FCC Part 74 Subpart H
EMI TEST REPORT

of

E.U.T. : Bodypack Transmitter
FCC ID. : M5XMT801A
MODEL : MT-801a
Working Frequency : 614.000MHz-806.000MHz;

for

APPLICANT ：MIPRO Electronics Co., Ltd.
ADDRESS ：814 Pei-Kang Road, Chia-Yi, 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 : 06-02-RBF-045-02

TEST REPORT CERTIFICATION

Applicant	:	MIPRO Electronics Co., Ltd. 814 Pei-Kang Road, Chia-Yi, Taiwan
Manufacturer	:	MIPRO Electronics Co., Ltd. 814 Pei-Kang Road, Chia-Yi, Taiwan
Description of EUT	:	

a) Type of EUT	:	Bodypack Transmitter
b) Trade Name	:	MIPRO
c) Model No.	:	MT-801a
d) FCC ID	:	M5XMT801A
e) Working Frequency	:	614.000MHz-806.000MHz
f) Power Supply	:	DC 3Vdc Battery

Regulation Applied: FCC Rules and Regulations Part 74 Subpart H (2005)

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 : Apr. 13, 2006

Test Engineer : Vincent Chang
(Vincent Chang)

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	:	Bodypack Transmitter
b) Trade Name	:	MIPRO
c) Model No.	:	MT-801a
d) FCC ID	:	M5XMT801A
e) Working Frequency	;	614.000MHz-806.000MHz
f) Power Supply	:	DC 3Vdc Battery
g) Emission Designator	:	116KF3E 2M+2DK = 2 x (18kHz) + 2 x (40kHz) x 1 = 116kHz

1.2 Test Methodology

Both Bodypack Transmitter conducted and radiated testing were performed according to the procedures in chapter 13 of ANSI C63.4 (2003) and section 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, and 2.1055 of Part 2 of CFR 47.

1.3 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 Oct. 20, 2005.

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

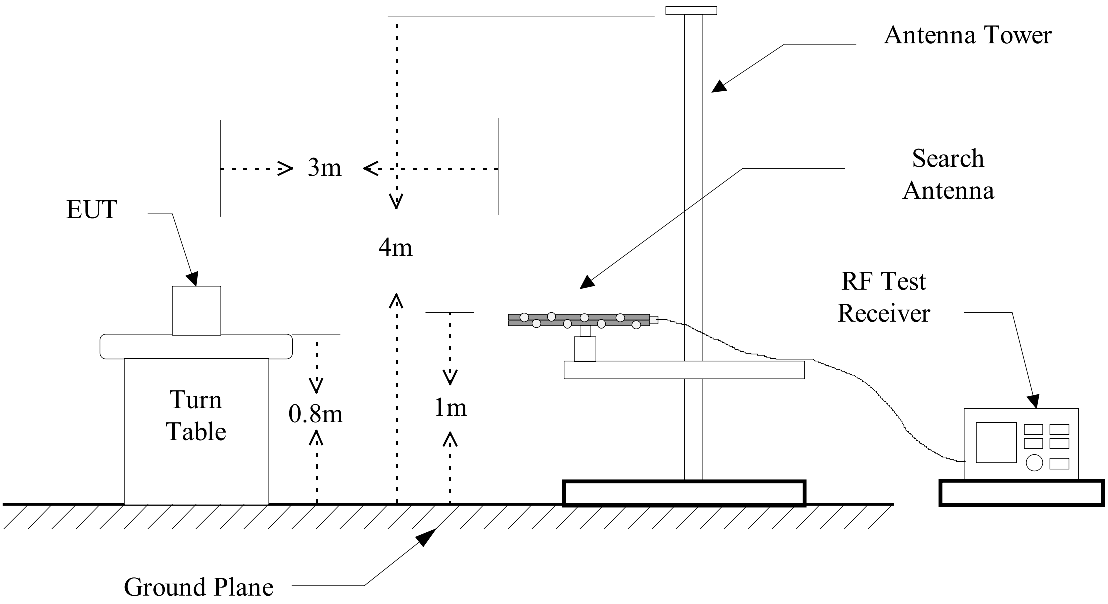
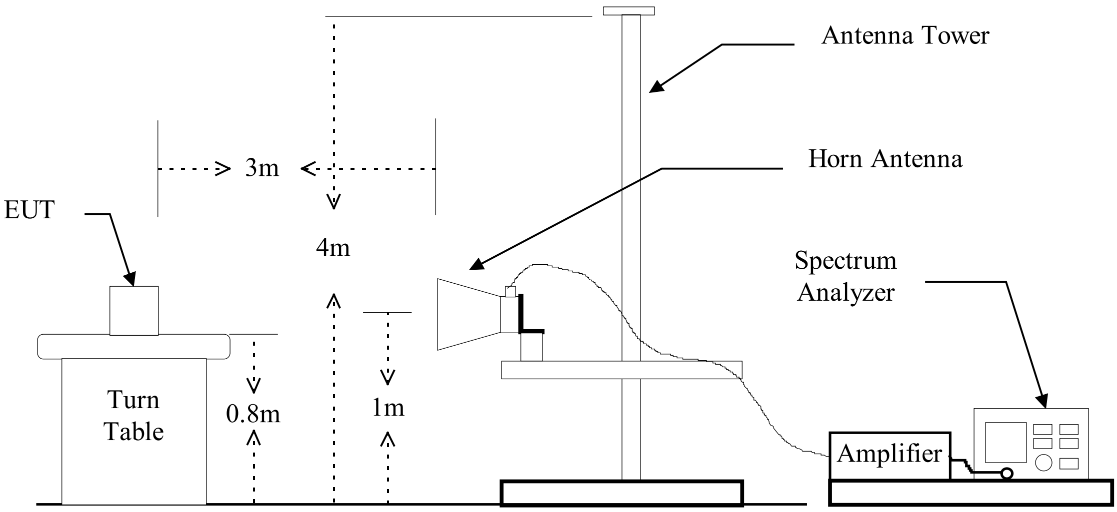


Figure 1 : Frequencies measured above 1 GHz configuration



3.3 Test Data

A. Channel Low (ERP)

Operated mode : TX   Test Date : Mar. 20, 2006
Temperature : 25 °C   Humidity : 65 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
615.000	80.8	9.6	-2.2	----	7.4	5.49	250

B. Channel Mid (ERP)

Operated mode : TX   Test Date : Mar. 20, 2006
Temperature : 25 °C   Humidity : 65 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
711.000	83.8	9.9	-2.4	----	7.5	5.62	250

C. Channel High (ERP)

Operated mode : TX   Test Date : Mar. 20, 2006
Temperature : 25 °C   Humidity : 65 %

Frequency (MHz)	Meter Reading (dBμV/m)	SG Reading (dBm)	Cable Loss (dB)	Antenna Gain	Result (dBm)	Output Power (mW)	Limit (mW)
805.500	82.5	9.9	-2.6	----	7.3	5.37	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.

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

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Next Cal. Date
EMI Test Receiver	R & S	ESCI	11/28/2006
Plotter	HP	7440A	N/A
Dipole Antenna	EMCO	3121C	06/06/2006
Signal generator	HP	8656B	11/20/2006

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.

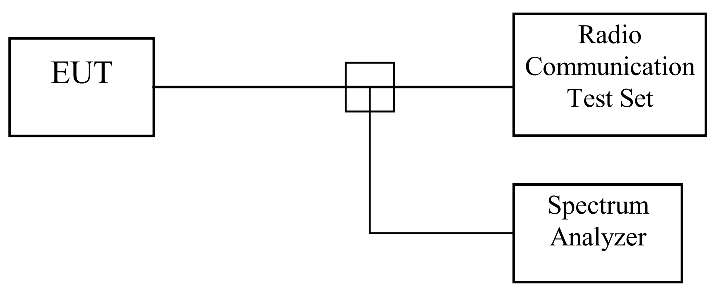
2. Repeat step 1 with changing the input frequency for 200, 500, 1000, 3000, and 5000 Hz in sequence.

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

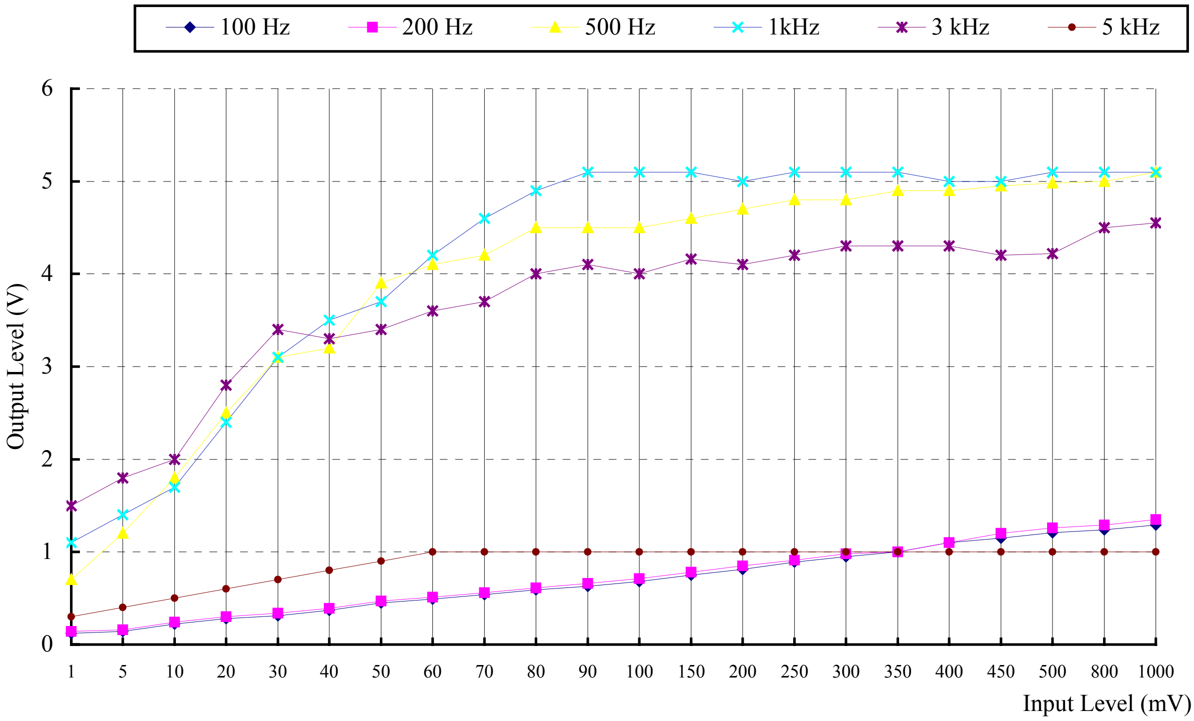


4.3 Measurement Instrument

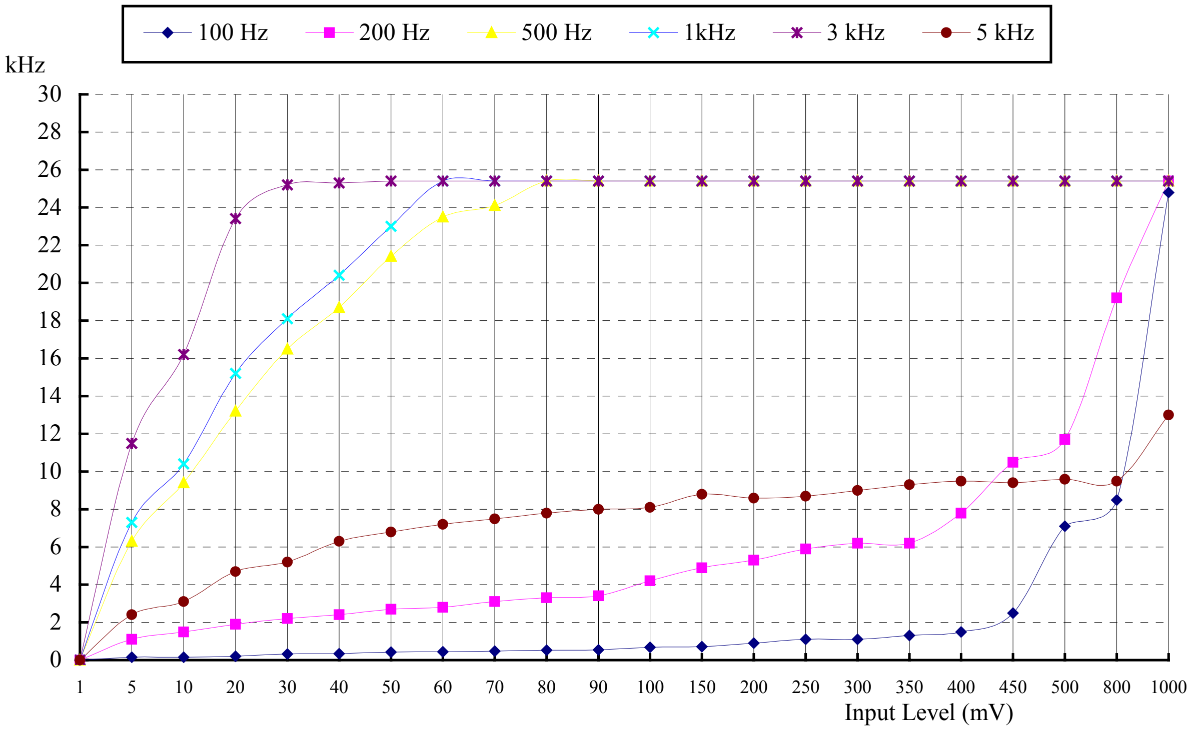
Equipment	Manufacturer	Model No.	Next Cal. Date
Radio Communication Test Set	Marconi	2955B	07/19/2006
Spectrum Analyzer	Rohde & Schwarz	FSP40	07/05/2006

4.4 Measurement Result

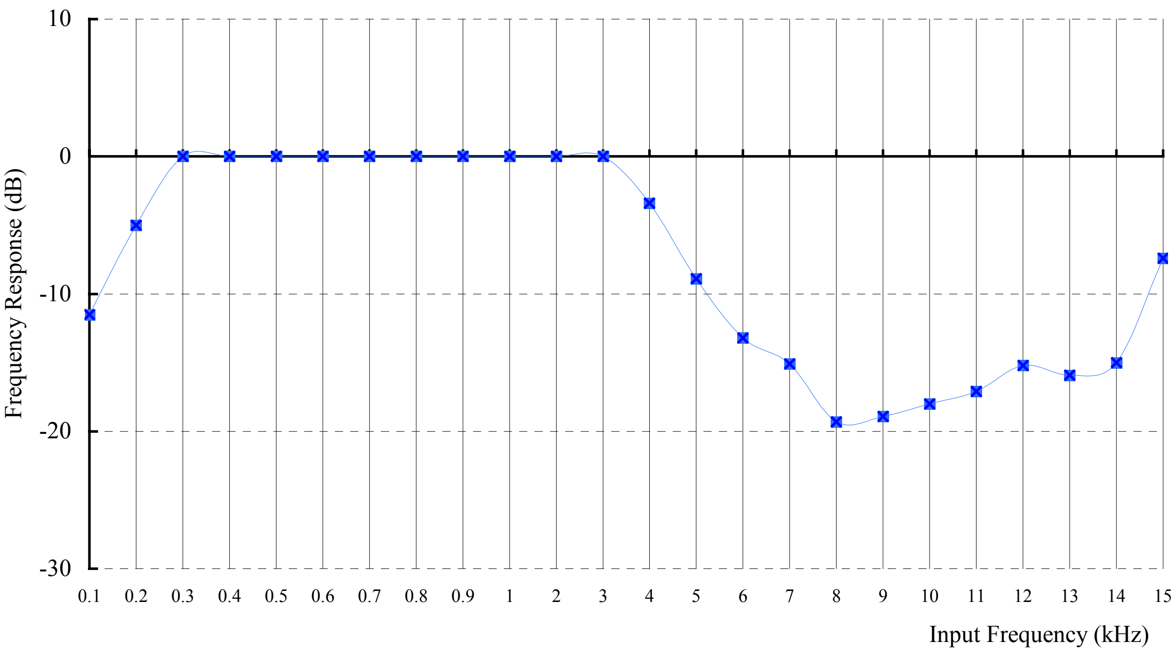
A). Frequency response



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.

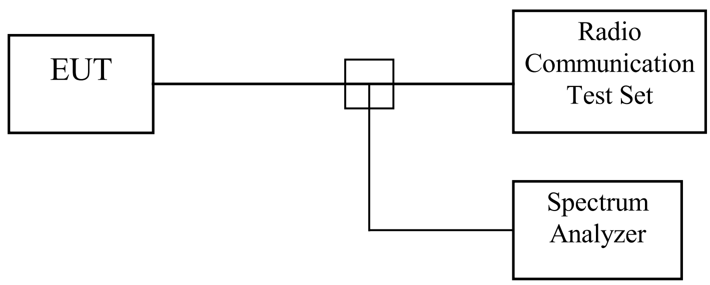
5.2 Measurement Method

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

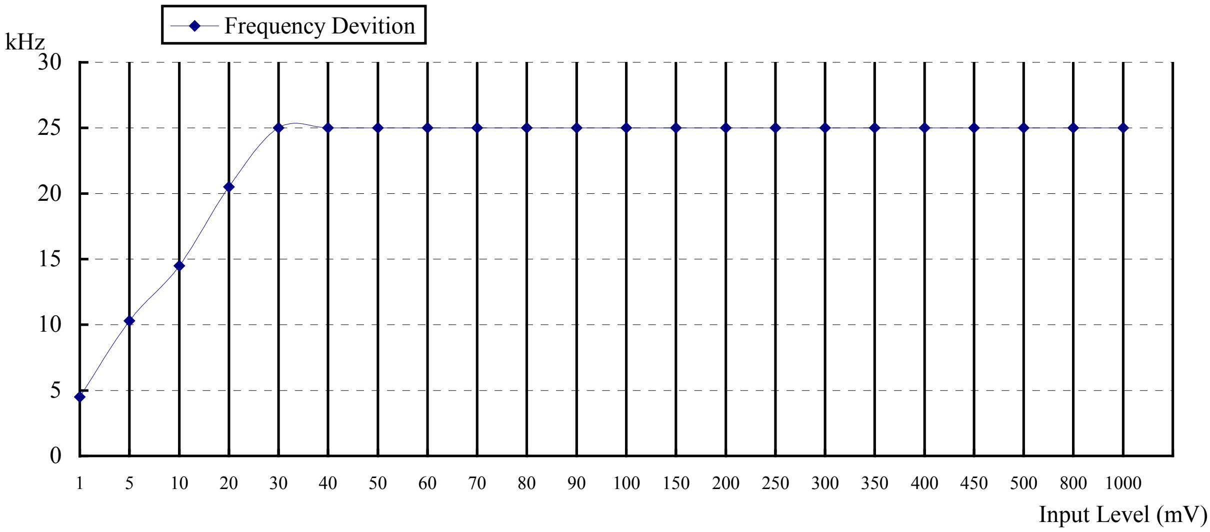
Equipment	Manufacturer	Model No.	Next Cal. Date
Radio Communication Test Set	Marconi	2955B	07/19/2006
Spectrum Analyzer	Rohde & Schwarz	FSP40	07/05/2006

5.4 Bandwidth Measured

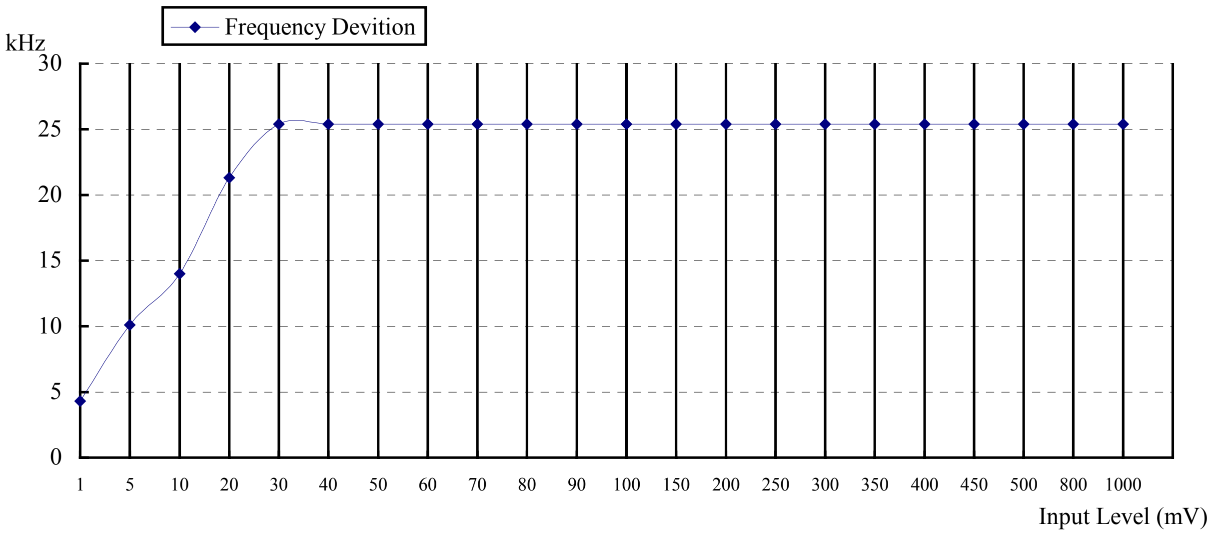
5.4.1 Input Level Derived

1. 615.000MHz

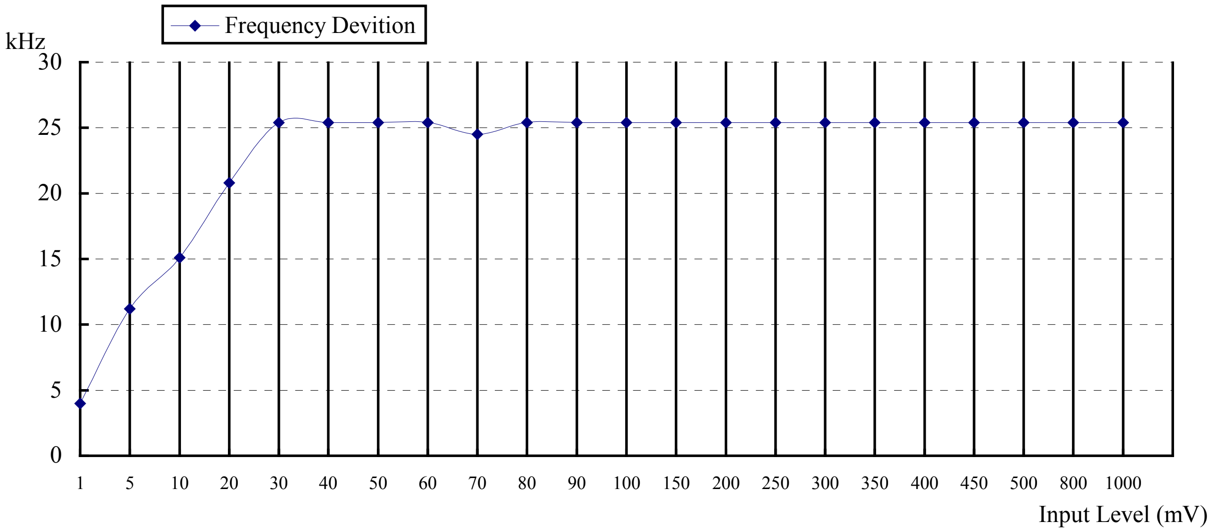
Input Audio Frequency : 2.5 kHz, Sine Wave



2. 711.000MHz



3. 805.500 MHz



The Level input to produce 50% modulation is 10 mV, therefore the magnitude 16 dB greater than it is 63 mV.

5.4.2 Occupied Bandwidth Plotted

The Channel Low 26 dB Bandwidth is 90.0KHz.
The Channel Mid 26 dB Bandwidth is 92.5KHz.
The Channel High 26 dB Bandwidth is 92.5KHz.

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	08/08/2006
Horn Antenna	EMCO	3115	08/18/2006
Log periodic Antenna	EMCO	3146	07/31/2006
Biconical Antenna	EMCO	3110B	10/05/2006
Preamplifier	Hewlett-Packard	8449B	09/13/2006
Preamplifier	Hewlett-Packard	8447D	08/03/2006

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

A. Channel Low

Operated mode : TX Test Date : Mar. 20, 2006

Temperature : 25 °C Humidity : 65 %

Unmodulated carrier output power is 7.4 dBm , or 5.49 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)
1230.000	---	---	---	---	6.4	-2.0	1.30	---	---	-13.0	---
1845.000	---	---	---	---	9.3	-2.0	1.75	---	---	-13.0	---
2460.000	---	---	---	---	9.2	-2.0	1.75	---	---	-13.0	---
3075.000	---	---	---	---	9.7	-2.0	1.75	---	---	-13.0	---
3690.000	---	---	---	---	9.6	-2.0	2.10	---	---	-13.0	---
4305.000	---	---	---	---	10.6	-2.0	2.10	---	---	-13.0	---
4920.000	---	---	---	---	10.9	-2.0	2.10	---	---	-13.0	---
5535.000	---	---	---	---	10.9	-2.0	2.60	---	---	-13.0	---
6150.000	---	---	---	---	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 : Mar. 20, 2006
Temperature : 25 °C   Humidity : 65 %

Unmodulated carrier output power is 7.5 dBm , or 5.62 mW (ERP).

The limit of spurious or harmonics is calculated as following :

7.5-[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)
1422.000	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2133.000	---	---	---	---	9.4	-2.0	1.7	---	---	-13.0	---
2844.000	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
3555.000	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4266.000	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
4977.000	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5688.000	---	---	---	---	11.0	-2.0	2.6	---	---	-13.0	---
6399.000	---	---	---	---	12.1	-2.0	2.6	---	---	-13.0	---
7110.000	---	---	---	---	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 : Mar. 20, 2006
Temperature : 25 °C Humidity : 65 %

Unmodulated carrier output power is 7.3 dBm , or 5.37 mW (ERP).

The limit of spurious or harmonics is calculated as following :

7.3-[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		
1611.000	---	---	---	---	9.1	-2.0	1.3	---	---	-13.0	---
2416.500	---	---	---	---	9.3	-2.0	1.7	---	---	-13.0	---
3222.000	---	---	---	---	9.7	-2.0	1.7	---	---	-13.0	---
4027.500	---	---	---	---	9.6	-2.0	2.1	---	---	-13.0	---
4833.000	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
5638.500	---	---	---	---	10.9	-2.0	2.1	---	---	-13.0	---
6444.000	---	---	---	---	11.9	-2.0	2.5	---	---	-13.0	---
7249.500	---	---	---	---	11.8	-2.0	2.5	---	---	-13.0	---
8055.000	---	---	---	---	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. TX(615.000MHz)

a) Emission frequencies below 1 GHz

Test Date : Mar. 20, 2006 Temperature : 25 °C Humidity : 65 %

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)
65.240	V	41.8	-16.4	25.4	40.0	-14.6	175	1.0
145.920	V	40.4	-10.3	30.1	43.5	-13.4	188	1.0
238.920	V	37.1	-4.6	32.5	46.0	-13.5	192	1.0
345.920	V	43.4	-9.9	33.5	46.0	-12.5	179	1.0
498.240	V	44.1	-4.4	39.7	46.0	-6.3	189	1.0
599.320	V	44.9	-4.5	40.4	46.0	-5.6	194	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. TX(711.000MHz)

a) Emission frequencies below 1 GHz

Test Date : Mar. 20, 2006 Temperature : 25 °C Humidity : 65 %

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)
45.120	V	36.9	-13.0	23.9	40.0	-16.1	175	1.0
98.180	V	38.8	-13.9	24.9	43.5	-18.6	188	1.0
199.210	V	33.1	-7.2	25.9	43.5	-17.6	192	1.0
334.120	V	40.9	-8.1	32.8	46.0	-13.2	174	1.0
444.180	V	42.3	-5.6	36.7	46.0	-9.3	179	1.0
596.240	V	43.4	-4.6	38.8	46.0	-7.2	188	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. TX(805.500MHz)

a) Emission frequencies below 1 GHz

Test Date : Mar. 20, 2006 Temperature : 25 °C Humidity : 65 %

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)
49.880	V	38.6	-14.1	24.5	40.0	-15.5	185	1.0
75.120	V	43.2	-15.7	27.5	40.0	-12.5	184	1.0
188.920	V	36.3	-8.5	27.8	43.5	-15.7	179	1.0
344.180	V	43.0	-9.6	33.4	46.0	-12.6	188	1.0
458.920	V	39.7	-5.2	34.5	46.0	-11.5	192	1.0
555.980	V	44.8	-5.2	39.6	46.0	-6.4	177	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.

6.6 Radiated Measurement Photos

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 variation of primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

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.

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.

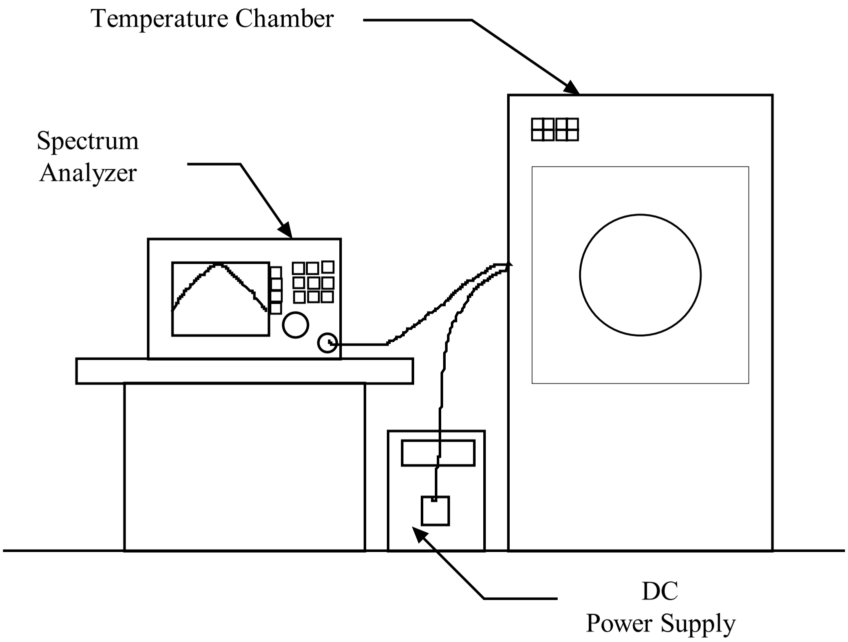
B) Frequency stability versus input voltage

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 non hand carried, battery operated device, supply the EUT primary voltage with 85 and 115 percent of the nominal value and record the frequency. 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	08/08/2006
Temperature Chamber	MALLIER	MCT-2X-M	11/01/2006

7.4 Measurement Data

A1. Frequency stability versus enviroment tempture

Reference Frequency : 615.000 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	614.9818	-0.00296	614.9836	-0.00266	615.0127	0.00206
40		614.9910	-0.00146	615.0078	0.00127	614.9904	-0.00155
30		615.0043	0.00070	615.0131	0.00214	615.0183	0.00297
20		615.0163	0.00265	615.0043	0.00070	614.9805	-0.00317
10		614.9986	-0.00023	614.9850	-0.00244	615.0067	0.00108
0		615.0036	0.00059	614.9828	-0.00279	614.9977	-0.00038
-10		615.0112	0.00182	614.9993	-0.00012	614.9985	-0.00025
-20		615.0123	0.00199	614.9959	-0.00067	614.9863	-0.00222
-30		614.9845	-0.00252	615.0162	0.00263	615.0117	0.00191

A2. Frequency stability versus end-point supplied voltage (1.6Vdc)

Reference Frequency : 615.000 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-point	614.9847	-0.00248	614.9915	-0.00139	615.0159	0.00259

B1. Frequency stability versus enviroment tempture

Reference Frequency : 711.000 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed 2 minute (MHz)	(%)	5 minute (MHz)	(%)	10 minute (MHz)	(%)
50	New Batt.	711.0071	0.00099	711.0196	0.00275	711.0113	0.00159
40		710.9866	-0.00189	711.0273	0.00384	711.0092	0.00130
30		711.0093	0.00130	710.9885	-0.00162	710.9953	-0.00066
20		710.9960	-0.00056	710.9873	-0.00178	711.0176	0.00247
10		711.0103	0.00144	711.0101	0.00143	710.9740	-0.00366
0		710.9926	-0.00104	711.0196	0.00276	710.9940	-0.00084
-10		711.0007	0.00010	710.9899	-0.00142	710.9867	-0.00186
-20		711.0046	0.00065	711.0234	0.00329	711.0122	0.00171
-30		710.9736	-0.00371	710.9742	-0.00363	711.0231	0.00325

B2. Frequency stability versus end-point supplied voltage (1.6Vdc)

Reference Frequency : 711.000 MHz Limit：0.005%							
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed 2 minute (MHz)	(%)	5 minute (MHz)	(%)	10 minute (MHz)	(%)
25	End-point	711.0049	0.00069	711.0037	0.00052	710.9767	-0.00328

C1. Frequency stability versus enviroment tempture

Reference Frequency : 805.500 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	New Batt.	805.5288	0.00357	805.5175	0.00217	805.5005	0.00006
40		805.5071	0.00088	805.5227	0.00282	805.5287	0.00356
30		805.5007	0.00008	805.4764	-0.00293	805.5170	0.00211
20		805.4777	-0.00277	805.5301	0.00374	805.5301	0.00373
10		805.5266	0.00330	805.4881	-0.00147	805.4947	-0.00066
0		805.4785	-0.00266	805.4763	-0.00295	805.4896	-0.00129
-10		805.5277	0.00343	805.5198	0.00246	805.4795	-0.00254
-20		805.5032	0.00040	805.5097	0.00120	805.4715	-0.00353
-30		805.4994	-0.00008	805.4955	-0.00056	805.5255	0.00317

C2. Frequency stability versus end-point supplied voltage (1.6Vdc)

Reference Frequency : 805.500 MHz		Limit：0.005%					
Enviroment Tempture (℃)	Power Supplied (Vac)	Frequency measured with time elapsed					
		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
25	End-point	805.4930	-0.00086	805.4720	-0.00348	805.4898	-0.00126

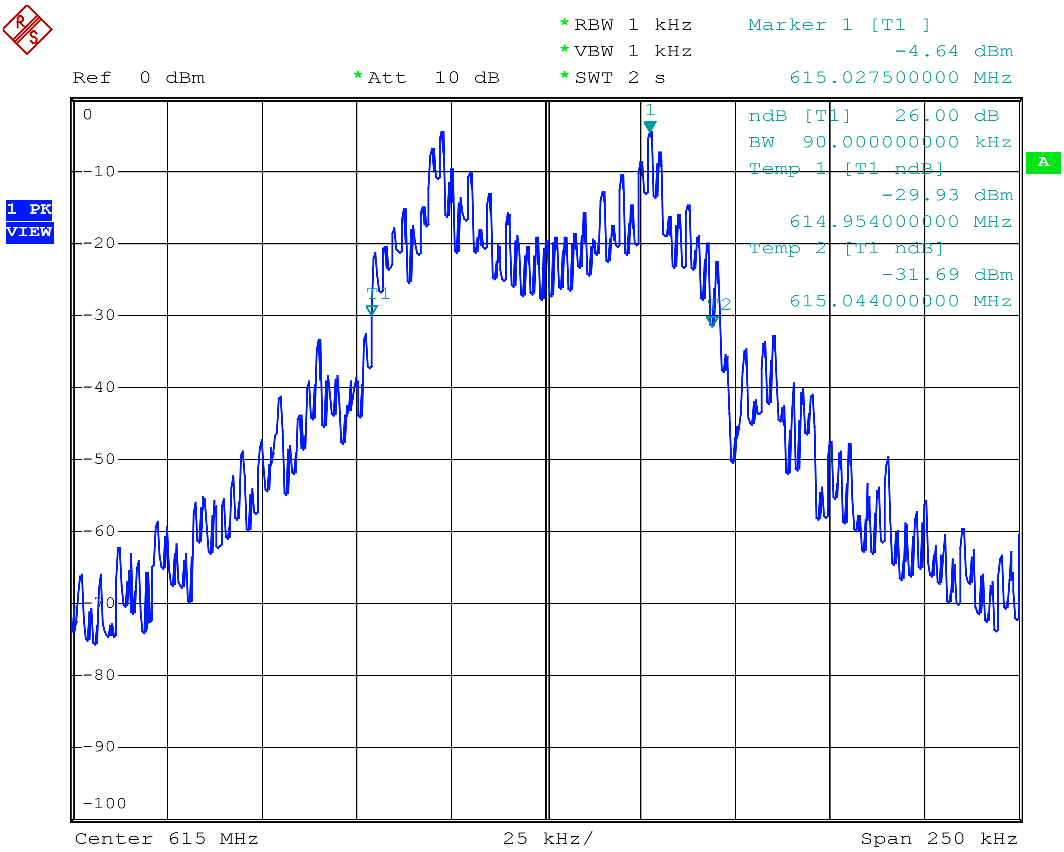
8 CONDUCTED EMISSION MEASUREMENT

8.1 Standard Applicable

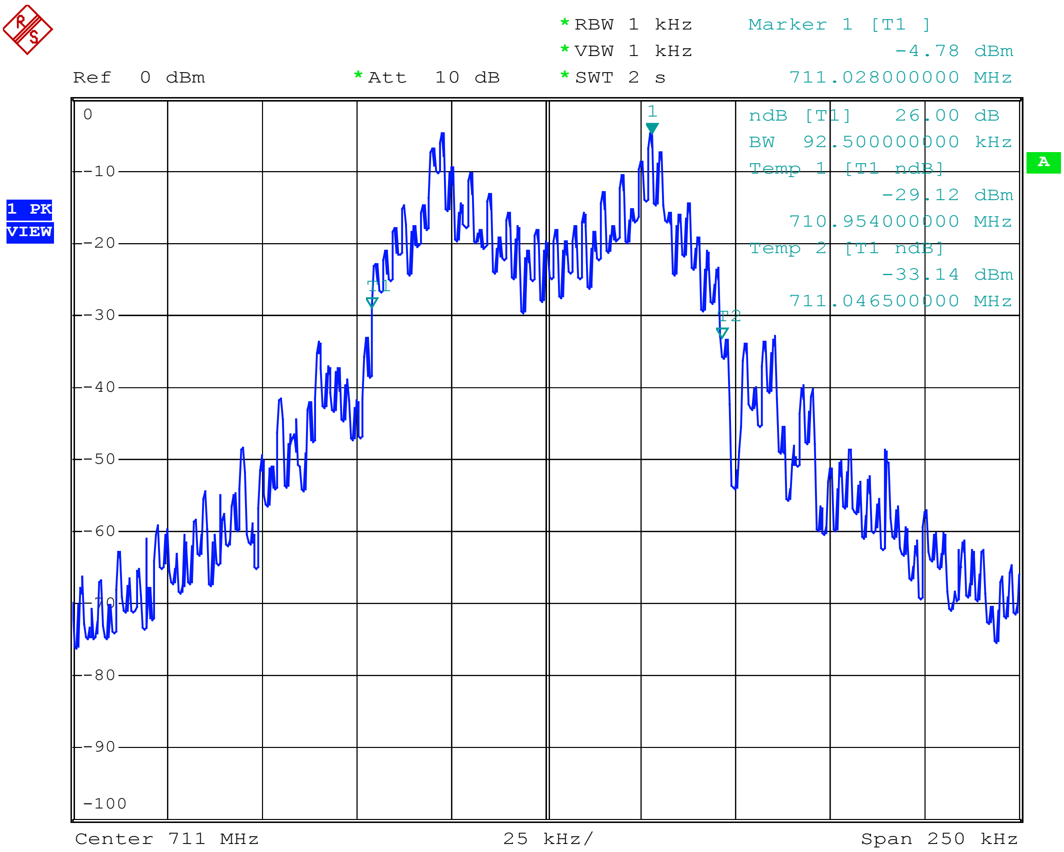
This EUT is excused from investigation of conducted emission, for it is powered by DC 3V battery only. According to §15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the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

Appendix 1 : Occupied Emission Bandwidth Plotted Data

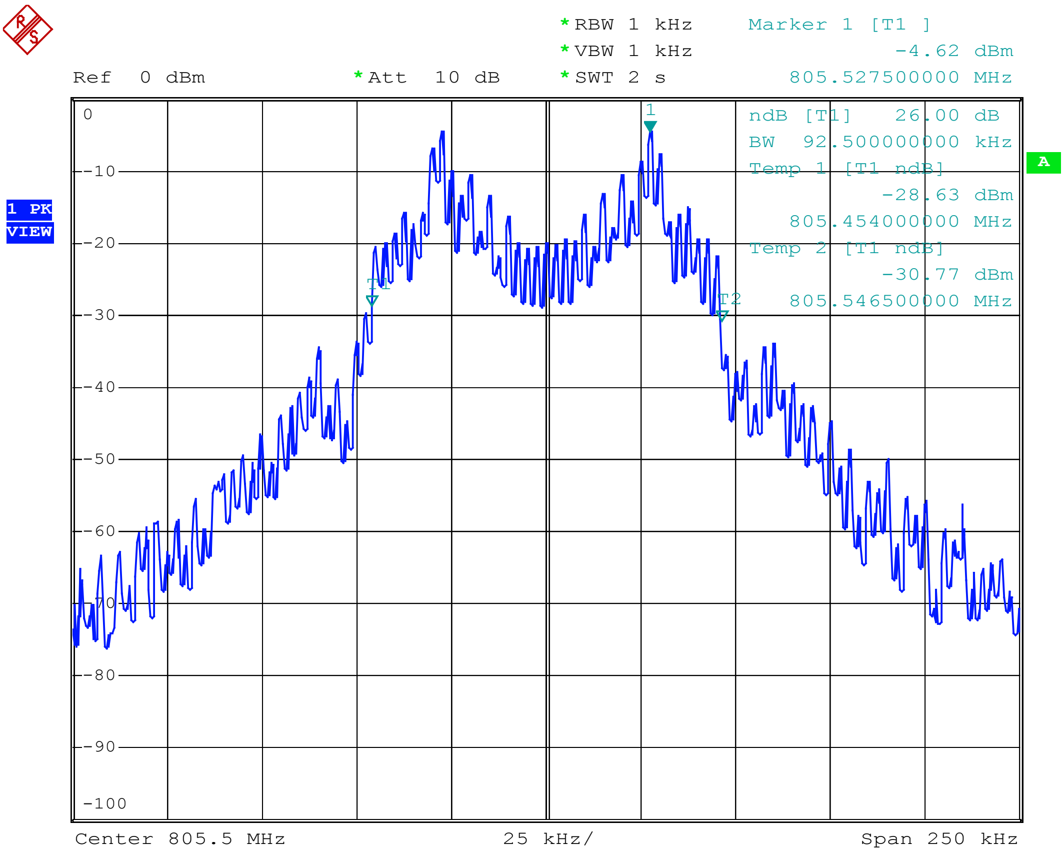
615.000MHz


*RBW 1 kHz
*VBW 1 kHz
*SWT 2 s
Ref 0 dBm
*Att 10 dB
Marker 1 [T1]
-4.64 dBm
615.027500000 MHz
ndB [T1] 26.00 dB
BW 90.000000000 kHz
Temp 1 [T1 ndB]
-29.93 dBm
614.954000000 MHz
Temp 2 [T1 ndB]
-31.69 dBm
615.044000000 MHz
1 PK VIEW
A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 615 MHz
25 kHz/
Span 250 kHz

711.000MHz

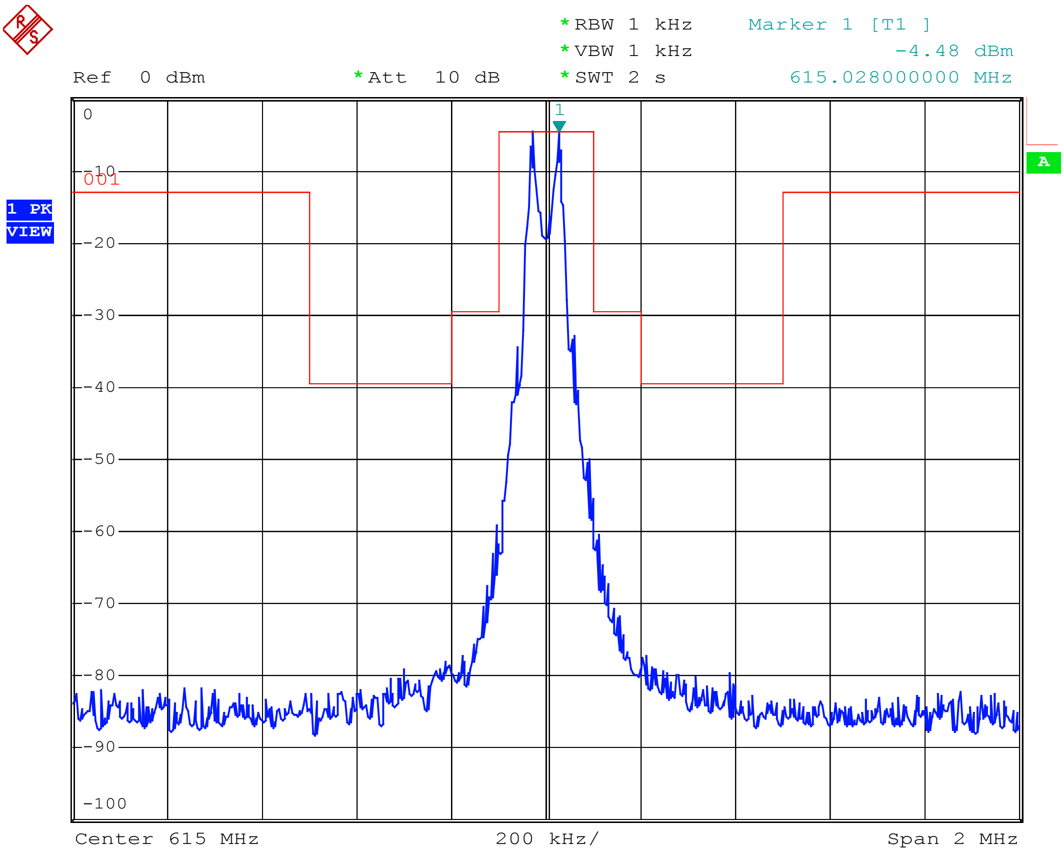

*RBW 1 kHz
*VBW 1 kHz
*SWT 2 s
Marker 1 [T1]
-4.78 dBm
711.028000000 MHz
Ref 0 dBm
*Att 10 dB
ndB [T1] 26.00 dB
BW 92.500000000 kHz
Temp 1 [T1 ndB]
-29.12 dBm
710.954000000 MHz
Temp 2 [T1 ndB]
-33.14 dBm
711.046500000 MHz
1 PK
VIEW
A
Center 711 MHz
25 kHz/
Span 250 kHz

805.500MHz

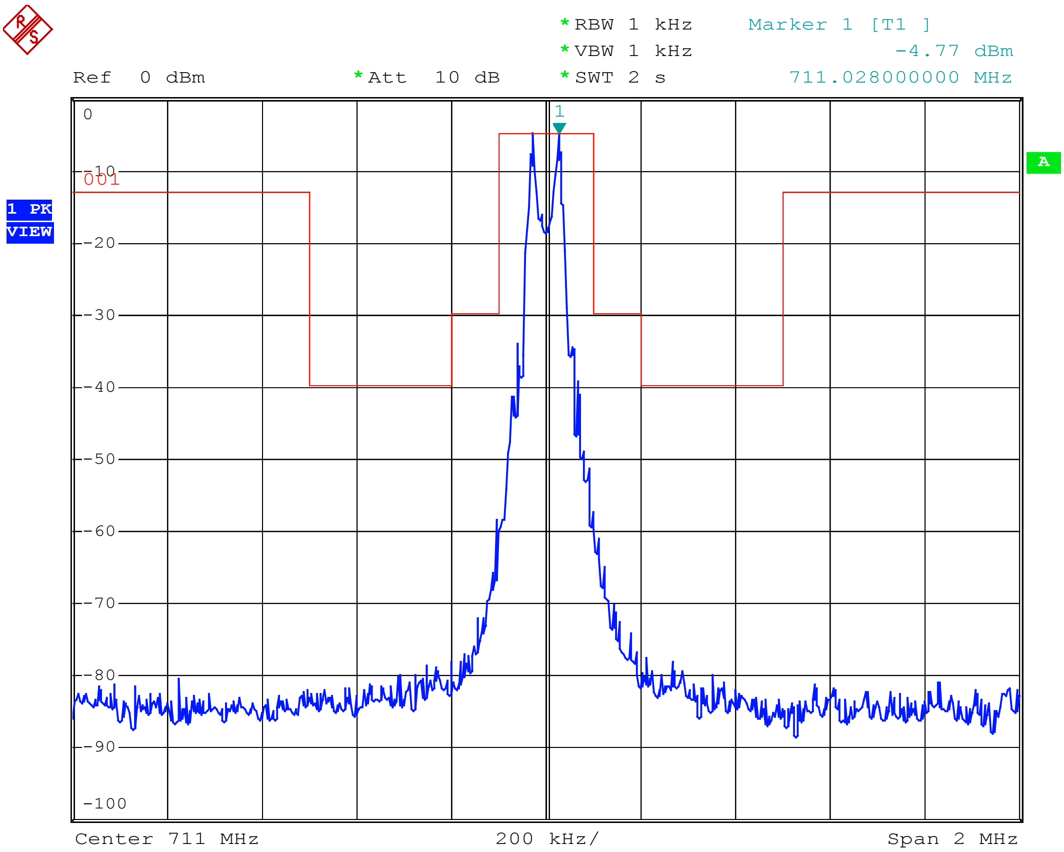

*RBW 1 kHz
*VBW 1 kHz
*SWT 2 s
Ref 0 dBm
*Att 10 dB
Marker 1 [T1]
-4.62 dBm
805.527500000 MHz
ndB [T1] 26.00 dB
BW 92.500000000 kHz
Temp 1 [T1 ndB]
-28.63 dBm
805.454000000 MHz
Temp 2 [T1 ndB]
-30.77 dBm
805.546500000 MHz
1 PK
VIEW
A
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Center 805.5 MHz
25 kHz/
Span 250 kHz

Appendix 2 : Emission Mask Plotted Data

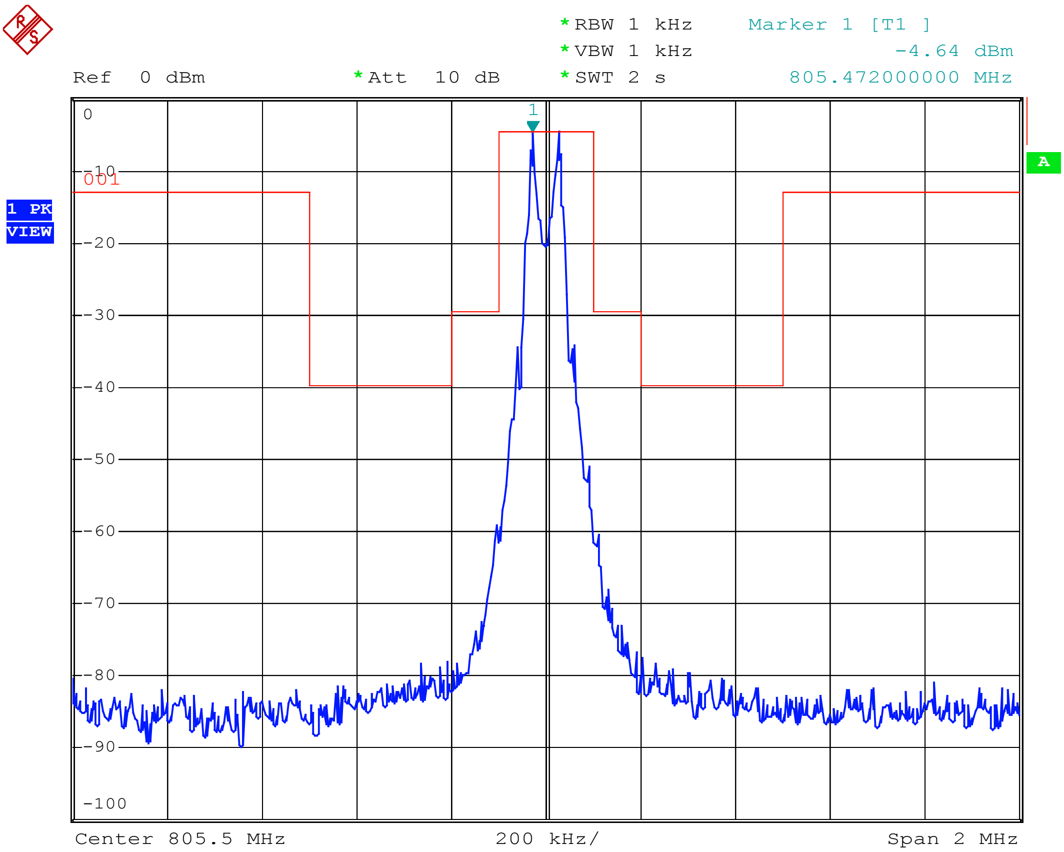
615.000MHz


*RBW 1 kHz
Marker 1 [T1]
*VBW 1 kHz
-4.48 dBm
Ref 0 dBm
*Att 10 dB
*SWT 2 s
615.028000000 MHz
0
-10
001
1 PK
VIEW
-20
-30
-40
-50
-60
-70
-80
-90
-100
1
A
Center 615 MHz
200 kHz/
Span 2 MHz

711.000MHz


*RBW 1 kHz
Marker 1 [T1]
*VBW 1 kHz
-4.77 dBm
Ref 0 dBm
*Att 10 dB
*SWT 2 s
711.028000000 MHz
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
001
1 PK
VIEW
A
1
Center 711 MHz
200 kHz/
Span 2 MHz

805.500MHz


*RBW 1 kHz
Marker 1 [T1]
*VBW 1 kHz
-4.64 dBm
Ref 0 dBm
*Att 10 dB
*SWT 2 s
805.472000000 MHz
0
-10
001
1 PK
VIEW
-20
-30
-40
-50
-60
-70
-80
-90
-100
A
Center 805.5 MHz
200 kHz/
Span 2 MHz