ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Cuatro Speaker

Model No.: UG-CUATRO

Trade Mark: URGE BASICS

FCC ID: 2ADN7-HL1081

Report No.: KAD140902005E

Issue Date: December 01, 2014

Prepared for

ERG NY LLC
66 Grant Avenue, Carteret, NJ 07008, USA

Prepared by

DONGGUAN EMTEK CO., LTD.

No.281, Guantai Road, Nancheng District,
Dongguan, Guangdong, China
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VERIFICATION OF COMPLIANCE

Applicant:	ERG NY LLC 66 Grant Avenue, Carteret, NJ 07008, USA
Manufacturer:	ECORE TECHNOLOGY COMPANY LIMITED North of Bingang East Road, Huahu Development Zone, Ezhou city, Hubei Province, China
Product Description:	Cuatro Speaker
Trade Mark:	URGE BASICS
Model Number:	UG-CUATRO
File Number:	KAD140902005E
Date of Test:	September 02, 2014 to September 27, 2014

We hereby certify that:

The above equipment was tested by DONGGUAN EMTEK 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 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247(2014).

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

Approved By

Sam.Lv / Q.A. Manager
DONGGUAN EMTEK CO., LTD.

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	KAD140902005E

Table of Contents

1. GENERAL INFORMATION

1.1 Product Description

The ERG NY LLC, Model: UG-CUATRO (referred to as the EUT in this report) The EUT is an short range, lower power transmitter. It is designed by way of utilizing the following modulation achieves the system operating.

A). Operation Frequency: 2402-2480MHz
B). Kind of device: Bluetooth 4.0
C). Modulation: GFSK
D). Number of Channel: 40
E). Channel space: 2MHz
F). Rated RF Output Power: 0.87dBm(0.001222W)
G). Antenna Type: Internal PCB antenna
H). Antenna GAIN: 0 dBi
I). Input Rating: USB 5V 1A

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	**2402**	15	2430	29	2458
02	2404	16	2432	30	2460
03	2406	17	2434	31	2462
04	2408	18	2436	32	2464
05	2410	19	2438	33	2466
06	2412	20	**2440**	34	2468
07	2414	21	2442	35	2470
08	2416	22	2444	36	2472
09	2418	23	2446	37	2474
10	2420	24	2448	38	2476
11	2422	25	2450	39	2478
12	2424	26	2452	40	**2480**
13	2426	27	2454		
14	2428	28	2456		

Note:
1. Test of channel was included the lowest 2402MHz, middle 2440MHz and highest frequency 2480MHz in highest data rate and to perform the test, then record on this report.

1.2 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

Tested in accordance with FCC KDB Publication No. KDB558074 D01 v03r02 for compliance to FCC 47CFR 15.247 requirements.

1.3 Special Accessories

Not available for this EUT intended for grant.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Test Facility

Site Description

EMC Lab. : Accredited by FCC, June 18, 2014
The Certificate Number is 247565

Accredited by Industry Canada, February 19, 2014
The Certificate Number is 9444A.

Name of Firm : DONGGUAN EMTEK CO., LTD

Site Location : No.281, Guantai Road, Nancheng District, Dongguan, Guangdong, China

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 transmission application.

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

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 C63.4-2009. 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 was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

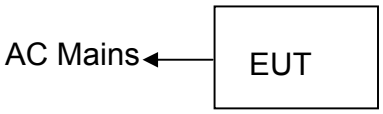


Table 2-1 Equipment Used in Tested System

Item	Equipment	Brand	Model No.	FCC ID	Note
1.	Cuatro Speaker	URGE BASICS	UG-CUATRO	2ADN7-HL1081	***EUT***
2.	Adapter	N/A	YSV6-0501000	N/A	***Support Equipment***

Note:

(1) Unless otherwise denoted as EUT in『Remark』column , device(s) used in tested system is a support equipment.

(2) All cases of EUT are tested, only the result of the worst case was recorded in the report.

3. Description of test modes

This is Digital Transmission system(DTS) and have one type of modulation GFSK.

The 3 channels of lower, middle and higher were chosen for test.

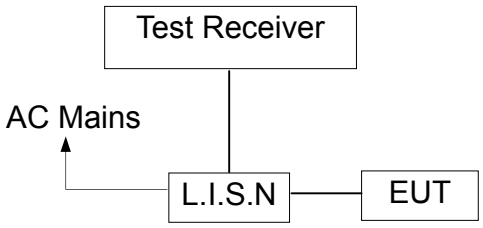
1. For lowest channel : 2402MHz(Channel 01)
2. For middle channel : 2440MHz(Channel 20)
3. For highest channel: 2480MHz(Channel 40)

4. Conducted Emissions Test

4.1 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 was complete.

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Equipment Used:

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**Last Cal.**	**Due date**
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/16/2014	05/15/2015
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/16/2014	05/15/2015
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/16/2014	05/15/2015
50ΩCoaxial Switch	Anritsu	MP59B	M20531	05/16/2014	05/15/2015

4.4 Conducted Emission Limit

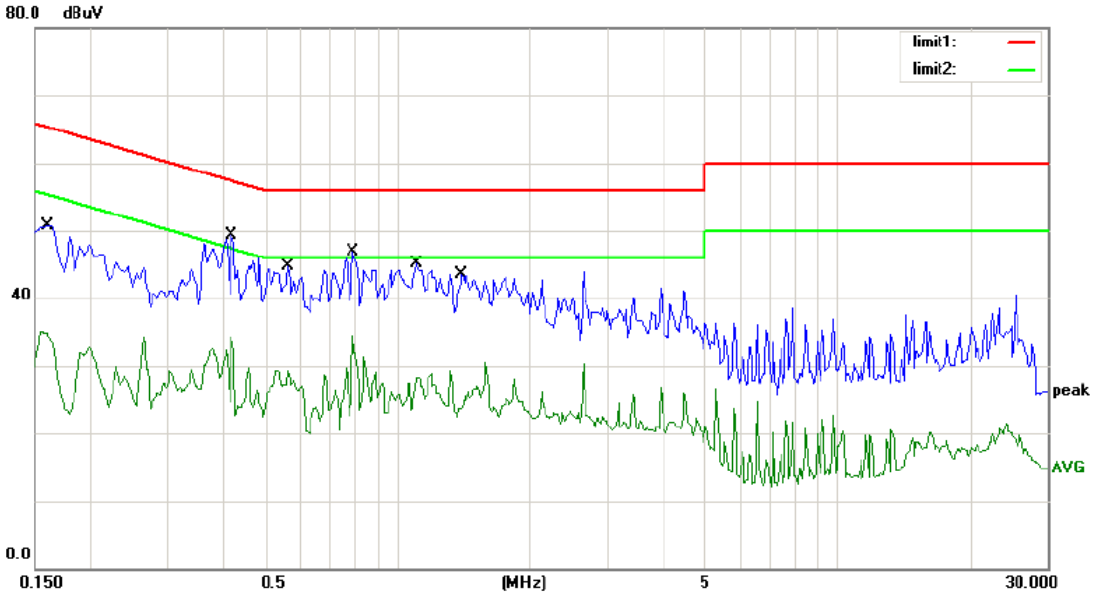
(7) Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:

1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

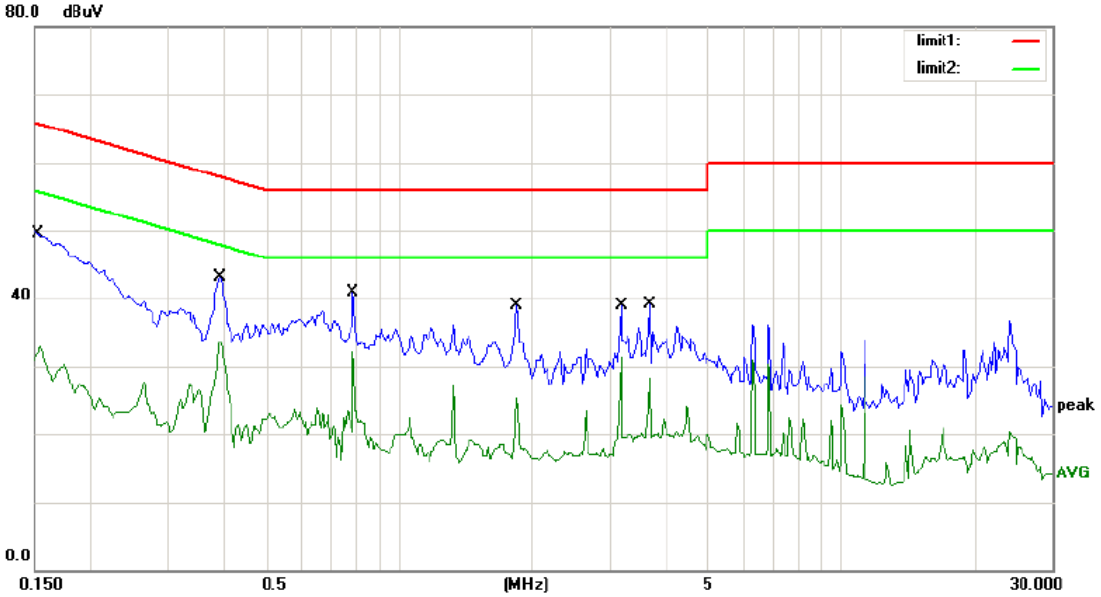
4.5 Measurement Result:



Site site #1 Phase: *L1* Temperature: 24
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 55 %
Mode: TX
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1600	47.30	0.00	47.30	65.46	-18.16	QP	
2		0.1600	35.12	0.00	35.12	55.46	-20.34	AVG	
3	*	0.4200	46.20	0.00	46.20	57.45	-11.25	QP	
4		0.4200	34.28	0.00	34.28	47.45	-13.17	AVG	
5		0.5650	41.90	0.00	41.90	56.00	-14.10	QP	
6		0.5650	29.40	0.00	29.40	46.00	-16.60	AVG	
7		0.7950	43.40	0.00	43.40	56.00	-12.60	QP	
8		0.7950	34.56	0.00	34.56	46.00	-11.44	AVG	
9		1.1000	41.50	0.00	41.50	56.00	-14.50	QP	
10		1.1000	28.30	0.00	28.30	46.00	-17.70	AVG	
11		1.4000	39.50	0.00	39.50	56.00	-16.50	QP	
12		1.4000	29.26	0.00	29.26	46.00	-16.74	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver.



Site site #1 Phase: N Temperature: 24
Limit: (CE)FCC PART 15 class B_QP Power: AC 120V/60Hz Humidity: 55 %
Mode: TX
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1540	46.30	0.00	46.30	65.78	-19.48	QP	
2		0.1540	32.86	0.00	32.86	55.78	-22.92	AVG	
3		0.3950	39.60	0.00	39.60	57.96	-18.36	QP	
4		0.3950	33.77	0.00	33.77	47.96	-14.19	AVG	
5		0.7900	37.50	0.00	37.50	56.00	-18.50	QP	
6	*	0.7900	32.04	0.00	32.04	46.00	-13.96	AVG	
7		1.8550	35.90	0.00	35.90	56.00	-20.10	QP	
8		1.8550	25.31	0.00	25.31	46.00	-20.69	AVG	
9		3.1750	36.10	0.00	36.10	56.00	-19.90	QP	
10		3.1750	31.33	0.00	31.33	46.00	-14.67	AVG	
11		3.7000	35.10	0.00	35.10	56.00	-20.90	QP	
12		3.7000	28.38	0.00	28.38	46.00	-17.62	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver.

4.6 Conducted Measurement Photos:

5. Radiated Emission Test

5.1 Measurement Procedure

1 The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six 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 measured were complete.

When spectrum scanned from 30MHz to 1GHz setting resolution bandwidth 120KHz and video bandwidth 300KHz:

EMI Test Receiver	Setting
Attenuation	Auto
RB	120KHz
VB	300KHz
Detector	QP
Trace	Max hold

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz:

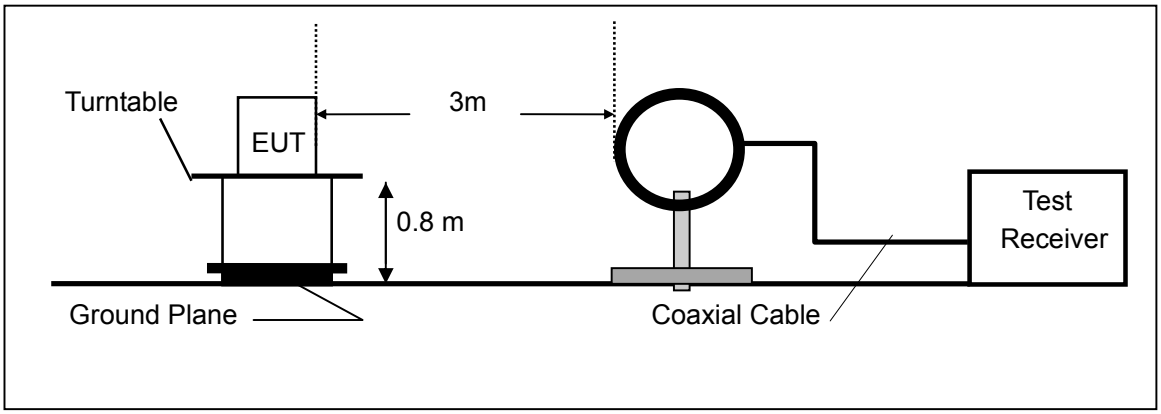
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 10Hz:

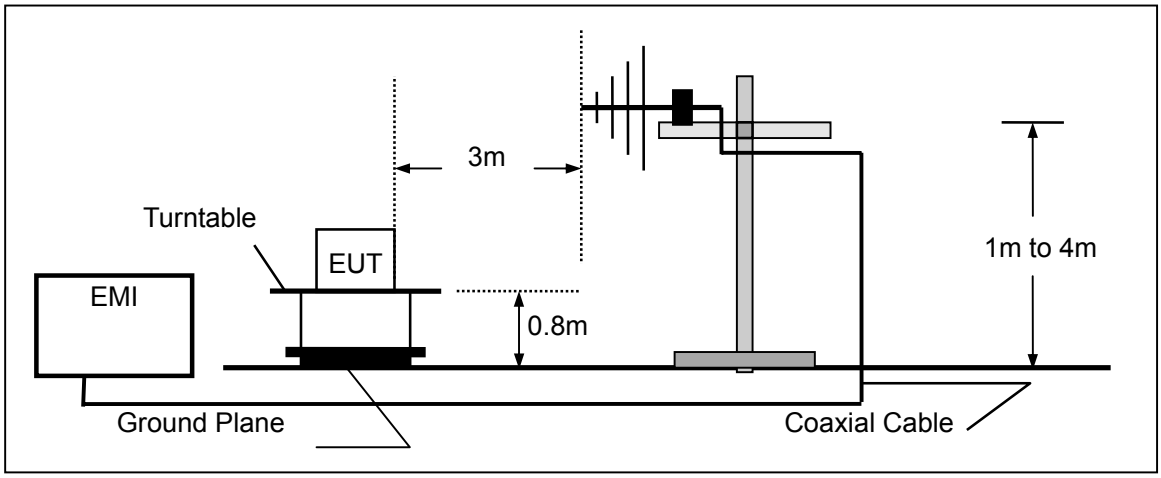
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	Peak
Trace	Max hold

5.2 Test SET-UP (Block Diagram of Configuration)

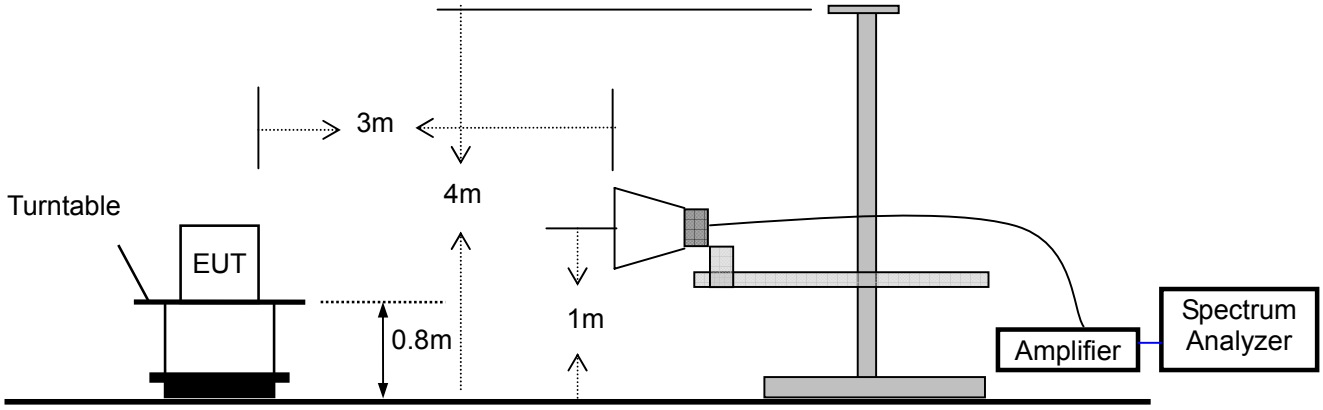
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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



5.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/16/2014	05/15/2015
Pre-Amplifier	HP	8447D	2944A07999	05/16/2014	05/15/2015
Bilog Antenna	SCHWARZBECK	VULB9163	142	05/16/2014	05/15/2015
Loop Antenna	ARA	PLA-1030/B	1029	05/16/2014	05/15/2015
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170399	05/16/2014	05/15/2015
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/16/2014	05/15/2015
Cable	Schwarzbeck	AK9513	ACRX1	05/19/2014	05/18/2015
Cable	Schwarzbeck	N/A	FP2RX2	05/19/2014	05/18/2015
Cable	Schwarzbeck	AK9513	CRPX1	05/19/2014	05/18/2015
Cable	Schwarzbeck	AK9513	CRRX2	05/19/2014	05/18/2015

5.4 Radiated emission limit

Frequency MHz	Distance Meter	Field Strength uV/m	Field Strength dBuV/m
0.009 – 0.490	300	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	30	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	100* 30	20log 30 + 40
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
Above 960	3	500	54.0

Note: The frequencies above 1000MHz, as measured using instrumentation with a peak detector function was corresponding to 20dB above maximum permitted average limit.

5.5 Measurement Result

Below 30MHz:

Operation Mode:	TX	Test Date :	September 09, 2014
Frequency Range:	9KHz~30MHz	Temperature :	28℃
Test Result:	PASS	Humidity :	65 %
Measured Distance:	3m	Test By:	Andy

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
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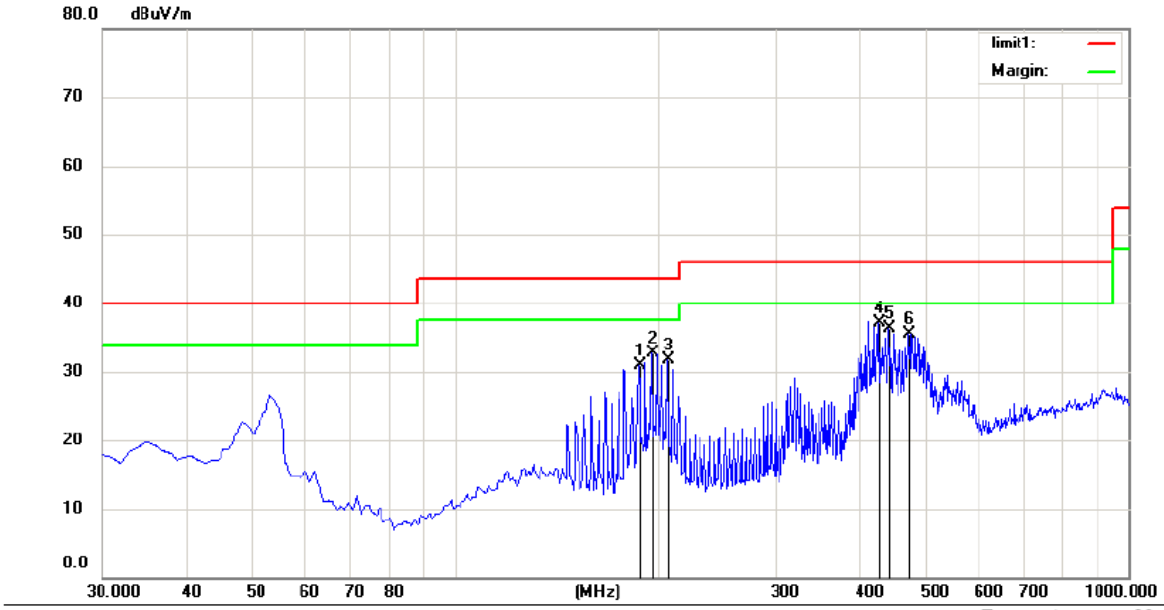
Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Below 1000MHz:

Pass.

Please refer to the following data.



Site Chamber #1 Polarization: **Horizontal** Temperature: 26

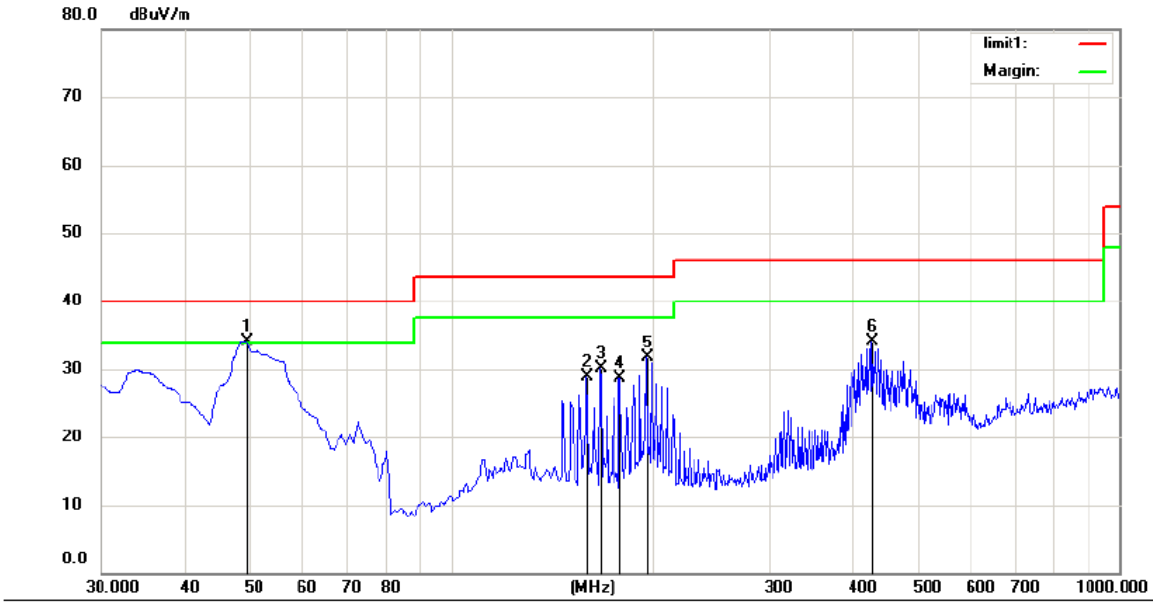
Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %

Mode:TX(2402)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		188.1100	49.37	-18.39	30.98	43.50	-12.52	QP			
2		195.8700	50.55	-17.85	32.70	43.50	-10.80	QP			
3		207.5100	48.91	-17.20	31.71	43.50	-11.79	QP			
4	*	427.7000	48.48	-11.35	37.13	46.00	-8.87	QP			
5		440.3100	47.52	-11.26	36.26	46.00	-9.74	QP			
6		472.3200	46.26	-10.71	35.55	46.00	-10.45	QP			

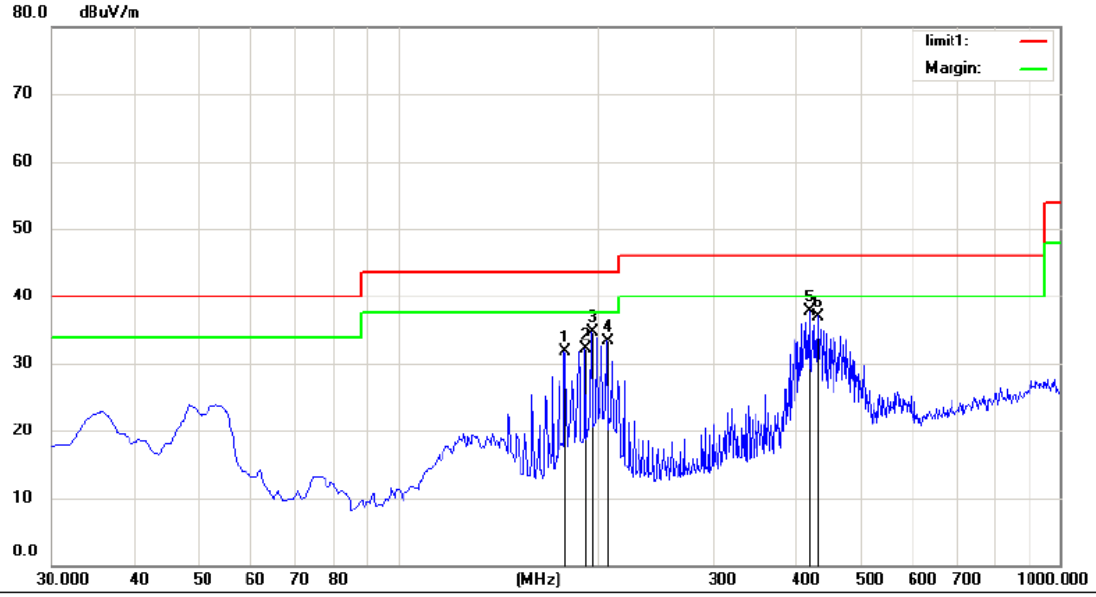
*:Maximum data x:Over limit !:over margin Operator: QIU



Site Chamber #1 Polarization: **Vertical** Temperature: 26
Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %
Mode:TX(2402)
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	49.4000	49.32	-15.17	34.15	40.00	-5.85	QP			
2		159.9800	47.25	-18.44	28.81	43.50	-14.69	QP			
3		167.7400	48.50	-18.41	30.09	43.50	-13.41	QP			
4		179.3800	47.55	-18.81	28.74	43.50	-14.76	QP			
5		195.8700	49.49	-17.85	31.64	43.50	-11.86	QP			
6		427.7000	45.44	-11.40	34.04	46.00	-11.96	QP			

*:Maximum data x:Over limit !:over margin Operator: QIU



Site Chamber #1 Polarization: **Horizontal** Temperature: 26

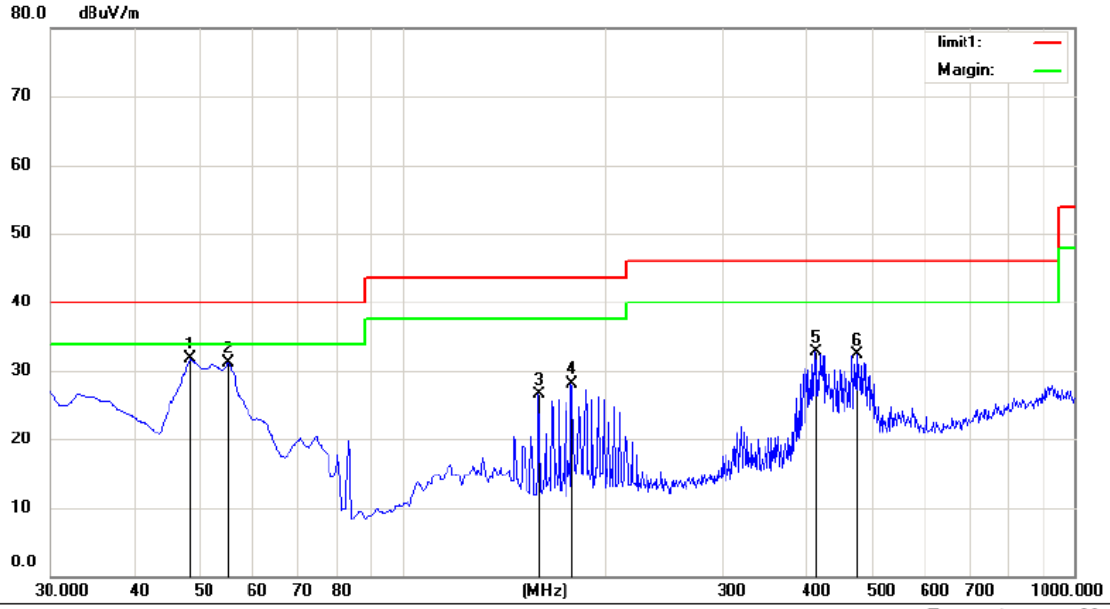
Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %

Mode: TX(2441)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		179.3800	50.44	-18.81	31.63	43.50	-11.87	QP			
2		191.9900	50.25	-18.14	32.11	43.50	-11.39	QP			
3		195.8700	52.51	-17.85	34.66	43.50	-8.84	QP			
4		207.5100	50.46	-17.20	33.26	43.50	-10.24	QP			
5	*	419.9400	49.08	-11.39	37.69	46.00	-8.31	QP			
6		431.5800	48.32	-11.32	37.00	46.00	-9.00	QP			

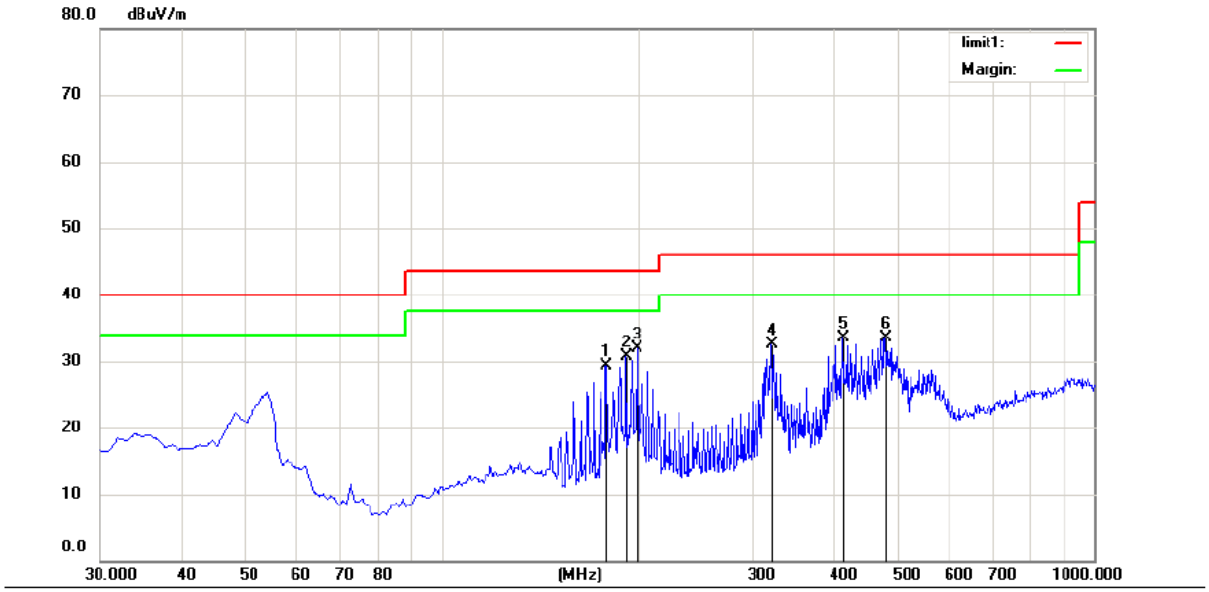
*:Maximum data x:Over limit !:over margin Operator: QIU



Site Chamber #1 Polarization: **Vertical** Temperature: 26
Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %
Mode:TX(2441)
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	48.4300	46.46	-14.74	31.72	40.00	-8.28	QP			
2		55.2200	48.64	-17.46	31.18	40.00	-8.82	QP			
3		159.9800	44.96	-18.44	26.52	43.50	-16.98	QP			
4		179.3800	46.86	-18.81	28.05	43.50	-15.45	QP			
5		412.1800	44.06	-11.34	32.72	46.00	-13.28	QP			
6		476.2000	42.94	-10.63	32.31	46.00	-13.69	QP			

*:Maximum data x:Over limit !:over margin Operator: QIU



Site Chamber #1 Polarization: **Horizontal** Temperature: 26

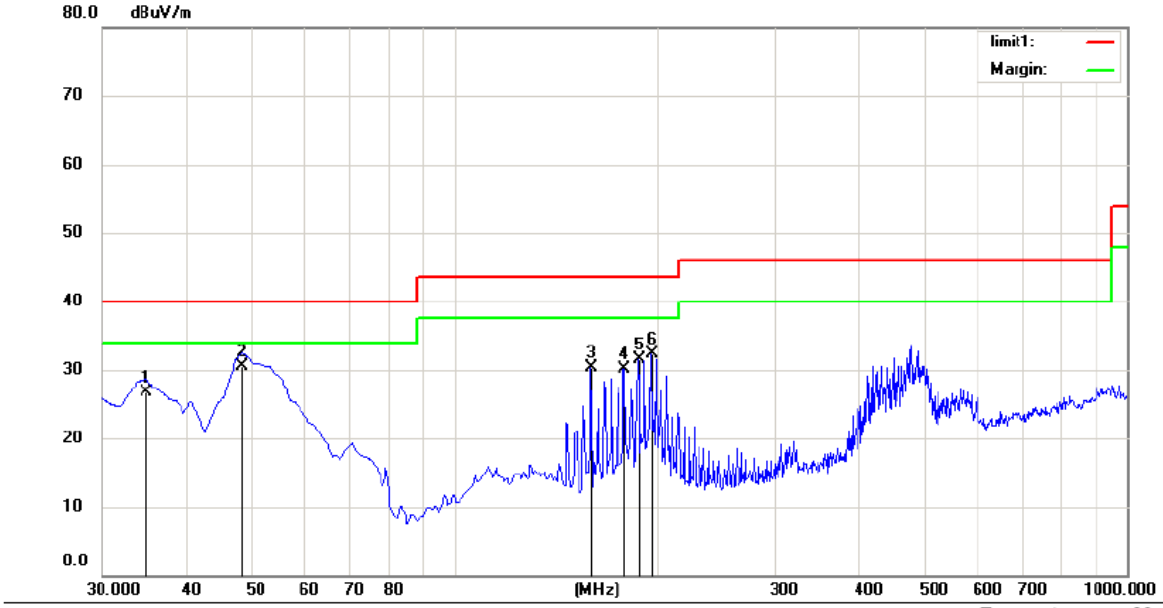
Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %

Mode:TX(2480)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		179.3800	48.15	-18.81	29.34	43.50	-14.16	QP			
2		191.9900	48.81	-18.14	30.67	43.50	-12.83	QP			
3	*	199.7500	49.68	-17.73	31.95	43.50	-11.55	QP			
4		320.0300	45.52	-13.05	32.47	46.00	-13.53	QP			
5		412.1800	44.87	-11.34	33.53	46.00	-12.47	QP			
6		480.0800	44.02	-10.54	33.48	46.00	-12.52	QP			

*:Maximum data x:Over limit !:over margin Operator: QIU



Site Chamber #1 Polarization: **Vertical** Temperature: 26

Limit: (RE)FCC PART 15 class B 3m Power: AC 120V/60Hz Humidity: 55 %

Mode:TX(2480)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		34.8500	40.86	-14.19	26.67	40.00	-13.33	QP			
2	*	48.4300	45.27	-14.74	30.53	40.00	-9.47	QP			
3		159.9800	48.78	-18.44	30.34	43.50	-13.16	QP			
4		179.3800	48.93	-18.81	30.12	43.50	-13.38	QP			
5		188.1100	49.82	-18.39	31.43	43.50	-12.07	QP			
6		195.8700	50.13	-17.85	32.28	43.50	-11.22	QP			

*:Maximum data x:Over limit !:over margin Operator: QIU

Above 1000MHz

Operation Mode:	TX Mode (CH01: 2402MHz)	Test Date :	September 09, 2014
Frequency Range:	1-25GHz	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %
Measured Distance:	3m	Test By:	Andy

Freq.	Ant. Pol.	Emission Level(dBuV/m		Limit 3m(dBuV/m)		Margin(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
4804	V	68.13	47.22	74	54	-5.87	-6.78
7206	V	67.08	46.29	74	54	-6.92	-7.71
9608	V	66.55	45.31	74	54	-7.45	-8.69
12010	V	64.95	44.85	74	54	-9.05	-9.15
14412	V	63.82	43.95	74	54	-10.18	-10.05
16814	V	62.13	42.55	74	54	-11.87	-11.45
4804	H	68.55	46.85	74	54	-5.45	-7.15
7206	H	67.21	45.13	74	54	-6.79	-8.87
9608	H	66.39	44.59	74	54	-7.61	-9.41
12010	H	65.72	43.95	74	54	-8.28	-10.05
14412	H	64.85	42.35	74	54	-9.15	-11.65
16814	H	63.95	41.07	74	54	-10.05	-12.93

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+ Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

Operation Mode:	TX Mode (CH20: 2440MHz)	Test Date :	September 09, 2014
Frequency Range:	1-25GHz	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %
Measured Distance:	3m	Test By:	Andy

Freq. (MHz)	Ant. Pol. H/V	Emission Level(dBuV/m		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4880	V	67.22	46.39	74	54	-6.78	-7.61
7320	V	66.28	45.25	74	54	-7.72	-8.75
9760	V	65.72	44.12	74	54	-8.28	-9.88
12200	V	64.35	43.69	74	54	-9.65	-10.31
14640	V	63.95	42.09	74	54	-10.05	-11.91
17080	V	62.12	41.07	74	54	-11.88	-12.93
4880	H	66.85	45.36	74	54	-7.15	-8.64
7320	H	65.37	44.18	74	54	-8.63	-9.82
9760	H	64.13	43.95	74	54	-9.87	-10.05
12200	H	63.95	42.24	74	54	-10.05	-11.76
14640	H	62.72	41.72	74	54	-11.28	-12.28
17080	H	61.04	40.95	74	54	-12.96	-13.05

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+ Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

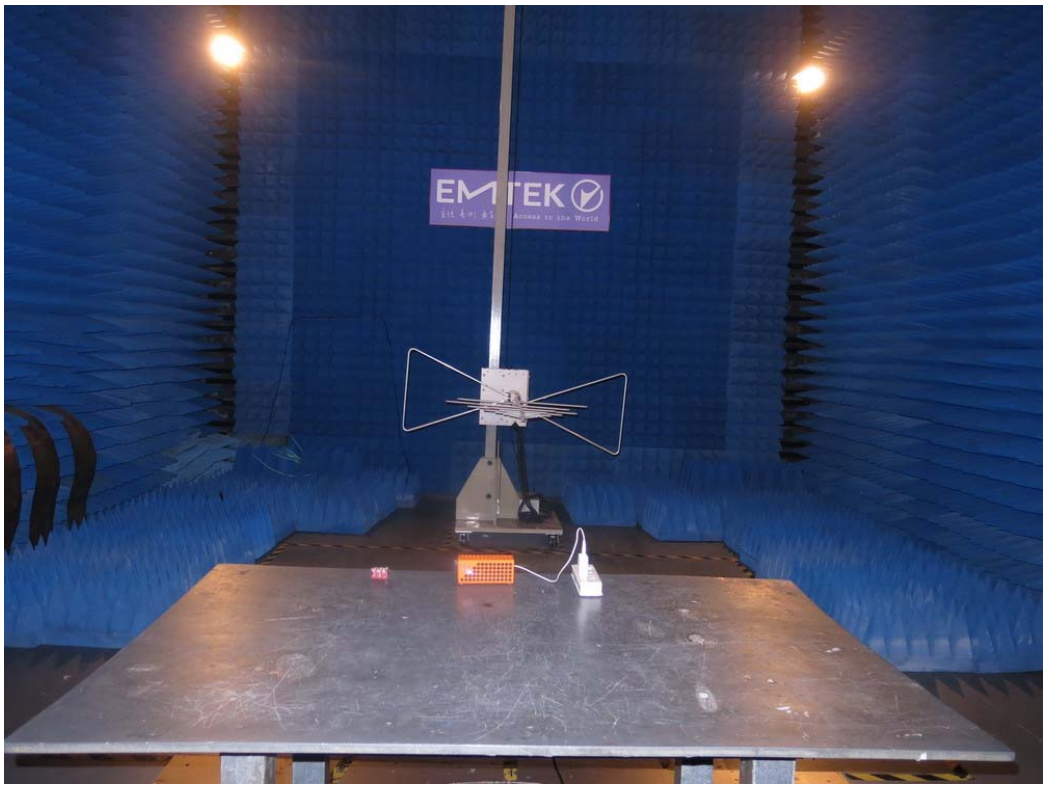
Operation Mode:	TX Mode (CH40: 2480MHz)	Test Date :	September 09, 2014
Frequency Range:	1-25GHz	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %
Measured Distance:	3m	Test By:	Andy

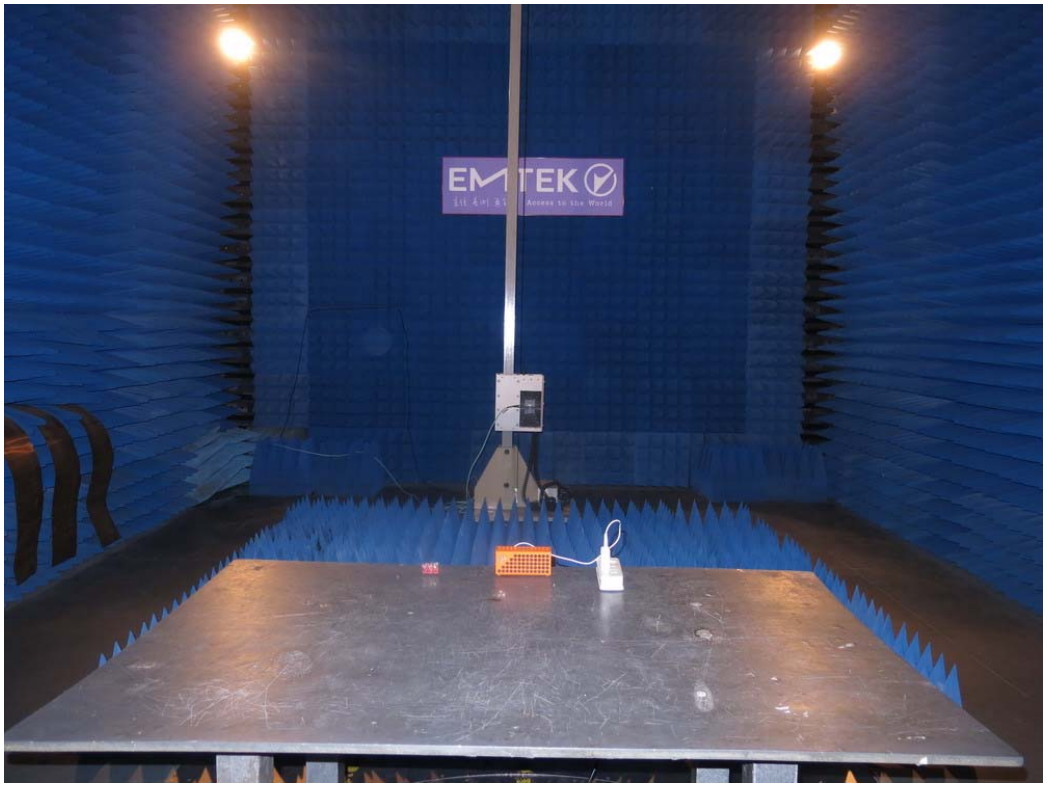
Freq. (MHz)	Ant. Pol. H/V	Emission Level(dBuV/m		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4960	V	66.33	45.33	74	54	-7.67	-8.67
7440	V	65.25	44.01	74	54	-8.75	-9.99
9920	V	64.95	43.95	74	54	-9.05	-10.05
12400	V	63.12	42.25	74	54	-10.88	-11.75
14880	V	62.85	41.38	74	54	-11.15	-12.62
17360	V	61.02	40.22	74	54	-12.98	-13.78
4960	H	67.23	46.39	74	54	-6.77	-7.61
7440	H	66.35	45.25	74	54	-7.65	-8.75
9920	H	65.27	44.26	74	54	-8.73	-9.74
12400	H	64.13	43.21	74	54	-9.87	-10.79
14880	H	63.85	42.39	74	54	-10.15	-11.61
17360	H	62.38	41.08	74	54	-11.62	-12.92

Other harmonics emissions are lower than 20dB below the allowable limit.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+ Probe Factor +Cable Loss.
(3) The average measurement was not performed when the peak measured data under the limit of average detection.

5.6 Radiated Measurement Photos:



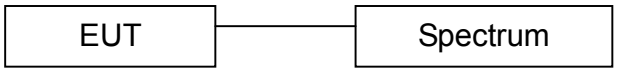


6. 6dB Bandwidth Measurement

6.1 Measurement Procedure

The EUT was operating in Bluetooth mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSV30	1321.3008K	05/16/2014	05/15/2015

6.4 Limit

The minimum 6dB bandwidth shall be at least 500kHz.

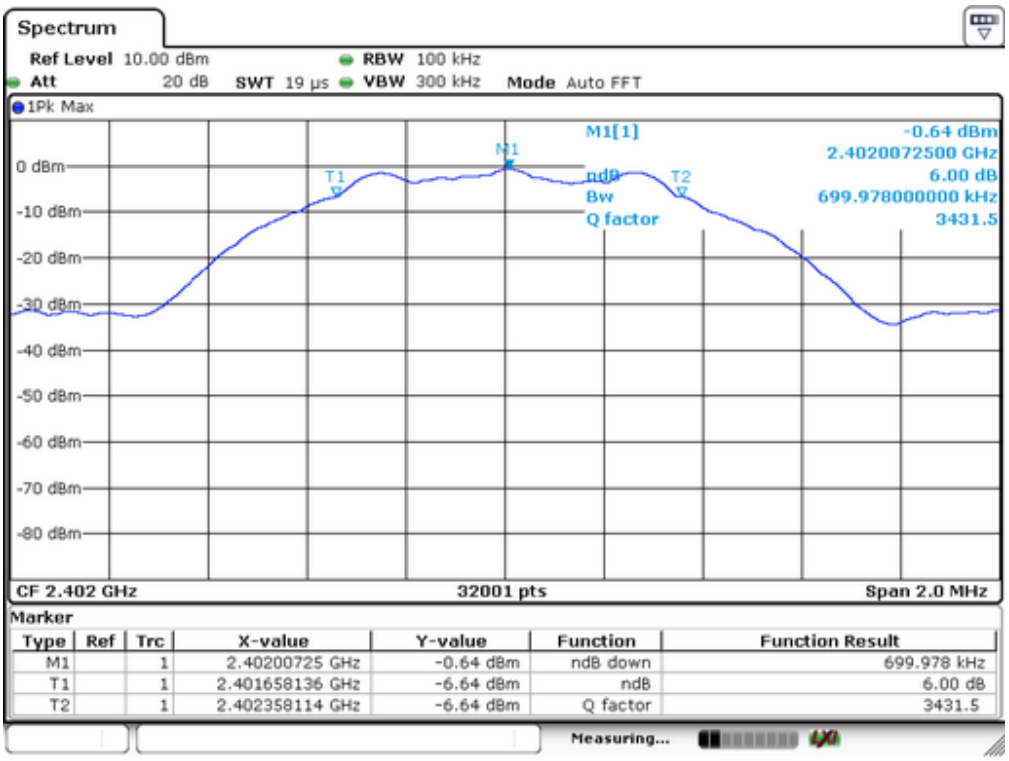
6.5 Measurement Results:

Refer to attached data chart.

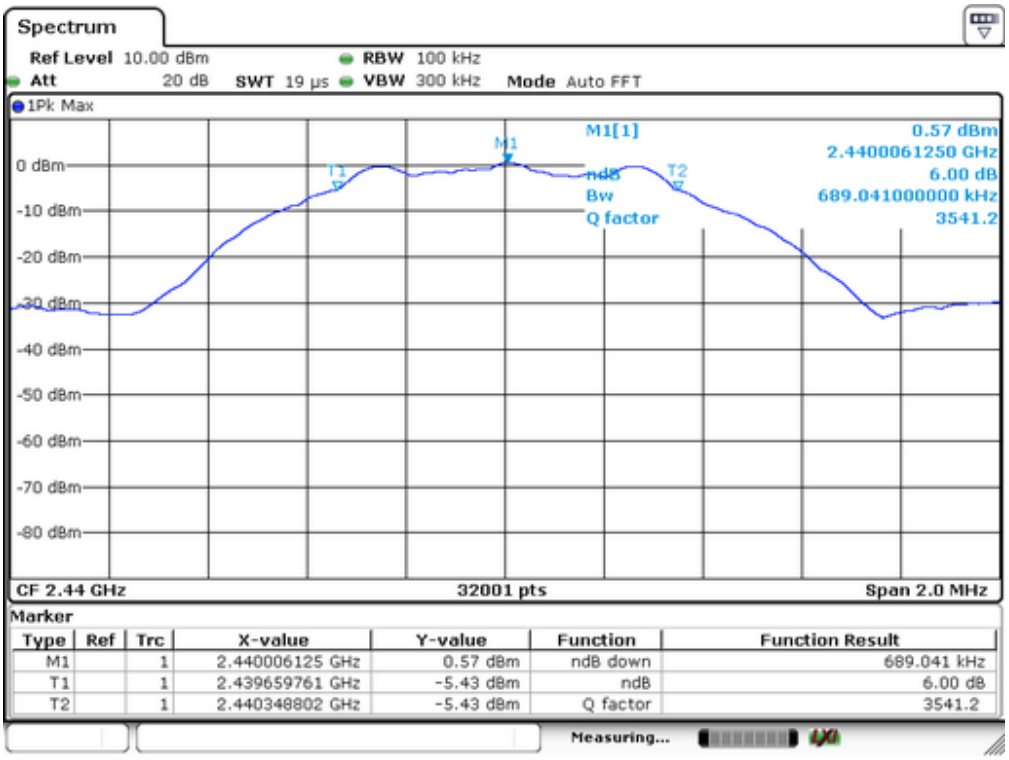
Spectrum Detector:	PK	Test Date :	September 09, 2014
Test By:	Andy	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %

Channel number	Channel frequency (MHz)	Measurement level (KHz)	Required Limit (KHz)
01	2402	699	>500
20	2440	689	>500
40	2480	686	>500

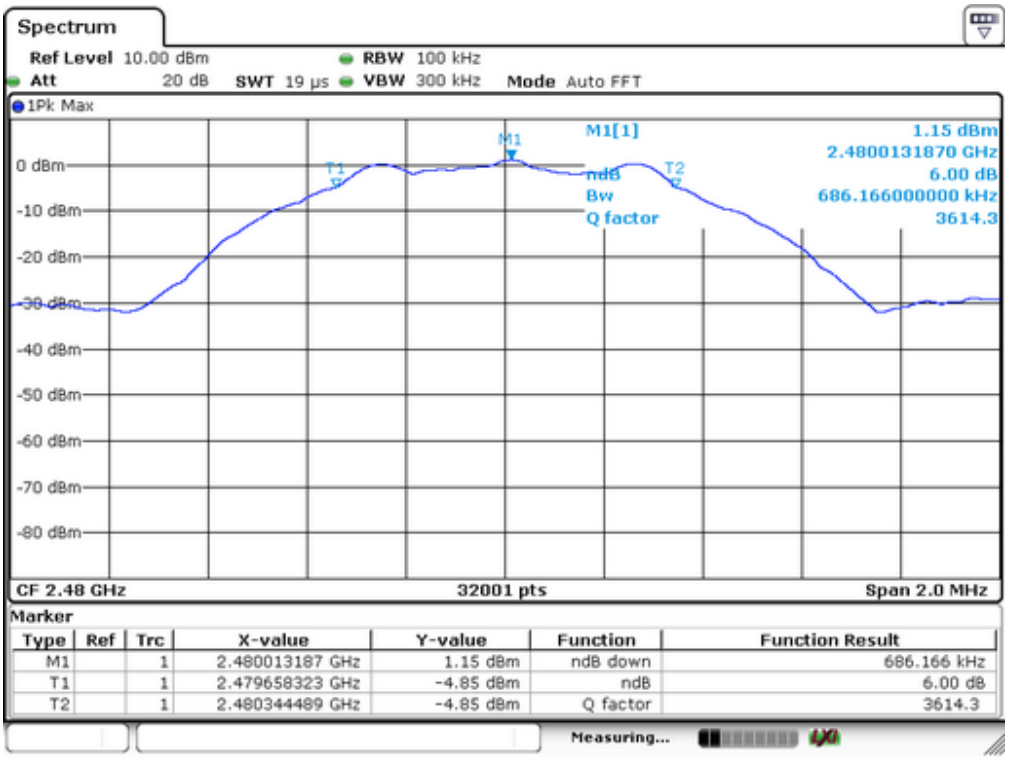
Channel 01:



Channel 20:



Channel 40:

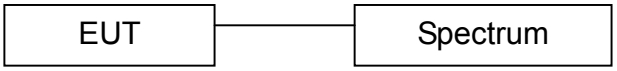

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 19 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
1.15 dBm
2.4800131870 GHz
ndB 6.00 dB
Bw 686.166000000 kHz
Q factor 3614.3
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 2.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.480013187 GHz 1.15 dBm ndB down 686.166 kHz
T1 1 2.479658323 GHz -4.85 dBm ndB 6.00 dB
T2 1 2.480344489 GHz -4.85 dBm Q factor 3614.3
Measuring...

7. MAXIMUM PEAK OUTPUT POWER TEST

7.1 Measurement Procedure

a. The Transmitter output (antenna port) was connected to the spectrum Analyzer.
b. Turn on the EUT and then record the peak power value.
c. Repeat above procedures on all channels needed to be tested.

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSV30	1321.3008K	05/16/2014	05/15/2015

7.4 Peak Power output limit

The maximum peak power shall be less 1Watt.

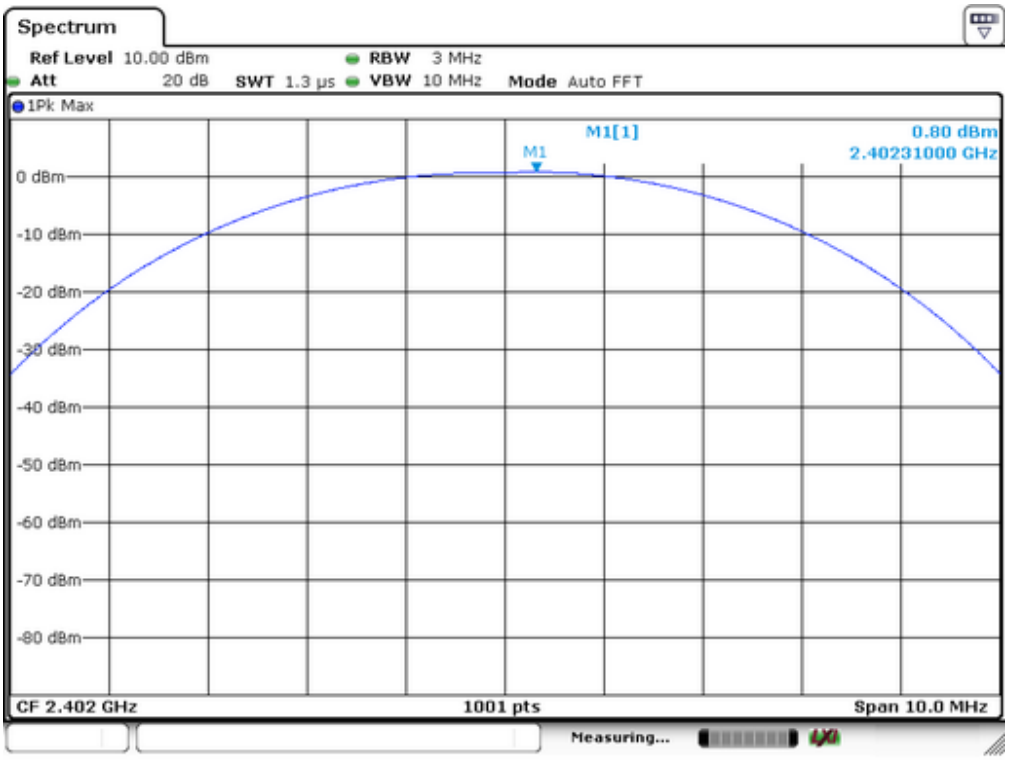
7.5 Measurement Results:

Refer to attached data chart.

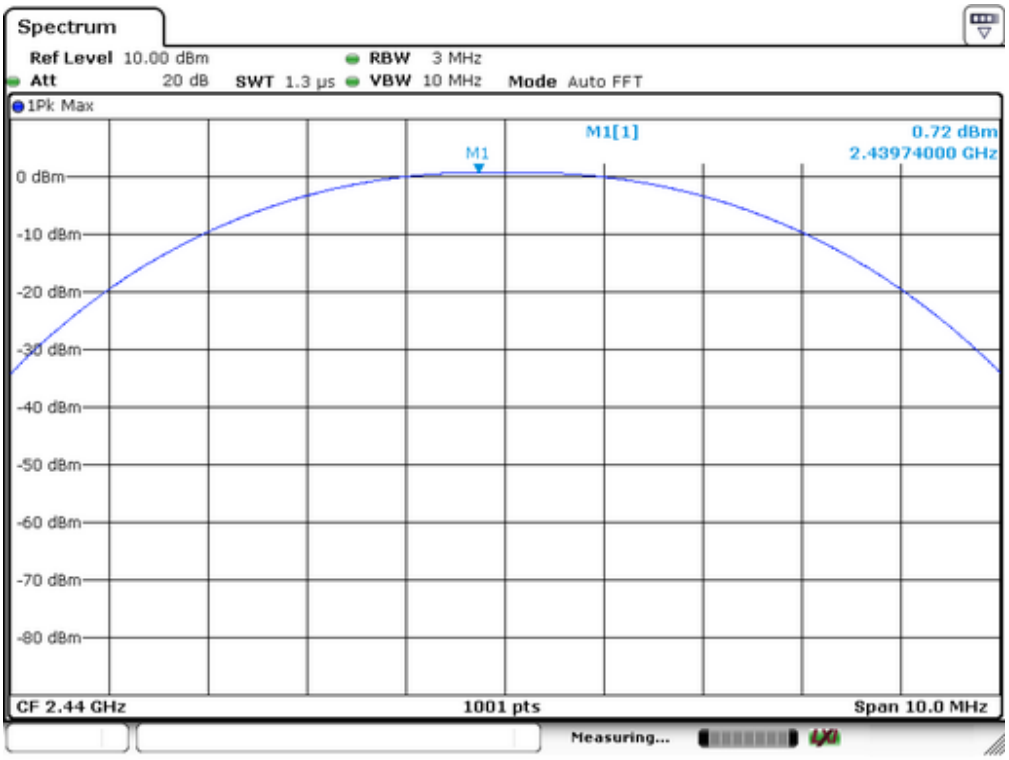
Spectrum Detector:	PK	Test Date :	September 09, 2014
Test By:	Andy	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power output(mW)	Peak Power Limit(W)	Pass/Fail
01	2402	0.80	1.202	1W(30dBm)	PASS
20	2440	0.72	1.180	1W(30dBm)	PASS
40	2480	**0.87**	1.222	1W(30dBm)	PASS

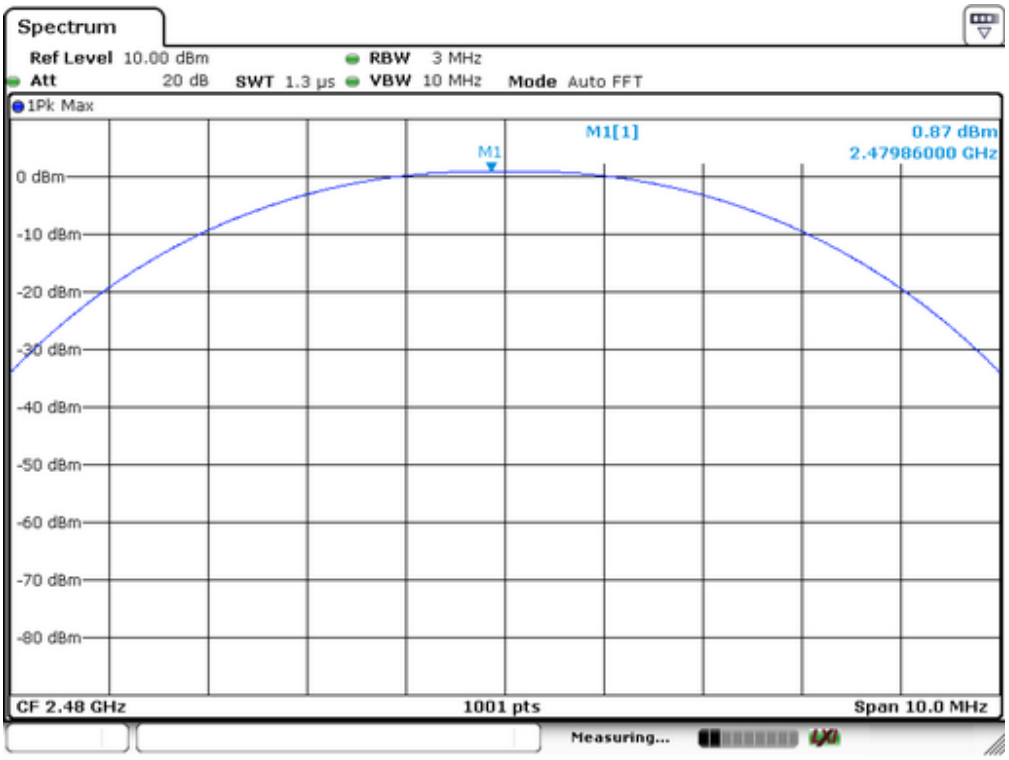
Channel 01



Channel 20



Channel 40

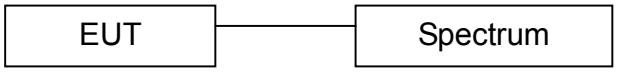

Spectrum
Ref Level 10.00 dBm
RBW 3 MHz
Att 20 dB
SWT 1.3 µs
VBW 10 MHz
Mode Auto FFT
1Pk Max
M1[1]
0.87 dBm
2.47986000 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
1001 pts
Span 10.0 MHz
Measuring...

8. Power Spectral Density Measurement

Measurement Procedure

The EUT was operating in Bluetooth mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

Test SET-UP (Block Diagram of Configuration)



Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSV30	1321.3008K	05/16/2014	05/15/2015

Measurement Procedure

8.4.1 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

8.4.2. Set to the maximum power setting and enable the EUT transmit continuously.

8.4.3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)

8.4.4. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.

8.4.5. Measure and record the results in the test report.

8.4.6. The Measured power density (dBm)/ 100KHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

8.5 Measurement Results:

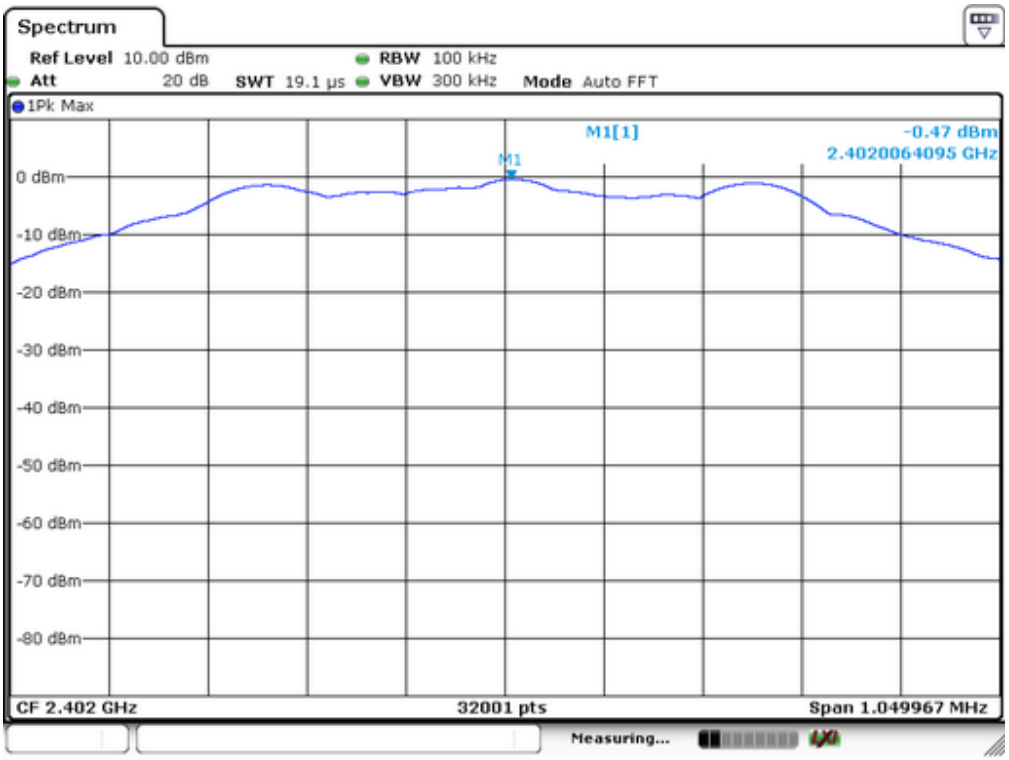
Refer to attached data chart.

Spectrum Detector:	PK	Test Date :	September 09, 2014
Test By:	Andy	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %

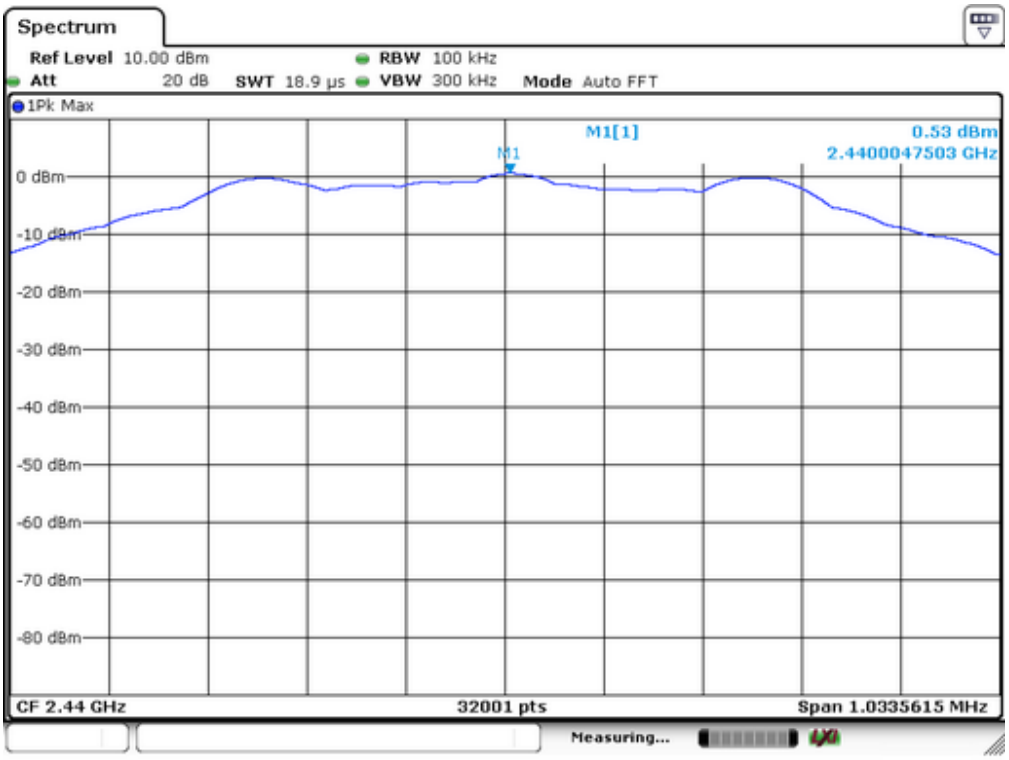
Channel number	Channel frequency (MHz)	Measurement level (dBm)		Required Limit (dBm)	Pass/Fail
01	2402	-0.47	-15.22	8	PASS
20	2440	0.53	-14.16	8	PASS
40	2480	1.05	-14.25	8	PASS

PSD 100kHz Plot:

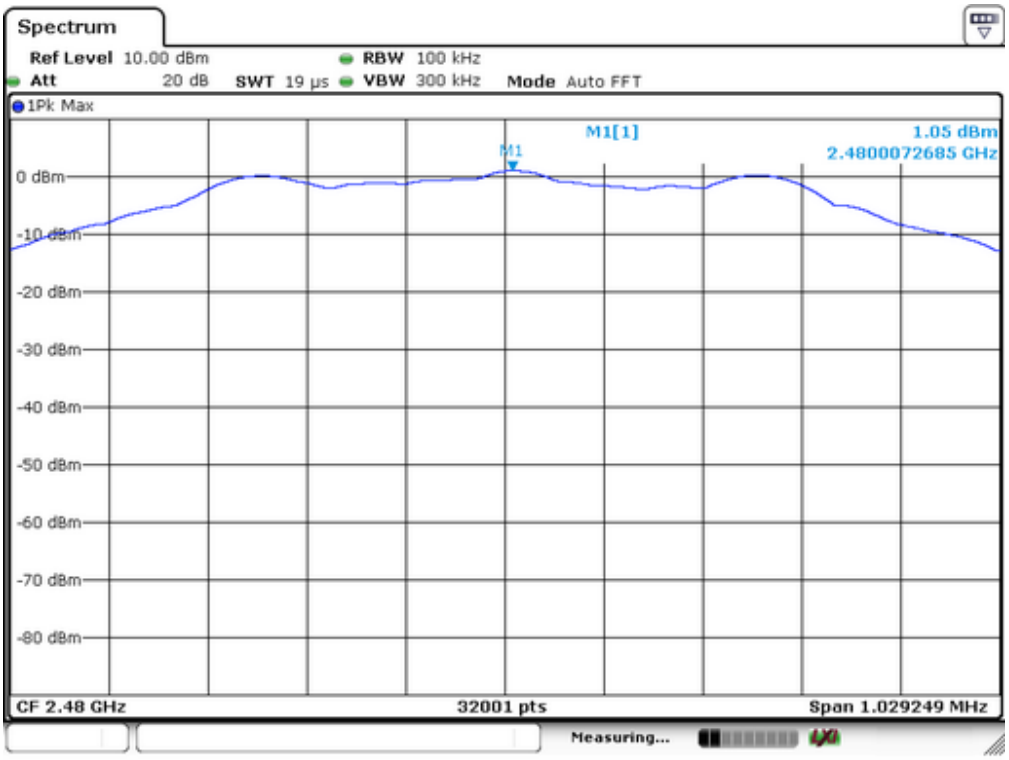
Channel 01



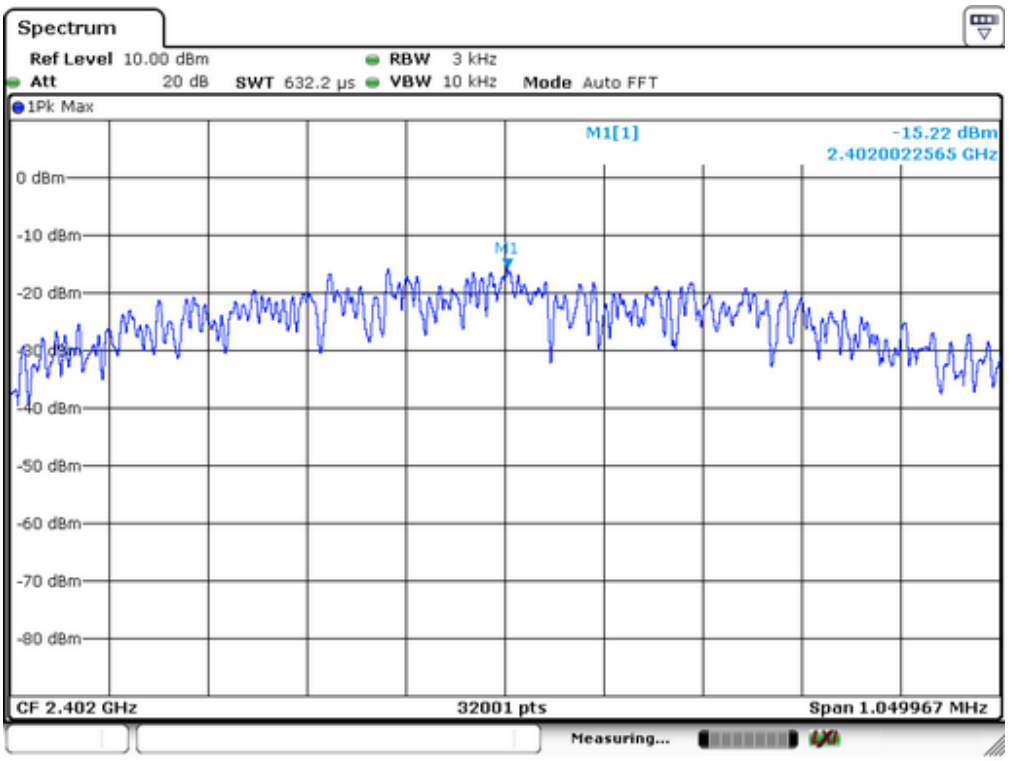
Channel 20



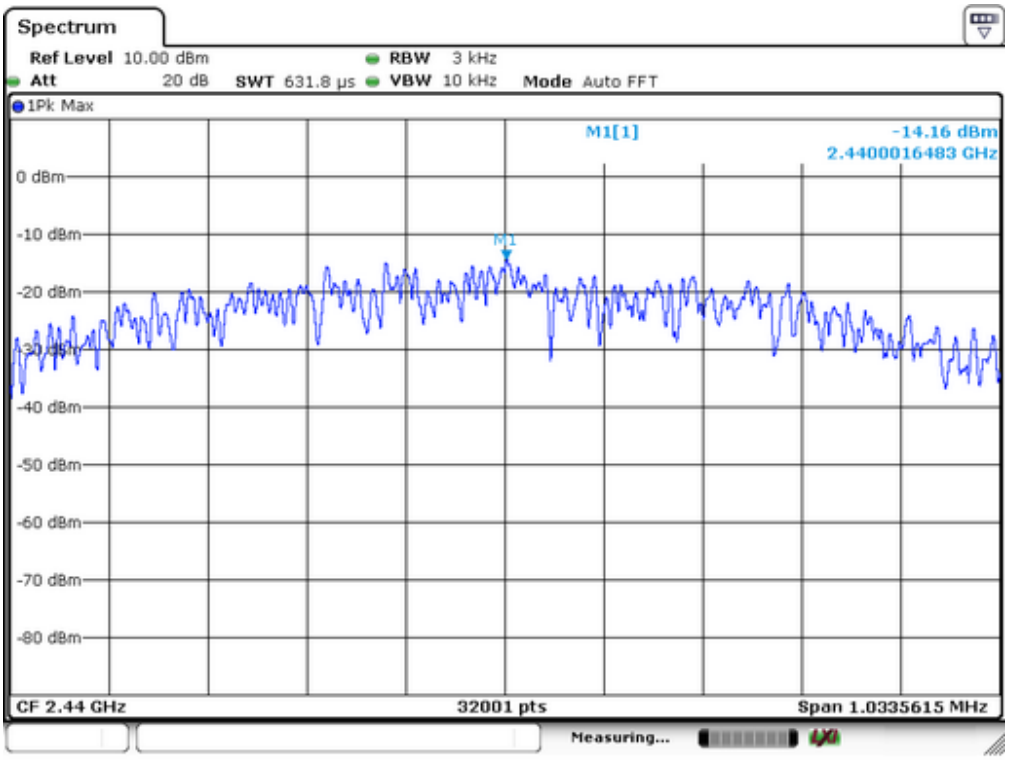
Channel 40



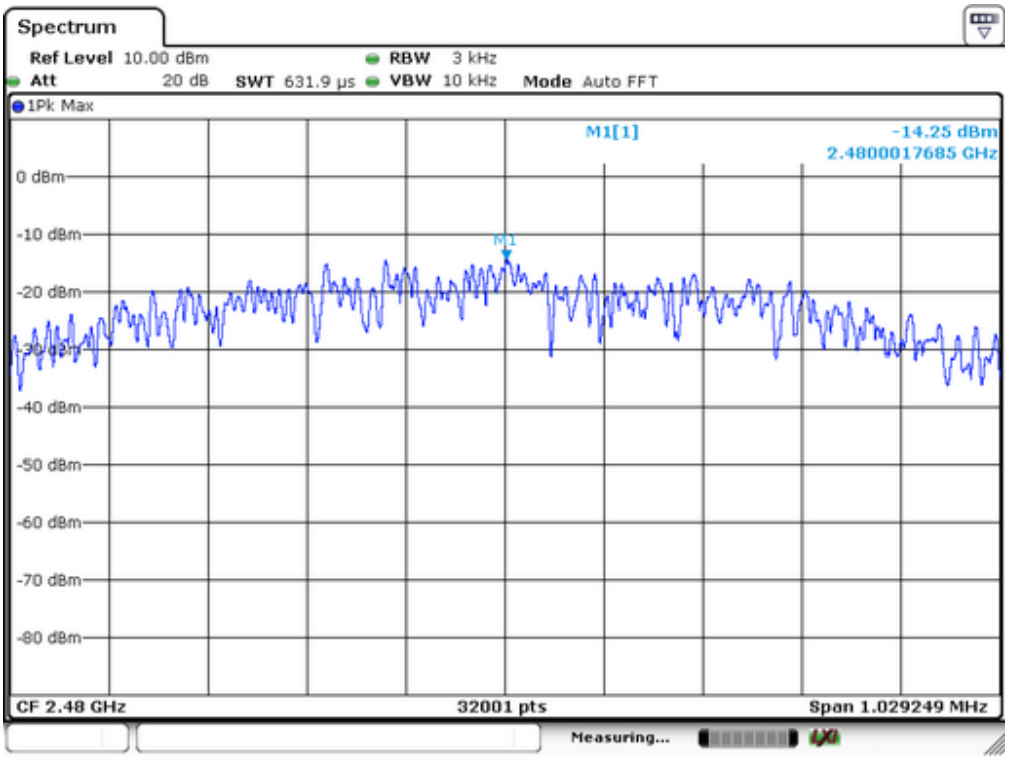
PSD 3KHz Plot:
Channel 01



Channel 20



Channel 40


Spectrum
Ref Level 10.00 dBm
RBW 3 kHz
Att 20 dB
SWT 631.9 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-14.25 dBm
2.4800017685 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.48 GHz
32001 pts
Span 1.029249 MHz
Measuring...

9. Band EDGE test

9.1 Measurement Procedure

For Conducted Test

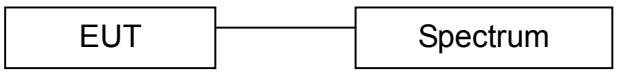
1. The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100KHz. The video bandwidth is set to 300KHz.
2. The spectrum from 30MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.
3. Preliminary tests on individual chains, and on all chains with a combiner, were performed. The worst-case configuration was with a combiner, therefore final test were preformed with all chains feeding a combiner.

For Radiated emission Test

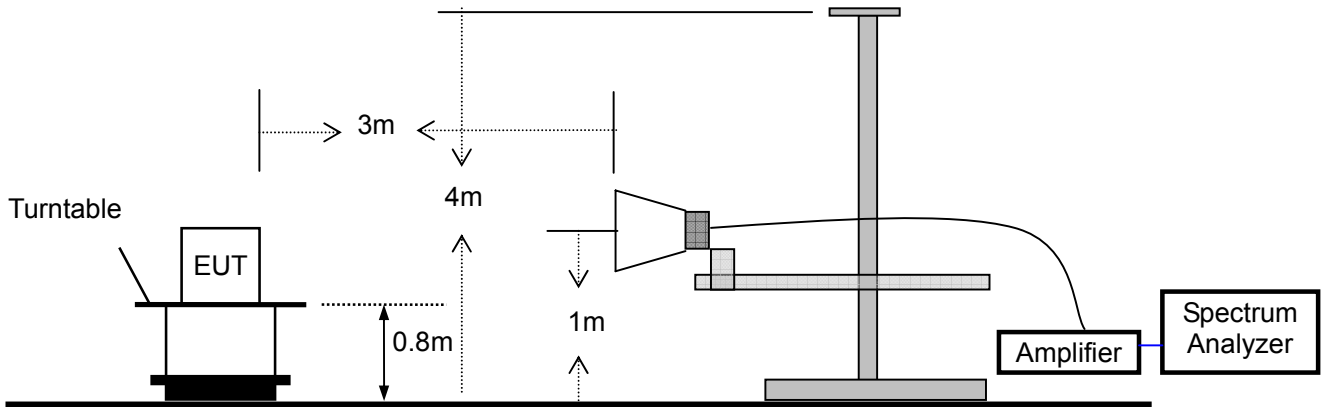
1. The EUT was Operating in hopping mode or could be controlled its channel. Printed out test result from the spectrum by hard copy function.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

9.2 Test SET-UP (Block Diagram of Configuration)

For Conducted Test



For Radiated emission Test



9.3 Measurement Results:

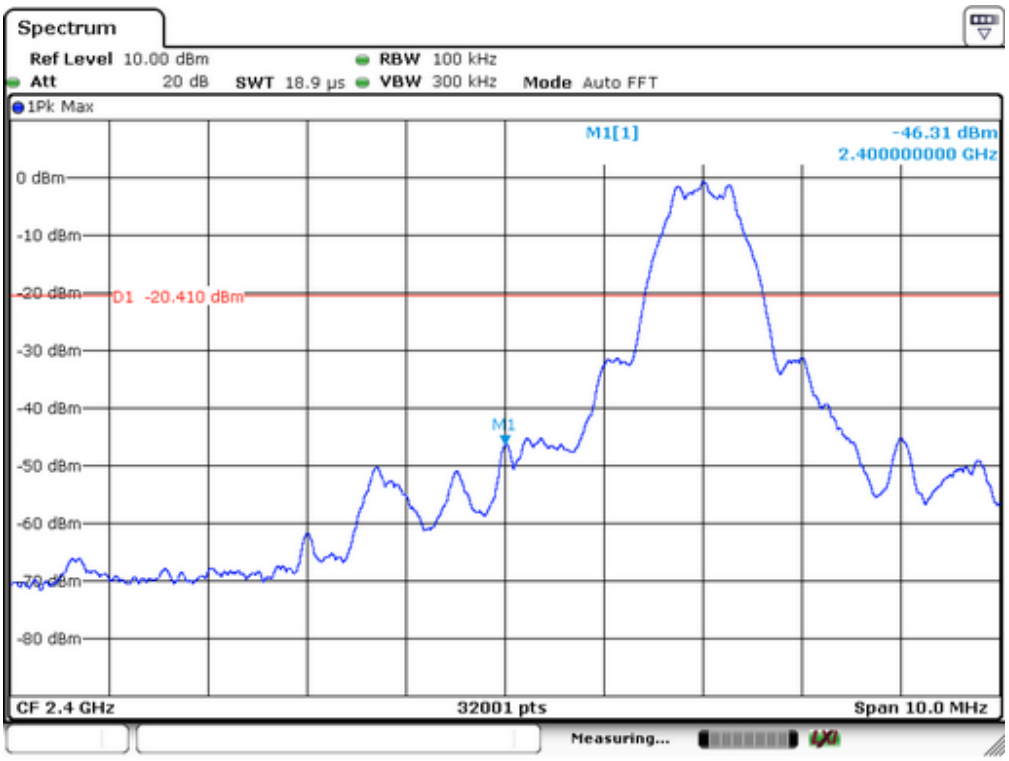
Refer to attached data chart.

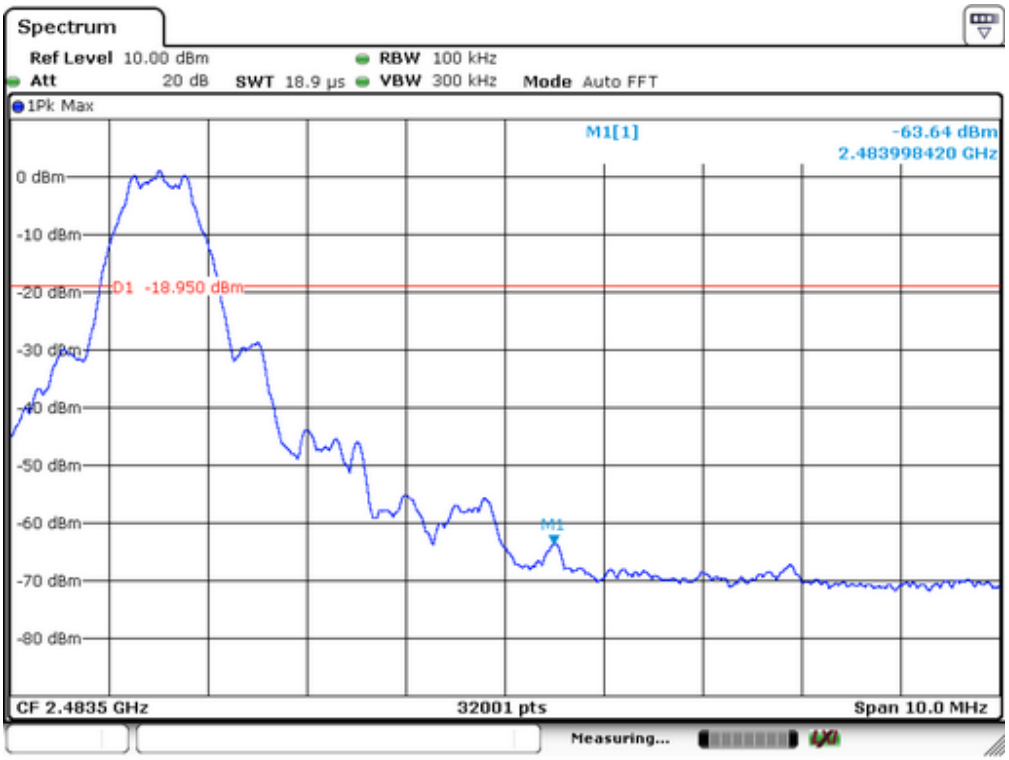
Spectrum Detector:	PK	Test Date :	September 09, 2014
Test By:	Andy	Temperature :	25 ℃
Test Result:	PASS	Humidity :	50 %

1. Conducted Test

Frequency (MHz)	Peak Power Output(dBm)	Emission read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)
<2400	-0.28	-46.31	46.03	>20dBc
>2483.5	0.94	-63.64	64.58	>20dBc

Test Plot:


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
-46.31 dBm
2.400000000 GHz
0 dBm
-10 dBm
-20 dBm
D1 -20.410 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
-63.64 dBm
2.483998420 GHz
0 dBm
-10 dBm
-20 dBm
D1 -18.950 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
M1
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Measuring...

2. Radiated emission Test

Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)	
		PK	AV	PK	AV
<2400	H	65.33	42.19	74.00	54.00
<2400	V	59.89	37.16	74.00	54.00
>2483.5	H	64.03	43.08	74.00	54.00
>2483.5	V	58.90	36.55	74.00	54.00

10 Antenna Application

10.1 Antenna requirement

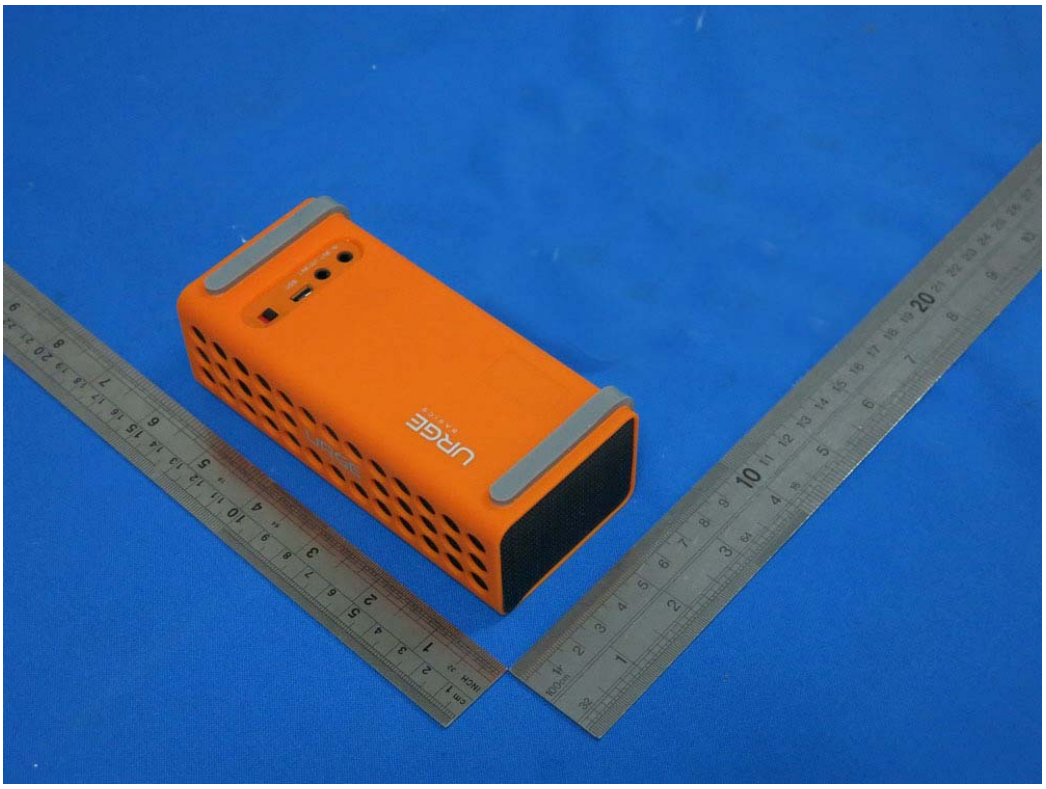
The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

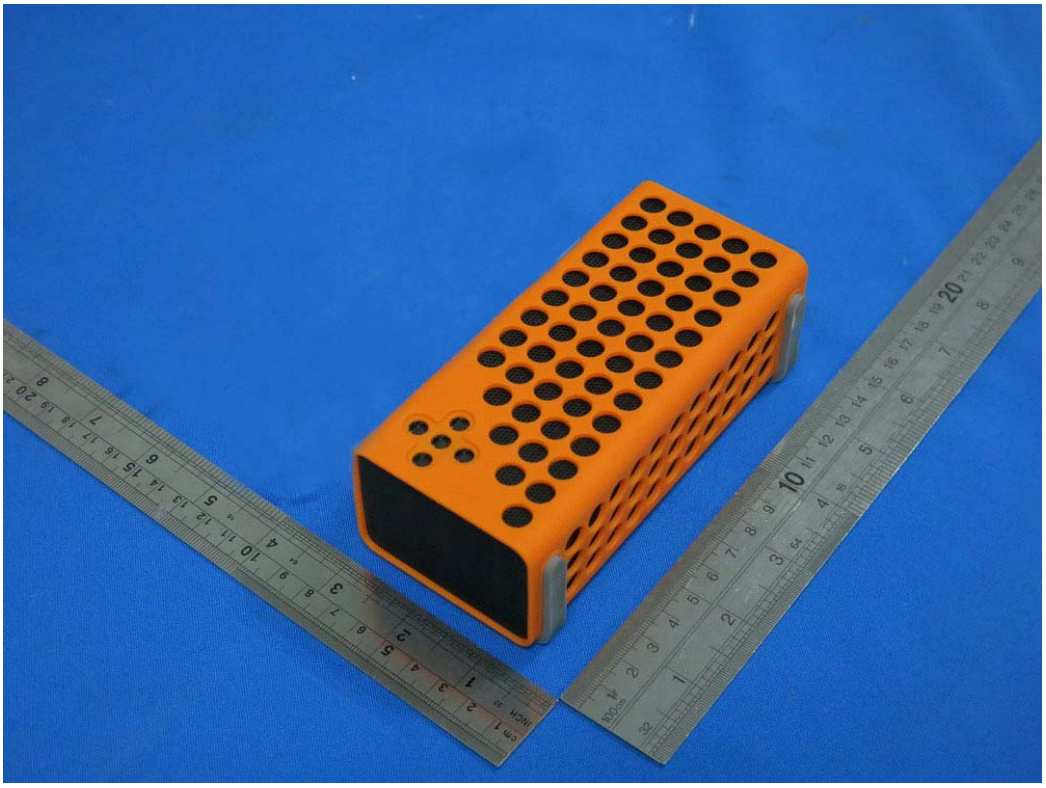
FCC part 15C section 15.247 requirements:
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

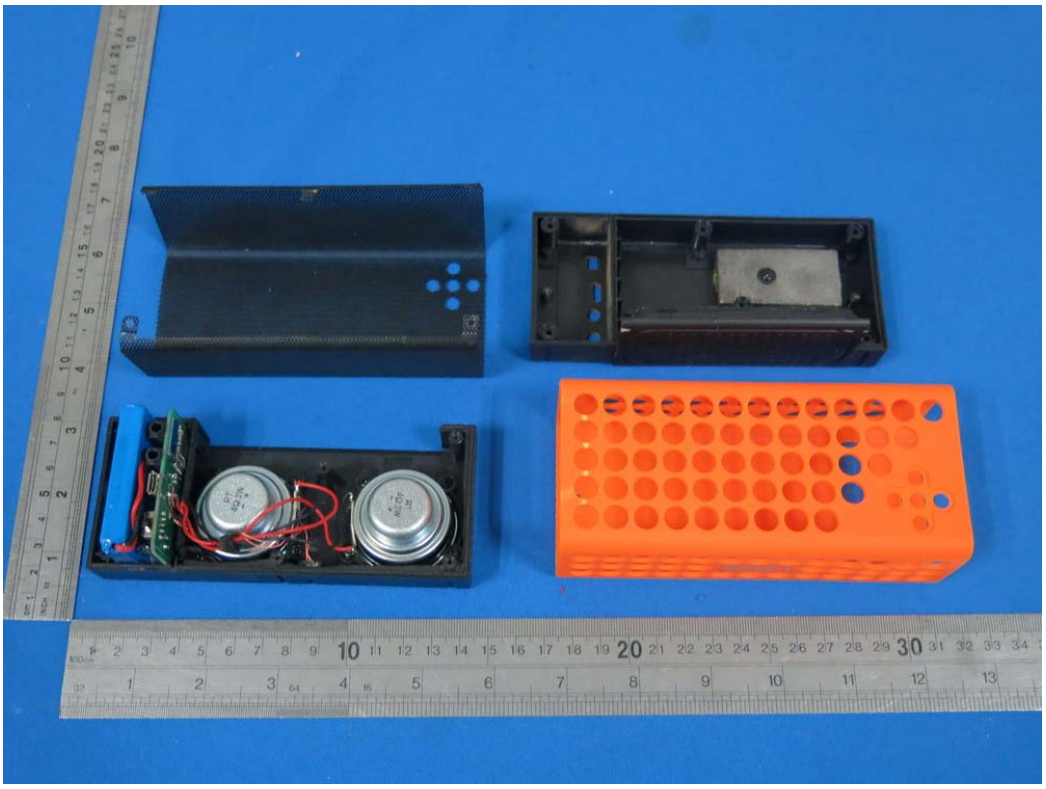
10.2 Result

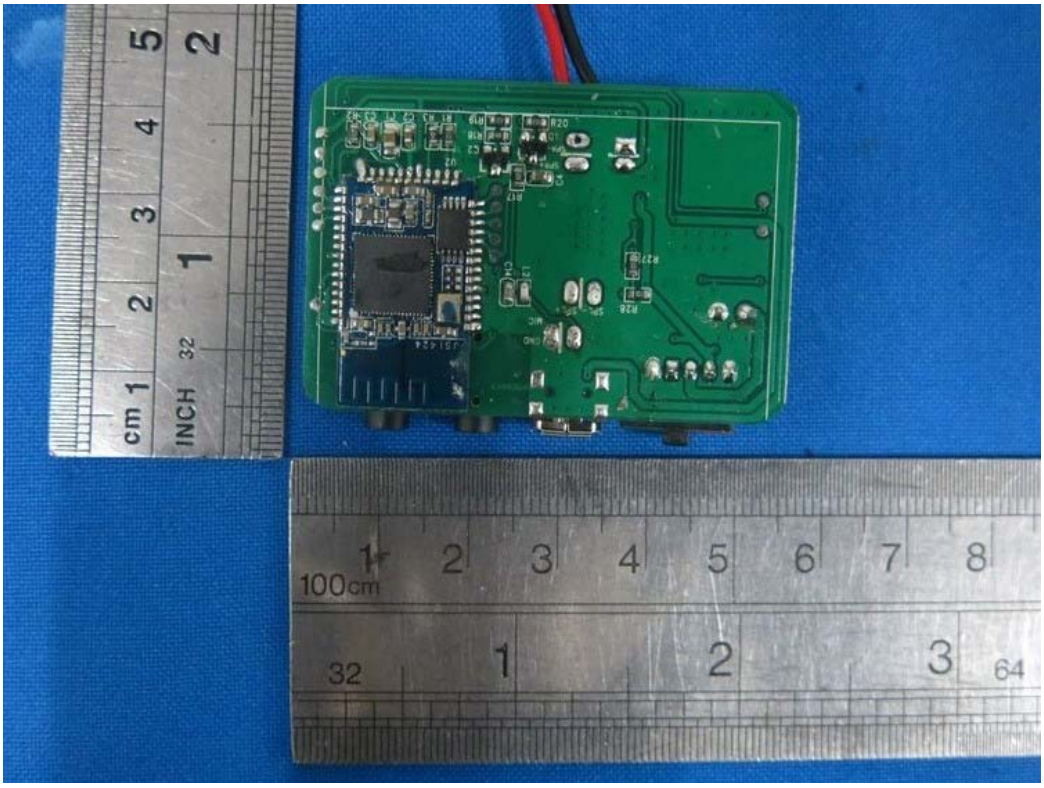
The EUT's antenna is an internal PCB antenna and integrated on PCB, The antenna's gain is 0dBi and meets the requirement.

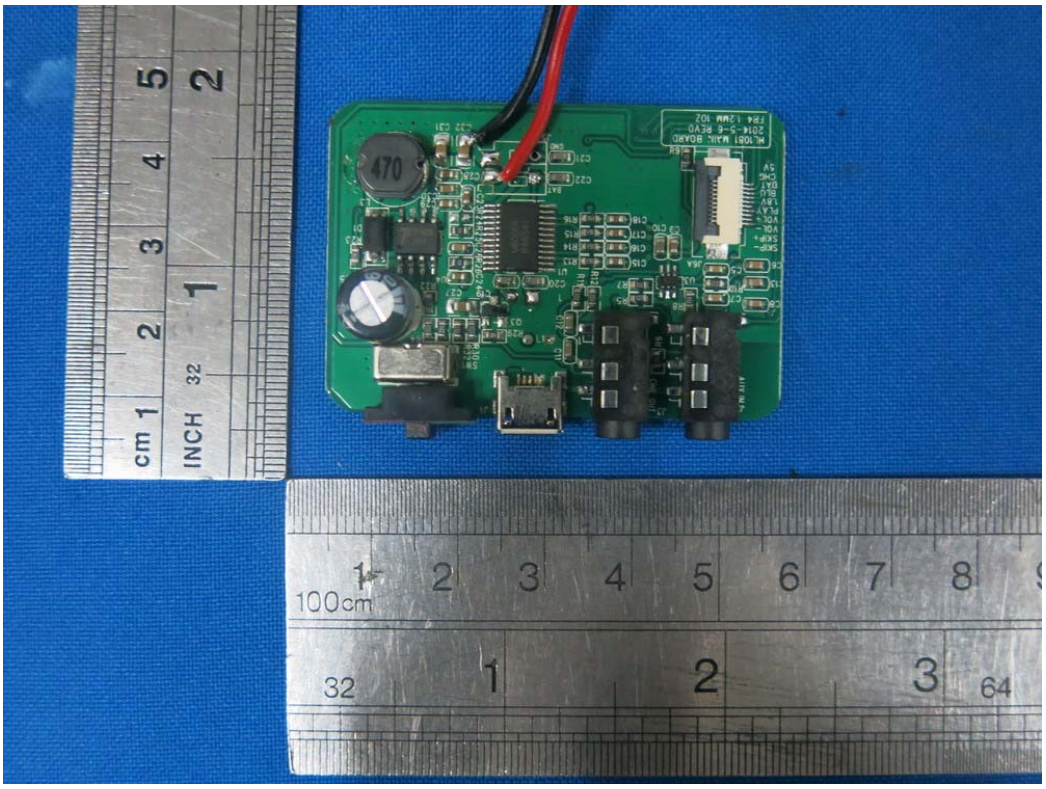
APPENDIX I
(PHOTOS OF EUT)

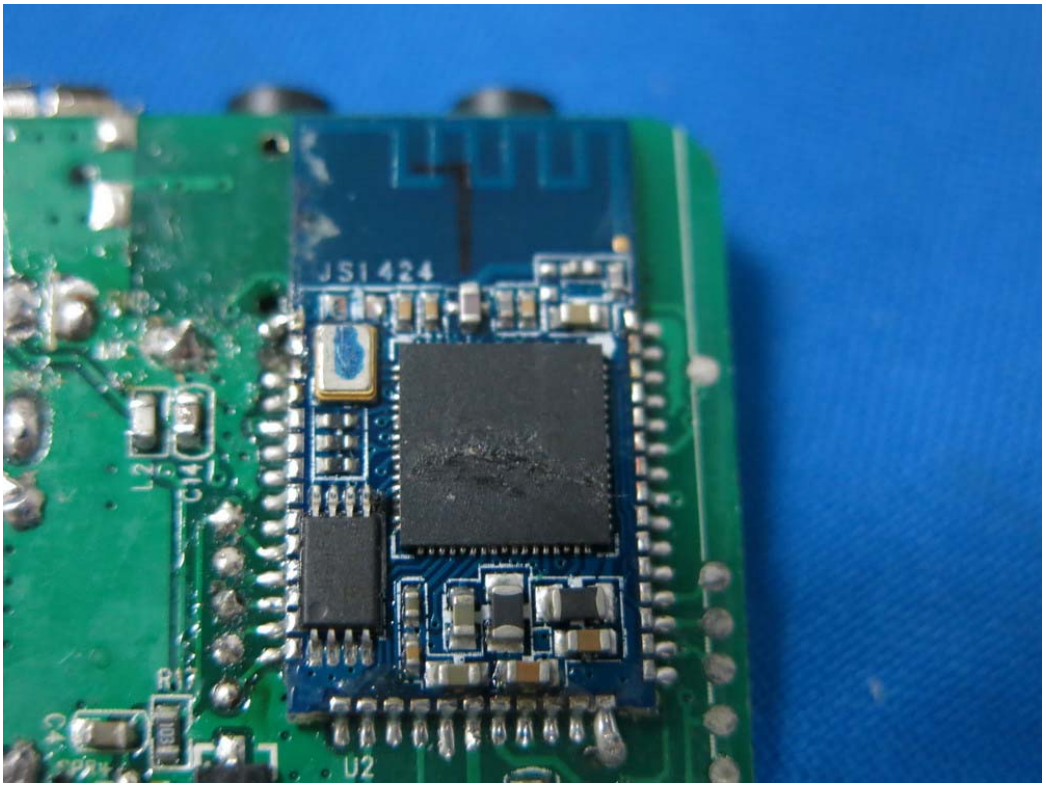









470
cm 1
INCH
100cm


JS1424
U2