FCC TEST REPORT
for
Xiamen MAXA Engineering Co., Ltd

Bluetooth Speaker
Model No.: Q10

Prepared for	:	Xiamen MAXA Engineering Co., Ltd
Address	:	Rm804, No.619, Sishui Road, Huli District, Xiamen, Fujian, China

Prepared By	:	Coffee-T Electronics Technology Co Ltd
Address	:	Unit 12, 8F Honghai Building,Qianhai Road,Nanshan,Shenzhen,China +86-755-86622903 +86-755-86622819

Report Number	:	CTE15KR-901F
Date of Test	:	Apr. 01~ 15, 2015
Date of Report	:	Apr. 16, 2015

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Test Report

TEST REPORT

Applicant	:	Xiamen MAXA Engineering Co., Ltd
Manufacturer	:	ZHUHAI YALI INDUSTRIAL CO., LTD
EUT	:	Bluetooth Speaker
Model No.	:	Q10
Serial No.	:	N/A
Trade Mark	:	N/A
Rating	:	DC 12V, 2A Via Adapter

Measurement Procedure Used:
FCC Part15 Subpart C, Paragraph 15.207, 15.249 & 15.209

The device described above is tested by Coffee-T Electronics Technology Co Ltd to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Coffee-T Electronics Technology Co Ltd is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Coffee-T Electronics Technology Co Ltd.

Date of Test : Apr. 01~ 15, 2015

Prepared by : (Tested Engineer / Angel Wu)

Reviewer : (Project Manager /Jason Chen)

Approved & Authorized Signer : (Manager /Sumy Li)

Unit 12, 8F Honghai Building,Qianhai Road,Nanshan,Shenzhen,China
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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Bluetooth Speaker
Model Number	:	Q10
Test Power Supply	:	AC 120V/60Hz for Adapter
Frequency	:	2402-2480MHz
Channels	:	79
Modulation		GFSK,π/4DQPSK, 8DPSK
Antenna Type	:	Internal
Antenna Gain	:	0 dBi
Applicant	:	Xiamen MAXA Engineering Co., Ltd
Address	:	Rm804, No.619, Sishui Road, Huli District, Xiamen, Fujian, China
Manufacturer	:	ZHUHAI YALI INDUSTRIAL CO., LTD
Address	:	8F, No 11, Ping Dong 4th Road, Nan Ping Hi-Tech Park, Zhuhai, China
Date of receiver	:	Apr. 01, 2015
Date of Test	:	Apr. 01~ 15, 2015

1.2 Support Equipment

N/A

1.3 Description of Test Facility

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

CNAS - LAB Code: L3503
Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed 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 752021, July 10, 2013.

1.4 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.3dB
Conduction Uncertainty	:	Uc = 3.4dB

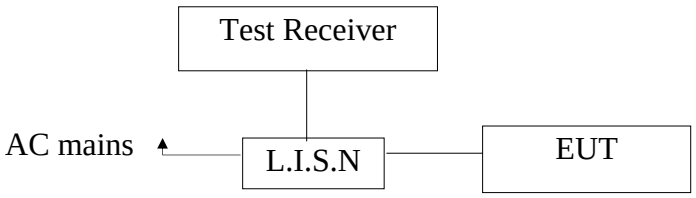
2. Conducted Limits

Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 23, 2014	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 23, 2014	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 23, 2014	1 Year

2.1 Block Diagram of Test Setup

2.1.1. Block diagram of connection between the EUT and simulators



2.2 Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

2.3 Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

2.4 Operating Condition of EUT

2.4.1. Setup the EUT and simulator as shown as Section 2.1.
2.4.2. Turn on the power of all equipment.
2.4.3. Let the EUT work in test mode (ON) and measure it.

2.5 Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 2.6.

2.6 Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150KHz to 30 MHz is investigated.

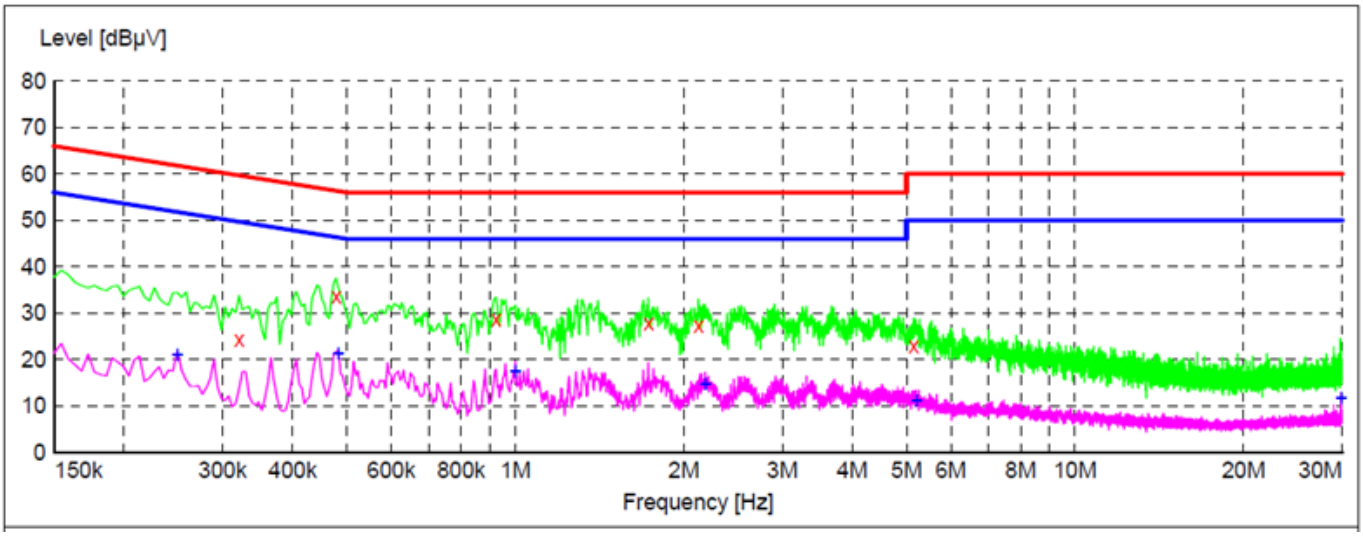
Please refer the following pages.

CONDUCTED EMISSION TEST DATA

Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 120V/60Hz for Adapter
Comment:	Live Line
	Tem:25℃ Hum:50%

SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.321000	24.30	20.1	60	35.4	QP	L1	GND
0.478500	33.70	20.1	56	22.7	QP	L1	GND
0.924000	28.60	20.1	56	27.4	QP	L1	GND
1.729000	27.90	20.3	56	28.1	QP	L1	GND
2.125000	27.20	20.3	56	28.8	QP	L1	GND
5.149000	22.90	20.5	60	37.1	QP	L1	GND

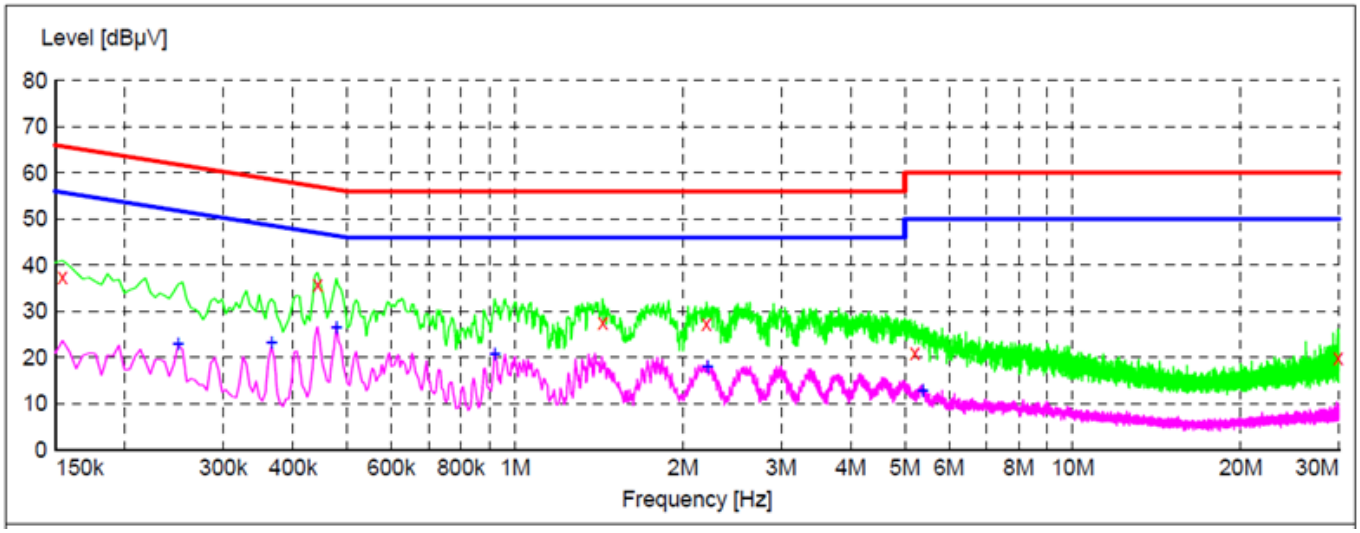
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.249000	21.10	20.1	52	30.7	AV	L1	GND
0.483000	21.40	20.1	46	24.9	AV	L1	GND
1.000000	17.40	20.2	46	28.6	AV	L1	GND
2.183500	14.60	20.3	46	31.4	AV	L1	GND
5.203000	11.10	20.5	50	38.9	AV	L1	GND
29.899000	11.60	20.9	50	38.4	AV	L1	GND

CONDUCTED EMISSION TEST DATA

Test Site:	1# Shielded Room
Operating Condition:	ON
Test Specification:	AC 120V/60Hz for Adapter
Comment:	Neutral Line
	Tem:25℃ Hum:50%

SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154500	37.60	20.1	66	28.2	QP	N	GND
0.442500	35.90	20.1	57	21.1	QP	N	GND
1.436500	27.70	20.3	56	28.3	QP	N	GND
2.206000	27.40	20.3	56	28.6	QP	N	GND
5.212000	21.10	20.5	60	38.9	QP	N	GND
29.903500	19.80	20.9	60	40.2	QP	N	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.249000	23.00	20.1	52	28.8	AV	N	GND
0.366000	23.20	20.1	49	25.4	AV	N	GND
0.478500	26.40	20.1	46	20.0	AV	N	GND
0.919500	20.80	20.1	46	25.2	AV	N	GND
2.215000	18.00	20.3	46	28.0	AV	N	GND
5.387500	12.90	20.5	50	37.1	AV	N	GND

3. Radiation Interference

3.1 Requirements (15.249, 15.209):

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHZ		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBμV/m @3m	54 dBμV/m @3m	ABOVE 960 MHz	54dBuV/m

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

3.2 Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

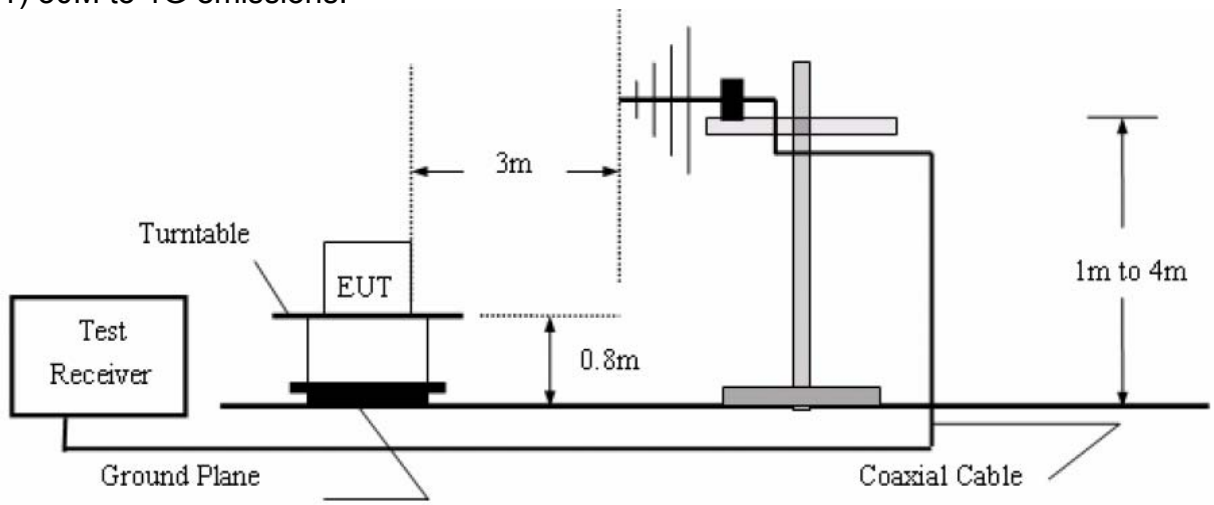
ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.
When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

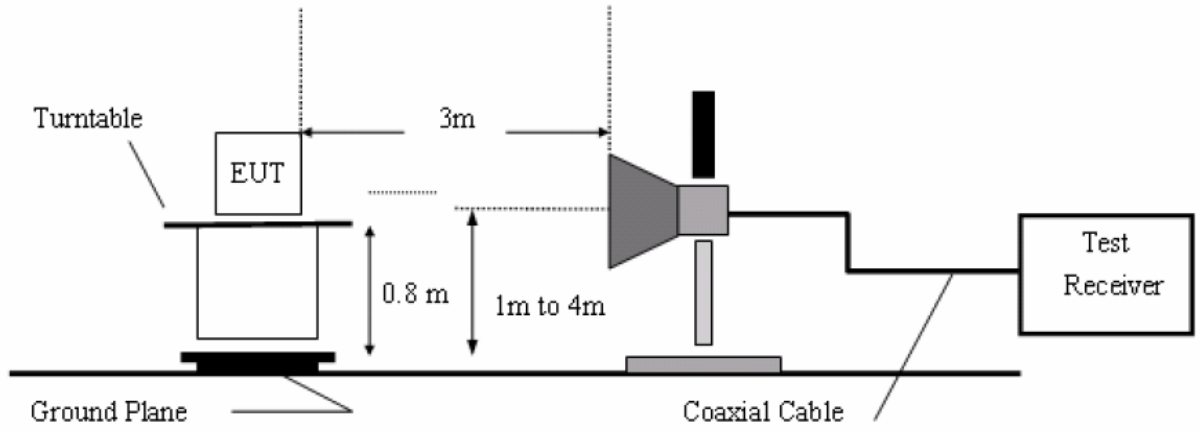
All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz. The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 3.3.

1) 30M to 1G emissions:



2) 1G to 40G emissions:



Test Equipment:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

3.3 Test Results

PASS.

Please refer the following pages.

Data:

Below 1GHz:

Freq. (MHz)	Ant. Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Note
89.510	V	28.54	40.00	-11.46	PK
254.770	V	35.22	46.00	-10.78	PK
401.090	V	36.05	46.00	-9.95	PK
647.540	V	35.77	46.00	-10.23	PK
801.150	V	37.64	46.00	-8.36	PK
876.290	V	36.92	46.00	-9.08	PK
128.490	H	26.87	43.50	-16.63	PK
341.220	H	37.05	46.00	-8.95	PK
512.860	H	34.61	46.00	-11.39	PK
775.810	H	36.77	46.00	-9.23	PK
778.220	H	36.49	46.00	-9.51	PK
902.440	H	31.65	46.00	-14.35	PK

Horizontal
CH Low (2402MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2402.00	2.17	31.21	35.30	90.21	88.29	114.0	-25.71	Peak
2402.00	2.17	31.21	35.30	78.45	76.53	94.0	-17.47	AV
4804.04	2.56	34.01	34.71	50.69	52.55	74.0	-21.45	Peak
4804.04	2.56	34.01	34.71	36.33	38.19	54.0	-15.81	AV
7207.98	2.98	36.16	35.15	47.01	51.00	74.0	-23.00	Peak
7207.98	2.98	36.16	35.15	31.77	35.76	54.0	-18.24	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---
---		.						

Vertical
CH Low (2402MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2402.00	2.17	31.21	35.30	91.41	89.49	114.0	-24.51	Peak
2402.00	2.17	31.21	35.30	82.36	80.44	94.0	-13.56	AV
4804.10	2.56	34.01	34.71	46.74	48.60	74.0	-25.40	Peak
4804.10	2.56	34.01	34.71	35.09	36.95	54.0	-17.05	AV
7207.93	2.98	36.16	35.15	43.22	47.21	74.0	-26.79	Peak
7207.93	2.98	36.16	35.15	35.13	39.12	54.0	-14.88	AV
9608.00	---	---	---	---	---	---	---	---
12010.00	---	---	---	---	---	---	---	---
14412.00	---	---	---	---	---	---	---	---
16814.00	---	---	---	---	---	---	---	---

Horizontal
CH Middle (2441MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2441.00	2.19	31.22	34.60	94.55	93.36	114.0	-20.64	Peak
2441.00	2.19	31.22	34.60	82.94	81.75	94.0	-12.25	AV
4882.08	2.57	35.00	34.58	46.17	49.16	74.0	-24.84	Peak
4882.08	2.57	35.00	34.58	39.97	42.96	54.0	-11.04	AV
7323.05	3.00	36.17	35.14	46.23	50.26	74.0	-23.74	Peak
7323.05	3.00	36.17	35.14	35.82	39.85	54.0	-14.15	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---

Vertical
CH Middle (2441MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2441.01	2.19	31.22	34.60	93.42	92.23	114.0	-21.77	Peak
2441.01	2.19	31.22	34.60	82.14	80.95	94.0	-13.05	AV
4882.11	2.57	35.00	34.58	46.95	49.94	74.0	-24.06	Peak
4882.11	2.57	35.00	34.58	38.26	41.25	54.0	-12.75	AV
7323.02	3.00	36.17	35.14	46.51	50.54	74.0	-23.46	Peak
7323.02	3.00	36.17	35.14	34.27	38.30	54.0	-15.70	AV
9764.00	---	---	---	---	---	---	---	---
12205.00	---	---	---	---	---	---	---	---
14646.00	---	---	---	---	---	---	---	---
17087.00	---	---	---	---	---	---	---	---

Horizontal
CH High (2480MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2480.00	2.19	31.22	34.60	93.42	92.23	114.0	-21.77	Peak
2480.00	2.19	31.22	34.60	82.14	80.95	94.0	-13.05	AV
4960.05	2.57	35.00	34.58	46.95	49.94	74.0	-24.06	Peak
4960.05	2.57	35.00	34.58	38.26	41.25	54.0	-12.75	AV
7439.99	3.00	36.17	35.14	46.51	50.54	74.0	-23.46	Peak
7439.99	3.00	36.17	35.14	34.27	38.30	54.0	-15.70	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---

Vertical
CH High (2480MHz)

Frequency MHz	Cable Loss dB	Ant Factor dB/m	Preamp Factor dB	Read Level dBμV	Level dBμV/m	Limit dBμV/m	Over Limit dB	Remark
2480.00	2.20	31.65	36.00	83.79	91.45	114.0	-22.55	Peak
2480.00	2.20	31.65	36.00	82.12	86.17	94.0	-7.83	AV
4960.10	2.58	35.06	34.79	40.58	42.44	74.0	-31.56	Peak
4960.10	2.58	35.06	34.79	38.31	40.05	54.0	-13.95	AV
7439.96	3.02	36.19	34.90	38.68	42.76	74.0	-31.24	Peak
7439.96	3.02	36.20	35.20	36.91	40.21	54.0	-13.79	AV
9920.00	---	---	---	---	---	---	---	---
12400.00	---	---	---	---	---	---	---	---
14880.00	---	---	---	---	---	---	---	---
17360.00	---	---	---	---	---	---	---	---

NOTE: " --- " 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.

4. Occupied Bandwidth

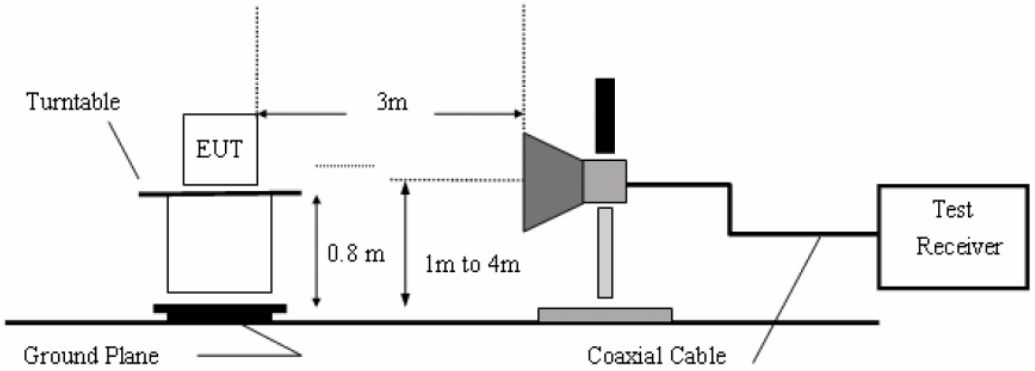
4.1 Requirements (15.249):

The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

4.2 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

4.3 Test Configuration:



Test Equipment:

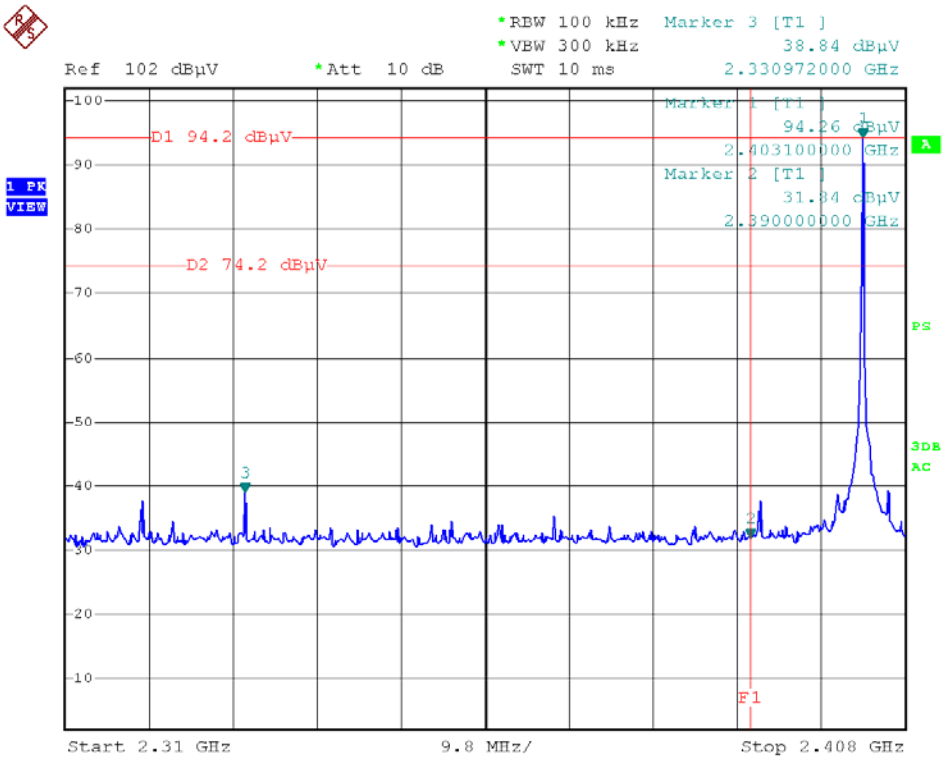
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2014	1 Year

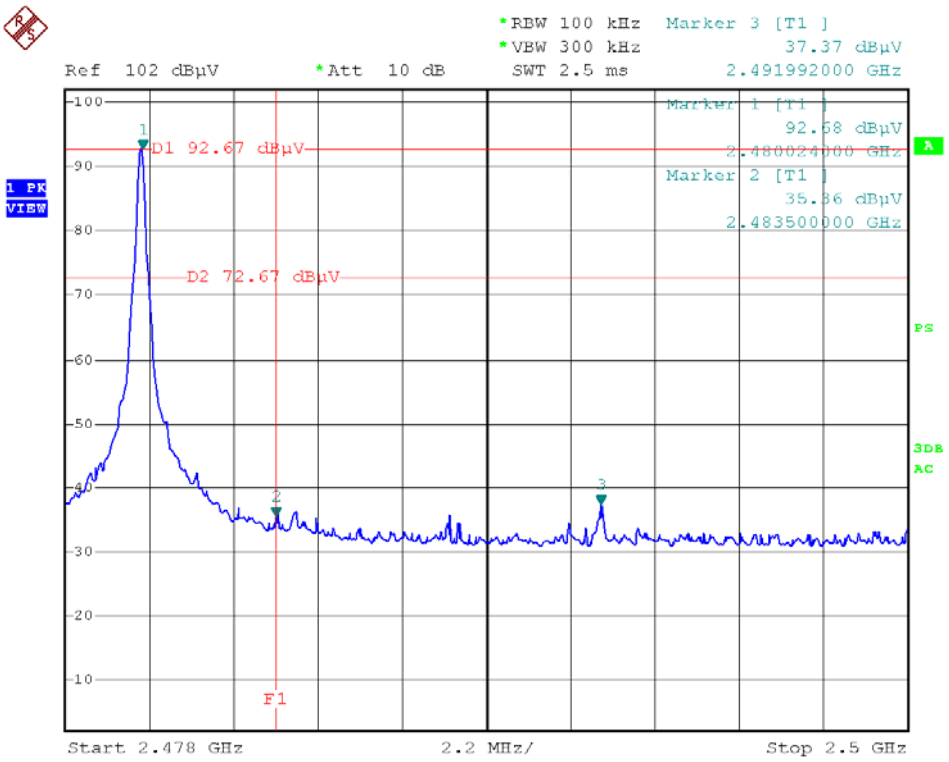
4.4 Test Results

Pass.

Please refer the following plot.

(Note: Marker 3 means the highest value in 2.31GHz~2.39GHz or 2.4835~2.5GHz)

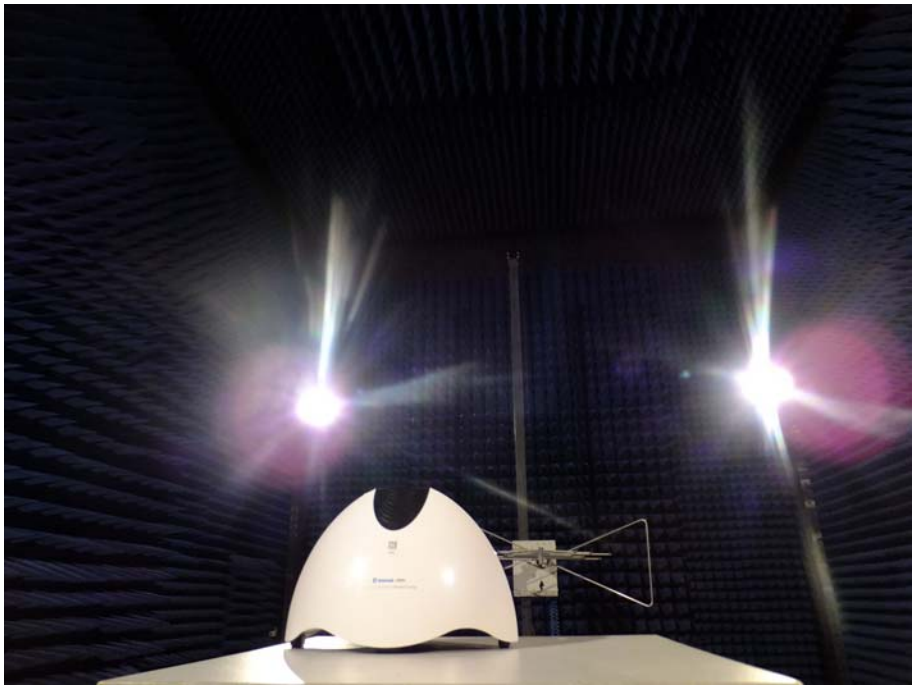


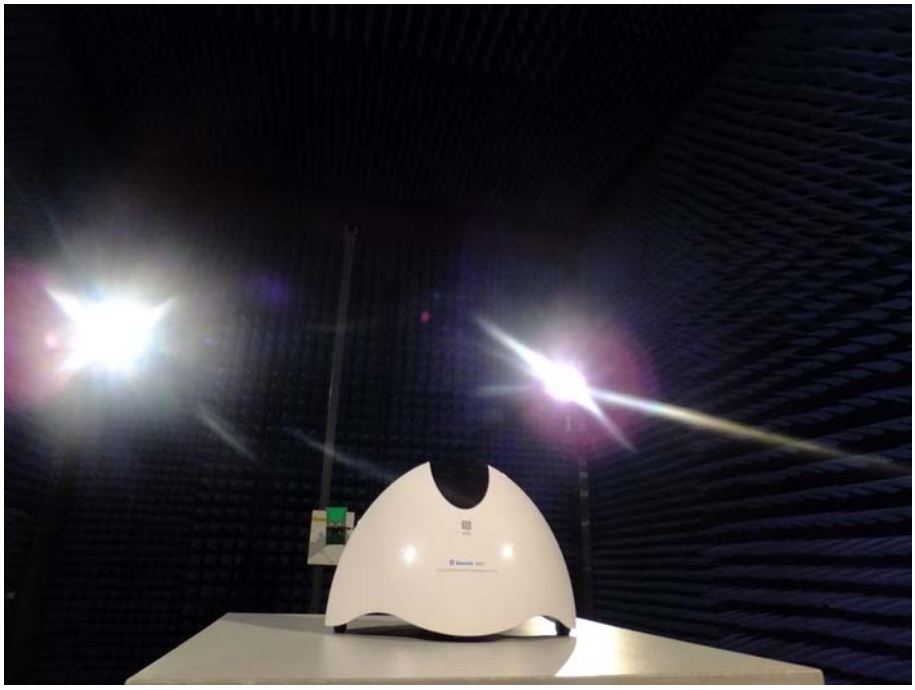

*RBW 100 kHz
*VBW 300 kHz
Ref 102 dBµV
*Att 10 dB
SWT 2.5 ms
Marker 3 [T1]
37.37 dBµV
2.491992000 GHz
Marker 1 [T1]
92.58 dBµV
2.480024000 GHz
Marker 2 [T1]
35.86 dBµV
2.483500000 GHz
D1 92.67 dBµV
D2 72.67 dBµV
1 PK VIEW
A
PS
3DB AC
F1
Start 2.478 GHz
2.2 MHz/
Stop 2.5 GHz

5. PHOTOGRAPH

5.1 Photo of Conducted Emission Test

5.2 Photo of Radiation Emission Test





APPENDIX I (EXTERNAL PHOTOS)

Figure 1
The EUT-Overall View

Figure 2
The EUT-Front View

Figure 3
The EUT-Back View

Figure 4
The EUT-Top View

Figure 5
The EUT-Bottom View

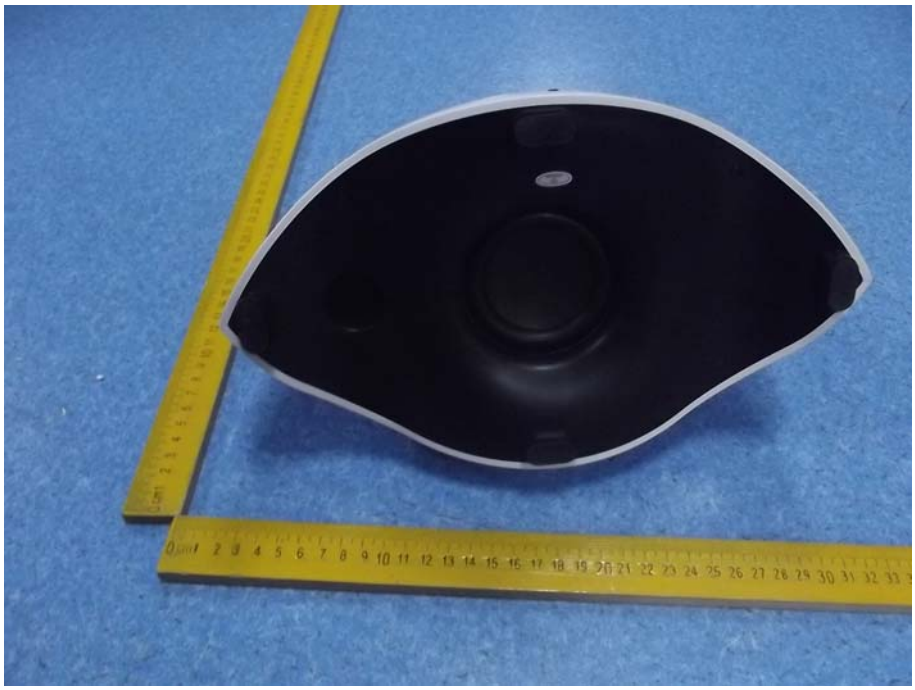


Figure 6
The EUT-Port View

APPENDIX II (INTERNAL PHOTOS)

Figure 7
PCB of the EUT

Figure 8
PCB of the EUT

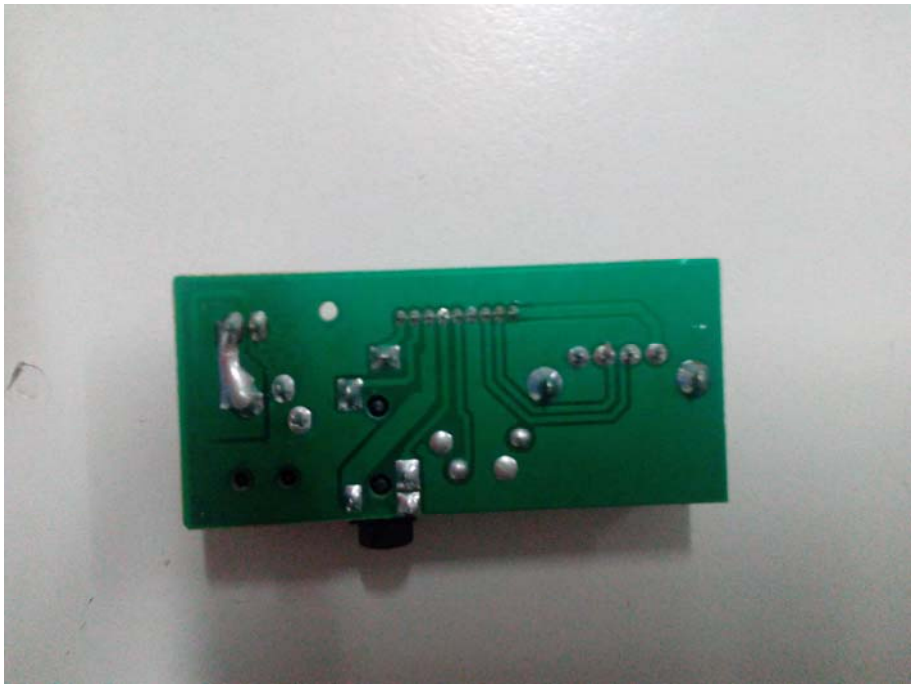


Figure 9
PCB of the EUT

Figure 10
PCB of the EUT

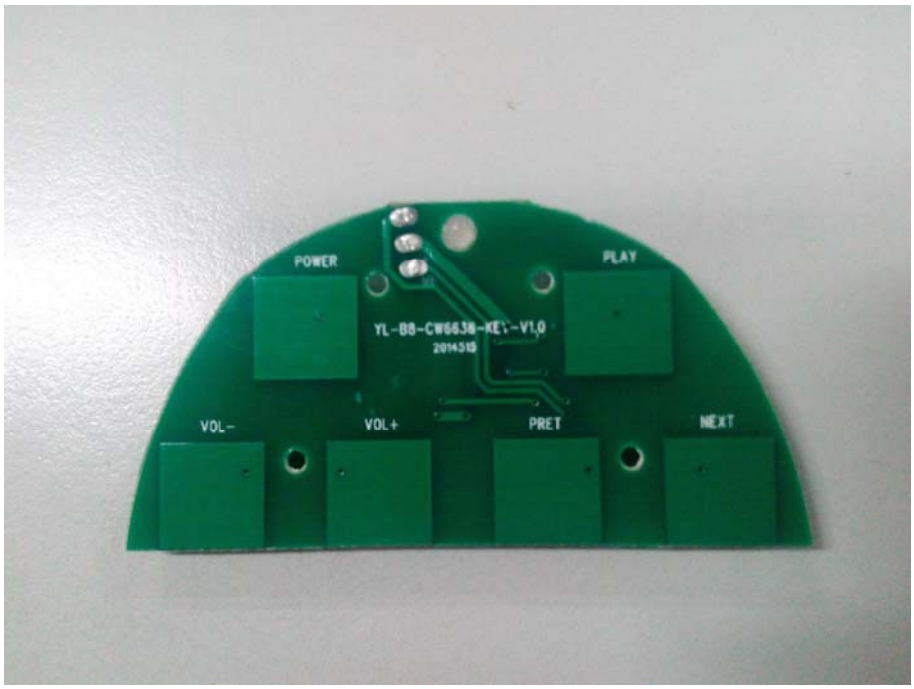


Figure 11
PCB of the EUT

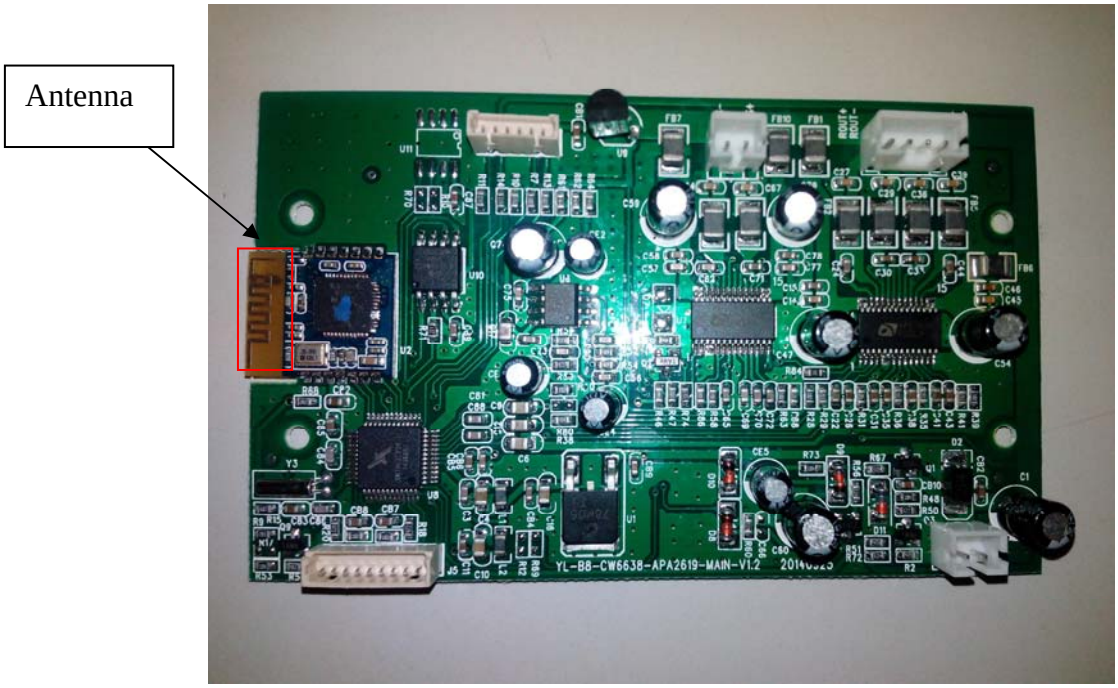


Figure 12
PCB of the EUT