

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

OF

SP-5050

MODEL No.: Siragon SP-5050

FCC ID: 2AC6BSP-5050

Trademark: N/A

REPORT NO.: ES140807080E2

ISSUE DATE: September 19, 2014

Prepared for

Siragon Corporation.

8501 NW 17th Street Suite 128 Miami, Florida 33126.

Prepared by

SHENZHEN EMTEK CO., LTD.

**Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen,
Guangdong, China**

TEL: 86-755-26954280

FAX: 86-755-26954282

VERIFICATION OF COMPLIANCE

Applicant:	Siragon Corporation. 8501 NW 17th Street Suite 128 Miami, Florida 33126.
Manufacturer:	Shenzhen Konka Telecommunications technology Co., Ltd. 9008, Shennan Avenue, Overseas Chinese Town, Shenzhen, China.
Product Description:	SP-5050
Model Number:	Siragon SP-5050
Trademark:	N/A
File Number:	ES140807080E2
Date of Test:	August 08, 2014 to September 19, 2014

We hereby certify that:

The above equipment was tested by SHENZHEN 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 REQUIREMENTS.

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

Date of Test : August 08, 2014 to September 19, 2014

Prepared by :



Jack Li/Editor

Reviewer :



Joe Xia/Supervisor

Approve & Authorized Signer :



Lisa Wang/Manager

Table of Contents

1. GENERAL INFORMATION.....	5
1.1 PRODUCT DESCRIPTION.....	5
1.2 RELATED SUBMITTAL(S) / GRANT(S).....	6
1.3 TEST METHODOLOGY	7
1.4 SPECIAL ACCESSORIES	7
1.5 EQUIPMENT MODIFICATIONS	7
1.6 TEST FACILITY	7
2. SYSTEM TEST CONFIGURATION	8
2.1 EUT CONFIGURATION	8
2.2 EUT EXERCISE	8
2.3 TEST PROCEDURE	8
2.4 CONFIGURATION OF TESTED SYSTEM	8
3. DESCRIPTION OF TEST MODES.....	10
4. SUMMARY OF TEST RESULTS	11
5. CONDUCTED EMISSIONS TEST	12
5.1 MEASUREMENT PROCEDURE	12
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	12
5.3 MEASUREMENT EQUIPMENT USED	12
5.4 CONDUCTED EMISSION LIMIT	12
5.5 MEASUREMENT RESULT	12
6. RADIATED EMISSION TEST	15
6.1 MEASUREMENT PROCEDURE	15
6.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	15
6.3 MEASUREMENT EQUIPMENT USED	17
6.4 RADIATED EMISSION LIMIT	17
6.5 MEASUREMENT RESULT	19
7. 6DB BANDWIDTH TEST	28
7.1 MEASUREMENT PROCEDURE	28
7.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	28
7.3 MEASUREMENT EQUIPMENT USED	28
7.4 MEASUREMENT RESULTS	28
8. MAXIMUM PEAK OUTPUT POWER TEST	31
8.1 MEASUREMENT PROCEDURE	31
8.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	31
8.3 MEASUREMENT EQUIPMENT USED	31
8.4 PEAK POWER OUTPUT LIMIT	31
8.5 MEASUREMENT RESULTS	31
9. BAND EDGE TEST.....	32
9.1 MEASUREMENT PROCEDURE	32
9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	32

9.3	MEASUREMENT EQUIPMENT USED	32
9.4	MEASUREMENT RESULTS	32
10.	POWER DENSITY	34
10.1	TEST EQUIPMENT	34
10.2	MEASURING INSTRUMENTS AND SETTING.....	34
10.3	TEST PROCEDURES	34
10.4	BLOCK DIAGRAM OF TEST SETUP	34
10.5	LIMIT	34
10.6	TEST RESULT	35
11	ANTENNA PORT EMISSION	37
11.1	TEST EQUIPMENT	37
11.2	MEASURING INSTRUMENTS AND SETTING.....	37
11.3	TEST PROCEDURES	37
11.4	BLOCK DIAGRAM OF TEST SETUP	37
11.5	TEST RESULT	37
12.	ANTENNA APPLICATION.....	41
12.1	ANTENNA REQUIREMENT	41
12.2	RESULT	41

1. General Information

1.1 Product Description

Device Type:	Mobile Device
Exposure Category:	Uncontrolled Environment/General Population
Product Name:	SP-5050
Model Number:	Siragon SP-5050
Power supply:	3.7V internal rechargeable lithium battery or DC 5V from AC adapter
Adapter:	Model: A31-501000 Input: 100-240V~, 50/60Hz, 0.2A Output: DC 5.0V, 1000mA
IMEI1:	351372098150251
IMEI2:	351372098150269
Hardware Version:	1405411548
Software Version:	Android 4.4.2
Operating Mode(s) & Operating Frequency Range(s):	Bluetooth: 2402MHz ~ 2480MHz;
Modulation:	GFSK for Bluetooth 4.0 DTS;
Number of Channels:	40 Channels for Bluetooth 4.0 DTS;
Type of Antenna:	Ceramic Chip Antenna
Antenna Gain:	1dBi for Bluetooth;
RF Output Power:	Bluetooth 4.0 DTS:-8.55dBm MAX;

Note:

1. This device is Mobile Phone included BT4.0 DSS , BT4.0 DTS, Wifi, 2G and 3G transceiver function.
2. Test of channel was included the lowest middle and highest frequency in lowest data rate and to perform the test, then record on this report.

1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: 2AC6BSP-5050 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

The composite system is compliance with Subpart B is authorized under a DOC procedure.

1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2009) and FCC Public Notice DA 00-705. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2013.10.29
The certificate is valid until 2016.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01: 2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, April 17, 2013
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 05, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD.
Site Location : Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, 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 normal application.

2.2 EUT Exercise

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

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements of ANSI C63.4-2009 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.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. Emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
SP-5050	N/A	Siragon SP-5050	2AC6BSP-5050	N/A	EUT
Adapter	N/A	A31-501000	N/A	N/A	

Note:

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

3. Description of Test Modes

these is Digital Transmission system (DTS) and with modulation GFSK.
EUT is a composite System, this Report Records BT4.0 DTS function test data

The mode is used: **Transmitting mode**

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

4. Summary of Test Results

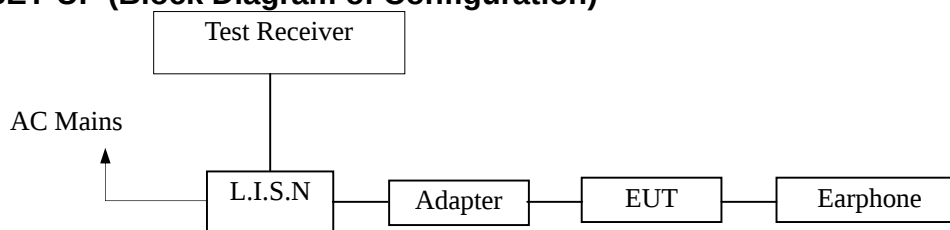
FCC Rules	Description Of Test	Result
§15.247(a)(2)	6dB bandwidth	Pass
§15.247(b)(3)	Max Peak output Power test	Pass
§15.247(e)	Power density	Pass
§15.247(d)	Band edge test	Pass
§15.207	AC Power Conducted Emission	Pass
§15.247(d), §15.209	Radiated Emission	Pass
§15.247(d)	Antenna Port Emission	Pass
§15.247(b)&§15.203	Antenna Application	Pass

5. Conducted Emissions Test

5.1 Measurement Procedure

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

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/17/2014	05/16/2015
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/17/2014	05/16/2015
50Ω Coaxial Switch	Anritsu	MP59B	M20531	05/17/2014	05/16/2015

5.4 Conducted Emission Limit

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

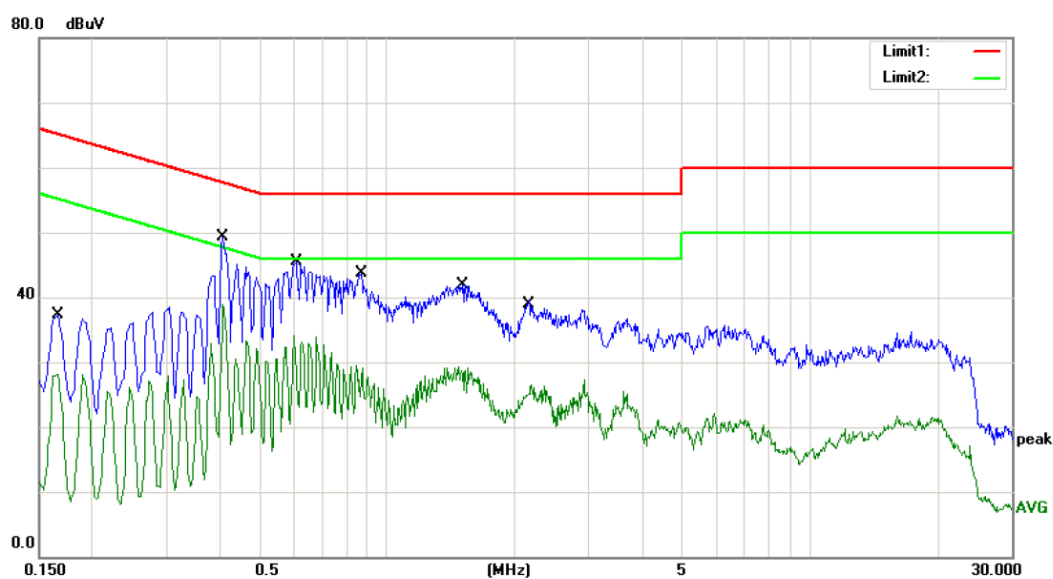
50

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.

5.5 Measurement Result

PASS



Site Conduction #1

Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

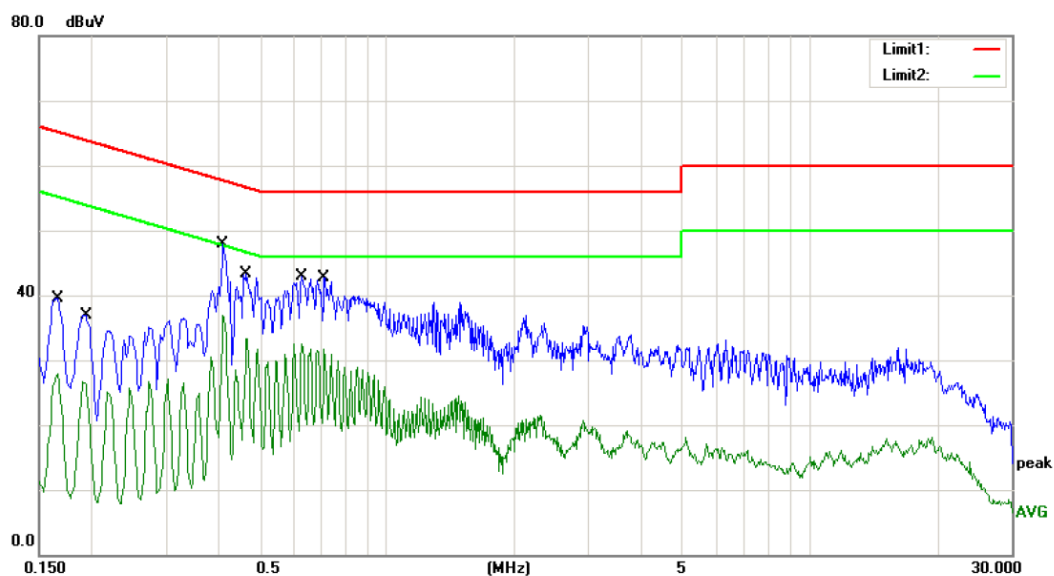
Humidity: 60 %

Mode: Bluetooth 4.0 DTS

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	37.30	0.00	37.30	65.16	-27.86	QP	
2		0.1660	28.14	0.00	28.14	55.16	-27.02	AVG	
3	*	0.4100	49.29	0.00	49.29	57.65	-8.36	QP	
4		0.4100	38.99	0.00	38.99	47.65	-8.66	AVG	
5		0.6100	45.59	0.00	45.59	56.00	-10.41	QP	
6		0.6100	34.12	0.00	34.12	46.00	-11.88	AVG	
7		0.8700	43.71	0.00	43.71	56.00	-12.29	QP	
8		0.8700	32.66	0.00	32.66	46.00	-13.34	AVG	
9		1.5060	41.92	0.00	41.92	56.00	-14.08	QP	
10		1.5060	29.39	0.00	29.39	46.00	-16.61	AVG	
11		2.1940	39.49	0.00	39.49	56.00	-16.51	QP	
12		2.1940	26.41	0.00	26.41	46.00	-19.59	AVG	

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



Site Conduction #1

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 60 %

Mode: Bluetooth 4.0 DTS

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1660	39.57	0.00	39.57	65.16	-25.59	QP	
2		0.1660	27.93	0.00	27.93	55.16	-27.23	AVG	
3		0.1940	36.89	0.00	36.89	63.86	-26.97	QP	
4		0.1940	26.63	0.00	26.63	53.86	-27.23	AVG	
5	*	0.4100	47.92	0.00	47.92	57.65	-9.73	QP	
6		0.4100	36.86	0.00	36.86	47.65	-10.79	AVG	
7		0.4660	43.37	0.00	43.37	56.58	-13.21	QP	
8		0.4660	33.37	0.00	33.37	46.58	-13.21	AVG	
9		0.6300	42.86	0.00	42.86	56.00	-13.14	QP	
10		0.6300	32.51	0.00	32.51	46.00	-13.49	AVG	
11		0.7100	42.73	0.00	42.73	56.00	-13.27	QP	
12		0.7100	31.70	0.00	31.70	46.00	-14.30	AVG	

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

6. Radiated Emission Test

6.1 Measurement Procedure

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

When spectrum scanned from 30 MHz to 1GHz setting resolution bandwidth 120 kHz 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.

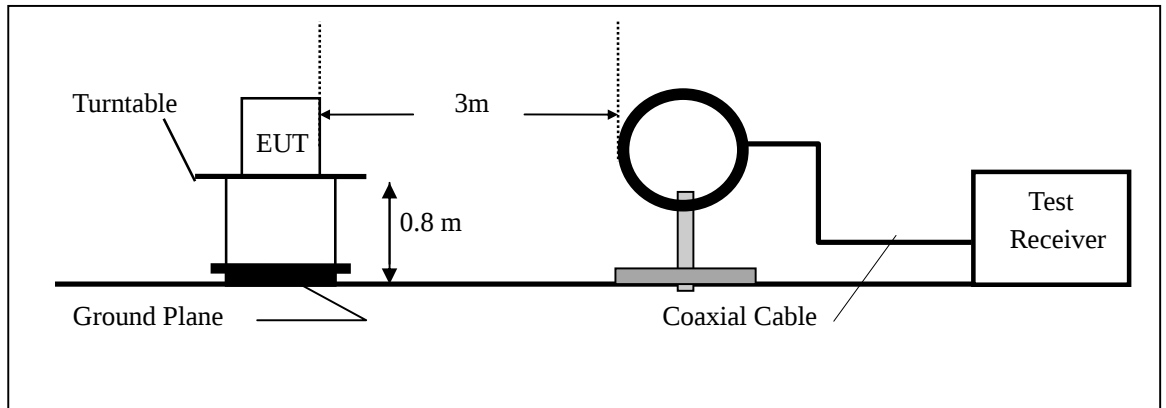
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

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

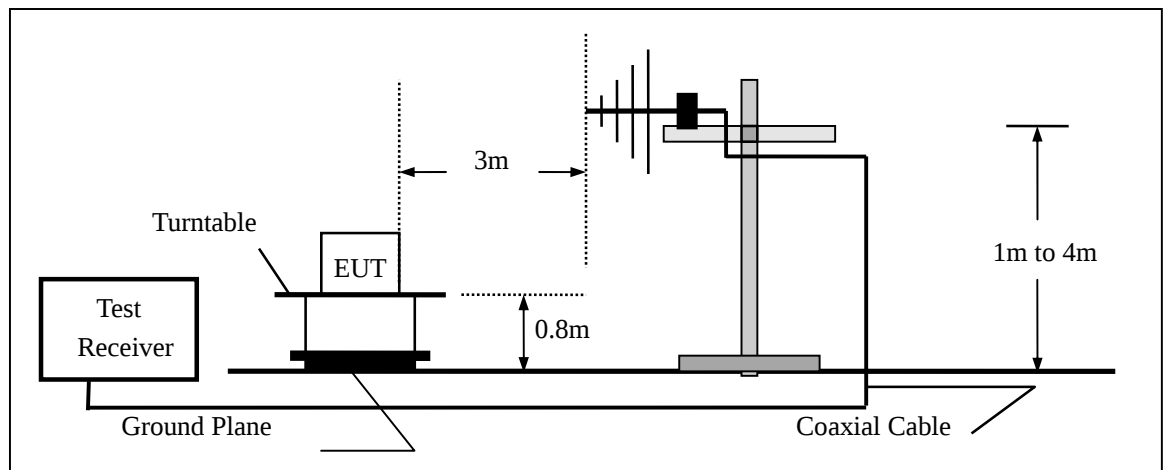
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	AVG
Trace	Max hold

6.2 Test SET-UP (Block Diagram of Configuration)

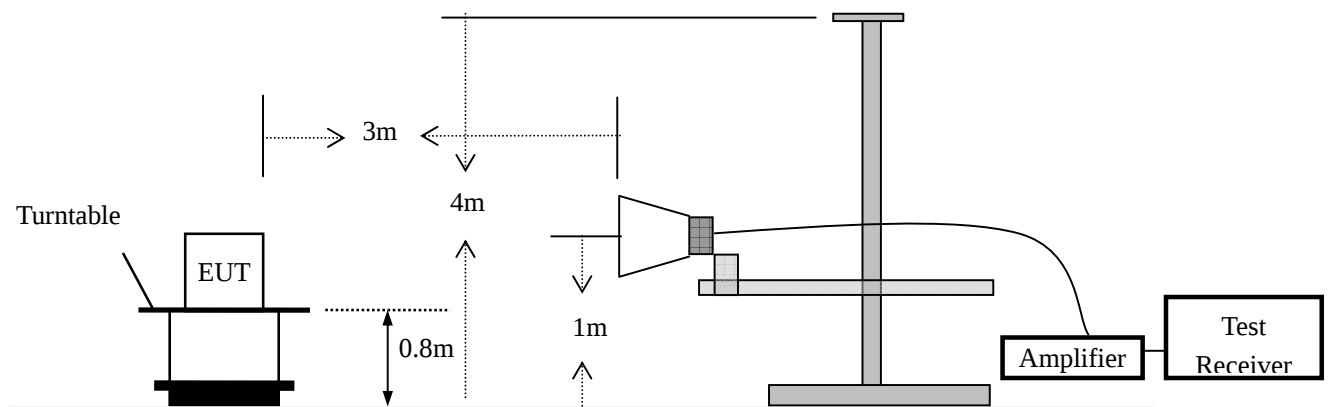
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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



6.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/17/2014	05/16/2015
Pre-Amplifier	HP	8447D	2944A07999	05/17/2014	05/16/2015
Bilog Antenna	Schwarzbeck	VULB9163	142	05/17/2014	05/16/2015
Loop Antenna	ARA	PLA-1030/B	1029	05/17/2014	05/16/2015
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/17/2014	05/16/2015
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/17/2014	05/16/2015
Cable	Schwarzbeck	AK9513	ACRX1	05/17/2014	05/16/2015
Cable	Rosenberger	N/A	FP2RX2	05/17/2014	05/16/2015
Cable	Schwarzbeck	AK9513	CRPX1	05/17/2014	05/16/2015
Cable	Schwarzbeck	AK9513	CRRX2	05/17/2014	05/16/2015

6.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

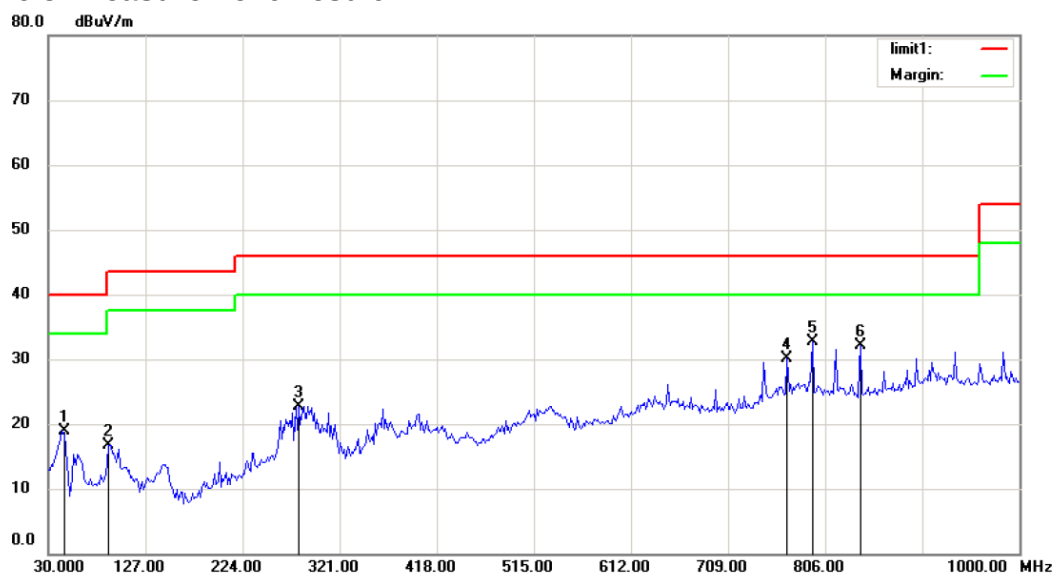
Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

Remark 1. Emission level in dBuV/m=20 log (uV/m)
 : 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

6.5 Measurement Result



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

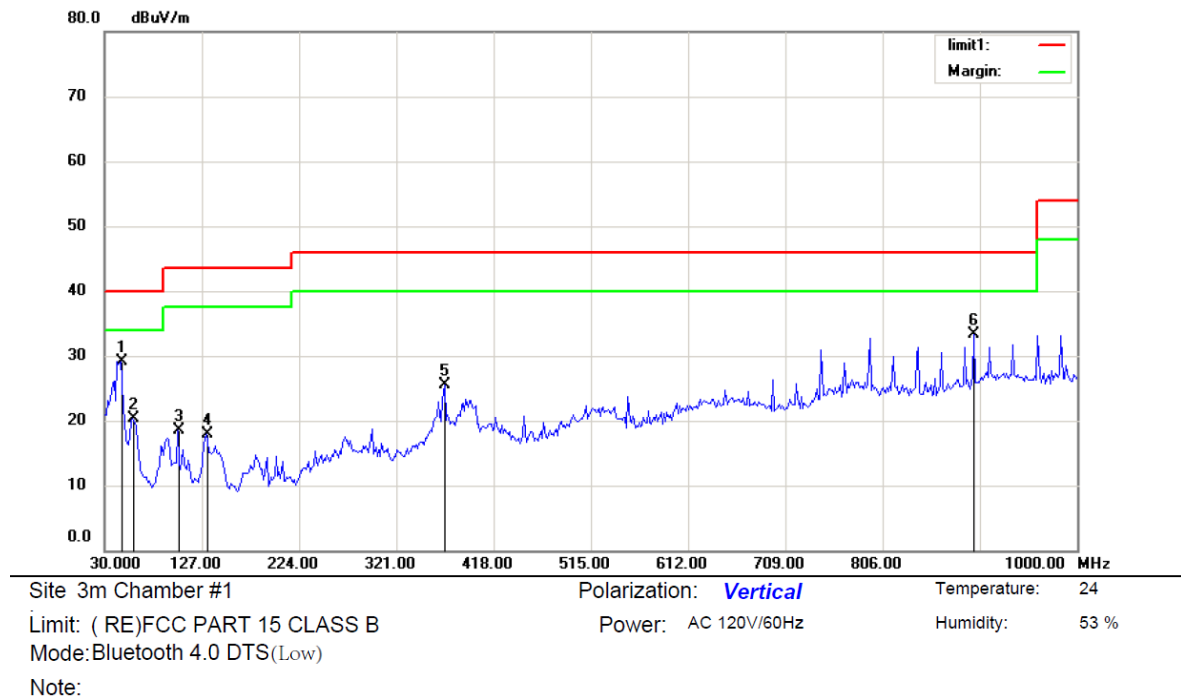
Mode:Bluetooth 4.0 DTS(Low)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		43.9904	0.70	18.17	18.87	40.00	-21.13	QP		
2		90.6250	6.08	10.53	16.61	43.50	-26.89	QP		
3		280.2724	7.81	14.97	22.78	46.00	-23.22	QP		
4		768.3814	5.23	24.82	30.05	46.00	-15.95	QP		
5	*	793.2532	7.82	24.91	32.73	46.00	-13.27	QP		
6		841.4423	7.81	24.28	32.09	46.00	-13.91	QP		

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

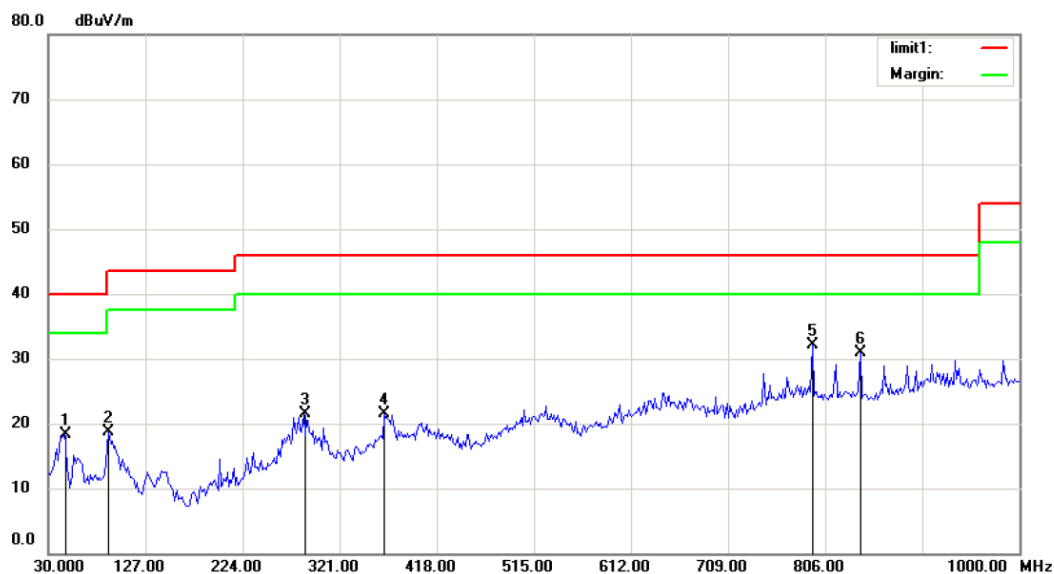
Operator: ZHL



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
1	*	45.5450	12.06	17.11	29.17	40.00	-10.83	QP		
2		57.9808	8.59	11.77	20.36	40.00	-19.64	QP		
3		103.0610	5.54	12.87	18.41	43.50	-25.09	QP		
4		131.0417	8.16	9.72	17.88	43.50	-25.62	QP		
5		368.8782	8.46	17.07	25.53	46.00	-20.47	QP		
6		897.4038	7.42	25.98	33.40	46.00	-12.60	QP		

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

Operator: ZHL



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

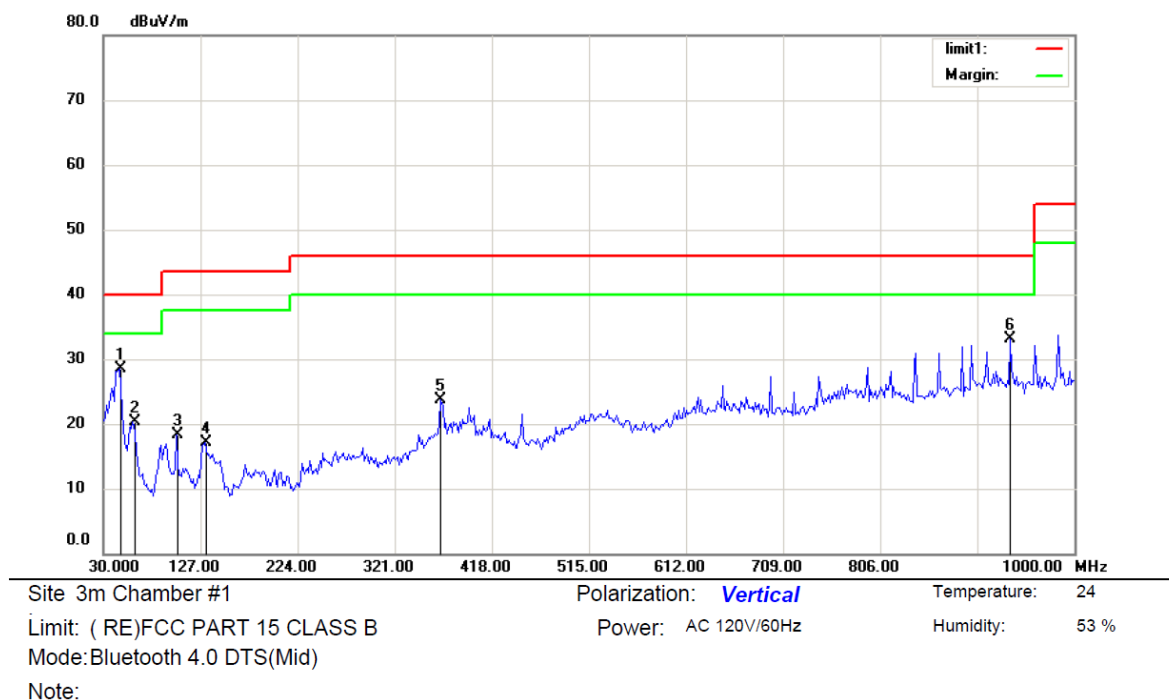
Mode:Bluetooth 4.0 DTS(Mid)

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		45.5450	1.14	17.11	18.25	40.00	-21.75	QP		
2		90.6250	8.10	10.53	18.63	43.50	-24.87	QP		
3		284.9360	6.62	14.91	21.53	46.00	-24.47	QP		
4		365.7692	4.49	17.05	21.54	46.00	-24.46	QP		
5	*	793.2532	7.14	24.91	32.05	46.00	-13.95	QP		
6		841.4423	6.58	24.28	30.86	46.00	-15.14	QP		

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

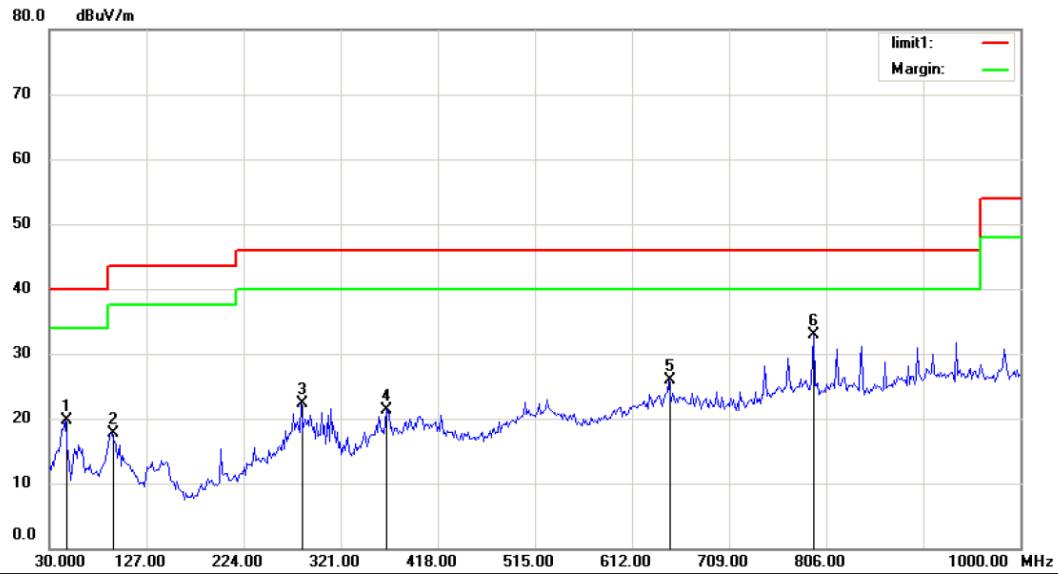
Operator: ZHL



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	45.5450	11.48	17.11	28.59	40.00	-11.41	QP		
2		59.5353	7.57	12.71	20.28	40.00	-19.72	QP		
3		103.0610	5.41	12.87	18.28	43.50	-25.22	QP		
4		131.0417	7.46	9.72	17.18	43.50	-26.32	QP		
5		367.3236	6.63	17.06	23.69	46.00	-22.31	QP		
6		936.2660	6.63	26.45	33.08	46.00	-12.92	QP		

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

Operator: ZHL



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

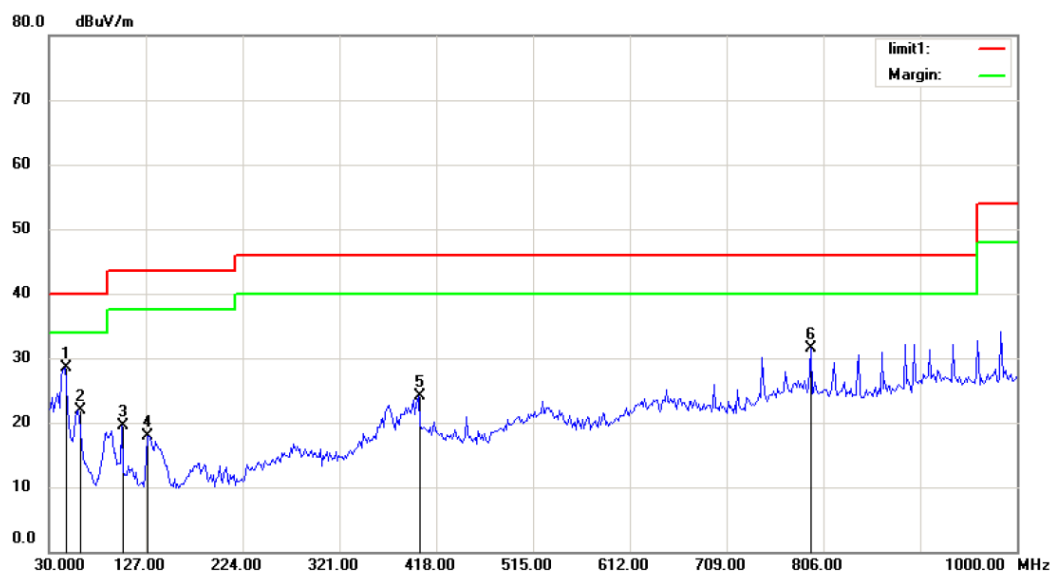
Mode:Bluetooth 4.0 DTS(High)

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		45.5450	2.61	17.11	19.72	40.00	-20.28	QP		
2		92.1795	6.69	11.07	17.76	43.50	-25.74	QP		
3		281.8270	7.44	14.95	22.39	46.00	-23.61	QP		
4		367.3236	4.28	17.06	21.34	46.00	-24.66	QP		
5		648.6860	2.92	22.99	25.91	46.00	-20.09	QP		
6	*	793.2532	7.92	24.91	32.83	46.00	-13.17	QP		

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

Operator: ZHL



Site 3m Chamber #1 Polarization: **Vertical** Temperature: 24
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 53 %
Mode:Bluetooth 4.0 DTS(High)
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	45.5450	11.45	17.11	28.56	40.00	-11.44	QP		
2		59.5353	9.14	12.71	21.85	40.00	-18.15	QP		
3		103.0610	6.66	12.87	19.53	43.50	-23.97	QP		
4		129.4871	8.07	9.76	17.83	43.50	-25.67	QP		
5		399.9680	5.31	18.74	24.05	46.00	-21.95	QP		
6		793.2532	6.65	24.91	31.56	46.00	-14.44	QP		

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

Operator: ZHL

Operation Mode: TX Channel 01 Test Date : August 09, 2014
Frequency Range: 1GHz~25GHz Temperature : 24℃
Test Result: PASS Humidity : 53 %
Measured Distance: 3m Test By: KK

Freq. (MHz)	Ant.Pol H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4804.00	V	52.63	34.20	74.00	54.00	-21.37	-19.80
7206.00	V	53.05	34.64	74.00	54.00	-20.95	-19.36
9608.00	V	53.72	35.10	74.00	54.00	-20.28	-18.90
12010.00	V	53.12	33.75	74.00	54.00	-20.88	-20.25
14412.00	V	53.62	35.20	74.00	54.00	-20.38	-18.80
16814.00	V	55.10	36.41	74.00	54.00	-18.90	-17.59
4804.00	H	52.36	32.96	74.00	54.00	-21.64	-21.04
7206.00	H	52.45	33.55	74.00	54.00	-21.55	-20.45
9608.00	H	52.34	34.45	74.00	54.00	-21.66	-19.55
12010.00	H	53.33	34.80	74.00	54.00	-20.67	-19.20
14412.00	H	52.37	34.14	74.00	54.00	-21.63	-19.86
16814.00	H	53.11	34.46	74.00	54.00	-20.89	-19.54

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode: TX Channel 20 Test Date : August 09, 2014
Frequency Range: 1GHz~25GHz Temperature : 24℃
Test Result: PASS Humidity : 53 %
Measured Distance: 3m Test By: KK

Freq. (MHz)	Ant.Pol H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4880.00	V	51.34	33.13	74.00	54.00	-22.66	-20.87
7320.00	V	53.01	34.53	74.00	54.00	-20.99	-19.47
9760.00	V	53.35	34.90	74.00	54.00	-20.65	-19.10
12200.00	V	52.98	34.33	74.00	54.00	-21.02	-19.67
14640.00	V	53.24	34.62	74.00	54.00	-20.76	-19.38
17080.00	V	53.07	34.16	74.00	54.00	-20.93	-19.84
4880.00	H	51.59	32.52	74.00	54.00	-22.41	-21.48
7320.00	H	53.53	35.27	74.00	54.00	-20.47	-18.73
9760.00	H	54.48	35.40	74.00	54.00	-19.52	-18.60
12200.00	H	52.74	35.09	74.00	54.00	-21.26	-18.91
14640.00	H	52.77	34.45	74.00	54.00	-21.23	-19.55
17080.00	H	53.48	34.24	74.00	54.00	-20.52	-19.76

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode: TX Channel 40 Test Date : August 09, 2014
 Frequency Range: 1GHz~25GHz Temperatur: 24℃
 Test Result: PASS Humidity : 53 %
 Measured Distance: 3m Test By: KK

Freq. (MHz)	Ant.Pol H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4960.00	V	52.23	33.54	74.00	54.00	-21.77	-20.46
7440.00	V	52.83	34.14	74.00	54.00	-21.17	-19.86
9920.00	V	54.03	34.92	74.00	54.00	-19.97	-19.08
12400.00	V	53.90	35.19	74.00	54.00	-20.10	-18.81
14880.00	V	53.31	34.25	74.00	54.00	-20.69	-19.75
17360.00	V	54.18	35.94	74.00	54.00	-19.82	-18.06
4960.00	H	52.44	33.84	74.00	54.00	-21.56	-20.16
7440.00	H	53.11	34.25	74.00	54.00	-20.89	-19.75
9920.00	H	54.08	34.93	74.00	54.00	-19.92	-19.07
12400.00	H	53.44	34.69	74.00	54.00	-20.56	-19.31
14880.00	H	55.17	36.02	74.00	54.00	-18.83	-17.98
17360.00	H	52.87	33.86	74.00	54.00	-21.13	-20.14

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 (3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

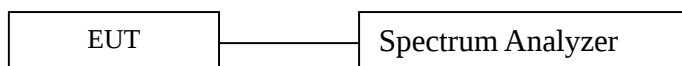
7. 6dB Bandwidth Test

7.1 Measurement Procedure

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

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequency) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Measurement Equipment Used

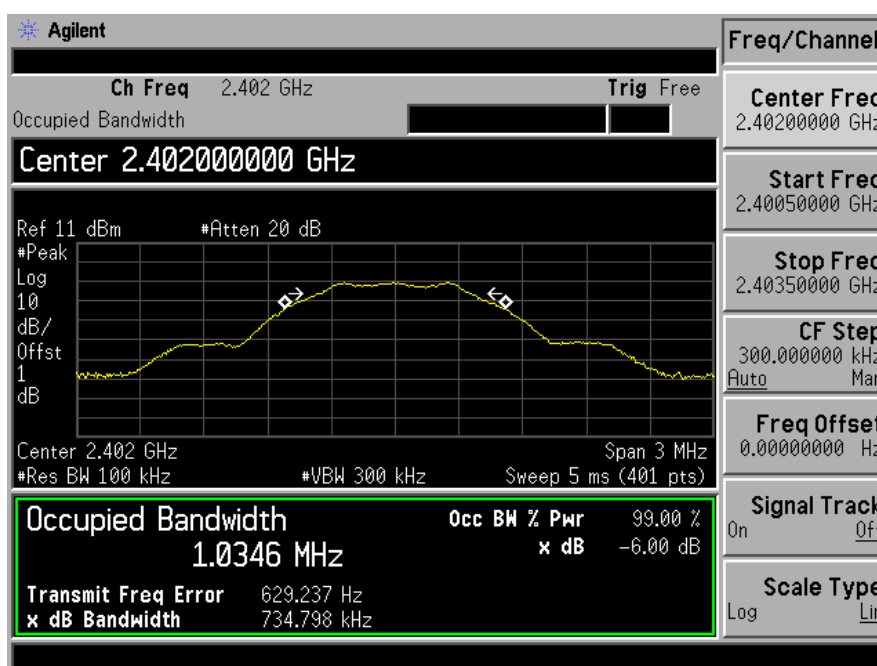
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

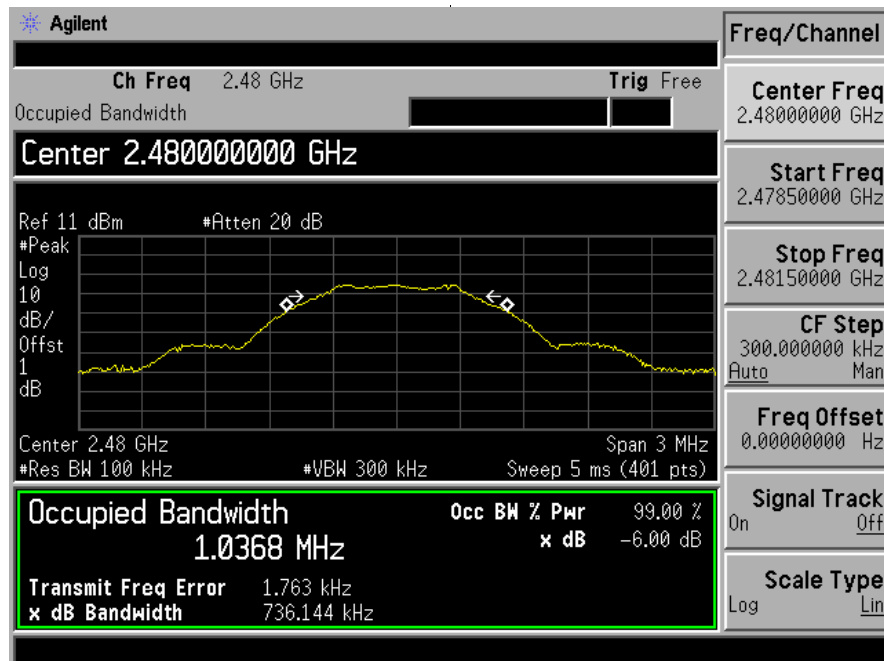
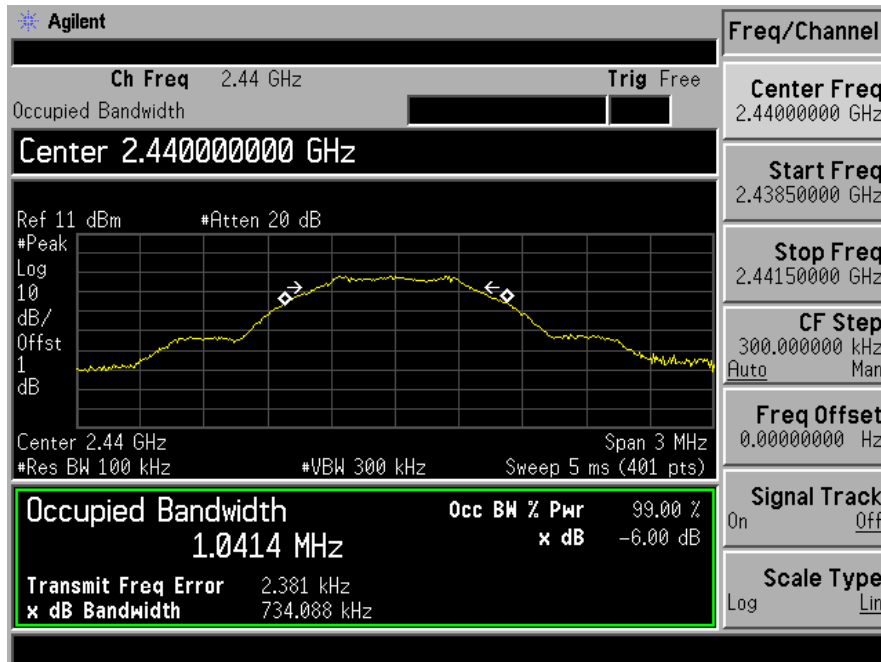
7.4 Measurement Results

6 Bandwidth Test Data Chart:
Refer to attached data chart.

Spectrum Detector: PK Test Date : September 02, 2014
Test By: KK Temperature : 24 °C
Test Result: PASS Humidity : 53 %

Channel number	Channel frequency (MHz)	6dB Down BW(kHz)	Required Limit (kHz)
01	2402	734.798	>500
20	2440	734.088	>500
40	2480	736.144	>500





8. Maximum Peak Output Power Test

8.1 Measurement Procedure

- The testing follows FCC public Notice DA 00-705 Measurement Guidelines.
- The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set to the maximum output power setting and enable the EUT transmit continuously.
- Measure the conducted output power with cable loss and record the results in the test report.
- Measure and record the results in the report.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Equipment Used

EQUIPMENT TYPE	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power meter	ML2495A	0824006	05/17/2014	05/16/2015
Power sensor	MA2411B	0738172	05/17/2014	05/16/2015

8.4 Peak Power output limit

The maximum peak power shall be less 1Watt.

8.5 Measurement Results

Spectrum Detector: PK Test Date : September 02, 2014
Test By: KK Temperature : 24°C
Test Result: PASS Humidity : 53 %

Channel number	Channel Frequency(MHz)	Peak Power output(dBm)	Peak Power Limit(W)	Pass/Fail
01	2402	-8.55	1W(30dBm)	PASS
20	2440	-10.09	1W(30dBm)	PASS
40	2480	-10.31	1W(30dBm)	PASS

9. Band Edge Test

9.1 Measurement Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.For average measurement:
VBW = 10 Hz, when duty cycle is no less than 98 percent.
 $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

9.2 Test SET-UP (Block Diagram of Configuration)

As 6.2 Test set up (B) and (C)

9.3 Measurement Equipment Used

Same as 6.3 Radiated Emission Measurement.

9.4 Measurement Results

Spectrum Detector: PK/AV Test Date : September 02, 2014
Test By: KK Temperature : 24°C
Test channel: 01 Humidity : 53 %

Frequency (MHz)	Polarity	Reading	Correct Factor	Result	Limited	Margin	Remark
		(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Detector)
2344.25	H	33.44	16.69	50.13	74.00	-23.87	PK
2344.25	H	20.25	16.69	36.94	54.00	-17.06	AV
2400.00	H	38.88	17.11	55.99	Delta=23.58dBc		AV
2402.00	H	62.45	17.12	79.57			AV
2374.98	V	28.81	16.80	45.61	74.00	-28.39	PK
2374.98	V	14.56	16.80	31.36	54.00	-22.64	AV
2400.00	V	37.22	17.11	54.33	Delta=22.92dBc		AV
2402.00	V	60.13	17.12	77.25			AV

Spectrum Detector: PK/AV Test Date : September 02, 2014
Test By: KK Temperature : 24°C
Test channel: 40 Humidity : 53 %

Frequency (MHz)	Polarity	Reading	Correct Factor	Result	Limited	Margin	Remark
		(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(Detector)
2480.00	H	75.06	17.71	92.77	/	/	PK
2480.00	H	57.84	17.71	75.55	/	/	AV
2483.50	H	30.44	17.73	48.17	74.00	-25.83	PK
2483.50	H	21.27	17.73	39.00	54.00	-15.00	AV
2480.00	V	70.75	17.71	88.46	/	/	PK
2480.00	V	51.34	17.71	69.05	/	/	AV
2483.50	V	28.18	17.73	45.91	74.00	-28.09	PK
2483.50	V	14.62	17.73	32.35	54.00	-21.65	AV

10. Power Density

10.1 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

10.2 Measuring Instruments and Setting

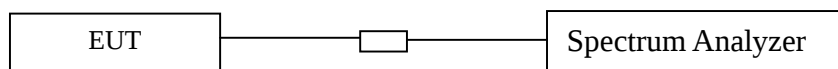
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS bandwidth.
RB	$3\text{kHz} \leq \text{RBW} \leq 100\text{KHz}$
VB	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max hold
Sweep Time	Automatic

10.3 Test Procedures

- a. The transmitter output (antenna port) was connected to the spectrum analyzer.
- b. Set analyzer center frequency to DTS channel center frequency.
- c. Set the analyzer span to a minimum of 1.5 times the DTS bandwidth.
- d. Set the RBW ≥ 3 kHz. Set the VBW $\geq 3 \times$ RBW.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level.

10.4 Block Diagram of Test Setup



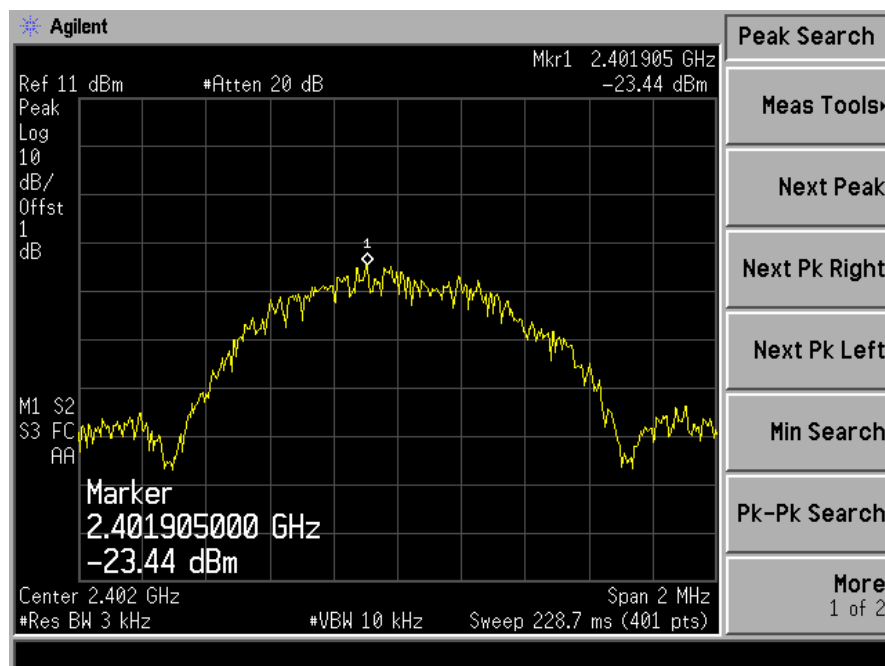
10.5 Limit

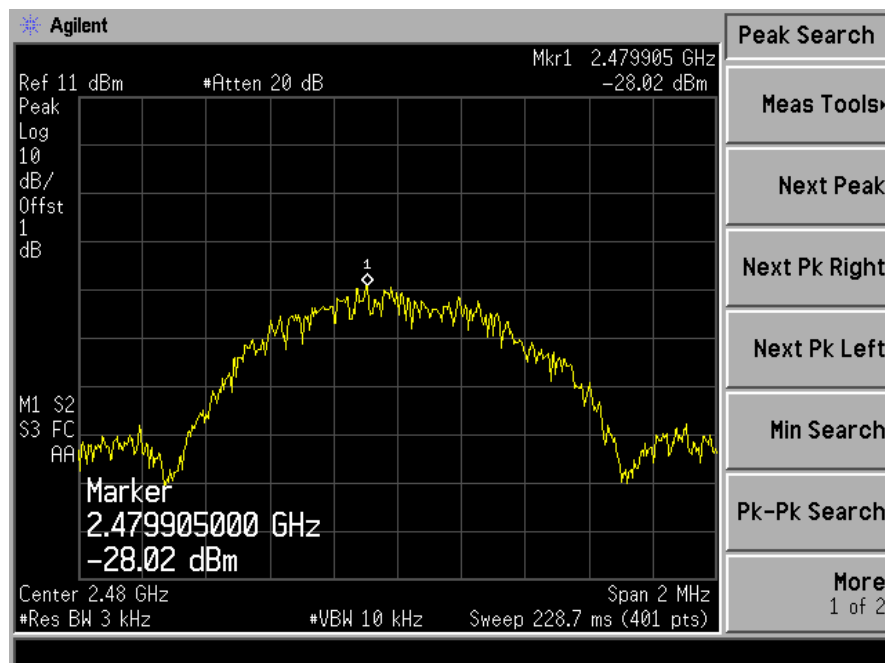
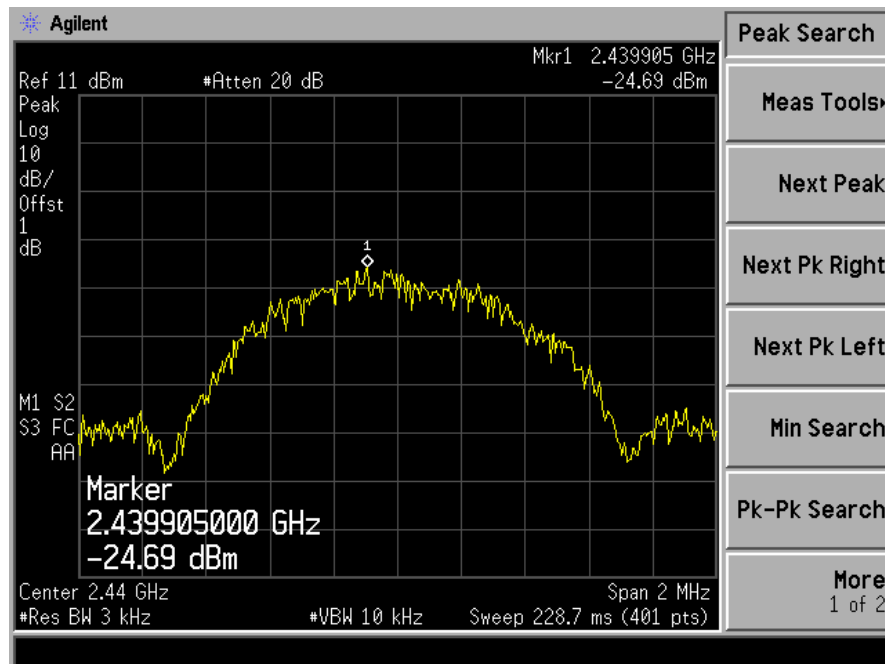
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3 kHz bandwidth.

10.6 Test Result

Spectrum Detector: PK Test Date : September 02, 2014
 Test By: KK Temperature : 24℃
 Test Result: PASS Humidity : 53 %
 Operation Mode: BLE

Channel	Measurement Level (dBm)	Required Limit (dBm)	Result
01	-23.44	<8dBm	PASS
20	-24.69	<8dBm	PASS
40	-28.02	<8dBm	PASS





11 Antenna Port Emission

11.1 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

11.2 Measuring Instruments and Setting

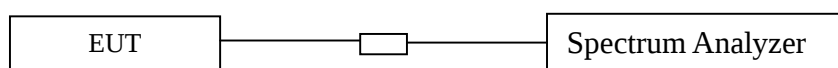
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
RB	100kHz(Above 1GHz VRB $\geq$ 1MHz)
VB	300kHz(Above 1GHz RRB $\geq$ 3VBW)
Detector	Peak
Trace	Max hold

11.3 Test Procedures

The conducted spurious emissions were measured conducted using a spectrum analyzer at low, Middle, and high channels, the limit was determined by attenuation 20dB of the RF peak power output.

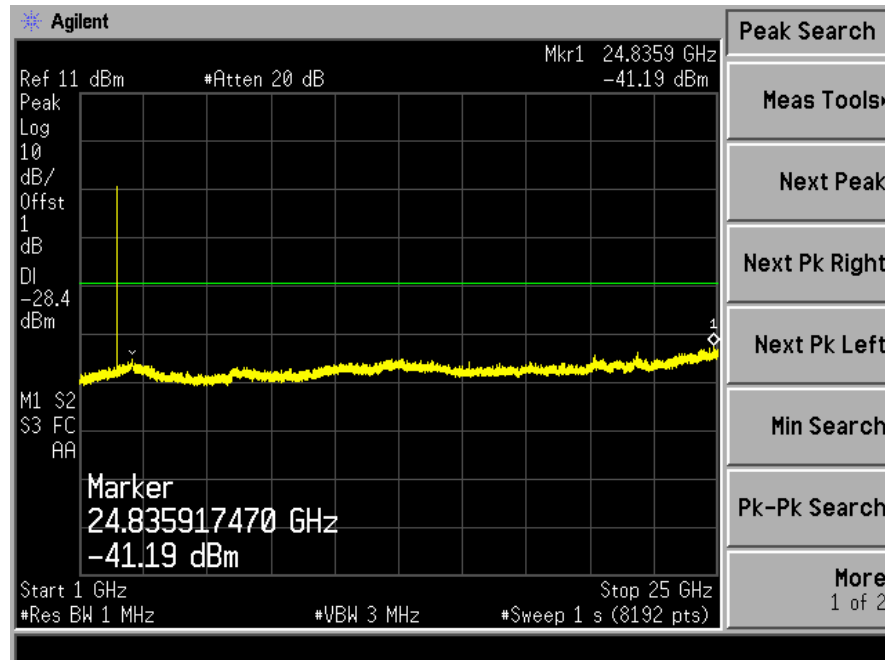
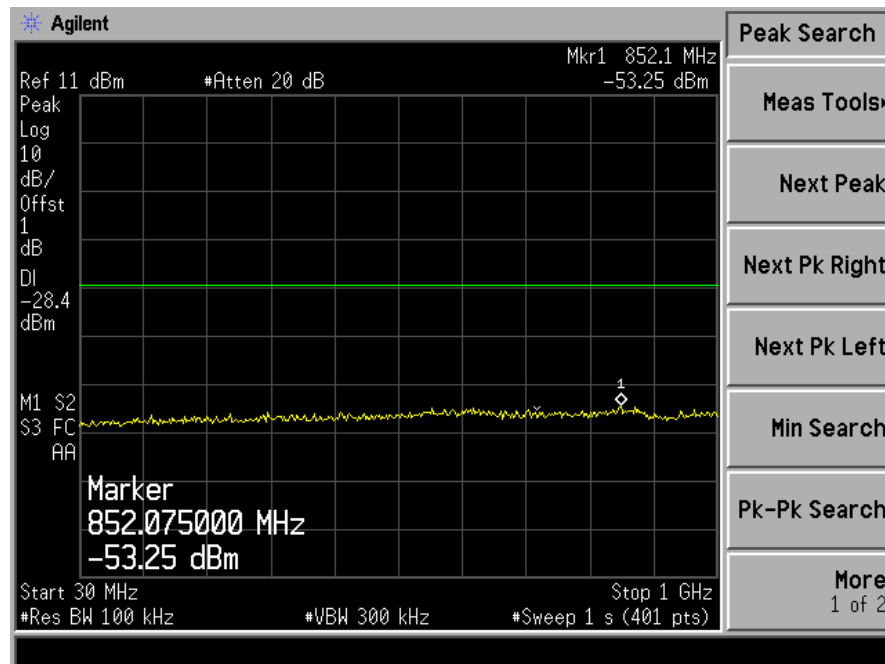
11.4 Block Diagram of Test setup



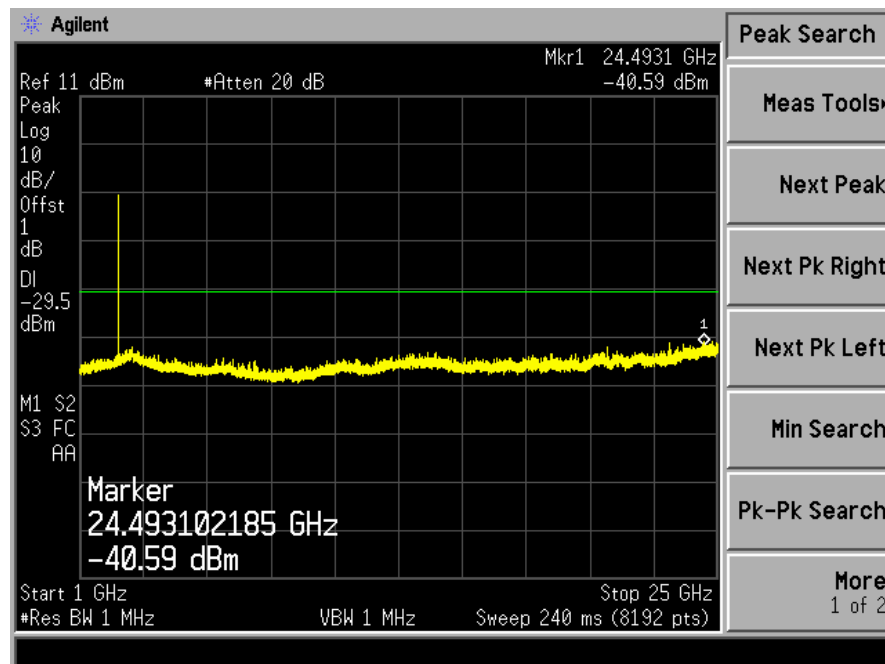
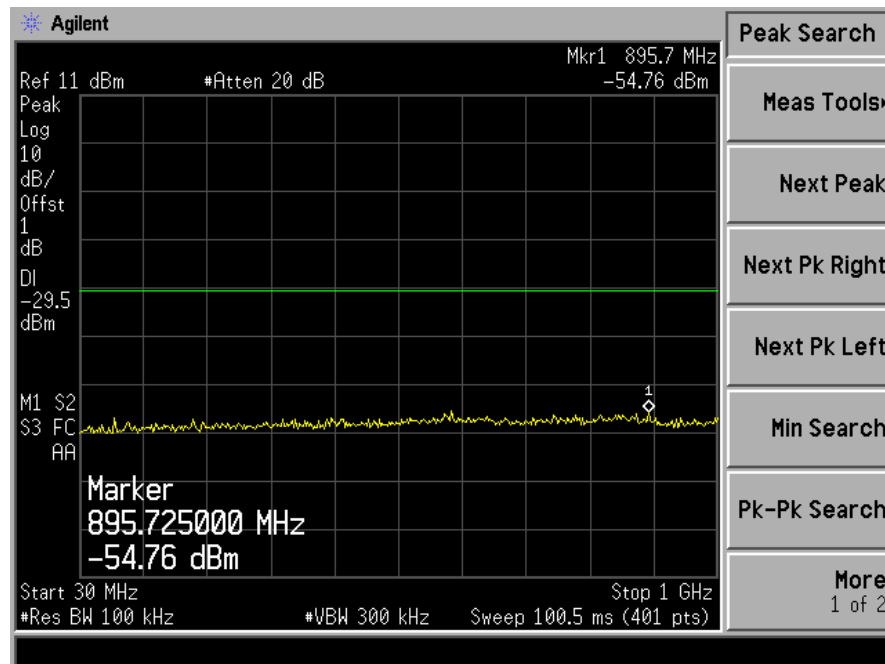
11.5 Test Result

PASS.

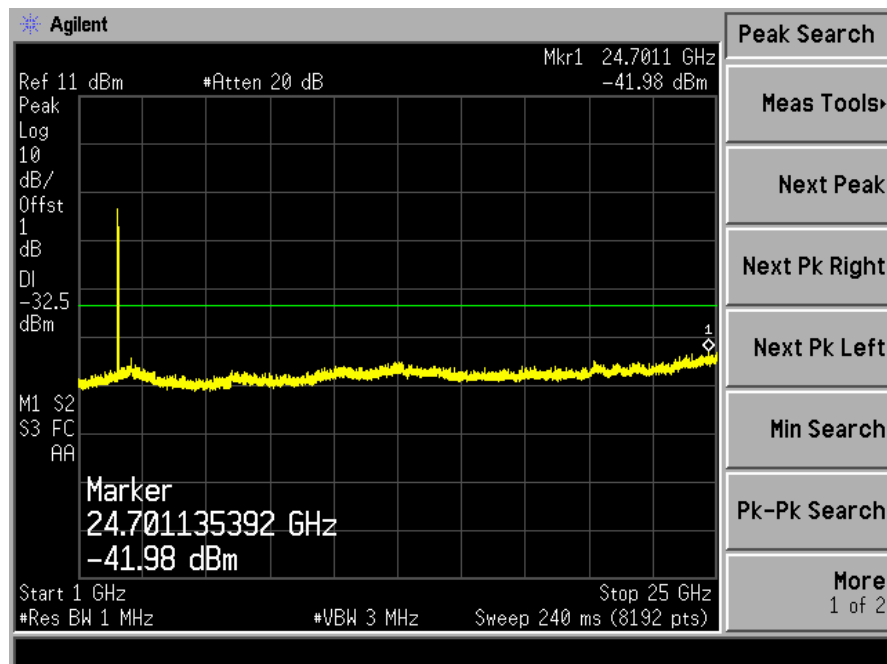
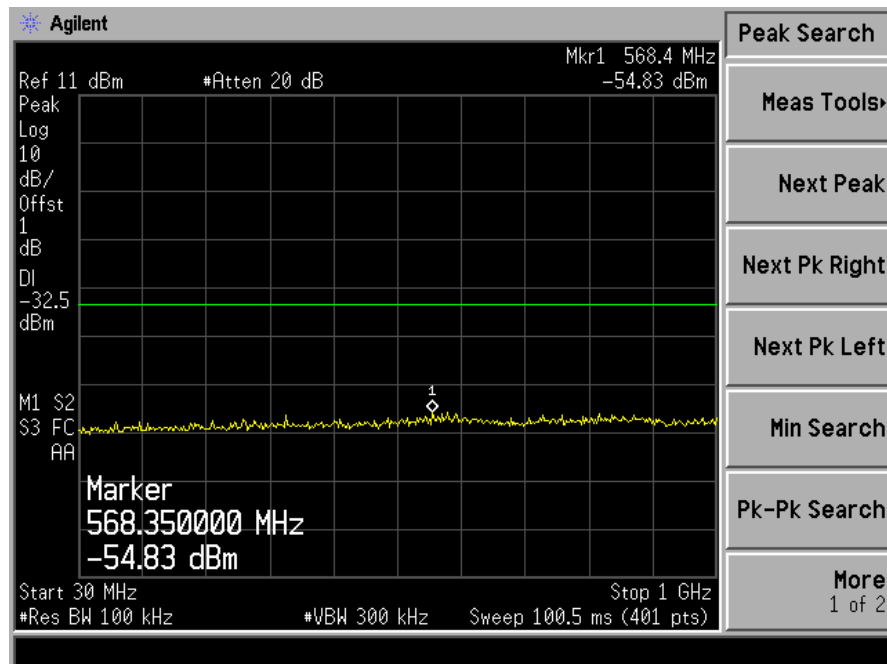
Low Channel 01



Mid Channel 20



High Channel 40



12 Antenna Application

12.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Result

The EUT'S antenna is Ceramic Chip Antenna. The antenna's gain is 1dBi and meets the requirement.