FCC Part 74 Subpart H

EMI TEST REPORT

of

E.U.T. : Wireless Handheld Transmitter Microphone

FCC ID. : JEBUF-16C

MODEL : UF-16A

Working Frequency : 682MHz-806MHz

for

APPLICANT : MASCOT ELECTRONIC CO., LTD.
ADDRESS : No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan, R.O.C.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34, LIN 5, DING FU TSUN, LINKOU HSIANG
TAIPEI HSIEN, TAIWAN, R.O.C.

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Report Number : ET92R-12-037-04

TEST REPORT CIRTIFICATION

Applicant : MASCOT ELECTRONIC CO., LTD.
No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian,
Tainan Hsien, Taiwan, R.O.C.

Manufacturer : MASCOT ELECTRONIC CO., LTD.
No. 85 Chang Hsing First Street, Tai-tzu Village, Jen-Te Hsian,
Tainan Hsien, Taiwan, R.O.C.

Description of EUT :

a) Type of EUT	: Wireless Handheld Transmitter Microphone
b) Trade Name	: MASCOT
c) Model No.	: UF-16A
d)The data also apply to	: XM-16
e) FCC ID	: JEBUF-16C
f) Working Frequency	: 682MHz-806MHz
g) Power Supply	: DC 3V Batteries

Regulation Applied : FCC Rules and Regulations Part 74 Subpart H (2001)

I HEREBY CERTIFY THAT; The data shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Issued Date : Jan. 09, 2003

Test Engineer : Tien Lu Liao
(Tien Lu Liao)

Approve & Authorized Signer : Will Yauo
Will Yauo, Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

Table of Contents *Page*

APPENDIX 2 : EMISSION MASK PLOTTED DATA 58

1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT	: Wireless Handheld Transmitter Microphone
b) Trade Name	: MASCOT
c) Model No.	: UF-16A
d) The data also apply to	: XM-16
e) FCC ID	: JEBUF-16C
f) Working Frequency	: 682MHz-806MHz
g) Power Supply	: DC 3V Batteries

1.2 Characteristics of Device:

1. Operating Frequency: 682MHz -698MHz, 740MHz -752MHz, 790MHz -806MHz
2. The handheld microphone operates in UHF band frequency with PLL synthesized control. UHF 16 preprogrammed selectable frequencies to avoid interference. Uni-directional dynamic or uni-directional condenser capsules with different characters for various choices. Use 1.5V x 2 AA size batteries for low operating cost.
3. The emission designator is 161KF3E. The calculation is (2M+2DK), K=1 and (2 x 32.768 + 2 x 48) = 161.5kHz, so the emission designator is 161KF3E.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4. and section 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, and 2.1055 of Part 2 of CFR 47

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No. 34, Lin 5, Ding Fu Tsun, Linkou Hsiang, Taipei Hsien, Taiwan, R.O.C.

This site has been fully described in a report submitted to your office, and accepted in a letter dated Feb. 10, 2000.

2. REQUIREMENTS OF PROVISIONS

2.1 Definition

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Frequencies Available

According to sec. 74.802 of Part 74, the following frequencies are available for low power auxiliary station :

Frequencies (MHz)

26.100-26.480	455.000-456.000
54.000-72.000	470.000-488.000
76.000-88.000	488.000-494.000
161.625-161.775	614.000-806.000
174.000-216.000	450.000-451.000
944.000-952.000	

2.3 Requirements for Radio Equipment on Certification

(1) RF Output Power
For transmitters, the power output shall be measured at the RF output terminals.

(2) Modulation Characteristics
For Voice Modulated Communication Equipment, a curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.

(3) Occupied Bandwidth
For radiotelephone transmitter, other than single sideband or indenpent sideband transmitter, when modulateed by a 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.

(4) Spurious Emissions at Antenna Terminals
The radio frequency voltage or power generated within the equipment and appearing on a spurious frequency shall be checked at the equipment output terminal when properly loaded with a suitable artificial antenna.

(5) Field Strength of Spurious Emissions

Measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal condition of installation and operation.

(6) Frequencies Tolerance

a) The frequency stability shall be measured with variation of ambient temperature.
b) The frequency stability shall be measured with variation of primary supply voltage.

2.4 Labeling Requirement

Each equipment for which a type acceptance application is filed on or after May 1,1981, shall bear an identification plate or label pursuant to § 2.925（Identification of equipment） and § 2.926（FCC identifier）.

3. OUTPUT POWER MEASUREMENT

3.1 Provision Applicable

According to § 74.861(e)(1)(ii), the output power shall not exceed 250 milliwatts.

3.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively, adjusting the input voltage to produce the maximum power as measured in chapter 3.
2. Adjust the analyzer for each frequency measured in chapter 6 on a 1 MHz frequency span and 1MHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0◦ to 360◦, and record the highest value indicated on spectrum analyzer as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1 GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on spectrum analyzer, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on spectrum analyzer. Record this value for result calculated.

7. Repeat step 6 until all frequencies need to be measured were complete.

8. Repeat step 7 with both dipole antenna (horn antenna for above 1 GHz) and search antenna in vertical polarized orientations.

Figure 2 : Frequencies measured below 1 GHz configuration

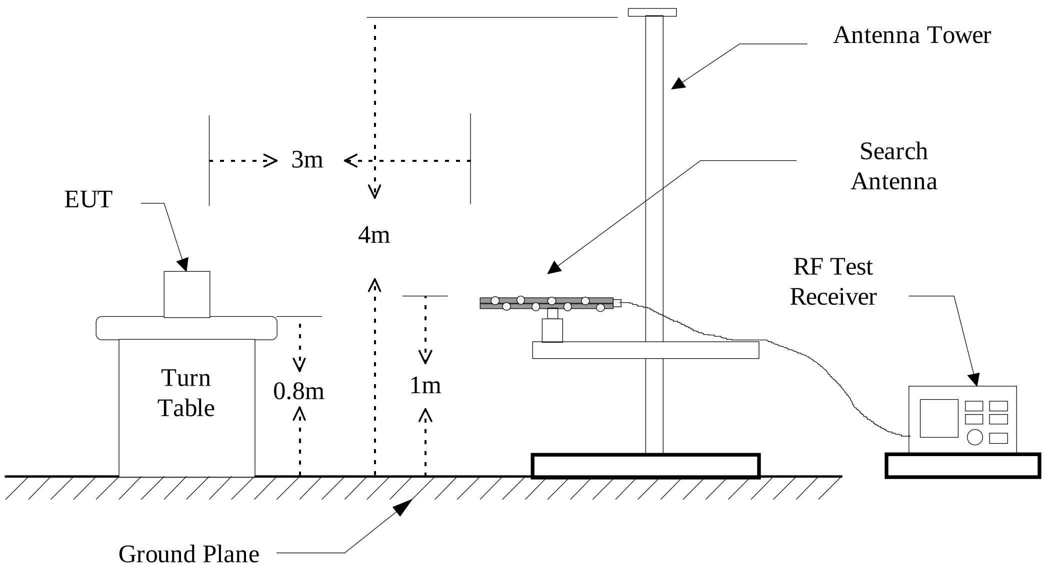
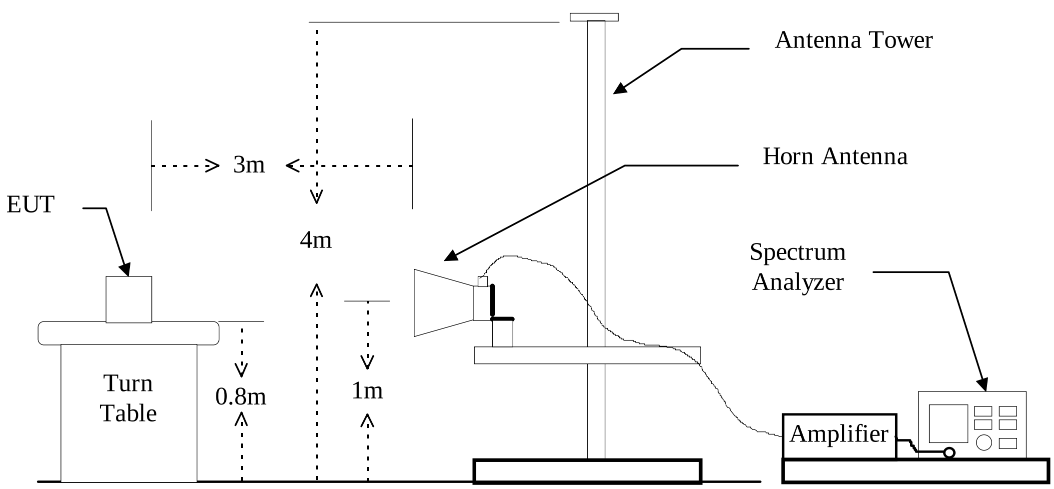


Figure 1 : Frequencies measured above 1 GHz configuration



3.3 Test Data

1. 682.000~698.000 MHz

A. Channel Low (ERP)

Operated mode : 682.364 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
682.364	76.8	4.4	2.3	---	2.1	1.6	24.0

B. Channel Mid (ERP)

Operated mode : 690.125 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
690.116	79.6	4.4	2.3	---	2.1	1.6	24.0

C. Channel High (ERP)

Operated mode : 697.125 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
697.112	78.1	5.2	2.3	---	2.9	1.9	24.0

Note: For measured frequency below 1GHz, a tuned dipole antenna is used.

2. 740.000~752.000 MHz

A. Channel Low (ERP)

Operated mode : 740.625 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
740.615	81.2	10.0	2.5	---	7.6	5.8	24.0

B. Channel Mid (ERP)

Operated mode : 746.250 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
746.614	80.7	9.9	2.5	---	7.4	5.5	24.0

C. Channel High (ERP)

Operated mode : 751.500 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
751.492	80.3	9.6	2.5	---	7.1	5.1	24.0

Note: For measured frequency below 1GHz, a tuned dipole antenna is used.

3. 790.000~806.000 MHz

A. Channel Low (ERP)

Operated mode : 790.375 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
790.359	80.8	10.9	2.6	---	8.3	6.8	24.0

B. Channel Mid (ERP)

Operated mode : 798.375 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
798.361	81.1	11.3	2.6	---	8.7	7.4	24.0

C. Channel High (ERP)

Operated mode : 805.375 MHz   Test Date : Dec. 23, 2003
Temperature : 21 ℃   Humidity : 69 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (dBm)
805.366	81.1	11.1	2.6	---	8.5	7.1	24.0

Note: For measured frequency below 1GHz, a tuned dipole antenna is used.

3.4 Result Calculation

Result calculation is as following :

Result ＝ SG Reading ＋Cable Loss ＋Antenna Gain Corrected

Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.

$$mW = \log^{-1}\left[\frac{\text{Result(dBm)}}{10}\right]$$

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
EMI Test Receiver	R&S	ESBI	05/25/2004
Plotter	HP	7440A	N/A

4. MODULATION CHARACTERISTICS

4.1 Provisions Applicable

According to § 2.1047 (a), for Voice Modulated Communication Equipment, the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be measured.

4.2 Measurement Method

A) Frequency response of audio circuits

1. Position the EUT as shown in figure 3.

2. Vary the modulating frequency from 100 Hz to 5000 Hz with varying the input voltage from 0V to maximum permitted input voltage, and observe the change in output.

B) Modulation Limit

1. Position the EUT as shown in figure 3, adjust the audio input frequency to 100 Hz and the input level from 0V to maximum permitted input voltage with recording each carrier frequency deviation responding to respective input level.

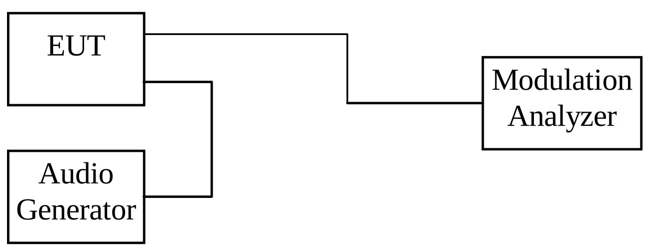
2. Repeat step 1 with changing the input frequency for 200, 500, 1000, 3000, and 5000 Hz in sequence.

C) Frequency response of all circuits

1. Position the EUT as shown in figure 3.

2. Vary the modulating frequency from 100 Hz to 15000 Hz with constant input voltage (derived from 5.4(a) of this test report), and observe the change in output.

Figure 3 : Modulation characteristic measurement configuration



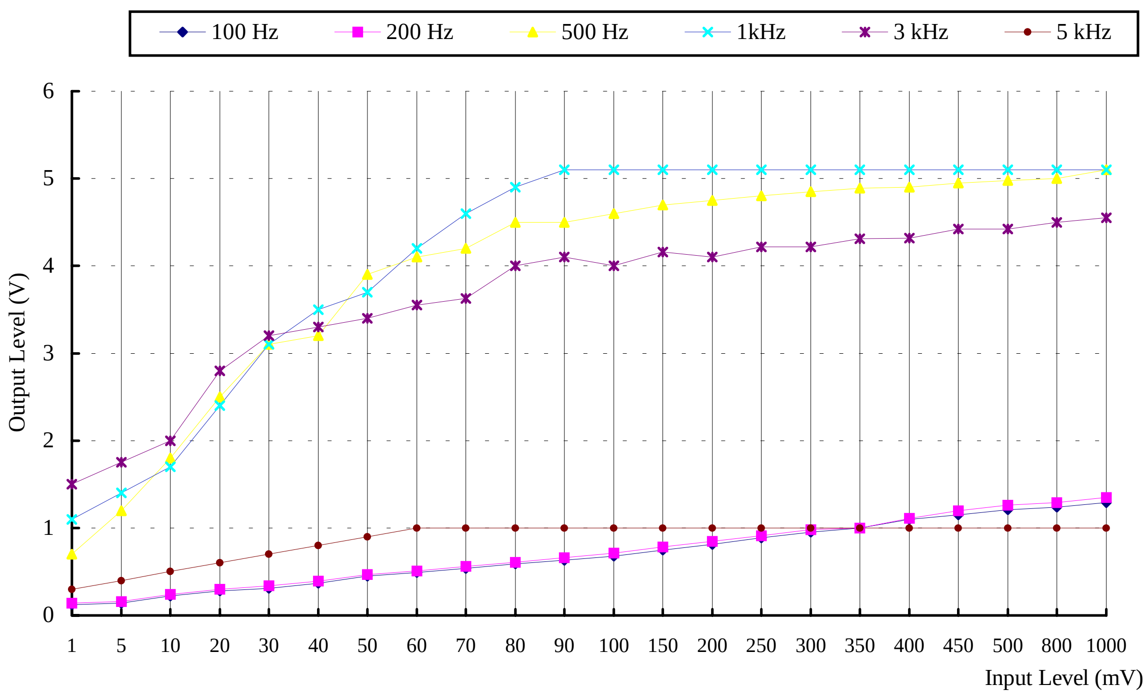
4.3 Measurement Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Modulation Analyzer	Hewlett-Packard	8901A	12/01/2004
Multifunction Synthesizer	Hewlett-Packard	8904A	12/07/2004
Oscillscope	Lecroy	9350A	05/26/2004

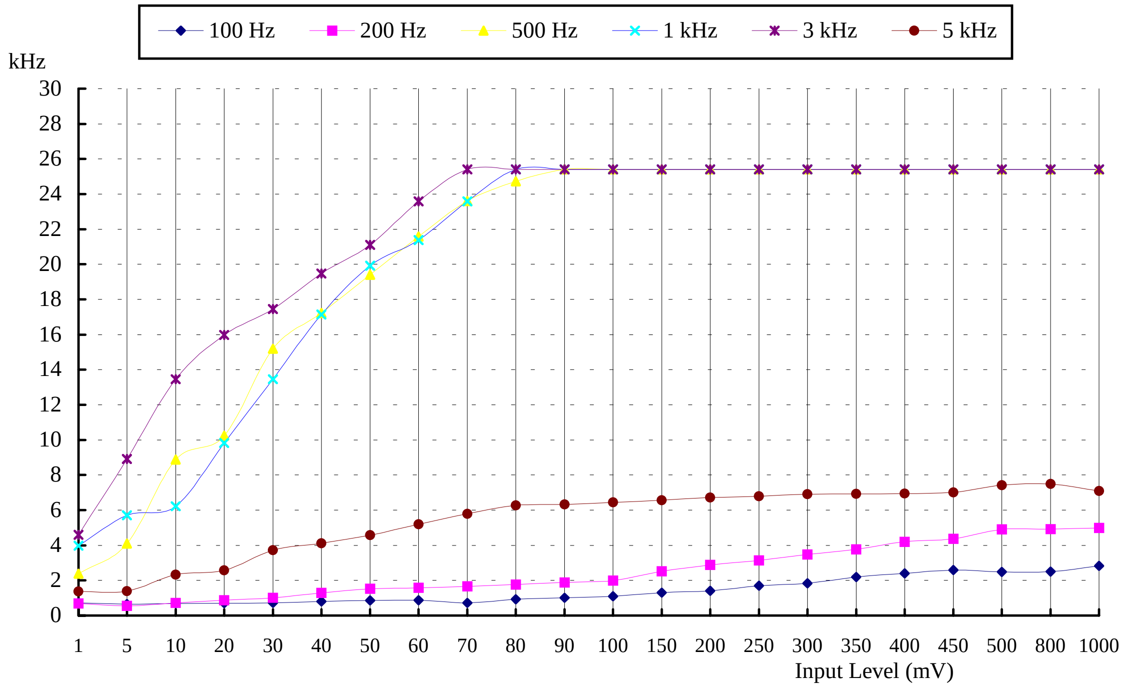
4.4 Measurement Result

1. 682.000~698.000 MHz

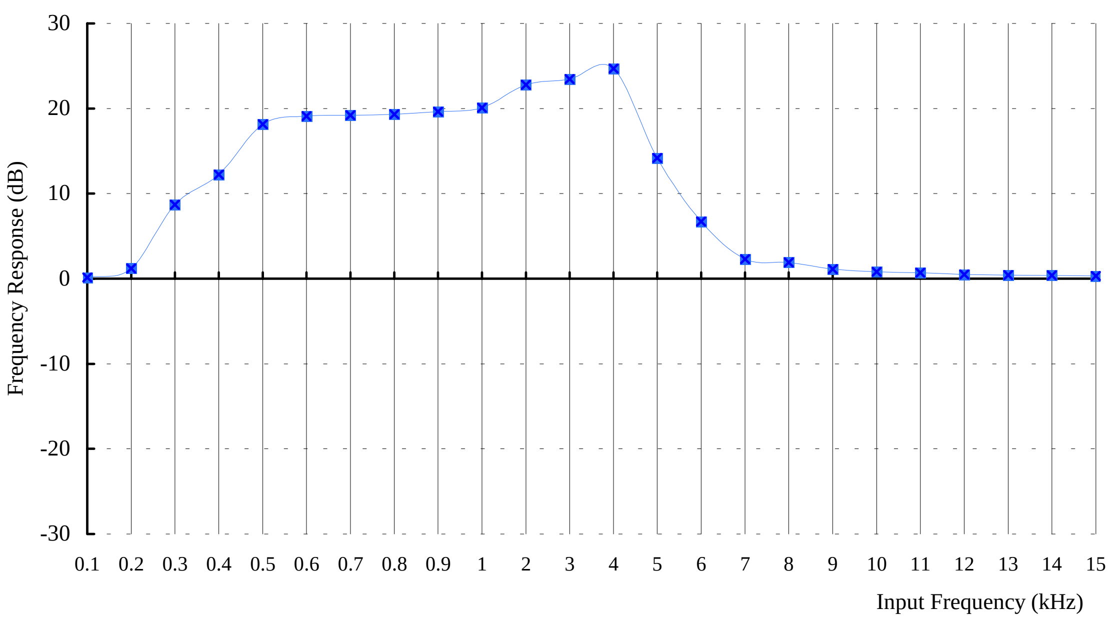
A). Frequency response



B). Modulation Limit

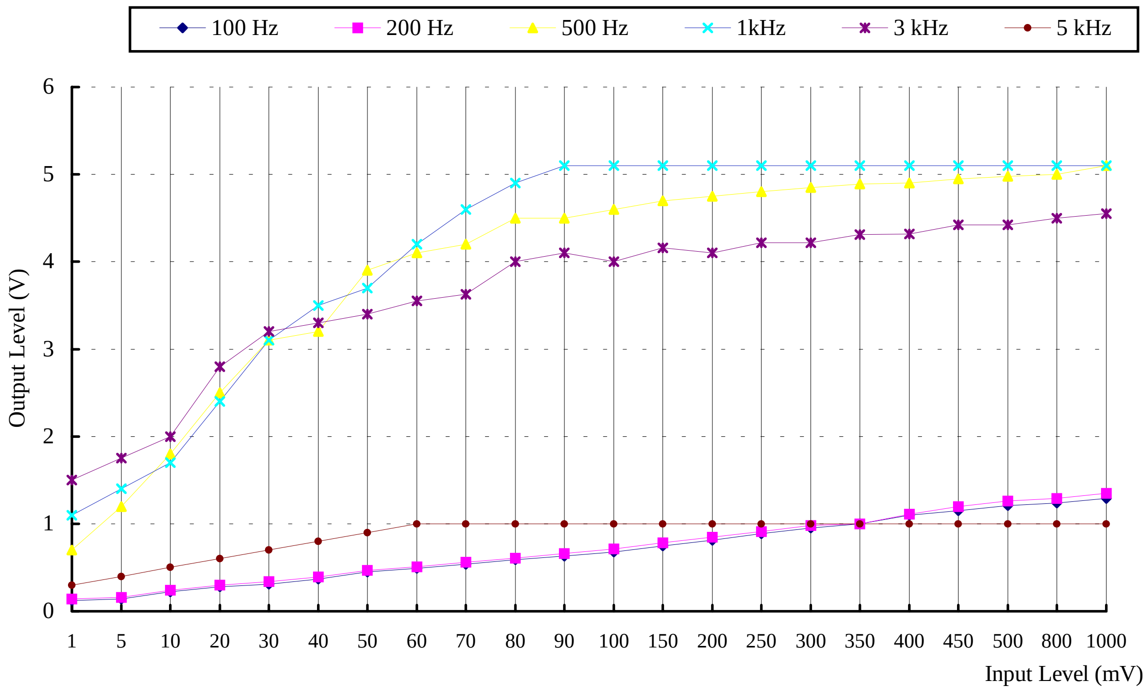


C). Frequency response of all circuits

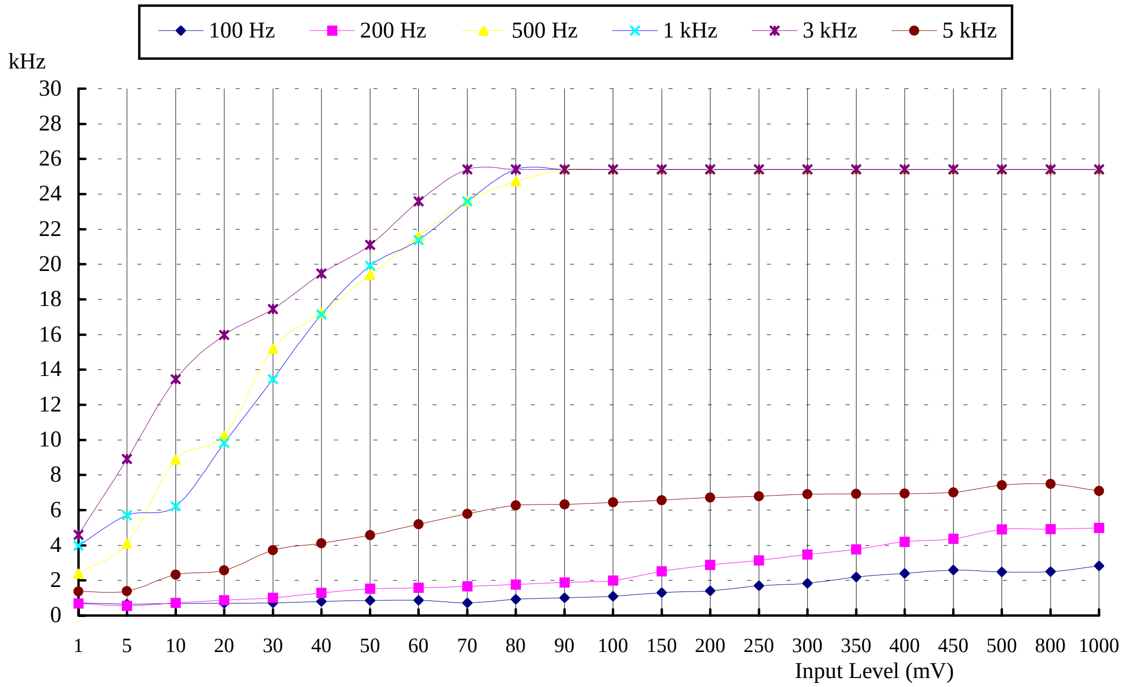


2. 740.000~752.000 MHz

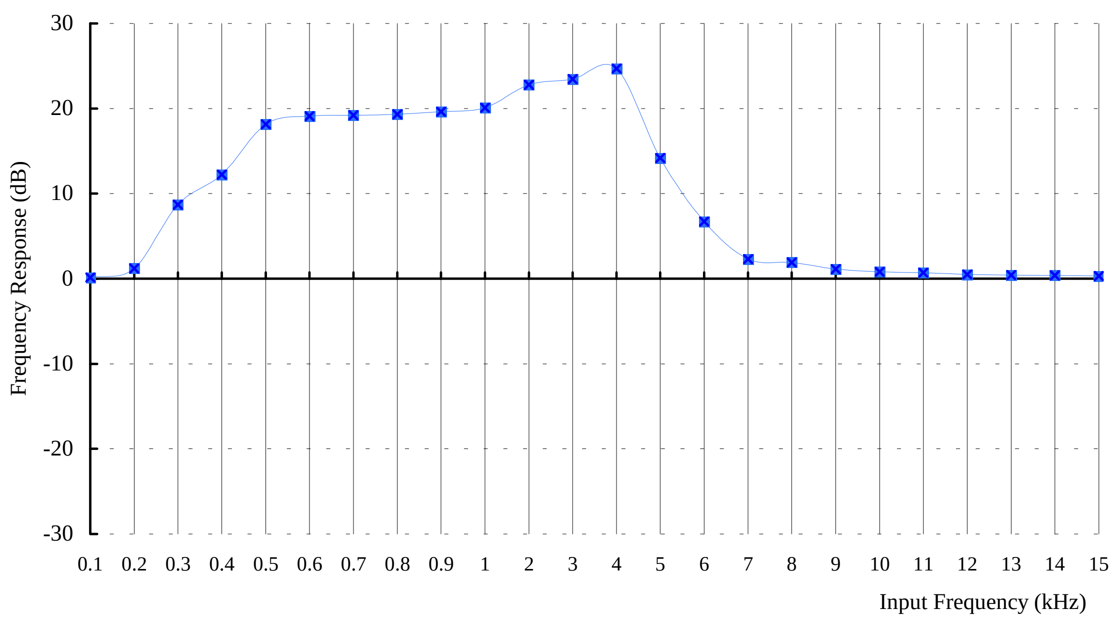
A). Frequency response



B). Modulation Limit

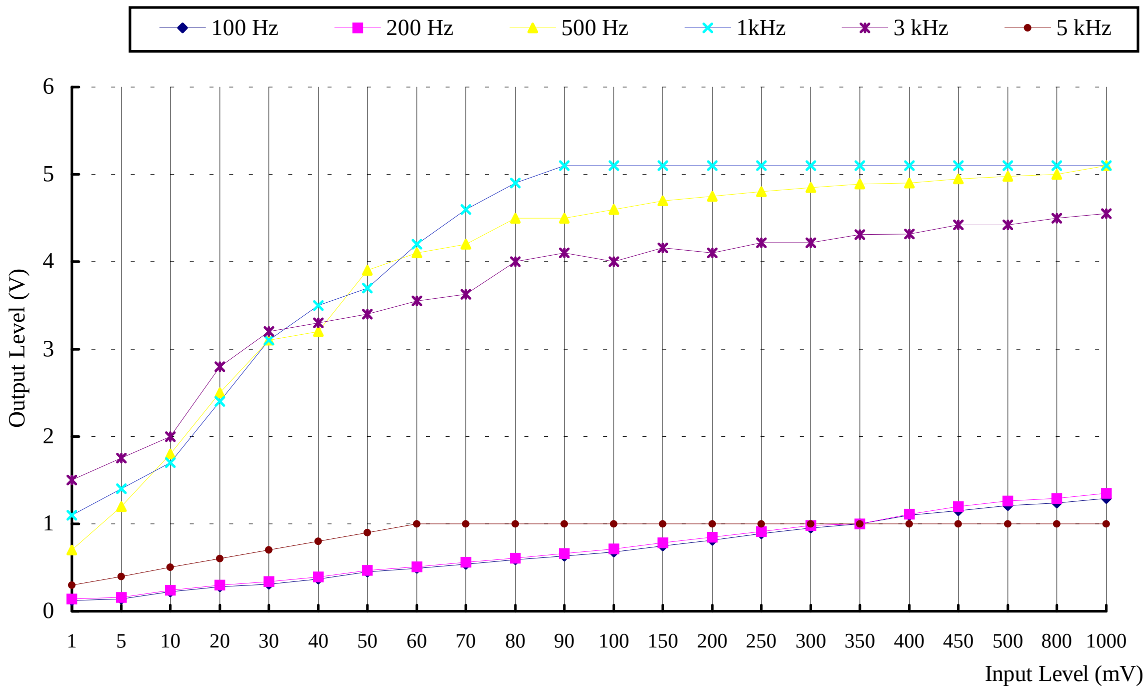


C). Frequency response of all circuits

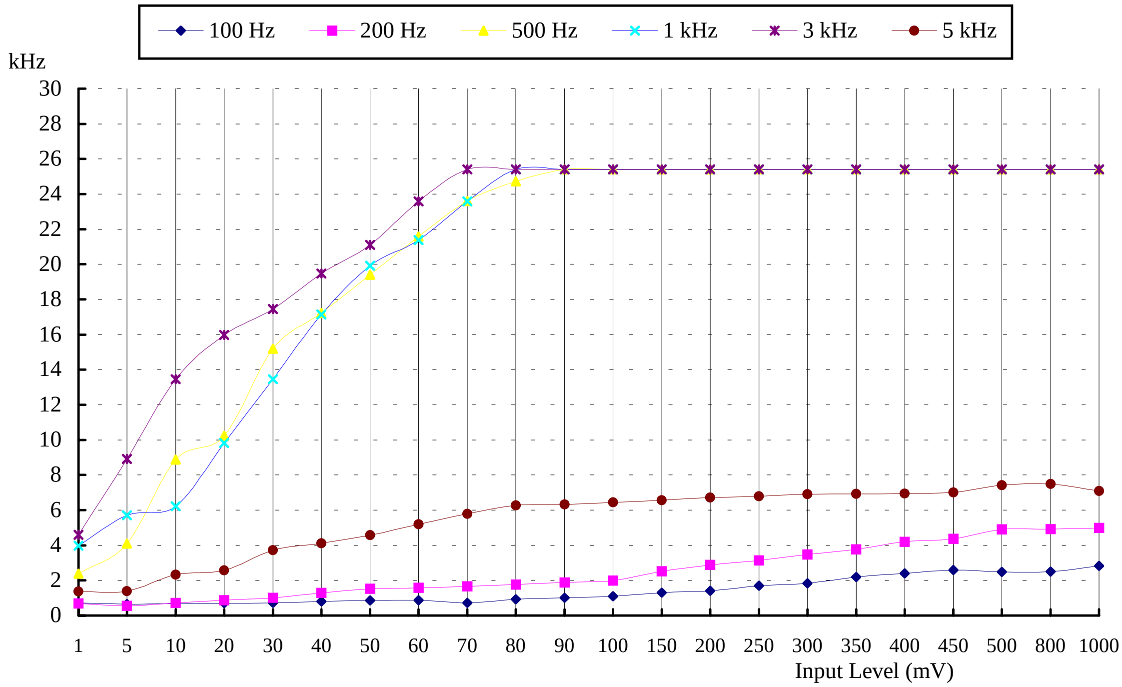


3. 790.000~806.000 MHz

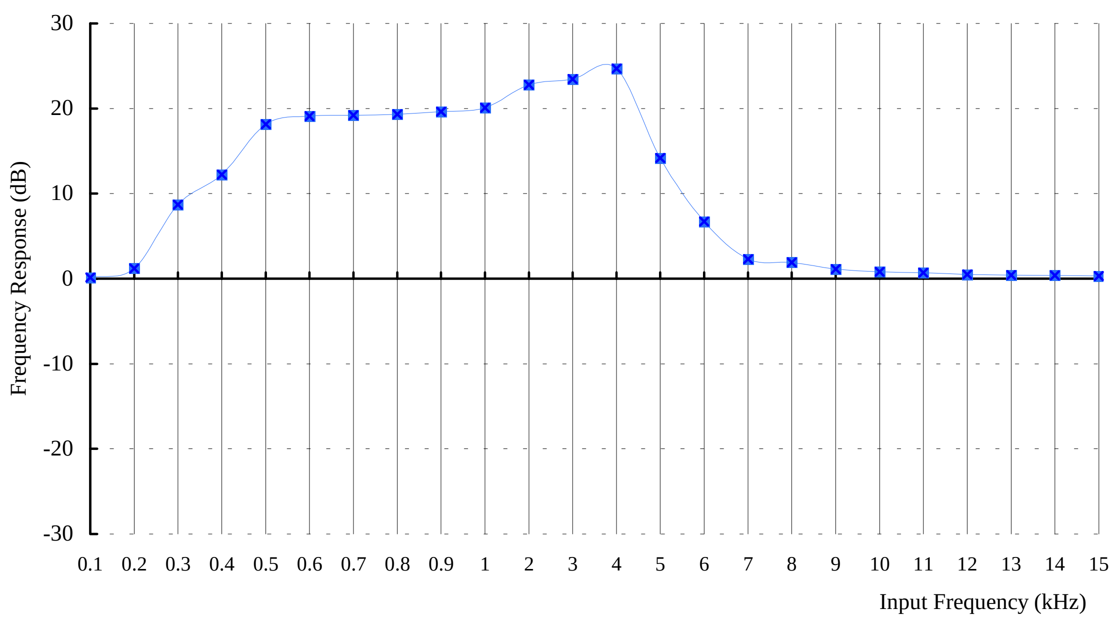
A). Frequency response



B). Modulation Limit



C). Frequency response of all circuits



5. OCCUPIED BANDWIDTH OF EMISSION

5.1 Provisions Applicable

According to § 2.1049 (c)(1), For radiotelephone transmitter, other than single sideband or indenpent sideband transmitter, when modulateed by a 2.5kHz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation.
According to § 74.861(e)(5), the frequency emission bandwidth shall not exceed 200 kHz.

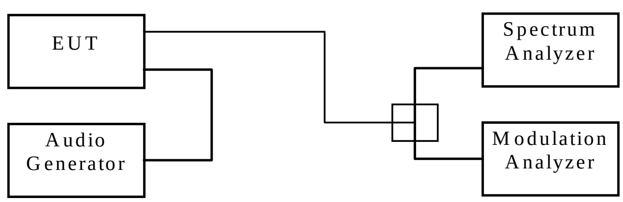
5.2 Measurement Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT as shown in figure 4, and Install new batteries in the EUT. Turn on the EUT ant set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3. Apply a 2.5 kHz modulation signal to EUT and measure the frequencies of the modulated signal from the EUT where it is the specified number of dB below the reference level set in step 2. This is the occupied bandwidth specified.

Figure 4 : Occupied bandwidth measurement configuration



5.3 Occupied Bandwidth Test Equipment

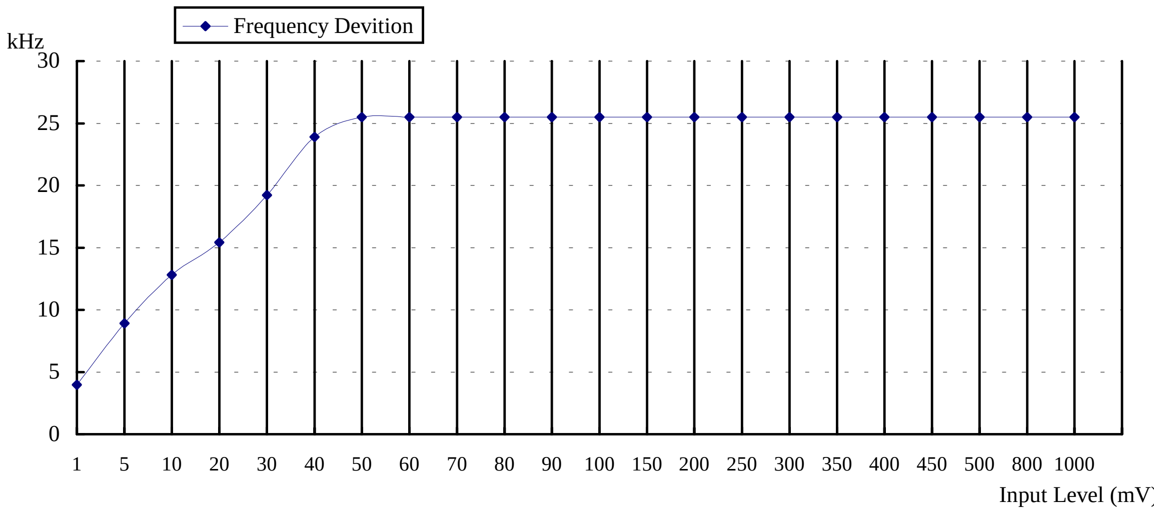
Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	R&S	ESBI	05/25/2004
Modulation Analyzer	Hewlett-Packard	8901A	12/01/2004
Multifunction Synthesizer	Hewlett-Packard	8904A	12/07/2004
Plotter	Hewlett-Packard	7440A	N/A

5.4 Bandwidth Measured

5.4.1 Input Level Derived

1. 682.000~698.000 MHz

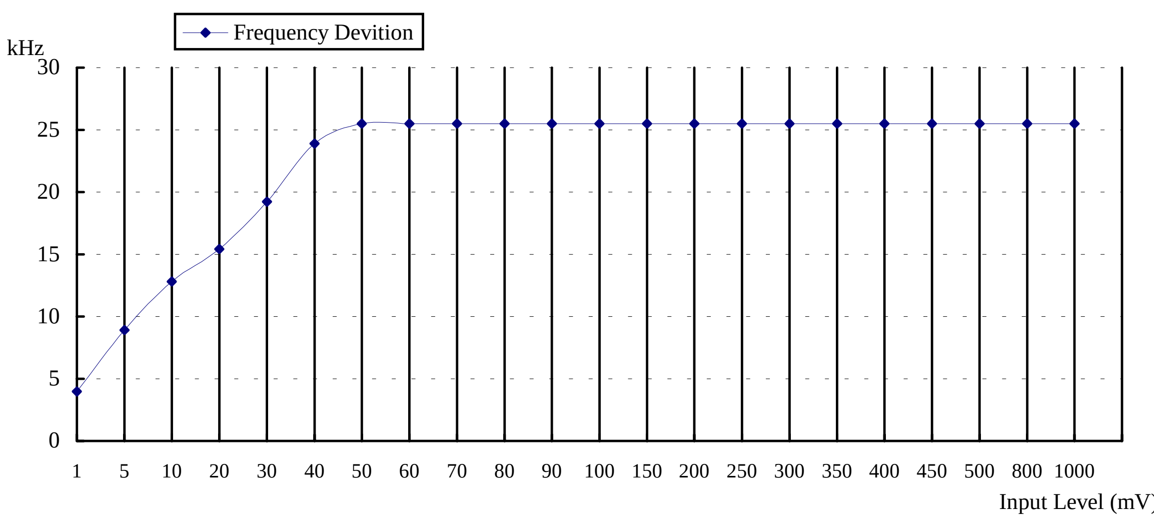
Input Audio Frequency : 2.5 kHz, Sine Wave



The Level input to produce 50％modulation is 25 mV, therefore the magnitude 16 dB greater than it is 157.5 mV.

2. 740.000~752.000 MHz

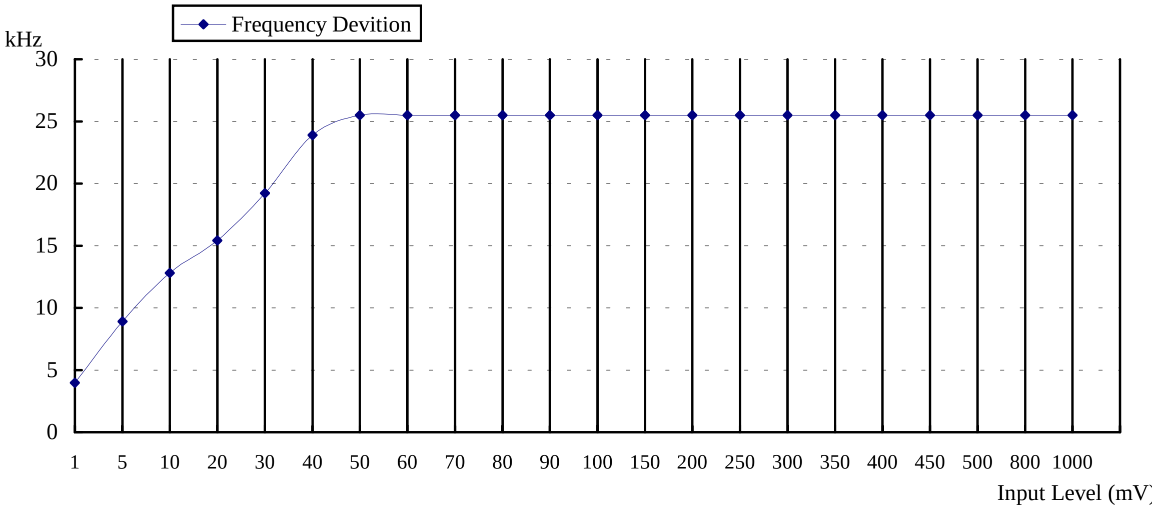
Input Audio Frequency : 2.5 kHz, Sine Wave



The Level input to produce 50％modulation is 25 mV, therefore the magnitude 16 dB greater than it is 157.5 mV.

3. 790.000~806.000 MHz

Input Audio Frequency : 2.5 kHz, Sine Wave



The Level input to produce 50％modulation is 25 mV, therefore the magnitude 16 dB greater than it is 157.5 mV.

5.4.2 Occupied Bandwidth Plotted

1. 682.000~698.000 MHz

The Channel Low 26 dB Bandwidth is 148.8KHz.
The Channel Mid 26 dB Bandwidth is 148.8KHz.
The Channel High 26 dB Bandwidth is 148.8KHz.

2. 740.000~752.000 MHz

The Channel Low 26 dB Bandwidth is 148.8KHz.
The Channel Mid 26 dB Bandwidth is 148.8KHz.
The Channel High 26 dB Bandwidth is 148.8KHz.

3. 790.000~806.000 MHz

The Channel Low 26 dB Bandwidth is 148.8KHz.
The Channel Mid 26 dB Bandwidth is 148.8KHz.
The Channel High 26 dB Bandwidth is 148.8KHz.

Please see appendix 1 for plotted data.

6. FIELD STRENGTH OF EMISSION

6.1 Provisions Applicable

According to § 2.1053, measurements shall be made to detect spurious emission that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal condition of installation and operation. Information submitted shall include the relative radiated power of spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from a halfwave dipole antenna.

According to § 74.861(e)(6), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the follwing sceedule:

(i) on any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB.

(ii) on any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB.

(iii) on any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth shall be attenuated below the unmodulated carrier by at least 43 plus 10 Log(output power in watts) dB.

6.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively, adjusting the input voltage to produce the maximum power as measured in chapter 3.
2. Adjust the analyzer for each frequency measured in chapter 6 on a 1 MHz frequency span and 1MHz resolution bandwidth.
3. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0◦ to 360◦, and record the highest value indicated on spectrum analyzer as reference value.
4. Repeat step 3 until all frequencies need to be measured were complete.
5. Repeat step 4 with search antenna in vertical polarized orientations.
6. Replace the EUT with a tuned dipole antenna (horn antenna for above 1 GHz) relative to each frequency in horizontally polarized orientation and as the same polarized orientation with search antenna. Connect the tuned dipole antenna to a standard signal generator (SG) via a low loss cable. Power on the SG and tune the right frequency in measuring as well as set SG at a appreciated output level. Rise and lower the search antenna to get the highest value on spectrum analyzer, and then hold this position. Adjust the SG output to get a identical value derived from step 3 on spectrum analyzer. Record this value for result calculated.

7. Repeat step 6 until all frequencies need to be measured were complete.
8. Repeat step 7 with both dipole antenna (horn antenna for above 1 GHz) and search antenna in vertical polarized orientations.

6.3 Measuring Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	Hewlett-Packard	8568B	01/25/2004
Quasi Peak Detector	Hewlett-Packard	85650A	01/25/2004
Pre-selector	Hewlett-Packard	85685A	01/25/2004
Spectrum Analyzer	Hewlett-Packard	8564E	05/16/2004
Horn Antenna	EMCO	3115	05/14/2004
Log periodic Antenna	EMCO	3146	11/05/2004
Biconical Antenna	EMCO	3110B	11/05/2004
Preamplifier	Hewlett-Packard	8449B	05/10/2004
Preamplifier	Hewlett-Packard	8447D	09/29/2004
Diple Antenna	EMCO	3121C	03/16/2004

Measuring instrument setup in frequency band measured is as following :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz

6.4 Measuring Data

1. 682.000~698.000 MHz

A. Channel Low

Operated mode : 682.375 MHz   Test Date : Dec. 23, 2003
Temperature : 21℃   Humidity : 69%

Unmodulated carrier output power is 2.1 dBm , or 1.6 mW (ERP).

The limit of spurious or harmonics is calculated as following :

2.1-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1364.698	---	---	---	---	8.2	-2.0	1.3	---	---	-13.0	---
2047.047	---	---	---	---	9.5	-2.0	1.8	---	---	-13.0	---
2729.396	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
3411.745	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
4094.094	---	---	---	---	9.8	-2.0	2.2	---	---	-13.0	---
4776.443	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5458.792	---	---	---	---	10.9	-2.0	2.6	---	---	-13.0	---
6141.141	---	---	---	---	12.0	-2.0	2.6	---	---	-13.0	---
6823.490	---	---	---	---	11.9	-2.0	2.6	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

B. Channel Mid

Operated mode : 690.250 MHz   Test Date : Nov. 12, 2003
Temperature : 21℃   Humidity : 68%

Unmodulated carrier output power is 2.1 dBm , or 1.6 mW (ERP).

The limit of spurious or harmonics is calculated as following :

2.1-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1380.460	---	---	---	---	8.2	-2.0	1.3	---	---	-13.0	---
2070.690	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
2760.920	---	---	---	---	9.5	-2.0	1.8	---	---	-13.0	---
3451.150	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
4141.380	---	---	---	---	9.8	-2.0	2.2	---	---	-13.0	---
4831.610	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5521.840	---	---	---	---	10.9	-2.0	2.6	---	---	-13.0	---
6212.070	---	---	---	---	12.0	-2.0	2.6	---	---	-13.0	---
6902.300	---	---	---	---	11.8	-2.0	2.6	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

C. Channel High

Operated mode : 697.125 MHz Test Date : Dec. 23, 2003
Temperature : 21℃ Humidity : 69%

Unmodulated carrier output power is 2.9 dBm , or 1.9 mW (ERP).

The limit of spurious or harmonics is calculated as following :

2.9-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1394.224	---	---	---	---	8.2	-2.0	1.3	---	---	-13.0	---
2091.336	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
2788.448	---	---	---	---	9.5	-2.0	1.8	---	---	-13.0	---
3485.561	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
4182.673	---	---	---	---	10.1	-2.0	2.2	---	---	-13.0	---
4879.785	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5576.897	---	---	---	---	11.1	-2.0	2.6	---	---	-13.0	---
6274.009	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
6971.121	---	---	---	---	11.7	-2.0	2.6	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

D. Emission mask plots

Please see appendix 2 for plotted data.

2. 740.000~752.000 MHz

A. Channel Low

Operated mode : 740.625 MHz   Test Date : Nov.12, 2003
Temperature : 21℃   Humidity : 68%

Unmodulated carrier output power is 7.6dBm , or 5.8 mW (ERP).

The limit of spurious or harmonics is calculated as following :

7.6-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1481.231	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2221.846	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
2962.462	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
3703.077	---	---	---	---	9.6	-2.0	2.2	---	---	-13.0	---
4443.692	---	---	---	---	10.6	-2.0	2.2	---	---	-13.0	---
5184.308	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5924.923	---	---	---	---	11.7	-2.0	2.6	---	---	-13.0	---
6665.539	---	---	---	---	12.0	-2.0	2.6	---	---	-13.0	---
7406.154	---	---	---	---	11.5	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark “---“ means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

B. Channel Mid

Operated mode : 746.625 MHz   Test Date : Dec. 23, 2003

Temperature : 21℃   Humidity : 69%

Unmodulated carrier output power is 7.4 dBm , or 5.5 mW (ERP).

The limit of spurious or harmonics is calculated as following :

7.4-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1493.229	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2239.843	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
2986.457	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
3733.072	---	---	---	---	9.6	-2.0	2.2	---	---	-13.0	---
4479.689	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5226.300	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5972.914	---	---	---	---	11.9	-2.0	2.6	---	---	-13.0	---
6719.529	---	---	---	---	12.0	-2.0	2.6	---	---	-13.0	---
7466.143	---	---	---	---	11.5	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

C. Channel High

Operated mode : 751.500 MHz   Test Date : Dec. 23, 2003
Temperature : 21℃   Humidity : 69%

Unmodulated carrier output power is 7.1 dBm , or 5.1 mW (ERP).

The limit of spurious or harmonics is calculated as following :

7.1-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1502.984	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2254.476	---	---	---	---	9.4	-2.0	1.8	---	---	-13.0	---
3005.968	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
3757.461	---	---	---	---	9.6	-2.0	2.2	---	---	-13.0	---
4508.953	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5260.445	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
6011.937	---	---	---	---	11.9	-2.0	2.6	---	---	-13.0	---
6763.429	---	---	---	---	11.9	-2.0	2.6	---	---	-13.0	---
7514.921	---	---	---	---	11.5	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

D. Emission mask plots

Please see appendix 2 for plotted data.

3. 790.000~806.000 MHz

A. Channel Low

Operated mode : 790.375 MHz Test Date : Dec. 23, 2003
Temperature : 21℃ Humidity : 69%

Unmodulated carrier output power is 8.3 dBm , or 6.8 mW (ERP).

The limit of spurious or harmonics is calculated as following :

8.3-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	V	SG Reading (dBm) H	V	Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm) H	V	Limit (dBm)	Margin (dB)
1580.719	---	---	---	---	9.2	-2.0	1.3	---	---	-13.0	---
2371.078	---	---	---	---	9.3	-2.0	1.8	---	---	-13.0	---
3161.438	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
3951.797	---	---	---	---	9.5	-2.0	2.2	---	---	-13.0	---
4742.156	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5532.515	---	---	---	---	10.9	-2.0	2.6	---	---	-13.0	---
6322.874	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7113.234	---	---	---	---	11.7	-2.0	2.6	---	---	-13.0	---
7903.593	---	---	---	---	11.3	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark "---" means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

B. Channel Mid

Operated mode : 797.375 MHz   Test Date : Dec. 23, 2003
Temperature : 21℃   Humidity : 69%

Unmodulated carrier output power is 8.7 dBm , or 7.4 mW (ERP).

The limit of spurious or harmonics is calculated as following :

8.7-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr’	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1596.721	---	---	---	---	9.2	-2.0	1.3	---	---	-13.0	---
2395.082	---	---	---	---	9.3	-2.0	1.8	---	---	-13.0	---
3193.443	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
3991.804	---	---	---	---	9.5	-2.0	2.2	---	---	-13.0	---
4790.164	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5588.525	---	---	---	---	11.1	-2.0	2.6	---	---	-13.0	---
6386.886	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7185.246	---	---	---	---	11.6	-2.0	2.6	---	---	-13.0	---
7983.607	---	---	---	---	11.3	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark “---“ means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

C. Channel High

Operated mode : 805.375 MHz Test Date : Dec. 23, 2003
Temperature : 21℃ Humidity : 69%

Unmodulated carrier output power is 8.5 dBm , or 7.1 mW (ERP).

The limit of spurious or harmonics is calculated as following :

8.5-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV) H	Meter Reading (dBuV) V	SG Reading (dBm) H	SG Reading (dBm) V	Antenna Gain	Antenna Gain Corr’	Cable Loss (dB)	Result (dBm) H	Result (dBm) V	Limit (dBm)	Margin (dB)
1610.730	---	---	---	---	9.2	-2.0	1.3	---	---	-13.0	---
2416.095	---	---	---	---	9.3	-2.0	1.8	---	---	-13.0	---
3221.460	---	---	---	---	9.7	-2.0	1.8	---	---	-13.0	---
4026.825	---	---	---	---	9.5	-2.0	2.2	---	---	-13.0	---
4832.190	---	---	---	---	10.9	-2.0	2.2	---	---	-13.0	---
5637.555	---	---	---	---	11.1	-2.0	2.6	---	---	-13.0	---
6442.920	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7248.285	---	---	---	---	11.6	-2.0	2.6	---	---	-13.0	---
8053.650	---	---	---	---	11.3	-2.0	2.9	---	---	-13.0	---

Note :

1. Remark “---“ means that the emission level is too weak to be detected.
2. For measured frequency below 1GHz, a tuned dipole antenna is used.
3. Result calculation is as following :

   Result ＝ SG Reading + Antenna Gain + Antenna Gain Corrected + Cable Loss

   Antenna Gain Corrected : is used for antenna other than dipole to convert radiated power to ERP.
4. Spurious or harmonics above 1 GHz is too low to be detected or attenuated more than 60 dB from limit value.

D. Emission mask plots

Please see appendix 2 for plotted data.

6.5 Radiated Emission Data

Emission frequencies below 1 GHz
Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured with a pre-amplifier of 35 dB.

6.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where
Corrected Factor = Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

6.7 Radiated Measurement Photos

Please see Exhibit-F-Setup_Photos

7. FREQUENCY STABILITY MEASUREMENT

7.1 Provisions Applicable

According to § 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃to +50℃centigrade, and according to § 2.1055 (d)(2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to § 74.861(e)(4), the frequency tolerance of the transmitter shall be 0.005 percent.

7.2 Measurement Procedure

A) Frequency stability versus environmental temperature

1. Setup the configuration per figure 5 for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used. Install new batteries in the EUT.

2. Turn on EUT and set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.

3. Set the temperature of chamber to 50℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.

4. Repeat step 2 with a 10℃decreased per stage until the lowest temperature -30℃is measured, record all measurement frequencies.

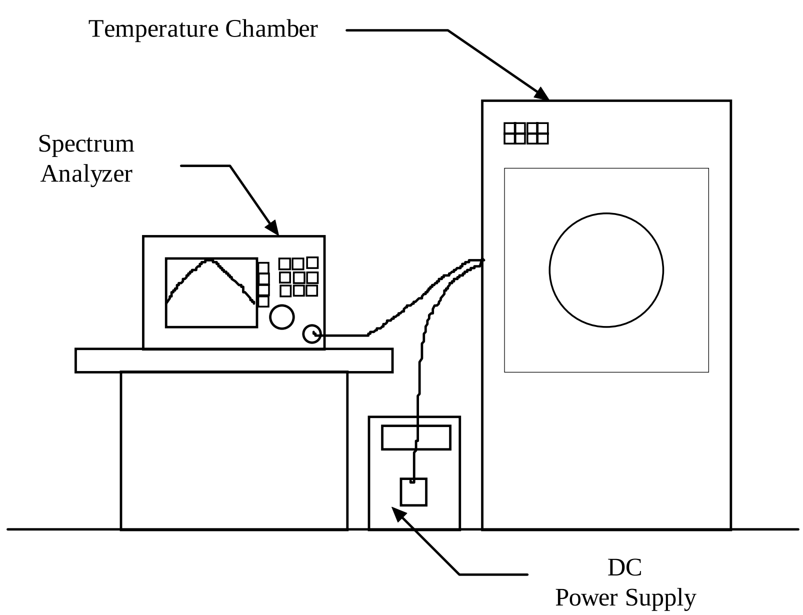
B) Frequency stability versus input voltage

1. Setup the configuration per figure 7 for frequencies measured at ambient temperature if it is within 15℃to 25℃. Otherwise, an environmental chamber set for a temperature of 20℃shall be used. Install new batteries in the EUT.

2. Set SA center frequency to the right frequency needs to be measured. Then set SA RBW to 30 kHz, VBW to 100kHz and frequency span to 500 kHz. Record this frequency to be a reference.

3. For battery operated only device, supply the EUT primary voltage at the battery operating end point which is specified by the manufacturer and record the frequency.

Figure 5 : Frequency stability measurement configuration



7.3 Measurement Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	HP	8564E	05/16/2004
Temperature Chamber	ACS	EOS 200T	01/17/2004

7.4 Measurement Data

7.4.1 682.000~698.000MHz

A1. Frequency stability versus enviroment tempture

Reference Frequency : 682.375 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	682.3968	0.00319	682.3786	0.00052	682.3721	-0.00043
40		682.3761	0.00016	682.3712	-0.00056	682.3797	0.00068
30		682.3705	-0.00066	682.3678	-0.00106	682.3898	0.00217
20		682.3832	0.00120	682.3857	0.00156	682.3516	-0.00343
10		682.3864	0.00167	682.3987	0.00347	682.3732	-0.00027
0		682.3894	0.00211	682.3815	0.00095	682.3608	-0.00208
-10		682.3951	0.00295	682.3734	-0.00023	682.3812	0.00090
-20		682.3992	0.00354	682.3513	-0.00347	682.3491	-0.00380
-30		682.3796	0.00067	682.4008	0.00379	682.3655	-0.00139

A2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 682.375 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	682.3611	-0.00204	682.3696	-0.00079	682.3774	0.00035

B1. Frequency stability versus enviroment tempture

Reference Frequency : 690.125 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	690.1372	0.00177	690.1141	-0.00158	690.1196	-0.00078
40		690.1255	0.00008	690.1279	0.00043	690.1433	0.00266
30		690.1429	0.00259	690.1463	0.00308	690.0985	-0.00384
20		690.1051	-0.00288	690.1270	0.00029	690.1139	-0.00161
10		690.1130	-0.00174	690.1322	0.00105	690.1484	0.00339
0		690.1390	0.00203	690.1500	0.00362	690.1066	-0.00266
-10		690.1069	-0.00262	690.1298	0.00070	690.1027	-0.00323
-20		690.1112	-0.00200	690.0992	-0.00374	690.1134	-0.00169
-30		690.1417	0.00242	690.1287	0.00054	690.1224	-0.00038

B2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 690.125 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	690.0997	-0.00367	690.1043	-0.00300	690.1127	-0.00178

C1. Frequency stability versus enviroment tempture

Reference Frequency : 697.125 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	697.1018	-0.00333	697.1123	-0.00182	697.1168	-0.00117
40		697.1382	0.00189	697.1327	0.00111	697.0986	-0.00379
30		697.0983	-0.00384	697.1234	-0.00023	697.1299	0.00070
20		697.1115	-0.00194	697.1037	-0.00306	697.1129	-0.00174
10		697.1447	0.00283	697.1439	0.00271	697.1212	-0.00054
0		697.0996	-0.00364	697.1106	-0.00206	697.1102	-0.00213
-10		697.1106	-0.00206	697.1445	0.00280	697.0985	-0.00380
-20		697.1140	-0.00157	697.1455	0.00294	697.1317	0.00097
-30		697.1265	0.00021	697.1405	0.00222	697.1351	0.00145

C2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 697.125 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	697.1230	-0.00029	697.1278	0.00041	697.1273	0.00033

7.4.2 740.000~752.000MHz

A1. Frequency stability versus enviroment tempture

Reference Frequency : 740.625 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	740.6046	-0.00275	740.6327	0.00104	740.6353	0.00139
40		740.6472	0.00300	740.6132	-0.00159	740.6495	0.00331
30		740.6059	-0.00259	740.6079	-0.00232	740.6405	0.00210
20		740.6068	-0.00246	740.6007	-0.00328	740.6176	-0.00099
10		740.6381	0.00177	740.6131	-0.00160	740.6442	0.00259
0		740.6419	0.00228	740.6356	0.00143	740.6493	0.00328
-10		740.6370	0.00162	740.6001	-0.00336	740.6384	0.00181
-20		740.5996	-0.00343	740.6315	0.00088	740.6271	0.00028
-30		740.6111	-0.00188	740.6439	0.00255	740.6172	-0.00106

A2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 740.625 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	740.6368	0.00159	740.6338	0.00119	740.5965	-0.00385

B1. Frequency stability versus enviroment tempture

Reference Frequency : 746.625 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	746.6477	0.00304	746.6157	-0.00124	746.5970	-0.00375
40		746.6451	0.00270	746.6168	-0.00109	746.6158	-0.00123
30		746.6464	0.00286	746.6499	0.00334	746.6487	0.00317
20		746.6344	0.00126	746.6064	-0.00249	746.6053	-0.00264
10		746.6084	-0.00222	746.6425	0.00234	746.6467	0.00290
0		746.6015	-0.00315	746.6336	0.00115	746.6175	-0.00100
-10		746.6399	0.00199	746.6260	0.00014	746.6339	0.00119
-20		746.6220	-0.00040	746.6194	-0.00076	746.6459	0.00280
-30		746.6282	0.00043	746.6090	-0.00215	746.6354	0.00139

B2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 746.625 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	746.6186	-0.00085	746.6234	-0.00021	746.5999	-0.00337

C1. Frequency stability versus enviroment tempture

Reference Frequency : 751.500 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	751.4782	-0.00290	751.5209	0.00278	751.4881	-0.00158
40		751.5281	0.00374	751.5286	0.00380	751.4978	-0.00029
30		751.5152	0.00202	751.4885	-0.00154	751.5242	0.00321
20		751.5257	0.00342	751.4830	-0.00226	751.4989	-0.00015
10		751.4962	-0.00050	751.4717	-0.00376	751.5266	0.00355
0		751.5015	0.00020	751.5067	0.00089	751.4912	-0.00117
-10		751.4863	-0.00182	751.4970	-0.00039	751.5125	0.00166
-20		751.5219	0.00292	751.4981	-0.00026	751.5110	0.00146
-30		751.5267	0.00355	751.4845	-0.00207	751.4712	-0.00383

C2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 751.500 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	751.4904	-0.00127	751.4806	-0.00258	751.4770	-0.00306

7.4.3 790.000~806.000MHz

A1. Frequency stability versus enviroment tempture

Reference Frequency : 790.375 MHz Limit：0.005%							
Enviroment Tempture (°C)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	790.3944	0.00245	790.3854	0.00131	790.3556	-0.00245
40		790.3613	-0.00173	790.3874	0.00157	790.4049	0.00379
30		790.3532	-0.00275	790.3789	0.00049	790.3594	-0.00197
20		790.3857	0.00135	790.3578	-0.00217	790.3623	-0.00161
10		790.3678	-0.00091	790.3458	-0.00370	790.3501	-0.00315
0		790.3816	0.00084	790.3917	0.00211	790.3672	-0.00099
-10		790.3955	0.00260	790.3975	0.00284	790.3906	0.00197
-20		790.3482	-0.00339	790.3645	-0.00133	790.3752	0.00002
-30		790.3579	-0.00217	790.3790	0.00051	790.3624	-0.00159

A2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 790.375 MHz Limit：0.005%							
Enviroment Tempture (°C)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	790.3639	-0.00140	790.3740	-0.00013	790.3975	0.00284

B1. Frequency stability versus enviroment tempture

Reference Frequency : 798.375 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	798.3450	-0.00376	798.3710	-0.00050	798.3611	-0.00174
40		798.4053	0.00380	798.3610	-0.00175	798.3681	-0.00086
30		798.3584	-0.00208	798.3869	0.00150	798.3540	-0.00263
20		798.3763	0.00016	798.3645	-0.00132	798.3558	-0.00241
10		798.3657	-0.00116	798.3505	-0.00307	798.3573	-0.00222
0		798.3723	-0.00034	798.3957	0.00260	798.3936	0.00234
-10		798.3816	0.00083	798.4002	0.00316	798.3643	-0.00134
-20		798.3668	-0.00103	798.3760	0.00013	798.3958	0.00261
-30		798.3555	-0.00244	798.3854	0.00131	798.3691	-0.00074

B2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 798.375 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	798.3907	0.00197	798.3767	0.00021	798.3540	-0.00263

C1. Frequency stability versus enviroment tempture

Reference Frequency : 805.375 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	805.3863	0.00140	805.3852	0.00127	805.4017	0.00331
40		805.3491	-0.00321	805.3652	-0.00121	805.3864	0.00141
30		805.3703	-0.00059	805.3647	-0.00128	805.3684	-0.00082
20		805.3794	0.00054	805.3935	0.00230	805.3840	0.00112
10		805.3999	0.00309	805.3654	-0.00120	805.3990	0.00298
0		805.3826	0.00095	805.4026	0.00342	805.3716	-0.00042
-10		805.3559	-0.00237	805.3903	0.00190	805.3613	-0.00171
-20		805.3669	-0.00101	805.3560	-0.00236	805.3912	0.00201
-30		805.4010	0.00323	805.3828	0.00097	805.3728	-0.00027

C2. Frequency stability versus end-point supplied voltage (2Vdc)

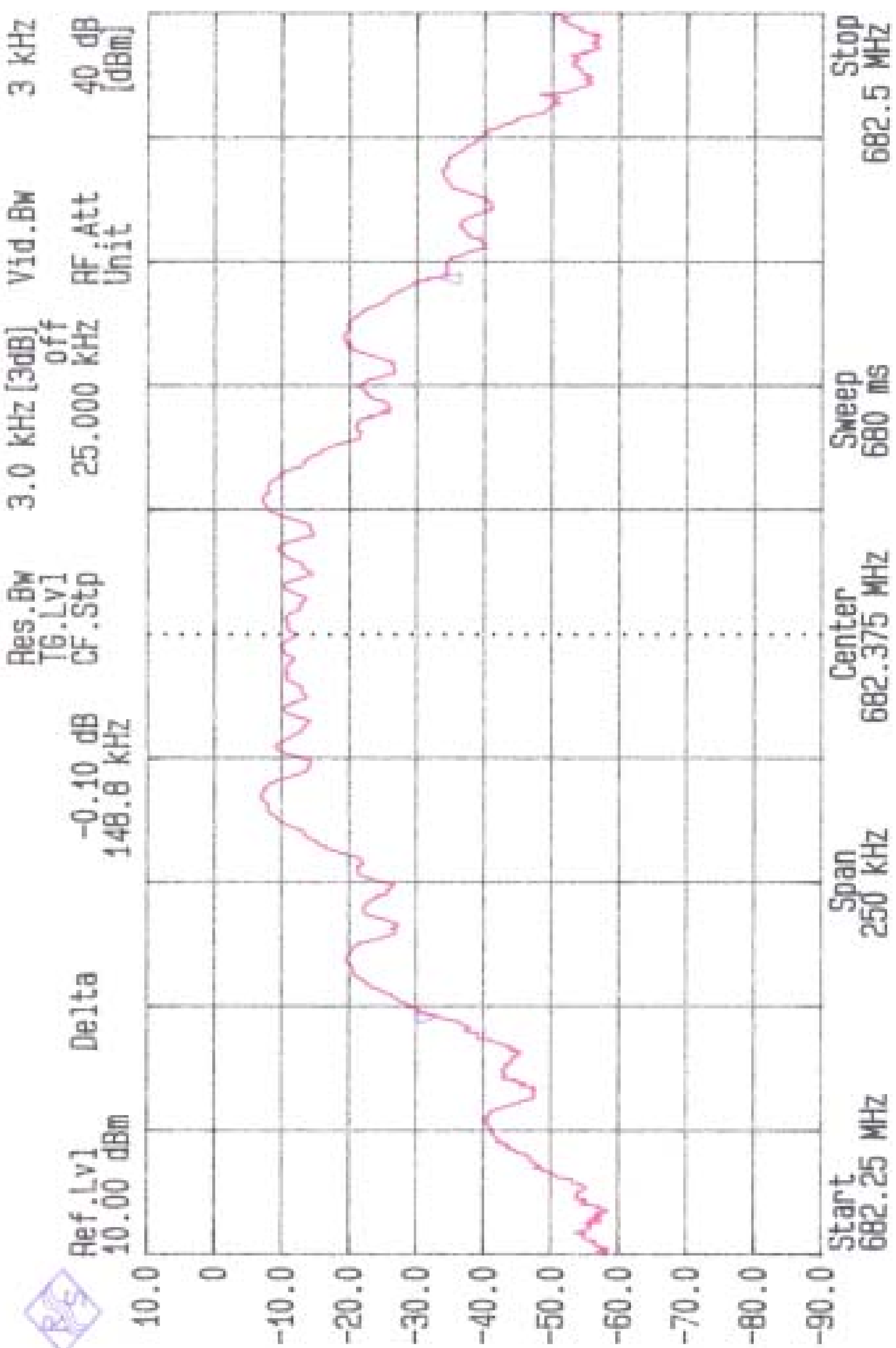
Reference Frequency : 805.375 MHz	Limit：0.005%						
Enviroment Tempture (℃)	Power Supplied (Vdc)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	805.3538	-0.00263	805.4016	0.00330	805.3987	0.00295

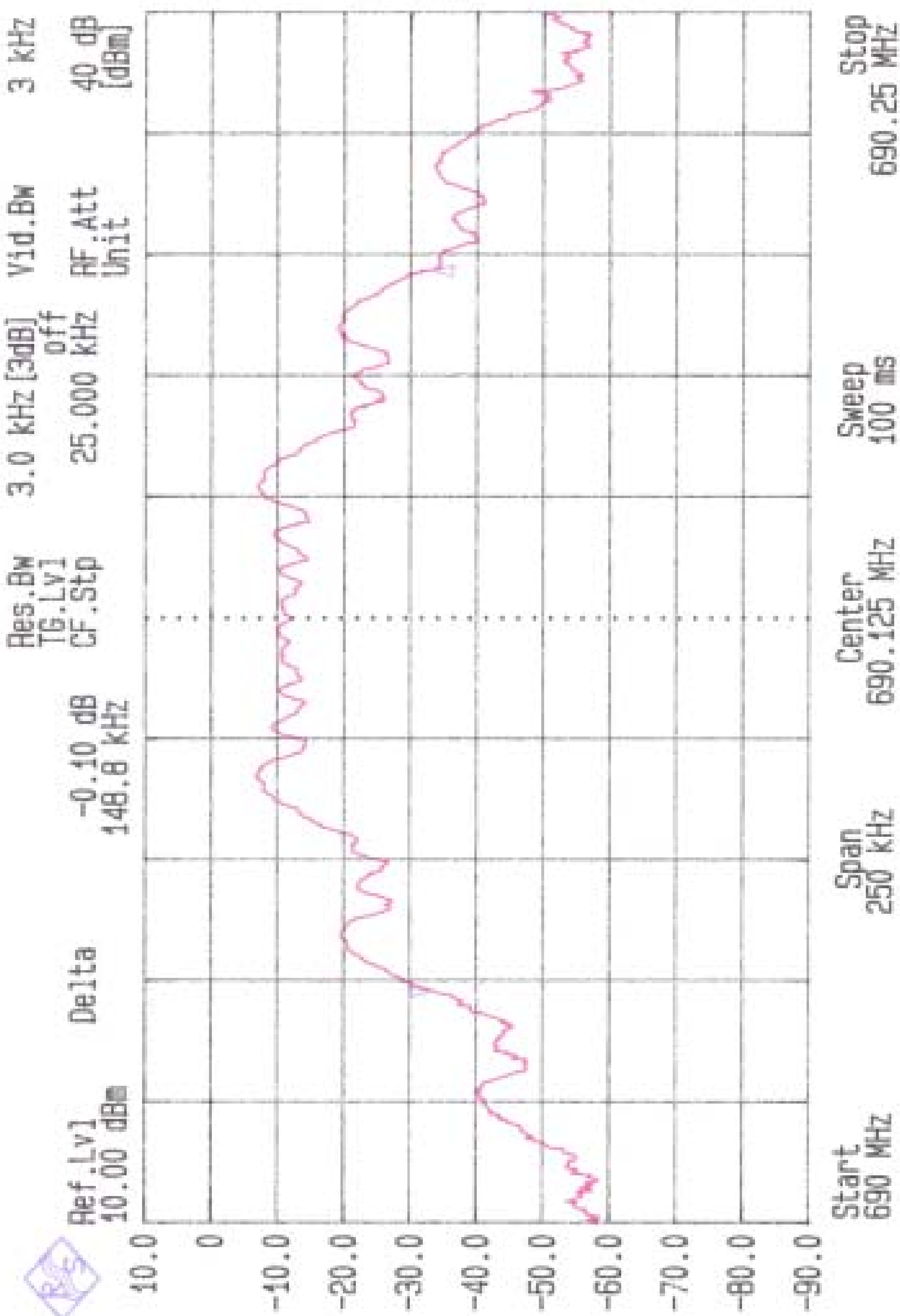
8 CONDUCTED EMISSION MEASUREMENT

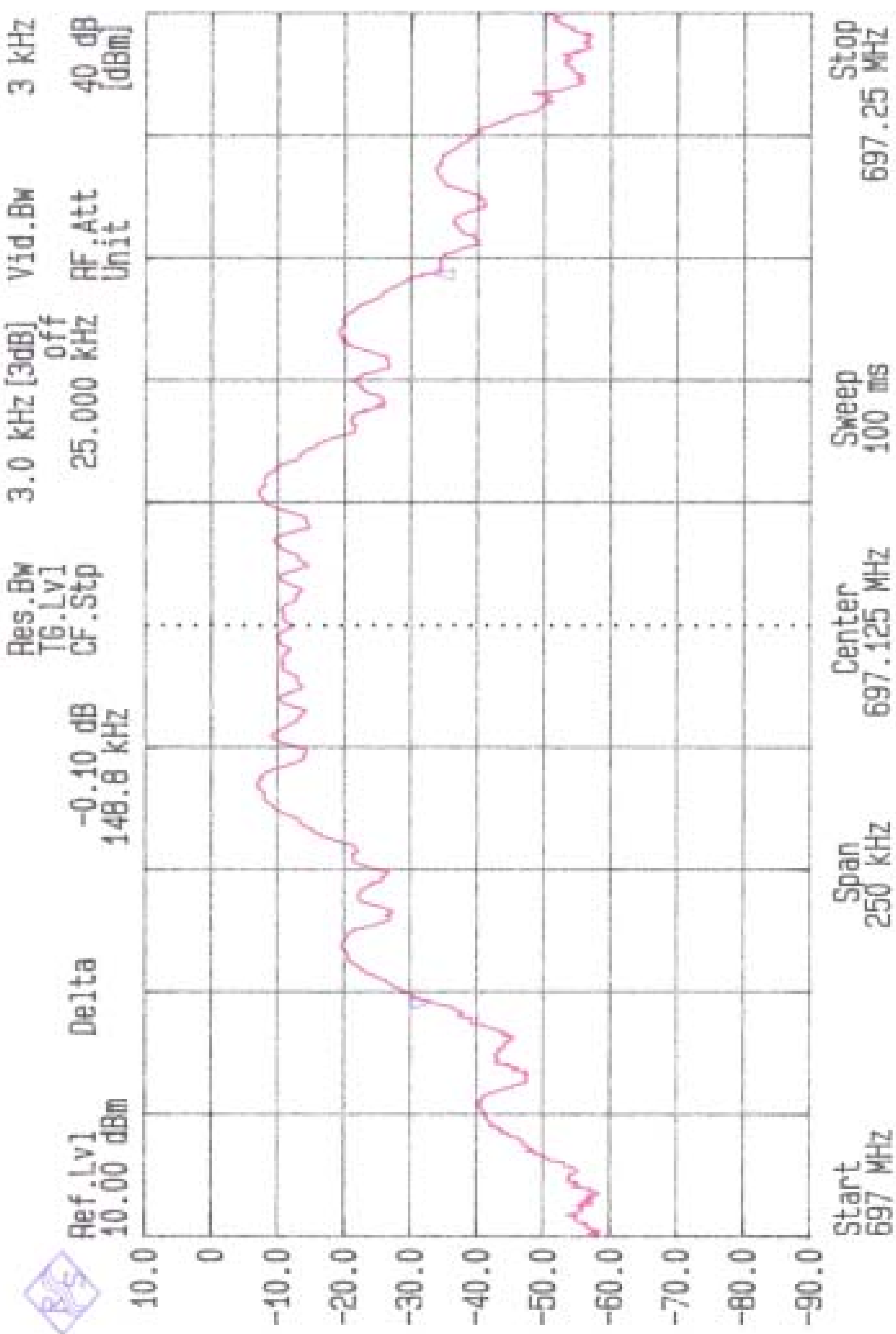
8.1 Description

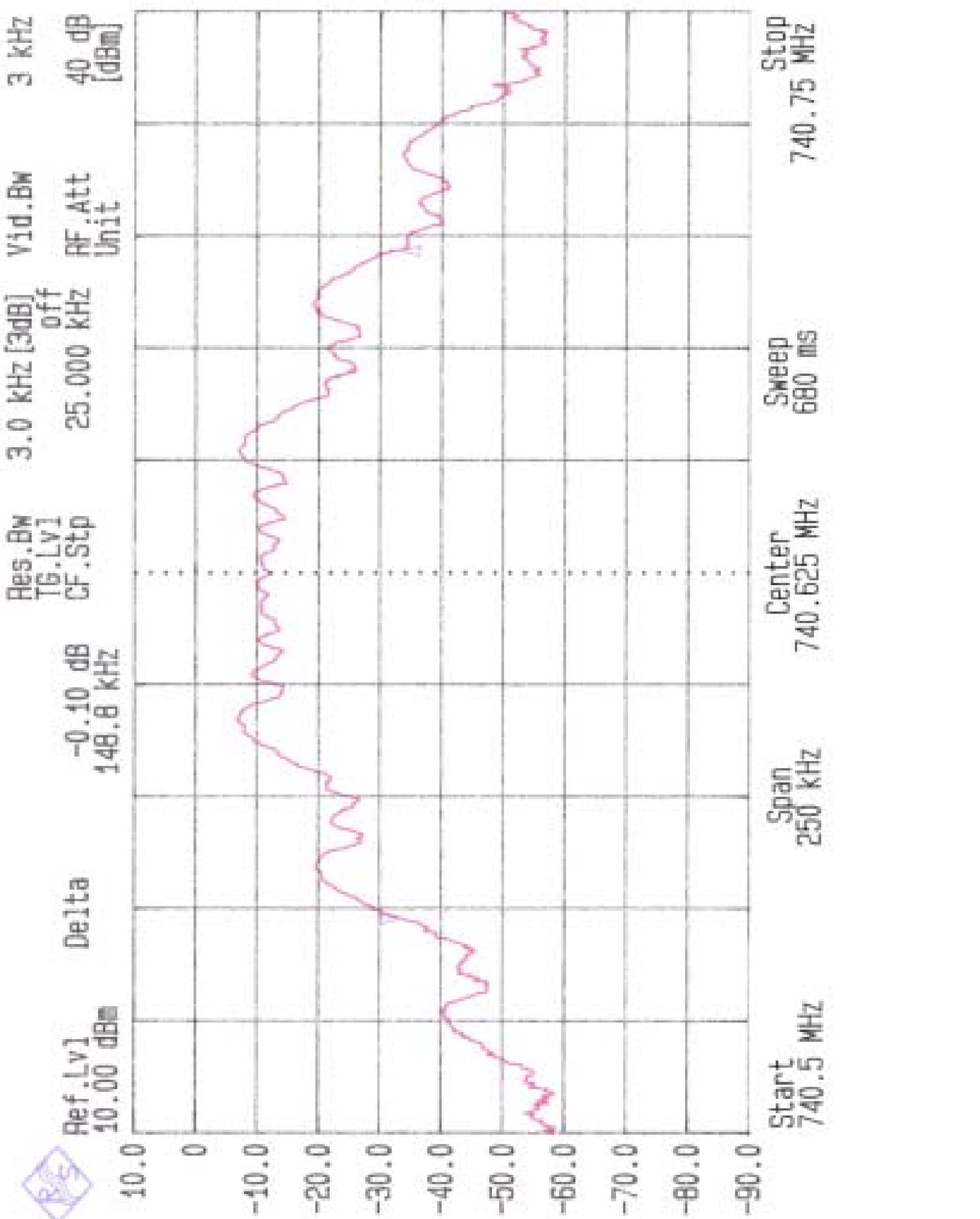
This EUT is excused from investigation of conducted emission, for it is powered by DC 3V battery only. According to § 15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

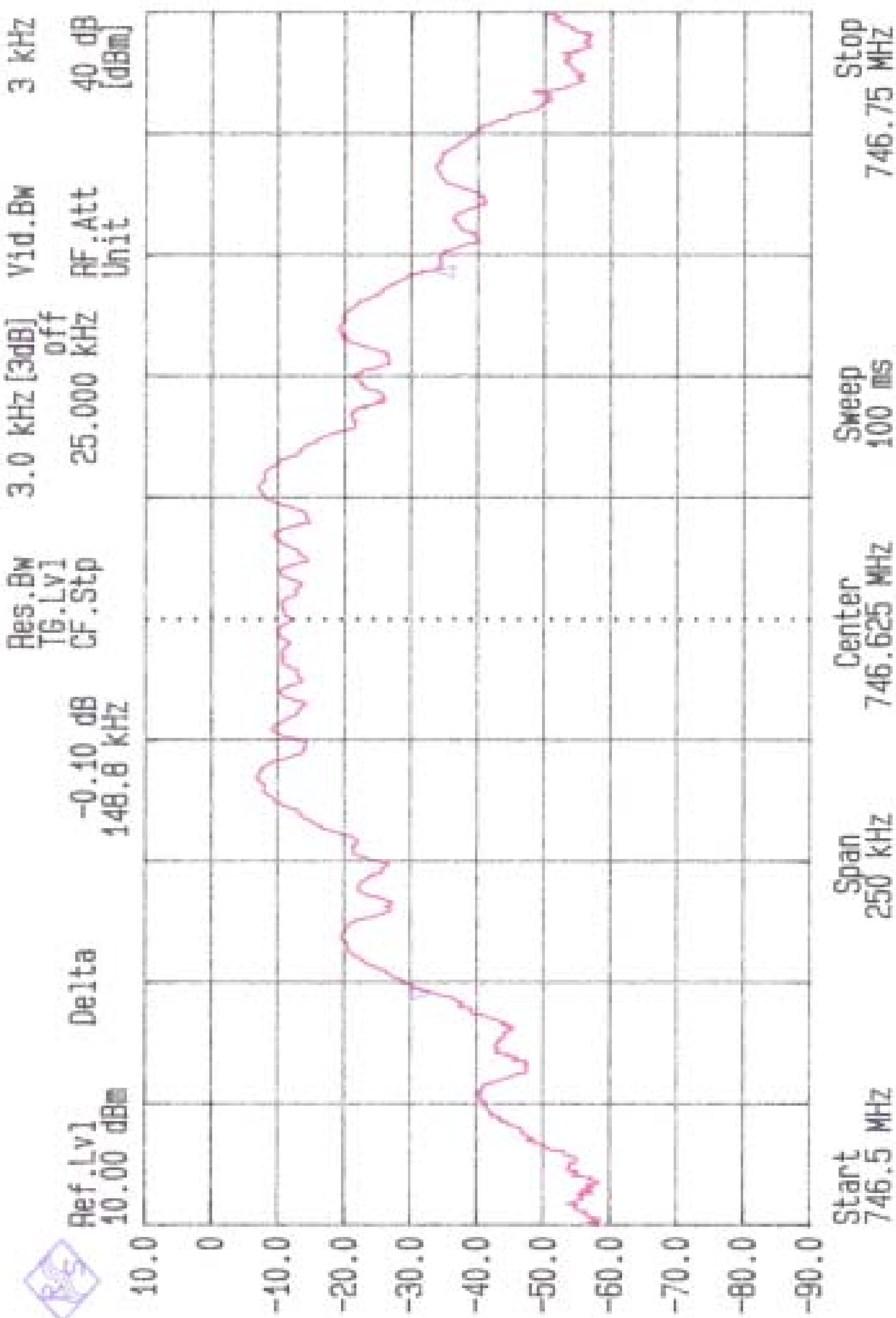
Appendix 1 : Occupied Emission Bandwidth Plotted Data

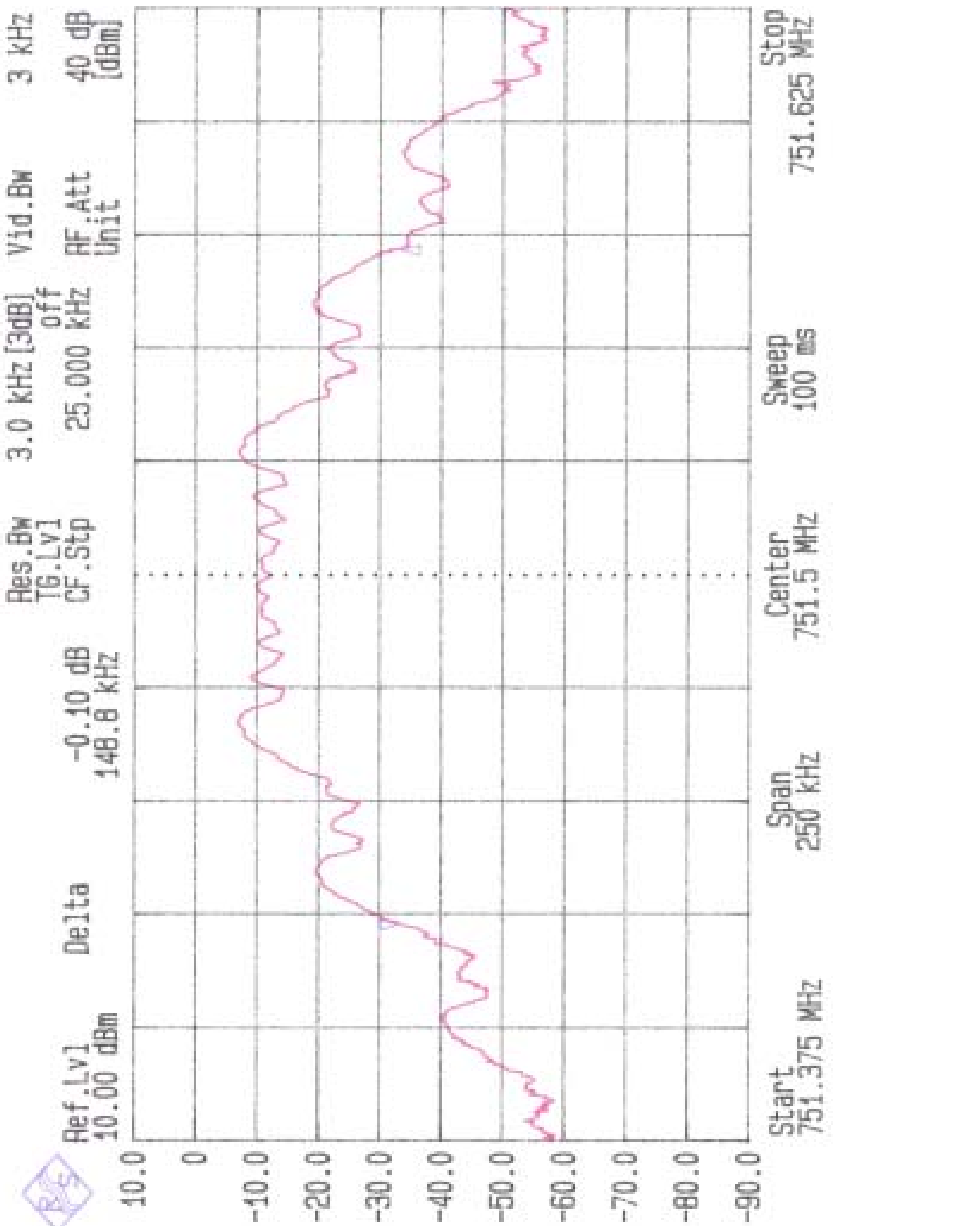

Ref Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
T6.Lv1
CF.Stp
3.0 kHz [3dB]
off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
682.25 MHz
Span
250 kHz
Center
682.375 MHz
Sweep
680 ms
Stop
682.5 MHz

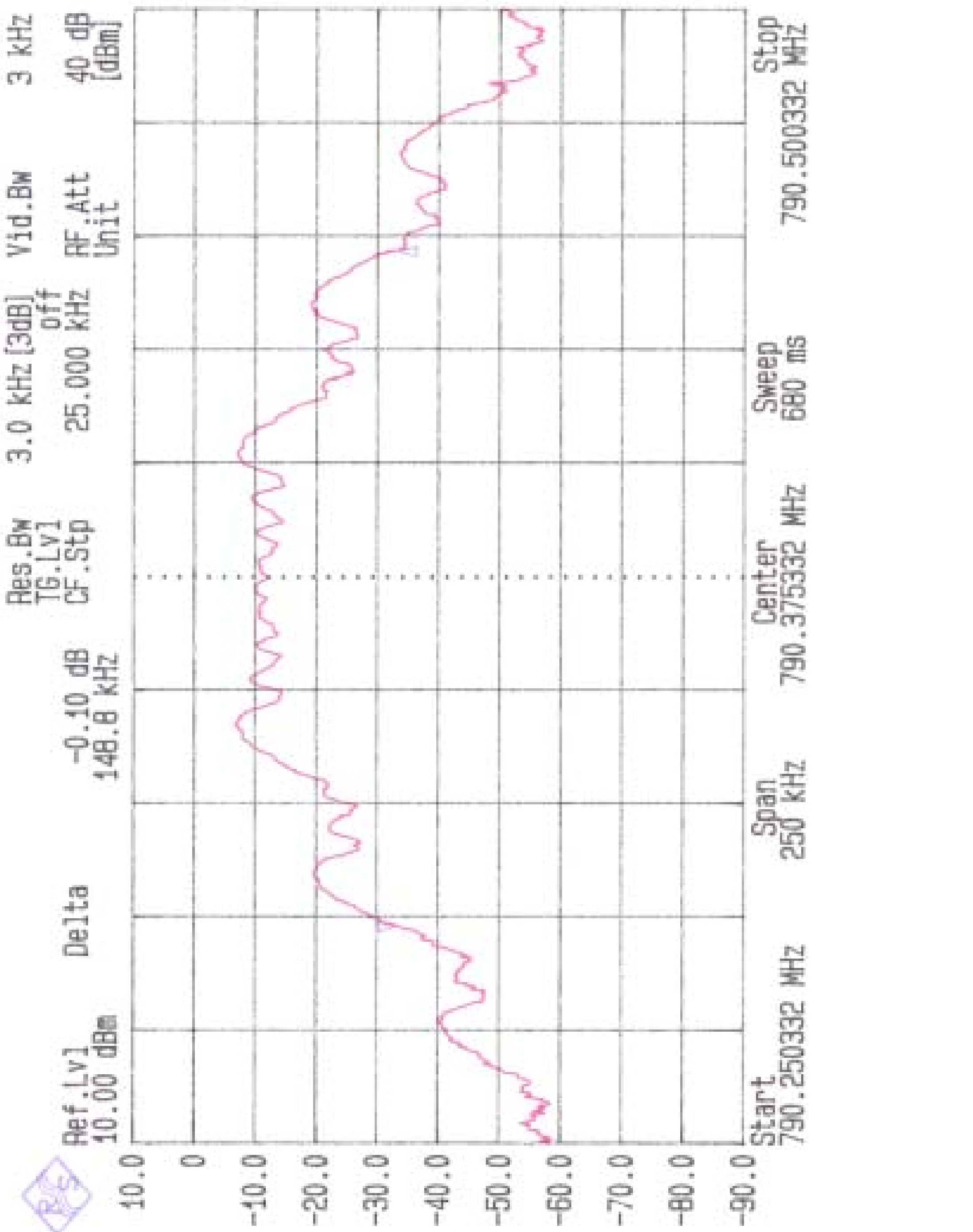

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl off
CF.Stp 25.000 kHz
Vid.Bw 3 kHz
RF.Att 40 dB
Unit [dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
690 MHz
Span
250 kHz
Center
690.125 MHz
Sweep
100 ms
Stop
690.25 MHz

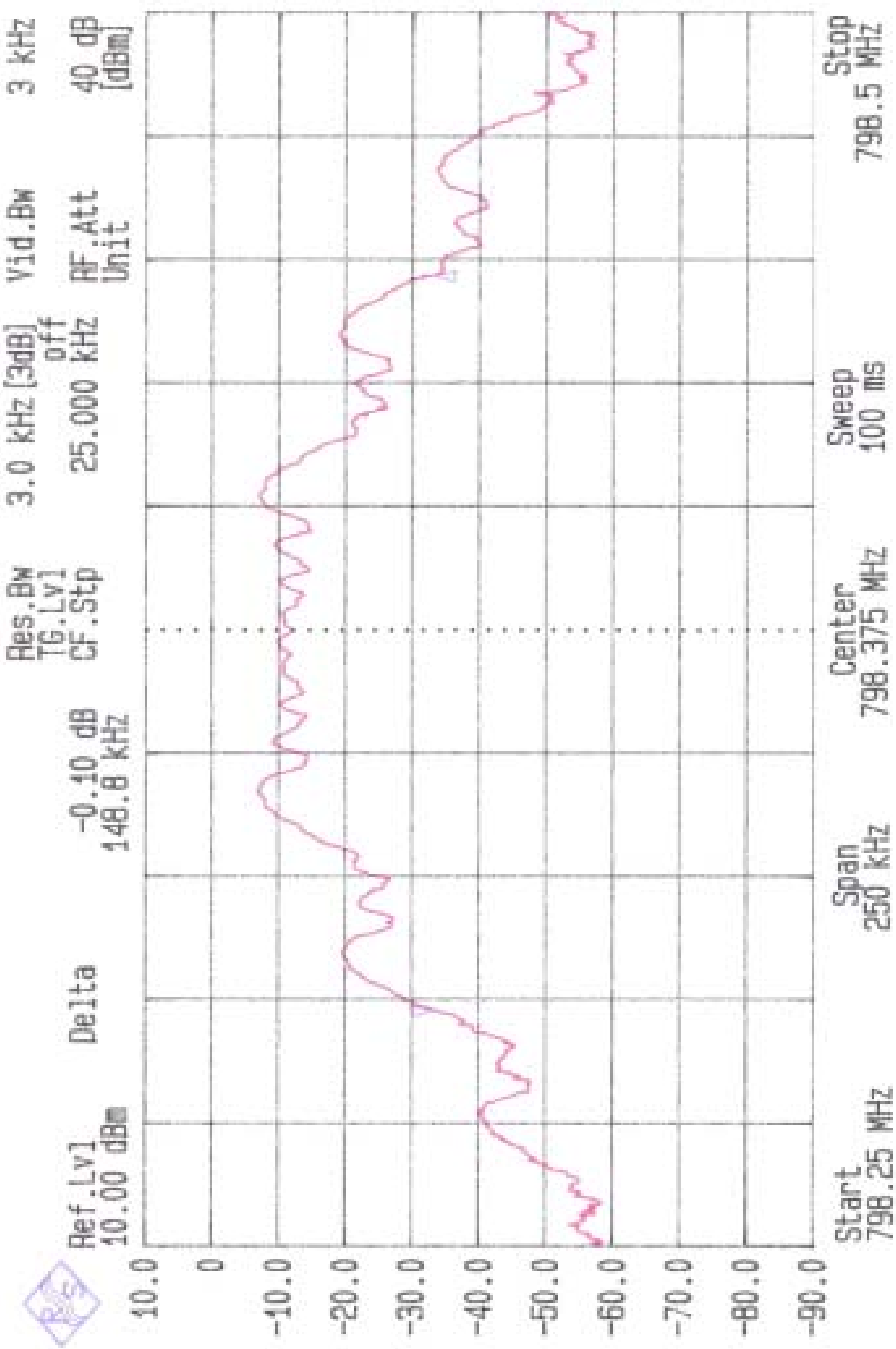

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
T6.Lvl
CF.Stp
3.0 kHz [3dB]
Off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
697 MHz
Span
250 kHz
Center
697.125 MHz
Sweep
100 ms
Stop
697.25 MHz

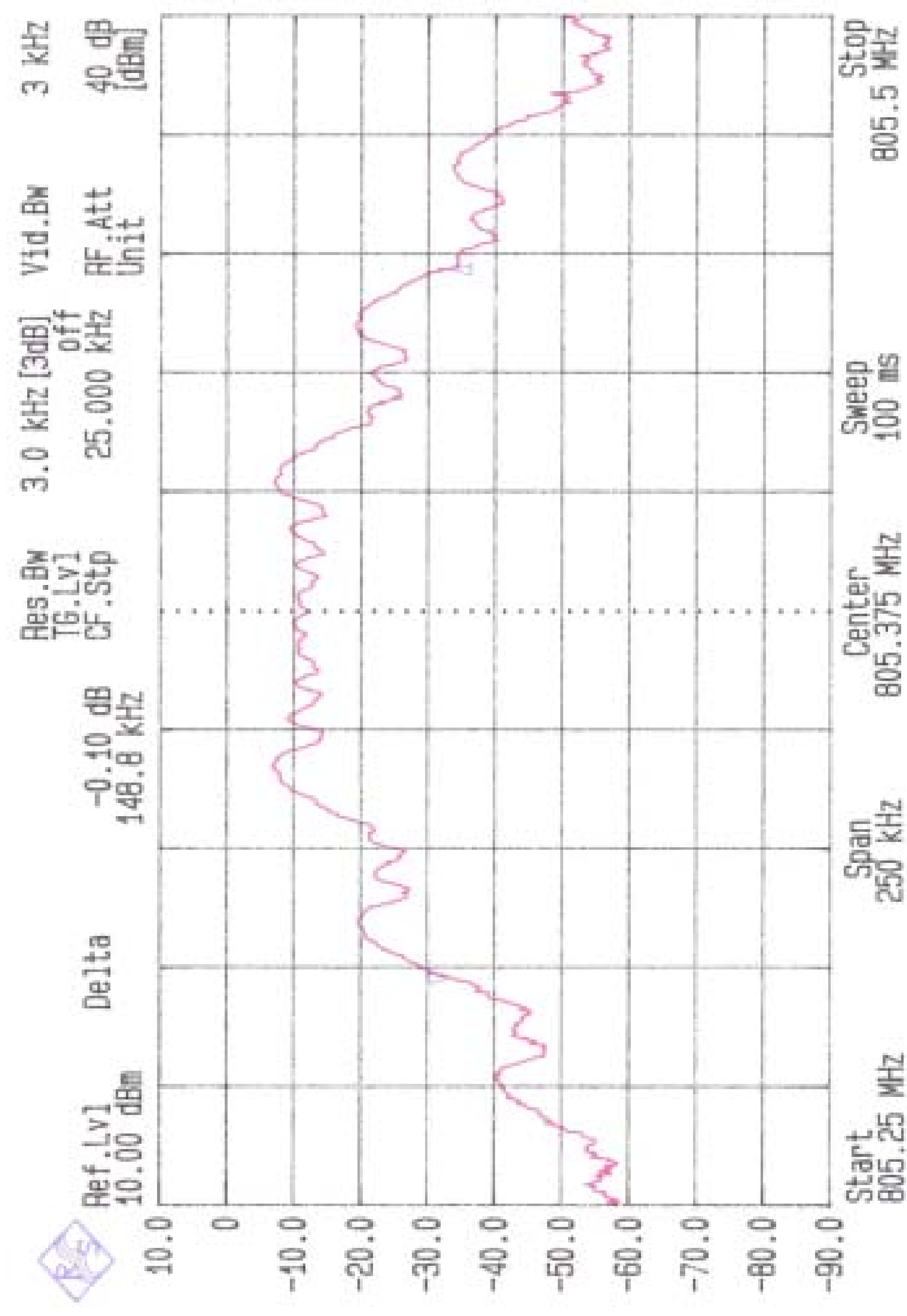

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
740.5 MHz
Span
250 kHz
Center
740.625 MHz
Sweep
680 ms
Stop
740.75 MHz


Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
746.5 MHz
Span
250 kHz
Center
746.625 MHz
Sweep
100 ms
Stop
746.75 MHz

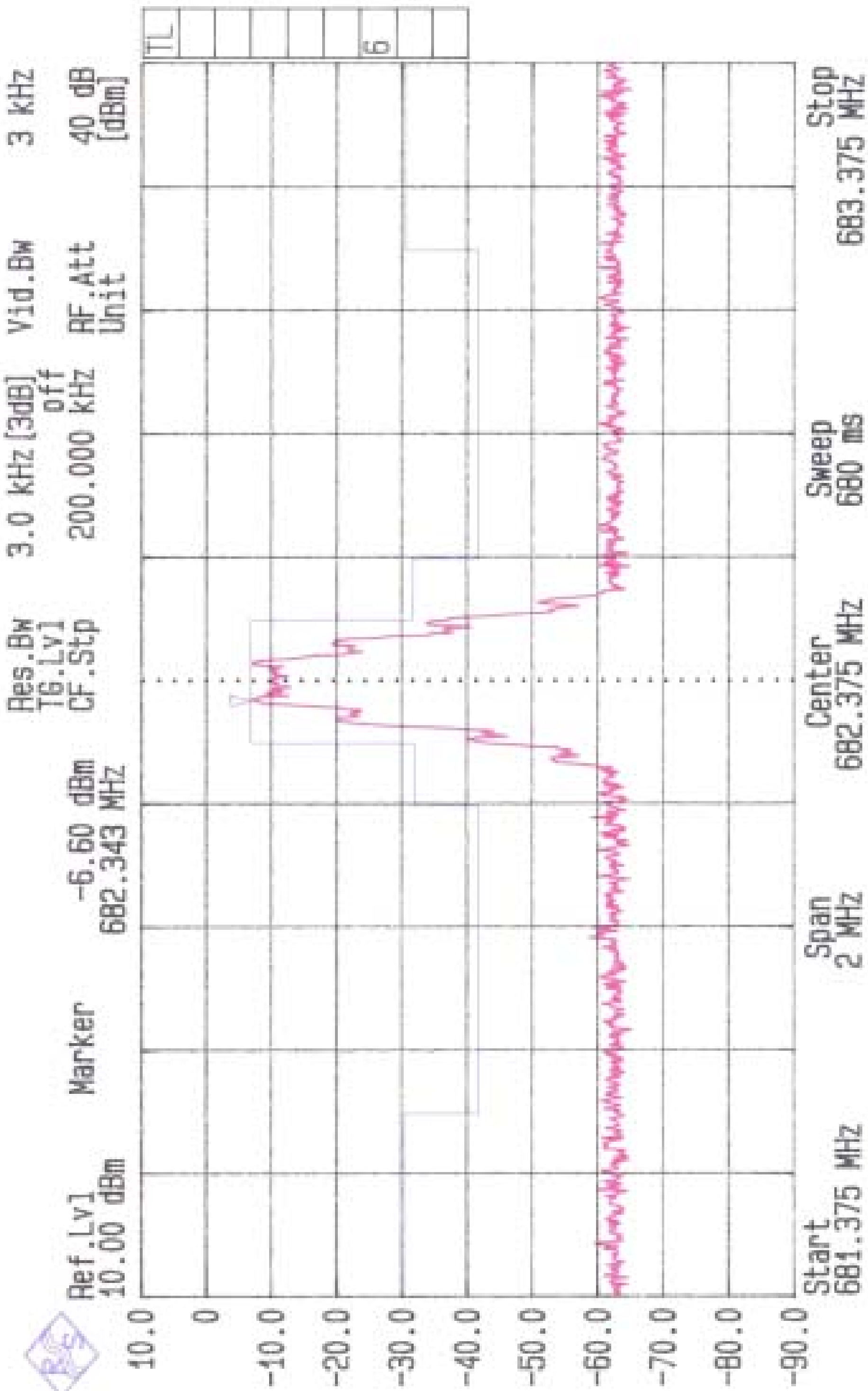

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
T6.Lvl
CF.Stp
3.0 kHz [3dB]
off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
751.375 MHz
Span
250 kHz
Center
751.5 MHz
Sweep
100 ms
Stop
751.625 MHz

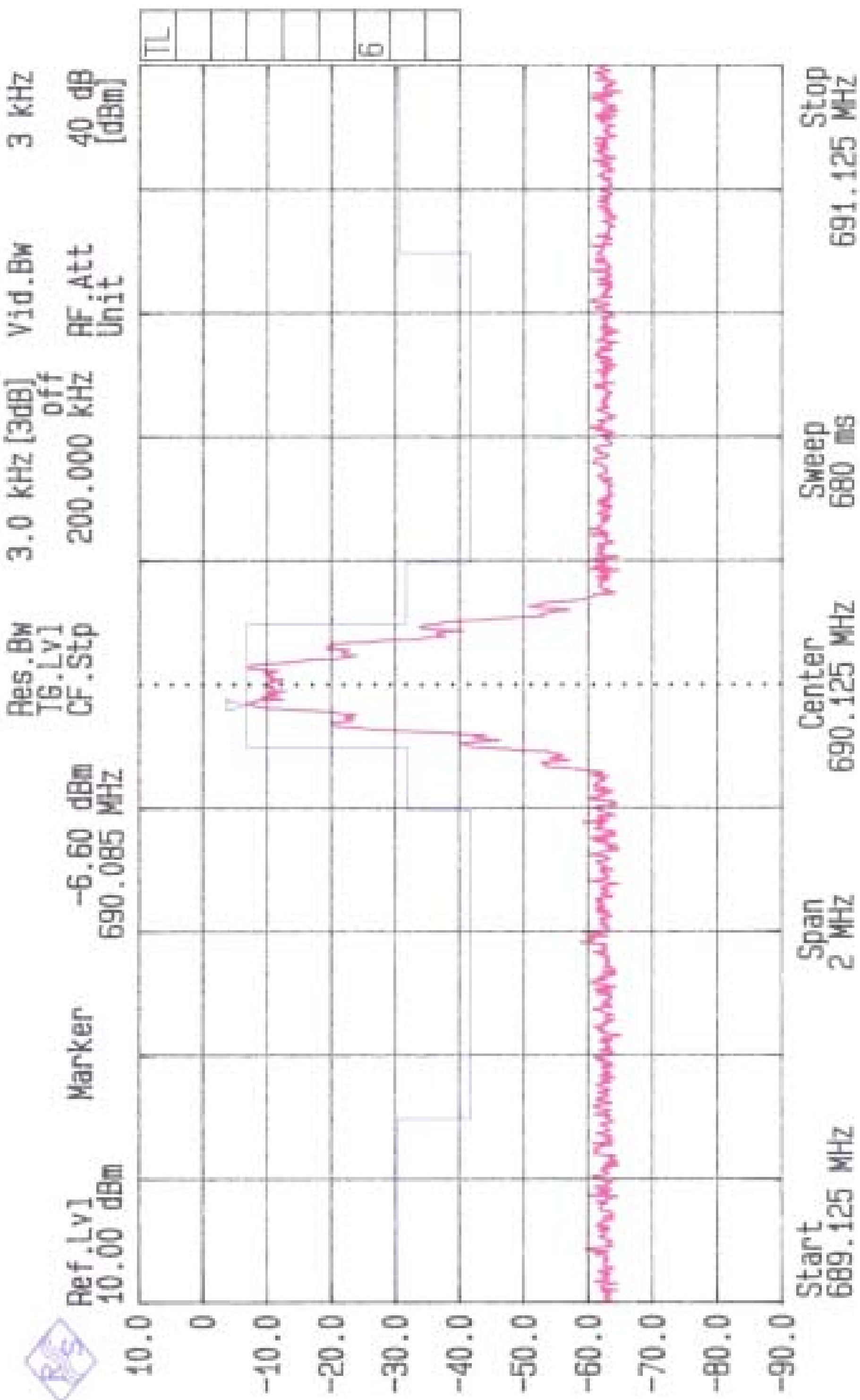

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
Off
25.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
790.250332 MHz
Span
250 kHz
Center
790.375332 MHz
Sweep
680 ms
Stop
790.500332 MHz

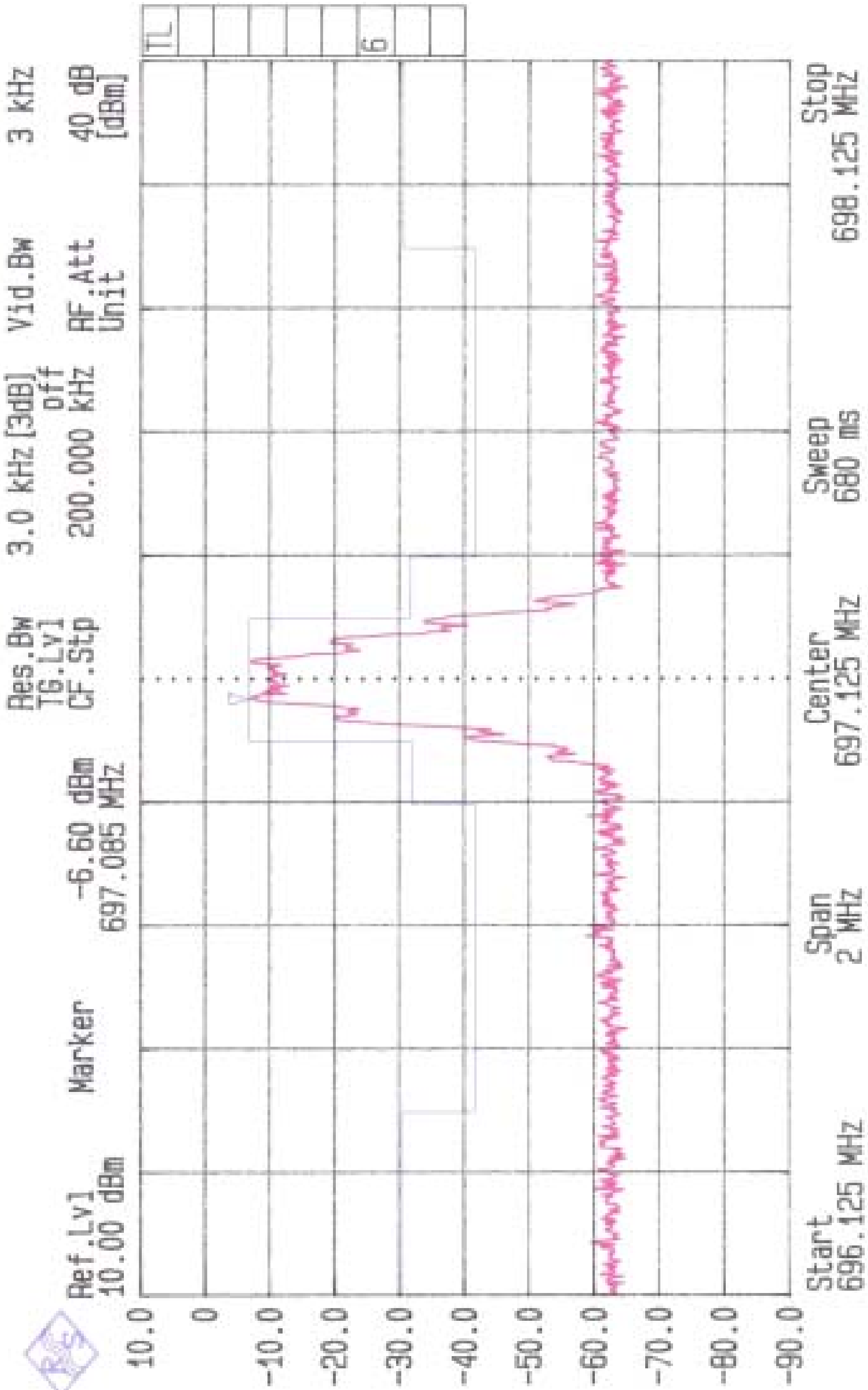

Ref.Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl Off
CF.Stp 25.000 kHz
Vid.Bw 3 kHz
RF.Att 40 dB
Unit [dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
798.25 MHz
Span
250 kHz
Center
798.375 MHz
Sweep
100 ms
Stop
798.5 MHz

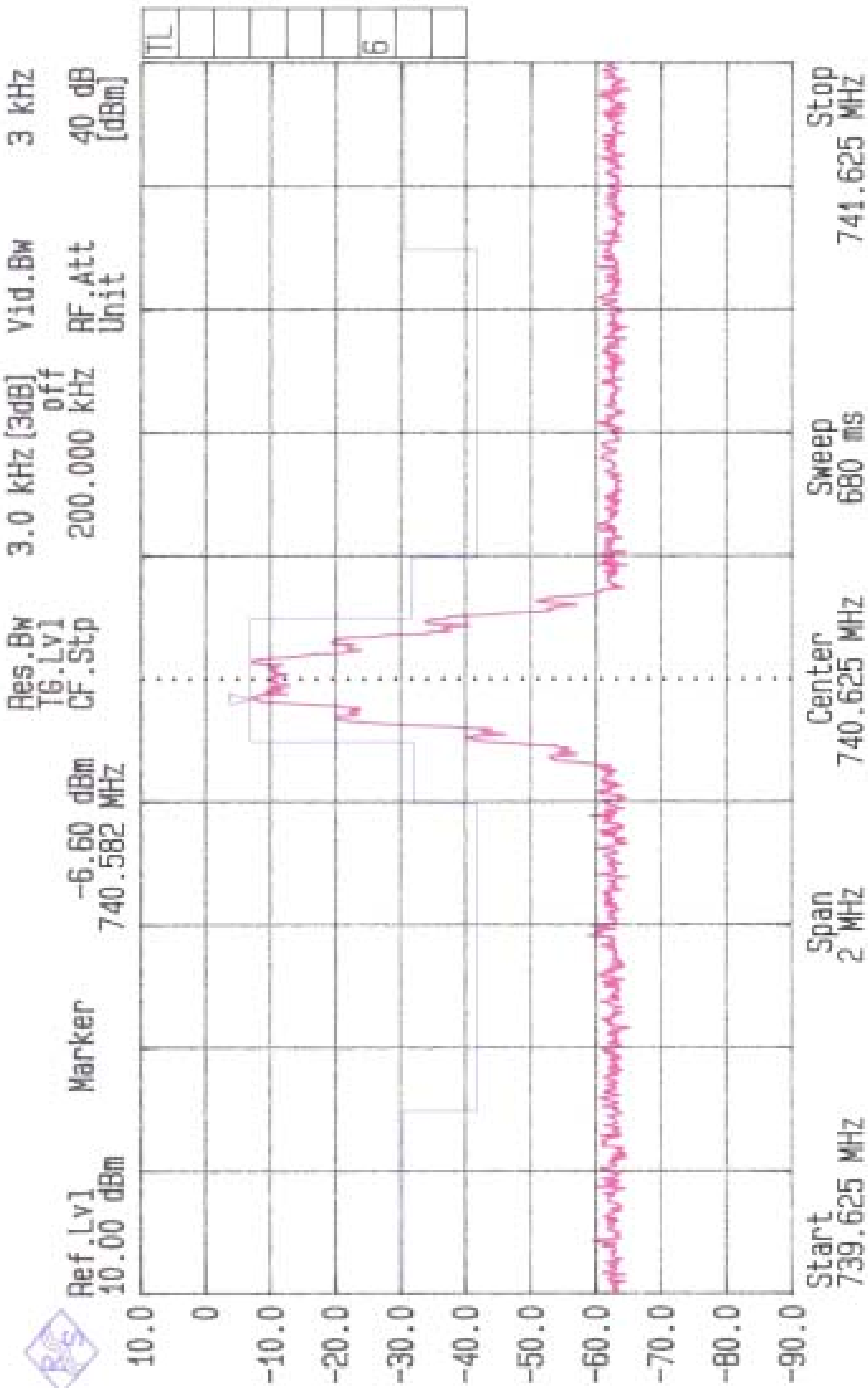

Ref Lvl
10.00 dBm
Delta
-0.10 dB
148.8 kHz
Res.BW
TG.Lvl
CF.Stp
3.0 kHz [3dB]
Off
25.000 kHz
Vid.BW
RF.Att
Unit
3 kHz
40 dB
[dBm]
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
805.25 MHz
Span
250 kHz
Center
805.375 MHz
Sweep
100 ms
Stop
805.5 MHz

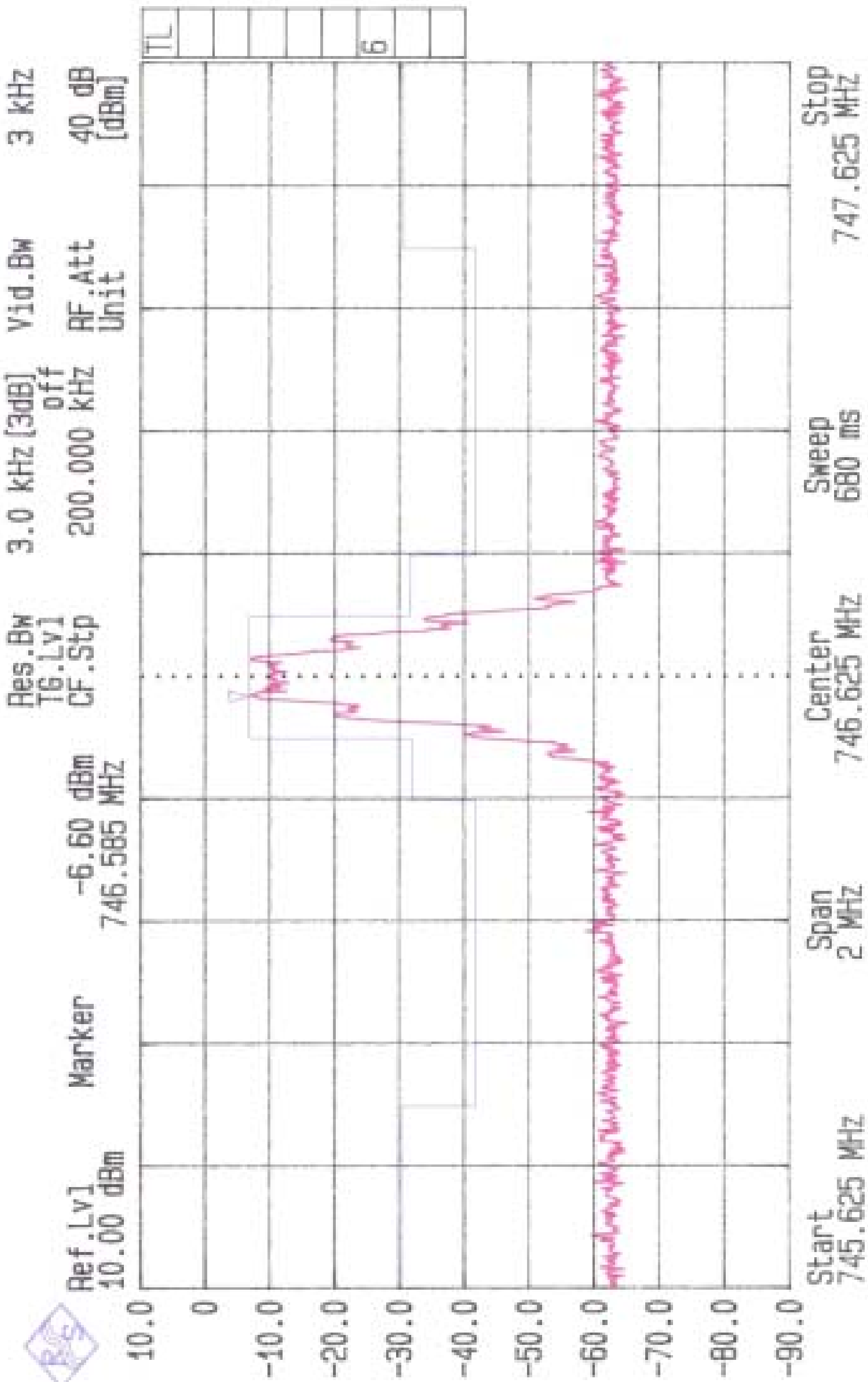
Appendix 2 : Emission Mask Plotted Data

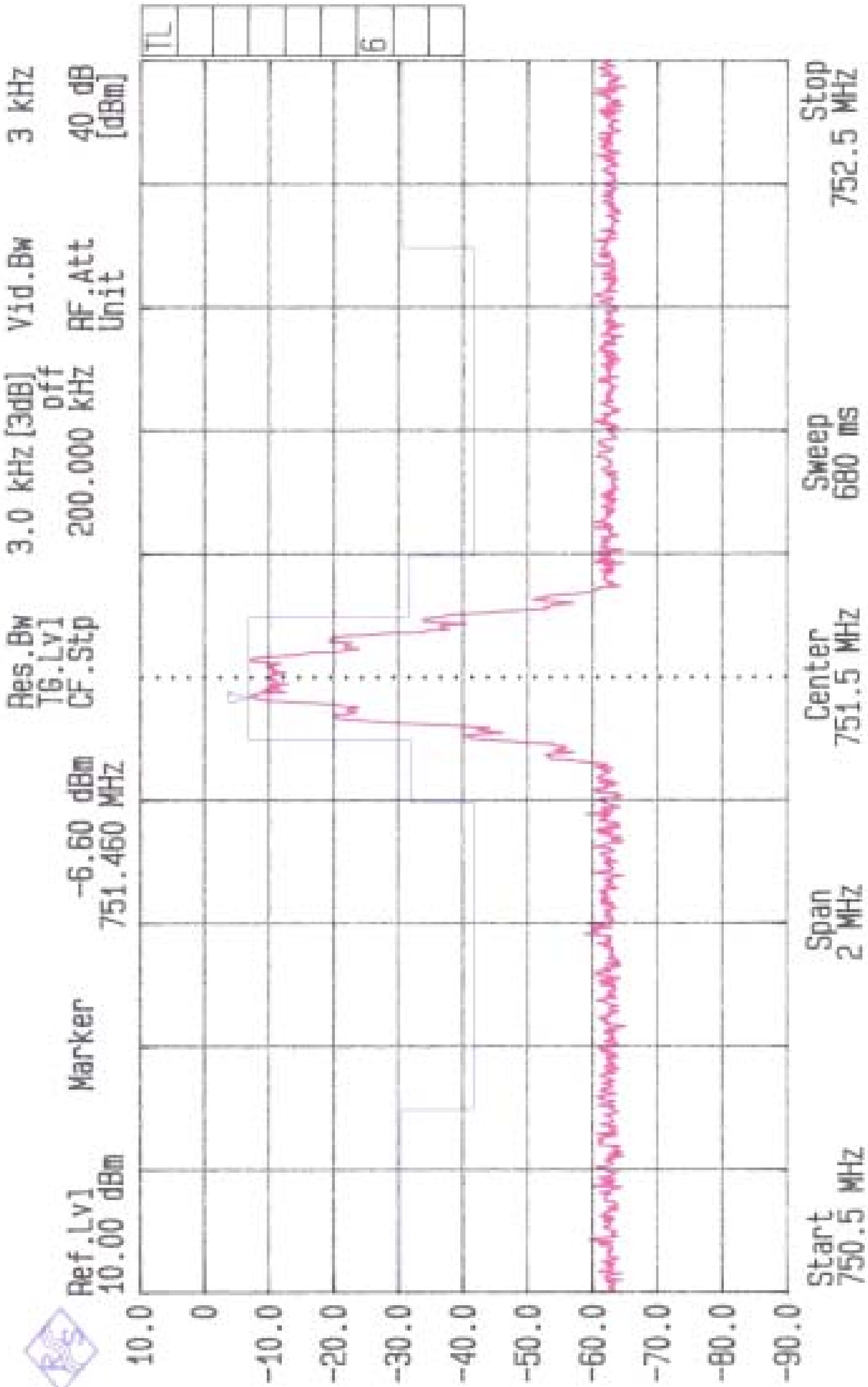

Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
682.343 MHz
Res.Bw 3.0 kHz [3dB]
T6.Lvl off
CF.Stp 200.000 kHz
Vid.Bw 3 kHz
RF.Att 40 dB
Unit [dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
681.375 MHz
Span
2 MHz
Center
682.375 MHz
Sweep
680 ms
Stop
683.375 MHz

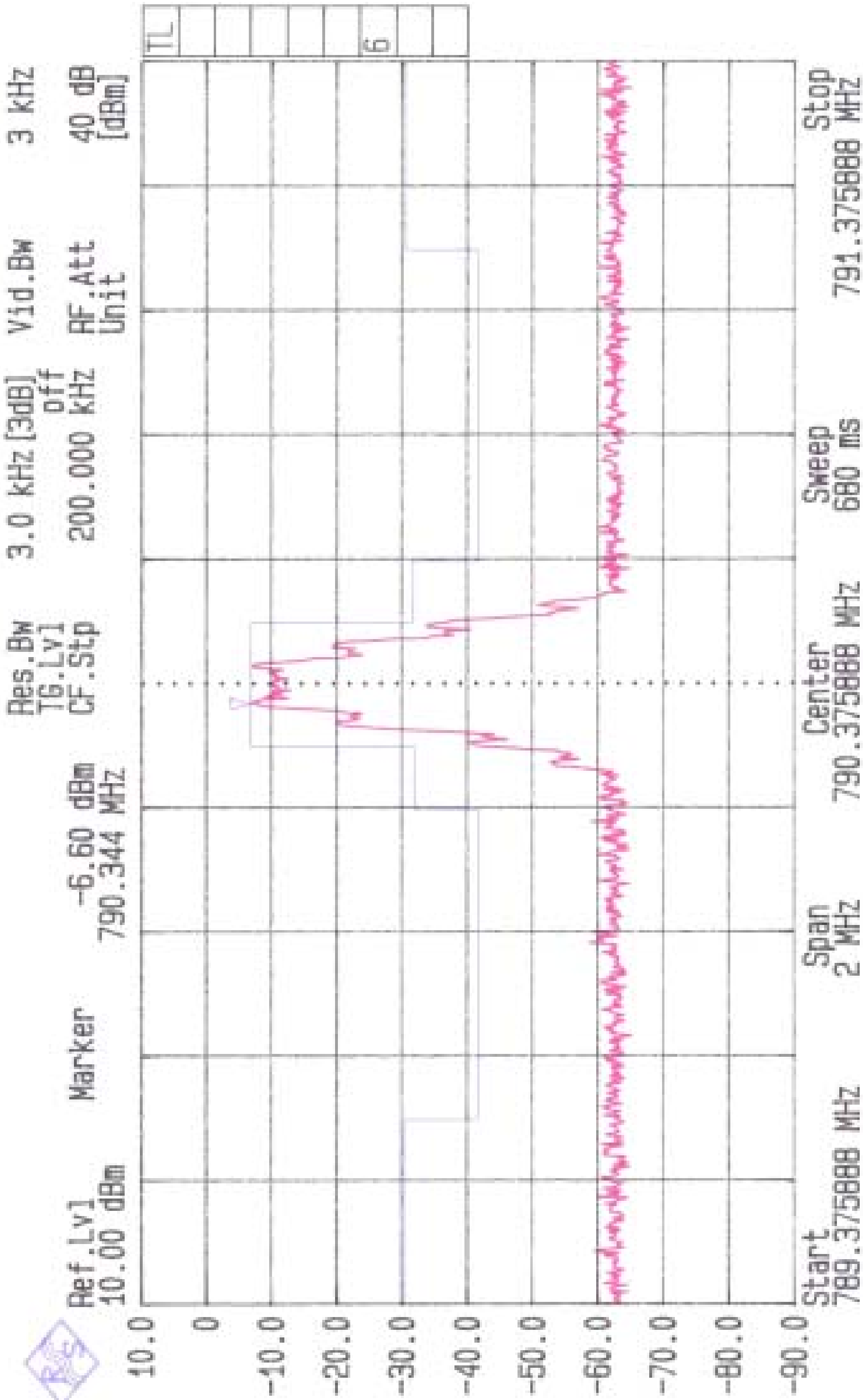

Ref.Lvl 10.00 dBm
Marker -6.60 dBm 690.085 MHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl off
CF.Stp 200.000 kHz
Vid.Bw 3 kHz
RF.Att 40 dB
Unit [dBm]
TL
G
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start 689.125 MHz
Span 2 MHz
Center 690.125 MHz
Sweep 680 ms
Stop 691.125 MHz

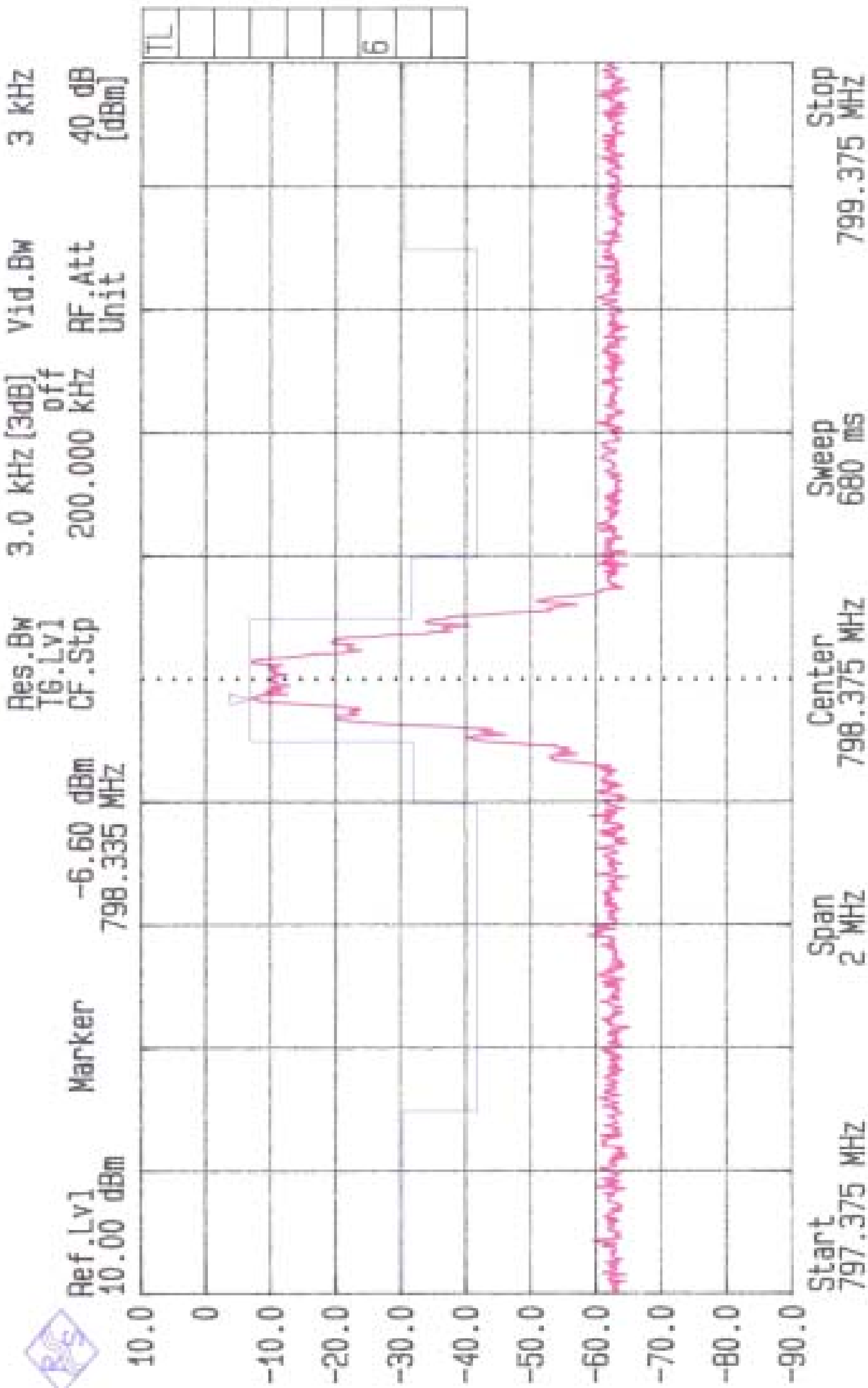

Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
697.085 MHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
696.125 MHz
Span
2 MHz
Center
697.125 MHz
Sweep
680 ms
Stop
698.125 MHz

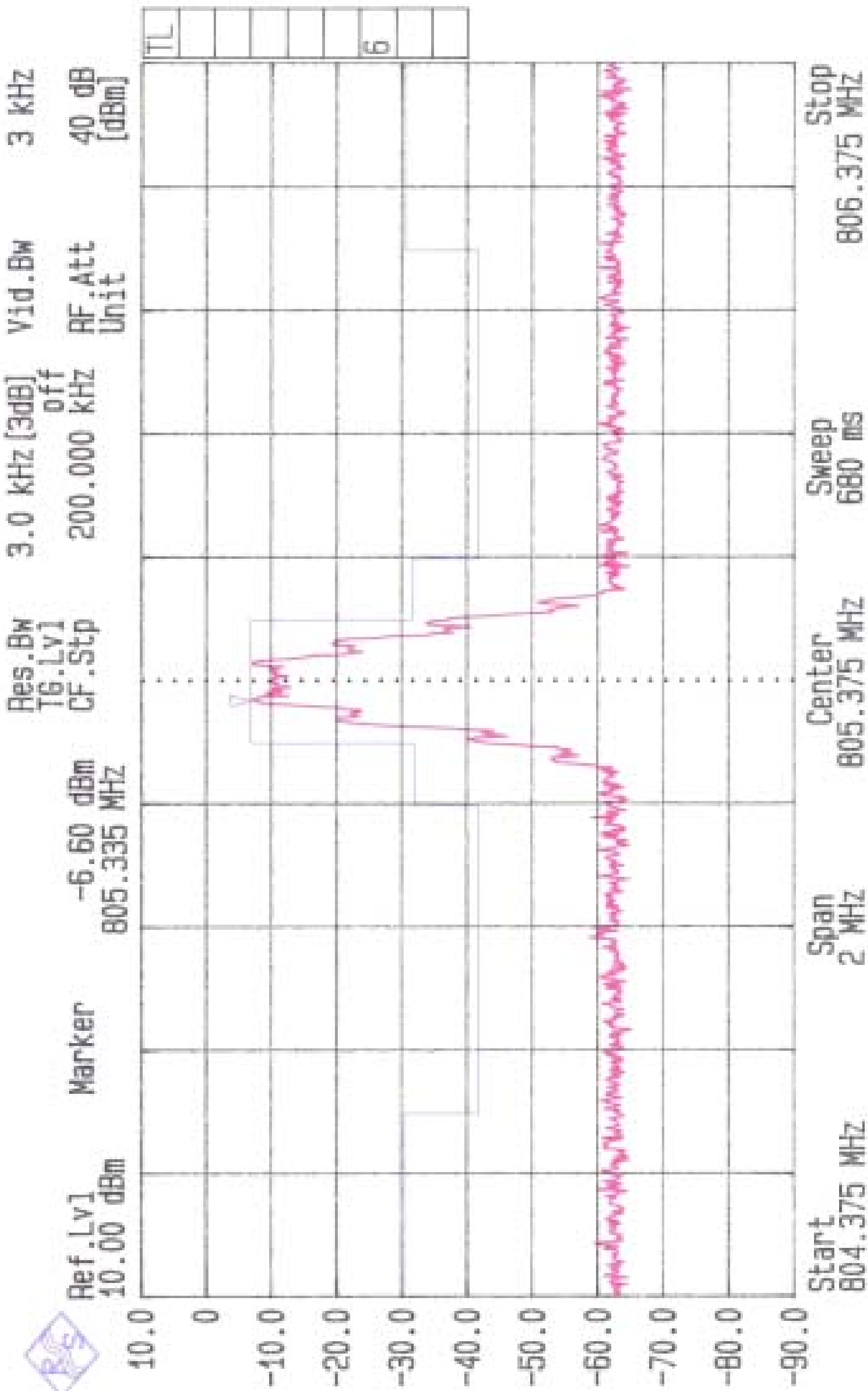

Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
740.582 MHz
Res.Bw
T6.Lvl
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
739.625 MHz
Span
2 MHz
Center
740.625 MHz
Sweep
680 ms
Stop
741.625 MHz


Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
746.585 MHz
Res.Bw
T6.Lvl
CF.Stp
3.0 kHz [3dB]
Off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
745.625 MHz
Span
2 MHz
Center
746.625 MHz
Sweep
680 ms
Stop
747.625 MHz


Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
751.460 MHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
750.5 MHz
Span
2 MHz
Center
751.5 MHz
Sweep
680 ms
Stop
752.5 MHz


Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
790.344 MHz
Res.Bw
TG.Lvl
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
Start
789.375888 MHz
Span
2 MHz
Center
790.375888 MHz
Sweep
680 ms
Stop
791.375888 MHz
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
TL
6


Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
798.335 MHz
Res.Bw
T6.Lv1
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
G
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
797.375 MHz
Span
2 MHz
Center
798.375 MHz
Sweep
680 ms
Stop
799.375 MHz


Ref.Lvl
10.00 dBm
Marker
-6.60 dBm
805.335 MHz
Res.Bw
T6.Lvl
CF.Stp
3.0 kHz [3dB]
off
200.000 kHz
Vid.Bw
RF.Att
Unit
3 kHz
40 dB
[dBm]
TL
6
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Start
804.375 MHz
Span
2 MHz
Center
805.375 MHz
Sweep
680 ms
Stop
806.375 MHz