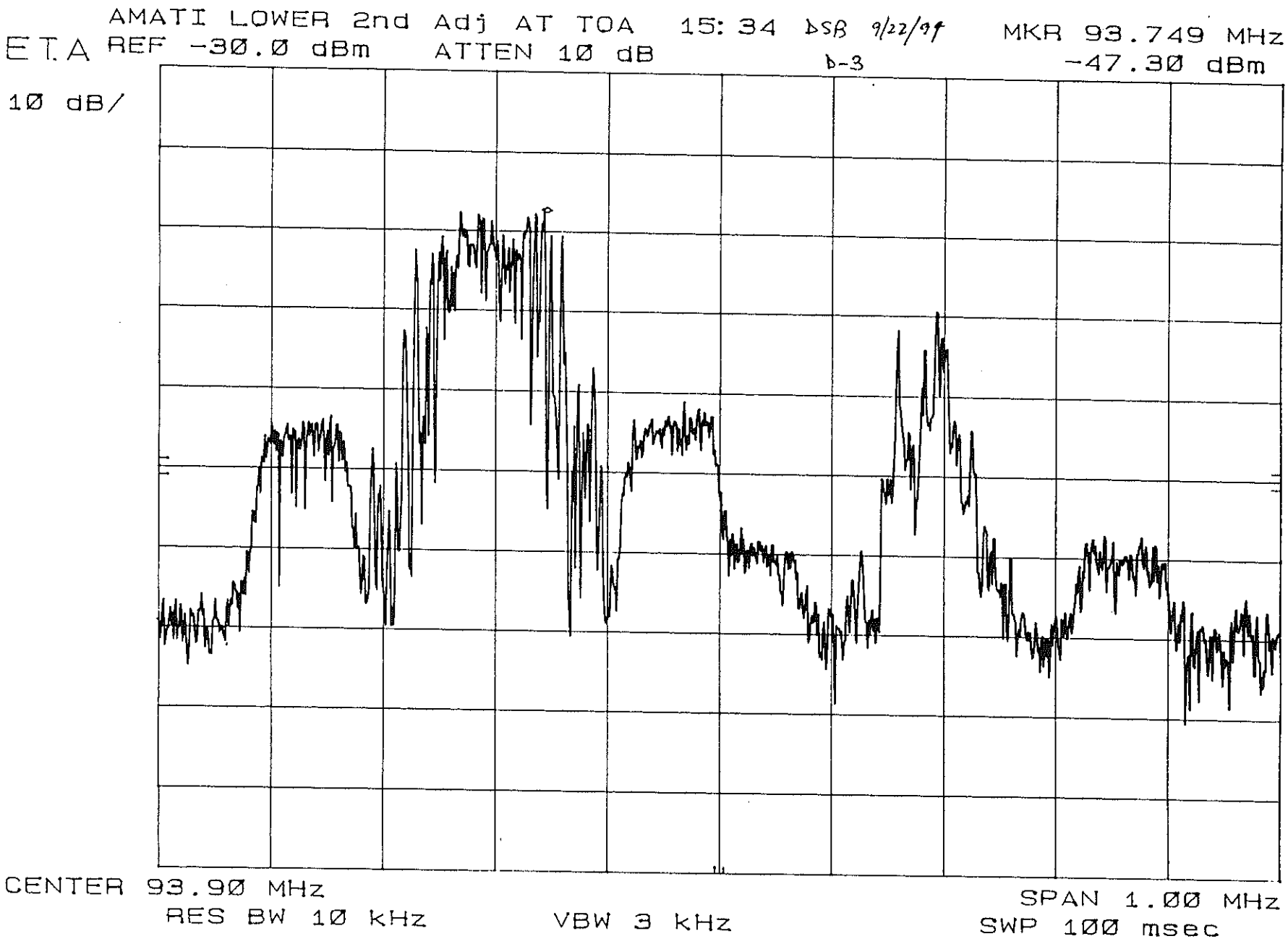
Output Level Adjustment

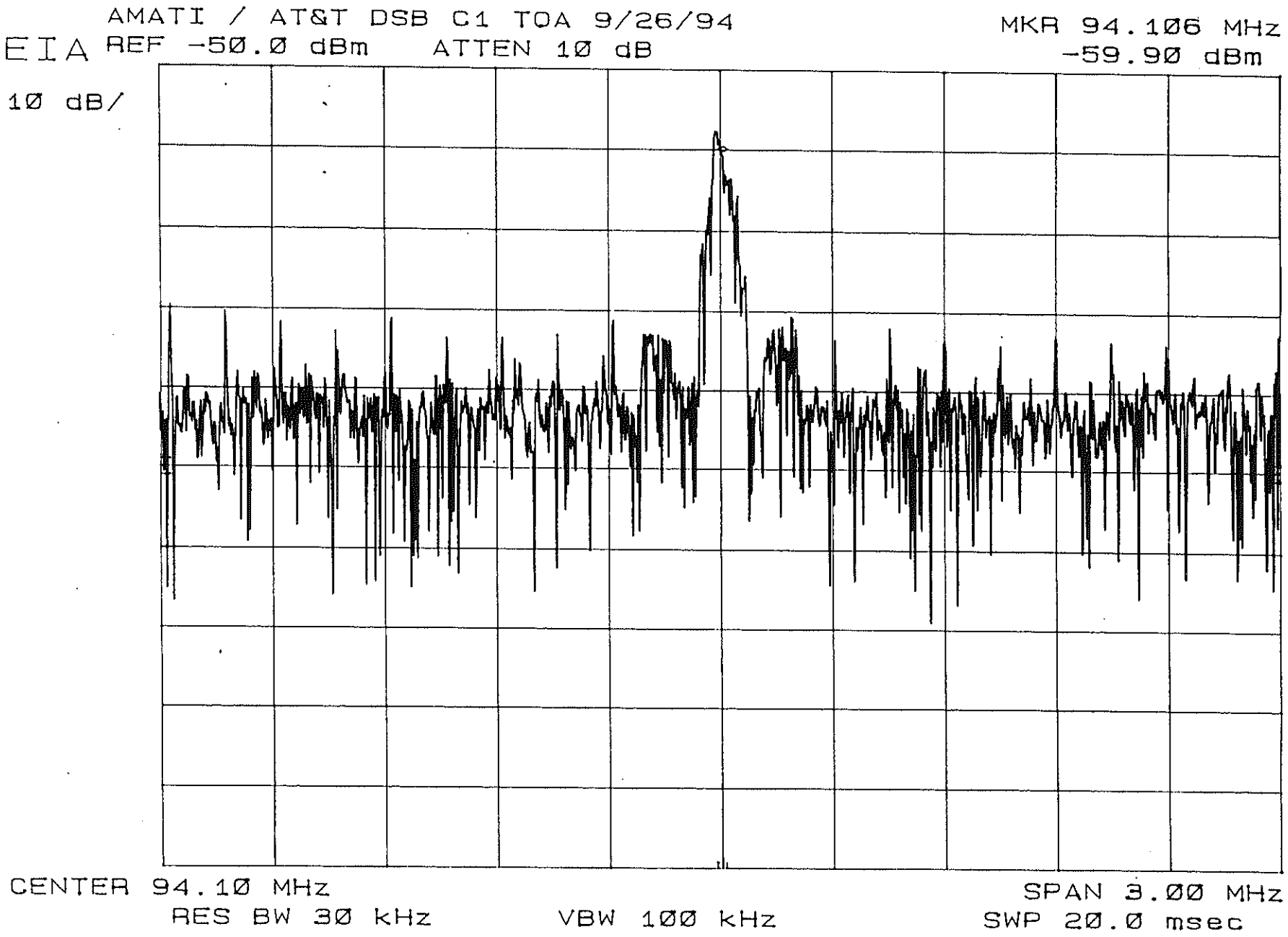


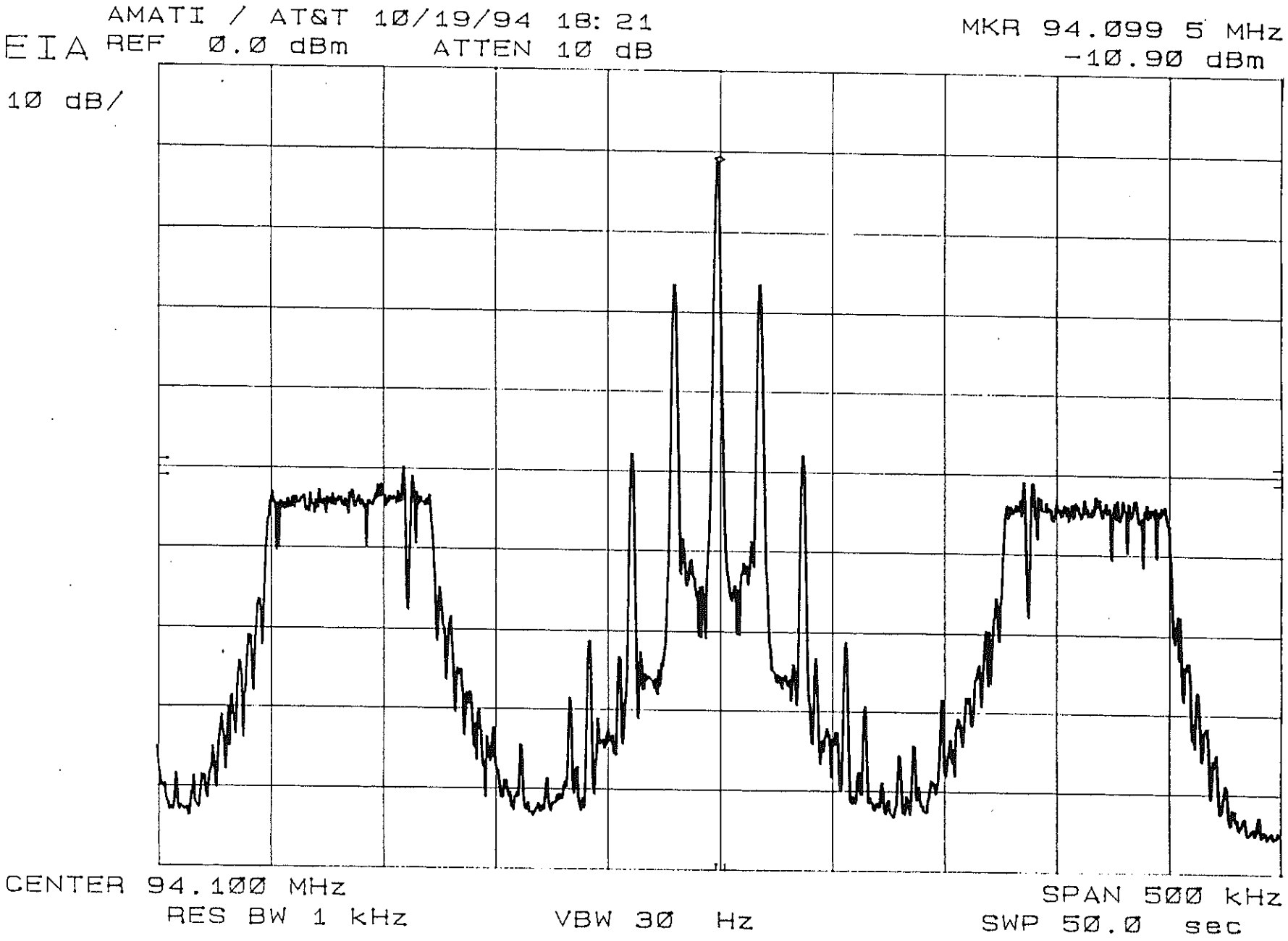
AFTER LEVELLING STATEMENT

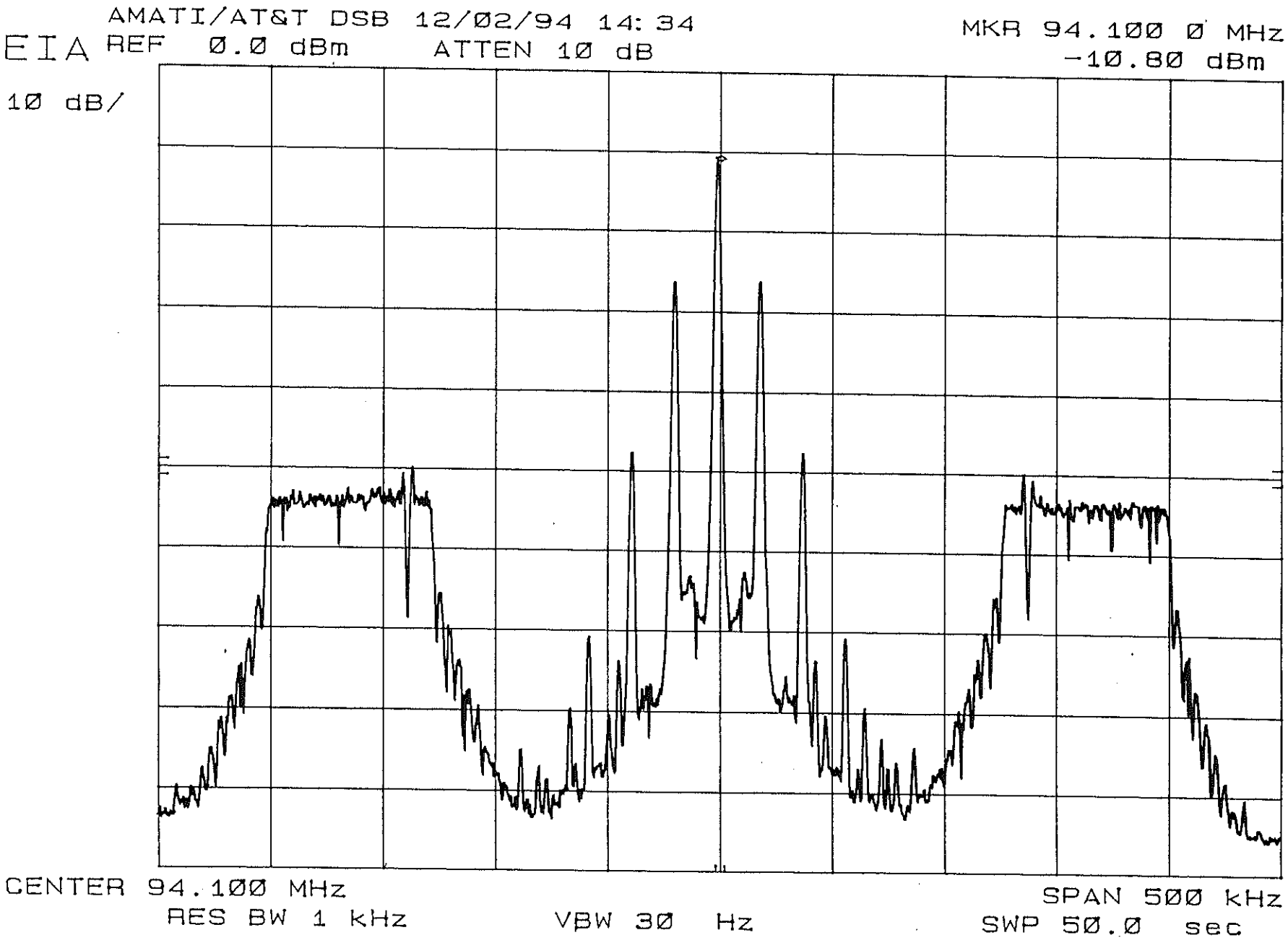

AMATI / AT&T DSB 9/22/94 09: 18
EIA REF 0.0 dBm
ATTEN 10 dB
MKR 94.100 0 MHz
-11.20 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec


AMATI / AT&T CO-CHANNEL 9/22/94 10:56
MKR 94.100 0 MHz
EIA REF -20.0 dBm ATTEN 10 dB
-39.50 dBm
10 dB/
CENTER 94.100 MHz
SPAN 500 kHz
RES BW 1 kHz
VBW 30 Hz
SWP 50.0 sec


AMATI LOWER 2nd Adj AT TOA 15:34 bsb 9/22/97
E.T.A REF -30.0 dBm ATTEN 10 dB
b-3
MKR 93.749 MHz
-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 94.099 5 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

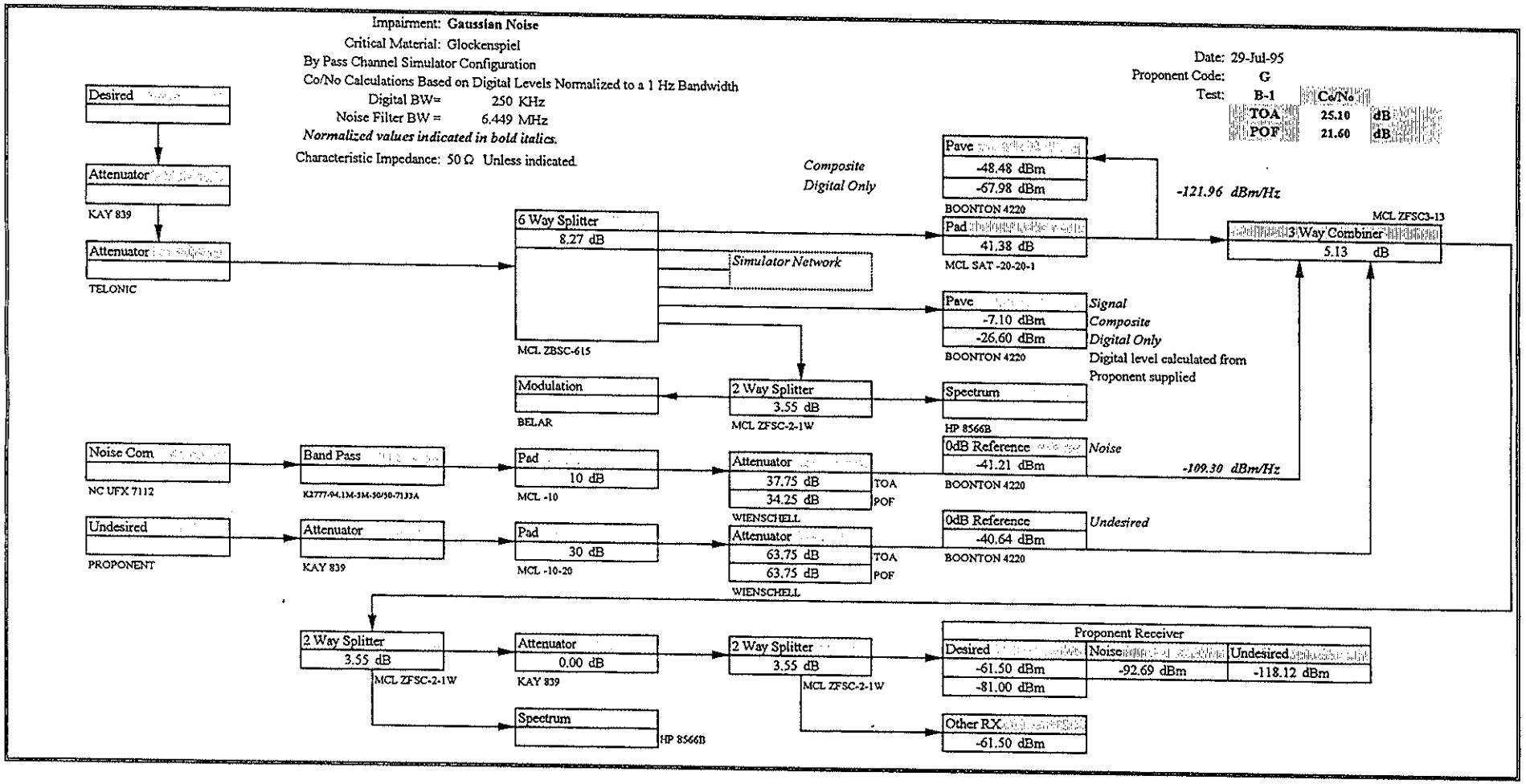
Proponent:	USADR FM2
Code:	G
Digital Band Width:	2.50E+05 Hz
Composite Band Width:	2.50E+05 Hz
Peak/Average:	2.05 dB

EIA Digital Audio Radio Test Laboratory

Test	B-1	Gaussian Noise		Units
Proponent Code:	G			
Glockenspiel		TOA	POF	
	Attenuator	37.75	34.25	dB
	Co/No	25.10	21.60	dB
	TOA	Occasional pops and clicks.		
EO&C				
	POF	Severely distorted audio with warbles, snaps and pops.		
Soprano		TOA	POF	
	Attenuator	37.75	34.00	dB
	Co/No	25.10	21.35	dB
	TOA	Small pops and clicks with some high cut.		
EO&C				
	POF	Many pops and clicks, heavy distortion and high cut.		
Clarinet		TOA	POF	
	Attenuator	39.00	35.00	dB
	Co/No	26.35	22.35	dB
	TOA	Intermittent pops and clicks (warbles).		
EO&C				
	POF	High Frequency roll off, many pops and clicks, heavily distorted.		

	Recording Reference:	DAR30215.DAT
Notes:	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 Start	Time Code Stop	Program ID #					Description	Attn
DAR30215.DAT			1	2				Glockenspiel Clear Channel	63.75
29-Jul-95			3	4					39.25
			5	6					38.75
			7	8					38.25
			9	10				TOAlab	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				TOAlab	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

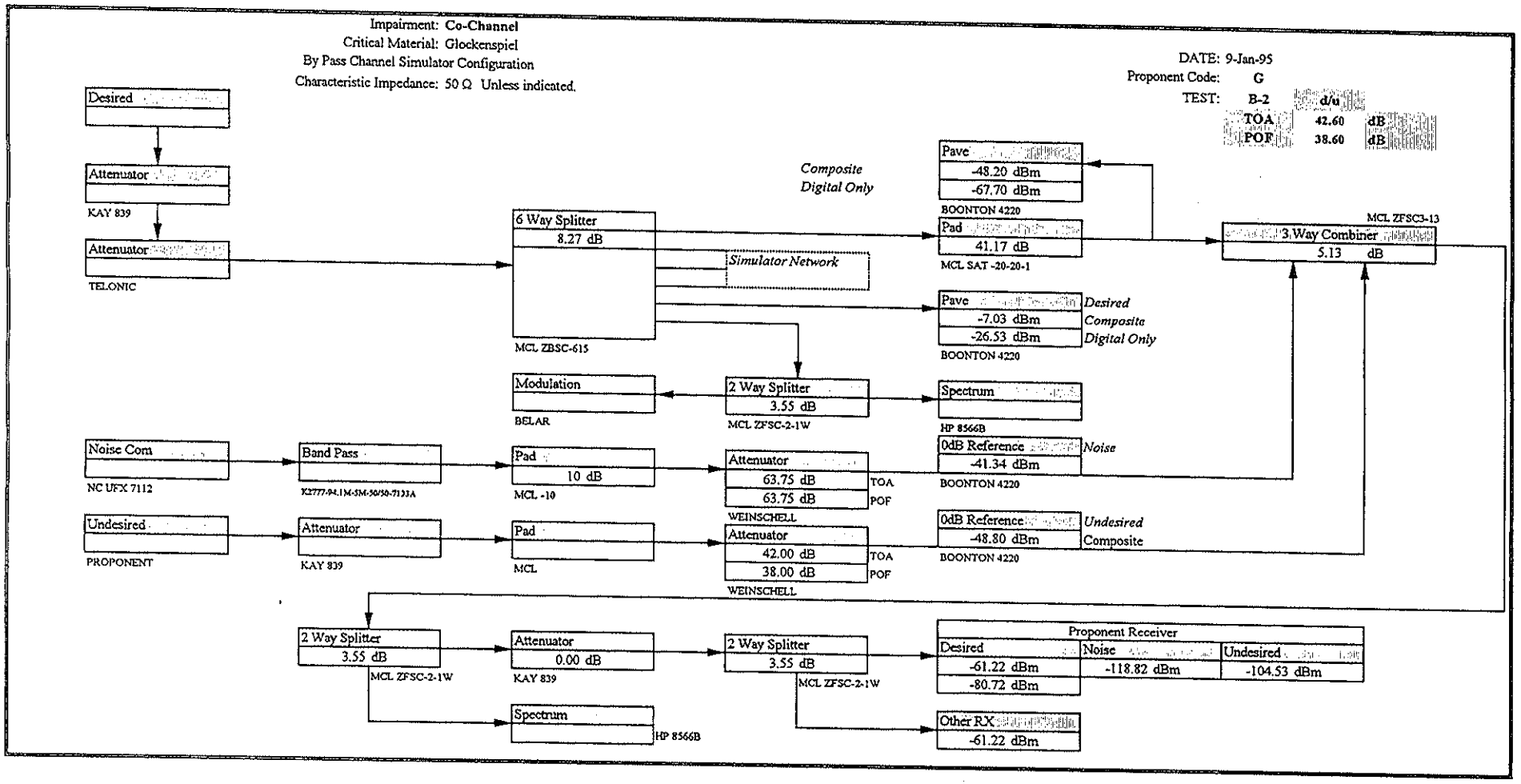
Code: G
Impairment: Gaussian Noise

EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30215.DAT			57	58				Clarinet Clear Channel	63.75
29-Jul-95			59	60					40.50
			61	62					40.00
			63	64					39.50
			65	66				TOA_{lab}	39.00
			67	68					38.50
			69	70					38.00
			71	72					37.50
			73	74					37.00
			75	76					36.50
			77	78					36.00
			79	80					35.50
			81	82				Sync	63.75
			83	84				POF_{lab}	35.00
			85	86					34.50

Code: G
Impairment: Gaussian Noise

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


Impairment: Co-Channel
Critical Material: Glockenspiel
By Pass Channel Simulator Configuration
Characteristic Impedance: 50 Ω Unless indicated.
DATE: 9-Jan-95
Proponent Code: G
TEST: B-2 d/u
TOA 42.60 dB
POF 38.60 dB
Desired
Attenuator
KAY 839
Attenuator
TELONIC
6 Way Splitter
8.27 dB
MCL ZBSC-615
Simulator Network
Composite
Digital Only
Pave
-48.20 dBm
-67.70 dBm
BOONTON 4220
Pad
41.17 dB
MCL SAT -20-20-1
MCL ZFSC3-13
3 Way Combiner
5.13 dB
Pave
-7.03 dBm
-26.53 dBm
BOONTON 4220
Desired
Composite
Digital Only
Modulation
BELAR
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Spectrum
HP 8566B
Noise Com
NC UFX 7112
Band Pass
Pad
10 dB
MCL -10
Attenuator
63.75 dB
63.75 dB
TOA
POF
WEINSCHELL
0dB Reference
-41.34 dBm
BOONTON 4220
Noise
Undesired
PROPONENT
Attenuator
KAY 839
Pad
MCL
Attenuator
42.00 dB
38.00 dB
TOA
POF
WEINSCHELL
0dB Reference
-48.80 dBm
BOONTON 4220
Undesired
Composite
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Attenuator
0.00 dB
KAY 839
2 Way Splitter
3.55 dB
MCL ZFSC-2-1W
Proponent Receiver
Desired
-61.22 dBm
-80.72 dBm
Noise
-118.82 dBm
Undesired
-104.53 dBm
Spectrum
HP 8566B
Other RX
-61.22 dBm

EIA Digital Audio Radio DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30243.DAT			1	2	3			Glockenspiel Clear Channel	63.75
9-Jan-95			4	5	6				43.00
			7	8	9				42.50
			10	11	12			TOAlab	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			TOAlab	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 DAT Recording Log

DAT File Number	Time Code Start	Time Code Stop	Program ID #					Description	Attn
DAR30244.DAT			1	2	3			Clarinet Clear Channel	63.75
9-Jan-95			4	5	6				43.00
			7	8	9				42.50
			10	11	12			TOAlab	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			POFlab	38.50
			34	35	36	37		disregard #36	38.00
			38	39	40				37.50
			41	42	43				37.00

Code: G
Impairment: Co-Channel

EIA Digital Audio Radio Test Laboratory

Test	B-3	Urban Slow Rayleigh					Units
Proponent Code:	G						
Glockenspiel			TOA		POF		
	Attenuator						
	Co/No						
	TOA	The simulation was allowed to run 5 minutes during which no recovered audio was observed.					
EO&C							
	POF						
Soprano			TOA		POF		
	Attenuator						
	Co/No						
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.					
EO&C							
	POF						
Clarinet			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

Test	B-3	Urban Fast Rayleigh	Units
Proponent Code:	G		

Glockenspiel			TOA		POF		
	Attenuator						
	Co/No						
	TOA	The simulation was allowed to run 5 minutes during which no recovered audio was observed.					
EO&C							
	POF						
Soprano			TOA		POF		
	Attenuator						
	Co/No						
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.					
EO&C							
	POF						
Clarinet			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

Test	B-3	Rural Fast Rayleigh	Units
Proponent Code:	G		

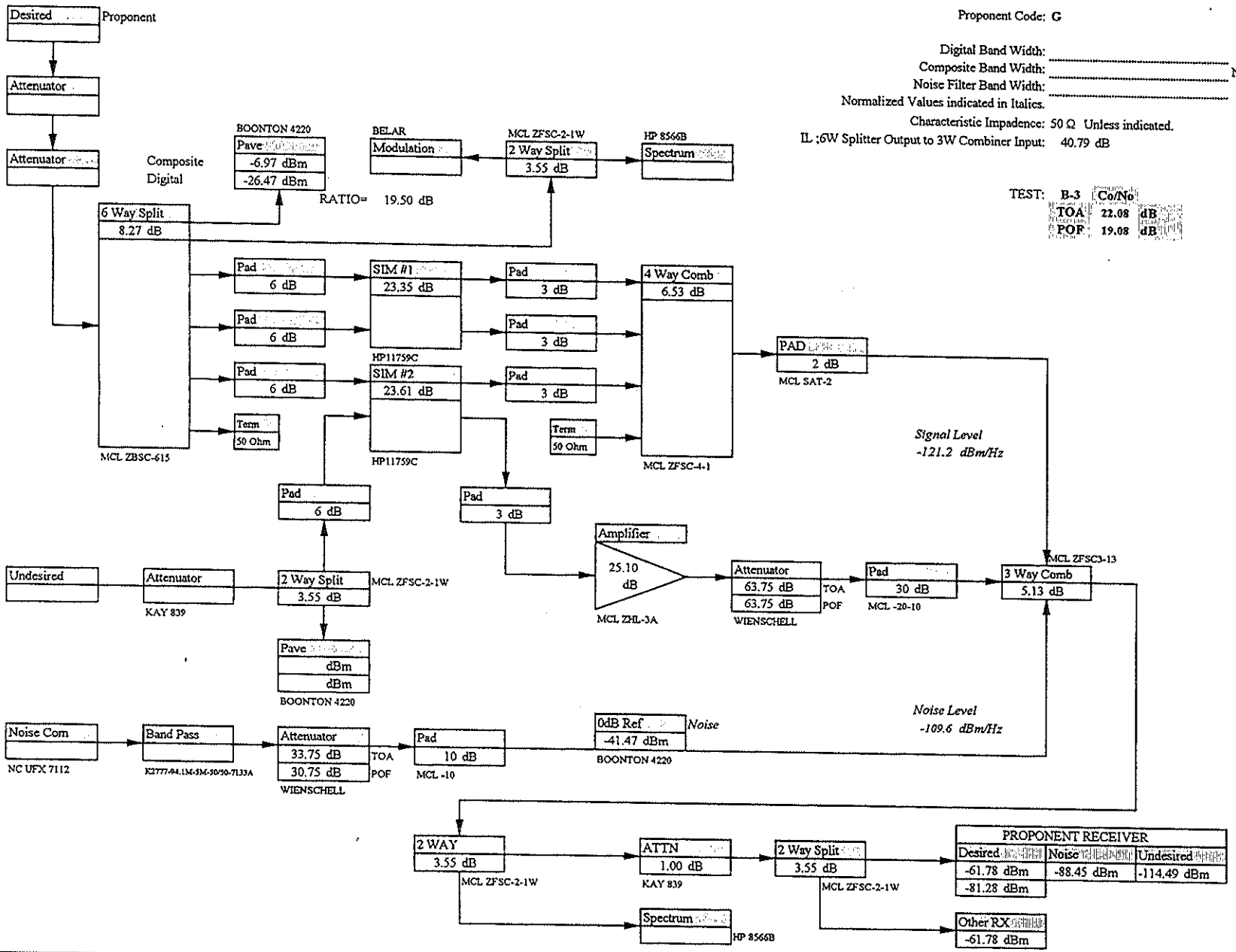
Glockenspiel			TOA		POF		
	Attenuator						
	Co/No						
	TOA	The simulation was allowed to run 5 minutes during which no recovered audio was observed.					
EO&C							
	POF						
Soprano			TOA		POF		
	Attenuator						
	Co/No						
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.					
EO&C							
	POF						
Clarinet			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

Test	B-3	Terrain Obstructed Rayleigh					Units
Proponent Code:	G						
Glockenspiel			TOA		POF		
	Attenuator						
	Co/No						
	TOA	The simulation was allowed to run 5 minutes during which no recovered audio was observed.					
	EO&C						
	POF						
Soprano			TOA		POF		
	Attenuator						
	Co/No						
	TOA	Due to performance as indicated above this test was assumed to be unnecessary.					
	EO&C						
	POF						
Clarinet			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					



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 Impedence: 50 Ω 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

Test	C-1	Impulse Response				
USADR FM2						
Program Material		Glockenspiel		1.00 Vp-p at attenuator input. 10.00 ns wide pulse		
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

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

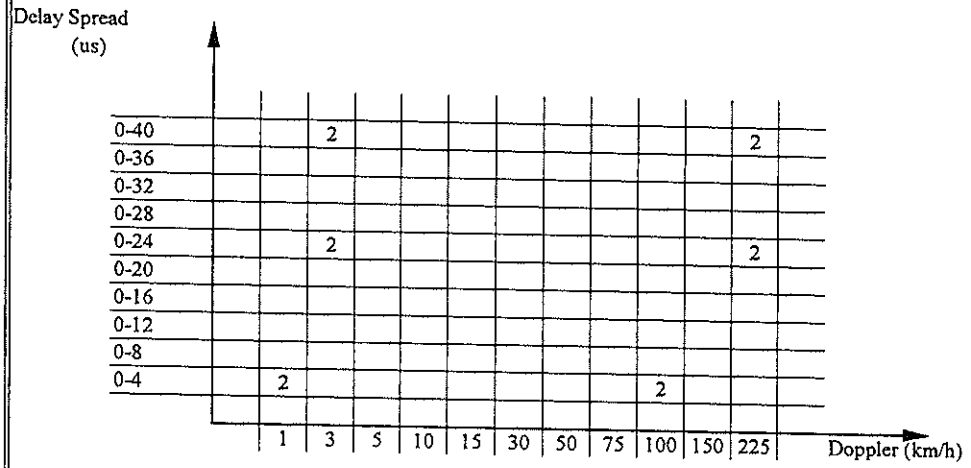
Test C-3 **Airplane Flutter**		
USADR FM2		
Program Material	Glockenspiel	
Scenario	Reflected Path	EO&C
#1	400 Km/h Doppler 27.5 µs Delay TOA 8.00 dB 8.00 dB	No recovered audio. Level of reflected path must be reduced by 43 dB for clean audio to be recovered.
#2	200 Km/h Doppler 13.7 µs Delay TOA 6.00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

Test	C-4	Weak Signal Sensitivity
USADR FM2		
Program Material		Glockenspiel

TOA (dBm)	POF (dBm)
-74 ≤ TOA < -73	-76 < POF ≤ -75

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

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



EO&C 30 sec minimum listening time.

0 = Unimpaired

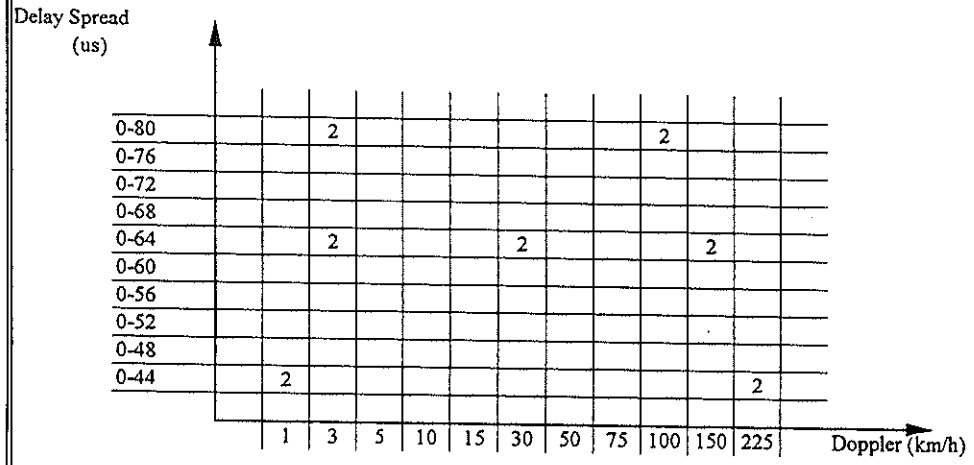
1 = Small Impairment

2 ≥ POF Level of Impairment

Test Date: 15-Dec-94

Testers: DML, RMc

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



EO&C

30 sec minimum listening time.

0 = Unimpaired

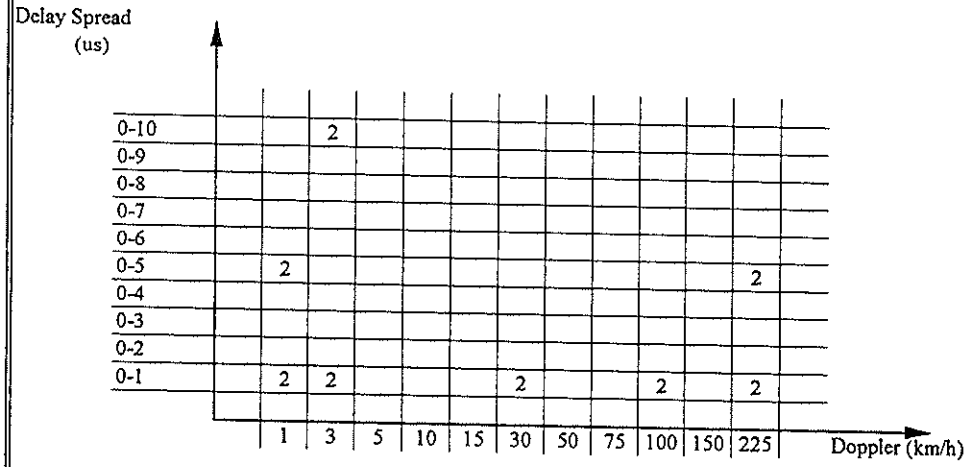
1 = Small Impairment

2 ≥ POF Level of Impairment

Test Date: 15-Dec-94

Testers: DML, RMc

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



EO&C

30 sec minimum listening time.

0 = Unimpaired

1 = Small Impairment

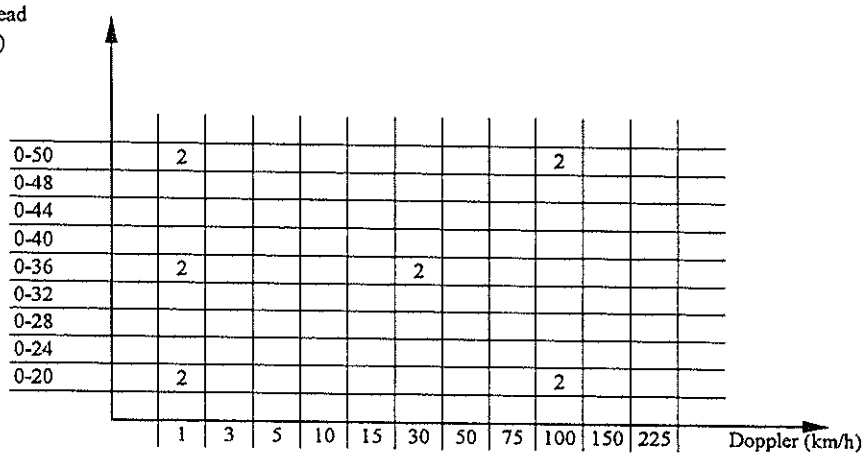
2 ≥ POF Level of Impairment

Small Impairments consisted of occational, brief (short duration) dropouts.

Test Date: 15-Dec-94

Testers: DML, RMc

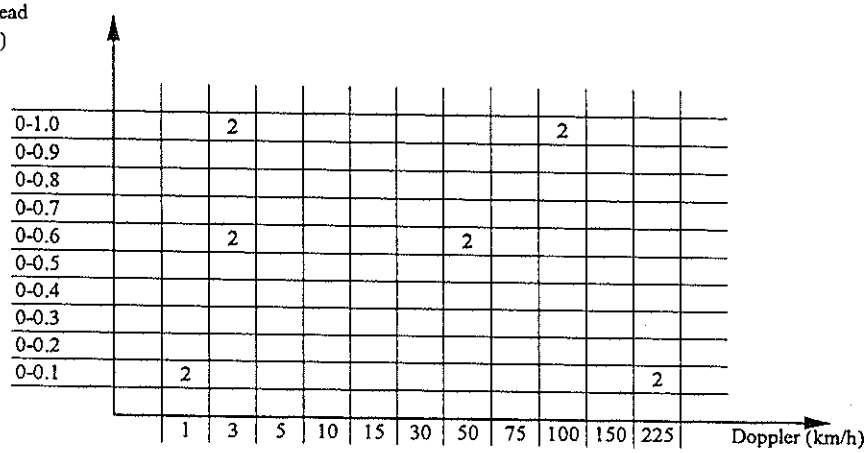
Test	C-5	**Delay Spread / Doppler**
Code:	G	Hilly Terrain
Program Material		Mozart (Track 67 on SQAM disk)



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

Test	C-5	**Delay Spread / Doppler**
Code:	G	Rural Area
Program Material		Mozart (Track 67 on SQAM disk)



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

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	

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

Test	D-Series Co-Channel, 1st and 2nd Adjacent				
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.

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	E-Series
USADR FM2	J-Series

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).

For similar reasons the J-2 tests for both Rayleigh and Doppler simulations were unnecessary.

Test	J-1	Re-Acquisition
USADR FM2		
Program Material		Mozart (Track 67 on SQAM disk)

	Re-Acquisition Time (s)		
Toff (s)	POF-2	POF-4	POF-6
30	6	4	3
	4	1	4
	4	9	10
	4	11	2
	3	3	2
Average	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 ± 0.5 seconds.

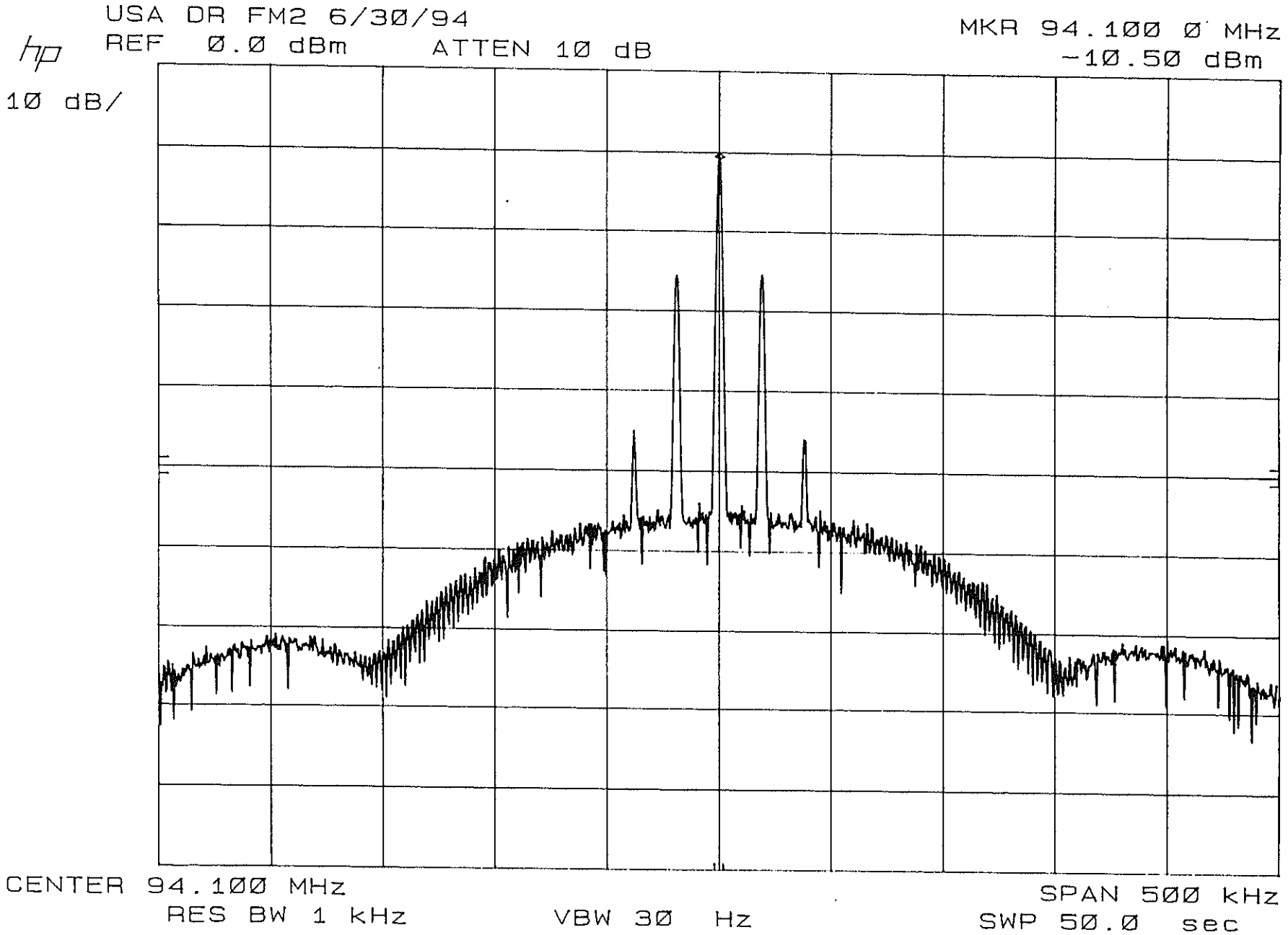
Test Date: 5-Oct-94

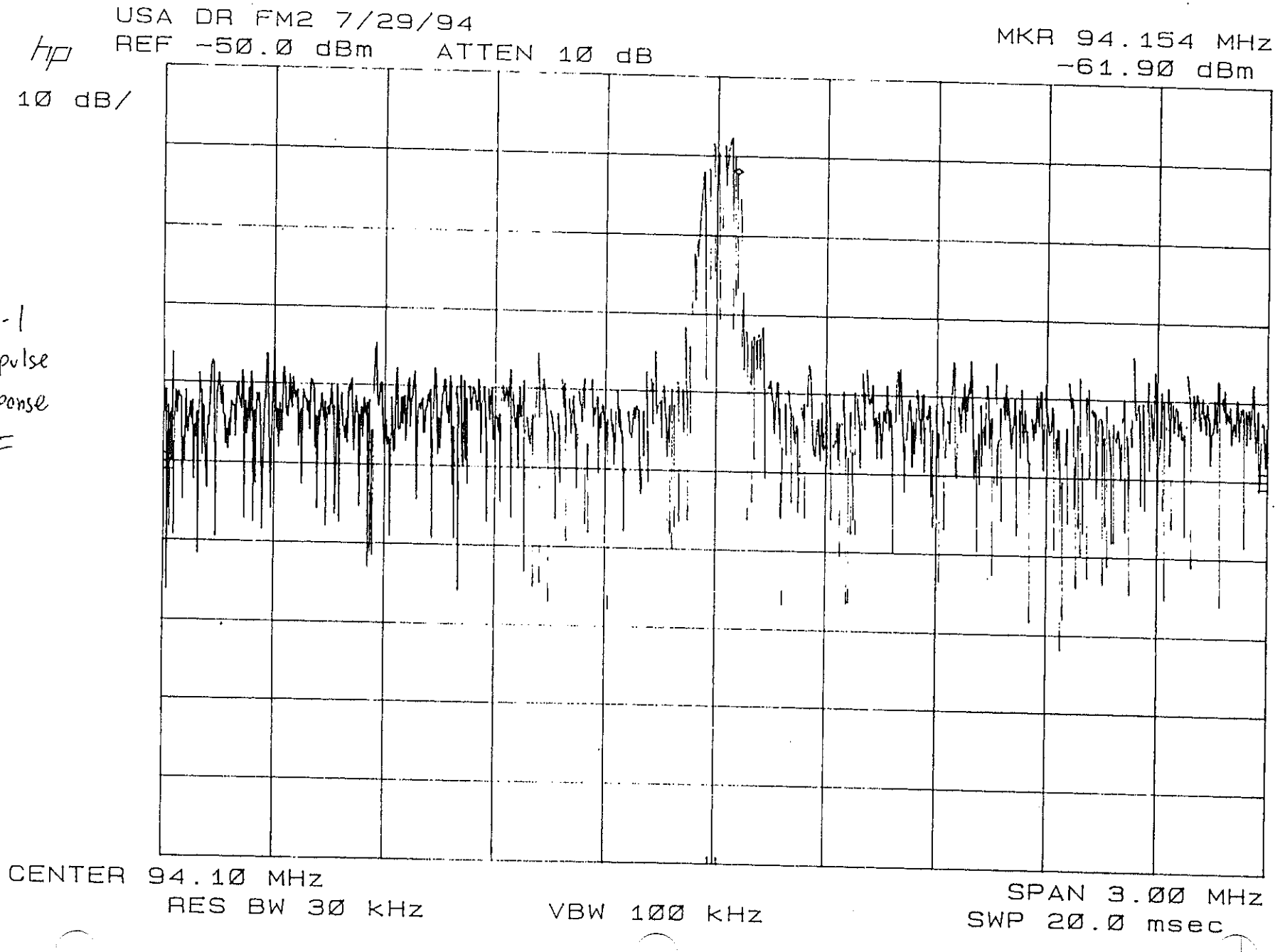
Testers: DML, RMc

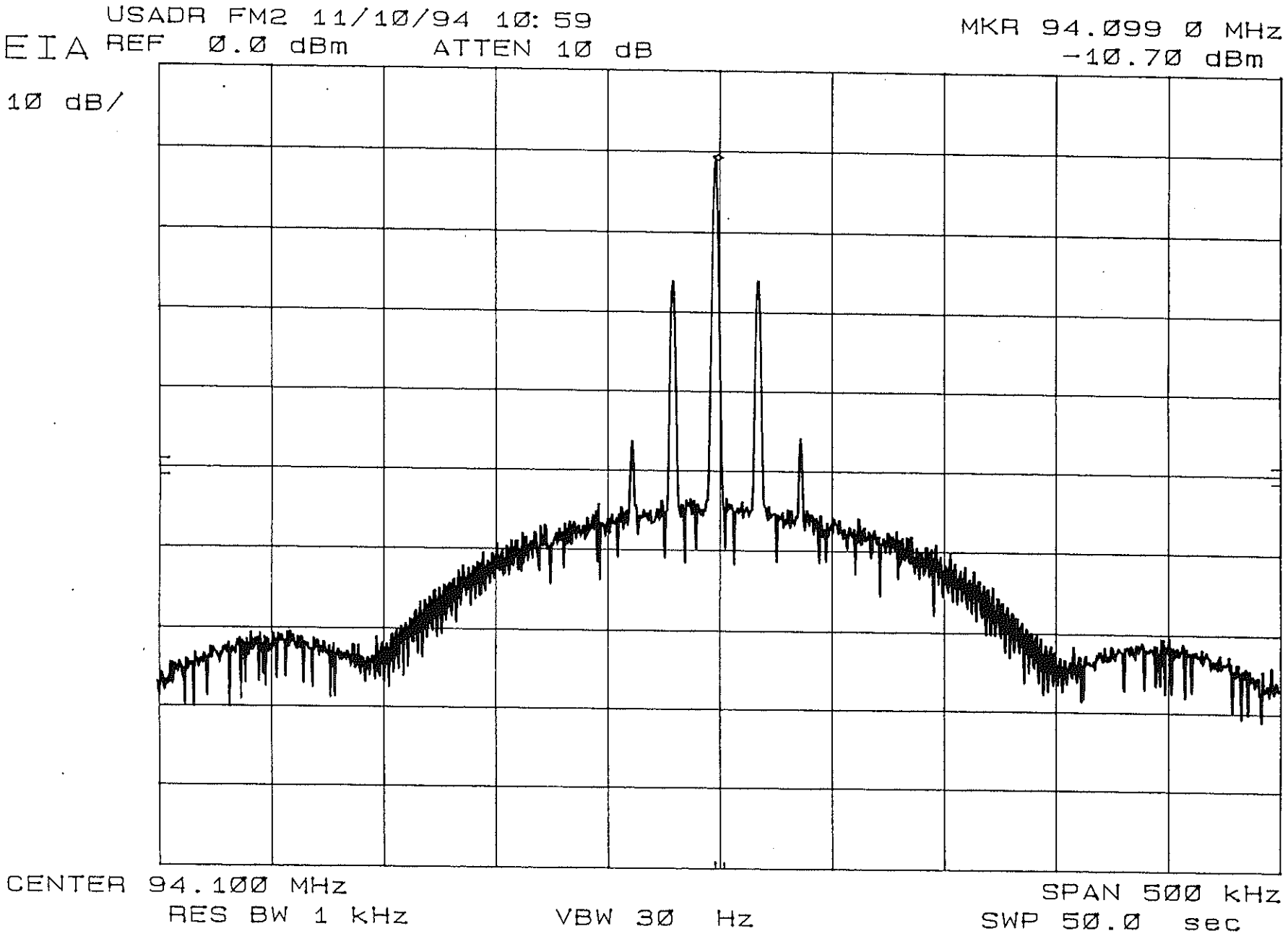
Test	B-1	Ancillary Data Channel Demonstration Gaussian Noise BER				
Proponent Code:	G					Units
		TOA		POF		
	Attenuator	34.75	33.75	32.25	30.75	dB
	Co/No	23.08	22.08	20.58	19.08	dB
	Log(BER)	-∞	-4.153	-2.590	-1.519	
	BER	0.00E+00	7.04E-05	2.57E-03	3.03E-02	

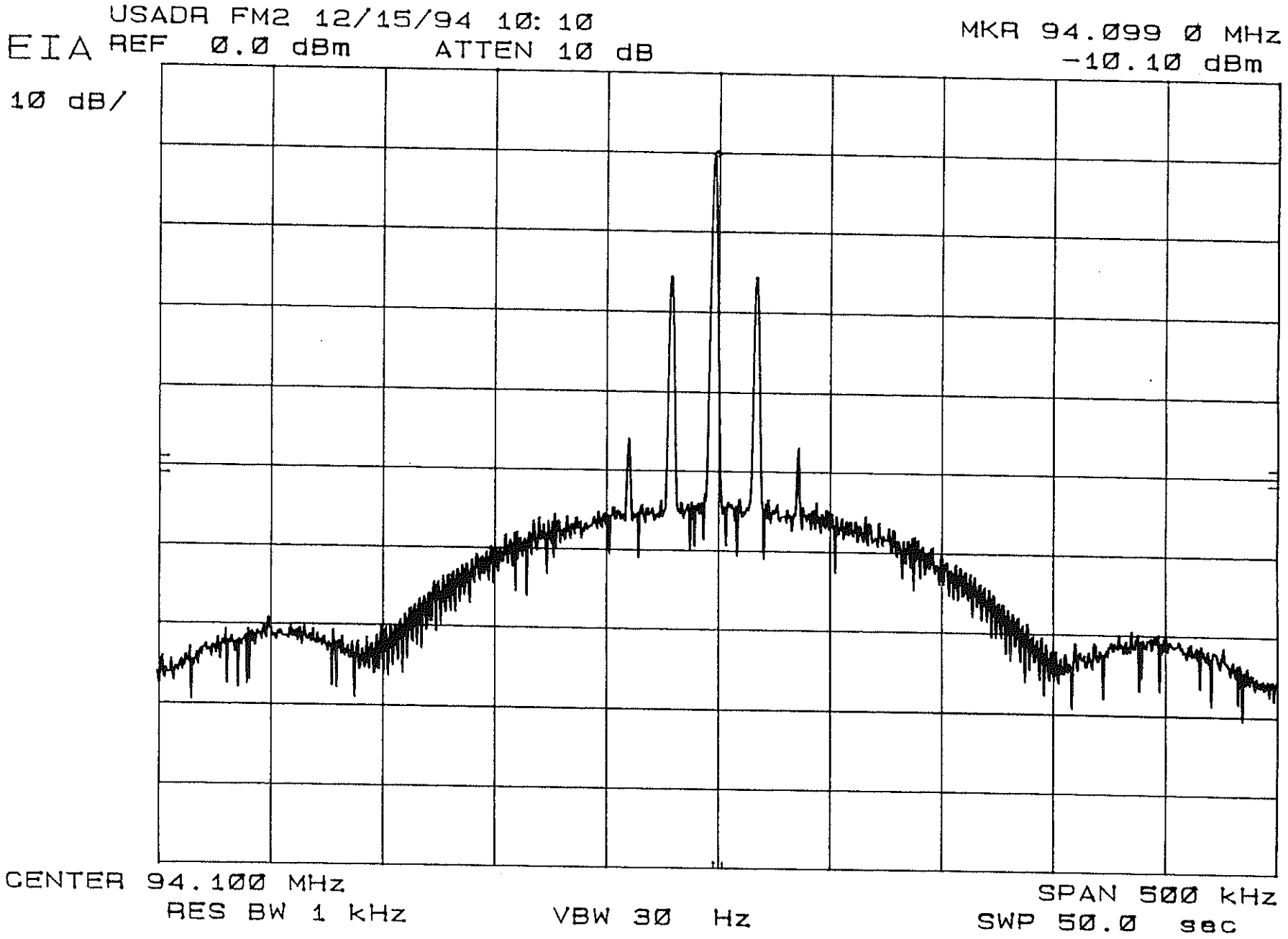
Test	B-2	Ancillary Data Channel Demonstration Co-Channel BER			Units
		TOA		POF	
	Attenuator		51.00	47.50	dB
	d/u		44.31	40.81	dB
	Log(BER)		-3.205	-1.398	
	BER		6.23E-04	4.00E-02	

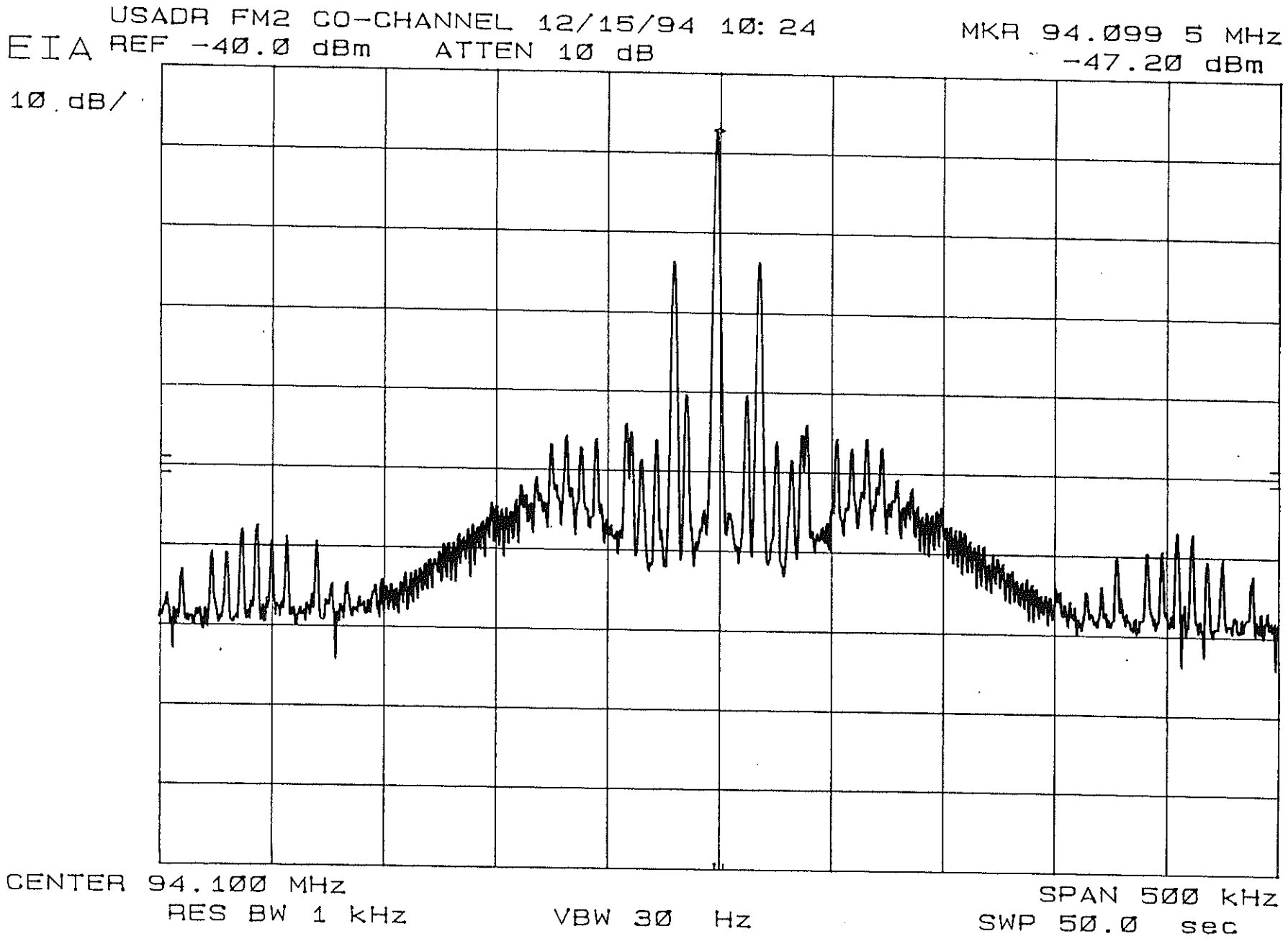
Testers:	DML, RMc	TOA and POF levels have been approximated for
Date:	15-Dec-95	this demonstration.

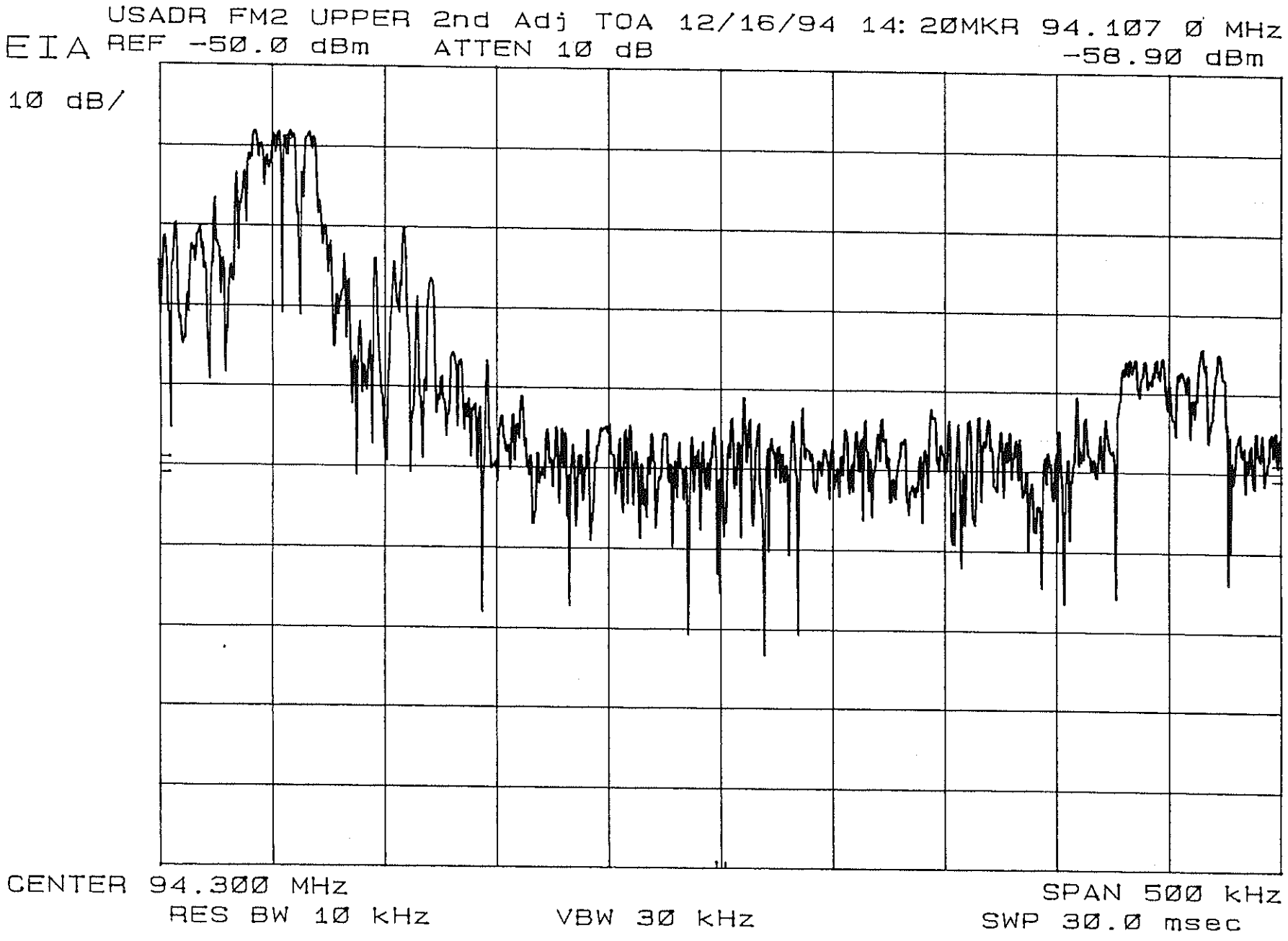

USA DR FM2 6/30/94
hp
REF 0.0 dBm
ATTEN 10 dB
MKR 94.100 0 MHz
-10.50 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

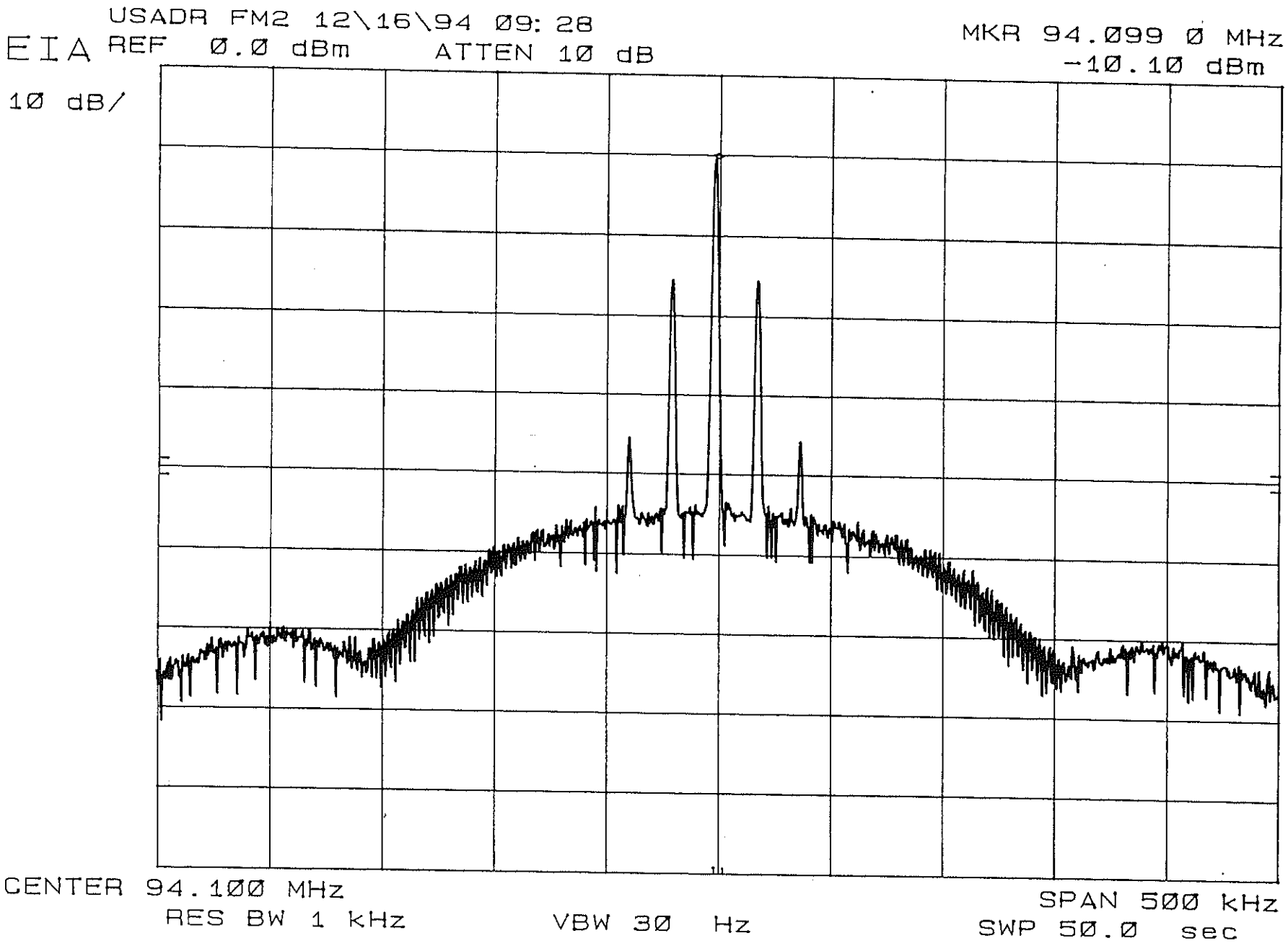

USA DR FM2 7/29/94
hp
REF -50.0 dBm
ATTEN 10 dB
MKR 94.154 MHz
-61.90 dBm
10 dB/
C-1
Impulse
Response
POF
CENTER 94.10 MHz
RES BW 30 kHz
VBW 100 kHz
SPAN 3.00 MHz
SWP 20.0 msec

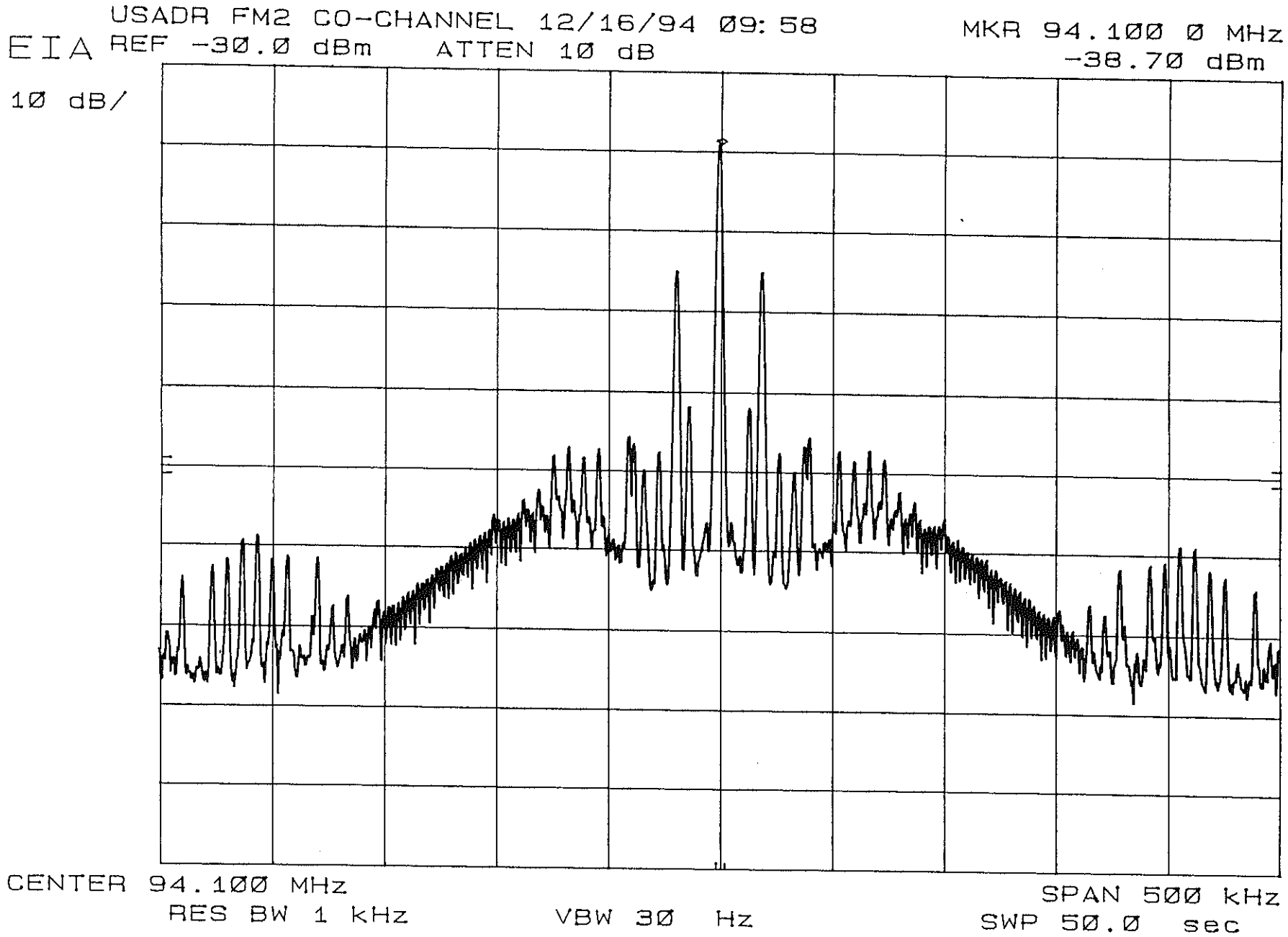

USADR FM2 11/10/94 10:59
EIA REF 0.0 dBm ATTEN 10 dB
MKR 94.099 0 MHz
-10.70 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

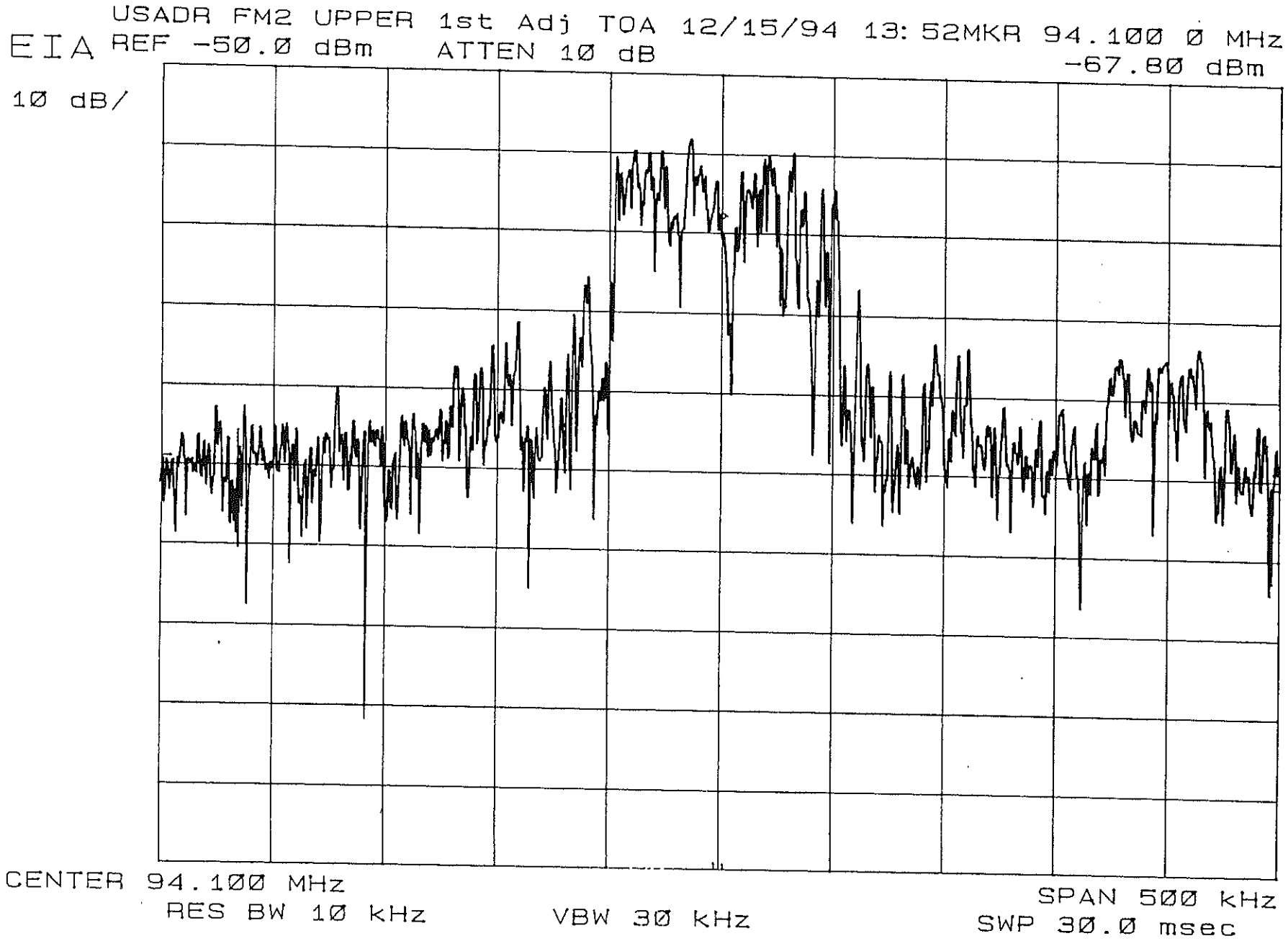

USADR FM2 12/15/94 10: 10
EIA REF 0.0 dBm ATTEN 10 dB
MKR 94.099 0 MHz
-10.10 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

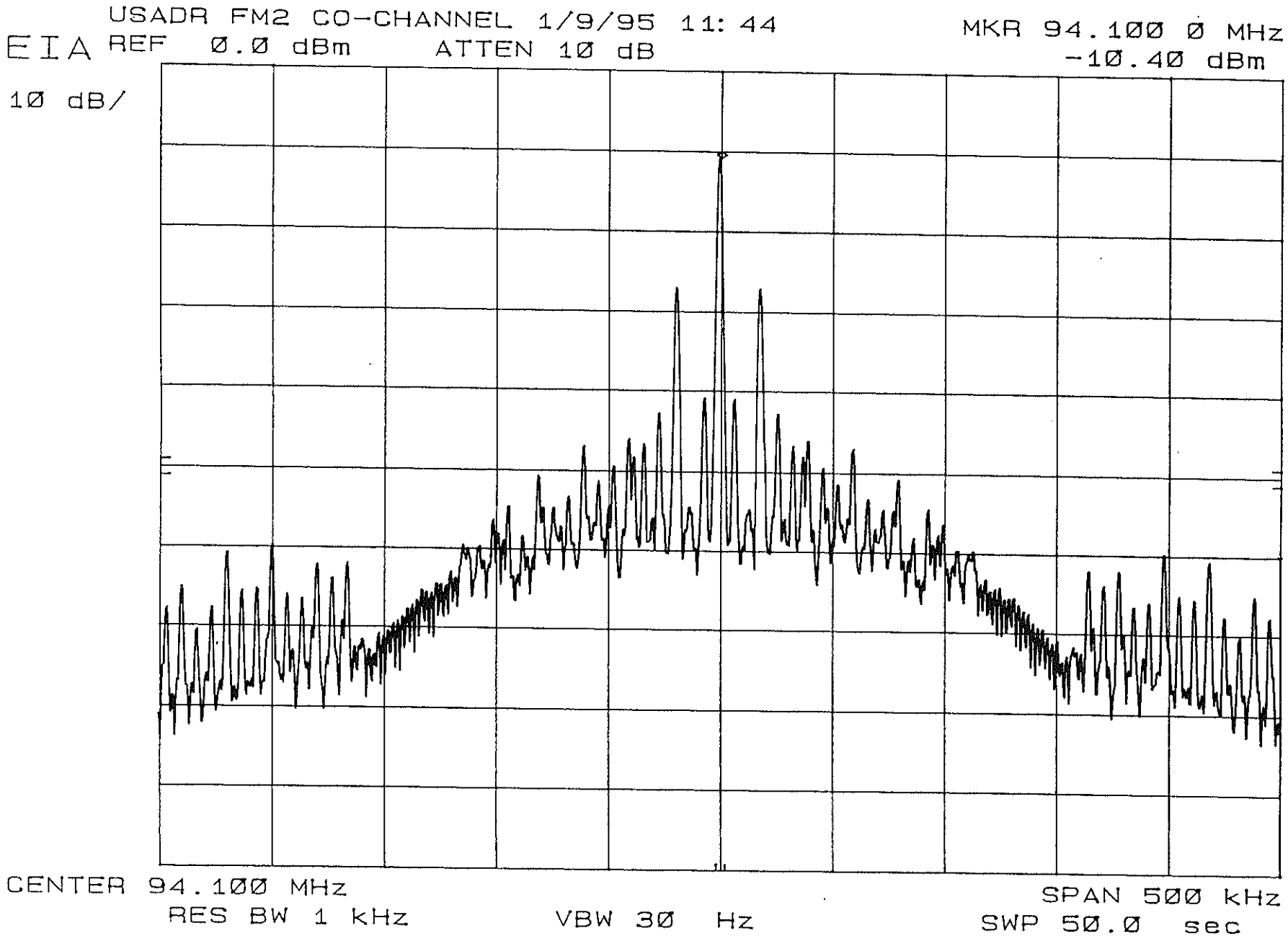

USADR FM2 CO-CHANNEL 12/15/94 10:24
EIA REF -40.0 dBm ATTEN 10 dB
MKR 94.099 5 MHz
-47.20 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

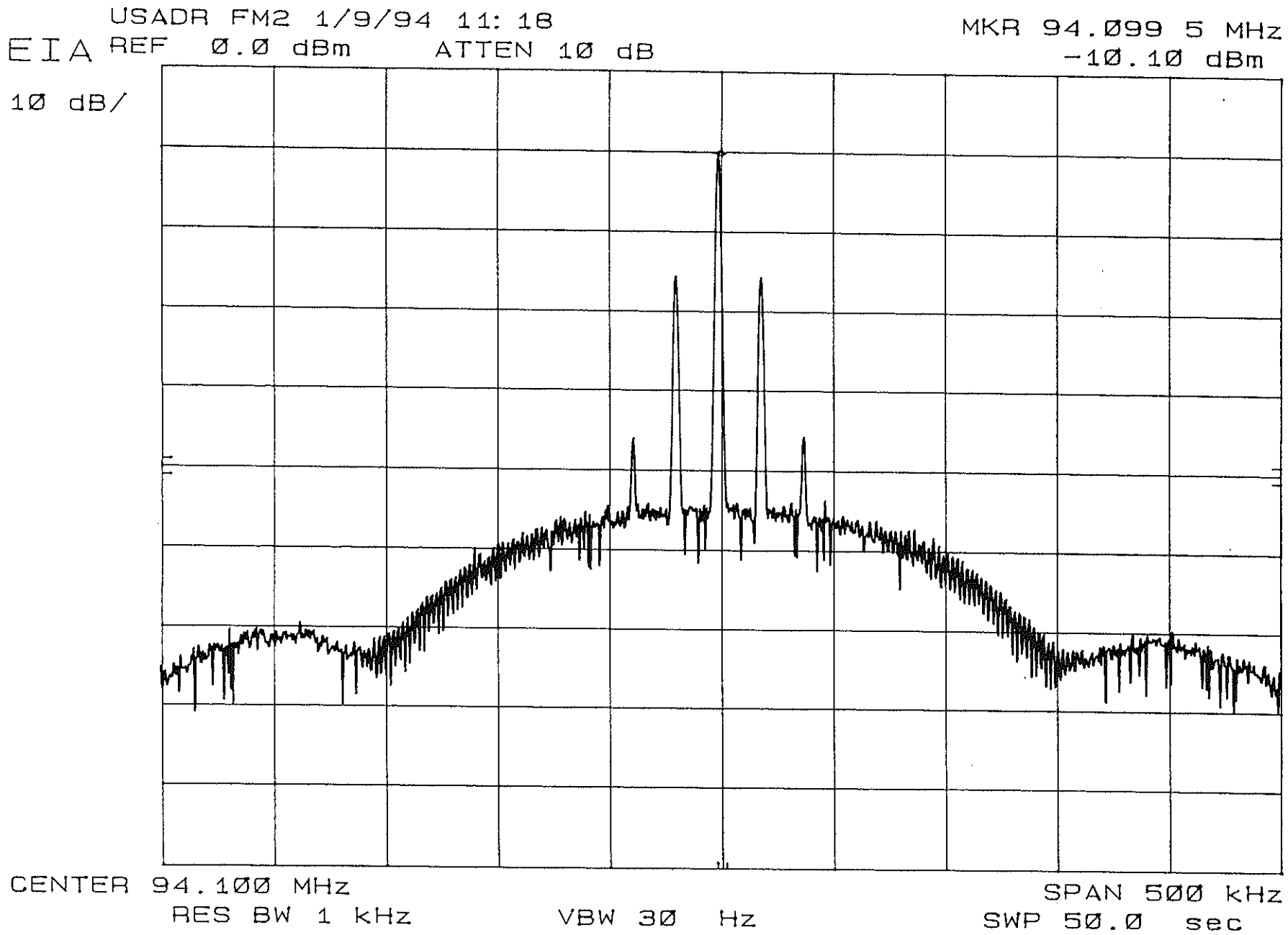

USADR FM2 UPPER 2nd Adj TOA 12/16/94 14: 20MKR 94.107 0 MHz
EIA REF -50.0 dBm ATTEN 10 dB
-58.90 dBm
10 dB/
CENTER 94.300 0 MHz
SPAN 500 kHz
RES BW 10 kHz
VBW 30 kHz
SWP 30.0 msec


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 00 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 13:52
EIA REF -50.0 dBm ATTEN 10 dB
MKR 94.100 0 MHz
-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
EIA REF 0.0 dBm
ATTEN 10 dB
MKR 94.099 5 MHz
-10.10 dBm
10 dB/
CENTER 94.100 MHz
RES BW 1 kHz
VBW 30 Hz
SPAN 500 kHz
SWP 50.0 sec

NRSC-R58

NRSC Document Improvement Proposal

If in the review or use of this document a potential change appears needed for safety, health or technical reasons, please fill in the appropriate information below and email, mail or fax to:

National Radio Systems Committee

c/o Consumer Electronics Association

Technology & Standards Department

1919 S. Eads St.

Arlington, VA 22202

FAX: 703-907-4190

Email: standards@ce.org

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a. Clause Number and/or Drawing:

b. Recommended Changes:

c. Reason/Rationale for Recommendation:

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CEA
Consumer Electronics Association


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