

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C AND RSS-210 REQUIREMENT**

OF

XPOWER POCKET INVERTER FM

FCC ID: RK8-PP100FM

IC : 7172A-PP100FM

MODEL No.: PP100FM

BRAND NAME: N/A

REPORT NO: WE07060001

ISSUE DATE: July 3, 2007

Prepared for

**NEW FOCUS LIGHTING AND
POWER TECHNOLOGY (SHANGHAI) CO., LTD.
NO. 9608, BEIQING ROAD, QINGPU, SHANGHAI, CHINA**

Prepared by

**SHENZHEN HUATONGWEI INTERNATIONAL
INSPECTION CO., LTD**

d.b.a.

**SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO., LTD
HUATONGWEI BUILDING, KEJI RD. 12 S., HIGH-TECH PARK,
NANSHAN DISTRICT, SHENZHEN,
GUANGDONG, P.R.CHINA**

TEL: 86-755-26748099

FAX: 86-755-26748005

VERIFICATION OF COMPLIANCE

Applicant:	New Focus Lighting and Power Technology (Shanghai) Co., Ltd. No. 9608, Beiqing Road, Qingpu, Shanghai, China
Product Description:	XPOWER POCKET INVERTER FM
Brand Name:	N/A
Model Number:	PP100FM
Serial Number:	N/A
File Number:	WE07060001
Date of Test:	June 06, 2007 ~ June 22, 2007

We hereby certify that:

The above equipment was tested by SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.239 and RSS-210 Issue 7 June 2007.

The test results of this report relate only to the tested sample identified in this report.

Approved By

Jimmy Li / Q.A. Manager
SHENZHEN HUA TONG WEI
INTERNATIONAL INSPECTION CO., LTD

Reviewed By

Tracy Qi / RF Engineer
SHENZHEN HUA TONG WEI
INTERNATIONAL INSPECTION CO., LTD

Table of Contents

1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION	5
1.2 RELATED SUBMITTAL(S) / GRANT (S)	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 SPECIAL ACCESSORIES	5
1.6 EQUIPMENT MODIFICATIONS	6
1.7. LABORATORY ACCREDITATIONS AND LISTINGS	6
2. SYSTEM TEST CONFIGURATION	8
2.1 EUT CONFIGURATION	8
2.2 EUT EXERCISE	8
2.3 TEST PROCEDURE	8
2.4 LIMITATION	8
2.5 CONFIGURATION OF TESTED SYSTEM	10
3. SUMMARY OF TEST RESULTS	11
4. DESCRIPTION OF TEST MODES	11
5. CONDUCTED EMISSIONS TEST (NOT APPLICABLE IN THIS REPORT)	12
5.1 MEASUREMENT PROCEDURE:	12
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	12
5.3 MEASUREMENT EQUIPMENT USED:	12
5.4 MEASUREMENT RESULT:	12
5.5 CONDUCTED MEASUREMENT PHOTOS:	12
6. RADIATED EMISSION TEST	13
6.1 MEASUREMENT PROCEDURE	13
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	14
6.3 MEASUREMENT EQUIPMENT USED:	15
6.4 FIELD STRENGTH CALCULATION	15
6.5 MEASUREMENT RESULT	16
7. OCCUPIED BANDWIDTH	19
7.1 MEASUREMENT PROCEDURE	19
7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	19
7.3 MEASUREMENT EQUIPMENT USED:	19
7.4 MEASUREMENT RESULTS:	19

APPENDIX 1	21
PHOTOGRAPHS OF SET UP	21
APPENDIX 2	23
PHOTOGRAPHS OF EUT	23

1. GENERAL INFORMATION

1.1 Product Description

The EUT is a short range, lower power, wireless transmitter designed as an “audio sender” It is designed by way of utilizing the FM modulation achieves the system operating.

The tuning is done digitally using up/down push buttons. The end user can only select 88.1 to 107.9 MHz

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 88.1~107.9MHz
- B). Modulation: FM
- C). Antenna Designation: Non-User Replaceable (Fixed)
- D). Power Supply: DC 12V from battery.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: RK8-PP100FM and IC: 7172A-PP100FM filing to comply with Section 15.239(b) of the FCC Part 15, Subpart C Rules and RSS-210 Issue 7 September 2007.. The composite system (receiver) is compliance with Subpart B is authorized under a verification procedure

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The fully anechoic chamber test site and conducted measurement facility used to collect the radiated data is located on the address of SHENZHEN HUA TONG WEI INTERNATIONAL INSPECTION CO., LTD Huatongwei Building, Keji Rd. 12 S., High-tech Park, Nanshan District, Shenzhen, Guangdong, P.R.China

The fully anechoic chamber Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements.

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

1.7. Laboratory Accreditations and listings

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 1999 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 1999 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is from Aug 24, 2005 to Sept 30, 2007

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date September 12, 2006.

IC-Registration No.: 5377

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November 28th, 2005.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

IECEE CB

Shenzhen Huatongwei International Inspection Co Ltd has been assessed and determined to fully comply with the requirements of ISO/IEC 17025: 2005-05, The Basic Rules, IECEE 01: 2006-10 and Rules of Procedure IECEE 02: 2006-10, and the relevant IECEE CB-Scheme Operational Documents.

It is therefore entitled to operate as a CB Testing Laboratory under the responsibility of Nemko A/S. This certificate remains valid until May 25th 2009 at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Program administered by the IECEE CB Scheme.

DNV

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until 19 April, 2007.

2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions (Not applicable in this report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. Emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission (Not applicable in this report)

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note		
1.The lower limit shall apply at the transition frequencies		
2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

- The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.
- The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit) and RSS-210 section 2.7 as below.

Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance(m)	Field strength at 3m $\text{dB}\mu\text{V/m}$
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

- Remark:
- Emission level in $\text{dB}\mu\text{V/m}=20 \log (\mu\text{V/m})$
 - Measurement was performed at an antenna to the closed point of EUT distance of meters.
 - Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205
 - Emission spurious frequency which appearing within the Restricted Bands specified in provision of §15.205, then the general radiated emission limits in § 15.209 apply.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

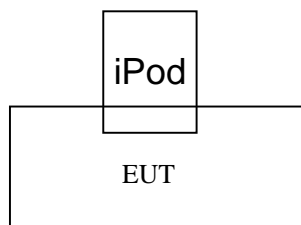


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1	iPod Video	N/A	A1136	N/A	JQ6410K5V9M	

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	N/A
§15.239	Radiated Emission	Compliant
§15.239	Occupied Bandwidth	Compliant

4. DESCRIPTION OF TEST MODES

1. The EUT has been tested under normal operating condition.
2. The EUT stay in continuous transmitting mode. Three axes (X,Y,Z) are chosen for testing.

5. CONDUCTED EMISSIONS TEST (Not applicable in this report)**5.1 Measurement Procedure:**

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

N/A

5.3 Measurement Equipment Used:

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS30	100038	2006/11	2007/10
ARTIFICIAL MAINS	ROHDE & SCHWARZ	ESH2-Z5	100028	2006/11	2007/10
PULSE LIMITER	ROHDE & SCHWARZ	ESHSZ2	100044	2006/11	2007/10
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 V1.71	N/A	2006/11	2007/10

5.4 Measurement Result:

N/A

5.5 Conducted Measurement Photos:

N/A

6. RADIATED EMISSION TEST

6.1 Measurement Procedure

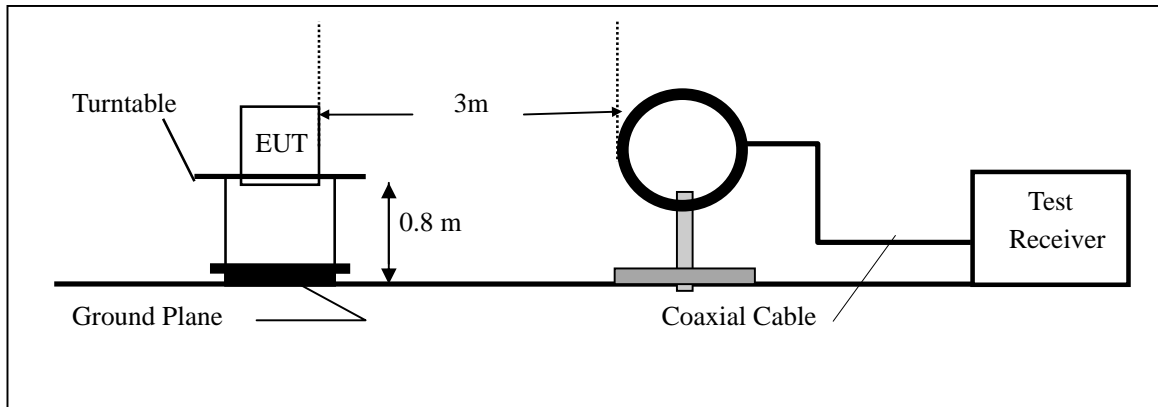
- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on at least ten highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

Note:

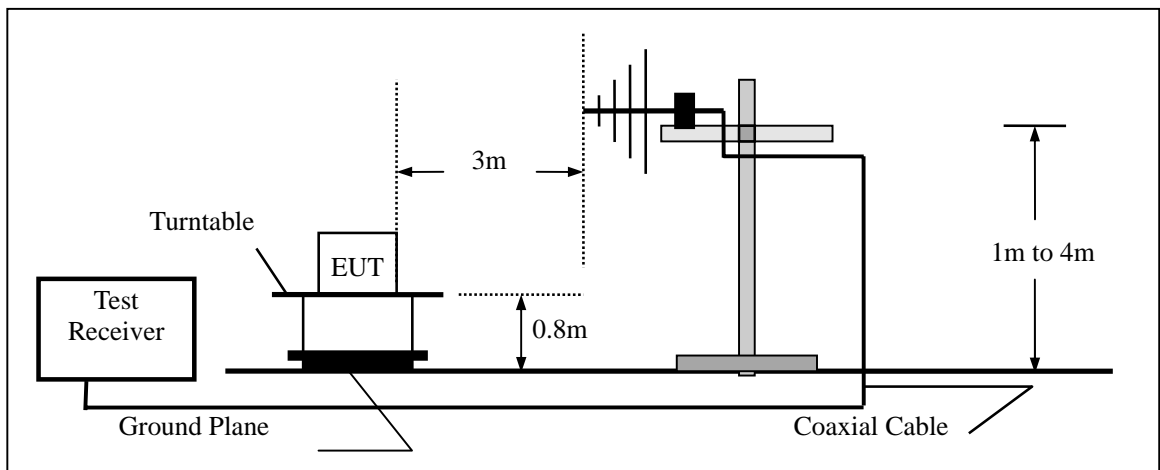
Three axes are chosen for pretest, the Z axis is the worst mode for final test.

6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



6.3 Measurement Equipment Used:

3/5 Anechoic Chamber Radiation Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
ULTRA-BROADBAND ANTENNA	ROHDE & SCHWARZ	HL562	100015	2006/11	2007/10
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2006/11	2007/10
RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	N/A	N/A
TURNTABLE	ETS	2088	2149	N/A	N/A
ANTENNA MAST	ETS	2075	2346	N/A	N/A
EMI TEST SOFTWARE	ROHDE & SCHWARZ	ES-K1 V1.71	N/A	2006/11	2007/10

6.4 Field Strength Calculation

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

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

6.5 Measurement Result

TEST PROCEDURE: The procedure used was ANSI STANDARD C63.4-2003. The spectrum was scanned from 30 MHz to 1000 MHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The UUT was tested in 3 orthogonal planes.

Operation Mode: Transmitting Mode on Z Axis

Test Date: June 16, 2007

Fundamental Frequency: 88.1 MHz

Test By: Tracy Qi

Rules Part No.: FCC Part 15.239 and Annex A2.8(a)

Temperature: 23°C

Humidity: 53 %

Requirements: Carrier frequency will not exceeds 48.0 dBuV/m at 3M.

TEST DATA

Frequency (MHz)	Read dBuV PK	Read dBuV AV	Polar	Ant Height m	Ant./CL Amp.CF(dB) dB	Result dBuV/m PK	Result dBuV/m AV	Limit dBuV/m PK	Limit dBuV/m AV	Margin dBuV/m PK	Margin dBuV/m AV
88.1	34.3	24.0	H	2.8	11.7	46.0	35.7	68	48	-22.0	-12.3
88.1	23.0	18.4	V	2.3	11.7	34.7	30.1	68	48	-33.3	-17.9

Frequency (MHz)	Read dBuV PK	Read dBuV AV	Polar	Ant Height m	Ant./CL Amp.CF(dB) dB	Result dBuV/m PK	Result dBuV/m AV	Limit dBuV/m PK	Limit dBuV/m AV	Margin dBuV/m PK	Margin dBuV/m AV
98.1	38.7	24.0	H	2.2	14.2	52.9	38.2	68	48	-15.1	-9.8
98.1	26.7	18.4	V	2.4	14.2	40.9	32.6	68	48	-27.1	-15.4

Frequency (MHz)	Read dBuV PK	Read dBuV AV	Polar	Ant Height m	Ant./CL Amp.CF(dB) dB	Result dBuV/m PK	Result dBuV/m AV	Limit dBuV/m PK	Limit dBuV/m AV	Margin dBuV/m PK	Margin dBuV/m AV
107.9	43.6	25.7	H	2.5	14.1	57.7	39.8	68	48	-10.3	-8.2
107.9	32.5	22.3	V	2.4	14.1	46.6	36.4	68	48	-21.4	-11.6

Remark:

- (1) Measuring frequencies from 25 MHz to the 1GHz.
- (2) The IF bandwidth of EMI Test Receiver between 25MHz to 1GHz was 120KHz.

TEST RESULTS: THE UNIT DOES MEET THE FCC AND RSS-210 REQUIREMENTS.

Operation Mode: Transmitting Mode on Z Axis**Test Date:** June 16, 2007**Fundamental Frequency:** 88.1 MHz / 98.1 MHz / 107.9 MHz**Test By:** Tracy Qi**Rules Part No.:** FCC Part 15.239 and RSS-210**Temperature:** 23°C**Humidity:** 53 %**Requirements:** OUT-OF-BAND EMISSIONS SHALL NOT EXCEED:

30 -88 MHz	40.0 dBuV/m MEASURED AT 3 METERS
88 - 216 MHz	43.5 dBuV/m
216 - 960 MHz	46.0 dBuV/m
ABOVE 960 MHz	54.0 dBuV/m

88.1 MHz

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
176.20	32.8	H	2.0	11.5	43.5	-10.7
440.50	37.1	H	2.0	20.2	46.0	-8.9
528.60	31.4	H	2.5	20.7	46.0	-14.6
Other	--					

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
176.20	23.8	V	2.1	11.5	43.5	-19.7
616.7	30.6	V	2.3	20.7	46.0	-15.4
Other	--					

98.1 MHz

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
196.20	38.5	H	2.0	10.9	43.5	-5.0
294.30	34.9	H	2.1	13.6	46.0	-11.1
392.40	35.2	H	2.5	19.8	46.0	-10.8
Other	--					

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
196.20	28.9	V	2.0	10.9	43.5	-14.6
294.30	23.5	V	2.3	13.6	46.0	-22.5
392.40	27.1	V	2.2	19.8	46.0	-18.9
Other	--					

107.9 MHz

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
215.80	40.2	H	2.0	11.1	43.5	-3.3
323.70	39.7	H	2.2	15.5	46.0	-6.3
431.60	40.1	H	2.4	20.2	46.0	-5.9
Other	--					

Frequency (MHz)	Result (dBuV/m)	Polar H/V	Ant Height(m)	Ant./CL Antenna Amp.CF(dB)	Limit (dBuV/m)	Margin (dBuV/m)
215.80	34.6	V	2.0	11.1	43.5	-8.9
323.70	28.4	V	2.3	15.5	46.0	-17.6
431.60	27.4	V	2.4	20.2	46.0	-18.6
Other	--					

SAMPLE CALCULATION: FSdBuV/m = MR (dBuV) + ACFdB.

Remark :

- (1) Measuring frequencies from 30 MHz to the 1GHz .
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
- (3) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (4) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz.

TEST RESULTS: THE UNIT DOES MEET THE FCC AND RSS-210 REQUIREMENTS.

7. OCCUPIED BANDWIDTH

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Based on FCC Part15 C Section 15.239(a): RBW= 10KHz. VBW= 30 KHz, Span=200 KHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.

7.2 Test SET-UP (Block Diagram of Configuration)

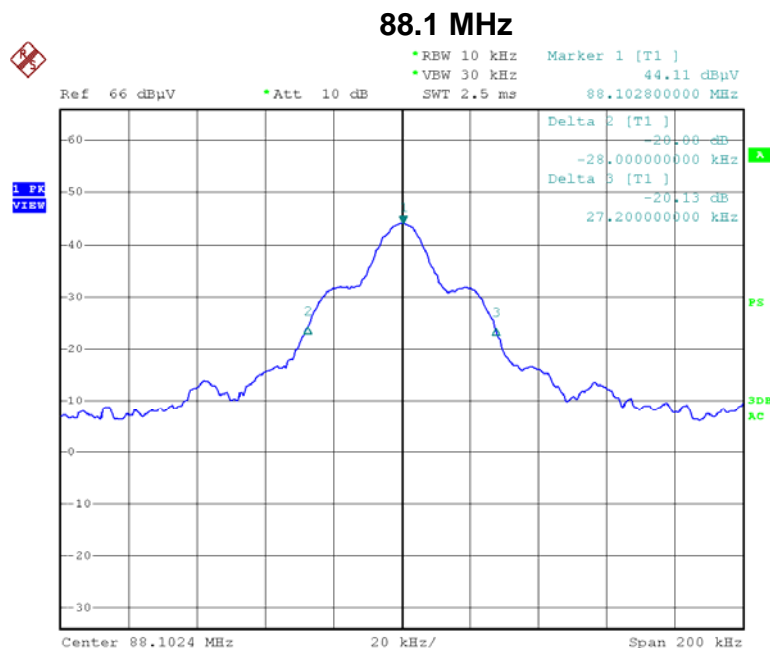
Same as 6.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

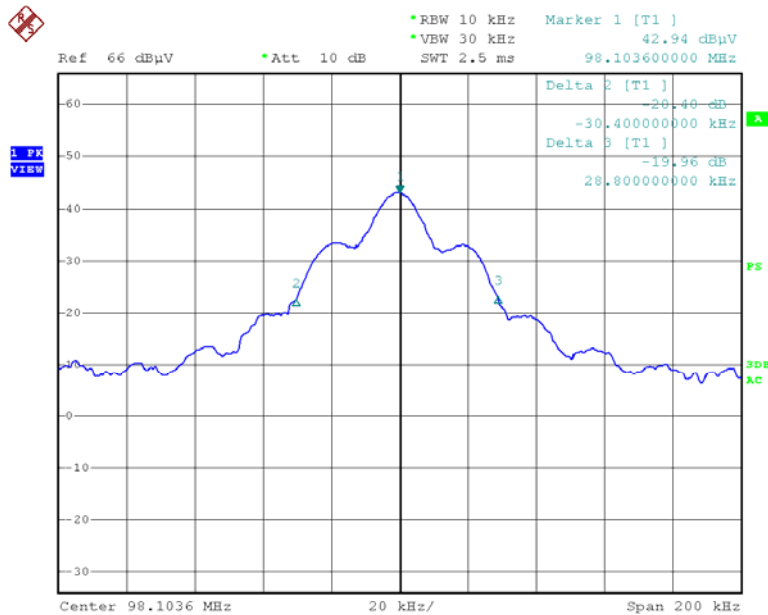
Same as 6.3 Radiated Emission Measurement.

7.4 Measurement Results:

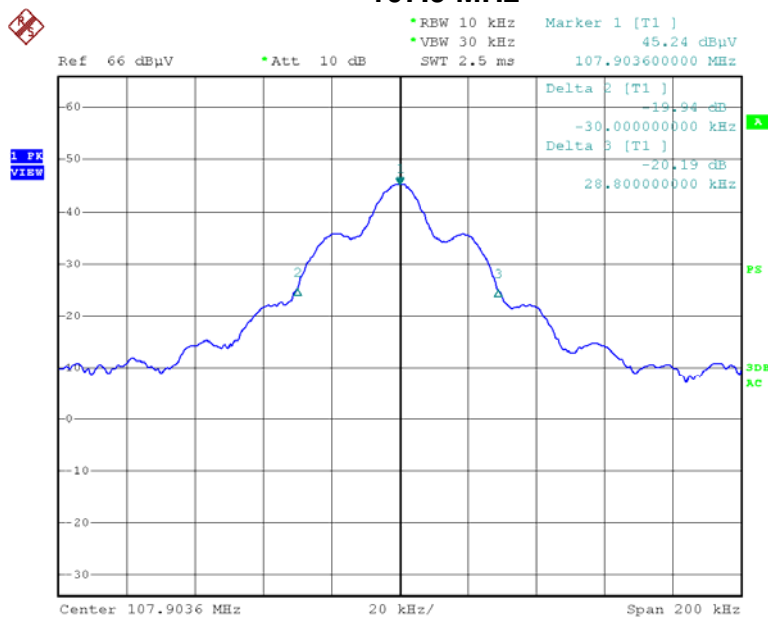
The graph as below represents the emissions take for this device.



Date: 7.JUN.2007 18:12:03

98.1 MHz

Date: 7.JUN.2007 18:15:17

107.9 MHz

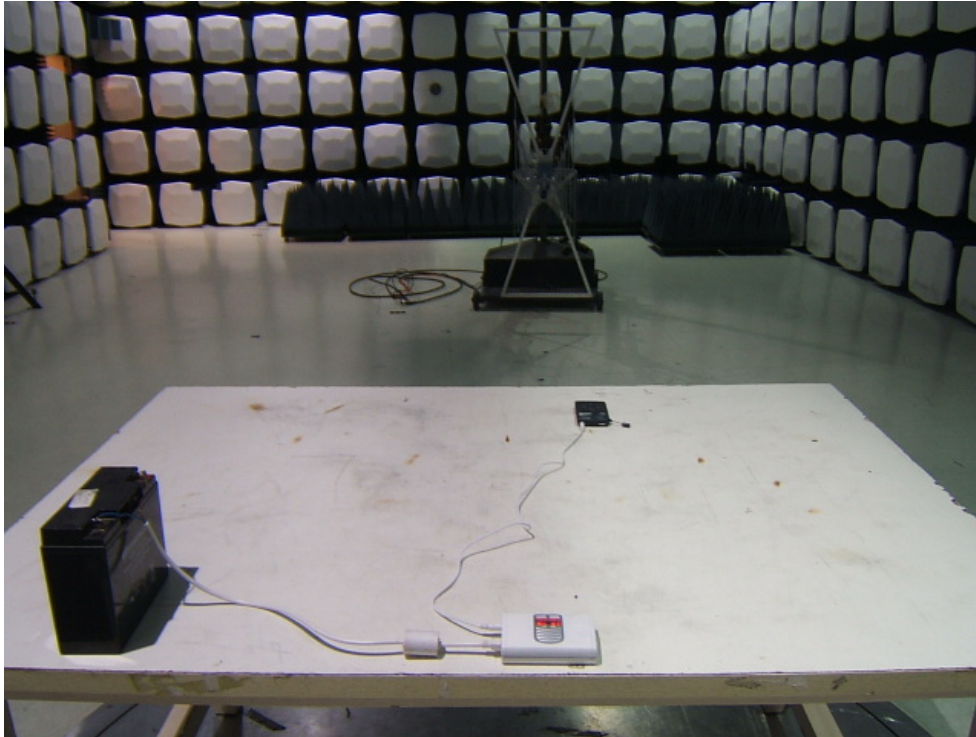
Date: 7.JUN.2007 18:13:25

TEST RESULTS: THE UNIT DOES MEET THE FCC AND RSS-210 ANNEX A2.8 REQUIREMENTS.

APPENDIX 1

PHOTOGRAPHS OF SET UP

Radiated Emission Setup Photo



APPENDIX 2

PHOTOGRAPHS OF EUT

Top View of EUT



Bottom View of EUT



Front View of EUT



Back View of EUT



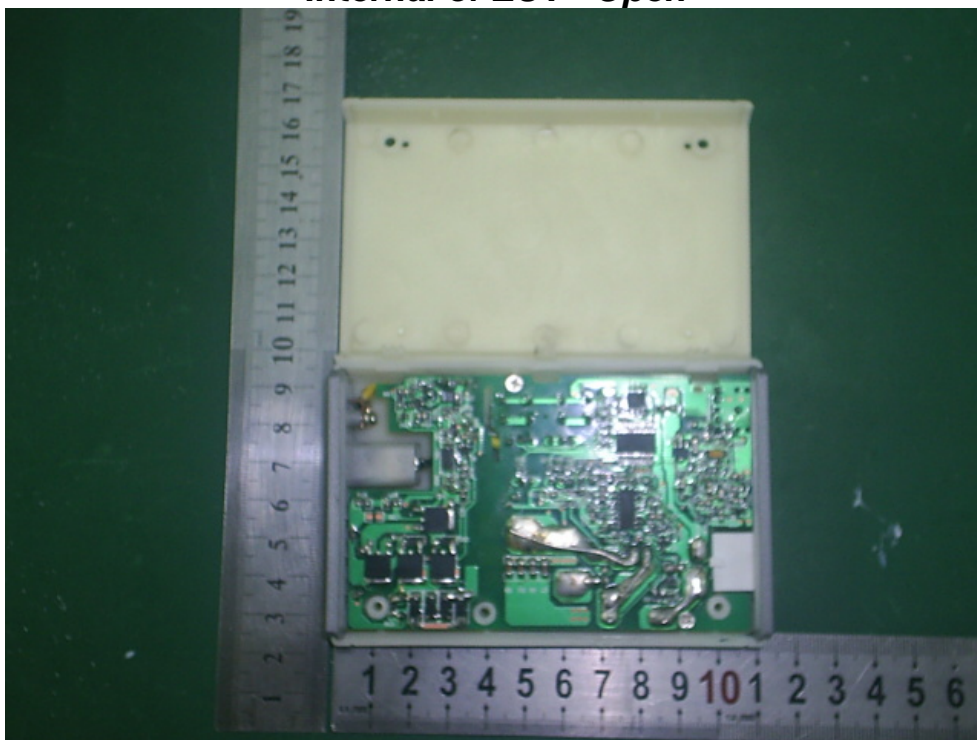
Left View of EUT



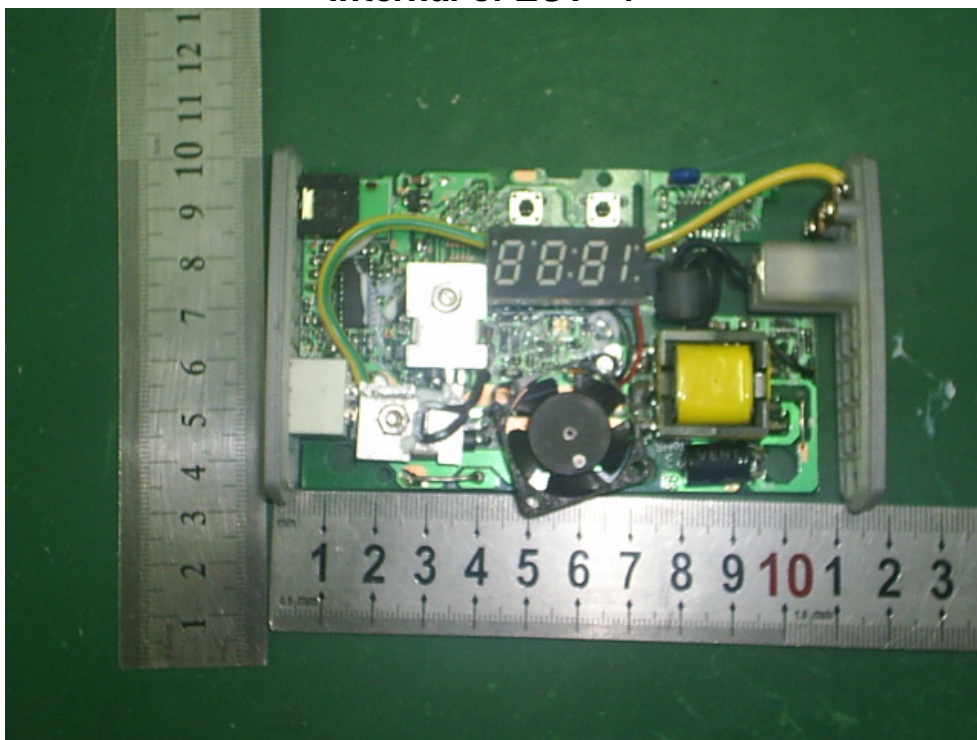
Right View of EUT



Internal of EUT– Open



Internal of EUT– 1



Internal of EUT- 2

