An Employee-Owned Company

11696 Sorrento Valley Road, Suite "F"
San Diego, California 92121
(619) 259-4941 Fax: (619) 259-7170

FCC, PART 15, SUBPART B, CLASS 'B'

CERTIFICATION REPORT

FOR THE

Satellite Receiver

Model: **DSR-421**

FCC ID # F2NDSR421R (Pending)

PREPARED FOR:

General Instrument Corporation
6450 Sequence Drive
San Diego, CA 92121

PREPARED ON:

APRIL 27, 1998

REPORT NUMBER **98-095**

This report has been prepared in accordance with all applicable requirements of ANSI C63.4-1992

DOCUMENT HISTORY

Revision	Date	Comments
A	4/27/98	Initial Release T. B. Ketterling

NOTE: EESI hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (1992) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The units described in this report were received at EESI's facilities on April 10, 1998. Testing was performed on the units described in this report on April 10-13, 1998.
- The Test Results reported herein apply only to the Units actually tested, and to substantially identical Units.

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ATTACHMENTS:

Filing Fee, 731 Form

Attachment A: Label Design and Placement Diagram
Attachment B: Block Diagram
Attachment C: Draft User's Guide with FCC Statements
Attachment D: FCC Correspondence

CERTIFICATION

The Radio Frequency Interference (RFI) testing, data evaluation and this report have been prepared by Electromagnetic Engineering Services, Inc., an independent electromagnetic compatibility consulting and test laboratory.

The testing and data collection were accomplished in accordance with the requirements of the ANSI, C63.4-1992 standard and the applicable sections of FCC, Part 15, Subpart B for Class "B" equipment. Refer to the Administrative Summary for a description of the test sample.

I certify the data, data evaluation and equipment configuration herein to be a true and accurate representation of the sample's radio frequency interference emission characteristics, as of the test date(s), and for the design of the test sample utilized to compile this report.

T. Bruce Ketterling
V.P. for Technical Operations

1. ADMINISTRATIVE DATA AND TEST SUMMARY

1.1 Administrative Data

CLIENT:	General Instrument Corporation 6450 Sequence Drive San Diego, CA 92121 (619) 535-2580 (619) 404-2044 - fax
CONTACT:	Kerry Galloway
DATE(S) OF TEST:	April 10-16, 1998
TEST SPECIFICATION:	FCC, Part 15, Subpart B, Class 'B' Certification for Information technology equipment.
EQUIPMENT UNDER TEST (EUT):	Satellite Receiver
Model Number:	DSR-421
Serial Number:	N/A

1.2 Test Summary

Specification	*Frequency Range*	*Compliance Status*
FCC, Part 15b, Class "B" Conducted Emissions for ITE equipment	0.45 MHz - 30.00 MHz	**PASS**
FCC, Part 15b, Class "B" Radiated Emissions for ITE equipment	30.00 MHz - 1000 MHz	**PASS**

T. Bruce Ketterling, EESI

Please refer to the Test Results section of this report for further details.

2. DESCRIPTION OF EUT

The DSR421 is a Digital Satellite (DigiCypher II) integrated receiver decoder built by General Instrument (formerly NextLevel Systems). The device accepts Digital Satellite or DigiCypher II signals from a standard satellite antenna for use with the end user's television; the DSR421 is considered to be TVID. The IRD is fully integrated to provide seamless transitions between satellite channels from the users perspective. The DigiCypher II element of the IRD shall be continuously processing DigiCipher II signals, if available.

The DSR421 has two modes of operation – Digital Satellite Mode and Bypass (Antenna Feed thru) Mode. Both of the modes were evaluated separately for compliance to FCC rules and regulations; specific testing accomplished is presented in section 8 of this application. Digital Satellite Mode was accomplished using input form a dedicated satellite receive dish. In the Bypass Mode, the unit was turned off and the consumer is able to receiver off-air transmissions with input from a standard TV antenna.

The draft User's Guide shows the back panel connectors present on the DSR-421. A brief explanation of the interfaces is given below:

#	User's Guide #	Function	Connector Type
1	#1 Satellite Input	Input from GI satellite – *the TVpc interface next to it is a TV pass card and not a TV personal computer input*	F
2	#2 Unused	reserved for future use - not presently supported	DB9
3	#3 Unused	reserved for future use - not presently supported	DB9
4	#4 UHF Remote Receiver	input for the FCC ID# F2NDSR400T transmitter	mini-phono
5	#5 To TV	output to television	F
6	#6 to VCR	output to VCR	F
7	#7 Left/Right	output audio	RCA
8	#8 Antenna In	antenna input when Bypass is engaged	F
9	#9 Ch3 / Ch4 select	select switch for Channel 3 or 4	slide switch
10	#10 To TV	output to television	F
11	#11 Report Back Telco	telephone input from unit	RJ
12	#12 IR Blaster	IR	N/A

3. DESIGN MODIFICATIONS FOR COMPLIANCE

Device: General Instrument Corporation Satellite Receiver

Model: DSR-421

No design modifications were made to this EUT during testing.

4. SYSTEM CONFIGURATION

4.1 System Configuration and Power Cables

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - Satellite Receiver	General Instrument Corporation DSR-421 N/A	2m, shielded, 18 AWG, 2-wire, IEC connectors (ferrite attached internally on power cable)
Television	Sony Trinitron KV-13TR28 8206120	2m, shielded, 18 AWG, 2-wire, IEC connectors
Cable Modulator	General Instrument CGM-11 JGN7000325321	2m, unshielded, 18 AWG, 3-wire, IEC connectors
Satellite Receiver	General Instrument DSR4500 NTSC 045002950	2m, unshielded, 18 AWG, 3-wire, IEC connectors

NOTE: Support equipment above is FCC compliant professional Audio/Video equipment.

4.2 Device Interconnection and I/O Cables

CONNECTION	I/O CABLE
Satellite Feed to EUT	Variable length, shielded, standard 75 Ω coax cable, F-connector
EUT Data Ports (x2)	1m, shielded, 5.1 kΩ coax cable, DB9 connector
EUT IR	1m, shielded, AWM Style 2725 cable, mini-phono connector
EUT Remote Input	1m, shielded, 1 kΩ coax cable, mini-phono connector
EUT Digital Audio	1m, shielded, standard 75Ω coax cable, RCA connectors
EUT to Television	1m, shielded, standard 75Ω coax cable, RCA connectors
EUT to VCR	1m, shielded, standard 75Ω coax cable, RCA connectors
EUT L/R Audio	1m, shielded, 2 kΩ coax cable, RCA connectors
EUT Antenna In	1m, shielded, standard 75Ω coax cable, F-connectors
EUT Ch3/Ch4 Switch	1m, shielded, standard 75Ω coax cable, F-connectors
EUT Out to Television	1m, shielded, standard 75Ω coax cable, 5-pin DIN connector
EUT S-Video	1m, unshielded, 24 AWG, 5-pin mini-DIN connector, 75Ω terminator
EUT Phone	1m, unshielded, 600 Ω coax cable, RJ11 connectors

5. DESCRIPTION OF TESTING METHODS DEMONSTRATING COMPLIANCE WITH FCC RULES FOR CLASS 'B' DEVICES

5.1 Introduction

As required in 47 CFR, Parts 2 and 15, the methods employed to test the radiated and conducted emissions (as applicable) of the EUT are those contained within the American National Standards Institute (ANSI) document C63.4-1992, titled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz." All applicable FCC Rule Sections that provide further guidance for performance of such testing are also observed.

The unit was prescreened in one mode and at several operational frequencies to determine the worst-case emissions profile to use during the qualification testing for radiated emissions. In Satellite Mode, the unit input signals for testing came from a facility roof-mounted C/Ku band antenna group, Bypass mode was not tested. (To initiate Bypass, the power to the DSR-421 is powered "Off" and the unit passively connects the RF signal from the "Ant In" port to the "To TV" port).

The maximum emissions configuration was determined by prescreening the unit in its different modes while the unit is installed in a shielded enclosure. After completion of the prescreening process, the #2 combination (listed in bold type below) of Satellite Mode presented the most active radiated emissions configuration. The remaining combinations of Satellite/Cable mode tested are given below:

Scan #	Satellite Mode	Bypass Mode
	Low / Mid / High Channels from the Cable Modulator	
1	1190 MHz receive	not engaged
2	**1190 MHz receive**	**not engaged**
3	1190 MHz receive	not engaged
	Low / Mid / High Channels on the Satellite Receiver	
4	950 MHz receive	not engaged
5	1190 MHz receive	not engaged
6	1450 MHz receive	not engaged
	Arbitrary settings on Cable / Satellite – Off Air Reception	
7	1190 MHz receive	engaged*

* To engage the Bypass, the DSR-421 unit is powered "Off."

For General Test Configuration of the EUT please refer to Figure #1 on page 8.

5.2 Configuration and Methods of Measurements for Conducted Emissions

Section 7 of ANSI C63.4 determines the general configuration of the EUT and associated equipment, as well as the test platform for conducted emissions testing. Tabletop devices are placed on a non-conducting surface 80 centimeters above the ground plane floor and 40 centimeters from the ground plane wall. The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. The emissions are recorded using the required bandwidth of 9 kHz in the quasi-peak mode. The average amplitude is also observed employing a 10 kHz bandwidth to determine the presence of broadband RFI. When such interference is caused by broadband sources (as defined by the FCC and ANSI Rules), the deviation guidelines contained in Section 11.3.1 of ANSI C63.4 are employed, which allows a correction factor of 13 dB to be subtracted from the quasi-peak reading. The emission levels are then compared to the applicable FCC limits to determine compliance.

For Conducted Emissions Test Configuration please refer to Figure #2 on page 9.

5.3 Ambient Signals

When performing all testing of equipment, the actual emissions of the EUT are segregated from ambient signals present within the laboratory or the open-field test range. Preliminary testing is performed to insure that ambient signals are sufficiently low to allow for proper observation of the emissions from the EUT. Incoming power lines are filtered using a 120 dB, 30 ampere, 115/208 volt filter to assist in reducing ambient signals for tests of levels of conducted emissions. Ambients within the laboratory are compared to those noted at the nearby open-field site to discriminate between signals produced from the EUT and ambient signals. In the event that a significant emission is produced by the EUT at a frequency that is also demonstrating significant ambient signals, the spectrum analyzer is placed in the peak mode, the bandwidth is narrowed, and the EUT's signal is centered on the analyzer. The scan width is expanded to 50 kHz while monitoring the audio to insure that only the EUT signal is present, the analyzer is switched to quasi-peak mode, and the level of the EUT signal is recorded.

For Conducted Emissions Test Configuration please refer to Figure #3 on page 10.

5.4 Configuration for Determining Location of Maximum Radiated Emissions

Section 8 of ANSI C63.4 determines the general configuration and procedures for measuring the radiated emissions of equipment under test. Initially, the primary emission frequencies are identified inside the test lab by positioning a broadband receive antenna one meter from the EUT to locate frequencies of significant radiation. Next, the EUT and associated system are placed on a turntable on a ten meter open area test site (registered with the FCC in accord with its Rules and ANSI C63.4) and the receive antenna is located at a distance of ten meters from the EUT.

The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. All significant radiated emissions are recorded when maximum radiation on each frequency is observed, in accord with part 8 of ANSI C63.4-1992 and Section 15.33 of the FCC Rules. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to produce horizontal and vertical polarities, and the turntable is also rotated to determine the worst emitting configuration.

For Radiated Emissions Test Configuration please refer to Figure #4 on page 11.

5.5 Radiated Emissions Requirements for TV Interface Devices

In addition to the general radiated emissions requirements described in FCC, Part 15b, for Class "B" devices, Section 15.115 determines the configuration and procedures for measuring radiated emissions of TV Interface Devices. In the case of these devices, conducted emissions are measured at the EUT output terminals with the correct resistance, impedance and output signal limit values.

The table on the following page is a summary of the testing requirements from CFR 47, Section 15.115, performed for the DSR-421 certification testing. Test data for each mode listed above has been provided as an appendix to this report.

#	CFR 47 Section #	Satellite Mode	Bypass Mode
1	15.115(a) Terminate in correct impedance	Accomplished	Accomplished
2	15.115(b)(i) RF outputs - in channel	TVID - Accomplished	Not Applicable
	15.115(b)(2) RF outputs - out of channel	TVID - Accomplished	Not Applicable
3	15.115(c) Transfer Switch isolation	TVID - Accomplished	Not Applicable
4	15.115(d) High Input Voltage	Not Applicable*	Not Applicable
5	15.115(e) Specify cables required for compliance	Accomplished	Accomplished
6	15.115(f) Single form 731	Not Applicable	Not Applicable
7	15.115(g) External device attached to TVID	Not Applicable	Not Applicable
8	15.115(h) External device attached to TVID	Not Applicable	Not Applicable
9	15.115(i) Bypass Switch attenuation	Not Applicable	Accomplished

*Not applicable because the input is from a General Instrument Corporation dedicated down converter which is specified to operate in the -54 to -25dBm level.

6. DESCRIPTION OF TEST SITE

The test site is located at:

11696 Sorrento Valley Road, Suite F
San Diego, CA 92121

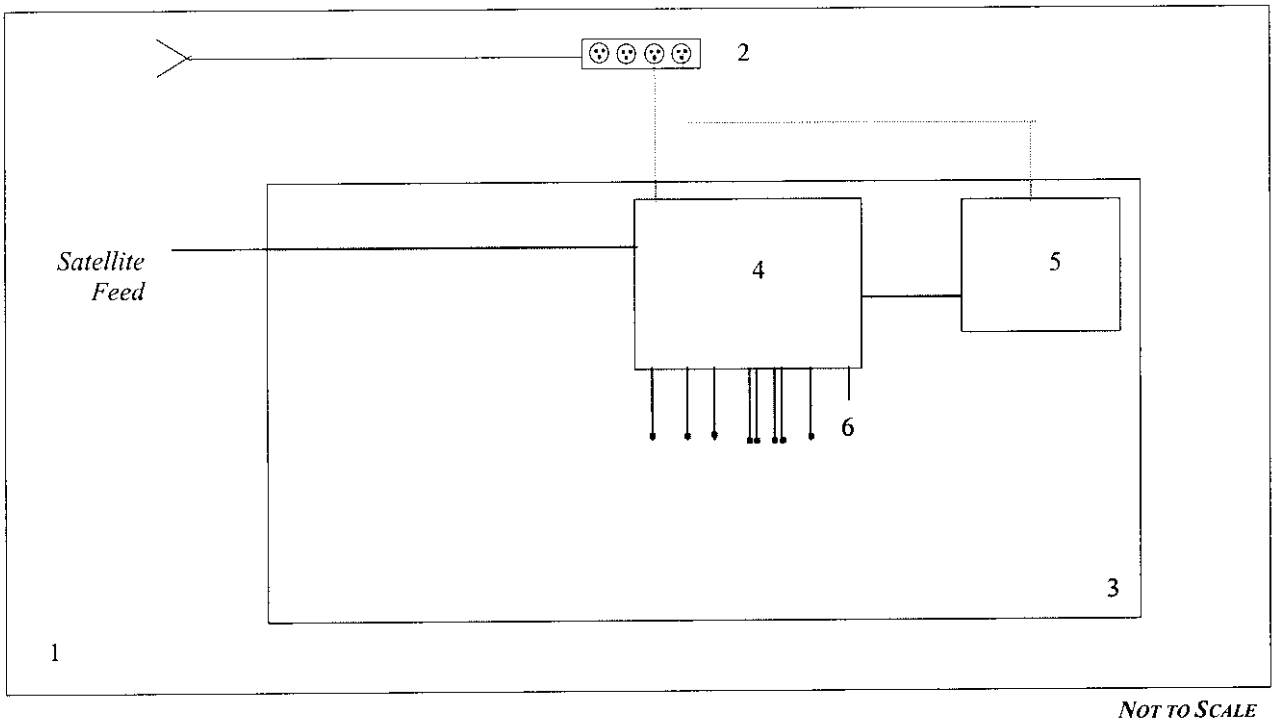
This ten meter site is located behind the office/lab building. It conforms to the normalized site attenuation limits and construction specifications as set in the EN 55022 (1987), CISPR 16 and 22 (1985) and ANSI C63.4-1992 documents. The site attenuation characteristics are verified for compliance every three years and was last registered with the Federal Communications Commission on October 21, 1996, FCC Document Number 31040/SIT (1300B3). The test site is physically located 18 miles Northwest of downtown San Diego. The general area is a valley 1.5 miles east of the Pacific Ocean. This particular part of the valley tends to minimize ambient levels, i.e. radio and TV broadcast stations and land mobile communications.

7. TEST EQUIPMENT

The test equipment, as follows, was of current calibration and of the type required in the Applicable Documents section.

DEVICE	MANUFACTURER	MODEL # SERIAL #
Spectrum Analyzer	Hewlett Packard	8568A 2216A02160
Quasi-peak adapter (CISPR)	Hewlett Packard	85650A 2043A00211
Power Line filter	Lindgren	C-150-30-2
Line Impedance Stabilization Network (LISN)	EMCO	3825/2
High pass filter	Solar	7801-5.0 838132
Amplifier	Mini-Circuits	ZHL-2 (SMA) 091887-21
Antenna, Log Periodic	Electro-Metrics	3146 9101-2
Antenna, Biconical	Electro-Metrics	3104 3020

FIGURE 1: EUT and Associated System - General Configuration

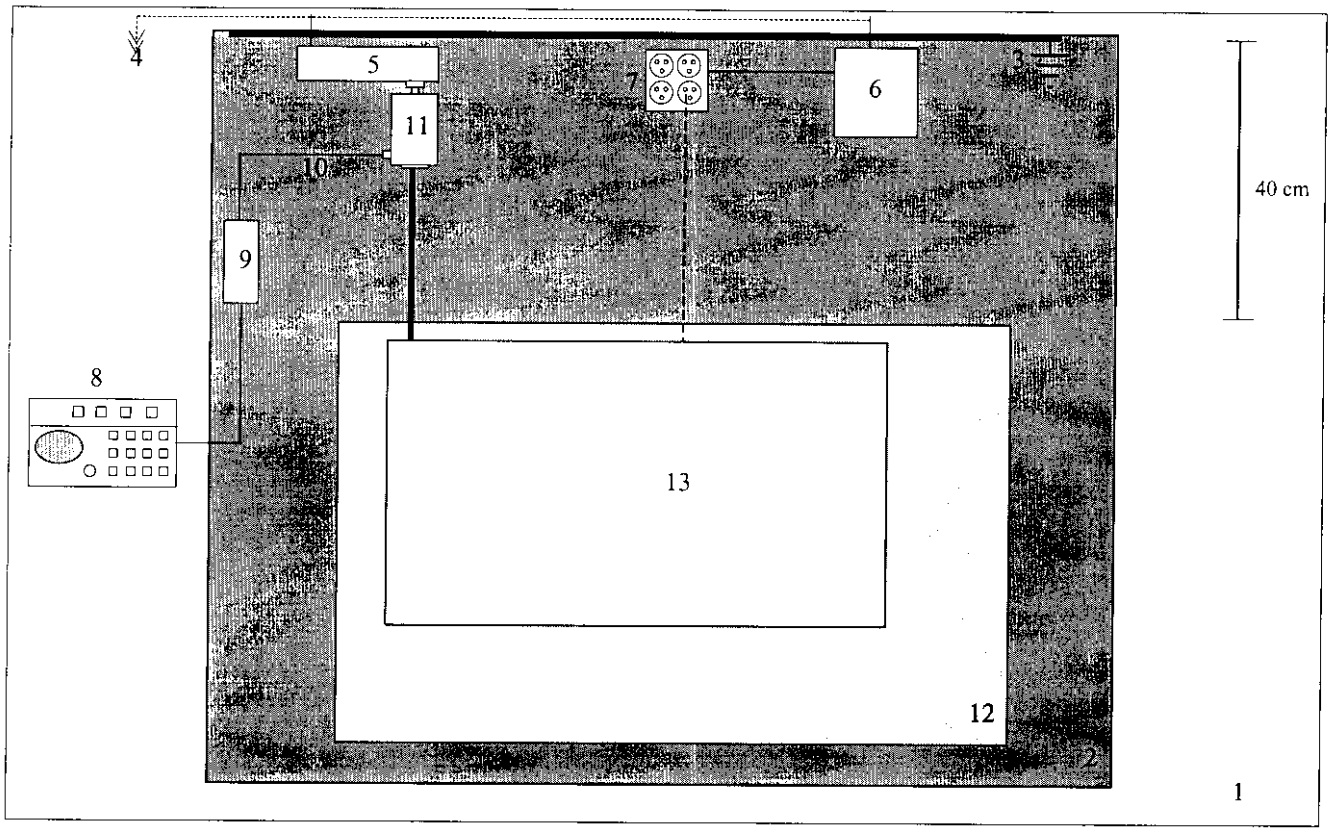


NOT TO SCALE

CONFIGURATION LEGEND

1. Test Laboratory
2. AC Power for Devices
3. Non-Conducting table 80 cm above ground plane
4. EUT: Satellite Receiver
5. Monitor
6. Multiple I/O cables (terminated as indicated in Section 4.2 of this report)

Figure 2: Test Configuration, Conducted Emissions

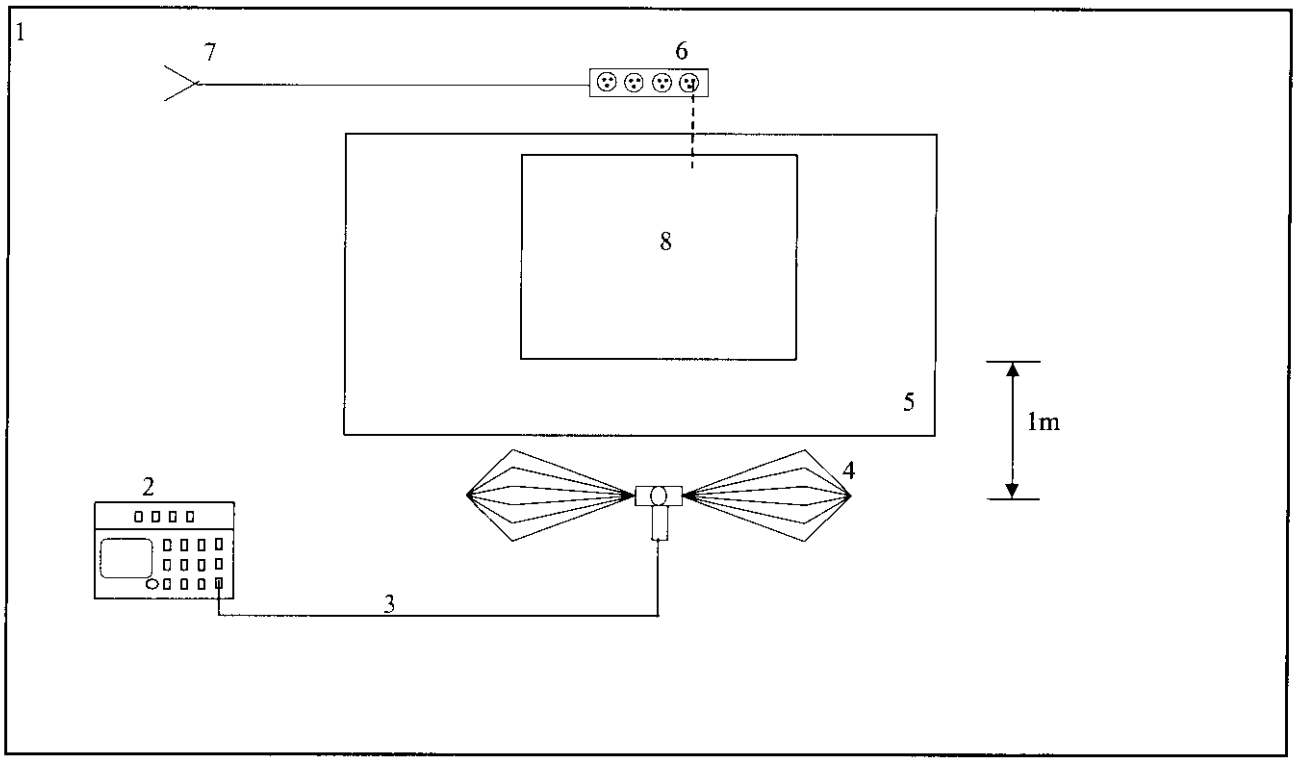


NOT TO SCALE

CONFIGURATION LEGEND

1. Test Laboratory (6 X 6 meters)
2. Ground Plane (15 square meters)
3. Vertical Conducting Wall (Grounded through Ground Plane via 10' ground rod)
4. AC Power for Devices
5. Power Line Filter, Lindgren, 120 dB, 30 amp
6. Line Impedance Stabilization Network (LISN) for peripheral devices
7. Power Distribution Box for peripheral devices
8. Spectrum Analyzer with Quasi-Peak Adapter
9. High Pass Filter
10. Coax input from EUT LISN to Spectrum Analyzer
11. LISN for EUT
12. Non-Conducting table 80 cm above ground plane
13. EUT and associated system

Figure 2. Test Configuration, Frequency Identification of Radiated Emissions

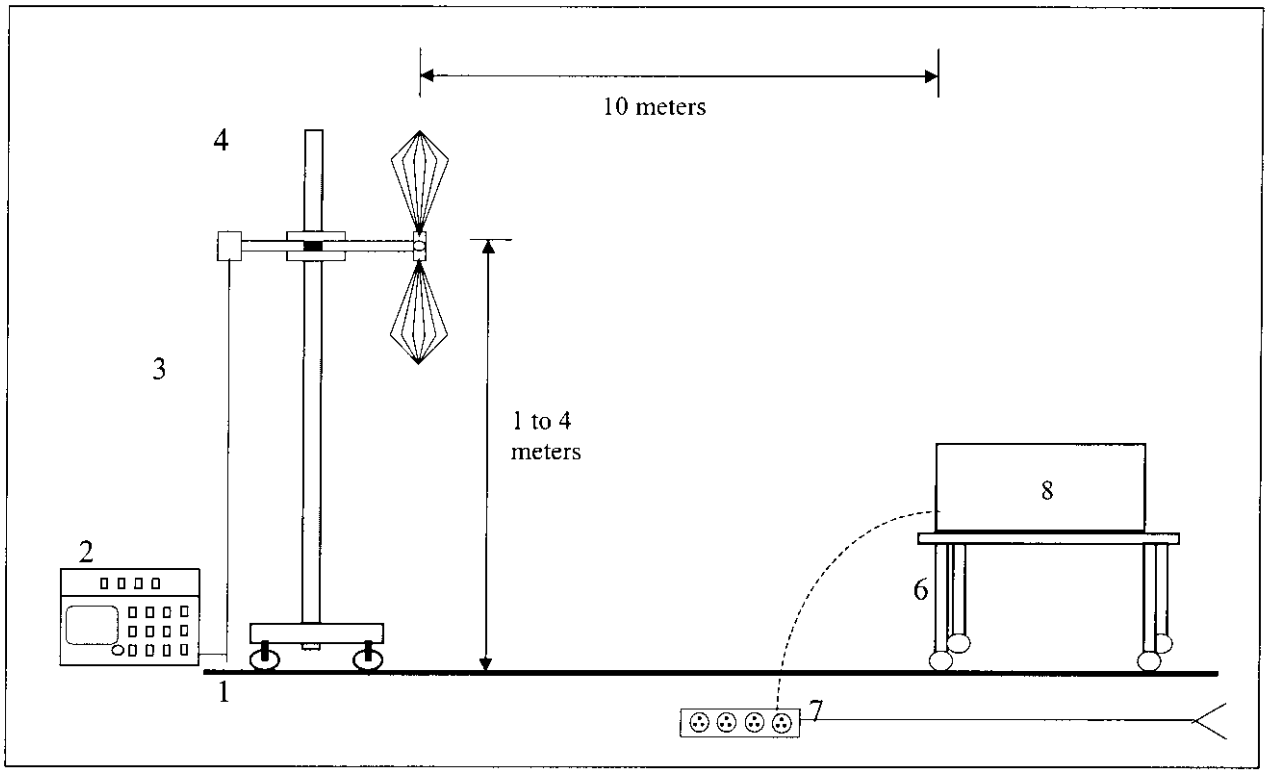


NOT TO SCALE

CONFIGURATION LEGEND

1. Test Laboratory
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Antenna to Spectrum Analyzer
4. Receive Antenna (basic relative position)
5. Non-Conducting table 80 cm above ground plane
6. Power strip for EUT and peripherals
7. AC power for devices
8. EUT and Associated System

Figure 4: Test Configuration, Radiated Emissions, 10-Meter Open Field Site



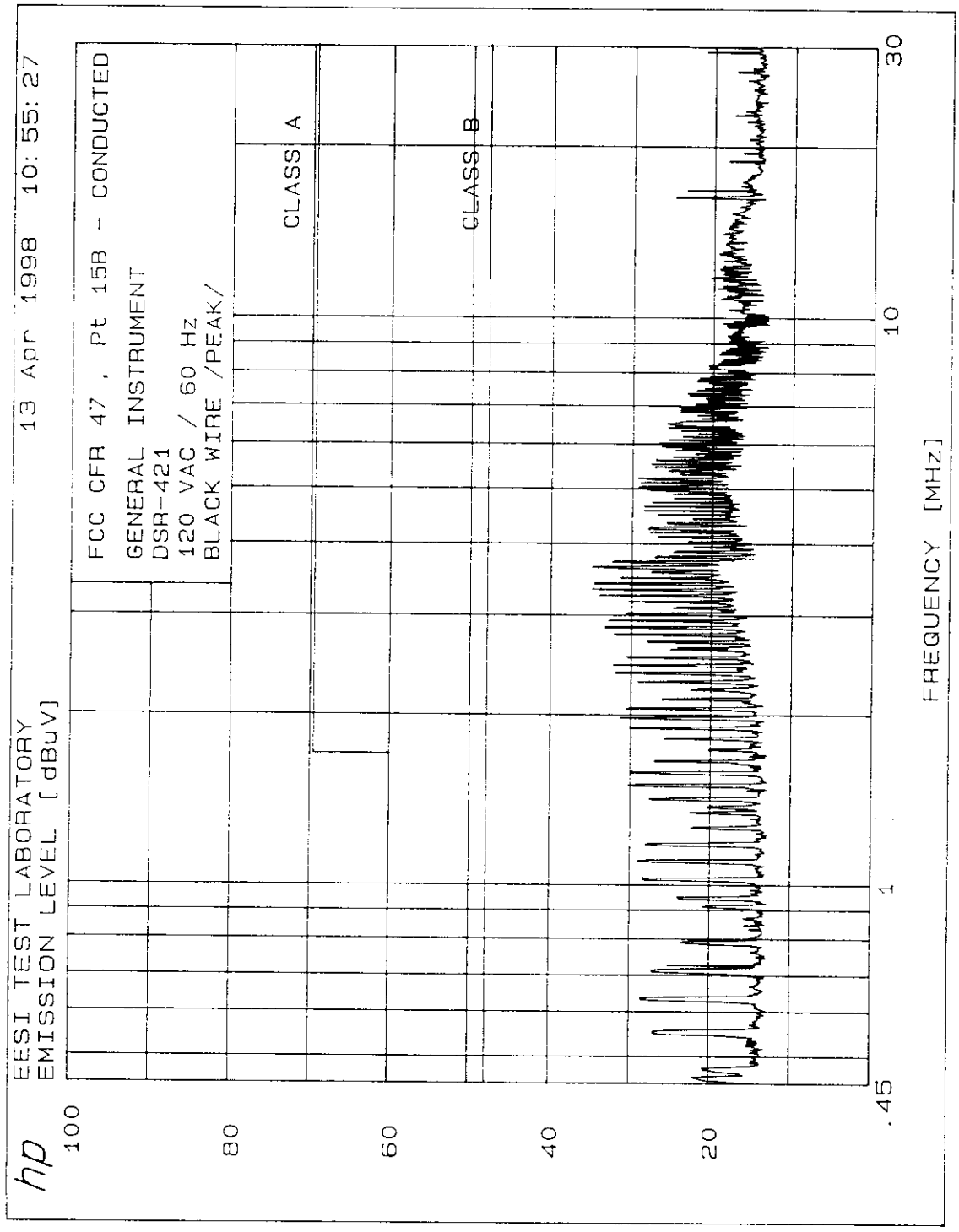
NOT TO SCALE

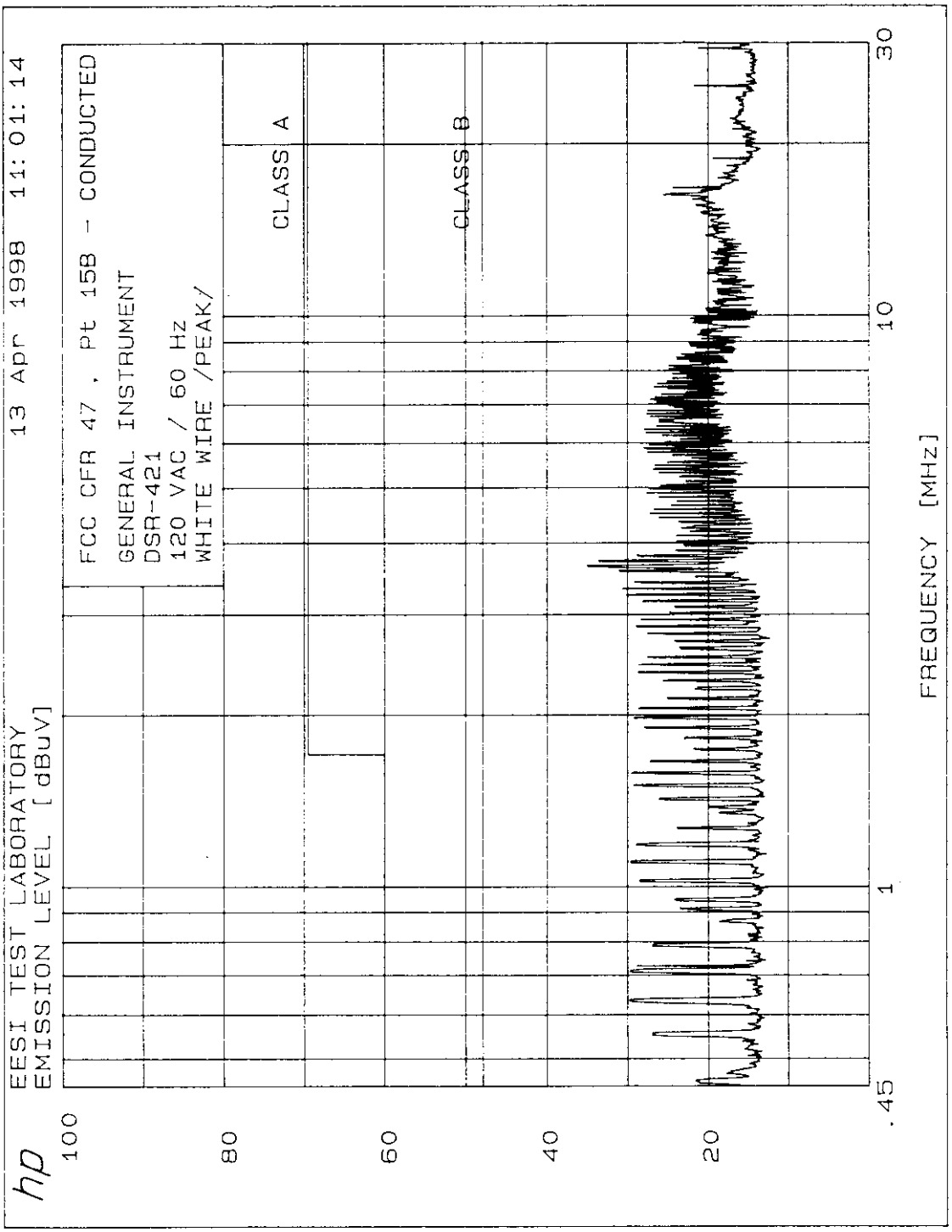
CONFIGURATION LEGEND

1. Ground plane (11 X 17 meters)
2. Spectrum Analyzer with Quasi-Peak Adapter
3. Coax interconnect from Receive Antenna to Spectrum Analyzer
4. Antenna Mast with motorized mounting assembly
5. Receive Antenna (basic relative position)
6. Non-Conducting table 80 cm above ground plane
7. AC power for devices
8. EUT and associated system

8. TEST RESULTS

8.1 Conducted Emissions Test Results




hp
EESI TEST LABORATORY
EMISSION LEVEL [dBuV]
13 Apr 1998 11:01:14
FCC CFR 47, Pt 15B - CONDUCTED
GENERAL INSTRUMENT
DSR-421
120 VAC / 60 Hz
WHITE WIRE /PEAK/
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

8.2 Radiated Emissions Test Results

Electromagnetic Engineering Services, Incorporated
FCC, Part 15B, Class "B" Radiated Emissions Data Sheet
(3m Open Area Test Site)

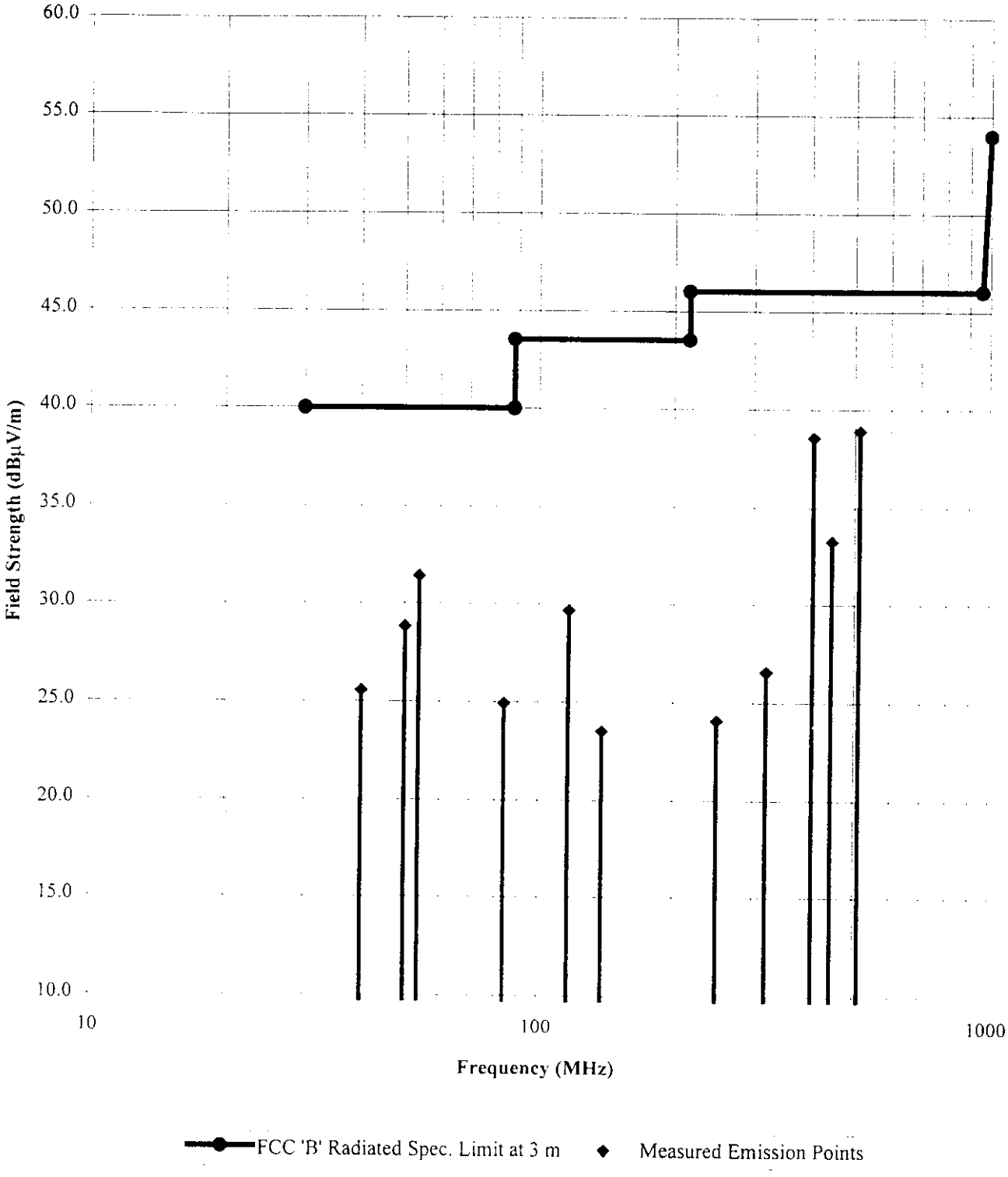
Client: **General Instrument**
EUT: **Satellite Reciever**
Model #: **DSR-421**

Conducted by: T Blattenberg
Date of Test: **4-10-98**
Test Distance, Amp. gain: **3 m, 0 dB**

Frequency (MHz)	Spectrum Analyzer Reading at 3m (dBμV)	Antenna Polori-zation (vertical or horizontal)	Amp. Gain & Cable Loss, Distance & Antenna Factor Correction for 3 m (dBuV/m)	Total Interference Level at 3 m (dBμV/m)	Emission Spec. Limit at 3 m (dBμV/m)	Difference Margin at 3m
40.260	11.1	v	14.5	25.6	40.0	-14.4
50.210	13.6	v	15.2	28.8	40.0	-11.2
53.945	15.7	v	15.7	31.4	40.0	-8.6
84.000	13.5	v	11.4	24.9	40.0	-15.1
117.000	10.7	v	19.0	29.7	43.5	-13.9
139.220	7.5	v	16.0	23.5	43.5	-20.0
250.710	5.3	v	18.8	24.1	46.0	-21.9
321.000	4.9	v	21.7	26.6	46.0	-19.4
405.000	14.8	h	23.7	38.5	46.0	-7.5
445.885	8.1	v	25.1	33.2	46.0	-12.8
513.335	11.0	h	27.9	38.9	46.0	-7.1

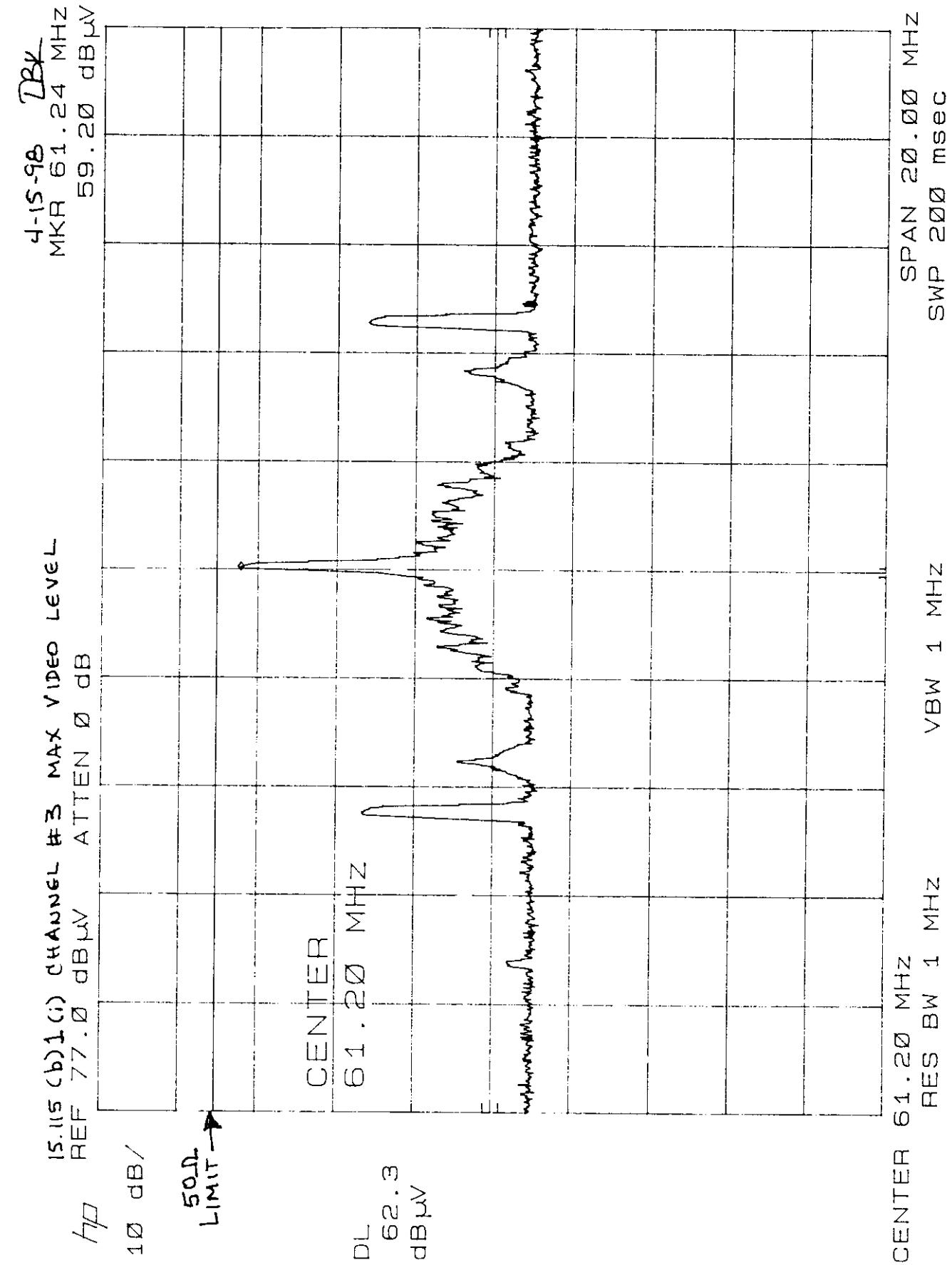
Test Conditions: Standard radiated emissions test set up on FCC registered open field site. The highest emissions for all antenna heights, polarities, and table orientations are the only emissions recorded.

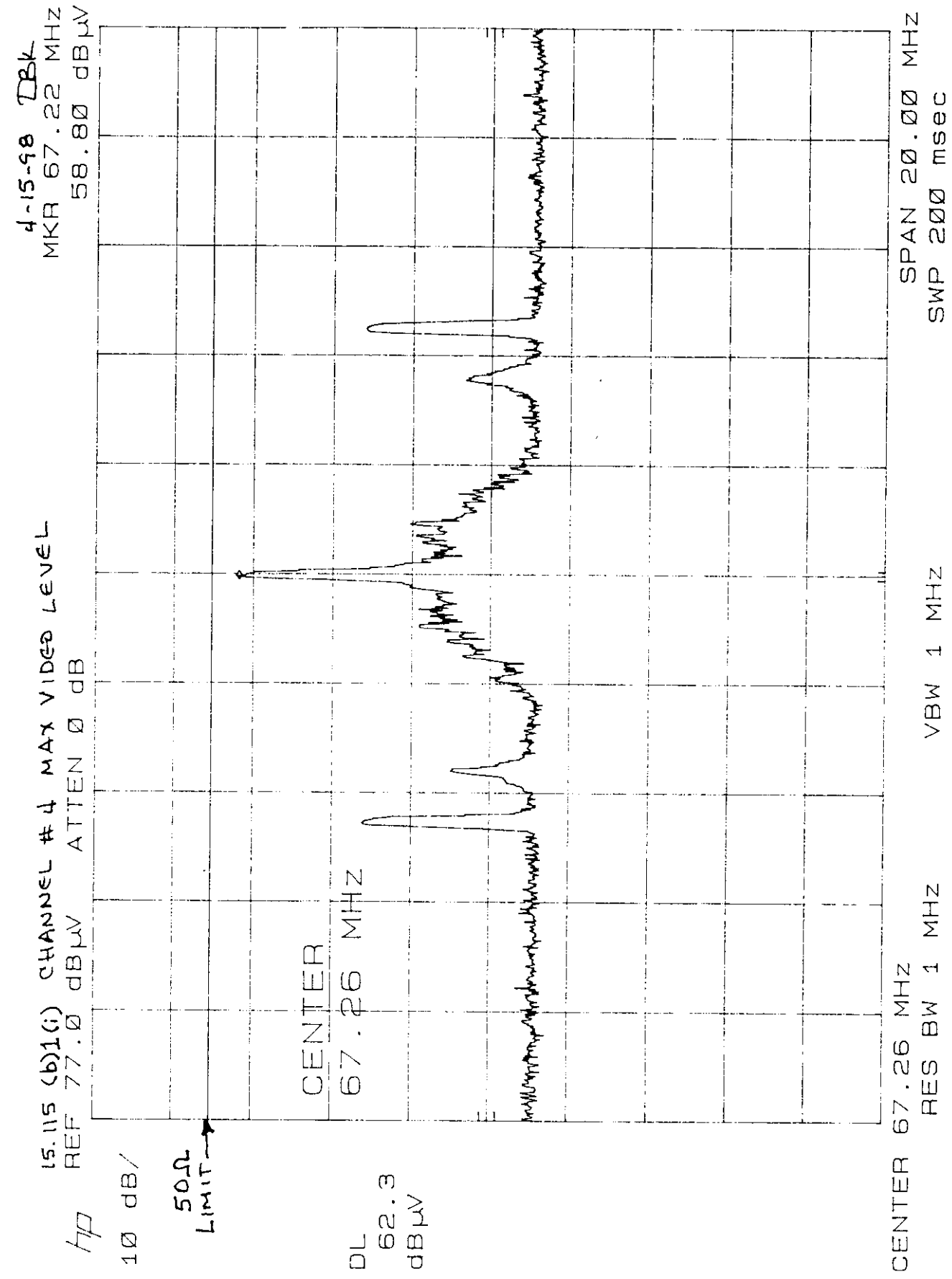
General Instrument - Satellite Reciever: DSR-421
Radiated Emissions Profile (4-10-98) - EESI

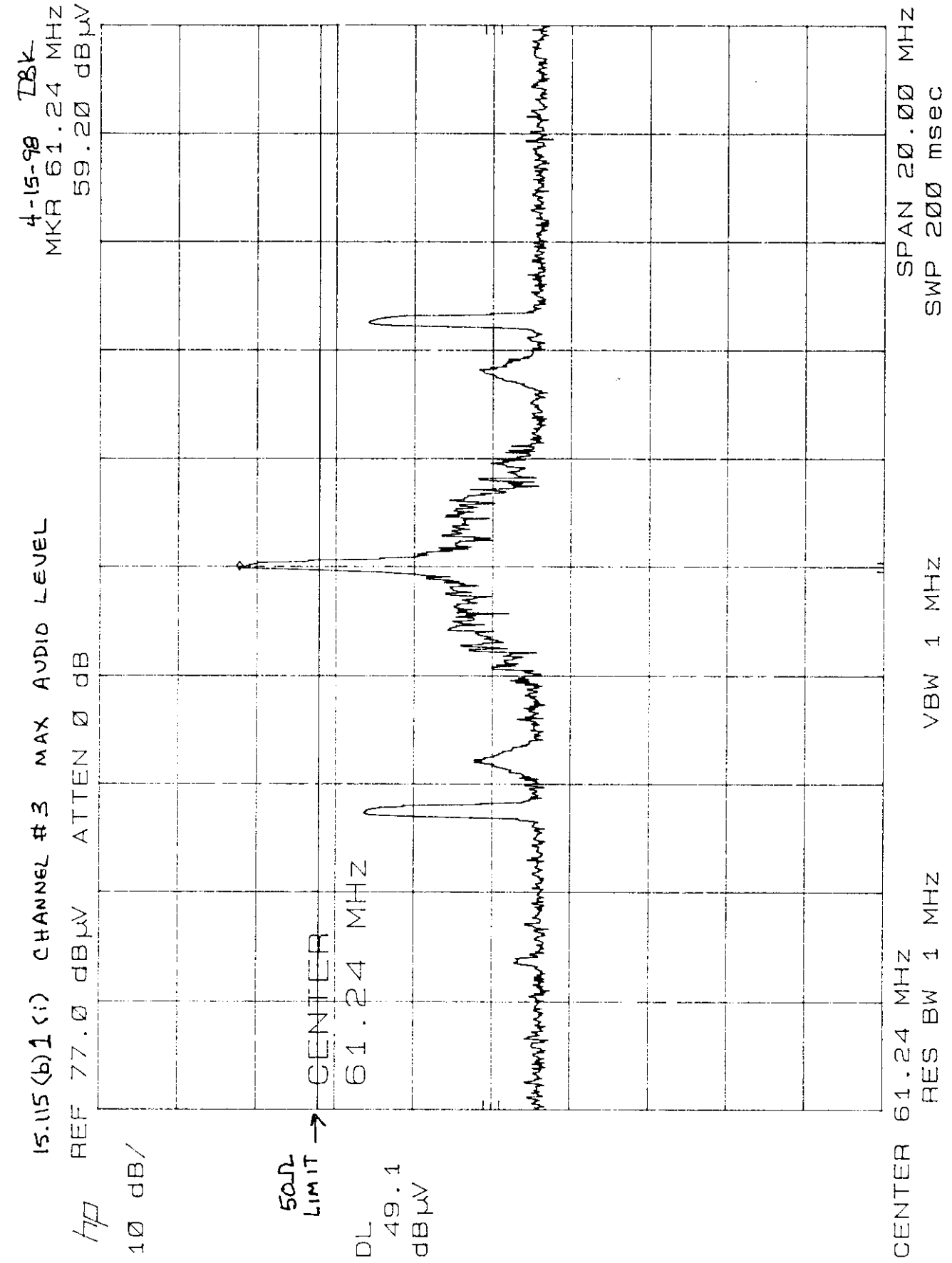


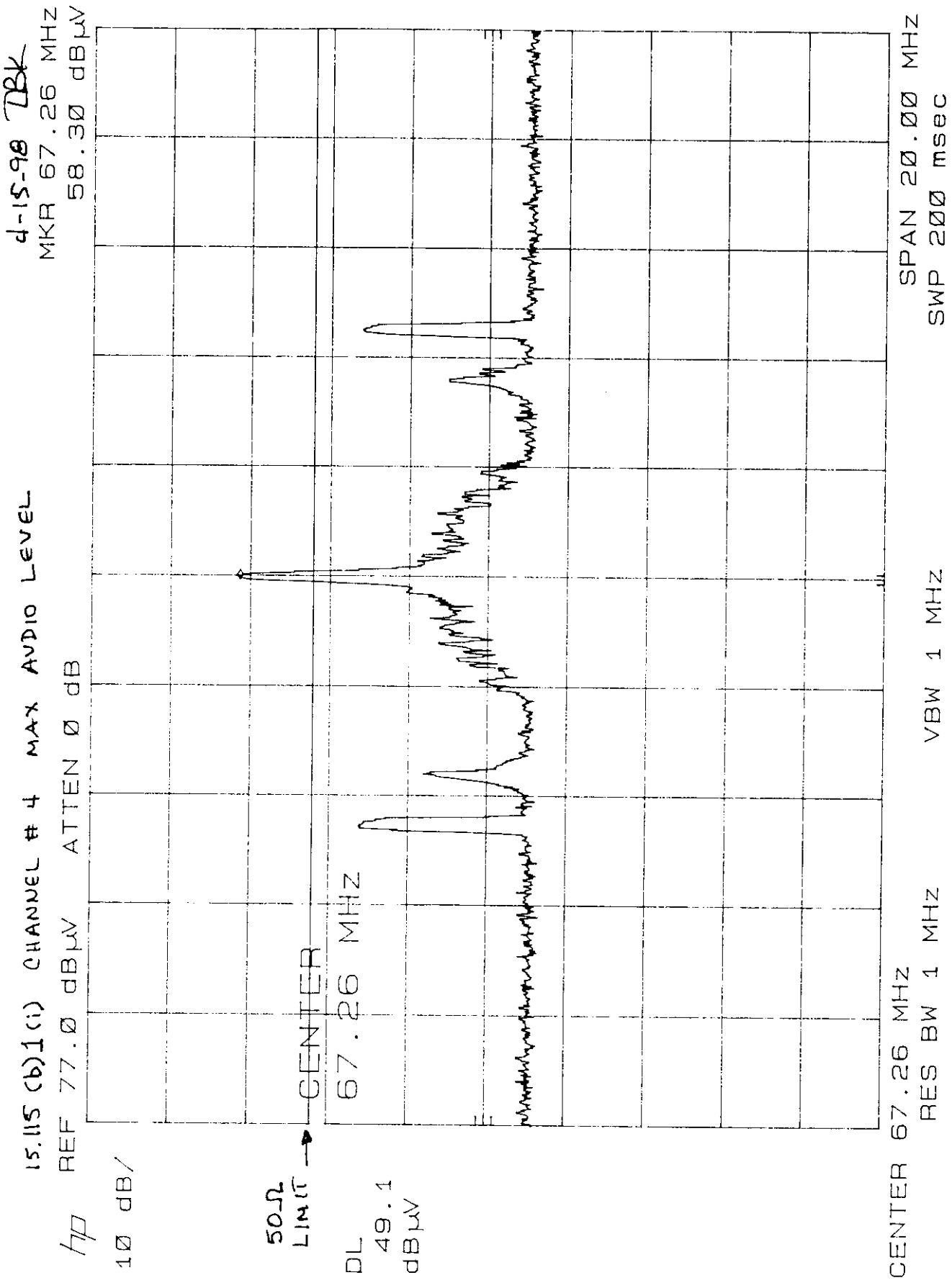
8.3 Part 15.115 Satellite Mode Test Results

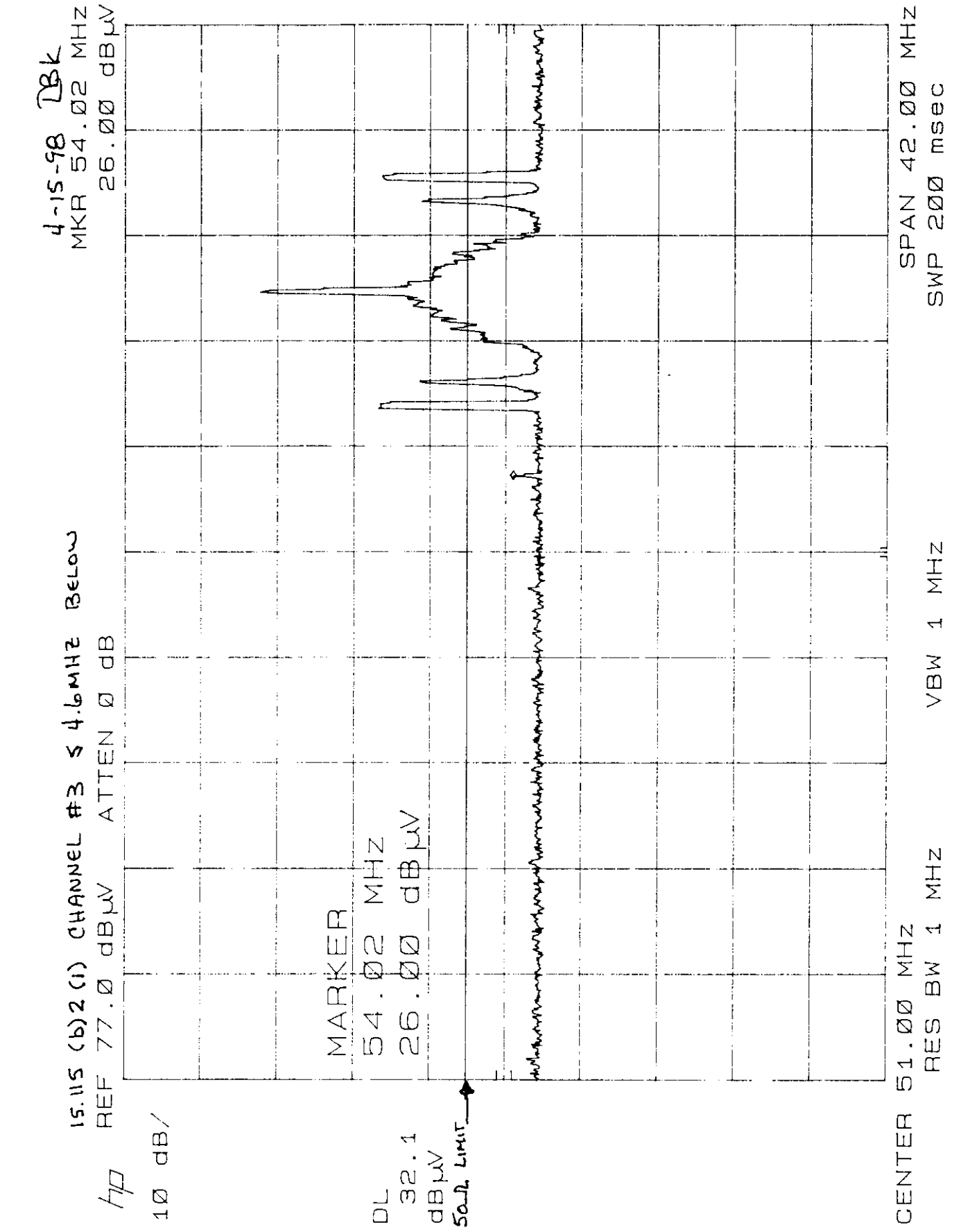
Test	Test Detail			Page #
15.115(a)	Terminated all ports with the proper impedance. <OK>			N/A
15.115(b)(1)(i)	Max In-Channel Output Signal Strength for the DSR-421 in satellite mode (TVID): Maximum Video (75Ω) = 3000μV (68.0 dBμV, 50Ω) Maximum Audio (75Ω) = 671.2μV (54.8dBμV, 50Ω)			
	Video Limit for 50Ω:		Ch3: <PASS>	17
	68.0 - 5.7 (75Ω to 50Ω adapter) = 62.3 dBμV		Ch4: <PASS>	18
	Audio Limit for 50Ω:		Ch3: <PASS>	19
	54.8 - 5.7 (75Ω to 50Ω adapter) = 49.1 dBμV		Ch4: <PASS>	20
15.115(b)(2)(i)	Max Out-Of-Channel Signal Strength in Satellite mode; frequencies more than 4.6 MHz below channel center, channel occupied bandwidth, or for frequencies more than 7.4 MHz above channel center, for TVID shall be less than (37.8 - 5.7 (75Ω to 50Ω adapter)) = 32.1 dBμV			
	< 4.6 MHz below channel center	Ch 3	<PASS>	21
	at channel 3 frequency	Ch 3	<PASS>	22
	> 7.6 MHz above channel center	Ch 3	<PASS>	23
	< 4.6 MHz below channel center	Ch 4	<PASS>	24
	at channel 4 frequency	Ch 4	<PASS>	25
	> 7.6 MHz above channel center	Ch 4	<PASS>	26
15.115(c)(ii)	Over-The-Air Antenna Input Isolation from the Satellite signal shall be less than 3μV (75Ω) or 2.447μV (50Ω) = 7.8 dBμV - 5.7 (75Ω to 50Ω adapter) = 2.1 dBμV <PASS> Verify that power off transfer video output to over-the-air input: <PASS>			27
15.115(d)	No Over-Voltage (i.e., 5v) testing was done, since this input comes from the General Instrument downconverter only. There is no chance that 5v could occur.			N/A

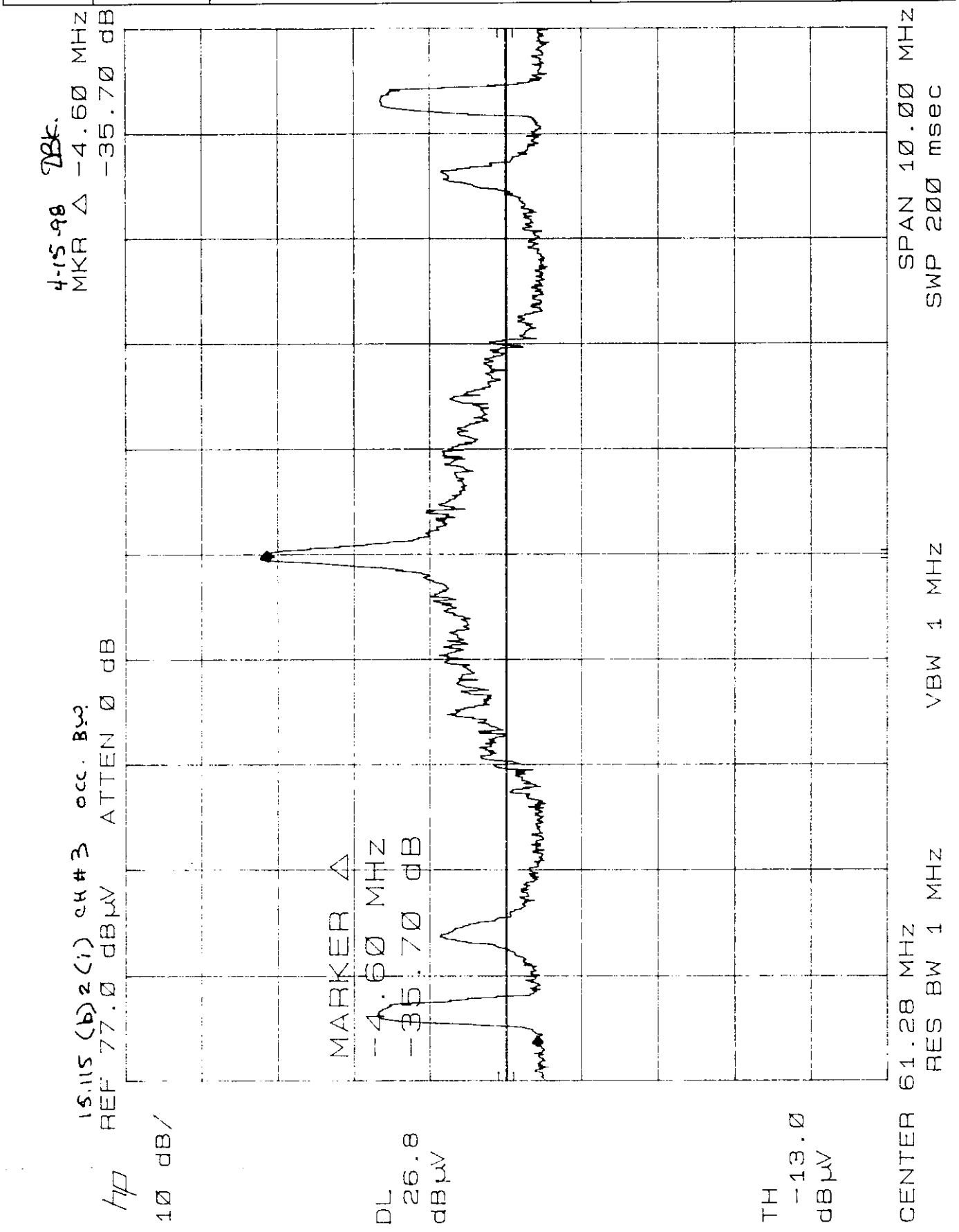

4-15-98
MKR 61.24 MHz
59.20 dBµV
15.115 (b)1(i) CHANNEL #3 MAX VIDEO LEVEL
REF 77.0 dBµV
ATTEN 0 dB
10 dB/
500 LIMIT
CENTER
61.20 MHz
DL
62.3
dBµV
SPAN 20.00 MHz
SWP 200 msec
VBW 1 MHz
CENTER 61.20 MHz
RES BW 1 MHz

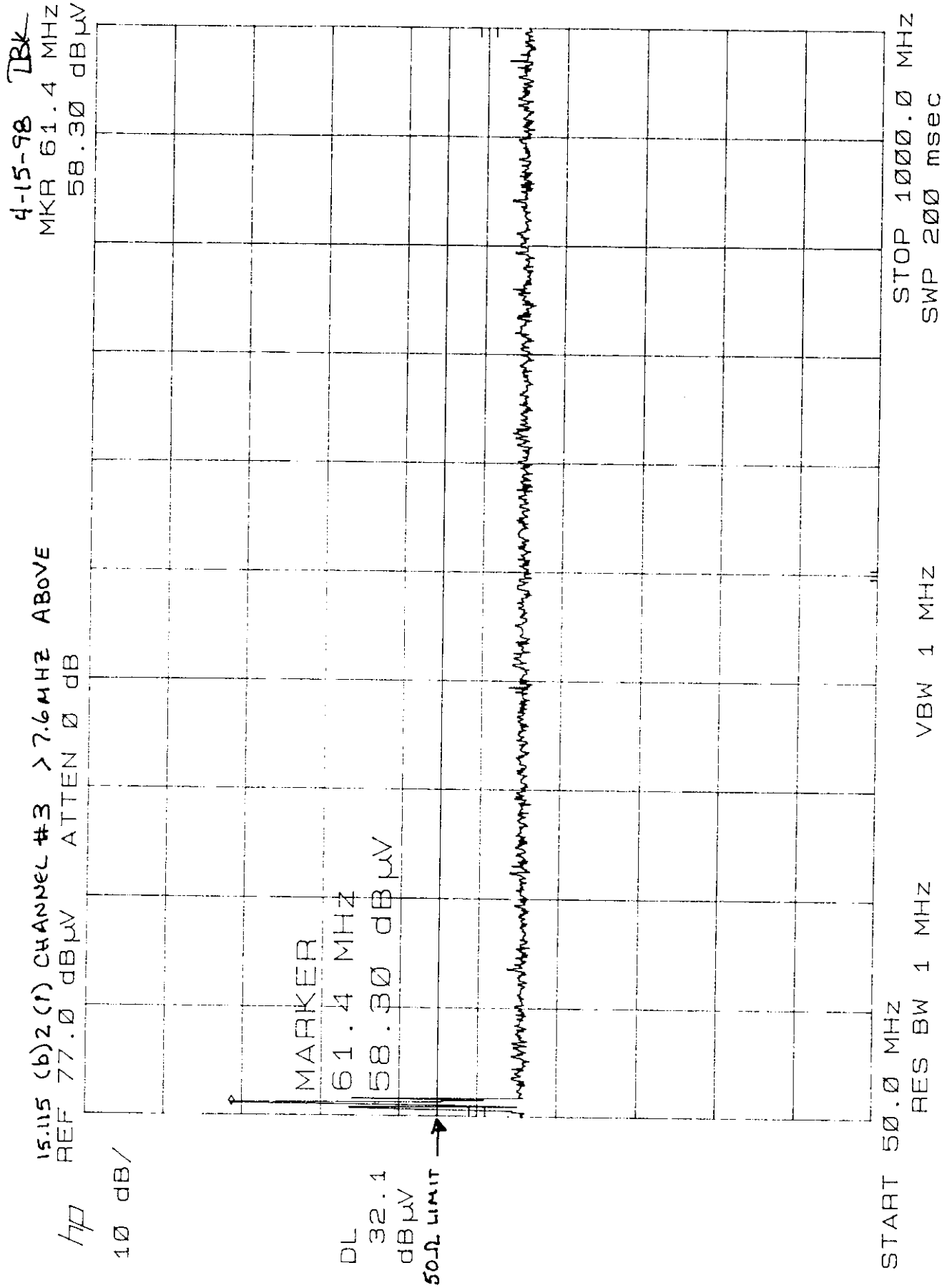

4-15-98 DBK
MKR 67.22 MHz
58.80 dBµV
15.115 (b)1(i) CHANNEL #4 MAX VIDEO LEVEL
REF 77.0 dBµV ATTEN 0 dB
hp
10 dB/
50Ω
LIMIT
CENTER
67.26 MHz
DL
62.3
dBµV
SPAN 20.00 MHz
SWP 200 msec
VBW 1 MHz
CENTER 67.26 MHz
RES BW 1 MHz

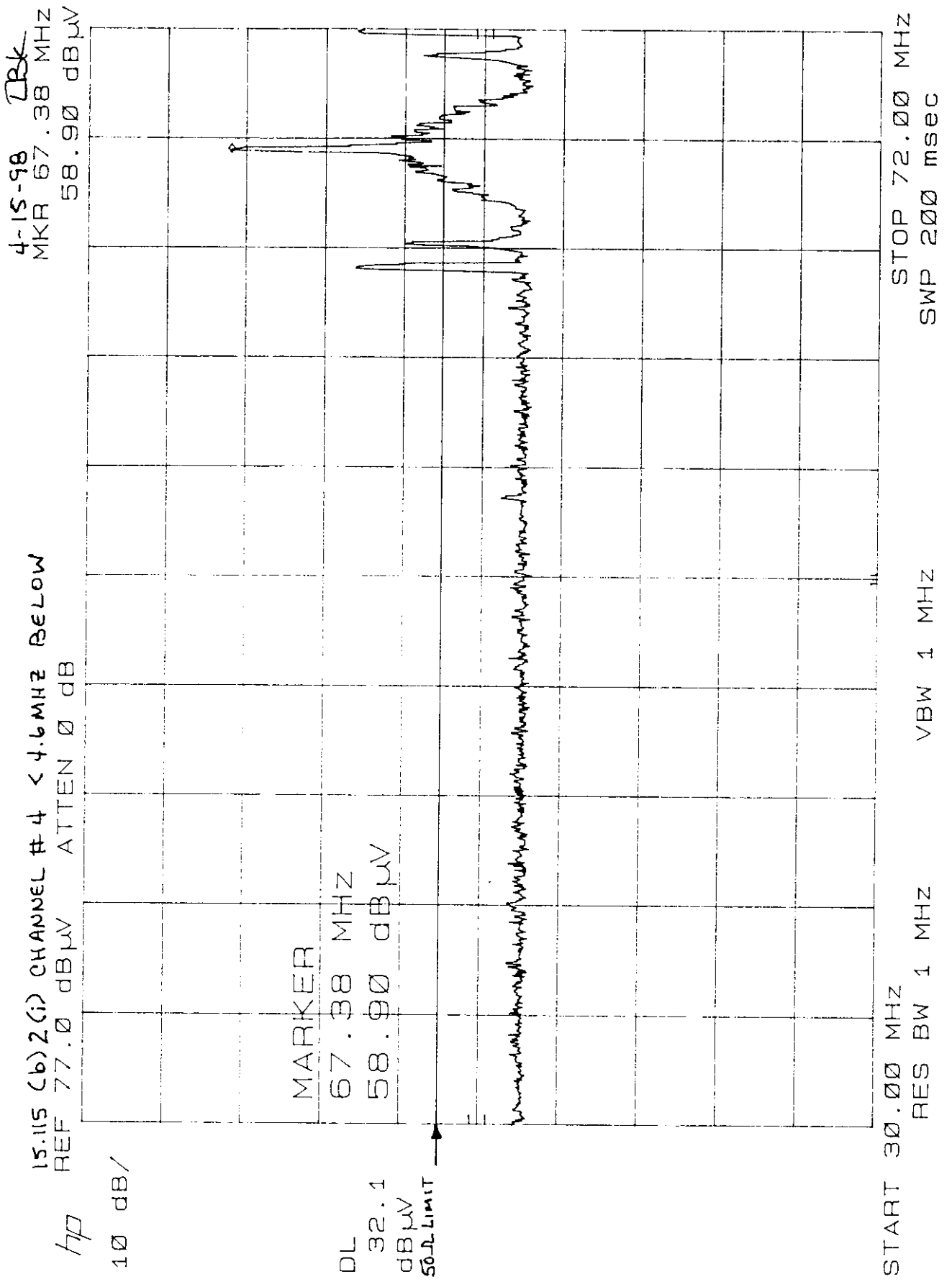

4-15-98 TBK
MKR 61.24 MHz
59.20 dBµV
15.115(b)1(i) CHANNEL #3 MAX AUDIO LEVEL
REF 77.0 dBµV
ATTEN 0 dB
10 dB/
CENTER
61.24 MHz
50Ω LIMIT
DL
49.1
dBµV
SPAN 20.00 MHz
SWP 200 msec
VBW 1 MHz
CENTER 61.24 MHz
RES BW 1 MHz

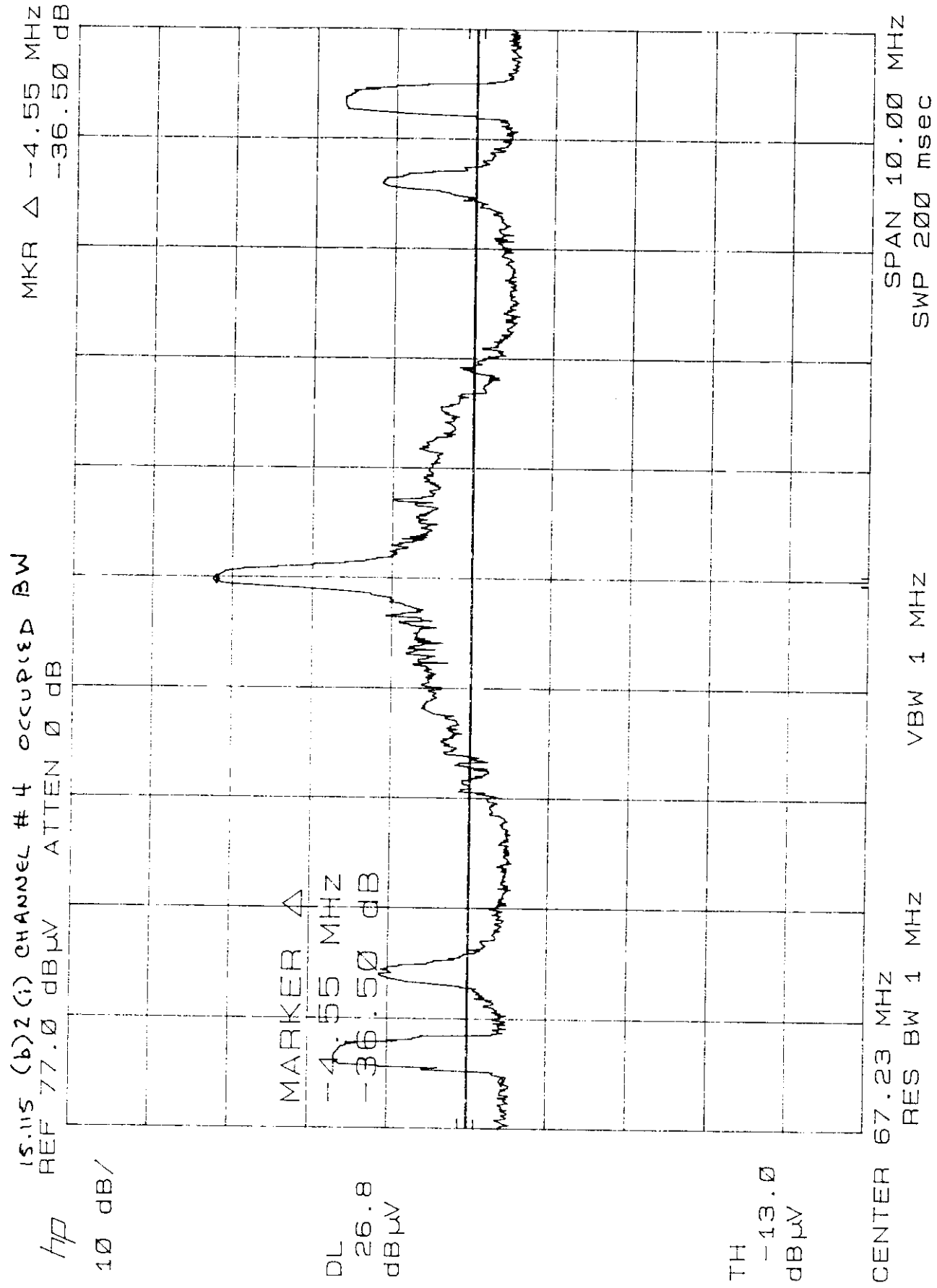

4-15-98 DBK
MKR 67.26 MHz
58.30 dBµV
SPAN 20.00 MHz
SWP 200 msec
15.115(b)1(i) CHANNEL # 4 MAX AUDIO LEVEL
REF 77.0 dBµV
ATTEN 0 dB
VBW 1 MHz
CENTER 67.26 MHz
RES BW 1 MHz
10 dB/
50Ω LIMIT
DL 49.1 dBµV
CENTER 67.26 MHz

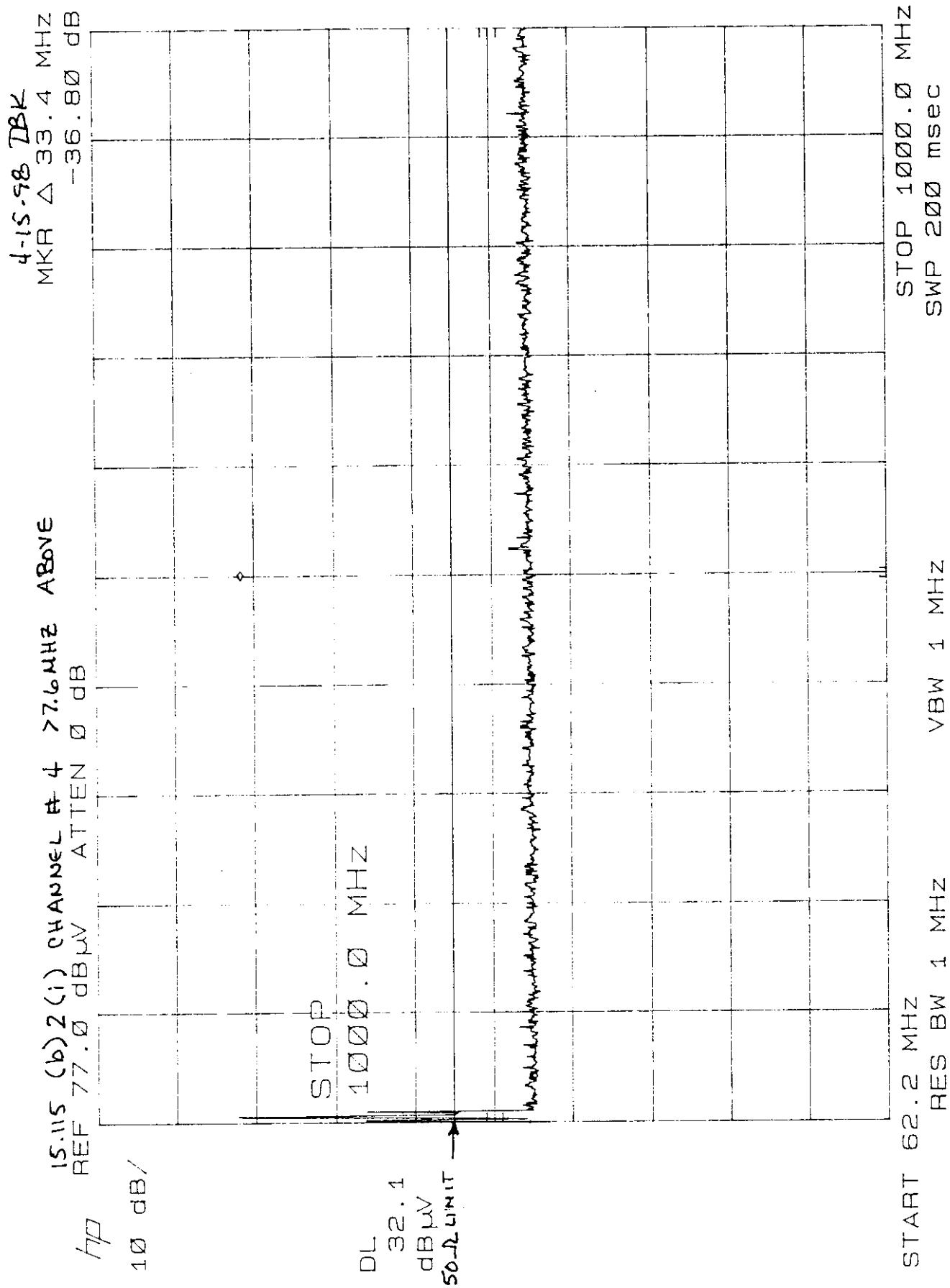

4-15-98 DBK
MKR 54.02 MHz
26.00 dBµV
SPAN 42.00 MHz
SWP 200 msec
15.115 (b)2 (i) CHANNEL #3 ≤ 4.6MHz BELOW
REF 77.0 dBµV
ATTEN 0 dB
VBW 1 MHz
MARKER
54.02 MHz
26.00 dBµV
10 dB/
DL
32.1
dBµV
50dB Limit
RES BW 1 MHz
CENTER 51.00 MHz

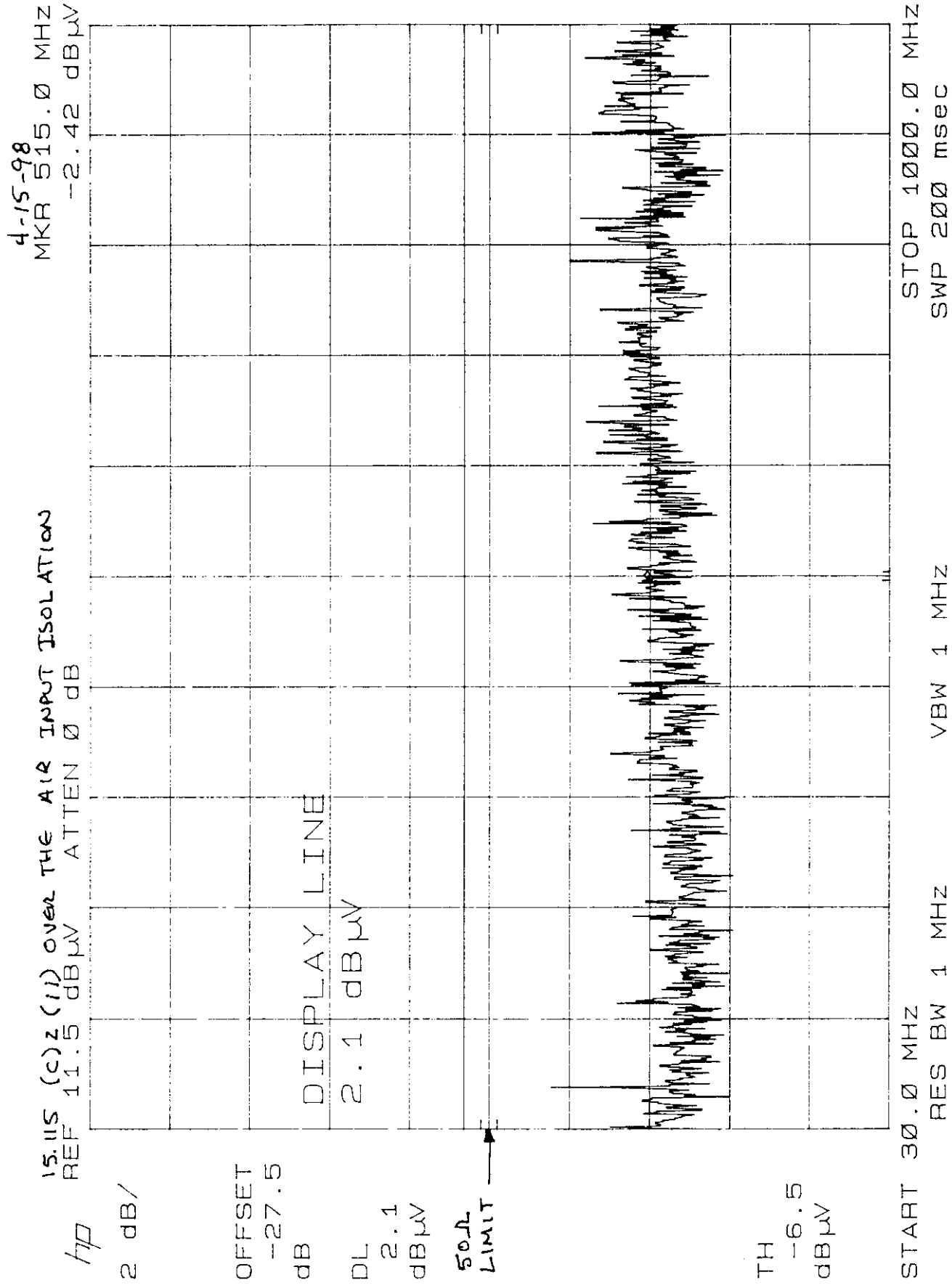

4-15-98 DBK.
MKR Δ -4.60 MHz
-35.70 dB
SPAN 10.00 MHz
SWP 200 msec
15.115 (b)2 (i) ch #3 occ. BW
REF 77.0 dBμV
ATTEN 0 dB
VBW 1 MHz
MARKER Δ
-4.60 MHz
-35.70 dB
RES BW 1 MHz
10 dB/
DL 26.8 dBμV
TH -13.0 dBμV
CENTER 61.28 MHz


4-15-98 TBK
MKR 61.4 MHz
58.30 dBµV
15.115 (b)2 (1) CHANNEL #3 > 7.6MHz ABOVE
REF 77.0 dBµV
ATTEN 0 dB
10 dB/
MARKER
61.4 MHz
58.30 dBµV
DL
32.1
dBµV
50Ω LIMIT
START 50.0 MHz
RES BW 1 MHz
VBW 1 MHz
STOP 1000.0 MHz
SWP 200 msec


4-15-98
MKR 67.38 MHz
58.90 dBµV
15.115 (b) 2 (i) CHANNEL #4 < 4.6 MHz BELOW
REF 77.0 dBµV
ATTEN 0 dB
10 dB/
DL
32.1
dBµV
50Ω LIMIT
MARKER
67.38 MHz
58.90 dBµV
START 30.00 MHz
RES BW 1 MHz
VBW 1 MHz
STOP 72.00 MHz
SWP 200 msec

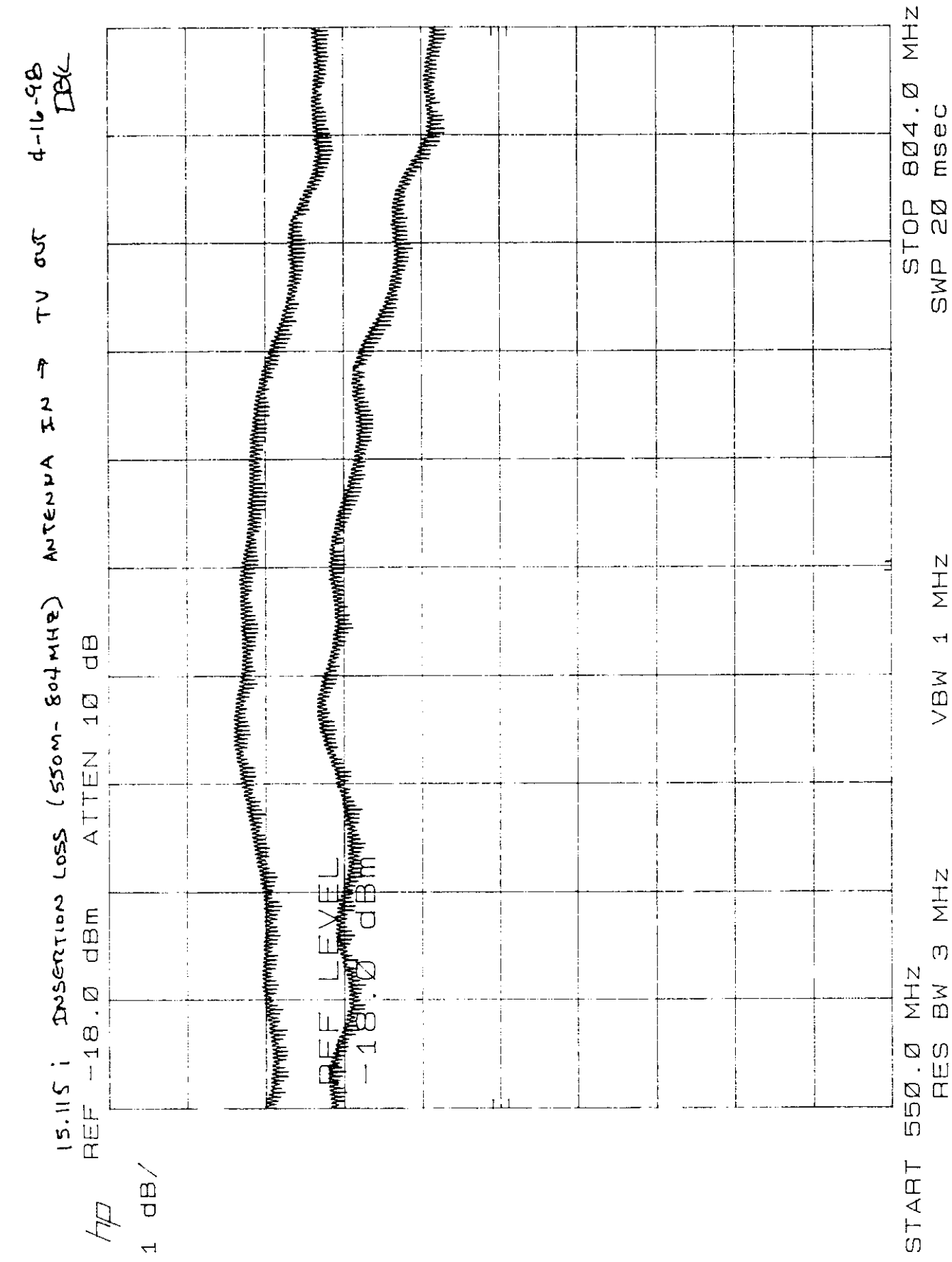

15.115 (b)2 (i) CHANNEL #4 occupied BW
REF 77.0 dBµV ATTEN 0 dB
MKR Δ -4.55 MHz
-36.50 dB
SPAN 10.00 MHz
SWP 200 msec
VBW 1 MHz
RES BW 1 MHz
MARKER Δ
-4.55 MHz
-36.50 dB
10 dB/
DL 26.8 dBµV
TH -13.0 dBµV
CENTER 67.23 MHz

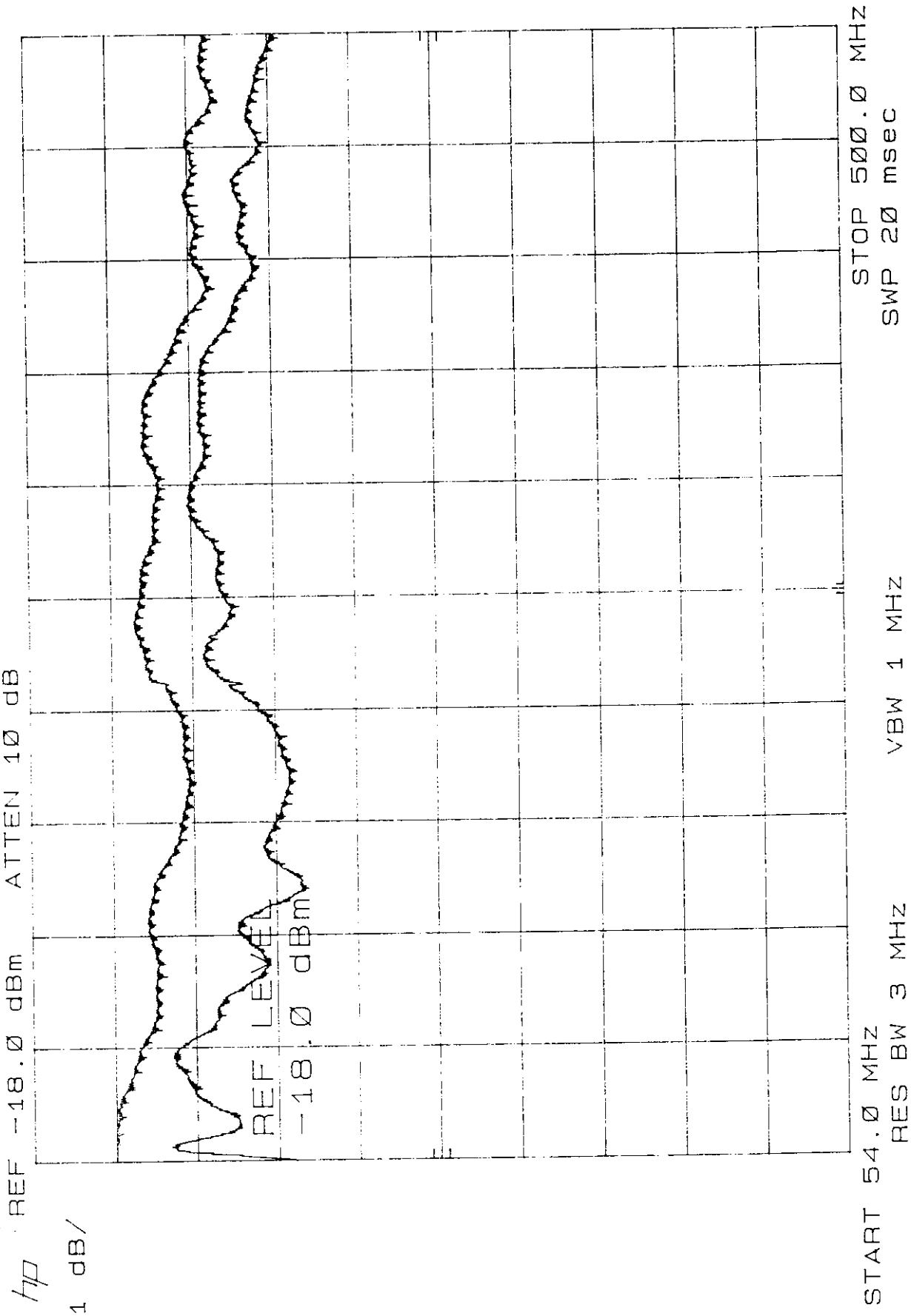

4-15-98 DBK
MKR Δ 33.4 MHz
-36.80 dB
15.115 (b) 2 (i) CHANNEL # 4 >7.6MHz ABOVE
REF 77.0 dBµV
ATTEN 0 dB
10 dB/
STOP 1000.0 MHz
DL 32.1 dBµV
50Ω LIMIT
START 62.2 MHz
RES BW 1 MHz
VBW 1 MHz
STOP 1000.0 MHz
SWP 200 msec


4-15-98
MKR 515.0 MHz
-2.42 dBµV
15.115 (c) z (ii) over the air input isolation
REF 11.5 dBµV
ATTEN 0 dB
DISPLAY LINE
2.1 dBµV
50L LIMIT
2 dB/
OFFSET -27.5 dB
DL 2.1 dBµV
TH -6.5 dBµV
START 30.0 MHz
RES BW 1 MHz
VBW 1 MHz
STOP 1000.0 MHz
SWP 200 msec

8.4 Part 15.115 Bypass Mode Test Results

Test	Test Detail		Page #
15.115(i)	Two Sweeps	1) Generator in to Signal Analyzer	29
		2) Generator in to Ant Input, (54-500 MHz) Signal Analyzer at TV Output <PASS>	
	Two Sweeps	1) Generator in to Signal Analyzer	30
		2) Generator in to Ant Input, (550-804 MHz) Signal Analyzer at TV Output <PASS>	


4-16-98
DBC
15.115 i Insertion Loss (550M- 804MHz) Antenna In → TV Out
REF -18.0 dBm ATTEN 10 dB
1 dB/
REF LEVEL
-18.0 dBm
START 550.0 MHz
RES BW 3 MHz
VBW 1 MHz
STOP 804.0 MHz
SWP 20 msec


15.115 i INSERTION LOSS (ANT IN → TV OUT) 54M-500MHz 4-16-98 DBK
REF -18.0 dBm ATTEN 10 dB
1 dB/
hp
REF LEVEL
-18.0 dBm
START 54.0 MHz
RES BW 3 MHz
VBW 1 MHz
STOP 500.0 MHz
SWP 20 msec

APPENDIX A
EESI'S TEST EQUIPMENT & TEST FACILITIES CALIBRATION PROGRAM

EESI operates a comprehensive equipment calibration program in order to ensure the validity of all test data. EESI's calibration program is fully compliant to the requirements of ANSI/NCSL Z540-1 (1994) and of ISO 10012-1 (1993-05-01). EESI's calibration program therefore meets or exceeds the US national commercial and military requirements (N.B. ANSI/NCSL Z540-1 (1994) replaces MIL-STD-45662A) and meets the requirements of ISO-9000. Specifically, all of EESI's primary reference standard devices (e.g., resistor and capacitor decade boxes, vector voltmeters, multimeters, attenuators and terminations, RF power meters (and their detector heads), oscilloscope mainframes and plug-ins, spectrum analyzers, RF preselectors, quasi-peak adapters, interference analyzers, impulse generators, signal generators and pulse/function generators, etc.) and certain secondary standard devices (e.g., RF preamplifiers used in CISPR 11/22 and FCC Part 15/18 tests) are calibrated by EESI-approved independent (third party) metrology laboratories, using NIST-traceable standards. In all cases, the metrology laboratory furnishes EESI with Certificates Of Calibration on each item of equipment that has been successfully recalibrated.

Calibration intervals are normally one year, except when the manufacturer advises a shorter interval (e.g., the HP 8568B Spectrum Analyzer is recalibrated every 6 months) or if US Government directives demand a shorter interval (e.g., the Eaton 533X-11 Impulse Generator is required to be recalibrated every six months for use in TEMPEST testing). Items of equipment which fail during routine use, or which suffer visible mechanical damage (during use or while in transit), are sidelined pending repair and recalibration. (Repairs are carried out either by the EESI-approved independent (third party) metrology laboratories, or by the manufacturer of the equipment.

EESI typically determines the Antenna Factors in its test antennas in-house. Antennas used for CISPR 11, CISPR 22, and FCC Part 15 and Part 18 Radiated Emissions testing (and for testing to the European Norms) are calibrated against NIST-traceable, FCC-approved Roberts™ Dipoles, using the methods specified in both Annex G.5 of CISPR 16-1 (1993) and ANSI C63.5 (1991), including the "Three-Antenna Method." Certain other antennas (e.g., log-conic spirals) are calibrated using the procedures specified in SAE ARP-958A. In accordance with FCC regulations, EESI recalibrates its suite of antennas used for FCC tests on an annual basis. These calibrations are performed as a precursor to the FCC-required annual revalidation of the Normalized Site Attenuation properties of EESI's Open Area Test Site[1]. In those instances where antennas are acquired directly from the manufacturer, EESI will purchase an Antenna Factor Calibration Data Package. Finally, EESI may send antennas out to NIST-traceable/military-approved independent antenna range laboratories, or to the original equipment manufacturer.

[1] EESI uses the procedures contained in both Subclause 16.6 and Annex G.2 of CISPR 16-1 (1993), and ANSI C63.4 (1992) when performing Normalized Site Attenuation measurement for calibration of EESI's Open Area Test Site.