FCC Part 74 Subpart H

EMI TEST REPORT

of

E.U.T. : Wireless Handheld Transmitter Microphone
FCC ID. : JEBUF-9R
MODEL : UF-9R
Working Frequency : 682MHz-698MHz;
740MHz-752MHz;
790MHz-806MHz

for

APPLICANT : MASCOT ELECTRIC CO., LTD.
ADDRESS : No. 85, Chang Hsing First Street, Tai-Tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan

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 : ET93R-08-093-04

TEST REPORT CERTIFICATION

Applicant	: MASCOT ELECTRIC CO., LTD. No. 85, Chang Hsing First Street, Tai-Tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan
Manufacturer	: MASCOT ELECTRIC CO., LTD. No. 85, Chang Hsing First Street, Tai-Tzu Village, Jen-Te Hsian, Tainan Hsien, Taiwan
Description of EUT	:

a) Type of EUT	: Wireless Handheld Transmitter Microphone
b) Trade Name	: MASCOT
c) Model No.	: UF-9R
d) FCC ID	: JEBUF-9R
e) Working Frequency	: 682MHz-698MHz; 740MHz-752MHz; 790MHz-806MHz
f) Power Supply	: Model:SCP41-120500 Input:120VAC 60Hz 10W Output:12VDC 500mA; DC 3V Batteries

Regulation Applied : FCC Rules and Regulations Part 74 Subpart H (2003)

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 : Sep. 08, 2004

Test Engineer : Kevin Lee

(Kevin Lee)

Approve & Authorized Signer : Will Yauo

Will Yauo, Manager

EMC Dept. II of ELECTRONICS

TESTING CENTER, TAIWAN

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1. GENERAL INFORMATION

1.1 Product Description

a) Type of EUT	: Wireless Handheld Transmitter Microphone
b) Trade Name	: MASCOT
c) Model No.	: UF-9R
d) FCC ID	: JEBUF-9R
e) Working Frequency	: 682MHz-698MHz; 740MHz-752MHz; 790MHz-806MHz
f) Power Supply	: Model:SCP41-120500 Input:120VAC 60Hz 10W Output:12VDC 500mA; DC 3V Batteries

1.2 Characteristics of Device:

The EUT is A frequency modulation Wireless Microphone with following features:

1. Operation Frequency Range: 682MHz-698MHz; 740MHz-752MHz; 790MHz-806MHz.
2. Type of Modulation:FM, 129KF3E.
3. The emission designator is 129KF3E. The calculation is (2M+2DK), K=1 and (2 x 32.768 + 2 x 48) = 128.768kHz, so the emission designator is 129KF3E.
4. This Wireless Microphone operates within UHF band with PLL synthesized. There are 64 channel available and channel used can be selected from a DIP switch.

1.3 Test Methodology

Both Wireless Handheld Transmitter Microphone conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4 (2001). 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.
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

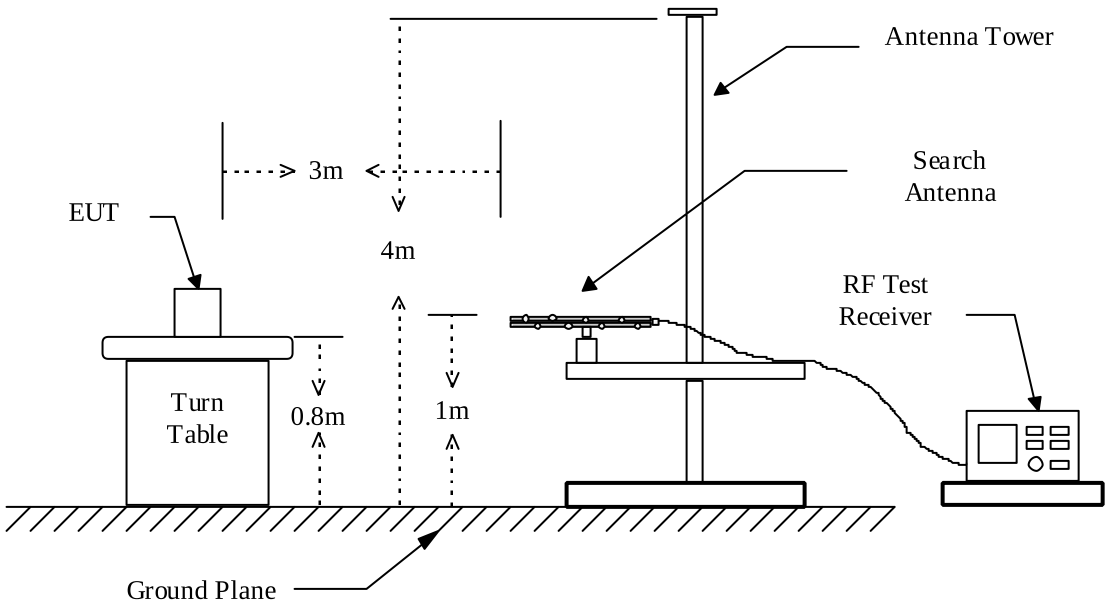
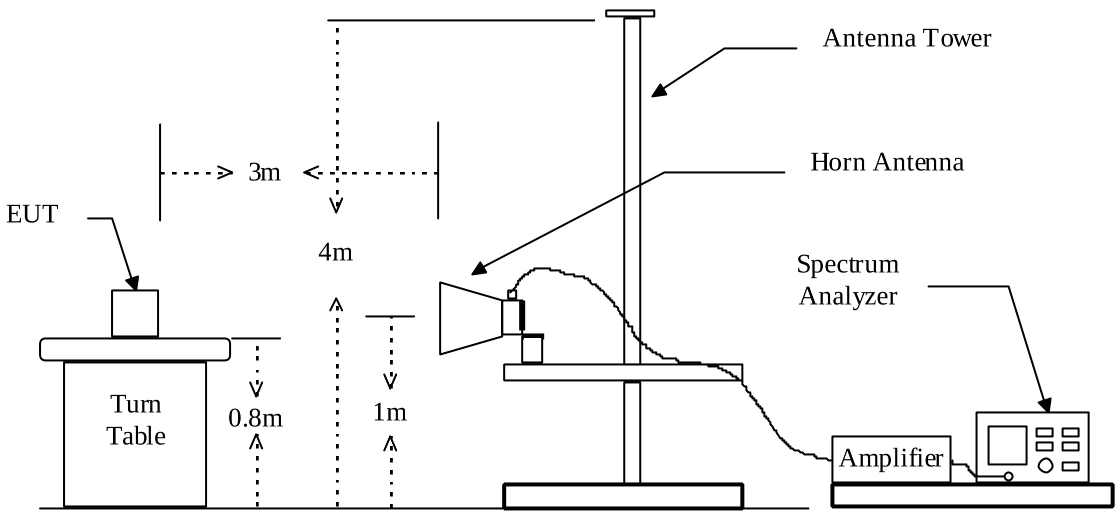


Figure 1 : Frequencies measured above 1 GHz configuration



3.3 Test Data

682.000~698.000 MHz

A. Channel Low (ERP)

Operated mode : TX　　Test Date : Aug. 31, 2004

Temperature : 25 ℃　　Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
682.368	67.2	-2.6	2.3	----	-4.9	0.32	250

B. Channel Mid (ERP)

Operated mode : TX　　Test Date : Aug. 31, 2004

Temperature : 25 ℃　　Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
692.745	66.2	-3.4	2.3	----	-5.7	0.26	250

C. Channel High (ERP)

Operated mode : TX　　Test Date : Aug. 31, 2004

Temperature : 25 ℃　　Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
697.873	68.4	-1.2	2.3	----	-3.5	0.44	250

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

740.000~752.000 MHz

A. Channel Low (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
740.620	70.1	0.2	2.5	----	-2.3	0.58	250

B. Channel Mid (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
748.870	68.4	-1.5	2.5	----	-4.0	0.39	250

C. Channel High (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB μ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
751.627	69.2	-0.7	2.5	----	-3.2	0.47	250

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

790.000~806.000 MHz

A. Channel Low (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB µ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
790.379	70.4	2.8	2.6	----	0.2	1.04	250

B. Channel Mid (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB µ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
797.740	71.2	3.6	2.6	----	1.0	1.25	250

C. Channel High (ERP)

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Meter Reading (dB µ V/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
805.754	70.4	2.8	2.6	----	0.2	1.04	250

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.

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

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
EMI Test Receiver	R & S	ESBI	05/31/2005
Plotter	HP	7440A	N/A
Dipole Antenna	EMCO	3121C	06/06/2005
Signal generator	HP	8656B	10/13/2004

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.

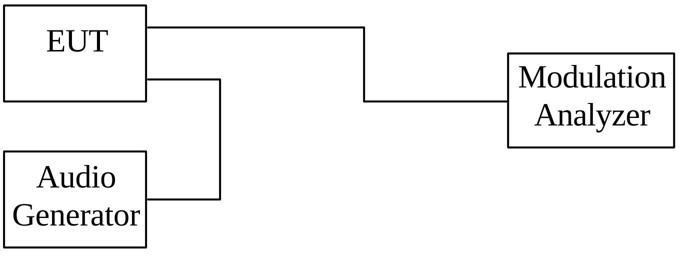
2. Repeat step 1 with changing the input frequency for 200, 500, 1000, 3000, and 5000 Hz in sequence.

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



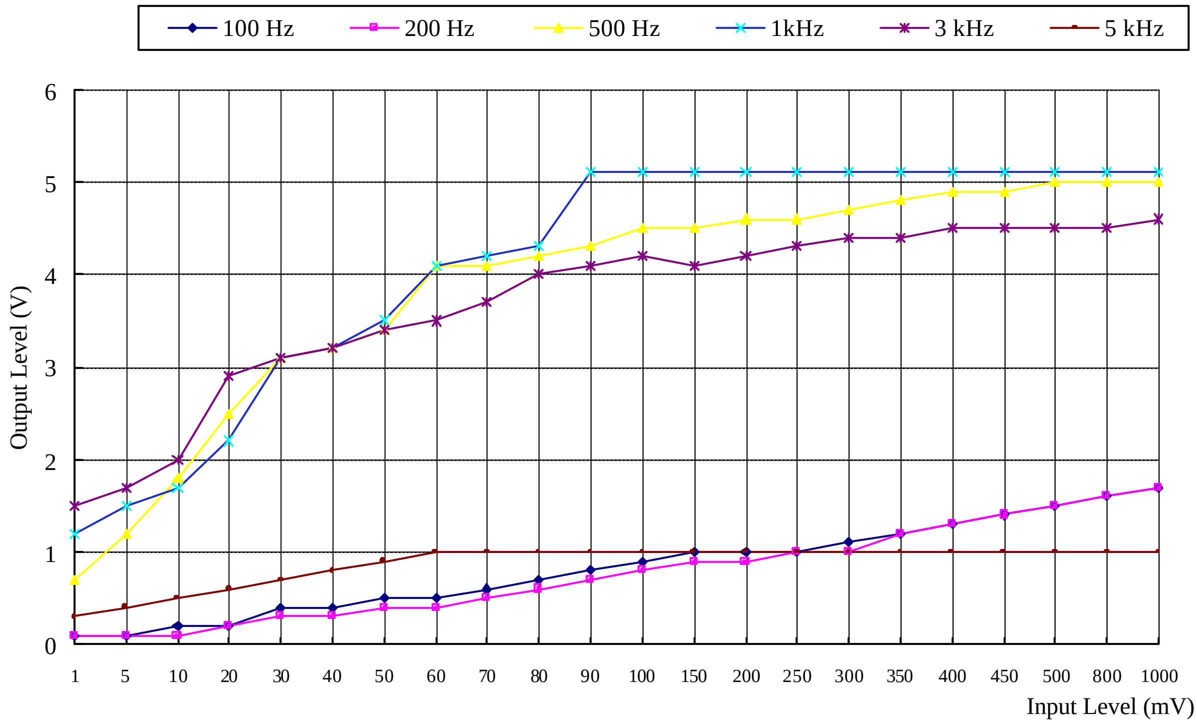
4.3 Measurement Instrument

Equipment	Manufacturer	Model No.	Next Cal. Date
Modulation Analyzer	Hewlett-Packard	8901A	11/30/2004
Multifunction Synthesizer	Hewlett-Packard	8904A	12/11/2004
Oscillscope	Lecroy	9350A	06/01/2005
Preamplifier	Hewlett-Packard	8447D	10/12/2004
Spectrum	Advantest	R3361C	07/13/2005

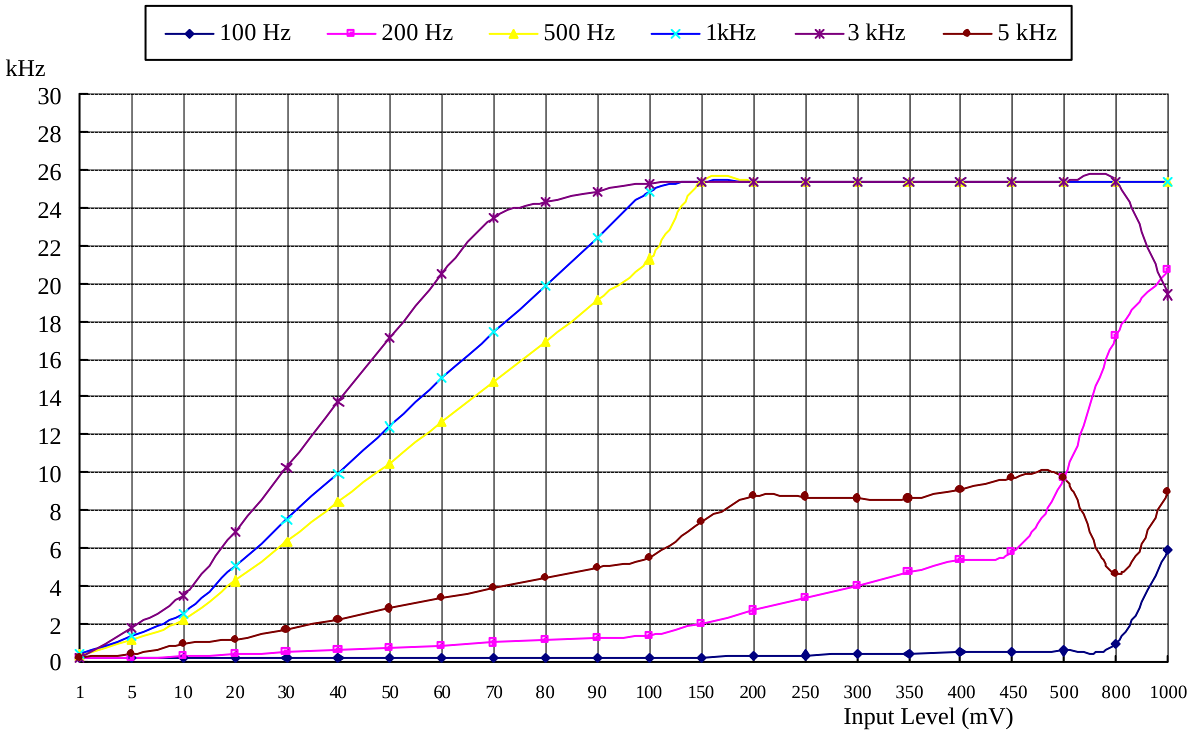
4.4 Measurement Result

1. 682.000~698.000 MHz

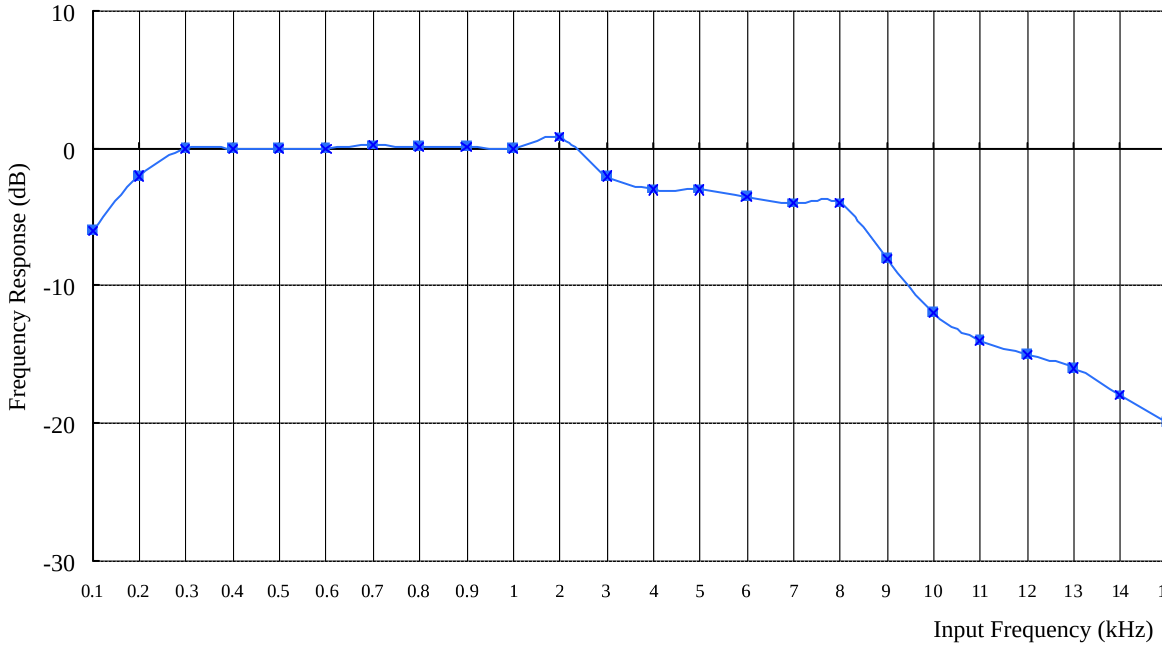
A). Frequency response



B). Modulation Limit

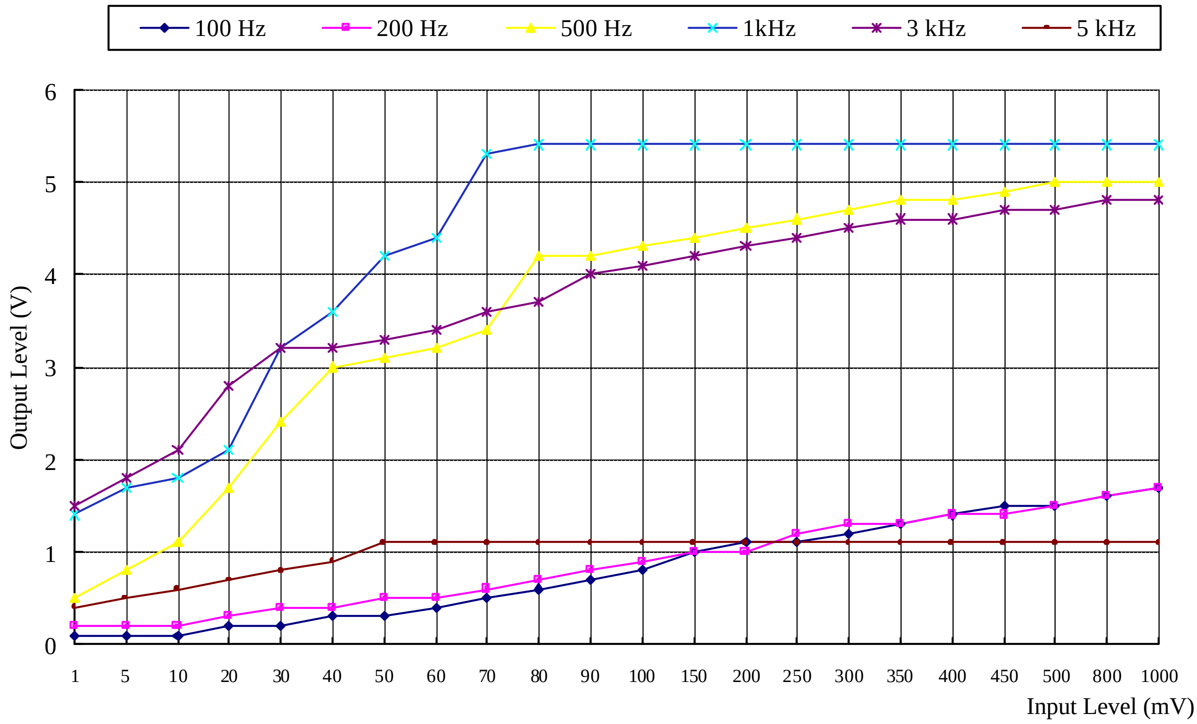


C). Frequency response of all circuits

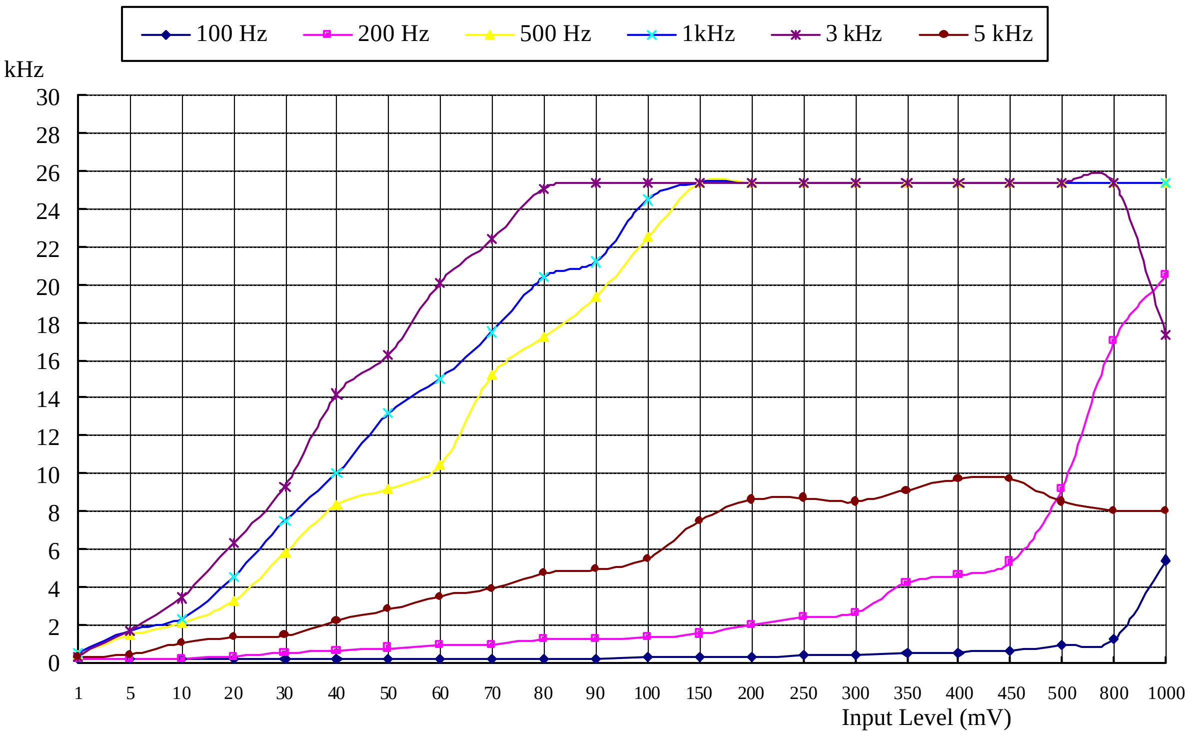


2. 740.000~752.000 MHz

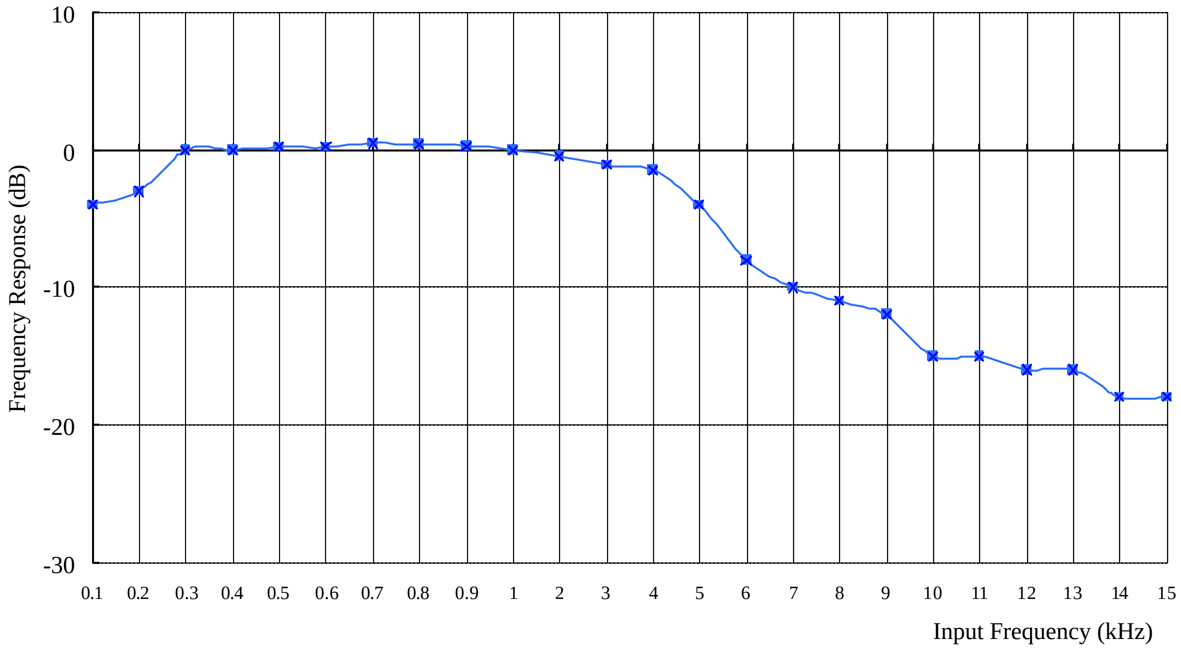
A). Frequency response



B). Modulation Limit

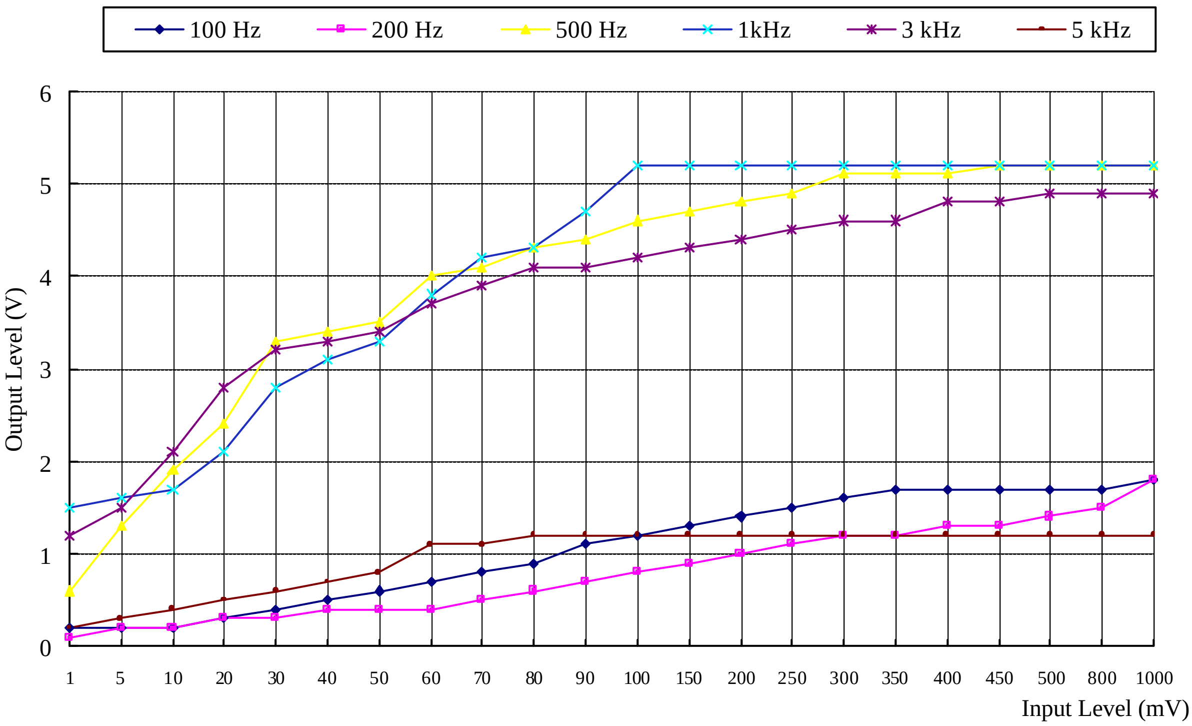


C). Frequency response of all circuits

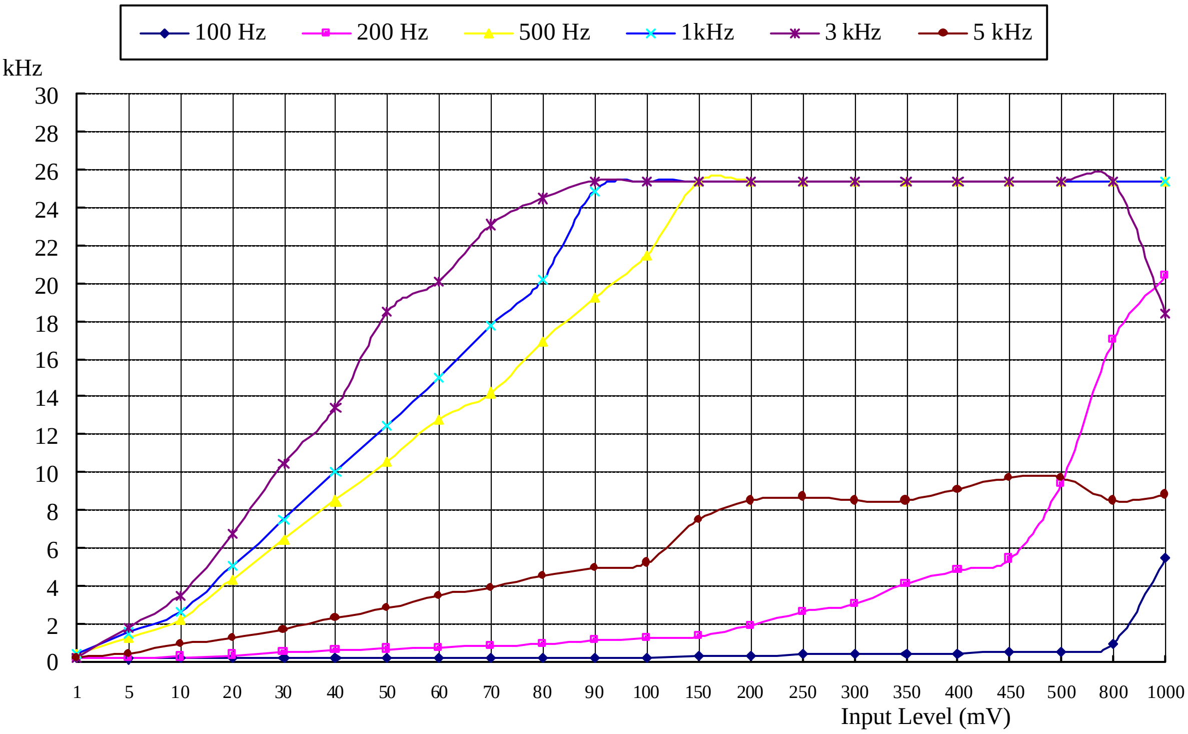


3. 790.000~806.000 MHz

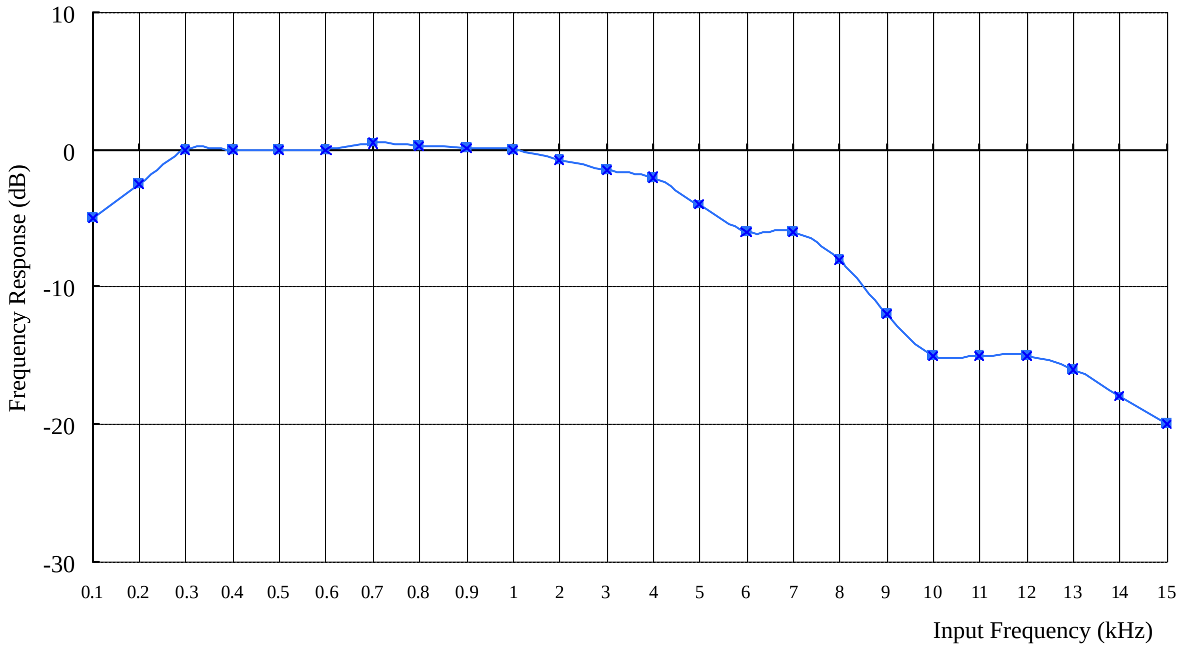
A). Frequency response



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.

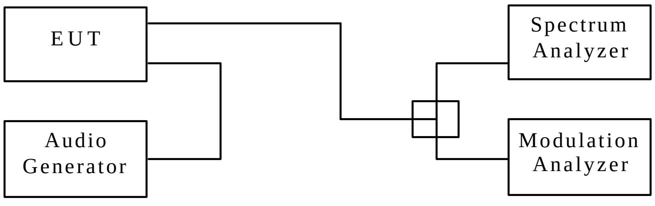
5.2 Measurement Method

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

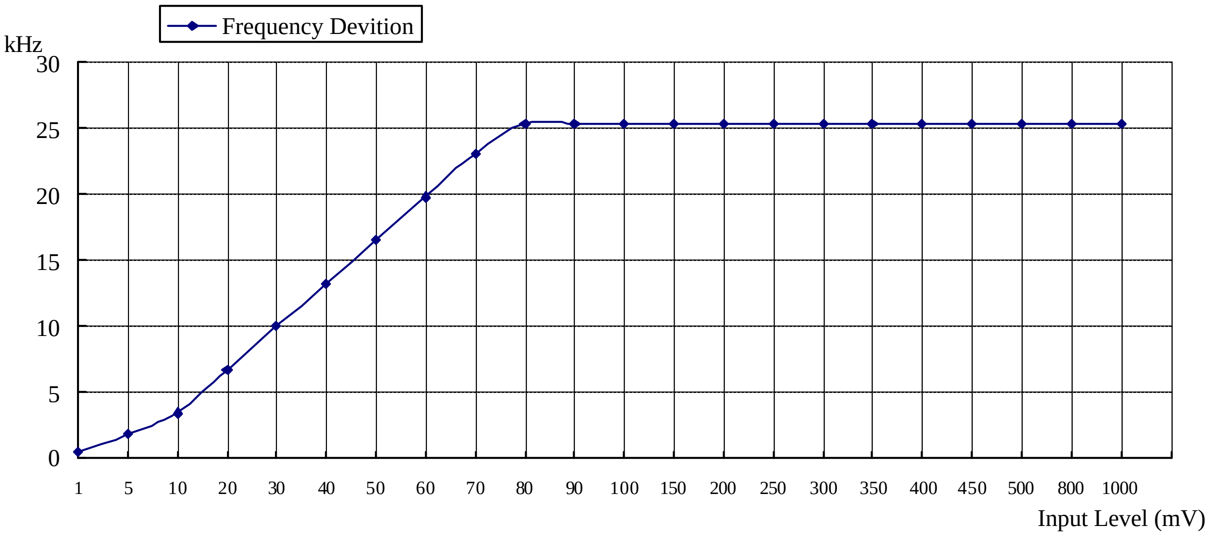
Equipment	Manufacturer	Model No.	Next Cal. Date
Spectrum Analyzer	R & S	ESBI	05/31/2005
Modulation Analyzer	Hewlett-Packard	8901A	11/30/2004
Multifunction Synthesizer	Hewlett-Packard	8904A	12/11/2004
Plotter	Hewlett-Packard	7440A	N/A

5.4 Bandwidth Measured

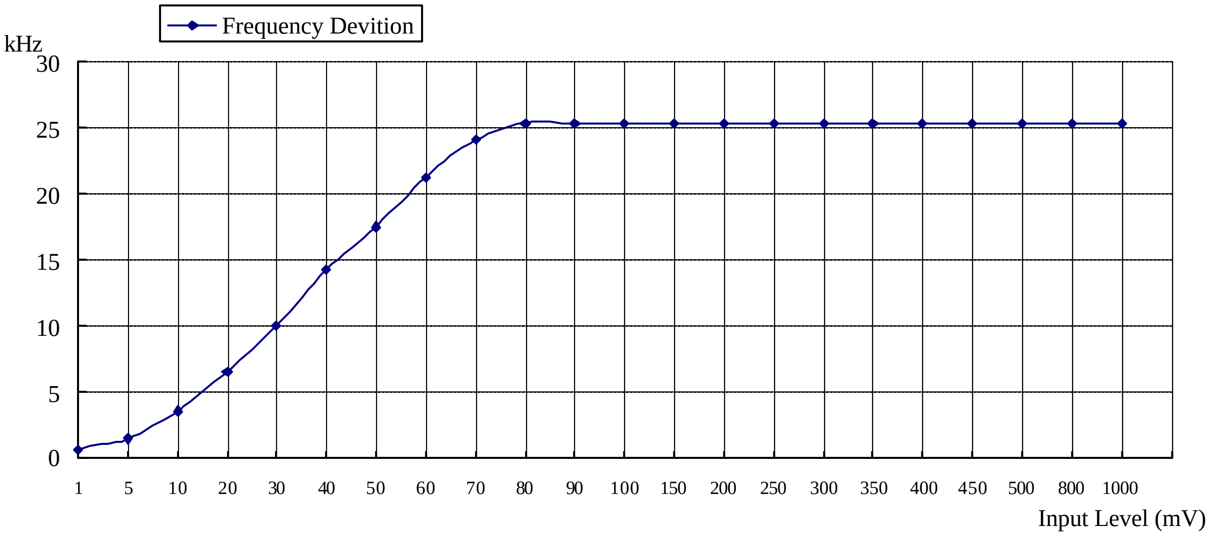
5.4.1 Input Level Derived

1. 682.000~698.000 MHz

Input Audio Frequency : 2.5 kHz, Sine Wave

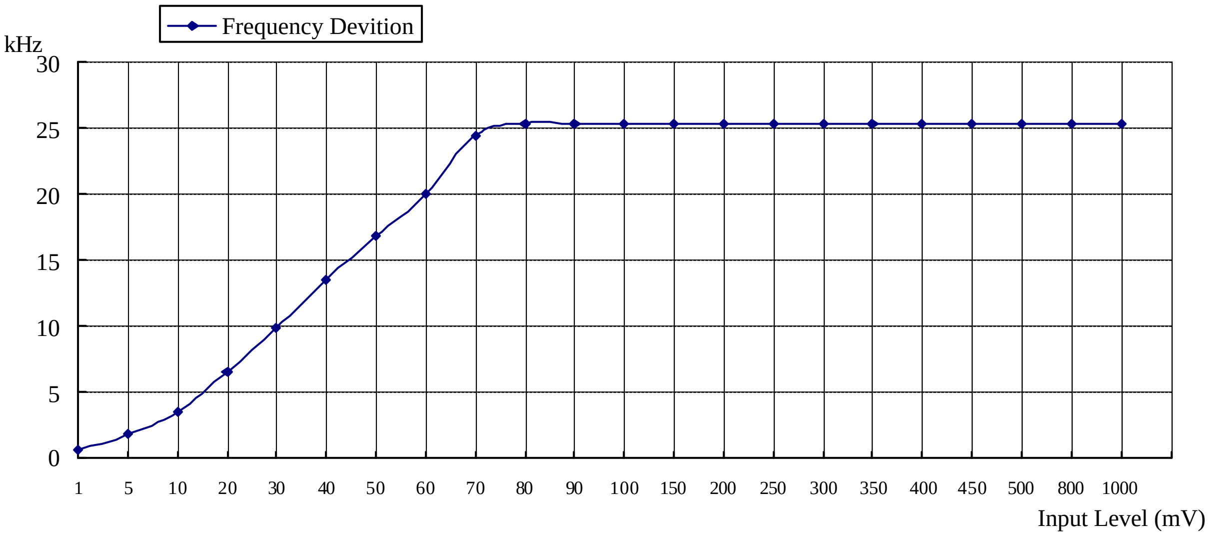


2. 740.000~752.000 MHz



The Level input to produce 50 % modulation is 20 mV, therefore the magnitude 16 dB greater than it is 126 mV.

3. 790.000~806.000 MHz



The Level input to produce 50％modulation is 20 mV, therefore the magnitude 16 dB greater than it is 126 mV.

5.4.2 Occupied Bandwidth Plotted

1. 682.000~698.000 MHz

The Channel Low 26 dB Bandwidth is 132.5KHz.
The Channel Mid 26 dB Bandwidth is 131.3KHz.
The Channel High 26 dB Bandwidth is 130.2KHz.

2. 740.000~752.000 MHz

The Channel Low 26 dB Bandwidth is 129.7KHz.
The Channel Mid 26 dB Bandwidth is 130.2KHz.
The Channel High 26 dB Bandwidth is 130.0KHz.

2. 790.000~806.000 MHz

The Channel Low 26 dB Bandwidth is 131.6KHz.
The Channel Mid 26 dB Bandwidth is 130.5KHz.
The Channel High 26 dB Bandwidth is 130.0KHz.

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	8564E	07/21/2005
Horn Antenna	EMCO	3115	08/12/2005
Log periodic Antenna	EMCO	3146	12/22/2004
Biconical Antenna	EMCO	3110B	12/22/2004
Preamplifier	Hewlett-Packard	8449B	06/30/2005
Preamplifier	Hewlett-Packard	8447D	02/18/2005

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 : TX   Test Date : Aug. 31, 2004

Temperature : 25°C   Humidity : 60%

Unmodulated carrier output power is –4.9 dBm , or 0.32 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-4.9-[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)
1364.000	---	---	---	---	6.4	-2.0	1.30	---	---	-13.0	---
2045.632	---	---	---	---	9.3	-2.0	1.75	---	---	-13.0	---
2727.264	---	---	---	---	9.2	-2.0	1.75	---	---	-13.0	---
3408.896	---	---	---	---	9.7	-2.0	1.75	---	---	-13.0	---
4090.528	---	---	---	---	9.6	-2.0	2.10	---	---	-13.0	---
4772.160	---	---	---	---	10.6	-2.0	2.10	---	---	-13.0	---
5453.792	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
6135.424	---	---	---	---	10.9	-2.0	2.60	---	---	-13.0	---
6817.056	---	---	---	---	12.1	-2.0	2.60	---	---	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 : TX   Test Date : Aug. 31, 2004
Temperature : 25°C   Humidity : 60%

Unmodulated carrier output power is –5.7 dBm , or 0.26 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-5.7-[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)
1385.490	---	---	---	---	7.3	-2.0	1.33	---	---	-13.0	---
2078.235	---	---	---	---	9.4	-2.0	1.75	---	---	-13.0	---
2770.980	---	---	---	---	9.2	-2.0	1.75	---	---	-13.0	---
3463.725	---	---	---	---	9.7	-2.0	1.75	---	---	-13.0	---
4156.470	---	---	---	---	9.6	-2.0	2.10	---	---	-13.0	---
4849.215	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
5541.960	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
6234.705	---	---	---	---	11.5	-2.0	2.60	---	---	-13.0	---
6927.450	---	---	---	---	12.2	-2.0	2.60	---	---	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 : TX   Test Date : Aug. 31, 2004
Temperature : 25°C   Humidity : 60%

Unmodulated carrier output power is –3.5 dBm , or 0.44 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-3.5-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV)		SG Reading (dBm)		Antenna Gain	Antenna Gain Corr’	Cable Loss (dB)	Result (dBm)		Limit (dBm)	Margin (dB)
	H	V	H	V				H	V		
1395.746	---	---	---	---	7.3	-2.0	1.33	---	---	-13.0	---
2093.619	---	---	---	---	9.4	-2.0	1.75	---	---	-13.0	---
2791.492	---	---	---	---	9.3	-2.0	1.75	---	---	-13.0	---
3489.365	---	---	---	---	9.7	-2.0	1.75	---	---	-13.0	---
4187.238	---	---	---	---	9.6	-2.0	2.10	---	---	-13.0	---
4885.111	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
5582.984	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
6280.857	---	---	---	---	11.7	-2.0	2.60	---	---	-13.0	---
6978.730	---	---	---	---	12.1	-2.0	2.60	---	---	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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.

2. 740.000~752.000 MHz

A. Channel Low

Operated mode : TX Test Date : Aug. 31, 2004
Temperature : 25°C Humidity : 60%

Unmodulated carrier output power is –2.3 dBm , or 0.58 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-2.3-[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)
1481.240	---	---	---	---	7.3	-2.0	1.3	---	---	-13.0	---
2221.860	---	---	---	---	9.4	-2.0	1.7	---	---	-13.0	---
2962.480	---	---	---	---	9.6	-2.0	1.7	---	---	-13.0	---
3703.100	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4443.720	---	---	---	---	10.6	-2.0	2.1	---	---	-13.0	---
5184.340	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5924.960	---	---	---	---	11.7	-2.0	2.6	---	---	-13.0	---
6665.580	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7406.200	---	---	---	---	11.6	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 : TX Test Date : Aug. 31, 2004
Temperature : 25°C Humidity : 60%

Unmodulated carrier output power is –4.0 dBm , or 0.39 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-4.0-[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)
1497.740	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2246.610	---	---	---	---	9.4	-2.0	1.7	---	---	-13.0	---
2995.480	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
3744.350	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4493.220	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5242.090	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5990.960	---	---	---	---	11.0	-2.0	2.6	---	---	-13.0	---
6739.830	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7488.700	---	---	---	---	11.6	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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	: TX	Test Date	: Aug. 31, 2004
Temperature	: 25°C	Humidity	: 60%

Unmodulated carrier output power is –3.2 dBm , or 0.47 mW (ERP).

The limit of spurious or harmonics is calculated as following :

-3.2-[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)
1503.254	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2254.881	---	---	---	---	9.3	-2.0	1.7	---	---	-13.0	---
3006.508	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
3758.135	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4509.762	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5261.389	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
6013.016	---	---	---	---	11.9	-2.0	2.5	---	---	-13.0	---
6764.643	---	---	---	---	11.8	-2.0	2.5	---	---	-13.0	---
7516.270	---	---	---	---	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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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.

3. 790.000~806.000 MHz

A. Channel Low

Operated mode : TX   Test Date : Aug. 31, 2004
Temperature : 25°C   Humidity : 60%

Unmodulated carrier output power is 0.2 dBm , or 1.04 mW (ERP).

The limit of spurious or harmonics is calculated as following :

0.2-[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)
1580.758	---	---	---	---	7.3	-2.0	1.3	---	---	-13.0	---
2371.137	---	---	---	---	9.4	-2.0	1.7	---	---	-13.0	---
3161.516	---	---	---	---	9.6	-2.0	1.7	---	---	-13.0	---
3951.895	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4742.274	---	---	---	---	10.6	-2.0	2.1	---	---	-13.0	---
5532.653	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
6323.032	---	---	---	---	11.7	-2.0	2.6	---	---	-13.0	---
7113.411	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7903.790	---	---	---	---	11.6	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 : TX
Temperature : 25°C
Test Date : Aug. 31, 2004
Humidity : 60%

Unmodulated carrier output power is 1.0 dBm , or 1.25 mW (ERP).

The limit of spurious or harmonics is calculated as following :

1.0-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV)		SG Reading (dBm)		Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm)		Limit (dBm)	Margin (dB)
	H	V	H	V				H	V		
1595.480	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2393.220	---	---	---	---	9.4	-2.0	1.7	---	---	-13.0	---
3190.960	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
3988.700	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4786.440	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5584.180	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
6381.920	---	---	---	---	11.0	-2.0	2.6	---	---	-13.0	---
7179.660	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7977.400	---	---	---	---	11.6	-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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 : TX   Test Date : Aug. 31, 2004
Temperature : 25°C   Humidity : 60%

Unmodulated carrier output power is 0.2 dBm , or 1.04 mW (ERP).

The limit of spurious or harmonics is calculated as following :

0.2-[43+10log(carrier output power in W)], or -13dBm

Frequency (MHz)	Meter Reading (dBuV)		SG Reading (dBm)		Antenna Gain	Antenna Gain Corr'	Cable Loss (dB)	Result (dBm)		Limit (dBm)	Margin (dB)
	H	V	H	V				H	V		
1611.508	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2417.262	---	---	---	---	9.3	-2.0	1.7	---	---	-13.0	---
3223.016	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
4028.770	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4834.524	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5640.278	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
6446.032	---	---	---	---	11.9	-2.0	2.5	---	---	-13.0	---
7251.786	---	---	---	---	11.8	-2.0	2.5	---	---	-13.0	---
8057.540	---	---	---	---	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 +Cable Loss +Antenna Gain +Antenna Gain Corrected

   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 Other Emission

1. Charging(682.000-698.000MHz)

a) Emission frequencies below 1 GHz

Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
103.980	H	34.8	-13.0	21.8	43.5	-21.7	74	1.0
125.580	H	32.8	-11.2	21.6	43.5	-21.9	272	1.0
200.910	H	32.4	-7.0	25.4	43.5	-18.1	254	1.0
241.410	H	34.4	-4.4	30.0	46.0	-16.0	162	1.0
844.600	H	33.2	2.0	35.2	46.0	-10.8	153	1.0
911.800	H	33.5	2.3	35.8	46.0	-10.2	20	1.0

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

b) Emission frequencies above 1 GHz

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

2. Charging(740.000-752.000MHz)

a) Emission frequencies below 1 GHz

Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
100.320	H	36.2	-13.8	22.4	43.5	-21.1	62	2.0
132.480	H	34.5	-11.3	23.2	43.5	-20.3	152	1.5
215.210	V	33.3	-6.1	27.2	43.5	-16.3	33	1.7
243.210	H	35.5	-4.3	31.2	46.0	-14.8	122	1.2
840.310	H	32.3	1.9	34.2	46.0	-11.8	162	1.0
904.770	H	32.0	2.2	34.2	46.0	-11.8	154	1.0

Note :

1. Remark "---" means that the emissions level is too low to be measured.
2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

b) Emission frequencies above 1 GHz

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

3. Charging(790.000-806.000MHz)

a) Emission frequencies below 1 GHz

Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (m)
105.210	H	35.4	-12.8	22.6	43.5	-20.9	27	1.0
130.250	H	34.7	-11.5	23.2	43.5	-20.3	34	1.0
215.320	H	32.2	-6.1	26.1	43.5	-17.4	128	1.5
245.330	H	35.4	-4.2	31.2	46.0	-14.8	156	1.5
840.210	H	32.4	1.9	34.3	46.0	-11.7	315	1.0
921.330	H	31.8	2.4	34.2	46.0	-11.8	25	1.0

Note :

1. Remark "---" means that the emissions level is too low to be measured.

2. The expanded uncertainty of the radiated emission tests is 3.53 dB.

b) Emission frequencies above 1 GHz

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

6.5 Radiated Measurement Photos

Mode: Charging

Mode: Tx

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.

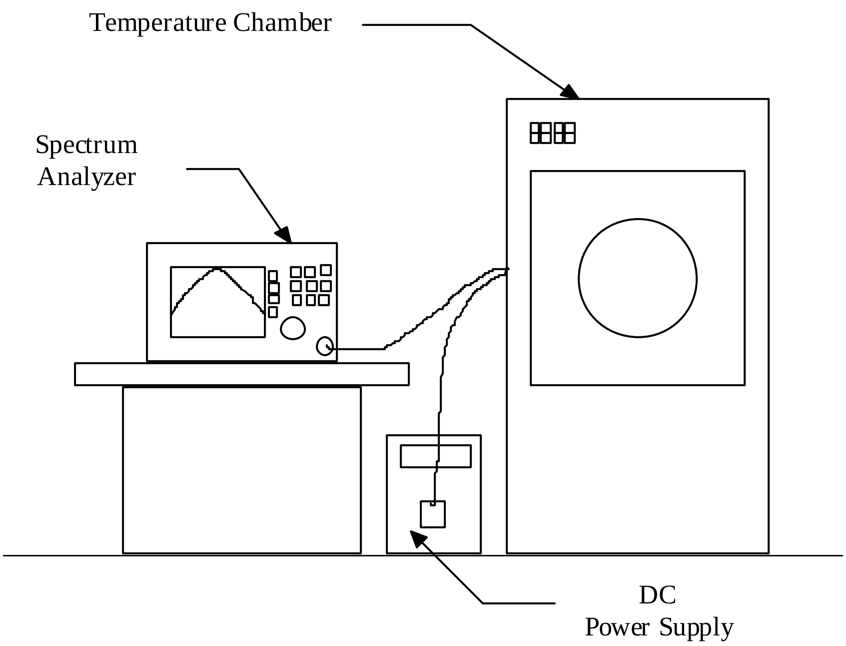
B) Frequency stability versus input voltage

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	07/21/2005
Temperature Chamber	MALLIER	MCT-2X-M	10/22/2004

7.4 Measurement Data

A1. Frequency stability versus enviroment tempture

Reference Frequency : 682.368 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.	682.3664	-0.00023	682.3671	-0.00013	682.3423	-0.00377
40		682.3607	-0.00107	682.3638	-0.00062	682.3695	0.00022
30		682.3831	0.00221	682.3885	0.00300	682.3843	0.00239
20		682.3750	0.00103	682.3940	0.00381	682.3871	0.00280
10		682.3715	0.00051	682.3781	0.00148	682.3874	0.00284
0		682.3680	0.00000	682.3632	-0.00070	682.3536	-0.00211
-10		682.3637	-0.00063	682.3522	-0.00232	682.3921	0.00353
-20		682.3644	-0.00053	682.3717	0.00054	682.3689	0.00013
-30		682.3572	-0.00158	682.3809	0.00189	682.3719	0.00057

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

Reference Frequency : 682.368 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	682.3535	-0.00212	682.3939	0.00380	682.3691	0.00016

B1. Frequency stability versus enviroment tempture

Reference Frequency : 692.745 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.	692.7396	-0.00078	692.7610	0.00231	692.7677	0.00328
40		692.7417	-0.00048	692.7306	-0.00208	692.7263	-0.00270
30		692.7495	0.00065	692.7428	-0.00032	692.7224	-0.00326
20		692.7221	-0.00331	692.7698	0.00358	692.7552	0.00147
10		692.7414	-0.00052	692.7407	-0.00062	692.7263	-0.00270
0		692.7311	-0.00201	692.7349	-0.00146	692.7580	0.00188
-10		692.7376	-0.00107	692.7249	-0.00290	692.7624	0.00251
-20		692.7205	-0.00354	692.7283	-0.00241	692.7305	-0.00209
-30		692.7530	0.00115	692.7192	-0.00372	692.7356	-0.00136

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

Reference Frequency : 692.745 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	692.7280	-0.00245	692.7273	-0.00256	692.7514	0.00092

C1. Frequency stability versus enviroment tempture

Reference Frequency : 697.873 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.	697.8933	0.00291	697.8580	-0.00215	697.8488	-0.00347
40		697.8935	0.00294	697.8622	-0.00155	697.8946	0.00310
30		697.8862	0.00189	697.8656	-0.00106	697.8926	0.00281
20		697.8535	-0.00279	697.8502	-0.00327	697.8589	-0.00202
10		697.8710	-0.00029	697.8924	0.00278	697.8470	-0.00373
0		697.8906	0.00252	697.8876	0.00209	697.8625	-0.00150
-10		697.8728	-0.00003	697.8931	0.00288	697.8941	0.00302
-20		697.8560	-0.00244	697.8779	0.00070	697.8927	0.00282
-30		697.8860	0.00186	697.8708	-0.00032	697.8693	-0.00053

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

Reference Frequency : 697.873 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	697.8684	-0.00066	697.8544	-0.00267	697.8503	-0.00325

D1. Frequency stability versus enviroment tempture

Reference Frequency : 740.620 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.	740.6358	0.00213	740.6009	-0.00258	740.6330	0.00176
40		740.6192	-0.00011	740.5928	-0.00367	740.6190	-0.00014
30		740.6163	-0.00050	740.6391	0.00258	740.6046	-0.00208
20		740.6374	0.00235	740.6422	0.00300	740.6160	-0.00054
10		740.6482	0.00381	740.5928	-0.00367	740.5928	-0.00367
0		740.6083	-0.00158	740.6272	0.00097	740.5929	-0.00366
-10		740.5990	-0.00284	740.5938	-0.00354	740.5926	-0.00370
-20		740.6406	0.00278	740.6040	-0.00216	740.6153	-0.00063
-30		740.6454	0.00343	740.6124	-0.00103	740.6157	-0.00058

D2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 740.620 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	740.6339	0.00188	740.6386	0.00251	740.6351	0.00204

E1. Frequency stability versus enviroment tempture

Reference Frequency : 748.870 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.	748.8529	-0.00228	748.8777	0.00103	748.8959	0.00346
40		748.8603	-0.00130	748.8423	-0.00370	748.8976	0.00369
30		748.8637	-0.00084	748.8805	0.00140	748.8434	-0.00355
20		748.8858	0.00211	748.8924	0.00299	748.8419	-0.00375
10		748.8711	0.00015	748.8695	-0.00007	748.8761	0.00081
0		748.8673	-0.00036	748.8559	-0.00188	748.8675	-0.00033
-10		748.8675	-0.00033	748.8900	0.00267	748.8701	0.00001
-20		748.8527	-0.00231	748.8871	0.00228	748.8485	-0.00287
-30		748.8897	0.00263	748.8852	0.00203	748.8629	-0.00095

E2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 748.870 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	748.8619	-0.00108	748.8564	-0.00182	748.8646	-0.00072

F1. Frequency stability versus enviroment tempture

Reference Frequency : 751.627 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.	751.6064	-0.00274	751.6398	0.00170	751.6503	0.00310
40		751.6108	-0.00216	751.6242	-0.00037	751.6247	-0.00031
30		751.6095	-0.00233	751.6386	0.00154	751.6526	0.00341
20		751.6252	-0.00024	751.6417	0.00196	751.6533	0.00350
10		751.6194	-0.00101	751.6319	0.00065	751.6207	-0.00084
0		751.6366	0.00128	751.6151	-0.00158	751.6142	-0.00170
-10		751.6258	-0.00016	751.6315	0.00060	751.6314	0.00059
-20		751.6445	0.00233	751.6266	-0.00005	751.6118	-0.00202
-30		751.6252	-0.00024	751.6295	0.00033	751.6005	-0.00353

F2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 751.627 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	751.5982	-0.00383	751.6028	-0.00322	751.6264	-0.00008

G1. Frequency stability versus enviroment tempture

Reference Frequency : 790.379 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.	790.3888	0.00124	790.3685	-0.00133	790.3998	0.00263
40		790.3764	-0.00033	790.3890	0.00127	790.4053	0.00333
30		790.3722	-0.00086	790.4023	0.00295	790.3743	-0.00059
20		790.3993	0.00257	790.3866	0.00096	790.3826	0.00046
10		790.4073	0.00358	790.3894	0.00132	790.3707	-0.00105
0		790.3562	-0.00288	790.3560	-0.00291	790.3945	0.00196
-10		790.3961	0.00216	790.3913	0.00156	790.4030	0.00304
-20		790.4039	0.00315	790.3841	0.00065	790.3542	-0.00314
-30		790.3539	-0.00318	790.3743	-0.00059	790.4065	0.00348

G2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 790.379 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	790.3718	-0.00091	790.3574	-0.00273	790.3611	-0.00226

H1. Frequency stability versus enviroment tempture

Reference Frequency : 797.740 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.	797.7477	0.00097	797.7299	-0.00127	797.7383	-0.00021
40		797.7134	-0.00333	797.7614	0.00268	797.7357	-0.00054
30		797.7549	0.00187	797.7356	-0.00055	797.7099	-0.00377
20		797.7398	-0.00003	797.7283	-0.00147	797.7443	0.00054
10		797.7176	-0.00281	797.7648	0.00311	797.7271	-0.00162
0		797.7364	-0.00045	797.7110	-0.00364	797.7562	0.00203
-10		797.7472	0.00090	797.7494	0.00118	797.7095	-0.00382
-20		797.7403	0.00004	797.7372	-0.00035	797.7387	-0.00016
-30		797.7254	-0.00183	797.7184	-0.00271	797.7610	0.00263

H2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 797.740 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	797.7311	-0.00112	797.7512	0.00140	797.7446	0.00058

I1. Frequency stability versus enviroment tempture

Reference Frequency : 805.754 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	805.7412	-0.00159	805.7736	0.00243	805.7602	0.00077
40		805.7341	-0.00247	805.7782	0.00300	805.7283	-0.00319
30		805.7711	0.00212	805.7779	0.00297	805.7554	0.00017
20		805.7661	0.00150	805.7596	0.00070	805.7689	0.00185
10		805.7707	0.00207	805.7670	0.00161	805.7616	0.00094
0		805.7472	-0.00084	805.7707	0.00207	805.7463	-0.00096
-10		805.7526	-0.00017	805.7481	-0.00073	805.7754	0.00266
-20		805.7793	0.00314	805.7723	0.00227	805.7814	0.00340
-30		805.7442	-0.00122	805.7548	0.00010	805.7442	-0.00122

I2. Frequency stability versus end-point supplied voltage (2Vdc)

Reference Frequency : 805.754 MHz		Limit：0.005%					
Enviroment	Power	Frequency measured with time elapsed					
Tempture	Supplied	2 minute		5 minute		10 minute	
(℃)	(Vdc)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-Point	805.7547	0.00009	805.7756	0.00268	805.7643	0.00128

8 CONDUCTED EMISSION MEASUREMENT

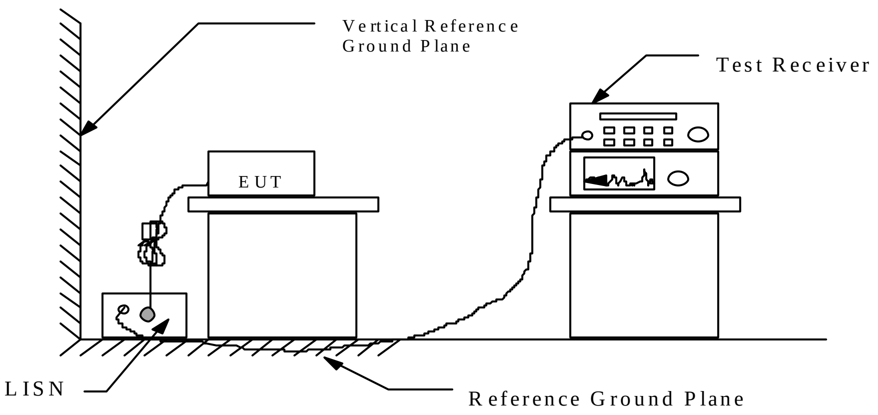
8.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to § 15.107(a) and §15.207(a) respectively. Both Limits are identical specification.

8.2 Measurement Procedure

1. Setup the configuration per figure 3.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 or 8 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3 : Conducted emissions measurement configuration



8.3 Conducted Emission Data

1. Operation Mode : Charging(682.000-698.000MHz)

Test Date : Aug. 31, 2004 Temperature : 25 ℃ Humidity : 60 %

Freq.	Meter Reading (dBµV)				Factor	Limit (dBµV)		Result (dBµV)			
	Q.P Value		AVG. Value			Q.P	AVG.	Q.P Value		AVG. Value	
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.212	34.1	33.5	----	----	0.2	63.1	53.1	34.3	33.7	----	----
0.566	28.3	27.3	----	----	0.3	56.0	46.0	28.6	27.6	----	----
0.648	27.7	26.6	----	----	0.3	56.0	46.0	28.0	26.9	----	----
0.773	29.9	29.5	----	----	0.3	56.0	46.0	30.2	29.8	----	----
0.839	30.5	30.3	----	----	0.3	56.0	46.0	30.8	30.6	----	----
0.906	28.3	27.8	----	----	0.3	56.0	46.0	28.6	28.1	----	----

2. Operation Mode : Charging (740.000-752.000MHz)

Test Date : Aug. 31, 2004 Temperature : 25 ℃ Humidity : 60 %

Freq.	Meter Reading (dBµV)				Factor	Limit (dBµV)		Result (dBµV)			
	Q.P Value		AVG. Value			Q.P	AVG.	Q.P Value		AVG. Value	
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.189	34.4	34.5	----	----	0.2	64.1	54.1	34.6	34.7	----	----
0.314	32.1	32.1	----	----	0.3	59.9	49.9	32.4	32.4	----	----
0.554	27.8	27.9	----	----	0.3	56.0	46.0	28.1	28.2	----	----
0.613	28.4	28.6	----	----	0.3	56.0	46.0	28.7	28.9	----	----
0.765	29.1	29.4	----	----	0.3	56.0	46.0	29.4	29.7	----	----
0.968	25.4	25.4	----	----	0.3	56.0	46.0	25.7	25.7	----	----

Note : 1. Please see appendix 1 for Plotted Data
2. The expanded uncertainty of the conducted emission tests is 2.45 dB.

3. Operation Mode : Charging (790.000-806.000MHz)

Test Date : Aug. 31, 2004 Temperature : 25 °C Humidity : 60 %

Freq.	**Meter Reading** (dBμV)				**Factor**	**Limit** (dBμV)		**Result** (dBμV)			
	Q.P Value		AVG. Value			Q.P	AVG.	Q.P Value		AVG. Value	
(MHz)	N	L1	N	L1	(dB)	Value	Value	N	L1	N	L1
0.1570	34.8	34.6	----	----	0.2	65.6	55.6	35.0	34.8	----	----
0.4000	28.7	28.6	----	----	0.3	57.9	47.9	29.0	28.9	----	----
0.4230	28.5	28.3	----	----	0.3	57.4	47.4	28.8	28.6	----	----
0.4970	26.3	26.4	----	----	0.3	56.0	46.0	26.6	26.7	----	----
0.8040	29.6	29.4	----	----	0.3	56.0	46.0	29.9	29.7	----	----
0.9410	26.3	26.1	----	----	0.3	56.0	46.0	26.6	26.4	----	----

Note : 1. Please see appendix 1 for Plotted Data
2. The expanded uncertainty of the conducted emission tests is 2.45 dB.

8.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dBμV is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dBμV.

RESULT = 22.5 + 0.1 = 22.6 dBμV
Level in μV = Common Antilogarithm[(22.6 dBμV)/20]
= 13.48 μV

8.5 Conducted Measurement Equipment

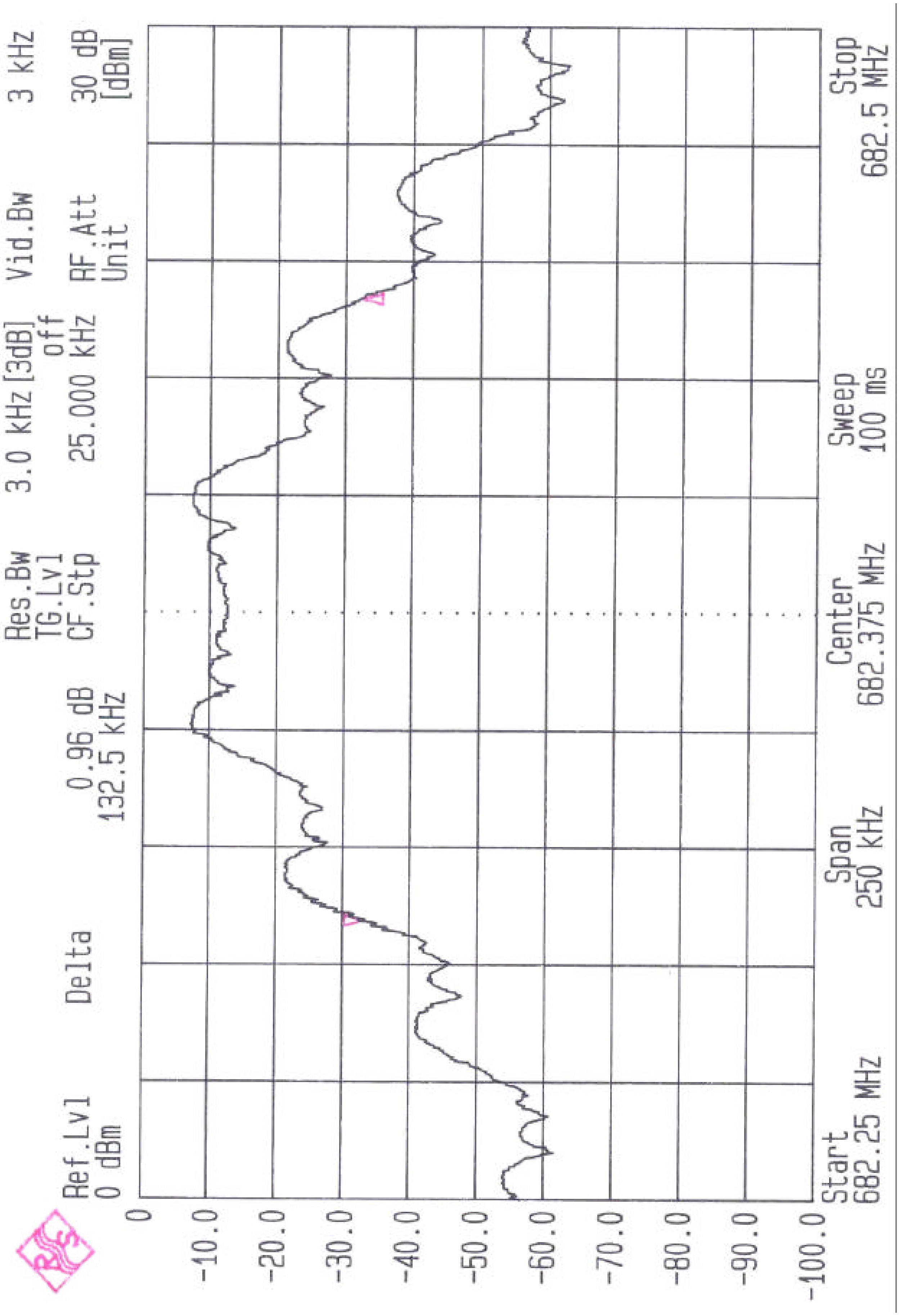
The following test equipment are used during the conducted test .

Equipment	**Manufacturer**	**Model No.**	**Next Cal. Due**
EMI Test Receiver	Rohde and Schwarz	ESCS30	12/01/2004
Line Impedance Stabilization network	Rohde and Schwarz	ESH2-Z5	09/20/2004
Line Impedance Stabilization network	Kyoritsu	KNW-407	12/24/2004
Shielded Room	Riken	----	N/A
Monitor	IBM	E54	N/A
Printer	HP	LASERJET 1000	N/A
Computer	ACER	Veriton 7500G	N/A

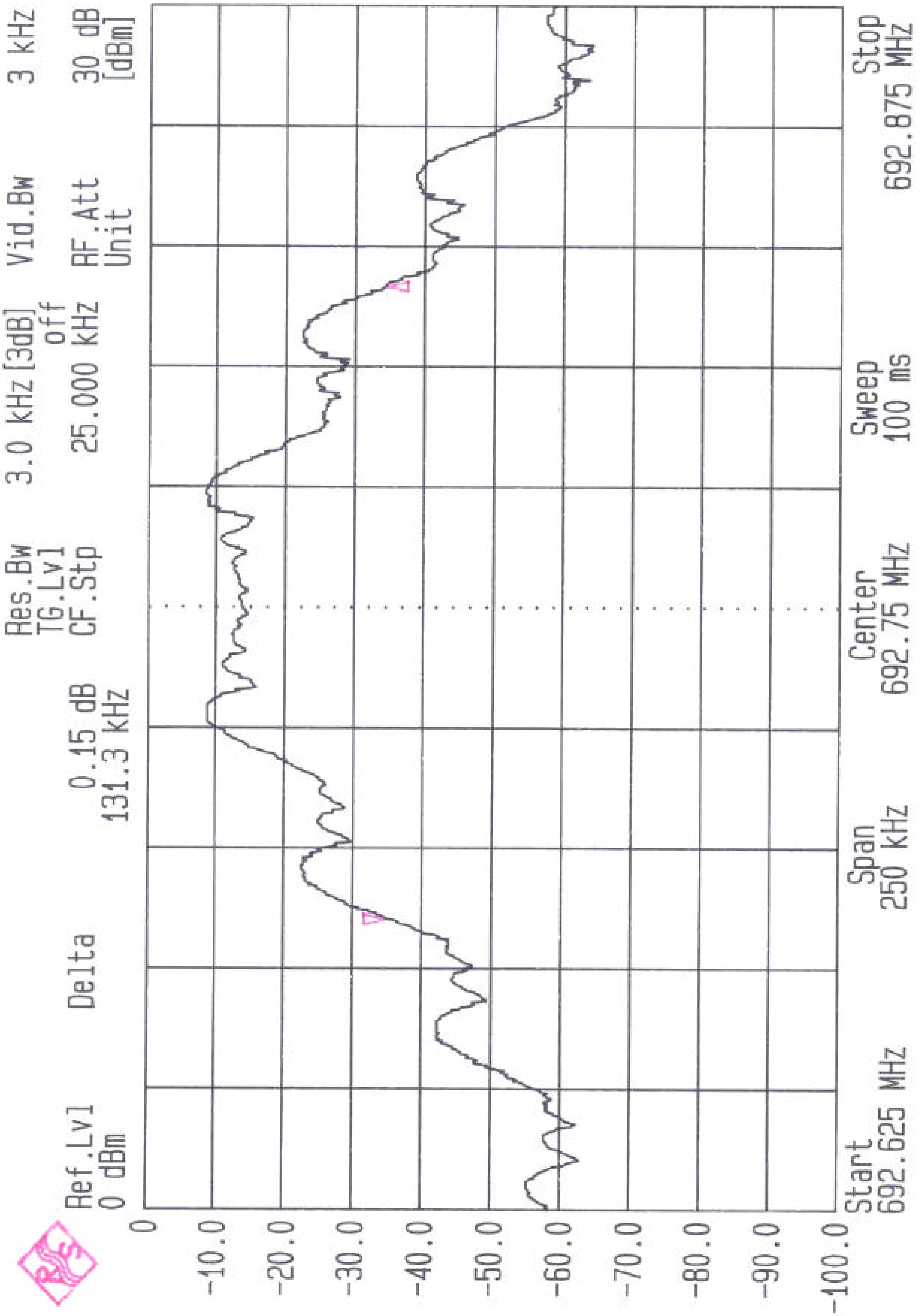
8.6 Photos of Conduction Measuring Setup

Appendix 1 : Occupied Emission Bandwidth Plotted Data

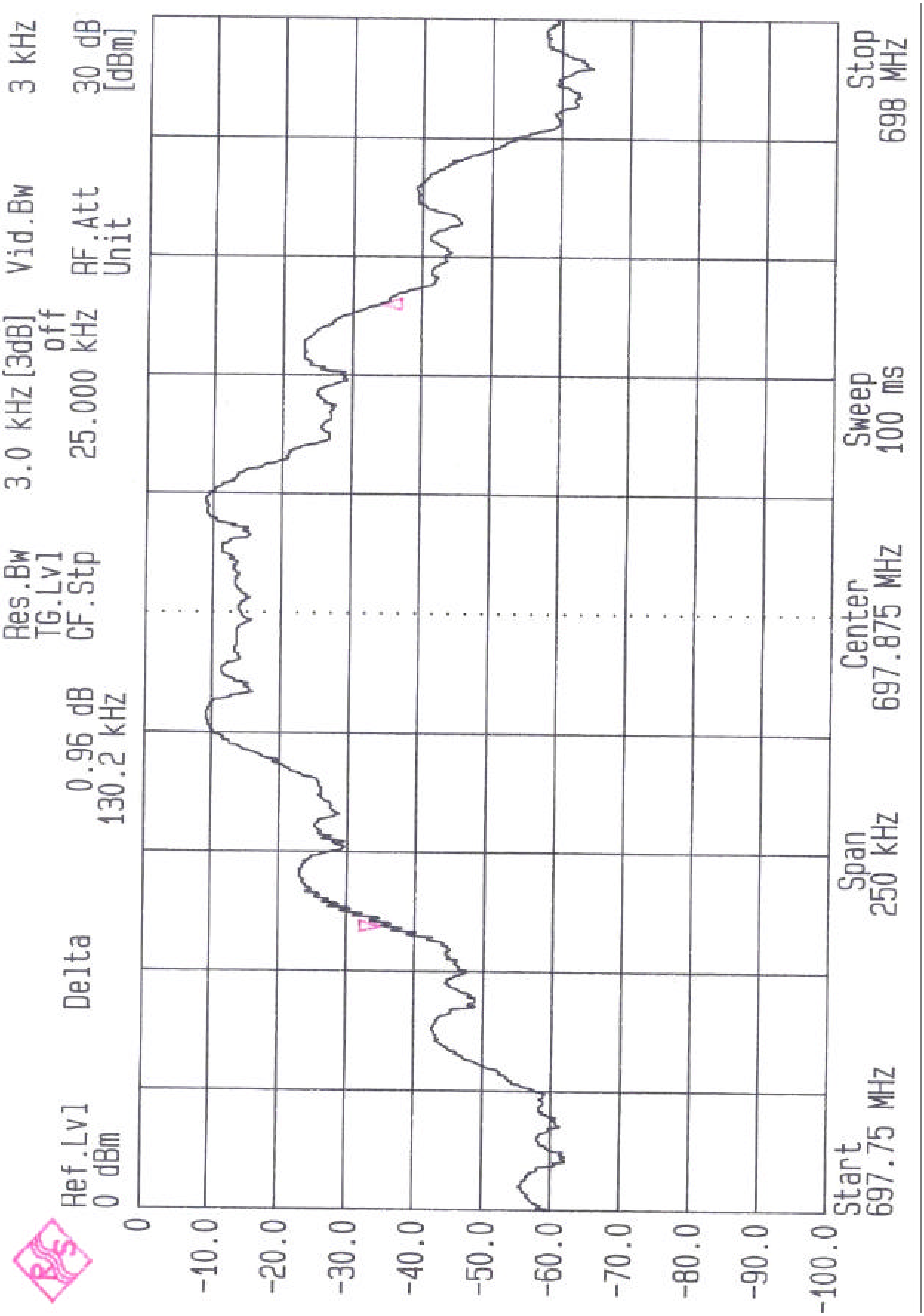
682.000~698.000MHz



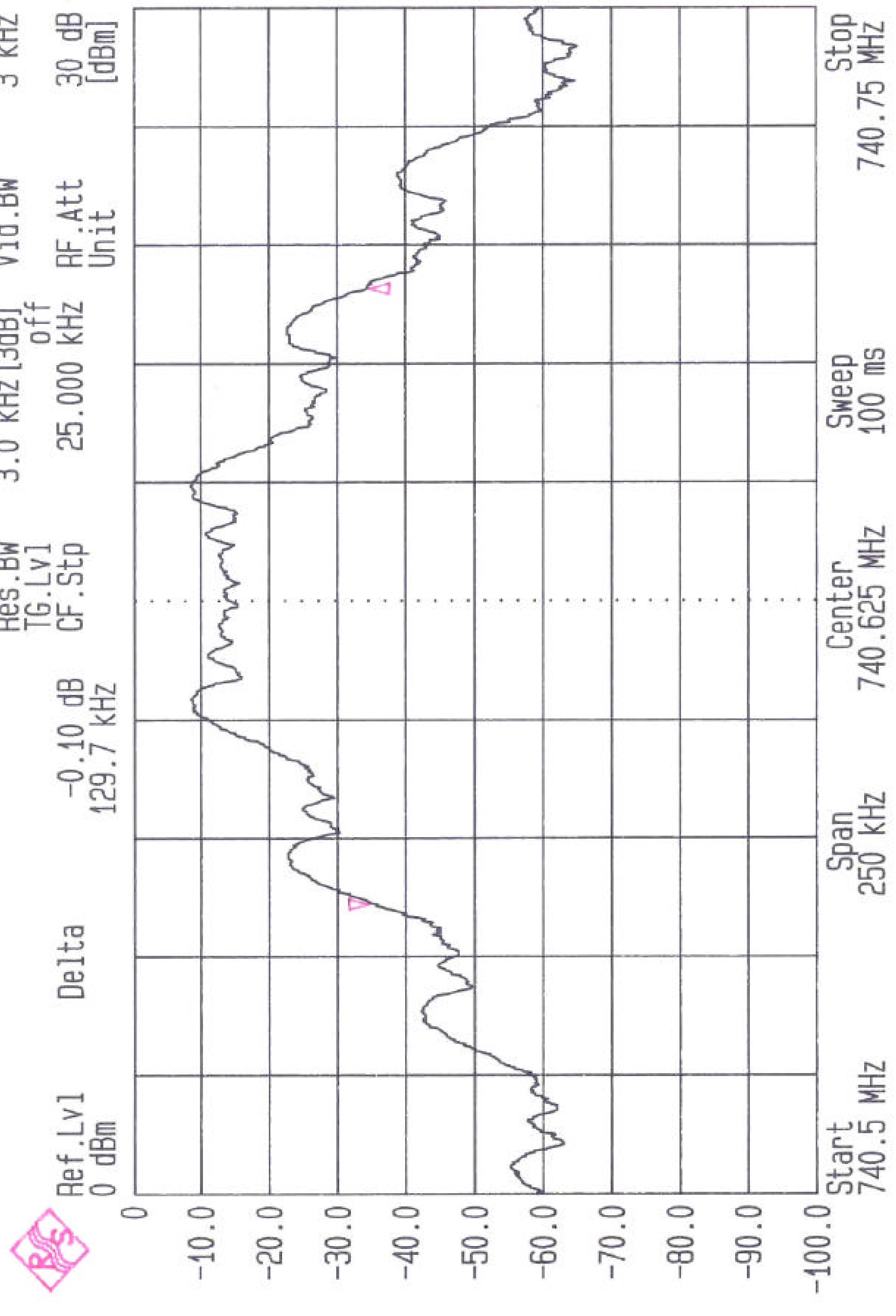
682.000~698.000MHz



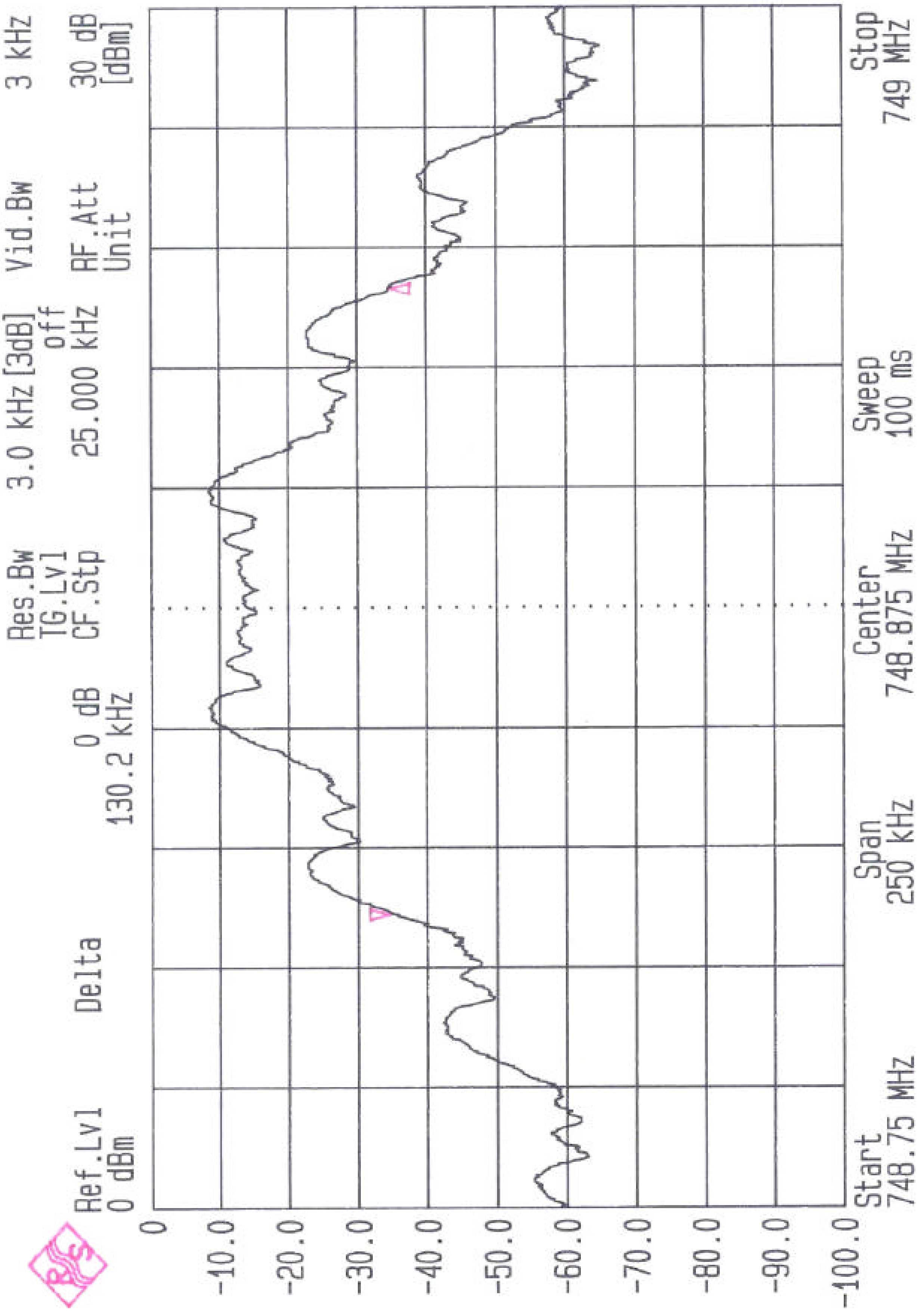
682.000~698.000MHz



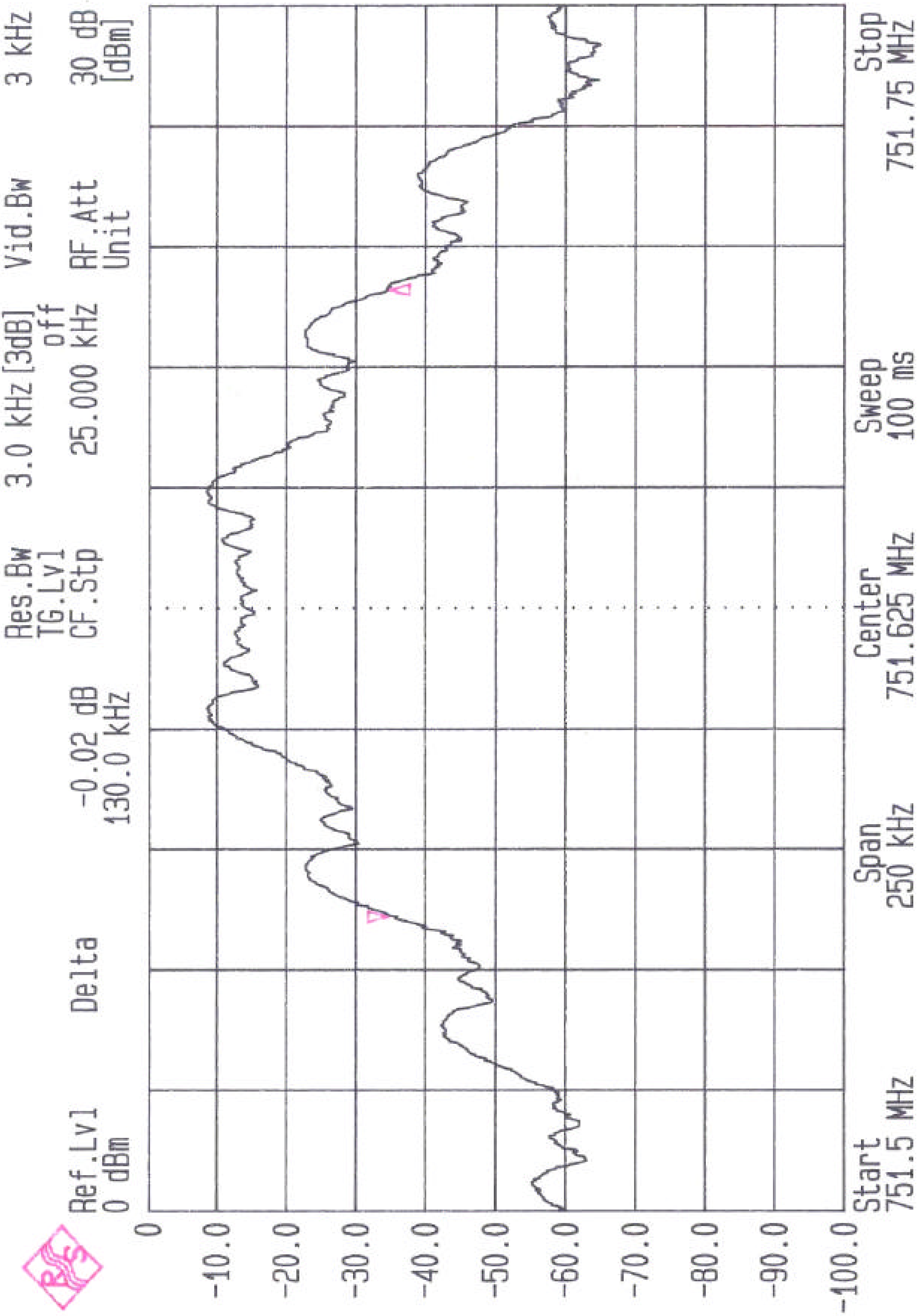
740.000~752.00MHz



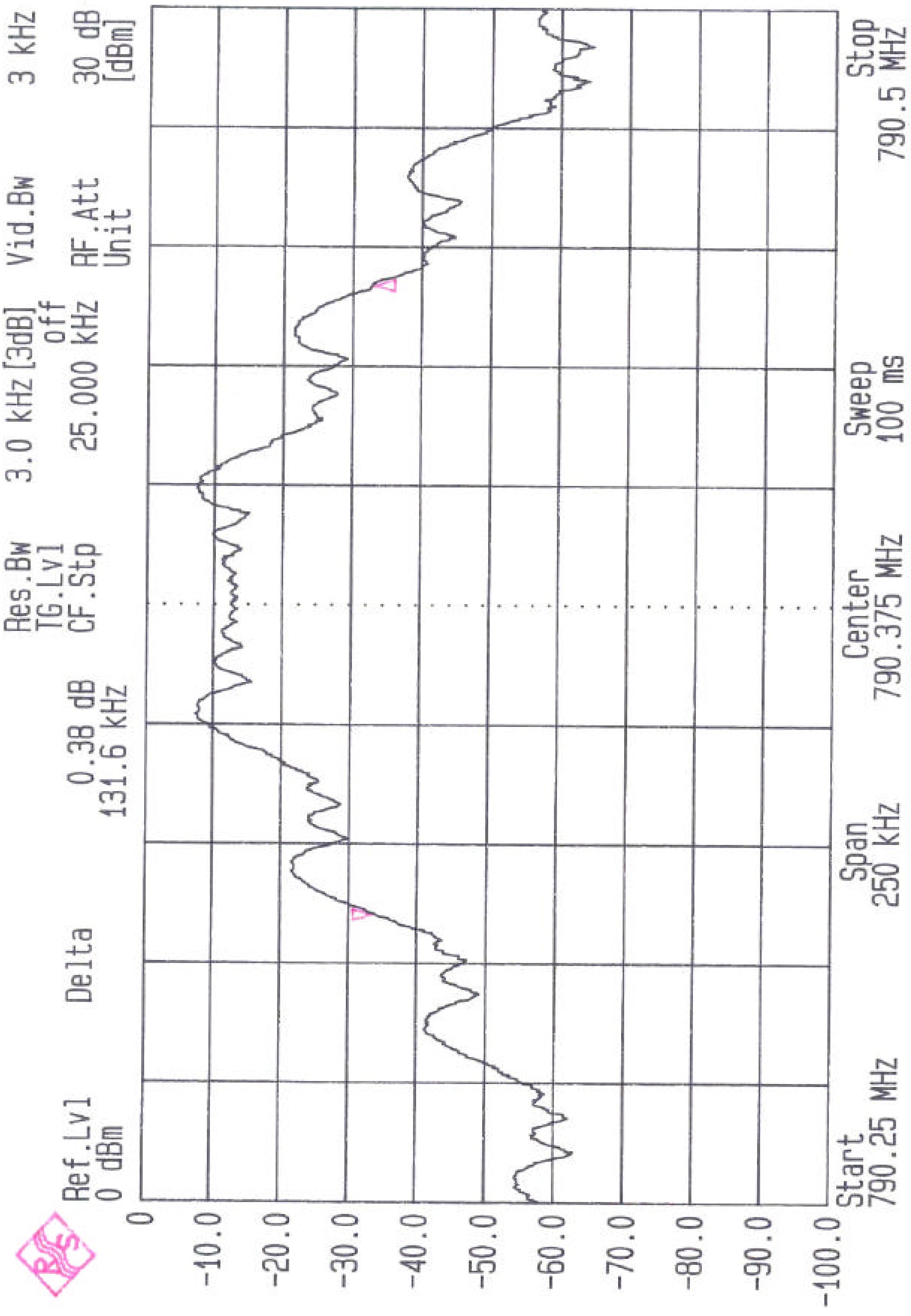
740.000~752.00MHz



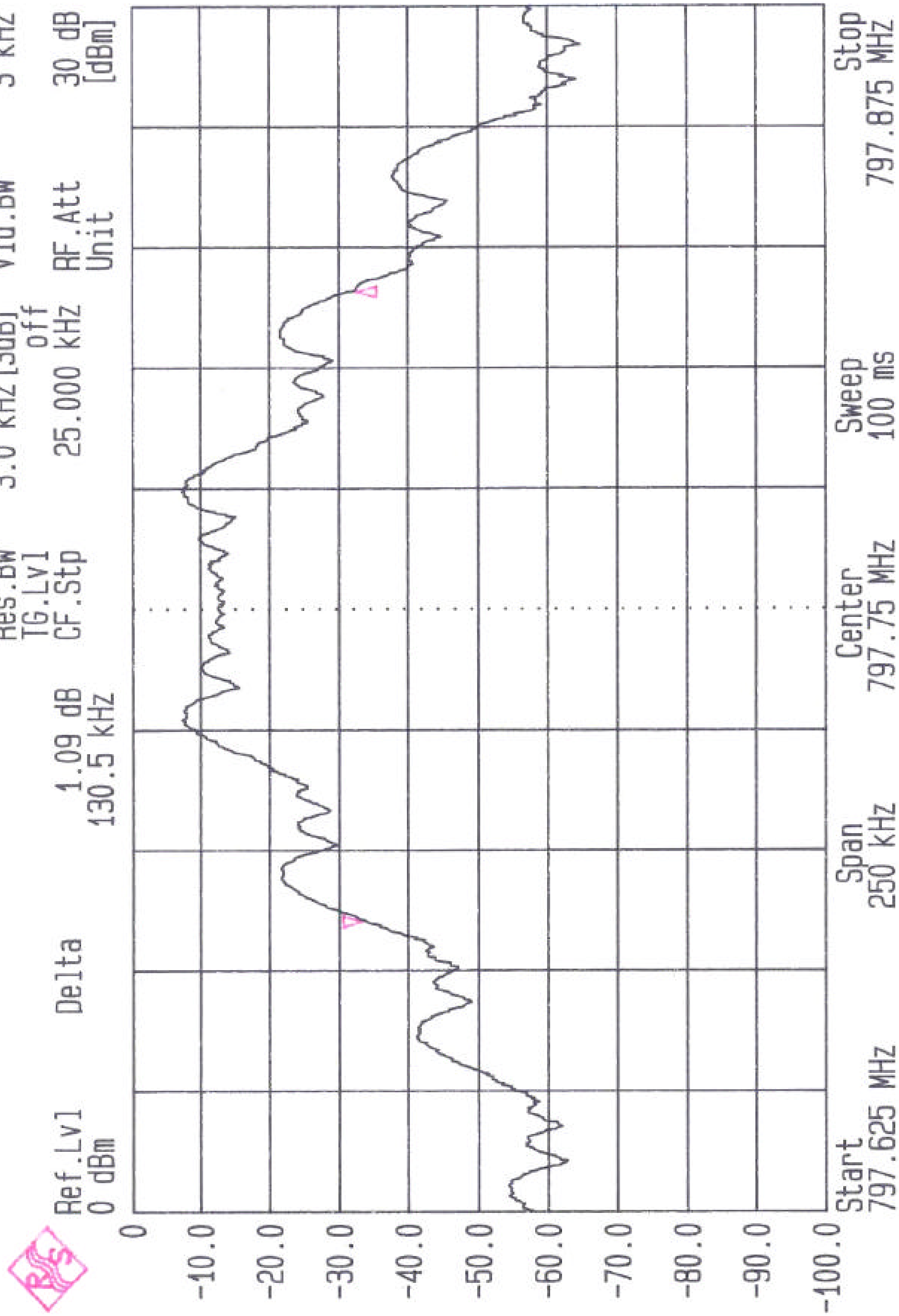
740.000~752.00MHz



790.000~806.00MHz



790.000~806.00MHz



790.000~806.00MHz