FCC TEST REPORT

FCC ID : WC2DS-988

Applicant : Wonders Technology Co., Ltd.
Address of Applicant : DOSS Industrial Zone, Qiping Kengdu Industrial Area, Guihua Village Guanlan Town, Baoan District, Shenzhen, Guangdong, China

Equipment Under Test (EUT) :

Product description : Wireless Speaker
Model No. : DS-988, EC-W100
Modulation : FM
Operation Frequency : 88.1 MHz ~88.9MHz

Standards : FCC 15 Subpart C Paragraph 15.239

Date of Test : July 30, 2009

Test Engineer : Zero.Zhou

Reviewed By : Phillo Zhong

PERPARED BY:
Waltek Services (Shenzhen) Co., Ltd.
1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen 518105,China
Tel :+86-755-27553488
Fax:+86-755-27553868

2 Contents

3 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Band Edge	FCC PART 15: 2007	ANSI C63.4: 2003	Note	PASS
Radiated Emission (30MHz to 1GHz)	FCC PART 15: 2007	ANSI C63.4: 2003	Note	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15: 2007	ANSI C63.4: 2003	Note	PASS

Note : denote that for more details of the EUT , please refer to the relating test items as below .

Remark : the methods of measurement in all the test items were according to ANSI C63.4: 2003.

4 General Information

4.1 Client Information

Applicant:	Wonders Technology Co., Ltd.
Address of Applicant:	DOSS Industrial Zone, Qiping Kengdu Industrial Area, Guihua Village, Guanlan Town, Baoan District, Shenzhen, Guangdong, China
Manufacturer:	Wonders Technology Co., Ltd
Address of Manufacturer:	DOSS Industrial Zone, Qiping Kengdu Industrial Area, Guihu Village, Guanlan Town, Baoan District, Shenzhen, Guangdong, China

4.2 General Description of E.U.T.

Product description:	Wireless Speaker
Model No.:	DS-988, EC-W100
Model Description:	The components of PCB are identical except color and appearance,DS-988 is test sample.

4.3 Details of E.U.T.

Power Supply:	Input:AC 100-240V,50/60Hz,0.2A Output:DC 7.5V,800mA

4.4 Description of Support Units

The EUT has been tested as an transmitter unit.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Wireless Speaker . The FM transmitter tests were done in this report. The standards used were FCC 15 Paragraph 15.205, Paragraph 15.207,Paragraph 15.209 and Paragraph 15.239.

4.6 Test Facility

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

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) 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 880581,June 24，2008.

- **IC – Registration No.: 7760A**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration No.:7760A,July 24，2008.

4.7 Test Location

All Emission tests were performed at:-
1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen 518105, Guangdong,China.

5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114943	W2008001	9k-26.5GHz	Aug-08	Aug-09	Wws20081596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM / VULB9163	336	W2008002	30-3000 MHz	Aug-08	Aug-09		±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZBECK MESS-ELEKTROM / VULB9163	667	W2008003	1-18GHz	Aug-08	Aug-09		f＜10 GHz：±1dB 10GHz＜f＜18 GHz：±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTROM / BBV 9718	9718-148	W2008004	0.5-18GHz	Aug-08	Aug-09		±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZBECK MESS-ELEKTROM / AK 9515 H	-	-	-	Aug-08	Aug-09		-
10m 50 Ohm Coaxial Cable with N-plug,individual length,usable up to 3(5)GHz, Connector	SCHWARZBECK MESS-ELEKTROM / AK 9513				Aug-08	Aug-09		
Positioning Controller	C&C LAB/ CC-C-IF				N/A	N/A		
Color Monitor	SUNSPO/ SP-14C				N/A	N/A		
Test Receiver	ROHDE&SCHWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug-08	Aug-09	Wws20080942	±1dB
EMI Receiver	Beijingkehuan	KH3931		9k-1GHz	Aug-08	Aug-09		
Two-Line V-Network	ROHDE&SCHWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug-08	Aug-09	Wws20080941	±10%

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
Absorbing Clamp	ROHDE&SCHWARZ/ MDS-21	100205	W2005003	impandance50 Ω loss ： 17 dB	Aug-08	Aug-09	Wws200 80943	±1dB
10m 50 Ohm Coaxial Cable with N-plug,individual length,usable up to 3(5)GHz, Connectors	SCHWARZBECK MESS-ELEKTROM / AK 9514				Aug-08	Aug-09		
Digital Power Analyzer	Em Test AG/Switzerland/ DPA 500	V07451 03095	W2008012	Power：2000VA Vol-range：0-300V Freq_range：10-80Hz	Aug-08	Aug-09	Wwd200 81185	Voltage distinguish:0.025% Power_freq distinguish:0.02Hz
Power Source	Em Test AG/Switzerland/ ACS 500	V07451 03096	W2008013	Vol-range：0-300V Power_freq：10-80Hz				
Electrostatic Discharge Simulator	Em Test AG/Switzerland/DITO	V07451 03094	W2008005	Contact discharge：500V-10KV Air diacharge：500V-16.5KV	Aug-08	Aug-09	Wwc200 82400	7.5A current will be changed in V_m=1.5V
RF Generator	TESEQ GmbH/ NSG4070	25781	W2008008	Fraq-range：9K-1GHz RF voltage：-60 dBm-+10dBm	Aug-08	Aug-09	Wws200 81890	Power_freq distinguish0.1Hz RFeletricity distinguish 0.1 B
CDN M-Type	TESEQ GmbH/ CDN M016	25112	W2008009	Voltage correct factor 9.5 dB	Aug-08	Aug-09	Wwc200 82396	150K-80MHz：±1dB 80-230MHz:-2-+3dB
EM-Clamp	TESEQ GmbH/ KEMZ 801	25453	W2008010	Freq_range：0.15-1000 MHz	Aug-08	Aug-09	Wwc200 82397	0.3-400 MHz：±4dB Other freq：±5dB
Attenuator 6dB	TESEQ GmbH/ ATN6050	25365			Aug-08	Aug-09	Wws200 81597	

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
All Modules Generator	SCHAFFNER/6150	34579	W2008006	voltage:200V-4.4KV Pulse current：100A-2.2KA	Aug-08	Aug-09	Wwc20082401	voltage: ±10% Pulse current：±10%
Capacitive Coupling Clamp	SCHAFFNER/ CDN 8014	25311			Aug-08	Aug-09	Wwc20082398	-
Signal and Data Line Coupling Network	SCHAFFNER/ CDN 117	25627	W2008011	1.2/50μS	Aug-08	Aug-09	Wwc20082399	-
AC Power Supply	TONGYUN/ DTDGC-4				Aug-08	Aug-09	Wws20080944	-
Exposure Level Tester ELT-400	Narda Safety TEST Solutions/2304/03	M-0155	w2008022	Test freq range：1—400kHz	Aug-08	Aug-09	Wwd20081191	Test uncertainly：1—120kHz:±1.83%, 120 kHz-400 kHz: ±4.06%
Magnetic Field Probe 100cm^2	Narda Safety TEST Solutions/2300/90.10	M-1070	w2008021	Test freq range：1—400kHz				Test uncertainly：1Hz-10Hz: ±16.2%, 10Hz - 120kHz:±2.2%, 120 kHz-400 kHz: ±4.7%
Active Loop Antenna Charger 10kHz-30MHz	Beijing Dazhi / ZN30900A	-	-	10kHz-30MHz	Aug-08	Aug-09		±1dB
MP3 player	Ipod/A1285				Aug-08	Aug-09		±1dB

6 Conducted Emission Test

Test Requirement:	FCC Part 15 Paragraph 15.207
Test Method:	Based on FCC Part15 Paragraph 15.207
Test Date:	July 30, 2009
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 Test Equipment

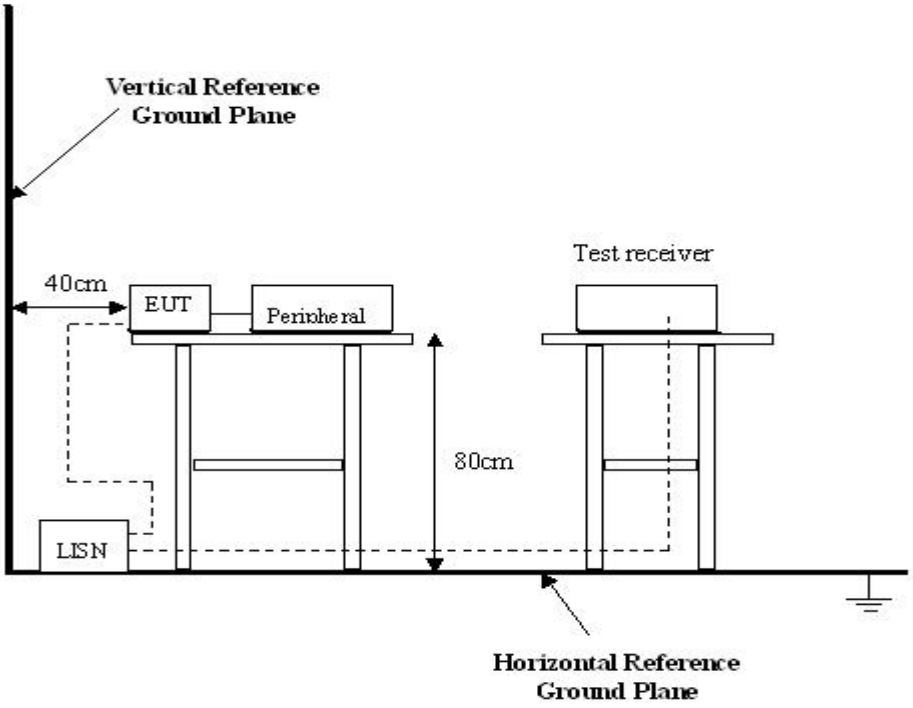
Please refer to Section 5 this report.

6.2 Test Procedure

1. The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.
3. Compliance test was performed in the EUT connected with the AC adaptor .

6.3 Conducted Test Setup

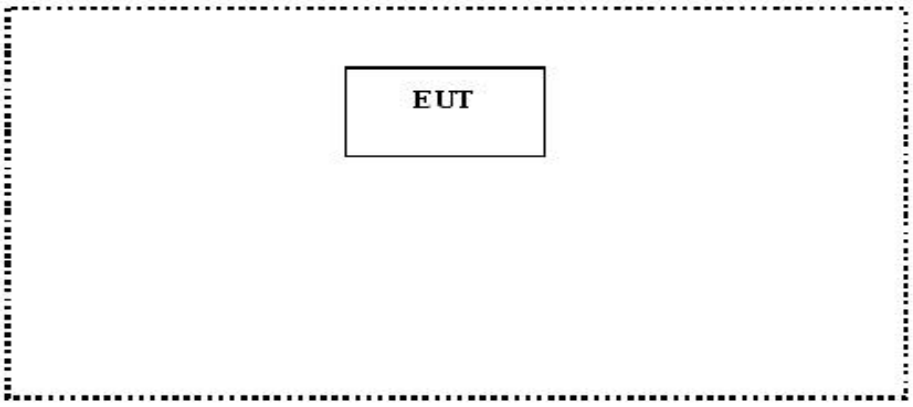
The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



6.4 EUT Operating Condition

Operating condition is according to ANSI C63.4:2003.

A. Setup the EUT and simulators as shown on follow.
B. Enable RF signal and confirm EUT active.
C. Modulate output capacity of EUT up to specification.



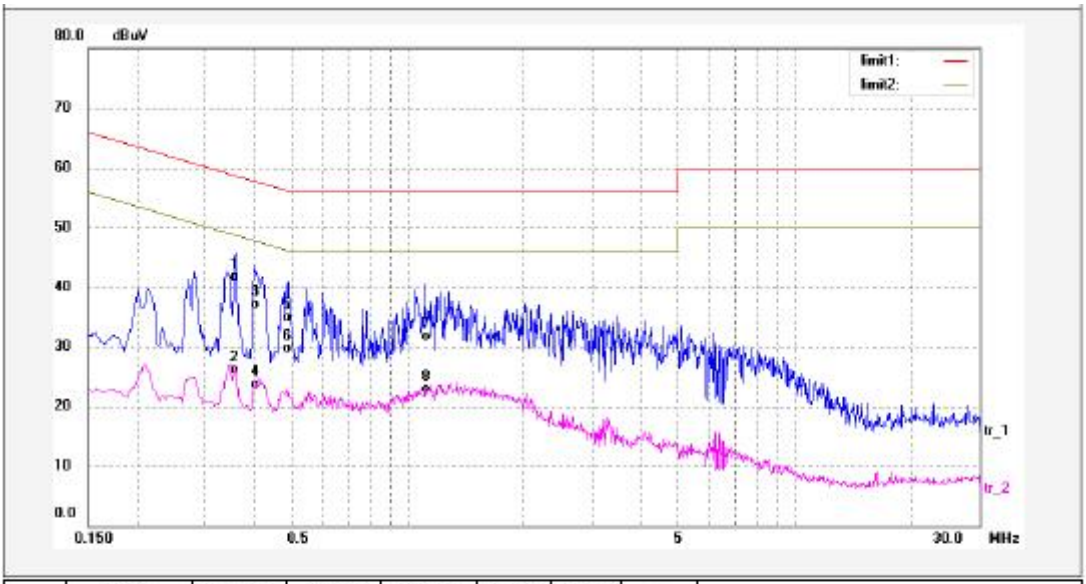
6.5 Conducted Emission Limits

66-56 dBμV between 0.15MHz & 0.5MHz
56 dBμVbetween 0.5MHz & 5MHz
60 dBμV between 5MHz & 30MHz

Note: In the above limits, the tighter limit applies at the band edges.

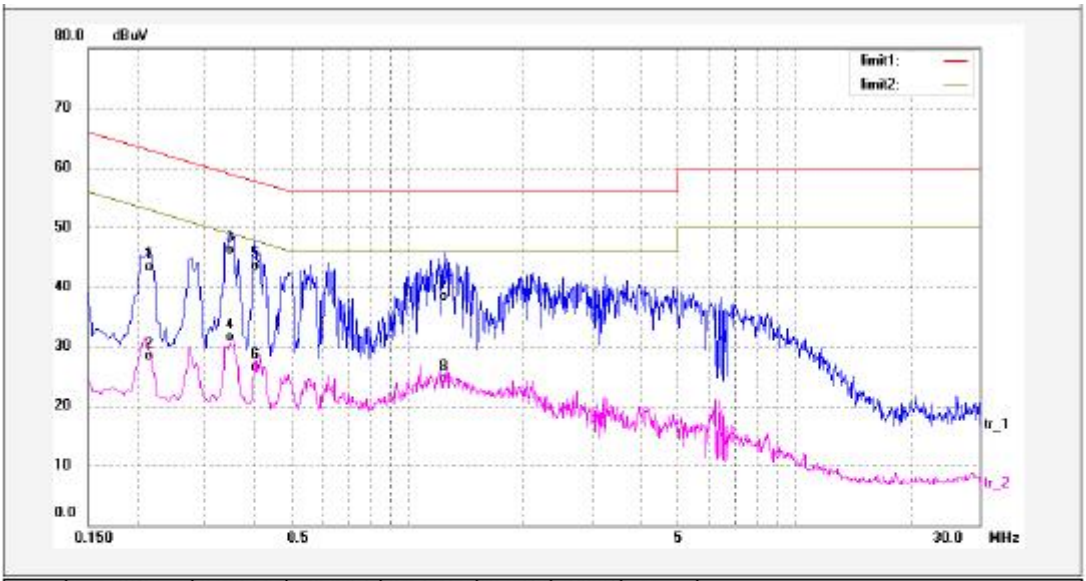
6.6 Conducted Emission Test Result

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.3620	30.09	10.73	40.82	58.68	-17.86	QP	
2	0.3620	14.60	10.73	25.33	48.68	-23.35	AVG	
3	0.4020	25.57	10.68	36.25	57.81	-21.56	QP	
4	0.4020	12.15	10.68	22.83	47.81	-24.98	AVG	
5	0.4940	23.31	10.82	34.13	56.10	-21.97	QP	
6	0.4940	18.14	10.82	28.96	46.10	-17.14	AVG	
7	1.1100	19.81	11.19	31.00	56.00	-25.00	QP	
8	1.1100	10.88	11.19	22.07	46.00	-23.93	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2180	31.82	10.66	42.48	62.89	-20.41	QP	
2	0.2180	16.78	10.66	27.44	52.89	-25.45	AVG	
3	0.3500	34.47	10.75	45.22	58.96	-13.74	QP	
4	0.3500	20.00	10.75	30.75	48.96	-18.21	AVG	
5	0.4020	32.03	10.68	42.71	57.81	-15.10	QP	
6	0.4020	15.10	10.68	25.78	47.81	-22.03	AVG	
7	1.2460	26.24	11.19	37.43	56.00	-18.57	QP	
8	1.2460	12.51	11.19	23.70	46.00	-22.30	AVG	

7 Radiation Emission Test

Test Requirement:	FCC Part15 Paragraph 15.239
Test Method:	Based on ANSI C63.4:2003
Test Date:	July 30, 2009
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Detector:	Peak for pre-scan (120kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6dB of limit

7.1 Test Equipment

Please refer to Section 5 this report.

7.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

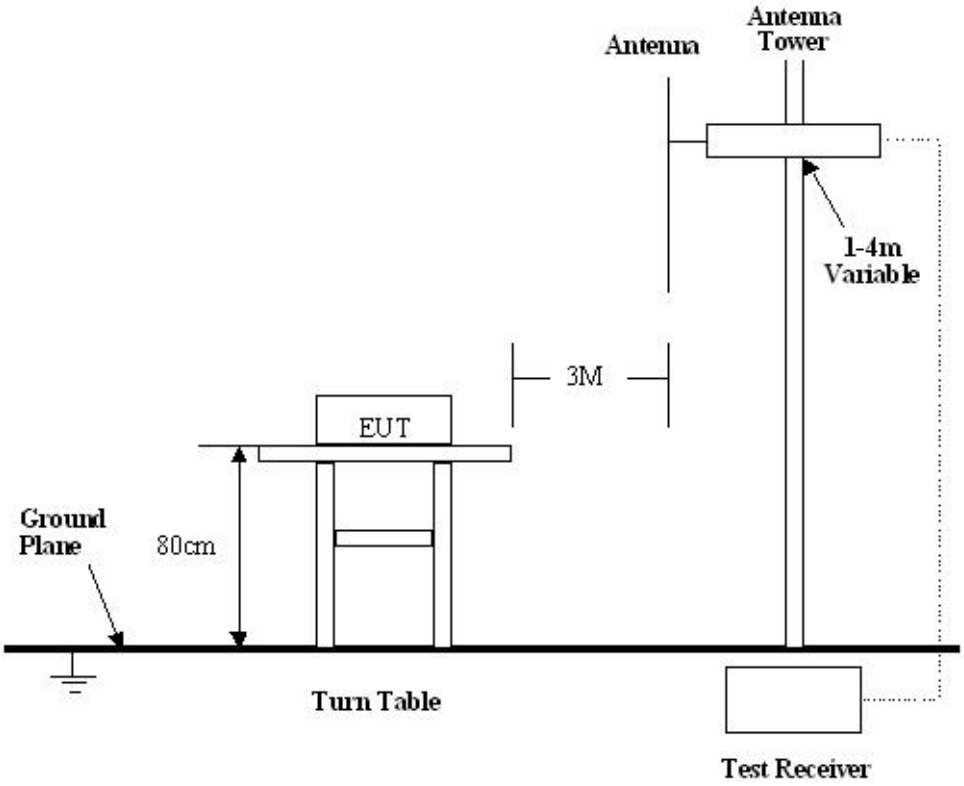
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is ±5.03 dB.

7.3 Test Procedure

1. The AC mains supply for the EUT for radiated emissions test. And the EUT was connected with the MP3 to make the FM Transmitter in operating mode.
2. The EUT was placed on the turn table in nomal position.
3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
4. All data was recorded in the peak and average detection mode.
5. The EUT was under working mode during the final qualification test and the configuration was used to represent the worst case results.
6. The EUT was testing at the frequency points 88.1MHz,88.5MHz and 88.9MHz, and found out that the worst case was 88.5MHz,so the data was show as follow.

7.4 Radiated Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.209 and Paragraph 15.239 limits.



7.5 Spectrum Analyzer Setup

According to FCC Part15 Paragraph 15.239 Rules, the system was tested to 1000 MHz.

Start Frequency .....30 MHz
Stop Frequency .....1000 MHz
Sweep Speed Auto
IF Bandwidth .....100 KHz
Video Bandwidth 100KHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode.....Normal
Resolution Bandwidth 100KHz

7.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

7.7 Summary of Test Results

According to the data in section 7.10, the EUT complied with the FCC Part15 Paragraph 15.239 standards.

7.8 EUT Operating Condition

Same as section 6.3 of this report. Compliance test was performed in the transmitter operation Mode.

7.9 Radiated Emissions Limit

A. FCC Part 15 subpart C Paragraph 15.239 Limit

Fundamental Frequency(MHZ)	Field Strength of Fundamental	
	uV/m	dBuV/m
88-108	250	48

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

(3) The emission limit in this paragraph is based on measurement instrumentaion employing an average detector.Measurement using instrumentation with a peak detector function,corresponding to 20dB above the maximum permitted average limit.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency(MHZ)	Distance(m)	Field strength(dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: (1) RF Voltage(dBuV)=20 log RF Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distance refers to the distance in meters between the measuring instrument antenna.

As shown in 15.35(b),for frequencies above 1000MHz,the field strength limits are based on average detector,however,the peak field strength of any emission shall not exceed the maximum permitted average limits,specified above by more than 20dB under any condition of modulation.

7.10 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding
The meter reading of the spectrum analyer (which is set to read in units of dBuV)
To the antenna correction factor supplied by the antenna manufacturer. The antenna
Correction factors are stared in terms of dB.The gain of the pressletor was accounted
For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

33 20dBuV+10.36dB=30.36dBuV/m @3m

Radiated Emission Test Data

Test Mode: TX ON

Temperature: 24 °C

Humidity: 52%RH

Test Result: PASS

The below is the Fundamental and Harmonics

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
88.50	AV	Vertical	38.00	48.00	-10.00	1.1	50
177.00	AV	Vertical	23.45	43.50	-20.05	1.1	50
265.50	AV	Vertical	22.14	46.00	-23.86	1.2	20
354.00	AV	Vertical	21.33	46.00	-24.67	1.3	150
442.50	AV	Vertical	22.54	46.00	-23.46	1.2	150
531.00	AV	Vertical	21.61	46.00	-24.39	1.2	0
619.50	AV	Vertical	21.71	46.00	-24.29	1.1	30
708.00	AV	Vertical	21.35	46.00	-24.65	1.2	180
796.50	AV	Vertical	21.82	54.00	-32.18	1.2	140
885.00	AV	Vertical	21.16	54.00	-32.84	1.2	15
88.50	AV	Horizontal	37.55	48.00	-10.45	1.1	0
177.00	AV	Horizontal	23.11	43.50	-20.39	1.1	20
265.50	AV	Horizontal	22.85	46.00	-23.15	1.2	60
354.00	AV	Horizontal	22.13	46.00	-23.87	1.1	140

442.50	AV	Horizontal	22.33	46.00	-23.67	1.1	15
531.00	AV	Horizonta	21.14	46.00	-24.86	1.0	60
619.50	AV	Horizontal	21.65	46.00	-24.35	1.1	10
708.00	AV	Horizontal	21.64	46.00	-24.36	1.2	20
796.50	AV	Horizontal	21.66	54.00	-32.34	1.2	80
885.00	AV	Horizontal	21.38	54.00	-32.62	1.0	0
88.50	PK	Vertical	48.55	68.00	-19.45	1.2	0
177.00	PK	Vertical	23.55	63.50	-39.95	1.2	10
265.50	PK	Vertical	23.14	66.00	-42.86	1.2	120
354.00	PK	Vertical	23.62	66.00	-42.38	1.2	120
442.50	PK	Vertical	23.51	66.00	-42.49	1.0	180
531.00	PK	Vertical	23.44	66.00	-42.56	1.5	0
619.50	PK	Vertical	23.61	66.00	-42.39	1.0	120
708.00	PK	Vertical	23.81	66.00	-42.19	1.2	0
796.50	PK	Vertical	23.64	74.00	-50.36	1.3	50
885.00	PK	Vertical	23.77	74.00	-50.23	1.2	140
88.50	PK	Horizontal	48.75	68.00	-19.25	1.3	0
177.00	PK	Horizontal	23.68	63.50	-39.82	1.2	40
265.50	PK	Horizontal	23.92	66.00	-42.08	1.1	100
354.00	PK	Horizontal	23.72	66.00	-42.28	1.2	190
442.50	PK	Horizontal	23.54	66.00	-42.46	1.0	60
531.00	PK	Horizontal	23.44	66.00	-42.56	1.2	60
619.50	PK	Horizontal	23.64	66.00	-42.36	1.2	110
708.00	PK	Horizontal	23.83	66.00	-42.17	1.3	10
796.50	PK	Horizontal	23.18	74.00	-50.82	1.2	0
885.00	PK	Horizontal	23.11	74.00	-50.89	1.3	10

8 Antenna Requirement.

According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a permanent antenna, fulfill the requirement of this section

9 Band Edge

9.1 Test Equipment

Please refer to Section 5 this report.

9.2 Test Procedure

1.The EUT, peripherals were put on the turntable which table size is 1mX1.5m, table high 0.8m. All set up is according to ANSI C63.4:2003.

2. The antenna high were varied from 1m to 4m high to find the maximum emission for each frequency.

3. The field strength of any emissions radiated on any frequency outside of the specified 200KHz band shall not exceed the general radiated emission limits in Section 15.209.

4. The market sample was tested for frequency testing at 88.1 MHz & 88.5 MHz.

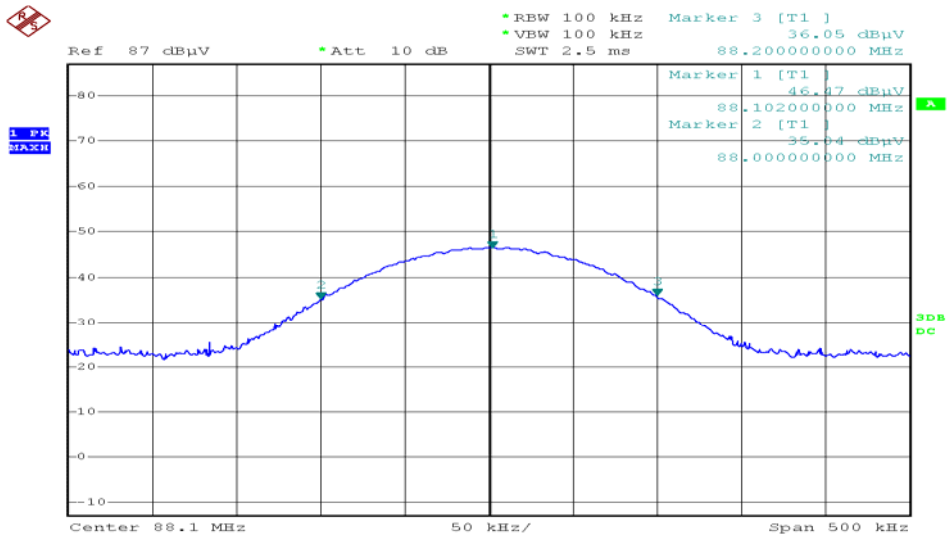
9.3 Band Edge Test Result

Test Mode: TX ON

Temperature: 24 °C

Humidity: 52%RH

88.1 MHz



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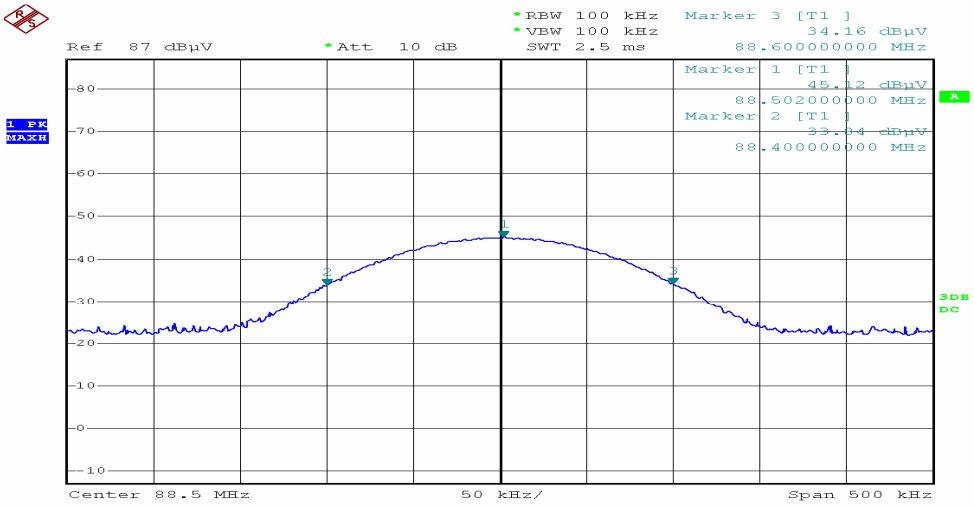
88.5 MHz



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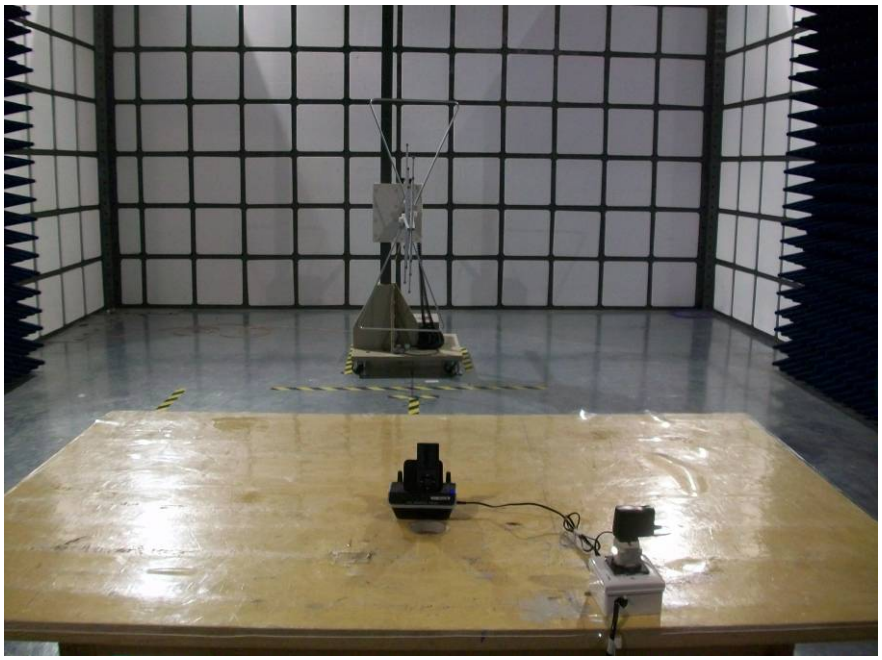
Note: (1) The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209.

(2) The average measurement was not performed when the peak measured data under the limit of average detection.

10 Photographs of Testing

10.1 Conducted Emission Test View

10.2 Radiation Emission Test View

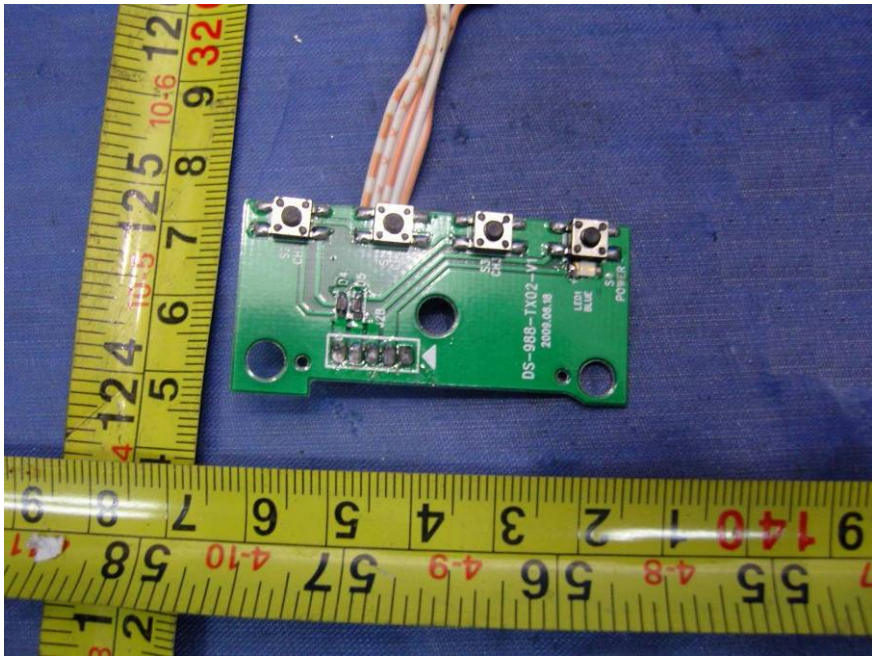


11 Photographs - Constructional Details

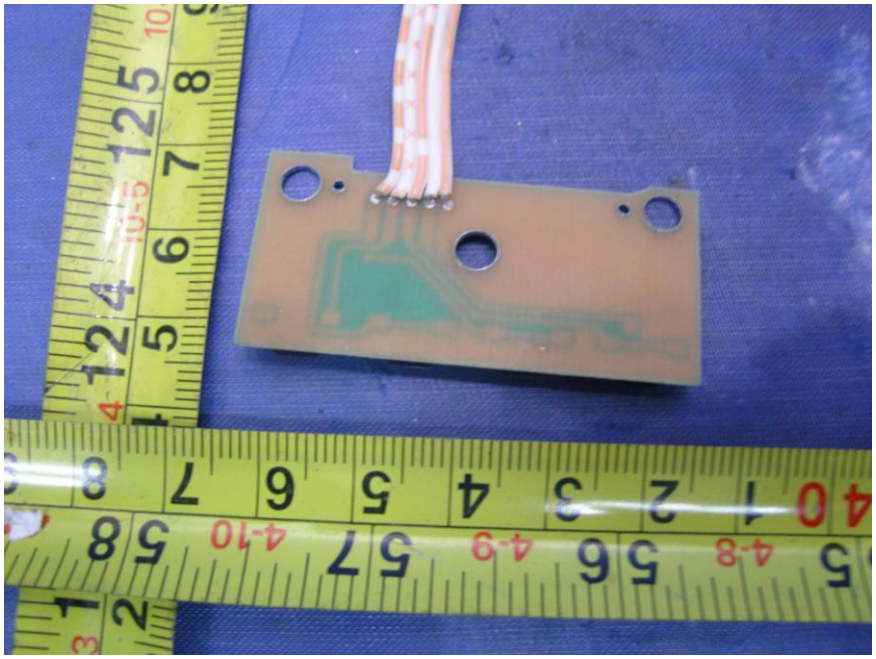
11.1 EUT - Front View

11.2 EUT - Back View

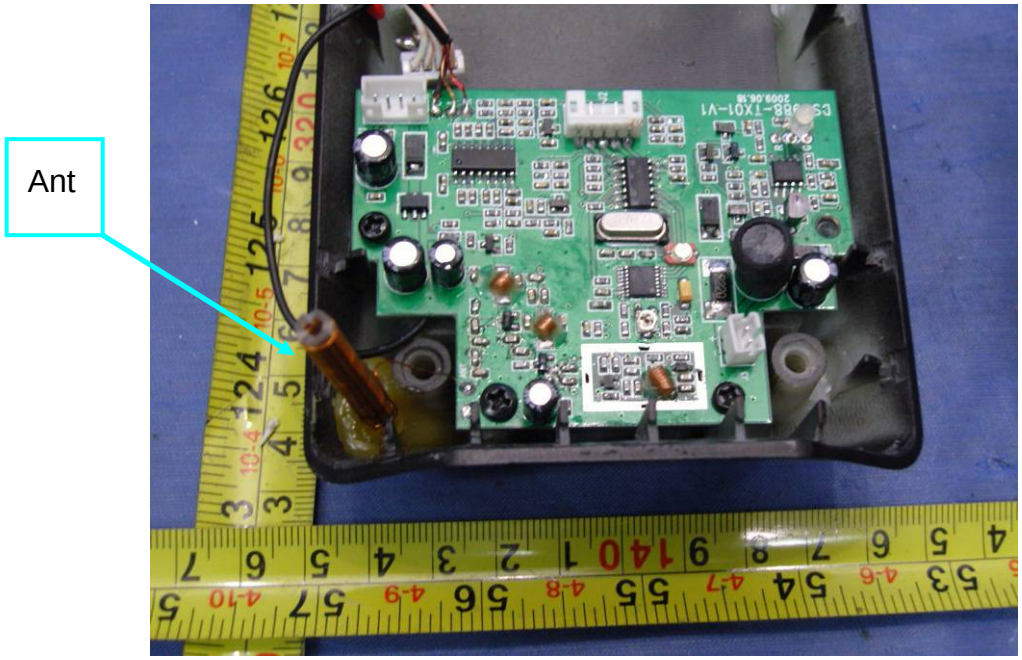
11.3 TX-PCB1 - Front View



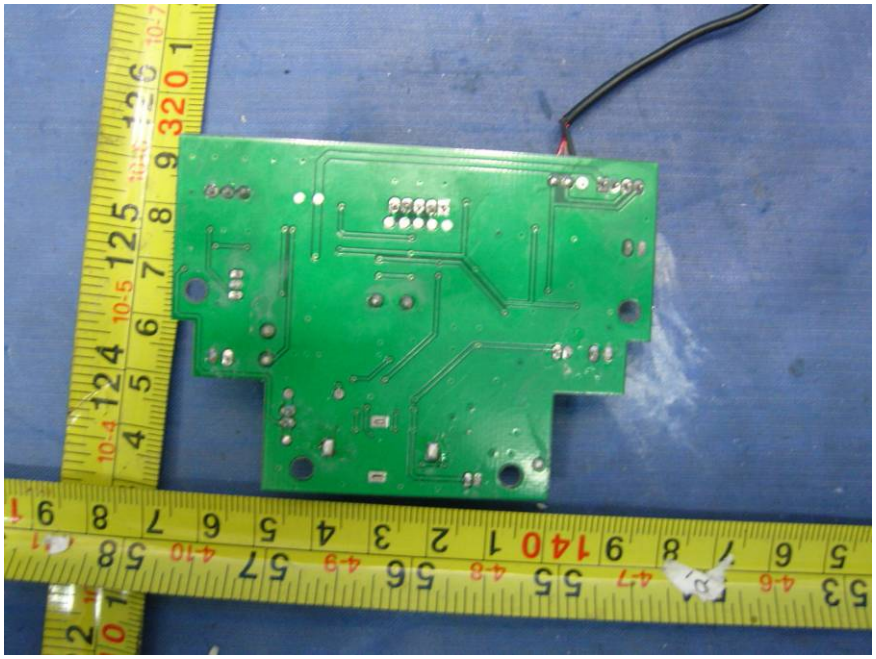
11.4 TX-PCB1 - Back View



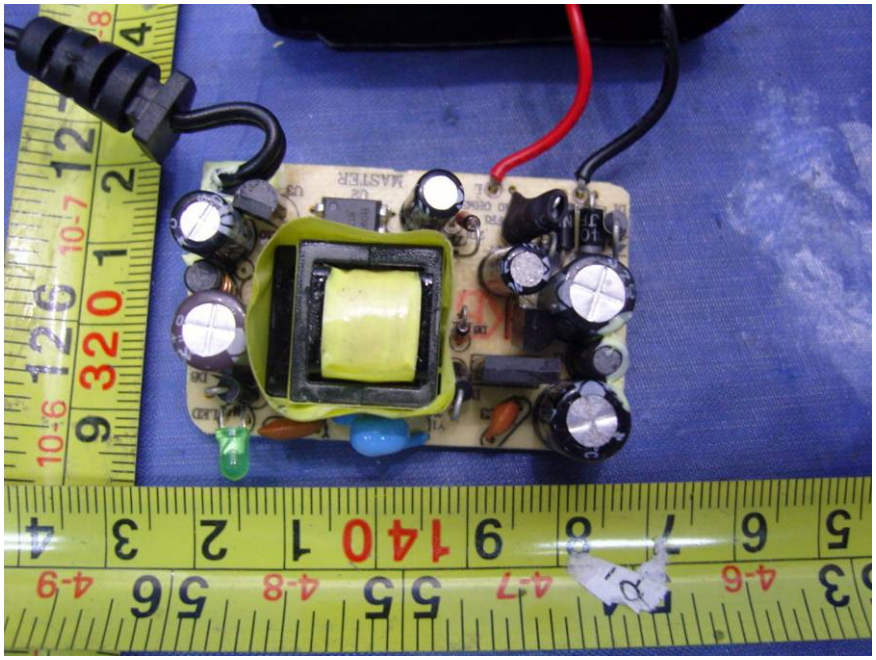
11.5 TX-PCB2 - Front View



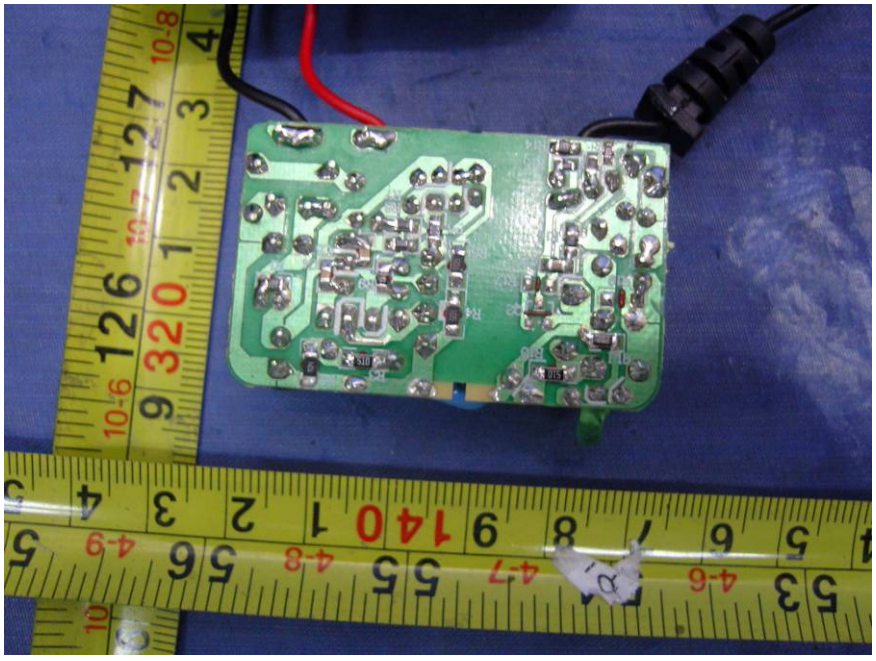
11.6 TX-PCB2 - Back View



11.7 Adapter-PCB - Front View



11.8 Adapter-PCB - Back View



12 FCC ID Label

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)this device may not cause harmful interference,and (2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Proposed Label Location on EUT

EUT Bottom View/proposed FCC Mark Location