

FCC PART 15 B COMPLIANCE REPORT

for

Electromagnetic Emissions

of

900MHz WIRELESS SPEAKER SYSTEMS

Trade Name : N/A
Model Number : SP2690
Serial Number : N/A
Report Number : WE07080001
Date of Issue : Sep 10, 2007

Prepared for :

UNI-ART PRECISE PRODUCTS LTD.
11-12/F, YUE XIU INDUSTRIAL BUILDING, 87 HUNG TO ROAD
KOWLOON, HONG KONG

Prepared by:

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d.b.a.

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1. VERIFICATION OF COMPLIANCE

Equipment Under Test: 900MHz Wireless Speaker System

Trade Name: N/A

Model Number: SP2690

Serial Number: N/A

Applicant: **Uni-Art Precise Products Ltd.**
11-12/F, Yue Xiu Industrial Building, 87 Hung To Road,
Kowloon, Hong Kong

Manufacturer: **Uni-Art Precise Products Ltd.**
11-12/F, Yue Xiu Industrial Building, 87 Hung To Road,
Kowloon, Hong Kong

Type of Test: FCC Part 15 B

Measurement Procedure: ANSI C63.4: 2003

File Number: WE07080001

Date of test: Aug 12, 2007 ~ Sep 01, 2007

Deviation: None

Condition of Test Sample: Normal

The above equipment was tested by SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO., LTD., for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

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

Approved By



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

Reviewed By



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

2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

The EUT is a short range, lower power, 900MHz Wireless speaker system Receiver (for more details, refer to the user's manual of the EUT).

A major technical descriptions of EUT is described as following:

- A). Antenna Designation: Non-User Replaceable (Integral without external RF Port)
- B). Power Supply: DC 12V Powered by adapter

2.2 RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for FCC ID: MVASP2690-001R filing to comply with FCC Part 15B.

2.3 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.

2.4 TEST FACILITY

The semi-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.

2.5 SPECIAL ACCESSORIES

Not available for this EUT intended for grant.

2.6 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

2.7 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.

3. PRODUCT INFORMATION

Housing Type: Plastic

EUT Power Rating: Powered by AC 120V/60Hz

Power during Test: Powered by AC 120V/60Hz

I/O Port of EUT:

I/O Port Type	Q'TY	Tested with
AV Output	N/A	N/A
AC 120V/60Hz Input	N/A	N/A

4. SUPPORT EQUIPMENT

No.	Equipment	Model#	Serial#	Trade Name	Data Cable
1.	N/A	N/A	N/A	N/A	N/A

****Note:** All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

5. TEST RESULTS EMISSION

5.1 CONDUCTED EMISSION TEST

5.1.1 MEASUREMENT PROCEDURE (PRELIMINARY LINE CONDUCTED EMISSION TEST)

- 1) The EUT is placed on a 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 30 MHz using CISPR Quasi-Peak and average detector mode.
- 2)
- 3) Support equipment, if needed, was placed as per ANSI C63.4.
- 4) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 5) The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 6) All support equipments received AC power from a second LISN, if any.
- 7) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 8) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- 9) During the above scans, the emissions were maximized by cable manipulation.
- 10) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test			
Frequency Range Investigated		150KHz To 30 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
NORMAL Operation	08/12/2007	SP2690(L,N)	☒

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

5.1.2 MEASUREMENT PROCEDURE (FINAL LINE CONDUCTED EMISSION TEST)

- 1) EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Peak Raw dBuV	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
xx.xxx	43.90	---	---	56.00	46.00	---	-2.10	L 1

Freq.

= Emission frequency in MHz

Raw dBuV

= Uncorrected Analyzer/Receiver reading

Limit dBuV

= Limit stated in standard

Margin dB

= Reading in reference to limit

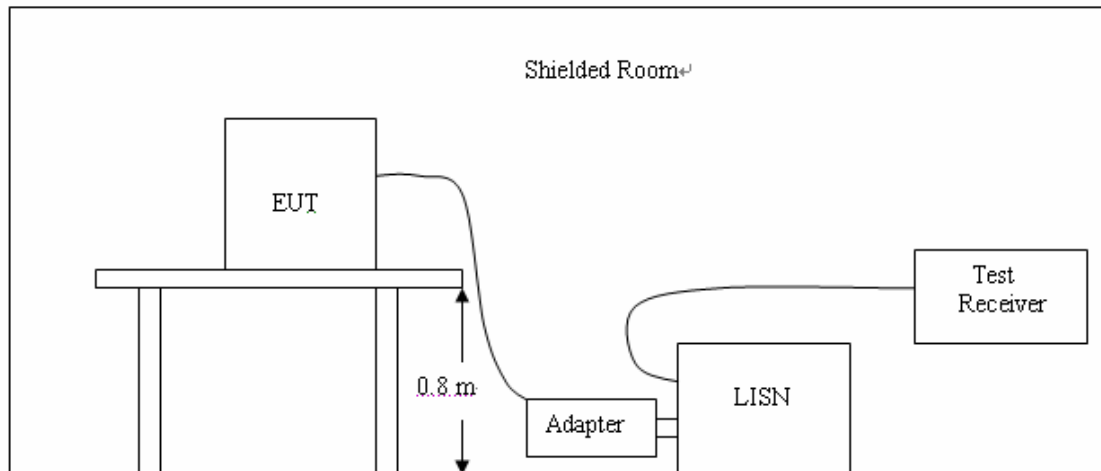
Note

= Current carrying line of reading

“---”

= The emission level complied with the Average limits, with at least 2 dB margin, so no further recheck.

5.1.3 Test SET-UP (Block Diagram of Configuration)



5.1.4 LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	AVERAGE(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

****Note:** The lower limit shall apply at the transition frequency.

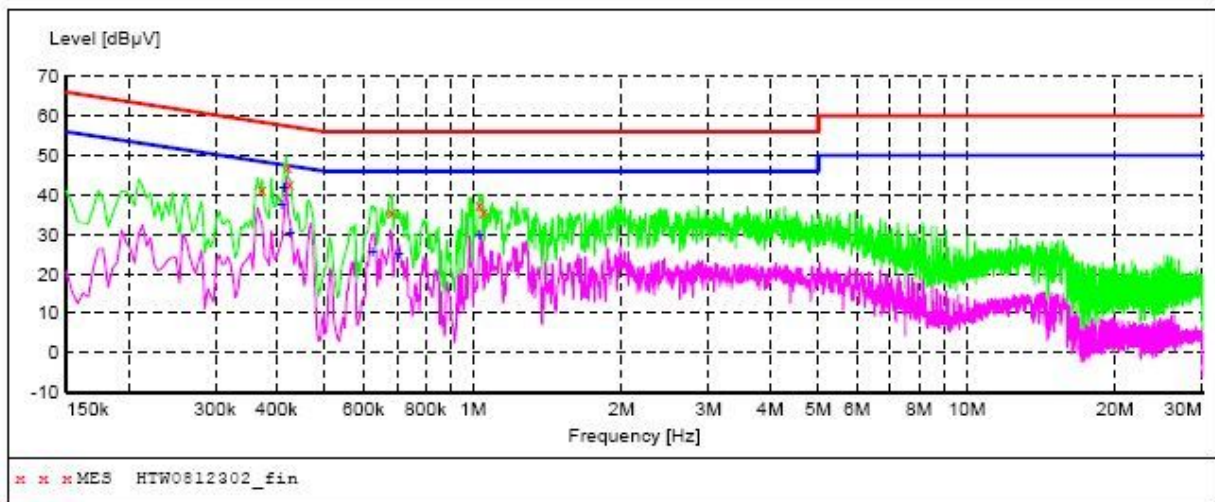
5.1.5 Measurement Equipment Used:

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

5.1.6 Measurement Result:

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0812302_fin"**

8/12/2007 12:41PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.374000	41.40	10.1	58	17.0	QP	L1	GND
0.422000	47.00	10.1	57	10.4	QP	L1	GND
0.426000	42.90	10.1	57	14.4	QP	L1	GND
0.684500	35.40	10.1	56	20.6	QP	L1	GND
1.031000	37.70	10.2	56	18.3	QP	L1	GND
1.049000	35.60	10.2	56	20.4	QP	L1	GND

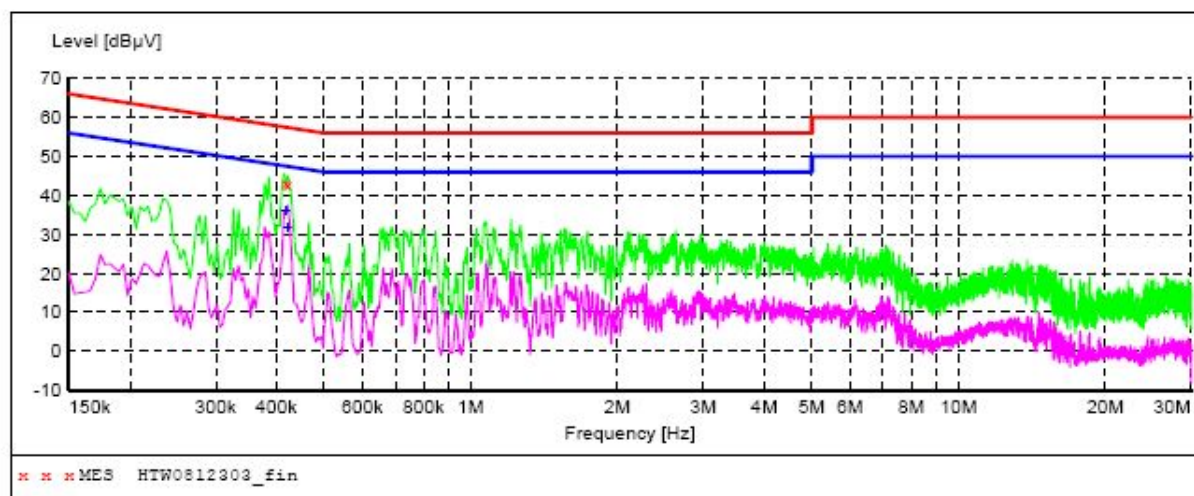
MEASUREMENT RESULT: "HTW0812302_fin2"

8/12/2007 12:41PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.410000	37.40	10.1	48	10.2	AV	L1	GND
0.414000	41.70	10.1	48	5.9	AV	L1	GND
0.426000	30.60	10.1	47	16.7	AV	L1	GND
0.626000	25.60	10.1	46	20.4	AV	L1	GND
0.707000	25.30	10.1	46	20.7	AV	L1	GND
1.031000	30.00	10.2	46	16.0	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M) FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW0812303_fin"**

8/12/2007 12:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.418000	43.40	10.1	58	14.1	QP	N	GND
0.422000	42.90	10.1	57	14.5	QP	N	GND

MEASUREMENT RESULT: "HTW0812303_fin2"

8/12/2007 12:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.418000	35.90	10.1	48	11.6	AV	N	GND
0.422000	31.80	10.1	47	15.6	AV	N	GND

5.2 RADIATED EMISSION TEST

5.2.1 MEASUREMENT PROCEDURE (PRELIMINARY RADIATED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, was placed as per ANSI C63.4.
- 3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- 4) The EUT has been set to work continuously on each mode; all support equipment work as usual, if any.
- 5) The antenna was placed at 3 meter away from the EUT as stated in FCC Rules and Regulations. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 7) The following test mode(s) were scanned during the preliminary test:

Preliminary Radiated Emission Test			
Frequency Range Investigated		30 MHz TO 1000 MHz	
Mode of operation	Date	Data Report No.	Worst Mode
NORMAL Operation	08/12/2007	SP2690(V,H)	☒

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for final testing.

5.2.2 MEASUREMENT PROCEDURE (FINAL RADIATED EMISSION TEST)

- 1) EUT and support equipment were set up on the turntable as per step 7 of the preliminary test.
- 2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P/Peak. reading is presented.
- 4) The test data of the worst case condition(s) was reported on the Summary Data page.

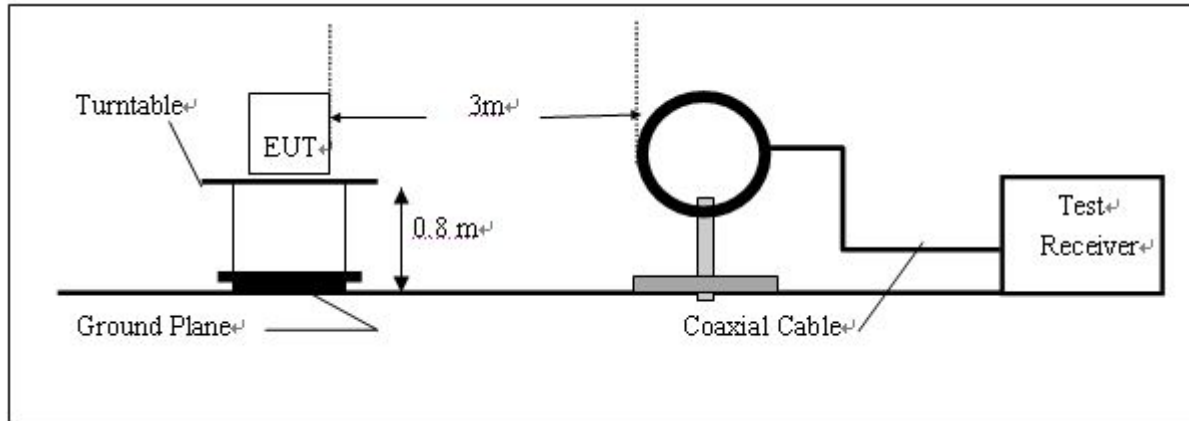
Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)	Reading Type P/Q
xxx.xx	24.02	12.25	26.27	40.00	-3.73	P

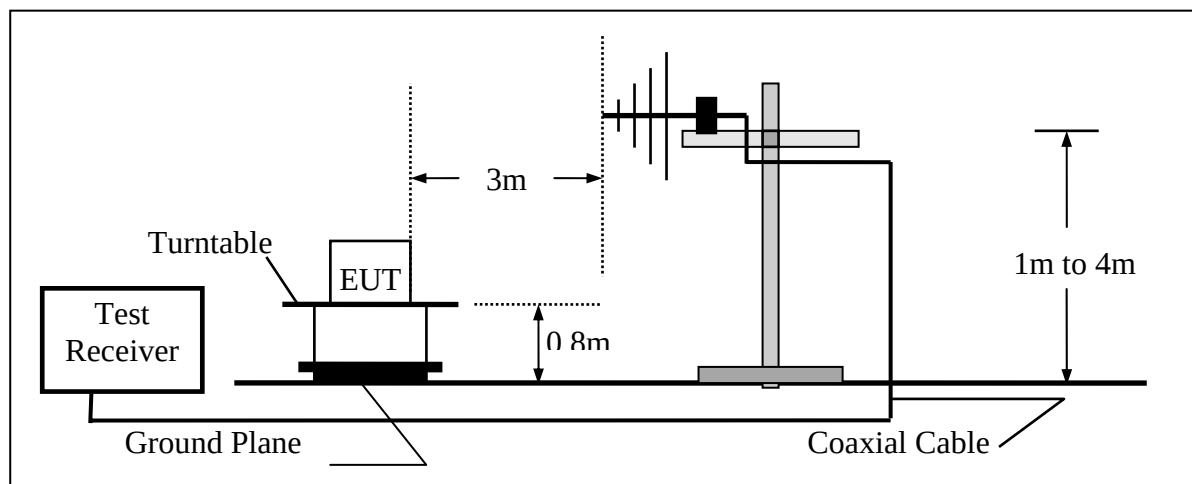
Freq.	= Emission frequency in MHz
Raw Data (dBuV/m)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dB)	= Correction factors of antenna factor and cable loss
Emiss. Level	=Raw reading converted to dBuV/m and CF added
Limit dBuV/m	= Limit stated in standard
Margin dB	= Reading in reference to limit
P	=Peak Reading
Q	=Quasi-peak

5.2.3 Test SET-UP (Block Diagram of Configuration)

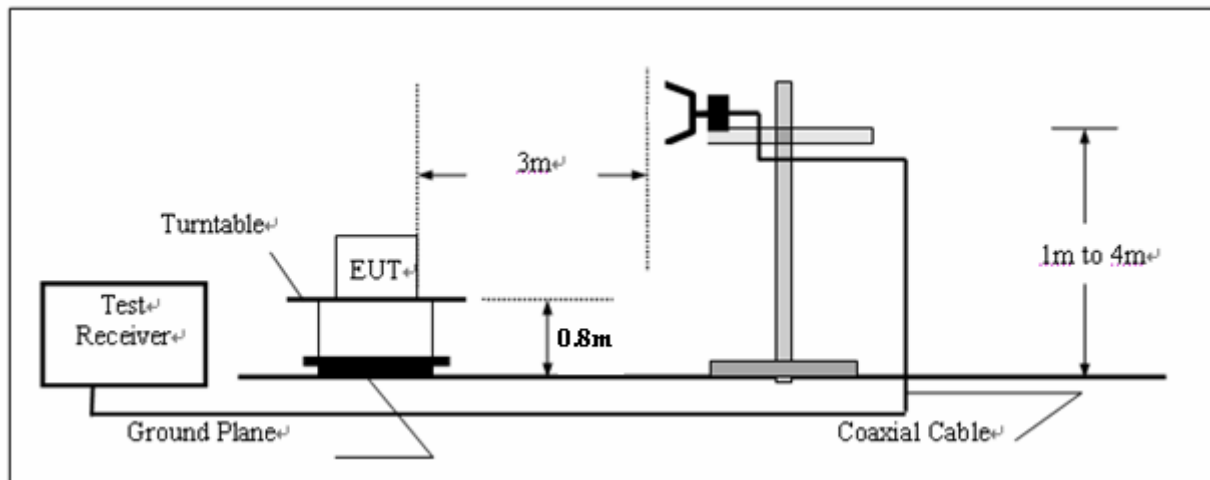
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



5.2.4 RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30-88	3	40
88-216	3	43.5
216-960	3	46
above 960	3	54

****Note:** The lower limit shall apply at the transition frequency.

5.1.5 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

Tested by: Tracy Qi**Polar:** Vertical--3m**Test Mode:** Normal Operation**Test Results:** Passed**Detector Function:** Peak/QP**Temperature:** 23°C**Humidity:** 52%RH

Freq. (MHz)	Ant.Pol. H/V	DetectorMode (PK/AV)	Reading (dBuV)	Ant./CL/ Amp. CF(dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)	Note
39.72	V	Peak	16.90	15.40	32.30	40.00	-7.70	
30.00	H	Peak	2.60	21.20	23.80	40.00	-16.20	
55.27	V	Peak	17.10	7.90	25.00	40.00	-15.00	
54.80	H	Peak	6.40	7.80	14.20	40.00	-25.80	
115.53	V	Peak	15.20	13.40	28.60	43.50	-14.90	
115.20	H	Peak	6.70	13.40	20.10	43.50	-23.40	
138.89	V	Peak	16.90	11.40	28.30	43.50	-15.20	
150.24	H	Peak	12.50	10.30	22.80	43.50	-20.70	
554.850	V	Peak	4.90	21.60	26.50	46.00	-19.50	
560.120	H	Peak	2.30	21.80	24.10	46.00	-21.90	
Others			---					

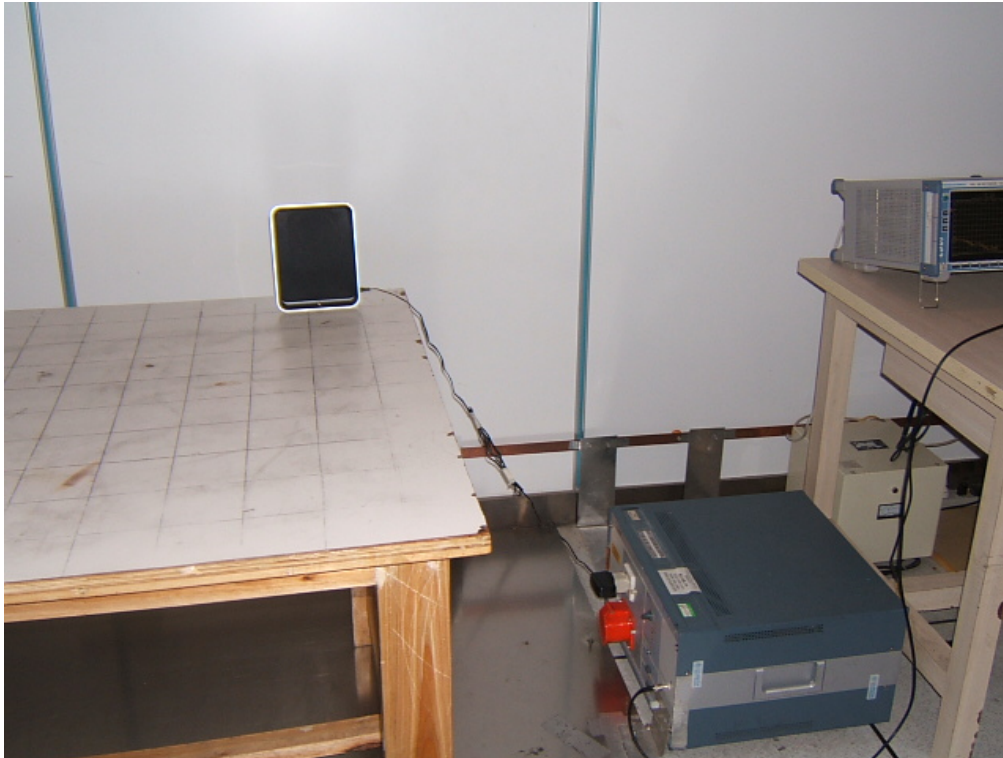
Remark :

- (1) Measuring frequencies from 30 MHz to the 2 GHz °
- (2) The radiated emissions of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the 15.209 limit or the field strength is too small to be measured.

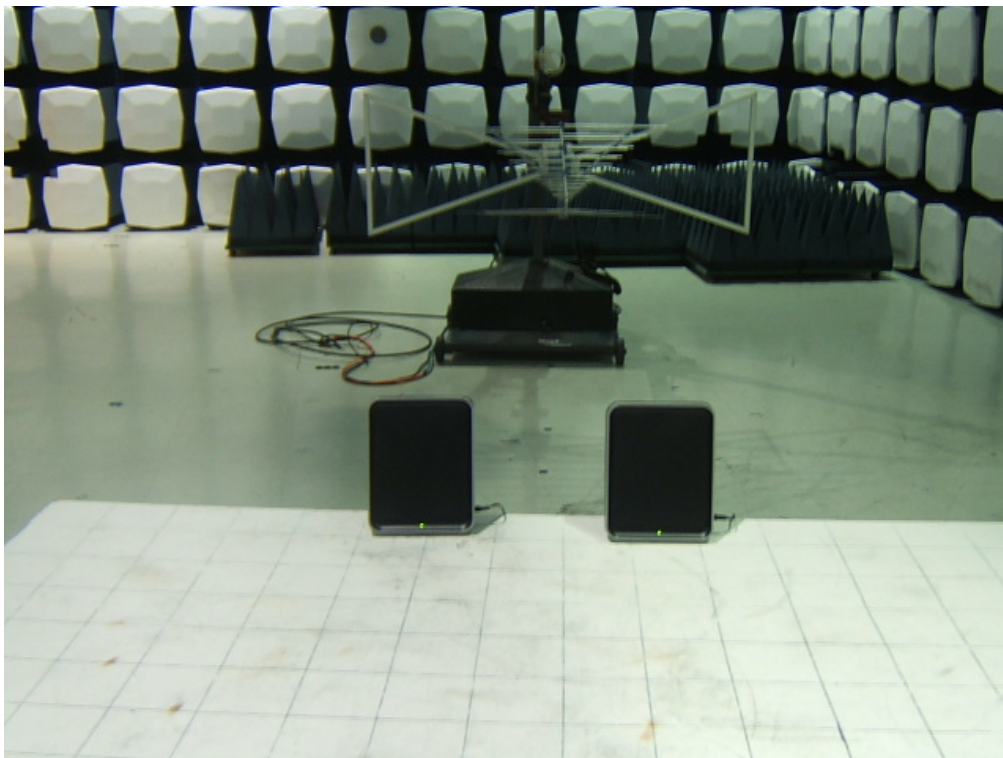
APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP



APPENDIX 2

PHOTOGRAPHS OF EUT

UP View of EUT



Bottom View of EUT



Left View of EUT



Right View of EUT



Front View of EUT



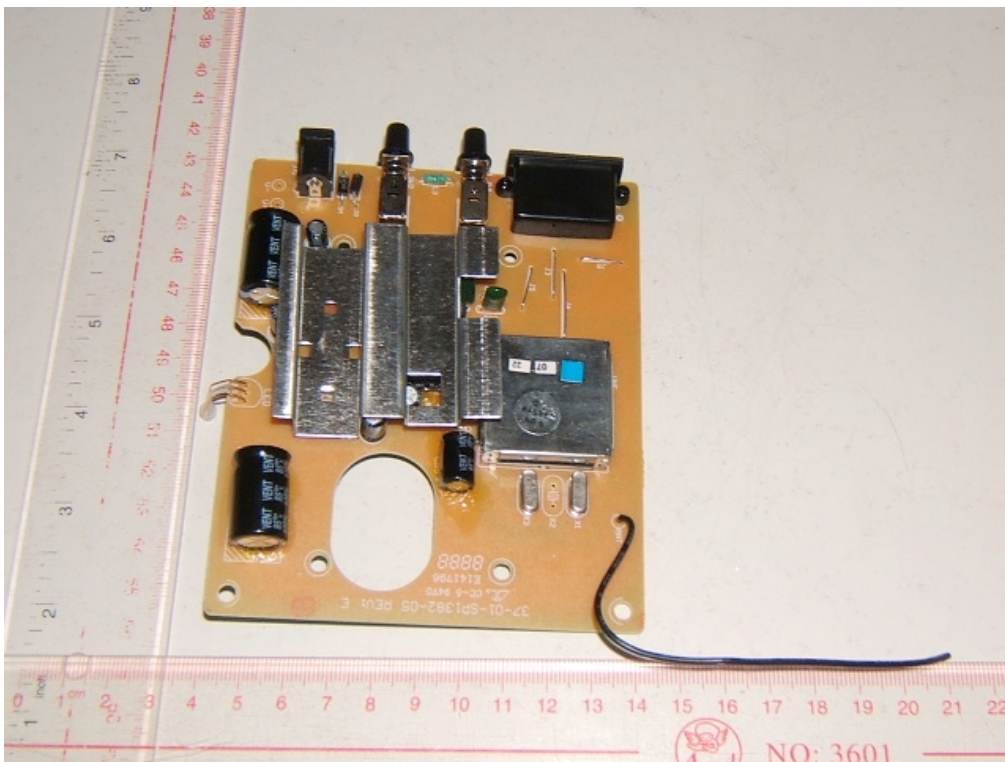
Back View of EUT



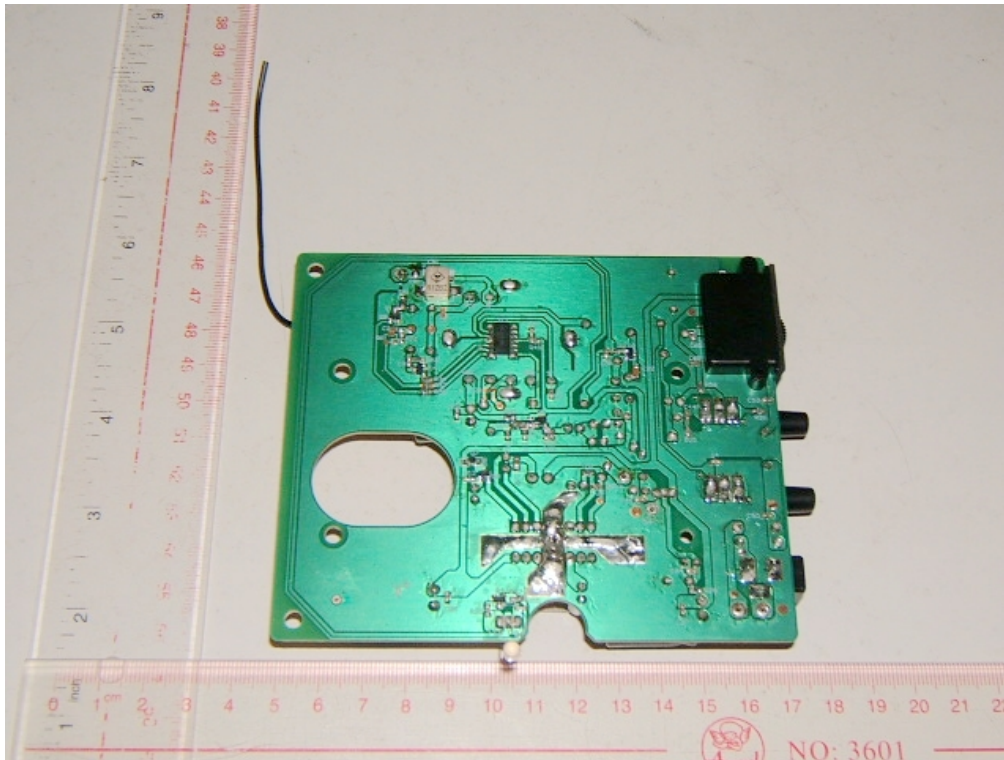
Open View of EUT



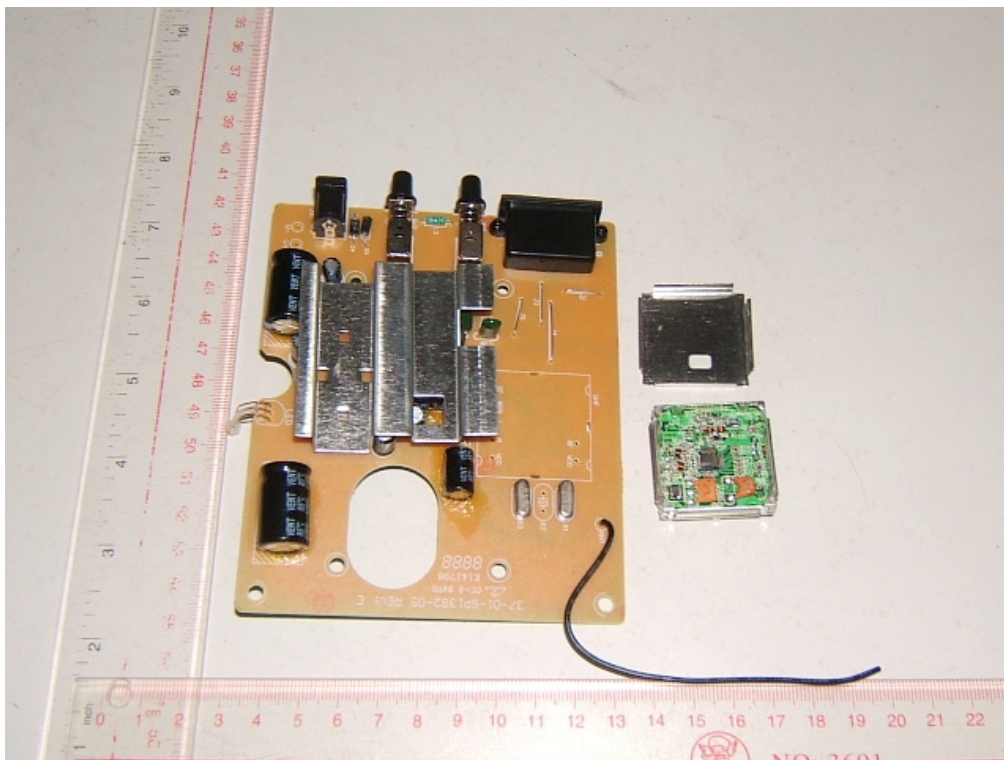
Internal View of EUT-1



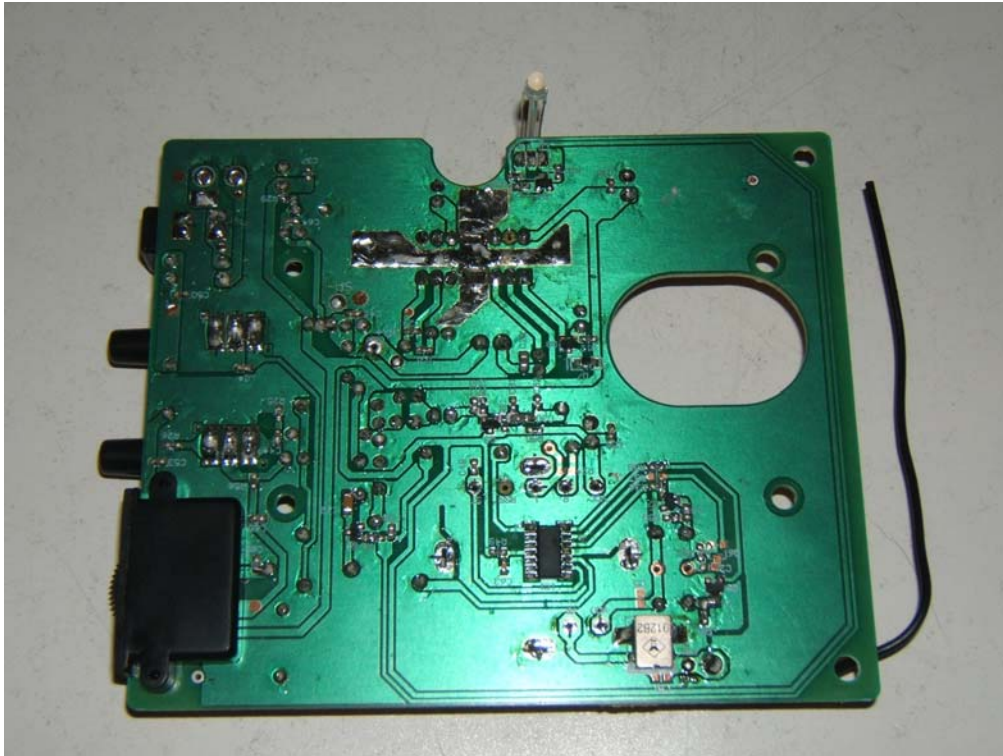
Internal View of EUT-2



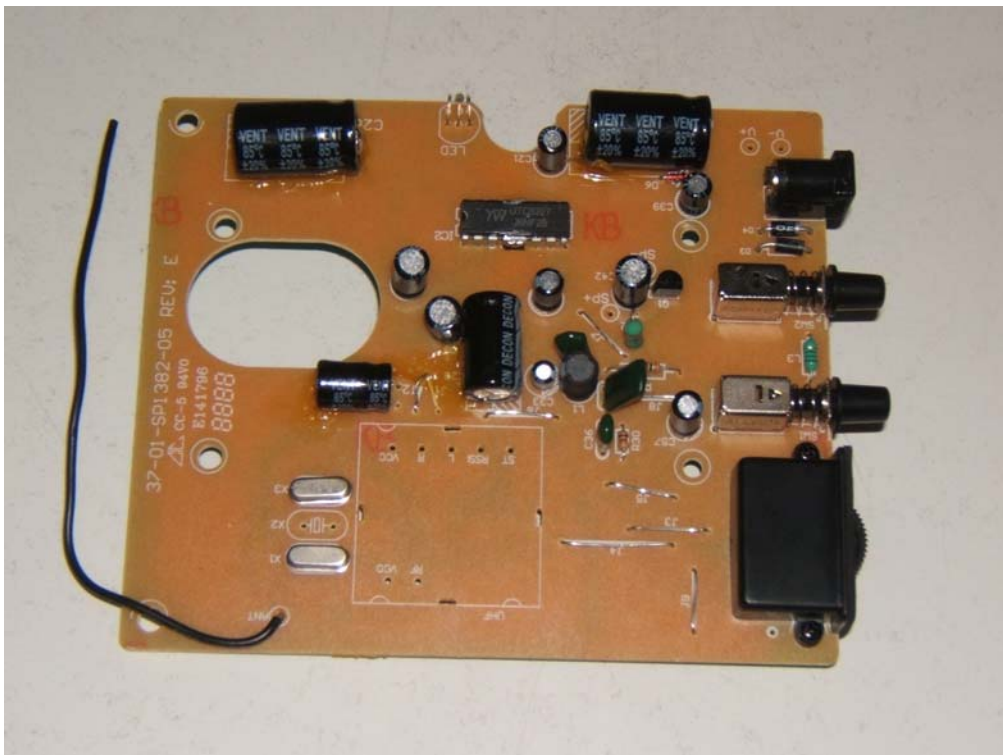
Internal View of EUT-3



Internal View of EUT-4



Internal View of EUT-5



Internal View of EUT-6



Internal View of EUT-7

