RF TEST REPORT

FCC ID:OXGAL93

Product	:	Kaleidoscope spotlight
Model Name	:	AL93
Brand	:	showlights
Report No.	:	PTC-DQ-01170303602E-FC01

Prepared for

Willis Electric CO.,Ltd.

8F, No.310, Sec.4, Zhongxiao E. Rd., Da'an Dist., Taipei, Taiwan

Prepared by

DongGuan Precise Testing Service Co.,Ltd.

Building D, Baoding Technology Park, Guangming Road 2, Guangming Community

Dongcheng District, Dongguan, Guangdong, China

TEST RESULT CERTIFICATION

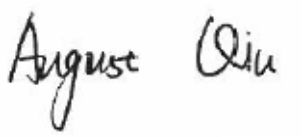
Applicant's name	:	Willis Electric CO.,Ltd.
Address	:	8F, No.310, Sec.4, Zhongxiao E. Rd., Da' an Dist., Taipei, Taiwan
Manufacture's name	:	Kupoint (DongGuan) Electric Co., Ltd
Address	:	Huai De Industrial Humen Town Dong Guan City Guang Dong Provience
Product name	:	Kaleidoscope spotlight
Model name	:	AL93
Standards	:	FCC CFR47 Part 15 Section 15.247
Test procedure	:	ANSI C63.10:2013, KDB 558074 D01 DTS MEAS GUIDANCE V04
Test Date	:	April.06. 2017 ~ April.13. 2017
Date of Issue	:	April.14. 2017
Test Result	:	Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

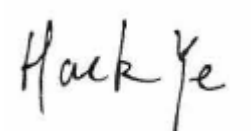
Testing Engineer

August Qiu



TechnicalManager

Hack Ye



AuthorizedSignatory

Chris Du

Contents

Page

2 Test Summary

Test Items	Test Requirement-FCC	Result
Conduct Emission	15.207	PASS
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Conducted Spurious Emission	15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Power Spectral Density	15.247(e)	PASS
Antenna Requirement	15.203	PASS
Remark: N/A: Not Applicable		

3 General Information

3.1 General Description of E.U.T.

Product Name	:	Kaleidoscope spotlight
Model Name	:	AL93
Model Description	:	N/A
Bluetooth Version	:	V4.0(BLE Only)
Operating frequency	:	2402-2480MHz, 40 channels
Antenna installation:	:	internal permanent antenna
Antenna Gain:	:	BLE: 0.5dBi
The lowest oscillator:	:	32.768KHz
Type of Modulation		GFSK
Power supply	:	AC120V, 50/60Hz 0.15A
Hardware Version	:	AL93_V3
Software Version	:	AL93BT_V10

3.2 Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Modulation	Test mode	Low channel	Middle channel	High channel
GFSK(BLE)	Transmitting	2402MHz	2440MHz	2480MHz
In the process of testing, use customers provide the fixed frequency test software, EUT working in the low、middle、high ch/planned power level/continuous transmission（duty cycle≥98%）.				

3.4 Test Site

Dongguan Precise Testing Service Co., Ltd.

Building D,Baoding Technology Park,Guangming Road2, Dongcheng District, Dongguan, Guangdong, China, Dongguan, 523129

China

FCC Registration Number: 371540

IC Registration Number: 12191A-1

4 Equipment During Test

4.1 Equipments List

RF Conducted Test							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMC Analyzer (9k~26.5GHz)	Agilent	E4407B	MY45109572	Aug.04, 2016	Aug.03, 2017	1 year
2	EXA Signal Analyzer	Keysight	N9010A	MY50520207 526B25MPB W7X	Aug.04, 2016	Aug.03, 2017	1 year
3	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
4	Humidity Chamber	GF	GTH-225-40-1P	IAA061225	July 15, 2016	July 14, 2017	1 year
5	Power Meter	Anritsu	ML2495A	15I00041SN O01	July 15, 2016	July 14, 2017	1 year
6	Power sensor	Anritsu	ML2411B	n/a	July 15, 2016	July 14, 2017	1 year
7	Test cable (9kHz~25GHz)	SCHWARZ BECK	n/a	n/a	July 15, 2016	July 14, 2017	1 year
8	Temporary antenna connector	n/a	S100	n/a	July 15, 2016	July 14, 2017	1 year
Radiated Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	Rohde&Schwarz	ESCI	101417	July 15, 2016	July 14, 2017	1 year
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3355	July 15, 2016	July 14, 2017	1 year
3	Amplifier	EM	EM-30180	060538	July 15, 2016	July 14, 2017	1 year
4	Horn Antenna	SCHWARZBECK	BBHA9120 D	1246	July 15, 2016	July 14, 2017	1 year
5	Horn Antenna	SCHWARZBECK	BBHA9170 D	1412	July 15, 2016	July 14, 2017	1 year
6	Active loop antenna	SCHWARZBECK	FMZB1519	1519-031	July 15, 2016	July 14, 2017	1 year
7	Coaxial Cable(below 1GHz)	LARGE	CALB1	-	July 15, 2016	July 14, 2017	1 year

8	Coaxial Cable(above 1GHz)	LARGE	CALB2	-	July 15, 2016	July 14, 2017	1 year
Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMI Test Receiver	R&S	ESCI	101155	July 15, 2016	July 14, 2017	1 year
2	LISN	SCHWARZBECK	NSLK 8128	8128-289	July 15, 2016	July 14, 2017	1 year
3	Cable	LARGE	RF300	-	July 15, 2016	July 14, 2017	1 year

4.2 Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions(150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB

5 Conducted Emission

Test Requirement:	:	FCC CFR 47 Part 15 Section 15.207
Test Method:	:	ANSI C63.10:2013
Test Result:	:	PASS
Frequency Range:	:	150kHz to 30MHz
Class/Severity:	:	Class B
Limit:	:	66-56 dBμV between 0.15MHz & 0.5MHz
	:	56 dBμV between 0.5MHz & 5MHz
	:	60 dBμV between 5MHz & 30MHz
Detector:	:	Peak for pre-scan(9kHz Resolution Bandwidth)

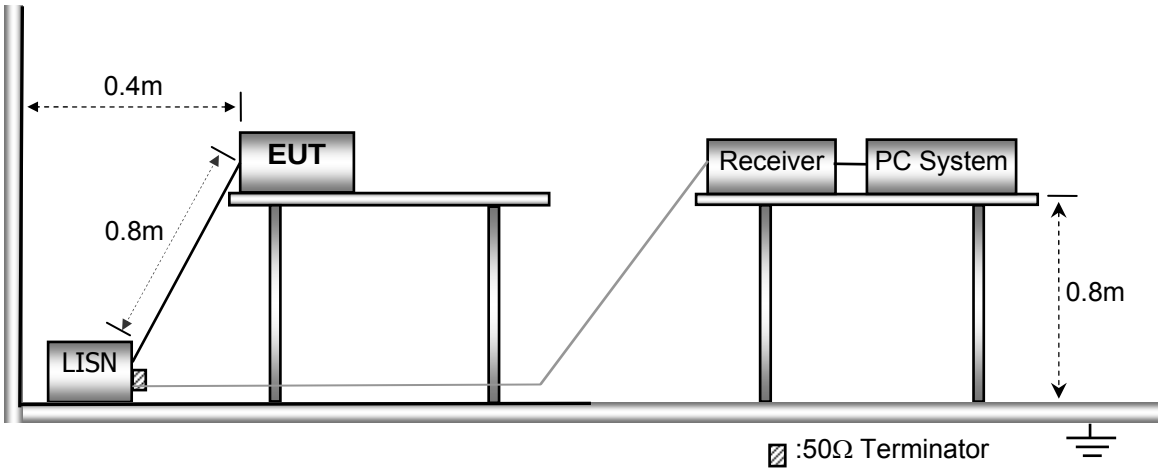
5.1 E.U.T. Operation

Operating Environment:

Temperature:	:	25.5 °C
Humidity:	:	51 % RH
Atmospheric Pressure:	:	101.2kPa
EUT Operation:	:	BLE mode (normal link) AC:120V 60Hz

5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



5.3 Measurement Description

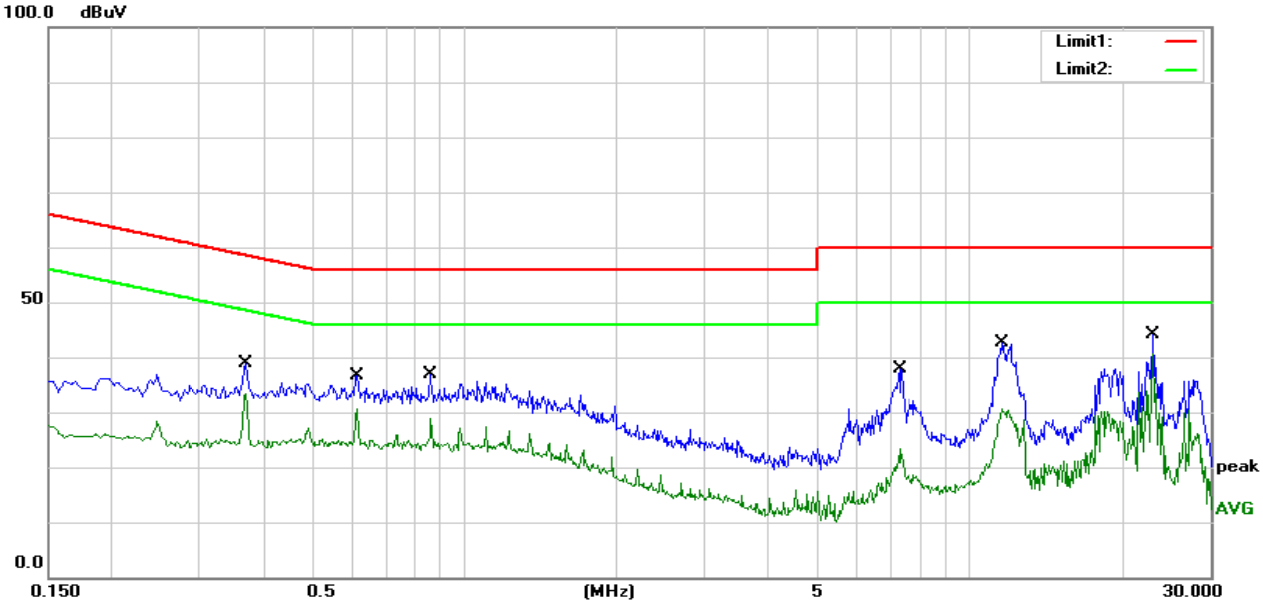
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.4 Conducted Emission Test Result

L

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3700	28.69	10.11	38.80	58.50	-19.70	QP
0.3700	23.30	10.11	33.41	48.50	-15.09	AVG
0.6140	26.77	9.96	36.73	56.00	-19.27	QP
0.6140	20.68	9.96	30.64	46.00	-15.36	AVG
0.8540	26.90	9.95	36.85	56.00	-19.15	QP
0.8540	18.92	9.95	28.87	46.00	-17.13	AVG
7.2700	27.62	10.22	37.84	60.00	-22.16	QP
7.2700	13.08	10.22	23.30	50.00	-26.70	AVG
11.5860	32.18	10.37	42.55	60.00	-17.45	QP
11.5860	20.22	10.37	30.59	50.00	-19.41	AVG
23.1300	33.51	10.61	44.12	60.00	-15.88	QP
23.1300	30.10	10.61	40.71	50.00	-9.29	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

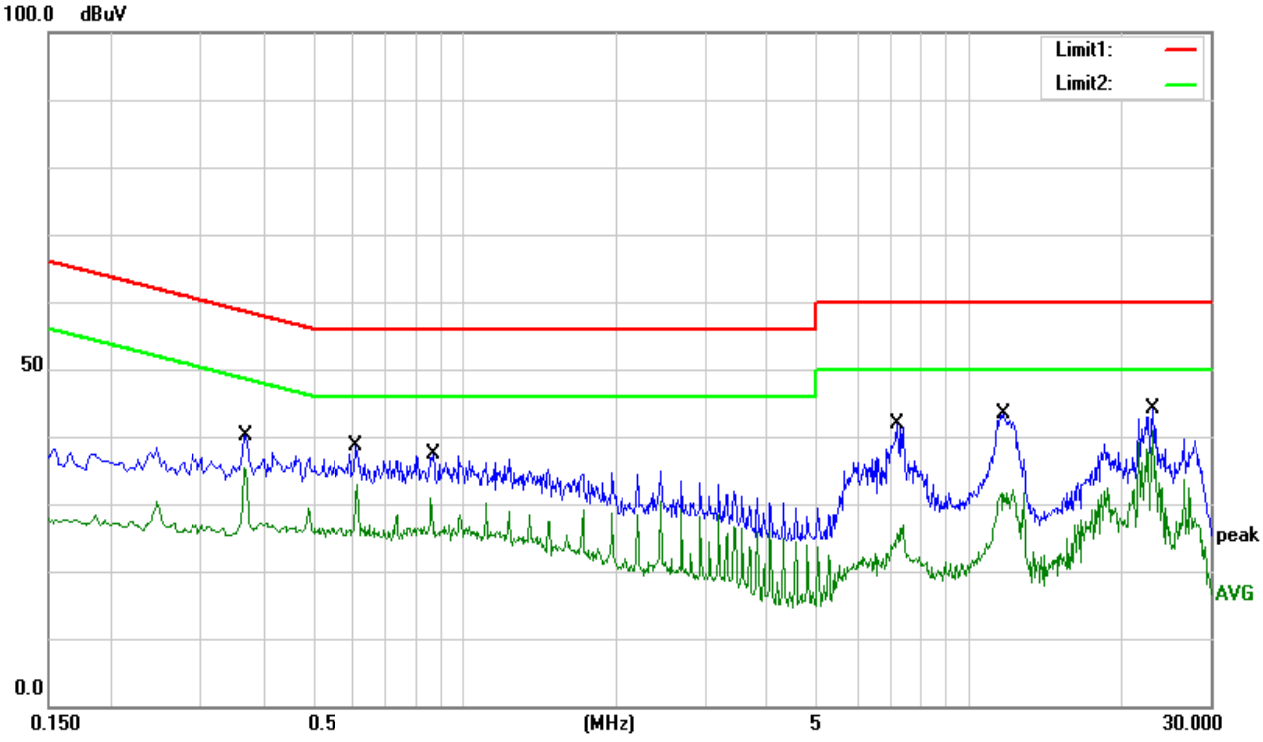


N

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3700	30.06	9.97	40.03	58.50	-18.47	QP
0.3700	25.25	9.97	35.22	48.50	-13.28	AVG
0.6100	28.63	9.95	38.58	56.00	-17.42	QP
0.6100	21.09	9.95	31.04	46.00	-14.96	AVG
0.8700	27.31	10.00	37.31	56.00	-18.69	QP
0.8700	16.07	10.00	26.07	46.00	-19.93	AVG
7.1940	31.66	10.21	41.87	60.00	-18.13	QP
7.1940	15.42	10.21	25.63	50.00	-24.37	AVG
11.7100	33.17	10.30	43.47	60.00	-16.53	QP
11.7100	21.10	10.30	31.40	50.00	-18.60	AVG
23.1300	33.56	10.66	44.22	60.00	-15.78	QP
23.1300	30.23	10.66	40.89	50.00	-9.11	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



6 Radiated Spurious Emissions

Test Requirement: : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: : ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04

Test Result: : PASS

Measurement Distance: : 3m

Limit: : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))}$ + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))}$ + 40
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)}$ + 40
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment :

Temperature: : 23.5 °C

Humidity: : 51.1 % RH

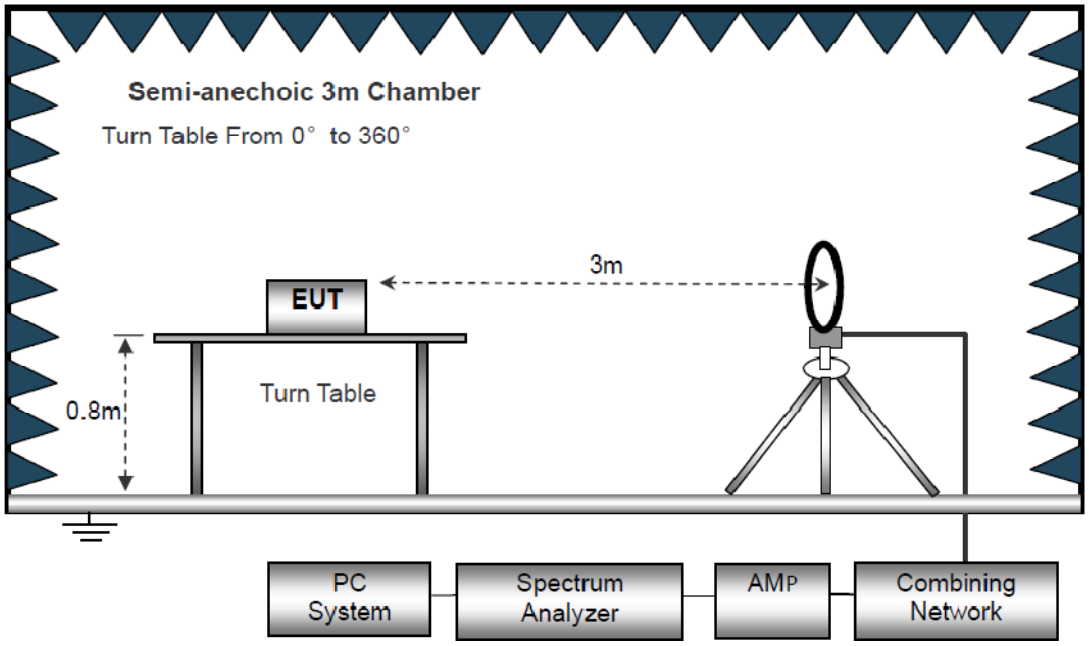
Atmospheric Pressure: : 101.2kPa

EUT Operation : : BLE mode
AC:120V 60Hz

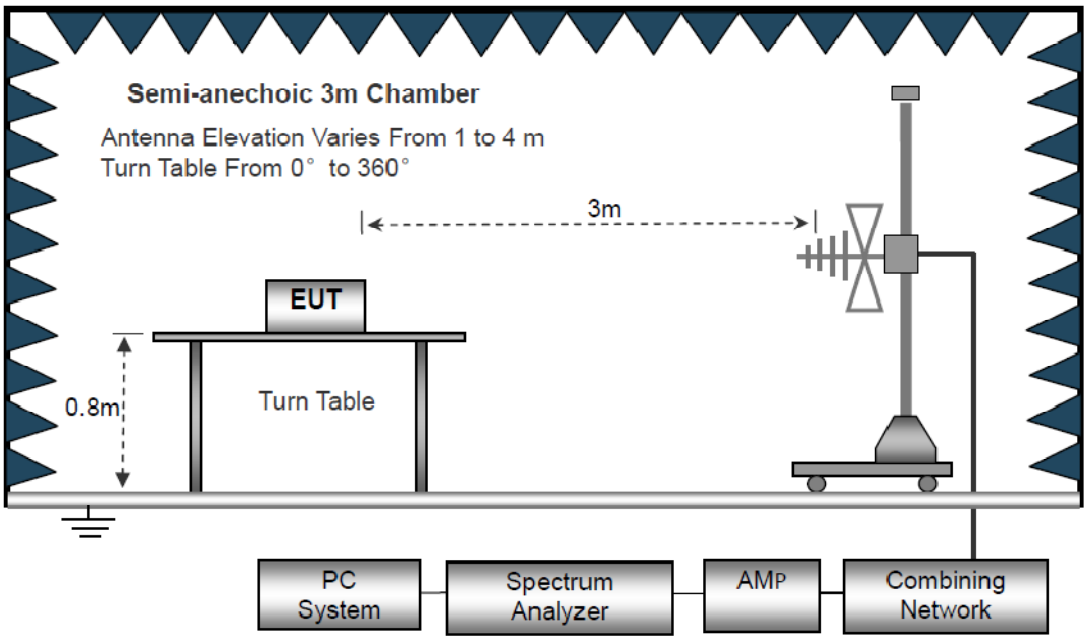
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber testsite

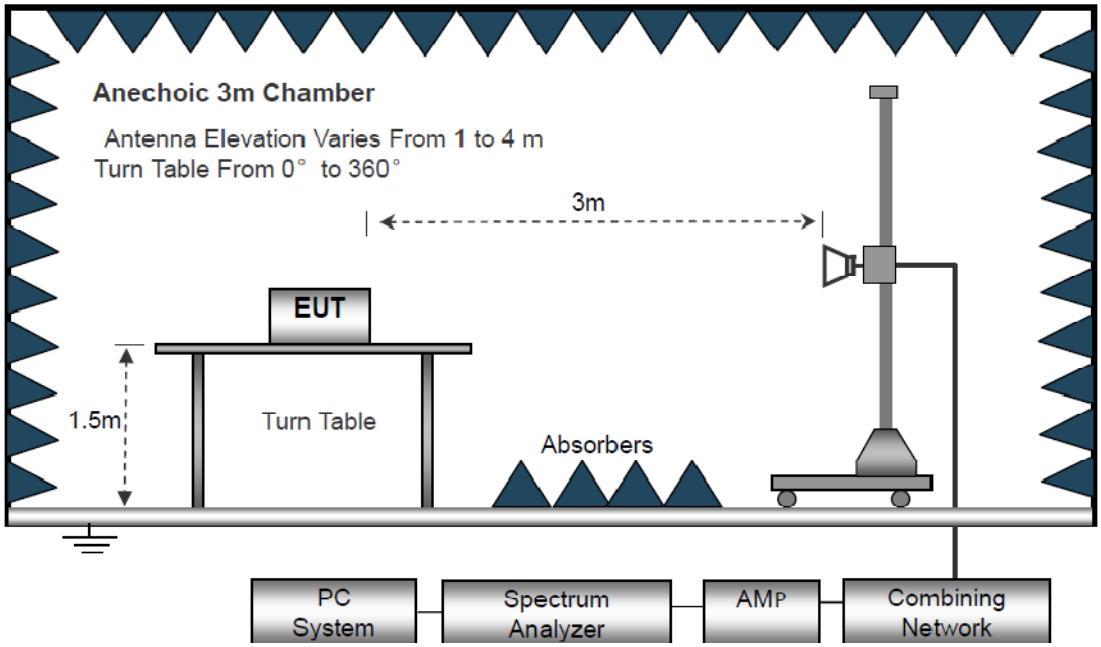
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



6.3 Spectrum Analyzer Setup

Below 30MHz

IF Bandwidth		10kHz
Resolution Bandwidth		10kHz
Video Bandwidth		10kHz

30MHz ~ 1GHz

Detector	:	PK
Resolution Bandwidth	:	100kHz
Video Bandwidth	:	300kHz
Detector	:	QP
Resolution Bandwidth	:	120kHz
Video Bandwidth	:	300kHz

Above 1GHz

Detector	:	PK
Resolution Bandwidth	:	1MHz
Video Bandwidth	:	3MHz
Detector	:	RMS
Resolution Bandwidth	:	1MHz
Video Bandwidth	:	3MHz

6.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8.The test above 1GHz must be use the fully anechoic room and the test below 1GHz use the half anechoic room

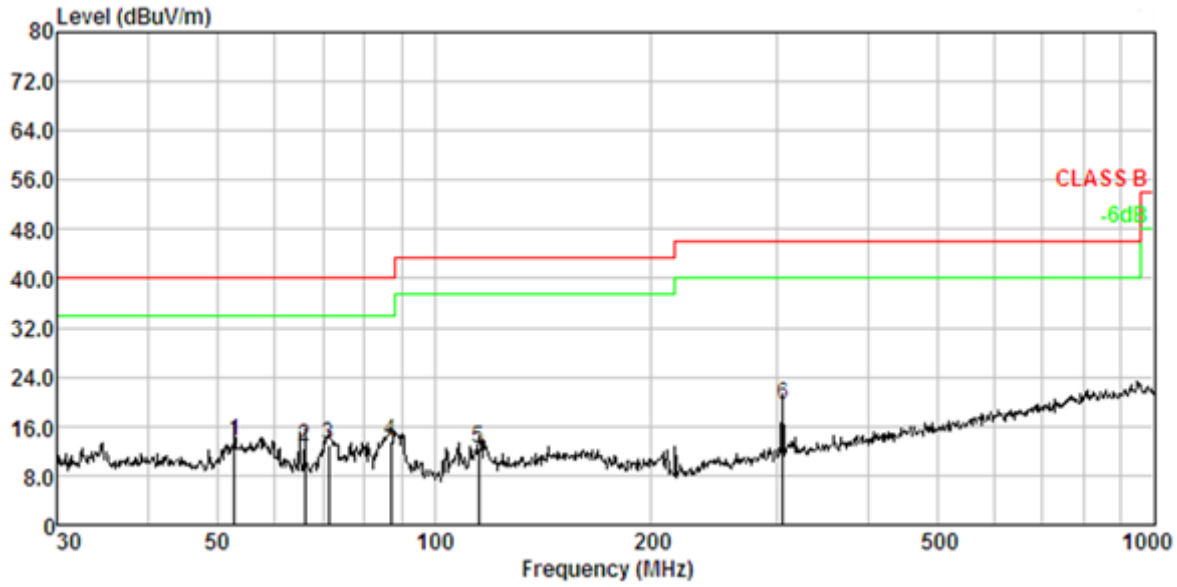
6.5 Summary of Test Results

Test Frequency: Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 1GHz

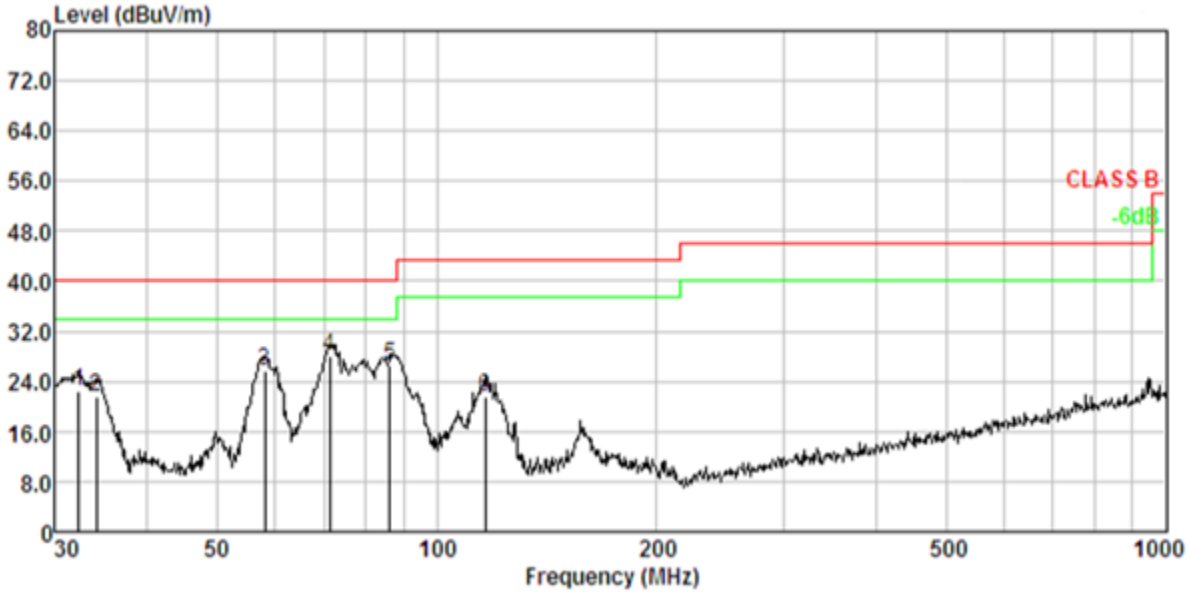
Antenna Polarization: Horizontal CH00 (worst case)



Remark:Emission Level=Receiver Reading+Cable Loss+ANT Factor-AMP Factor

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	52.760	1.57	12.06	30.10	30.17	13.56	40.00	-26.44	QP
2.	66.034	1.77	11.45	29.67	30.24	12.65	40.00	-27.35	QP
3.	71.330	1.84	9.96	31.45	30.27	12.98	40.00	-27.02	QP
4.	87.112	2.02	8.95	33.03	30.34	13.66	40.00	-26.34	QP
5.	115.321	2.27	11.59	29.05	30.44	12.47	43.50	-31.03	QP
6.	304.610	3.15	13.30	33.72	30.78	19.39	46.00	-26.61	QP

Antenna Polarization: Vertical CH00 (worst case)



Remark:Emission Level=Receiver Reading+Cable Loss+ANT Factor-AMP Factor

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	32.293	1.12	13.22	38.13	30.00	22.47	40.00	-17.53	QP
2.	34.156	1.17	13.34	37.01	30.02	21.50	40.00	-18.50	QP
3.	58.203	1.66	12.08	42.28	30.20	25.82	40.00	-14.18	QP
4.	71.330	1.84	9.96	46.39	30.27	27.92	40.00	-12.08	QP
5.	86.200	2.01	8.83	45.98	30.34	26.48	40.00	-13.52	QP
6.	116.540	2.28	11.71	38.12	30.44	21.67	43.50	-21.83	QP

Test Frequency: 1GHz ~ 25GHz

Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (GFSK/2402 MHz)							
4804.20	65.81	-3.62	62.19	74	-11.81	PK	Vertical
4804.21	46.96	-3.62	43.34	54	-10.66	AV	Vertical
7206.13	61.69	-0.9	60.79	74	-13.21	PK	Vertical
7206.12	41.35	-0.9	40.45	54	-13.55	AV	Vertical
4804.00	62.04	-3.65	58.39	74	-15.61	PK	Horizontal
4803.98	44.09	-3.65	40.44	54	-13.56	AV	Horizontal
Mid Channel (GFSK/2440 MHz)							
4880.09	64.81	-3.65	61.16	74	-12.84	PK	Vertical
4880.07	48.94	-3.65	45.29	54	-8.71	AV	Vertical
7320.22	60.87	-0.83	60.04	74	-13.96	PK	Vertical
7320.21	43.77	-0.83	42.94	54	-11.06	AV	Vertical
4880.17	61.33	-3.68	57.65	74	-16.35	PK	Horizontal
4880.15	44.90	-3.68	41.22	54	-12.78	AV	Horizontal
High Channel (GFSK/2480 MHz)							
4960.26	61.17	-3.59	57.58	74	-16.42	PK	Vertical
4960.30	45.32	-3.59	41.73	54	-12.27	AV	Vertical
7440.26	61.20	-0.73	60.47	74	-13.53	PK	Vertical
7440.30	45.26	-0.73	44.53	54	-9.47	AV	Vertical
4960.32	60.88	-3.59	57.29	74	-16.71	PK	Horizontal
4960.31	45.34	-3.59	41.75	54	-12.25	AV	Horizontal
Remark: 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Restricted Bands Requirements

Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
GFSK							
2399.9	67.98	-12.99	54.99	74	-19.01	PK	Vertical
2399.9	53.92	-12.99	40.93	54	-13.07	AV	Vertical
2399.9	68.85	-12.99	55.86	74	-18.14	PK	Horizontal
2399.9	53.12	-12.99	40.13	54	-13.87	AV	Horizontal
2483.6	70.04	-12.78	57.26	74	-16.74	PK	Vertical
2483.6	52.87	-12.78	40.09	54	-13.91	AV	Vertical
2483.6	70.12	-12.78	57.34	74	-16.66	PK	Horizontal
2483.6	52.96	-12.78	40.18	54	-13.82	AV	Horizontal
Remark: 1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.							
Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz. Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.							

7 Conducted Spurious Emission

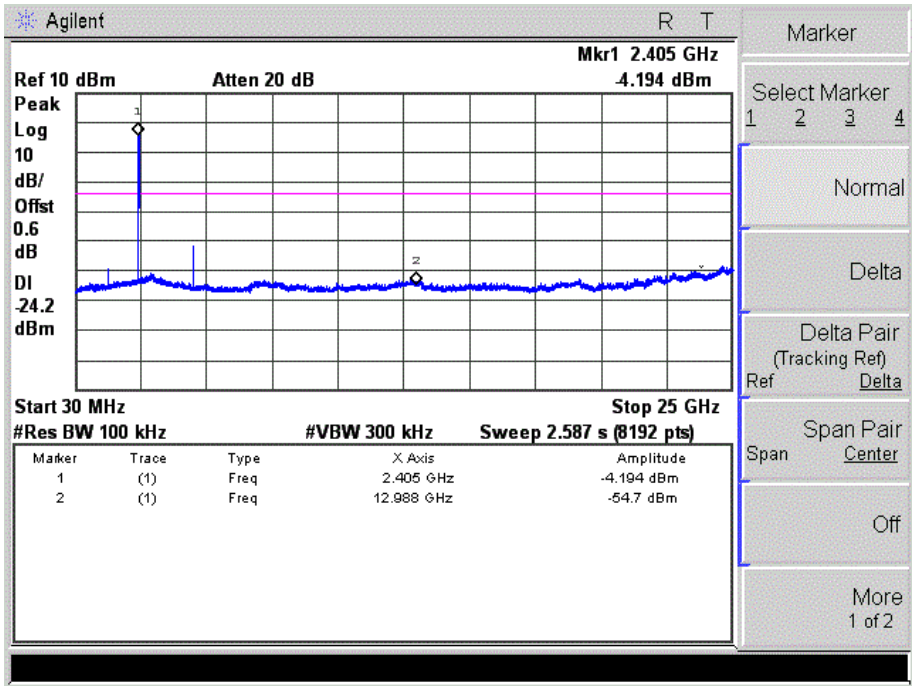
Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04
Test Limit	:	Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode	:	Refer to section 3.3

7.1 Test Procedure

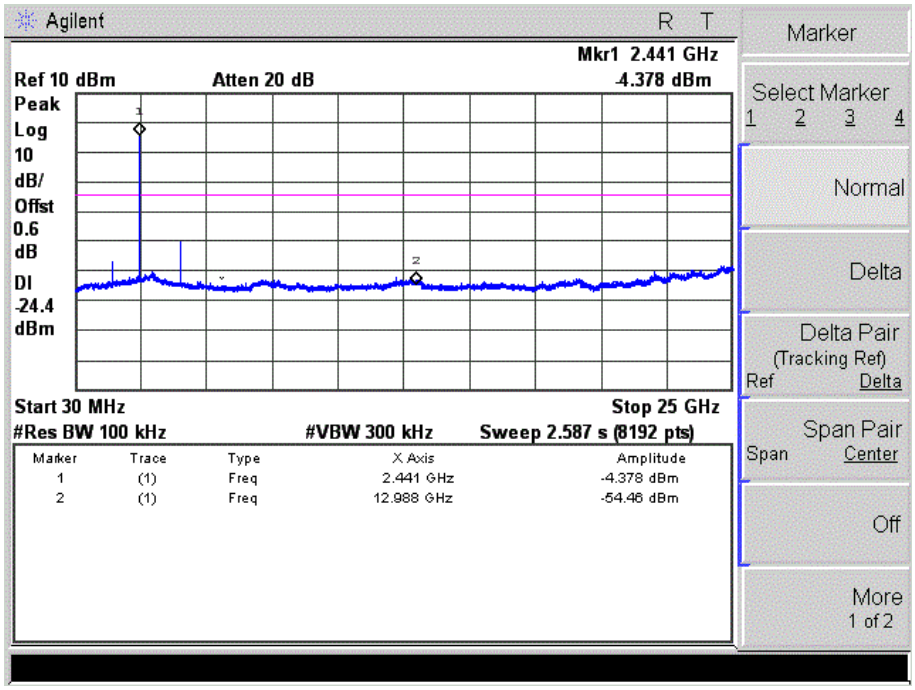
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to thespectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

7.2 Test Result

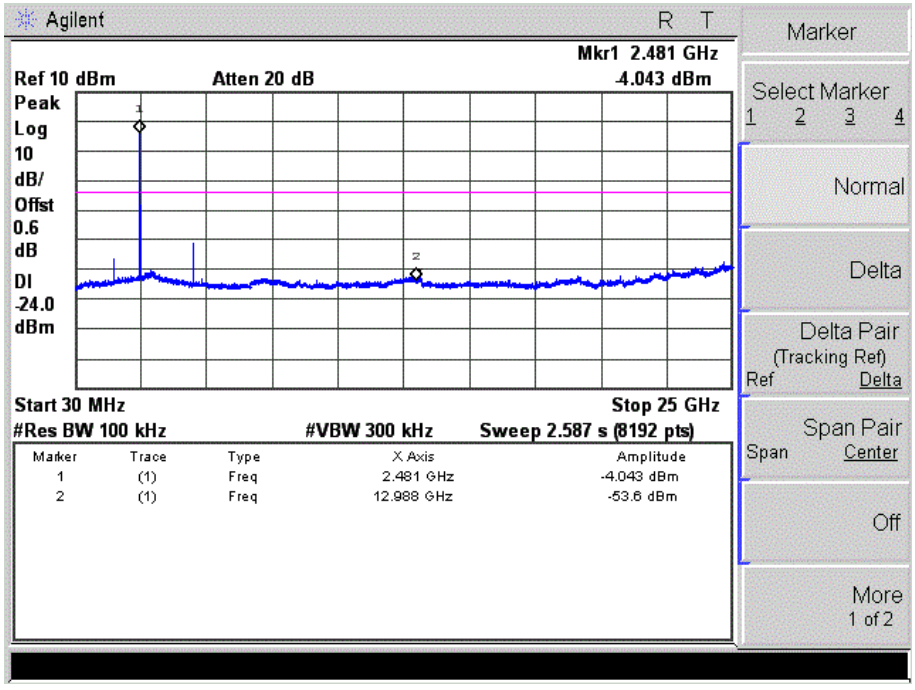
BLE Low Channel



BLE Middle Channel



BLE High Channel



8 Band Edge Measurement

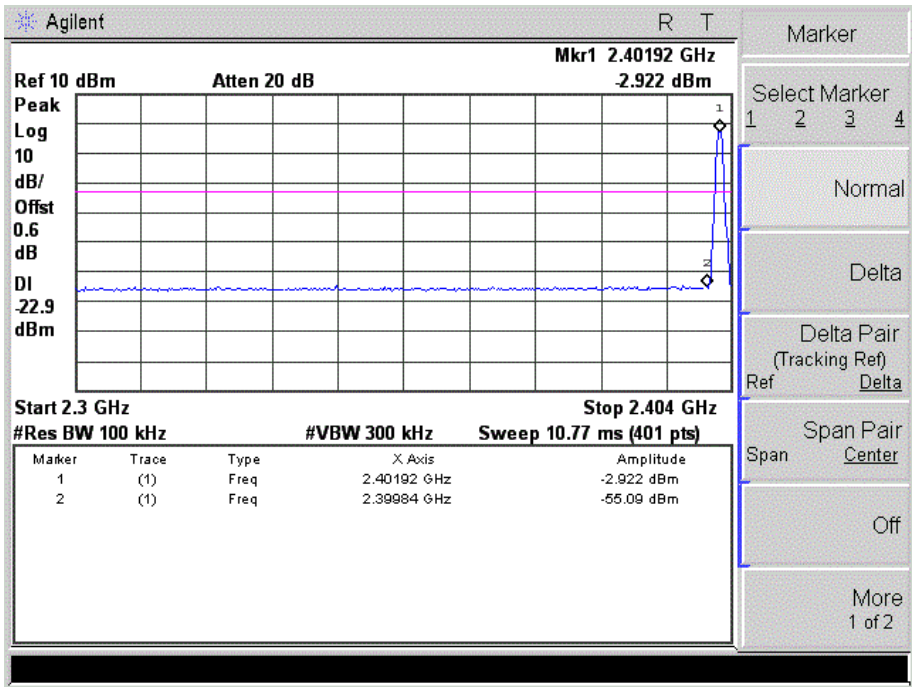
Test Requirement	:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04
Test Limit	:	Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
Test Mode	:	Refer to section 3.3

8.1 Test Procedure

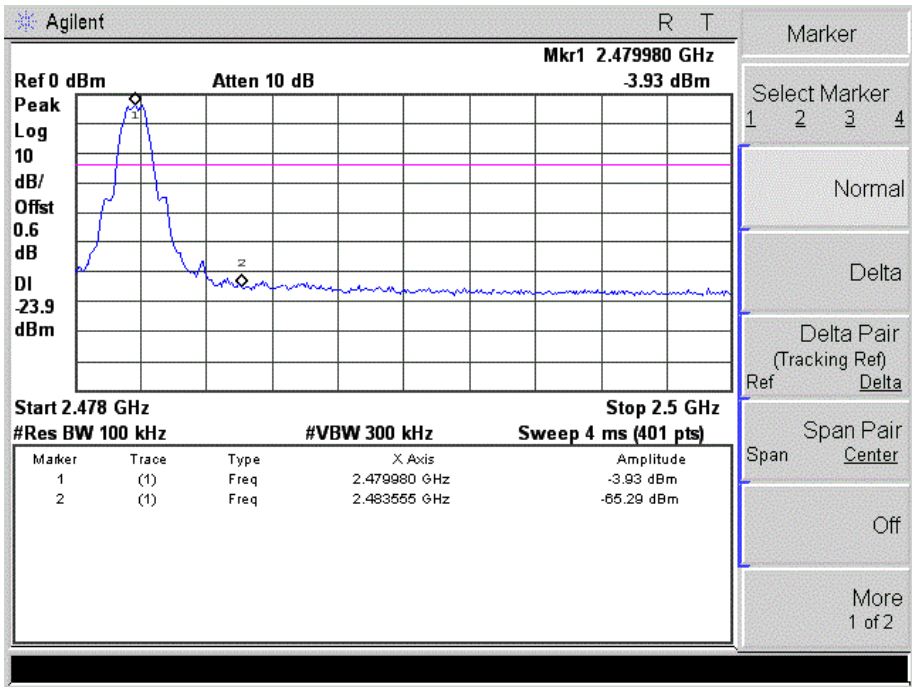
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

8.2 Test Result

GFSK(BLE) Band edge-left side



GFSK(BLE) Band edge-right side



9 Bandwidth Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04
Test Limit		Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Mode	:	Refer to section 3.3

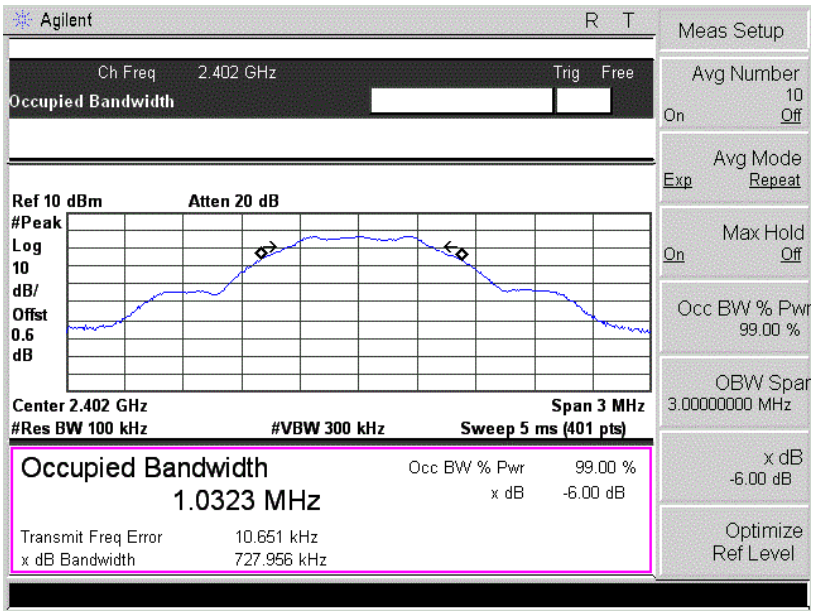
9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: For BLE, RBW = 100 kHz, VBW = 300kHz, For WIFI, RBW = 100kHz, VBW = 300kHz

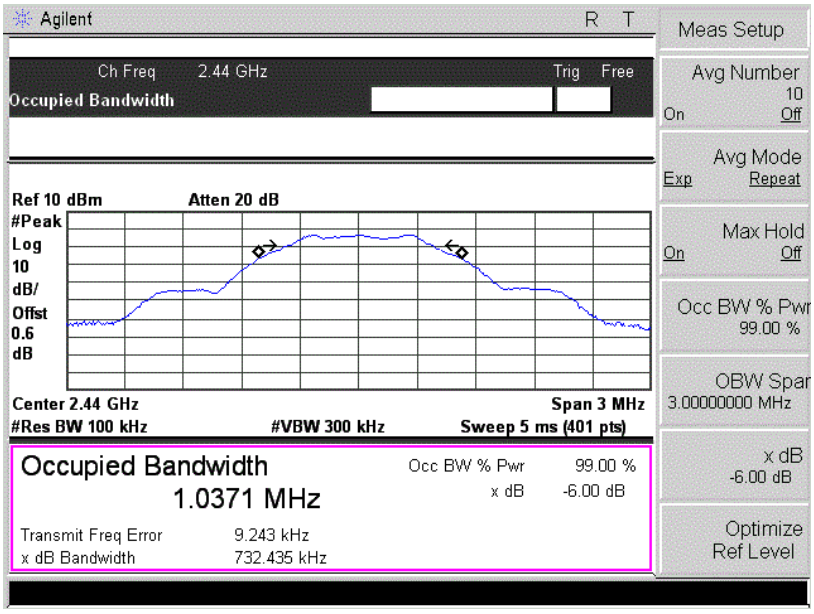
9.2 Test Result

Frequency	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2402 MHz	1.0323	0.728	>=500KHz	PASS
2440 MHz	1.0371	0.732	>=500KHz	PASS
2480 MHz	1.0376	0.737	>=500KHz	PASS

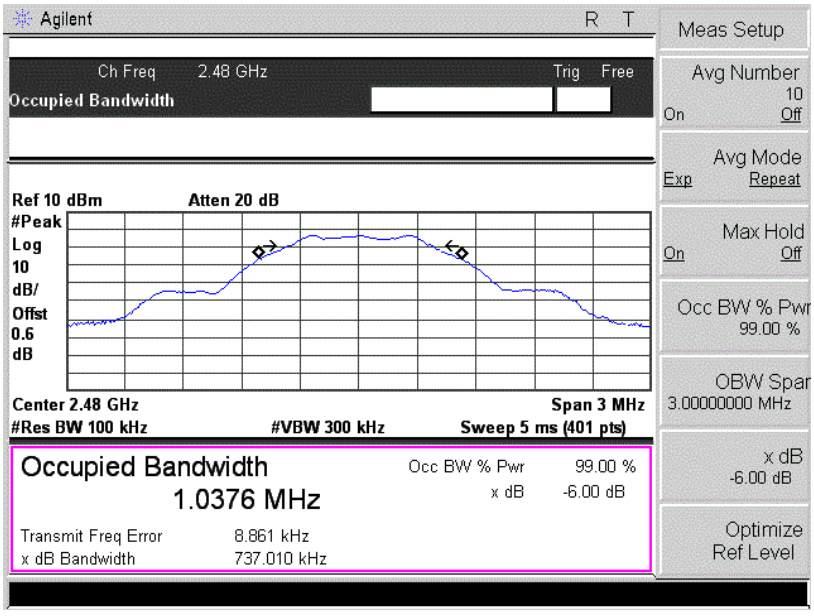
TX CH 01



TX CH 20



TX CH 40



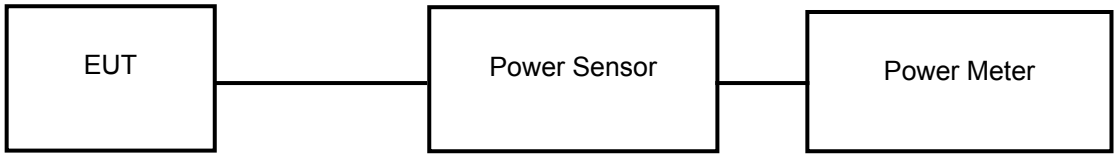
10 Maximum Peak Output Power

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04
Test Limit	:	Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.
Test Mode	:	Refer to section 3.3

10.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v04

The maximum peak conducted output power measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.



10.2 Test Result

TX Mode			
Test Channel	Frequency	Peak Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH01	2402	-3.091	30
CH20	2440	-2.490	30
CH40	2480	-2.139	30

11 Power Spectral density

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013,KDB 558074 D01 DTS MEAS GUIDANCE v04
Test Limit	:	Regulation 15.247(f)The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Test Mode	:	Refer to section 3.3

11.1 Test Procedure

KDB 558074 D01 DTS Meas Guidance v04

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna portto the spectrum.

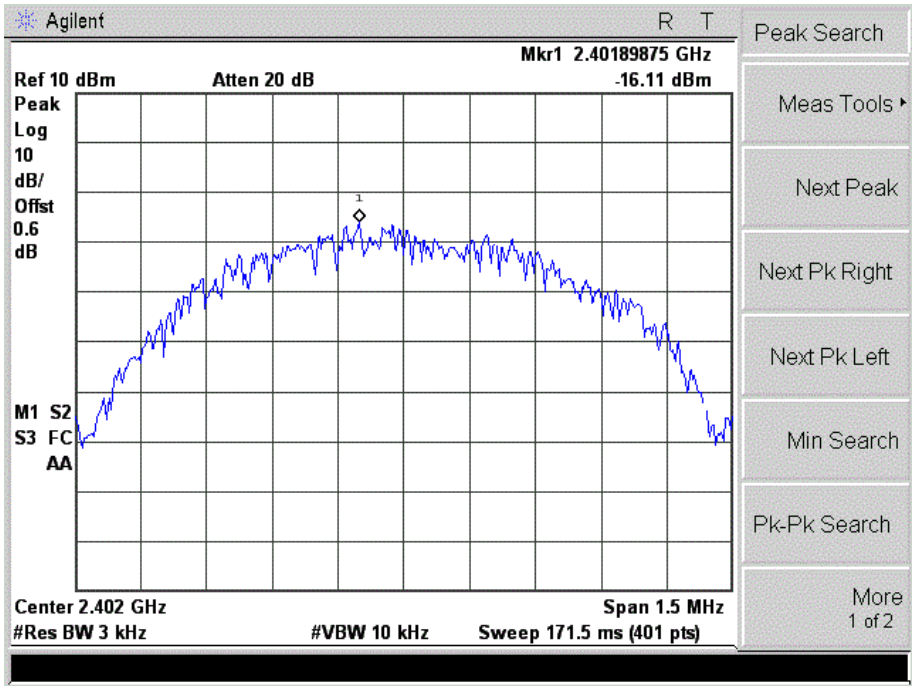
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

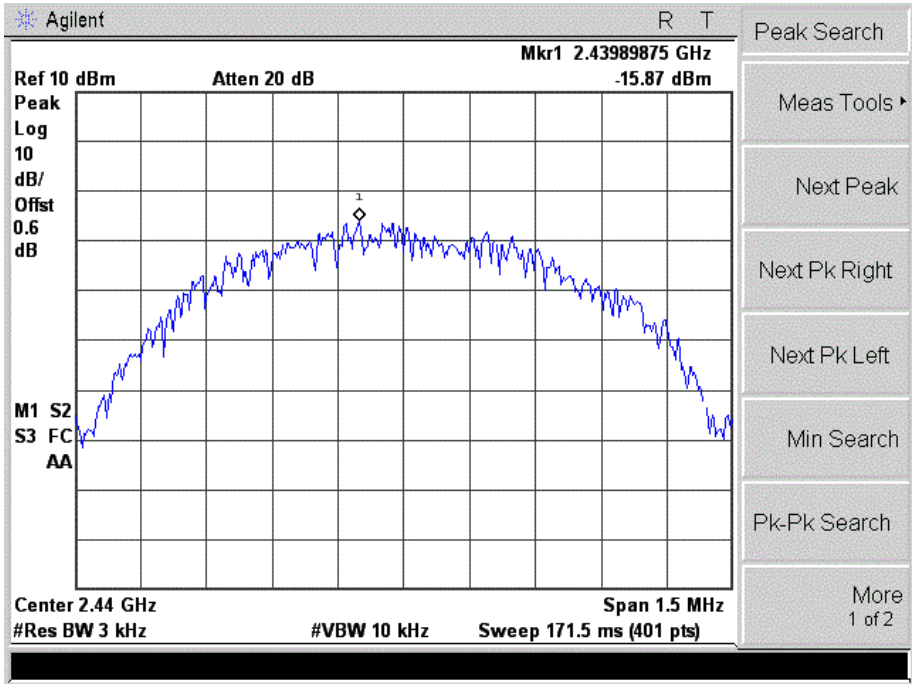
11.2 Test Result

Frequency	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
2402 MHz	-16.11	8	PASS
2440 MHz	-15.87	8	PASS
2480 MHz	-17.91	8	PASS

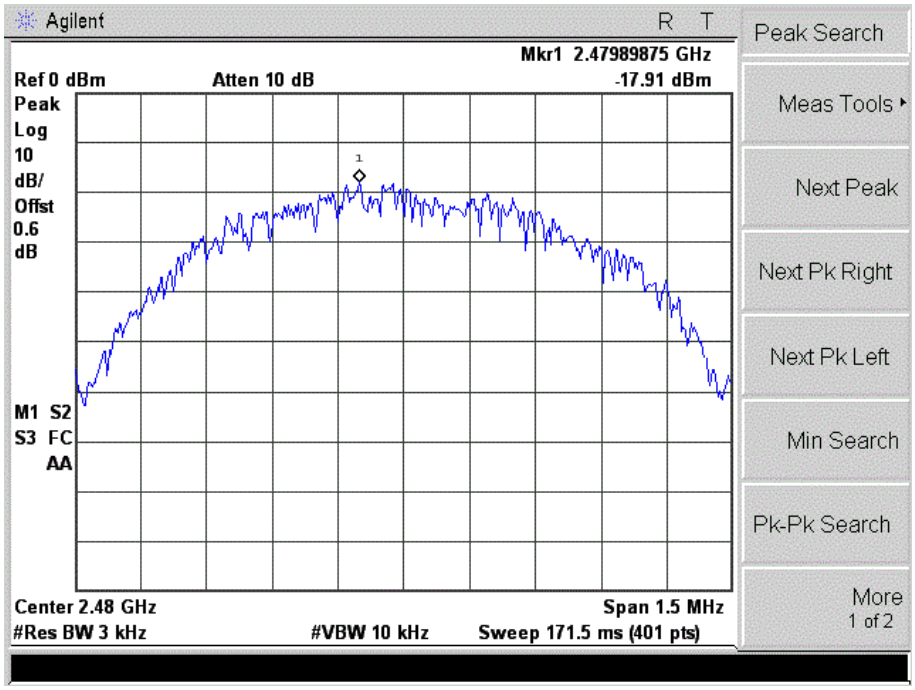
GFSK(BLE) Low Channel



GFSK(BLE) Middle Channel



GFSK(BLE)High Channel

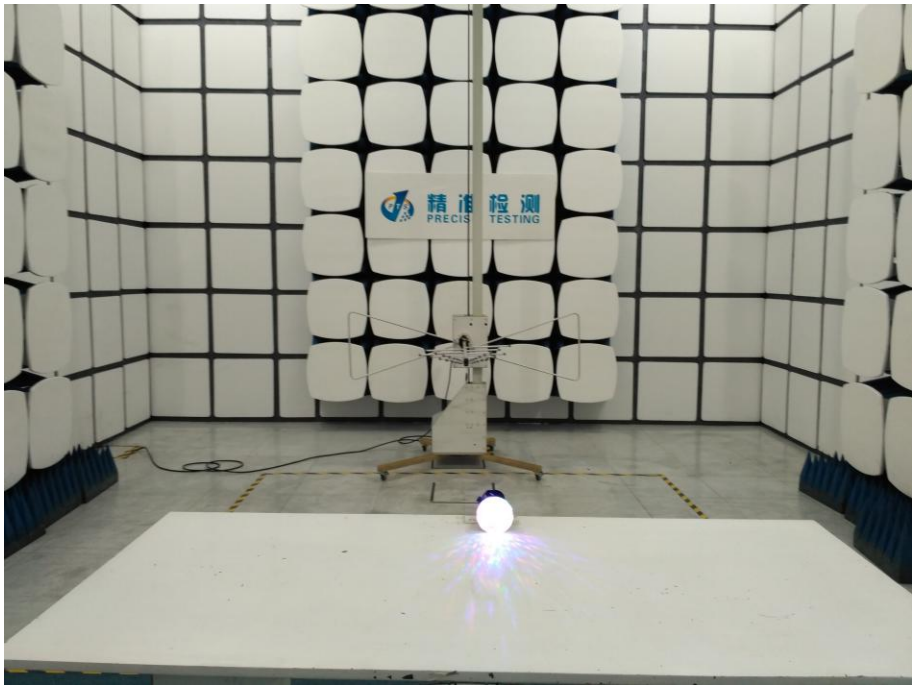


12 Antenna Requirement

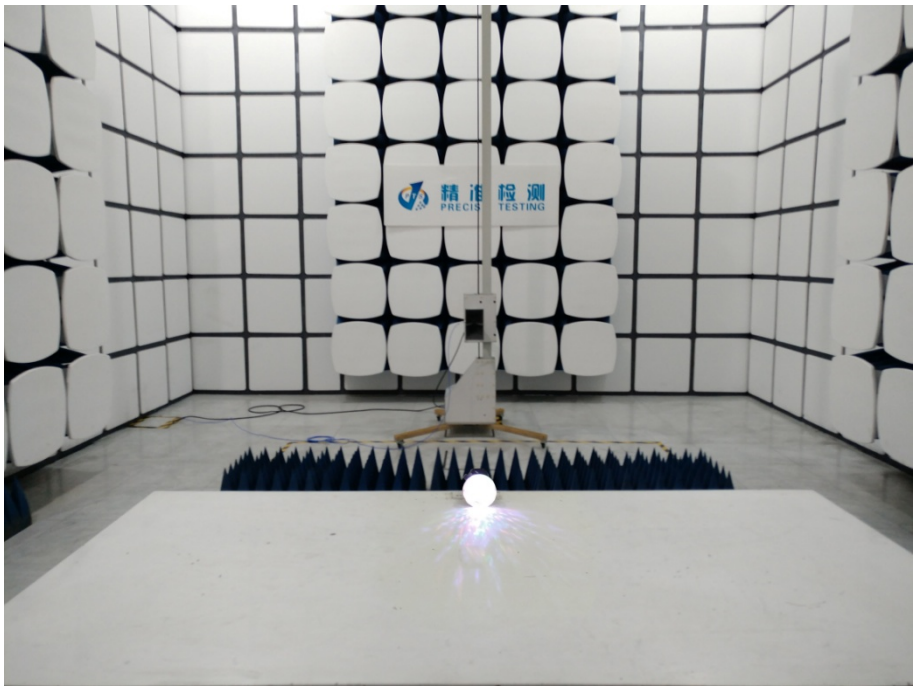
According to the FCC part15.203, a transmitter can only be sold or operated with antennas with which it was approved. This product has an internal permanent antenna, it meet the requirement of this section.

13 Test Setup

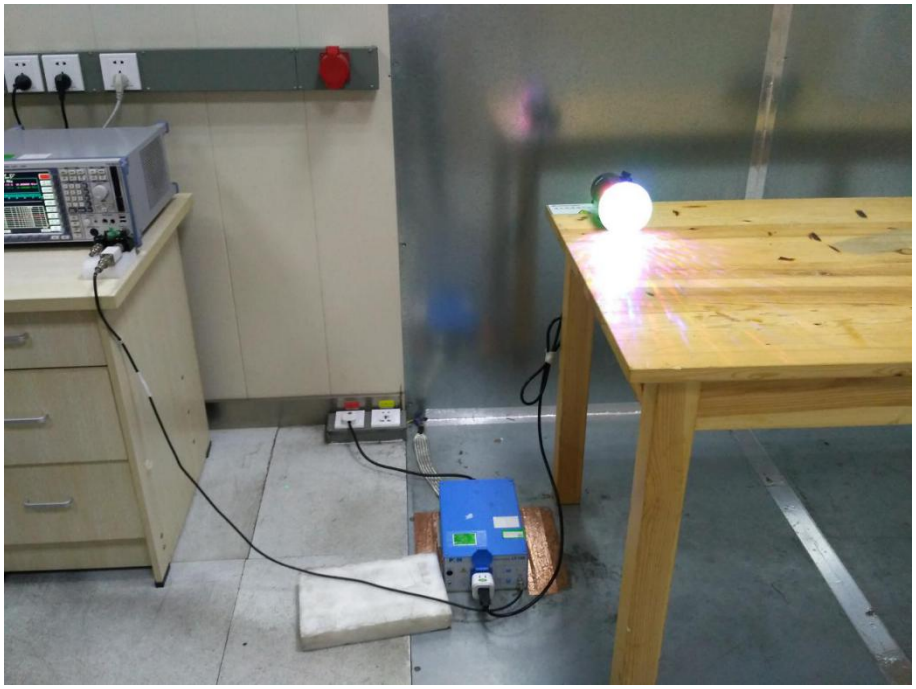
Radiated Spurious Emissions
From 30MHz-1000MHz



Above1Ghz



Conducted Measurement



********THE END REPORT********