Engineering and Testing for EMC and Safety Compliance

TYPE CERTIFICATION REPORT

Sony Ericsson Mobile Communications (US, Inc.)
7001 Development Drive
P.O. Box 13969
Research Triangle Park, NC 27709
919-472-1697 (Pierre Chery)

MODEL: R300ds

FCC ID: AXATR-421-A2

November 12, 2001

STANDARDS REFERENCED FOR THIS REPORT	
PART 2: 1999	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
PART 15: 1999	§15.109: RADIATED EMISSIONS LIMITS
PART 22: 1998	PUBLIC MOBILES SERVICES
ANSI C63.4-1992	STANDARD FORMAT MEASUREMENT/TECHNICAL REPORT PERSONAL COMPUTER AND PERIPHERALS
ANSI/TIA/EIA603- 1992	LAND MOBILE FM OR PM COMMUNICATIONS EQUIPMENT MEASUREMENT AND PERFORMANCE STANDARDS
ANSI/TIA/EIA 603-1-1998	ADDENDUM TO ANSI/TIA/EIA 603-1992

FCC Rules Parts	Frequency Range	Output Power ERP (W)	Freq. Tolerance	Emission Designator
22.901(d)	824-849 MHz	0.447	1.5	28K5DXW
22(H)	824-849 MHz	0.347	1.5	40K0F1D, 40K0F8W

REPORT PREPARED BY:

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Document Number: 2001303 / QRTL01-334

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TABLE OF CONTENTS

1 GENERAL INFORMATION 4

1.1 TEST FACILITY 4
1.2 RELATED SUBMITTAL(S)/GRANT(S) 4

2 CONFORMANCE STATEMENT 5

3 TESTED SYSTEM DETAILS 6

3.1 COMPONENTS 6
3.2 CONFIGURATION OF TESTED SYSTEM 6

4 FCC RULES AND REGULATIONS PART 2.1046 (A); RF POWER OUTPUT: RADIATED ERP PER PART 22.913 7

4.1 TEST PROCEDURE 7
4.2 TEST DATA 8
4.3 TEST EQUIPMENT 8

5 FCC RULES AND REGULATIONS PART 2 §2.1053 (A): FIELD STRENGTH OF SPURIOUS RADIATION 9

5.1 TEST PROCEDURE 9
5.2 TEST DATA 10
5.3 TEST EQUIPMENT 10

6 FCC RULES AND REGULATIONS PART 22.901(D): BAND-EDGE COMPLIANCE 11

6.1 TEST DATA FOR PART 22.901(D) 11
6.2 TEST EQUIPMENT 16

7 FCC RULES AND REGULATIONS PART 22.917 (F) EMISSIONS IN BASE STATION FREQUENCY BAND FROM MOBILES 17

7.1 TEST DATA 17
7.2 TEST EQUIPMENT 24

8 FCC RULES AND REGULATIONS PART 2 §2.1049 (C) (1): OCCUPIED BANDWIDTH 25

8.1 TEST PROCEDURE 25
8.2 TEST DATA 25
8.3 TEST EQUIPMENT 36

9 FCC RULES AND REGULATION PART 2 §2.1055: FREQUENCY STABILITY 37

9.1 TEST PROCEDURE 37
9.2 TEST DATA 37
9.2.1 FREQUENCY STABILITY/FREQUENCY VARIATION 37
9.2.2 FREQUENCY STABILITY/VOLTAGE VARIATION 38

10 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE 40

10.1 TEST PROCEDURE 40
10.2 TEST DATA 40
10.3 TEST EQUIPMENT 40

11 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS - AUDIO LOW PASS FILTER RESPONSE 41

11.1 TEST PROCEDURE 41

11.2 TEST DATA ... 41
11.3 TEST EQUIPMENT ... 41

12 FCC RULES AND REGULATIONS PART 2 §2.1047 (B): MODULATION CHARACTERISTICS - MODULATION LIMITING 42

12.1 TEST PROCEDURE ... 42
12.2 TEST DATA ... 42
12.3 TEST EQUIPMENT ... 45

13 FCC RULES AND REGULATIONS PART 2.202: NECESSARY BANDWIDTH AND EMISSION BANDWIDTH ... 46

14 FCC RULES AND REGULATIONS PART 2.1033(C)(8)); DC VOLTAGES AND CURRENTS ... 46

15 TEST CONFIGURATION PHOTOGRAPHS ... 47

APPENDIX A: FCC PART 15 §15.107 (A) - AC LINES CONDUCTED EMISSIONS ... 51

TEST PROCEDURE ... 51
TEST DATA ... 52
TEST EQUIPMENT ... 52

APPENDIX B: FCC PART 15 §15.109 (A) RADIATED EMISSIONS ... 53

FIELD STRENGTH CALCULATION ... 53
TEST PROCEDURE ... 54
TEST DATA ... 54
TEST EQUIPMENT ... 54

1 GENERAL INFORMATION

The following Report of a Type Certification is prepared on behalf of Sony Ericsson Mobile Communications, (US Inc.) in accordance with the Federal Communications Commissions. The Equipment Under Test (EUT) was the R300ds unit; FCC ID: AXATR-421-A2. The test results reported in this document relate only to the item that was tested.

All measurements contained in this application were conducted in accordance with FCC Rules and Regulations CFR 47 and ANSI/TIA/EIA603-1992 /-1-1998 Land Mobile FM or PM Communications Equipment Measurement and Performance Standards. The instrumentation utilized for the measurements conforms to the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Calibration checks are performed regularly on the instruments, and all accessories including high pass filter, coaxial attenuator, preamplifier and cables.

1.1 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

1.2 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application for Certification

2 CONFORMANCE STATEMENT

We, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this attached test record. No modifications were made to the equipment during testing in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to or exclusions from the FCC Part 2, FCC Part 15, FCC Part 22(H) and Part 22.901(d) Certification methodology.

Signature: Date: November 11 2001

Typed/Printed Name: Bruno Clavier Position: Vice President of Operations (NVLAP Signatory)

Signature: Date: November 11 2001

Typed/Printed Name: Daniel W. Baltzell Position: EMC Test Engineer

NVLAP *Accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code 200061-0.*

Note: This report may not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

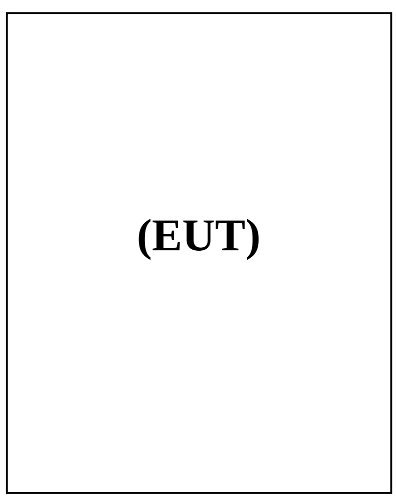
3 TESTED SYSTEM DETAILS

Listed below is the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

3.1 COMPONENTS

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
PHONE	ERICSSON, INC.	R300ds	UA2020LBTK	N/A	N/A	13847
PHONE	ERICSSON, INC.	R300ds	UA2020LC6S	N/A	N/A	13839
BATTERY	ERICSSON, INC.	30000044	13461585CPDBWP	N/A	N/A	13848
BATTERY	ERICSSON, INC.	30000044	13461434CPDBWP	N/A	N/A	13843
BATTERY CHARGER	ERICSSON, INC.	316AMS43001	N/A	N/A	N/A	13842
BATTERY CHARGER	ERICSSON, INC.	316AMS43001	N/A	N/A	N/A	13840

3.2 CONFIGURATION OF TESTED SYSTEM



4 FCC RULES AND REGULATIONS PART 2.1046 (A); RF POWER OUTPUT: RADIATED ERP PER PART 22.913

4.1 TEST PROCEDURE

Substitution Method:

The EUT was setup at an antenna to EUT distance of 3 meters on an open area test site. The EUT was placed on a nonconductive turntable 1.0 meter above the ground plane.

The physical arrangement of the EUT was varied through three orthogonal planes in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

The worst-case, maximum radiated emission was recorded and used as reference for the measurement.

The EUT was then replaced by an ½ wave dipole antenna and polarized in accordance with the EUT's antenna polarization. The ½ wave dipole antenna was connected to a RF signal generator with a coaxial cable.

The search antenna height, and search antenna polarity was set to levels that produced the maximum reading obtained in step 3. The signal generator was adjusted to a level that produced the radiated emission level obtained in step 3.

The signal generator level was recorded and corrected by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal ½ wave dipole antenna. The signal generator corrected level is the ERP level.

4.2 TEST DATA

AMPS

Channel Number	Frequency (MHz)	Signal Generator (dBm)	Cable Loss* (dB)	TX Antenna Gain (dBd)	Corrected Signal Generator (dBm)	ERP (mW)
991	824.036	26.5	0.9	-1.2	24.4	275
383	836.490	26.3	1.0	-1.2	24.1	257
799	848.966	26.5	1.0	-1.2	24.3	269

TDMA

Channel Number	Frequency (MHz)	Signal Generator (dBm)	Cable Loss* (dB)	TX Antenna Gain (dBd)	Corrected Signal Generator (dBm)	ERP (mW)
991	824.036	28.6	0.9	-1.2	26.5	447
383	836.490	28.0	1.0	-1.2	25.8	380
799	848.966	27.8	1.0	-1.2	25.6	363

*cable loss from transmitting antenna to signal generator
Measurement accuracy is +/- .5 dB

4.3 TEST EQUIPMENT

Spectrum Analyzer HP8566B
Antenna BiLog Chase 6112L

5 FCC RULES AND REGULATIONS PART 2 §2.1053 (A): FIELD STRENGTH OF SPURIOUS RADIATION

5.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.12

Substitution Method:

The EUT was setup at an antenna to EUT distance of 3 meters on an open area test site. The EUT was placed on a nonconductive turntable 1.0 meter above the ground plane.

The physical arrangement of the EUT was varied through three orthogonal planes in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

The worst-case, maximum radiated emission was recorded and used as reference for the measurement.

The EUT was then replaced by an ½ wave dipole antenna and polarized in accordance with the EUT's antenna polarization. The ½ wave dipole antenna was connected to a RF signal generator with a coaxial cable.

The search antenna height, and search antenna polarity was set to levels that produced the maximum reading obtained in step 3. The signal generator was adjusted to a level that produced the radiated emission level obtained in step 3.

The signal generator level was recorded and corrected by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal ½ wave dipole antenna. The signal generator corrected level is the spurious radiation emission level.

The transmitter is modulated with a 2,500 Hz sine wave at an input level 16 dB greater than that required to produce 50% of the rated system deviation at 1000 Hz, and for digital mode the transmitter is set in continuous transmitting mode and modulated with pseudo random data using internal software.

5.2 TEST DATA

The magnitude of emissions attenuated more than 20 dB below the FCC limit need not be recorded.

Channel 991 (824.036 MHz) AMPs mode (24.4 dBm ERP); substitution method

Frequency (MHz)	Signal Generator (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator (dBc)	Limit (dBc)	Margin (dB)
1648.072	-51.6	1.2	6.8	70.4	37.4	-33
2472.108	-60.6	1.2	6.8	79.4	37.4	-42
3296.144	<-80					
4120.180	<-80					
4944.216	<-80					
5768.252	<-80					
6592.288	<-80					
7416.324	<-80					
8240.360	<-80					

Channel 991 (824.036 MHz) TDMA mode (26.5 dBm ERP) ; substitution method

Frequency (MHz)	Signal Generator (dBm)	Cable Loss (dB)	Antenna Gain (dBd)	Corrected Signal Generator (dBc)	Limit (dBc)	Margin (dB)
1648.072	-40.9	1.5	7.3	61.6	39.5	-22.1
2472.108	-62.7	1.5	7.3	83.4	39.5	-43.9
3296.144	<-80					
4120.180	<-80					
4944.216	<-80					
5768.252	<-80					
6592.288	<-80					
7416.324	<-80					
8240.360	<-80					

5.3 TEST EQUIPMENT

Antenna:	CHASE CBL6112	s/n 2099
Amplifier:	HP8449B	s/n 3008A00505
Spectrum analyzer:	HP8564E	s/n 3943A01719
RF Signal Generator	HP8648C	s/n 3537A01741
Synthesized Sweeper	HP83752A	s/n 3610A00846

6 FCC RULES AND REGULATIONS PART 22.901(D): BAND-EDGE COMPLIANCE

6.1 TEST DATA FOR PART 22.901(D)

The following plots were made using radiated measurements. The center frequency of the spectrum analyzer display was set to 824MHz for the lower band-edge and 849MHz for the upper band-edge.

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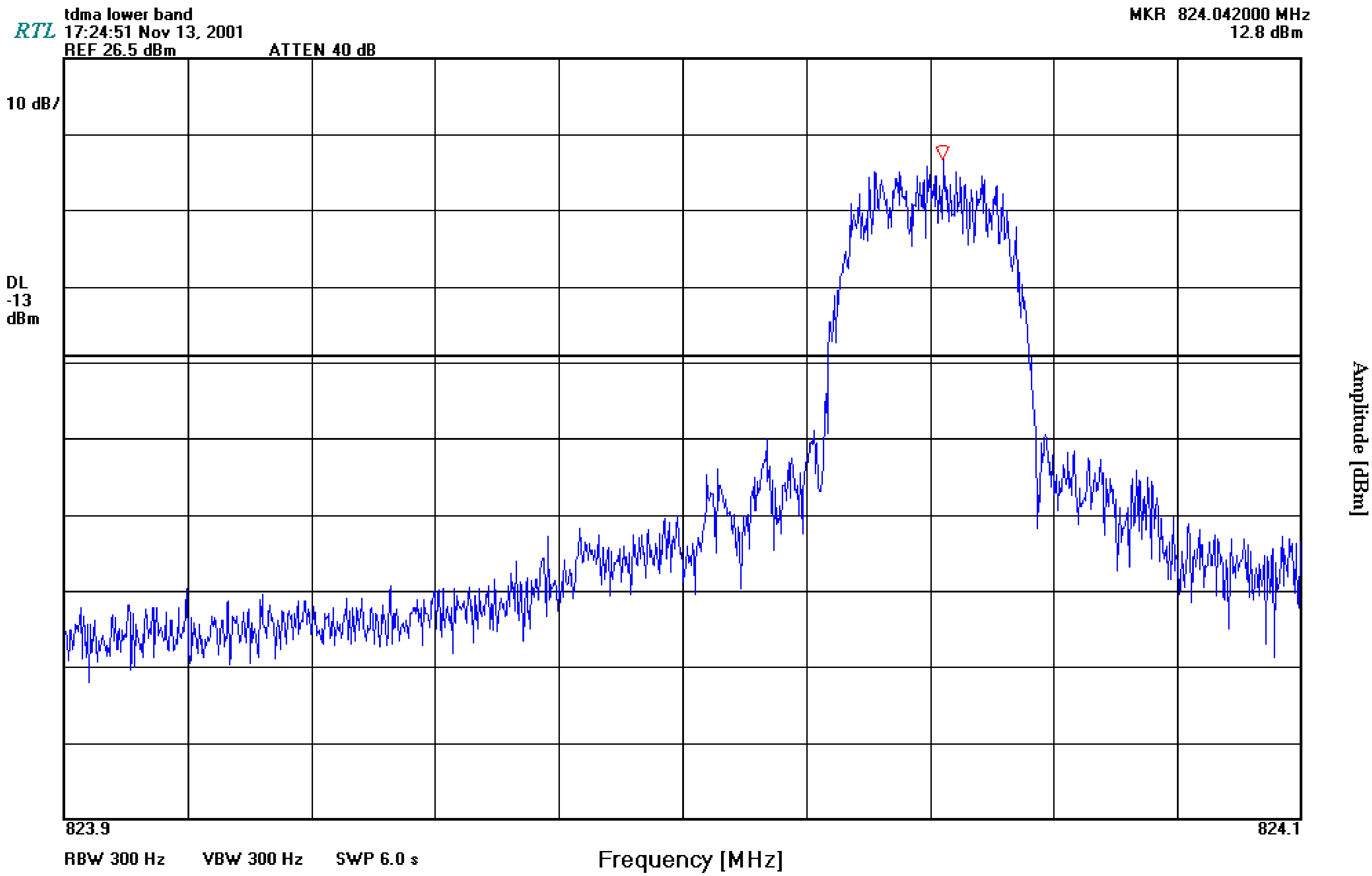
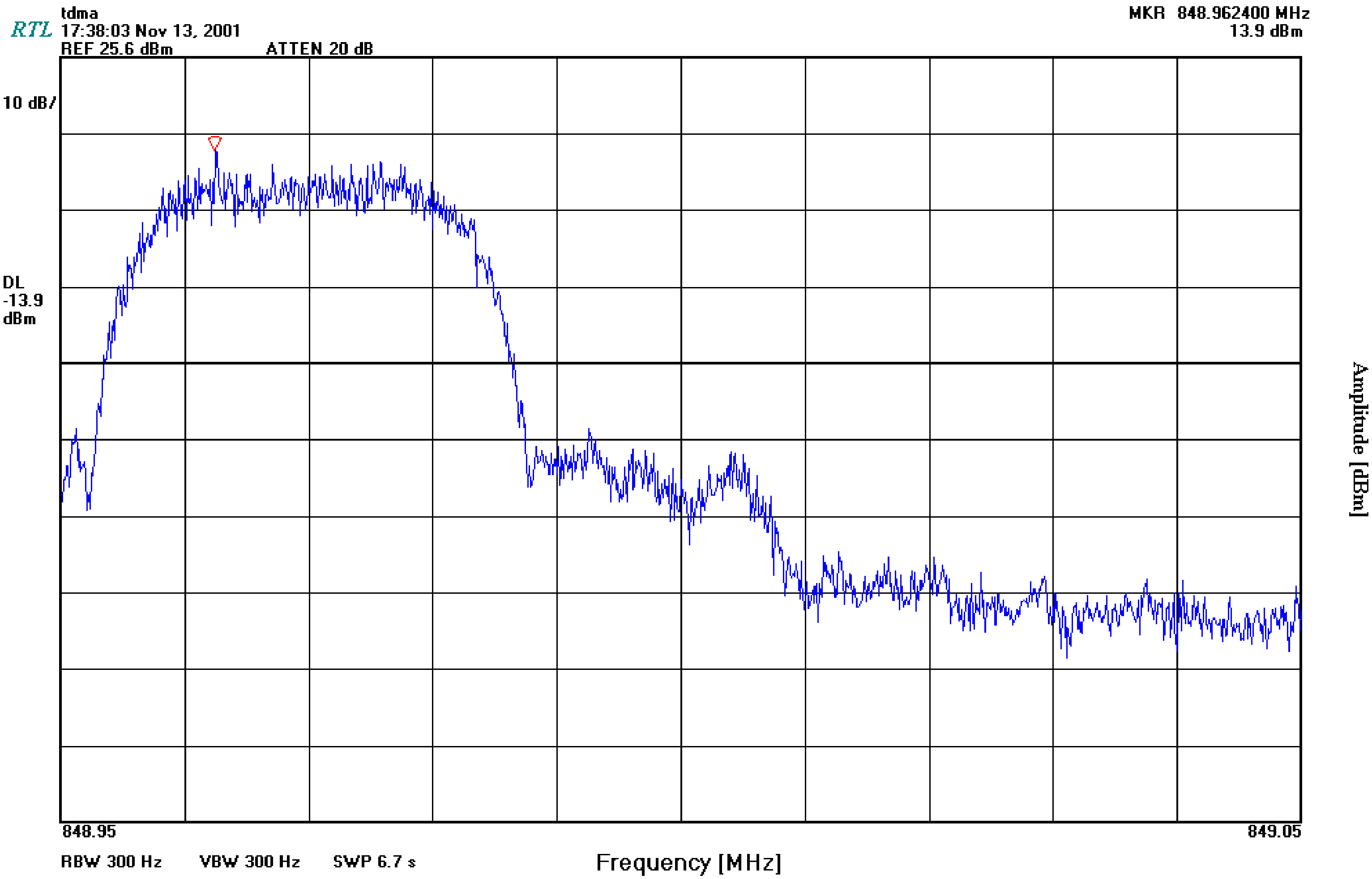
TDMA Lower Band Edge



TDMA Upper Band Edge



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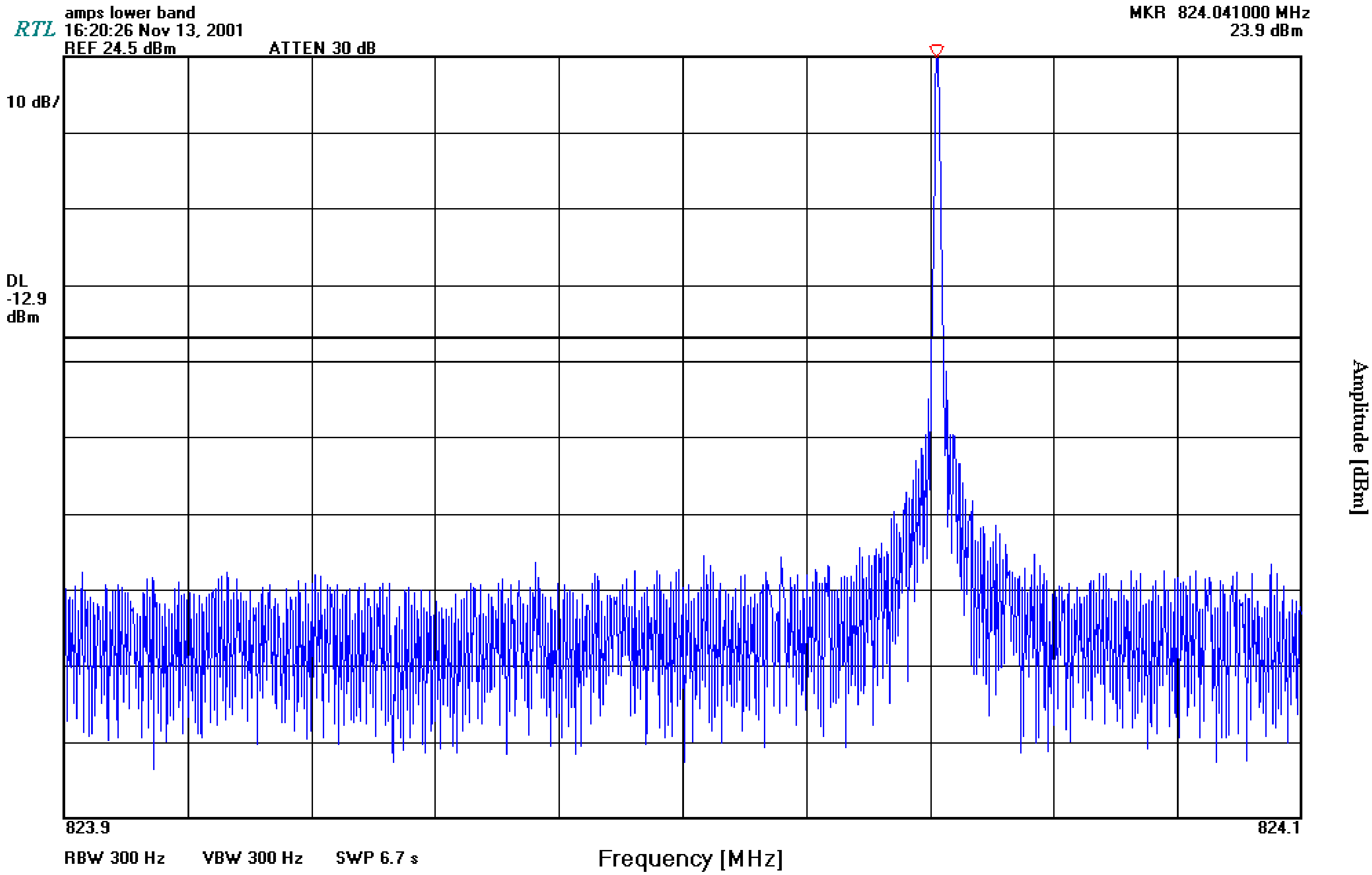
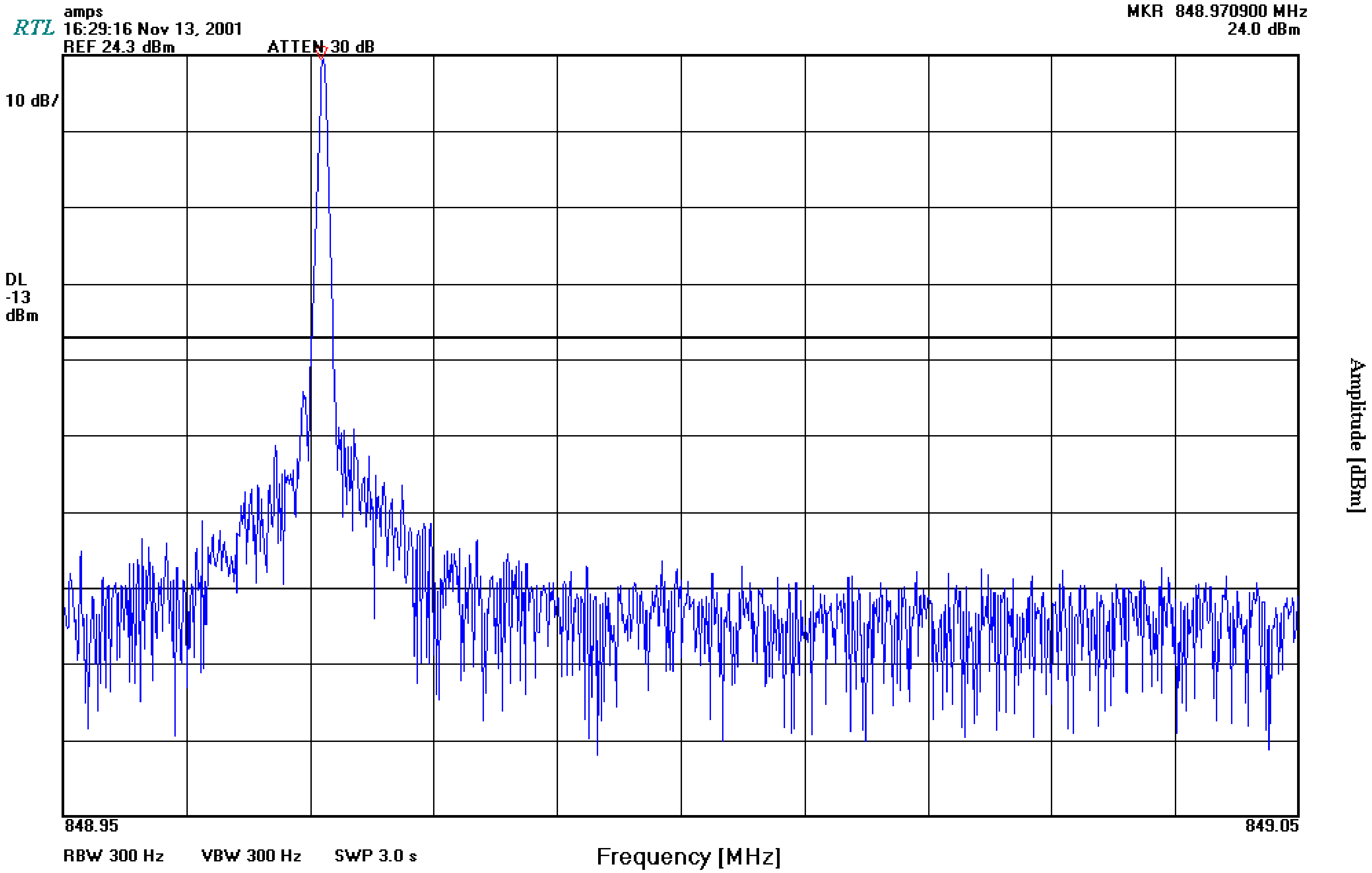
AMPS Lower Band Edge



AMPS Upper Band Edge



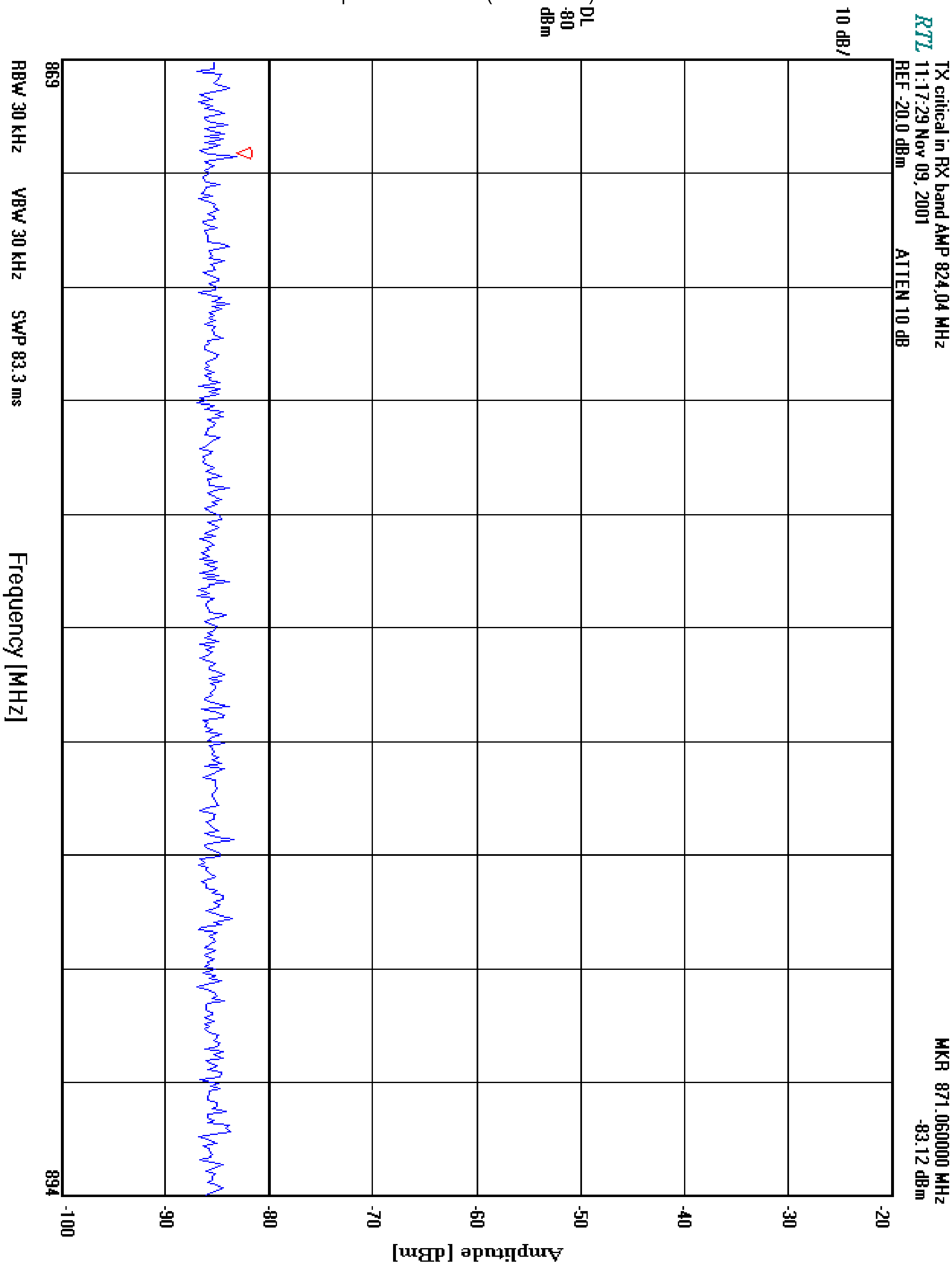
6.2 TEST EQUIPMENT

Spectrum Analyzer	HP8566B
Antenna	BiLog Chase 6112L

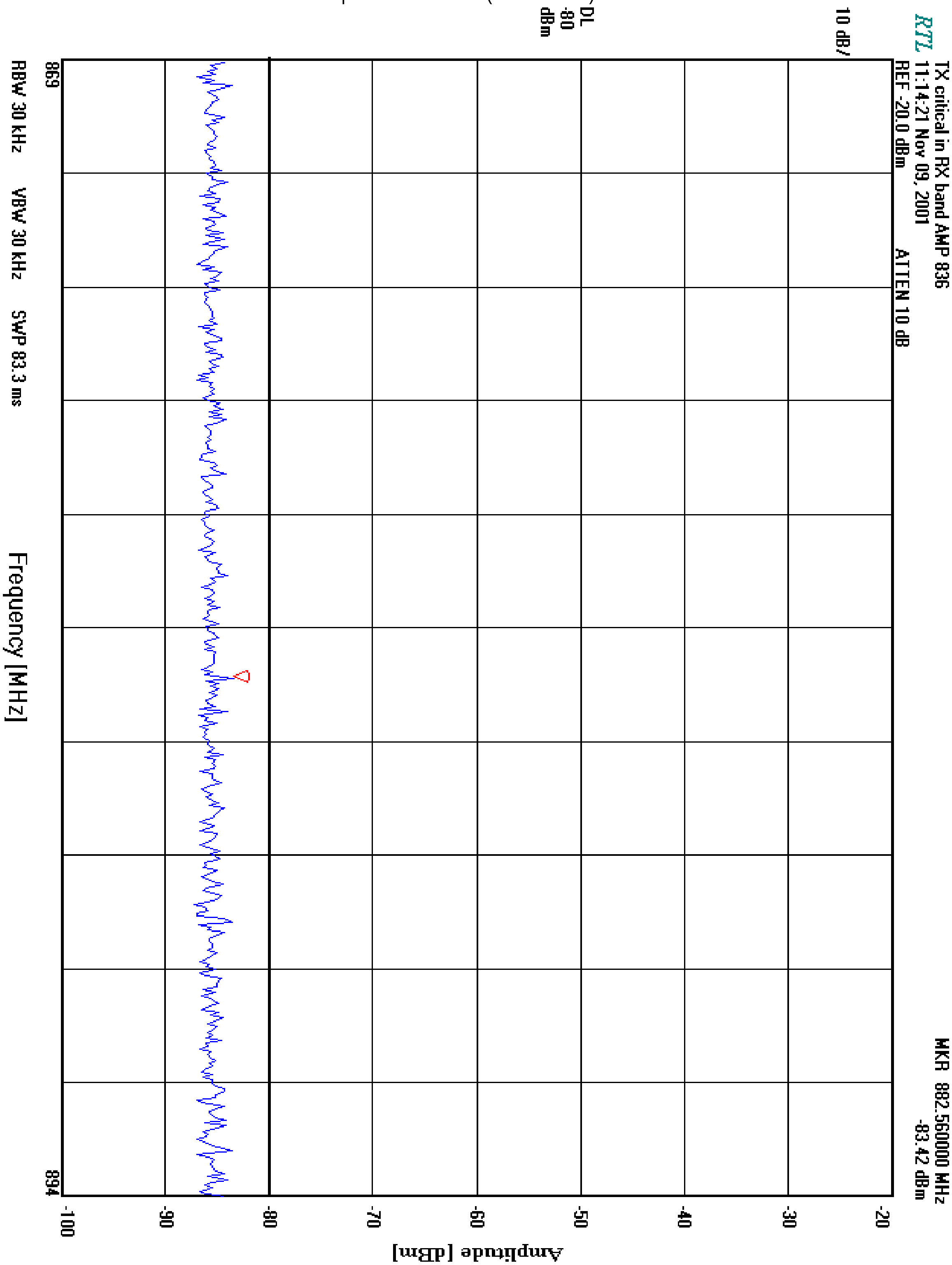
7 FCC RULES AND REGULATIONS PART 22.917 (F) EMISSIONS IN BASE STATION FREQUENCY BAND FROM MOBILES

7.1 TEST DATA

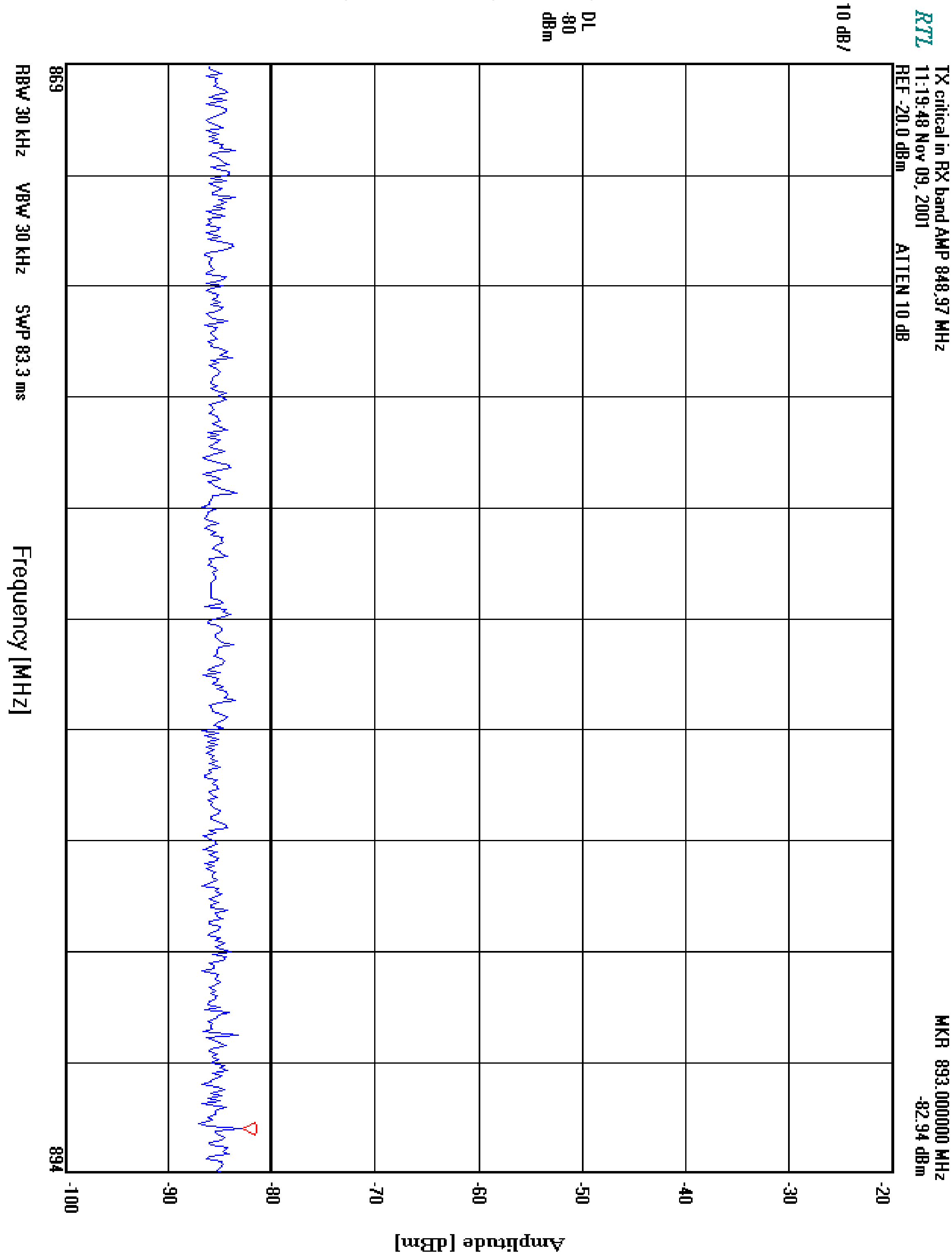
TX spurs in RX critical (824.04 MHz) AMPS



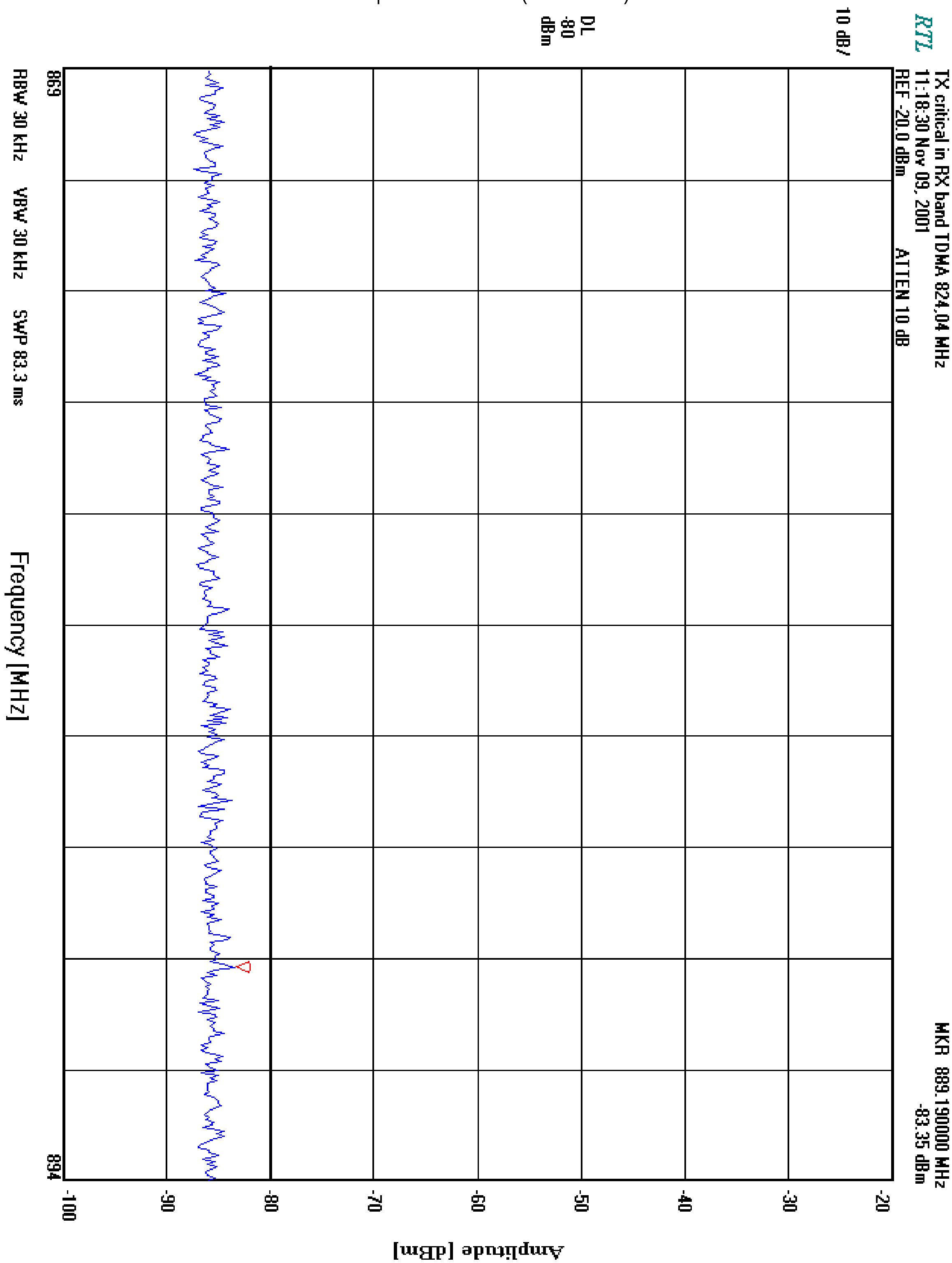
TX spurs in RX critical (836.49 MHz) AMPS



TX spurs in RX critical (848.97 MHz) AMPS



TX spurs in RX critical (824.04 MHz) TDMA



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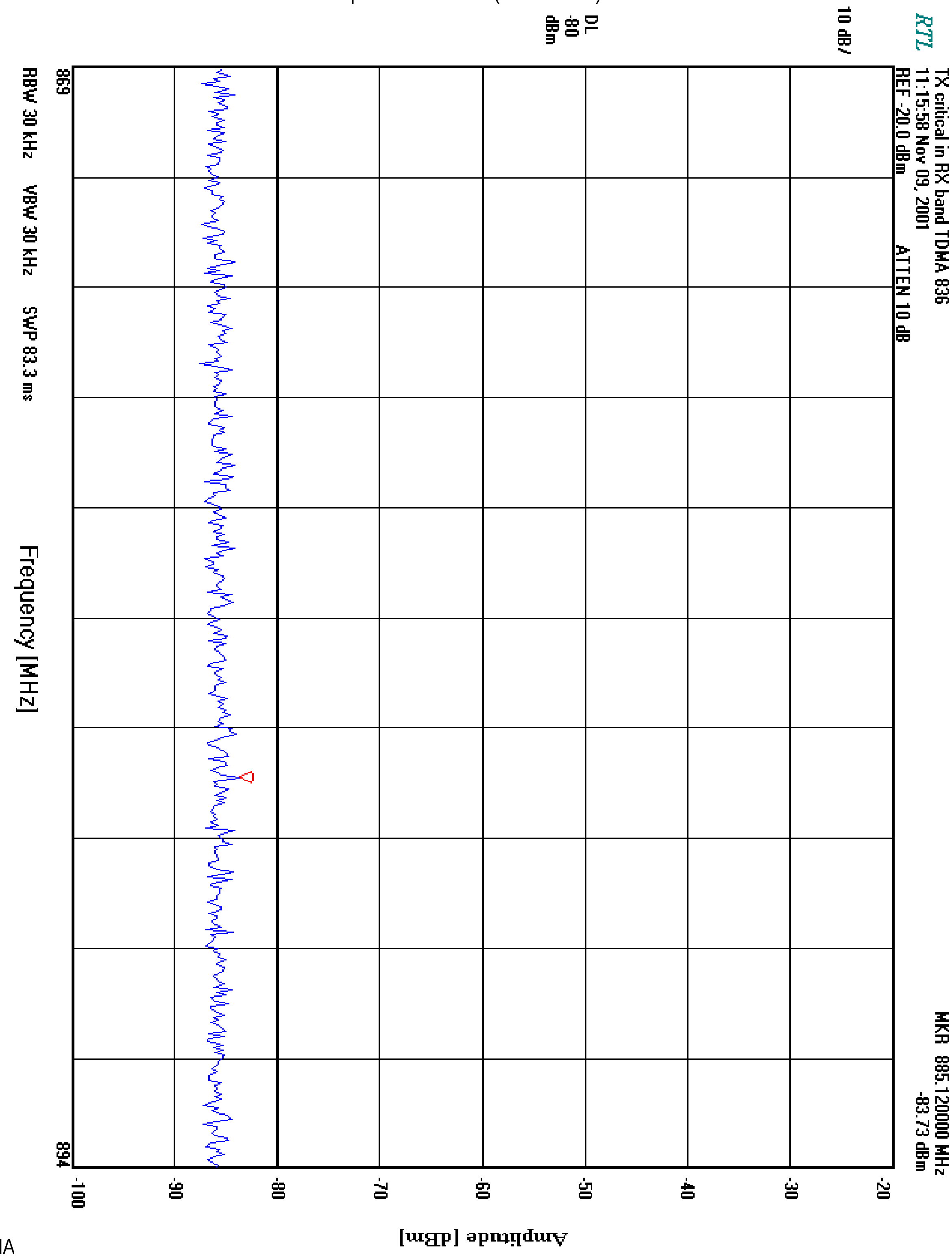
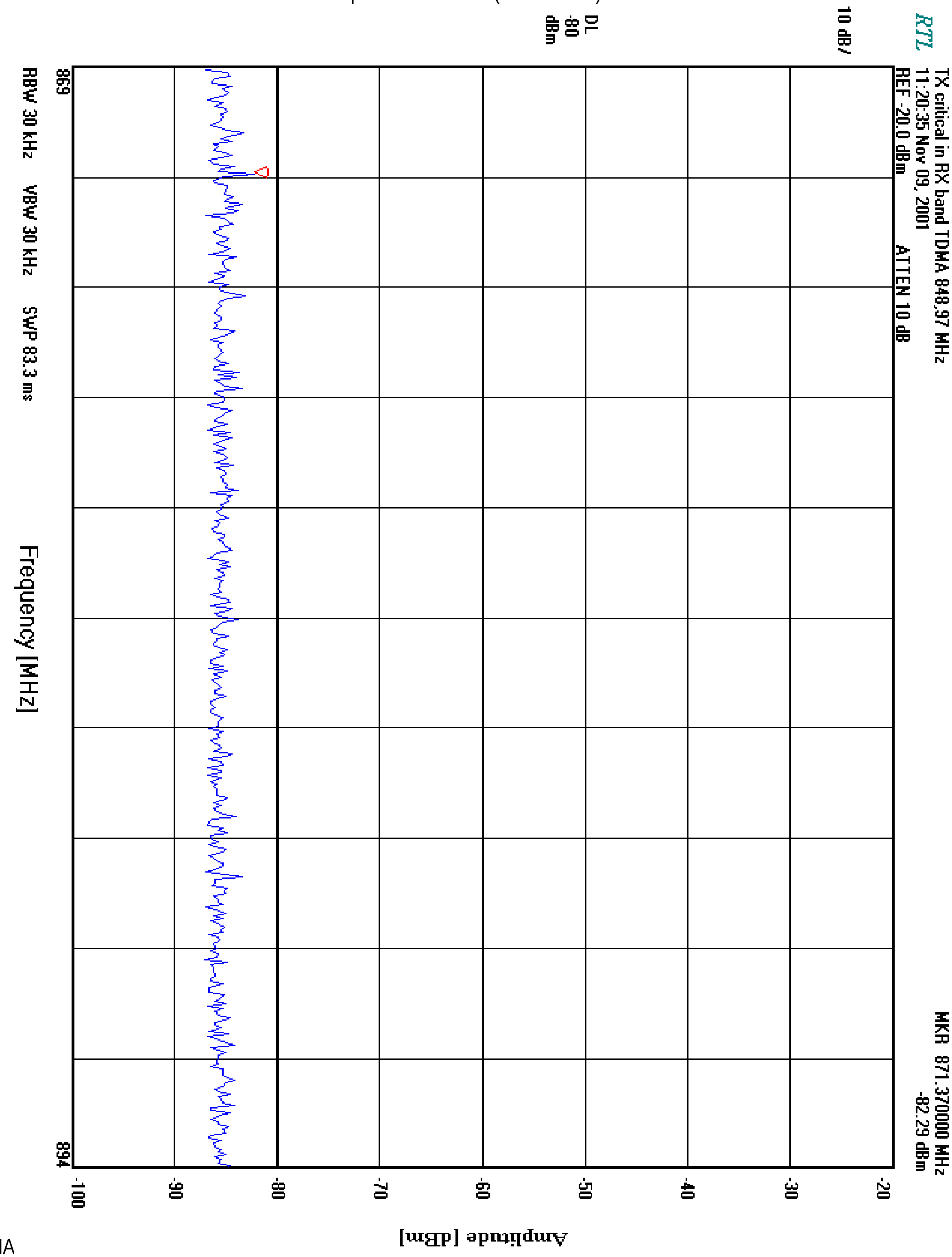
TX spurs in RX critical (836.49 MHz)



TDMA

TX spurs in RX critical (848.97 MHz)



TDMA

7.2 TEST EQUIPMENT

Spectrum Analyzer HP8564E s/n 3943A01719

8 FCC RULES AND REGULATIONS PART 2 §2.1049 (C) (1): OCCUPIED BANDWIDTH

OCCUPIED BANDWIDTH - COMPLIANCE WITH THE EMISSION MASKS

8.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.11
Part 22.917(b)

8.2 TEST DATA

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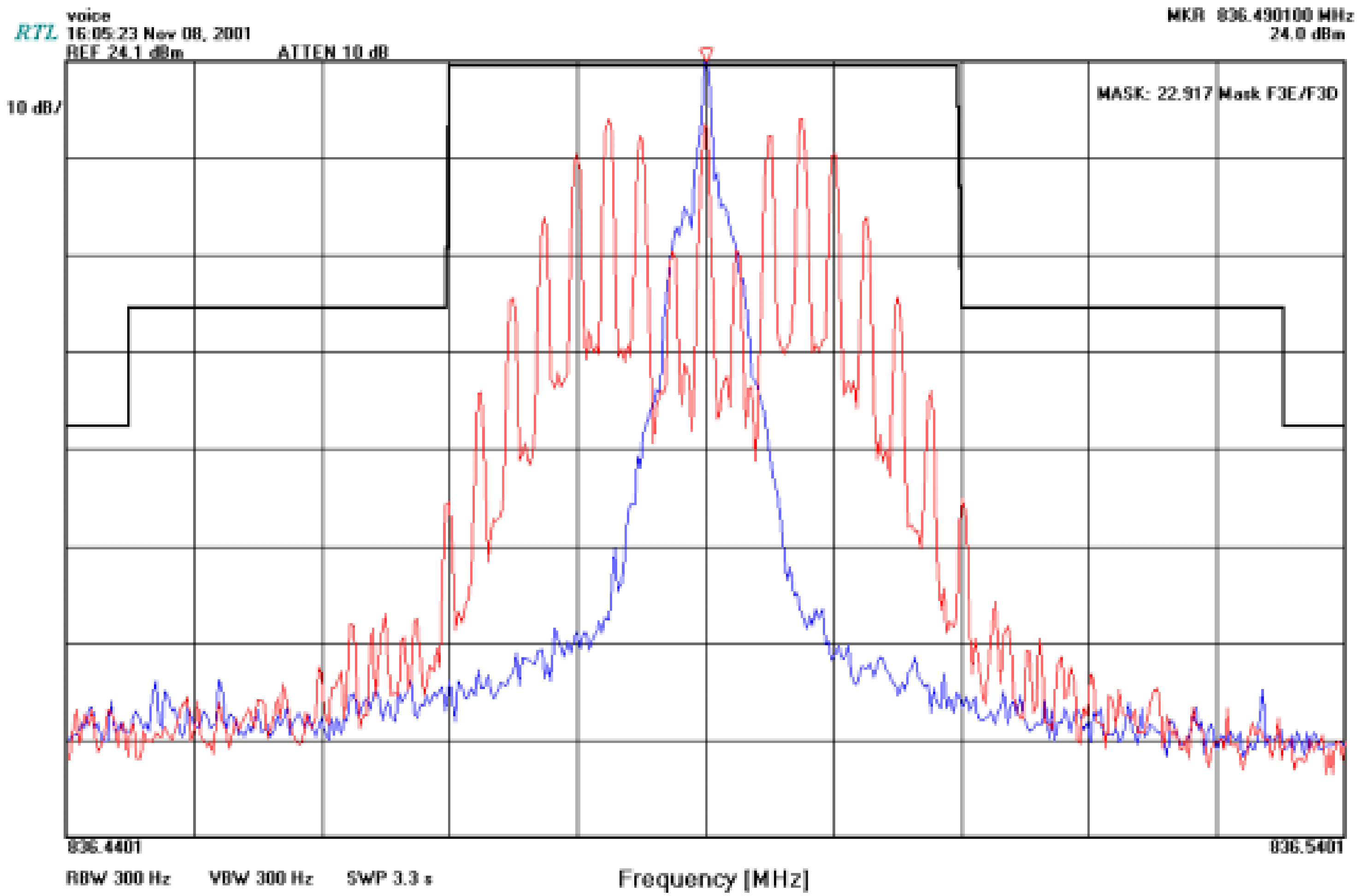
40 kHz Channel Bandwidth: (Audio Modulation: 2,500 Hz) Voice



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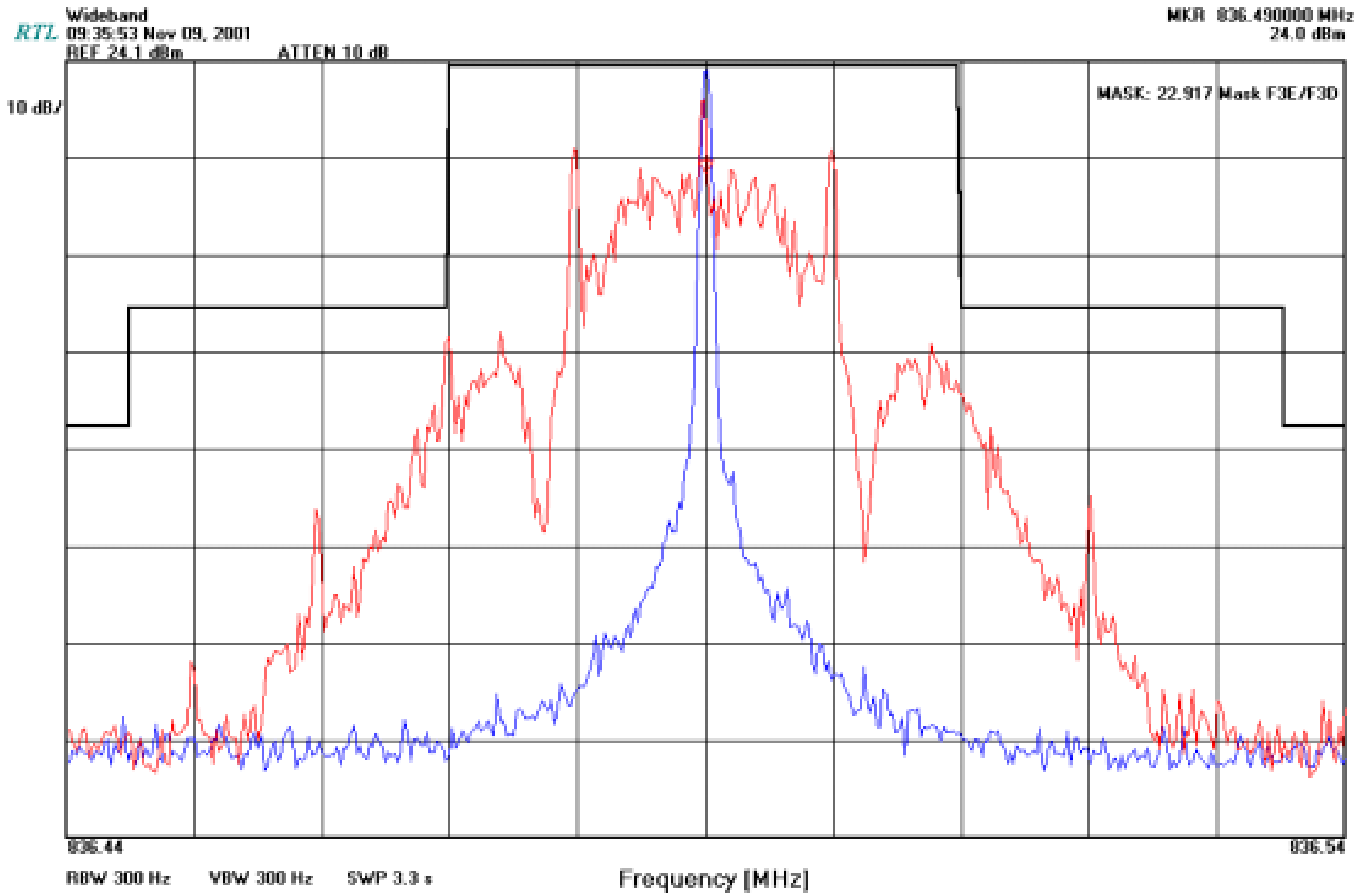
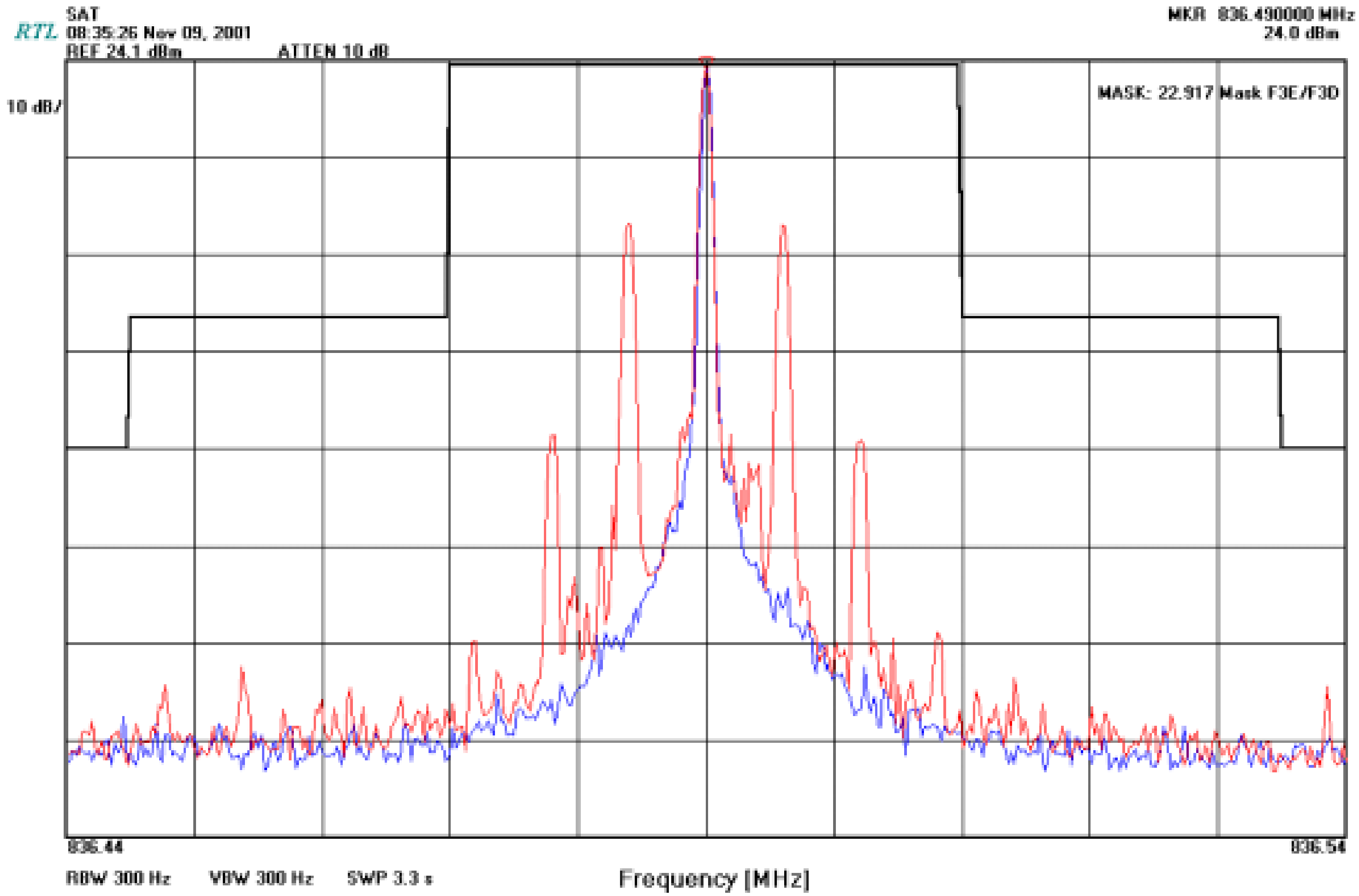
40 kHz Channel Bandwidth: Wideband data



40 kHz Channel Bandwidth: SAT



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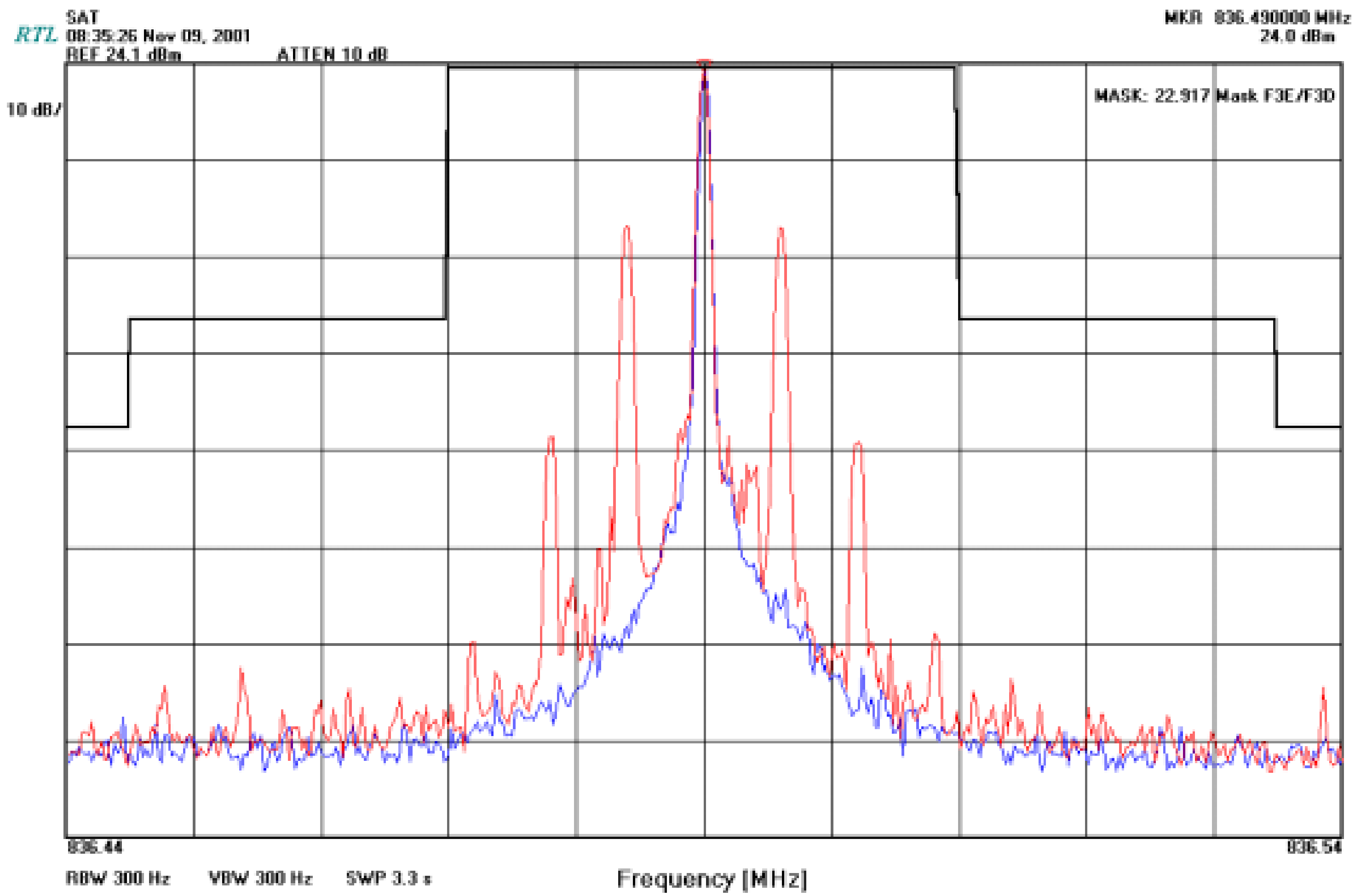
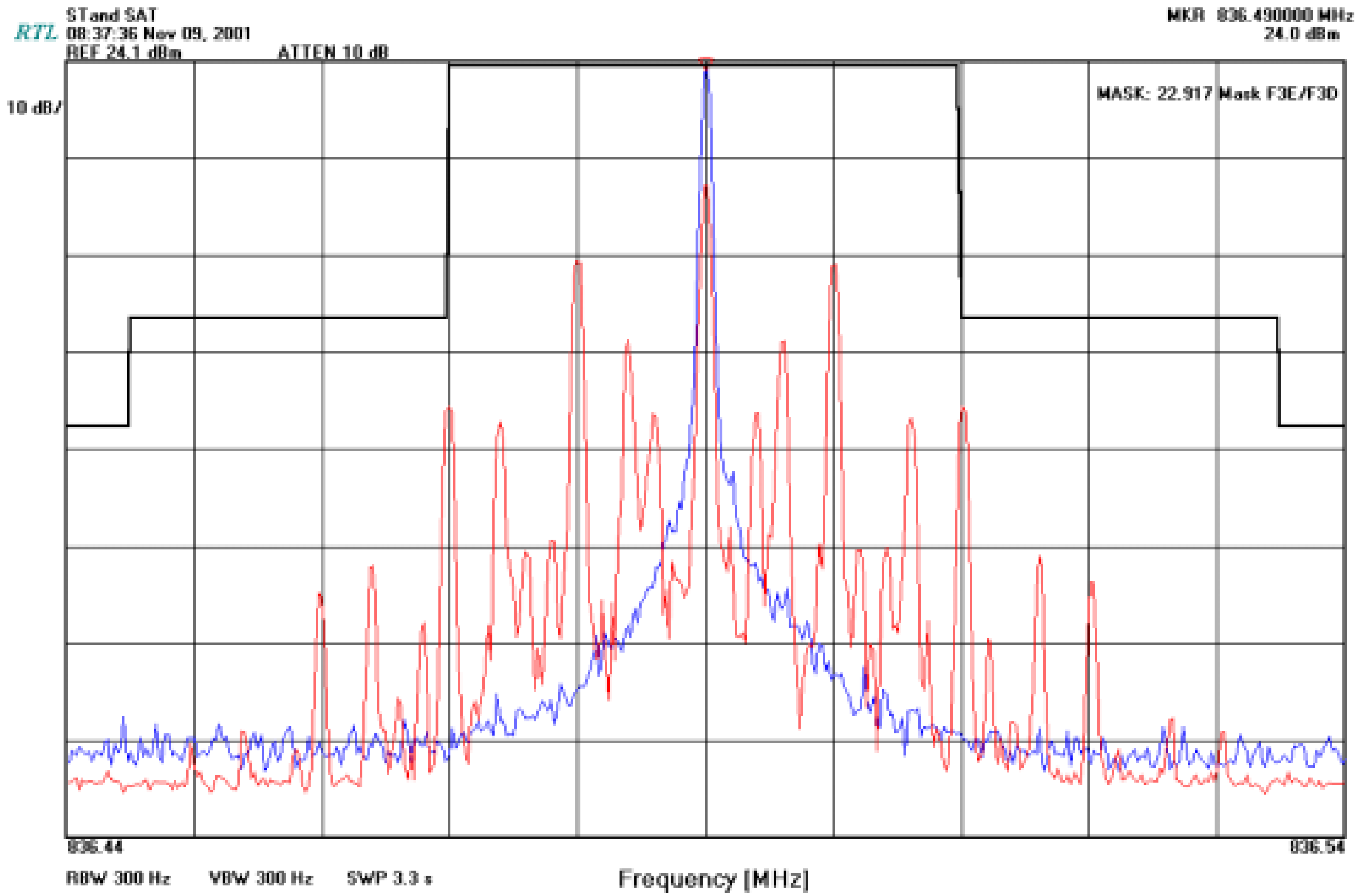
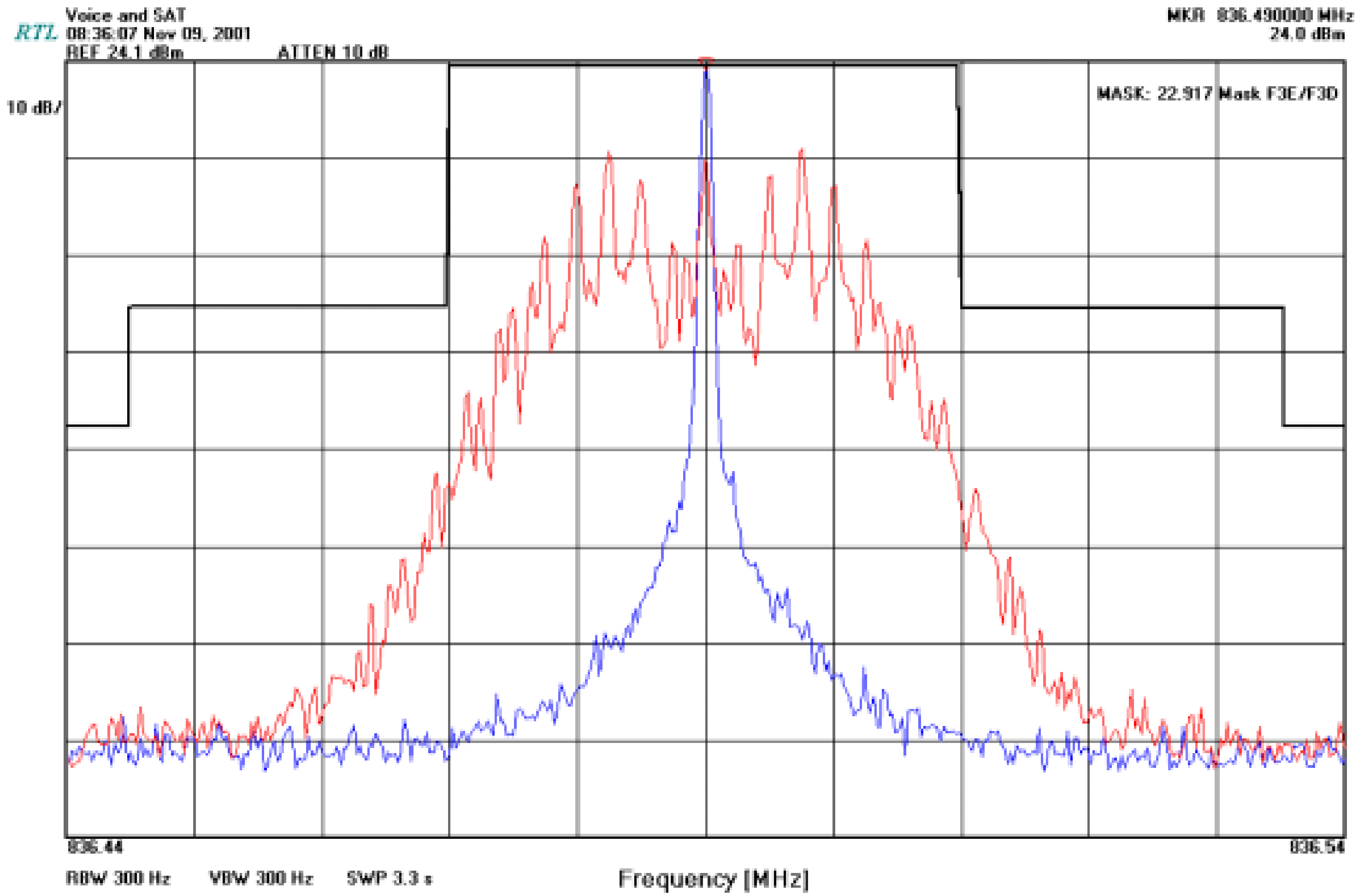
40 kHz Channel Bandwidth: ST



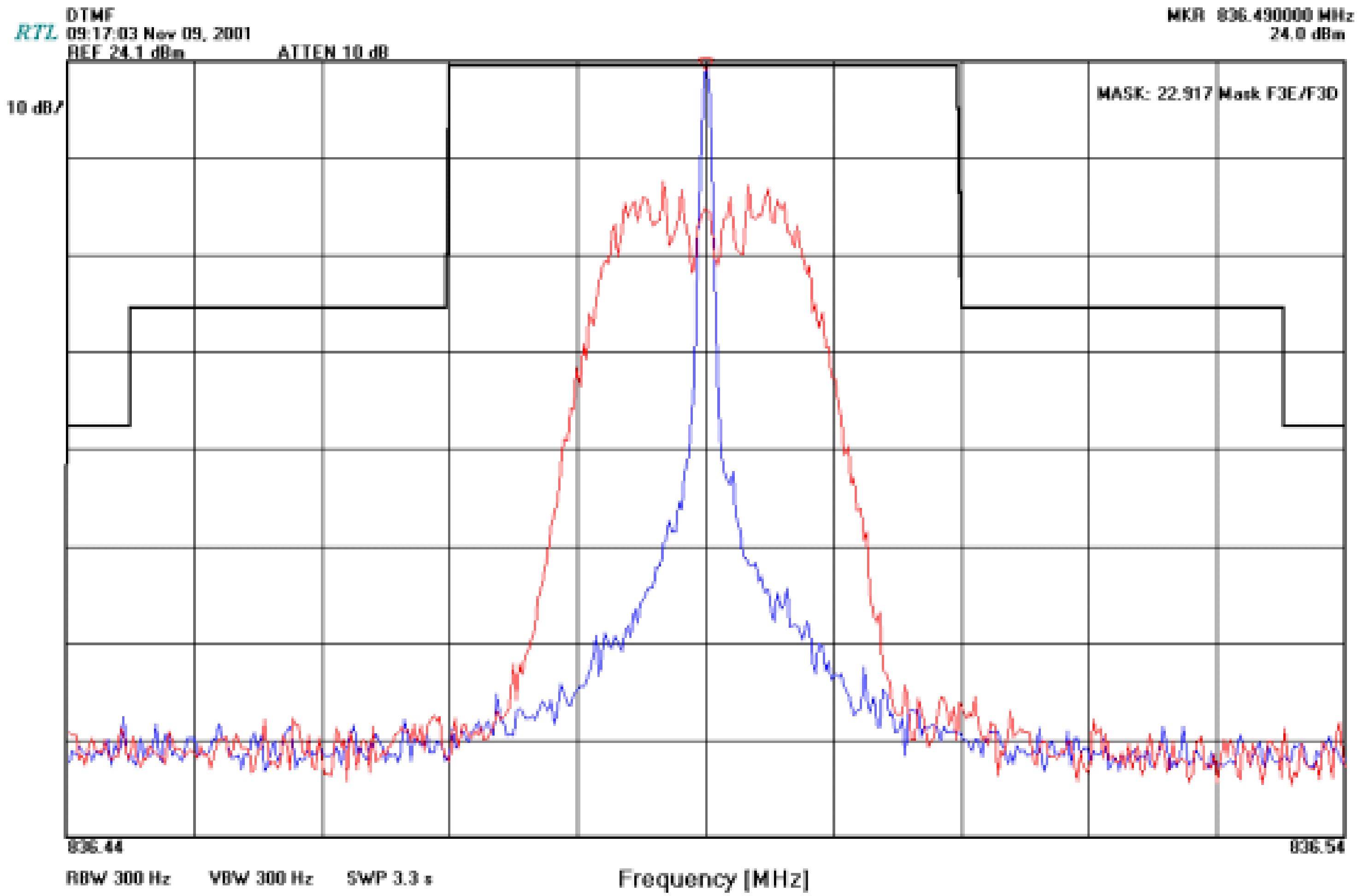
40 kHz Channel Bandwidth: SAT and ST



40 kHz Channel Bandwidth: SAT and Voice



40 kHz Channel Bandwidth: DTMF



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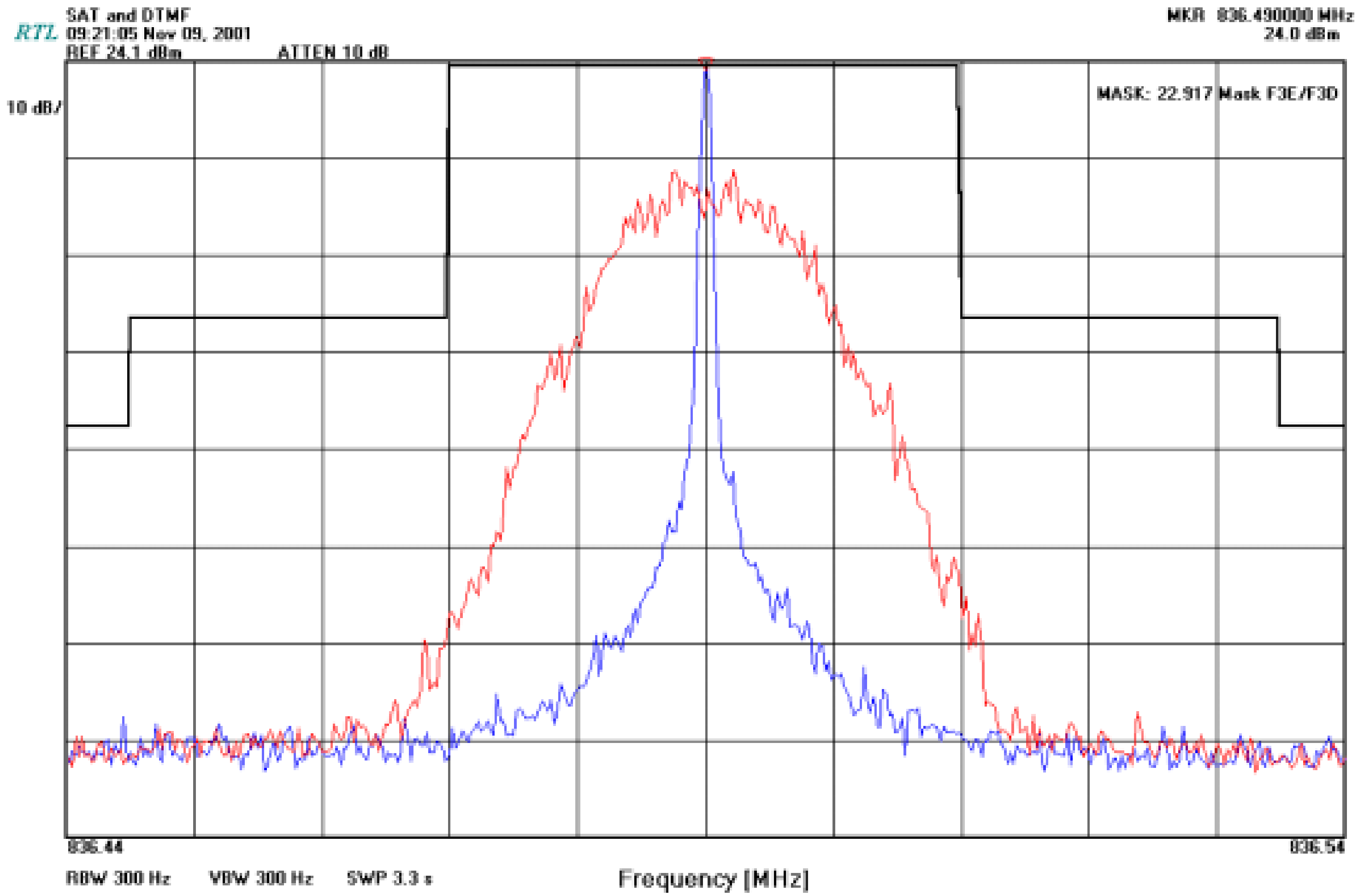
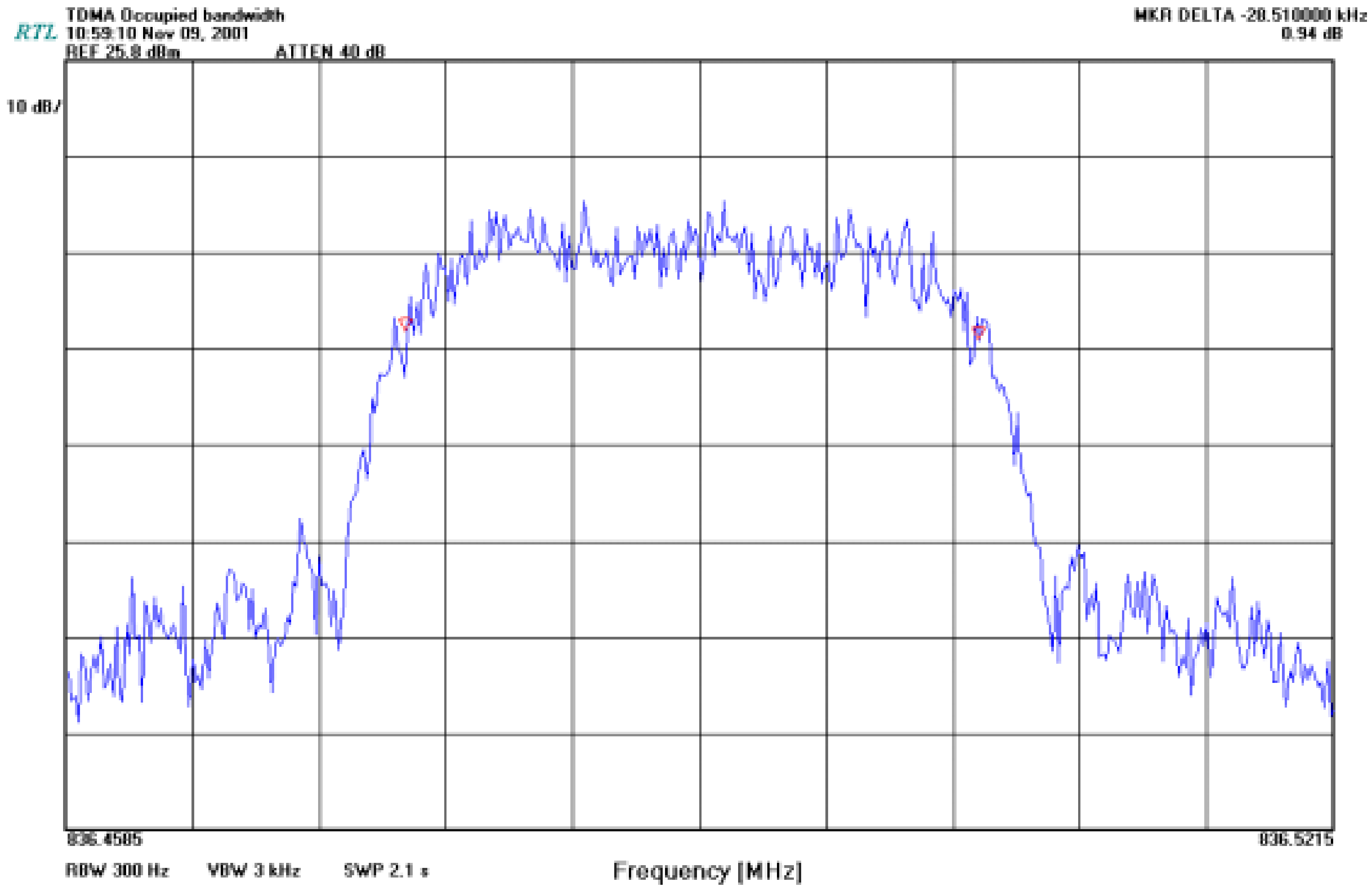
40 kHz Channel Bandwidth: DTMF and SAT



TDMA – 99% Occupied Bandwidth (28.5 KHz)



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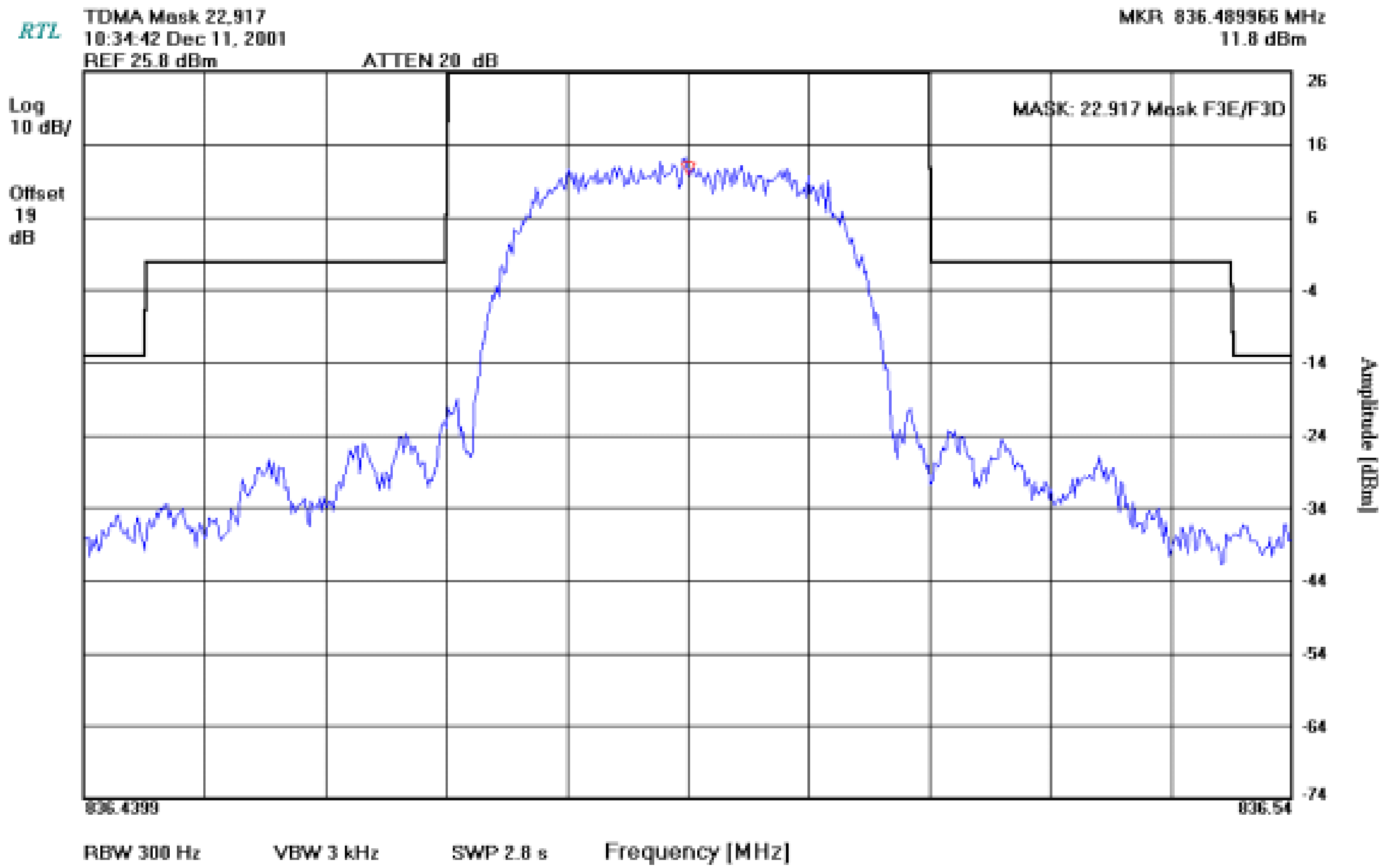
TDMA



8.3 TEST EQUIPMENT

Spectrum Analyzer HP8564E s/n 3943A01719

9 FCC RULES AND REGULATION PART 2 §2.1055: FREQUENCY STABILITY

9.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.2 and FCC part 22.355

The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

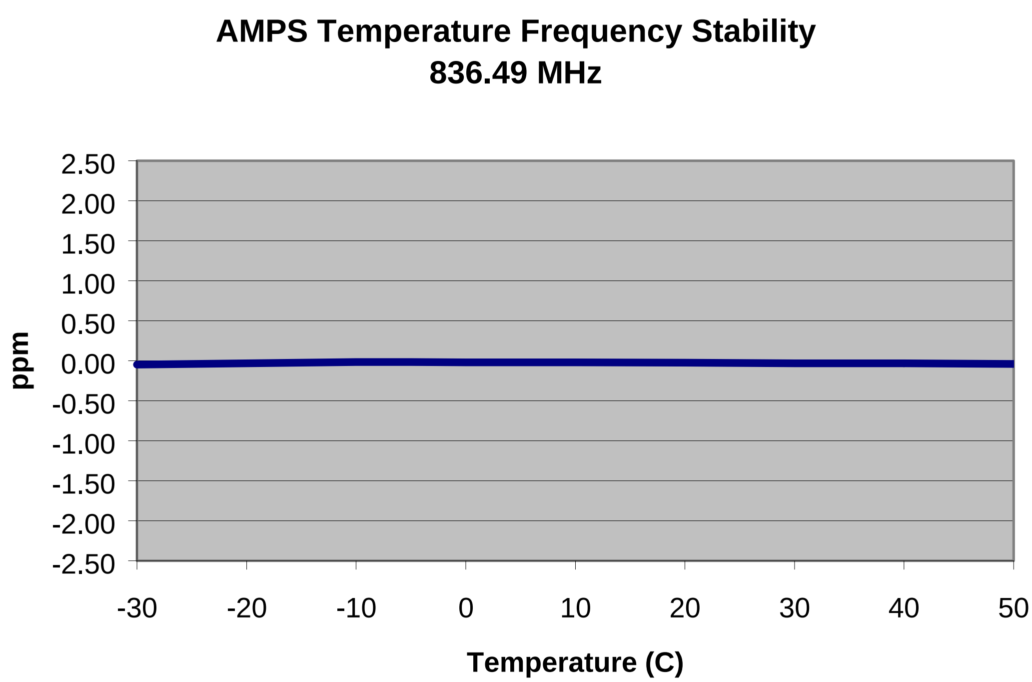
The EUT was evaluated over the temperature range -30°C to +50°C.

The temperature was initially set to -30°C and a period of time sufficient to stabilize all of the components of the oscillator circuit was observed prior to each frequency measurement of 10 degree intervals.

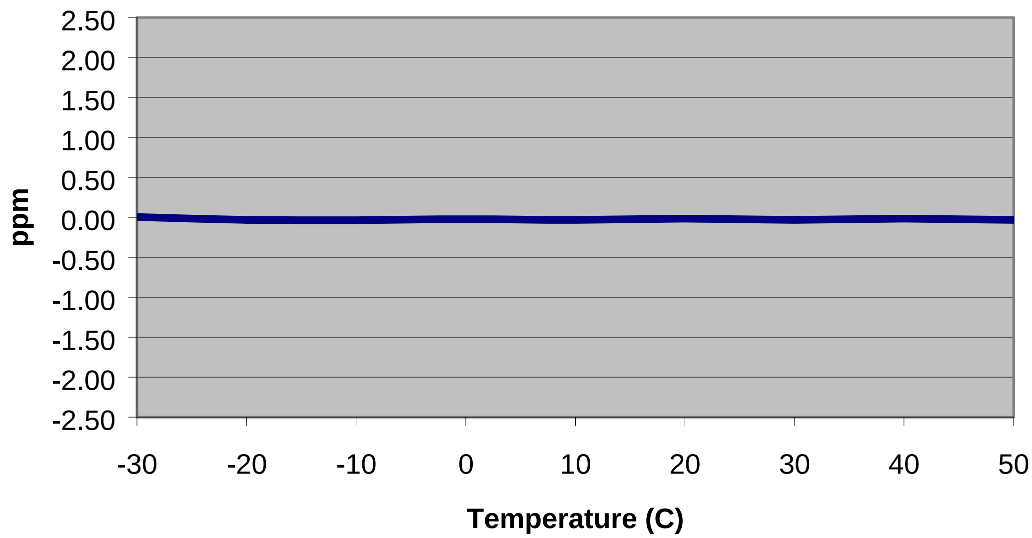
Additionally, the power supply voltage of the EUT was varied from 85% to 115% of the nominal voltage.

9.2 TEST DATA

9.2.1 FREQUENCY STABILITY/FREQUENCY VARIATION



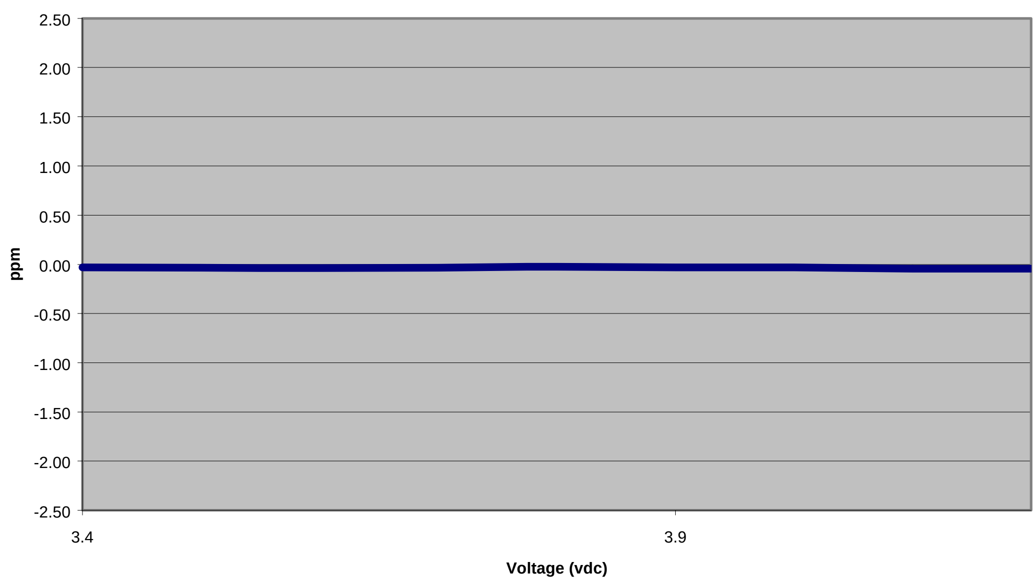
TDMA Temperature Frequency Stability
(836.49 MHz)

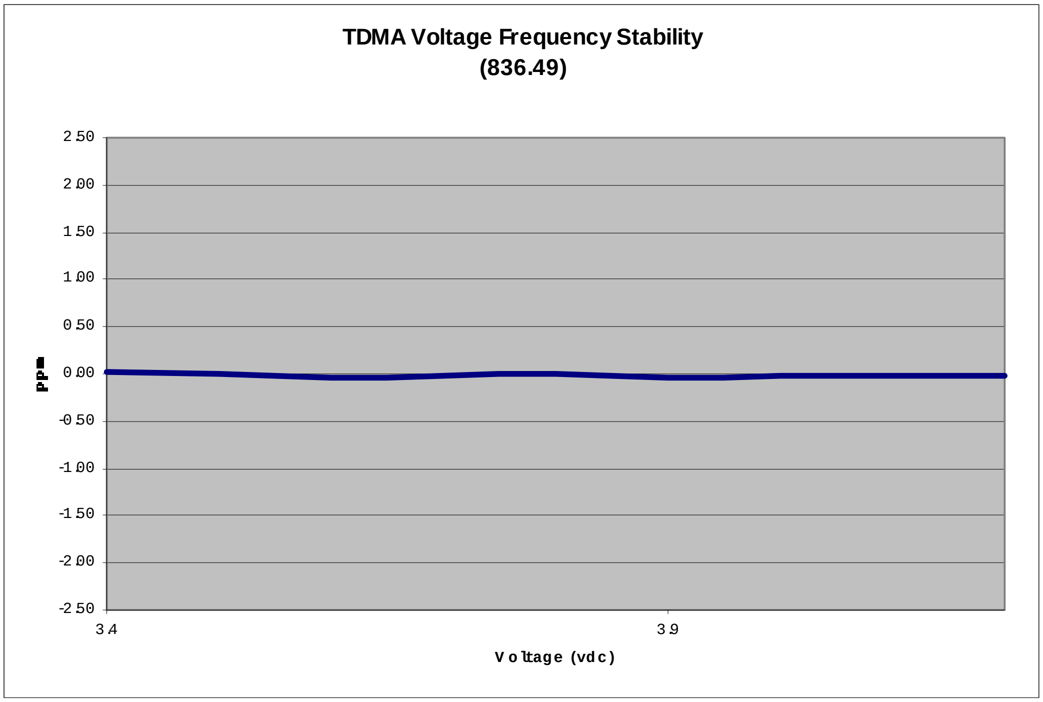


9.2.2 FREQUENCY STABILITY/VOLTAGE VARIATION

BATTERY END-POINT = 3.4 VDC

AMPS Voltage Frequency Stability
(836.49 MHz)




TDMA Voltage Frequency Stability
(836.49)
2.50
2.00
1.50
1.00
0.50
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
PPM
3.4
3.9
Voltage (vdc)

10 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS - AUDIO FREQUENCY RESPONSE

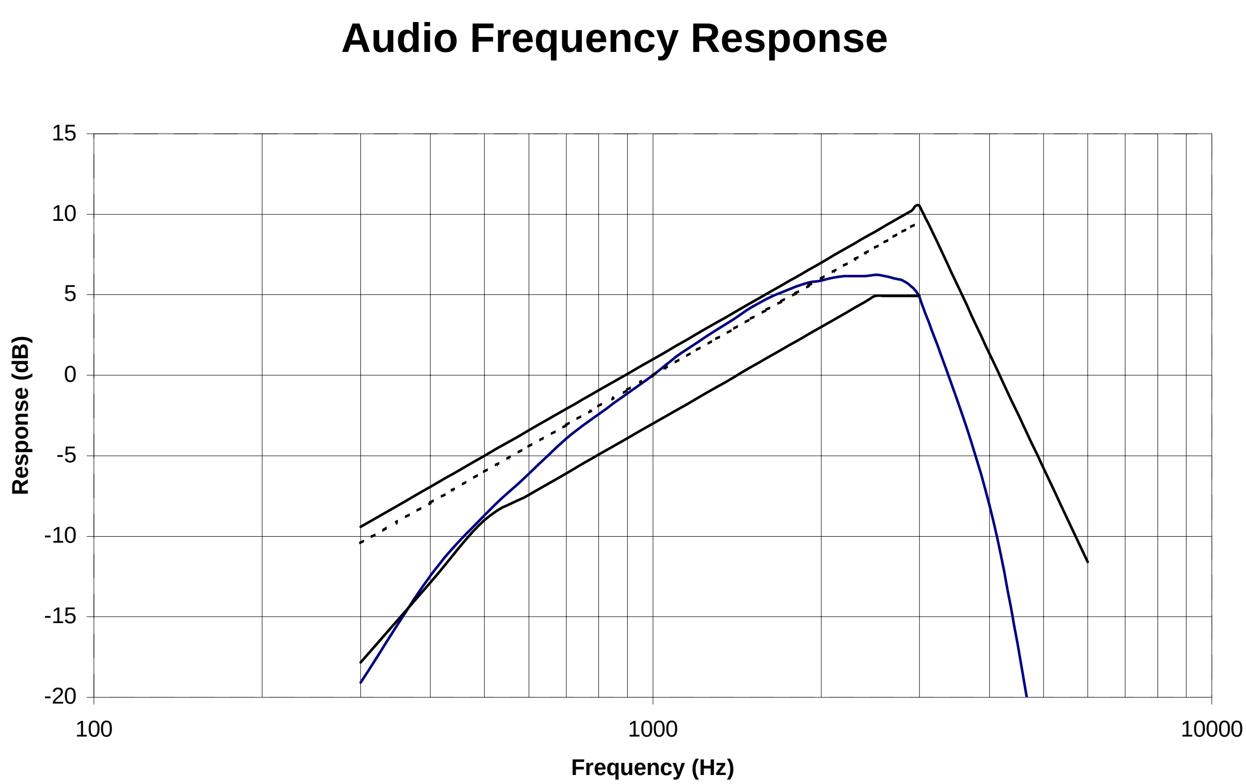
10.1 TEST PROCEDURE

EIA/IS-19-B: 1988 Recommended Minimum Standards for 800MHz Cellular Subscriber Units

The audio frequency response is the degree of closeness to which the frequency deviation of the transmitter follows a prescribed characteristic. The input audio level at 1000 Hz is set to produce 20% of the rated system deviation. This point is shown as the 0 dB reference level, noted DEVref. The audio signal generator was varied from 100Hz to 5kHz with the input level held constant. The deviation in kHz was recorded using a modulation analyzer as DEVfreq. The response in dB relative to 1 kHz was calculated as follows: Audio Frequency Response = 20 LOG (DEVfreq/DEVref)

10.2 TEST DATA

Audio Frequency Response (836.49 MHz)



Frequency of Max Response 2262.935 Hz

10.3 TEST EQUIPMENT

Audio generator	HP3336B s/n 2127A00559
Modulation analyzer	HP8901A s/n 2545A04102

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11 FCC RULES AND REGULATIONS PART 2 §2.1047 (A): MODULATION CHARACTERISTICS - AUDIO LOW PASS FILTER RESPONSE

11.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, 2.2.15 and Part 22. 915(d)(1)

The Audio Low Pass Filter Response is the frequency response of the post limiter low pass filter circuit above 3000 Hz.

11.2 TEST DATA

11.3 TEST EQUIPMENT

Audio generator	HP3336B s/n 2127A00559
Modulation analyzer	HP8901A s/n 2545A04102
Selective level meter	HP3586B s/n 1928A01892
Synthesizer/Level generator	HP3336B s/n 2514A02585

12 FCC RULES AND REGULATIONS PART 2 §2.1047 (B): MODULATION CHARACTERISTICS - MODULATION LIMITING

12.1 TEST PROCEDURE

ANSI/TIA/EIA-603-1992, section 2.2.3 and Part 22.915 (B)

The transmitter is adjusted for full rated system deviation. The audio input level is adjusted for 60% of rated system deviation at 1000Hz. Using this level as a reference (0dB) the audio input level is varied from the reference to a level +25 dB above it and –25 dB under it, for modulation frequencies of 300Hz, 1,000Hz, and 2,500Hz. The system deviation obtained as a function of the input level is recorded.
Both Positive and Negative Peak deviations were recorded.

12.2 TEST DATA

Type	Measured	Rated
Voice	12	12
Wideband	8.4	8
SAT	1.98	2
ST	7.47	8

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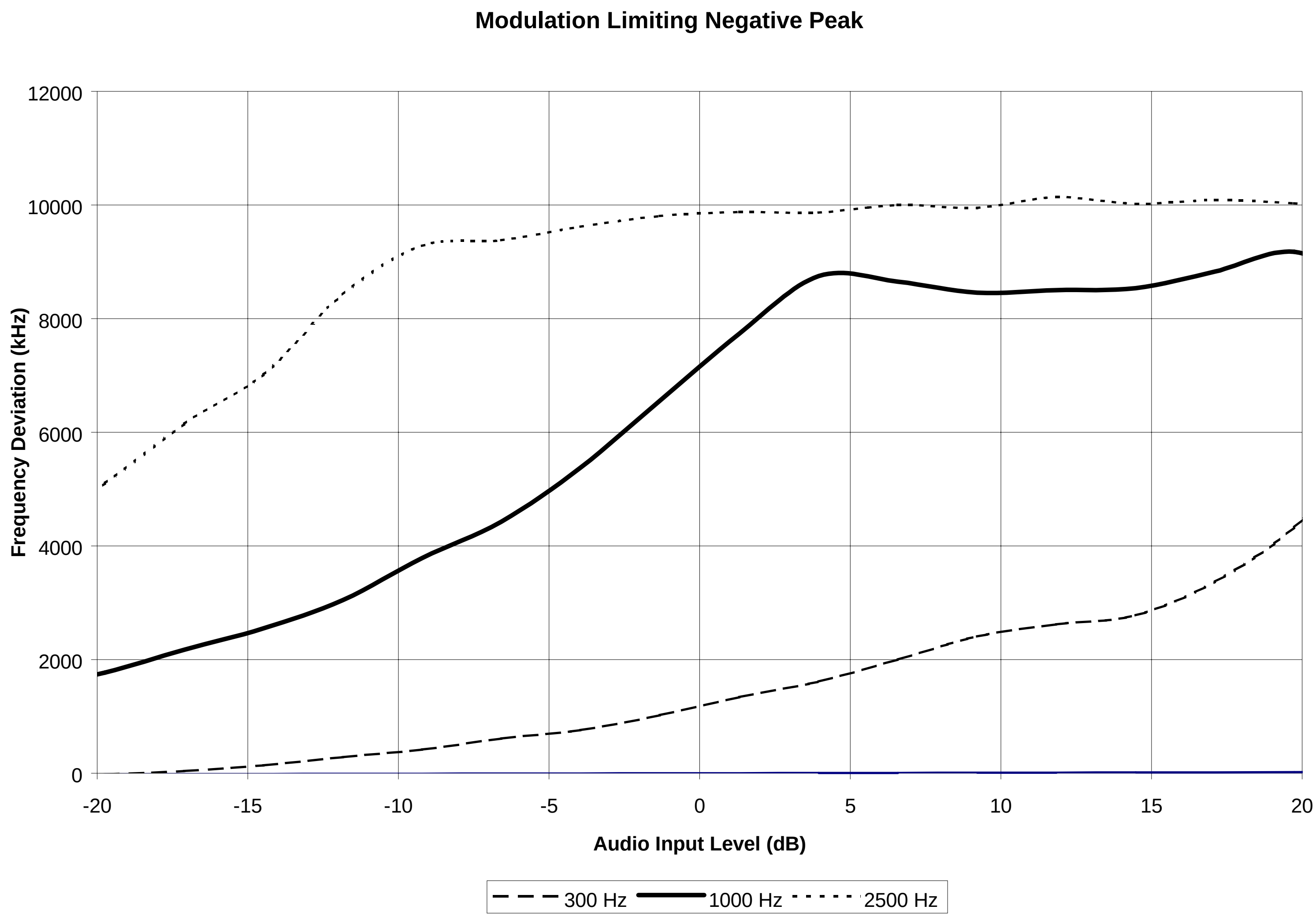
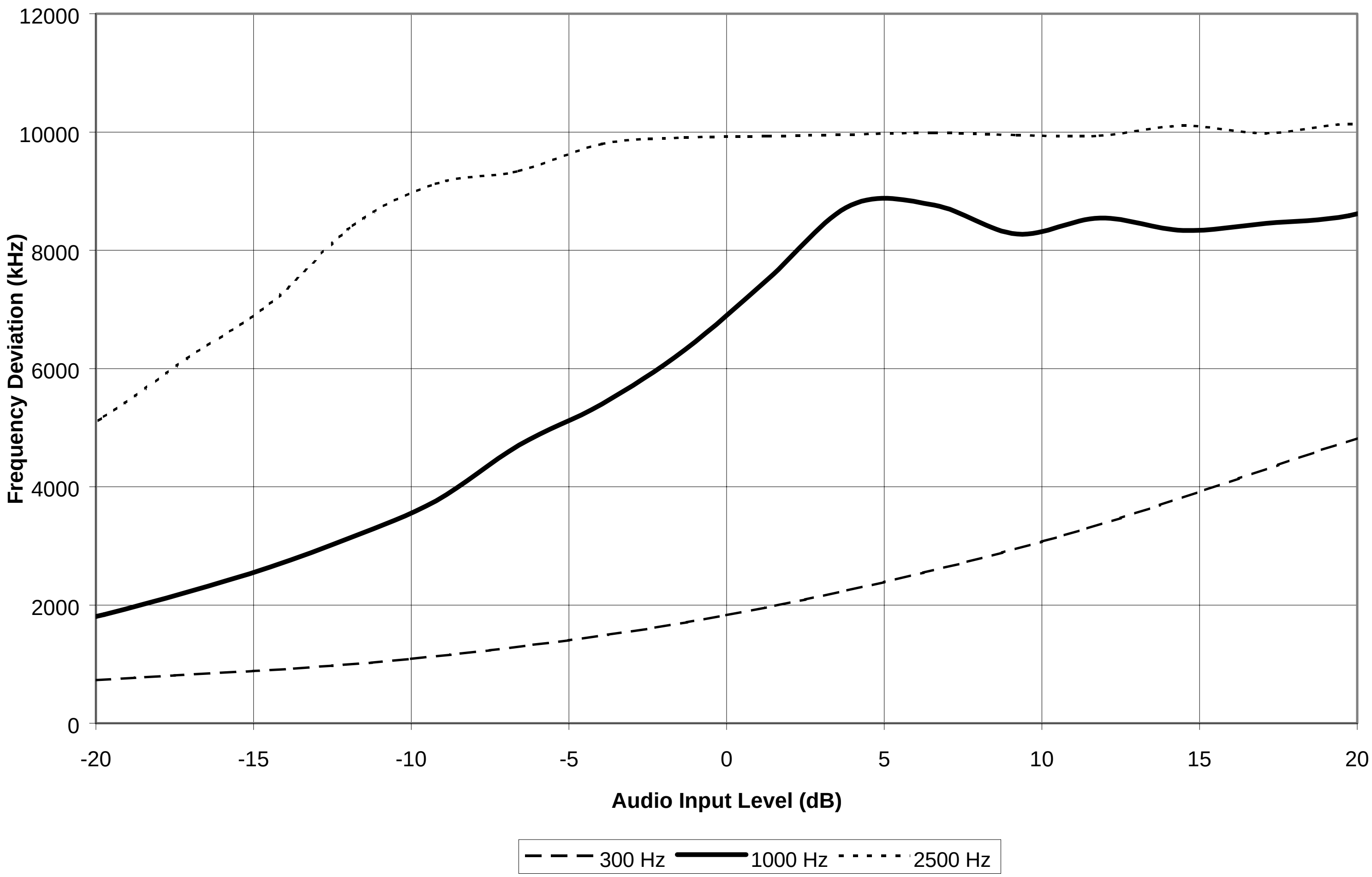


Modulation Limiting Positive Peak



12.3 TEST EQUIPMENT

Audio generator	HP3336B s/n 2127A00559
Modulation analyzer	HP8901A s/n 2545A04102

13 FCC RULES AND REGULATIONS PART 2.202: NECESSARY BANDWIDTH AND EMISSION BANDWIDTH

Type of Emission: F8W, F1D

Necessary Bandwidth and Emission Bandwidth:
40K0F1D
40K0F8W

Calculation for 40K0F8W

1/ Voice + SAT
Modulation: Voice is 2.5 kHz and SAT is 6kHz, thus the maximum modulation is M = 6 kHz
Deviation: Voice is 12kHz and SAT is 2kHz, thus the maximum deviation is D= 12+2= 14 kHz
Bn = 2xM+2xDK with K =1
Bn= 40 kHz

2/ Signaling Tone (ST) + SAT
Modulation: ST is 10 kHz and SAT is 6kHz, thus the maximum modulation is M = 10 kHz
Deviation: ST is 8kHz and SAT is 2kHz, thus the maximum deviation is D= 8+2= 10 kHz
Bn = 2xM+2xDK with K =1
Bn= 40 kHz

Calculation for 40K0F1D (wide Band Data)

1/ Voice + SAT
Modulation: Wideband Data is 10 kHz and SAT is 6kHz, thus the maximum modulation is M = 10 kHz
Deviation: Wideband Data is 8kHz and SAT is 2kHz, thus the maximum deviation is D= 8+2 = 10 kHz
Bn = 2xM+2xDK with K =1
Bn= 40 kHz

14 FCC RULES AND REGULATIONS PART 2.1033(C)(8)); DC VOLTAGES AND CURRENTS

The dc voltages applied to and dc currents into the several elements of the final radio frequency amplifying device for normal operation over the power range.

The DC voltage and total input current of the entire final power amplifier module is 3.85 VDC and 380 mA in the highest level to 100 mA in the lowest power level.

15 TEST CONFIGURATION PHOTOGRAPHS

Radiated Back View

Radiated Front View

Conducted Front View

Conducted Back View

APPENDIX A: FCC PART 15 §15.107 (A) - AC LINES CONDUCTED EMISSIONS

TEST PROCEDURE

The EUT is operated with a battery. Power lines conducted emissions were measured when the radio was in transmit mode and while using a battery charger AC/DC powered from the mains.

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm / 50 microhenry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 400 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 400 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. No video filter less than 10 times the resolution bandwidth was used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 450 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in this report.

TEST DATA

Table 5-1: Conducted Emissions (Class B Limits) Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)
0.467	Pk	37.1	0.8	37.9	48.0	-10.1
0.635	Pk	28.9	0.7	29.6	48.0	-18.4
0.845	Pk	20.5	0.7	21.2	48.0	-26.8
0.957	Pk	23.1	0.7	23.8	48.0	-24.2
1.360	Pk	29.2	0.9	30.1	48.0	-17.9
1.524	Pk	25.2	1.0	26.2	48.0	-21.8
15.690	Pk	17.1	2.8	19.9	48.0	-28.1
22.260	Pk	17.8	3.2	21.0	48.0	-27.0

Table 5-2: Conducted Emissions (Class B Limits) Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)
0.451	Pk	37.9	0.8	38.7	48.0	-9.3
0.671	Pk	34.2	0.7	34.9	48.0	-13.1
0.894	Pk	28.2	0.7	28.9	48.0	-19.1
1.496	Pk	31.0	0.9	31.9	48.0	-16.1
11.140	Pk	16.9	2.3	19.2	48.0	-28.8
13.144	Pk	16.3	2.4	18.7	48.0	-29.3
15.045	Pk	16.4	2.7	19.1	48.0	-28.9
17.545	Pk	17.5	2.8	20.3	48.0	-27.7

TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771
900070	Solar		LISN	

APPENDIX B: FCC PART 15 §15.109 (A) RADIATED EMISSIONS

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FI(dBuV/m) = SAR(dBuV) + SCF(dB/m)
FI = Field Intensity
SAR = Spectrum Analyzer Reading
SCF = Site Correction Factor

The Site Correction Factor (SCF) used in the above equation is determined empirically, and is expressed in the following equation:

SCF(dB/m) = - PG(dB) + AF(dB/m) + CL(dB)

SCF = Site Correction Factor
PG = Pre-amplifier Gain
AF = Antenna Factor
CL = Cable Loss

The field intensity in microvolts per meter can then be determined according to the following equation:

$$FI(uV/m) = 10^{FI(dBuV/m)/20}$$

For example, assume a signal at a frequency of 125 MHz has a received level measured as 49.3 dBuV. The total Site Correction Factor (antenna factor plus cable loss minus preamplifier gain) for 125 MHz is -11.5 dB/m. The actual radiated field strength is calculated as follows:

49.3 dBuV - 11.5 dB/m = 37.8 dBuV/m

$$10^{37.8/20} = 10^{1.89} = 77.6 \text{ uV/m}$$

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TEST PROCEDURE

The EUT was scanned at a three-meter open-field range in order to determine its emissions spectrum signature. The physical arrangement of the test system was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency.
Final radiated emissions measurements were made on the three-meter, open-field test site. The EUT was placed on a nonconductive turntable 1.0 meter above the ground plane.
At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech quality manual, section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding error.

TEST DATA

Table 6-1: Radiated Emissions (Receiver-Digital Data) Temperature: 30°F, Humidity: 74%

Emission Frequency (MHz)	Test Detector	Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
178.942	Qp	V	0	1.0	45.4	-17.7	27.7	43.5	-15.8
357.884	Qp	V	225	1.0	37.8	-11.5	26.3	46.0	-19.7
536.826	Qp	V	0	1.0	35.1	-7.5	27.6	46.0	-18.4
881.490	Qp	V	145	1.0	34.8	-3.0	31.8	46.0	-14.2
881.490	Qp	V	145	1.0	34.8	-3.0	31.8	46.0	-14.2
979.560	Qp	V	145	1.0	35.9	-2.9	33.0	54.0	-21.0
1004.490	Av	V	45	1.0	35.2	-4.3	30.9	54.0	-23.1
1762.980	Av	V	1	1.0	17.8	4.0	21.8	54.0	-32.2
1959.120					<10				
2008.980					<10				
2644.460					<10				
2938.680					<10				
3013.470					<10				
3525.950					<10				
3918.240					<10				
4017.960					<10				
4407.440					<10				

TEST EQUIPMENT

Antenna:	CHASE CBL6112B s/n 2648	
Amplifier:	HP8449B	s/n 3008A00505
Spectrum analyzer:	HP8566B	s/n 3138A07771
RF Signal Generator	HP8648C	s/n 3537A01741
Synthesized Sweeper	HP83752A	s/n 3610A00846