

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C AND CANADIAN RSS 210 ISSUE 8
REQUIREMENTS**

OF

SOUNDBAR

MODEL No.: A844, A600, A1094, B1027, B1197, B1397

FCC ID: 2ACPUA844

IC: 12178A-SBA844

Trademark: N/A

REPORT NO.: ES140430278E

ISSUE DATE: August 8, 2014

Prepared for

NINGBO SOMLE AUDIO-VISUAL TECHNOLOGY CO., LTD.

No.39, Lane150, Beihai Road, Jiangbei, Ningbo, China.

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:	NINGBO SOMLE AUDIO-VISUAL TECHNOLOGY CO., LTD. No.39, Lane150, Beihai Road, Jiangbei, Ningbo, China.
Manufacturer:	NINGBO SOMLE AUDIO-VISUAL TECHNOLOGY CO., LTD. No.39, Lane150, Beihai Road, Jiangbei, Ningbo, China.
Product Description:	SOUNDBAR
Model Number:	A844, A600, A1094, B1027, B1197, B1397 (Note: Series A: A844, A600, A1094; Series B: B1027, B1197, B1397 For Series A and series B: the only differences are the exterior designs and model numbers; For Model Number: all the model numbers are identical in circuitry and electrical, mechanical, internal construction, PCB layout, material; the only differences are the exterior designs and model no..)
Trademark:	N/A
File Number:	ES140430278E
Date of Test:	April 30, 2014 to June 28, 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 and Canadian RSS 210 ISSUE 8 REQUIREMENTS.

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

Date of Test : April 30, 2014 to June 28, 2014

Prepared by : Jack Li
Jack Li/Editor

Reviewer : Joe Xia
Joe Xia/Supervisor

Approve & Authorized Signer : 
Lisa Wang/Manager

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1. General Information

1.1 Product Description

A major technical descriptions of EUT is described as following:

- A). Operation Frequency: 2402-2480MHz
- B). Modulation: GFSK ,1/4Π-DQPSK, 8DPSK for Bluetooth4.0 DSS;
GFSK for Bluetooth4.0 DTS
- C). Number of Channel: 79 Channels for Bluetooth4.0 DSS;
40 Channels for Bluetooth4.0 DTS
- D). Channel space: 1MHz for Bluetooth4.0 DSS, 2MHz for Bluetooth4.0 DTS
- E). RF Output Power: BT4.0 DSS: 4.42dBm Max; BT4.0 DTS:1.04dBm Max
- F). Antenna Type: PCB antenna
- G). Antenna GAIN: 1dBi
- H). Power Supply: AC 120V/60Hz

Note:

1. This device is Bluetooth portable speaker included BT4.0 DSS and BT4.0 DTS 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: 2ACPUA844 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules and also intended for IC: 12178A-SBA844 filing to comply with Canadian RSS 210 Issue 8.0.
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

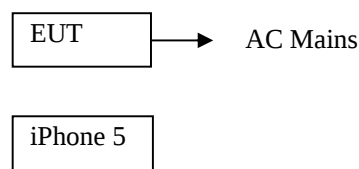


Table 2-1 Equipment Used in Tested System

Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
SOUNDBAR	N/A	A844	2ACPUA844	N/A	EUT
IPhone 5	apple	A1324	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

Two different series were tested the data of the Worse result(B1027) are recorded in the following pages and the others do not exceed the limits.

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

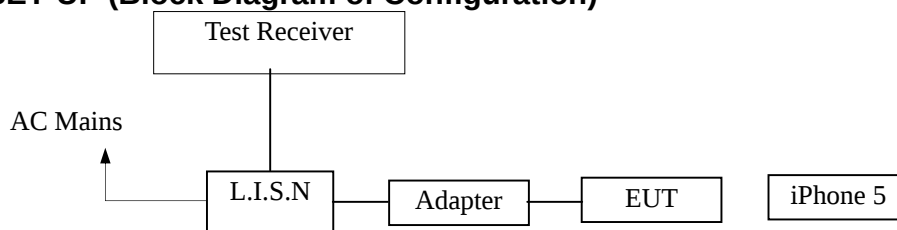
FCC Rules	IC Rule	Description Of Test	Result
§15.247(a)(2)	RSS-210, A8.2(a)	6dB bandwidth	Pass
§15.247(b)(3)	RSS-210, A8.4(2)	Max Peak output Power test	Pass
§15.247(e)	RSS-210, A8.2(b)	Power density	Pass
§15.247(d)	RSS-210, A2.9, A8.5	Band edge test	Pass
§15.207	RSS-GEN, Section 7.2.4	AC Power Conducted Emission	Pass
§15.247(d), §15.209	RSS-210, A2.9, A8.5	Radiated Emission	Pass
§15.247(d)	RSS-GEN, Section 7.2.5	Antenna Port Emission	Pass
§15.247(b)&§15.203	RSS-210, A8.5	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

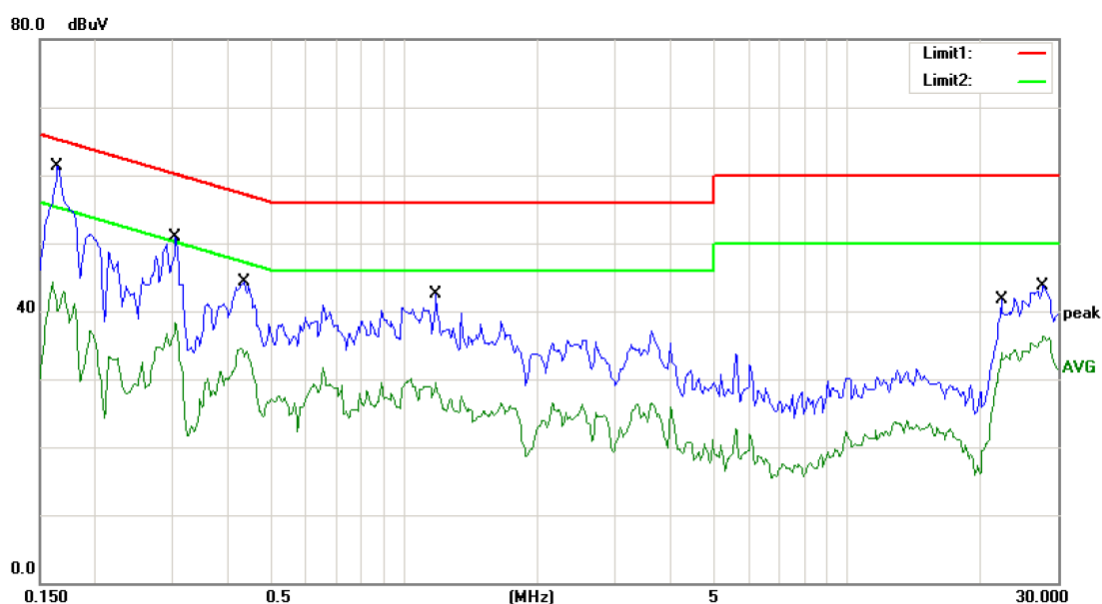
50

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: 24

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

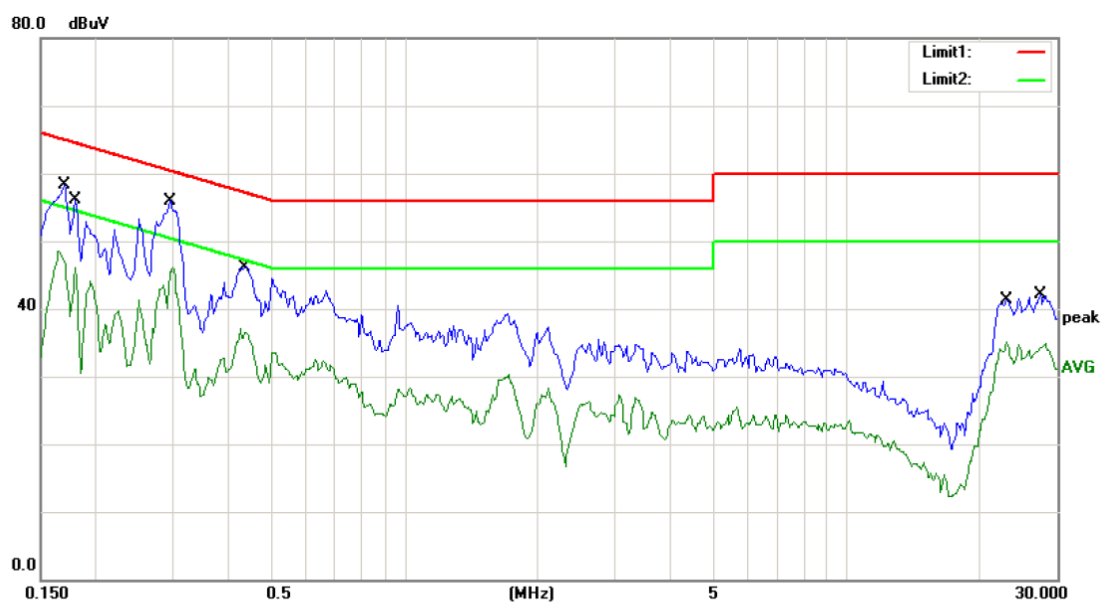
Humidity: 53 %

Mode: Bluetooth ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1650	58.60	0.00	58.60	65.21	-6.61	QP	
2		0.1650	44.28	0.00	44.28	55.21	-10.93	AVG	
3		0.3050	50.83	0.00	50.83	60.11	-9.28	QP	
4		0.3050	38.24	0.00	38.24	50.11	-11.87	AVG	
5		0.4350	44.21	0.00	44.21	57.16	-12.95	QP	
6		0.4350	34.52	0.00	34.52	47.16	-12.64	AVG	
7		1.1800	42.46	0.00	42.46	56.00	-13.54	QP	
8		1.1800	29.58	0.00	29.58	46.00	-16.42	AVG	
9		22.4000	41.61	0.00	41.61	60.00	-18.39	QP	
10		22.4000	32.06	0.00	32.06	50.00	-17.94	AVG	
11		27.8500	43.64	0.00	43.64	60.00	-16.36	QP	
12		27.8500	36.32	0.00	36.32	50.00	-13.68	AVG	

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



Site Conduction #1

Phase: **N**

Temperature: 24

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 53 %

Mode: Bluetooth ON

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1700	58.26	0.00	58.26	64.96	-6.70	QP	
2	0.1700	48.47	0.00	48.47	54.96	-6.49	AVG	
3	0.1800	56.08	0.00	56.08	64.49	-8.41	QP	
4	0.1800	46.13	0.00	46.13	54.49	-8.36	AVG	
5	0.2950	54.20	0.00	54.20	60.38	-6.18	QP	
6 *	0.2950	46.10	0.00	46.10	50.38	-4.28	AVG	
7	0.4350	46.19	0.00	46.19	57.16	-10.97	QP	
8	0.4350	37.16	0.00	37.16	47.16	-10.00	AVG	
9	23.0750	41.34	0.00	41.34	60.00	-18.66	QP	
10	23.0750	35.05	0.00	35.05	50.00	-14.95	AVG	
11	27.5250	42.02	0.00	42.02	60.00	-17.98	QP	
12	27.5250	34.86	0.00	34.86	50.00	-15.14	AVG	

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

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.

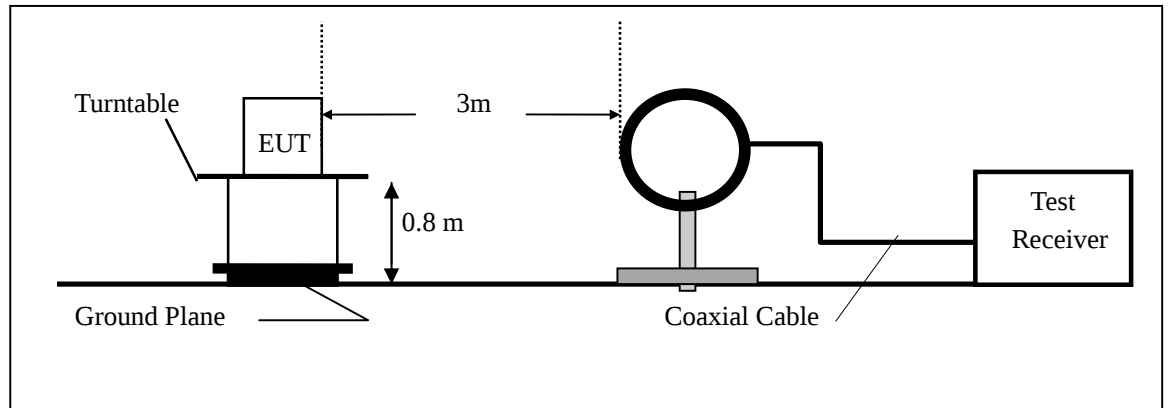
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

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

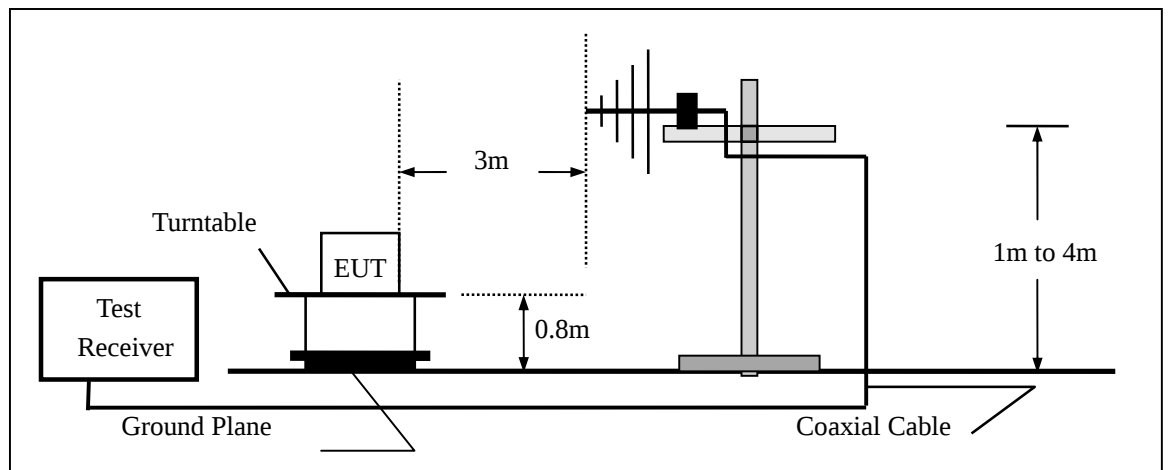
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	AVG
Trace	Max hold

6.2 Test SET-UP (Block Diagram of Configuration)

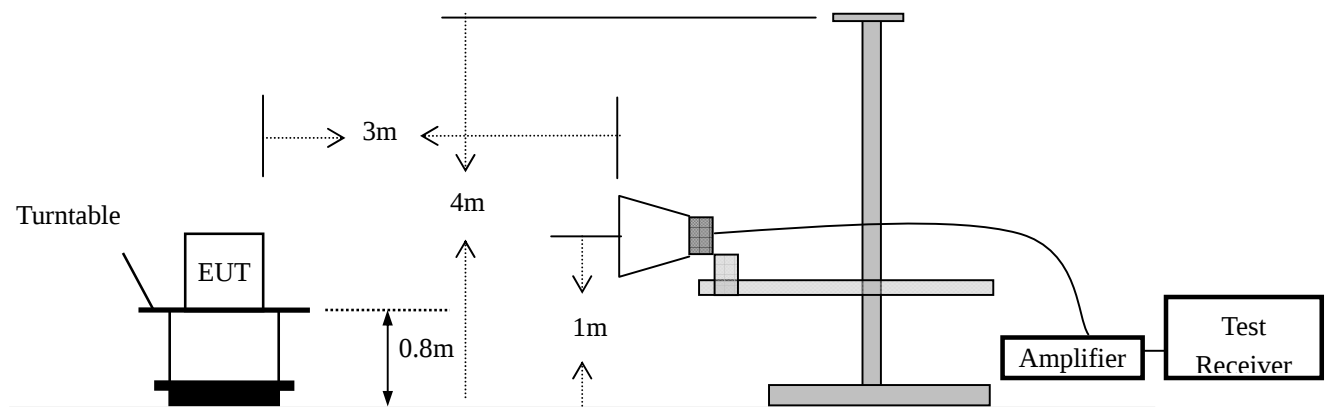
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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):

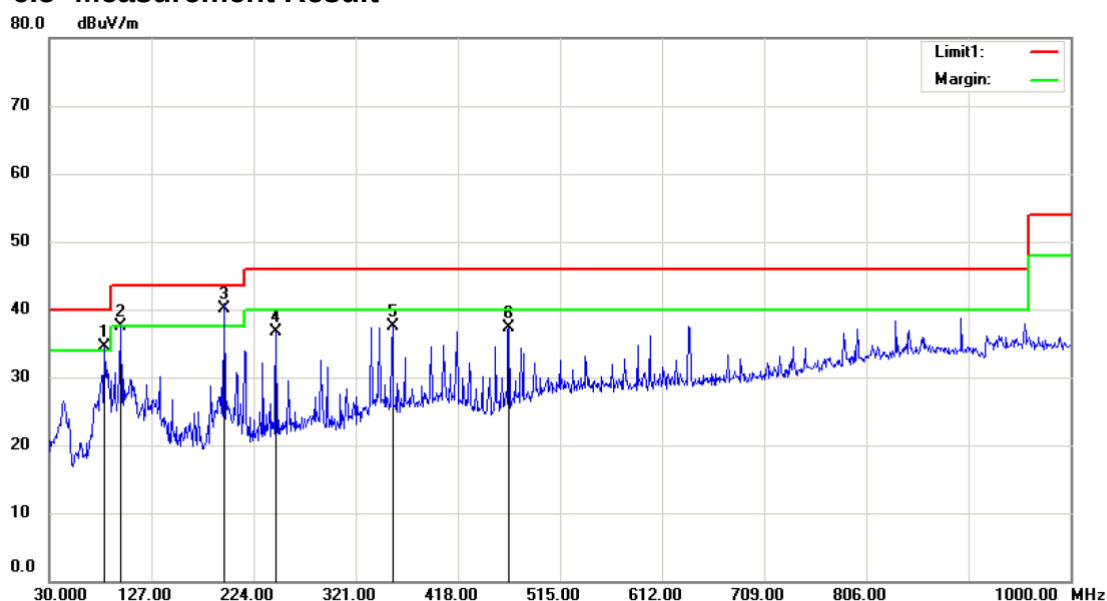
Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

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 site #1

Polarization: **Horizontal**

Temperature: 24

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 53 %

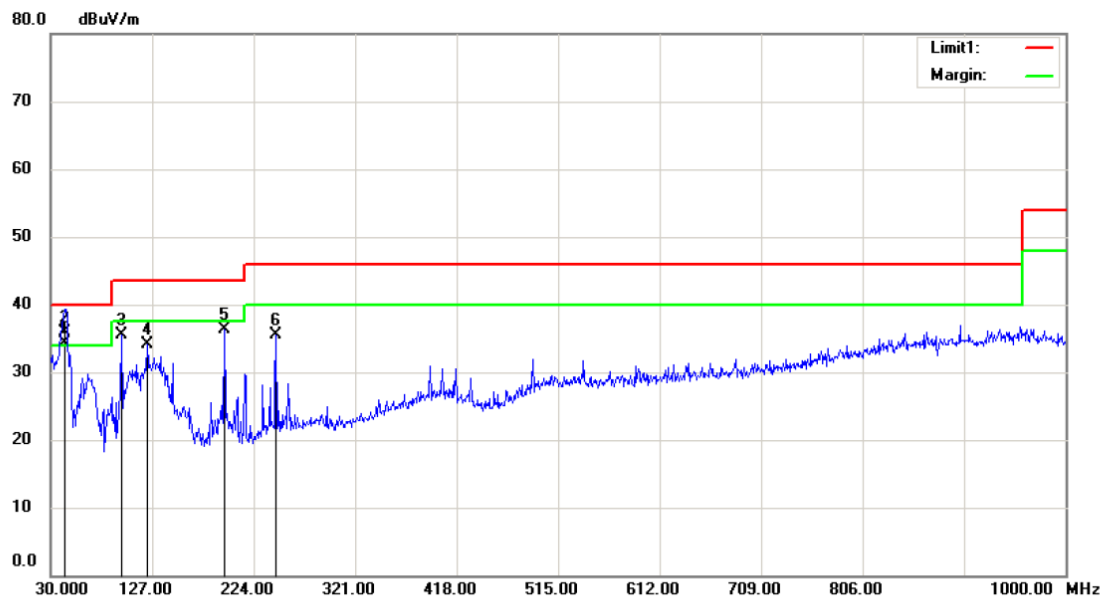
Mode:GFSK TX CH00

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	!	82.3800	46.72	-12.28	34.44	40.00	-5.56	QP		
2		97.9000	44.92	-7.49	37.43	43.50	-6.07	QP		
3	*	195.8700	49.97	-9.77	40.20	43.50	-3.30	QP		
4		245.3400	43.11	-6.35	36.76	46.00	-9.24	QP		
5		355.9200	41.06	-3.56	37.50	46.00	-8.50	QP		
6		466.5000	39.64	-2.32	37.32	46.00	-8.68	QP		

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

Operator: Wang



Site site #1

Polarization: **Vertical**

Temperature: 24

Limit: FCC Class B 3M Radiation

Power: AC 120V/60Hz

Humidity: 53 %

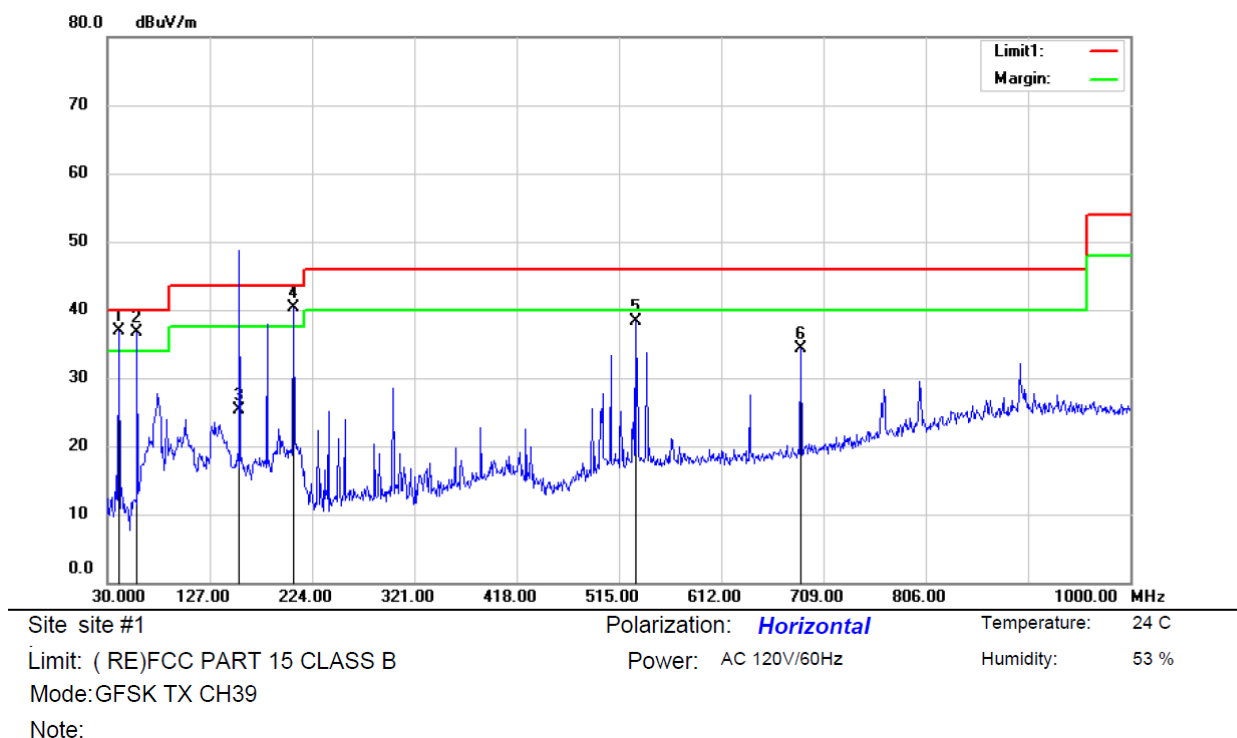
Mode:GFSK TX CH00

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	!	43.5800	37.76	-3.36	34.40	40.00	-5.60	QP		
2	*	43.5800	39.26	-3.36	35.90	40.00	-4.10	QP		
3		97.9000	43.05	-7.49	35.56	43.50	-7.94	QP		
4		122.1500	43.86	-9.78	34.08	43.50	-9.42	QP		
5		195.8700	45.98	-9.77	36.21	43.50	-7.29	QP		
6		245.3400	41.82	-6.35	35.47	46.00	-10.53	QP		

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

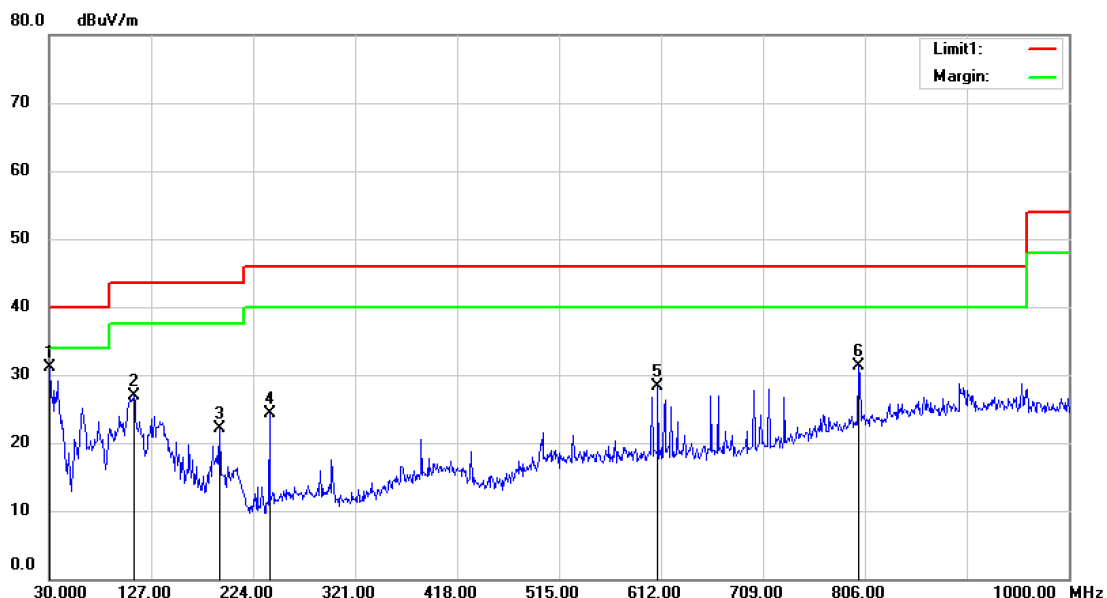
Operator: Wang



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	*	40.6700	57.52	-20.59	36.93	40.00	-3.07	QP		
2	!	58.1300	59.75	-22.98	36.77	40.00	-3.23	QP		
3		155.1300	51.12	-25.72	25.40	43.50	-18.10	QP		
4	!	206.5400	63.39	-23.18	40.21	43.50	-3.29	QP		
5		530.5200	51.12	-12.88	38.24	46.00	-7.76	QP		
6		687.6600	45.38	-10.99	34.39	46.00	-11.61	QP		

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

Operator: KK



Site site #1

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

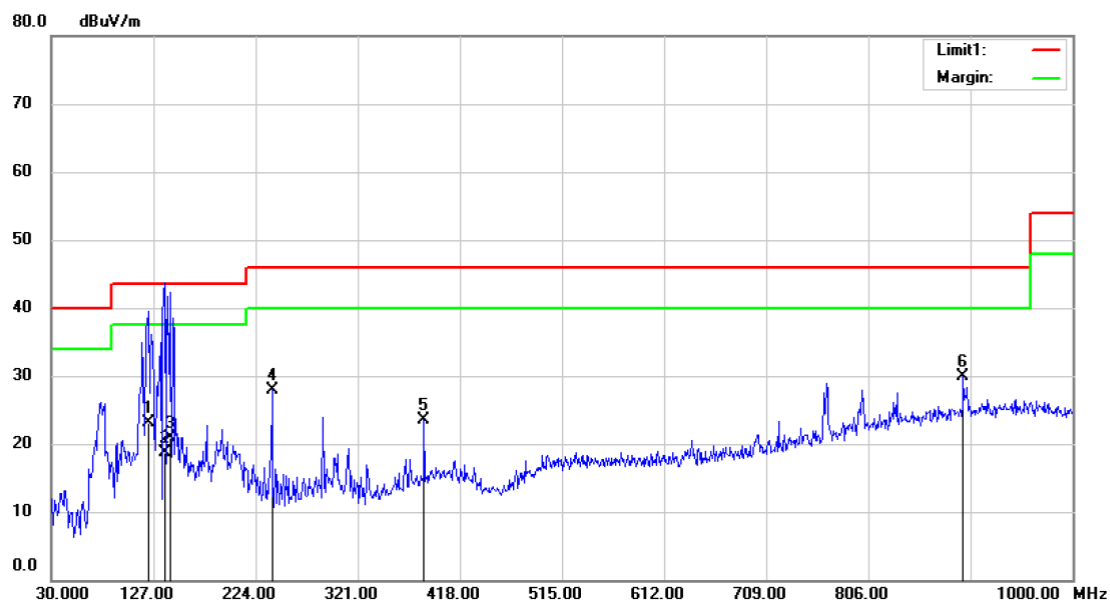
Mode:GFSK TX CH39

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	*	30.9700	55.04	-23.86	31.18	40.00	-8.82	QP		
2		110.5100	48.79	-21.92	26.87	43.50	-16.63	QP		
3		191.9900	46.16	-24.02	22.14	43.50	-21.36	QP		
4		239.5200	44.86	-20.48	24.38	46.00	-21.62	QP		
5		609.0900	40.56	-12.20	28.36	46.00	-17.64	QP		
6		800.1800	38.44	-7.16	31.28	46.00	-14.72	QP		

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

Operator: KK

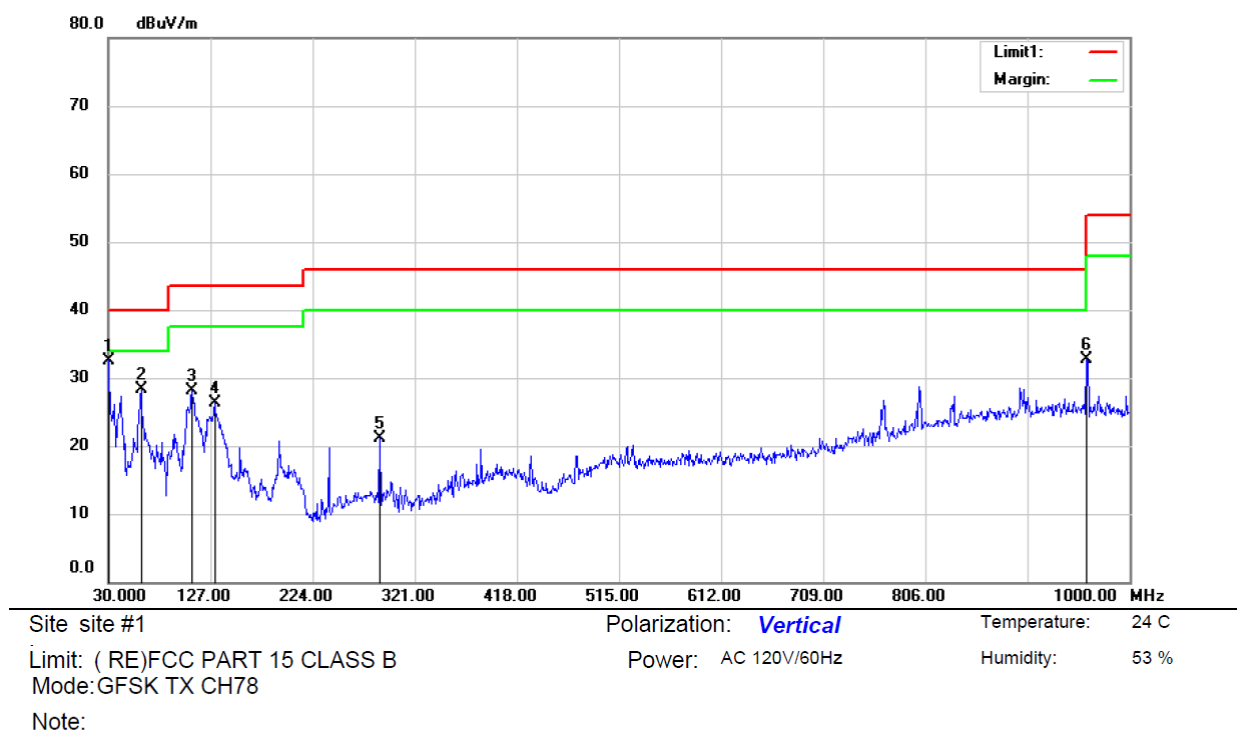


Site site #1 Polarization: **Horizontal** Temperature: 24 C
Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 53 %
Mode:GFSK TX CH78
Note:

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		122.1500	47.25	-24.05	23.20	43.50	-20.30	QP		
2		137.6700	43.79	-25.09	18.70	43.50	-24.80	QP		
3		142.5200	46.16	-25.26	20.90	43.50	-22.60	QP		
4		239.5200	48.32	-20.48	27.84	46.00	-18.16	QP		
5		384.0500	39.18	-15.66	23.52	46.00	-22.48	QP		
6	*	896.2100	34.60	-4.72	29.88	46.00	-16.12	QP		

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

Operator: KK



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	*	30.0000	56.83	-24.23	32.60	40.00	-7.40	QP		
2		61.0400	51.45	-23.24	28.21	40.00	-11.79	QP		
3		109.5400	49.98	-21.81	28.17	43.50	-15.33	QP		
4		130.8800	51.05	-24.77	26.28	43.50	-17.22	QP		
5		288.0200	40.56	-19.36	21.20	46.00	-24.80	QP		
6		959.2600	37.41	-4.74	32.67	46.00	-13.33	QP		

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

Operator: KK

Operation Mode: TX Channel 01 Test Date : June 28, 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	51.84	30.25	74.00	54.00	-22.16	-23.75
7206.00	V	48.91	35.77	74.00	54.00	-25.09	-18.23
9608.00	V	59.84	44.94	74.00	54.00	-14.16	-9.06
12010.00	V	49.55	42.15	74.00	54.00	-24.45	-11.85
14412.00	V	55.29	37.19	74.00	54.00	-18.71	-16.81
16814.00	V	58.52	37.35	74.00	54.00	-15.48	-16.65
4804.00	H	52.55	31.87	74.00	54.00	-21.45	-22.13
7206.00	H	70.35	33.65	74.00	54.00	-3.65	-20.35
9608.00	H	68.30	38.16	74.00	54.00	-5.70	-15.84
12010.00	H	49.27	49.81	74.00	54.00	-24.73	-4.19
14412.00	H	53.42	48.82	74.00	54.00	-20.58	-5.18
16814.00	H	58.39	37.22	74.00	54.00	-15.61	-16.78

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 : June 28, 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	53.00	30.98	74.00	54.00	-21.00	-23.02
7320.00	V	50.07	36.50	74.00	54.00	-23.93	-17.50
9760.00	V	61.00	45.67	74.00	54.00	-13.00	-8.33
12200.00	V	50.71	42.88	74.00	54.00	-23.29	-11.12
14640.00	V	56.45	37.71	74.00	54.00	-17.55	-16.29
17080.00	V	59.68	38.08	74.00	54.00	-14.32	-15.92
4880.00	H	53.71	32.60	74.00	54.00	-20.29	-21.40
7320.00	H	70.95	34.38	74.00	54.00	-3.05	-19.62
9760.00	H	69.46	38.39	74.00	54.00	-4.54	-15.61
12200.00	H	50.43	50.04	74.00	54.00	-23.57	-3.96
14640.00	H	54.58	48.85	74.00	54.00	-19.42	-5.15
17080.00	H	59.55	37.95	74.00	54.00	-14.45	-16.05

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 : June 28, 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	52.57	29.77	74.00	54.00	-21.43	-24.23
7440.00	V	49.64	35.29	74.00	54.00	-24.36	-18.71
9920.00	V	60.57	44.46	74.00	54.00	-13.43	-9.54
12400.00	V	50.28	41.67	74.00	54.00	-23.72	-12.33
14880.00	V	56.02	36.71	74.00	54.00	-17.98	-17.29
17360.00	V	59.25	36.87	74.00	54.00	-14.75	-17.13
4960.00	H	53.28	31.39	74.00	54.00	-20.72	-22.61
7440.00	H	70.58	33.17	74.00	54.00	-3.42	-20.83
9920.00	H	69.03	37.68	74.00	54.00	-4.97	-16.32
12400.00	H	50.00	49.33	74.00	54.00	-24.00	-4.67
14880.00	H	54.15	48.34	74.00	54.00	-19.85	-5.66
17360.00	H	59.12	36.74	74.00	54.00	-14.88	-17.26

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.

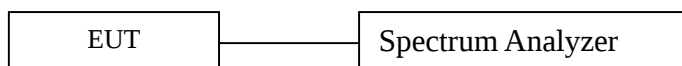
7. 6dB Bandwidth Test

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

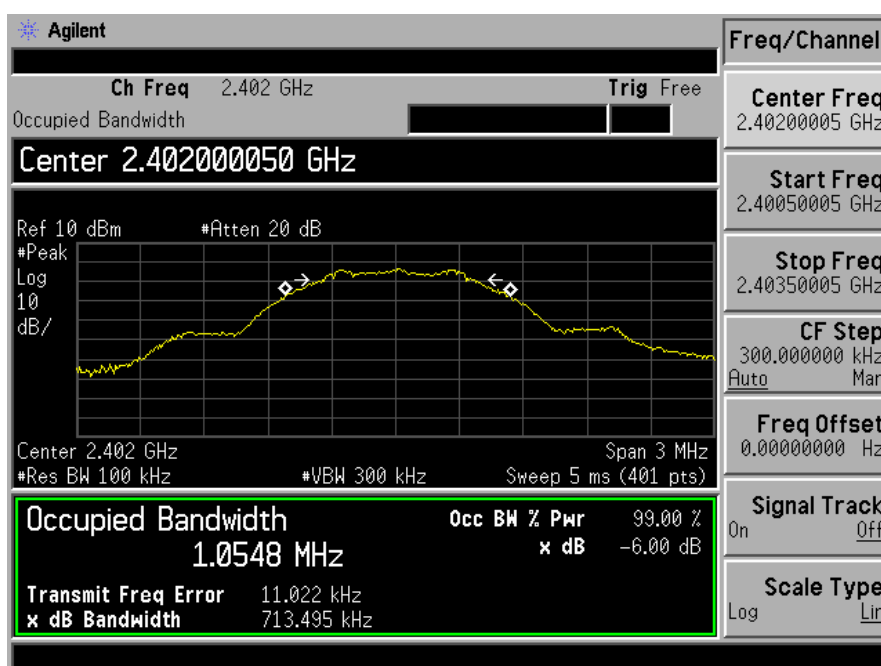
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

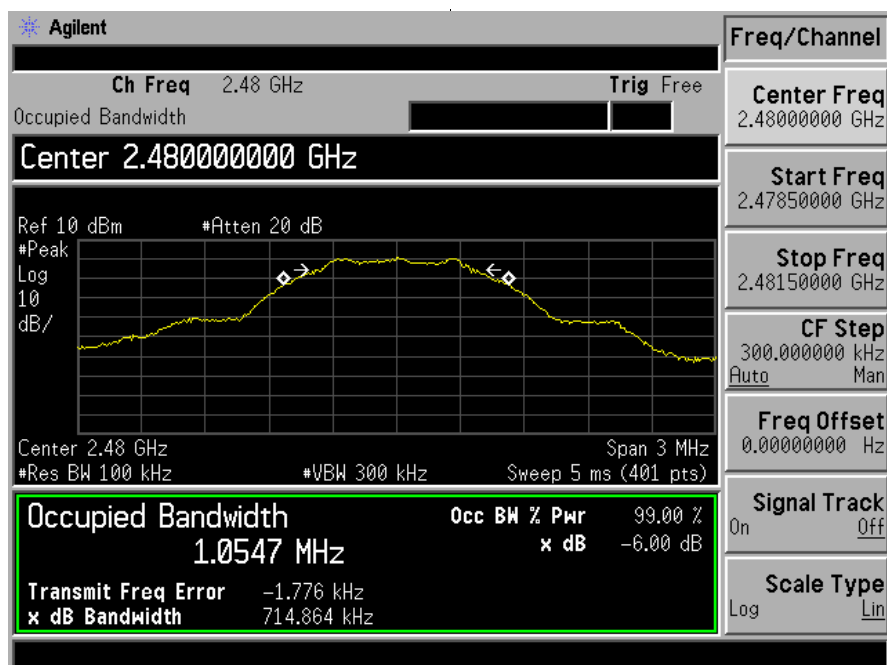
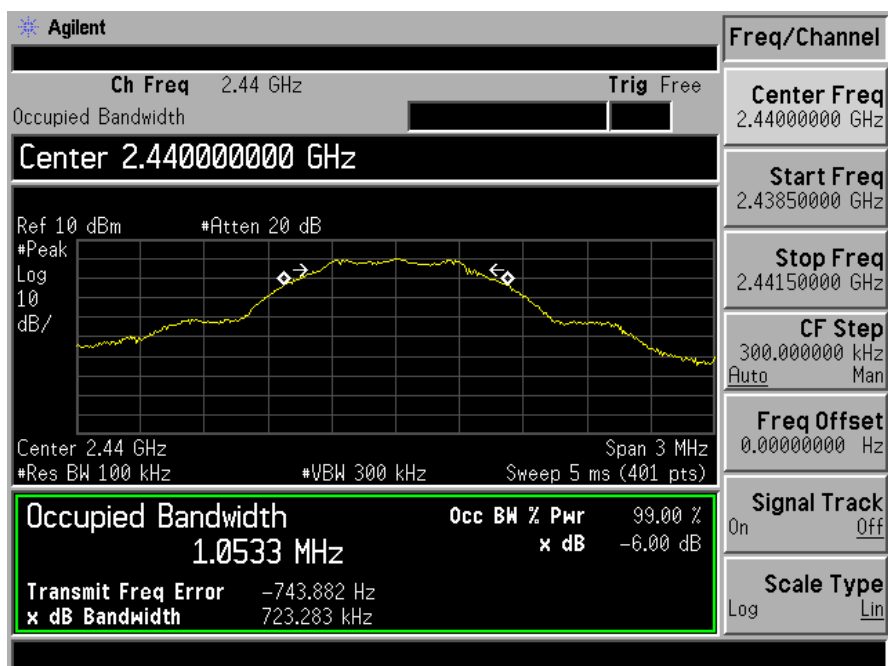
7.4 Measurement Results

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

Spectrum Detector: PK Test Date : June 28, 2014
Test By: DK Temperature : 24 °C
Test Result: PASS Humidity : 53 %

Channel number	Channel frequency (MHz)	6dB Down BW(kHz)	99% BW (kHz)	Required Limit (kHz)
01	2402	713.495	1054.8	>500
20	2440	723.283	1053.3	>500
40	2480	714.864	1054.7	>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 :	June 28, 2014
Test By:	DK	Temperature :	24℃
Test Result:	PASS	Humidity :	53 %

Channel number	Channel Frequency(MHz)	Peak Power output(dBm)	Peak Power Limit(W)	Pass/Fail
01	2402	-2.99	1W(30dBm)	PASS
20	2440	0.65	1W(30dBm)	PASS
40	2480	1.04	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 : June 28, 2014
 Test By: KK Temperature : 24℃
 Test channel: 01 Humidity : 53 %

Frequency (MHz)	Polarity	Level (dBuV/m)		Limited (dBuV/m)	
		PK	AV	PK	AV
2372.05	H	47.81	33.30	74	54
2336.32	V	46.47	31.96	74	54

Spectrum Detector: PK/AV Test Date : June 28, 2014
 Test By: KK Temperature : 24℃
 Test channel: 40 Humidity : 53 %

Frequency (MHz)	Polarity	Level (dBuV/m)		Limited (dBuV/m)	
		PK	AV	PK	AV
2485.91	H	48.57	34.06	74	54
2487.72	V	47.23	32.72	74	54

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

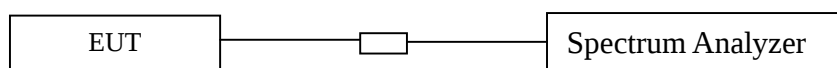
The following table is the setting of spectrum analyzer.

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



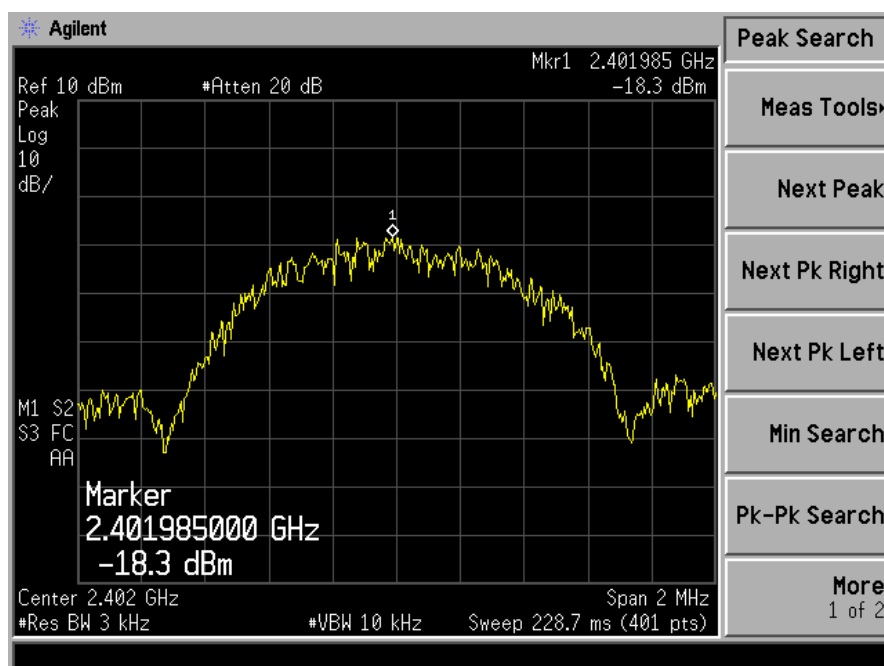
10.5 Limit

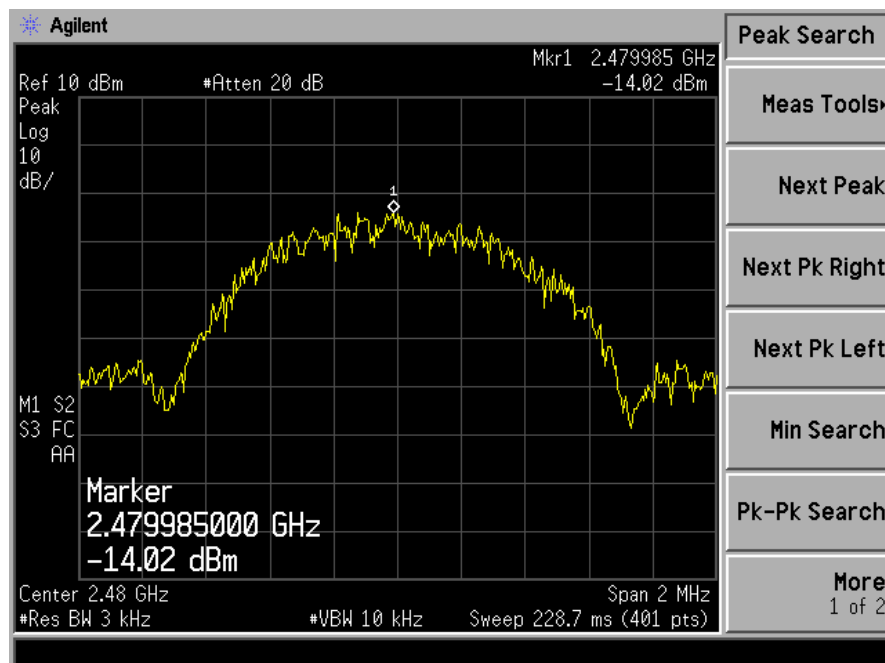
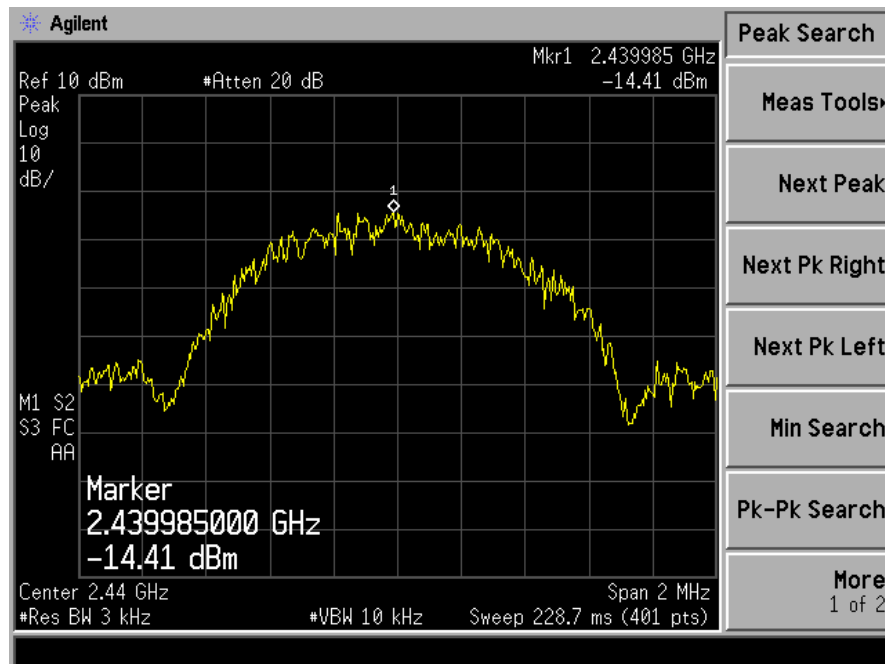
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3 kHz bandwidth.

10.6 Test Result

Spectrum Detector:	PK	Test Date :	June 28, 2014
Test By:	DK	Temperature :	24℃
Test Result:	PASS	Humidity :	53 %
Operation Mode:	BLE		

Channel	Measurement Level (dBm)	Required Limit (dBm)	Result
01	-18.30	<8dBm	PASS
20	-14.41	<8dBm	PASS
40	-14.02	<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

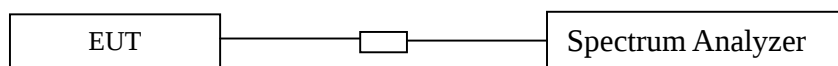
The following table is the setting of spectrum analyzer.

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.

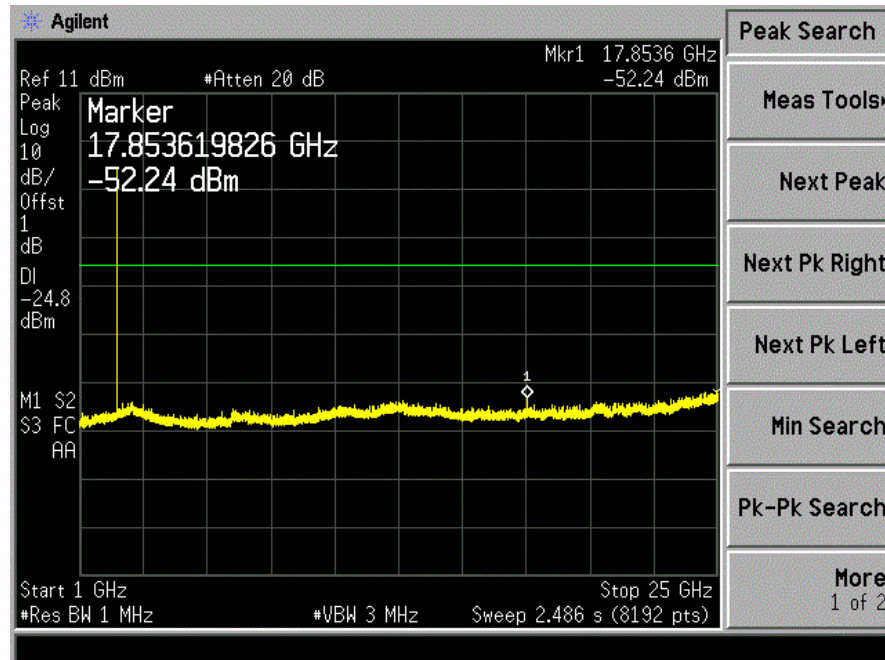
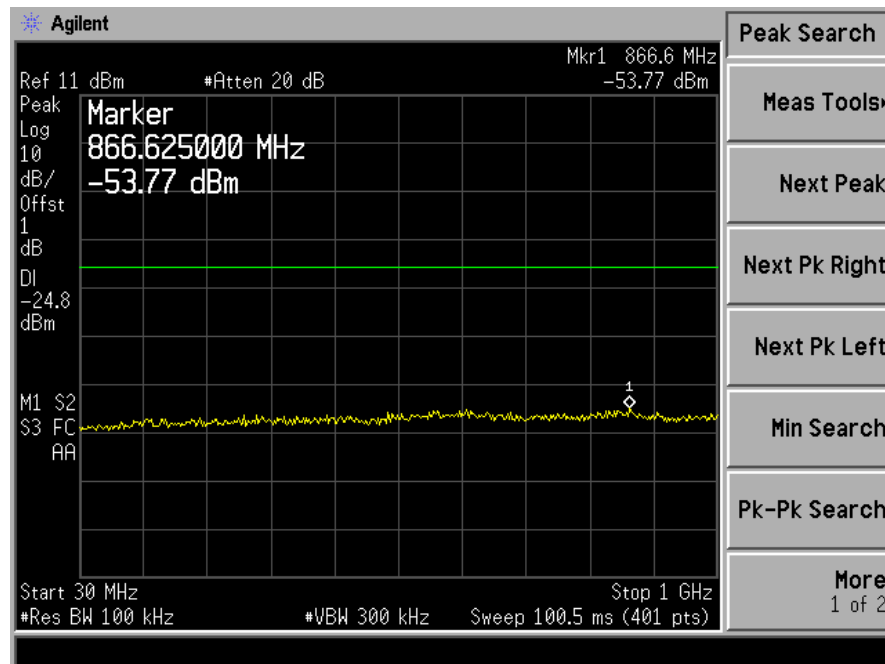
11.4 Block Diagram of Test setup



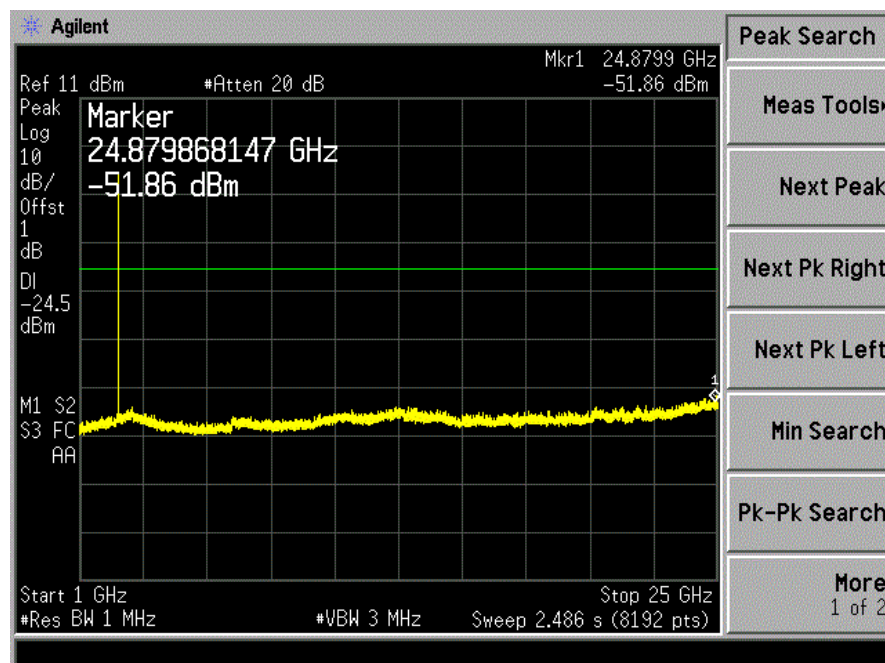
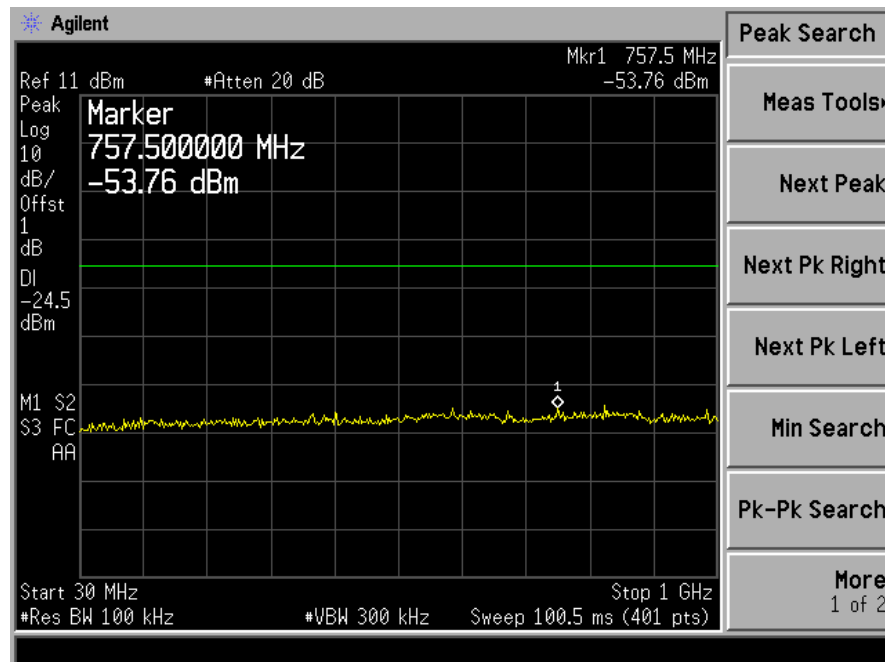
11.5 Test Result

PASS.

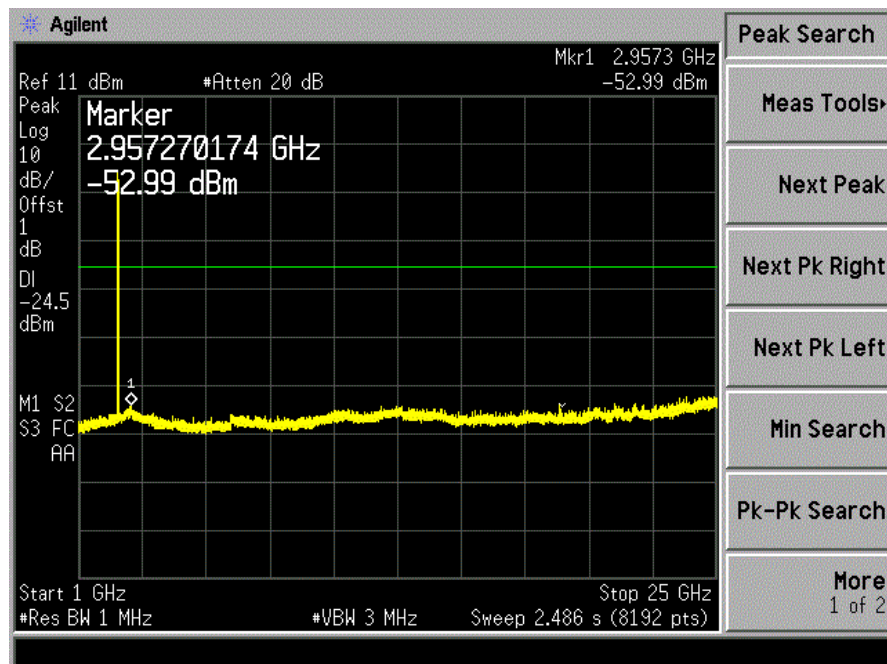
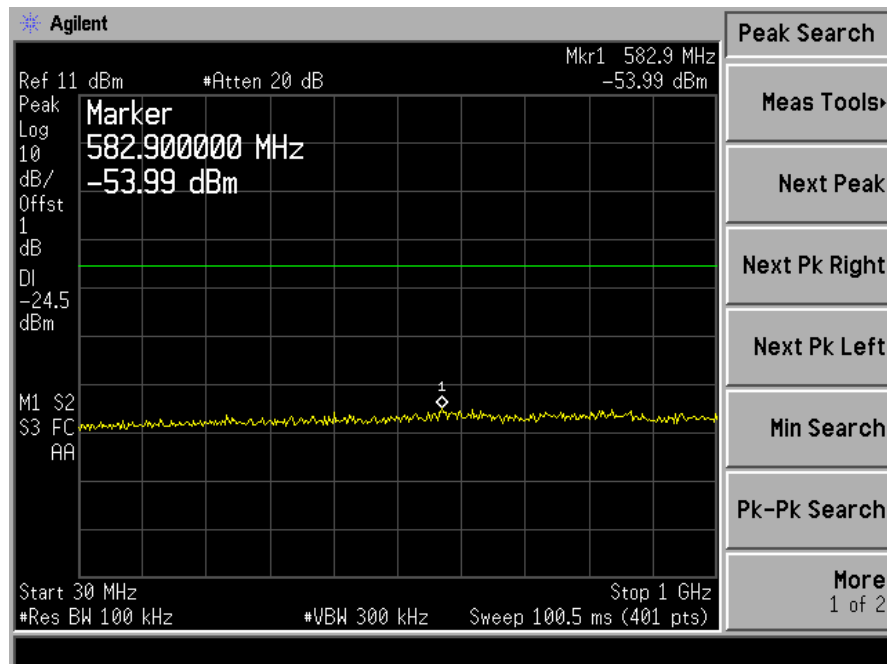
Low Channel 01



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 PCB Antenna. The antenna's gain is 1dBi and meets the requirement.