Test Report

FCC Part15 Subpart C& Industry Canada RSS-247 Issue 1

Product Name	:	EZ-BLE PRoC XR Module
Model No.	:	CYBLE-212006-01; CYBLE-202007-01
FCC ID	:	WAP2006
IC	:	7922A-2006

Applicant	:	Cypress Semiconductor
Address	:	198 Champion Ct, San Jose, California 95134 United States

Date of Receipt	:	Jun. 28, 2016
Test Date	:	Jun. 28, 2016~ Jul. 19, 2016
Issued Date	:	Jul. 22, 2016
Report No.	:	1662128R-RF-US-P06V01
Report Version	:	V1.0

Test Report Certification

Issued Date : Jul. 22, 2016
Report No. : 1662128R-RF-US-P06V01

Product Name	:	EZ-BLE PRoC XR Module
Applicant	:	Cypress Semiconductor
Address	:	198 Champion Ct, San Jose, California 95134 United States
Manufacturer	:	Wujiang Sigmatron Electronics Co., Ltd
Address	:	386 Huahong Rd, Wujiang, Suzhou, Jiangsu, China
Model No.	:	CYBLE-212006-01; CYBLE-202007-01
FCC ID	:	WAP2006
IC	:	7922A-2006
EUT Voltage	:	DC 2.0 ~ 3.6V
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2015 ANSI C63.4:2014; ANSI C63.10:2013; KDB 558074 D01v03r05 Industry Canada RSS-Gen Issue 4 / RSS-247 Issue 1
Test Result	:	Complied
Performed Location	:	Quietek Corporation - Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392; IC Lab Code: 4075B

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(Engineering Manager : Harry Zhao)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/english/about/certificates.aspx?bval=5
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1662128R-RF-US-P06V01	V1.0	Initial Issued Report	Jul. 22, 2016

1. General Information

1.1. EUT Description

Product Name	EZ-BLE PRoC XR Module
Model No.	CYBLE-212006-01
Working Voltage	DC 2.0 ~ 3.6V
Bluetooth Specification	V4.2
Frequency Range	2402- 2480 MHz
Channel Number	V4.2: 40
Channel Separation	V4.2: 2MHz
Type of Modulation	V4.2: GFSK
Data Rate	V4.2: 1Mbps(GFSK)
Model No.	CYBLE-202007-01
Working Voltage	DC 2.0 ~ 3.6V
Bluetooth Specification	V4.2
Frequency Range	2402- 2480 MHz
Channel Number	V4.2: 40
Channel Separation	V4.2: 2MHz
Type of Modulation	V4.2: GFSK
Data Rate	V4.2: 1Mbps(GFSK)
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

Note: 1. Modules CYBLE-212006-01 uses the PCB antenna and CYBLE-202007-01 uses the external antenna.

2. Both of the models were tested, and only the worst data were showed in the report.

1.2. Working Frequency of Each Channel:

Bluetooth Working Frequency of Each Channel: (For BLE)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz
08	2418 MHz	09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz	15	2432 MHz
16	2434 MHz	17	2436 MHz	18	2438 MHz	19	2440 MHz
20	2442 MHz	21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz	27	2456 MHz
28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz

1.3. Antenna information

Model No.	N/A					
Antenna manufacturer	N//A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		
			☐	CDD		
			☐	Beam-forming		
Antenna Type	☐	External	☐	Dipole		
	☒	Internal	☐	PIFA		
			☒	PCB		
			☐	Ceramic Chip Antenna		
			☐	Metal plate type F antenna		
Antenna Gain	-0.5dBi					

Model No.	B4844-01					
Antenna manufacturer	Antenova					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna technology	☒	SISO				
	☐	MIMO	☐	Basic		

			☐	CDD
			☐	Beam-forming
Antenna Type	☒	External	☒	Dipole
	☐	Internal	☐	PIFA
			☐	PCB
			☐	Ceramic Chip Antenna
			☐	Metal plate type F antenna
Antenna Gain	2.2dBi			

1.4. Mode of Operation

Test Mode
Mode 1: Transmit-1Mbps(GFSK_BLE)

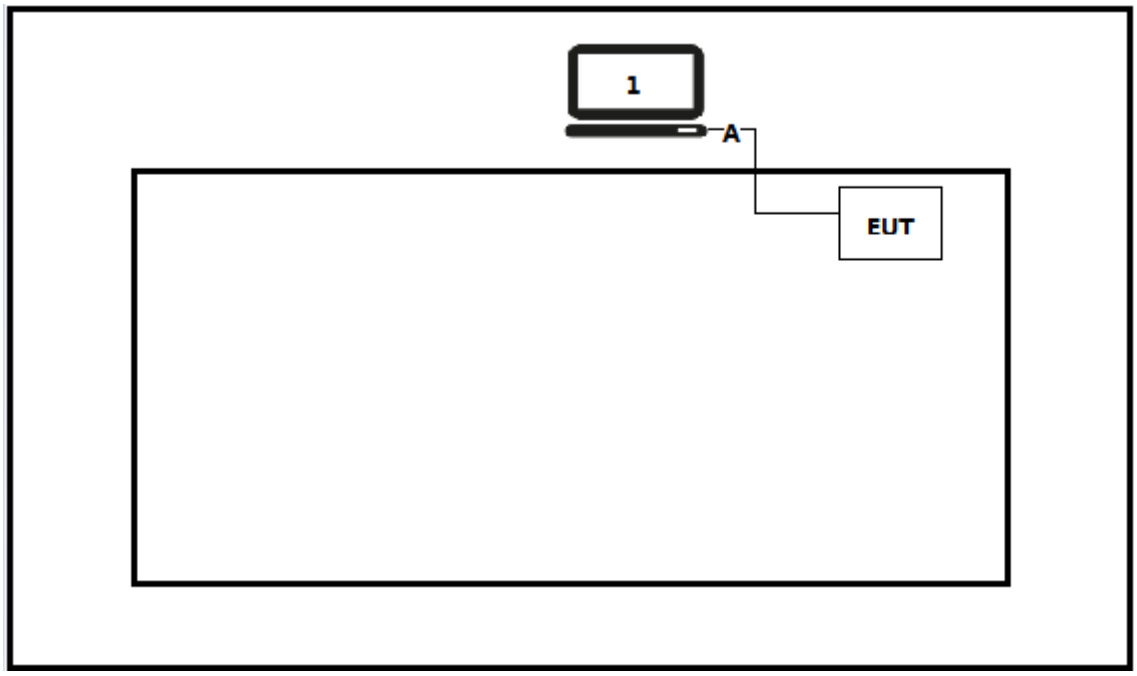
1.5. Tested System Details

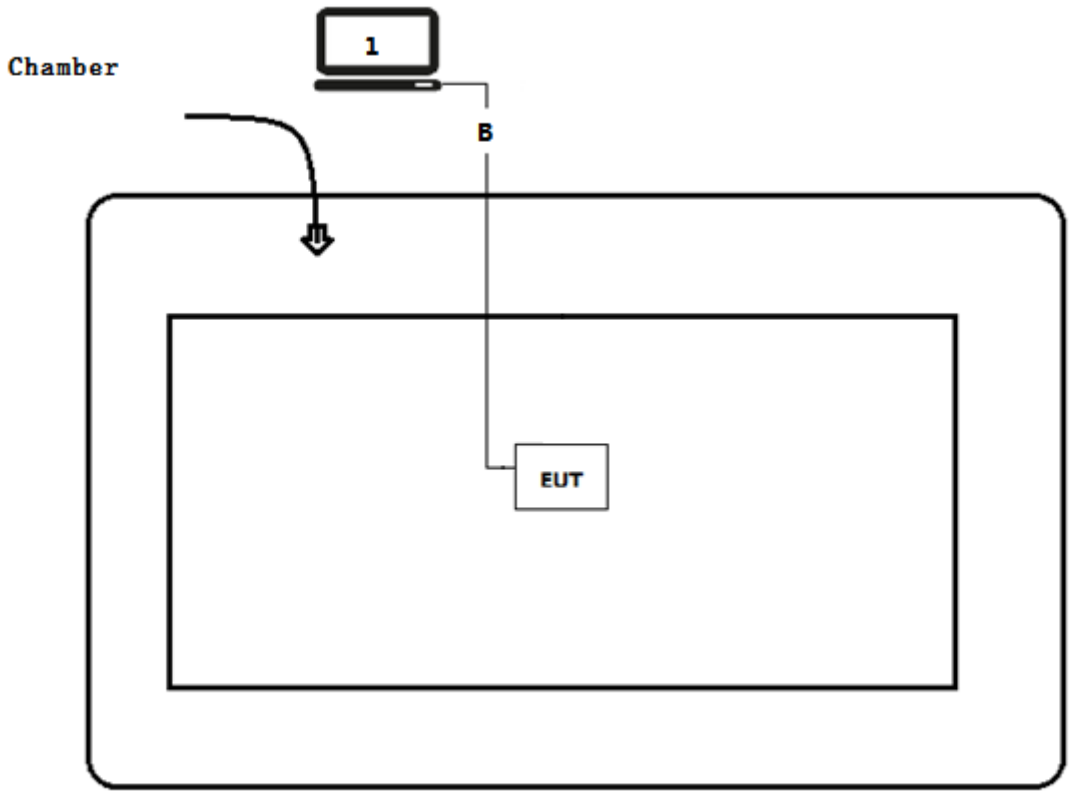
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Think Pad	2526	LV-A3285	Power by adapter

1.6. Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission


1.7. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run the RF test software, and set the test mode and channel, then press OK to start continue receive.

2. Technical Test
2.1. Summary of Test Result

Performed Test Item	Normative References	Worst case mode	Limit	Result
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	Mode 1	FCC 15.207	PASS
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	Mode 1	FCC 15.209	PASS
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(d)	Mode 1	⩾20dBc	PASS
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	Mode 1	FCC 15.209	PASS
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(2)	Mode 1	⩾500kHz	PASS
Fundamental emission output power	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(3)	Mode 1	⩽30dBm	PASS
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(e)	Mode 1	⩽8dBm/3kHz	PASS

Performed Test Item	Normative References	Worst case mode	Limit	Result
AC Power Line Conducted Emission	RSS-Gen Issue 4 Section 8.8	Mode 1	RSS-Gen	PASS
Emissions in restricted frequency bands	RSS-Gen Issue 4 Section 8.9	Mode 1	RSS-Gen	PASS
Emissions in non-restricted frequency bands	RSS-247 Issue 1 Section A5.5	Mode 1	⩾20dBc	PASS
Radiated Emission Band Edge	RSS-247 Issue 1 Section A5.5	Mode 1	RSS-247	PASS
Occupied Bandwidth	RSS-Gen Issue 4 Section 6.6 RSS-247 Issue 1 Section A5.2(1)	Mode 1	⩾500kHz	PASS
Fundamental emission output power	RSS-247 Issue 1 Section A5.4(4)	Mode 1	⩽30dBm	PASS
Power Spectral Density	RSS-247 Issue 1 Section A5.2(2)	Mode 1	⩽8dBm/3kHz	PASS

2.2. Test Frequency configuration:

Bluetooth Working Frequency of Each Channel: (For BLE)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz
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28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz

2.3. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

2.4. Measurement Uncertainty

Test Items	Uncertainty
AC Power Line Conducted Emission	±2.02dB
Radiated Emission	Below 1GHz ±3.8 dB
	Above 1GHz ±3.9 dB
RF Antenna Port Conducted Emission	±1.27dB
Radiated Emission Band Edge	±3.9dB
Occupied Bandwidth	±1kHz
Power Spectral Density	±1.27dB

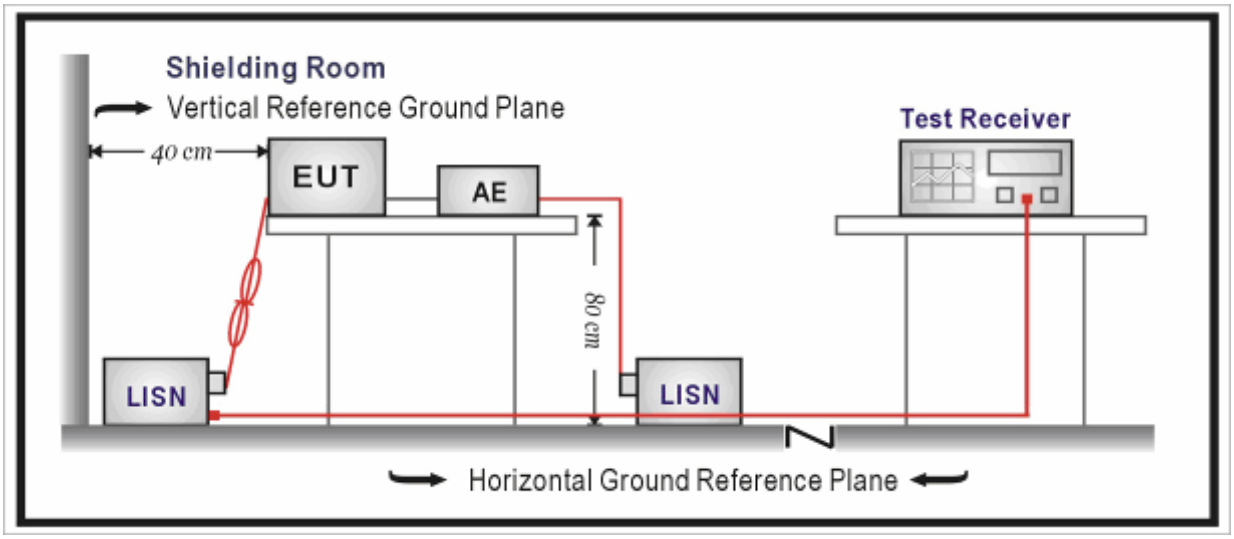
3. AC Power Line Conducted Emission

3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2016.03.05	2017.03.05
Two-Line V-Network	R&S	ENV216	101189	2016.07.16	2016.07.16
Two-Line V-Network	R&S	ENV216	100044	2015.09.16	2016.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2015.09.16	2016.09.16
Temperature/Humidity Meter	zhichen	ZC1-2	TR1-TH	2016.01.05	2017.01.05
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

3.2. Test Setup

AC Power Line Conducted Emission test setup



3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB μ V)	Average(dB μ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50
Note 1: The lower limit shall apply at the transition frequencies. Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

3.4. Test Procedure

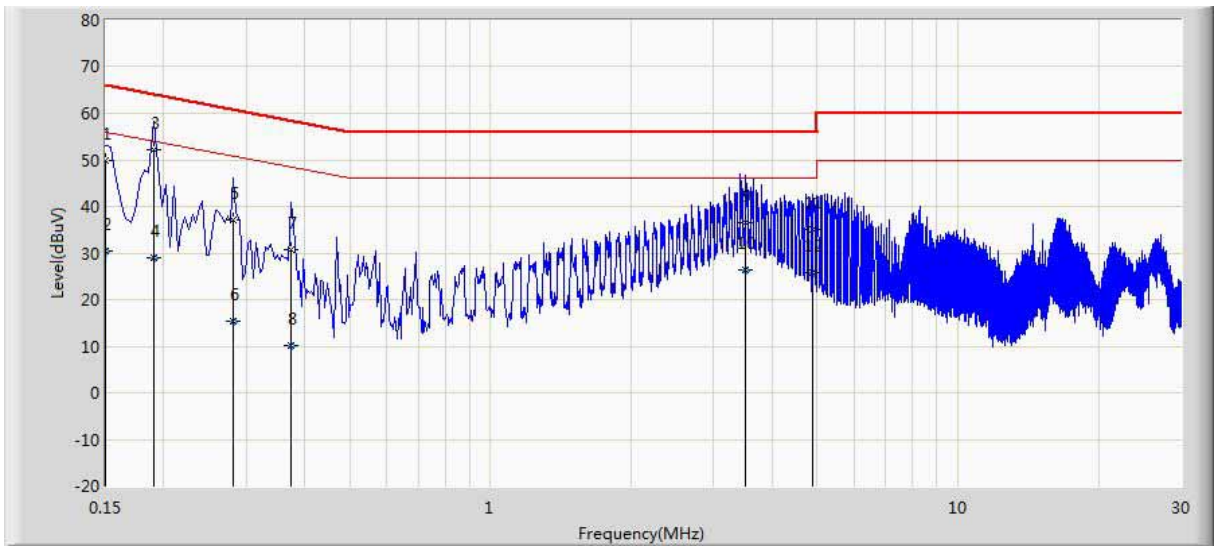
Test Method			
	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices
☒	ANSI C63.4-2014	7	AC power-line conducted emission measurements

3.5. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Polarity	:	Line
Test Item	:	AC Power Line Conducted Emission	Power	:	AC 120V/60Hz
Test Site	:	TR1	Test Mode	:	Mode 1

No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.150	49.739	40.118	-16.261	66.000	9.621	QP
2		0.150	30.491	20.870	-25.509	56.000	9.621	AV
3	*	0.190	52.110	42.490	-11.927	64.037	9.620	QP
4		0.190	29.001	19.381	-25.036	54.037	9.620	AV
5		0.282	37.073	27.451	-23.684	60.757	9.622	QP
6		0.282	15.443	5.821	-35.314	50.757	9.622	AV
7		0.374	30.614	20.986	-27.798	58.412	9.628	QP
8		0.374	10.259	0.631	-38.153	48.412	9.628	AV
9		3.518	36.462	26.727	-19.538	56.000	9.736	QP
10		3.518	26.383	16.648	-19.617	46.000	9.736	AV
11		4.898	35.011	25.245	-20.989	56.000	9.766	QP
12		4.898	25.820	16.054	-20.180	46.000	9.766	AV

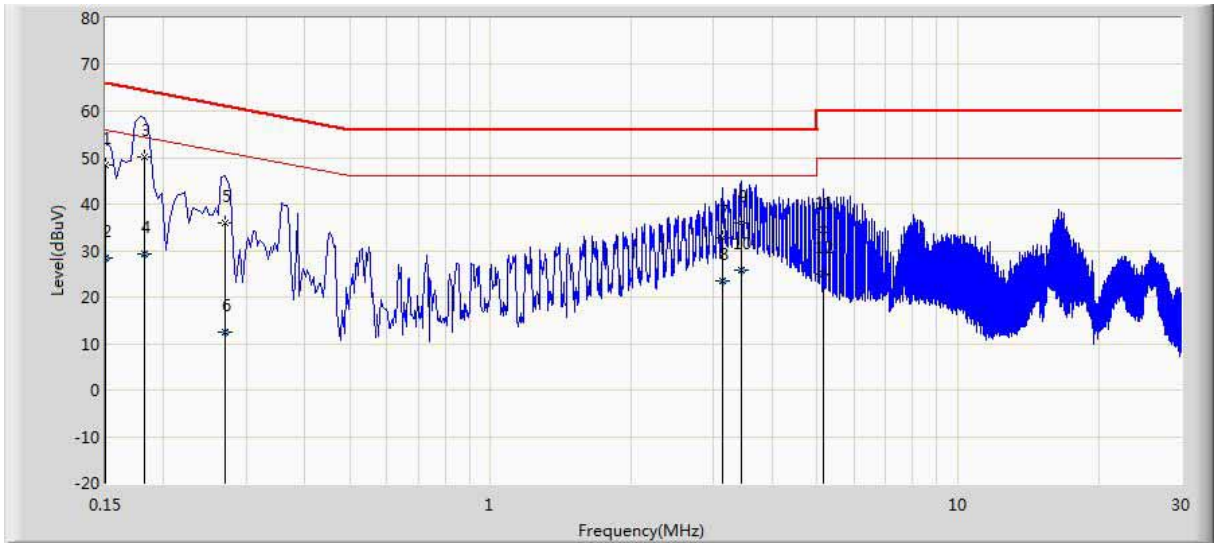
Polarity: Line



Product Name	:	EZ-BLE PRoC XR Module	Polarity	:	Neutral
Test Item	:	AC Power Line Conducted Emission	Power	:	AC 120V/60Hz
Test Site	:	TR1	Test Mode	:	Mode 1

No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.150	48.450	38.849	-17.550	66.000	9.601	QP
2		0.150	28.312	18.712	-27.688	56.000	9.601	AV
3	*	0.182	50.246	40.647	-14.148	64.394	9.599	QP
4		0.182	29.198	19.599	-25.196	54.394	9.599	AV
5		0.270	35.798	26.193	-25.320	61.118	9.606	QP
6		0.270	12.443	2.837	-38.675	51.118	9.606	AV
7		3.126	32.770	23.059	-23.230	56.000	9.711	QP
8		3.126	23.542	13.832	-22.458	46.000	9.711	AV
9		3.442	36.033	26.310	-19.967	56.000	9.723	QP
10		3.442	25.677	15.954	-20.323	46.000	9.723	AV
11		5.154	34.557	24.797	-25.443	60.000	9.761	QP
12		5.154	25.052	15.291	-24.948	50.000	9.761	AV

Polarity: Neutral



4. Emissions in restricted frequency bands

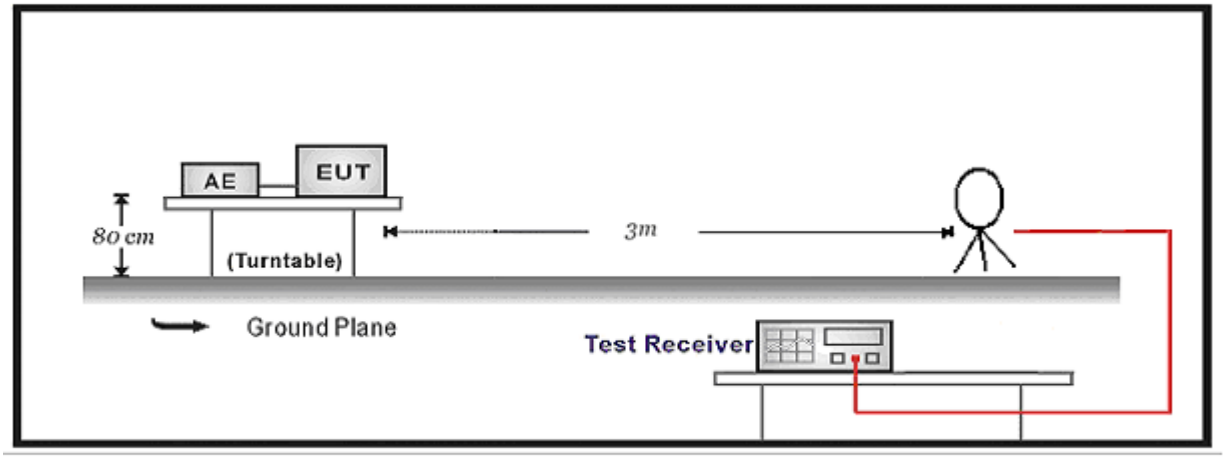
4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2016.03.05	2017.03.05
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.07	2016.11.07
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2015.09.25	2016.09.25
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2017.02.28	2017.02.28
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2016.01.05	2017.01.05
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

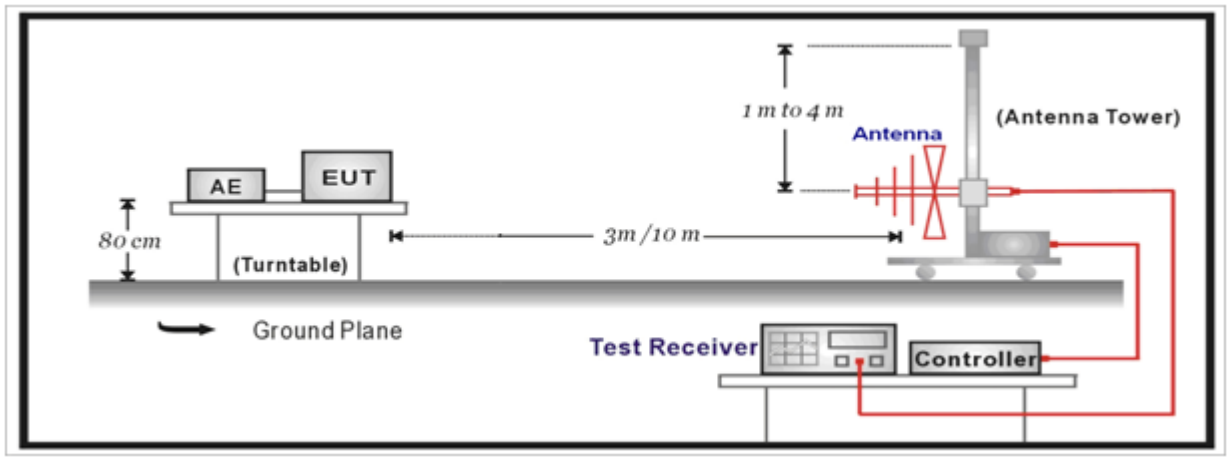
Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.04
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.03	2017.05.03
DRG Horn	ETS-Lindgren	3117	00167055	2015.07.23	2016.07.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	1126450	2014.09.18	2016.09.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2017.02.28	2017.02.28
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2017.02.28	2017.02.28
EMI Receiver	Agilent	N9038A	MY51210196	2016.07.16	2016.07.16
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.05	2017.01.05
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

4.2. Test Setup

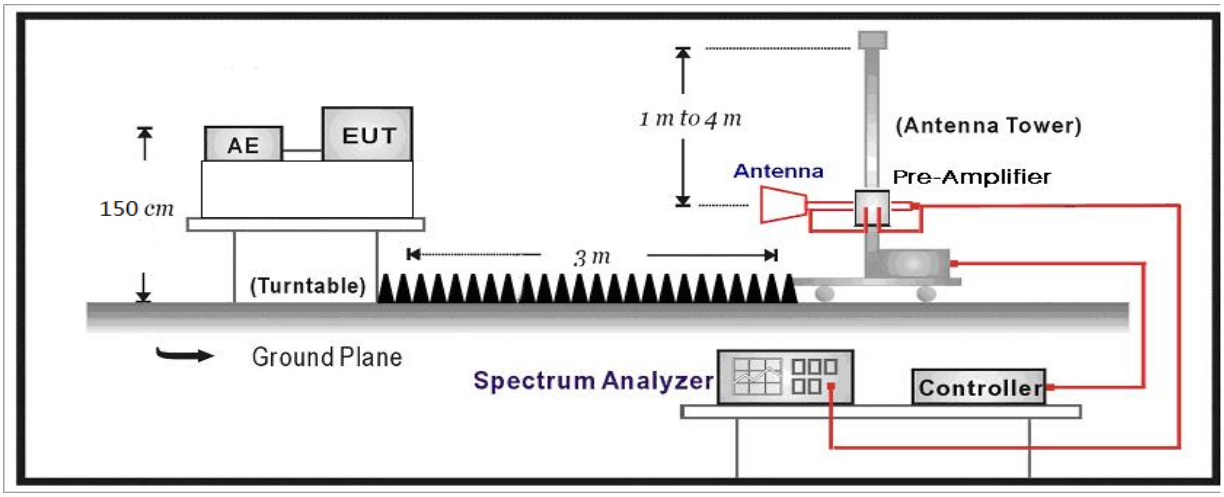
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
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
8.81425 – 8.81475	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	
13.36 – 13.41			

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 - 88	100	40	3(Note 2)
88 - 216	150	43.5	3(Note 2)
216 - 960	200	46	3(Note 2)
Above 960	500	54	3(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.4. Test Procedure

Test Method						
	References Rule				Chapter	Description
☐	ANSI C63.10				11.11	Emissions in non-restricted frequency bands
	☐	ANSI C63.10			11.11.2	Reference level measurement
	☐	ANSI C63.10			11.11.3	Emission level measurement
☒	ANSI C63.10				11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10			11.12.1	Radiated emission measurements
	☒	ANSI C63.10			11.12.2.7	Radiated spurious emission test
		☒	ANSI C63.10		6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
		☒	ANSI C63.10		6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
		☒	ANSI C63.10		6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	☒	ANSI C63.10			11.12.2	Antenna-port conducted measurements
		☐	ANSI C63.10		11.12.2.3	Quasi-peak measurement procedure
		☒	ANSI C63.10		11.12.2.4	Peak power measurement procedure
		☒	ANSI C63.10		11.12.2.5	Average power measurement procedures
			☐	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
			☐	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
			☒	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

4.5. EUT test Axis definition

<table>
<tr><td>Item</td><td colspan="4">Emissions in non-restricted frequency bands</td></tr>
<tr><td rowspan="2">Device Category</td><td>☐</td><td colspan="3">Fixed position use</td></tr>
<tr><td>☒</td><td colspan="3">Mobile position use</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1</td></tr>
<tr><td rowspan="13">Test method</td><td>☒</td><td colspan="3">Radiated</td></tr>
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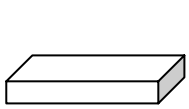
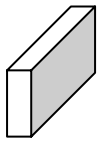
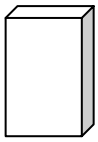
<tr><td>  </td><td>  </td><td>  </td></tr>
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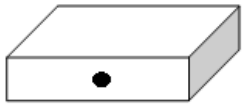
<tr><td></td><td colspan="3">  </td></tr>
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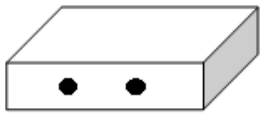
<tr><td rowspan="2"></td><td colspan="3">  </td></tr>
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<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td rowspan="2"></td><td colspan="3">  </td></tr>
<tr><td>Worst Chain ☐</td><td>Worst Chain ☐</td><td>Worst Chain ☐</td></tr>
</table>

4.6. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Power	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	AC-5

CYBLE-212006-01

Chain	CH	Antenna	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dBV/m)	Over Limit (dB)	Limit (dB μ V/m)	Factor (dB)	Detector
Ant 0	0	H	4804.000	43.563	37.798	-10.437	54(Note3)	5.765	PK
		H	7206.000	47.351	37.851	-6.649	54(Note3)	9.499	PK
		H	9608.000	45.484	32.542	-8.516	54(Note3)	12.942	PK
		V	4804.000	44.330	38.565	-9.670	54(Note3)	5.765	PK
		V	7206.000	44.993	35.493	-9.007	54(Note3)	9.499	PK
		V	9608.000	45.401	32.459	-8.599	54(Note3)	12.942	PK
	19	H	4880.000	44.180	38.451	-9.820	54(Note3)	5.729	PK
		H	7320.000	45.894	36.297	-8.106	54(Note3)	9.597	PK
		H	9760.000	46.694	33.709	-7.306	54(Note3)	12.986	PK
		V	4880.000	43.079	37.350	-10.921	54(Note3)	5.729	PK
		V	7320.000	43.138	33.541	-10.862	54(Note3)	9.597	PK
		V	9760.000	45.468	32.483	-8.532	54(Note3)	12.986	PK
	39	H	4960.000	43.580	37.352	-10.420	54(Note3)	6.227	PK
		H	7440.000	46.357	36.660	-7.643	54(Note3)	9.697	PK
		H	9920.000	47.014	33.788	-6.986	54(Note3)	13.226	PK
		V	4960.000	43.878	37.650	-10.122	54(Note3)	6.227	PK
		V	7440.000	42.187	32.490	-11.813	54(Note3)	9.697	PK
		V	9920.000	46.874	33.648	-7.126	54(Note3)	13.226	PK

Note: 1. Measure Level = Reading Level + Factor.

Note: 2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

Note: 3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Note: 4. The RBW set up, see Clause 6.6.

CYBLE-202007-01

Chain	CH	Antenna	Frequency (MHz)	Measure Level (dB μ V/m)	Reading Level (dBV/m)	Over Limit (dB)	Limit (dB μ V/m)	Factor (dB)	Detector
Ant 0	0	H	4804.000	52.669	46.904	-1.331	54(Note3)	5.765	PK
		H	7206.000	46.628	37.128	-7.372	54(Note3)	9.499	PK
		H	9608.000	52.033	39.091	-1.967	54(Note3)	12.942	PK
		V	4804.000	50.851	45.086	-3.149	54(Note3)	5.765	PK
		V	7206.000	43.796	34.296	-10.204	54(Note3)	9.499	PK
		V	9608.000	49.915	36.973	-4.085	54(Note3)	12.942	PK
	19	H	4880.000	49.070	43.341	-4.930	54(Note3)	5.729	PK
		H	7320.000	43.833	34.236	-10.167	54(Note3)	9.597	PK
		H	9760.000	48.651	35.666	-5.349	54(Note3)	12.986	PK
		V	4880.000	50.432	44.703	-3.568	54(Note3)	5.729	PK
		V	7320.000	41.729	32.132	-12.271	54(Note3)	9.597	PK
		V	9760.000	47.617	34.632	-6.383	54(Note3)	12.986	PK
	39	H	4960.000	46.670	40.442	-7.330	54(Note3)	6.227	PK
		H	7440.000	43.353	33.656	-10.647	54(Note3)	9.697	PK
		H	9920.000	47.934	34.708	-6.066	54(Note3)	13.226	PK
		V	4960.000	49.876	43.648	-4.124	54(Note3)	6.227	PK
		V	7440.000	41.831	32.134	-12.169	54(Note3)	9.697	PK
		V	9920.000	47.477	34.251	-6.523	54(Note3)	13.226	PK

Note: 1. Measure Level = Reading Level + Factor.

Note: 2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

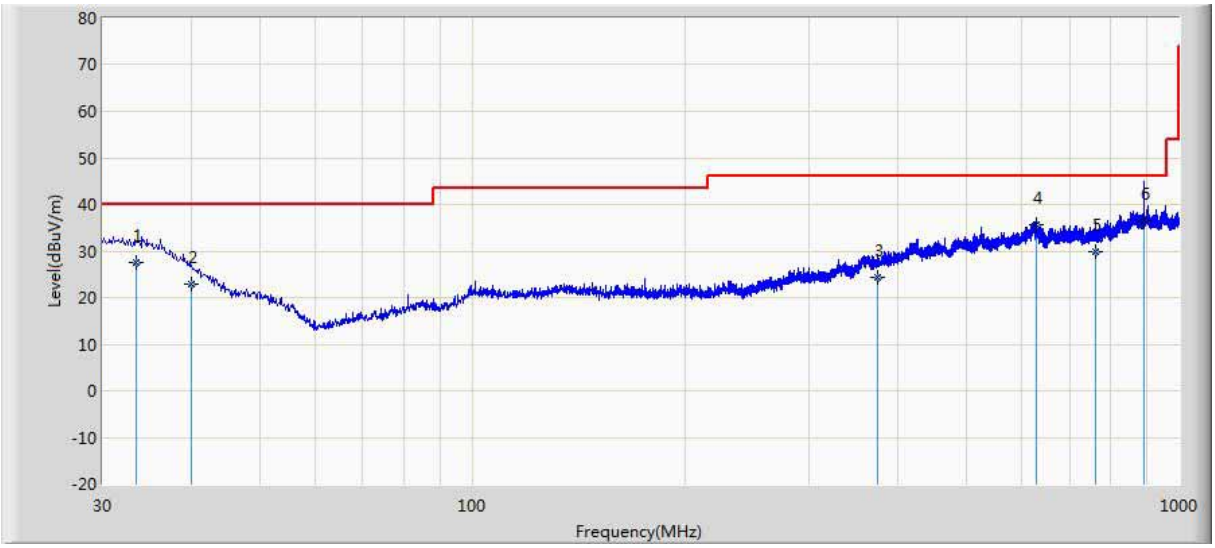
Note: 3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Note: 4. The RBW set up, see Clause 6.6.

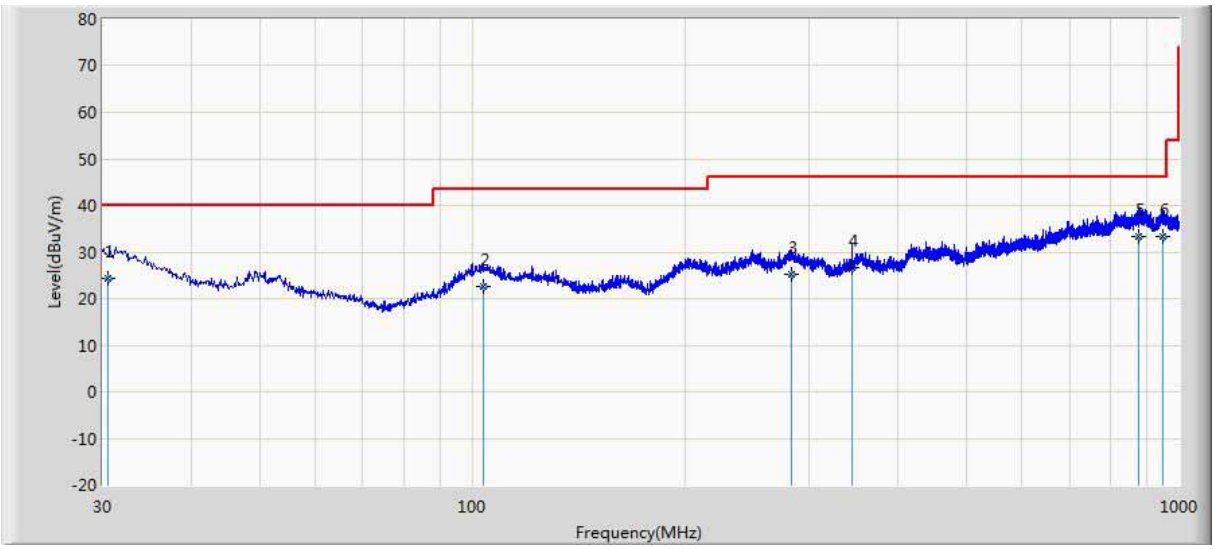
The worst case of Radiated Emission below 1GHz:

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dB μ V/m)	Factor (dB)	Measure Level (dB μ V/m)	Limit (dB μ V/m)	Over Limit (dB)	Detector
Ant 0	0	H	33.419	0.100	27.365	27.465	40.000	-12.535	QP
		H	39.987	0.387	22.371	22.757	40.000	-17.243	QP
		H	374.794	0.300	24.007	24.307	46.000	-21.693	QP
		H	629.132	5.198	30.406	35.605	46.000	-10.395	QP
		H	760.447	0.300	29.514	29.814	46.000	-16.186	QP
		H	892.362	4.399	32.257	36.656	46.000	-9.344	QP
		V	30.476	0.100	24.208	24.308	40.000	-15.692	QP
		V	103.665	0.250	22.318	22.568	43.500	-20.932	QP
		V	282.806	0.140	25.170	25.309	46.000	-20.691	QP
		V	345.030	2.700	24.035	26.735	46.000	-19.265	QP
		V	875.505	0.100	33.135	33.235	46.000	-12.765	QP
		V	948.447	0.200	33.157	33.356	46.000	-12.644	QP
Note 1: The worst case of Radiated Emission below 1GHz									

Polarity: Horizontal



Polarity: Vertical



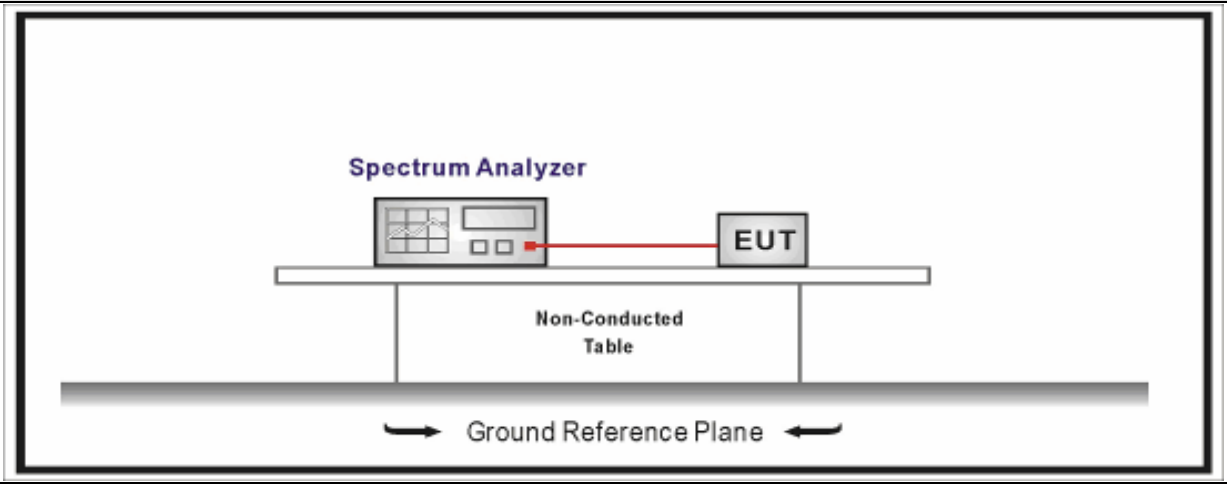
5. Emissions in non-restricted frequency bands

5.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.02.04	2017.02.04
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2016.04.10	2017.04.10
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

5.2. Test Setup

Occupied Bandwidth test setup:



5.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)

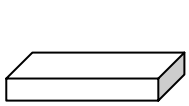
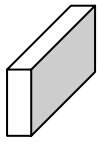
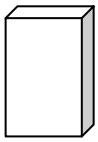
Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

5.4. Test Procedure

Test Method						
	References Rule				Chapter	Description
☒	ANSI C63.10				11.11	Emissions in non-restricted frequency bands
	☒	ANSI C63.10			11.11.2	Reference level measurement
	☒	ANSI C63.10			11.11.3	Emission level measurement
☐	ANSI C63.10				11.12	Emissions in restricted frequency bands
	☐	ANSI C63.10			11.12.1	Radiated emission measurements
	☐	ANSI C63.10			11.12.2.7	Radiated spurious emission test
☒	ANSI C63.10				6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
☒	ANSI C63.10				6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10				6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	☒	ANSI C63.10			11.12.2	Antenna-port conducted measurements
		☐	ANSI C63.10		11.12.2.3	Quasi-peak measurement procedure
		☒	ANSI C63.10		11.12.2.4	Peak power measurement procedure
		☐	ANSI C63.10		11.12.2.5	Average power measurement procedures
			☐	ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
			☐	ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
			☐	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

5.5. EUT test Axis definition

<table>
<tr><td>Item</td><td colspan="4">Emissions in non-restricted frequency bands</td></tr>
<tr><td rowspan="2">Device Category</td><td>☐</td><td colspan="3">Fixed position use</td></tr>
<tr><td>☒</td><td colspan="3">Mobile position use</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1</td></tr>
<tr><td rowspan="13">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
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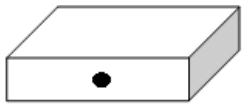
<tr><td></td><td colspan="3">  </td></tr>
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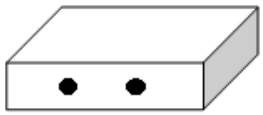
<tr><td rowspan="2"></td><td colspan="3">  </td></tr>
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<tr><td>Worst Chain ☐</td><td>Worst Chain ☐</td><td>Worst Chain ☐</td></tr>
</table>

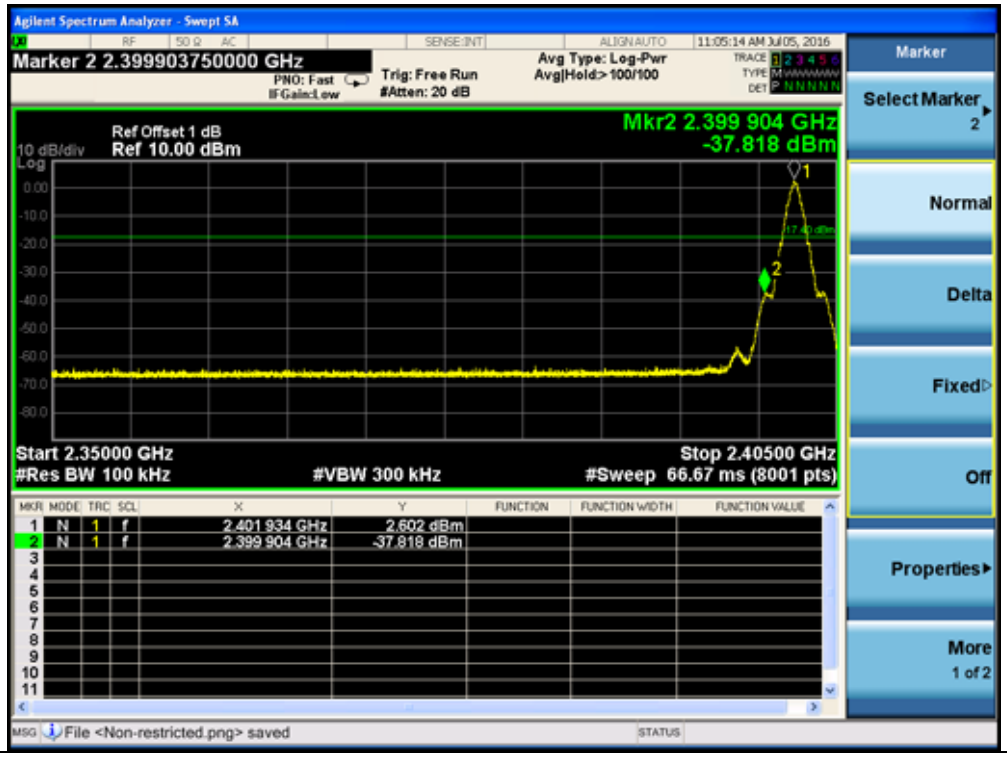
5.6. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR8			

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	2.602	2400.00	-37.818	40.420	>20	Pass
1	39	2480	2.923	2500.00	-50.700	53.623	>20	Pass

Note: The worst case of Emissions in non-restricted frequency bands as below:

Mode 1 CH00 (2402MHz)

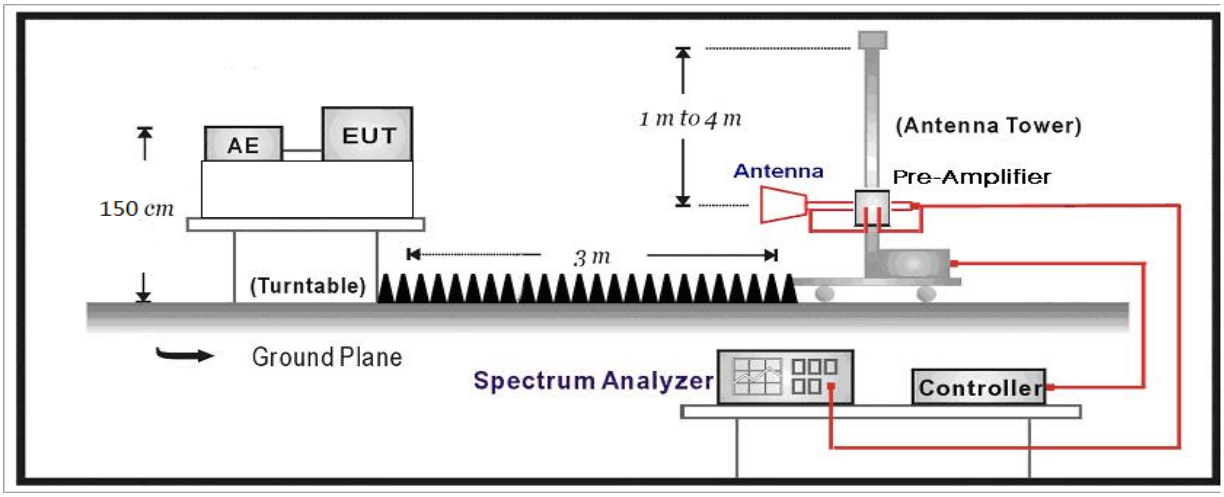


6. Radiated Emission Band Edge

6.1. Test Equipment

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.04
Preamplifier	Miteq	NSP1800-25	1364185	2016.05.03	2017.05.03
DRG Horn	ETS-Lindgren	3117	00167055	2015.07.23	2016.07.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	1126450	2014.09.18	2016.09.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2016.02.28	2017.02.28
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2016.02.28	2017.02.28
EMI Receiver	Agilent	N9038A	MY51210196	2016.07.16	2016.07.16
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2016.01.05	2017.01.05

6.2. Test Setup

Above 1GHz Test Setup:


6.3. Limit

Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3
Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.				

6.4. Test Procedure

Test Method						
	References Rule				Chapter	Description
☒	ANSI C63.10				6.10	Band-edge testing
	☒	ANSI C63.10			6.10.5	Restricted-band band-edge measurements
	☐	ANSI C63.10			6.10.6	Marker-delta method
☒	ANSI C63.10				11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10			11.12.1	Radiated emission measurements
	☒	ANSI C63.10			11.12.2.7	Radiated spurious emission test
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			☒	ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

6.5. EUT test definition

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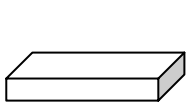
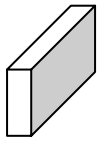
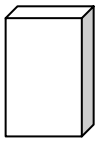
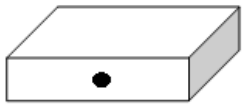
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☒</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☐</td><td colspan="3">Conducted</td></tr>
<tr><td>☐</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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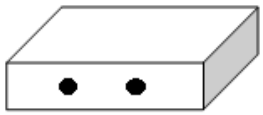
<tr><td></td><td colspan="3">  </td></tr>
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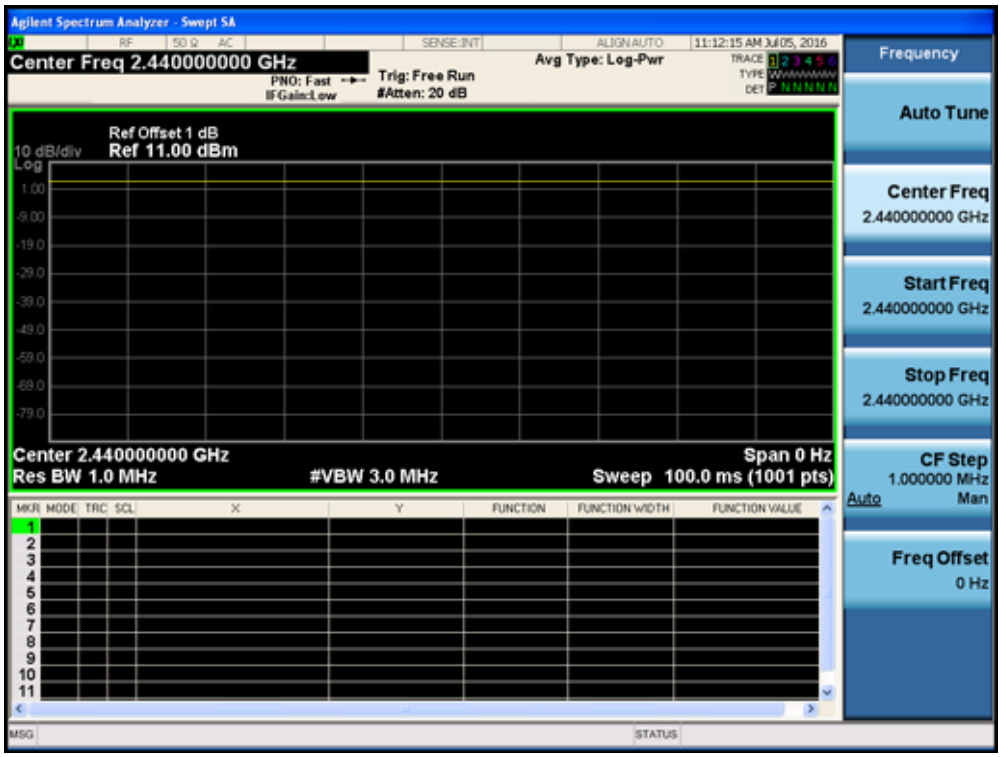
<tr><td></td><td colspan="3">  </td></tr>
</table>

6.6. Duty Cycle

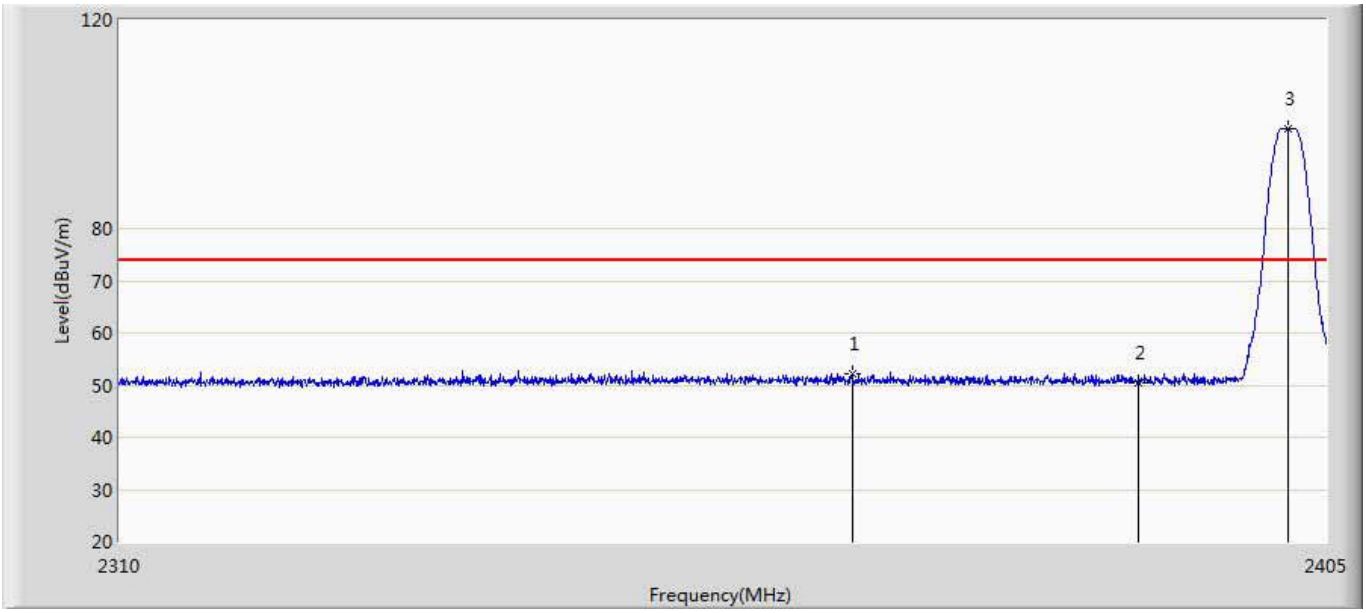
Test Mode	Tx On (ms)	Tx Off (ms)	Reduced VBW (Hz)	Tx On + Tx Off (ms)	Duty Cycle
BLE	N/A	N/A	10	N/A	100%

BLE



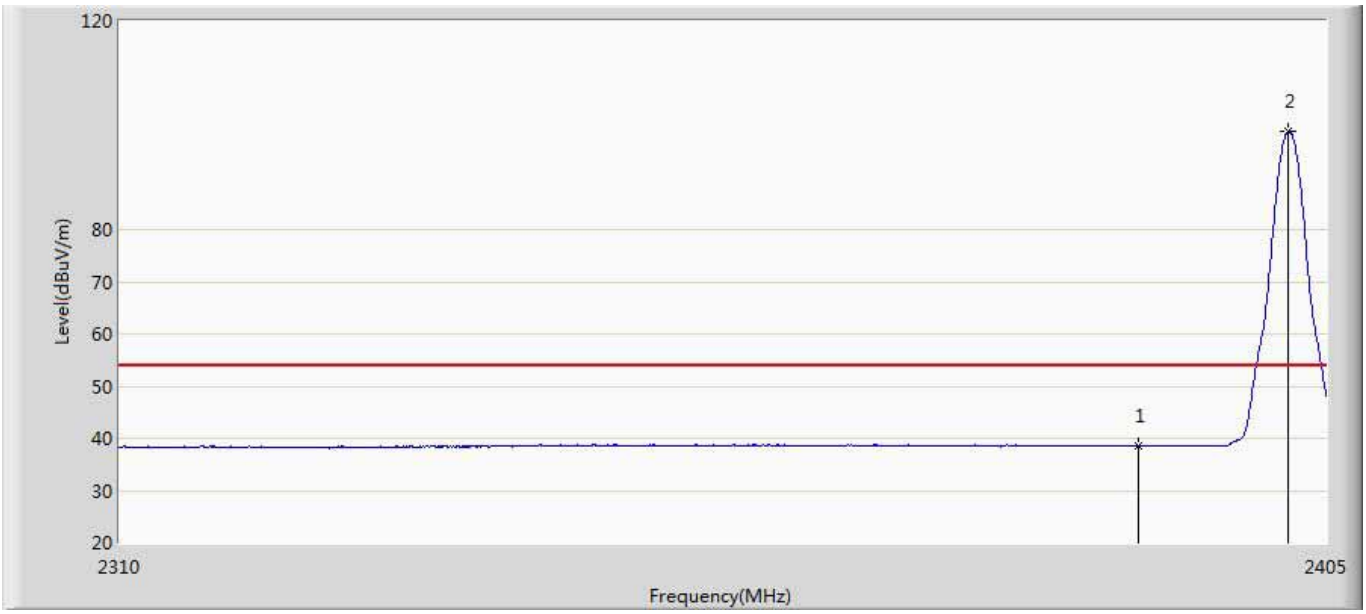
6.7 Test Result

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



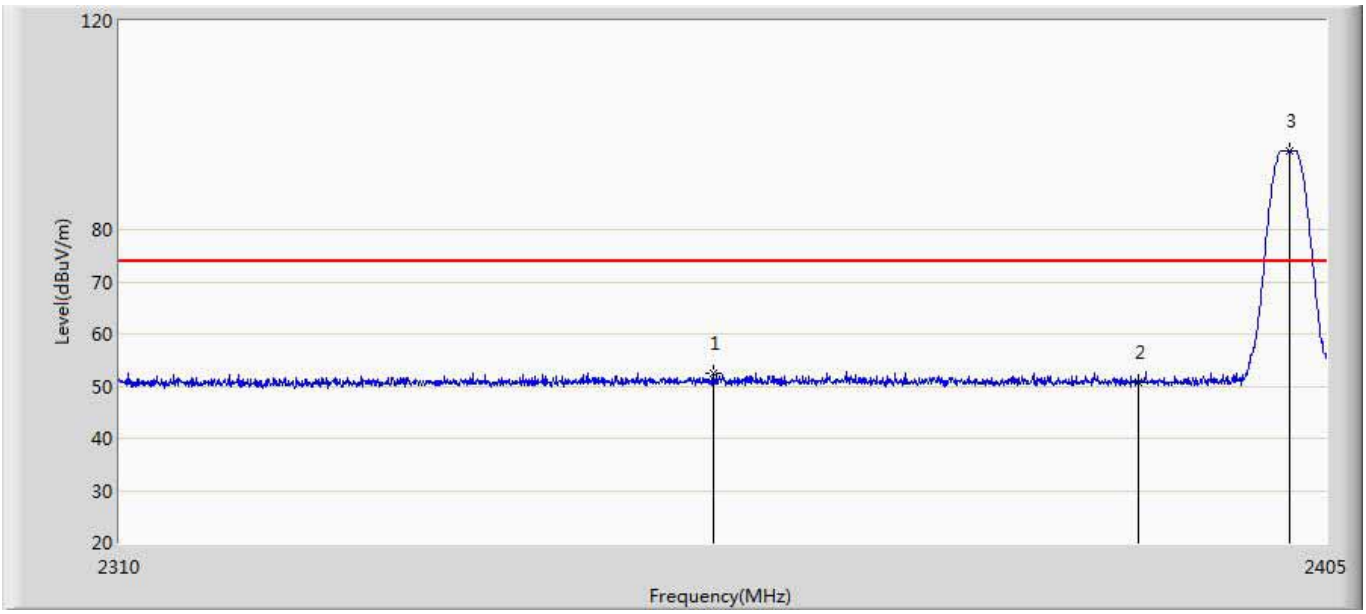
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2367.285	52.161	16.024	-21.839	74.000	36.137	PK
2		2390.000	50.433	14.360	-23.567	74.000	36.073	PK
3	*	2401.913	99.225	63.147	25.225	74.000	36.078	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



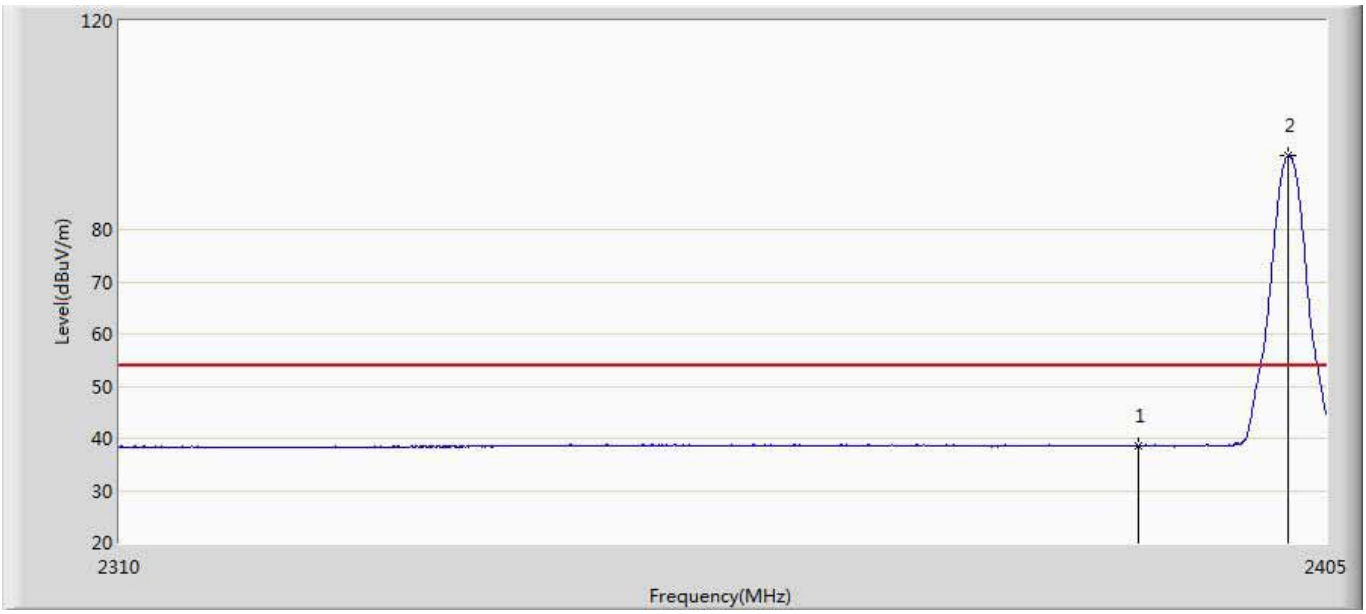
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	38.528	2.455	-15.472	54.000	36.073	AV
2	*	2401.960	98.788	62.710	44.788	54.000	36.078	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



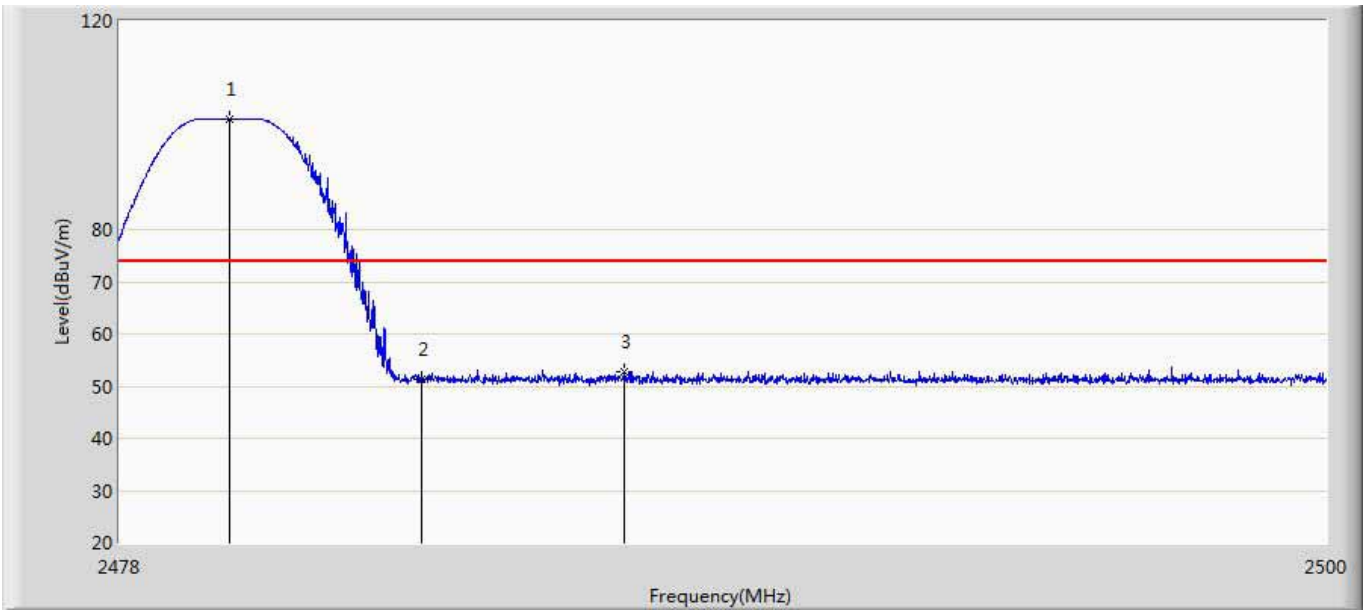
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2356.265	52.465	16.279	-21.535	74.000	36.187	PK
2		2390.000	50.698	14.625	-23.302	74.000	36.073	PK
3	*	2402.055	95.098	59.020	21.098	74.000	36.078	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



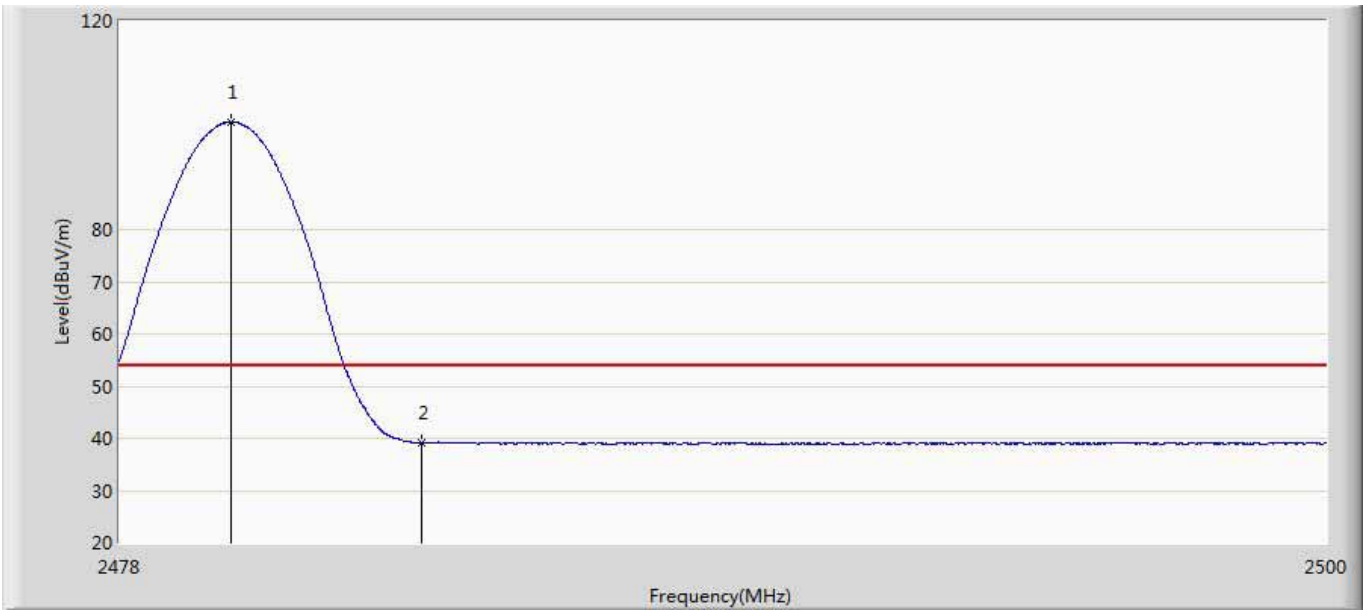
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	38.563	2.490	-15.437	54.000	36.073	AV
2	*	2401.913	94.135	58.057	40.135	54.000	36.078	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



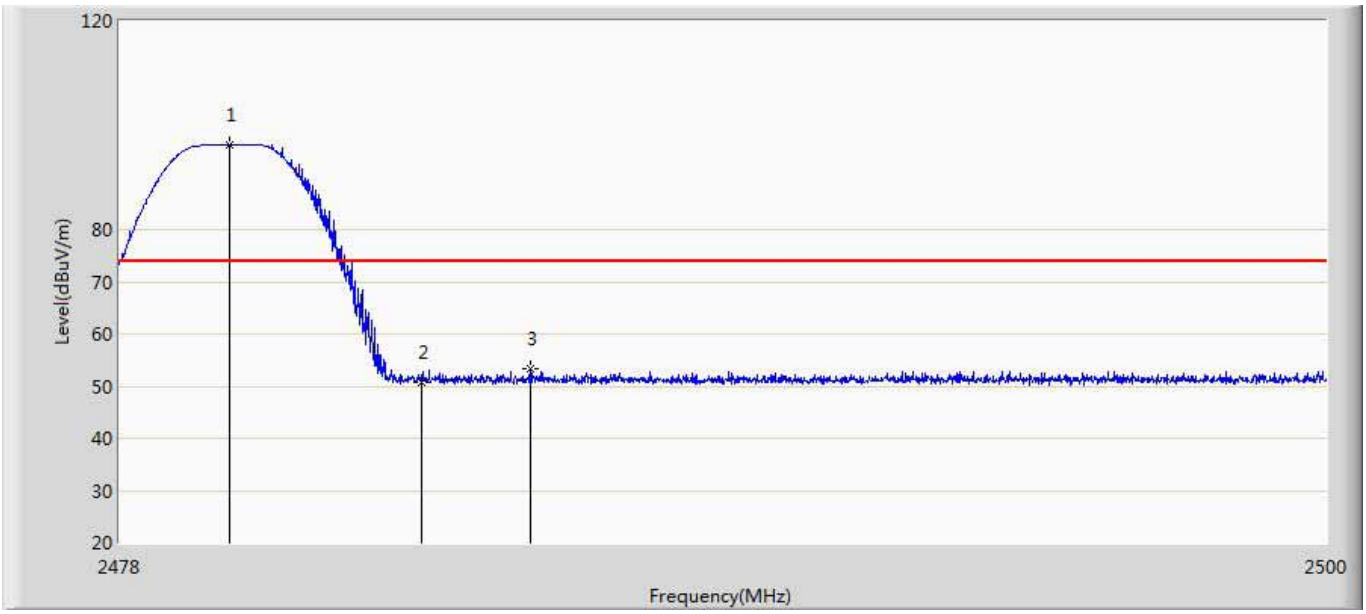
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	101.185	64.777	27.185	74.000	36.408	PK
2		2483.500	51.393	14.998	-22.607	74.000	36.395	PK
3		2487.196	52.896	16.514	-21.104	74.000	36.382	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



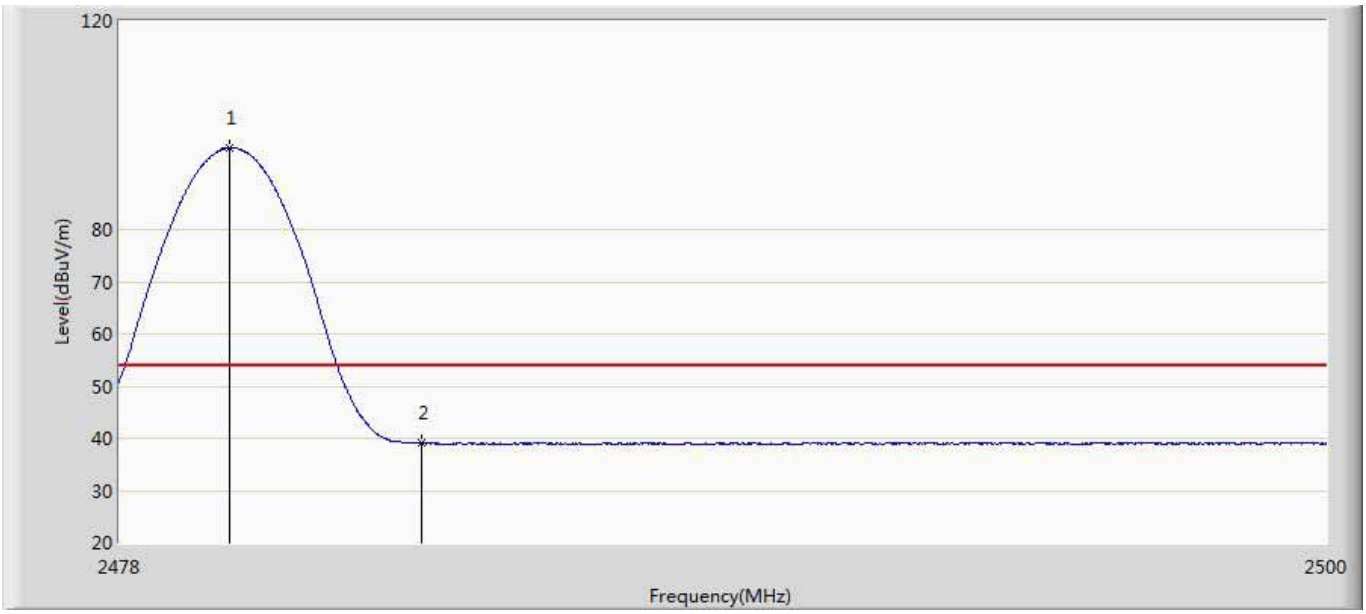
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.035	100.592	64.184	46.592	54.000	36.408	AV
2		2483.500	39.172	2.777	-14.828	54.000	36.395	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



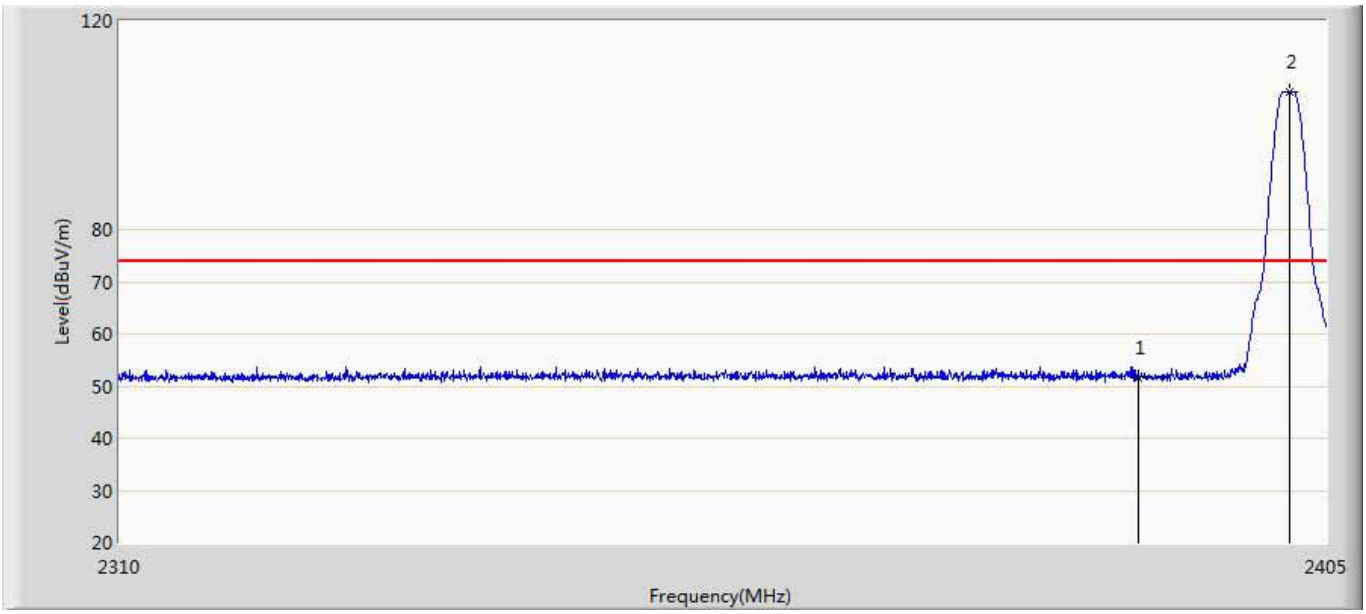
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	96.208	59.800	22.208	74.000	36.408	PK
2		2483.500	50.746	14.351	-23.254	74.000	36.395	PK
3		2485.469	53.442	17.054	-20.558	74.000	36.388	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-212006-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



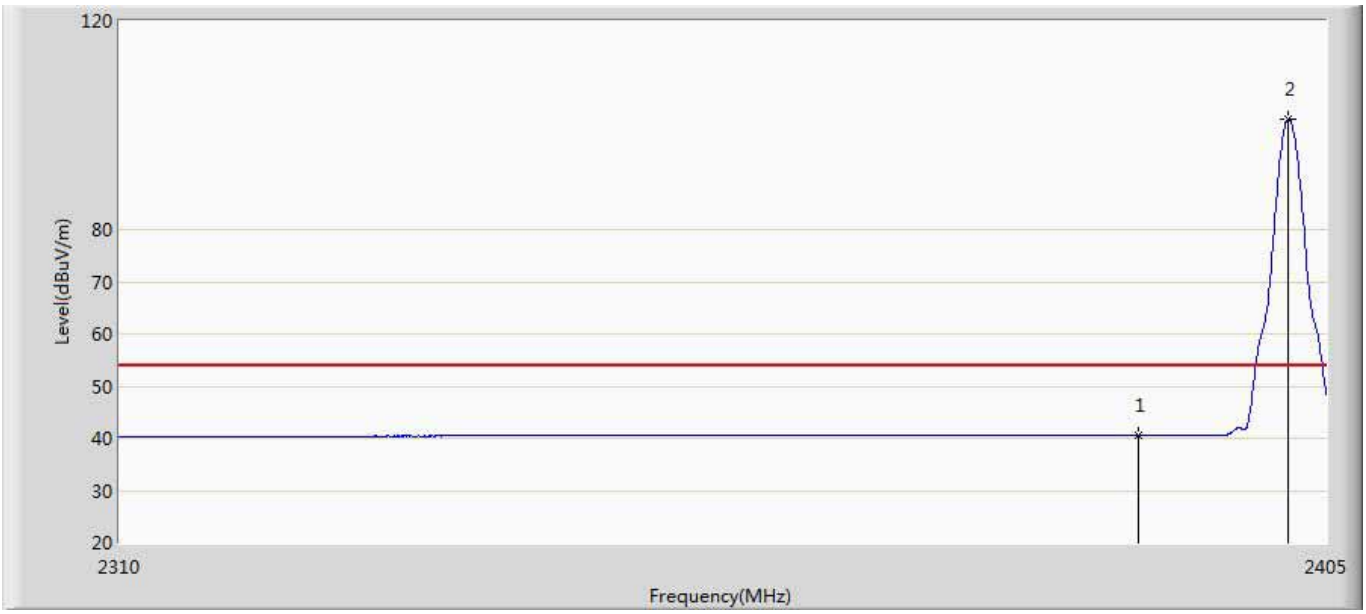
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	95.647	59.239	41.647	54.000	36.408	AV
2		2483.500	39.207	2.812	-14.793	54.000	36.395	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



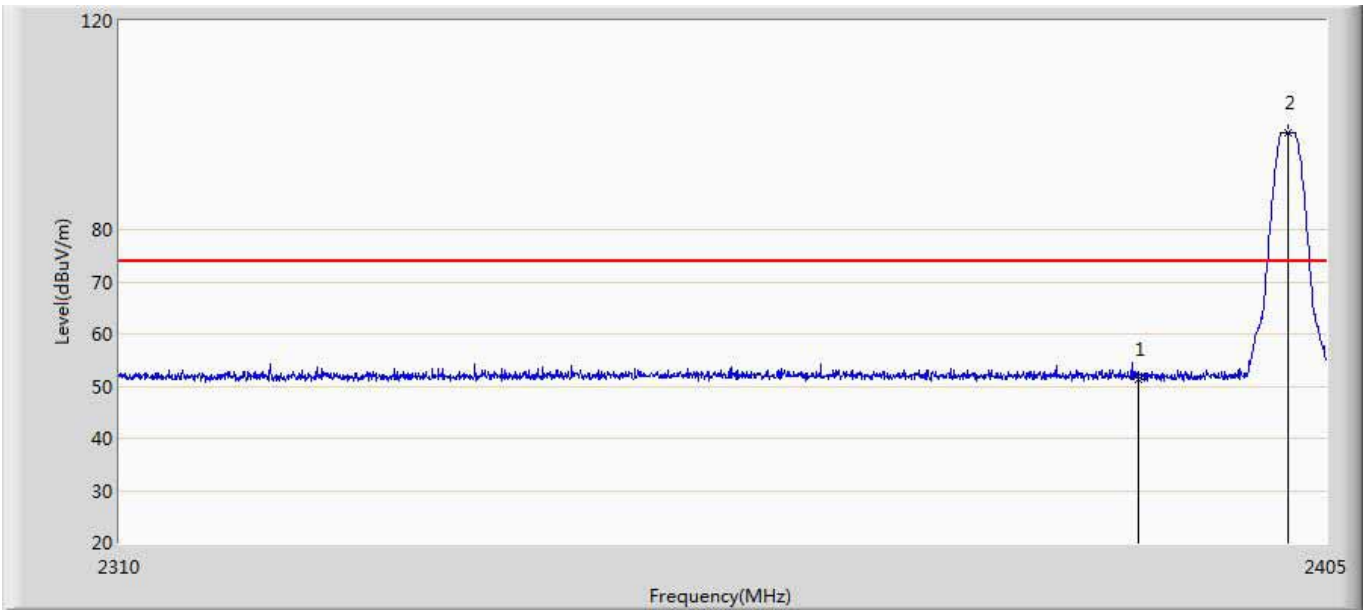
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.699	15.626	-22.301	74.000	36.073	PK
2	*	2402.055	106.499	70.421	32.499	74.000	36.078	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/17 - 09:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



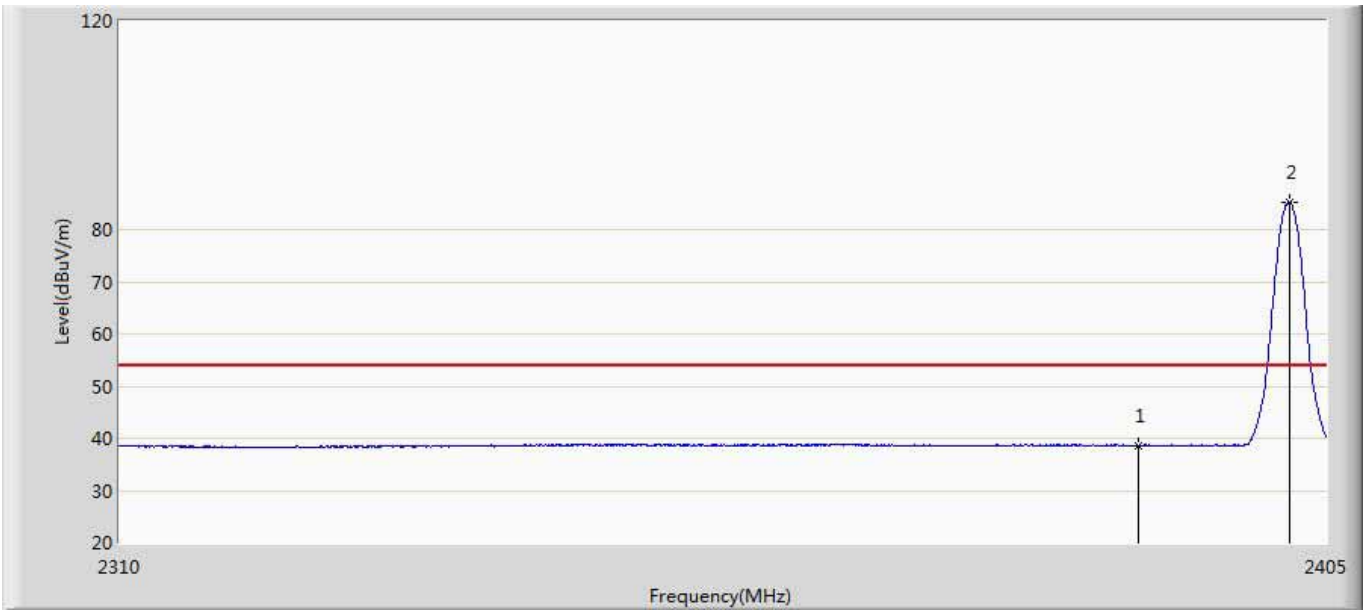
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	40.505	4.432	-13.495	54.000	36.073	AV
2	*	2401.960	101.248	65.170	47.248	54.000	36.078	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



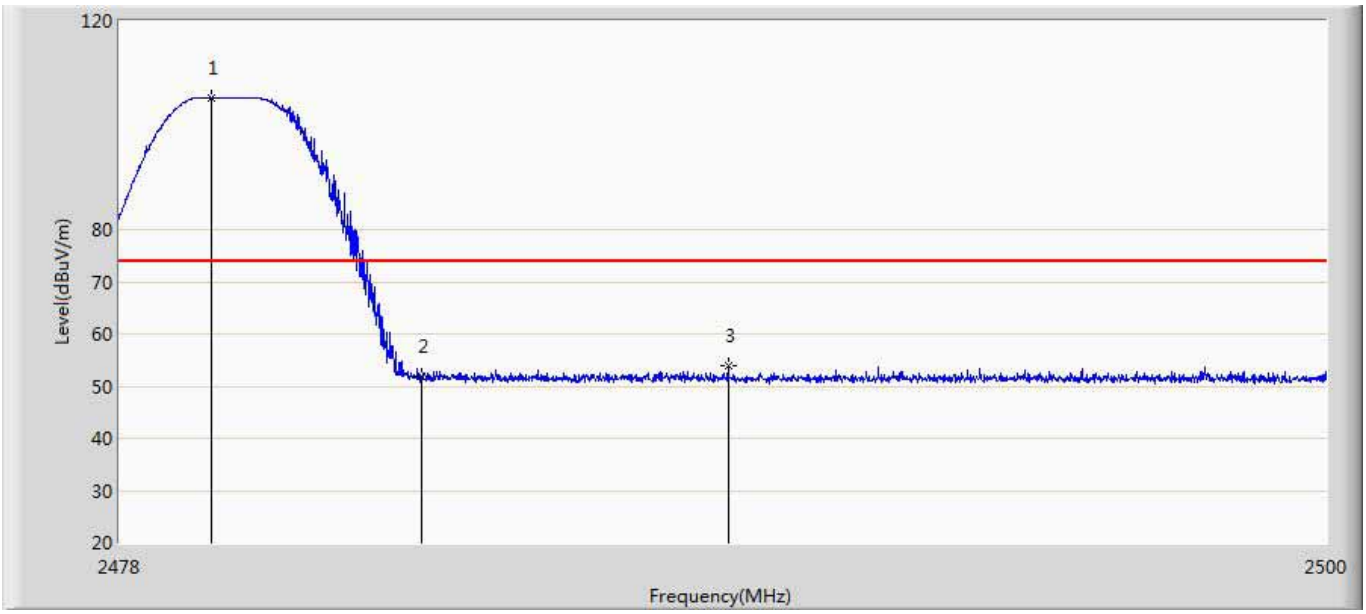
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.273	15.200	-22.727	74.000	36.073	PK
2	*	2401.913	98.628	62.550	24.628	74.000	36.078	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2402Mhz by BLE	



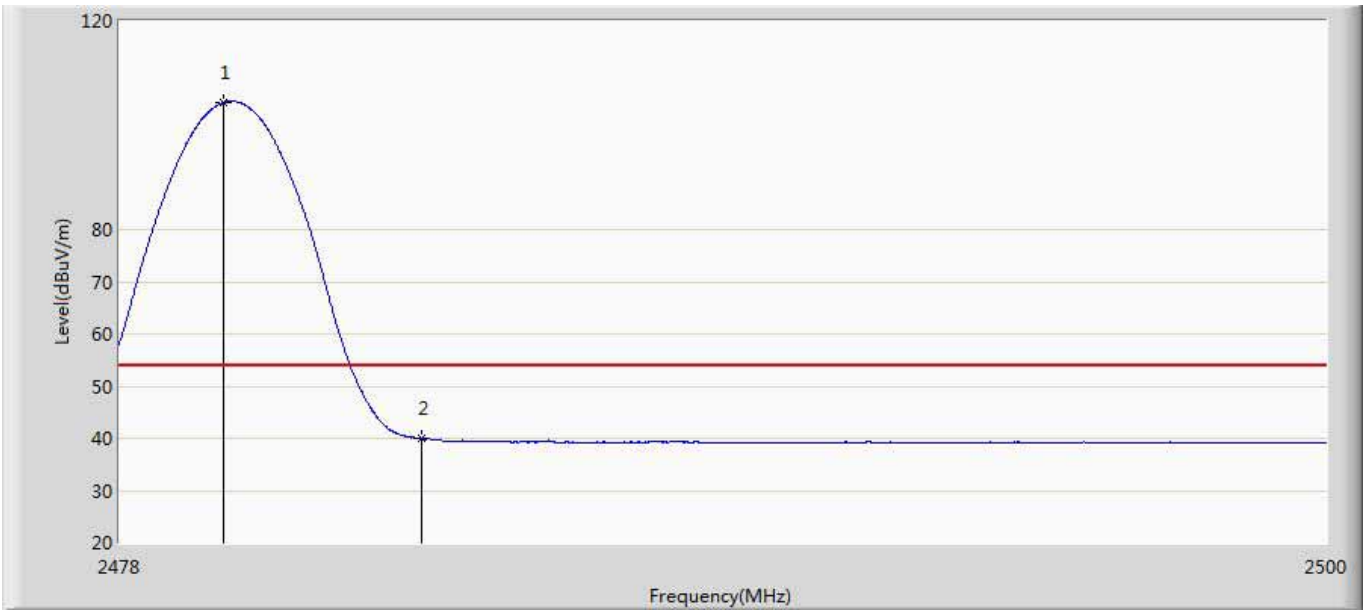
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	38.584	2.511	-15.416	54.000	36.073	AV
2	*	2402.055	85.320	49.242	31.320	54.000	36.078	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



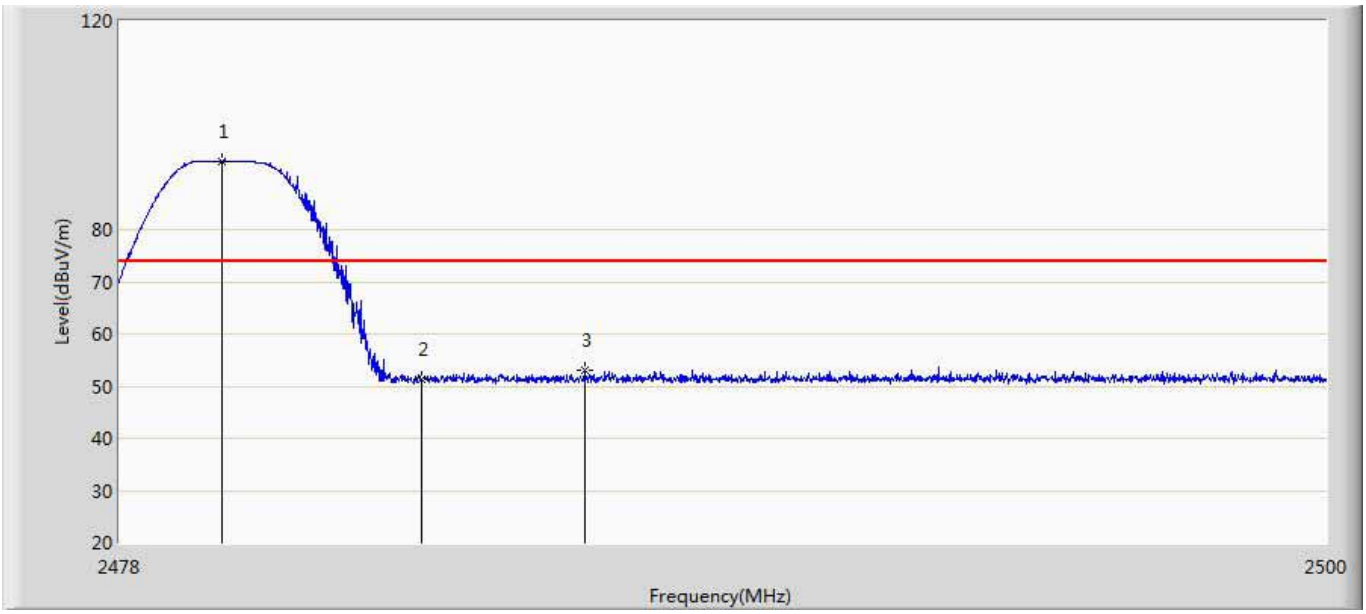
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.672	105.327	68.918	31.327	74.000	36.409	PK
2		2483.500	51.993	15.598	-22.007	74.000	36.395	PK
3		2489.088	53.796	17.421	-20.204	74.000	36.375	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



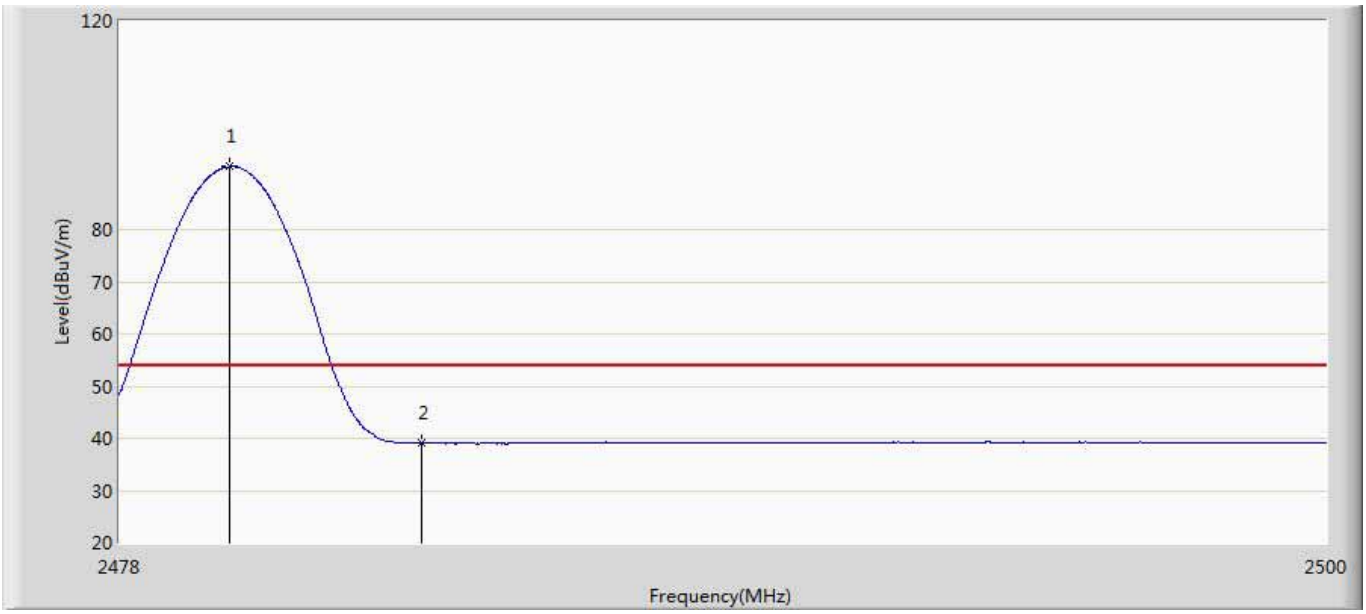
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.892	104.336	67.928	50.336	54.000	36.408	AV
2		2483.500	39.944	3.549	-14.056	54.000	36.395	AV

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.870	93.158	56.750	19.158	74.000	36.408	PK
2		2483.500	51.174	14.779	-22.826	74.000	36.395	PK
3		2486.459	53.018	16.634	-20.982	74.000	36.385	PK

Engineer: Scott	
Site: AC5	Time: 2016/07/17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: CYBLE-202007-01	Power: AC 120V/60Hz
Note: Mode 1:Transmit at CH2480Mhz by BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	92.043	55.635	38.043	54.000	36.408	AV
2		2483.500	39.116	2.721	-14.884	54.000	36.395	AV

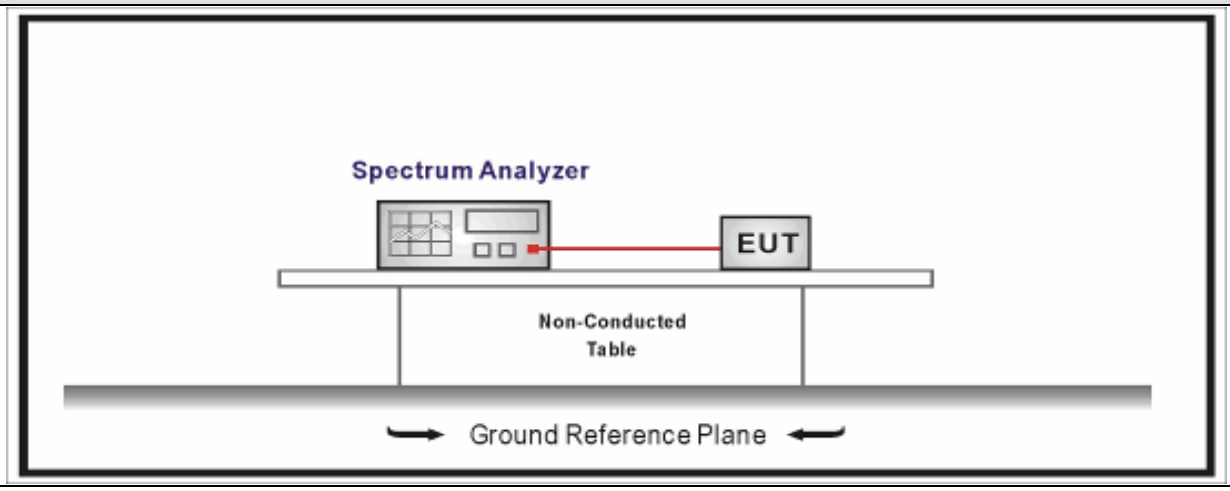
7. Occupied Bandwidth

7.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.02.04	2017.02.04
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2016.04.10	2017.04.10
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

7.2. Test Setup

Occupied Bandwidth test setup:



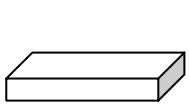
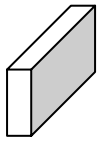
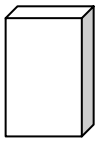
7.3. Limit

Occupied Bandwidth
Systems using digital modulation techniques operate in the2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at least 500 kHz

7.4. Test Procedure

Test Method				
	Reference Rule		Chapter	Description
☒	ANSI C63.10		11.8	DTS bandwidth
	☐	ANSI C63.10	11.8.1	Option 1
	☒	ANSI C63.10	11.8.2	Option 2

7.5. EUT test definition

<table>
<tr><td>Item</td><td colspan="4">Occupied Bandwidth</td></tr>
<tr><td rowspan="2">Device Category</td><td>☐</td><td colspan="3">Fixed position use</td></tr>
<tr><td>☒</td><td colspan="3">Mobile position use</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1</td></tr>
<tr><td rowspan="11">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
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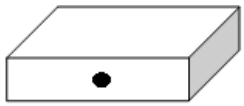
<tr><td>☒</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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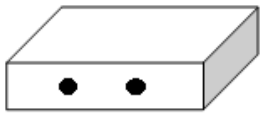
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

7.6. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR-8			

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	1554.0	740.8	>500	Pass
1	19	2440	1634.3	738.9	>500	Pass
1	39	2480	1575.8	735.1	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

Mode 1 CH39 (2480MHz)

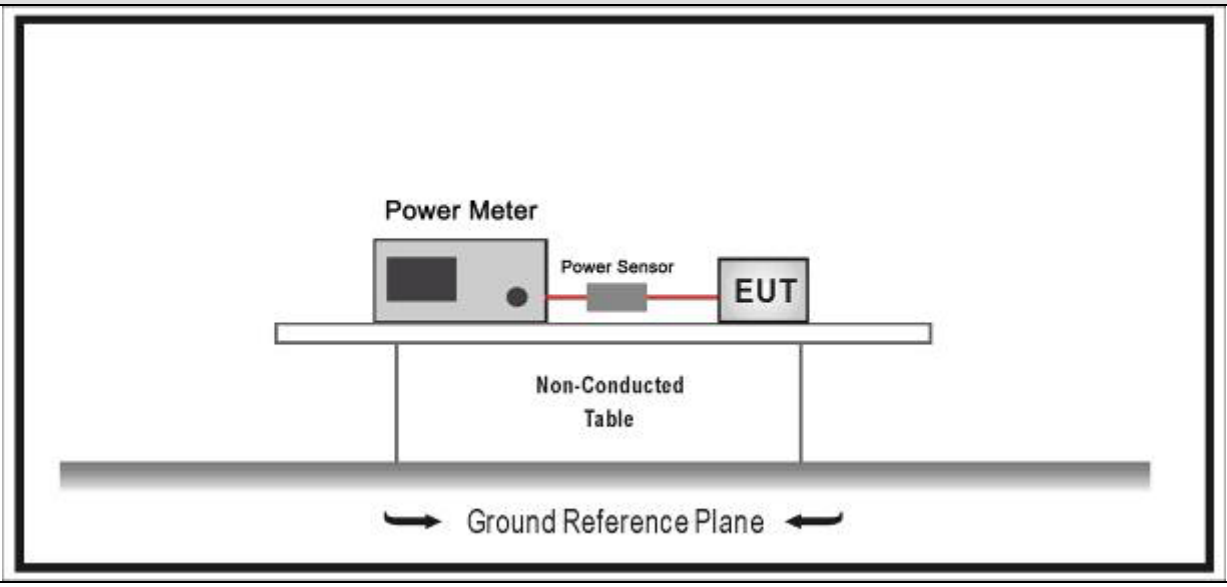
8. Fundamental emission output power

8.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2016.01.04	2017.01.04
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.02.04	2017.02.04
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2015.10.14	2016.10.14
Power Sensor	Anritsu	MA2411B	0846014	2015.10.14	2016.10.14
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2016.04.10	2017.04.10
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

8.2. Test Setup

Fundamental emission output power test setup



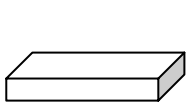
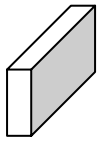
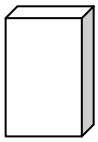
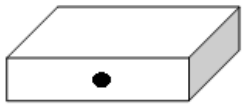
8.3. Limit

Fundamental emission output power Limit			
☒	G_{TX} ＜6dBi		P_{out}≤30dBm
☐	G_{TX} ＞6dBi		
	☐	Non-Fix point-point	P_{out}≤30-(G_{TX} -6)
	☐	Fix point-point	P_{out}≤30-[(G_{TX}-6)]/3
	☐	Point-to-multipoint	P_{out}≤30-(G_{TX}-6)
	☐	Overlap Beams	P_{out}≤30-[(G_{TX}-6)]/3
	☐	Aggregate power transmitted simultaneously on all beams	P_{out}≤30-[(G_{TX}-6)]/3
	☐	single directional beam	P_{out}≤30-[(G_{TX}-6)]/3+8dB
Note 1 : G_{TX} directional gain of transmitting antennas. Note 2 : P_{out} is maximum peak conducted output power .			

8.4. Test Procedure

Fundamental emission output power Test Method						
	References Rule				Chapter	Description
☒	ANSI C63.10				11.9	Fundamental emission output power
	☒	ANSI C63.10			11.9.1	Maximum peak conducted output power
		☐	ANSI C63.10		11.9.1.1	RBW ≥ DTS bandwidth
		☐	ANSI C63.10		11.9.1.2	Integrated band power method
		☒	ANSI C63.10		11.9.1.3	PKPM1 Peak power meter method
	☐	ANSI C63.10			11.9.2	Maximum conducted (average) output power
		☐	ANSI C63.10		11.9.2.2	Measurement using a spectrum analyzer (SA)
			☐	ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle≥98%)
			☐	ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle≥98%)
			☐	ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle≤98%)
			☐	ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle≤98%)
			☐	ANSI C63.10	11.9.2.2.4	Method AVGSA-3
			☐	ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
		☐	ANSI C63.10		11.9.2.3	Measurement using a power meter (PM)
			☐	ANSI C63.10	11.9.2.3.1	Method AVGPM
			☐	ANSI C63.10	11.9.2.3.2	Method AVGPM-G

8.5. EUT test definition

<table>
<tr><td>Item</td><td colspan="4">Fundamental emission output power</td></tr>
<tr><td rowspan="2">Device Category</td><td>☐</td><td colspan="3">Fixed position use</td></tr>
<tr><td>☒</td><td colspan="3">Mobile position use</td></tr>
<tr><td>Test mode</td><td colspan="4">Mode 1</td></tr>
<tr><td rowspan="11">Test method</td><td>☐</td><td colspan="3">Radiated</td></tr>
<tr><td rowspan="3"></td><td>X Axis</td><td>Y Axis</td><td>Z Axis</td></tr>
<tr><td>  </td><td>  </td><td>  </td></tr>
<tr><td>Worst Axis ☐</td><td>Worst Axis ☐</td><td>Worst Axis ☐</td></tr>
<tr><td>☒</td><td colspan="3">Conducted</td></tr>
<tr><td>☒</td><td colspan="3">Chain 0</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
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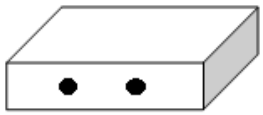
<tr><td></td><td colspan="3">  </td></tr>
<tr><td>☐</td><td>Chain 0</td><td>Chain 1</td><td>Chain 2</td></tr>
<tr><td></td><td colspan="3">  </td></tr>
</table>

8.6. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR8			

Mode	Channel	Test Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	00	2402	6.26	30	Pass
1	19	2440	7.25	30	Pass
1	39	2480	8.37	30	Pass

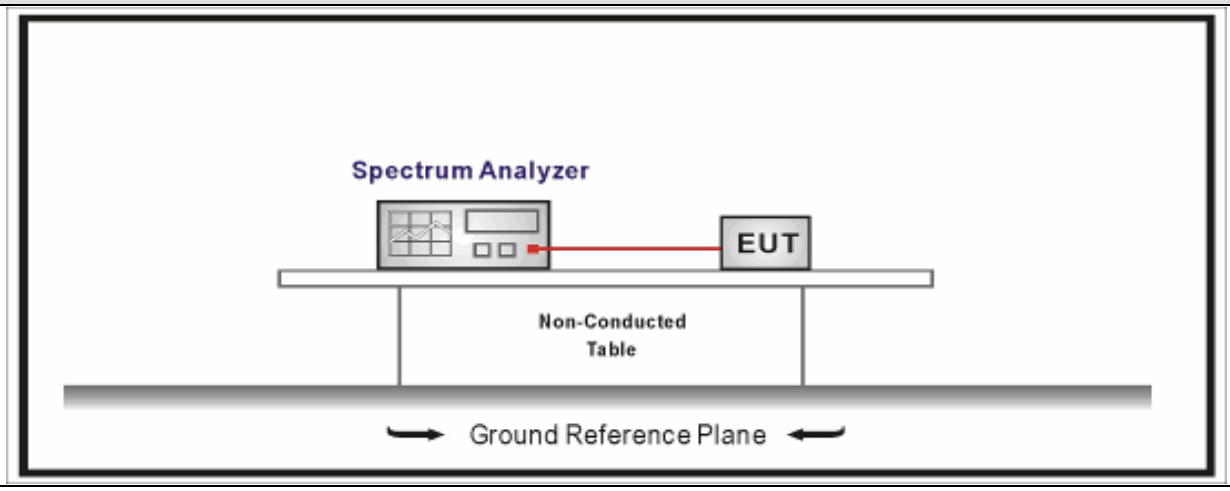
9. Power Spectral Density

9.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2016.02.04	2017.02.04
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2016.04.10	2017.04.10
Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.					

9.2. Test Setup

Power Spectral Density test setup



9.3. Limit

Power Spectral Density Limit
Power Spectral Density≤8dBm/3kHz

9.4. Test Procedure

Power Spectral Density Test Method				
	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle＜98%)
	☐	ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle＜98%)
	☐	ANSI C63.10	11.10.7	Method AVGPSD-3
	☐	ANSI C63.10	11.10.8	Method AVGPSD-3A

9.5. EUT test definition

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<tr><td rowspan="2">Device Category</td><td>☐</td><td colspan="3">Fixed position use</td></tr>
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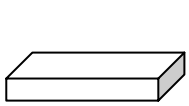
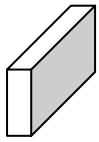
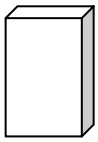
<tr><td>  </td><td>  </td><td>  </td></tr>
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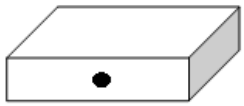
<tr><td></td><td colspan="3">  </td></tr>
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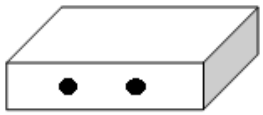
<tr><td></td><td colspan="3">  </td></tr>
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</table>

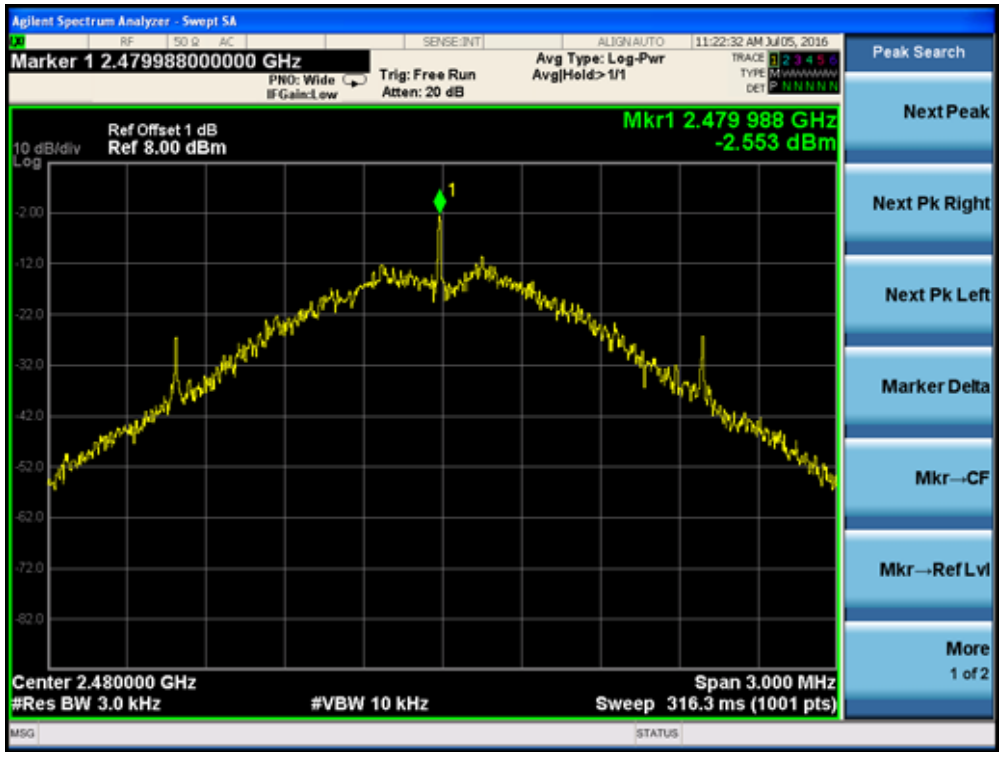
9.6. Test Result

Product Name	:	EZ-BLE PRoC XR Module	Test Power	:	AC 120V/60Hz
Test Site	:	TR8			

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz) Ant 0	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	00	2402	-3.281	-3.281	8	Pass
1	19	2440	-3.296	-3.296	8	Pass
1	39	2480	-2.553	-2.553	8	Pass

Note : The worst case of Power Spectral Density as below:

Mode 1 CH39(2480MHz)



The End