ALIGNMENT PROCEDURE

PARA. 2.983(d)(9)
Alignment Procedures

Due to the high accuracy of the I/O, the modulation, transmit voice, DTMF, SAT and data deviations are all preset in the DSP software and are not normally set in production and /or field. These procedures give the test method to verify the phone has proper deviations.

1.0 RADIO TUNE/TEST INSTRUCTIONS

1.1 800 Mhz FILTERING

SAW and fixed ceramic elements, therefore no tuning is required at 800 Mhz.

1.2 REFERENCE FREQUENCY ADJUSTMENT

CHECK/SET RF FREQUENCY (VCTCXO)TEST SETUP

Testing of the VCTCXO circuit is temperature dependent and should be carried out at an ambient room temperature of +23°C to +27°C. Any frequency adjustments should be made 24 hours after reflow soldering to allow for relaxation of thermal stress. Additionally, the adjustment accuracy depends on having the transceiver completely closed up in the case. If this is not possible at board level with some kind of fixture of the fixture is suspect, this test me re-done(checked) at final test.

Terminate ANT(TP1) into a frequency counter with a 50 ohm input impedence.

Enter test mode and issue a suspend.

Enter the following test commands:
*** The same channel should be used for all parts of this test***

@80	(initialize the transceiver-carrier off and audio muted)
@6502	(AFC off)
@E11401FF	(center DAC3)
@3Czzxxxx	(select a MID-CHANNEL CELLULAR BAND)
@8407	(set the transmitter power level)
@81	(turn the transmitter on)

TEST RESULTS

Wait until output is stable (<±42Hz variation in frequency). Log output frequency and calculate error in ppm. Verify that the transmitter frequency is <±100 Hz of the channel frequency.

Adjust DAC3 with the commands @E1140xxx where xxx is 000 to 3FF(each step is approx. 17Hz.) to achieve a transmitter frequency that is <±100Hz of the channel frequency.

END OF TEST

@80	(carrier off and audio muted)

1.3 SET TRANSMIT RF POWER

TEST SETUP

Before testing, provide the antenna (TP1) with a 50 ohm load capable of dissipating 1 W (average power).

ALIGNMENT PROCEDURE

PARA. 2.983

Enter the following test commands:

@6502	(set DCTXO control voltage)
@3C000383	(tune to MID-CHANNEL CELLULAR BAND, CHAN 383)
@81	(turn on carrier output)

For each level, 0 through 10, repeat the following setup and check each under test results below:

@840x	(x is power level to be set, 0 to A(A=pl 10))
@3900yy	(yy is hex setting corresponding to power level as follows:)

Each hex setting is approx. 0.5dB for power levels 0,1,2,3,4 and approx. 1.0dB for 5,6,7,8,9,10.

@222D	(store new power levels)

NOTE: Levels 0,1,2 are set when level 0 is set.

TEST RESULTS:

Verify that the power levels for each of the setup settings is within the tolerance shown below:

POWER LEVEL	POWER OUTPUT	Measurement Middle	Measurement Band Edge
0	+26.0dBm	+1.5/-0.5dB	±2.0dB
1	+26.0dBm	+1.5/-0.5dB	±2.0dB
2	+26.0dBm	+1.5/-0.5dB	±2.0dB
3	+22.5dBm	±1.5dB	±2.0dB/-4.0dB
4	+19.0dBm	±1.5dB	±2.0dB/-4.0dB
5	+15.5dBm	±1.5dB	±2.0dB/-4.0dB
6	+12.0dBm	±1.5dB	±2.0dB/-4.0dB
7	+8.5dBm	±1.5dB	±2.0dB/-4.0dB
8	+5.0dBm	±1.5dB	±3.0dB
9	+1.5dBm	±3.0dB	±6.0dB
10	-2.0dBm	±5.0dB	±9.0dB

END OF TEST

@82	(turn carrier off).

TRANSMIT DEVIATION

TEST SETUP

Set the modulation test equipment to have 50Hz high-pass and 15khz low-pass filtering

Inject a 1004Hz signal into the system connector audio input(X500-2, ATMS and X500-4, AGND). Adjust the level of the input signal to 45 mvRMS.

ALIGNMENT PROCEDURE

PARA. 2.983

Enter the following test commands:

@6502	(AFC off)
@3Czzxxx	(Tune to MID-CHANNEL CELLULAR BAND)
@8400	(set attenuation to power level 0)
@81	(turn the carrier on)
@88	(unmute the transmit path)
@AC	(turn on the compander)
@2C0001	(disable auto-writes to Patti addr. 40, 48, & 88)
@2C482C	(Tx PGA=-2.5dB, Rx PGA=+2.5dB)
@2C4005	(audio to system connector)

Record the deviation level at the test equipment.

TEST RESULTS

The transmit deviation should be 2.9kHz ±500Hz.

END OF TEST

@80	(reset transceiver)

DTMF DEVIATION AND HIGH FREQUENCY

TEST SETUP

Set modulation analyzer for 50Hz HP and 15kHz LP.

Enter the following test commands:

@3Czzxxx	(Tune to MID-CHANNEL CELLULAR BAND)
@88	(open transmit audio)
@8400	(set attenuation to power level 0)
@81	(turn the carrier on)
@AA0D	(turn on DTMF high tone)

Turn off injected audio signal to radio.

TEST RESULTS

Verify that the mobile transmitted tone is 1143Hz ±1.5% and the peak radian deviation (fdev/ftone) is 4.5±10%.

END OF TEST

@AB	(turn DTMF off)
@80	(initialize transceiver)

ALIGNMENT PROCEDURE

PARA. 2.983

SAT DEVIATION

TEST SETUP
Set modulation analyzer for 50Hz HP and 15kHz LP.

Enter the following test commands:

@3Czzxxx	(Tune to MID-CHANNEL CELLULAR BAND)
@6502	(lock the VCTCXO)
@8400	(power level 0)
@81	(turn on transmitter)
@A002	(turn SAT on (6030Hz))
@85	(mute receive audio)
@87	(mute transmit audio)

Using an on-channel carrier, inject a valid SAT tone of 6030Hz at 1.8kHz deviation into the mobile unit.

TEST RESULTS
Verify that the mobile transmitted frequency is 6030Hz ±1Hz and the peak frequency deviation is: 2000Hz ±10% with above filtering excluding residual FM.

END OF TEST

@80	(initialize transceiver)

DATA (SIGNALING TONE) DEVIATION

TEST SETUP
Set modulation analyzer for 50Hz HP and 15kHz LP.

Enter the following test commands:

@3Czzxxx	(Tune to MID-CHANNEL CELLULAR BAND)
@6502	(lock the VCTCXO)
@8400	(power level 0)
@81	(turn on transmitter)
@8F	(turn on 10kHz data tone)

TEST RESULTS
Verify that the transmit deviation level is 8.0kHz ±10%.

END OF TEST

@80	(initialize transceiver)

ALIGNMENT PROCEDURE

RECEIVER ALIGNMENT

NO ALIGNMENT REQUIRED

CIRCUIT & DEVICE DESCRIPTIONS

PARA. 2.983 (d)(10-12)

(10) FREQUENCY STABILIZATION

A temperature compensated crystal oscillator (U1) provides a reference frequency signal for the transmitter and receiver frequency synthesizers. It has an temperature of ±2.5 ppm over the temperature range of -20°C to +50° C. After the unit acquires a base station signal it locks itself to the high accuracy timebase of the base station.

(11a) ATTENUATION OF SPURIOUS EMISSIONS

The 800 Mhz band transmitter frequency is obtained from mixing a phase locked VCO operating from 979.53 Mhz to 1004.49 Mhz with a 155.52 Mhz signal. The 155.52 Mhz signal is obtained by phase locking an oscillator to the VCTCXO output.

The 800 Mhz band receiver frequency is obtained by dual conversion. The first conversion is obtained by mixing the incoming signal with the 979.53 Mhz to 1004.49 Mhz VCO to a first IF frequency of 110.52 MHz. The second conversion mixes the IF frequency with a phase locked VCO at 109.92 Mhz to obtain the second IF frequency of 600 kHz. All VCO's are phase locked to the reference VCTCXO U1.

The use of multi-layer printed circuit boards, with signal tracks between ground planes, for the radio as well as for the logic areas reduces the radiation to a minimum. Ceramic resonator bandpass filters for the duplexer attenuate conducted transmitter harmonics, reference oscillator and local oscillator signals. A bandpass filter in the receiver front end attenuates the local oscillator signal further. Additional suppression of radiation is achieved by shielding and key isolation between circuits.

(11b) LIMITING MODULATION

The modulation for the transmitter is produced inside a Digital Signal Processing integrated circuit. The modulation limiting is therefore controlled by an algorithm inside this chip. The limit is preset at the factory and cannot be changed thereafter.

ATTENUATING HIGHER AUDIO FREQUENCIES

The DSP chip provides an audio filter with a 120 log (f/3000) response, f=3K to 20KHz. Manchester encoded data signals are filtered prior to transmission by a four-pole lowpass filter providing an attention of 24 dB/Octave above 20 kHz.

CIRCUIT & DEVICE DESCRIPTIONS

PARA. 2.983 (d) (10-12)

The signal produced by the DSP chip is a differentially shifted PI/4 QPSK signal for the digital system and a FM signal for the analog cellular system. These signals are fed through a three-pole lowpass filter with a 3 dB down cut-off frequency of 25 kHz to limit the adjacent channel energy in the digital mode.

(11c) OUTPUT POWER CONTROL

A loop circuit under supervision of the logic sets the output to any of the eleven power levels.

A digital word is transmitted to the gain control amplifier for output power adjustment.

A detector at the output of the power amplifier module senses the RF energy present and sends a corresponding DC voltage to the digital logic circuitry.

Upon receiving a command to set power level from the handset or from a base station the microprocessor sends a predetermined work to the ALC amplifier. The output detector voltage is then read by the microprocessor and compared to a preset value. If the detector voltage is outside the allowed tolerance an adjustment is made to the gain-controlled amplifier to bring the detector voltage into the proper range.

(12) DIGITAL MODULATION TECHNIQUES

800 Mhz: The 10 kilobit/second data stream is transformed to 20 kilobaud Manchester encoded data in such a way that each NRZ binary one is transformed to a zero-to-one transition, and each NRZ binary zero is transformed to a one-to-zero transition.

The Manchester encoded data stream is filtered before being applied tot he modulator. Direct binary frequency shift keying is used. A binary one into the modulator corresponds to a normal peak frequency deviation of 8kHz above the carrier frequency and a zero corresponds to a nominal peak frequency deviation 8 kHz below the carrier frequency.

(12a) DESCRIPTION OF PI/4 DQPSK

The modulation method used for the digital mode is known as PI/4 shifted differentially encoded Quadrature Phase Shift Keying. Eight distinct phase states are possible. The signal information is differentially encoded; symbols are transmitted as changes in phase rather than absolute phases. Transition of phase which would result in a zero amplitude momentarily are not allowed.

CIRCUIT & DEVICE DESCRIPTIONS

PARA.

1.0 LOGIC BOARD OPERATION

The logic board is the central controller system for the radio. It is made up of a microprocessor, DSP, codec, memory, and control logic.

1.1 ASIC CONTROL CHIP – D550

The ASIC control chip is made up of a Z80 microprocessor and application specific logic circuits. The chip is the main control center for the radio and provides interfaces to the DSP's, codec, memories, keypad, display, alarms, and system interfaces.

1.2 MEMORY CHIP'S

D560 is the 512k x 8 flash memory used to store the radio's operating algorithm. This part may be field programmed to allow new revisions of the operating algorithm to be installed without opening the radio case.

D570 is the 32k x 8 static RAM used for stack, and microprocessor operation.

D575 is the 32k x 8 electrically erasable programmable read only memory. The part stores all of the users phone numbers, any system parameters that change, and the power down status of the radio.

1.3 USER INTERFACES

Keypad is a 3x6 arrangement providing a standard touch tone telephone key pad plus 6 radio functions.

LCD display is a three line display that provides complete radio user interface with the operator. The display is connected to the radio with a bi-directional serial data line and one clock line. There is also temperature compensation when the microprocessor reads a thermistor and then furnishes control information to the display.

When the telephone receives an incoming call the 2048 Hz transducer will sound a variety of alarm sequences to alert the operator of the pending call.

There are two indicator LED's that provide the operator with information about low battery and when the radio has established service with a cell site. The green LED indicates service and the red LED indicates low battery.

1.4 AUDIO INTERFACE

D700 codec will provide the necessary audio conversions from analog to digital and digital to analog for all user interfaces. The codec will provide all necessary filters, A to D and D to A control functions for the radio.

1.5 DIGITAL SIGNAL PROCESSING

D580 is the DSP and provides all signal conversion and error correction for the incoming audio receive path and all signal conversions for the transmitted digital signal.

800 Mhz: RF POWER OUTPUT

PARA 2.985 (a)

The RF power measured at the output terminals (antenna connector) is plotted against supply voltage variations at the highest and lowest power levels.

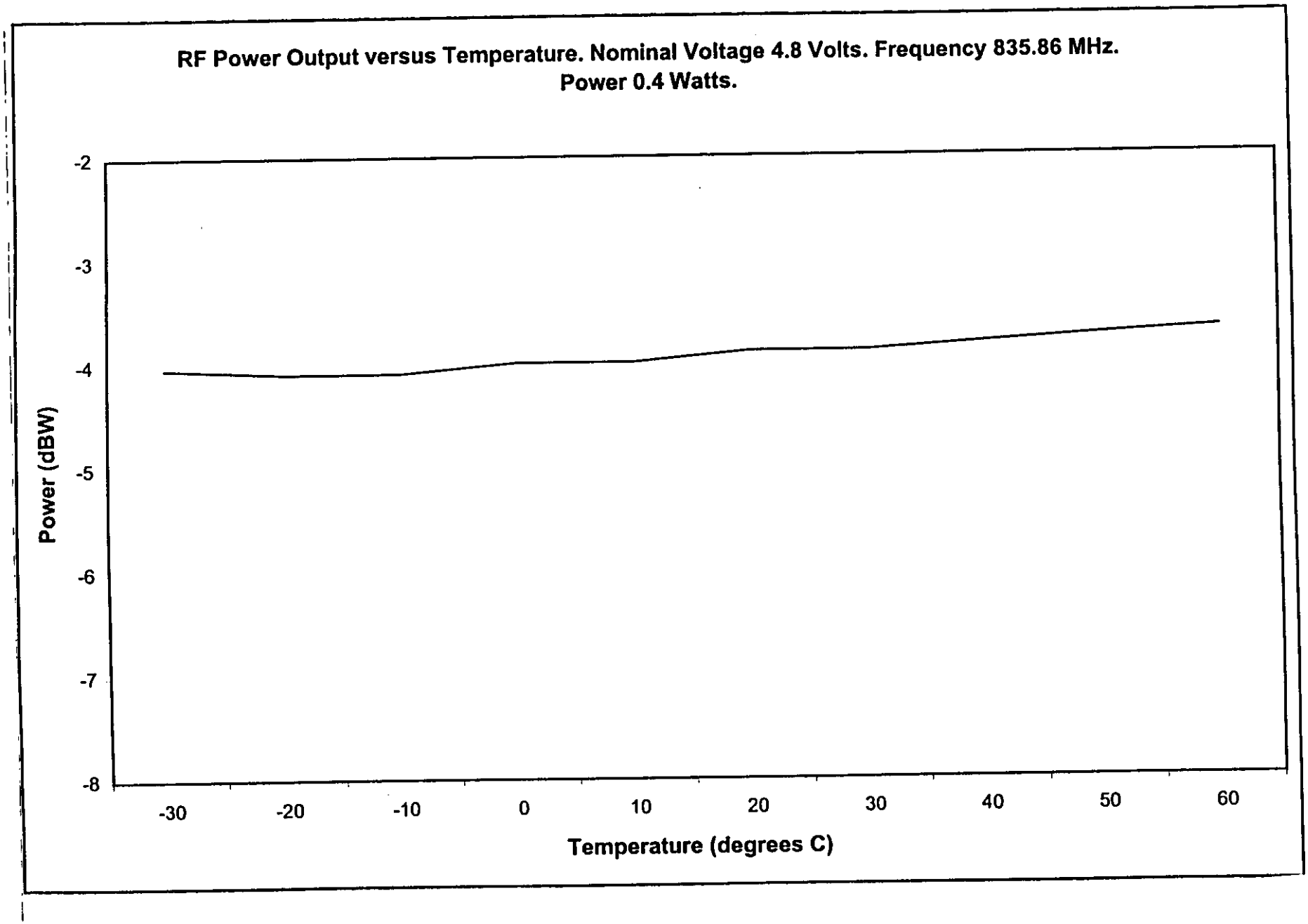
EXHIBIT	SUPPLY VOLTAGE (V)	TEMPERATURE	POWER LEVEL	TX FREQ	OUTPUT (WATTS)
8B	4.8	Varied	0	Mid Band	.4
8C	Varied	+25 °C	7	Mid Band	.006
8D	4.8	+25°C	0	Varied	.4

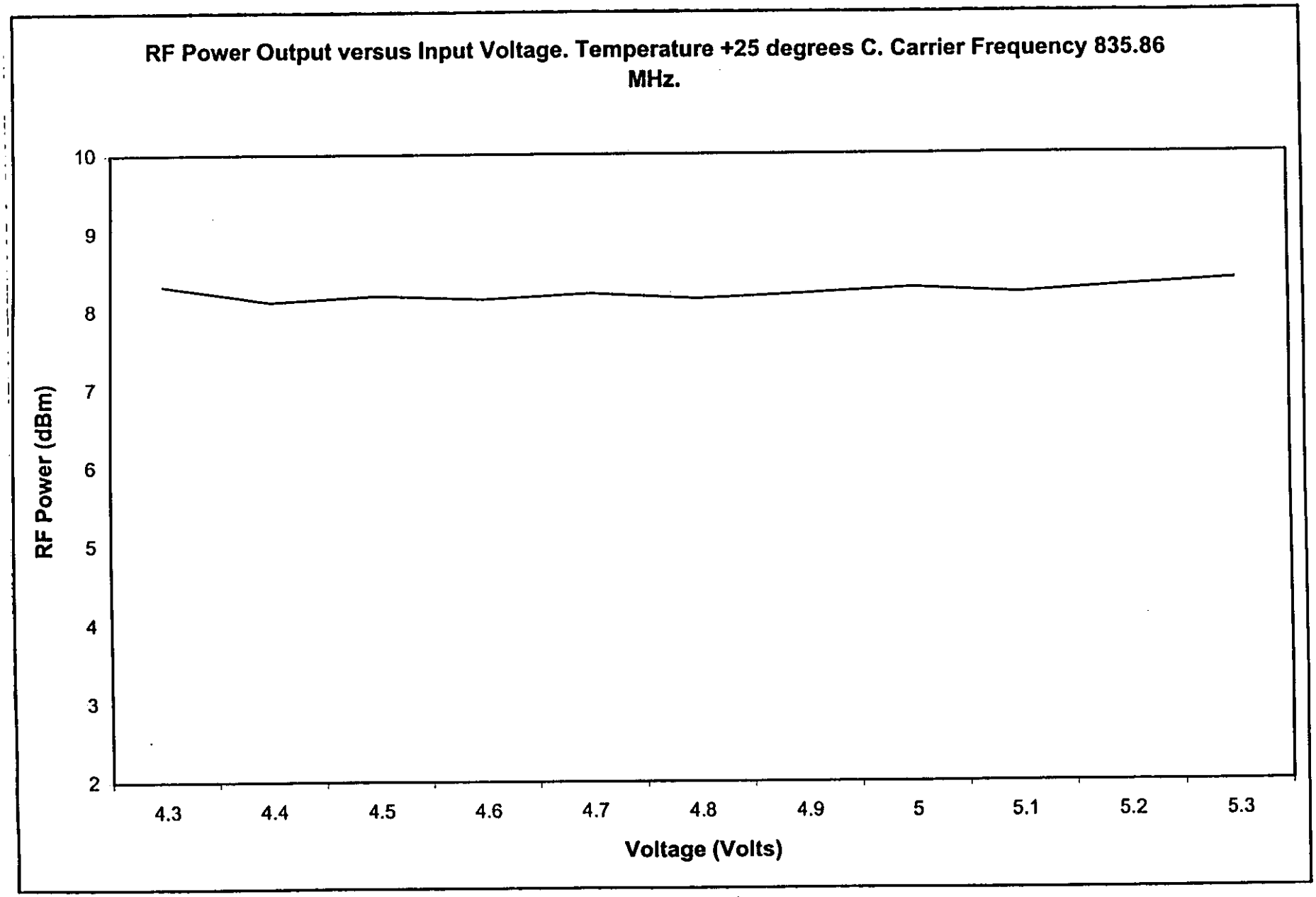
Output power was measured conducted, via a standard antenna connector.

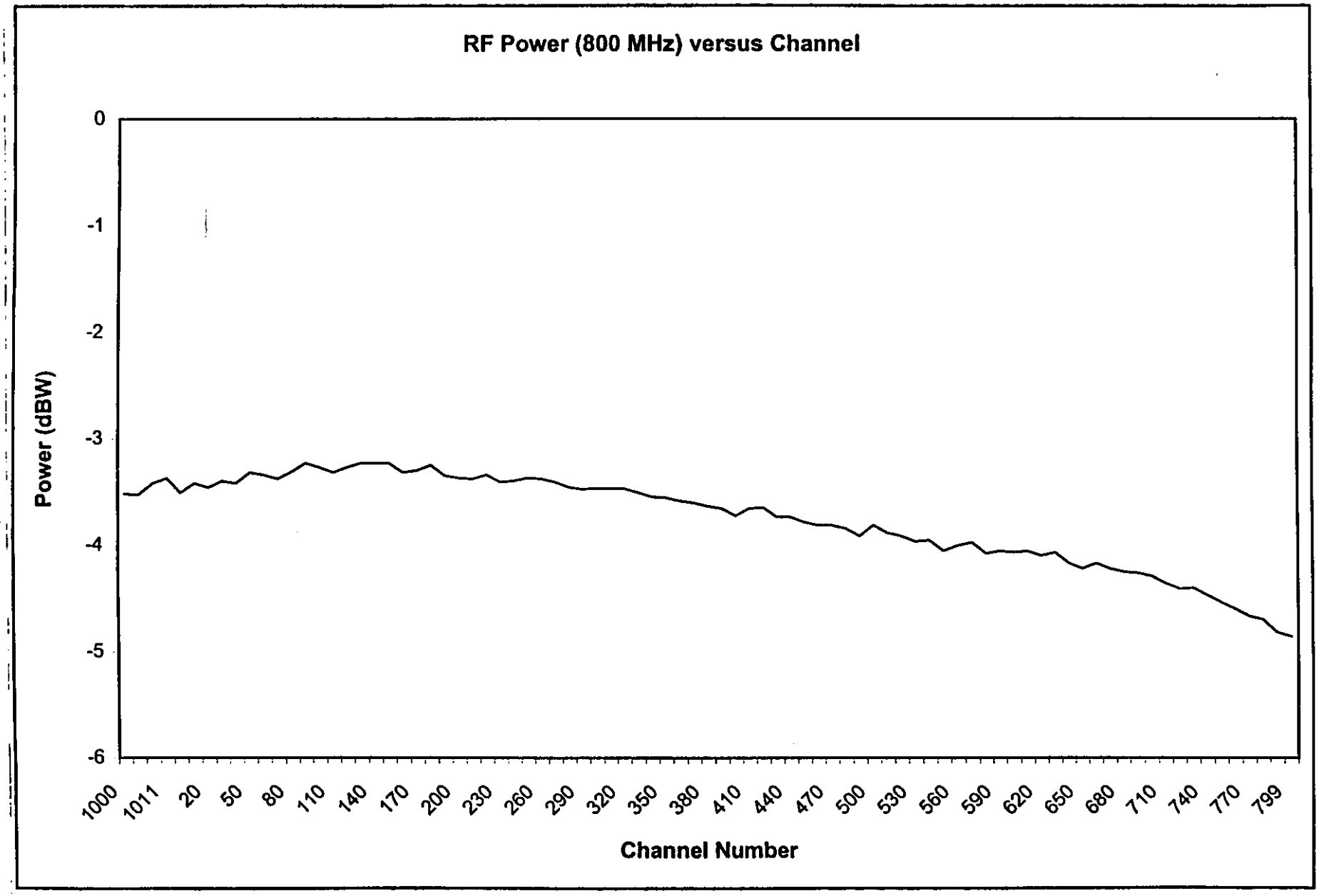
NOTE: Since the portable uses a unity gain antenna, the maximum ERP for this unit is 400 milliwatts. Ericsson requested 500 milliwatts maximum on the originally submitted 731 Form which factors in the maximum tolerance allowed.

The measurements were made per EIA IS-19B using a Hewlett Packard 8953DT North American Dual-Mode Cellular Test System which includes the following equipment:

Hewlett Packard 8958A Cellular Interface
Hewlett Packard 6623A DC Power Supply
Hewlett Packard 8596E Spectrum Analyzer
Hewlett Packard 437B Power Meter
Hewlett Packard 8901B Modulation Analyzer
Hewlett Packard 8903B Audio Analyzer
Thermatron SM-8C Temperature Chamber







800 Mhz: MODULATION CHARACTERISTICS

Per 2.987 (a)(b)(d) and 22.915 (b)(4)

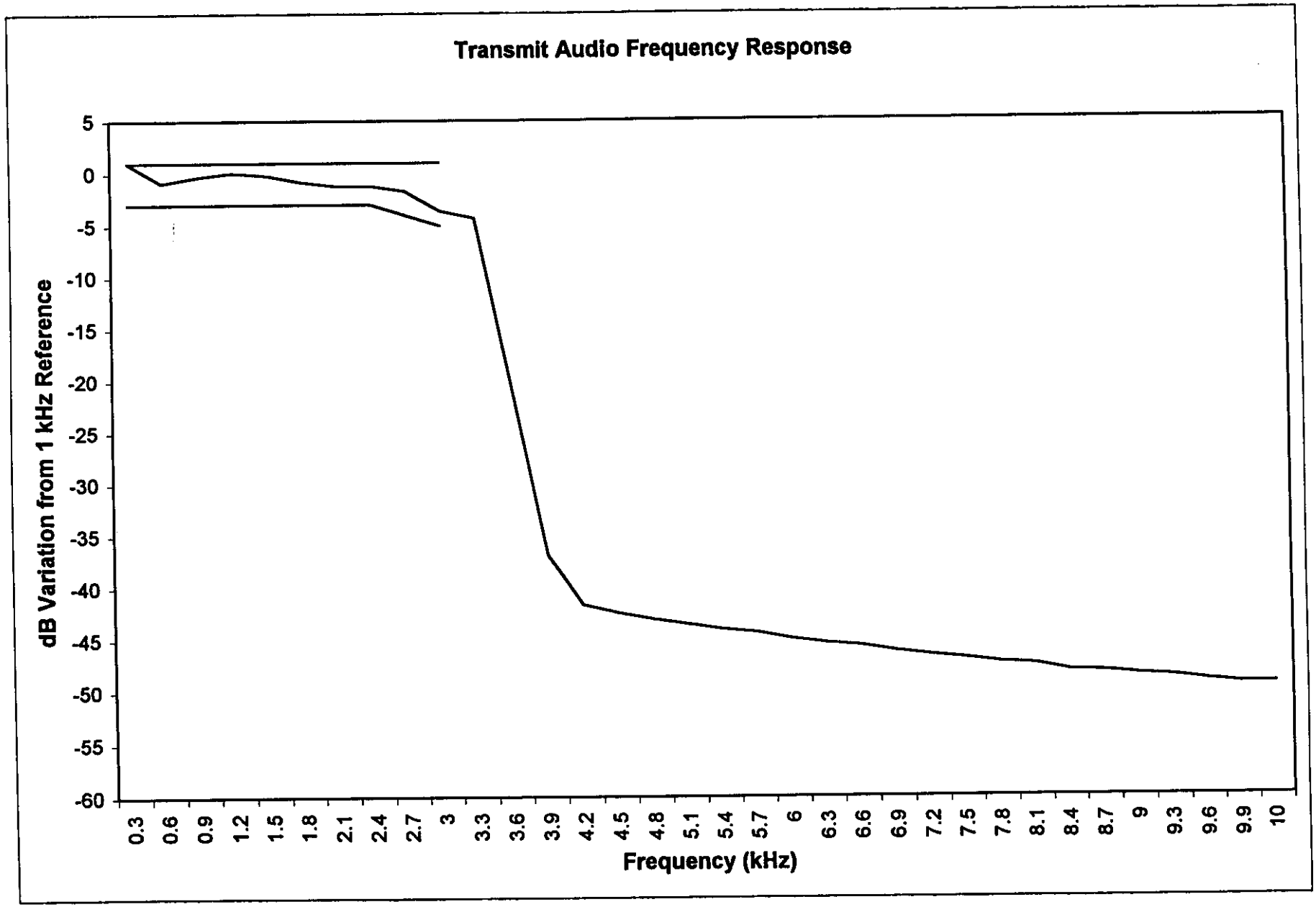
The frequency and amplitude response to audio inputs measured per EIA-IS-19B are shown on the following:

Exhibit

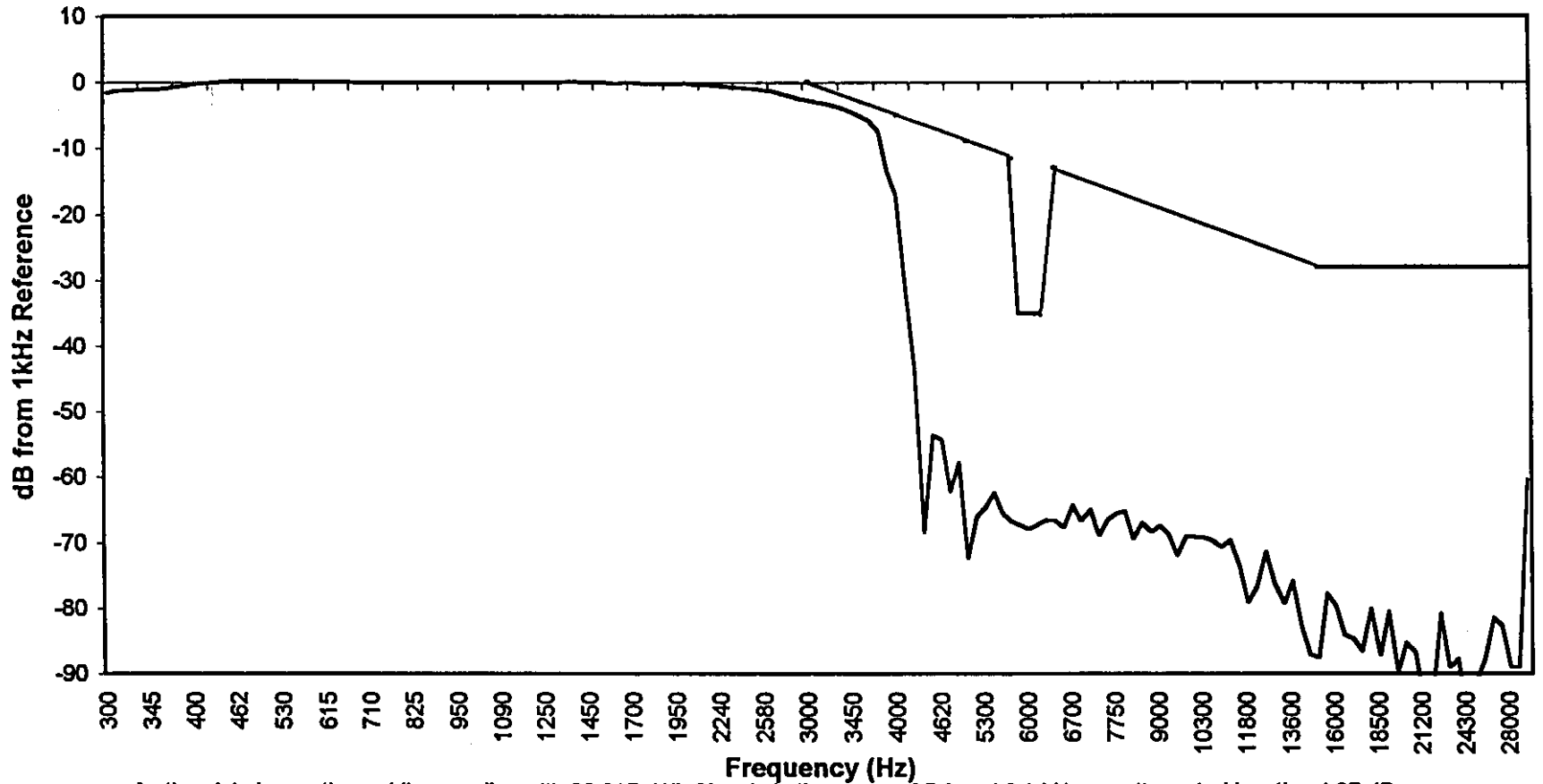
9B	Transmit Audio Frequency Response
9C	Post Limiter Filter Attenuation
9D	Modulation Limiting
9E	Modulation Limiting vs. Frequency

The measurements were made per EIA IS-19B using a Hewlett Packard 8953DT North American Dual-Mode Cellular Test System which includes the following equipment:

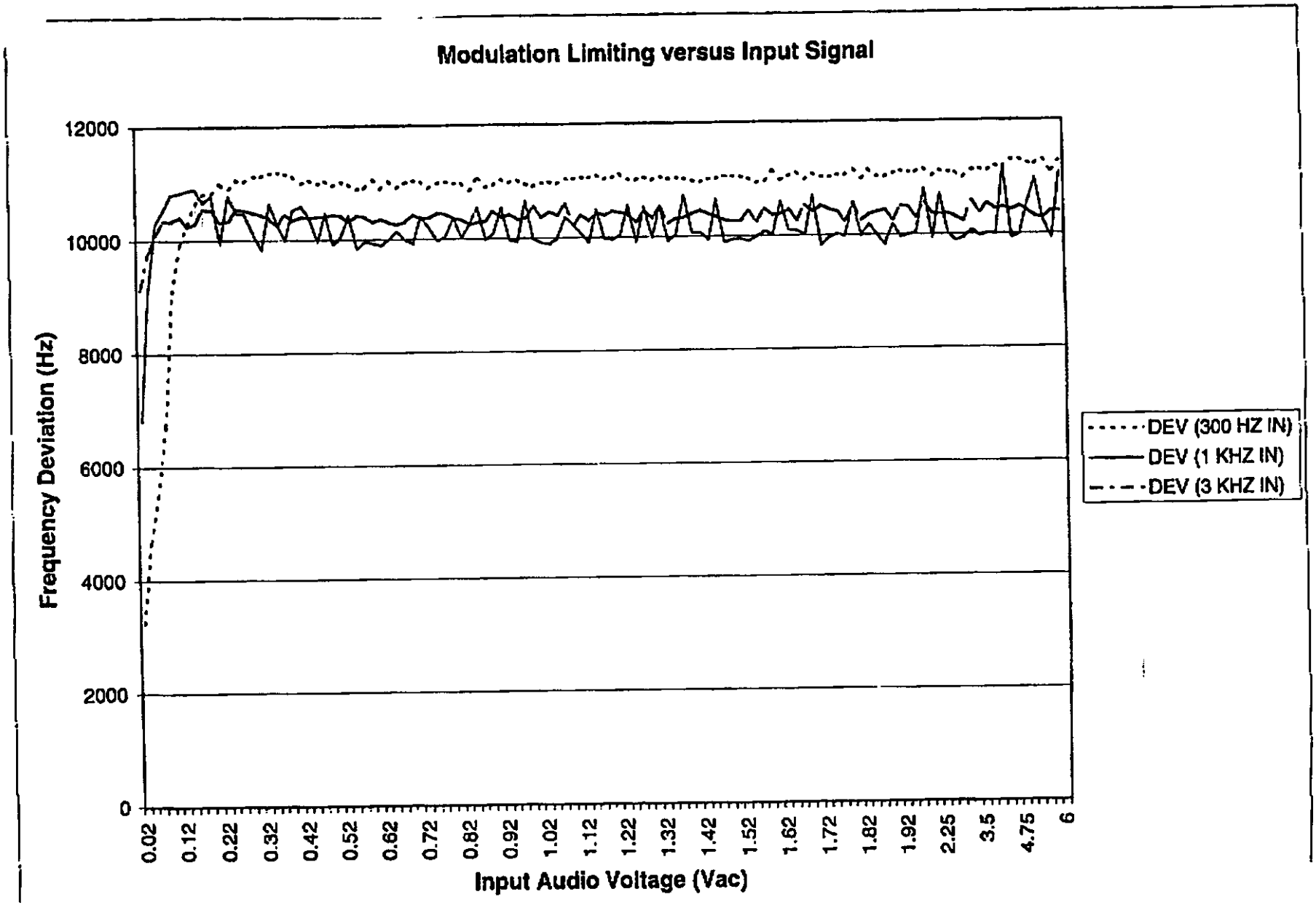
Hewlett Packard 8958A Cellular Interface
Hewlett Packard 6623A DC Power Supply
Hewlett Packard 8596E Spectrum Analyzer
Hewlett Packard 437B Power Meter
Hewlett Packard 8901B Modulation Analyzer
Hewlett Packard 8903B Audio Analyzer
Thermatron SM-8C Temperature Chamber
Bruel & Kjaer 2012 Audio Analyzer

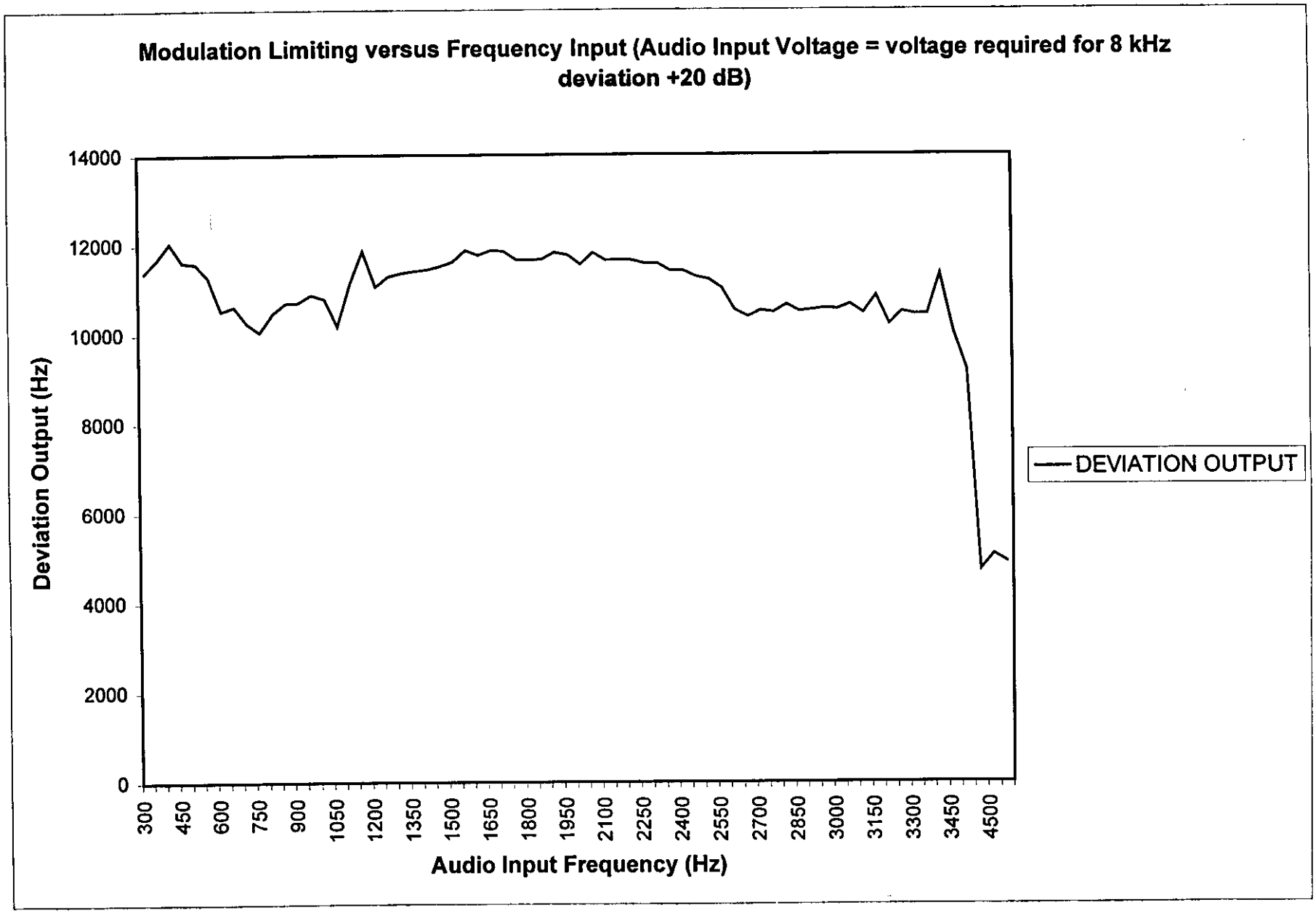


Post Limiter Filter Attenuation



As the plot shows, the mobile complies with 22.915 d1ii. Signals in the range of 5.9 and 6.1 kHz are attenuated by atleast 35 dB.





800 Mhz: OCCUPIED BANDWIDTH

Per 2.989 (c) (1) (h) and 22.917 (d)(1)

The exhibits presented show the modulations that co-exist in a Cellular System.

EXHIBIT		POWER LEVEL
10B	Unmodulated Carrier	0
10C	Unmodulated Carrier	10
10D	SAT and Voice	0
10E	SAT and Signal Tone	0
10F	SAT and DTMF #3	0
10G	SAT and 10kb/s Wideband Data	0
10H	Wideband Data 48.6 kb/s switched(Data)	0
10I	SAT and Voice	10
10J	SAT and Signal Tone	10
10K	SAT and DTMF #3	10
10L	SAT and 10kb/s Wideband Data	10
10M	Wideband Data 48.6 kb/s switched(Data)	10

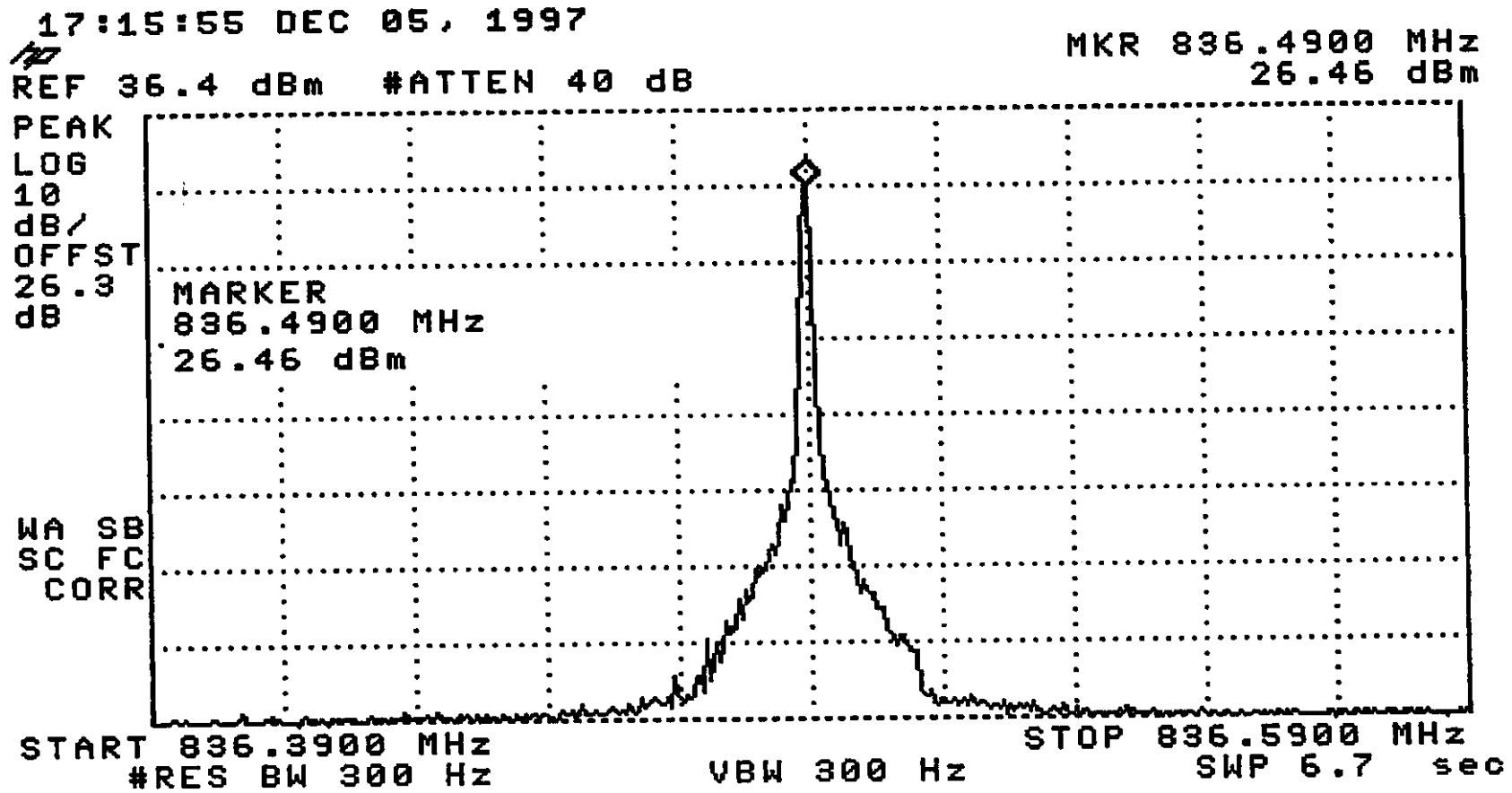
All deviations are set independently of each other per exhibit 6 and limits and nominal values per Exhibit 7.

As per IS-55, the limit requirements are:

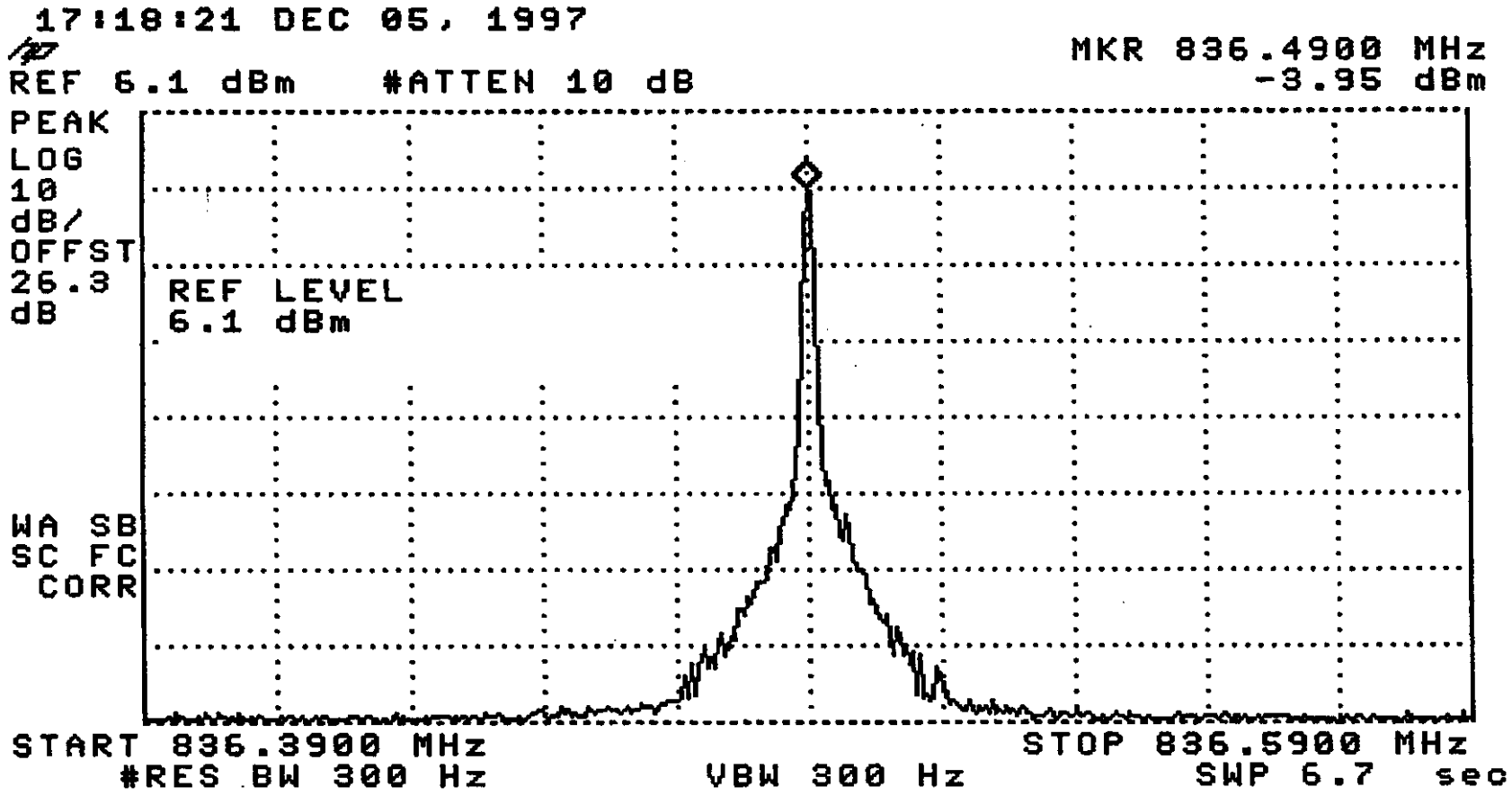
	High Limit	Measured Value
Voice	±12kHz	±11kHz
SAT	±2kHz	±2 kHz
Voice & SAT	±14kHz	±10kHz
Signal Tone	±8kHz	±8 kHz
Wideband Data (10 kb/s)	±8kHz	±8 kHz
Psuedrandom Data 48.6 kb/s	minimum standard as per 15-55 (3.3.2.1.3)	

The measurements were made per EIA IS-19B using a Hewlett Packard 8953DT North American Dual-Mode Cellular Test System which includes the following equipment:

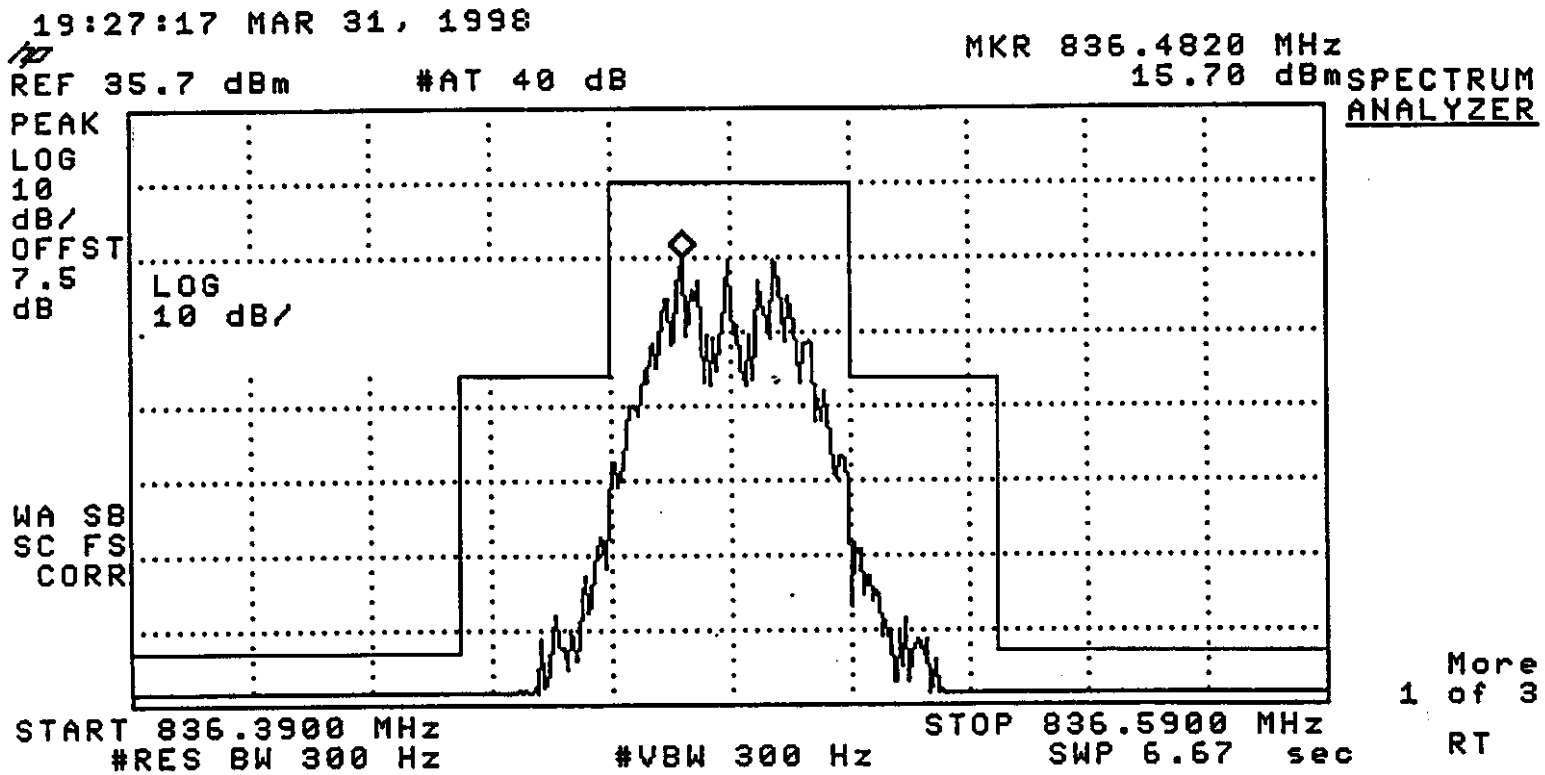
Hewlett Packard 8958A Cellular Interface
Hewlett Packard 6623A DC Power Supply
Hewlett Packard 8596E Spectrum Analyzer
Hewlett Packard 437B Power Meter
Hewlett Packard 8901B Modulation Analyzer
Hewlett Packard 8903B Audio Analyzer
Thermatron SM-8C Temperature Chamber



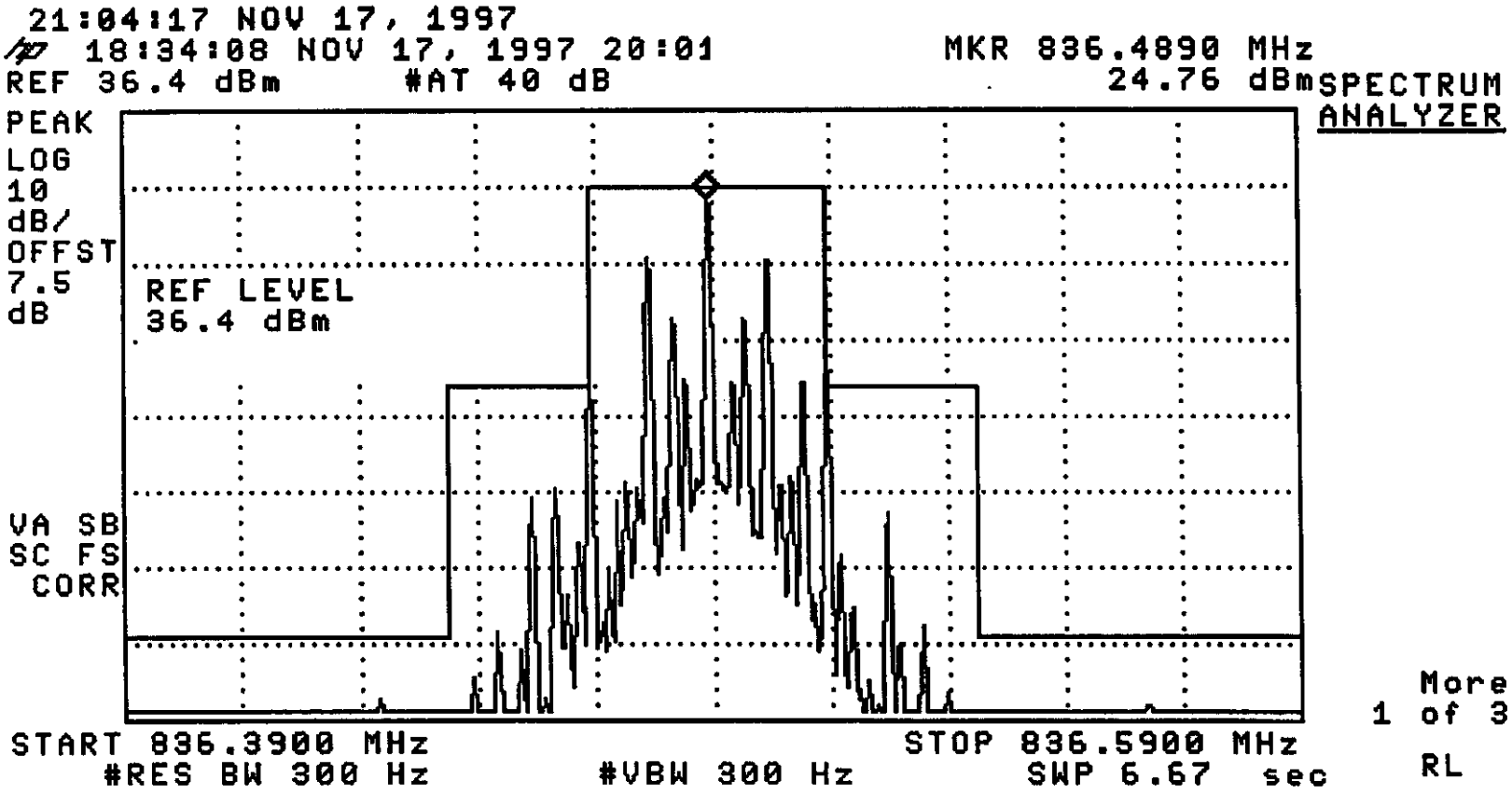
Unmodulated Carrier. Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 26.46 dBm.



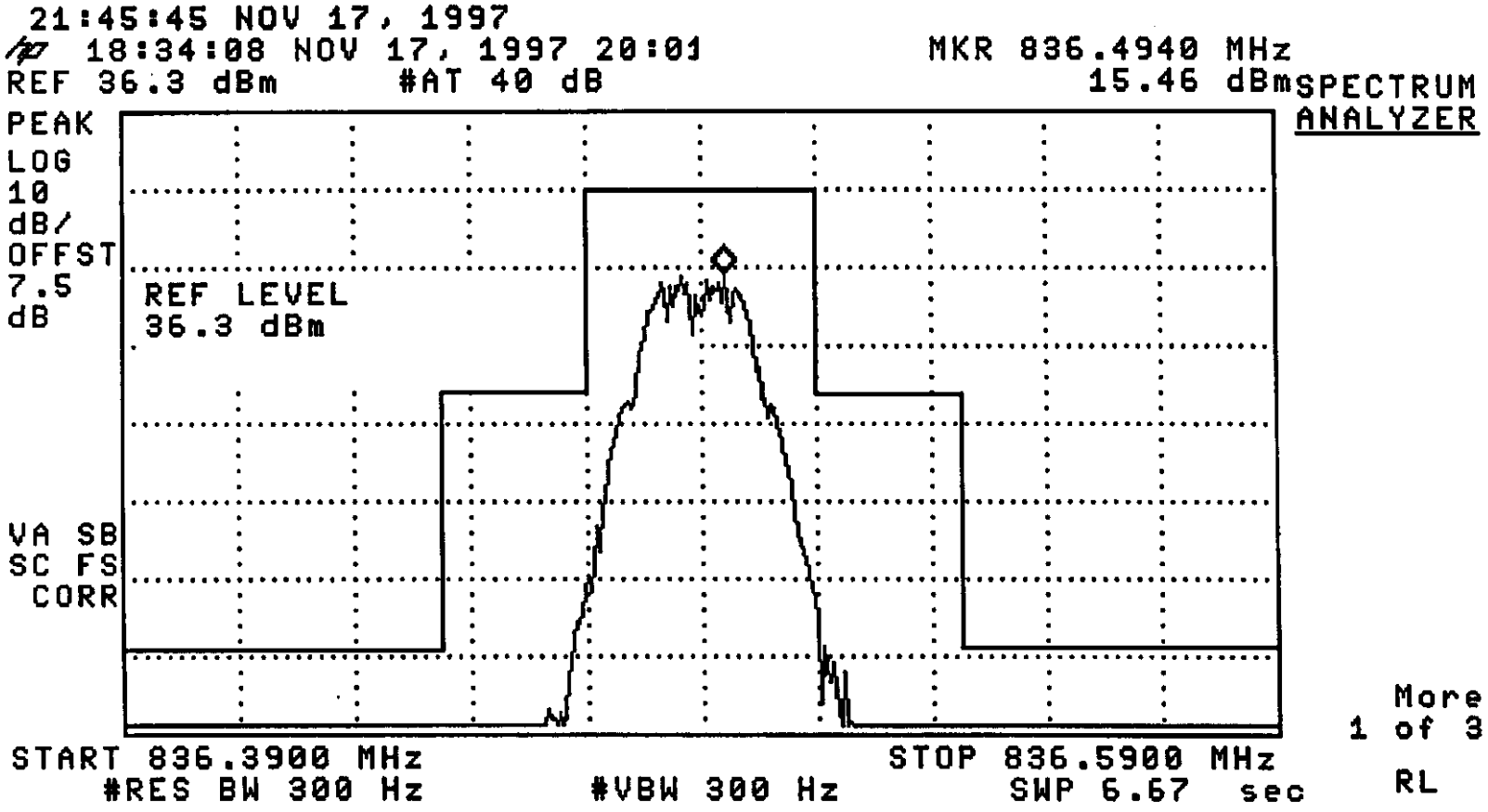
Unmodulated Carrier. Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power –3.95 dBm.



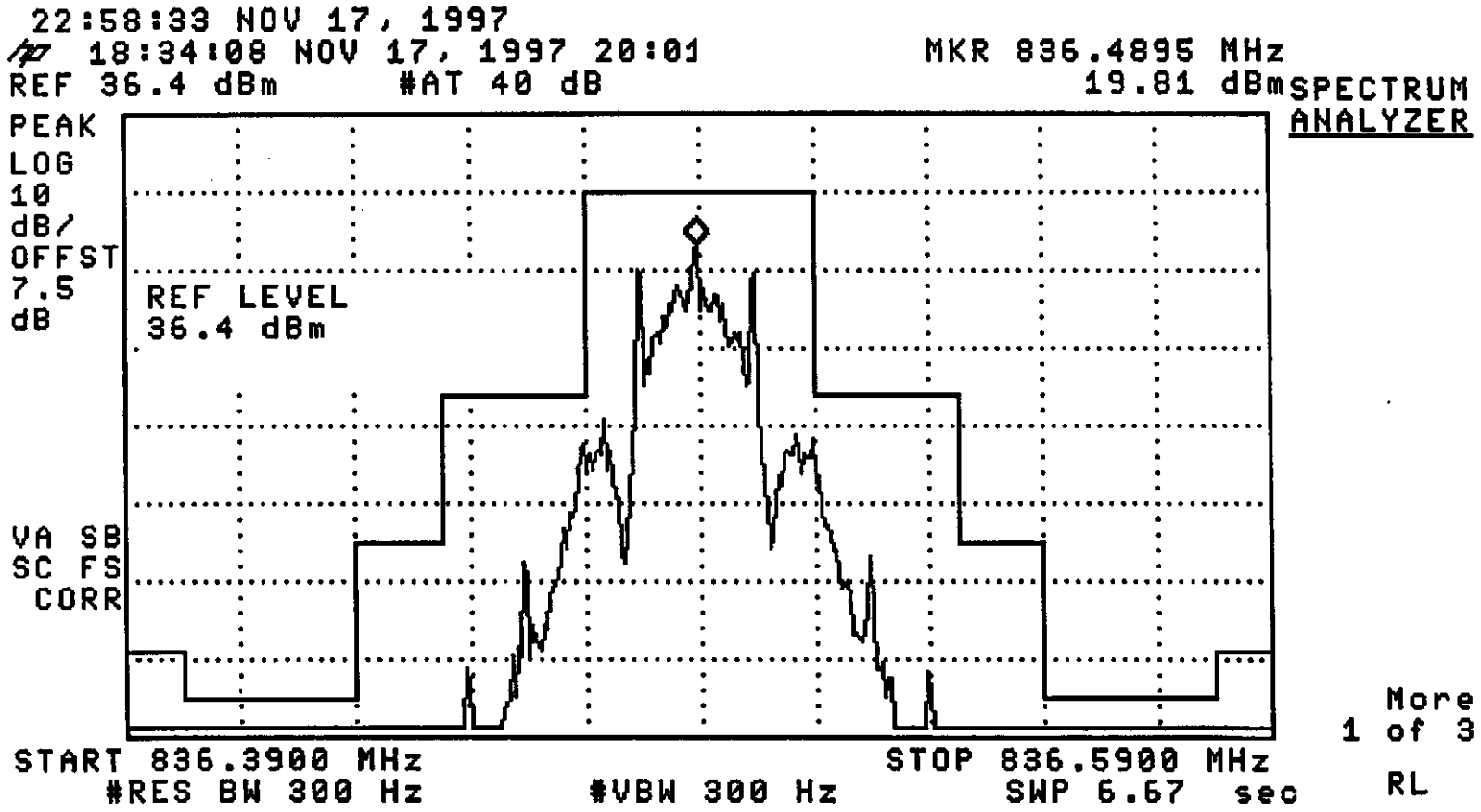
SAT and Voice. Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 25.7 dBm. Voice Tone 2500 Hz, SAT 6000 Hz, Total Deviation 11000Hz. F3E Emissions Mask.



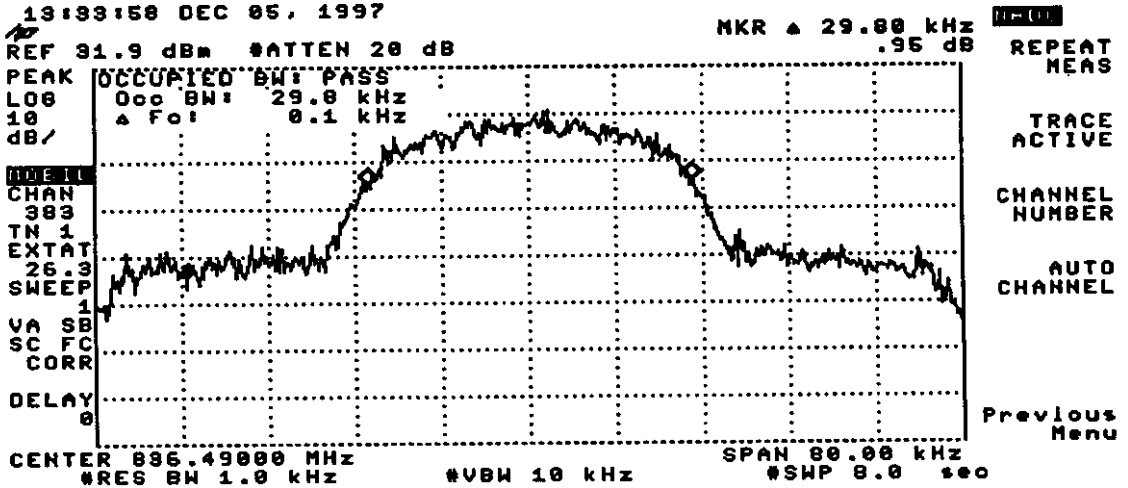
SAT and Signalling Tone. Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 26.4 dBm. F3E Emissions Mask.

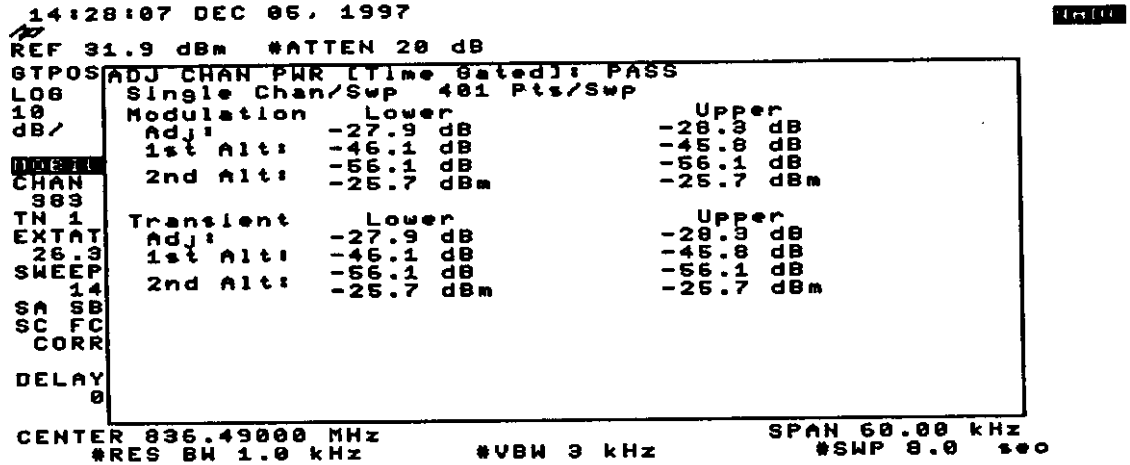


SAT and DTMF #3. Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 26.3 dBm. F3E Emissions Mask

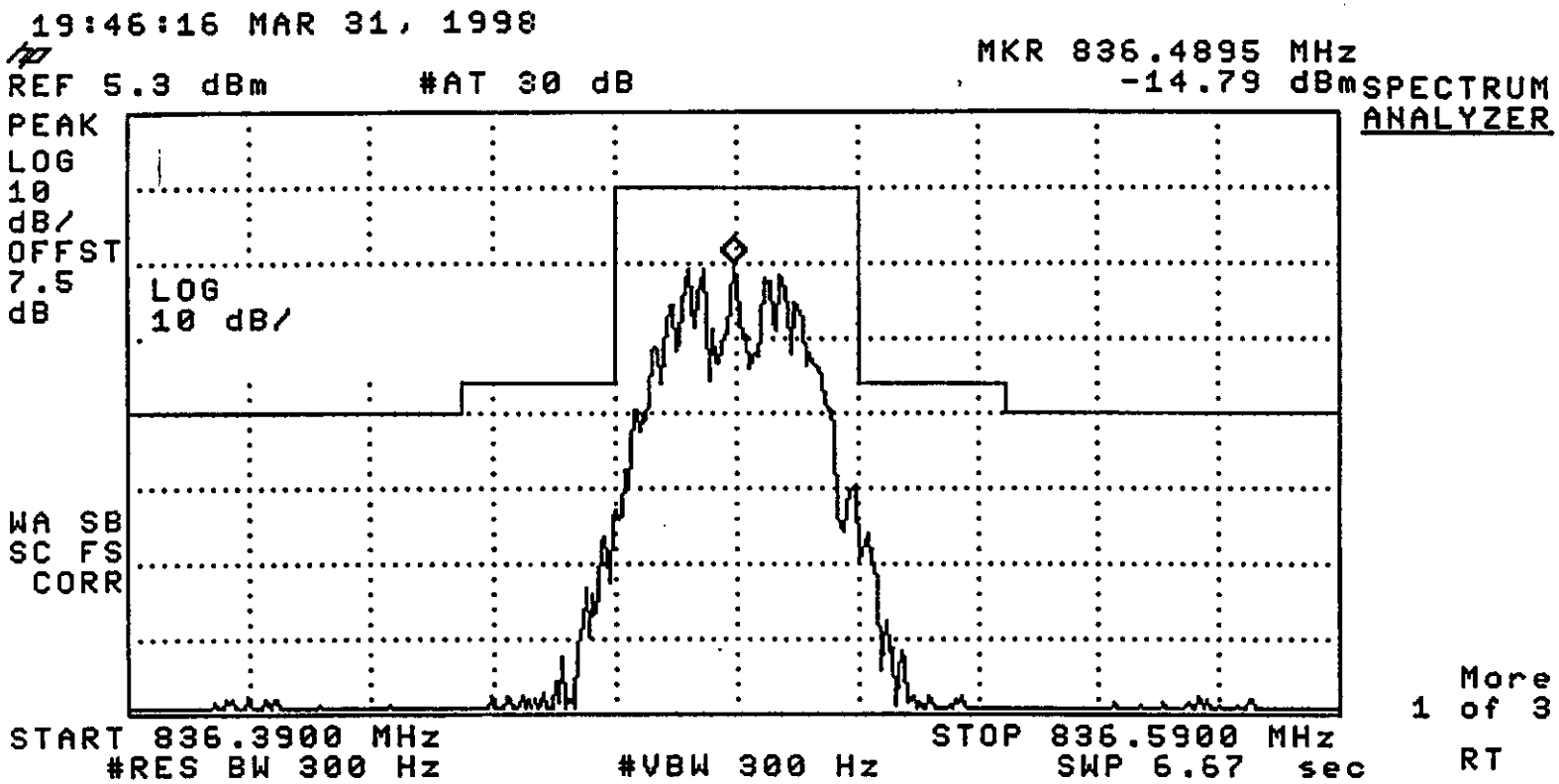


SAT and Wideband 10 kb/S Digital data. Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 26.3 dBm. F1D Emissions Mask.

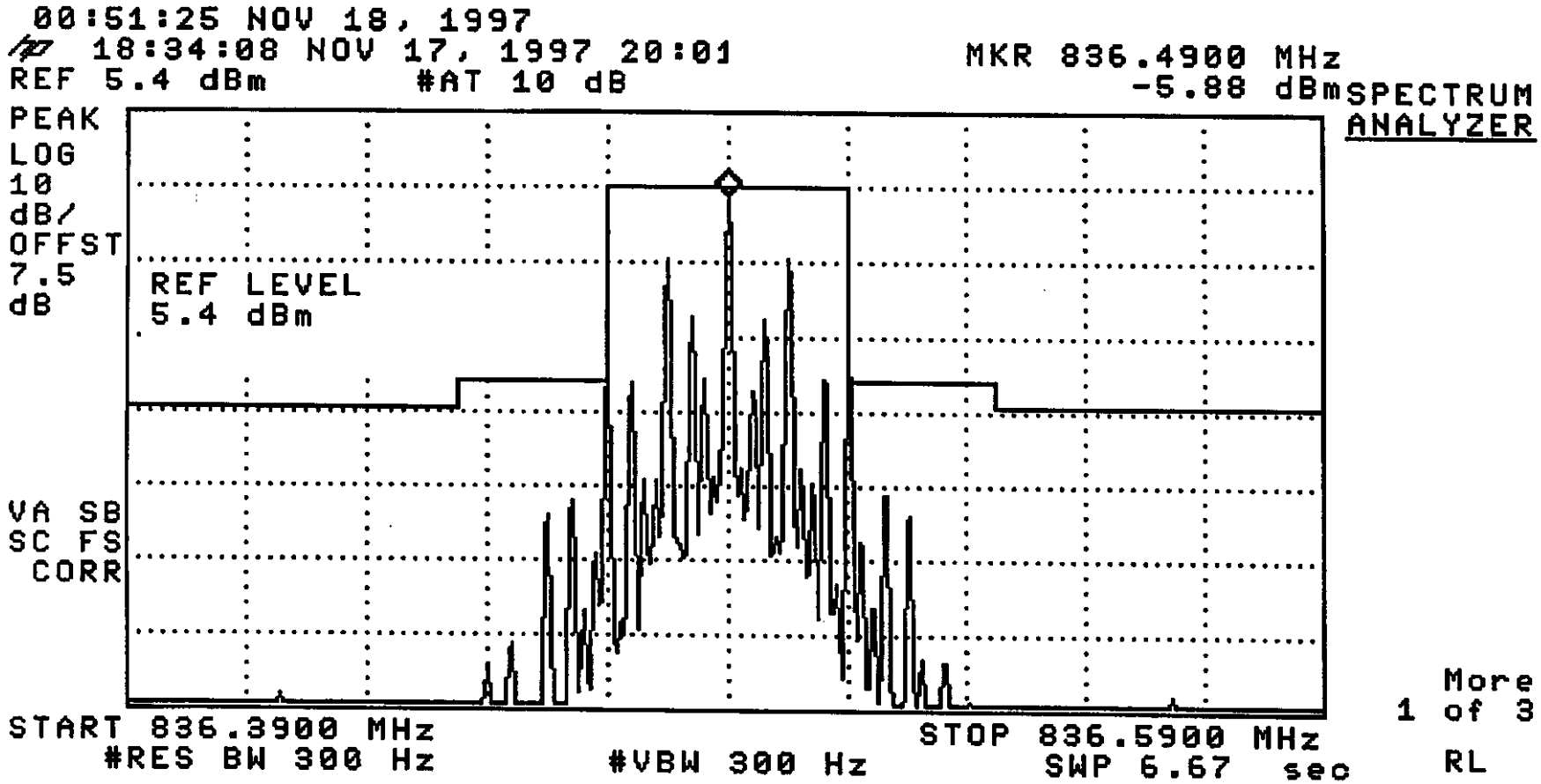




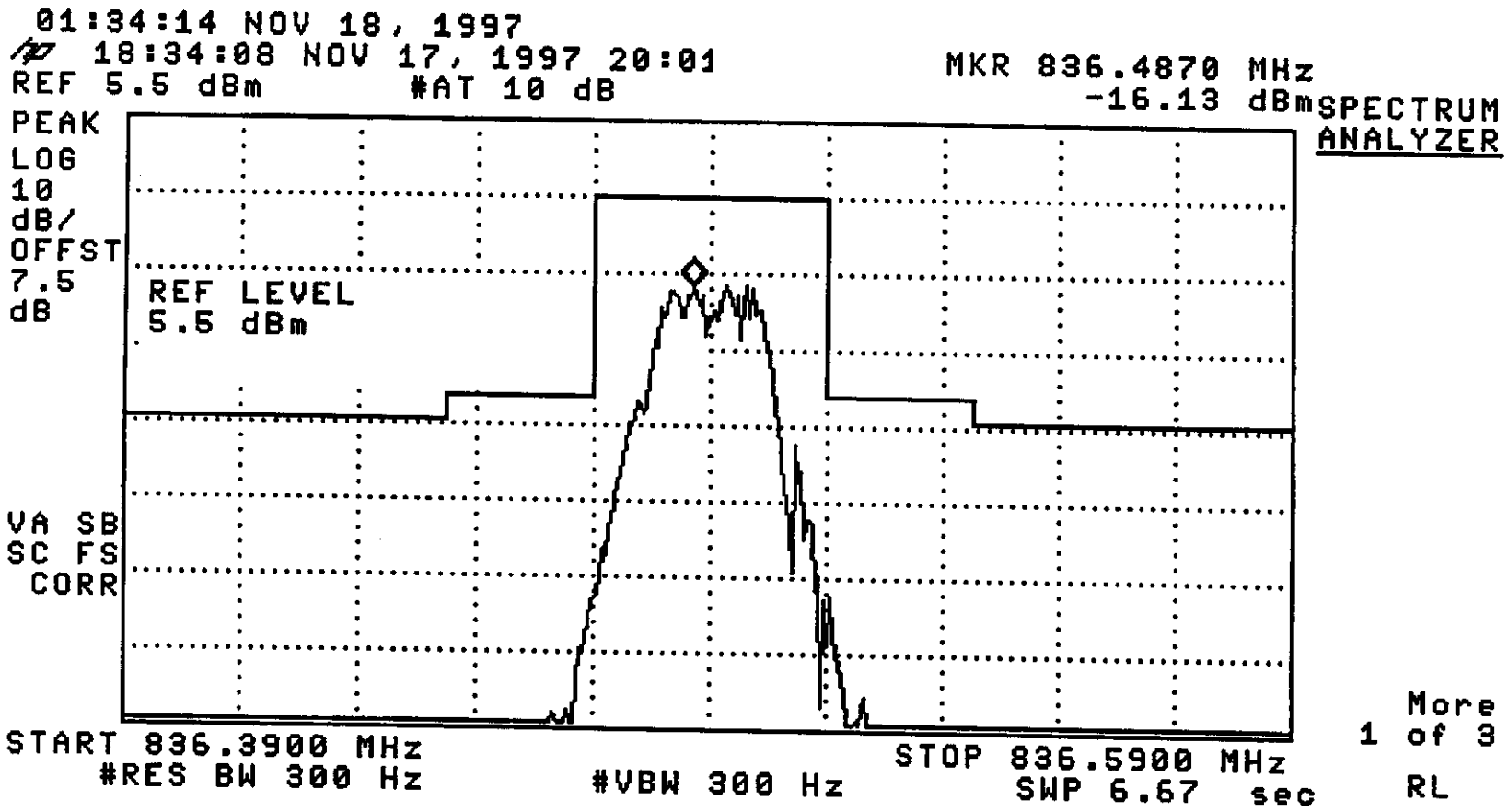
Wideband Data 48.6 kb/s switched (Data). Power Level 0, Carrier Frequency 836.49 MHz, Carrier Power 26.32 dBm.
Plots showing occupied bandwidth of 29.8 kHz and alternate and adjacent power



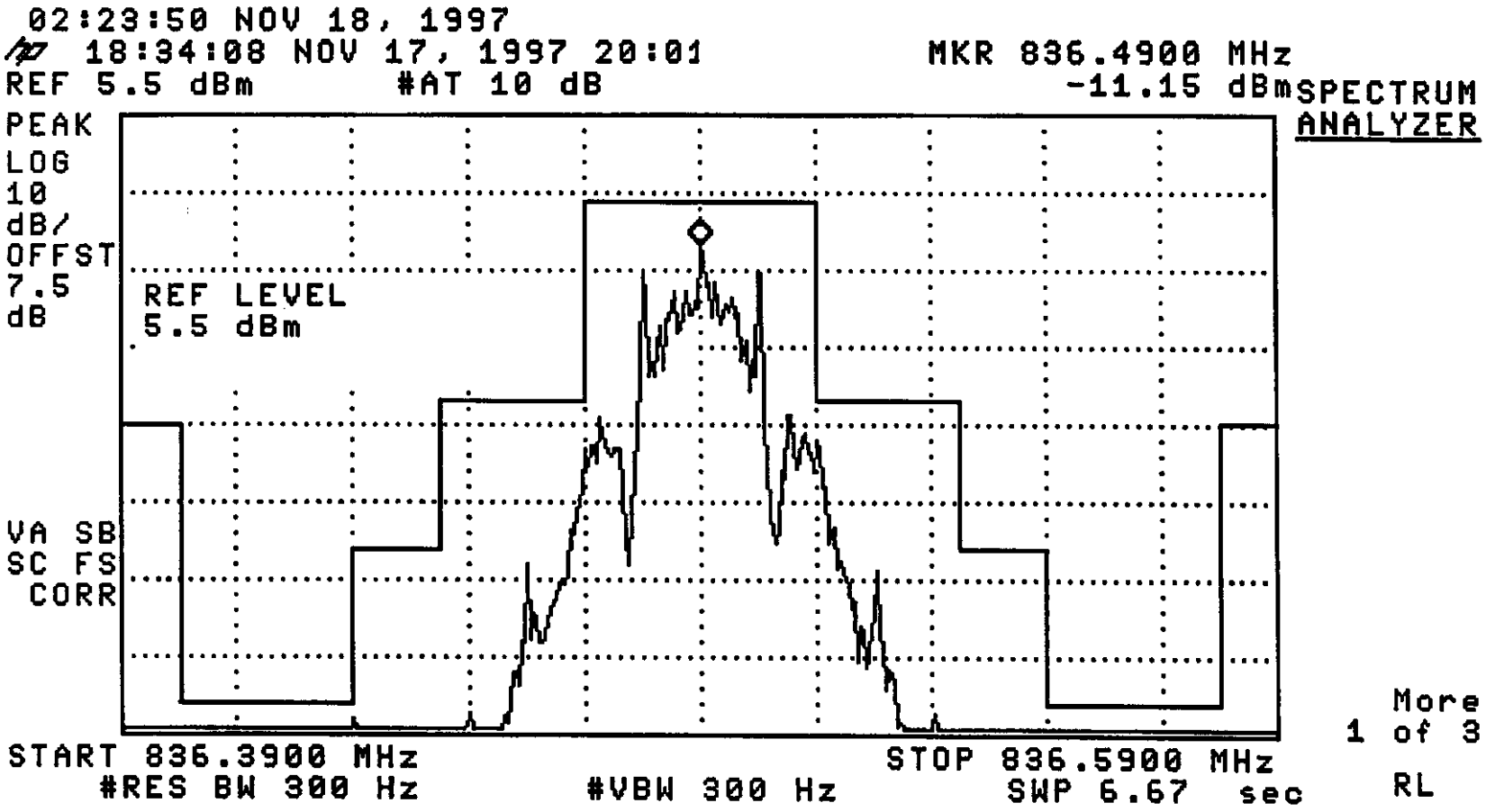
SAT and Voice. Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power -4.7 dBm. F3E Emissions Mask.



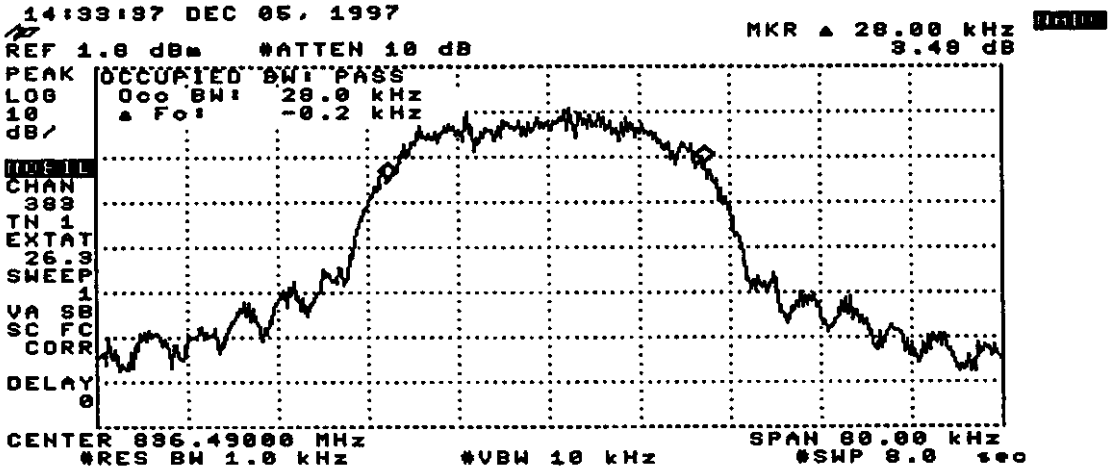
SAT and Signalling Tone. Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power –4.58 dBm. F3E Emissions Mask.

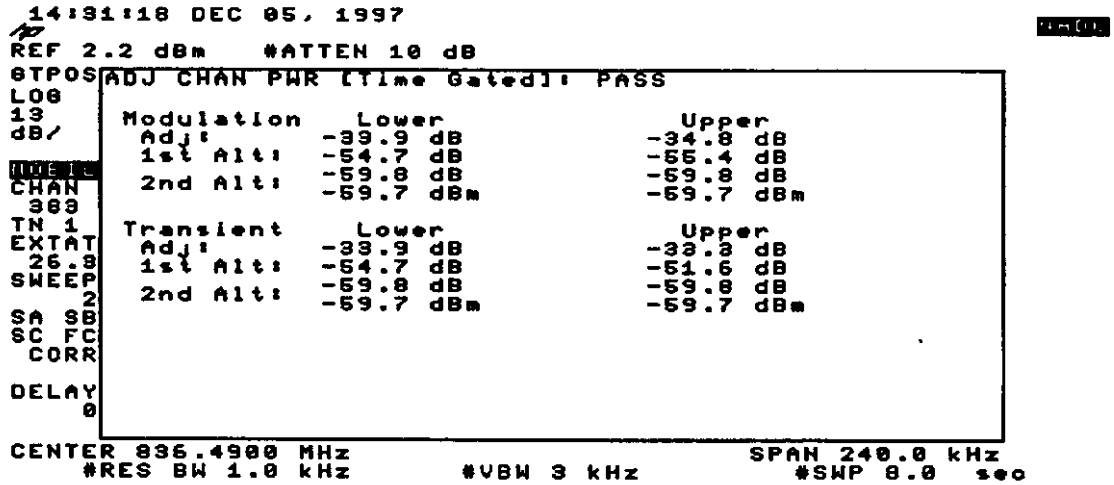


SAT and DTMF #3. Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power –4.49 dBm. F3E Emissions Mask.



SAT and Wideband 10 kb/S Digital data. Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power –4.51 dBm. F1D Emissions Mask.





Wideband Data 48.6 kb/s switched (Data). Power Level 10, Carrier Frequency 836.49 MHz, Carrier Power –4.51 dBm.
Plots showing occupied bandwidth of 28.0 kHz and alternate and adjacent power.

ERICSSON

March 27, 1998

Federal Communications Commission
Authorization & Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046
Attn: Mr. Greg Czumak

Subject: Request for Block Edges data

Reference: FCC filing ID No. AXATR-375-A2 dated December 19, 1997

Dear Greg:

Ericsson Inc. is submitting the additional plots as discussed in the conference call on March 23, 1998 between Ericsson and FCC. The plots included support the requested band edges for the Wideband Data as specified in the Occupied Bandwidth at frequencies of 848.97MHz and 824.04 MHz.

The data taken has been reviewed by Ericsson Engineering and meets the requirements as specified in the 47 CFR 22.901 as referenced in the March 13, 1998 Fax received from the FCC.

For the referenced filing under FCC ID No. AXATR-375-A2, Ericsson is required to submit the new plots for Modulation Limiting as I understand is the remaining item that is outstanding for the FCC.

Thank you in advance for your expeditious review of this amended plot for the filing.

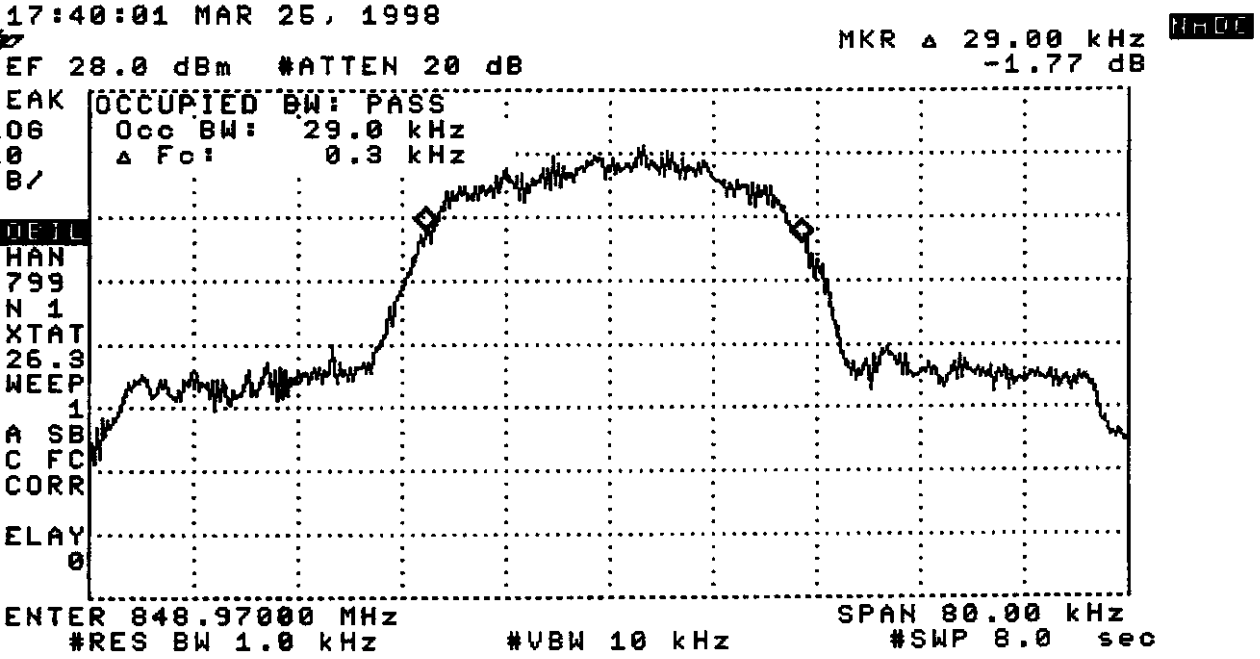
If you have any questions regarding the plots submitted please don't hesitate to contact me.

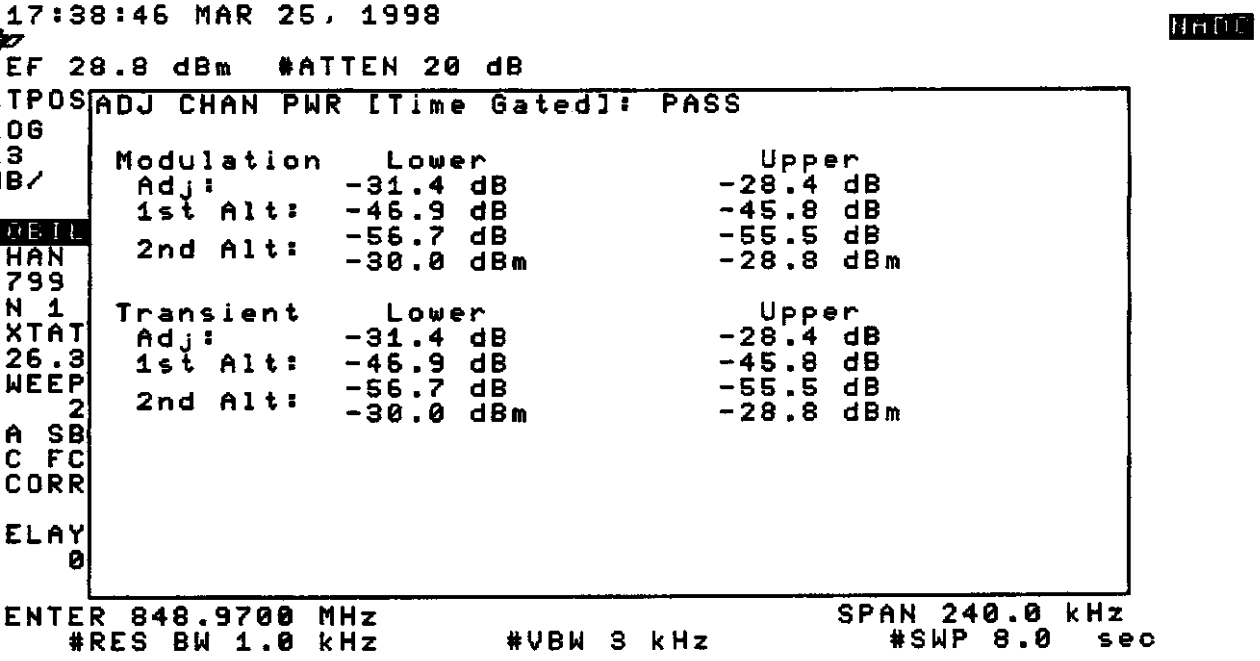
Sincerely,

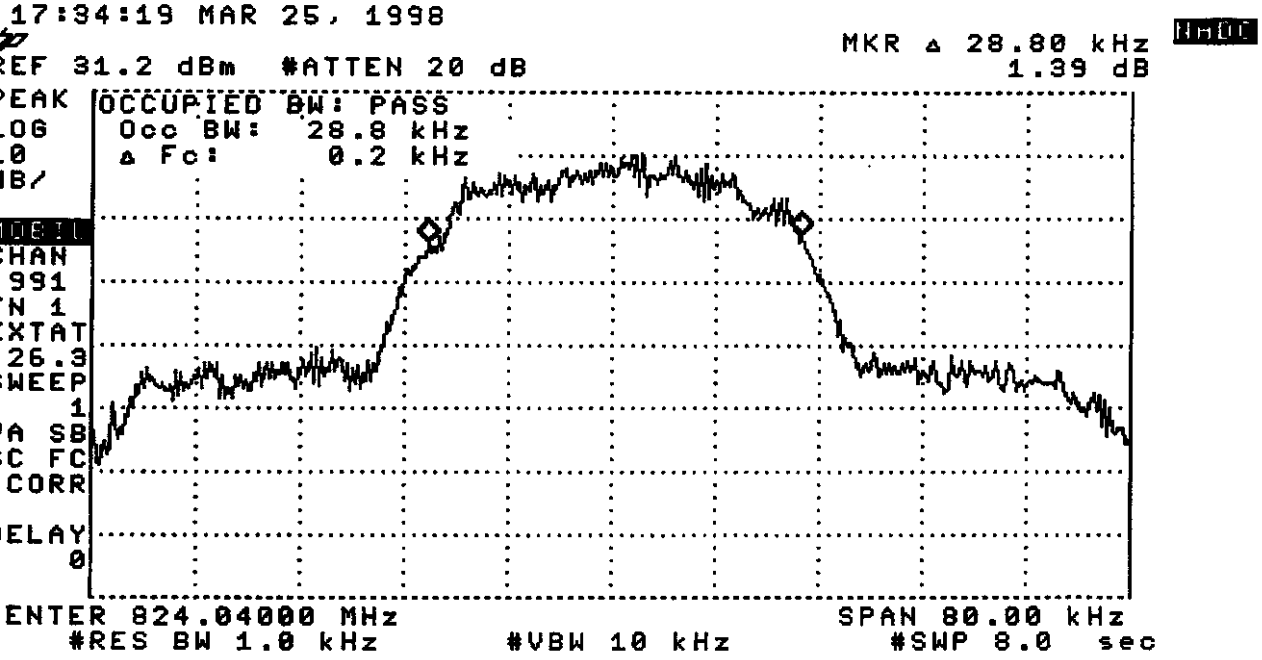
Steven G. Coston
Mgr., Regulatory Services
Research Triangle Park, NC

Tel No: (919) 472-7527
Fax No: (919) 472-7452

Attachments


17:40:01 MAR 25, 1998
MKR Δ 29.00 kHz
-1.77 dB
EF 28.0 dBm #ATTEN 20 dB
EAK
06
0
B/
OCCUPIED BW: PASS
Occ BW: 29.0 kHz
Δ Fc: 0.3 kHz
DETL
HAN
799
N 1
XTAT
26.3
WEEP
1
A SB
C FC
CORR
ELAY
0
ENTER 848.97000 MHz
SPAN 80.00 kHz
#RES BW 1.0 kHz
#VBW 10 kHz
#SWP 8.0 sec


17:38:46 MAR 25, 1998
EF 28.8 dBm #ATTEN 20 dB
TPOS
OG
3
B/
DBIL
HAN
799
N 1
XTAT
26.3
WEEP
2
A SB
C FC
CORR
ELAY
0
ADJ CHAN PWR [Time Gated]: PASS
Modulation Lower Upper
Adj: -31.4 dB -28.4 dB
1st Alt: -46.9 dB -45.8 dB
2nd Alt: -56.7 dB -55.5 dB
-30.0 dBm -28.8 dBm
Transient Lower Upper
Adj: -31.4 dB -28.4 dB
1st Alt: -46.9 dB -45.8 dB
2nd Alt: -56.7 dB -55.5 dB
-30.0 dBm -28.8 dBm
ENTER 848.9700 MHz
SPAN 240.0 kHz
#RES BW 1.0 kHz
#VBW 3 kHz
#SWP 8.0 sec


17:34:19 MAR 25, 1998
MKR Δ 28.80 kHz
1.39 dB
REF 31.2 dBm #ATTEN 20 dB
PEAK
LOG
0
IB/
OCCUPIED BW: PASS
Occ BW: 28.8 kHz
Δ Fc: 0.2 kHz
CHAN
991
N 1
XTAT
26.3
WEEP
1
A SB
C FC
CORR
ELAY
0
ENTER 824.04000 MHz
SPAN 80.00 kHz
#RES BW 1.0 kHz
#VBW 10 kHz
#SWP 8.0 sec

17:36:42 MAR 25, 1998

EF 30.8 dBm #ATTEN 20 dB

ADJ CHAN PWR [Time Gated]: PASS

Modulation	Lower	Upper
Adj:	-30.7 dB	-28.4 dB
1st Alt:	-47.5 dB	-47.3 dB
2nd Alt:	-55.6 dB -25.8 dBm	-54.8 dB -25.0 dBm

Transient	Lower	Upper
Adj:	-30.7 dB	-28.4 dB
1st Alt:	-47.5 dB	-45.0 dB
2nd Alt:	-49.3 dB -19.5 dBm	-50.2 dB -20.4 dBm

ENTER 824.0400 MHz SPAN 240.0 kHz

#RES BW 1.0 kHz #VBW 3 kHz #SWP 8.0 sec

800 Mhz: SPURIOUS EMISSIONS (Conducted)

PARA 2.991 and 22.917 (d)(3)(e)(f)

Per 2.991 spurious emissions at the antenna terminals (conducted) when properly loaded with an appropriate artificial antenna were measured per EIA IS-55.

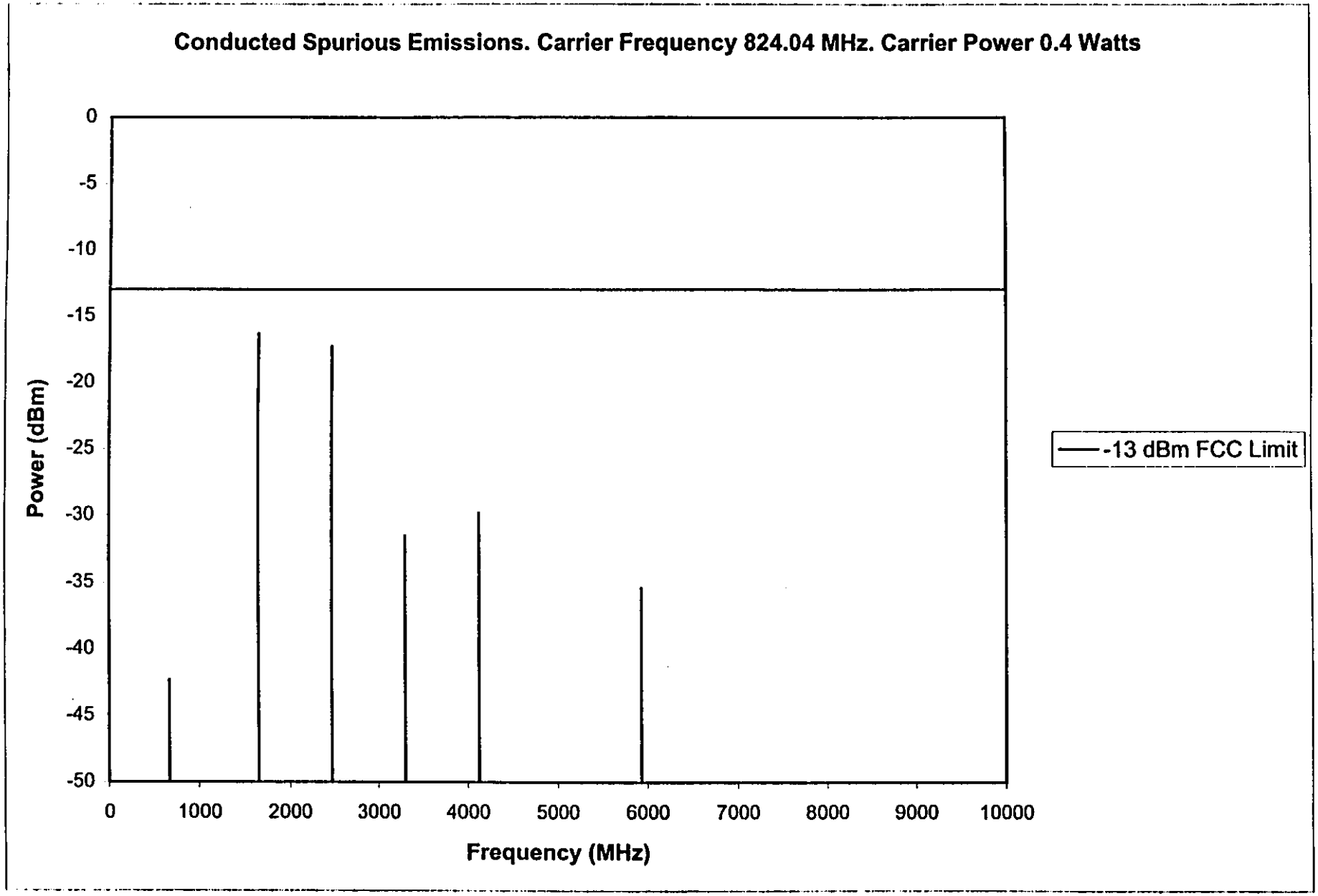
Pseudorandom 10 kHz data at +-8.8 kHz, which represents worse case modulation, was used for these tests.

As shown in the exhibits below, no radiated Emissions were found within the Base Station Transmit Band (869 Mhz - 894 Mhz). Above –80 dBm. This satisfies the Base Station protection section of Part 22.917 (f).

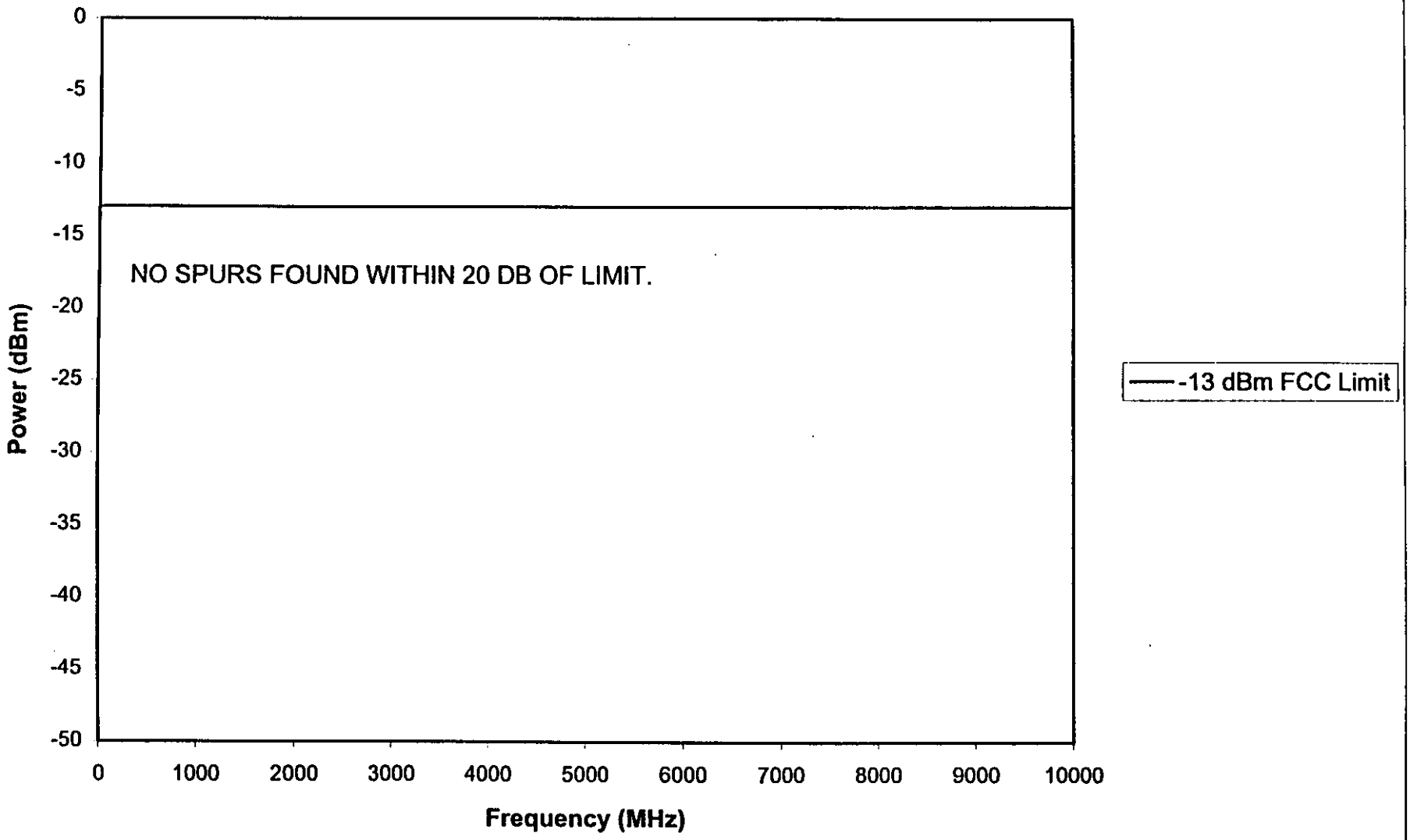
EXHIBIT	FREQUENCY (MHz)	OUTPUT POWER (W)
11B	824.04	.4
11C	824.04	.0004
11D	848.97	.4
11E	848.97	.0004

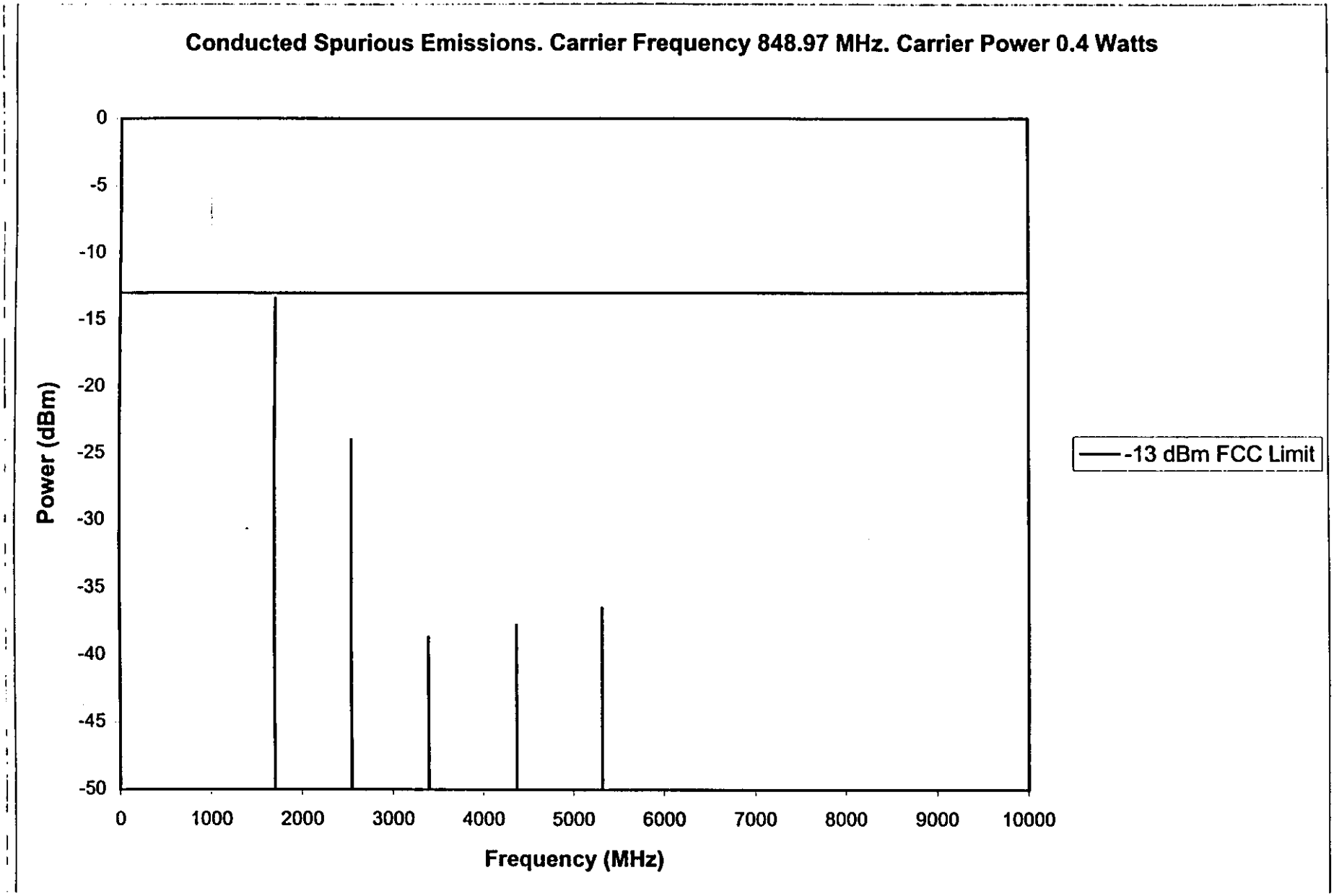
The measurements were made per EIA IS-19B using a Hewlett Packard 8953DT North American Dual-Mode Cellular Test System which includes the following equipment:

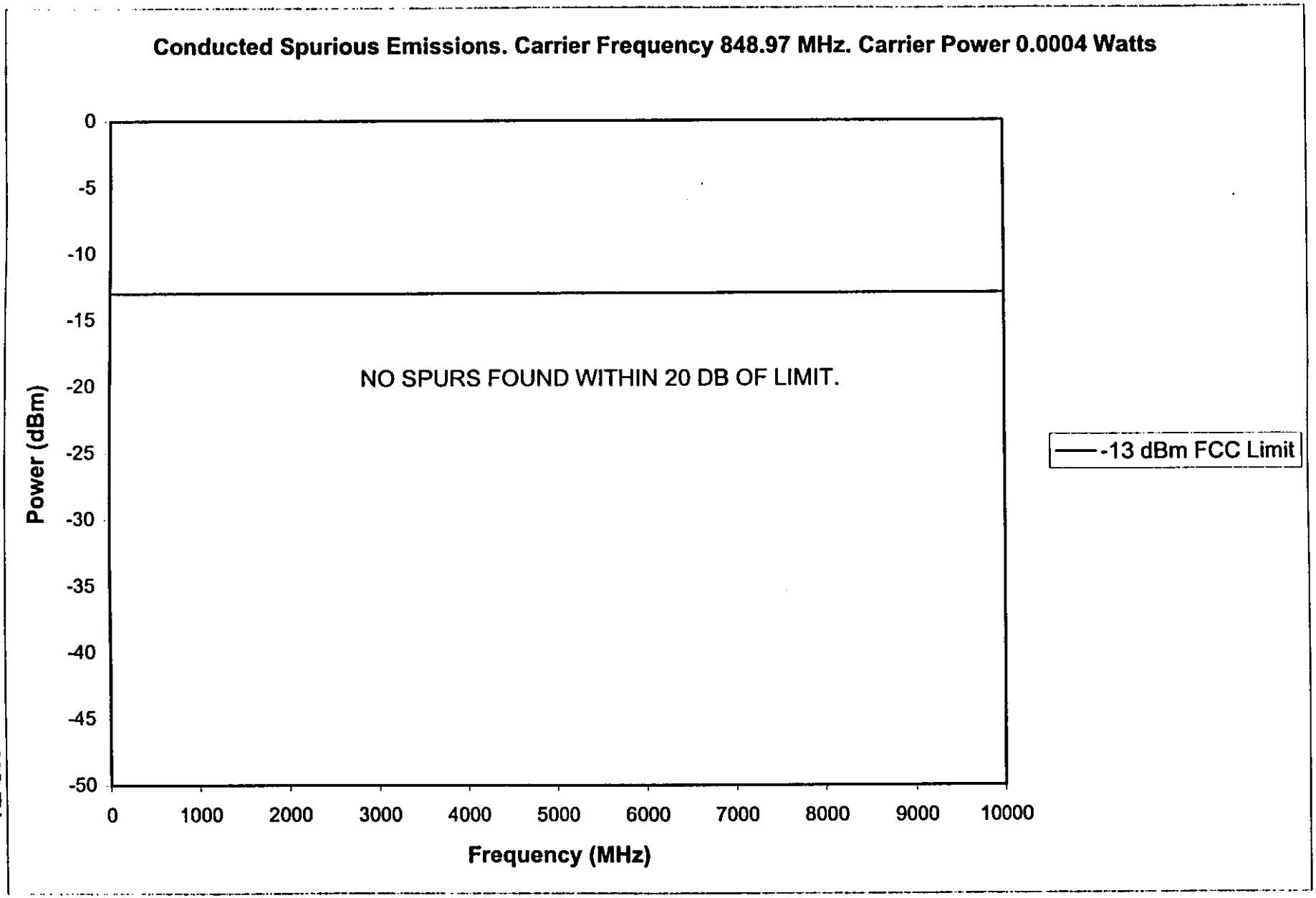
Hewlett Packard 8958A Cellular Interface
Hewlett Packard 6623A DC Power Supply
Hewlett Packard 8596E Spectrum Analyzer
Hewlett Packard 437B Power Meter
Hewlett Packard 8901B Modulation Analyzer
Hewlett Packard 8903B Audio Analyzer
Thermatron SM-8C Temperature Chamber



Conducted Spurious Emissions. Carrier Frequency 824.04 MHz. Carrier Power 0.0004 Watts






Conducted Spurious Emissions. Carrier Frequency 848.97 MHz. Carrier Power 0.0004 Watts
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
Power (dBm)
NO SPURS FOUND WITHIN 20 DB OF LIMIT.
-13 dBm FCC Limit
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Frequency (MHz)

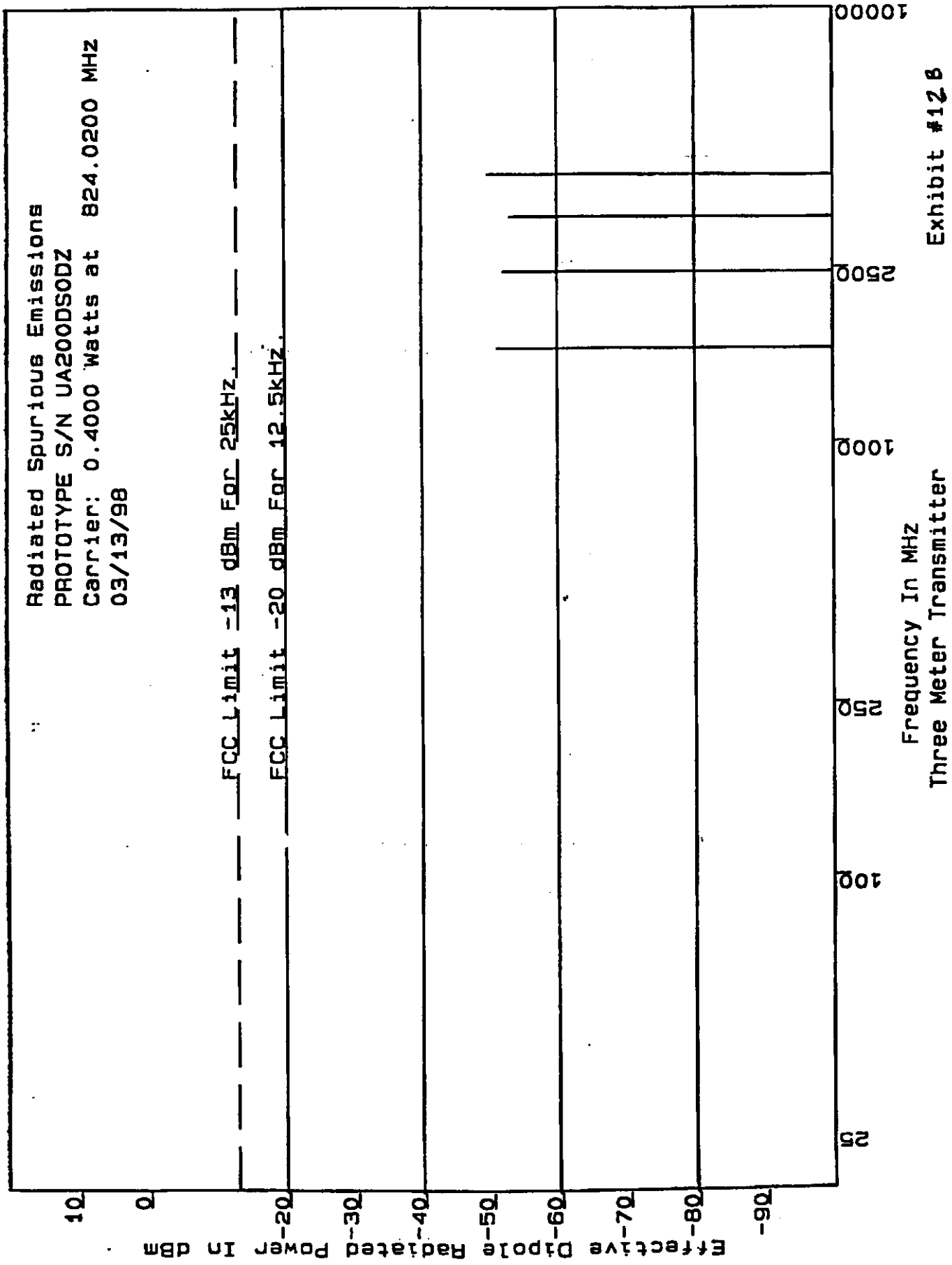
800 Mhz: SPURIOUS EMISSIONS (Radiated)

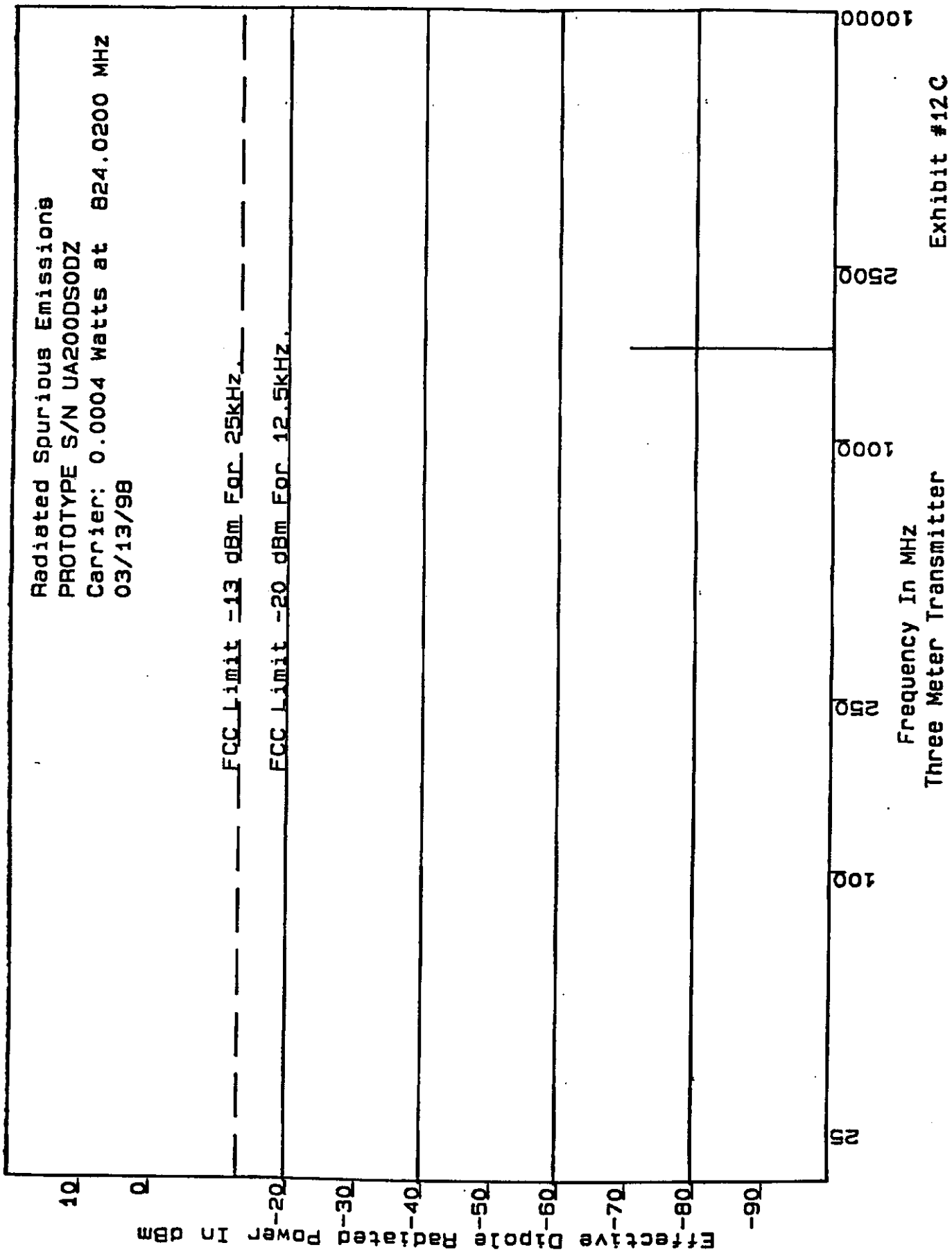
Per 2.993 and 22.917 (e), field strength of spurious radiation was measured on Ericsson's 3 meter site in Lynchburg, VA. The site and equipment are described in the site description and attenuation measurements for the Ericsson Inc. 3 meter radiation site #2 filed with the FCC in Columbia, MD, on June 5, 1997. The measurement procedure is per EIA IS-19B but done on a 3 meter test site. Results are shown on the following Exhibits.

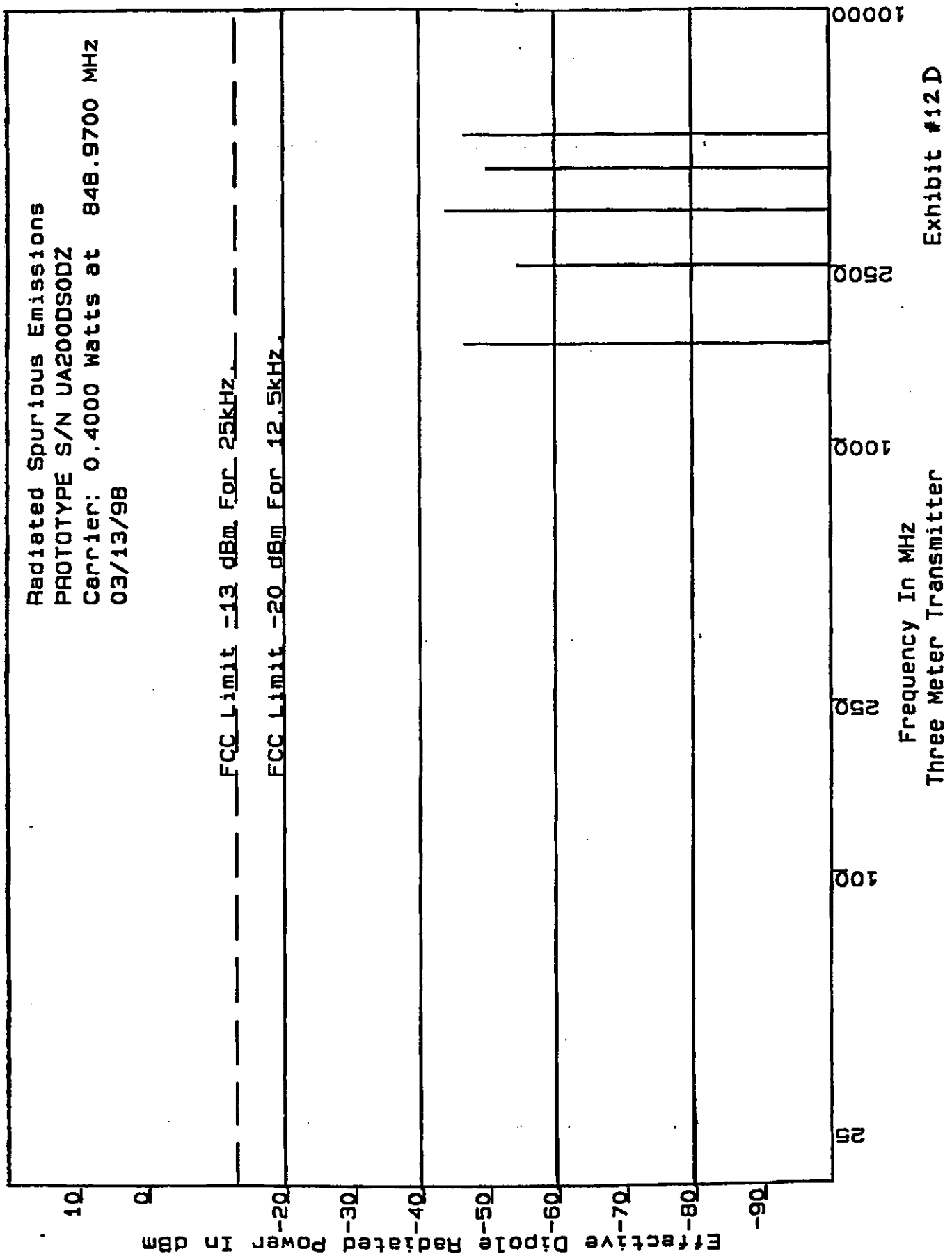
EXHIBIT	FREQUENCY	OUTPUT POWER
12B	824.02	.4
12C	824.02	.0004
12D	848.97	.4
12E	848.97	.0004
12F	836.49	.4
12G	836.49	.0004

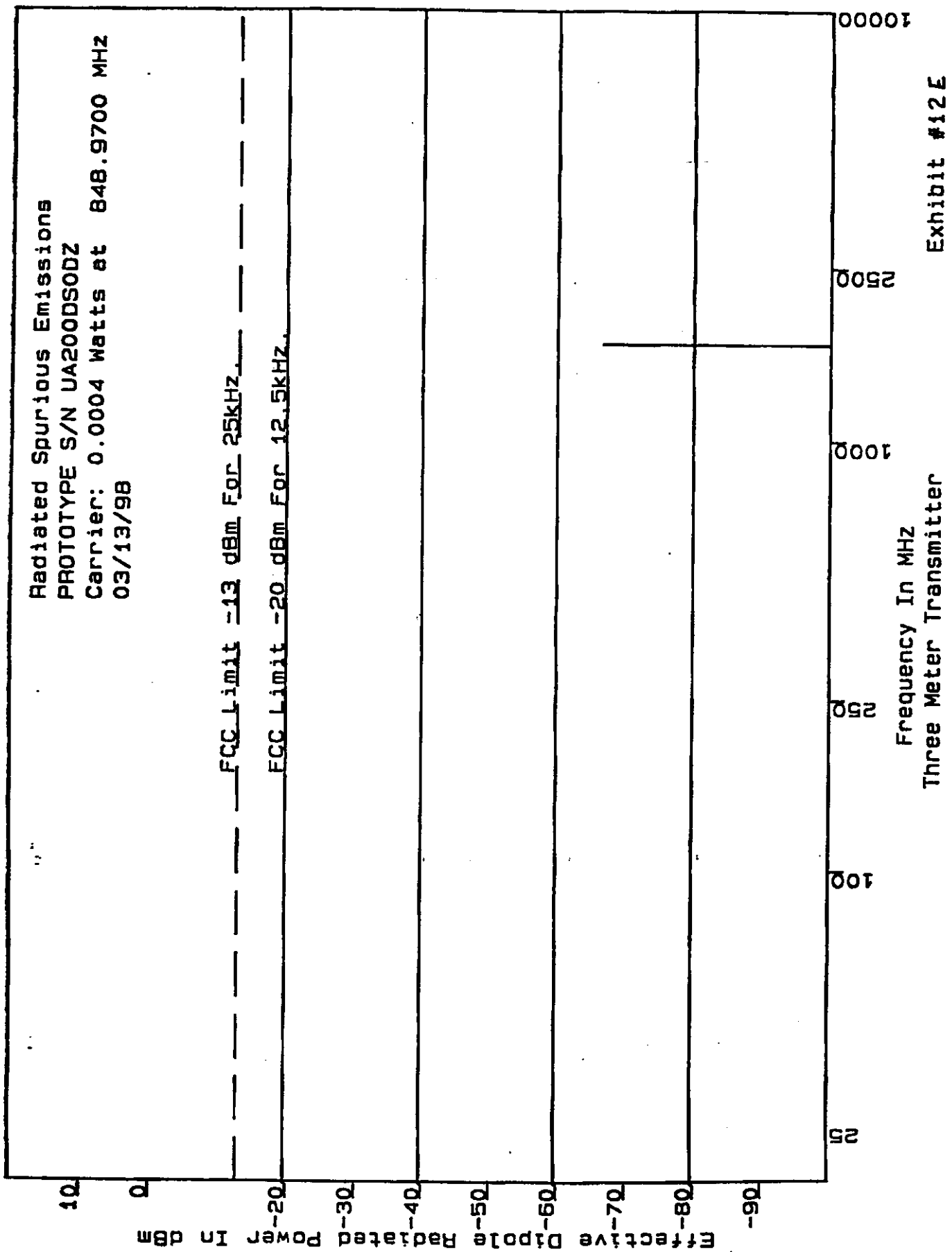
The measurements were made per EIA IS-19B using the following equipment:

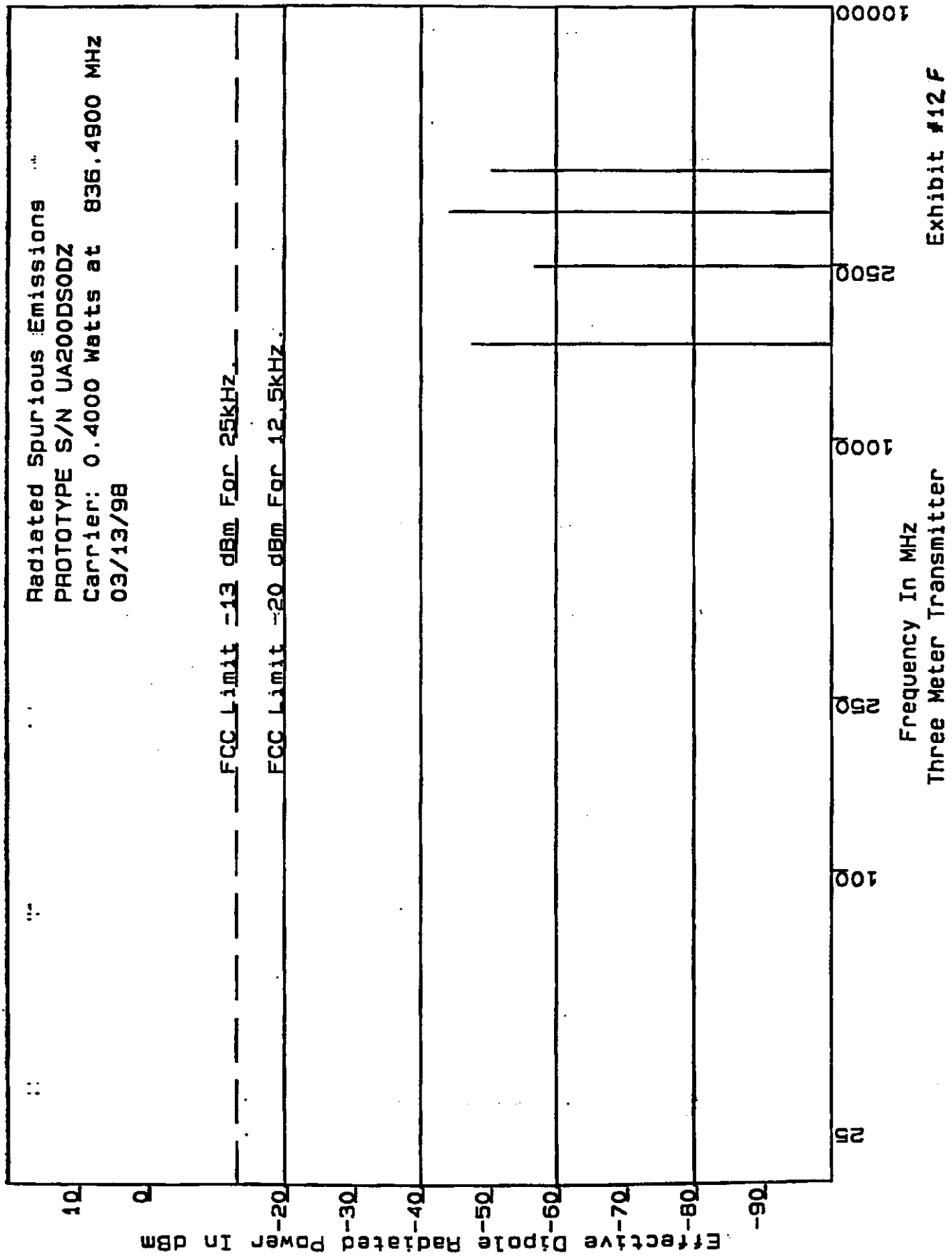
Hewlett Packard 8566B Spectrum Analyzer
Hewlett Packard 8559A Spectrum Analyzer

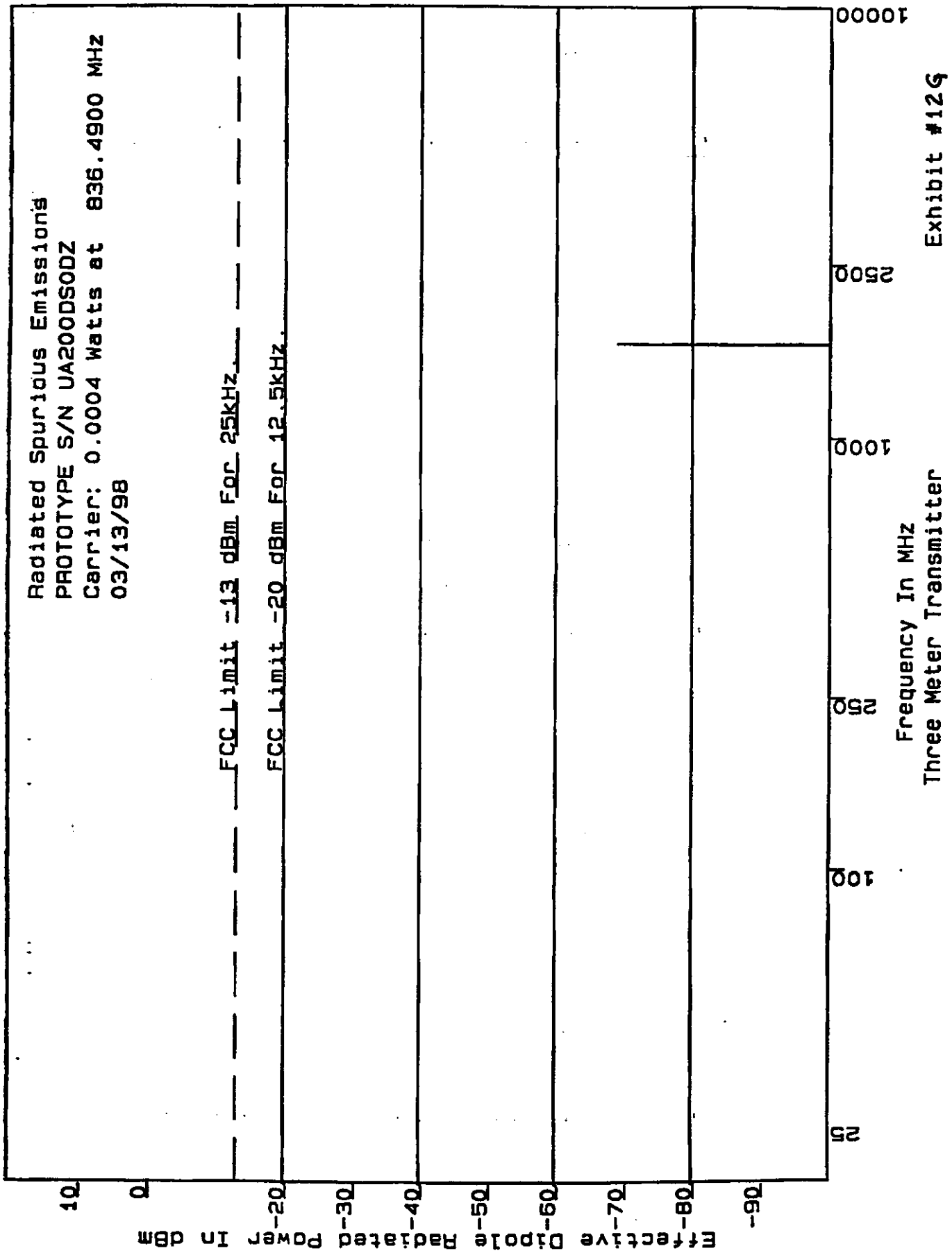

Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0DZ
Carrier: 0.4000 Watts at 824.0200 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12 B


Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0DZ
Carrier: 0.0004 Watts at 824.0200 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz.
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12C


Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0D2
Carrier: 0.4000 Watts at 848.9700 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12D


Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0DZ
Carrier: 0.0004 Watts at 848.9700 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12E


Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0DZ
Carrier: 0.4000 Watts at 836.4900 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz.
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12F


Radiated Spurious Emissions
PROTOTYPE S/N UA200DS0DZ
Carrier: 0.0004 Watts at 836.4900 MHz
03/13/98
FCC Limit -13 dBm For 25kHz
FCC Limit -20 dBm For 12.5kHz
Effective Dipole Radiated Power In dBm
10
0
-20
-30
-40
-50
-60
-70
-80
-90
25
100
250
1000
2500
10000
Frequency In MHz
Three Meter Transmitter
Exhibit #12G

800 Mhz: FREQUENCY STABILITY

PARA 2.995 (a1)(b)(d1)

Per 2.995 (a1, b, d1) variation of output frequency as a result of either temperature or voltage variation is shown in the following exhibits.

EXHIBIT	VOLTAGE	TEMPERATURE
13B	4.8	Varied
13C	4.3 to 5.9	+25

Manufacturer's rated limits are 4.3 to 5.9V for battery.

The measurements were made per EIA IS-19B using a Hewlett Packard 8953DT North American Dual-Mode Cellular Test System which includes the following equipment:

Hewlett Packard 8958A Cellular Interface
Hewlett Packard 6623A DC Power Supply
Hewlett Packard 8596E Spectrum Analyzer
Hewlett Packard 437B Power Meter
Hewlett Packard 8901B Modulation Analyzer
Hewlett Packard 8903B Audio Analyzer
Thermatron SM-8C Temperature Chamber