

*NRSC
REPORT*

NATIONAL RADIO SYSTEMS COMMITTEE

**NRSC-R33
High-speed Subcarrier (Digital)
HSSC Laboratory Test Report
May 1997**

Part II – FFT Baseband Plots



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NRSC-R33

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FOREWORD

NRSC-R33, High-speed Subcarrier (Digital) HSSC Laboratory Test Report, is the first of three test reports submitted to the NRSC's High-Speed FM Subcarrier (HSSC) Subcommittee. Three digital FM subcarrier systems were evaluated during these tests—DARC (submitted by Digital DJ, Inc.), STIC (submitted by Mitre Corporation), and HSDS (submitted by Seiko, Inc.). The co-chairmen of the HSSC Subcommittee at the time of the submission of NRSC-R33 were Michael Rau and David Kelly. The NRSC Chairman at the time of the submission of NRSC-R33 was Charles Morgan.

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

FFT Baseband Plots

Five Radios

Digital Radio Test Laboratory

High Speed FM SubCarrier SubCommittee

Proponent System Test Results

Spectrum Analysis Plots on
Main channel audio during 30 seconds of silence from
DAT Tape Logs under various operating conditions

Summary of FFT Plots

Contents:

The next 12 pages have a summary of the High Speed DAT test tape logs with minor operator comments.

This is followed by the plots themselves, numbered for each tape track.

Process overview

The FFT engine was cleared, reset and started 3 seconds into the 30 silence period on each track and stopped during the last 1 second. The composite peak energy seen across a DC to 25 KHz spectrum was captured and the result plotted. The device was set to bin this space into 400 equal spaced samples (providing a frequency resolution of 62.5 Hz). During this run, the operator listened to the output and observed the spectrum for any abnormal change in energy. If such was seen, an attempt was then made to get a "close up" of the time or spectrum of interest. Additional spectrum plots are provided in these cases.

General Comments

The number of each trace is found by looking at the tape number on the plot (example: HS40800) and the track ID marked next to each trace. In general the reference plots will be the bottom trace, while proponent traces will be above. The same general format of working with proponents in an A-B-C order followed by C-B-A was followed on the plots. Observe caution in reading the plots to avoid confusion of proponents.

The general format of the plots is from DC to 25 KHz of recovered left channel from the DAT tape plotted over a 100 dB dynamic range. When multiple plots are taken, they are moved upward by a 20 dB offset and plotted to the same scale and dynamic range. This was done for ease of comparison, the settings on the instrument are identical in each case.

The plots represent the peak amount of spectral energy seen at each frequency (normalized to a C/No of 1 Hz). The noise of the combined DAT tape player and ambient was found to be over 20 dB less than the noise floor of the recording. Analysis was performed in the lab with other equipment turned off to preserve the greatest dynamic range. We conclude that the range of data was not compromised by the DAT player or any other noise sources in the lab environment.

Comments on the Findings

The vast majority of these plots are uninteresting. This suggests that in the case of silence, the three proponent systems do not cross talk onto the main channel in any significant way. More specifically - that they do not as a rule impinge in any different way from one another.

In a few of the plots buzzes and whistles were heard, or pops occurs. This occurs during multipath fading as expected. The spectrum of such an event tends to be chaotic in nature - generally increasing the noise floor rather than having distinct spectral energy. This is the most common difference which can be seen in the tapes.

DIGITAL SUBCARRIER to HOST ANALOG
TEST D

Compatibility Baseband Recordings

A total of 156 two minute compatibility DAT recordings were made from the stereo audio outputs of the five compatibility receivers. Of the total (156), 57 recordings were without multipath, test D-1. Test D-2 is the remaining 99 tests with multipath.

The test audio was timed to the multipath simulator 27 second Rayleigh cycles. Four cycles (segments) were recorded for each test. The first three audio segments were selected from the EBU SQAM CD. The third segment was silence. A reference recording (without proponent) was made for each test group.

For the multipath tests the multipath simulation is started by a cue from the DAT recording.

Each test was evaluated by the lab staff (EO&C) using the scale in Table 3.

Table 1. Audio Segments

Segment	Segment Description
1	Abba
2	Female Speech
3	Violin
4	Silence

Table 2. Receivers and Multipath Scenarios Used

Number	Type	Make	Urban Slow	Urban Fast	Rural Fast	Terrain Obstructed
1	Auto	Delco	X	X	X	X
2	Highend Hi-Fi	Denon	X			
3	Blaster	Panasonic	X			
4	Competitive Hi-Fi	Pioneer	X			
5	Auto	Ford	X	X	X	X

Table 3. EO&C rating scale

Rating Scale

-3	Much Worse
-2	Worse
-1	Slightly Worse
0	The Same
1	Slightly Better
2	Better
3	Much Better

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence

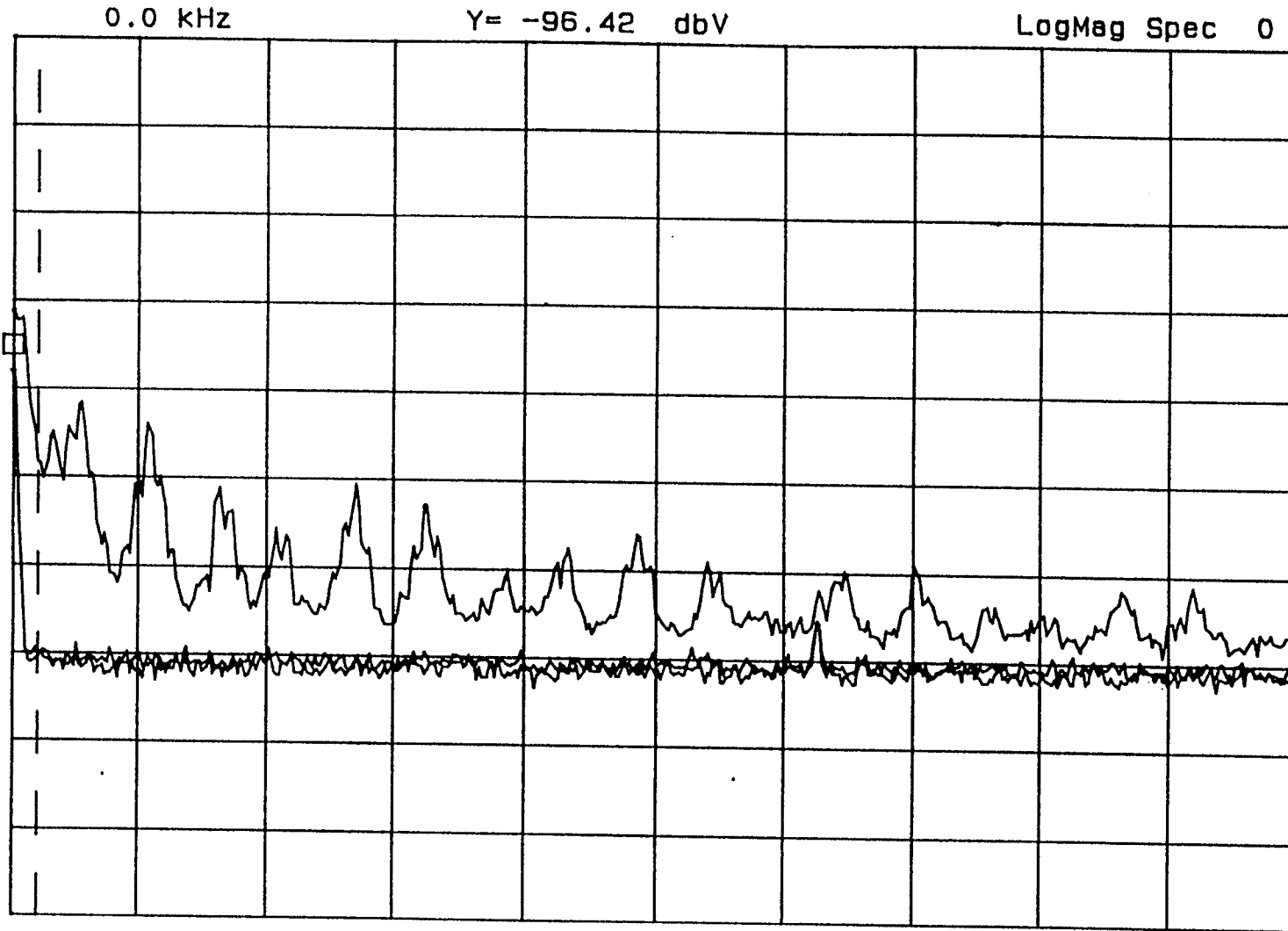
Reference Point PREP

Operator Comments

A) ENGINE w/50u
TEAM

B) CONNECT TO
DOT ; POWER off

C) DOT ON; NOT
MOVING



Analog Baseband Frequency Spectrum

1/1/97 20: 01: 29



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

Reference Point PREP

Operator Comments

>35 dB
INCREASE w/SIGNAL

PRESENT; ∴ NO

ABLE TO SEE

INTERNAL DAT

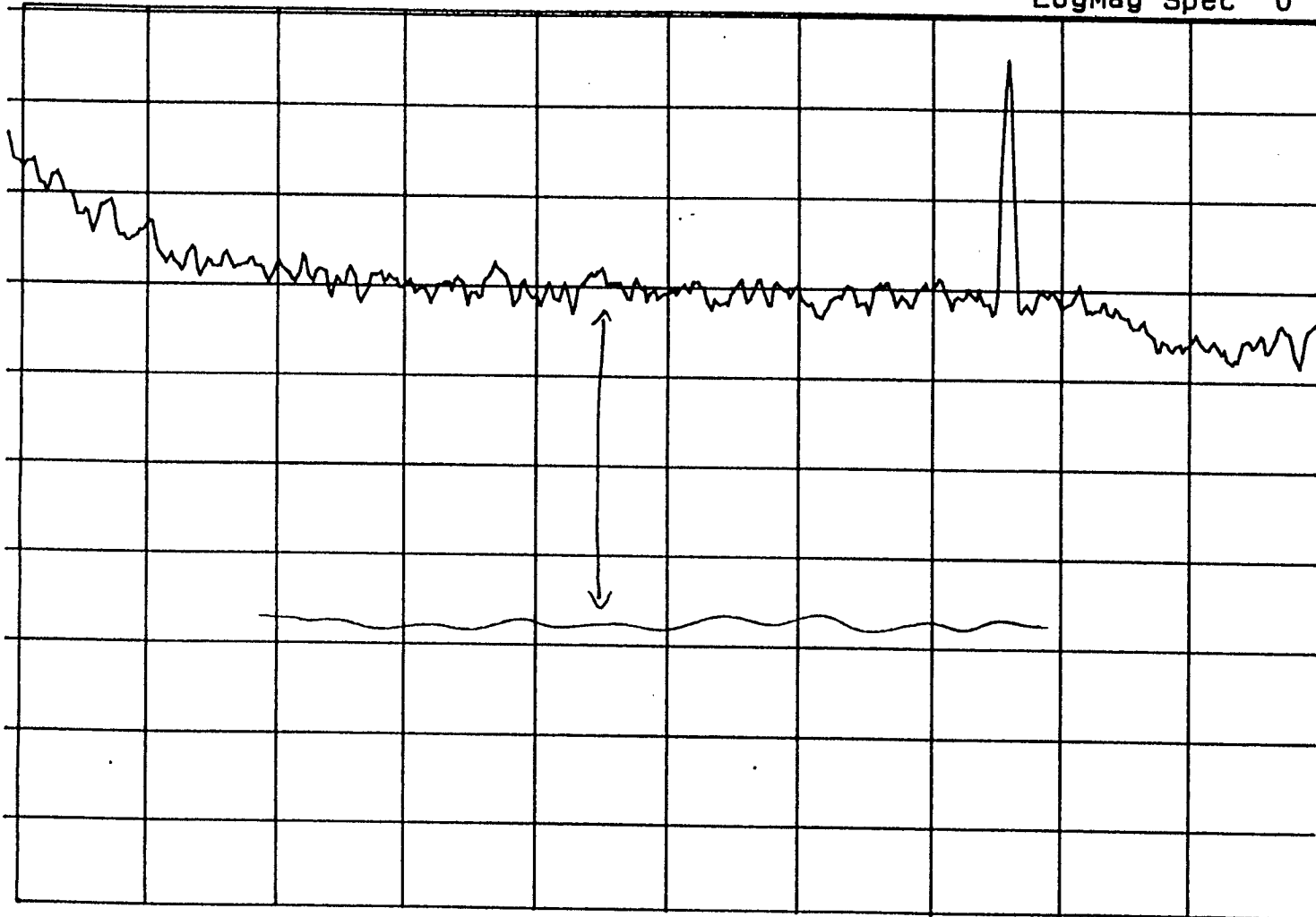
SPURS IN ALL TESTS



SubCarrier Systems Corporation

611

LogMag Spec 0



0.0 KHz

12.5000 KHz

25.0000 KHz

Top = -60 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/97

20: 22: 12

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

Reference Point PREP

Operator Comments

TAPE HS 40100

TRACK #3 (ALL)

*COMPOSITE ON
TEST TONE SEQ.*

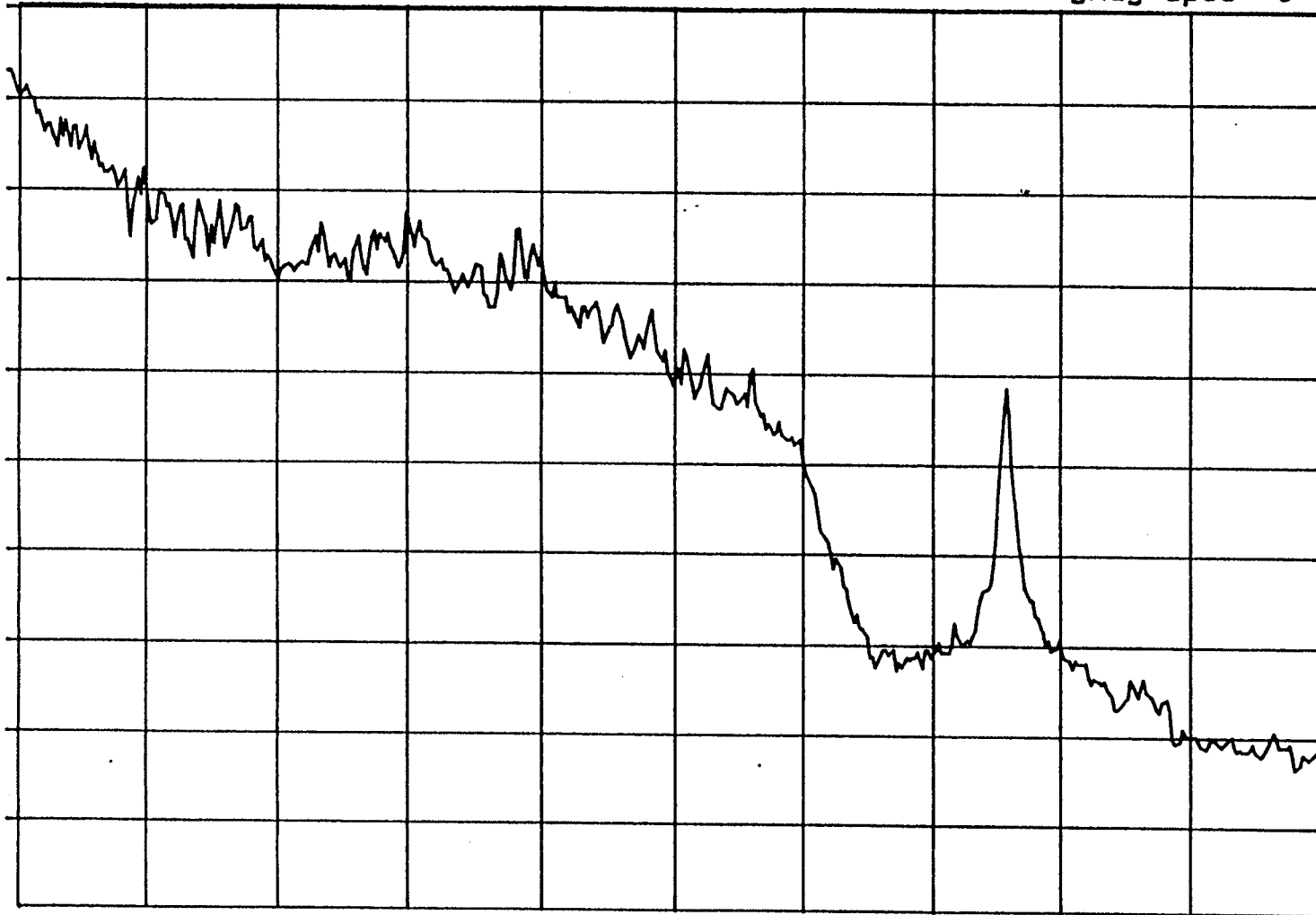
SHOWS OVERALL

*RESPONSE OF
TOWER*



SubCarrier Systems Corporation

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 36: 24

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

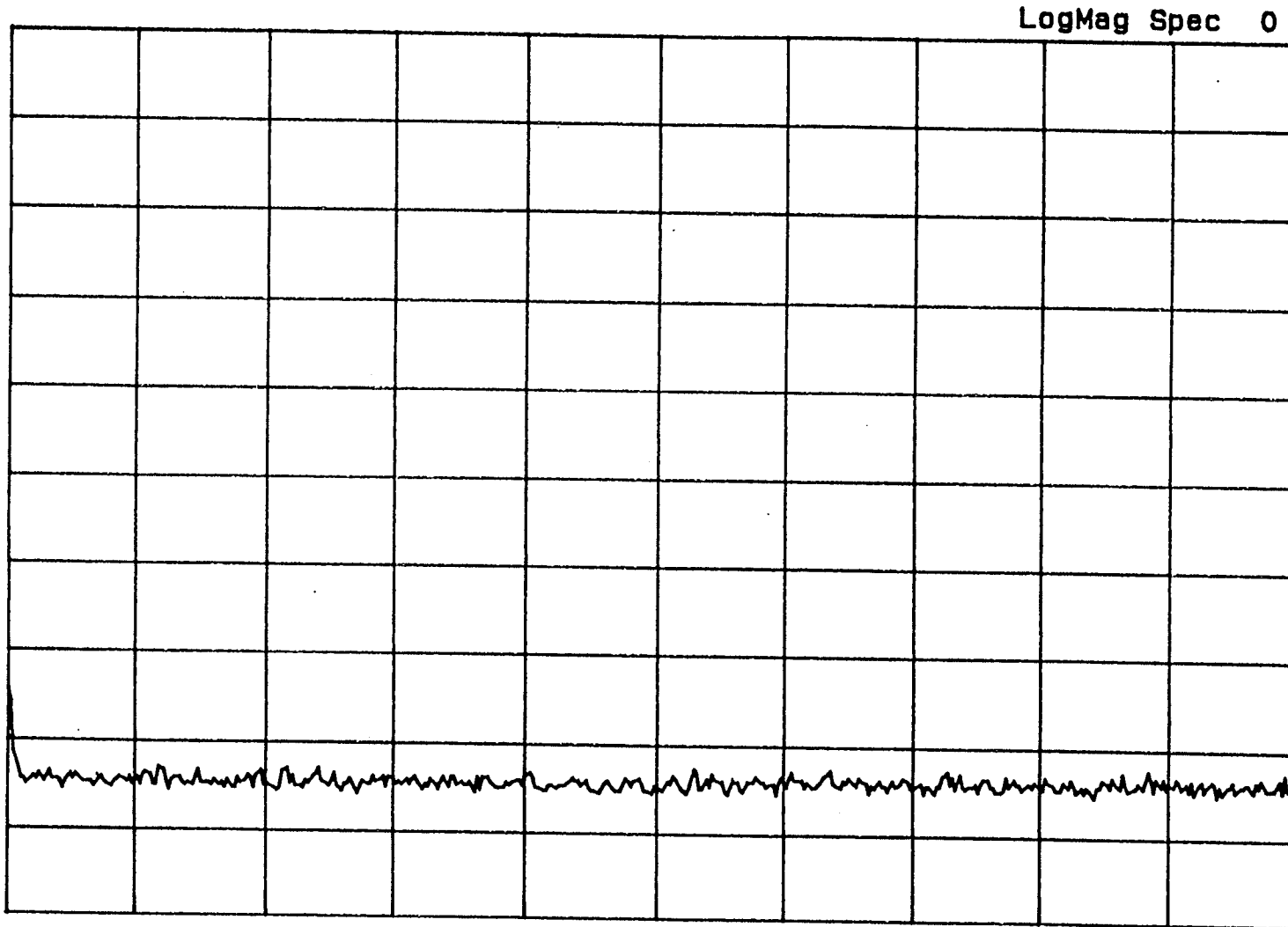
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence

Reference Point PREP

Operator Comments

*SYSTEM RUNNING
WITH BLANK
DOT TAPE; RESULT
MIN NOISE LEVEL*



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

/1/97

22: 58: 39

SubCarrier Systems Corporation



181

Delco

Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	FFT Sapec Anal Operator Test Comments	Grade
	Start	Stop				
HS40100.DAT	11/13/96					
	0:00	0:30	1	Delco Radio 0 dB Reference Track 1KHz@91% Pilot@9% 2.4 Vrms=-14 dB on DAT Input Monitor Level Meters		
	0:30	1:00	2	Noise Reference No SCA		
	1:05	3:06	3	Reference	Ref	
	3:12	5:12	4	System C <i>MITRE</i>		
	5:19	7:20	5	Disregard	Disregard	
	7:27	9:27	6	System B <i>DDJ</i>		
	9:34	11:35	7	Disregard	Disregard	
	11:42	13:41	8	System A <i>SEIKO</i>	Change Plotter Pich Rollers to remove page shift	
	13:45	15:46	9	Reference	Ref	
	15:52	17:52	10	System A Group A <i>SEIKO</i>		
	17:58	20:00	11	Disregard		
	20:06	22:07	12	System B Group A <i>DDJ</i>	Tape Jam in deck, problem w/ tape here, stops deck, bad track	
	22:13	24:13	13	Disregard		
	24:19	26:20	14	System C Group A <i>MITRE</i>		
	26:26	28:26	15	Reference		
	28:32	30:32	16	System C Group B <i>MITRE</i>		
	30:38	32:39	17	Disregard		
	32:45	34:45	18	System B Group B <i>DDJ</i>		
	34:50	36:52	19	Disregard		
	36:58	38:58	20	System A Group B <i>SEIKO</i>		

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

#1

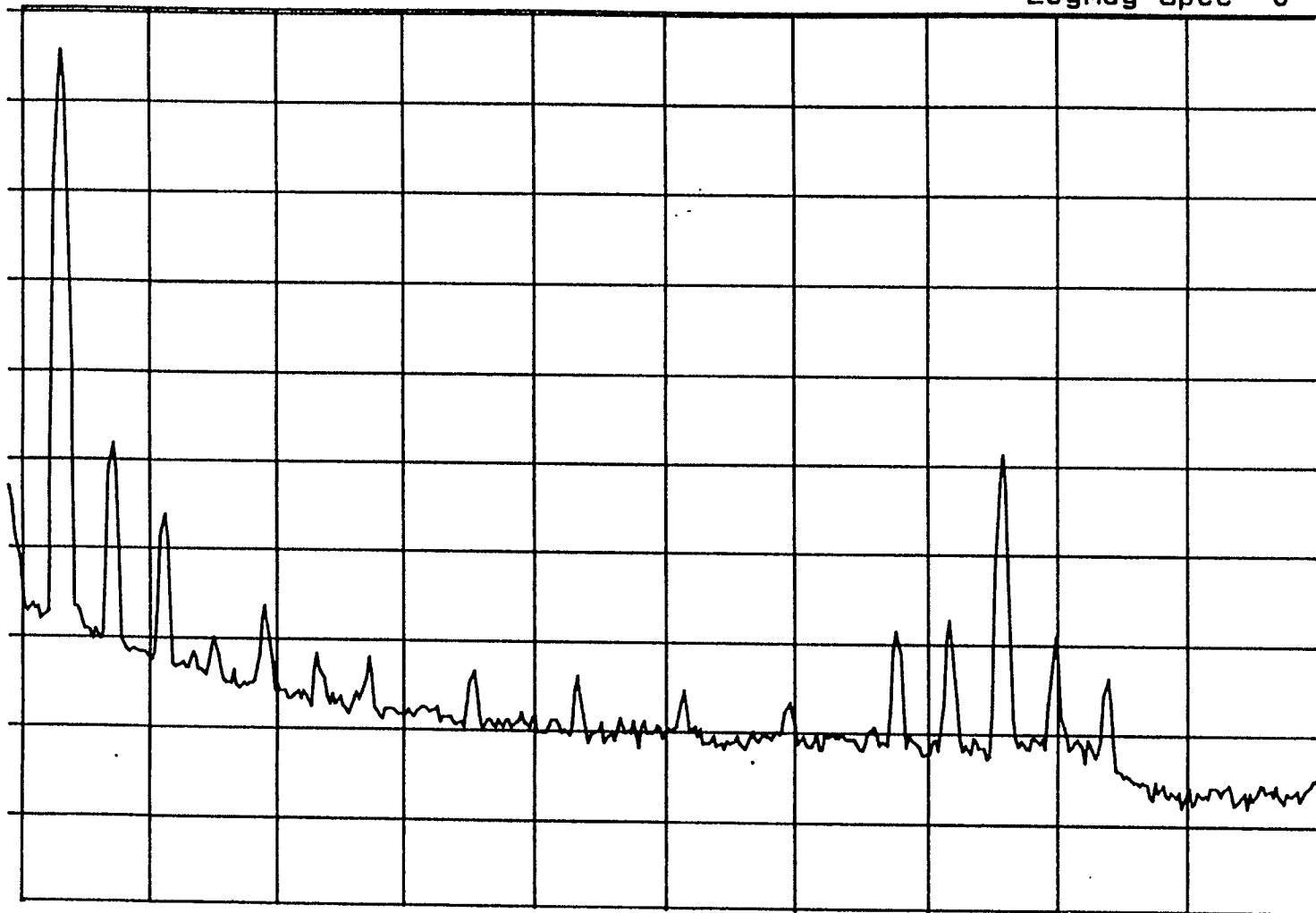
Reference Point

HS 40100

Operator Comments

DELCO
REF
TRACK 1 kHz

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 29: 23

SubCarrier System Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

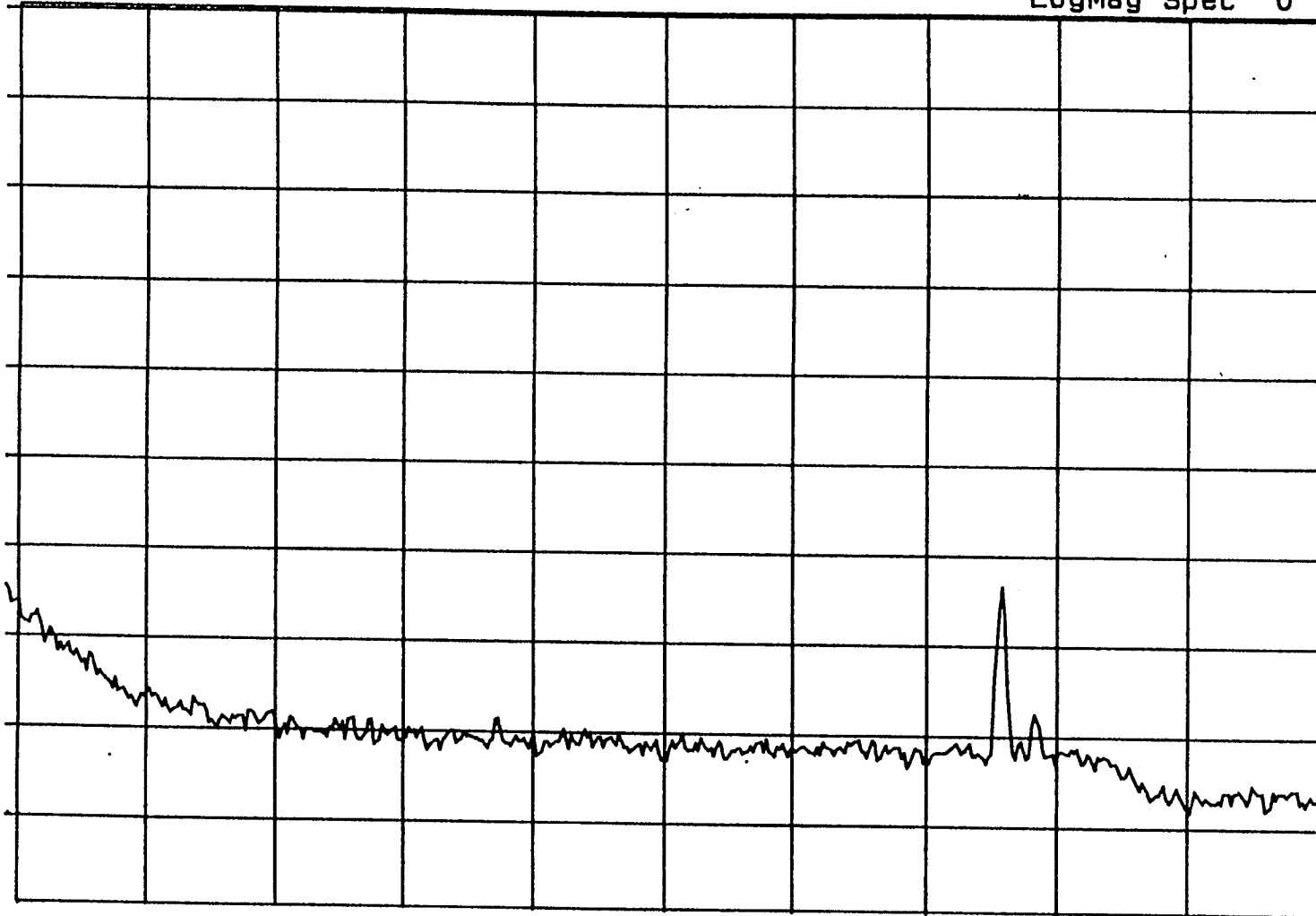
Test Squence

Reference Point 2
HS40100

Operator Comments

NOISE
REF
No SCA
DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 33: 52

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

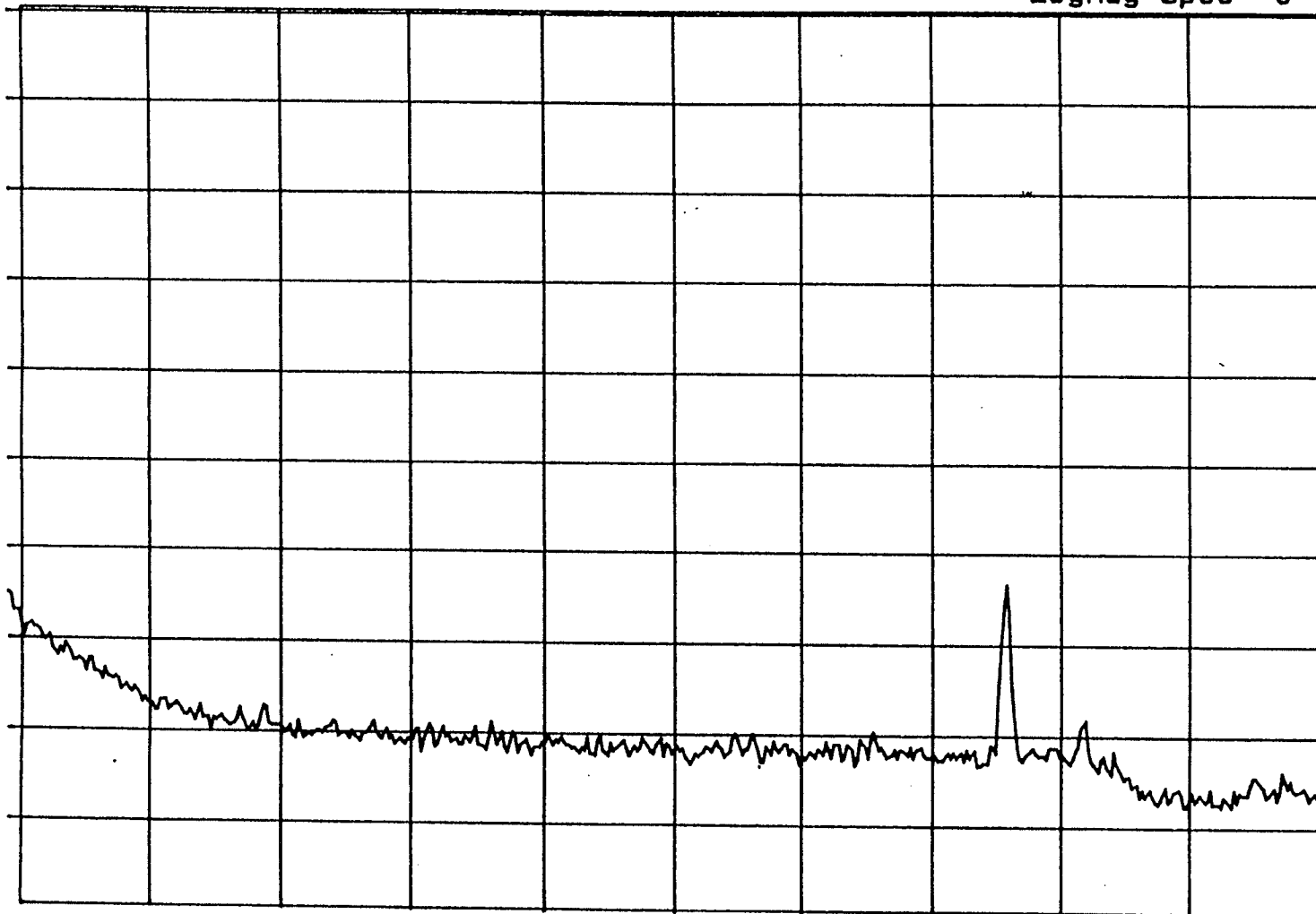
Reference Point 3

HS40100

Operator Comments

REFERENCE

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 41: 30

SubCarrier Syst Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence

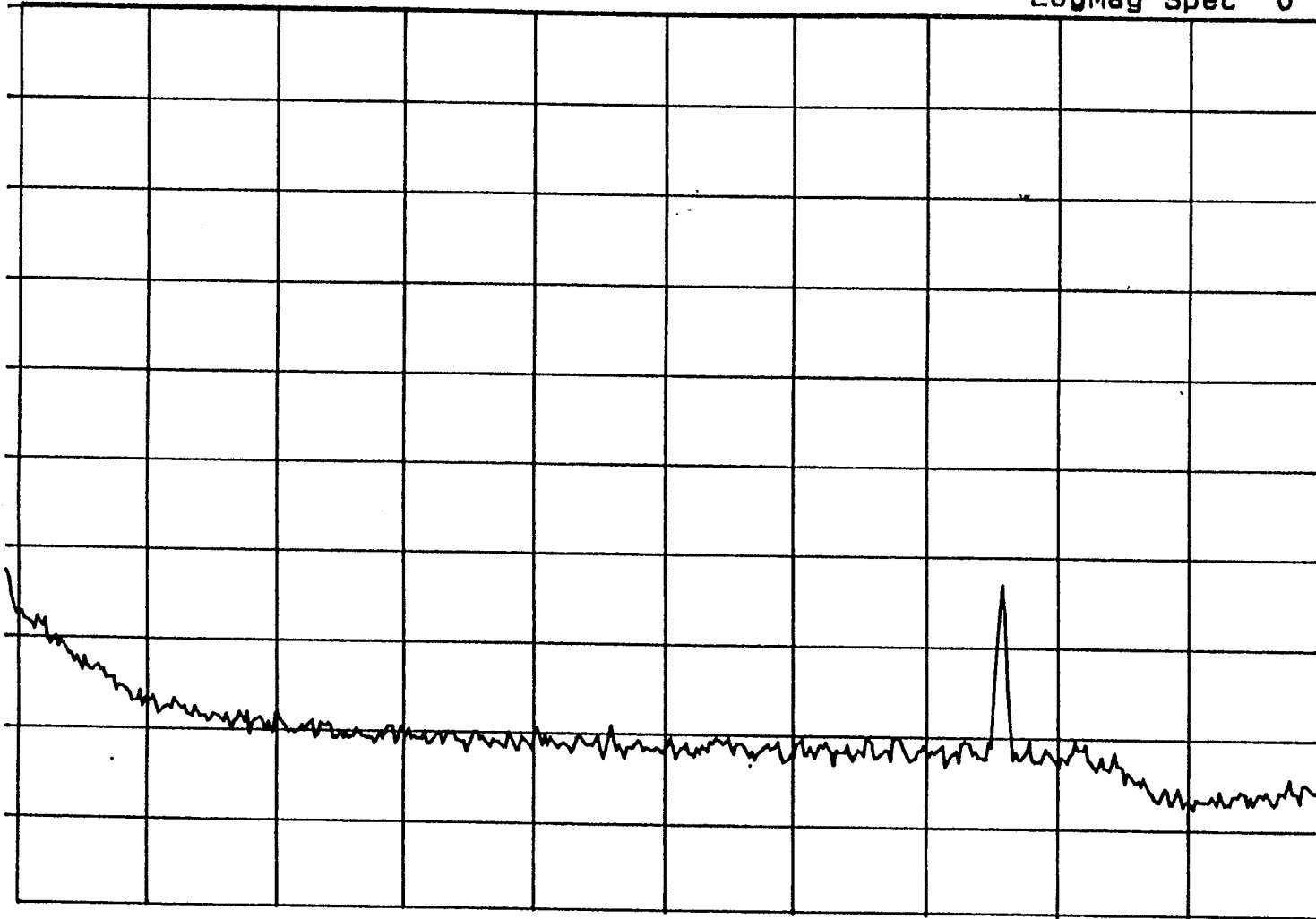
Reference Point 4

HS 40100

Operator Comments

*C
HITRE
DELCO*

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
 Top = 0 dbV 10 dB/div Wndo: BMH
 File= Live

Analog Baseband Frequency Spectrum

1/1/97 20: 44: 07

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

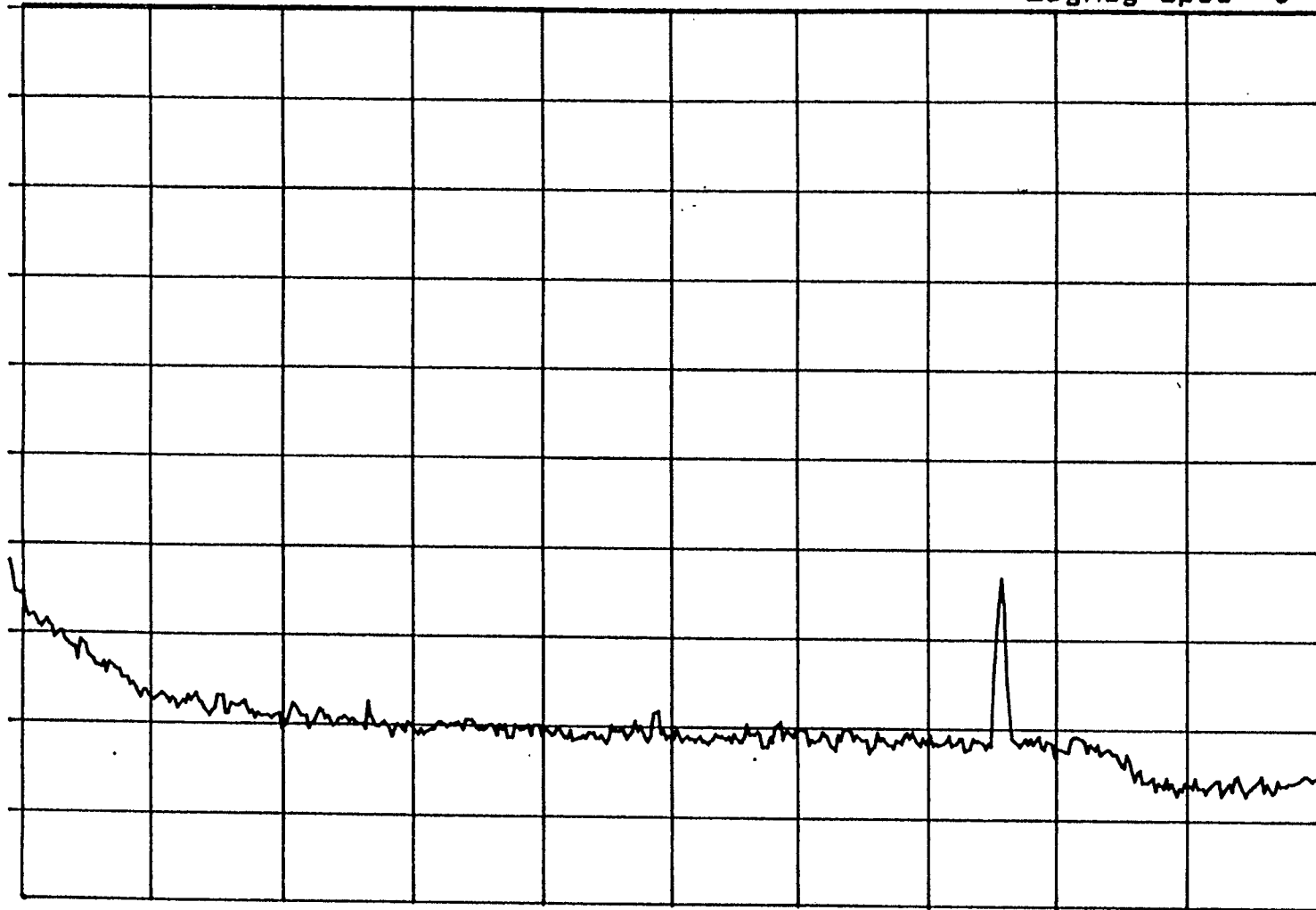
Reference Point 6

HS 40100

Operator Comments

DDJ
DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 47: 23

SubCarrier System

poration



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

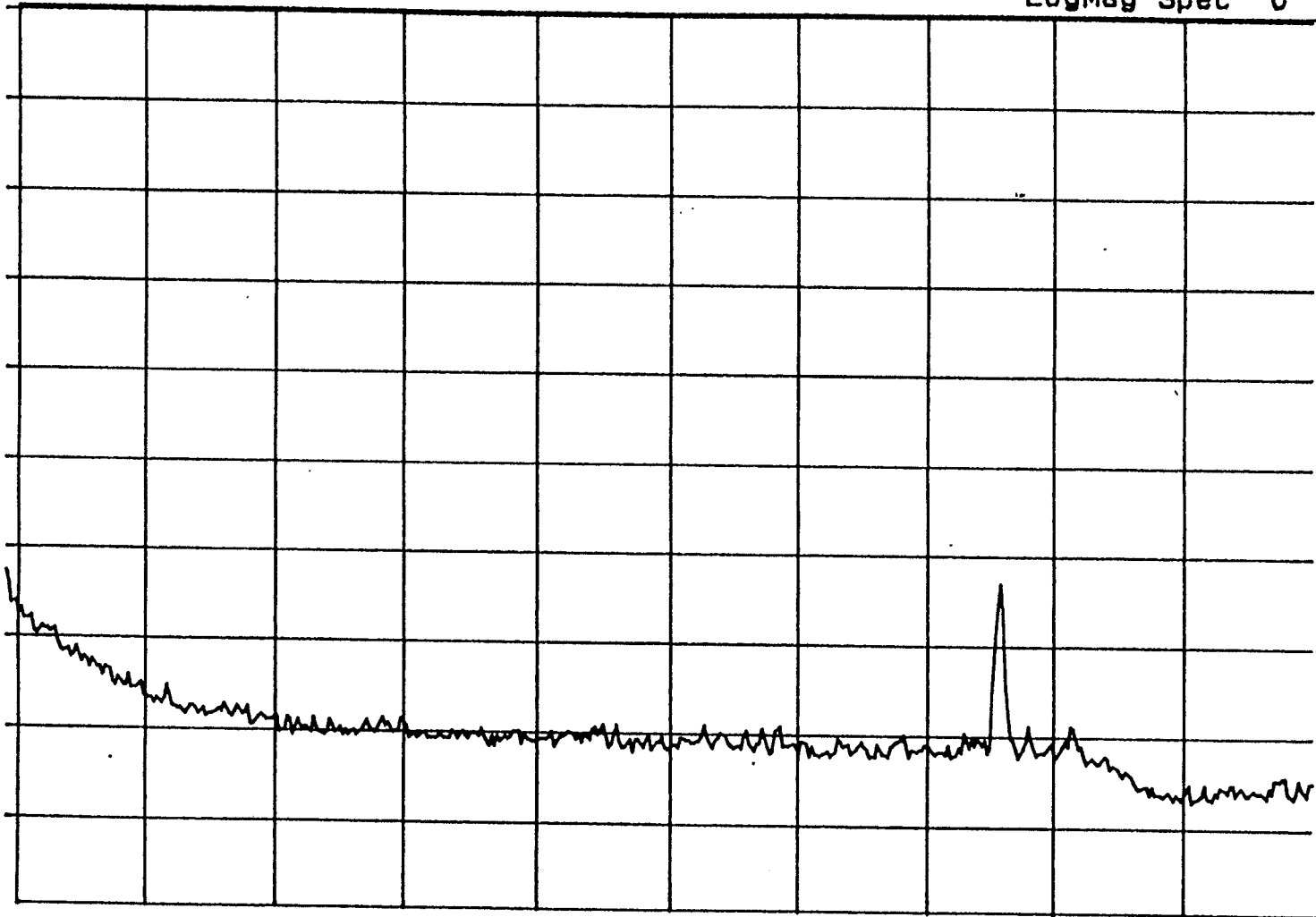
Test Squence

Reference Point 8
HS40100

Operator Comments

A
SEIKO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

20: 49: 40

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

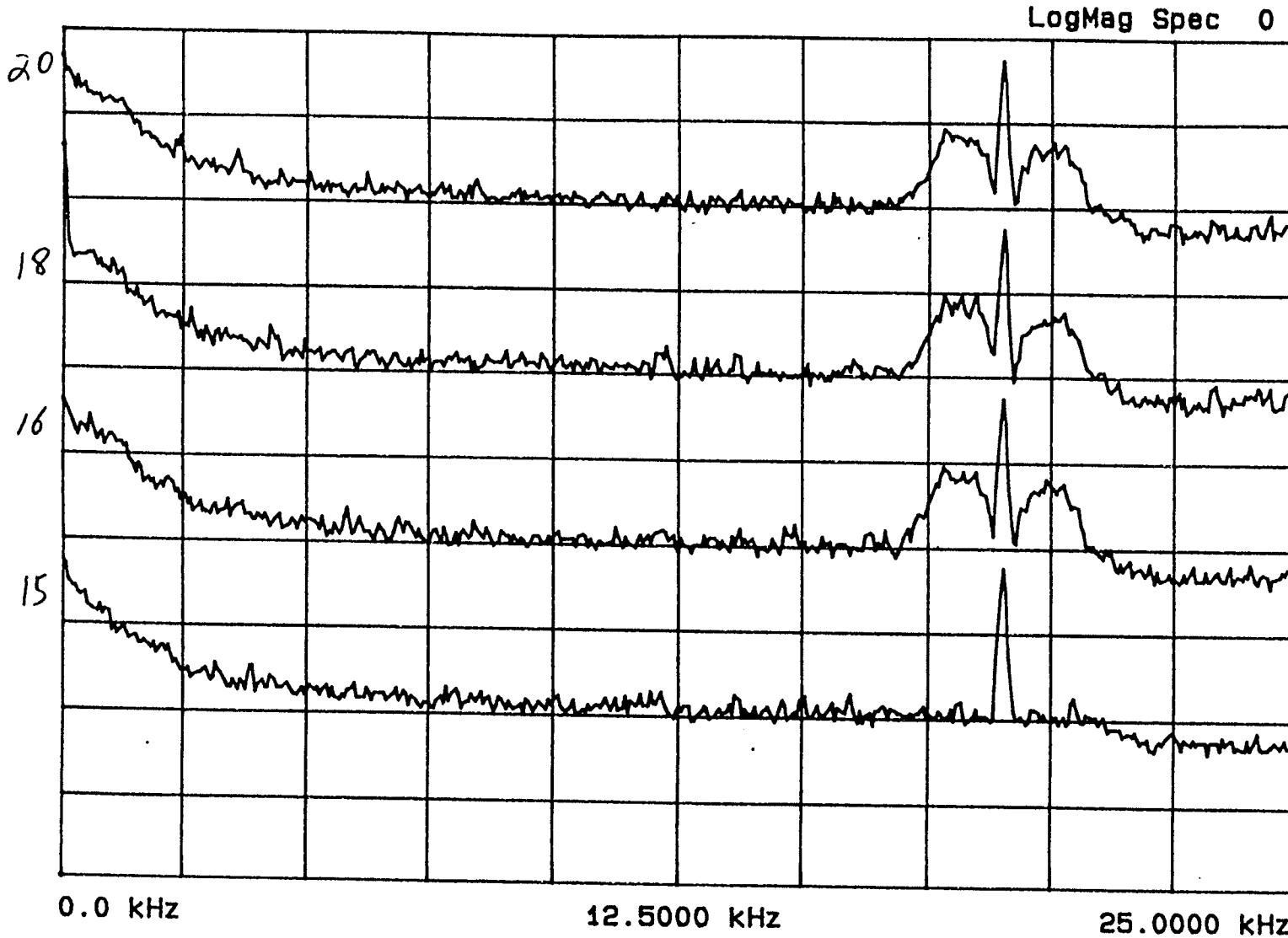
Dig Radio Test Lab Plan

Test Sequence

Reference Point HS4010L

Operator Comments

20 SEIKO
18 DDJ
16 MITRE
15 RFF
DELCO



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

22: 48: 43

SubCarrier Systems Corporation



667

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

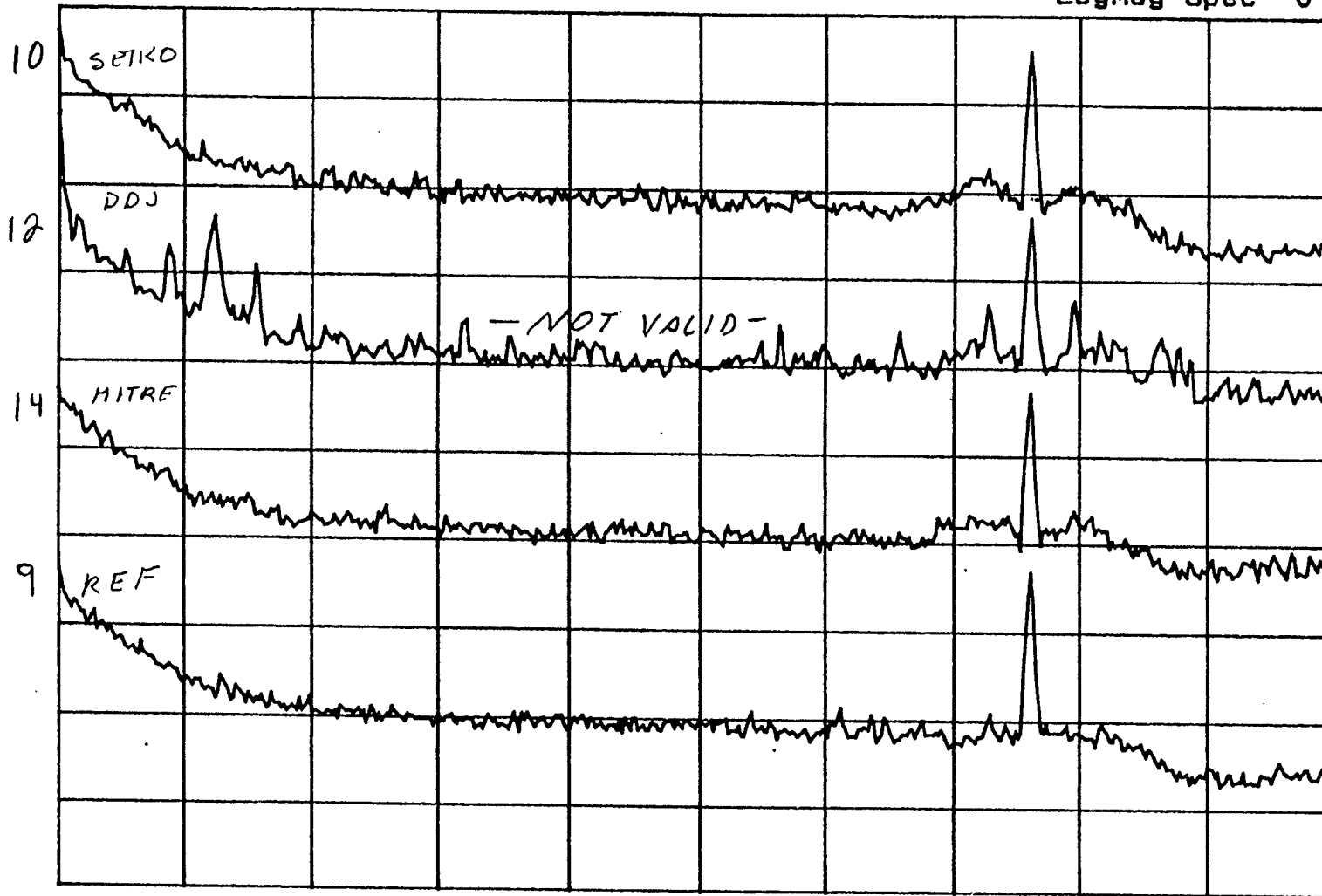
Reference Point _____

HS40100

Operator Comments

*ID #12 SHOWS
NOISE FROM DAT
Tape Search &
Errors*

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz

Top = 0 dBV 10 dB/div Wndo: BMH

File = Live

Analog Baseband Frequency Spectrum

1/1/97 21:45:34

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

Reference Point 3, 4, 6, 8

HS 40100

Operator Comments

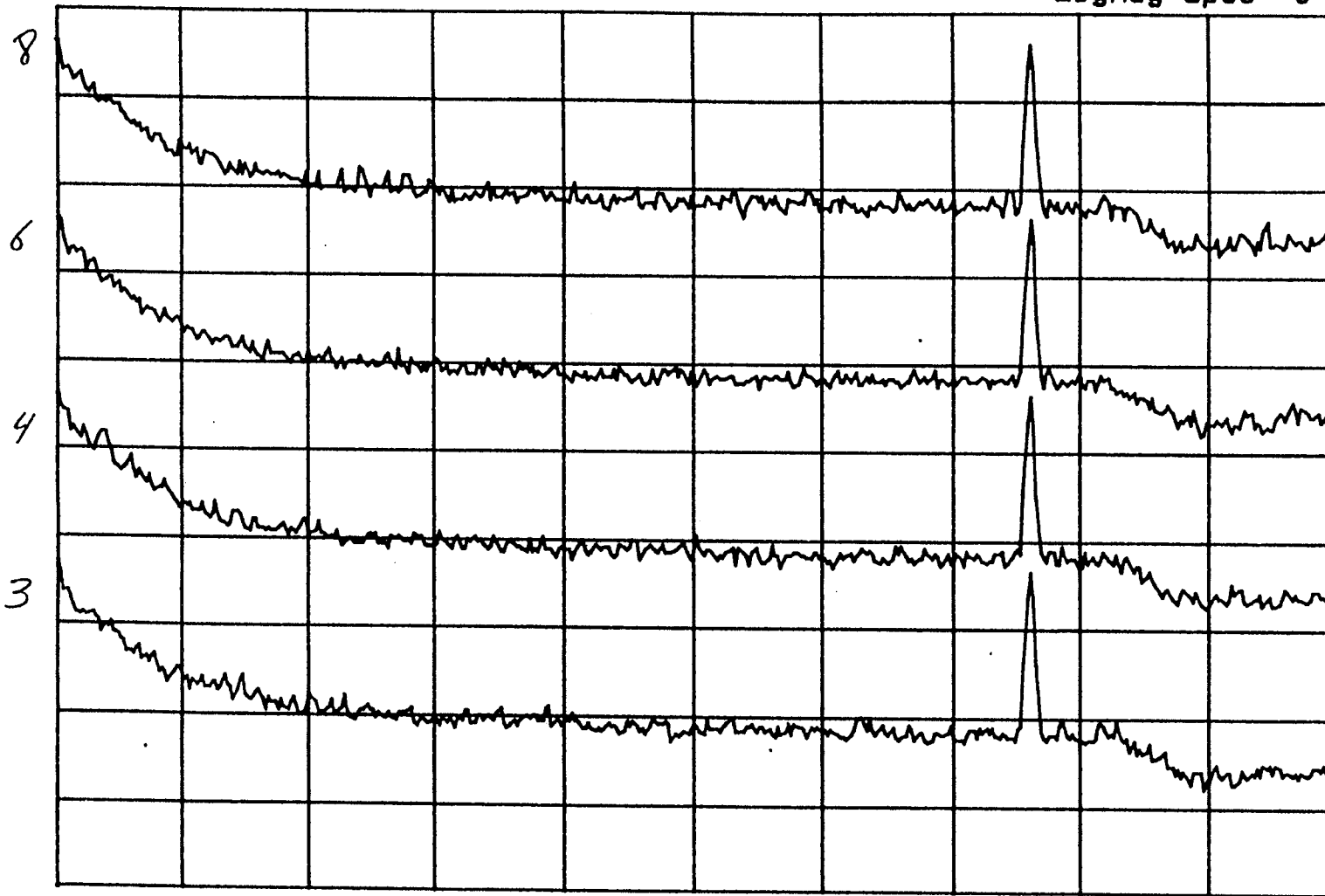
8 SEIKO

6 DDJ

4 MITRE

3 REF

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

21: 33: 17

SubCarrier System Corporation



Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	FFT Sapec Anal Operator Test Comments	Grade
	Start	Stop				
HIS40101.DAT	11/18/96			Proponent Only		
	0:06	2:06	1	Urban Slow Reference	Low end noise, visabvble on UV meter too	
	2:12	4:12	2	Urban Slow System A	SEIKO	
	4:18	6:18	3	Urban Slow System B	DDJ	
	6:24	8:24	4	Urban Slow System C	MITRE	
	8:30	10:30	5	Urban Fast Reference		
	10:36	12:36	6	Urban Fast System C	MITRE	
	12:42	14:42	7	Urban Fast System B	DDJ	
	14:48	16:48	8	Urban Fast System A	SEIKO	During fade, popped "whote" spectrum base band up was fade occurs
	16:54	18:54	9	Rural Fast Reference		0 db
	19:00	21:00	10	Rural Fast System A	SEIKO	20 db up shift in plot
	21:06	23:06	11	Rural Fast System B	DDJ	40 db up shift
	23:12	25:12	12	Rural Fast System C	MITRE	60 db up shift
	25:18	27:24	13	Obstructed Reference		See Notes for plot format details
	27:30	29:30	14	Obstructed System C	MITRE	
	29:36	31:36	15	Obstructed System B	DDJ	
	31:42	33:42	16	Obstructed System A	SEIKO	

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

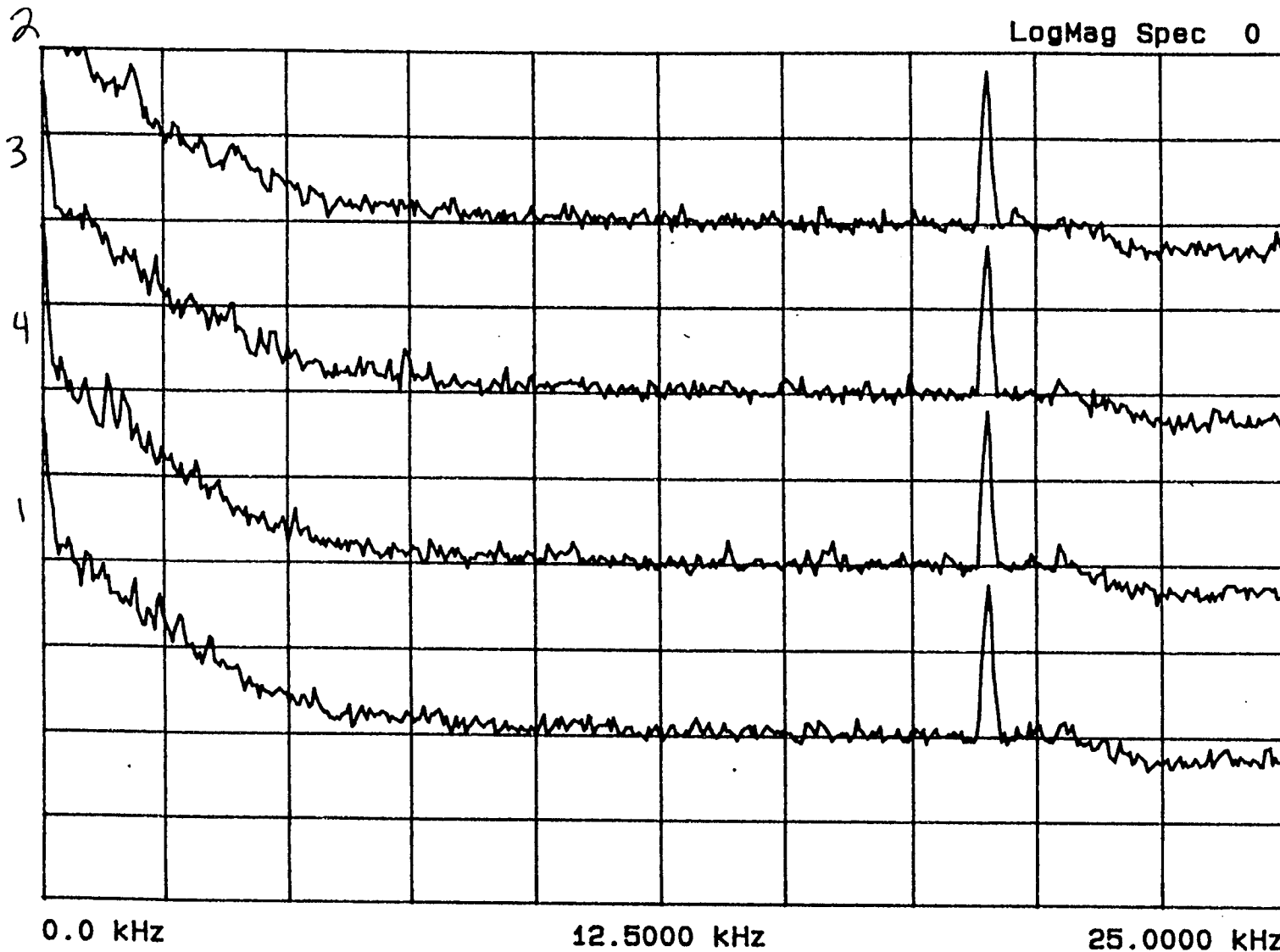
Test Sequence

Reference Point HS40101

Operator Comments

2 SEIKO
3 DDJ
4 MITRE
1 REF URBAN SLOW

M.P. U SLOW
DELCO



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 10: 32

SubCarrier System Corporation



761

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence

Reference Point HS40101

Operator Comments

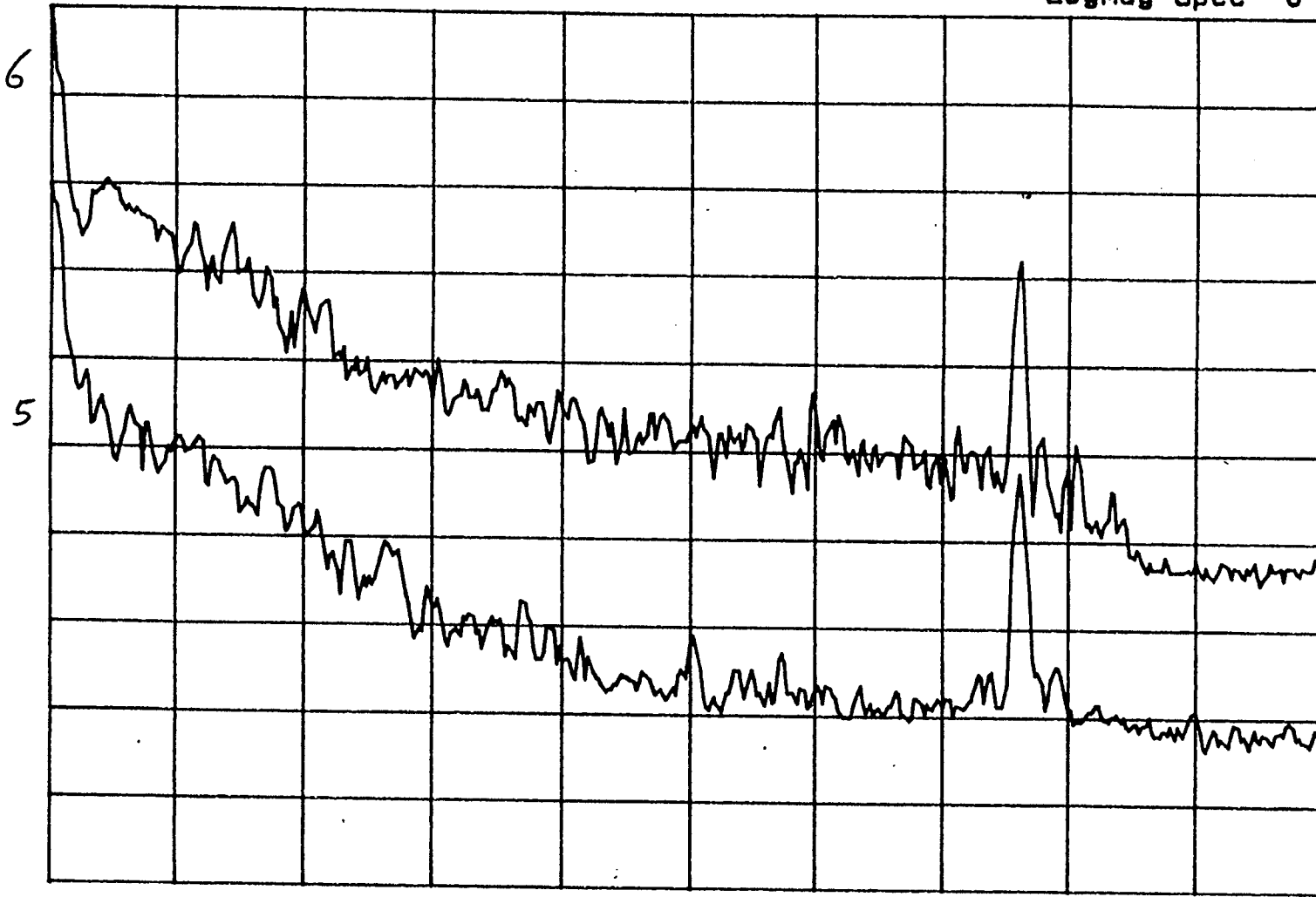
6 MITRE

5 REF

MP V FAST

DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 18: 29



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence

Reference Point HS4010

Operator Comments

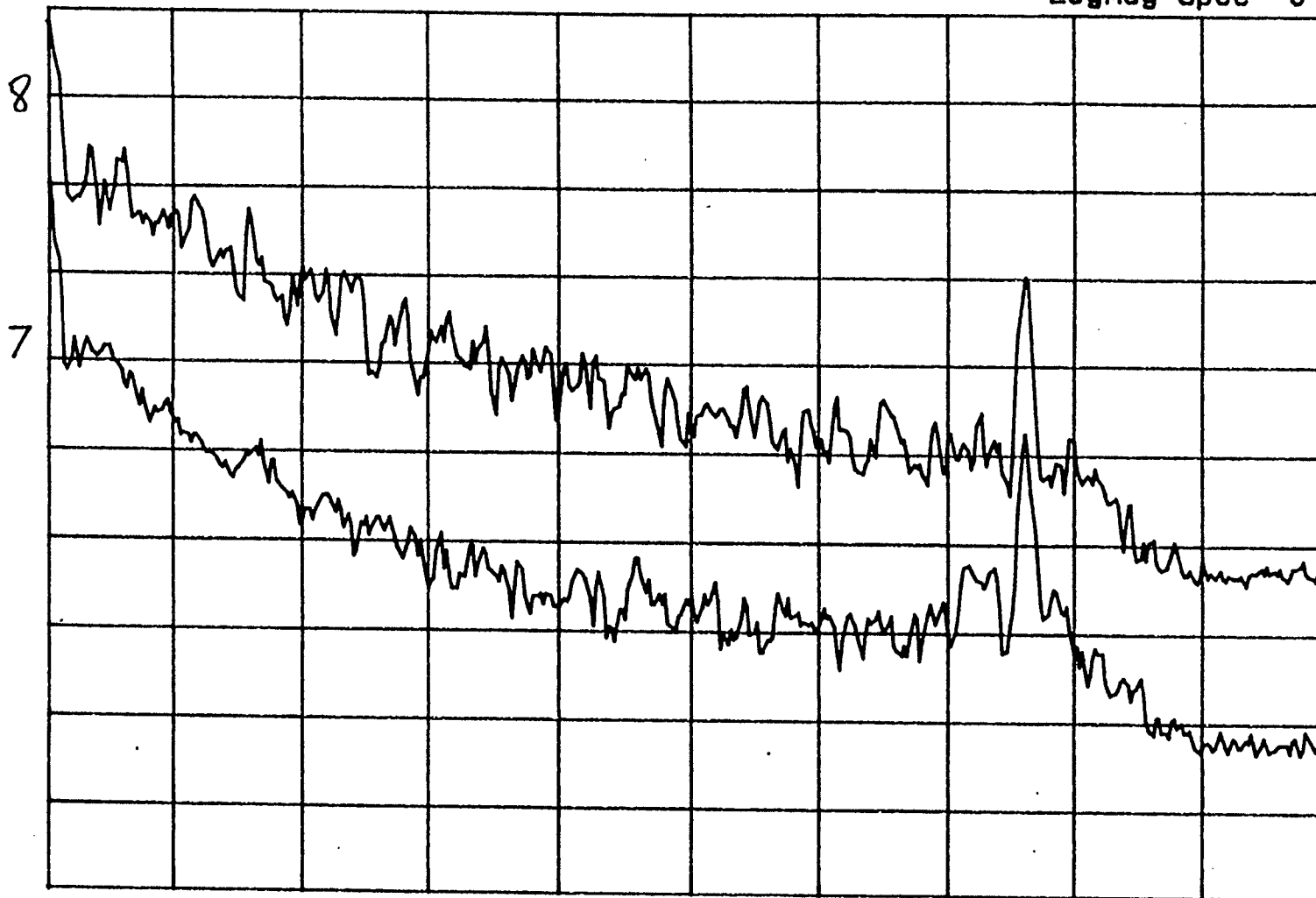
8 SEIKO

7 DDJ

MP U FAST

DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 22: 41

SubCarrier System Corporation



1910

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

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Test Squence

Reference Point HS40101

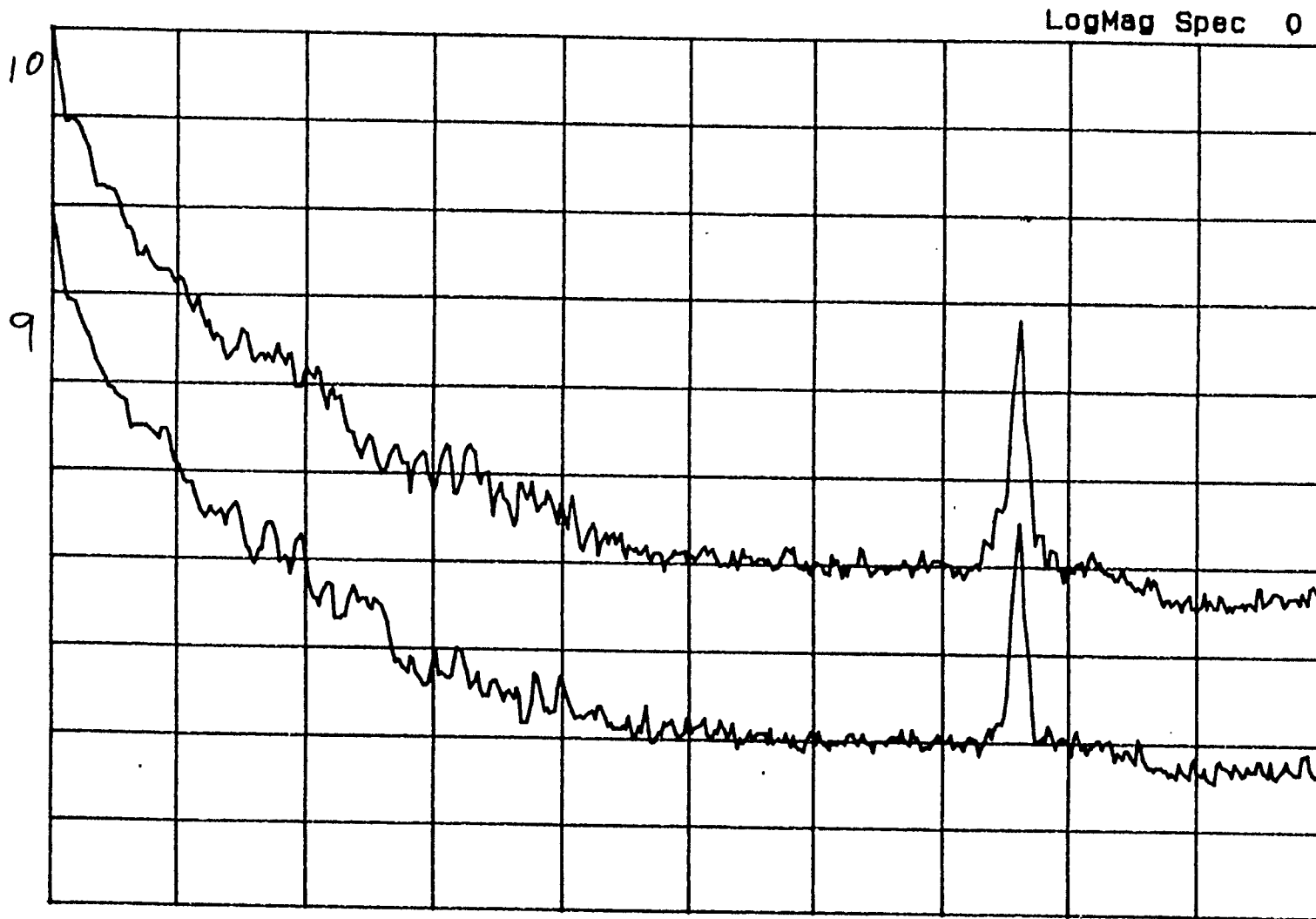
Operator Comments

10 SEIKO

9 REF

MP R. FAST

DELCO



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 28: 36

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(High Speed FM

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Report & Test Plan: #1

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Test Sequence

Reference Point HS40101

Operator Comments

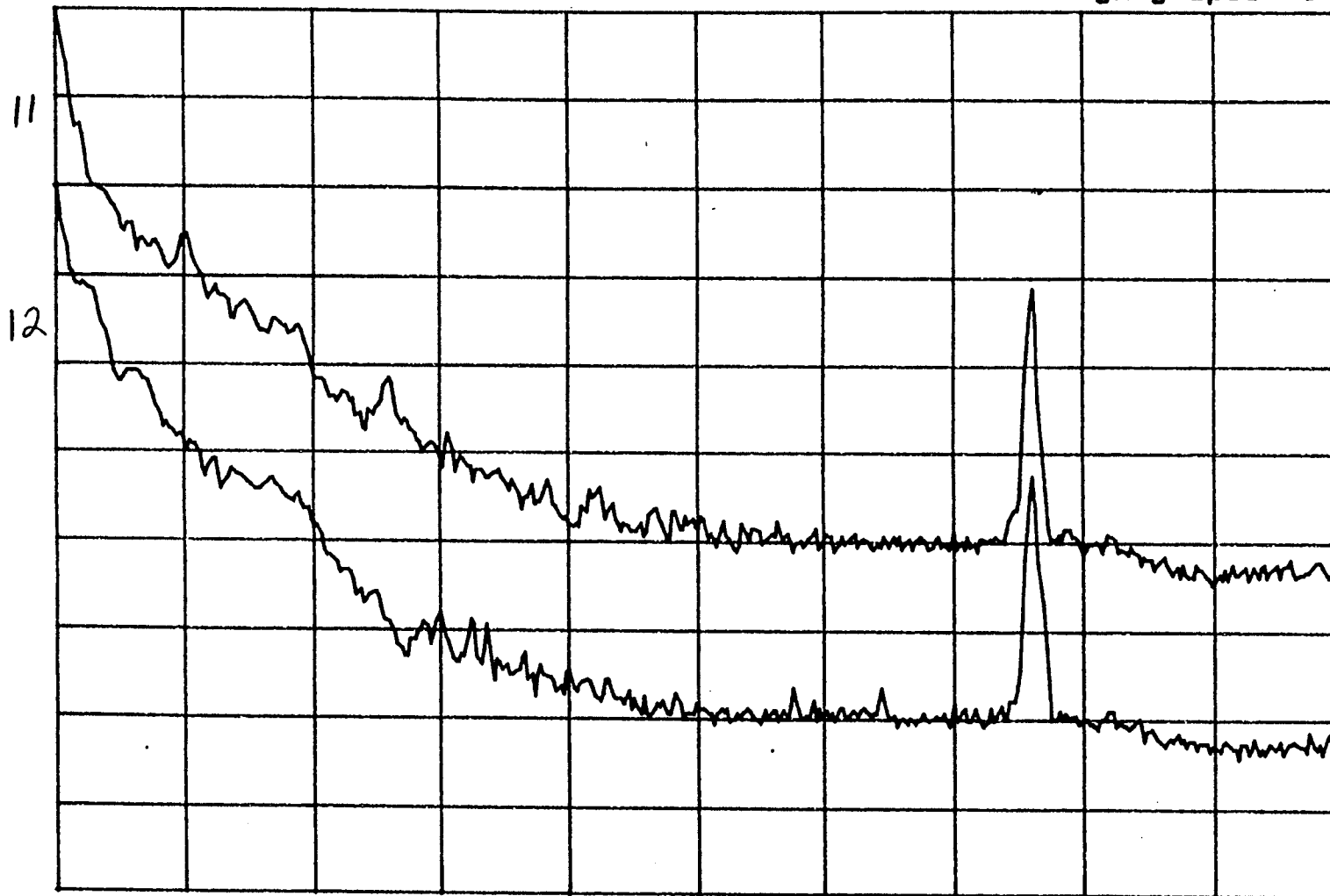
11 DDJ

12 HITRE

MP R FAST

DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 34: 57

SubCarrier Systems Corporation



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Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

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Test Sequence

Reference Point H540101

Operator Comments

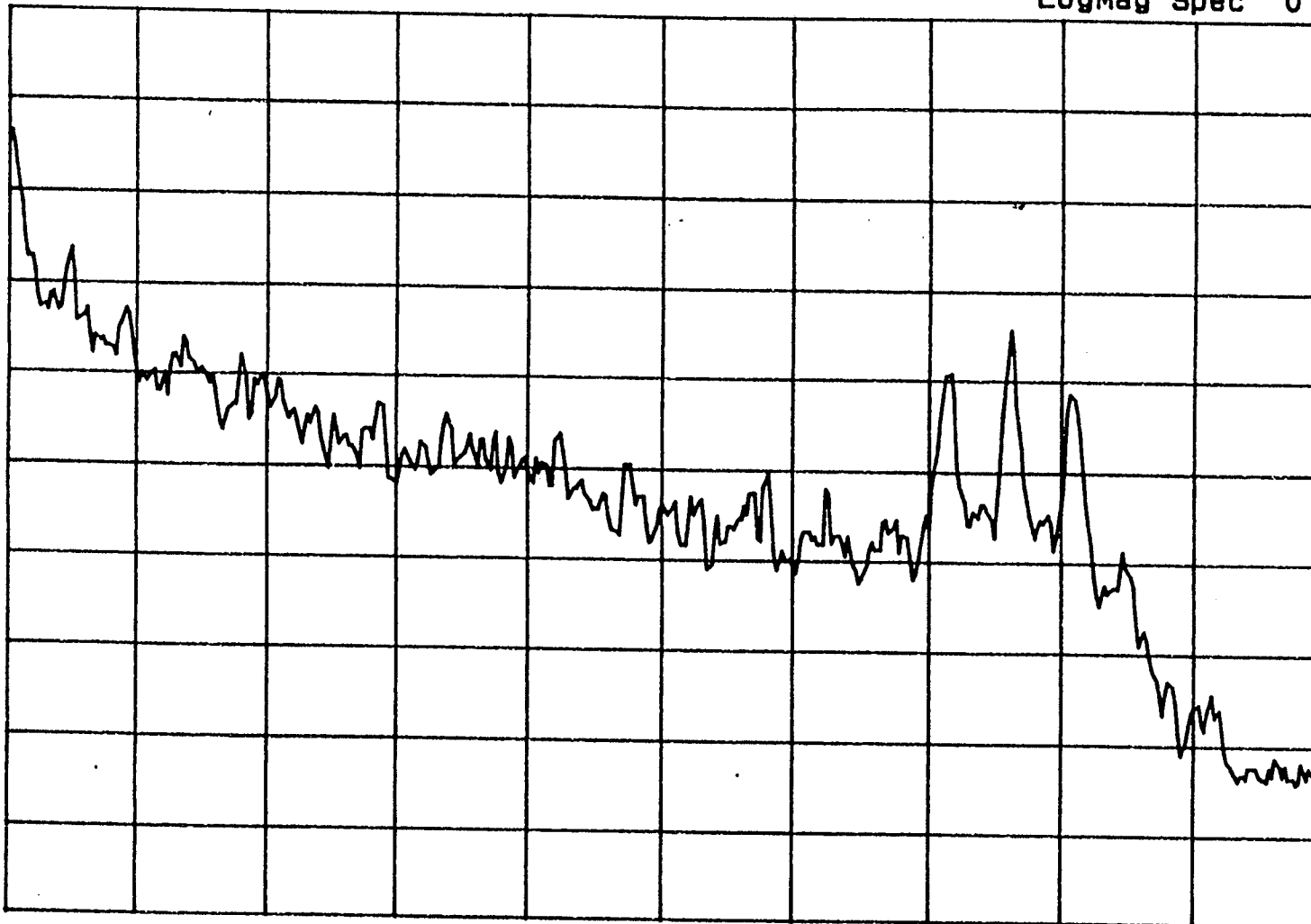
#13

OBSTRUCTED M.P.

REF

DFCCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 40: 24

SubCarrier Systems Corporation



Client:

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(High Speed FM

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Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

Reference Point HS40101

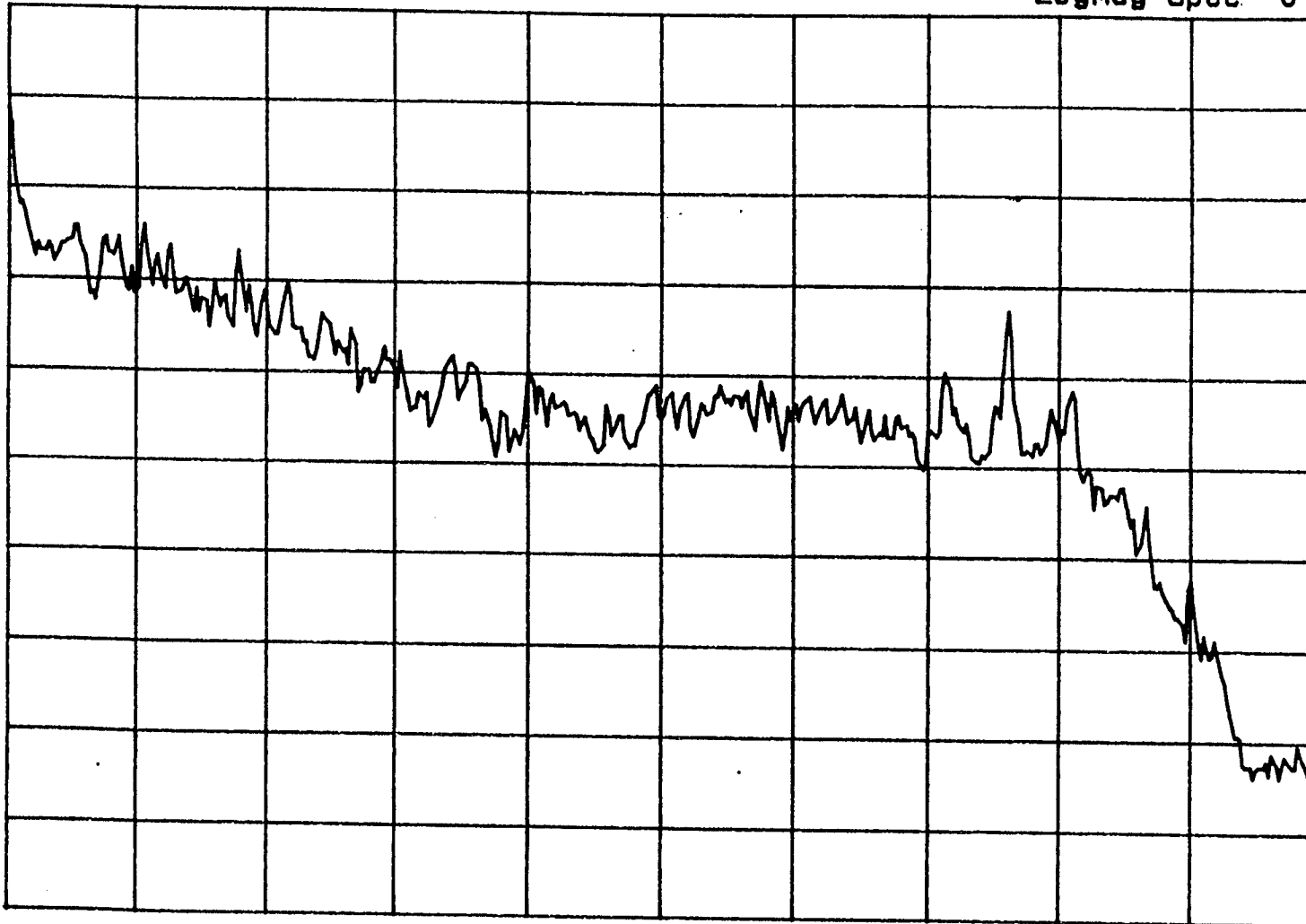
Operator Comments

#14

MITRE
M.P. OBSTRUCTED

DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 42: 50

SubCarrier System: Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence

Reference Point H540101

Operator Comments

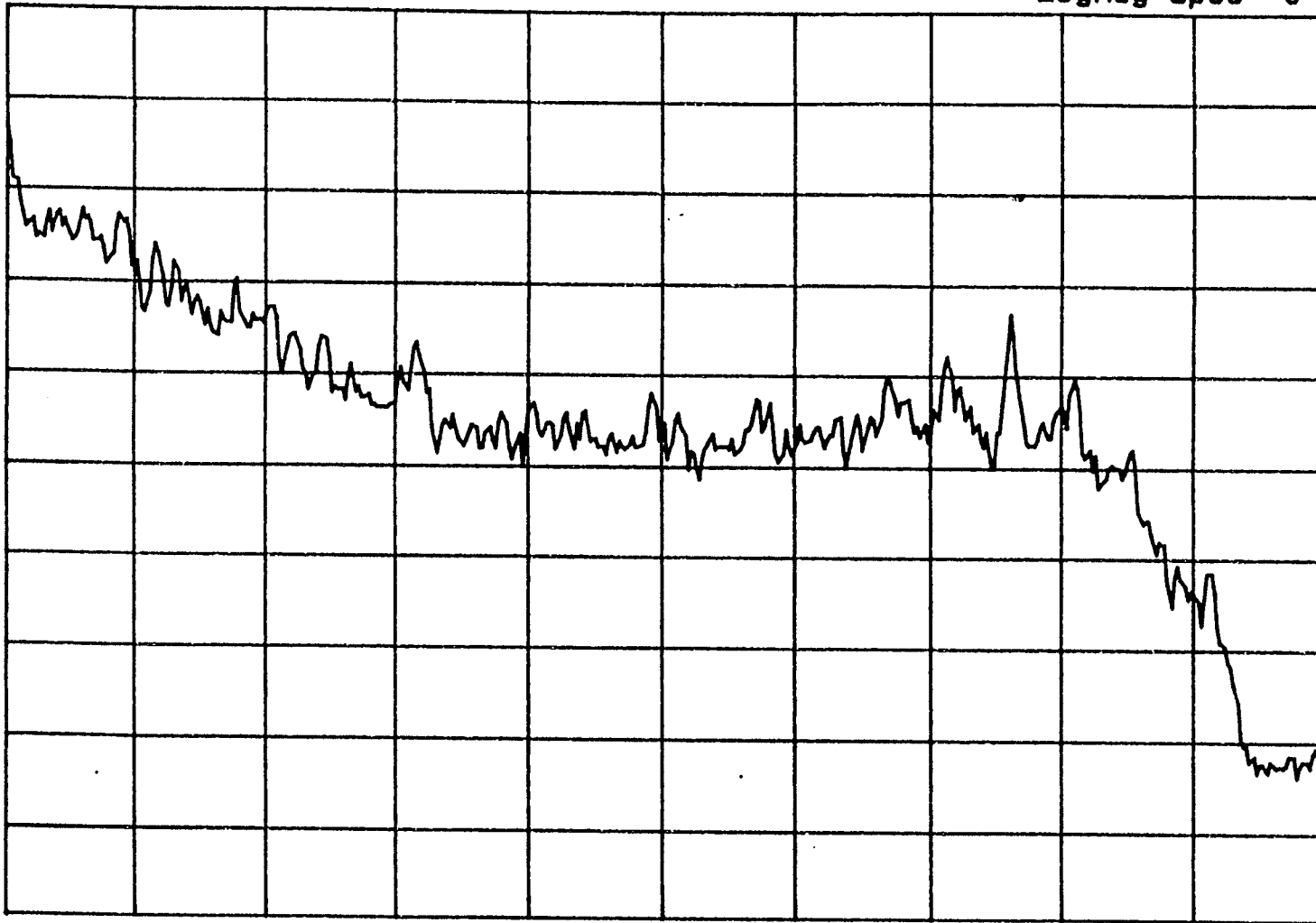
#15

DDJ

OBSTRUCTED MP

DFLCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 45: 09



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

Reference Point HS40101

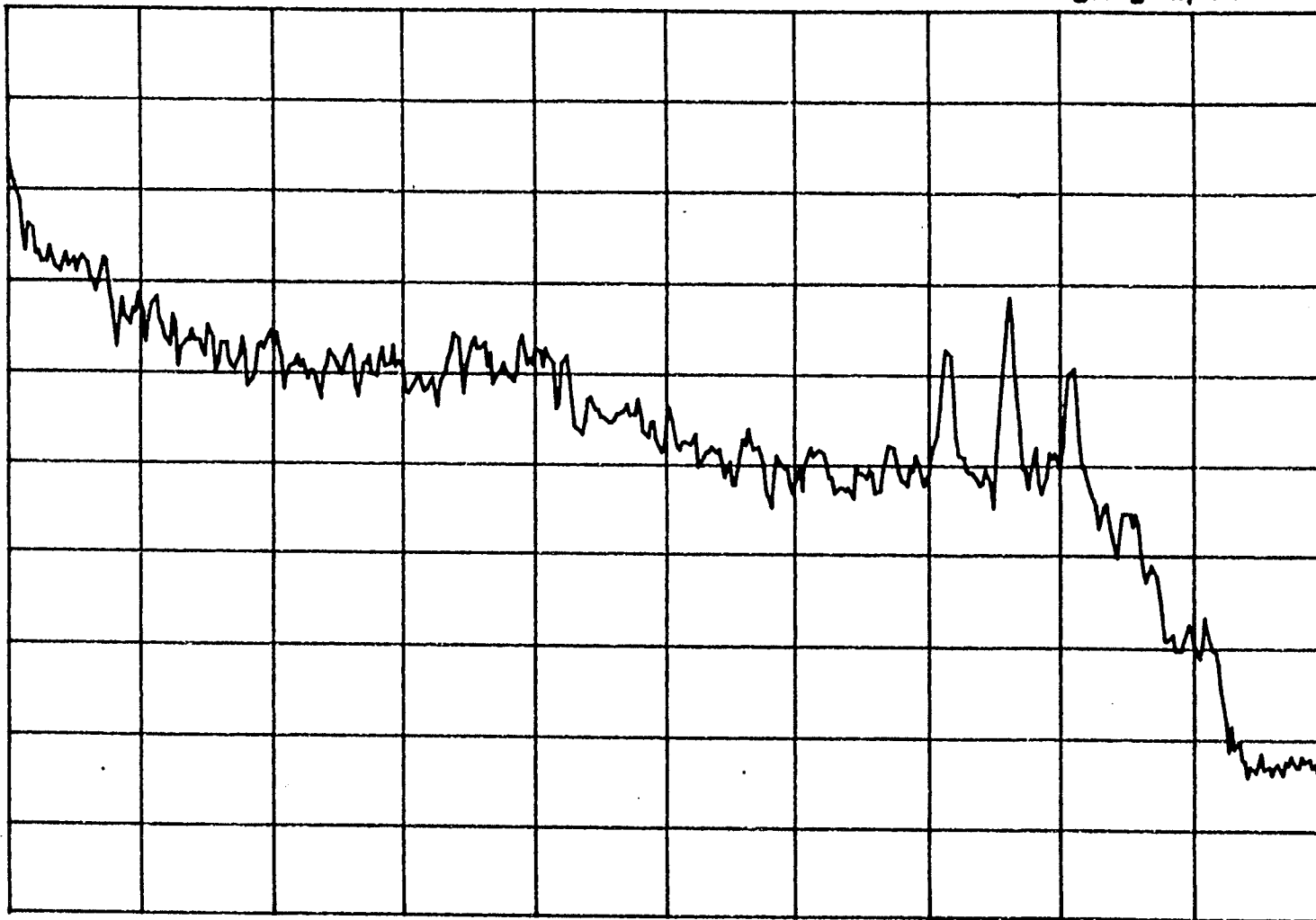
Operator Comments

#16

SEIKO
OBSTRUCTED M.P.

DELCO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 47: 31

SubCarrier System Corporation



202

Digital Radio Test Laboratory

DAT File Number	Time Code		ID		Description	
	Start	Stop				
HS40102.DAT	11/18/96				Group A	
	0:05	2:06	1		Urban Slow Reference	
	2:11	4:12	2		Urban Slow System A	SEIKO
	4:18	6:19	3		Urban Slow System B	DDJ
	6:24	8:25	4		Urban Slow System C	MITRE
	8:30	10:31	5		Urban Fast Reference	
	10:36	12:37	6		Urban Fast System C	MITRE
	12:42	14:43	7		Urban Fast System B	DDJ
	14:48	16:49	8		Urban Fast System A	SEIKO
						14:11 0-6 Khz zoom in runs also
						16:15 0-6 Khz zoom in runs also
	16:54	18:55	9		Rural Fast Reference	
	19:00	21:01	10		Rural Fast System A	SEIKO
	21:06	23:07	11		Rural Fast System B	DDJ
	23:12	25:13	12		Rural Fast System C	MITRE
	25:19	27:19	13		Obstructed Reference	
	27:24	29:27	14		Obstructed System C	MITRE
	29:32	31:34	15		Obstructed System B	DDJ
	31:39	33:41	16		Obstructed System A	SEIKO

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540102*

Reference Point _____

Operator Comments

#2 SEIKO

#3 DDJ

#4 MITRE

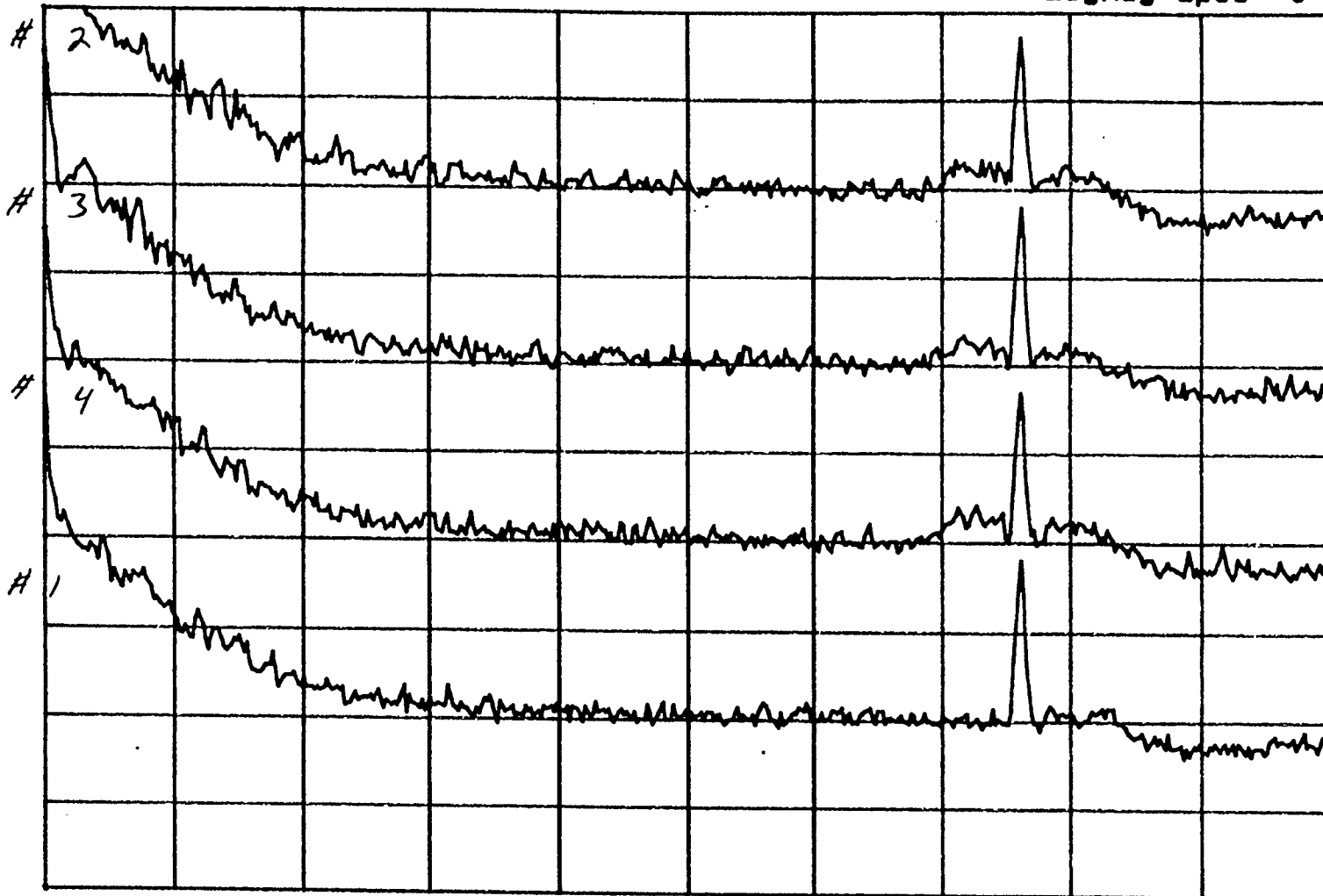
#1 REF

U SLOW

DIFCO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

19: 59: 34

SubCarrier System Corporation



204

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

HS40102

Reference Point

Operator Comments

#6 MITRE

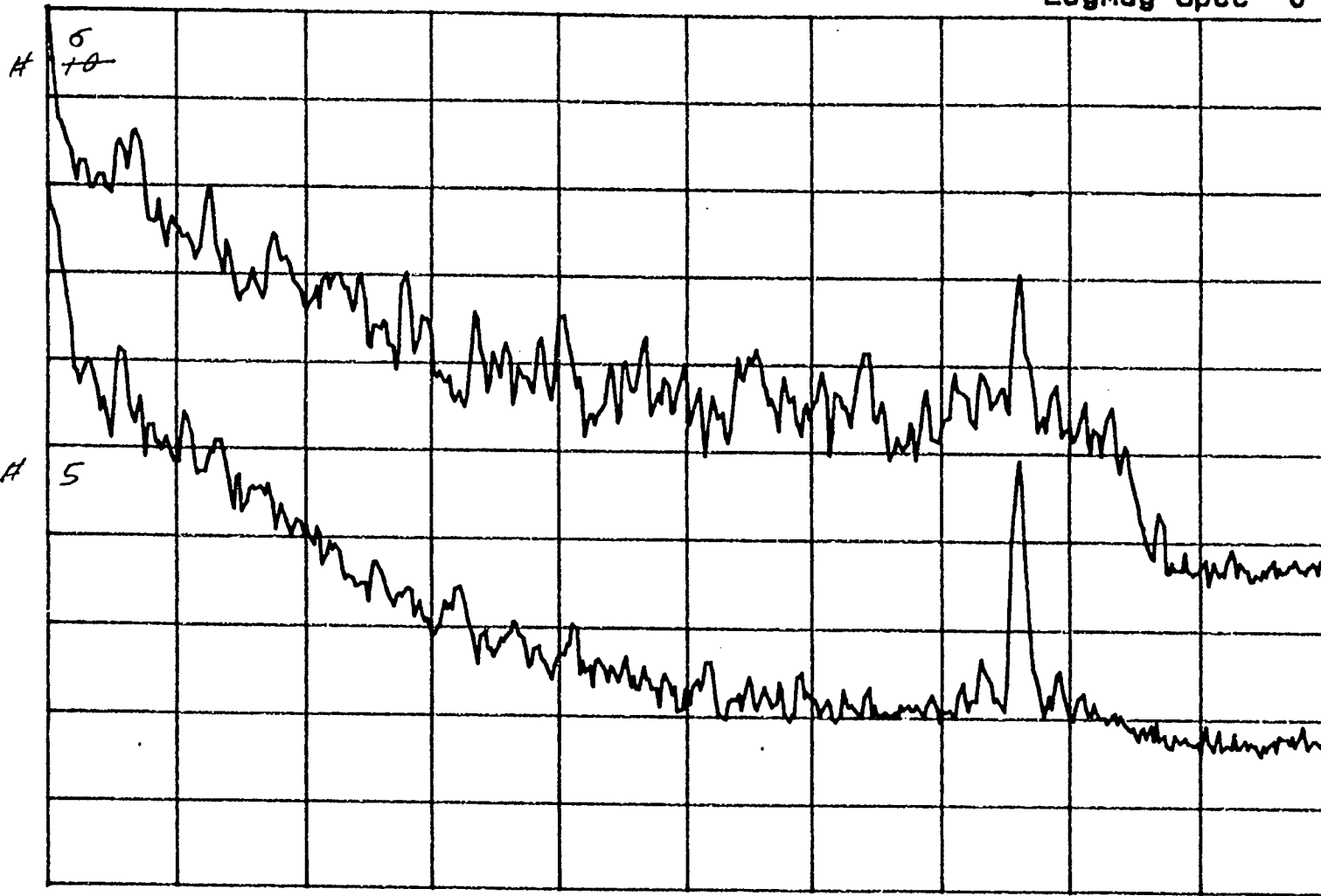
#5 REF

U FAST

DFLCO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 07: 24

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS40102*

Reference Point _____

Operator Comments

#8 SEIKO

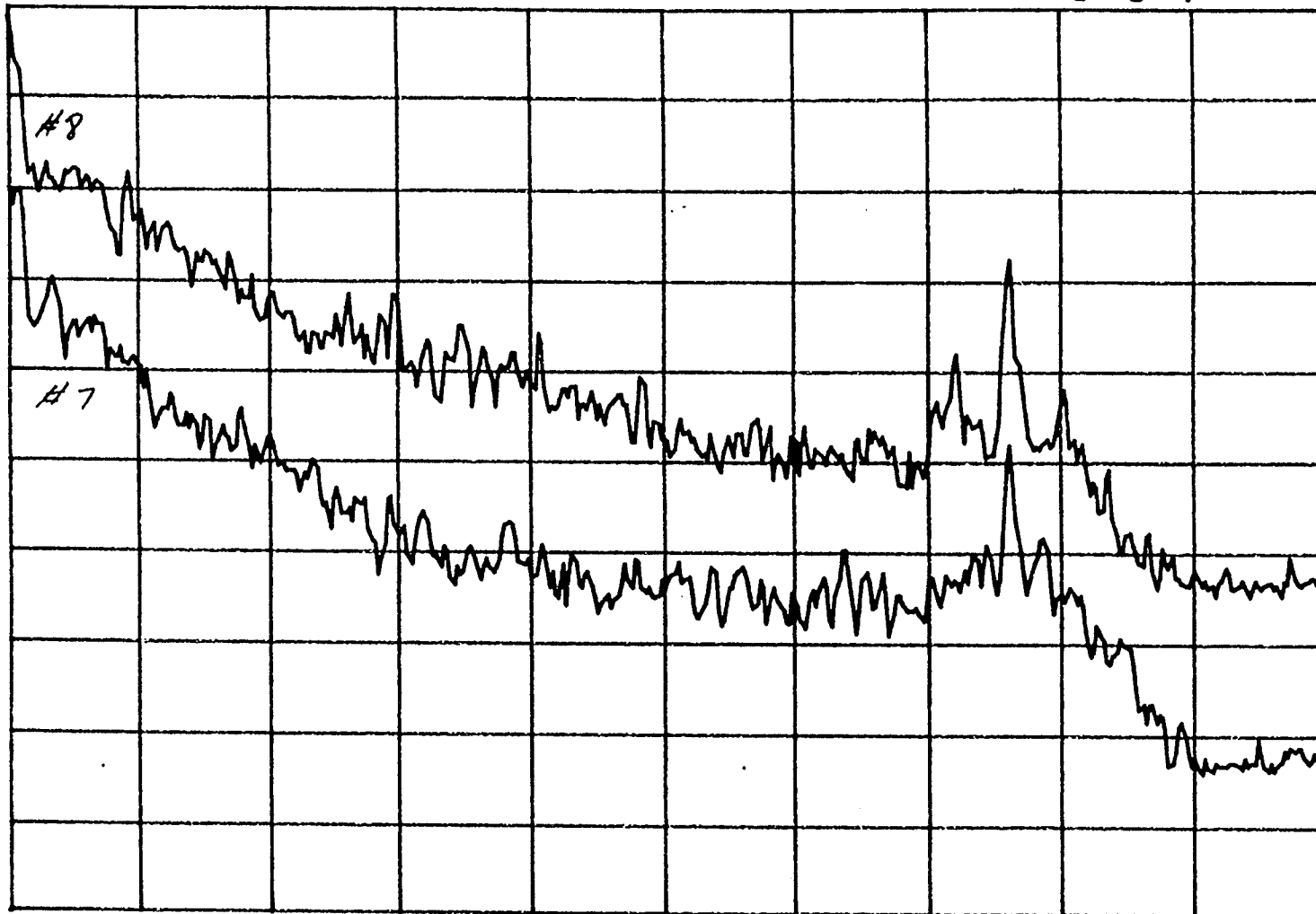
#7 DDJ

V FAST

DELCO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 13: 37

SubCarrier Syst Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS40102*

Reference Point _____

Operator Comments

#8 SEIKO

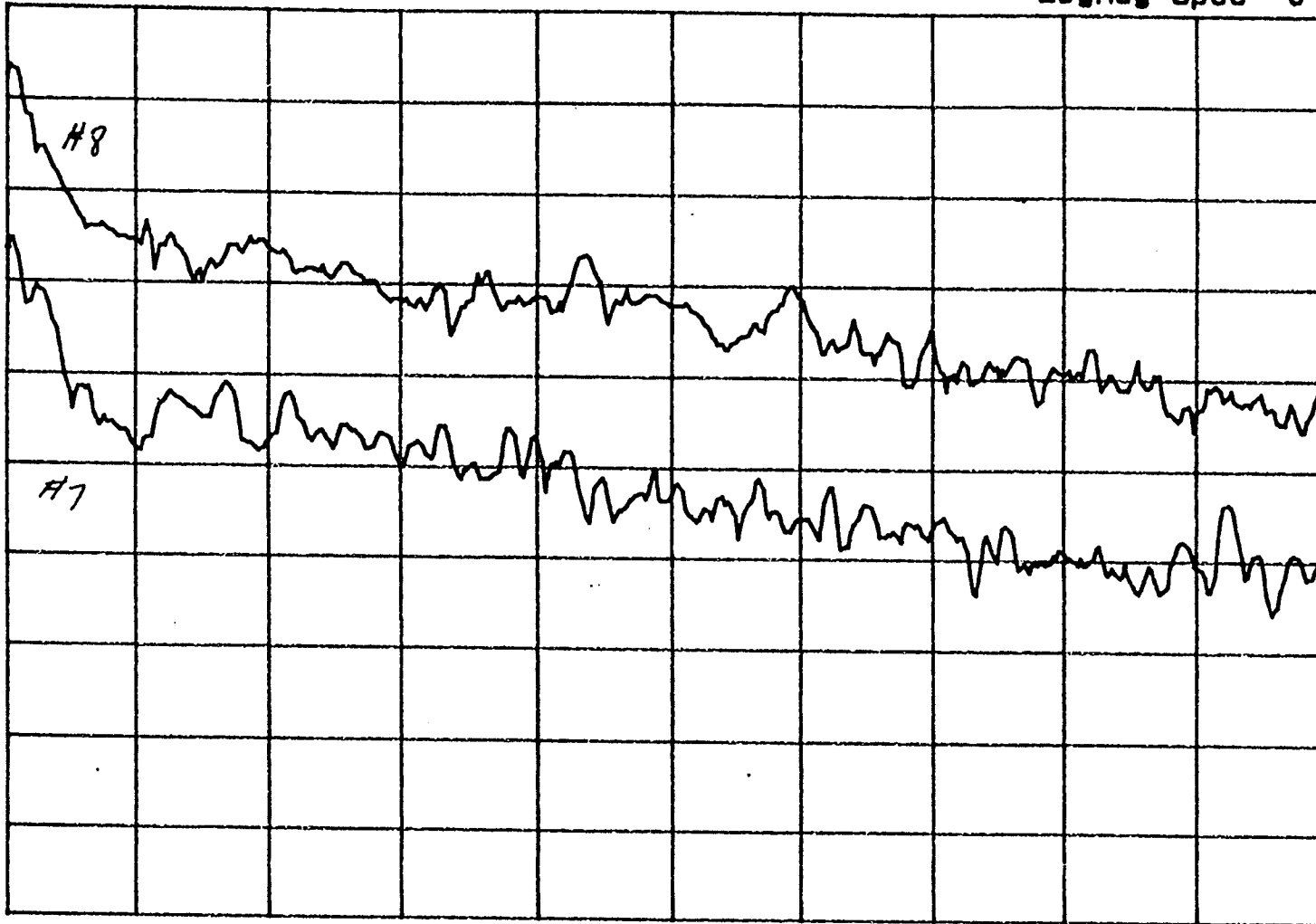
#7 DDJ

U FAST

DELCO

GROUP A

LogMag Spec 0



0.0 kHz

3.1250 kHz

6.2500 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 20: 19

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

HS40102

Reference Point

Operator Comments

#10 SEIKO

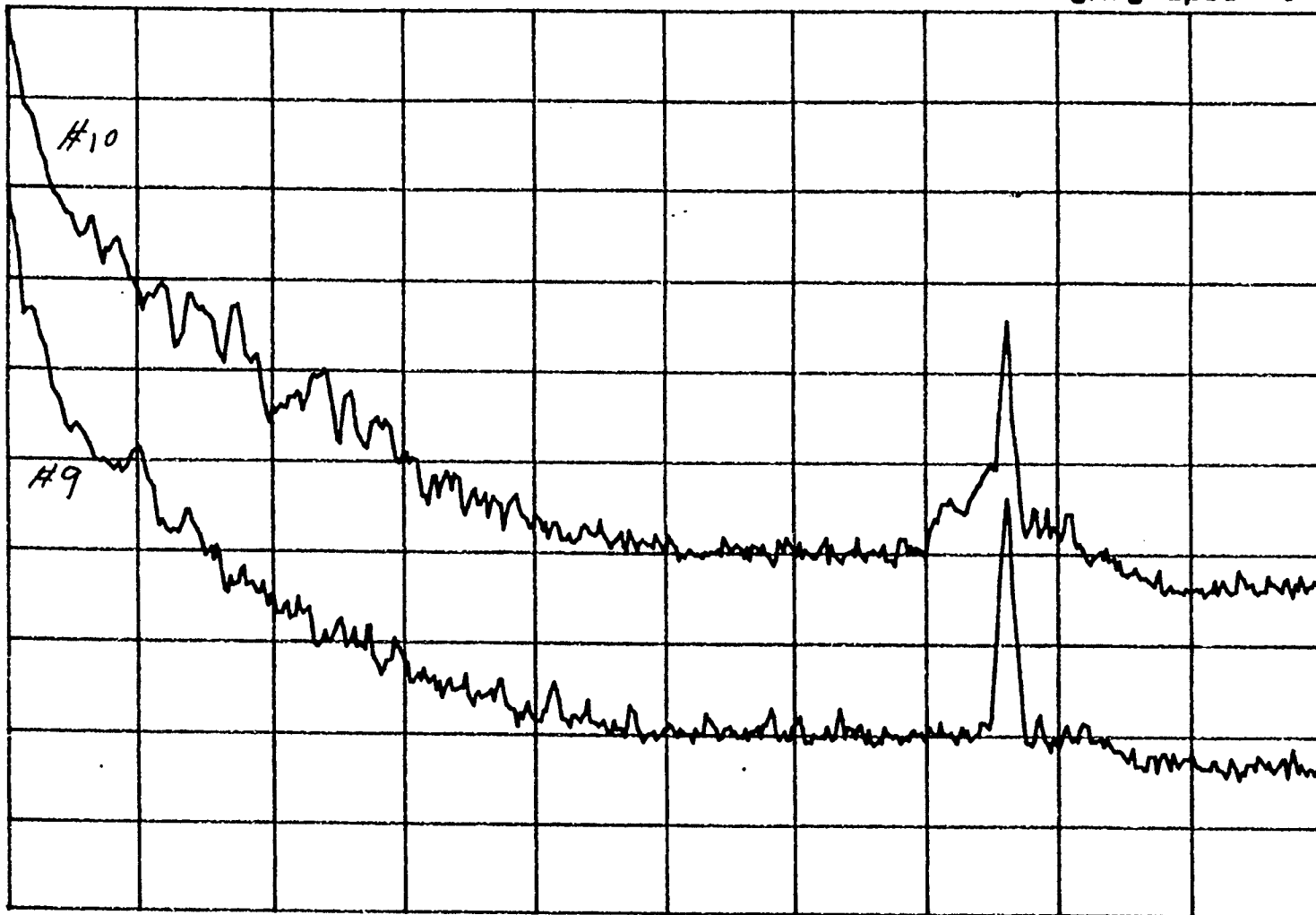
#9 REF

R FAST

DELCO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 29: 17

SubCarrier System Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540102*

Reference Point _____

Operator Comments

#11 DDJ

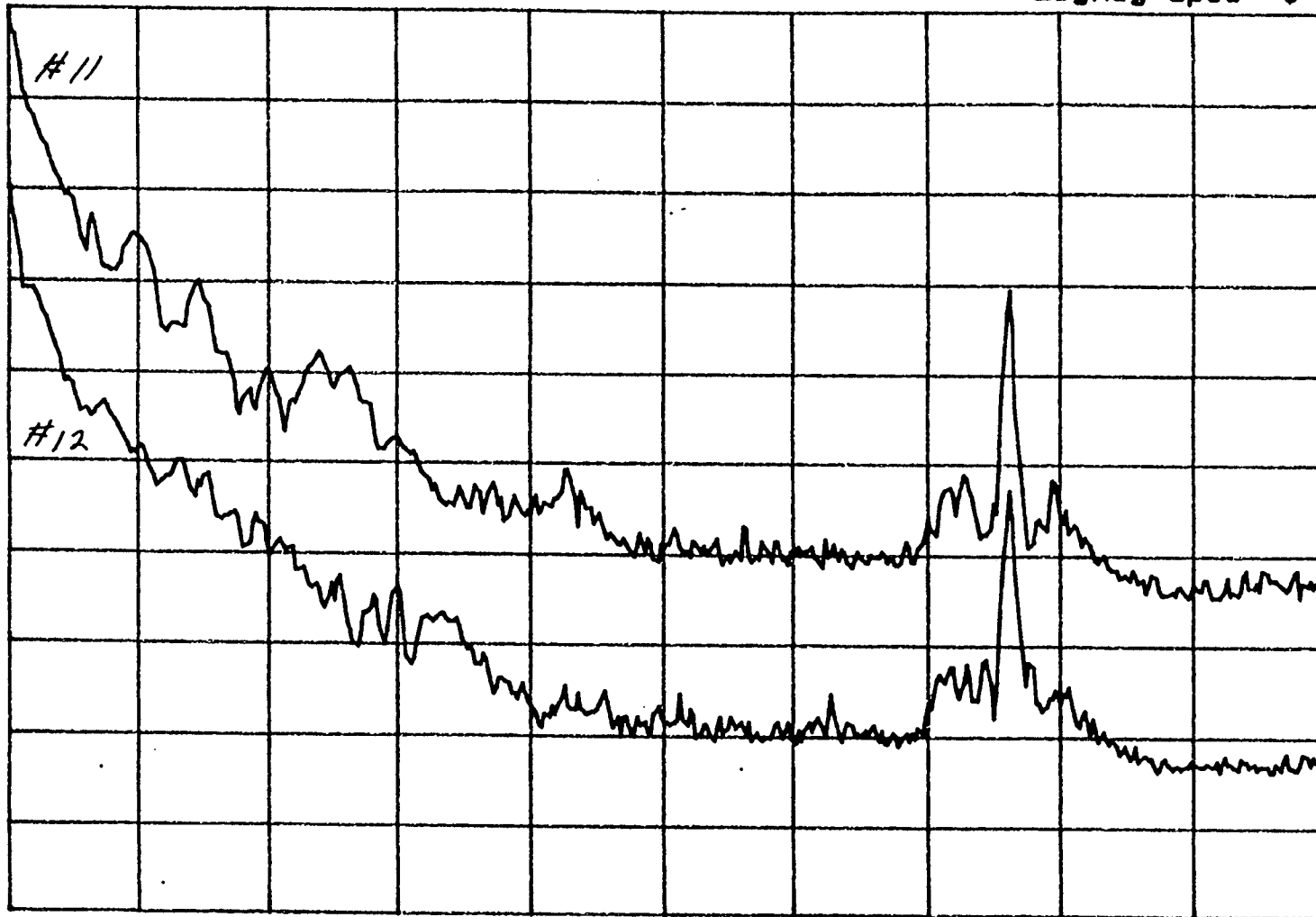
#12 MITRE

R. FAST

DELO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 33: 29

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

HS 40102

Reference Point

Operator Comments

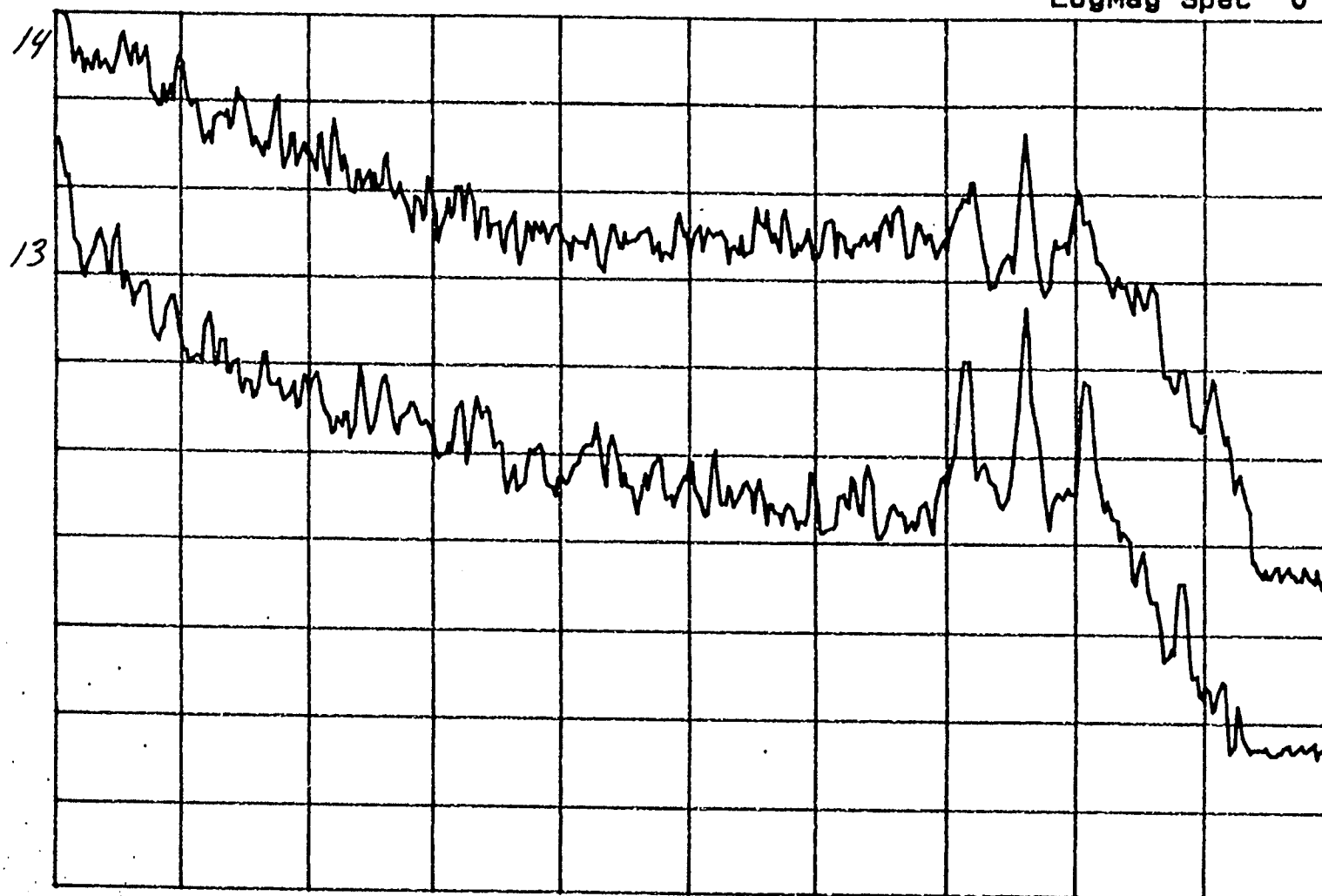
#14 NITRE

#13 REF

TER-OB

DFLCO

GROUP A



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 37: 27

SubCarrier System Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40102*

Reference Point _____

Operator Comments

#16 SEIKO

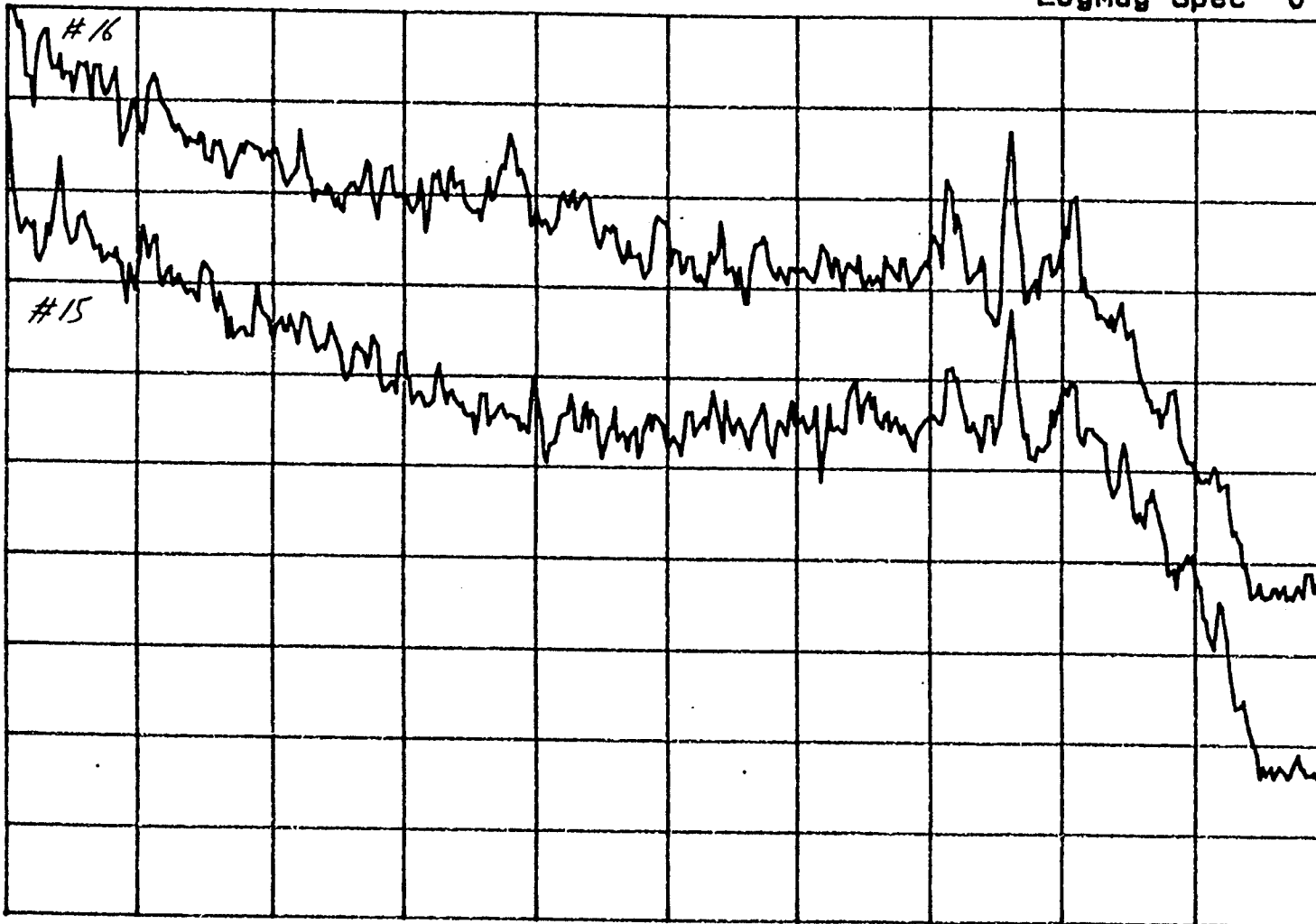
#15 DDJ

TER-OB

DFLCO

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 41: 20

SubCarrier Systems Corporation



Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	
	Start	Stop			
HIS40103.DAT	11/18/96			Group B	
	0:05	2:05	1	Urban Slow Reference	
	2:10	4:11	2	Urban Slow System A	SEIKO
	4:15	6:17	3	Urban Slow System B	DDJ
	6:22	8:23	4	Urban Slow System C	MITRE
	8:28	10:29	5	Urban Fast Reference	
	10:34	12:34	6	Urban Fast System C	MITRE
	12:41	14:41	7	Urban Fast System B	DDJ
	14:46	16:47	8	Urban Fast System A	SEIKO
	16:55	18:54	9	Rural Fast Reference	
	18:59	21:00	10	Rural Fast System A	SEIKO
	21:06	23:06	11	Rural Fast System B	DDJ
	23:12	25:13	12	Rural Fast System C	MITRE
	25:18	27:18	13	Obstructed Reference	
	27:24	29:25	14	Obstructed System C: Multipath more pronounced	MITRE Higher Noise
	29:30	31:31	15	Obstructed System B: Multipath more pronounced	DDJ
	31:36	33:37	16	Obstructed System A: Multipath more pronounced	SEIKO

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540103*

Reference Point _____

Operator Comments

#4 MITRE

#3 DDJ

#2 SEIKO

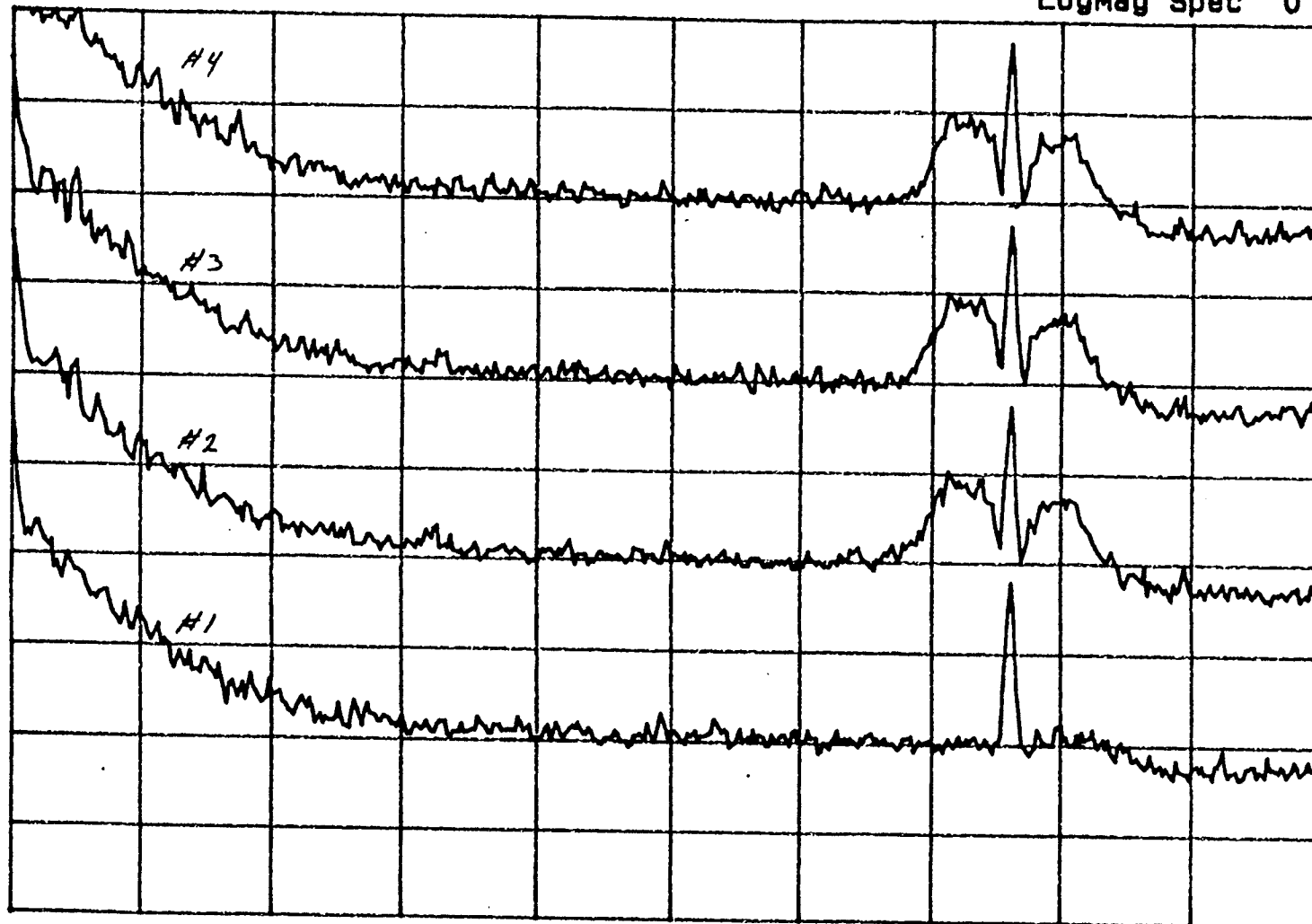
#1 REF

U SLOW

DELCO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 47: 45

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS4010:*

Reference Point _____

Operator Comments

#6 MITRE

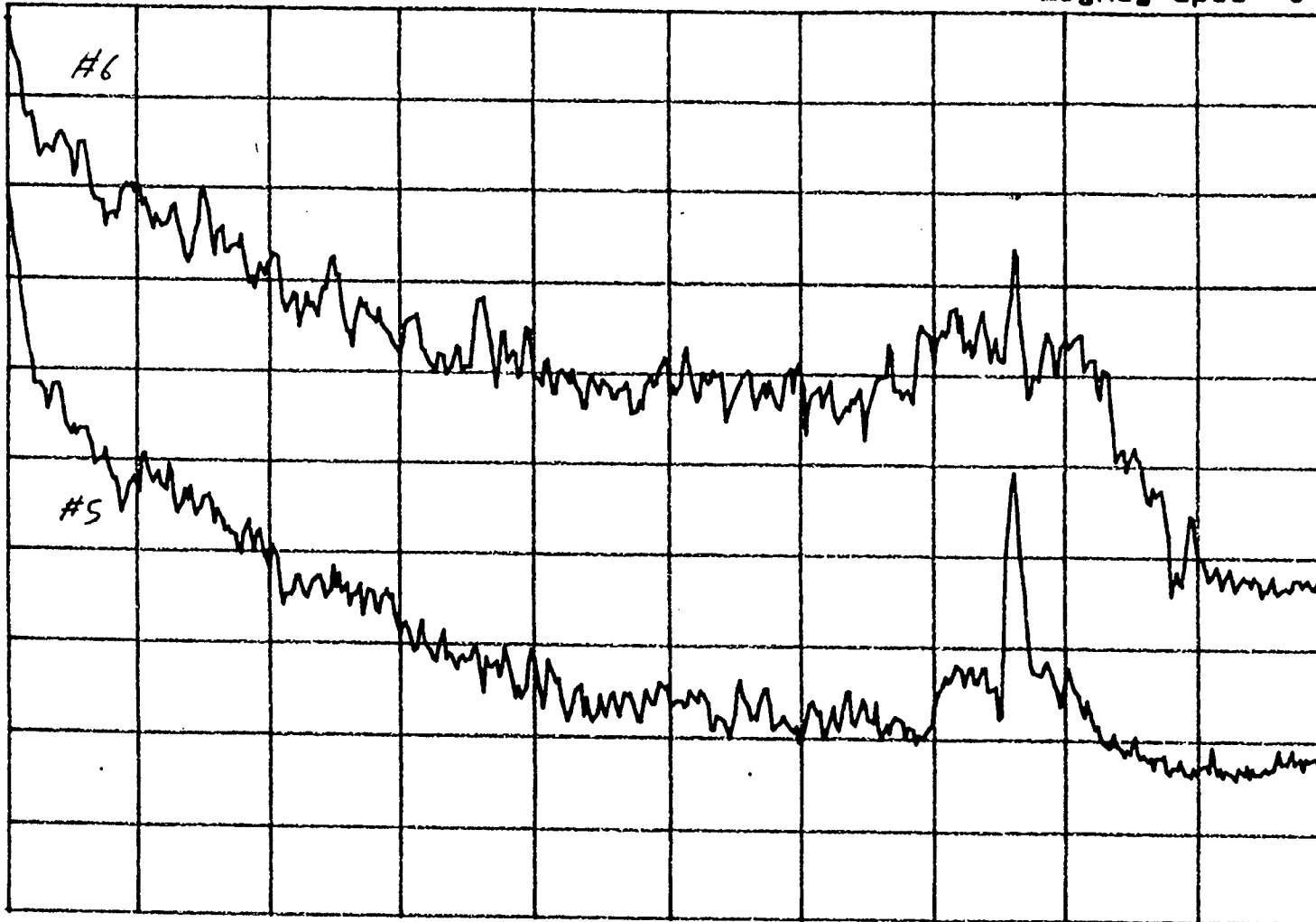
#5 REF

V-FAST

DELCO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 54: 30

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40103*

Reference Point _____

Operator Comments

#7 DDJ

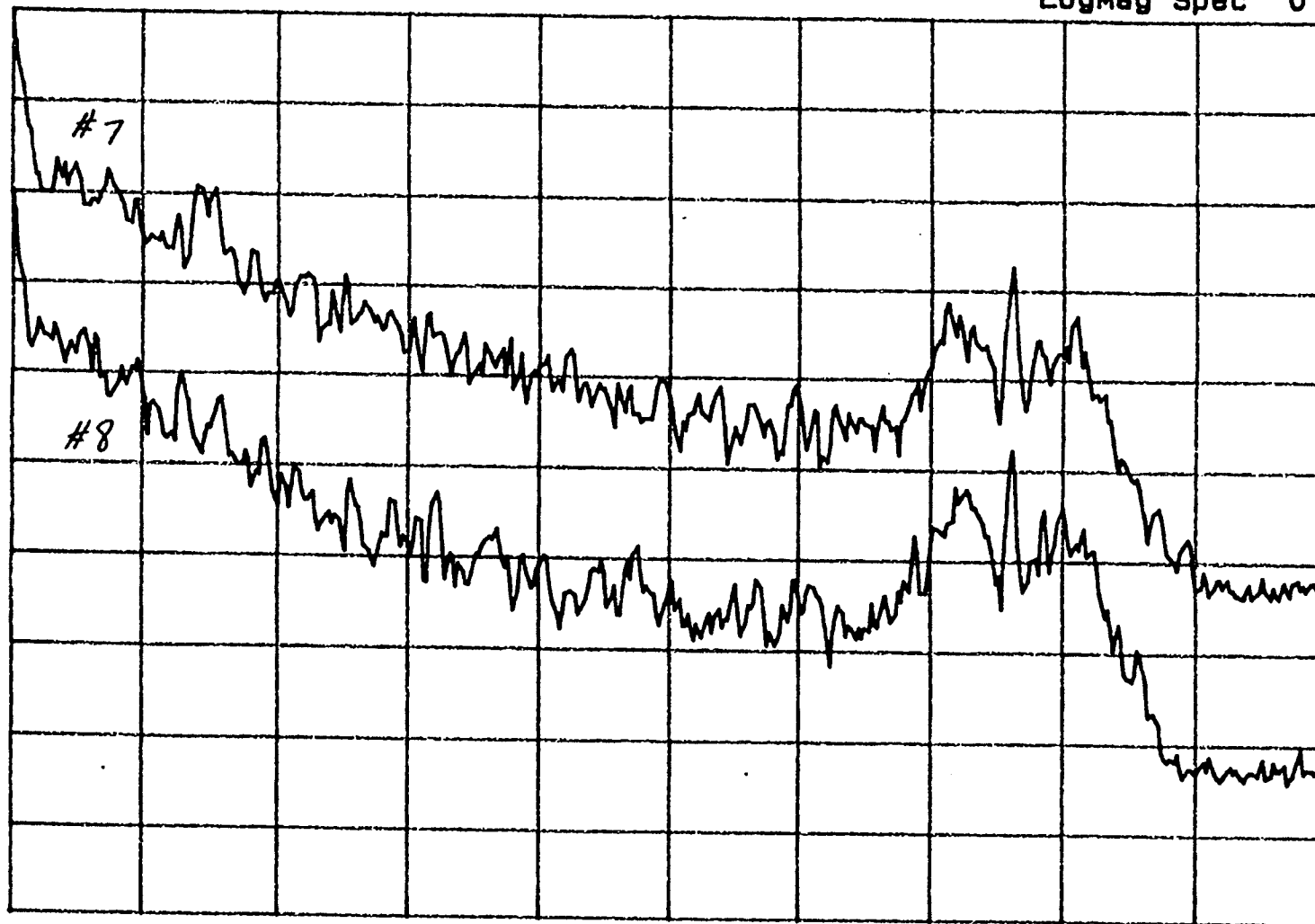
#8 SEIKO

U-FAST

DELCO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

20: 58: 30

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H54010*

Reference Point _____

Operator Comments

#10 SEIKO

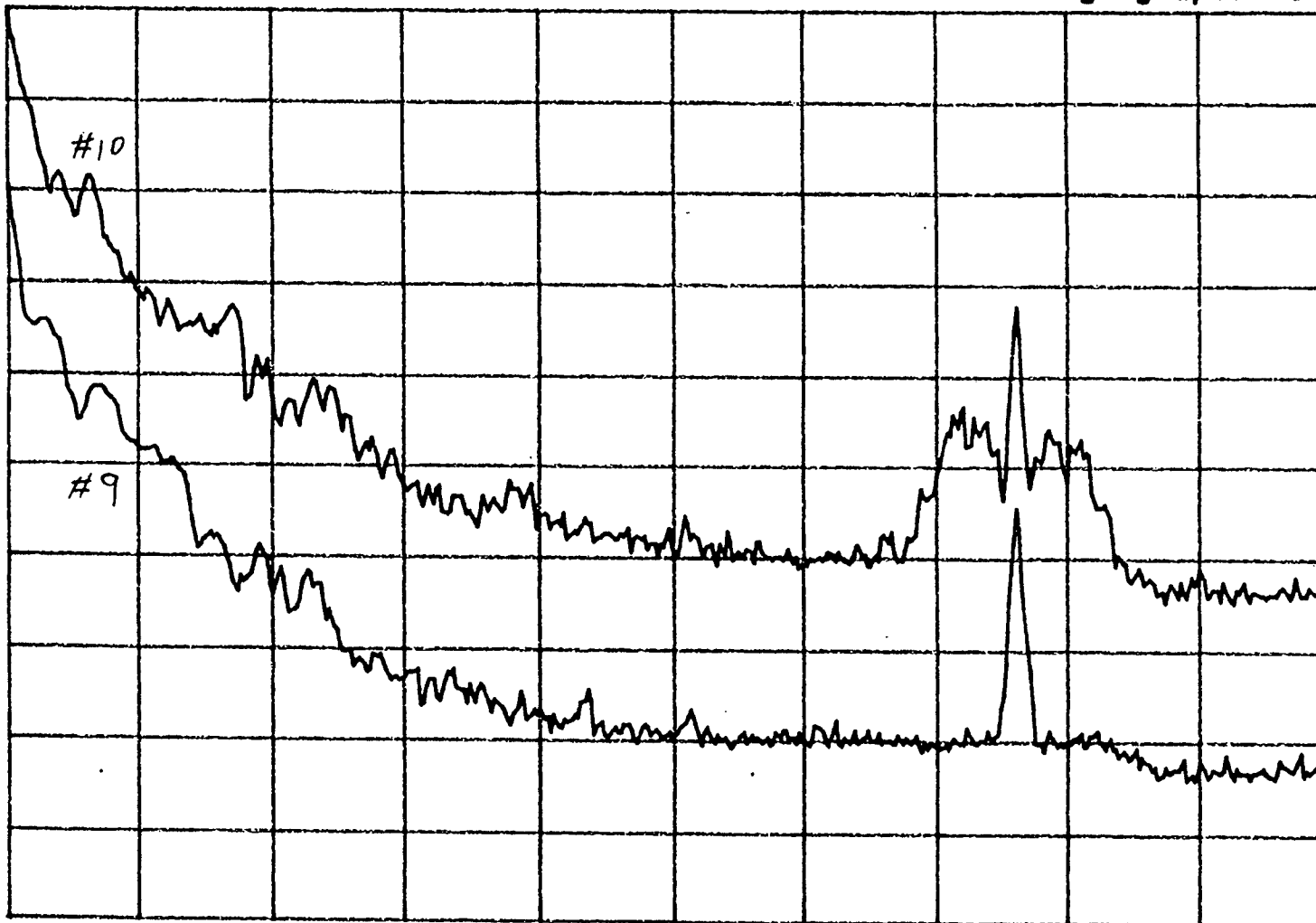
#9 REF

R - FAST

DELCO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 01: 55

SubCarrier Syslr. Corporation



010

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40103*

Reference Point _____

Operator Comments

#12 MITRE

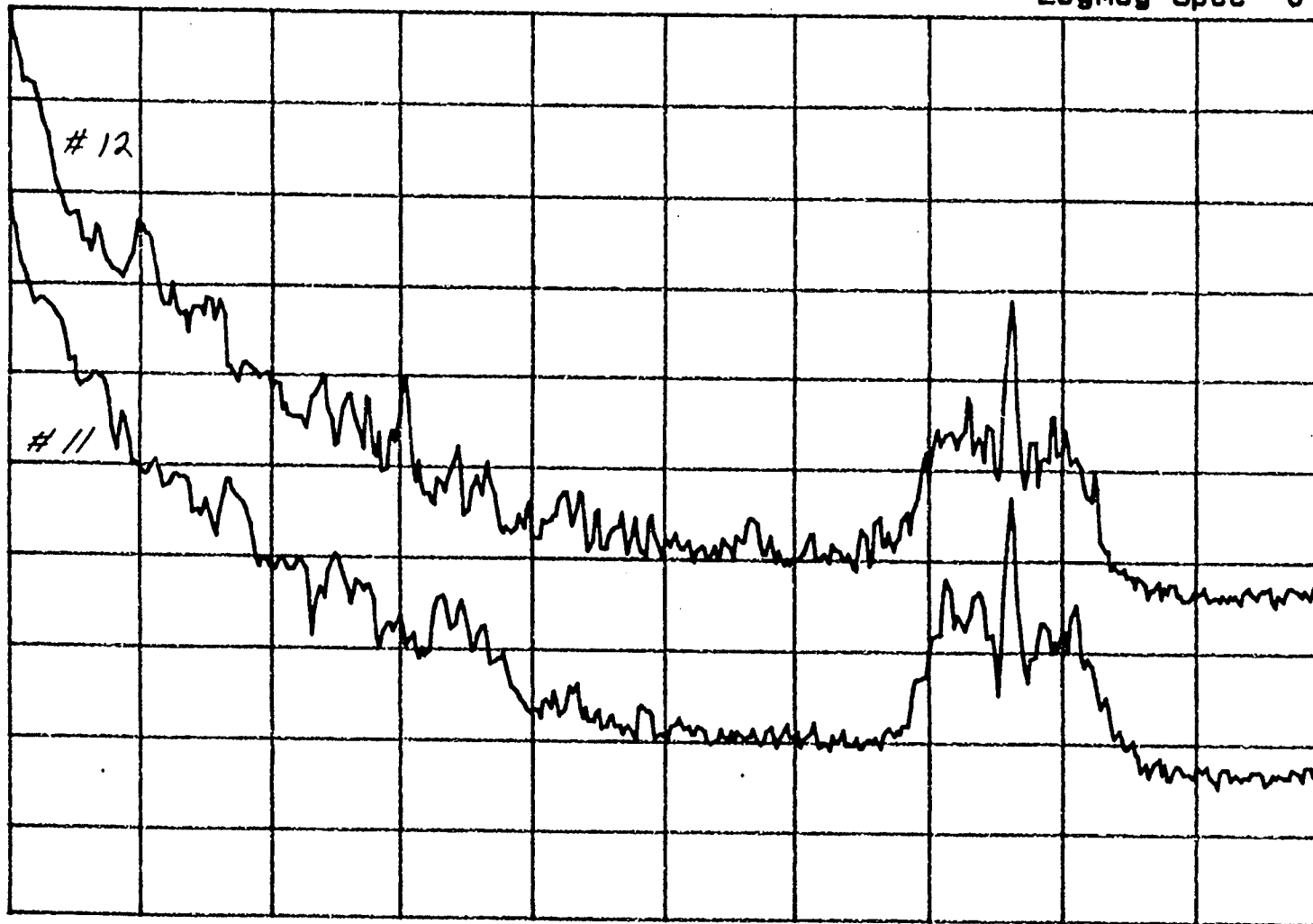
#11 DDJ

R-FAST

PERO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 05: 07

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40103*

Reference Point _____

Operator Comments

#14 MITRE

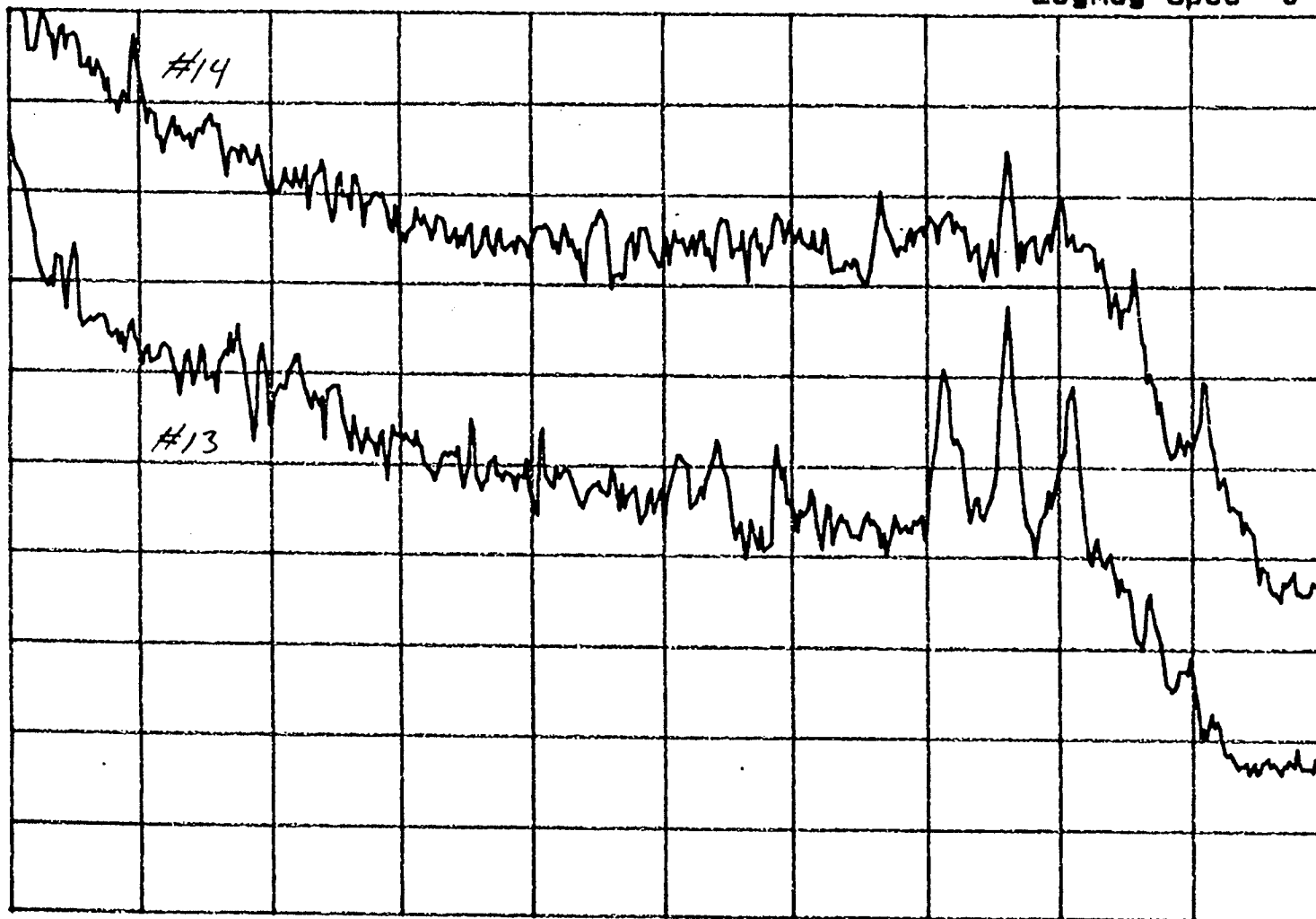
#13 REF

TER-OB

DELCO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 08: 50

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence HS40103

Reference Point _____

Operator Comments

#16 SEIKO

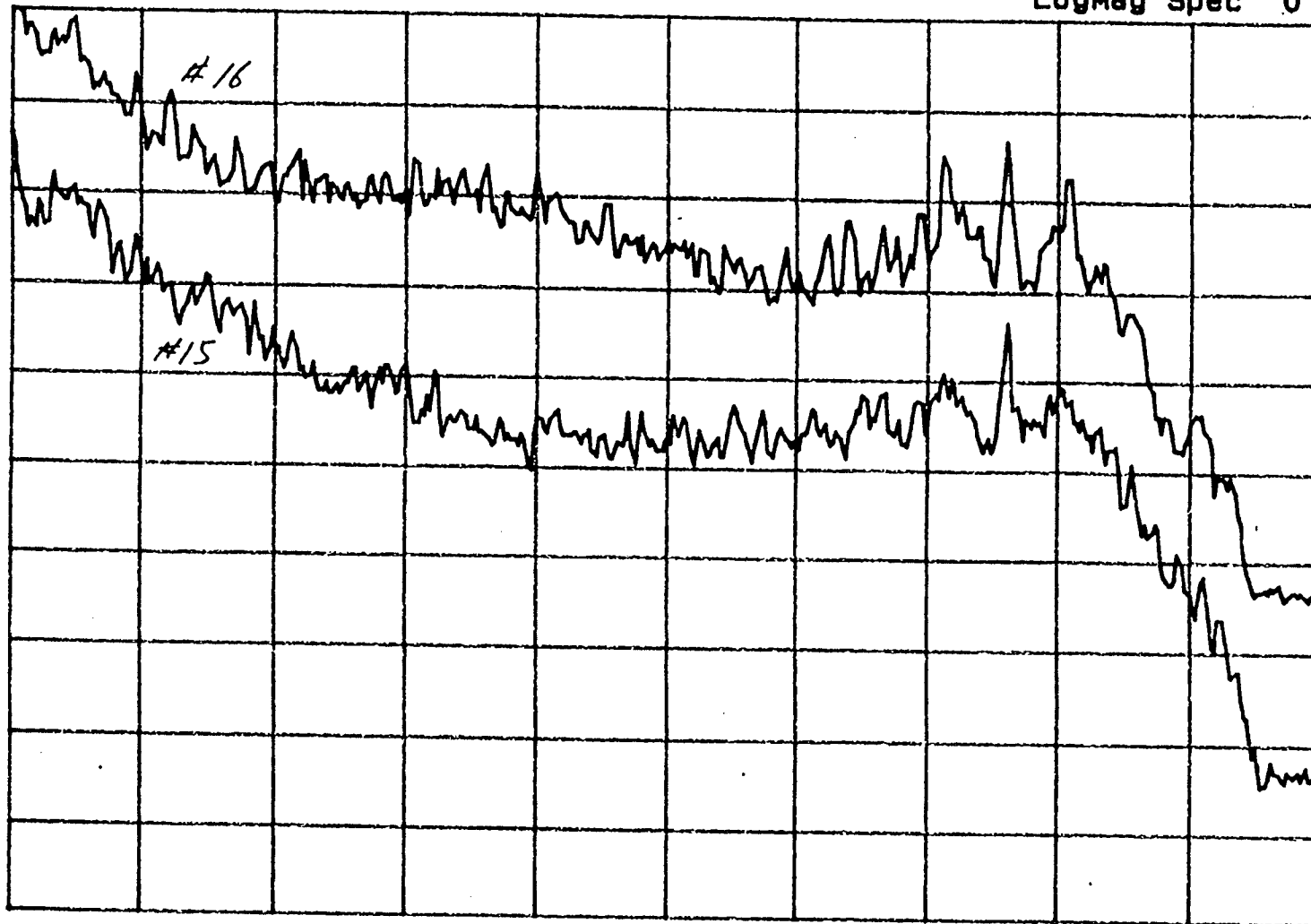
#15 DDJ

TER - OB

DECO

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 12: 24

SubCarrier Systems Corporation



Denon

Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	Grade
	Start	Stop			
IIS40200.DAT	11/19/96				
	0:00	0:30	1	Denon Radio 0 dB Reference Track 1kHz@91% Pilot@9% 755 mVrms=-24 dB on DAT Input Monitor Level Meters	Very Clean
	0:30	1:00	2	Noise Reference No SCA	
				Proponent Only	
	1:05	3:06	3	Reference	
	3:11	5:11	4	System C	MITRE
	5:17	7:17	5	System B	P.D.J.
	7:23	9:22	6	System A	SEIKO
				Group A	
	9:28	11:28	7	Reference	
	11:34	13:34	8	System A Group A	SEIKO
	13:40	15:40	9	System B Group A	P.D.J.
	15:45	17:46	10	System C Group A	MITRE
				Group B	
	17:52	19:51	11	Reference	
	19:57	21:57	12	System C Group B: Change in the characteristic of noise.	MITRE
	22:03	24:03	13	System B Group B: Change in the characteristic of noise.	P.D.J.
	24:09	26:09	14	System A Group B: Change in the characteristic of noise.	SEIKO
				Proponent Only	
	26:14	28:15	15	Urban Slow Reference	
	28:20	30:21	16	Urban Slow System A	SEIKO
	30:26	32:27	17	Urban Slow System B	P.D.J.
	32:32	34:33	18	Urban Slow System C	MITRE
				Group A	
	34:38	36:38	19	Urban Slow Reference	
	36:43	38:43	20	Urban Slow System A	SEIKO
	38:48	40:48	21	Urban Slow System B	P.D.J.
	40:54	42:54	22	Urban Slow System C	MITRE
				Group B	
	43:00	45:00	23	Urban Slow Reference	
	45:06	47:06	24	Urban Slow System A: Change in the characteristic of noise.	SEIKO
	47:11	49:11	25	Urban Slow System B: Change in the characteristic of noise.	P.D.J.
	49:17	51:17	26	Urban Slow System C: Change in the characteristic of noise.	MITRE

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

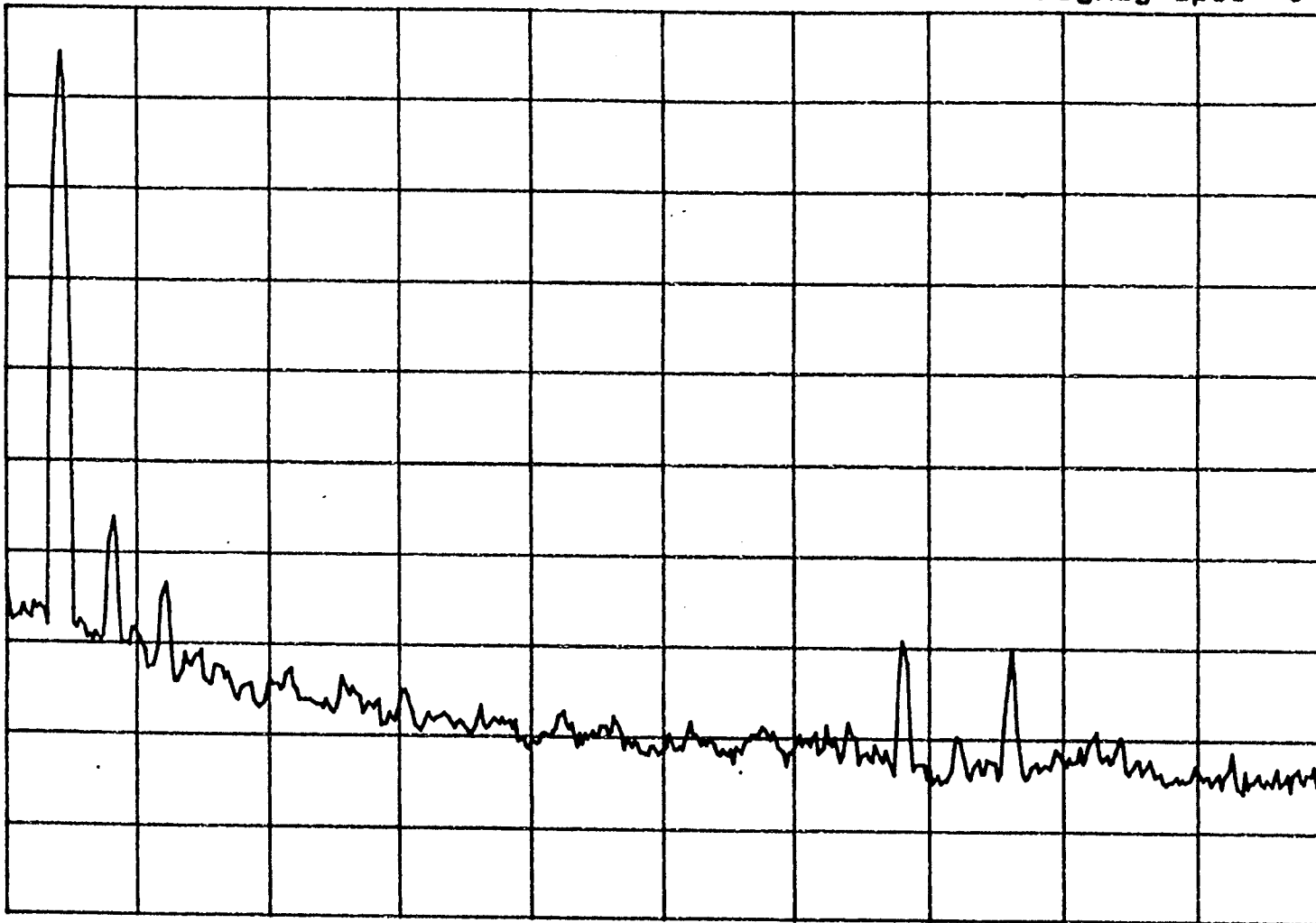
Reference Point HS40201

Operator Comments

#1

DENON RADIO

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 51: 43

SubCarrier Systems Corporation



2
2
2

2003

Client:
 NRSC Digital Radio
 Test Laboratory
 (High Speed FM
 SubCarrier SubCommittee)

LogMag Spec 0

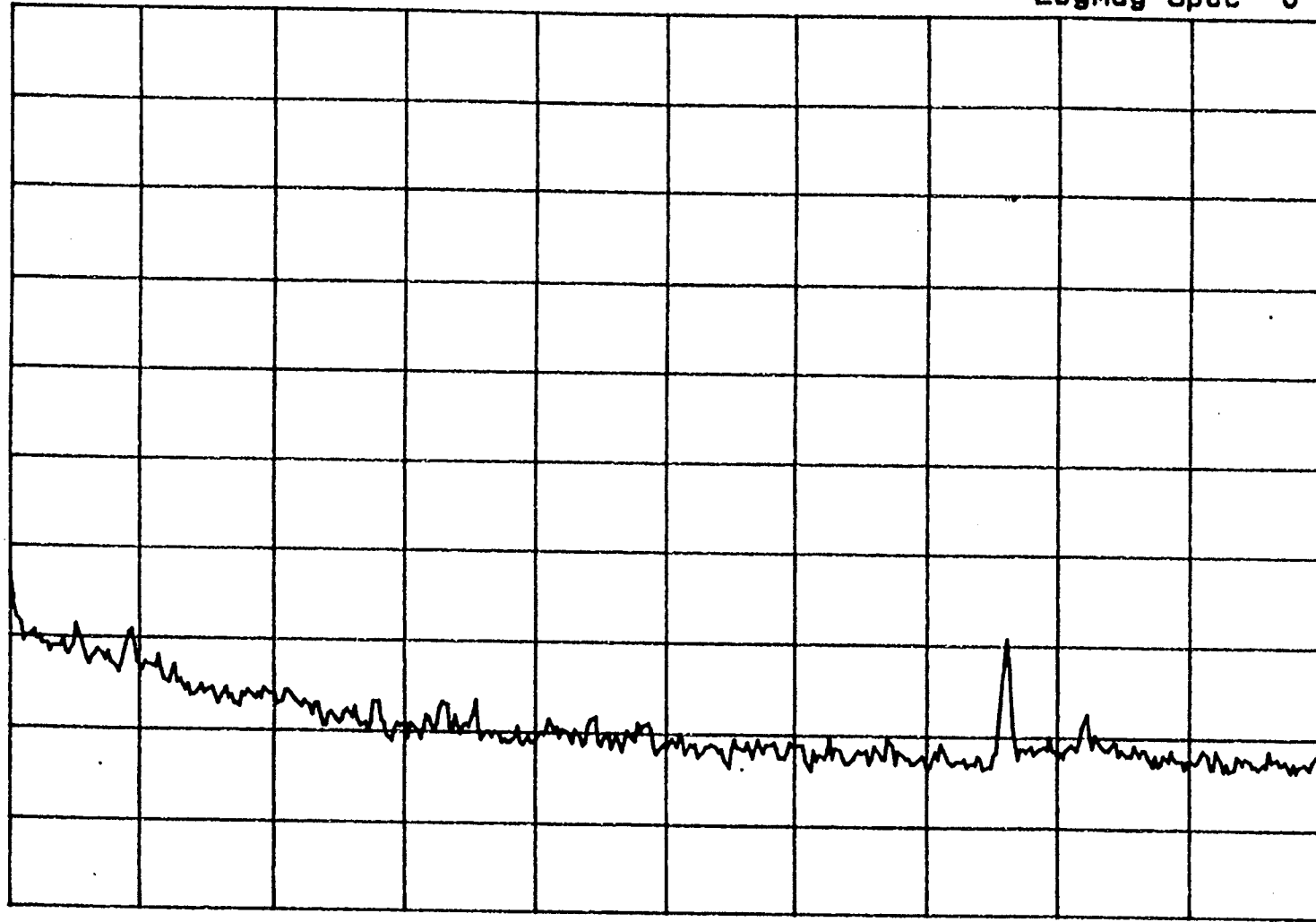
Report & Test Plan: #1
 No Formal SCSC Plan,
 Dig Radio Test Lab Plan

Test Sequence
 Reference Point H540200

Operator Comments

#2

NOISE FLOOR
 NO SUBCARRIERS
 DETON



0.0 kHz 12.5000 kHz 25.0000 kHz
 Top = 0 dBV 10 dB/div Wndo: BMH
 File= Live

Analog Baseband Frequency Spectrum

1/1/97 23: 53: 46

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS 40200*

Reference Point _____

Operator Comments

#6 SEIKO

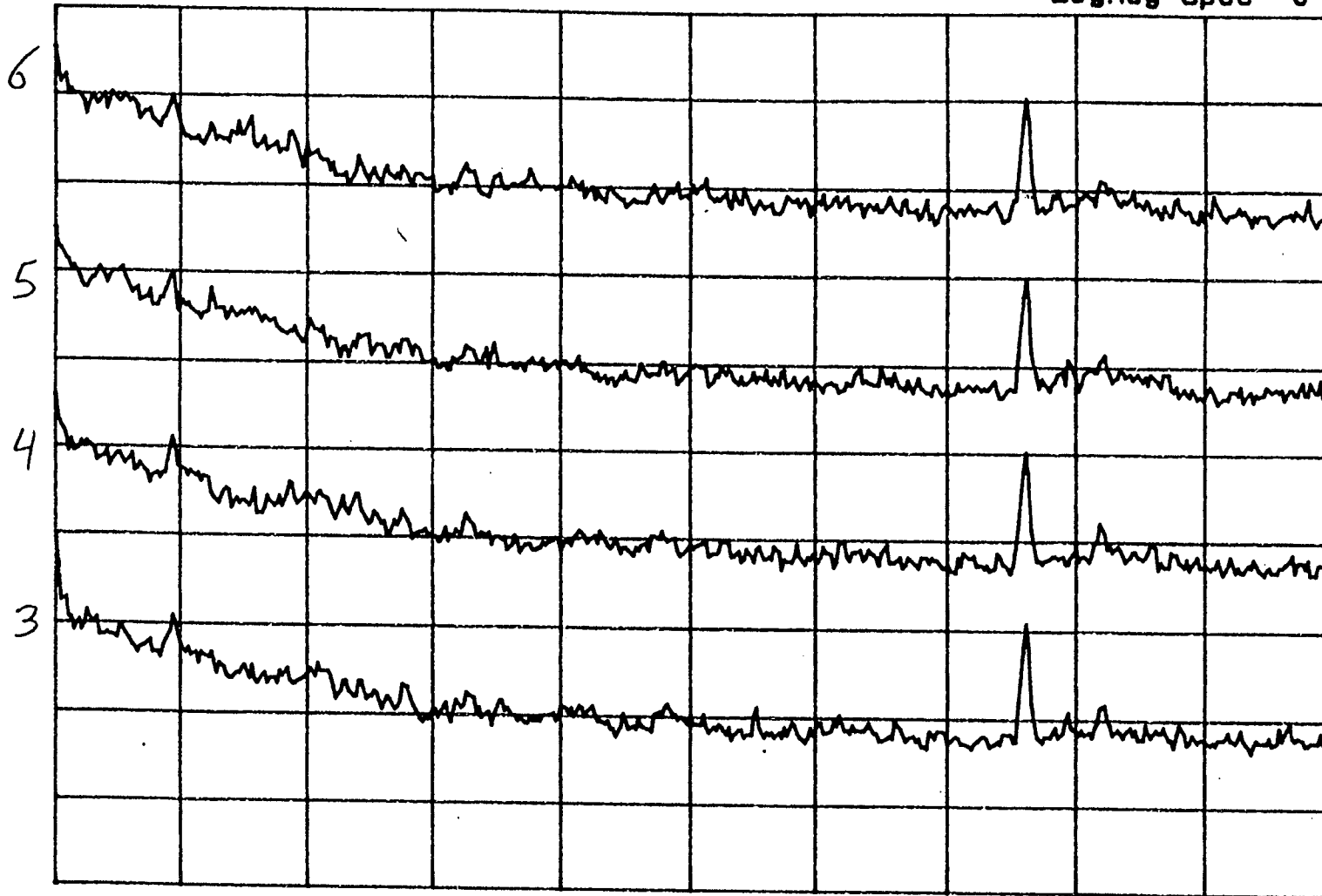
#5 DDJ

#4 MITRE

#3 REF

*DENON
PROPONENT ONLY*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/1/97

23: 55: 28

SubCarrier System Corporation



224

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS 40200*

Reference Point _____

Operator Comments

#8 SEIKO

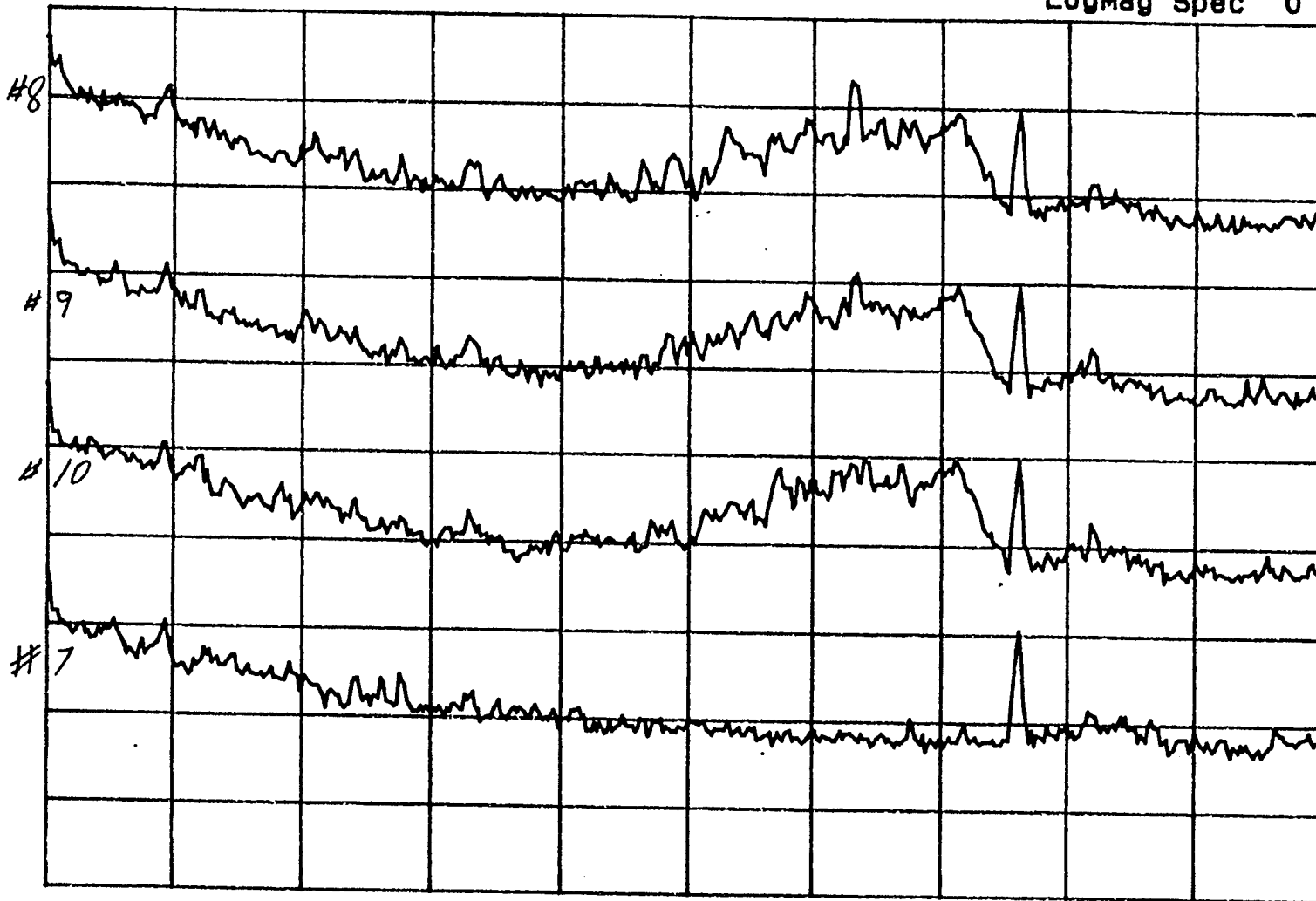
#9 DDJ

#10 MITRE

#7 REF

*DENON
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0:02:58

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

HS 4020C

Reference Point

Operator Comments

#14 SEIKO

#13 DDJ

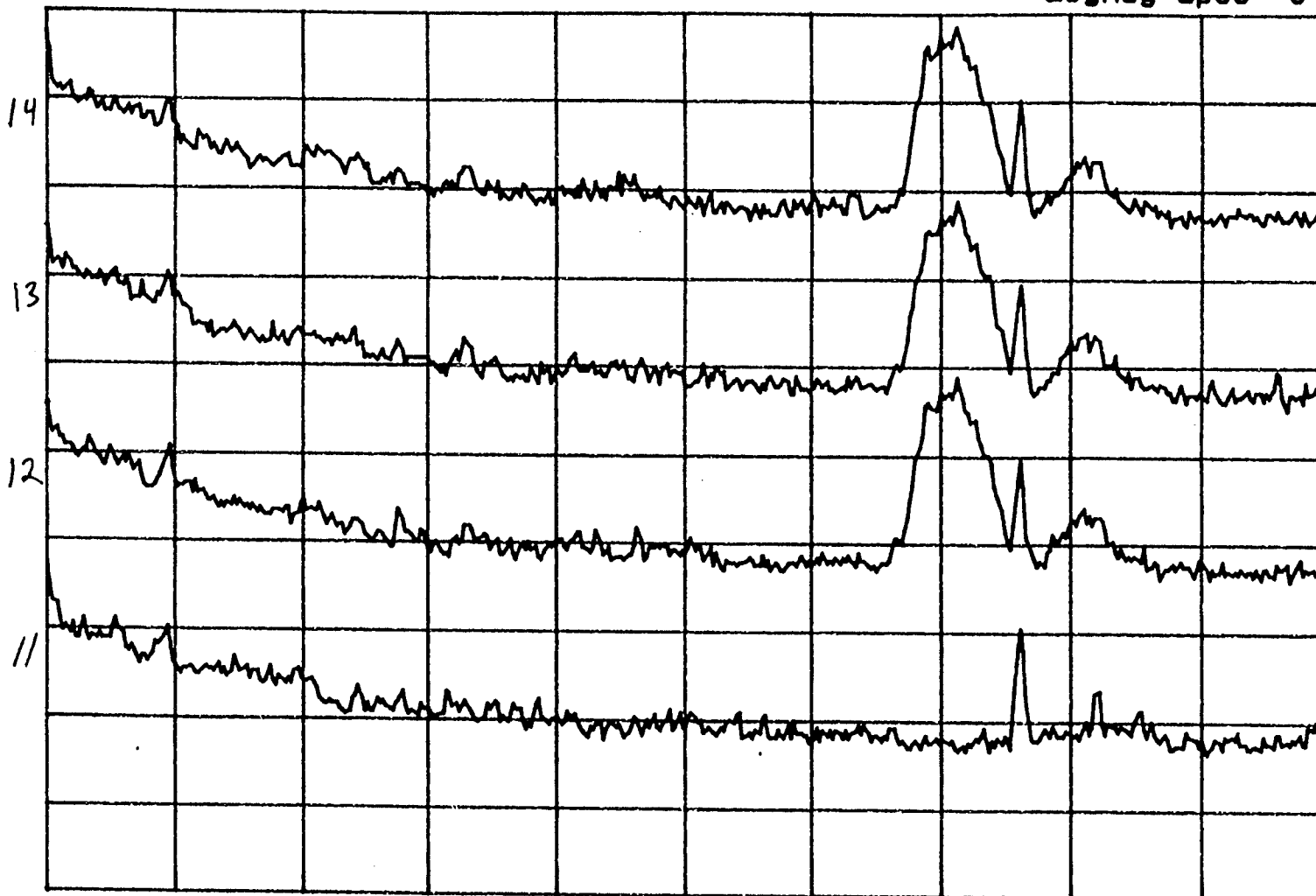
#12 MITRE

#11 REF

DENON

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0: 10: 10

SubCarrier Systems Corporation



SCS

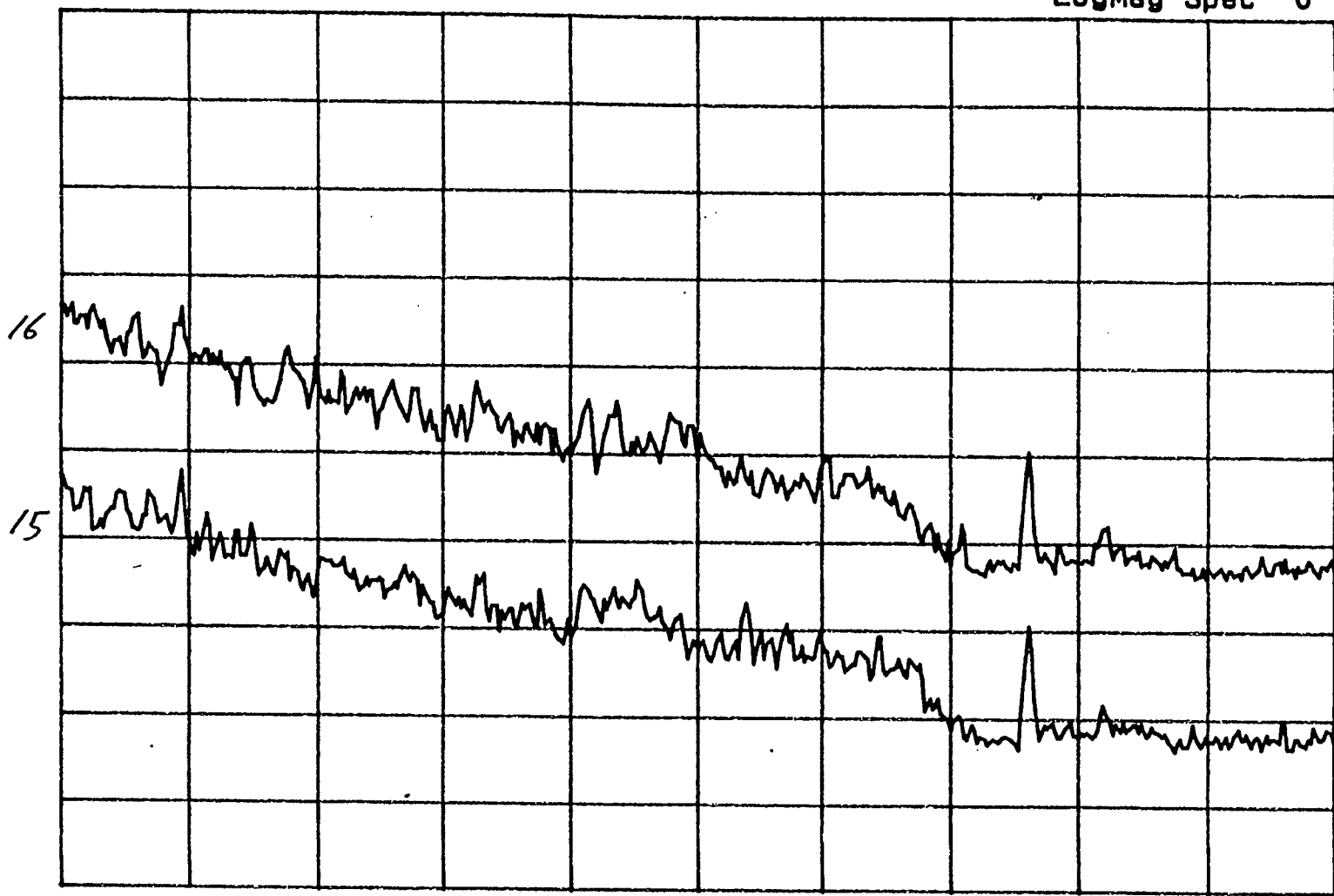
Client:
NRSC Digital Radio
Test Laboratory
(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS 4020*
Reference Point

Operator Comments
#16 351K0
#15 REF
DENON
V-SLOW
PRO PORT ONLY
DENON

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
Top = 0 dbV 10 dB/div Wndo: BMH
File= Live

Analog Baseband Frequency Spectrum

1/2/97 0: 17: 50

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40201*

Reference Point _____

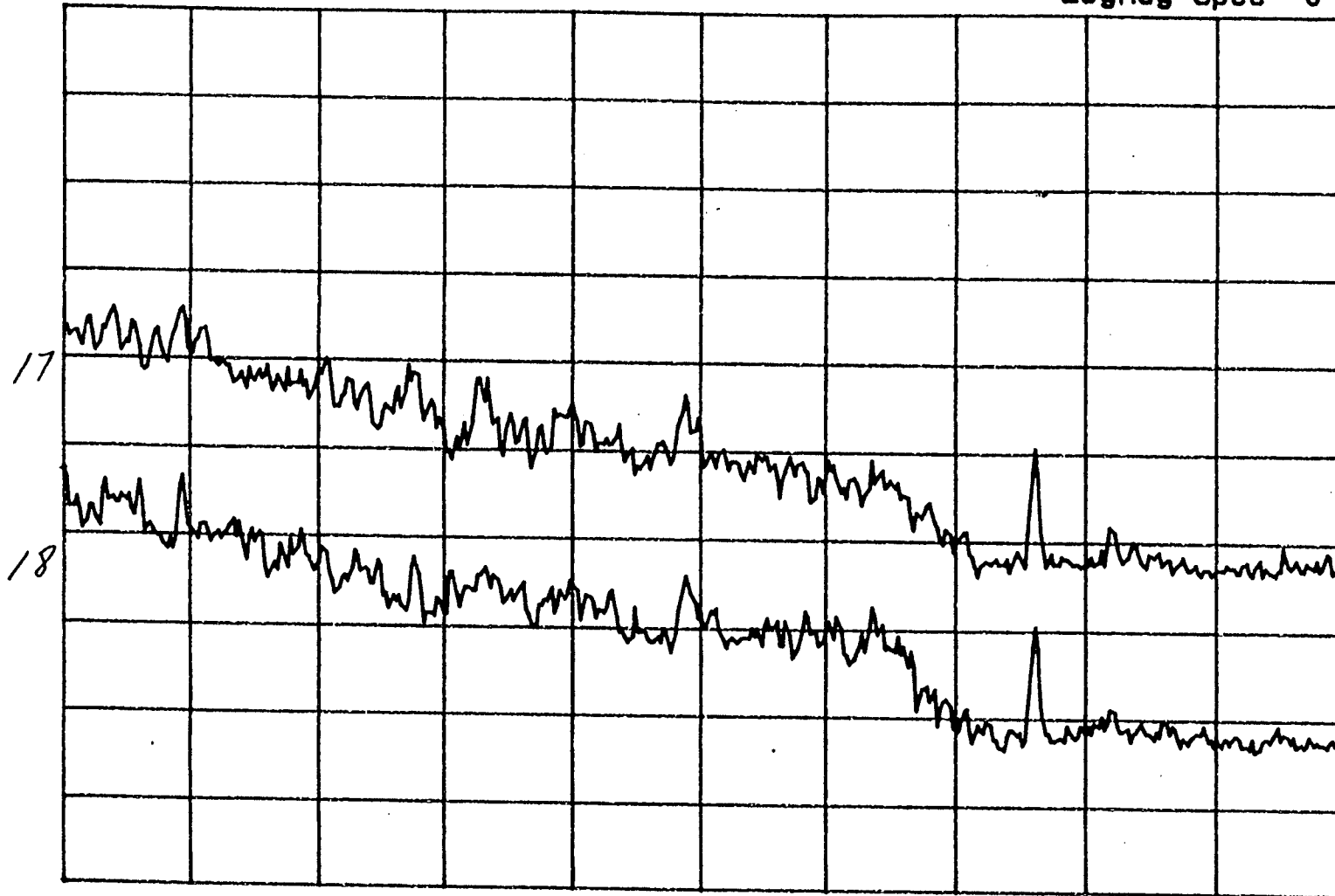
Operator Comments

#17 DDJ

#18 MITR

*U - SLOW
DENON
PROPONENT ONLY*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0: 22: 53

SubCarrier Systems Corporation



Client: NRSC Digital Radio

Test Laboratory
(High Speed FM
SubCarrier SubCommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40200*
Reference Point _____

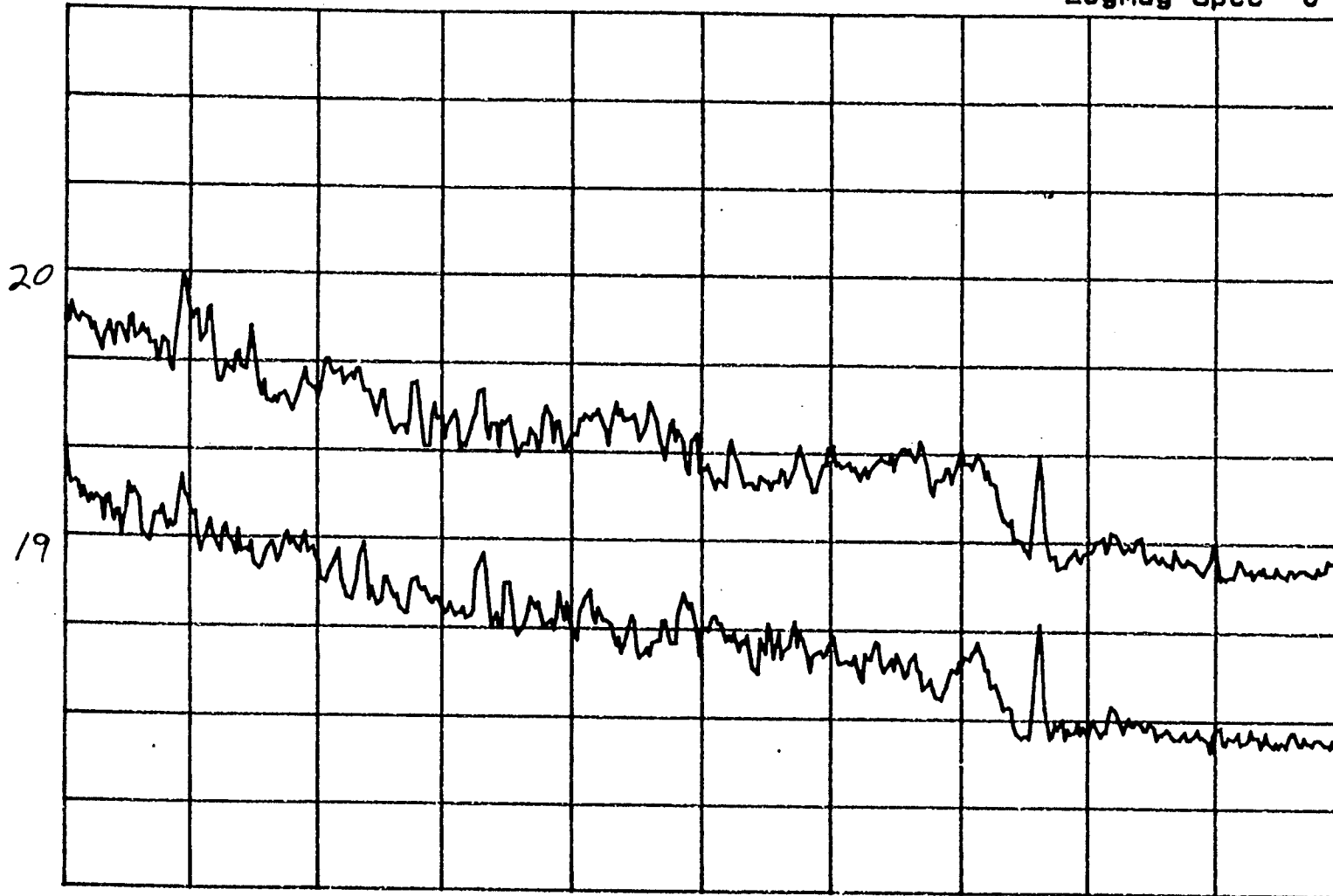
Operator Comments

20 SEIKO

19 REF

U-SLOW
DENON
GROUP A

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz

Top = 0 dBV 10 dB/div Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97 0: 30: 58

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS40200*

Reference Point _____

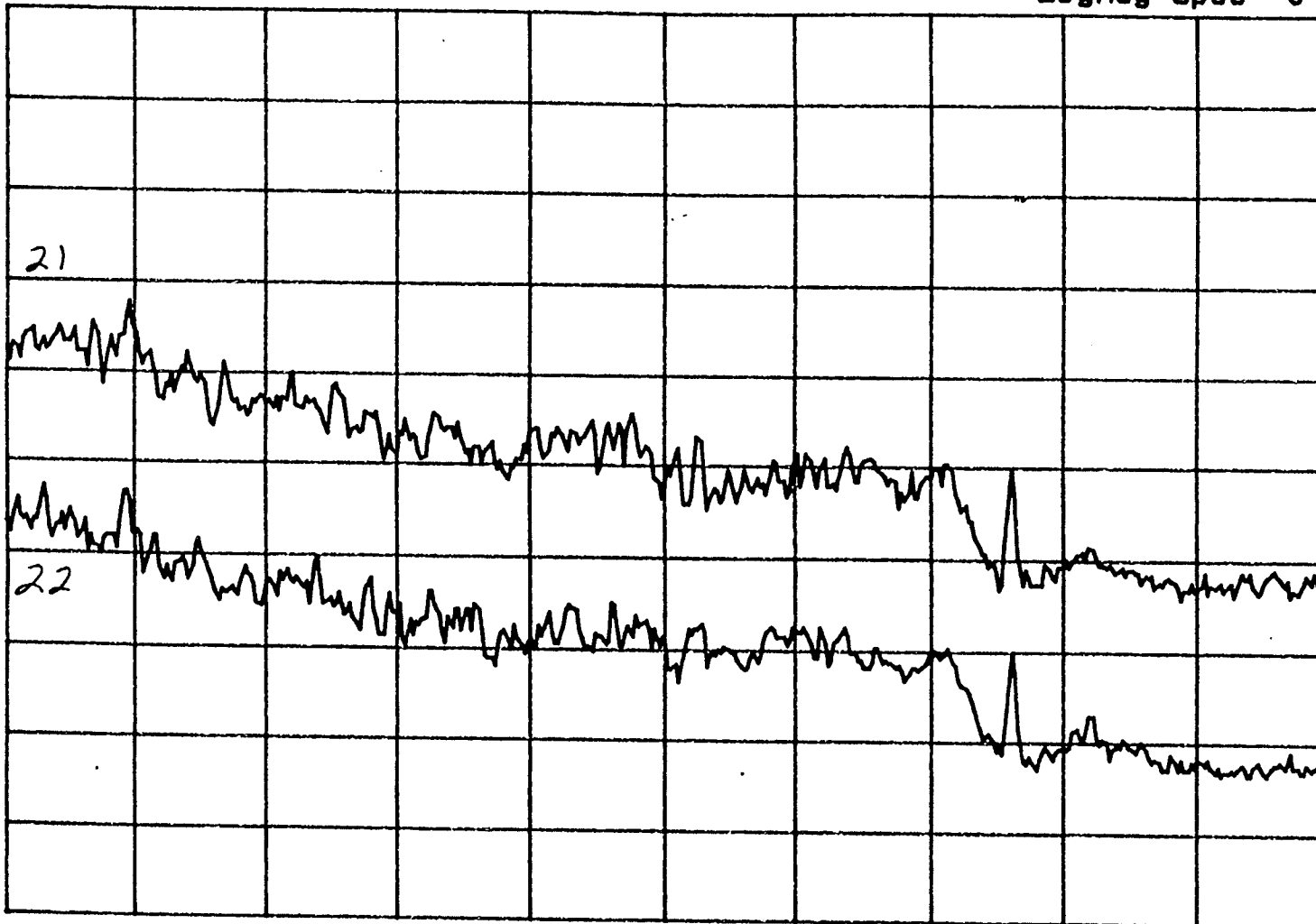
Operator Comments

#21 DDJ

#22 MITRE

*V-SLOW
DENON
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0: 34: 15

SubCarrier System Corporation



230

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS 40200*

Reference Point _____

Operator Comments

#24 SEIKO

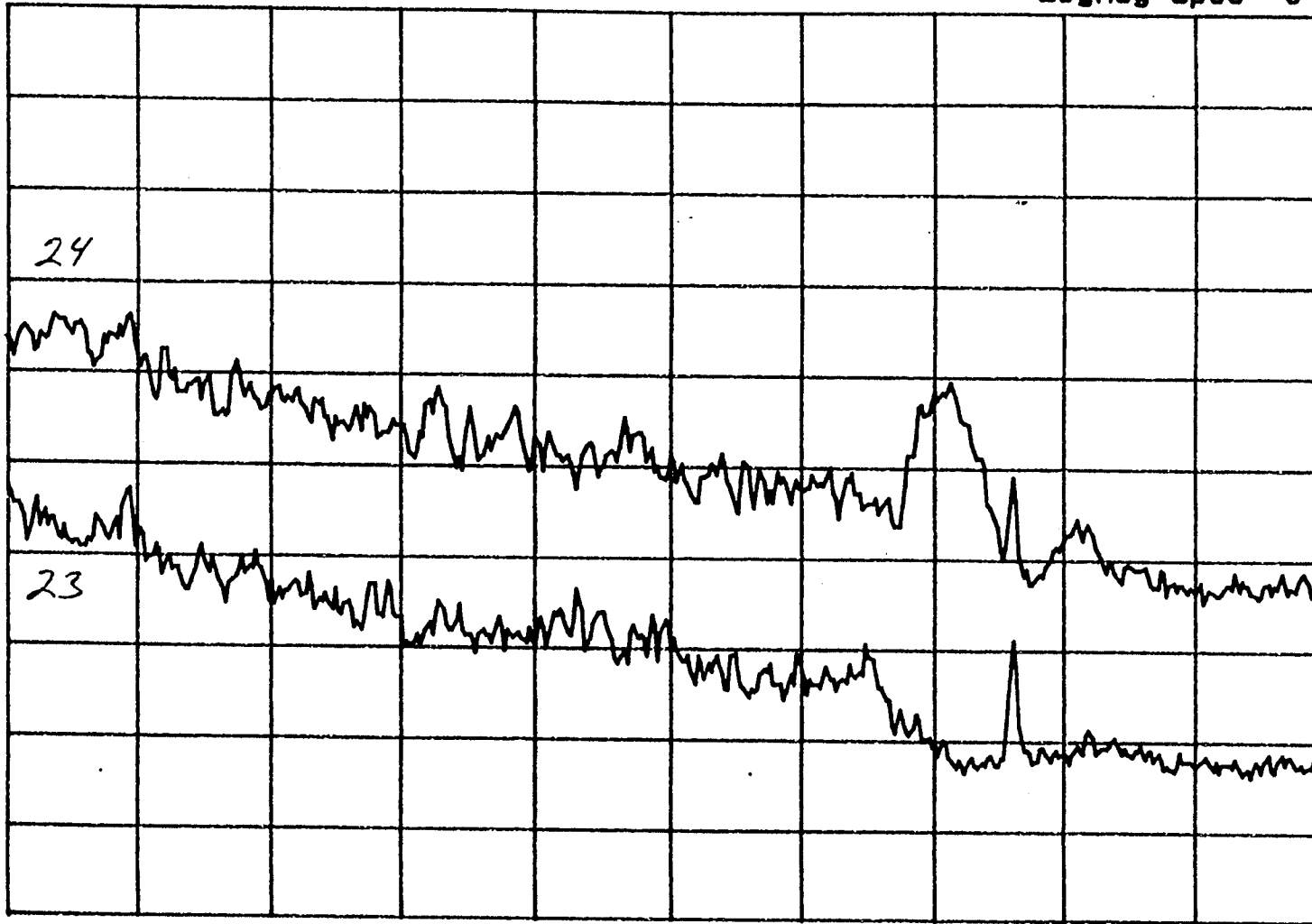
#23 REF

U-SLOW

DENON

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0: 37: 32

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS4020*

Reference Point _____

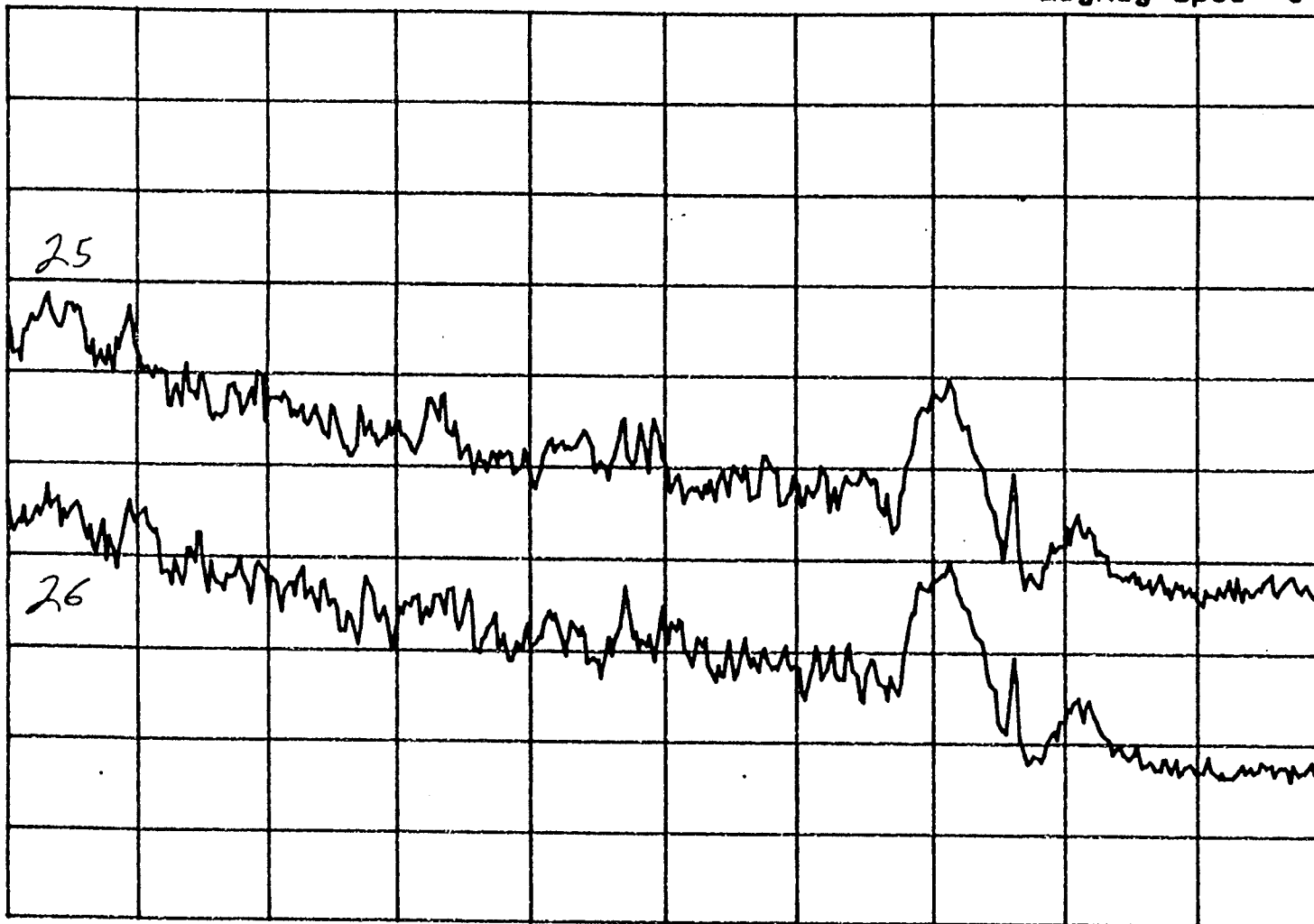
Operator Comments

#25 PDJ

#26 HITRE

*U-SLOW
DENON
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/2/97

0: 41: 11

SubCarrier Systems Corporation



0.332

Panasonic

Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	Grade
	Start	Stop			
HS40300.DAT	11/20/96				
	0:00	0:30	1	Panasonic Radio 0 dB Reference Track 1kHz@91% Pilot@9% 2 Vrms=-15 dB on DAT Input Monitor Level	See zoom up
	0:30	1:00	2	Meters Noise Reference No SCA	for greater detail on noise spurs
	1:06	3:06	3	Proponent Only Reference	
	3:11	5:12	4	System C	MITRE T
	5:18	7:18	5	System B	DDJ T
	7:24	9:24	6	System A	SEIKO
	9:30	11:30	7	Group A Reference	
	11:36	13:36	8	System A Group A	SEIKO T
	13:41	15:42	9	System B Group A	DDJ T
	15:48	17:48	10	System C Group A	MITRE
	17:53	19:53	11	Group B Reference	
	19:59	21:59	12	System C Group B	MITRE T
	22:05	24:05	13	System B Group B	DDJ T
	24:10	26:11	14	System A Group B	SEIKO This plot looked strange, repeat to be sure, yes this is really there.
	26:17	28:17	15	Proponent Only Urban Slow Reference	Whistle tones at 28:03
	28:22	30:22	16	Urban Slow System A	SEIKO T Buzz at 29:5x on tape. 2nd one too
	30:27	32:28	17	Urban Slow System B	DDJ T Whistle tone at 32:15 mark
	32:34	34:35	18	Urban Slow System C	MITRE Whistle tone at ~34:25 but lost in local hiss (seems lower then one above)
	34:40	36:41	19	Group A Urban Slow Reference	
	36:47	38:47	20	Urban Slow System A	SEIKO T
	38:53	40:53	21	Urban Slow System B	DDJ T
	40:59	42:59	22	Urban Slow System C	MITRE
	43:04	45:06	23	Group B Urban Slow Reference	
	45:11	47:11	24	Urban Slow System A	SEIKO T
	47:16	49:16	25	Urban Slow System B	DDJ T Whistles heard, but down in noise of plot
	49:22	51:23	26	Urban Slow System C	MITRE

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

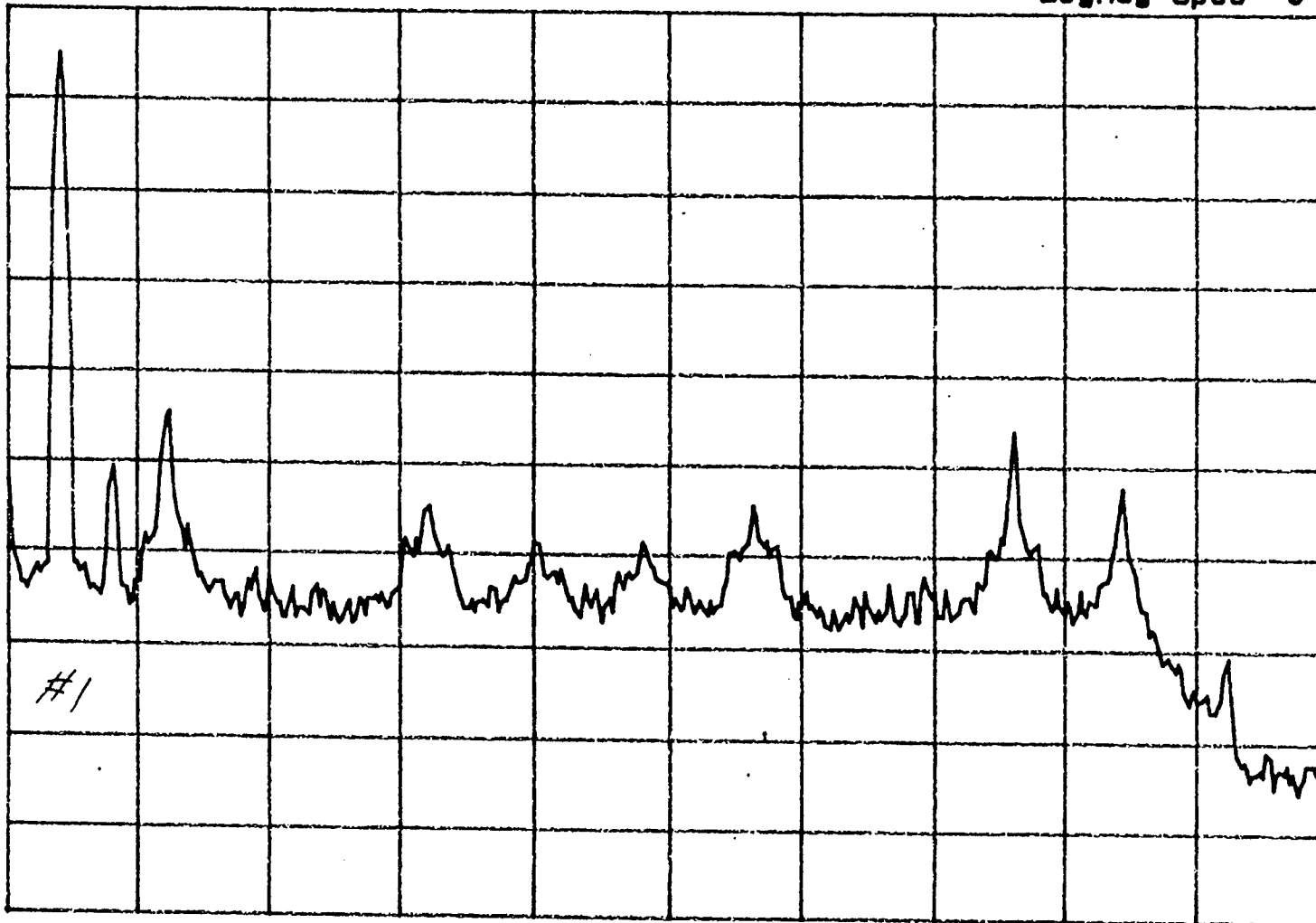
Test Sequence *HS40300*

Reference Point _____

Operator Comments

*#1 REF
PANASONIC*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 18: 09

SubCarrier Systems Corporation



235

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

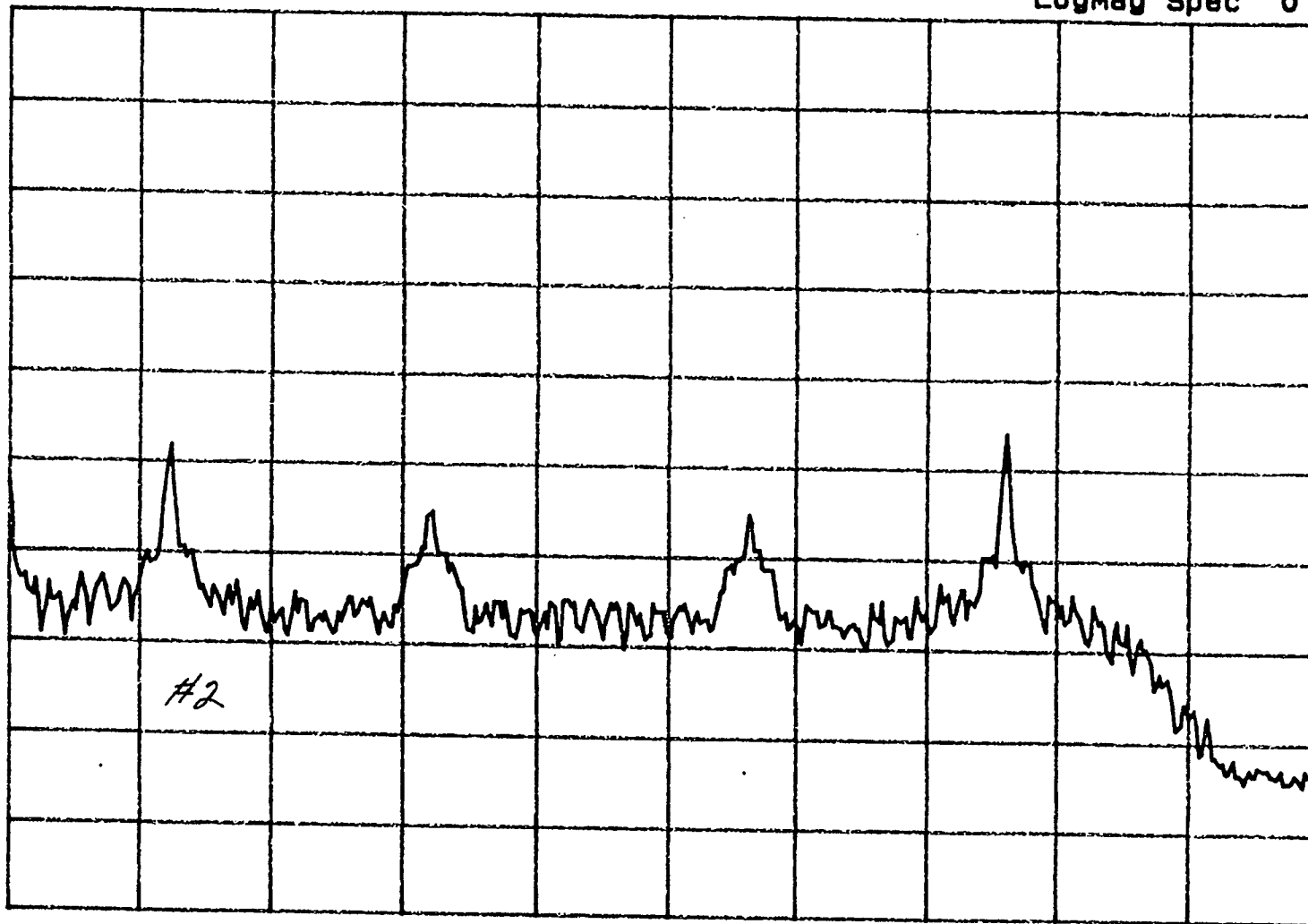
Test Sequence *HS40300*

Reference Point _____

Operator Comments

*ONE PRESUMES
THIS IS A REALLY
LOW END TUNER*

LogMag Spec 0



#2

0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97 21: 20: 41

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

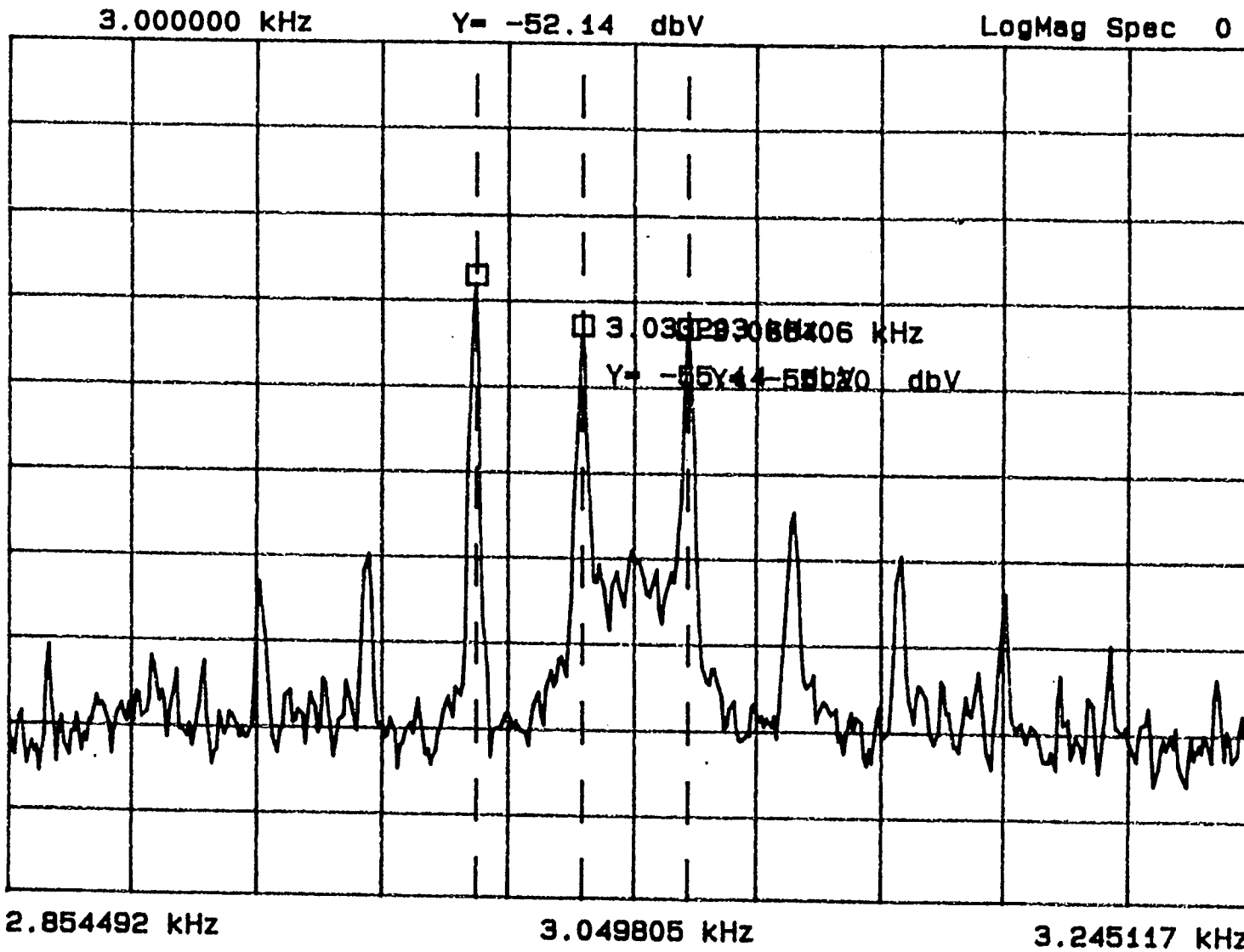
Test Sequence *HS40300*

Reference Point _____

#1

Operator Comments

*close up of
noise span @
3.05 kHz w/
300 kHz 3rd Harmonic*



2.854492 kHz

3.049805 kHz

3.245117 kHz

Top = -38 dBV 5 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 29: 29

SubCarrier Systems Corporation



237

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40300*

Reference Point _____

Operator Comments

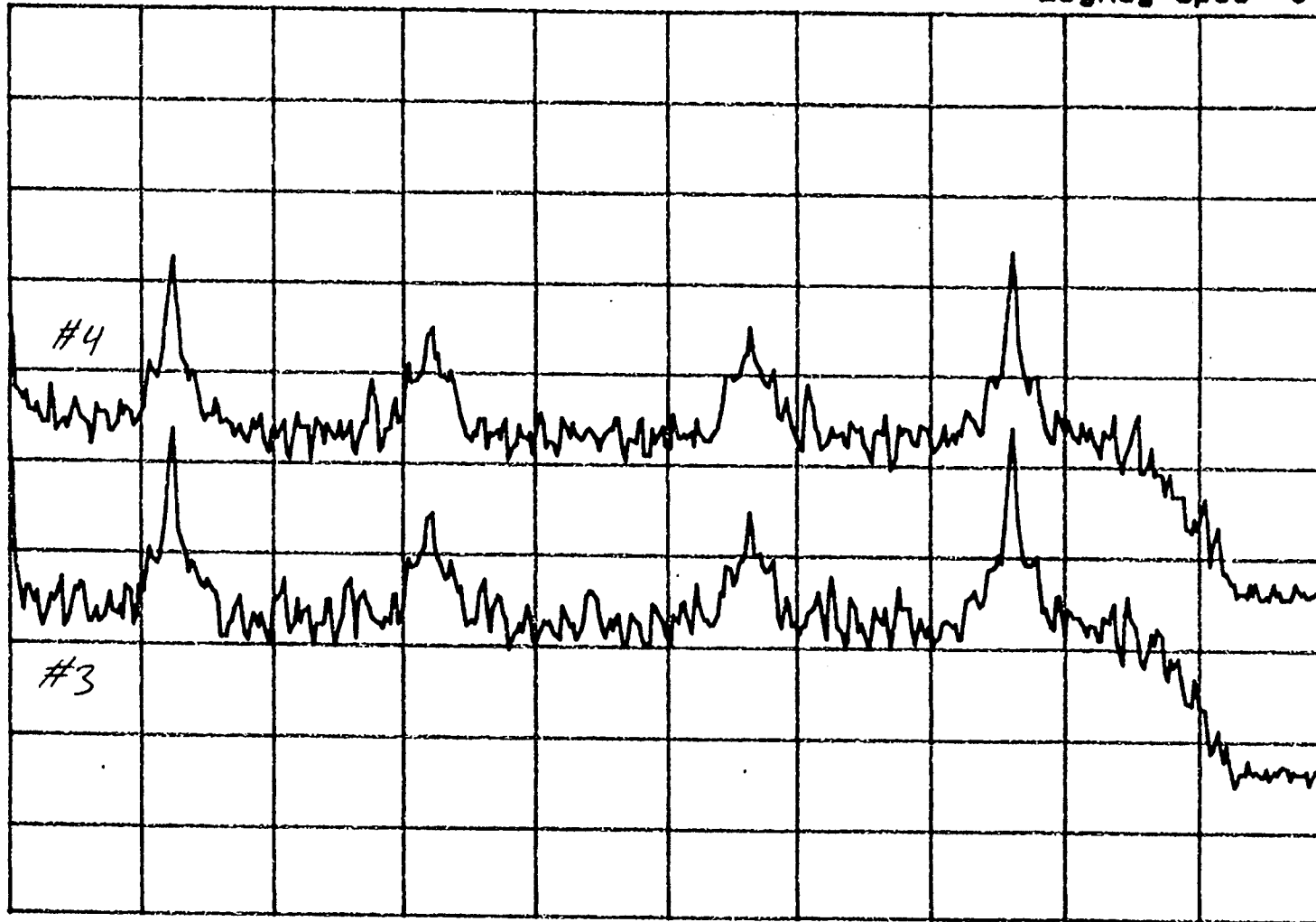
#4 MTRF

#3 REF

PANASONIC

PROPOSENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 33: 52

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence #540300

Reference Point _____

Operator Comments

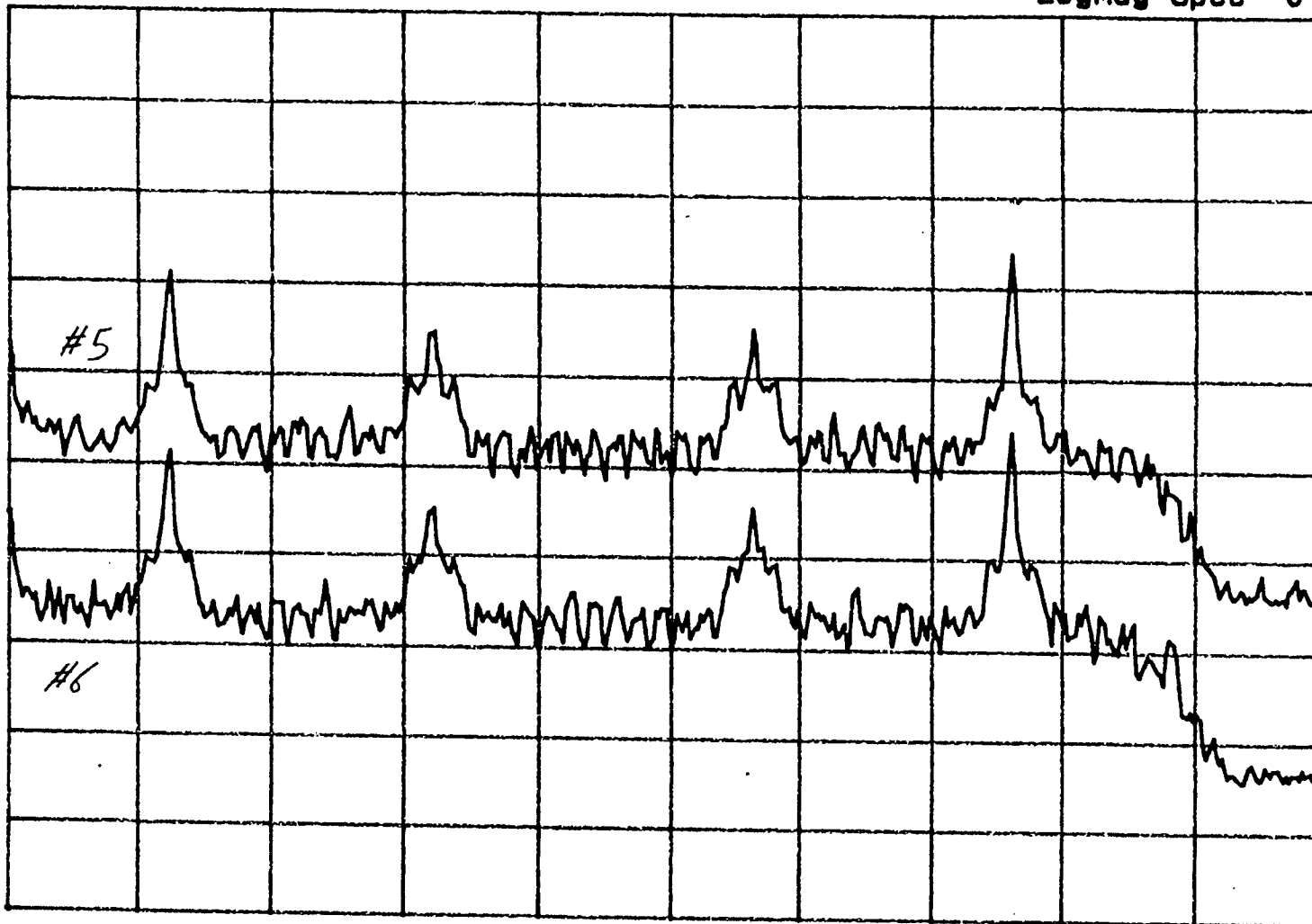
#5 DDJ

#6 SEIKO

PANASONIC

PROPOONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 37: 27

SubCarrier System

poration



239

chc

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS40300*

Reference Point _____

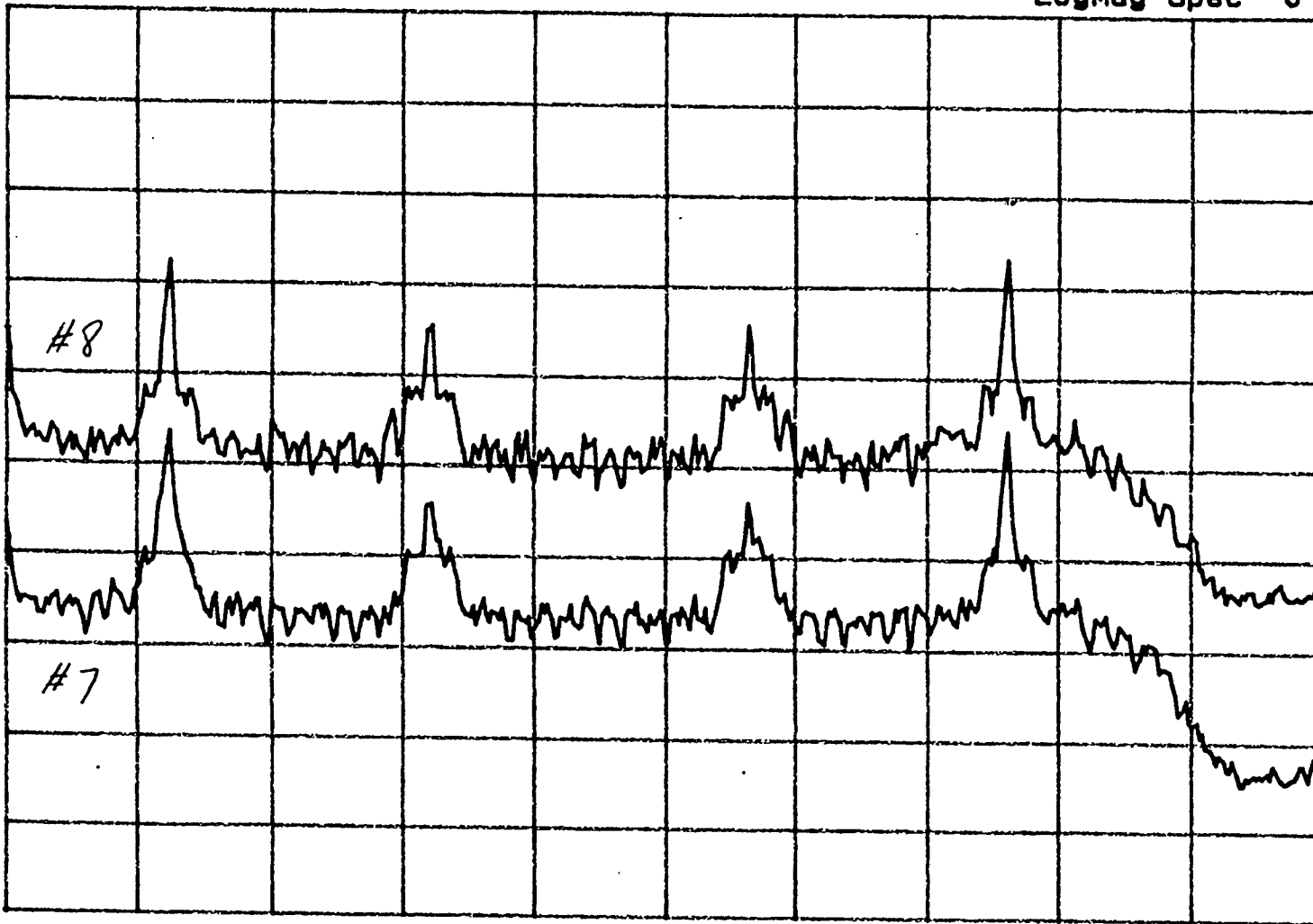
Operator Comments

#8 SEIKO

#7 RFI

*PANASONIC
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 41: 05

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS4030*

Reference Point _____

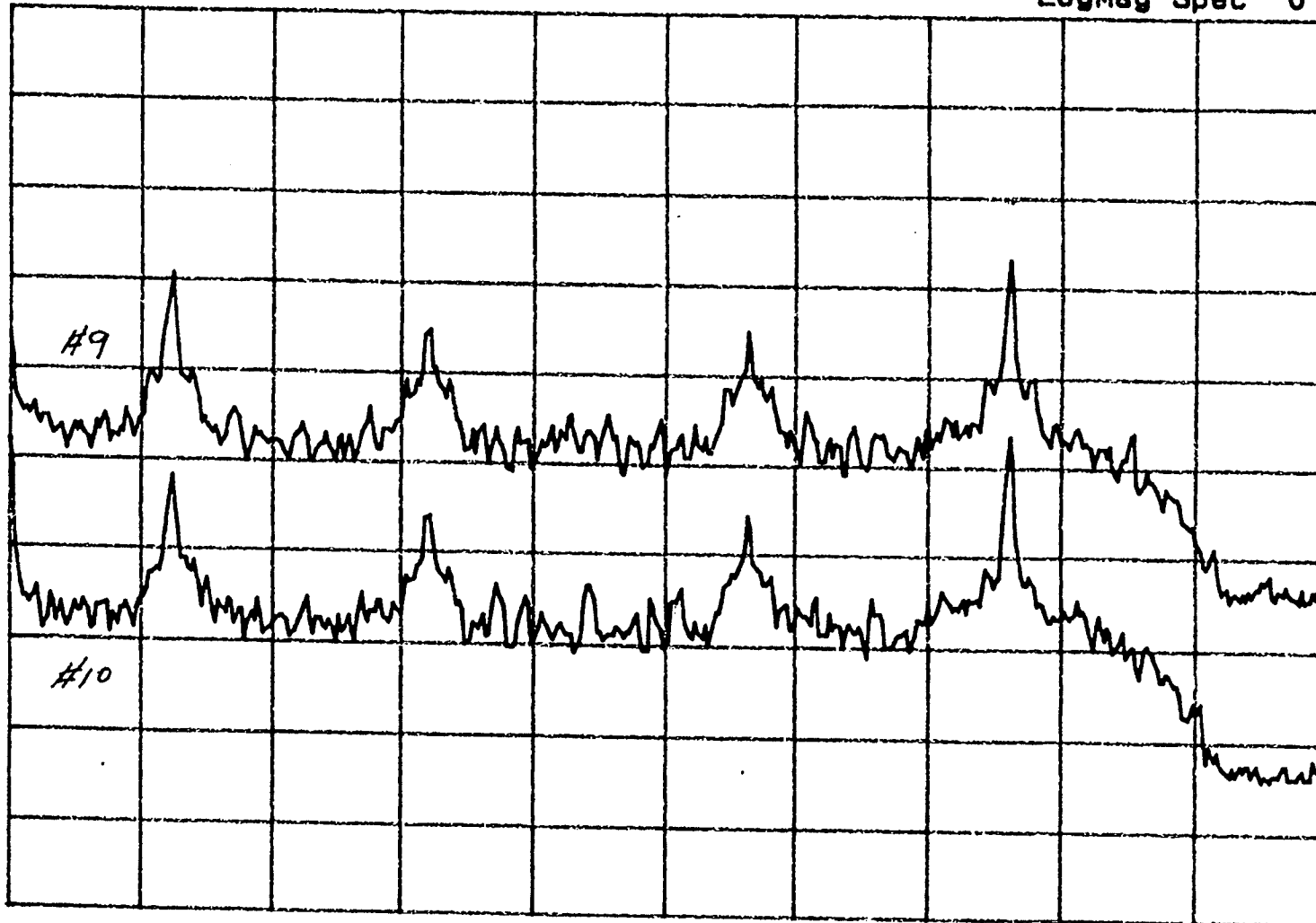
Operator Comments

#9 DDJ

#10 MITRE

*PANASONIC
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 44: 20

SubCarrier System Corporation



Client:
NRSC Digital Radio

Test Laboratory
(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40300*

Reference Point _____

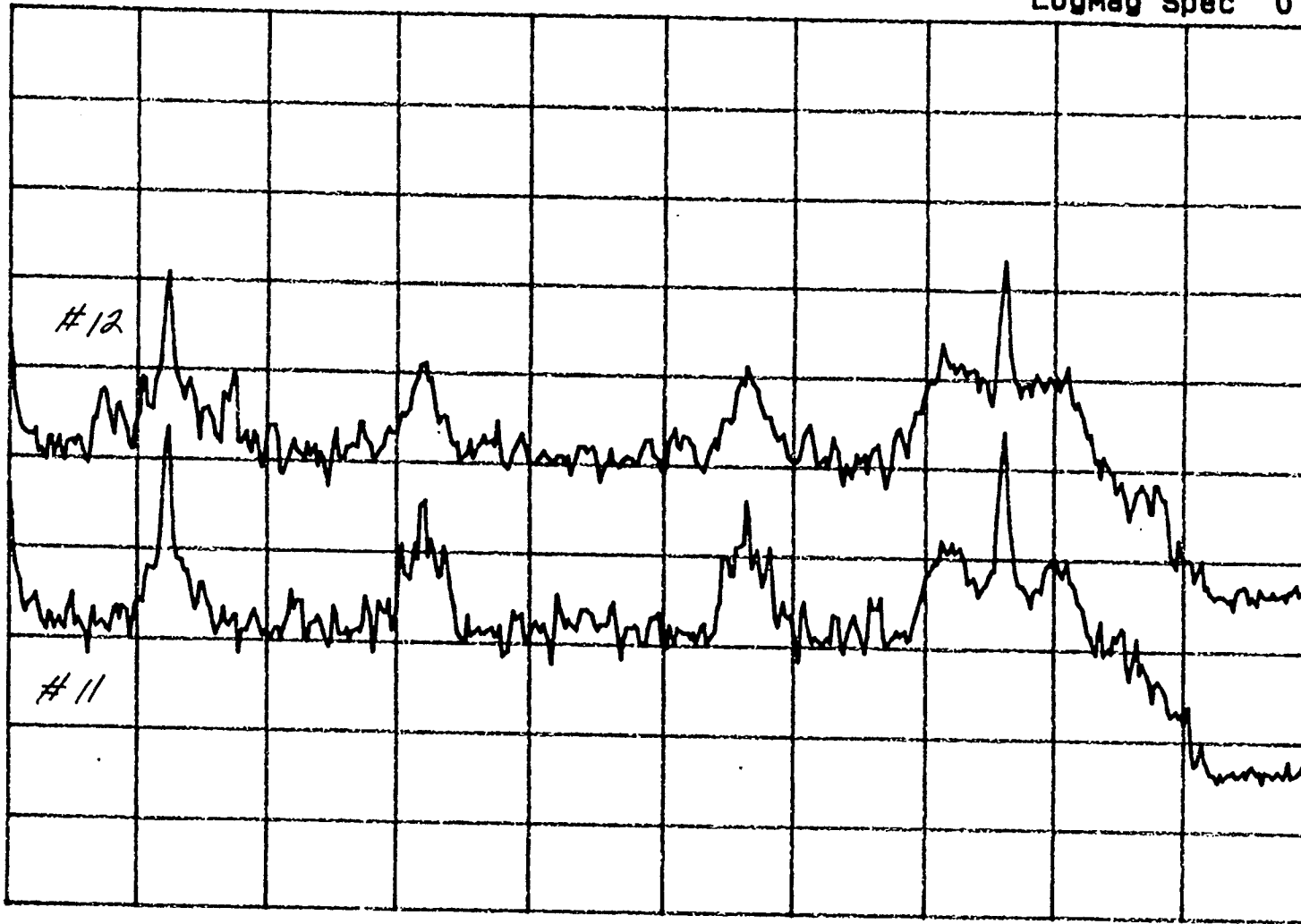
Operator Comments

#12 MITRE

#11 REF

*PANASONIC
GROUP B*

LogMag Spec 0



0.0 kHz

12.500 kHz

25.000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97 21: 47: 15

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40300*

Reference Point _____

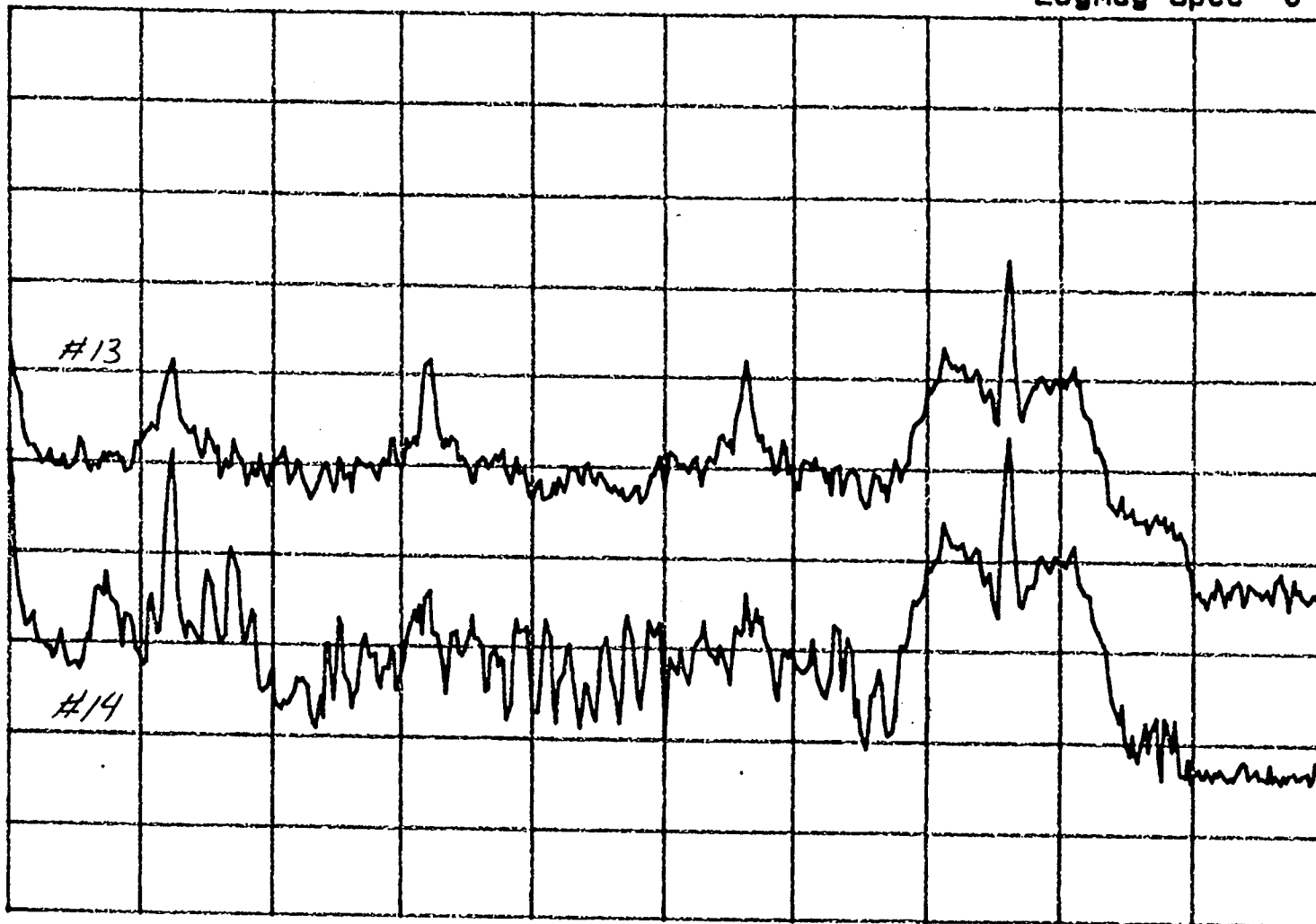
Operator Comments

#13 DDJ

#14 SEIKO

*PANASONIC
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/3/97

21: 50: 37

SubCarrier Syster

poration



che

hfe

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS40300*

Reference Point _____

Operator Comments

*#16 Has SHORT
BUZZ TONE ON TAPE;
DRIVES NOISE FLOOR
UP ; SEE NEXT*

PLOTS.

#16 SEIKO

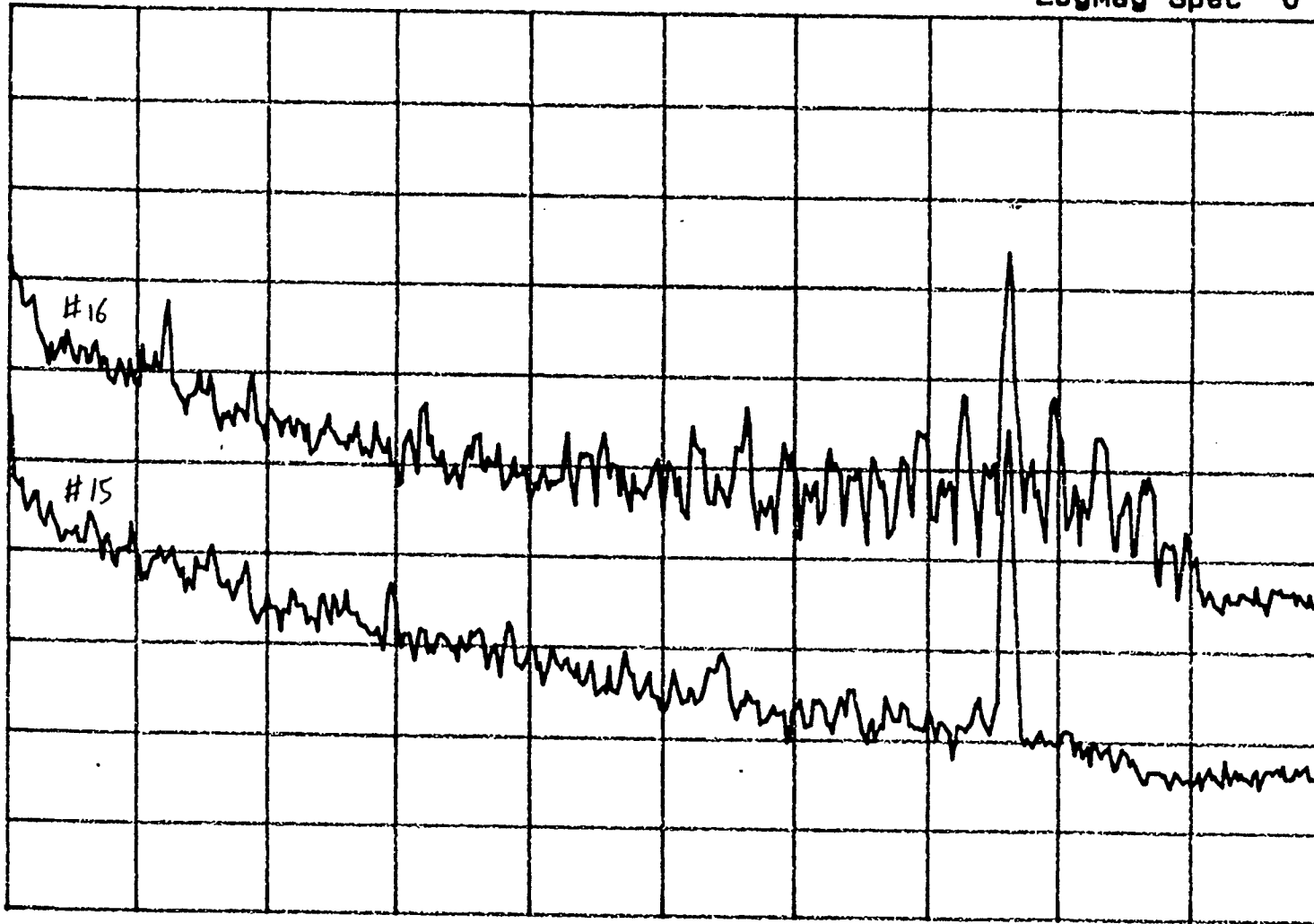
#15 RFE

*KANASOMC
V-SLOW
PROPOSENT ONLY*



SubCarrier Systems Corporation

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

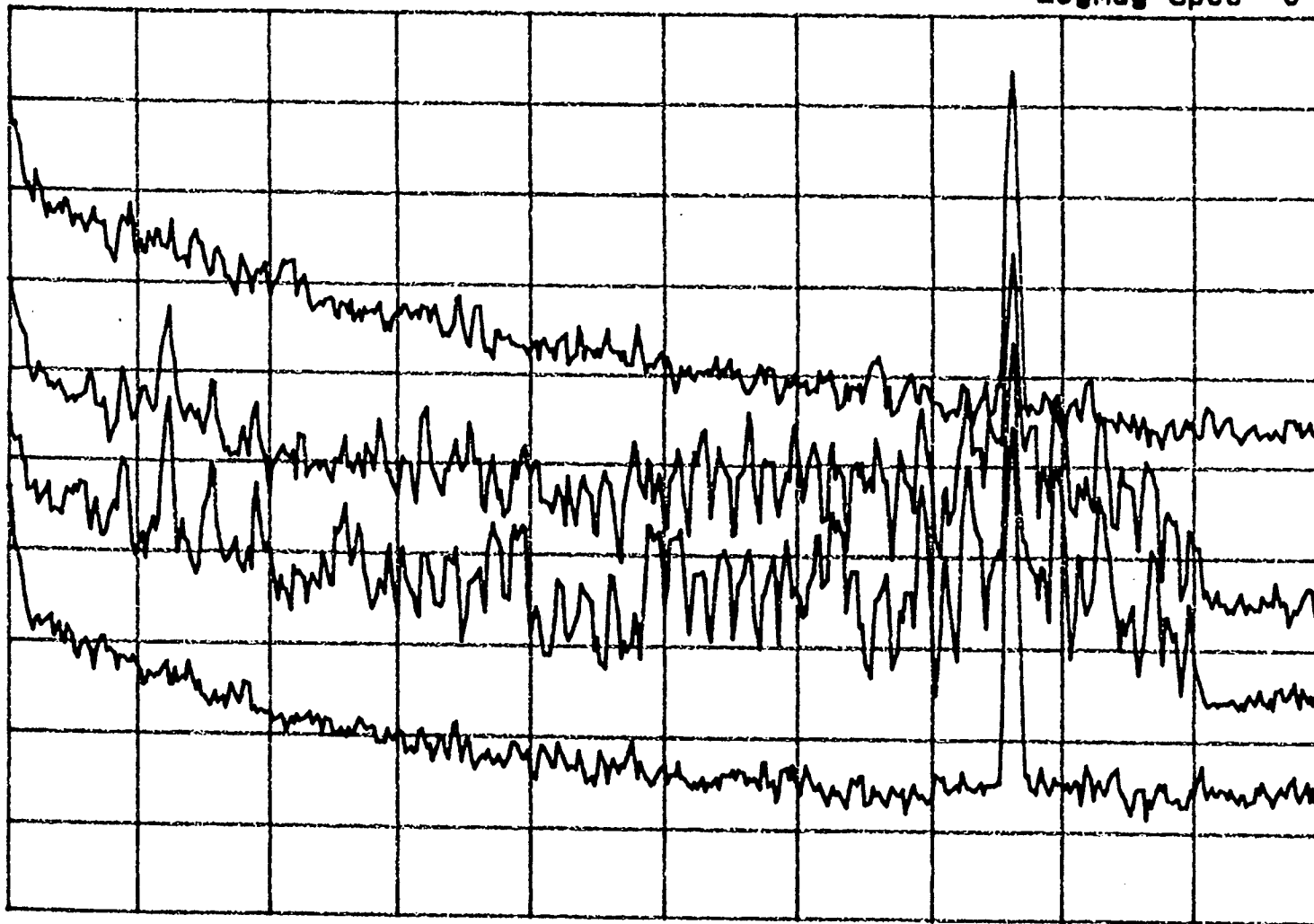
File= Live

Analog Baseband Frequency Spectrum

1/11/97

20: 49: 27

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -40 dBV 10 dB/div

Wndo: BMH

REF

File= Live

H540300
Run id # 16
SEIRD
PARASONIC
U-SLOW
PROPONENT ONLY

Composite Run

-40

Noise Buzz Pop
@ 29:54 TO :50

-20

0

Take #2 of some

NON-FADING
moment; NOTE
BETWEEN NOISE
FLOOR

1/11/97

20:54:26

57

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *H540300*

Reference Point _____

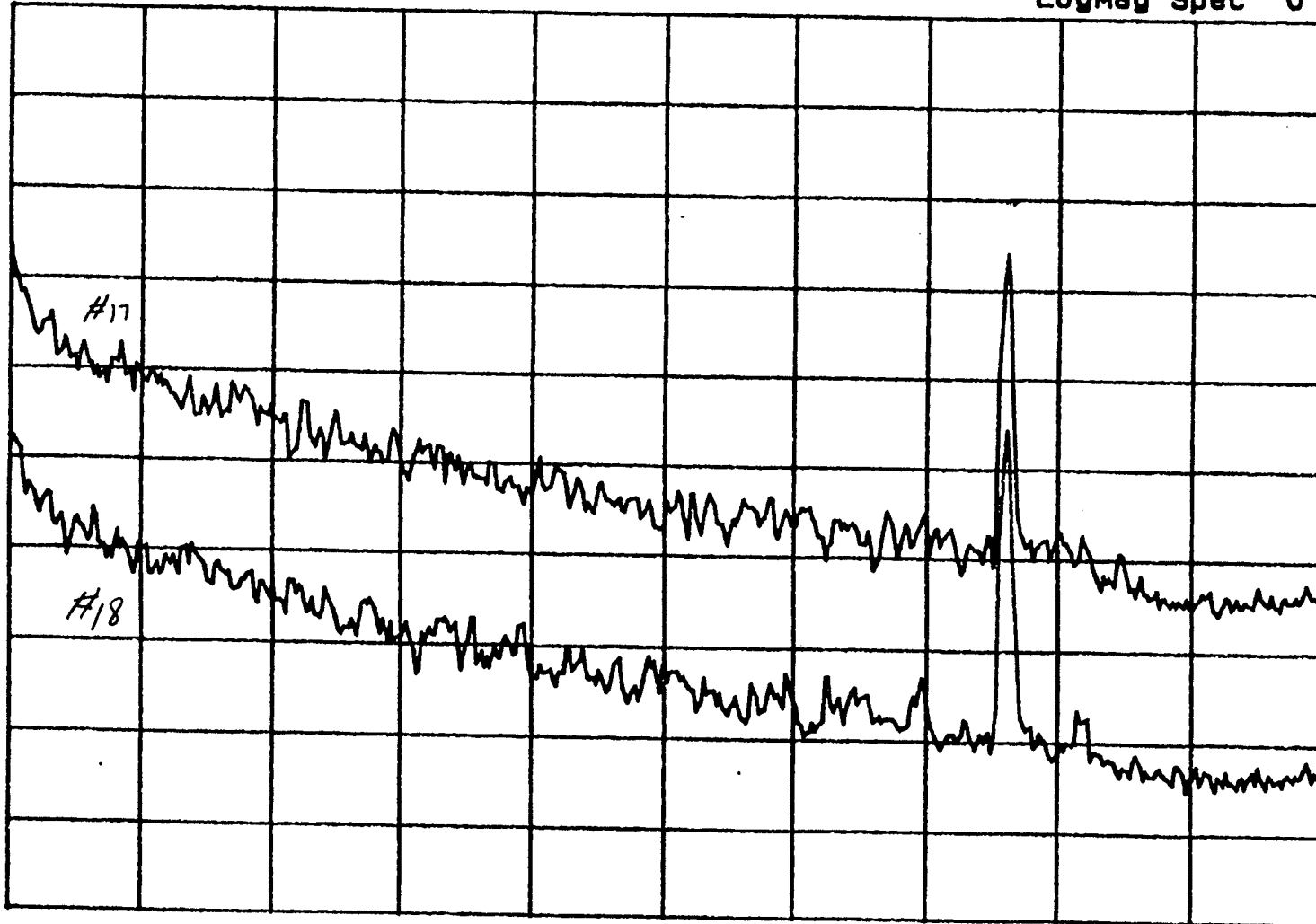
Operator Comments

#17 DDJ

#18 MITRE

*.PANASONIC
U-SLOW
PROPERMENT ONLY*

LogMag Spec 0



0.0 KHz

12.5000 KHz

25.0000 KHz

Top = -20 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 06: 44

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40300*

Reference Point _____

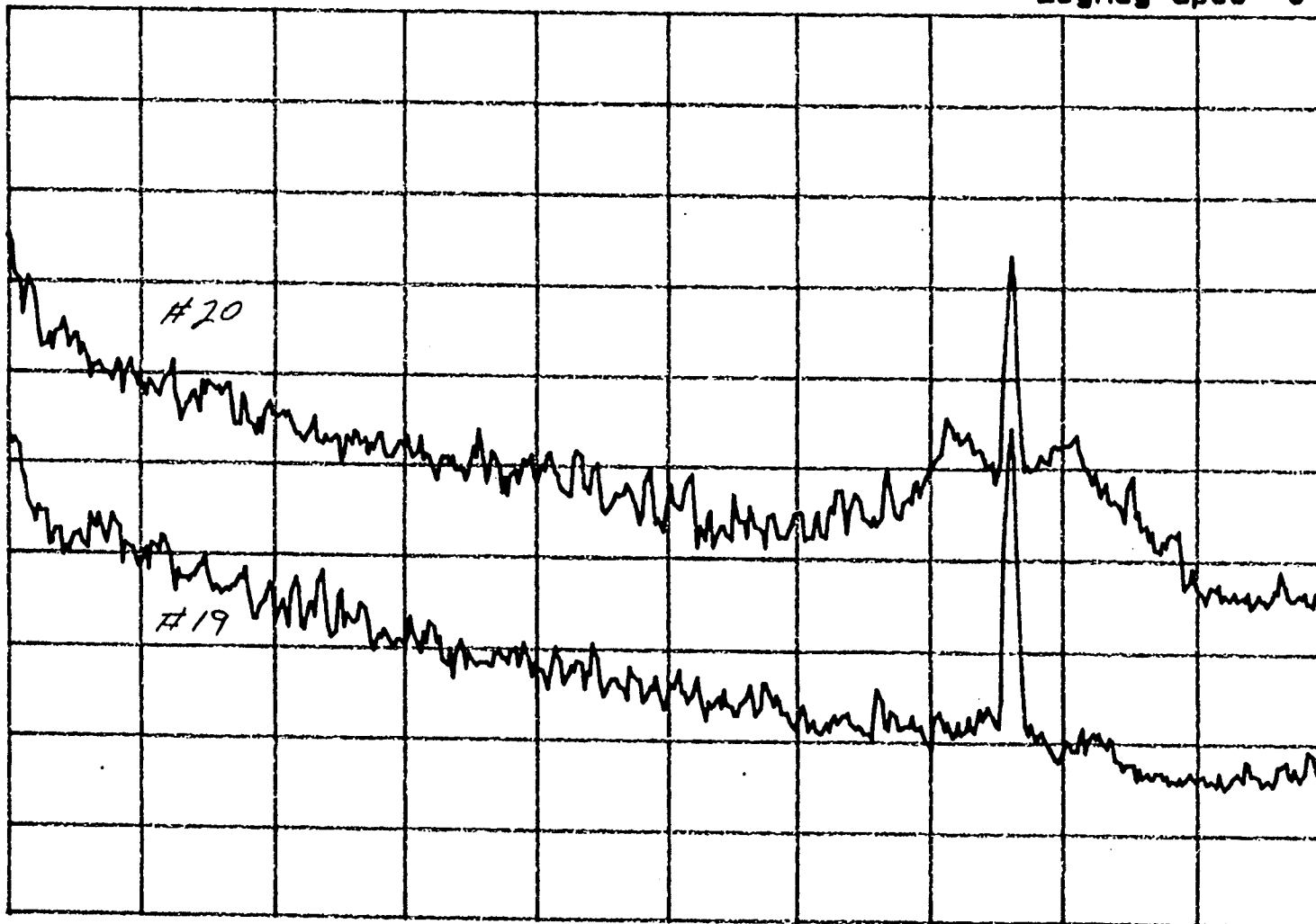
Operator Comments

#20 SEIKO

#19 REF

*U-SLOW
PANASONIC
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 13: 32

SubCarrier System

poration



640

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS40300*

Reference Point _____

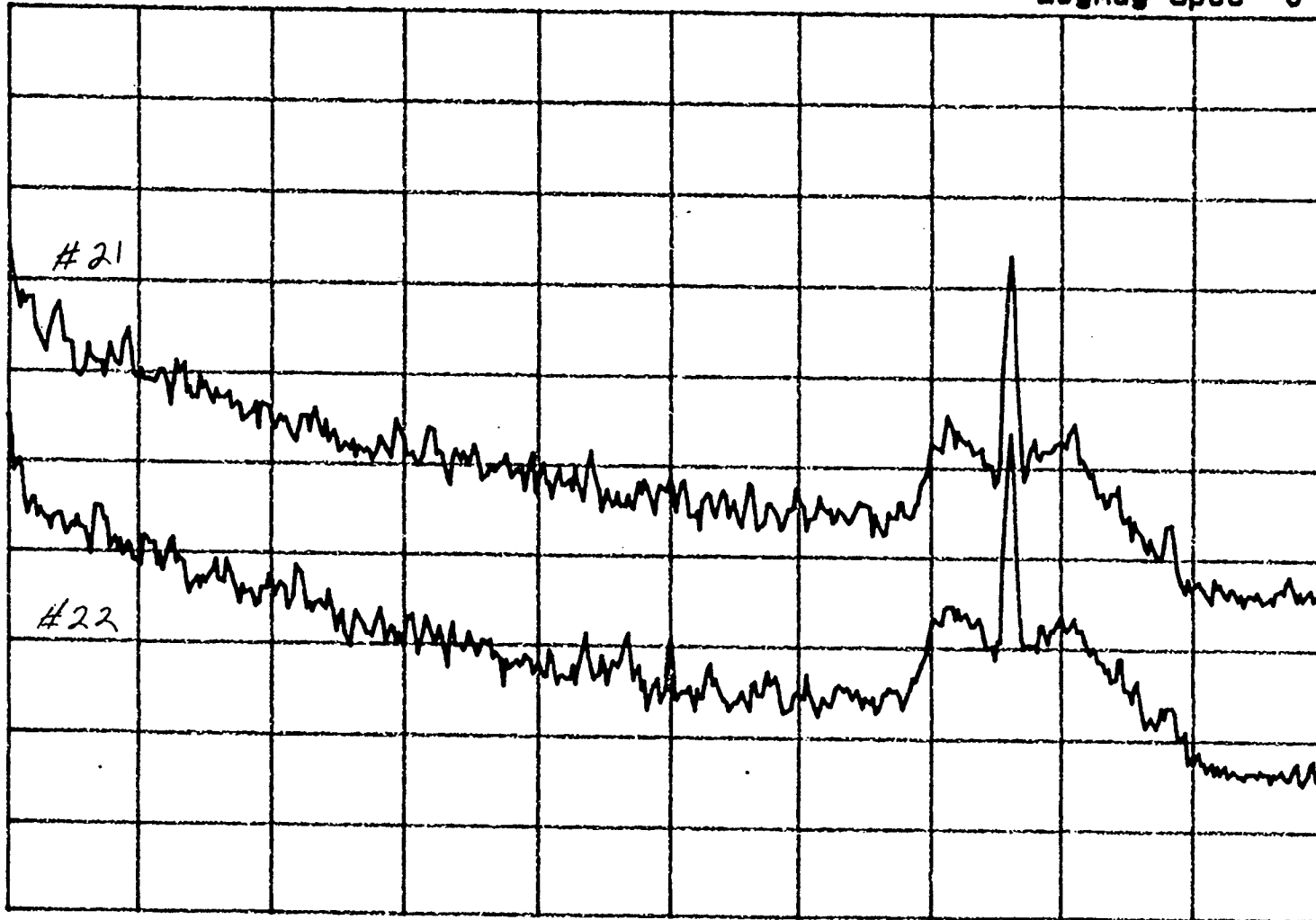
Operator Comments

#21 DDJ

#22 MITRE

U-SLOW
PANASONIC
GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 17: 05

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40300*

Reference Point _____

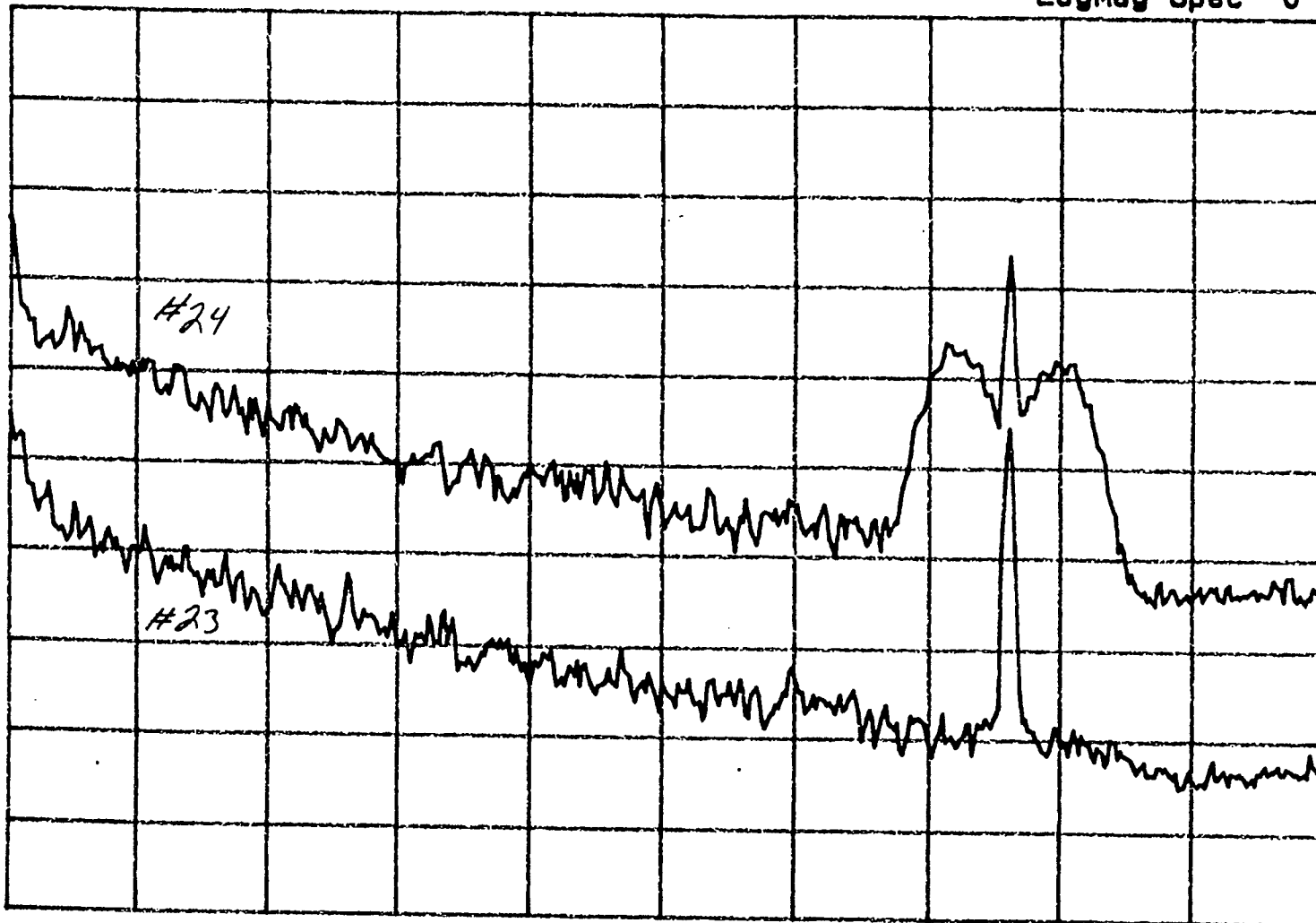
Operator Comments

#24 SEIKO

#23 RFF

✓ - SLOW
PIONEER
GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 21: 25

SubCarrier System

oration



b7c

Client: NRSC Digital Radio

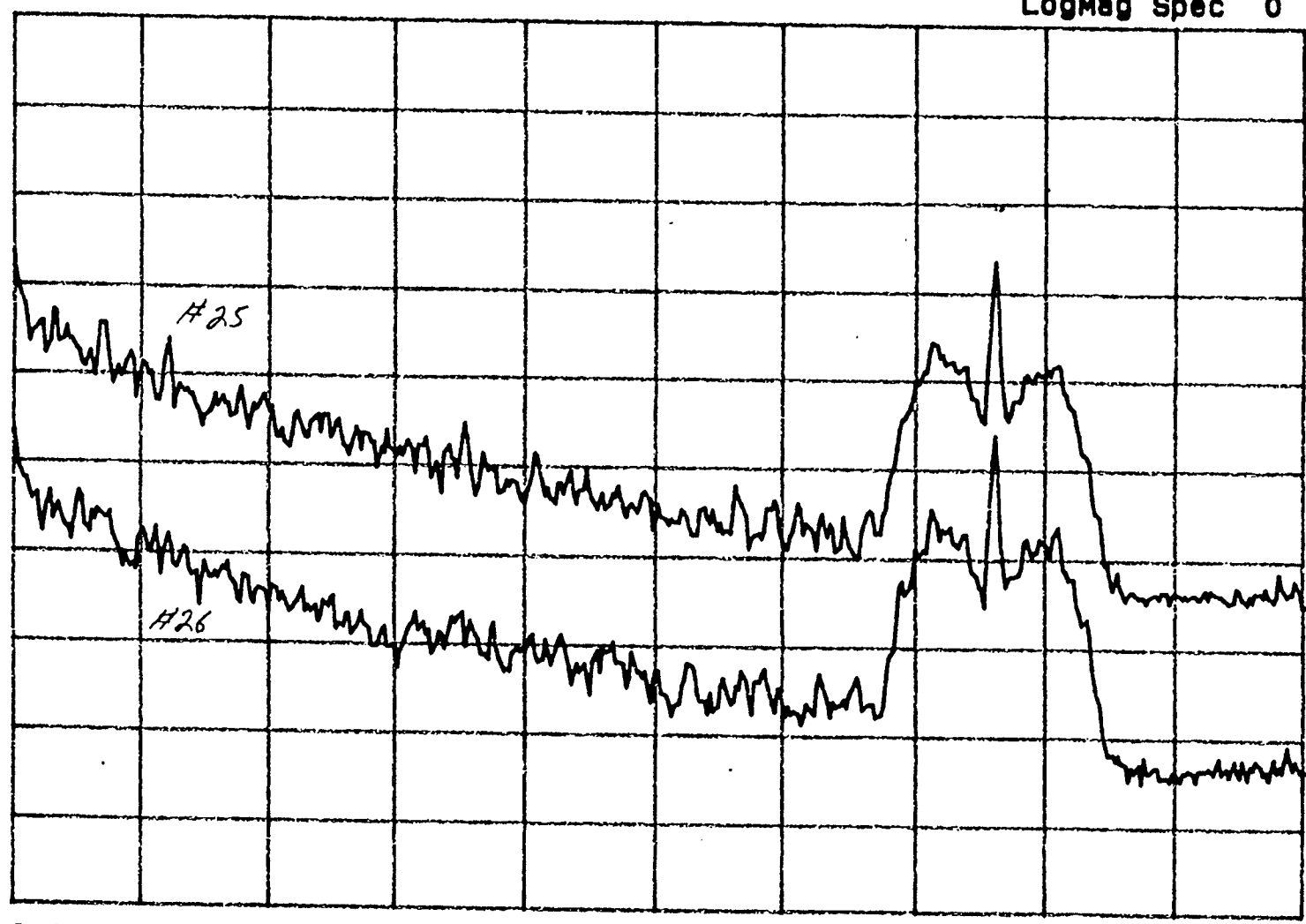
Test Laboratory
(High Speed FM
SubCarrier SubCommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *H540300*
Reference Point _____

Operator Comments
#25 PDJ
#26 MITRE
U-SLOW
PARASONIC
GROUP B

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
Top = -20 dBV 10 dB/div Wndo: BMH
File= Live

Analog Baseband Frequency Spectrum

1/11/97 21: 25: 09

Pioneer

DAT File Number	Time Code		ID	Description	Grade
	Start	Stop			
HS40400.DAT	11/19/96				
	0:00	0:30	1	Pioneer Radio 0 dB Reference Track 1kHz@91% Pilot@9% 680 mVrms=-26 dB on DAT Input Monitor Level Meters	
	0:30	1:00	2	Noise Reference No SCA	
				Proponent Only	
	1:06	3:07	3	Reference	
	3:12	5:12	4	System C	
	5:18	7:20	5	System B	MITRE
	7:25	9:25	6	System A	DDJ
				Group A	SEIKO
	9:31	11:31	7	Reference	
				System A Group A : Slight increase in noise floor. Tone when	Reset plotter tension again and replot
	11:37	13:37	8	Program on 92 kHz SCA back tracks. Mod Peaks detected.	T SEIKO
	13:42	15:43	9	System B Group A : Slight increase in noise floor. Tone when	
				Program on 92 kHz SCA back tracks. Mod Peaks detected.	B DDJ
	15:48	17:49	10	System C Group A : Slight increase in noise floor. Tone when	
				Program on 92 kHz SCA back tracks. Mod Peaks detected.	T MITRE
				Group B	
	17:54	19:56	11	Reference	
					T, At 21:45 a buzz tone, plot it all .
	20:01	22:02	12	System C Group B :Small increase in noise floor.	then replot with pre, noise and post sections, same done for other runs as needed
					T, Run started after a beep tone, too short to catch and plot above local noise, t=23:38
	22:08	24:08	13	System B Group B :Small increase in noise floor.	
	24:14	26:14	14	System A Group B :Small increase in noise floor.	Buzz like track 12, was at 25:53
				Proponent Only	
	26:20	28:22	15	Urban Slow Reference	
	28:27	30:27	16	Urban Slow System A	SEIKO T
	30:32	32:33	17	Urban Slow System B	DDJ T
	32:41	34:41	18	Urban Slow System C	MITRE Buzz at time 34:23
				Group A	
	34:46	36:47	19	Urban Slow Reference	
	36:52	38:52	20	Urban Slow System C	MITRE T
	38:58	40:58	21	Urban Slow System B	DDJ T
	41:04	43:04	22	Urban Slow System A	SEIKO
				Group B	
	43:10	45:10	23	Urban Slow Reference	
	45:15	47:15	24	Urban Slow System A	SEIKO T
	47:21	49:21	25	Urban Slow System B	DDJ T
	49:26	51:26	26	Urban Slow System C	SEIKO

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence

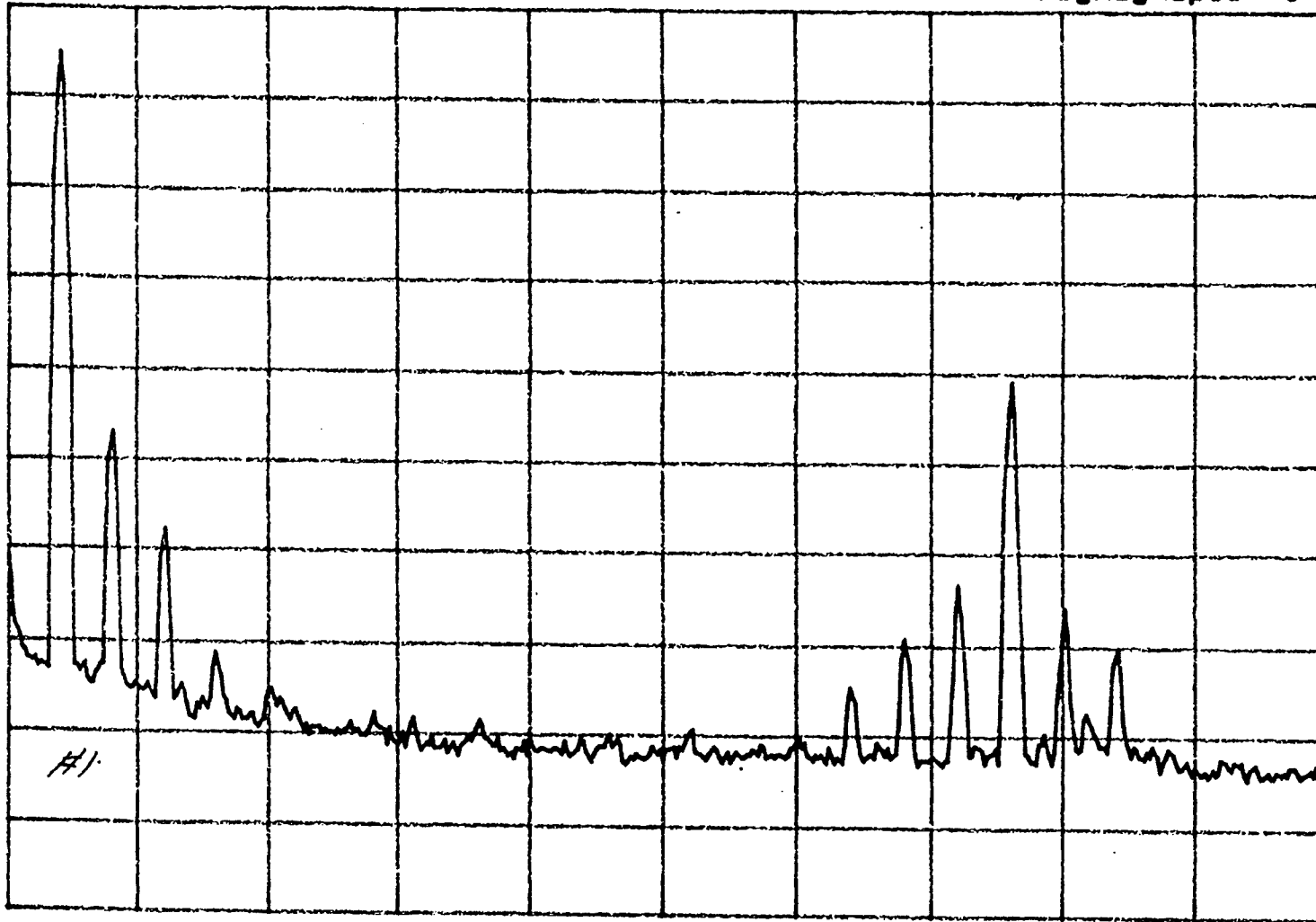
HS40400

Reference Point

Operator Comments

#1 PIONEER

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 38: 05

SubCarrier System

poration



55

Client: NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

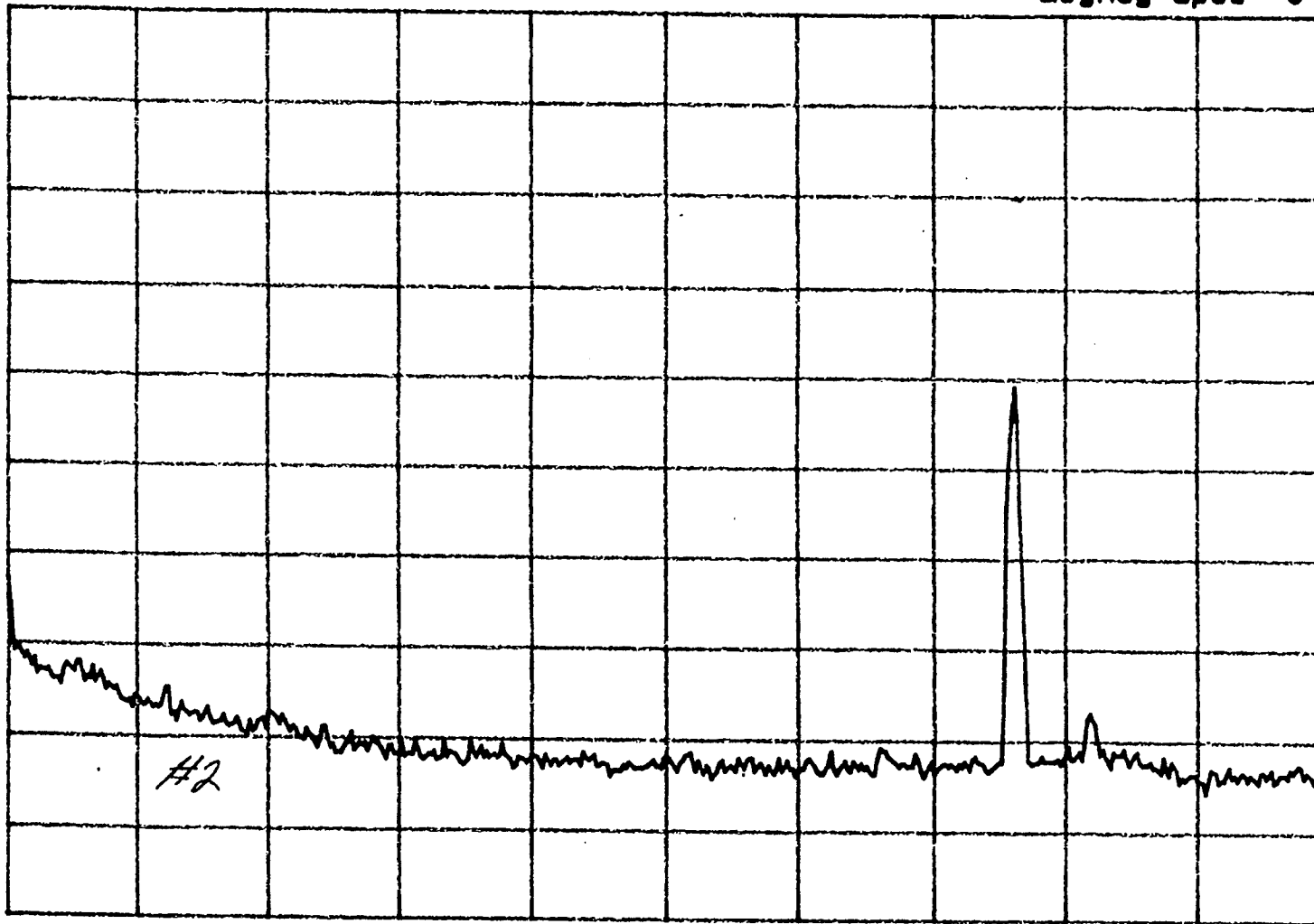
Test Squence *1540400*

Reference Point _____

Operator Comments

*#2 NOISE
PIONEER*

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz

Top = 0 dbV 10 dB/div Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97 21: 39: 42

SubCarrier Systems Corporation



154

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *11540406*

Reference Point _____

Operator Comments

#6 SEIKO

#5 DDJ

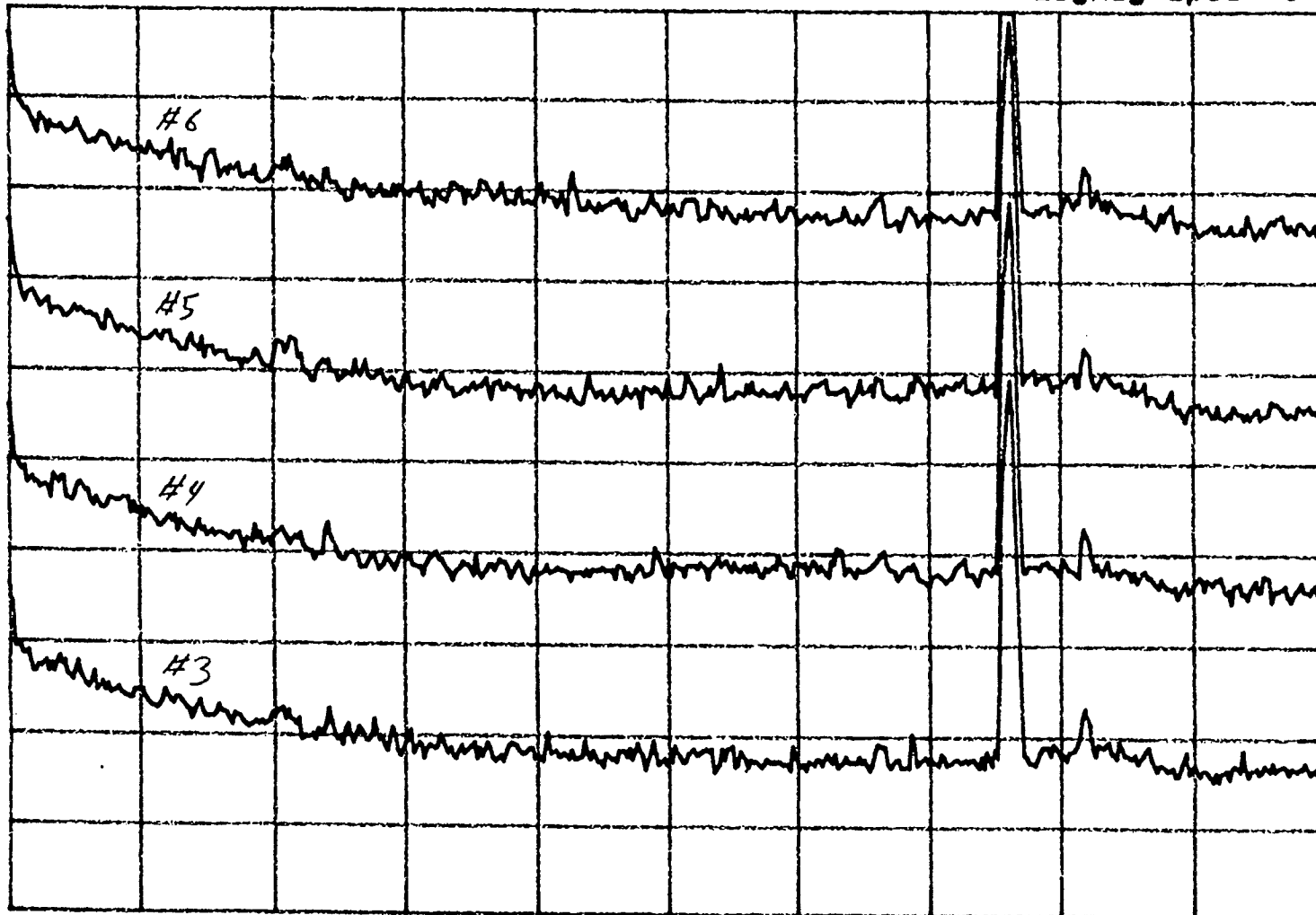
#4 MITRE

#3 REF

PIONEER

PROBONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 41: 40

SubCarrier System Corporation



SCS

256

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

Operator Comments

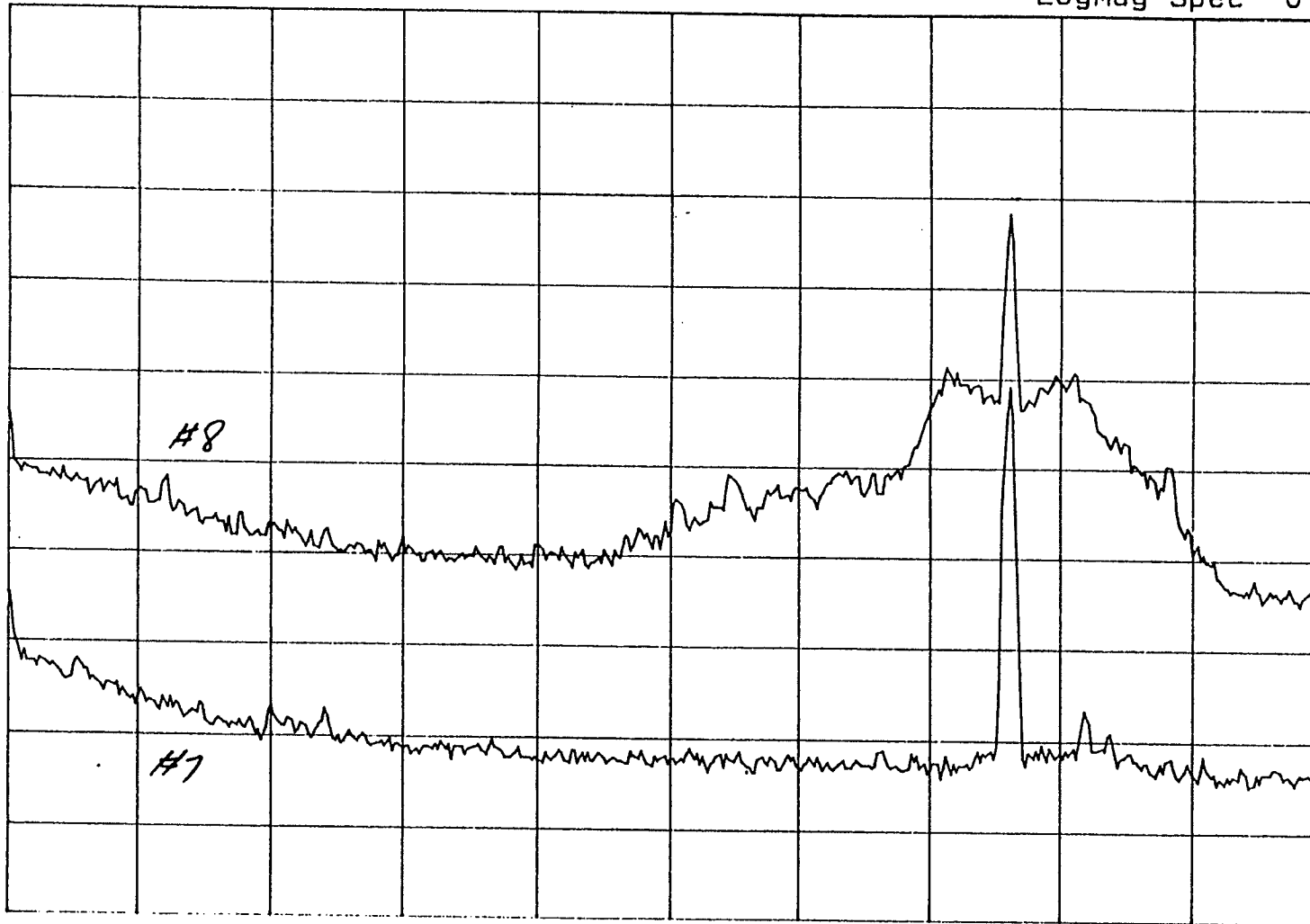
#8 SEIKO

#7 REF

PIONEER

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 55: 52

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

Operator Comments

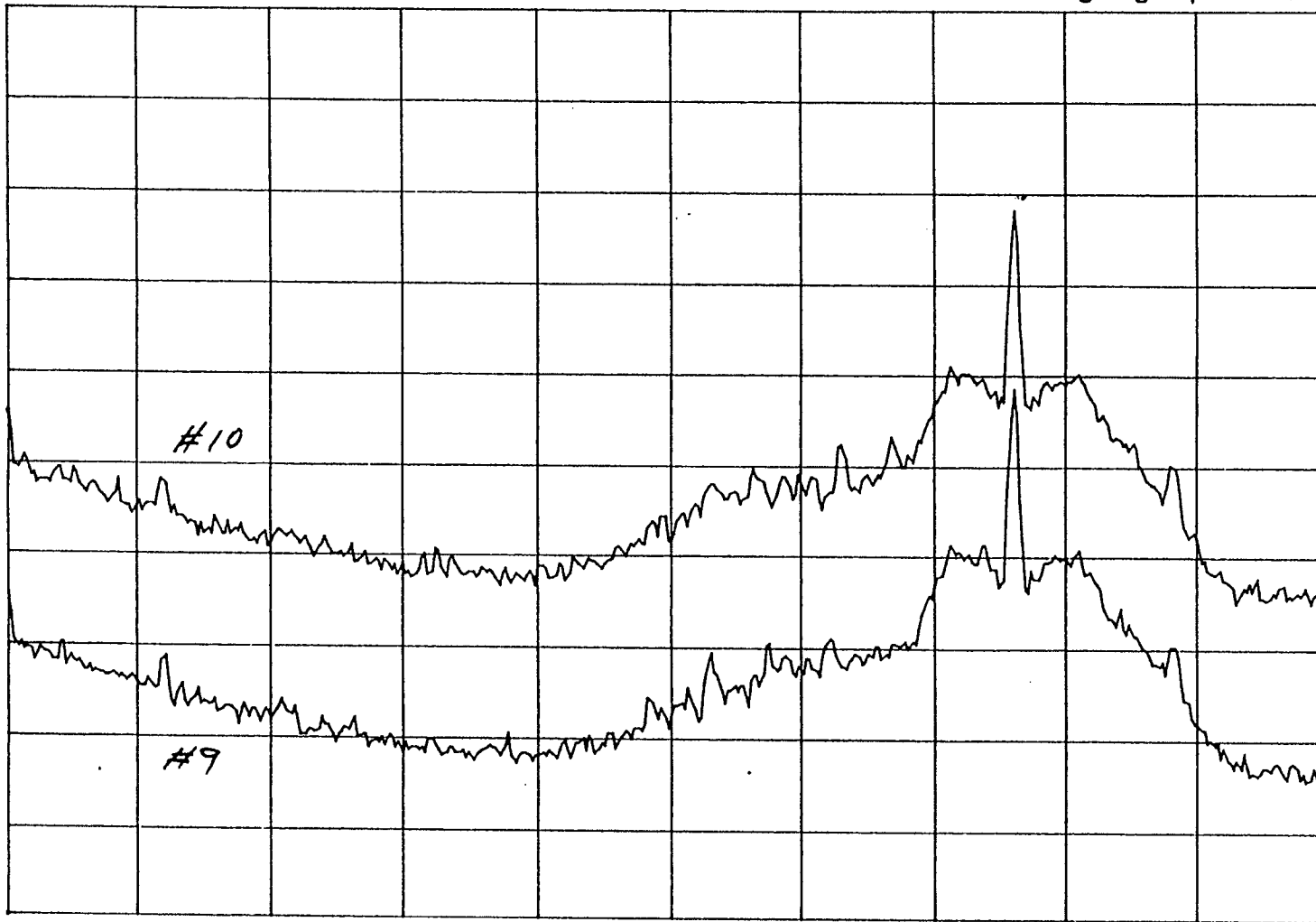
#10 MITRE

#9 DDJ

PIONEER

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

21: 59: 36

SubCarrier System Corporation



517

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence

Reference Point _____

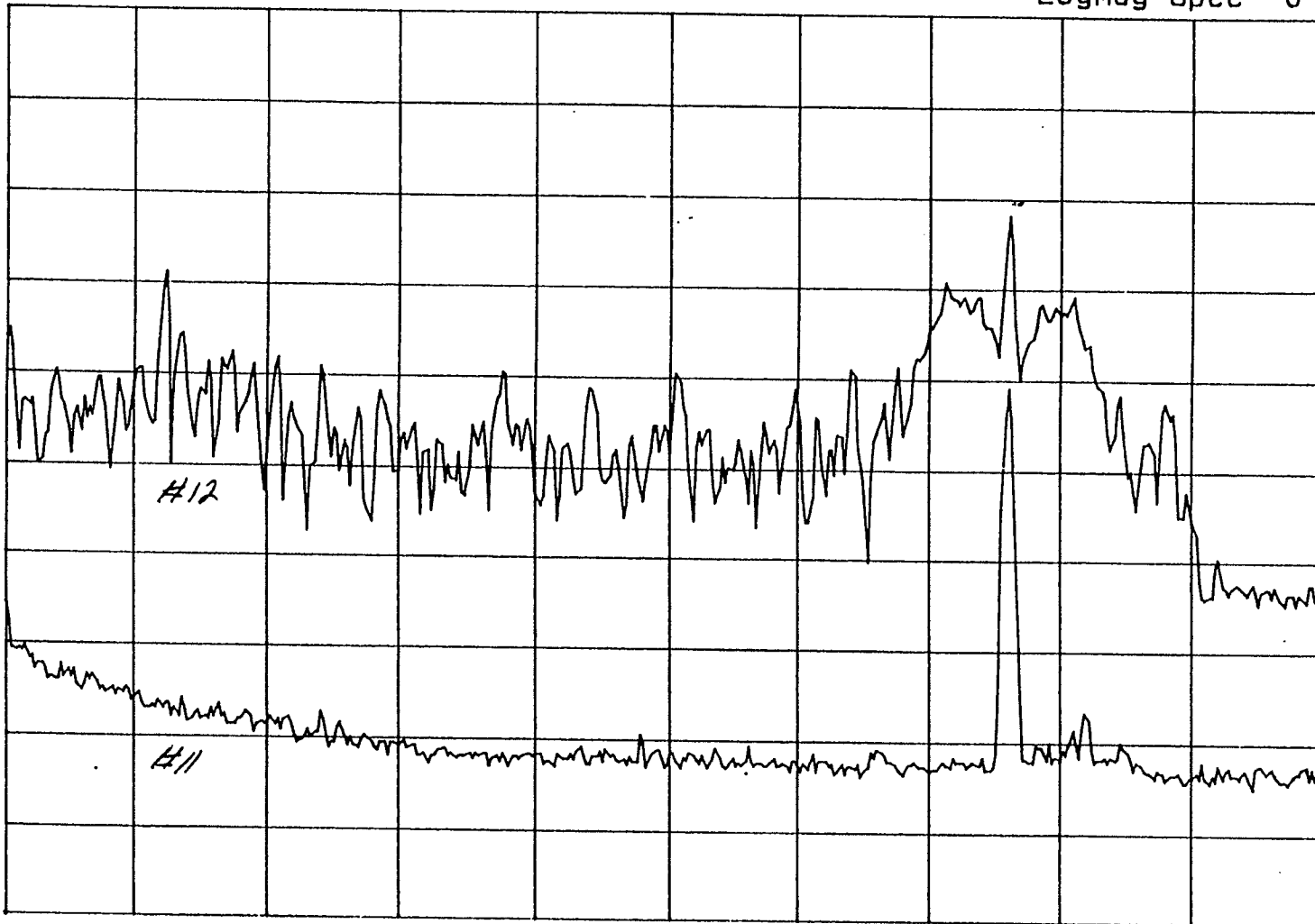
Operator Comments

#12 HAS NOISE
.BUZZ; SEE NEXT

Plots
#12 MITRE

#11 RFF
PIONEER
GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 03: 54

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

ID # 12 MITRE

Operator Comments

*PIONEER
GROUP B*

A: PNE BUZZ

B: BUZZ ~ 21:45

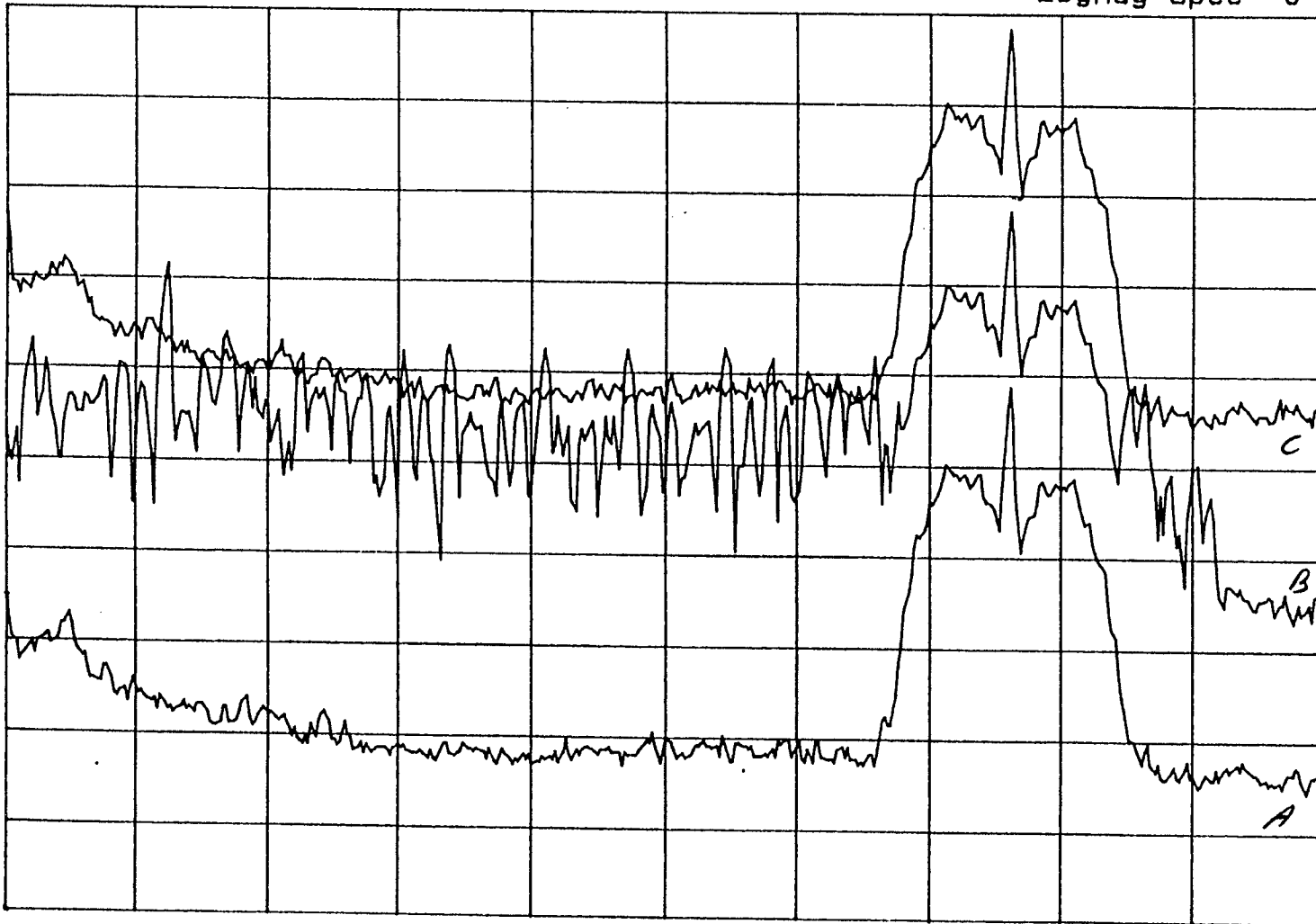
C: Post BUZZ

*IF BUZZ IS Egup
Ennon; Use Plot A*

For comparisons



LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 08: 07

SubCarrier System Corporation

650

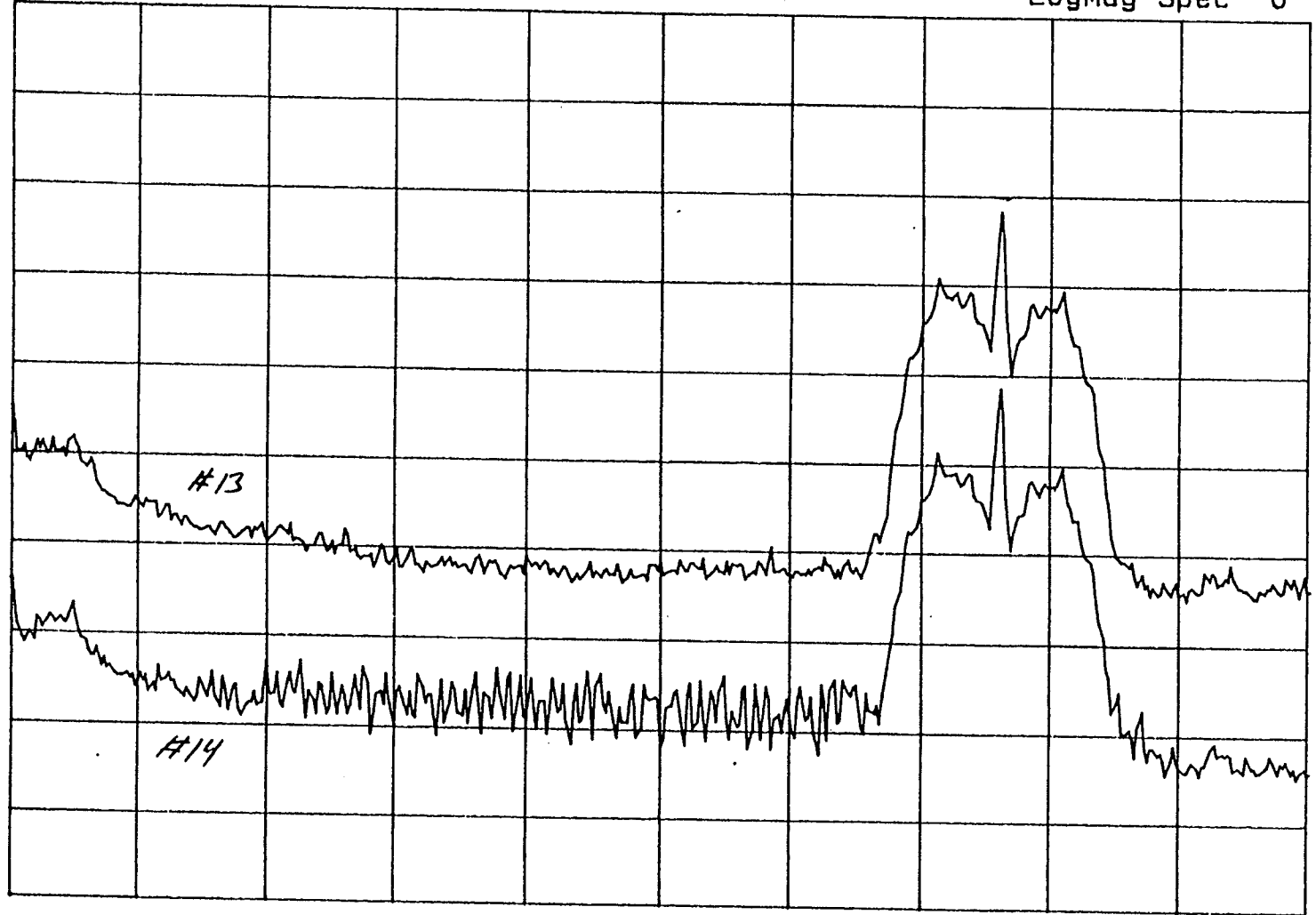
Client: NRSC Digital Radio
Test Laboratory
(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40400*
Reference Point _____

Operator Comments
#13 DOJ
#14 SEIKO
Buzz in #14
much like Run #12
SEE NEXT PLOT
PIONEER
GROUP B

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
Top = -20 dBV 10 dB/div Wndo: BMH
File= Live

Analog Baseband Frequency Spectrum

1/11/97 22: 14: 41

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *H540400*

Reference Point _____

*ID # 14
SEIKO*

Operator Comments

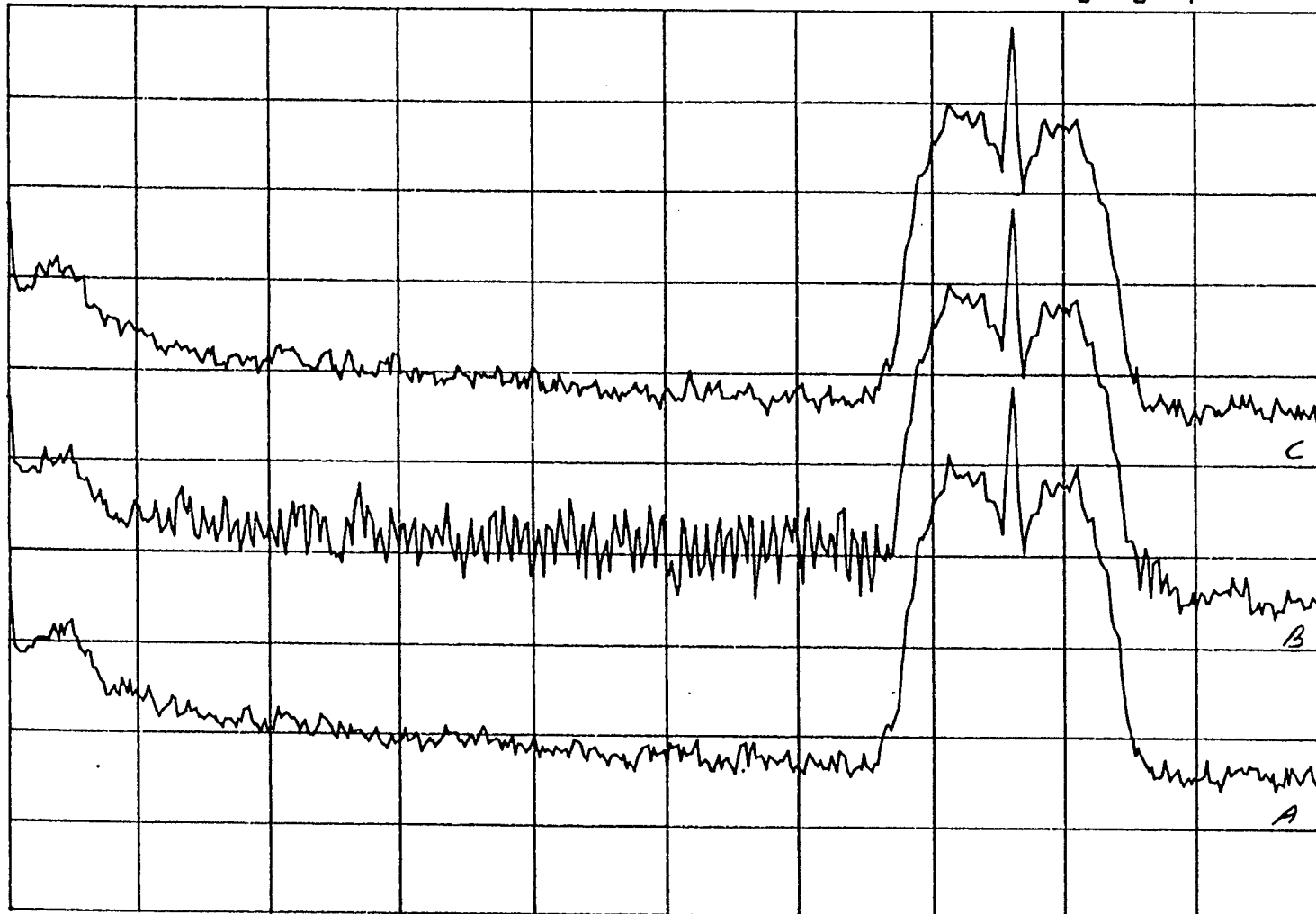
A: Pre Buzz

B: Buzz @ ~ 25:53

C: Post Buzz

*PIONEER
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 20: 59

SubCarrier Syster

poration



0101

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540400*

Reference Point _____

Operator Comments

#16 SEIKO

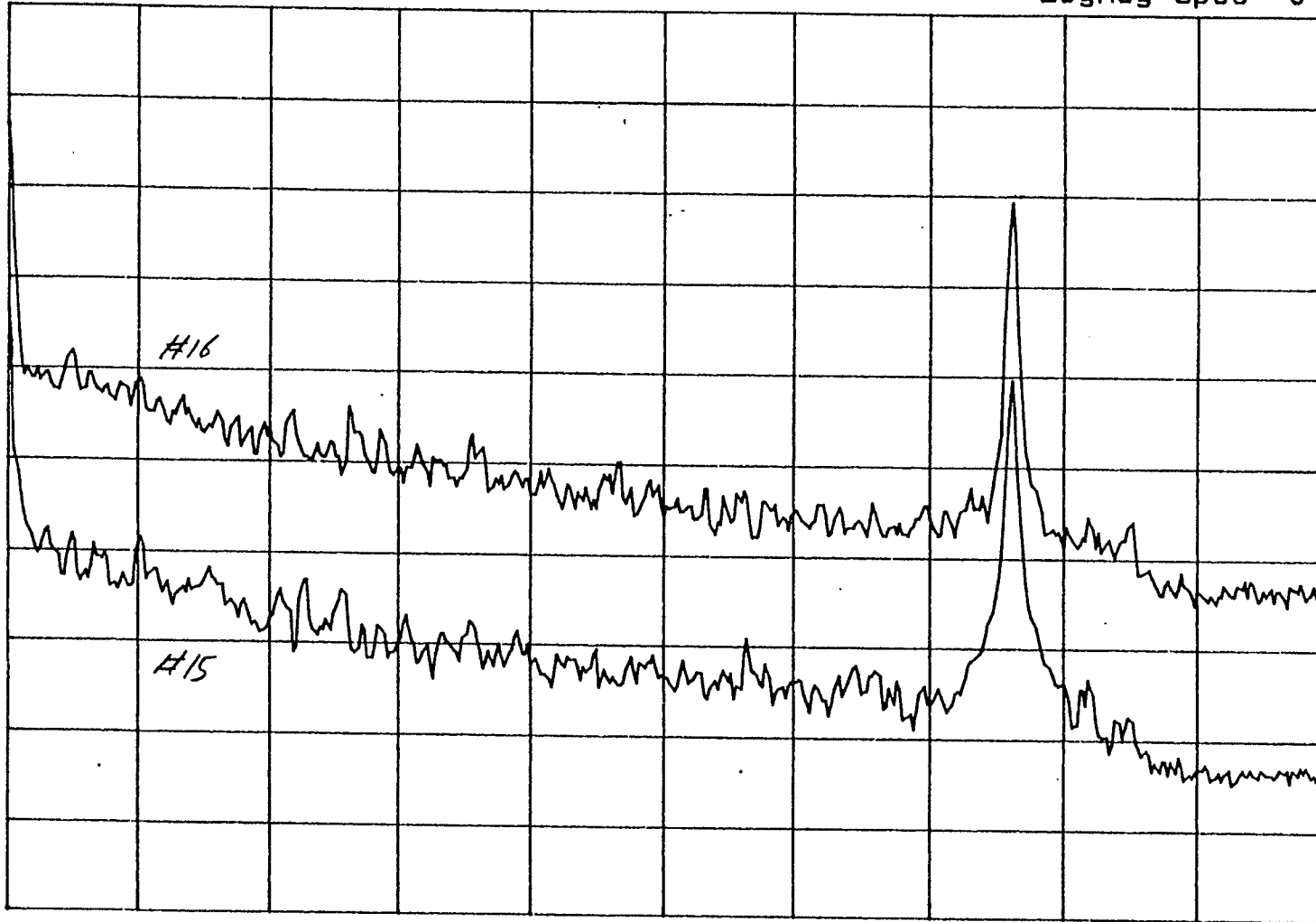
#15 REF

U-SLOW

PIONEER

PROPONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22:34:01

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS 40400*

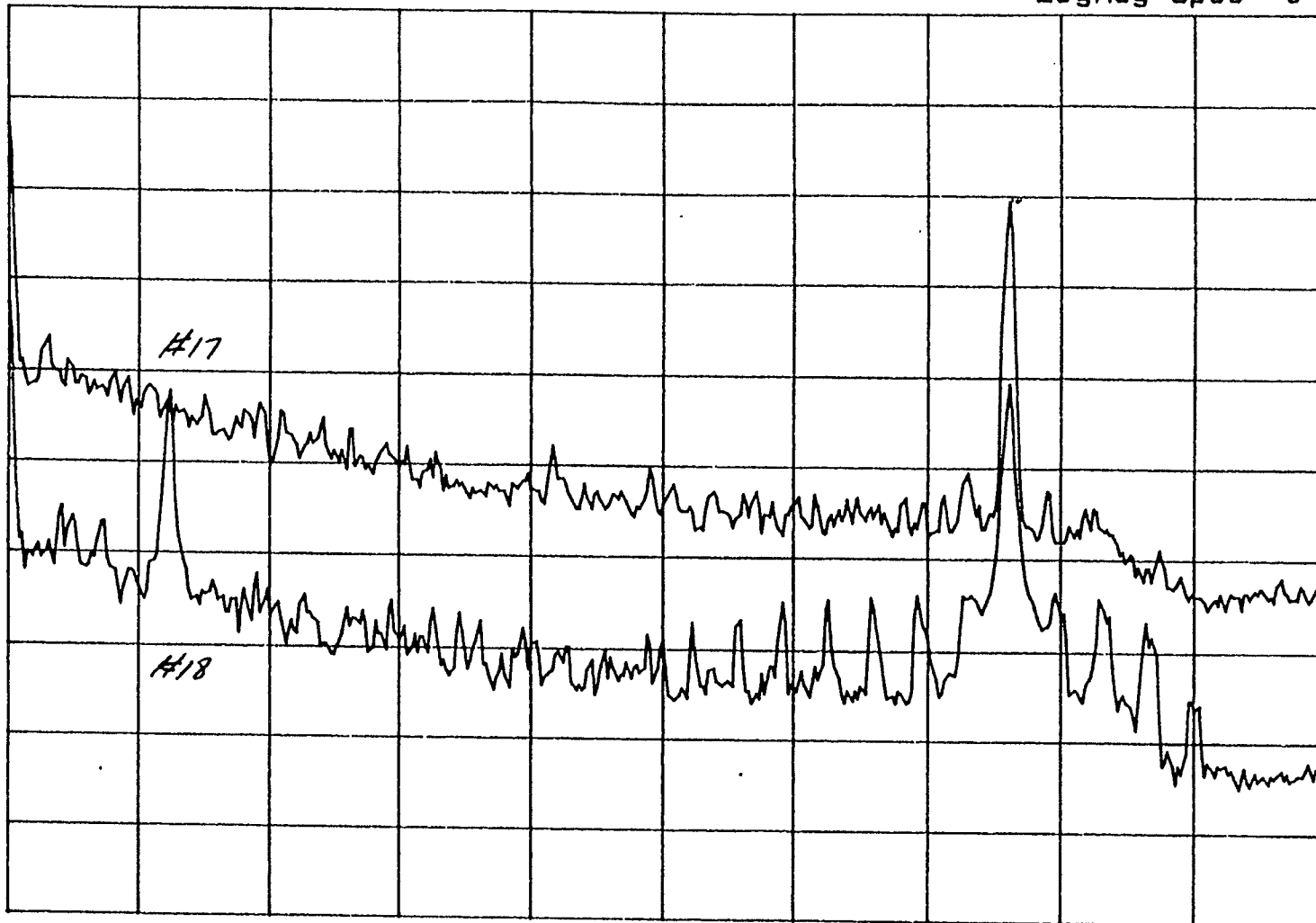
Reference Point _____

Operator Comments

*#17 DDJ
#18 MITRE
V-SLOW
PIONEER
PROPONENT ONLY*

*BULL ON #18;
SEE NEXT CHANTS*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 37: 38

SubCarrier System

operation



802E

Client:
NRSC Digital Radio

Test Laboratory
(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

*Run id 18
MITRE*

Operator Comments

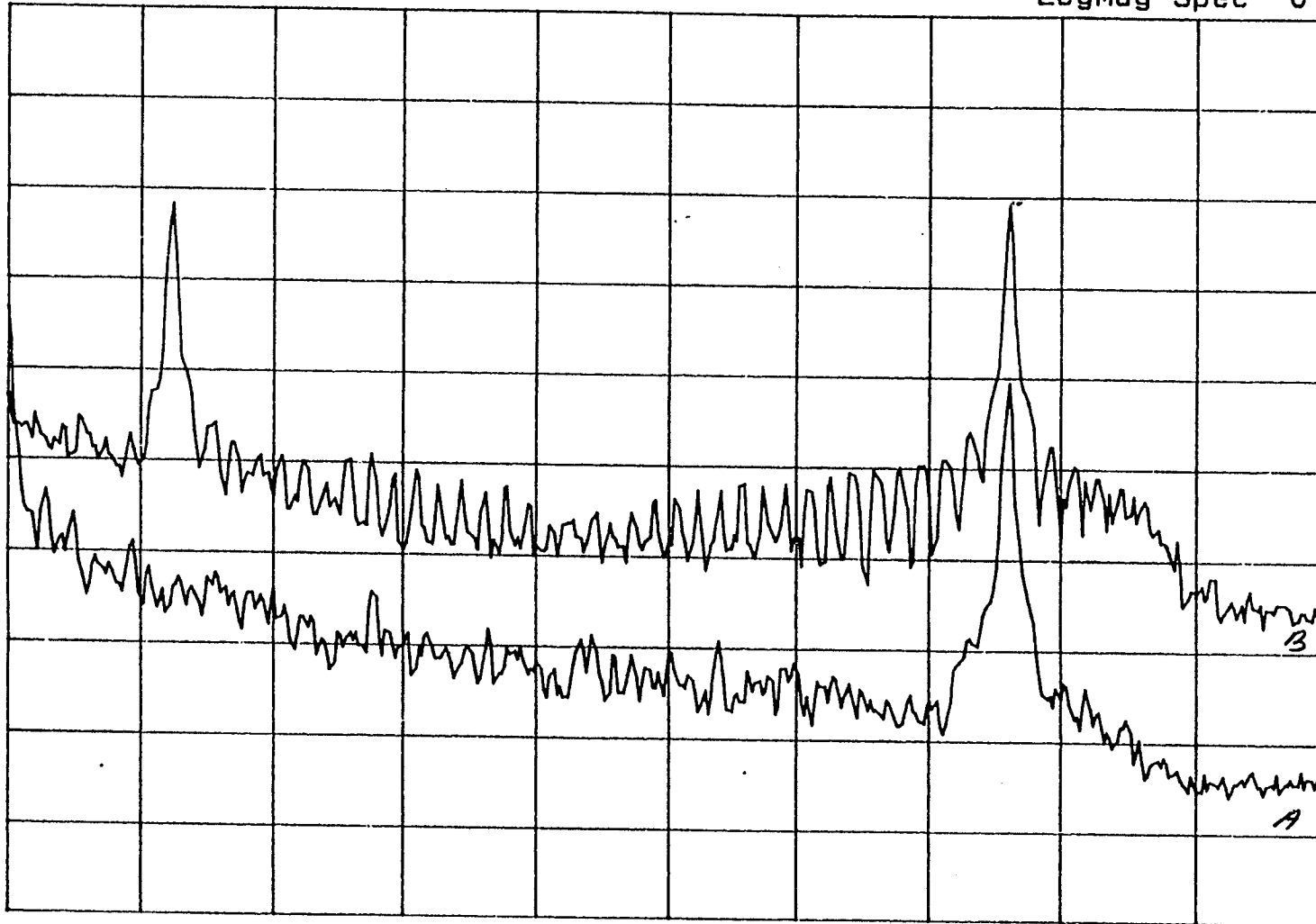
*PIONEER
PROPONENT ONLY
U-SLOW*

A: PNE BUZZ

*B: Moment of Buzz'
~34.23*

REST of Run like A

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz

Top = 0 dBV 10 dB/div Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97 22: 41: 06

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS40400*

Reference Point

Run Id 18

Operator Comments

Moment of Brill

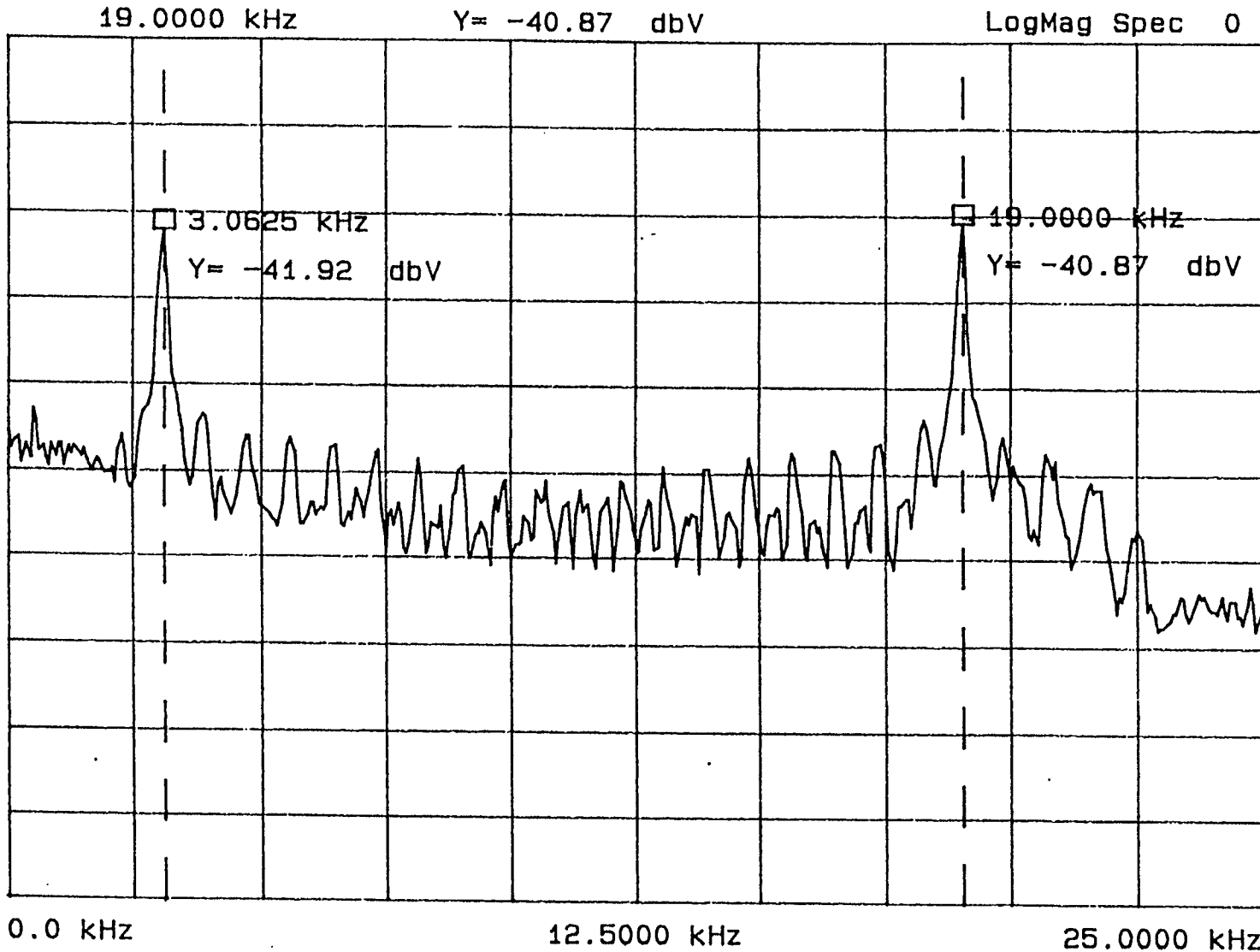
~34.23

MITRE

V-SLOW

PIONEER

PROBONENT ONLY



Top = -20 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 45: 17

SubCarrier System Corporation



2065

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

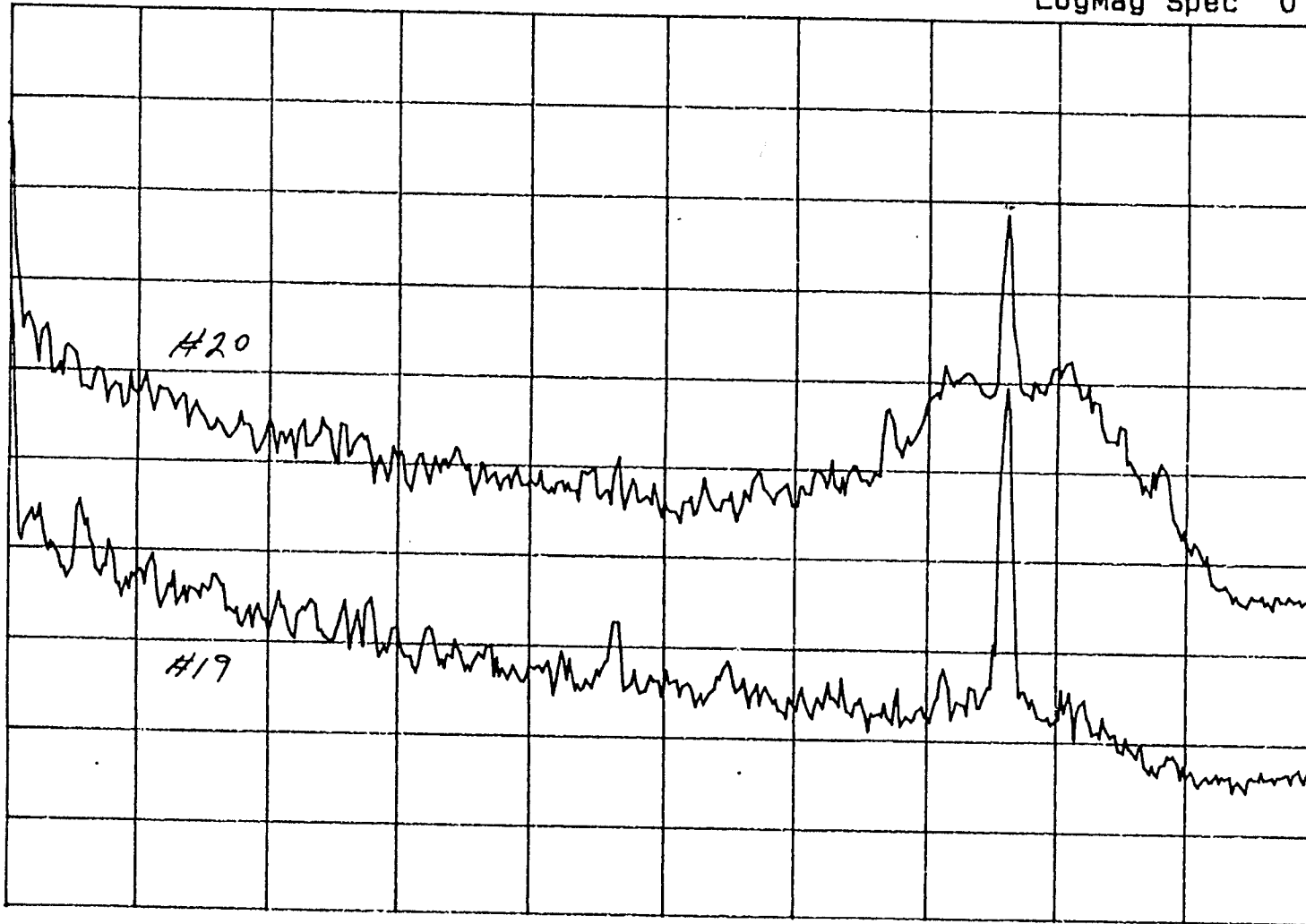
Operator Comments

#20 HITRF

#19 RFF

*V-SLOW
PIONEER
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 50: 44

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence 11540400

Reference Point _____

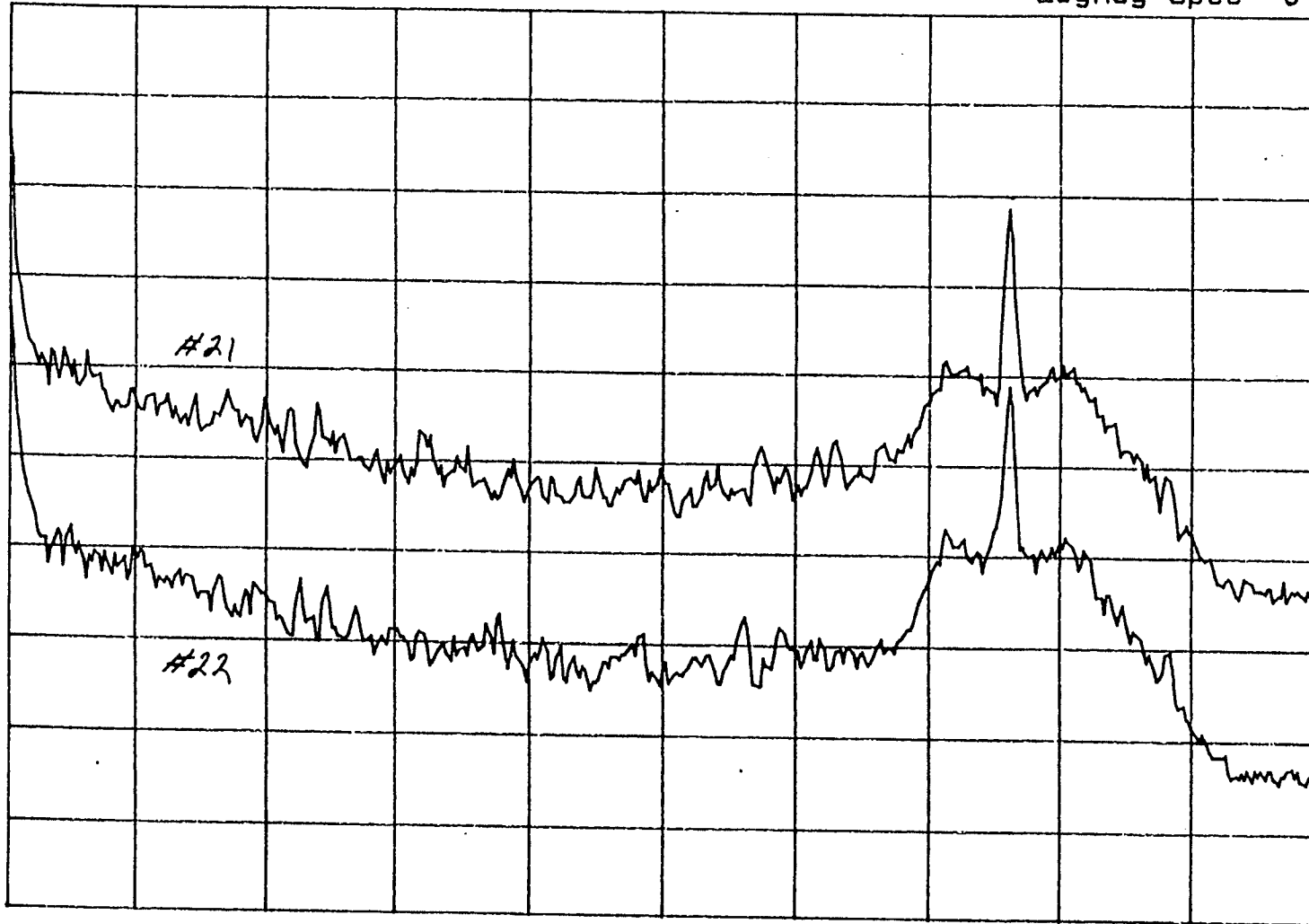
Operator Comments

#21 DDJ

#22 SEIKO

U-SLOW
PIONEER
GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 55: 27

SubCarrier System Corporation



1017

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

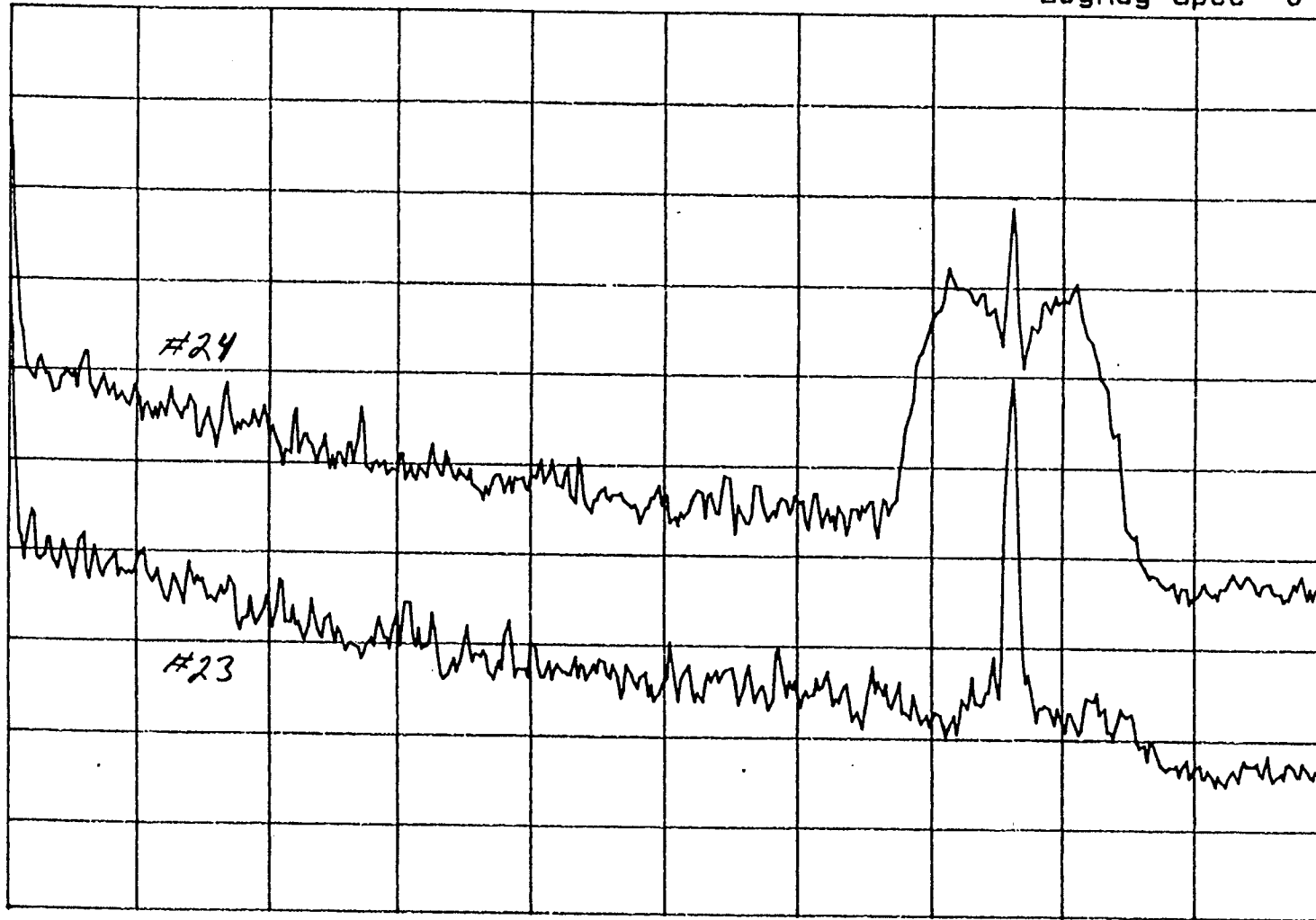
Operator Comments

#24 SEIKO

#23 REF

*U-SLOW
PIONEER
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

22: 58: 47

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40400*

Reference Point _____

Operator Comments

#25 DDJ

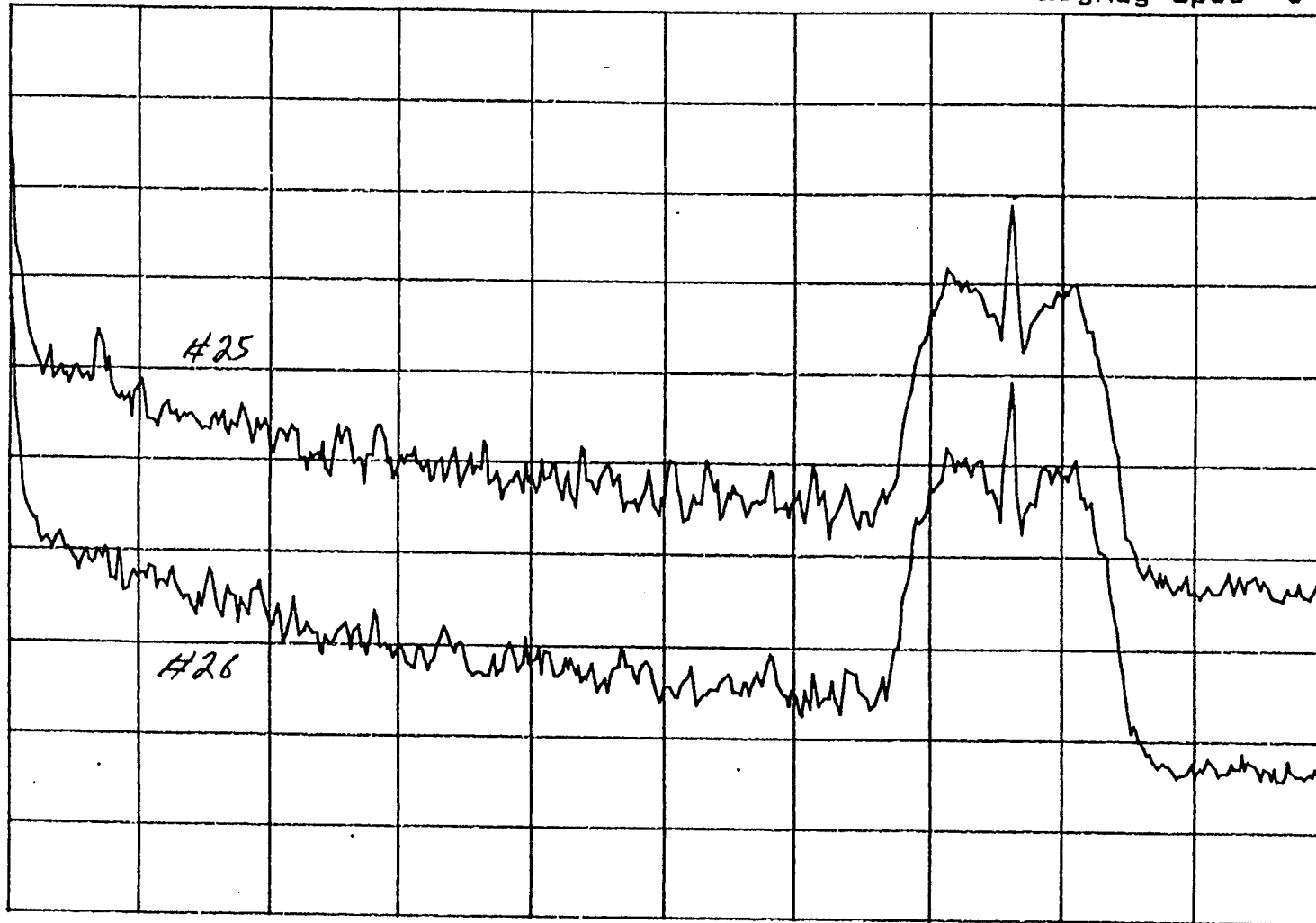
#26 SEIKO

U-SLOW

PIONEER

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 01: 43

SubCarrier System

orporation



100

Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	
	Start	Stop			
HS40401.DAT	11/19/96			Strong Signal Level	
				Proponent Only	
	0:00	2:05	1	Reference	
	2:12	4:12	2	System C	M.I.TRE
	4:18	6:18	3	System B	DDJ
	6:23	8:24	4	System A	SEIKO
				Group A	
	8:30	10:30	5	System A :Hear modulation peaks on 92kHz SCA and low level tone when CD back tracks.	SEIKO B
	10:38	12:38	6	System B :Hear modulation peaks on 92kHz SCA and low level tone when CD back tracks.	DDJ
	12:44	14:45	7	System C :Hear modulation peaks on 92kHz SCA and low level tone when CD back tracks.	M.I.TRE T
				Group B	
	14:50	16:50	8	System C :Increase in noise floor.	M.I.TRE T
	16:55	18:55	9	System B :Increase in noise floor.	DDJ
	19:01	21:01	10	System A :Increase in noise floor.	SEIKO B
					There is a blip at the end of track #9 which is plotted here as well. One wonders what there is at 3 KHz which produced this image See time mark 18:57 to observe.

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40401*

Reference Point _____

Operator Comments

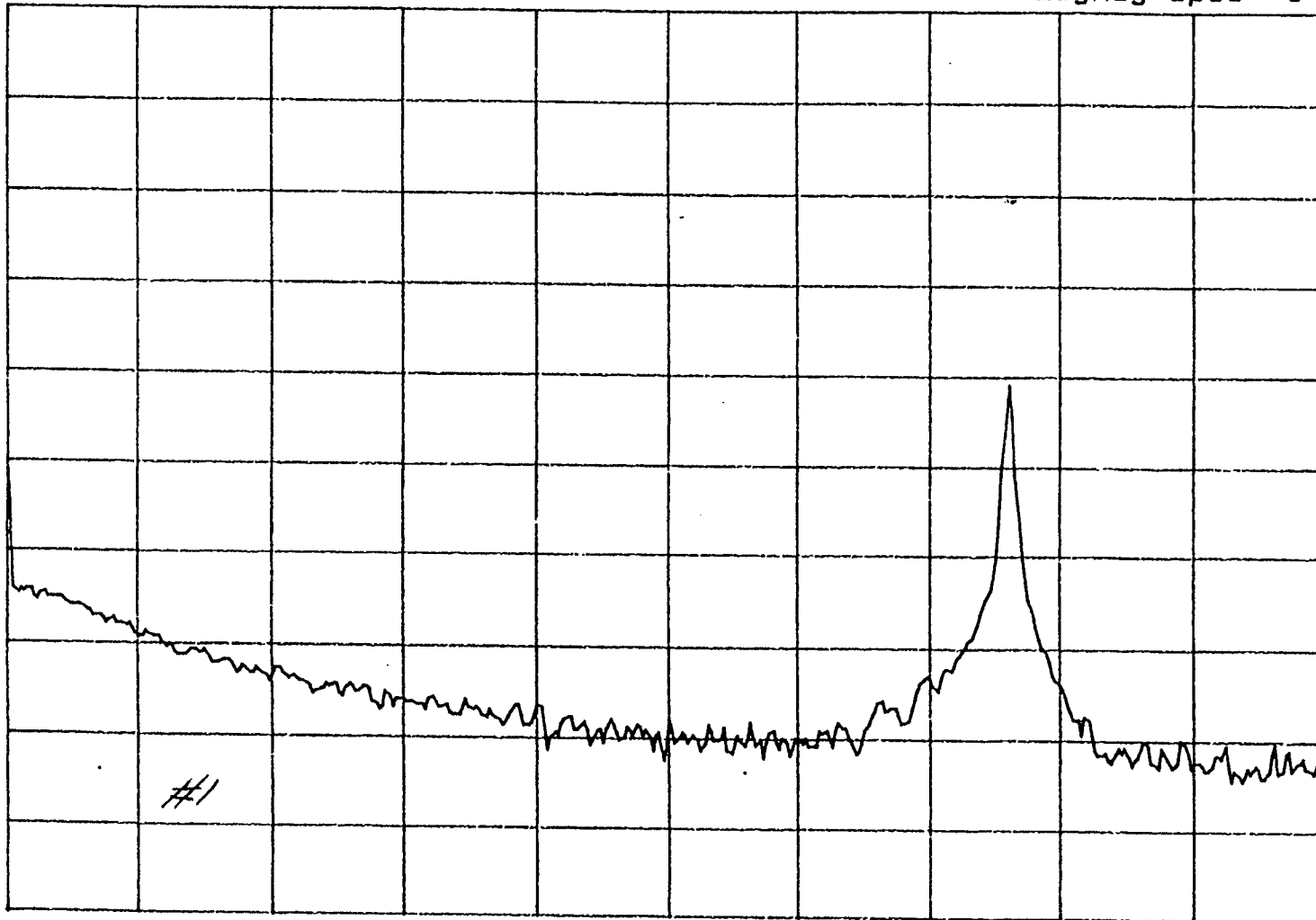
COMPLETE RUN

*"CLICK" in signal
PRODUCES NOISE SPIKE*

@ 1:57

*REF
PIONEER*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 09: 40

SubCarrier Systems Corporation



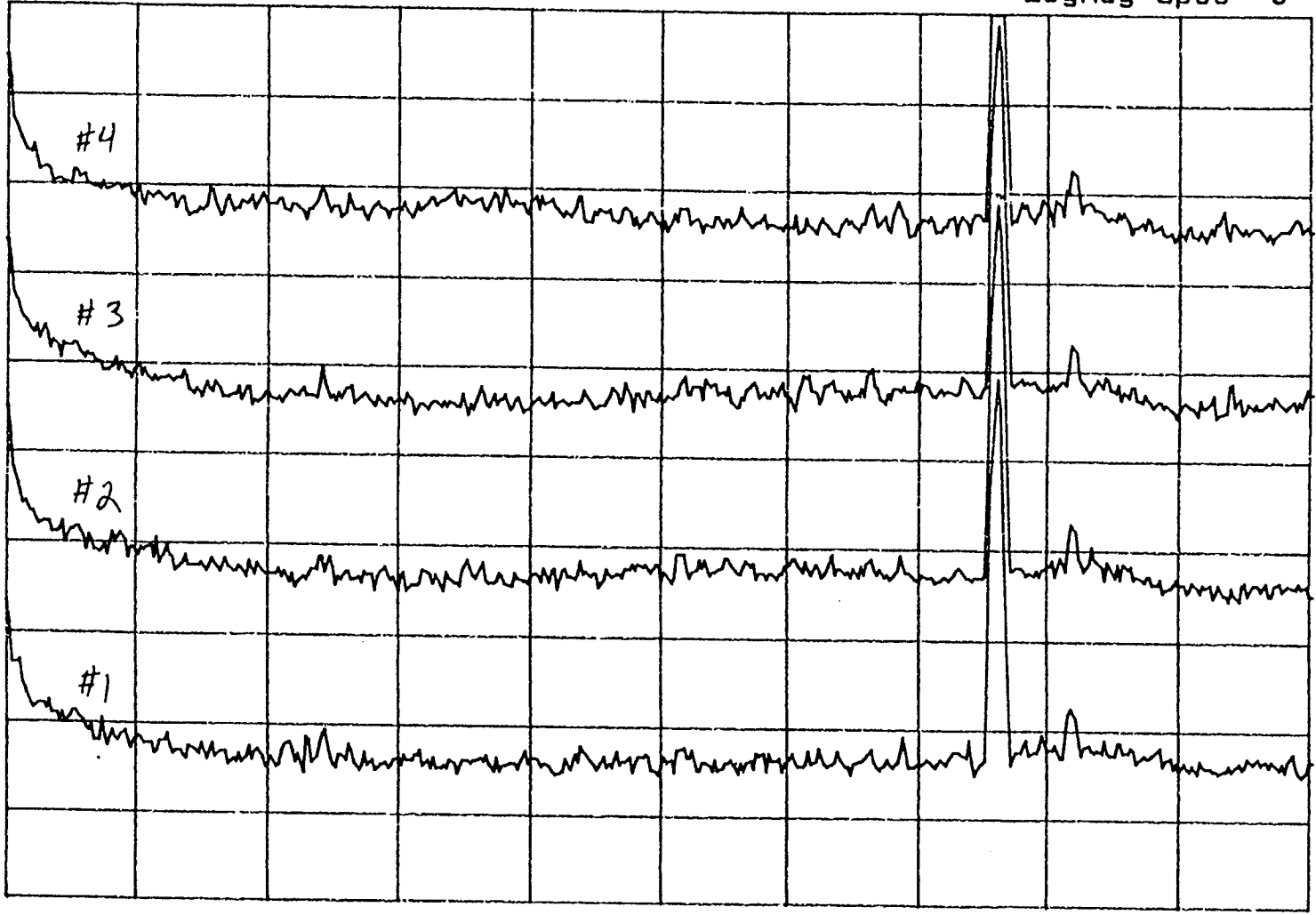
Client: NRSC Digital Radio
Test Laboratory (High Speed FM SubCarrier SubCommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *H540401*
Reference Point _____

Operator Comments
*Run #1 w/o
Pop @ 1:57*
#4 SEIKO
#3 DDJ
#2 MITRE
#1 REF
PIONEER
PROBONENT ONLY

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
Top = 0 dbV 10 dB/div Wndo: BMH
File= Live

Analog Baseband Frequency Spectrum

1/11/97 23: 12: 25



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540401*

Reference Point _____

Operator Comments

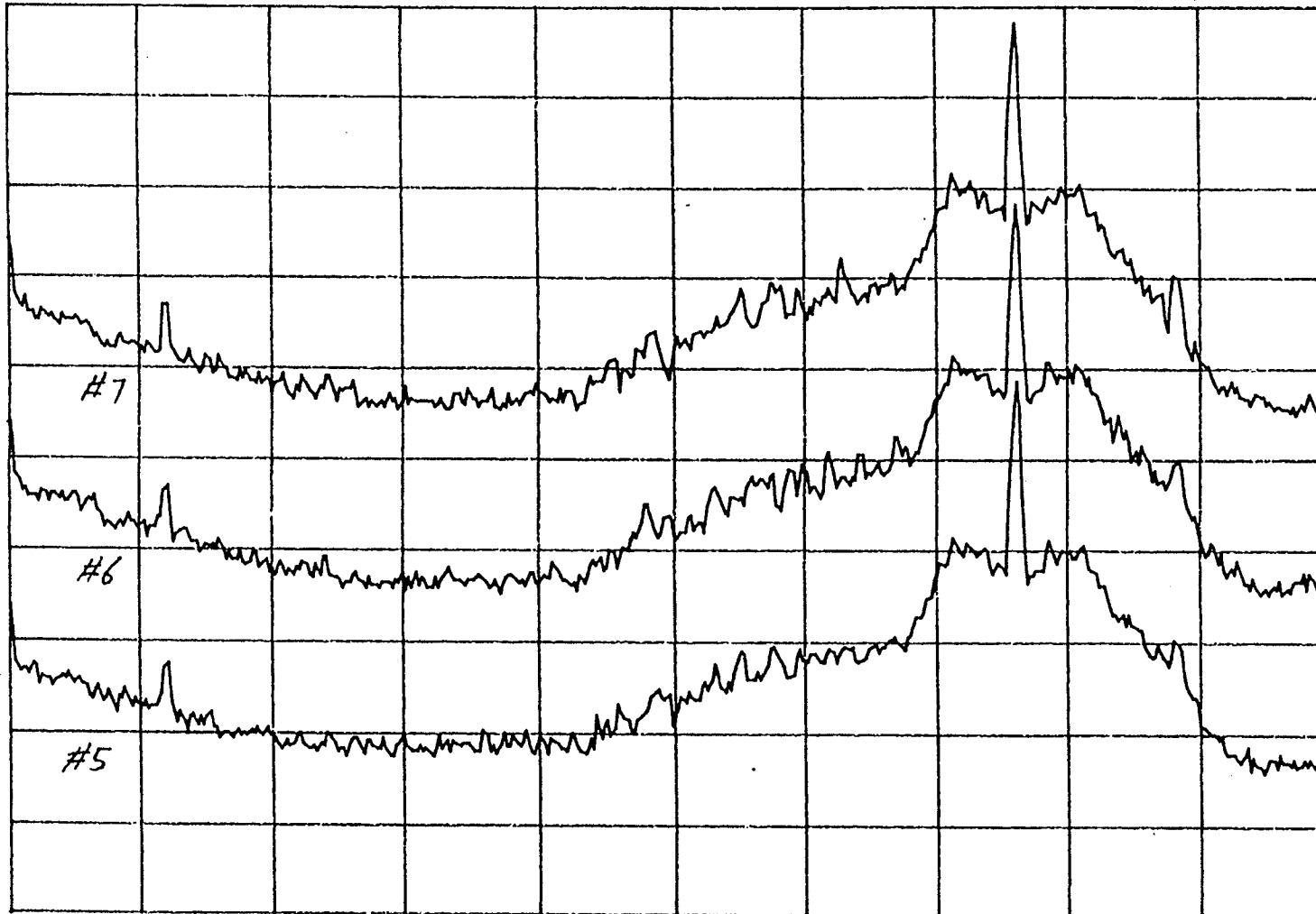
#7 *MITRE*

#6 *DDJ*

#5 *SEIKO*

*PIONEER
GROUP A*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 19: 24

SubCarrier Syste

operation



012

Client: NRSC Digital Radio
 Test Laboratory (High Speed FM SubCarrier Subcommittee)

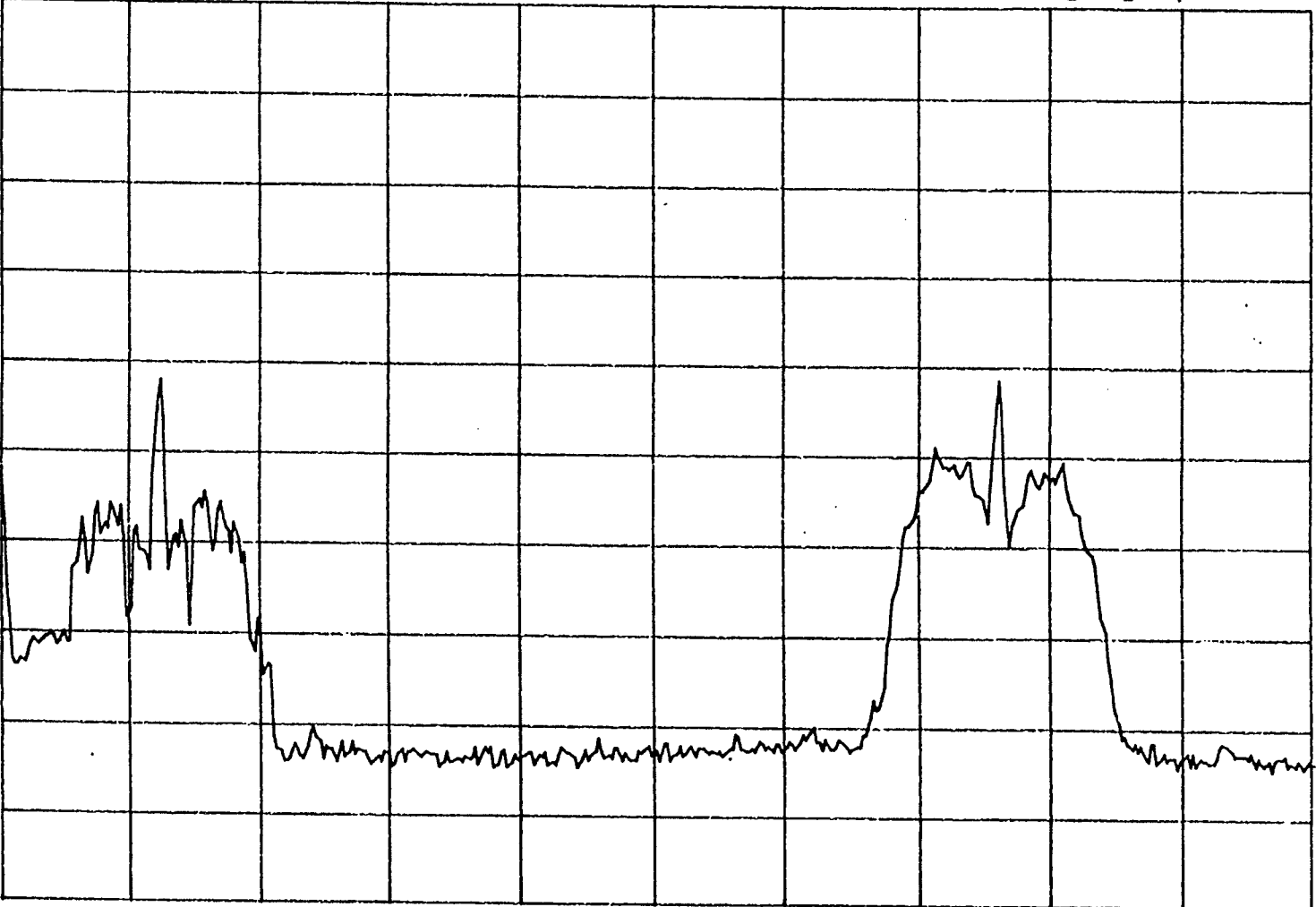
Report & Test Plan: #1
 No Formal SCSC Plan,
 Dig Radio Test Lab Plan

Test Squence *HS40401*
 Reference Point
ID#9 003

Operator Comments

*Sound at Last
 Second of Track
 T=18.57
 PIONEER
 GROUP B*

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
 Top = 0 dbV 10 dB/div Wndo: BMH
 File= Live

Analog Baseband Frequency Spectrum

1/11/97 23: 28: 14

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS40401*

Reference Point _____

Operator Comments

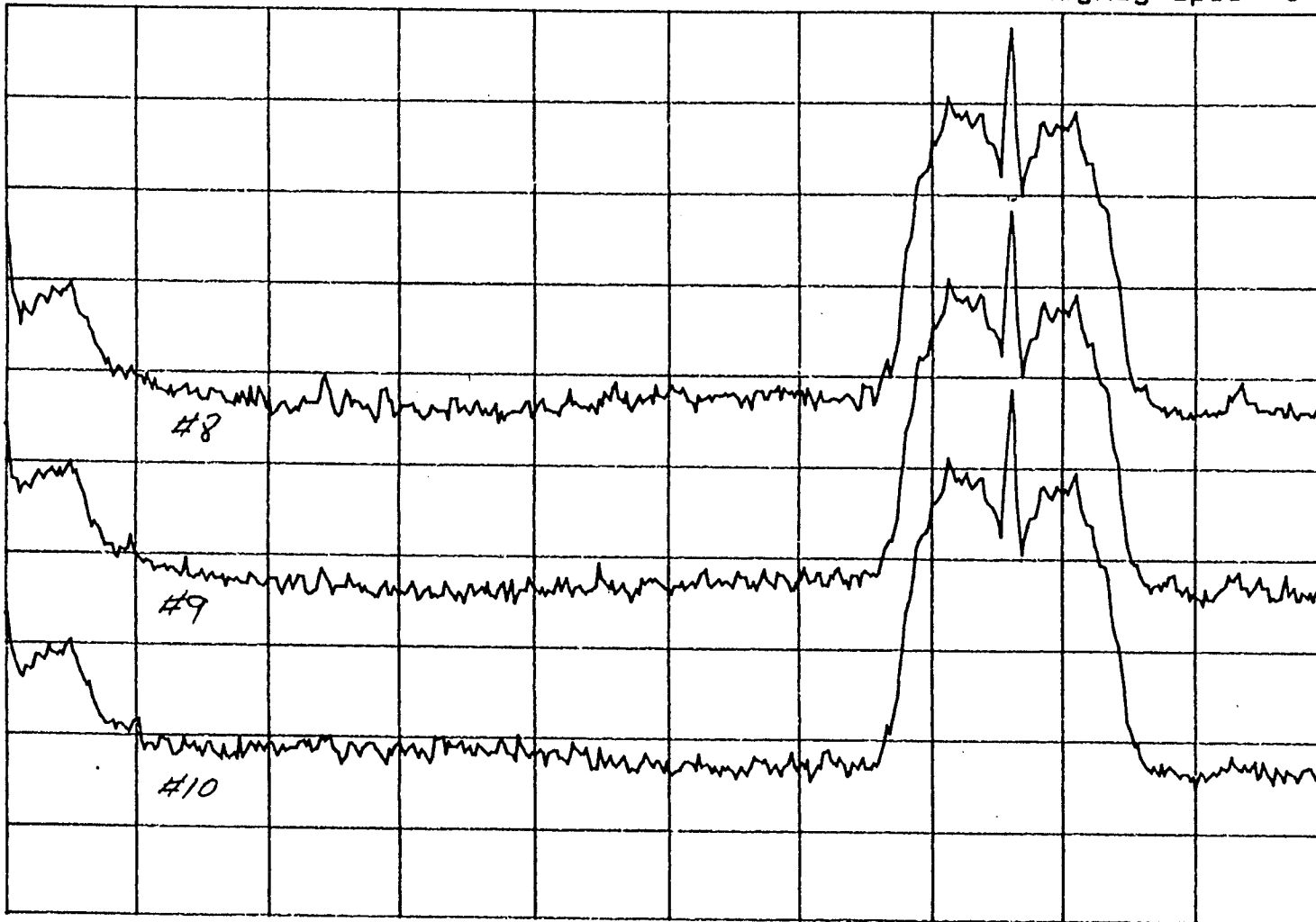
#8 *MITRE*

#9 *DDJ*

#10 *SFIKO*

*PIONEER
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -40 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 32: 02

SubCarrier Systems Corporation



Ford

Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	Grade
	Start	Stop			
IIS40800.DAT	11/21/96				
	0:00	0:30	1	Ford Radio 0 dB Reference Track 1kHz@91% Pilot@9% 2.25 Vrms=-15 dB on DAT Input Monitor Level Meters	Strong 2nd tone shows up at t=0:10 in mid run, see expanded plots
	0:30	1:00	2	Noise Reference No SCA Proponent Only	
	1:05	3:05	3	Reference	B
	3:10	5:11	4	System C: Slight increase in noise floor or change in noise character. <i>MITRE</i>	
	5:16	7:17	5	System B <i>DDJ</i>	
	7:22	9:23	6	System A: Slight increase in noise floor or change in noise character. <i>SEIKO</i>	T
	9:28	11:28	7	Group A Reference	B
	11:34	13:34	8	System A Group A: Slight increase in noise floor or change in noise character. <i>SEIKO</i>	
	13:40	15:40	9	System B Group A: Slight increase in noise floor. <i>DDJ</i>	
	15:46	17:46	10	System C Group A: Slight increase in noise floor. <i>MITRE</i>	T
	17:51	19:52	11	Group B Reference	B
	19:57	21:58	12	System C Group B: Low level tone. <i>MITRE</i>	See spur at 2.5 KHz
	22:03	24:03	13	System B Group B: Low level tone. <i>DDJ</i>	See spur at 2.5 KHz
	24:09	26:09	14	System A Group B: Low level tone and increase in noise floor. <i>SEIKO</i>	T, Screwed up offsets, replot whole family

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540800*

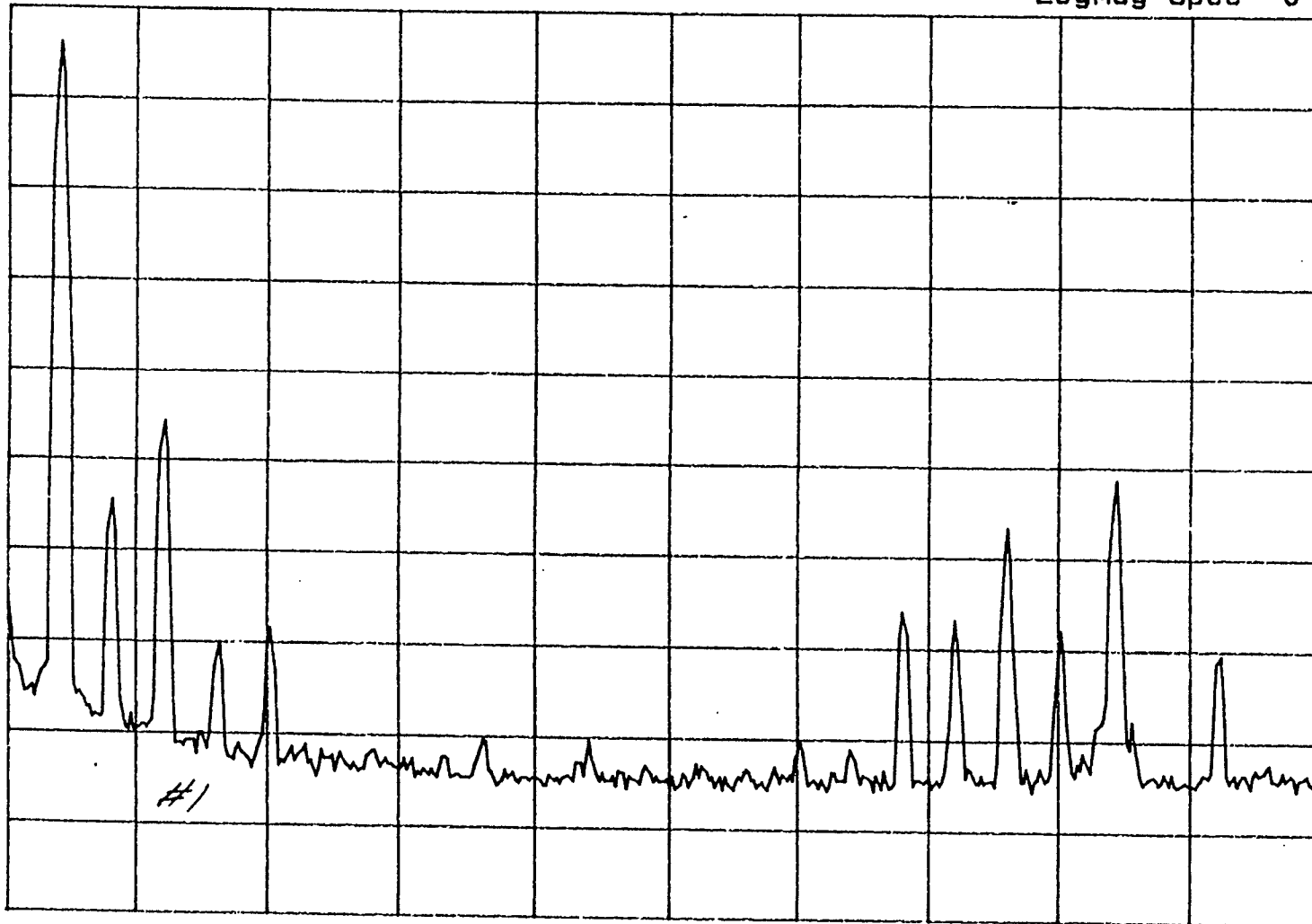
Reference Point _____

ID #1

Operator Comments

COMPLETE RUN

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

What's this?

Analog Baseband Frequency Spectrum

1/11/97

23: 38: 42

SubCarrier System Corporation



078

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *HS40800*

Reference Point _____
ID #1

Operator Comments

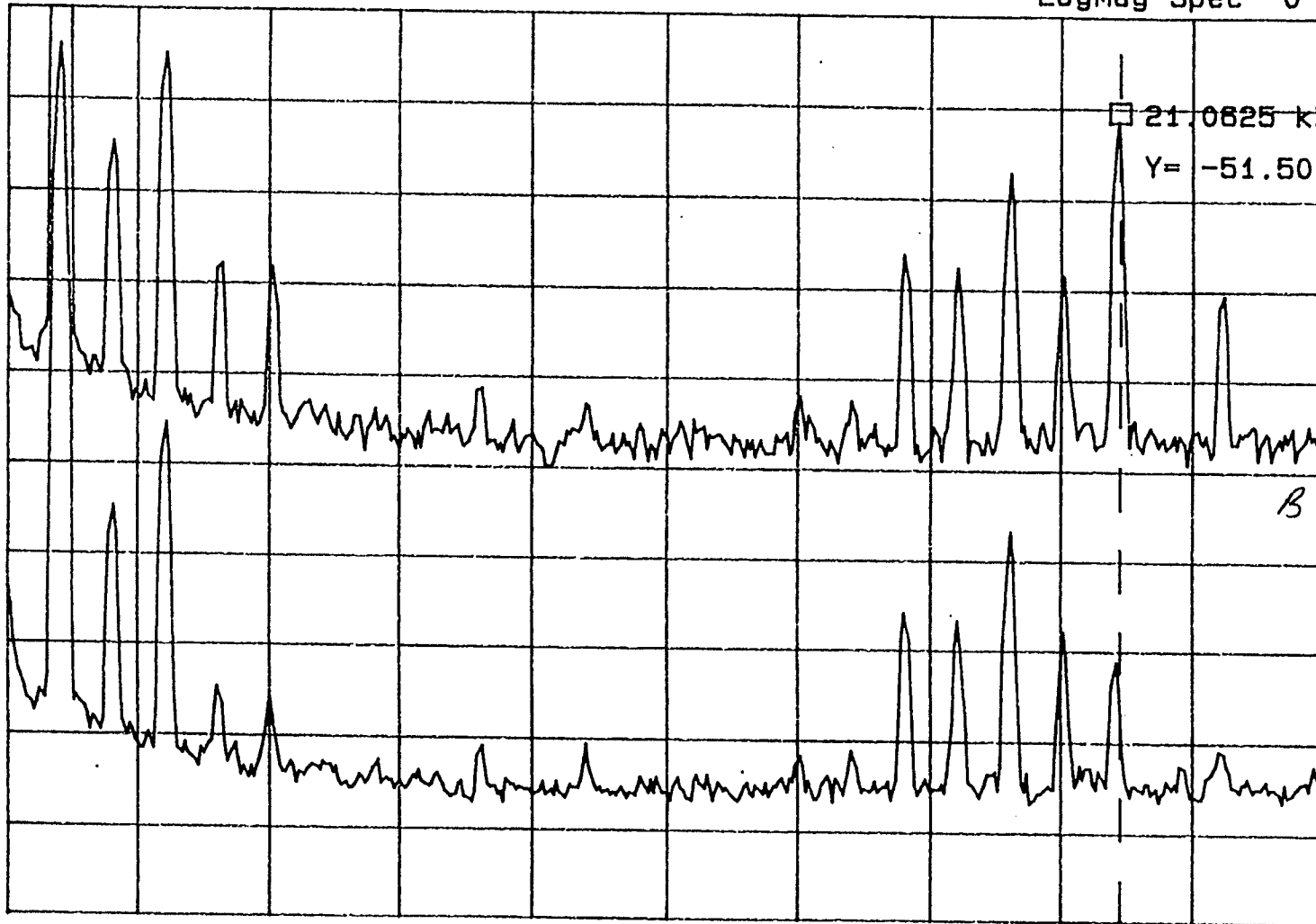
ID #1

A: PRE TONE

B: POST TONE

@ T = 0:10

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 40: 12

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

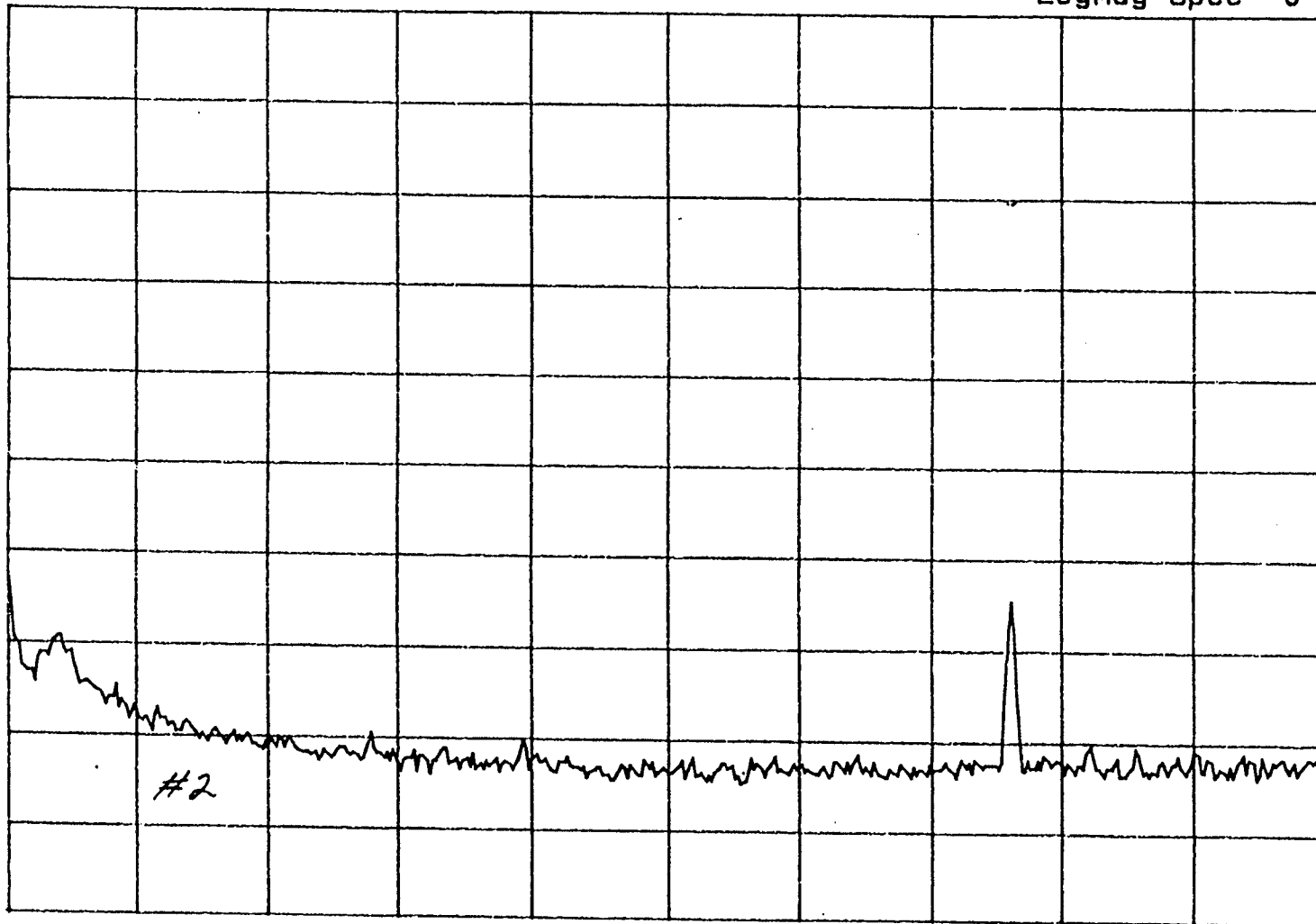
Test Sequence *HS40800*

Reference Point _____

Operator Comments

*NOISE REF
FORD
NO SUB CARRIER*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 45: 49

SubCarrier System Corporation



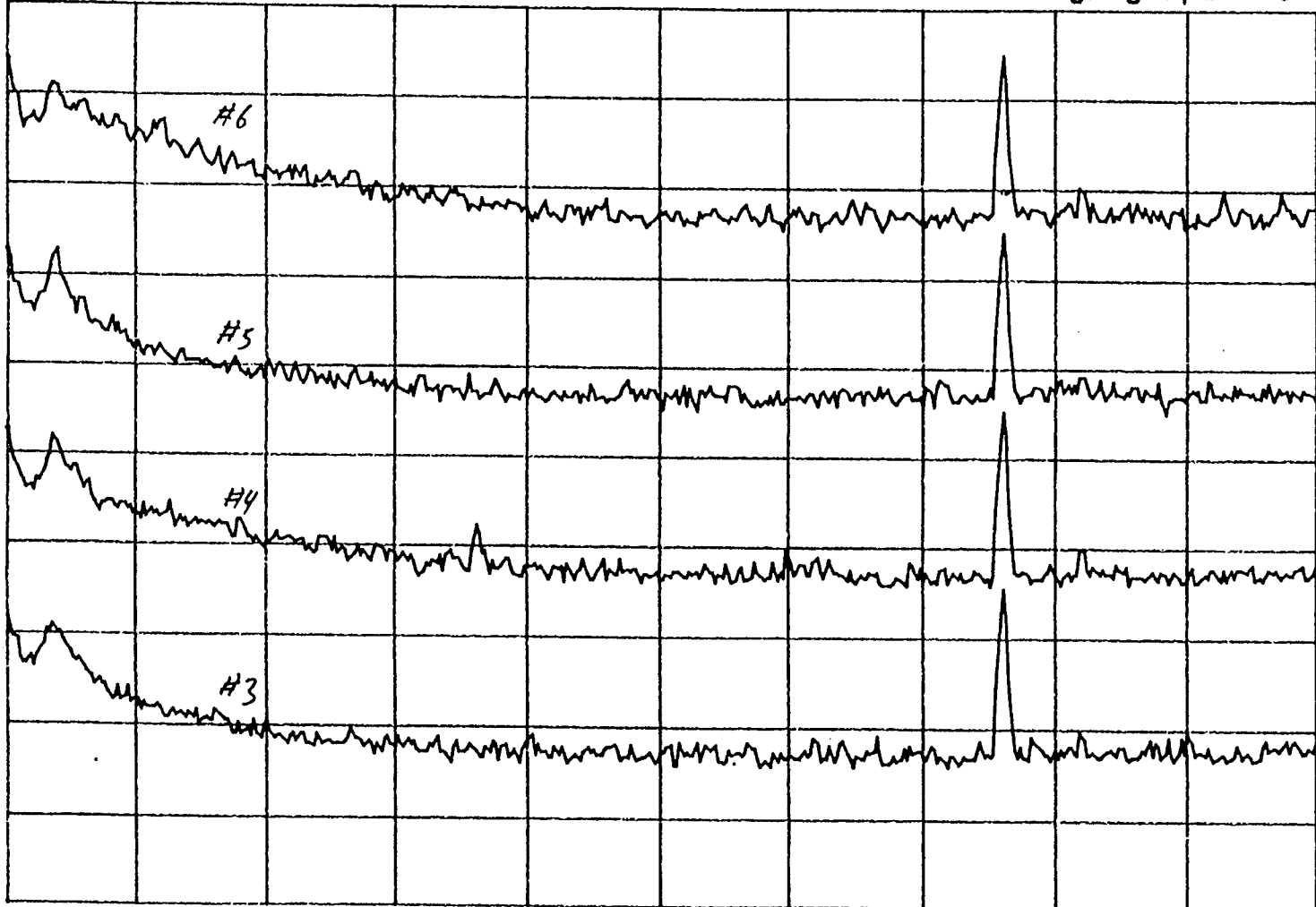
000

Client: NRSC Digital Radio
Test Laboratory
(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1
No Formal SCSC Plan,
Dig Radio Test Lab Plan
Test Sequence H540800
Reference Point _____

Operator Comments
#6 SEIKO
#5 DDJ
#4 MITRE
#3 RFI
FORD
NO SUBCARRIERS

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz
Top = 0 dBV 10 dB/div Wndo: BMH
File= Live

Analog Baseband Frequency Spectrum

1/11/97 23: 47: 45

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence HS40800

Reference Point _____

Operator Comments

#10 HITRE

#9 DDJ

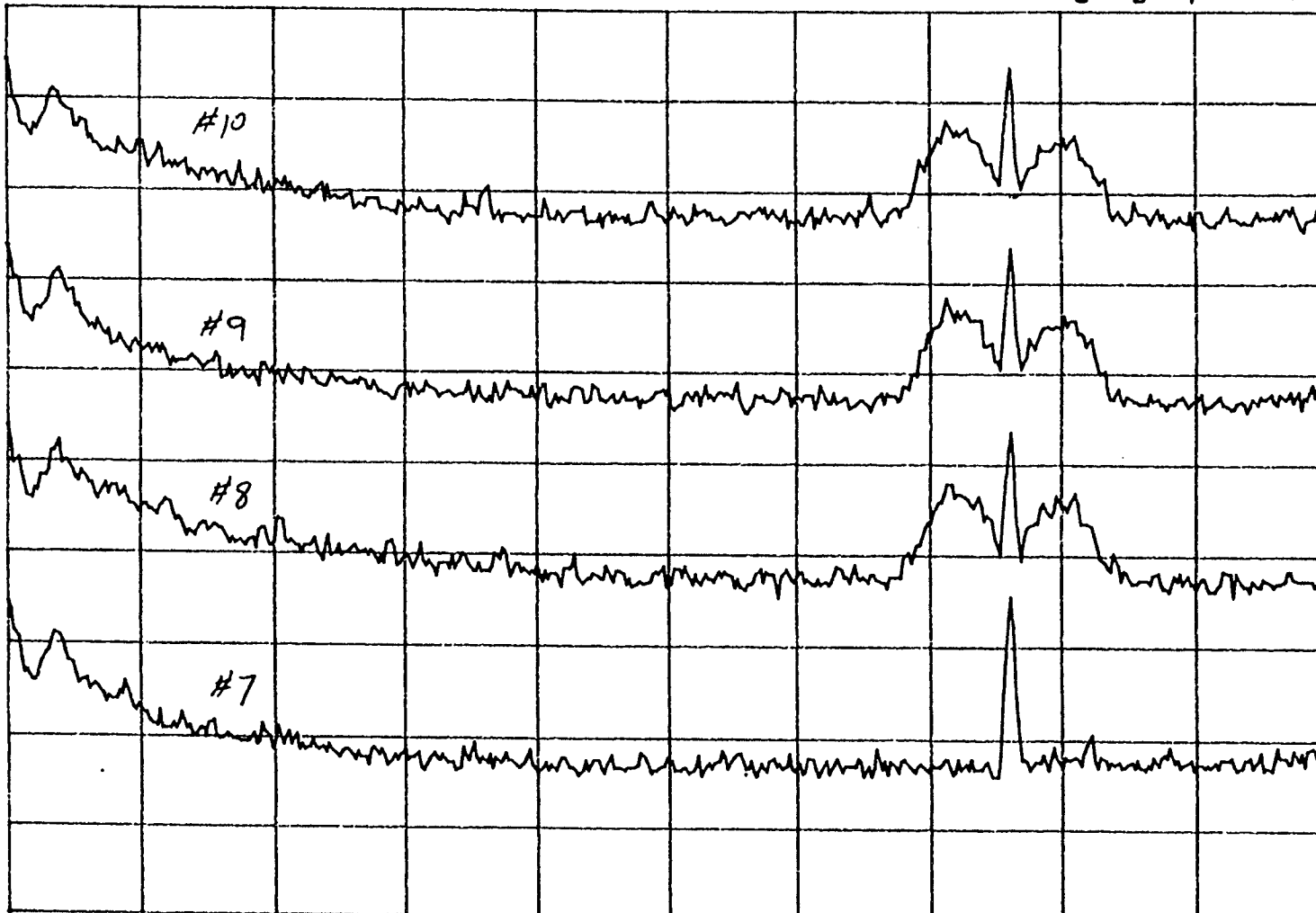
#8 SEIKO

#7 REF

FORD

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/11/97

23: 53: 54

SubCarrier System Corporation



©
1997

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM
SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *14540800*

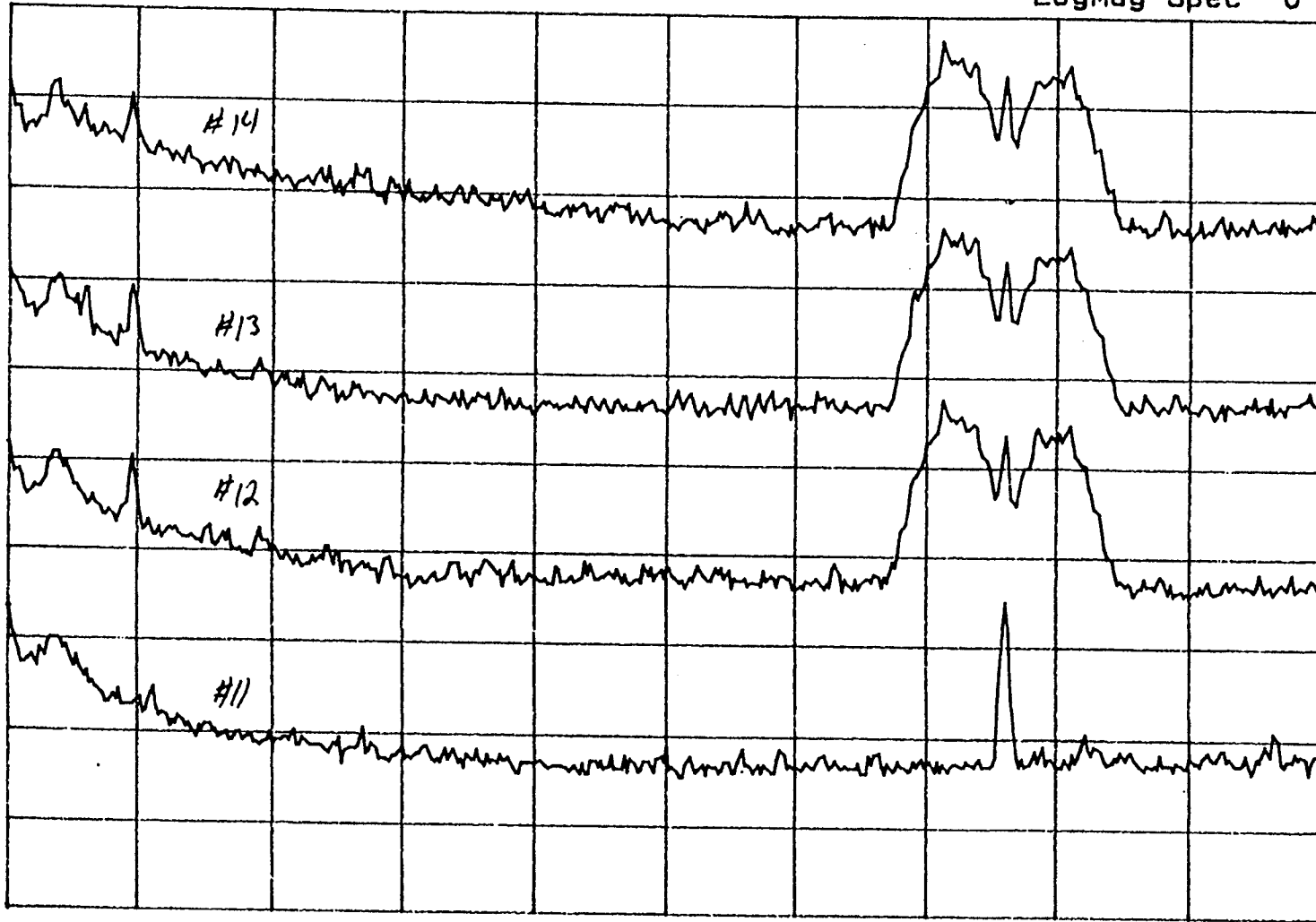
Reference Point _____

Operator Comments

- #14 SEIKO
- #13 DDJ
- #12 HITRE
- #11 REF
- FORD
- GROUP B

ee

LogMag Spec 0



0.0 kHz 12.5000 kHz 25.0000 kHz

Top = -60 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97 0:05:01



Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	Grade
	Start	Stop			
HIS40801.DAT	11/21/96			Proponent Only	
	0:05	2:05	1	Urban Slow Reference	B
	2:11	4:13	2	Urban Slow System A: Slight increase in noise floor. SEIKO	
	4:18	6:19	3	Urban Slow System B DDJ	
	6:25	8:25	4	Urban Slow System C: Slight increase in noise floor. MITRE	T
	8:31	10:31	5	Urban Fast Reference	B
	10:35	12:36	6	Urban Fast System C: Slight increase in noise floor. MITRE	T
	12:42	14:42	7	Urban Fast System B DDJ	T
	14:47	16:48	8	Urban Fast System A: Slight increase in noise floor. SEIKO	B (ABOUT 10 DB NOISE FLLOR INCREASE)
	16:53	18:54	9	Rural Fast Reference	B
	19:00	21:00	10	Rural Fast System A: Slight increase in noise floor. SEIKO	T
	21:06	23:06	11	Rural Fast System B DDJ	T
	23:11	25:12	12	Rural Fast System C: Slight increase in noise floor. MITRE	B
	25:17	27:17	13	Obstructed Reference	B
	27:23	29:23	14	Obstructed System C MITRE	T
	29:28	31:30	15	Obstructed System B DDJ	T
	31:35	33:35	16	Obstructed System A SEIKO	B

f.00

005
005

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540801*

Reference Point _____

Operator Comments

#4 *MITRE*

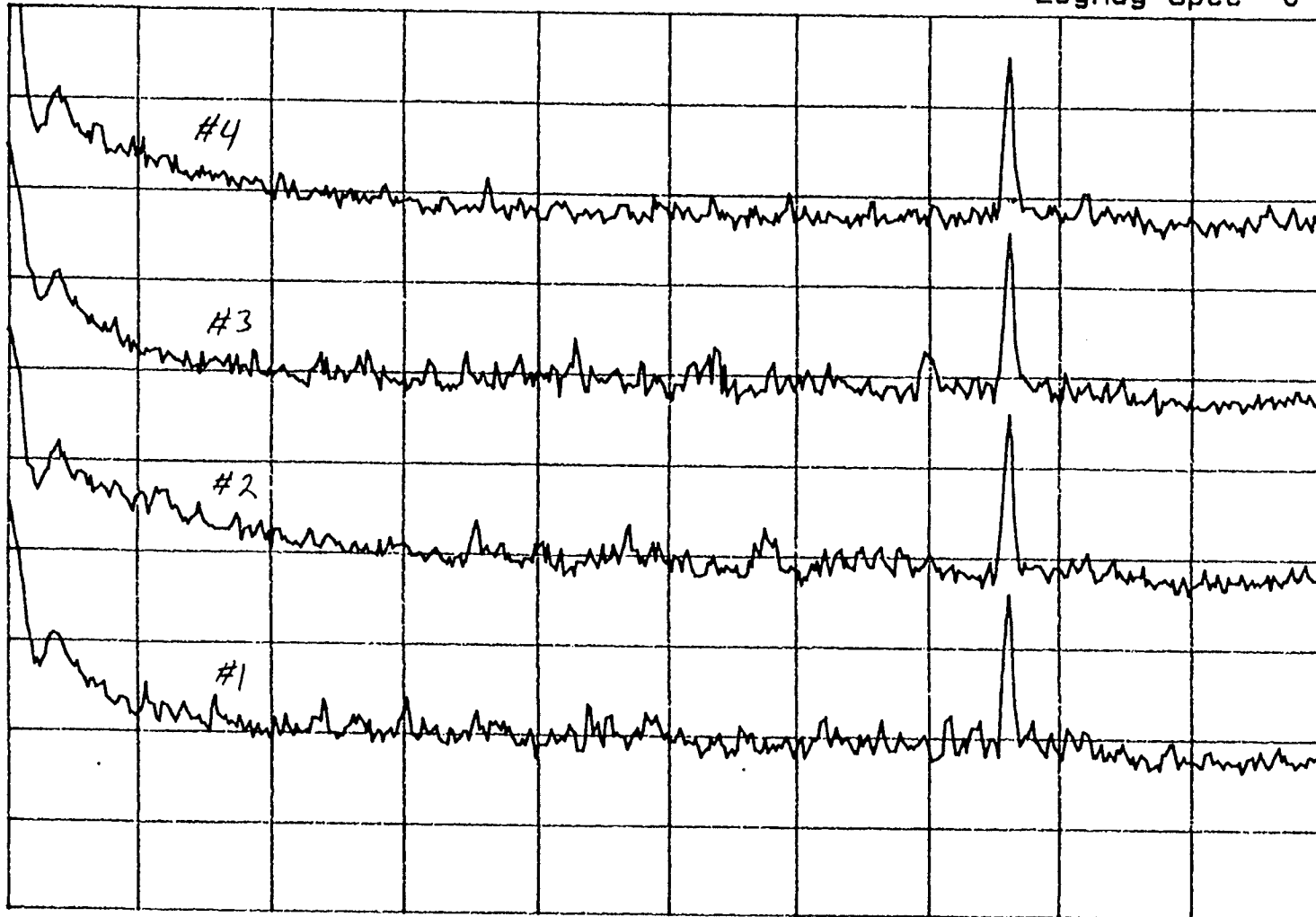
#3 *DDJ*

#2 *SEIKO*

#1 *REF*

*U - SLOW
FOR P
PROPONENT ONLY*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 32: 44

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540801*

Reference Point _____

Operator Comments

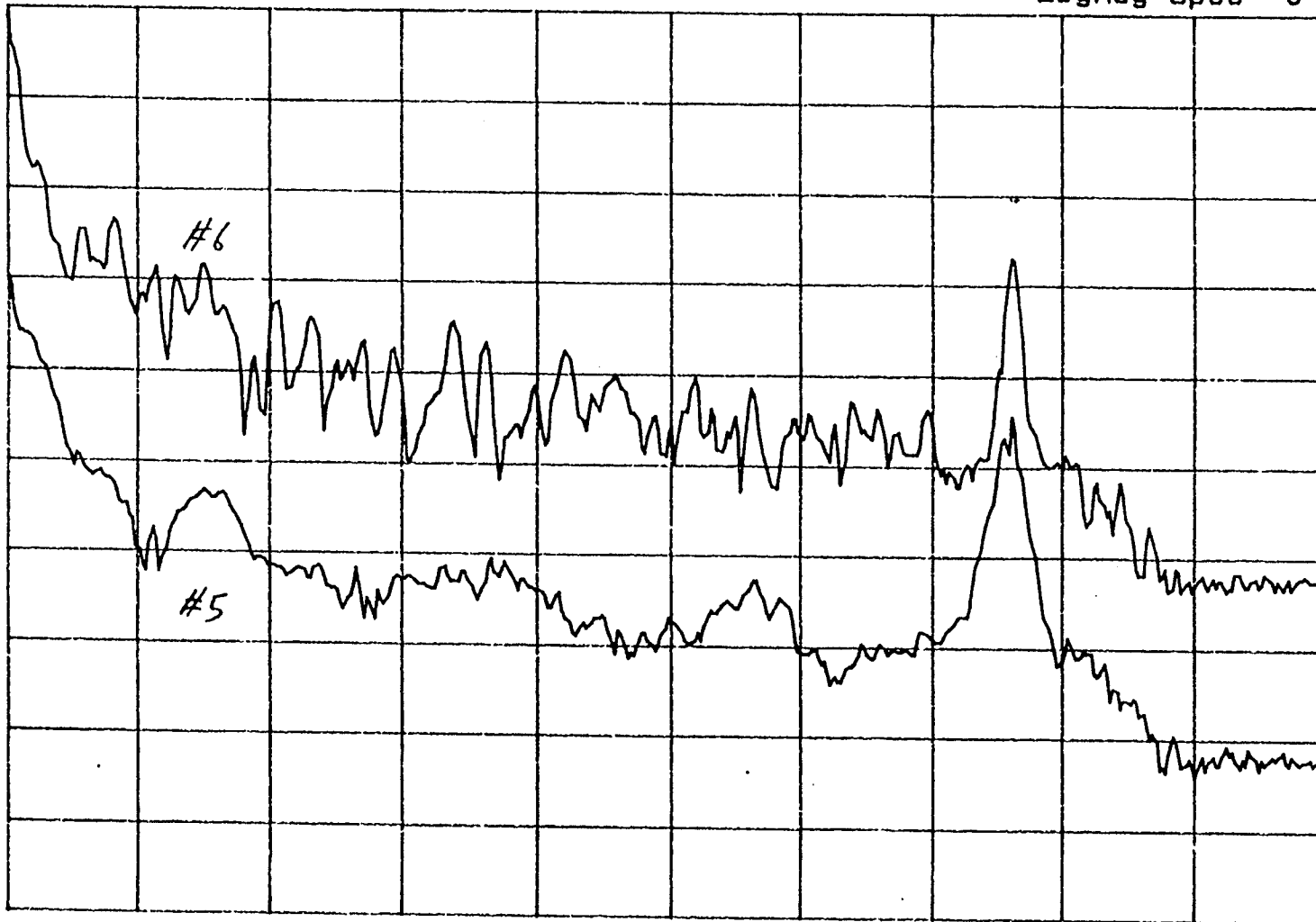
#6 MITRE

#5 REF

*U-FAST
FORD*

PROPONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 38: 51

SubCarrier System Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence 4540801

Reference Point _____

Operator Comments

#7 DDJ

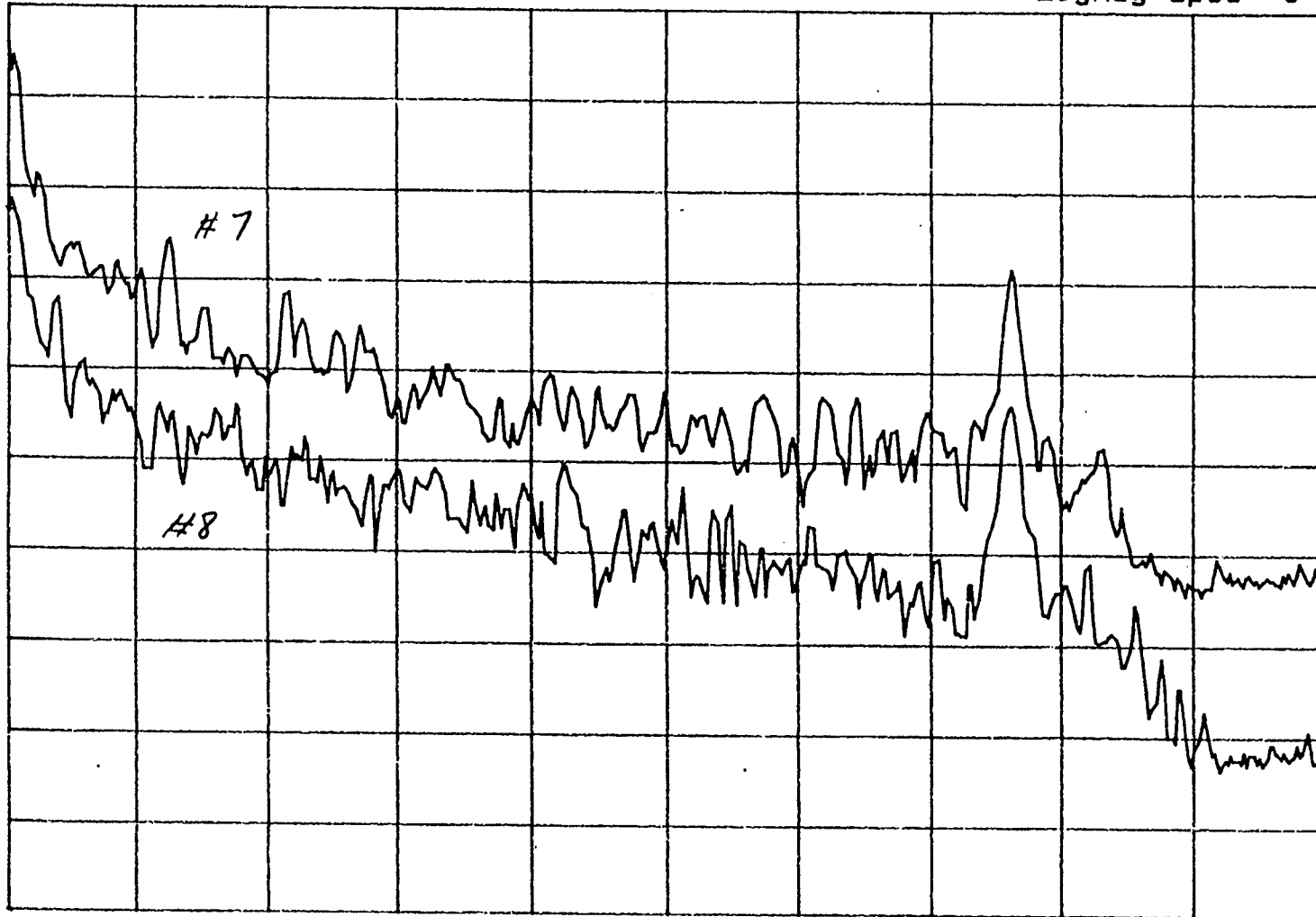
#8 SEIKO

V-FAST

FORD

PROPONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 41: 46

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40801*

Reference Point _____

Operator Comments

#10 SETRO

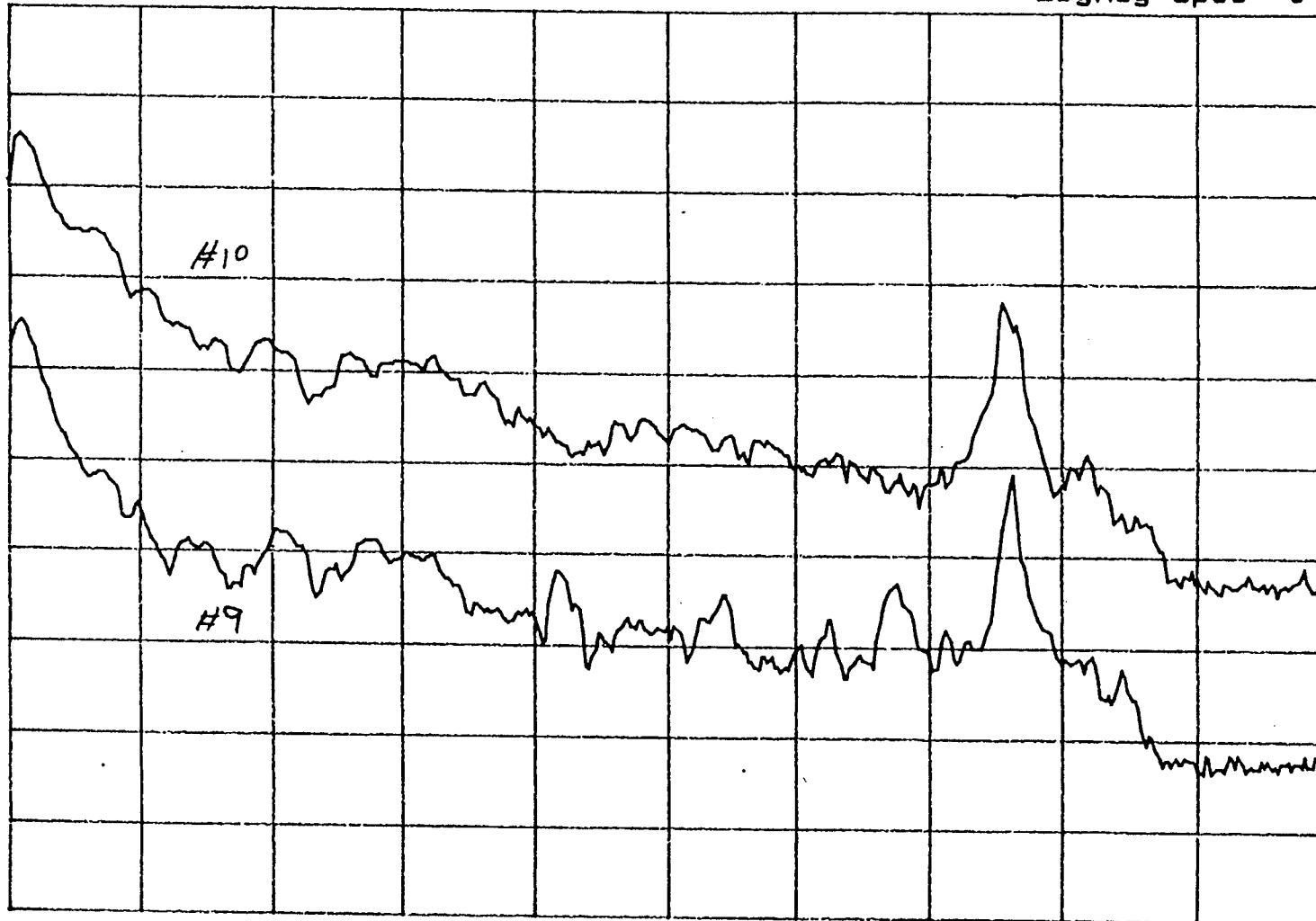
#9 REF

R-FAST

FORD

PROPONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 44: 42

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence 4540801

Reference Point _____

Operator Comments

#11 DDJ

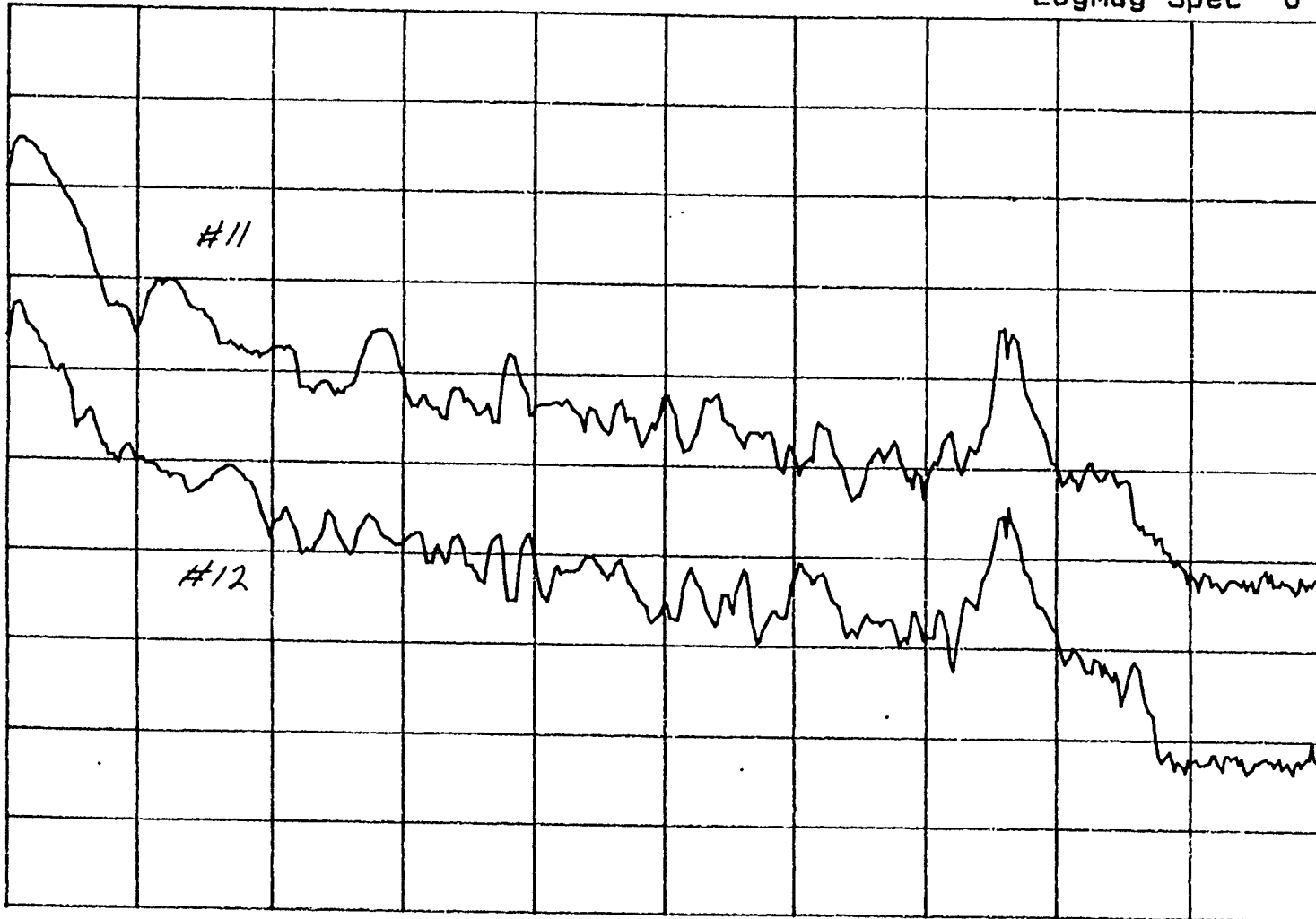
#12 MITRB

R-FAST

FORD

PROBONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 47: 58

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *4540801*

Reference Point _____

Operator Comments

#14 MITRE

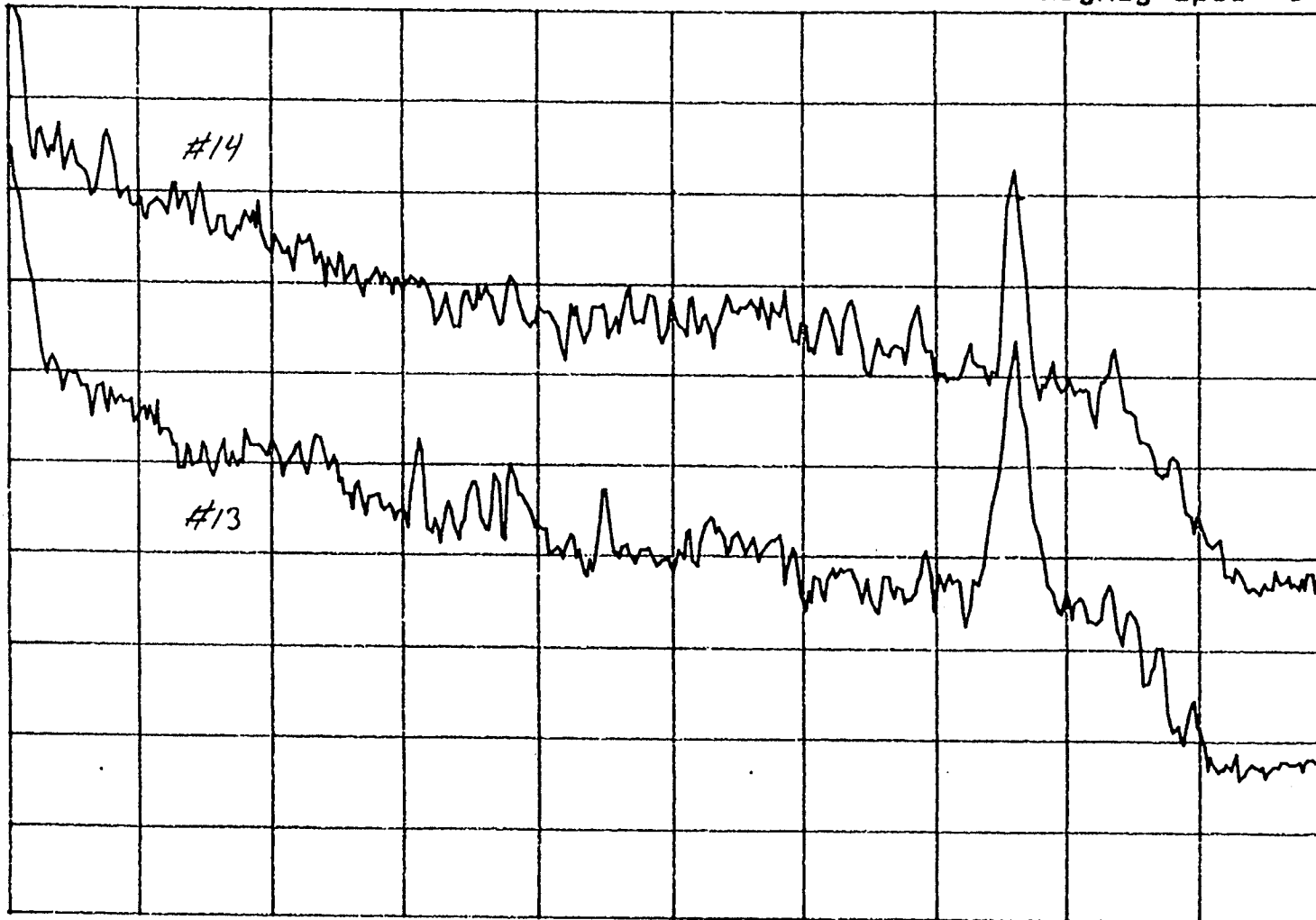
#13 REF

TER - OBS

FORD

PROPOONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 51: 32

SubCarrier Systems Corporation



069

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540801*

Reference Point _____

Operator Comments

#15 IDJ

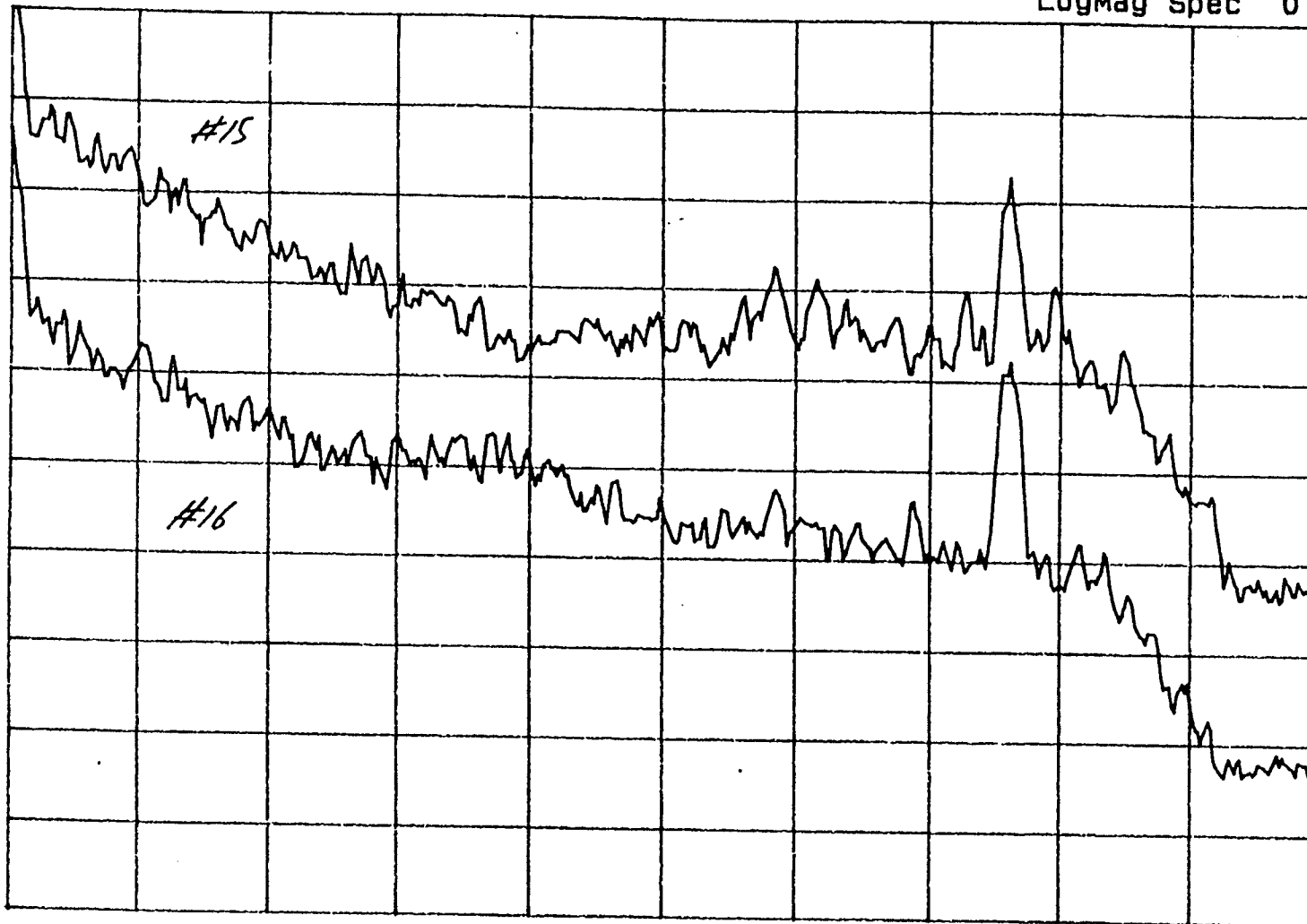
#16 SEIKD

TER - OBS

RORD

PROPONENT ONLY

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0:54:40

SubCarrier Systems Corporation



Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	
	Start	Stop			
IIS40802.DAT	11/21/96			Group A	
	0:05	2:05	1	Urban Slow Reference	B
	2:10	4:11	2	Urban Slow System A: Slight increase in noise floor. SEIKO	
	4:16	6:16	3	Urban Slow System B DDJ	
	6:21	8:21	4	Urban Slow System C: Slight increase in noise floor. MITRE	T
	8:27	10:27	5	Urban Fast Reference	B
	10:33	12:33	6	Urban Fast System C: Slight increase in noise floor. MITRE	T
	12:38	14:38	7	Urban Fast System B DDJ	T
	14:44	16:44	8	Urban Fast System A: Slight increase in noise floor. SEIKO	B
	16:50	18:50	9	Rural Fast Reference	B
	18:56	20:56	10	Rural Fast System A: Slight increase in noise floor. SEIKO	T
	21:02	23:02	11	Rural Fast System B DDJ	T
	23:07	25:07	12	Rural Fast System C: Slight increase in noise floor. MITRE	B
	25:13	27:13	13	Obstructed Reference	B
	27:19	29:19	14	Obstructed System C MITRE	T
	29:25	31:25	15	Obstructed System B DDJ	T
	31:31	33:31	16	Obstructed System A SEIKO	B

202

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *4540802*

Reference Point _____

Operator Comments

#4 MITRE

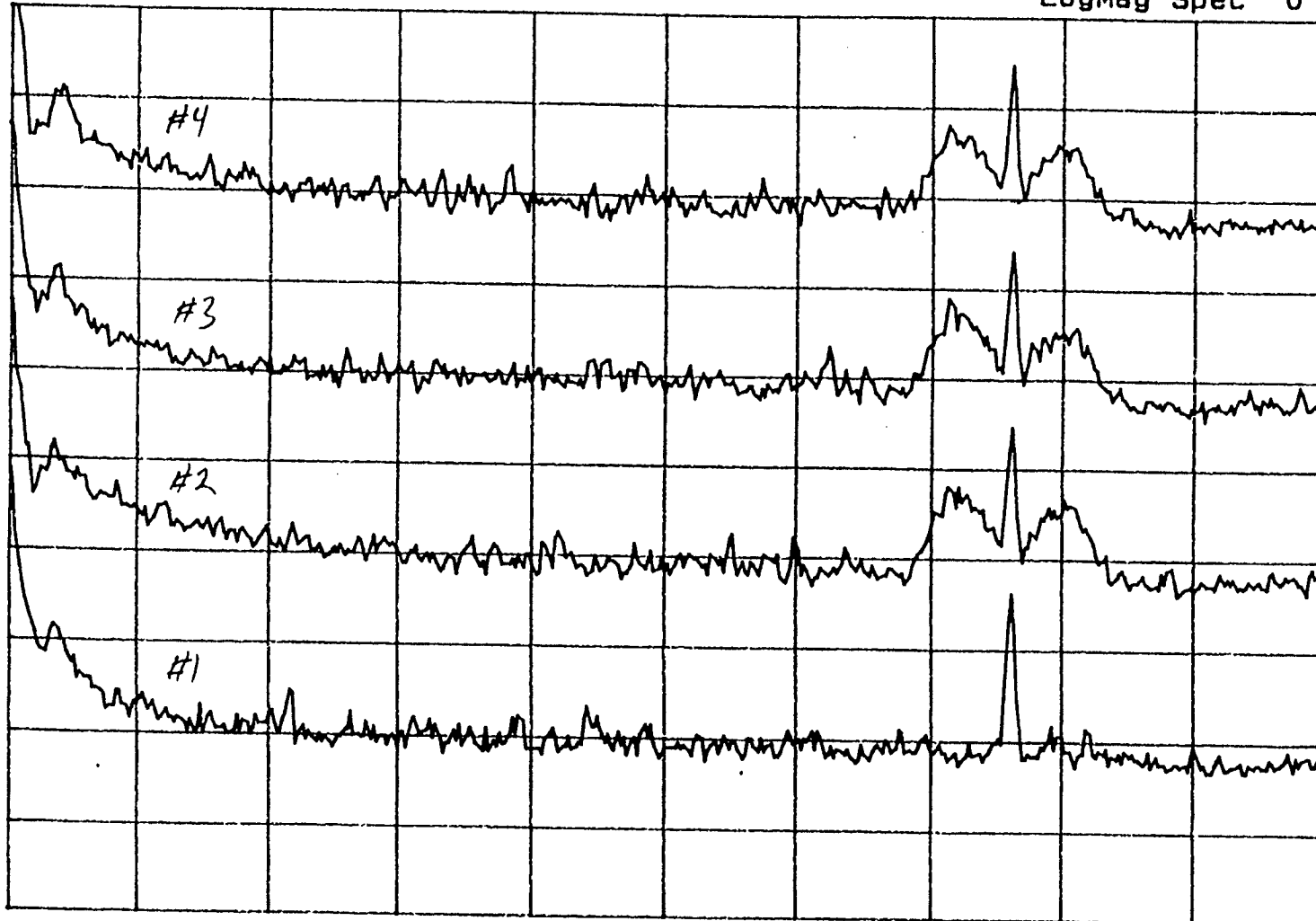
#3 DDJ

#2 SEIKO

#1 REF

FORD
GROUP A
V-SLOW

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dbV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

0: 58: 40

SubCarrier Systems Corporation



209

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *1540802*

Reference Point _____

Operator Comments

#6 MITRU

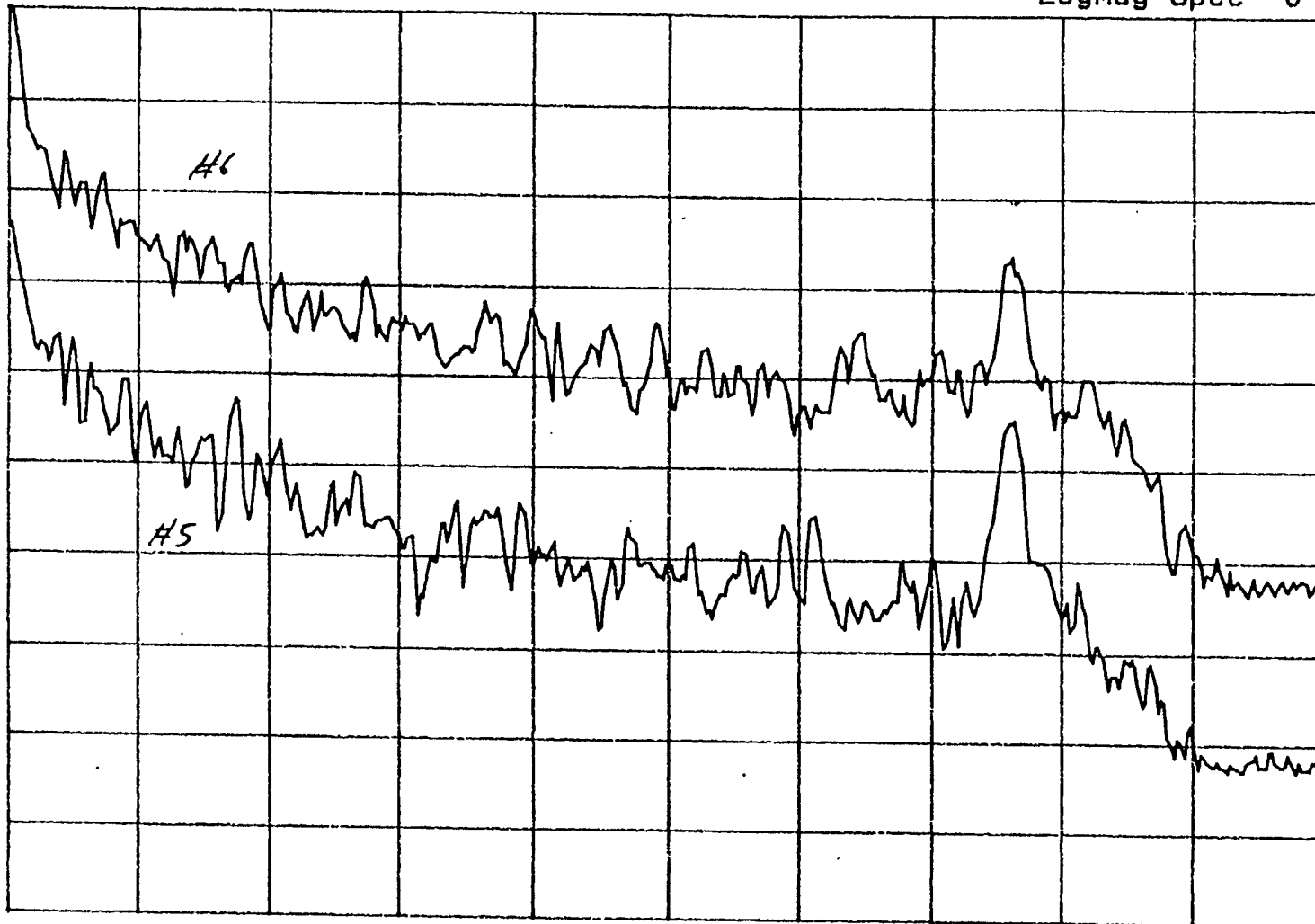
#5 REF

FORD

GROUP A

U-FAST

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1:07:01

SubCarrier System

poration



201

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *HS40802*

Reference Point _____

Operator Comments

#7 DDJ

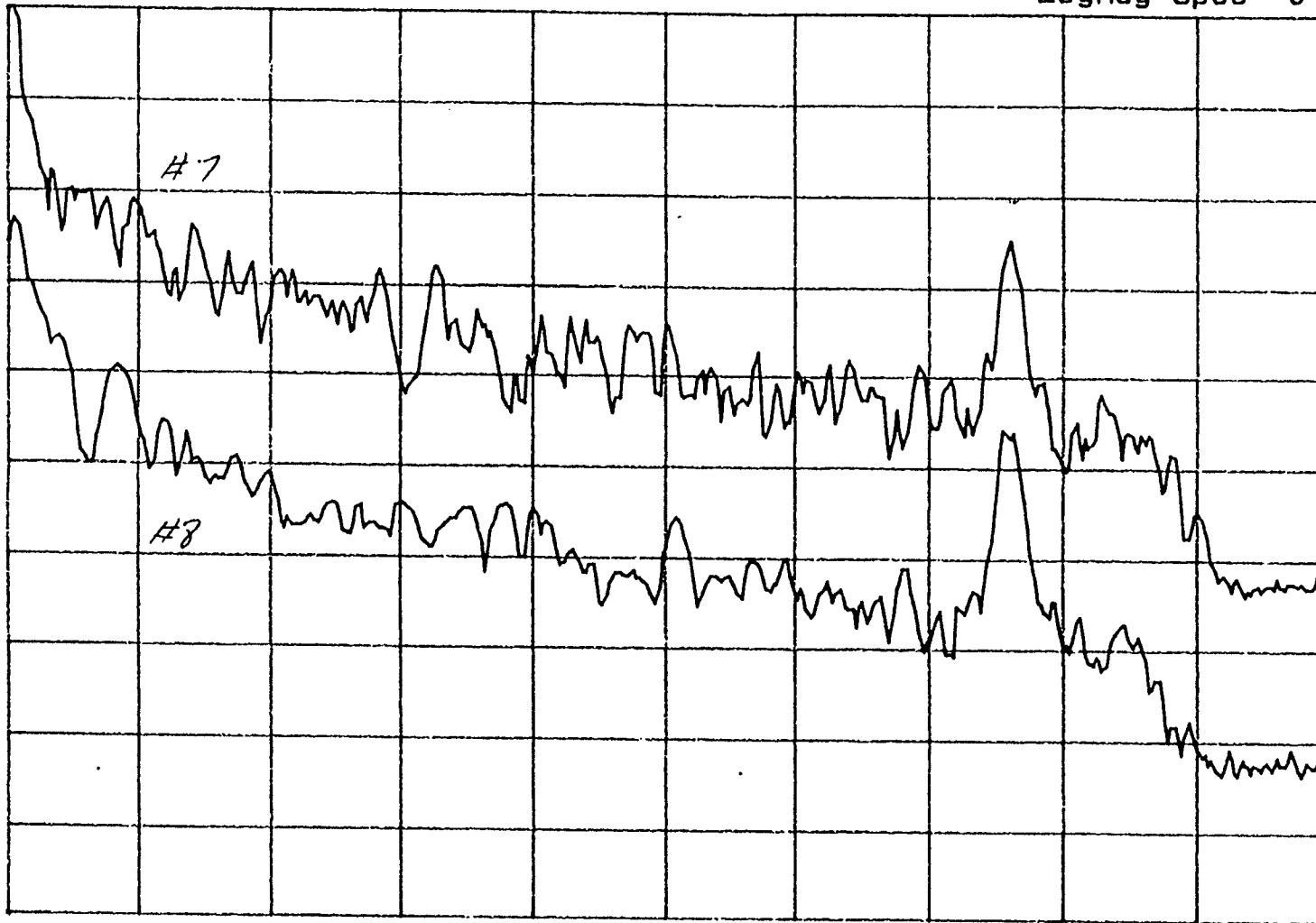
#8 SEIKO

FORD

GROUP A

U-FAST

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 10: 43

SubCarrier Systems Corporation



805
51

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40802*

Reference Point _____

Operator Comments

#10 SEIKO

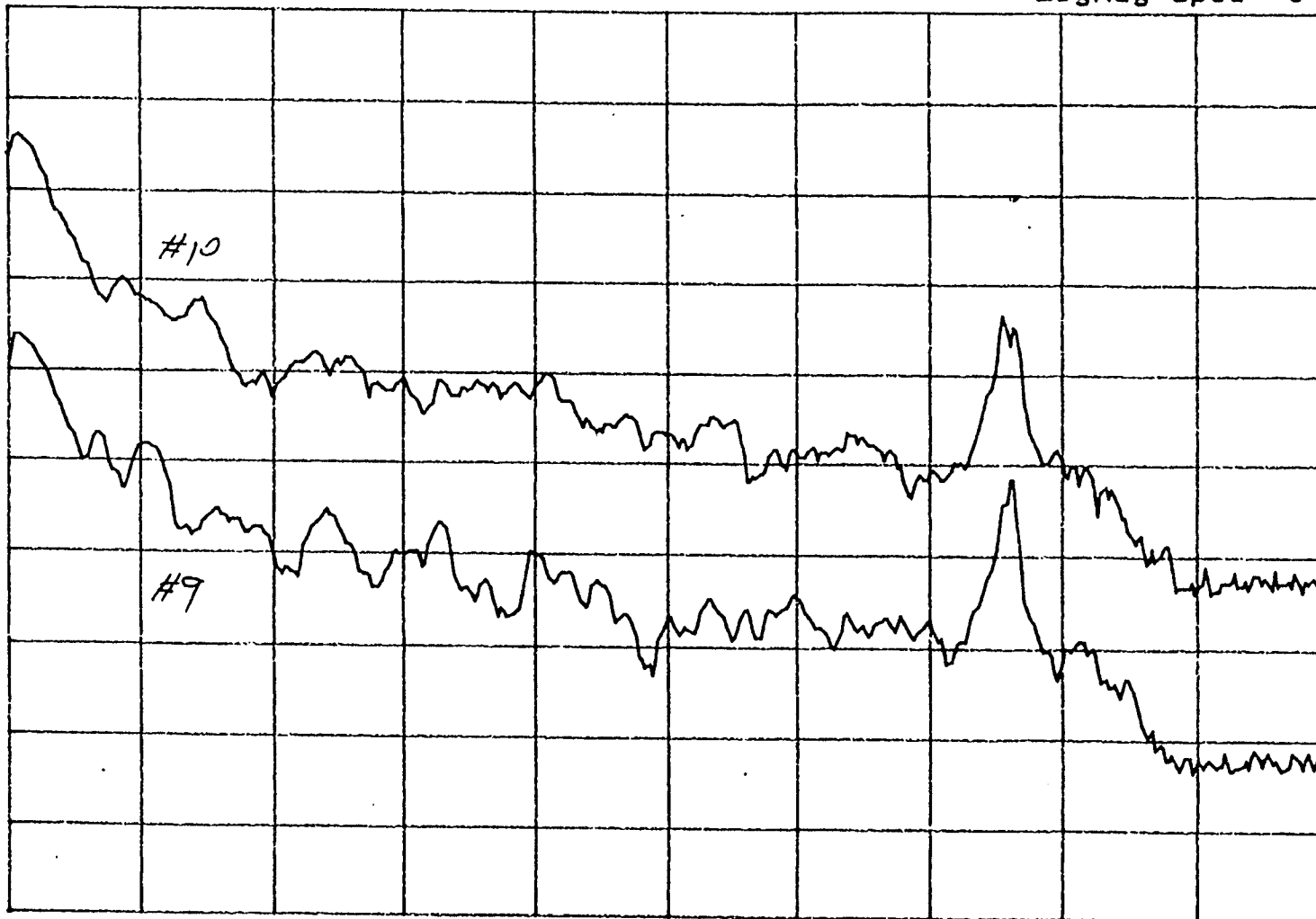
#9 REF

R-FAST

FORD

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 14: 04

SubCarrier Systems Corporation



968

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40802*

Reference Point _____

Operator Comments

#11 DDJ

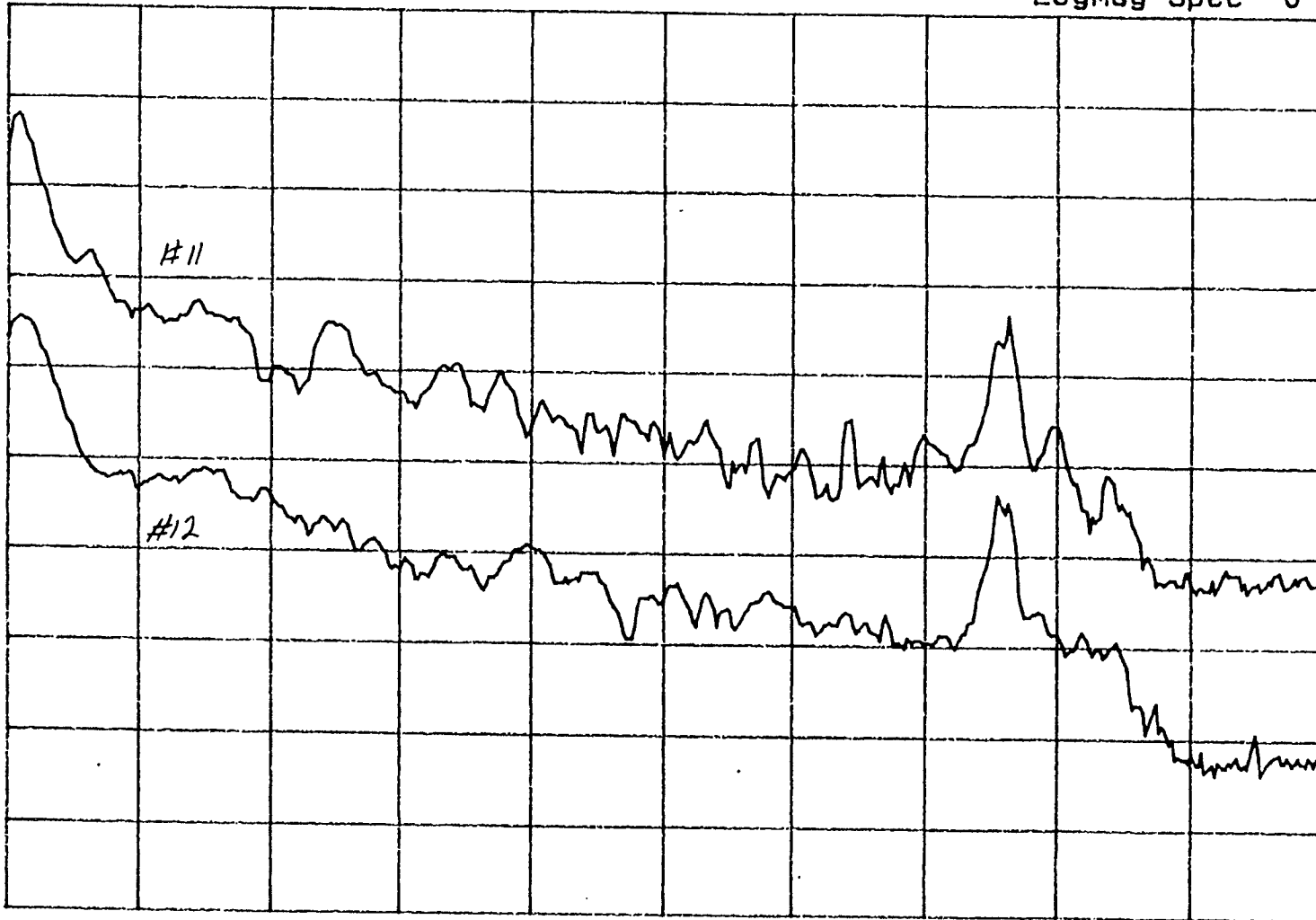
#12 MITRE

R-FAST

FORD

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 16: 47

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Squence *4540802*

Reference Point _____

Operator Comments

#14 MITRE

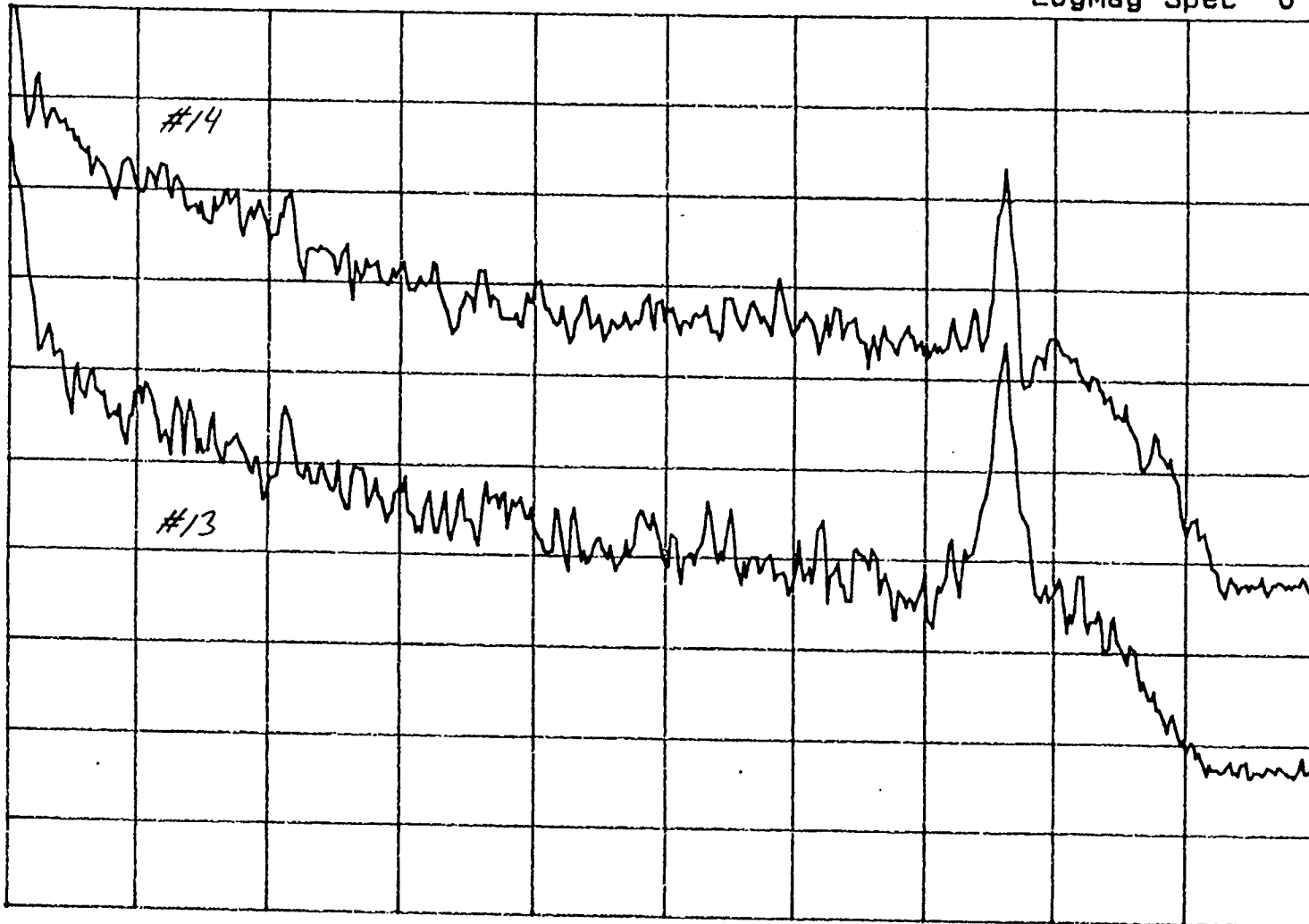
#13 REF

TER-OBS

FORD

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 19: 50

SubCarrier Syst

orporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *H540802*

Reference Point _____

Operator Comments

#15 DDJ

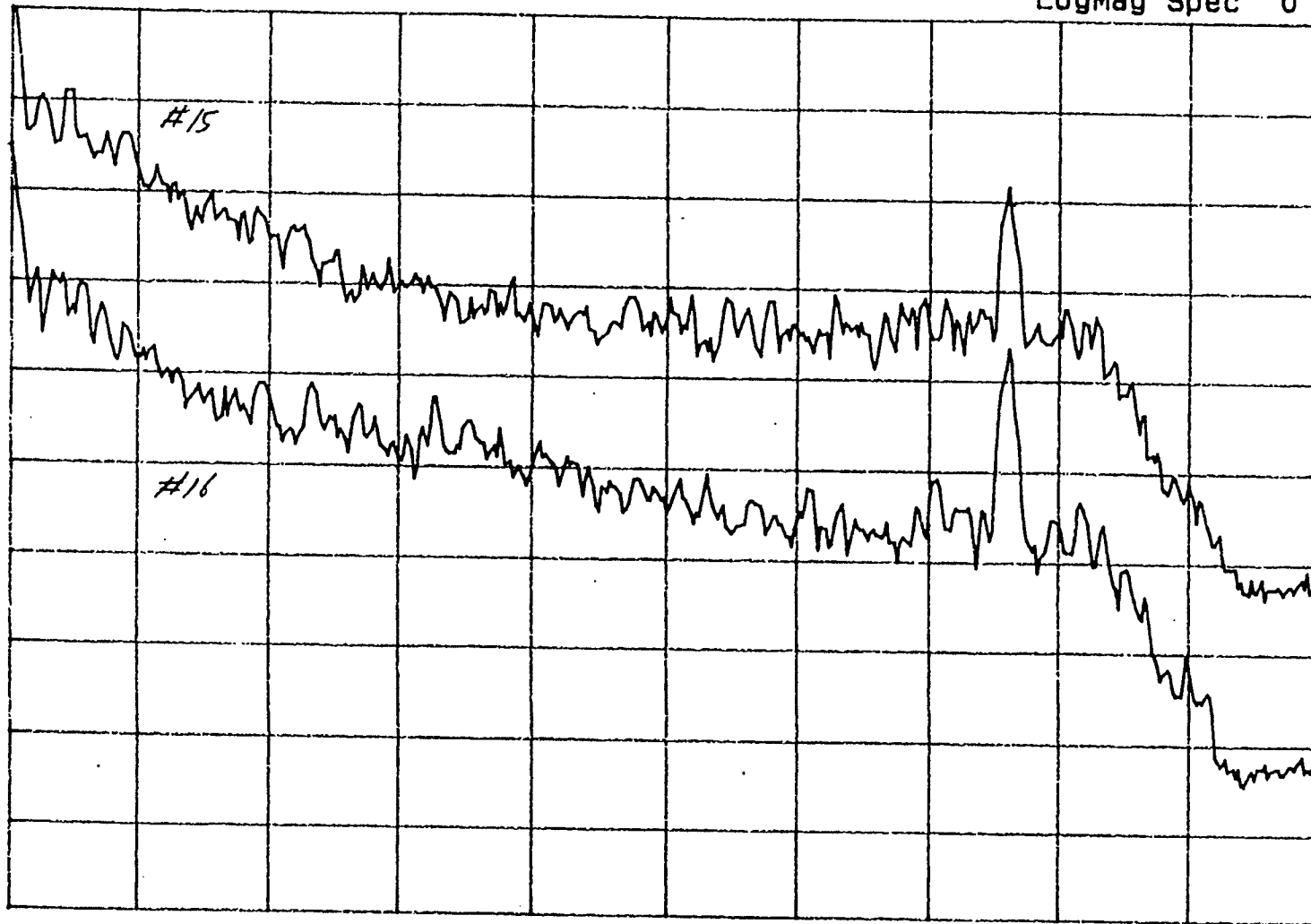
#16 SEIKO

TER-OBS

FORD

GROUP A

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 23: 16

SubCarrier Systems Corporation



Digital Radio Test Laboratory

DAT File Number	Time Code		ID	Description	
	Start	Stop			
IIS40803.DAT	11/21/96			Group B	
	0:06	2:06	1	Urban Slow Reference	B
	2:12	4:12	2	Urban Slow System A: Low level tone.	SEIKO
	4:18	6:18	3	Urban Slow System B: Low level tone.	DDJ
	6:23	8:23	4	Urban Slow System C: Low level tone.	MITRE T
	8:29	10:29	5	Urban Fast Reference	B
	10:35	12:35	6	Urban Fast System C: Low level tone.	MITRE T
	12:40	14:40	7	Urban Fast System B: Low level tone.	DDJ T
	14:46	16:46	8	Urban Fast System A: Low level tone.	SEIKO B
	16:52	18:52	9	Rural Fast Reference	B
	18:57	20:57	10	Rural Fast System A: Low level tone and slight increase in noise floor	T SEIKO
	21:03	23:03	11	Rural Fast System B: Low level tone.	T DDJ
	23:09	25:09	12	Rural Fast System C: Low level tone and slight increase in noise floor	B MITRE
	25:15	27:15	13	Obstructed Reference	B
	27:21	29:21	14	Obstructed System C: Low level tone.	MITRE T
	29:27	31:27	15	Obstructed System B: Low level tone.	DDJ T
	31:33	33:33	16	Obstructed System A: Low level tone.	SEIKO B

000

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40803*

Reference Point _____

Operator Comments

#4 MITR6

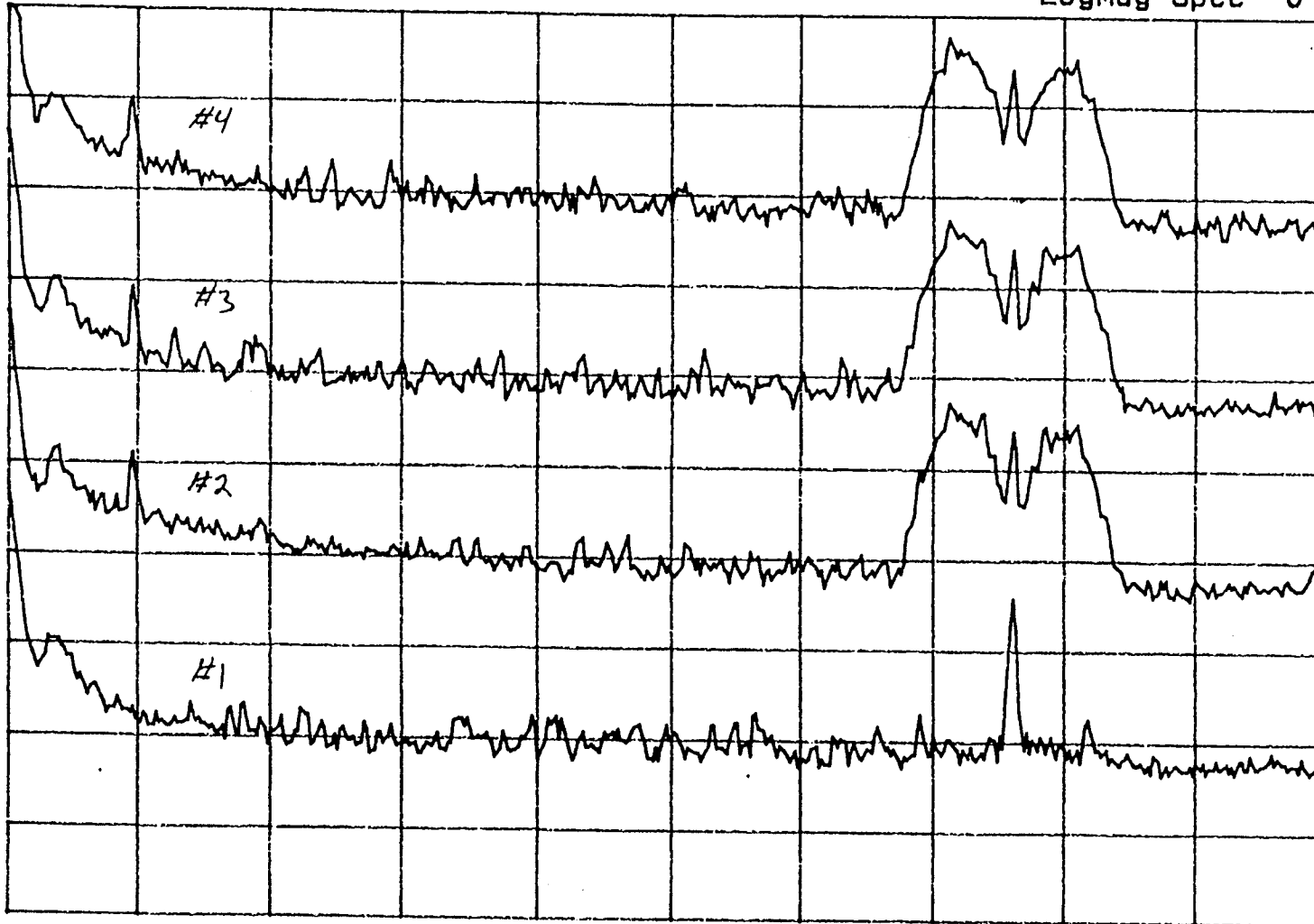
#3 DDJ

#2 SEIKO

#1 REF

U - SLOW
FORD
GROUP B

LogMag Spec 0



0.0 KHz

12.5000 KHz

25.0000 KHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 27: 39

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40803*

Reference Point _____

Operator Comments

#6 MITRE

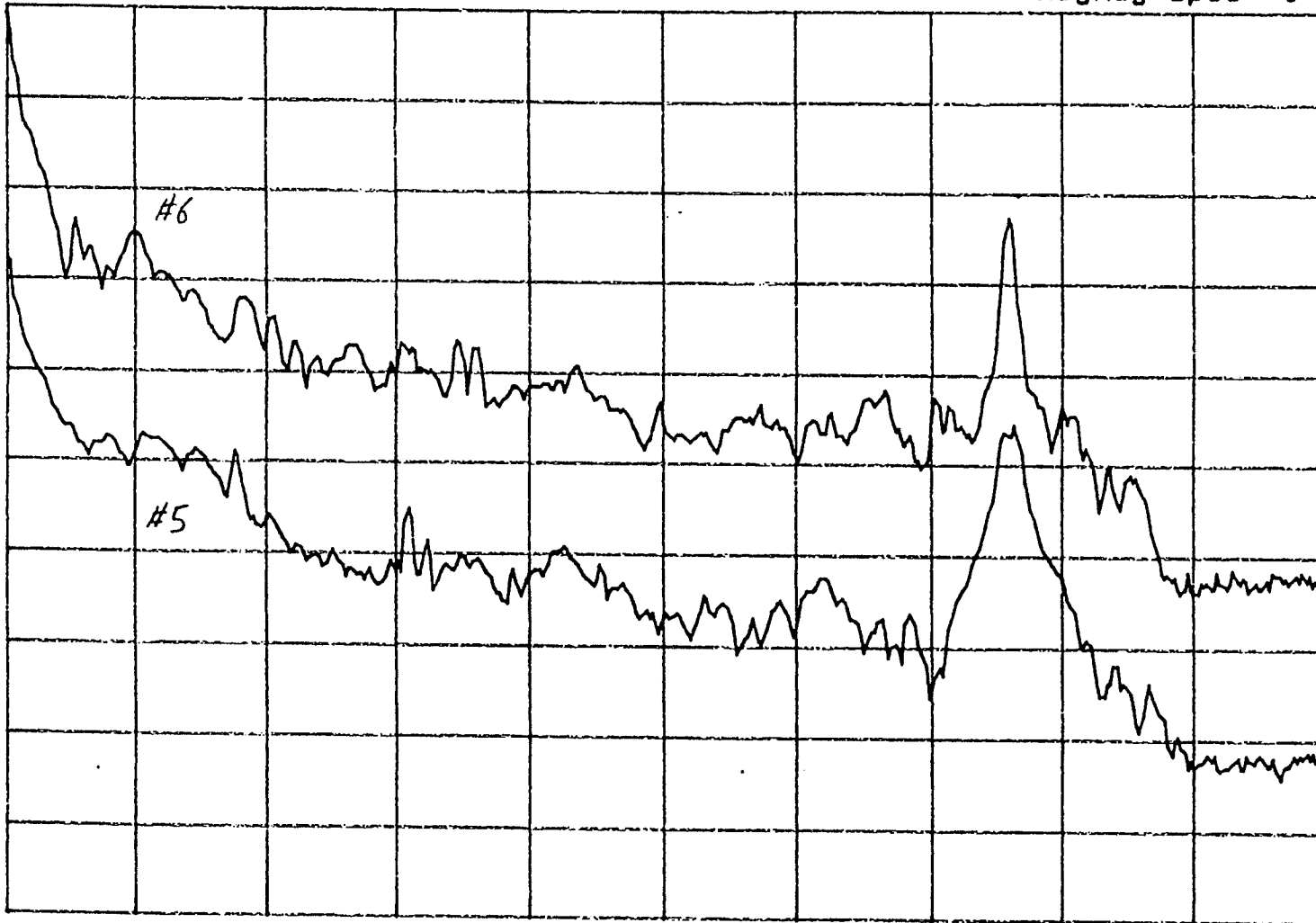
#5 REF

U-FAST

FORD

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 33: 20

SubCarrier Systems Corporation



302

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Sequence *H540803*

Reference Point _____

Operator Comments

#7 DDJ

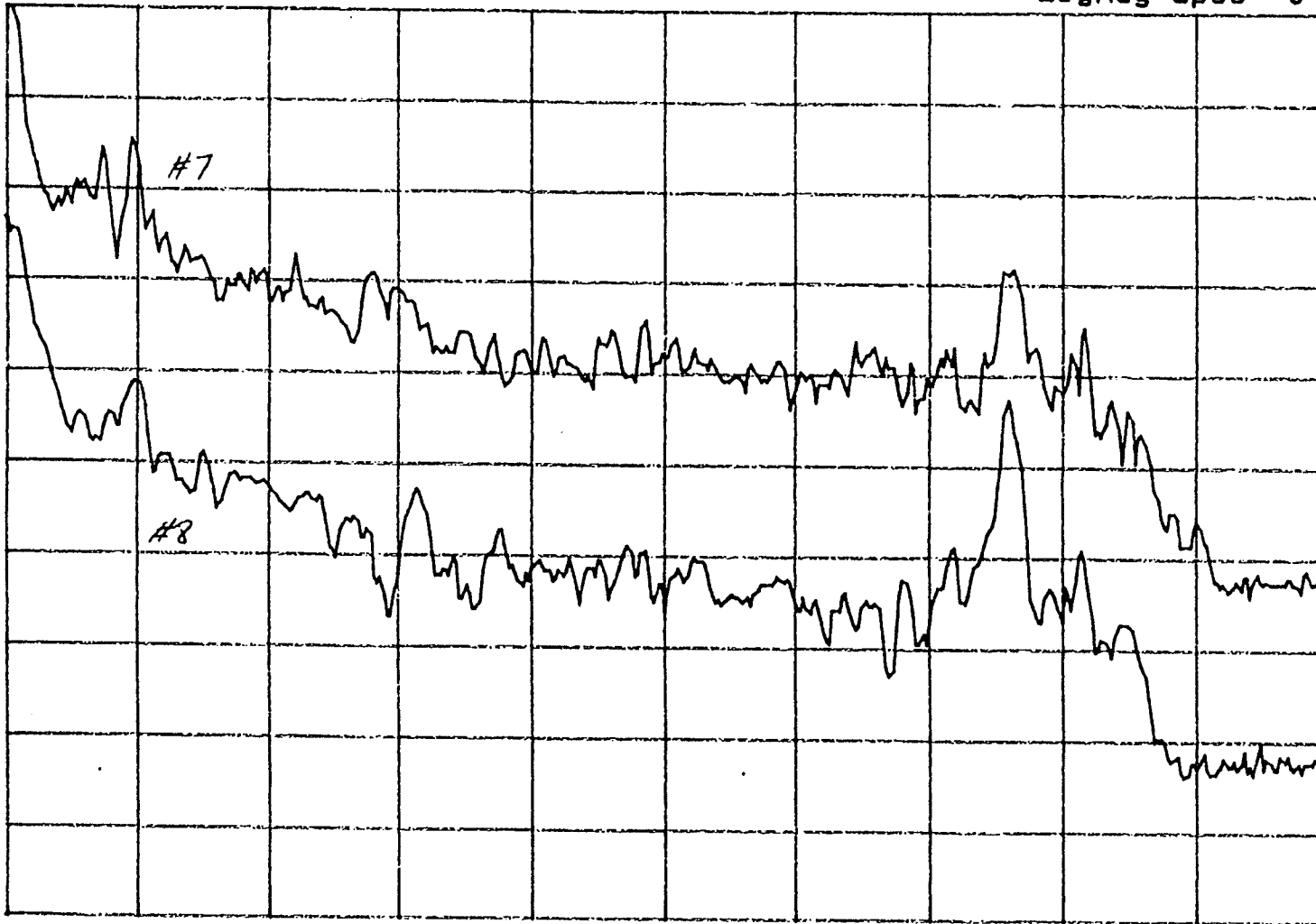
#8 SLIKO

U-FAST

FORD

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1:36:49

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *4540803*

Reference Point _____

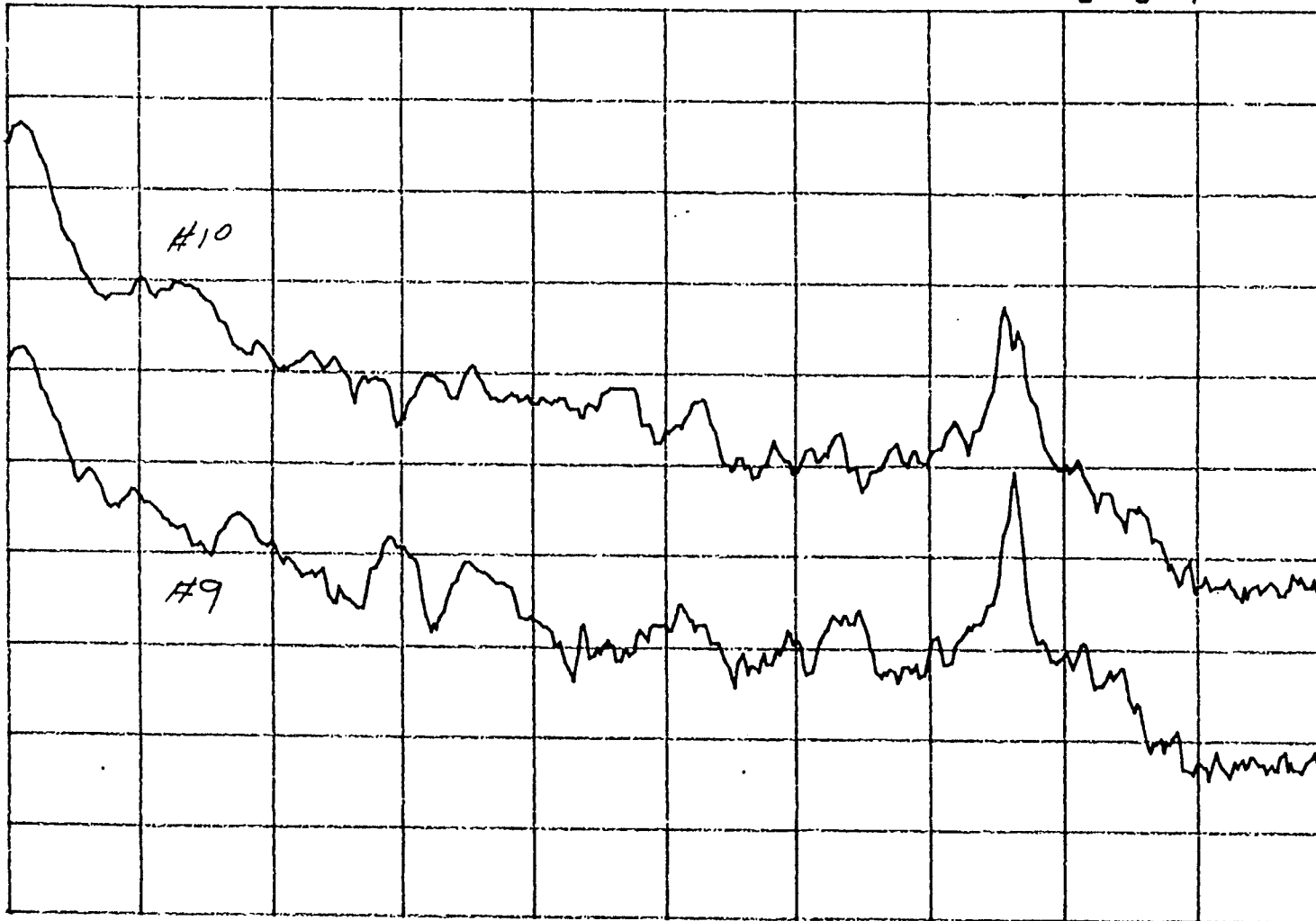
Operator Comments

#10 SEIKO

#9 REF

*R-FAST
FORD
GROUP B*

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1:39:48

SubCarrier Systems Corporation



304

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier SubCommittee)

Report & Test Plan: #1

No Formal SCSC Plan,
Dig Radio Test Lab Plan

Test Squence *HS40803*

Reference Point _____

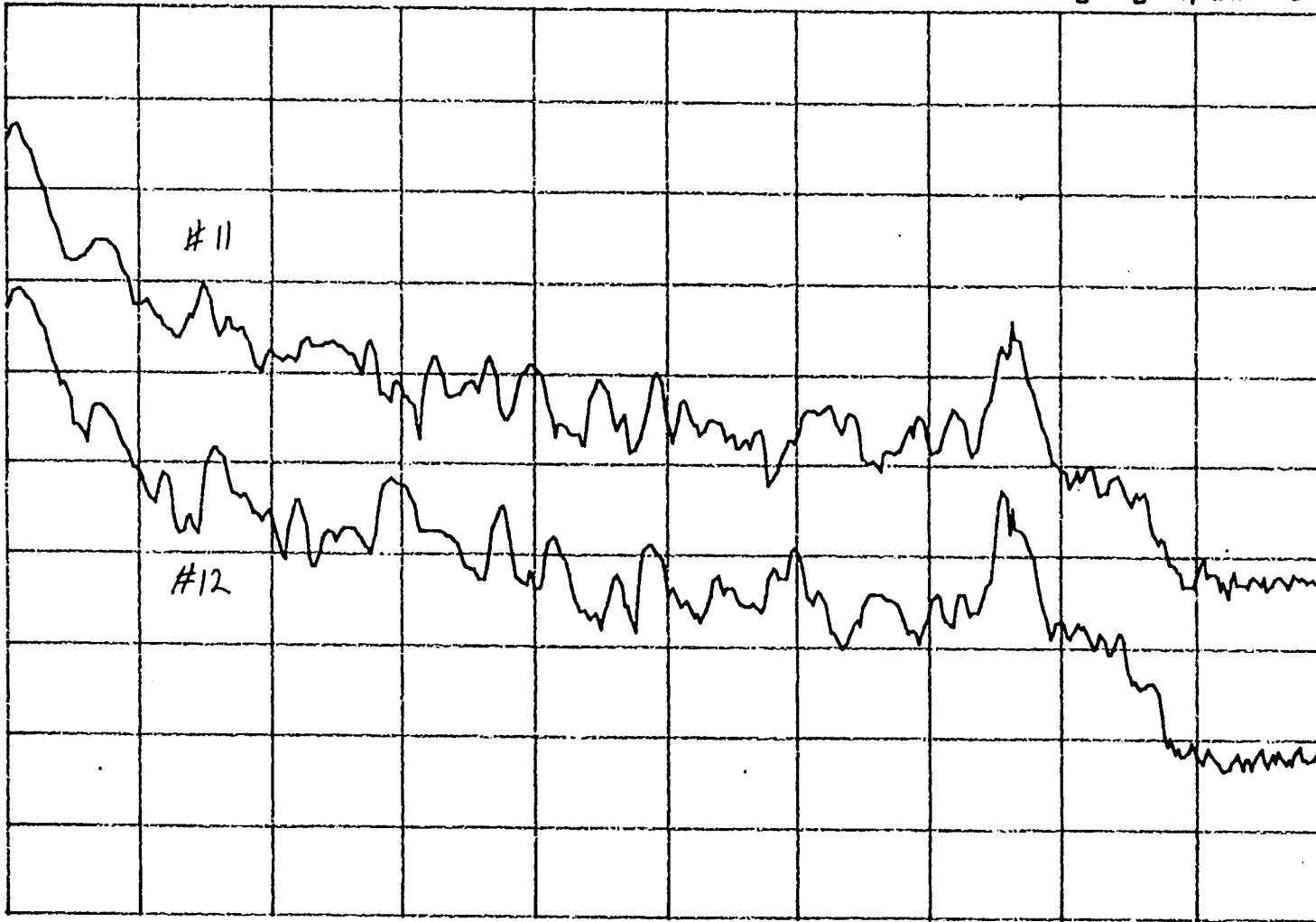
Operator Comments

#11 DDJ

#12 MITRO

R-FAST
FORD
GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 42: 56

SubCarrier Systems Corporation



Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40803*

Reference Point _____

Operator Comments

#14 MITRE

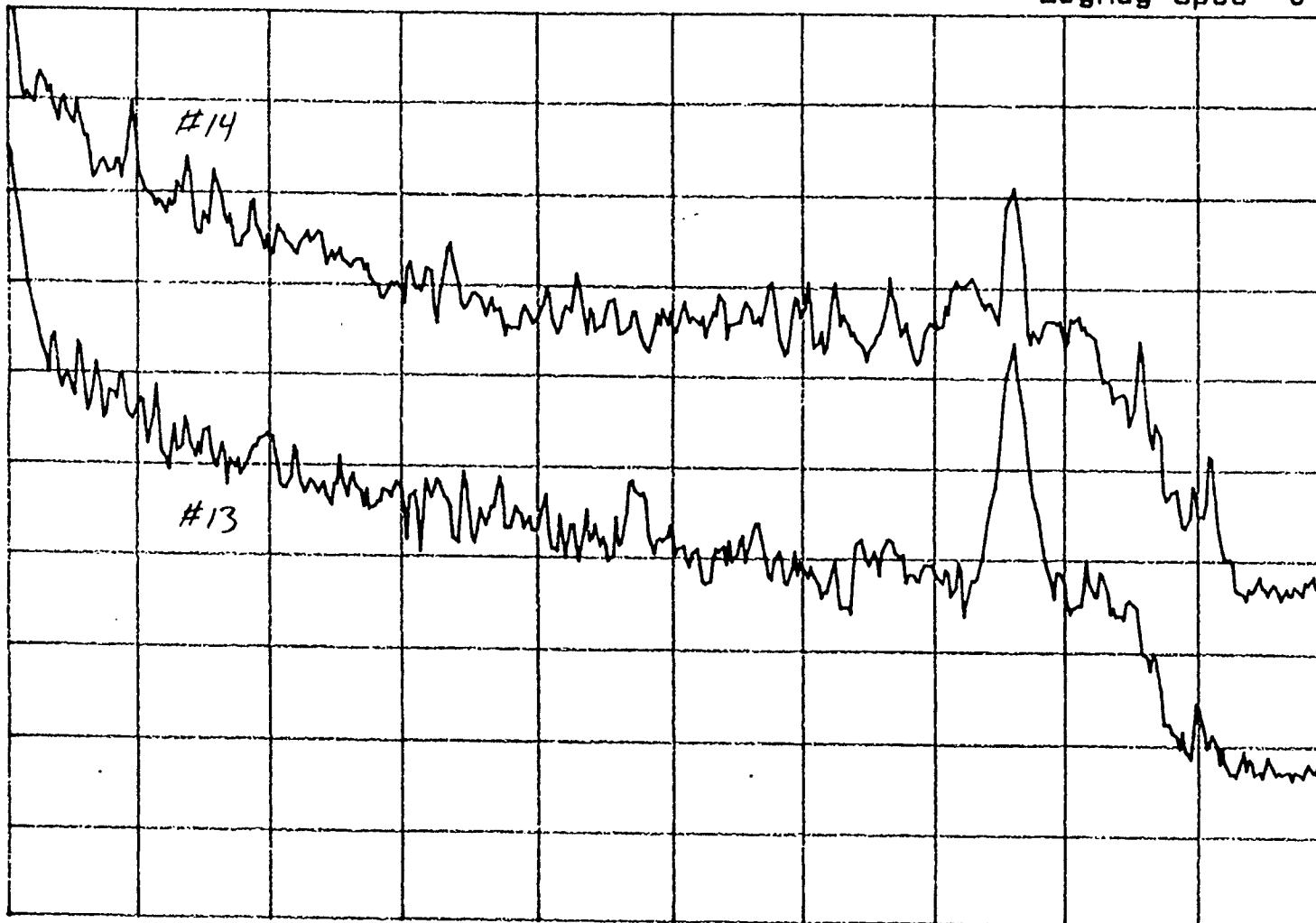
#13 REF

TER-OBS

FORD

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = 0 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 47: 20

SubCarrier System Corporation



SCS

Client:

NRSC Digital Radio

Test Laboratory

(High Speed FM

SubCarrier Subcommittee)

Report & Test Plan: #1

No Formal SCSC Plan,

Dig Radio Test Lab Plan

Test Sequence *HS40803*

Reference Point _____

Operator Comments

#15 DDJ

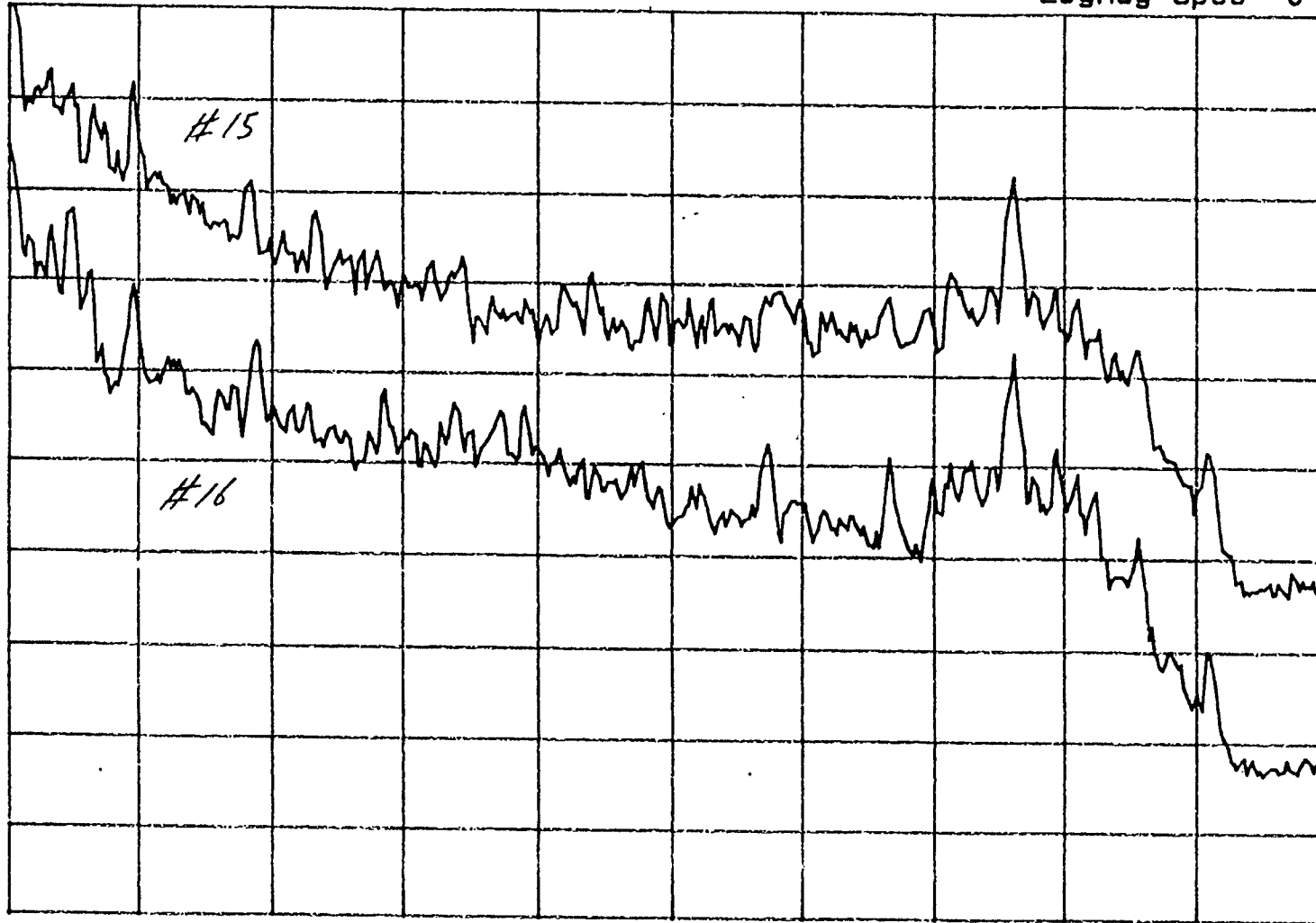
#16 SEIKO

TER-OBS

FORD

GROUP B

LogMag Spec 0



0.0 kHz

12.5000 kHz

25.0000 kHz

Top = -20 dBV 10 dB/div

Wndo: BMH

File= Live

Analog Baseband Frequency Spectrum

1/12/97

1: 50: 43

SubCarrier Systems Corporation



NRSC-R33

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:		
ADDITIONAL REMARKS:		
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Co-chairmen:	_____	
Date forwarded to co-chairmen:	_____	



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