FCC & IC Test Report

Product Name	：	TX-only beacon
Trade Name	：	AI T380
Model No.	：	2145807
FCC ID.	：	SDL-BTAG
IC ID.	：	5228A-BTAG

Applicant	：	Hilti Corporation
Address	：	Feldkircherstrasse 100 – P.O. Box 333

Date of Receipt	：	Oct. 10, 2017
Issued Date	：	Feb. 05, 2018
Report No.	：	17A0214R-RFUSP01V00
Report Version	：	V3.0

Testing Laboratory
3024

Test Report Certification

Issued Date : Feb. 05, 2018
Report No. : 17A0214R-RFUSP01V00

Product Name	:	TX-only beacon
Applicant	:	Hilti Corporation
Address	:	Feldkircherstrasse 100 – P.O. Box 333
Manufacturer	:	Hilti Corporation
Model No.	:	2145807
FCC ID.	:	SDL-BTAG
IC ID.	:	5228A-BTAG
EUT Voltage	:	DC 5V
Testing Voltage	:	DC 5V
Trade Name	:	AI T380
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2016 RSS-247 Issue 2 (Feb. 2017) ANSI C63.10: 2013
Laboratory Name	:	Hsin Chu Laboratory
Address	:	No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result	:	Complied

Documented By : Lyla Yang

(Lyla Yang / Engineering Adm. Specialist)

Tested By : Scott Chang

(Scott Chang / Engineer)

Approved By : Roy Wang

(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
17A0214R-RFUSP01V00	V3.0	Initial issue of report	Feb. 05, 2018

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1. General Information

1.1. EUT Description

Product Name	TX-only beacon
Trade Name	AI T380
Model No.	2145807
Frequency Range/Channel Number	2402~2480MHz / 40 Channels
Type of Modulation	Bluetooth 4.0 (GFSK)
Hw version	2.0
Sw version	HI.1.00.6

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

Note:

1. This device is a TX-only beacon including BT4.0 transmitting function.
2. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.

1.2. Test Mode

DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Test Mode	Mode 1: Transmit Mode

Test Items	Modulation	Channel	Antenna	Result
Conducted Emission	GFSK	19	0	N/A
Peak Power Output	GFSK	00/19/39	0	Complies
Radiated Emission	GFSK	00/19/39	0	Complies
RF antenna conducted test	GFSK	00/19/39	0	Complies
Radiated Emission Band Edge	GFSK	00/19/39	0	Complies
Occupied Bandwidth	GFSK	00/19/39	0	Complies
Power Density	GFSK	00/19/39	0	Complies

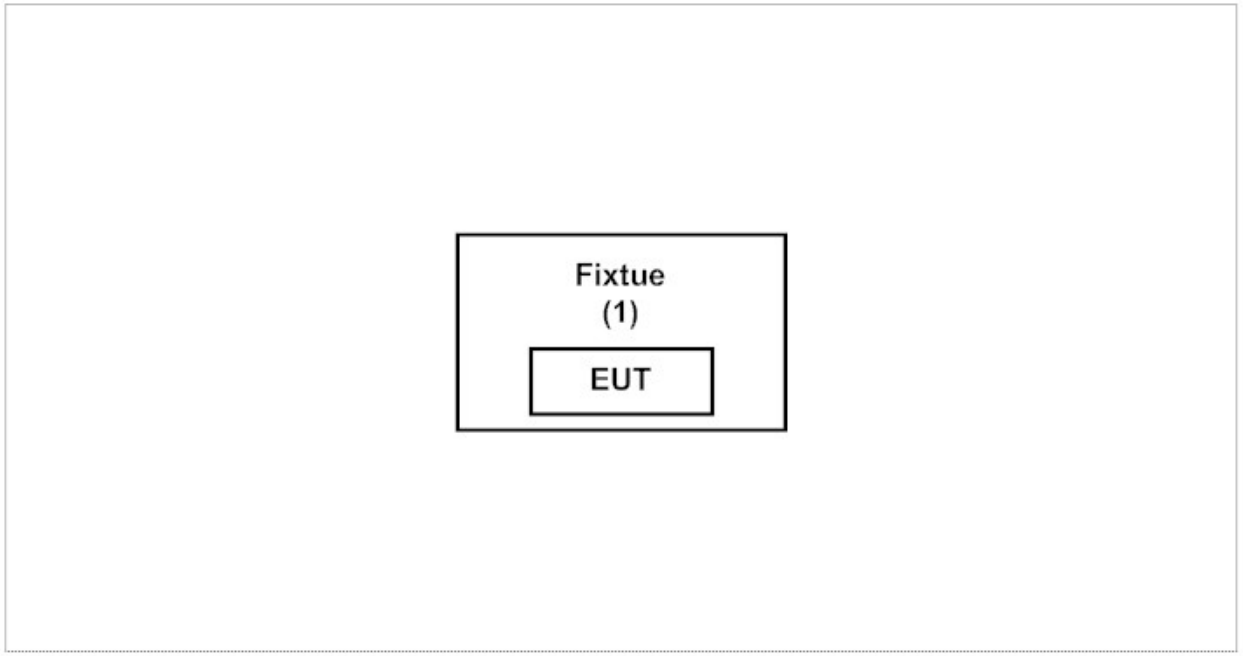
1.3. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Fixtue	EM Microelectronic	N/A	N/A	DoC	--

1.4. Configuration of tested System

Connection Diagram



1.5. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the “command” on the laptop.
3	Configure the test mode, the test channel, and the data rate.
4	Press “Start TX” to start the continuous Transmitter.
5	Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual	Test Site
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20	--
Humidity (%RH)		25 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission	15 - 35	25	2
Humidity (%RH)		25 - 75	54	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 RF antenna conducted test	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Band Edge	15 - 35	25	2
Humidity (%RH)		25 - 75	50	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	
Temperature (°C)	FCC PART 15 C 15.247 Power Density	15 - 35	24	3
Humidity (%RH)		25 - 75	45	
Barometric pressure (mbar)		860 - 1060	950-1000	

Note: Test site information refers to Laboratory Information.

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site :
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx

If you have any comments, Please don't hesitate to contact us. Our test sites as below:

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2 No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
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3 No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958 E-Mail : info.tw@dekra.com

2. Conducted Emission

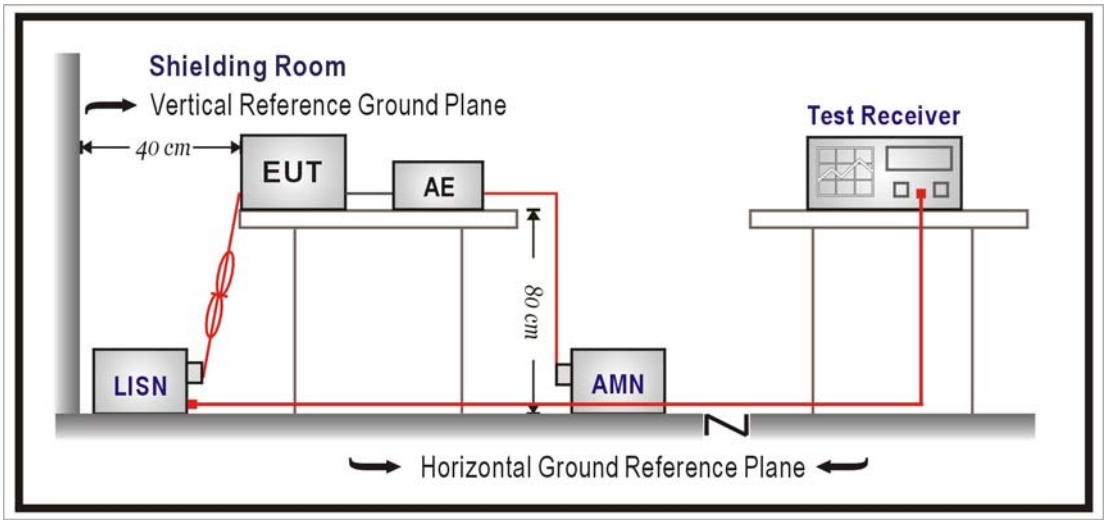
2.1. Test Equipment

The following test equipment are used during the test:

Conducted Emission / SR2-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Artificial Mains Network	R&S	ENV4200	848411/010	2017/02/06	2018/02/05
Test Receiver	R&S	ESCS 30	836858/022	2017/04/12	2018/04/11
LISN	R&S	ENV216	100092	2017/07/31	2018/07/30

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)
Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2016

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Owing to the DC operation of EUT, this test item is not performed.

3. Peak Power Output

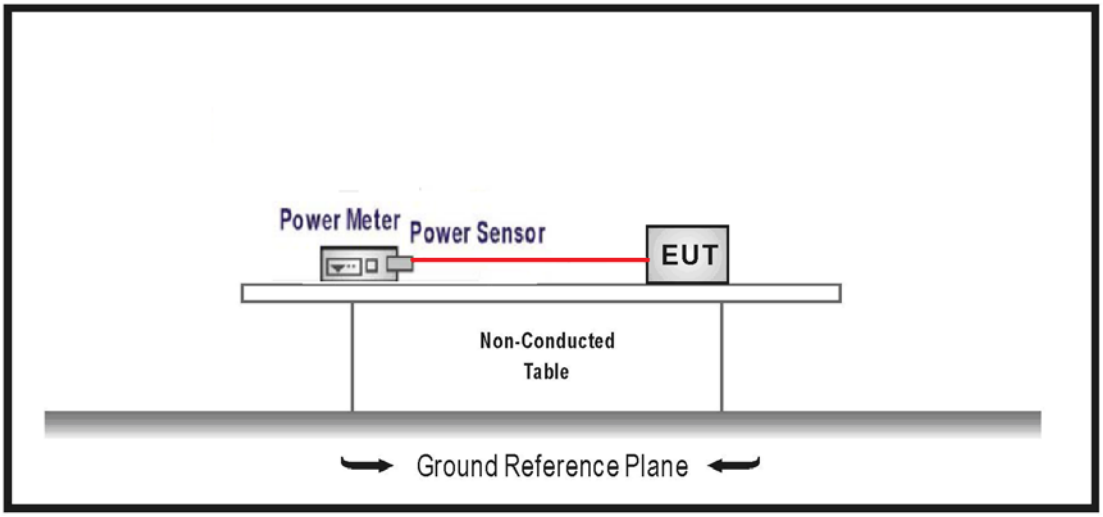
3.1. Test Equipment

The following test equipment is used during the test:

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2017/01/20	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531043	2017/01/20	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531044	2017/01/20	2018/01/19

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

3.4. Limits

FCC 15.247:

The maximum peak power shall be less 1 Watt.

RSS- 247:

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. The e.i.r.p. shall not exceed 4 W,

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247 and RSS-247

3.6. Test Result

Product	TX-only beacon		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/10/12	Test Site	SR10-H

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	EIRP Measure Level (dBm)	Limit (dBm)	Limit EIRP (dBm)	Result
00	2402	2.590	5.590	≦30	≦36	Pass
19	2440	2.770	5.770	≦30	≦36	Pass
39	2480	2.430	5.430	≦30	≦36	Pass

4. Radiated Emission

4.1. Test Equipment

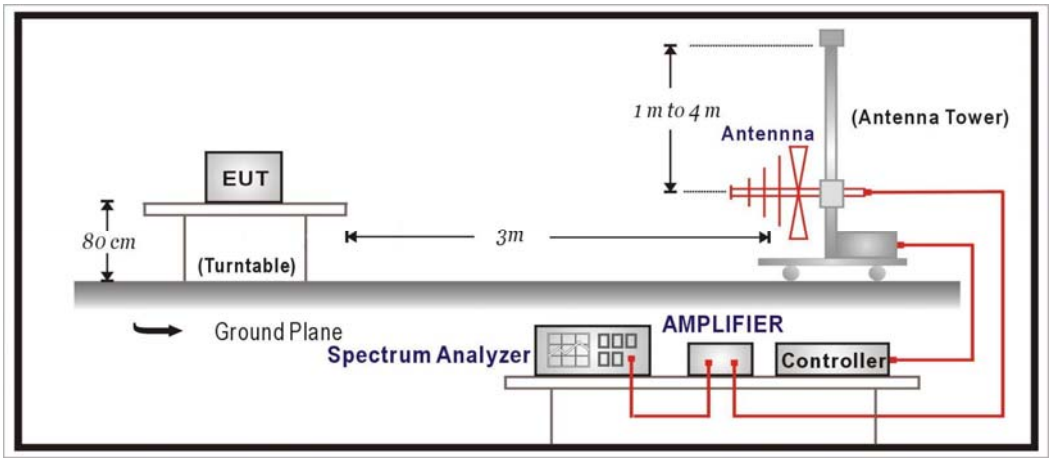
The following test equipment are used during the test:

Radiated Emission / CB4-H

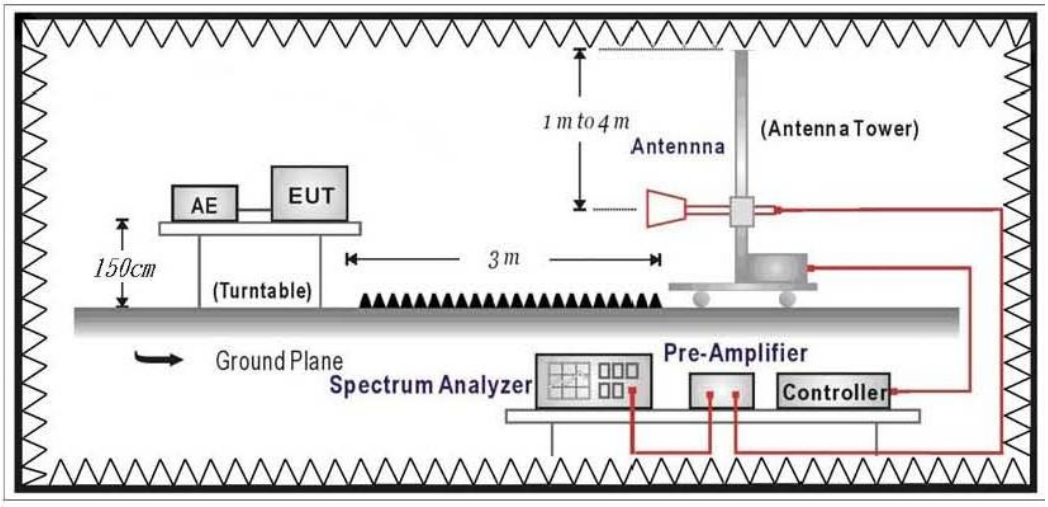
Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2017/11/21	2018/11/20
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/10	2019/01/09
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2017/02/15	2018/02/14
Pre-Amplifier	RF Bay Inc.	LNA-1330	12162511	2017/03/09	2018/03/08
Pre-Amplifier	EMCI	EMCI 1830I	980366	2018/01/08	2019/01/07
Pre-Amplifier	MITEQ	JS44-18004000-45-8P	2014754	2017/12/13	2018/12/12

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.
The EUT and its simulators are placed on a turn table which is 0.8 or 1.5 meter above ground.
The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.
On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

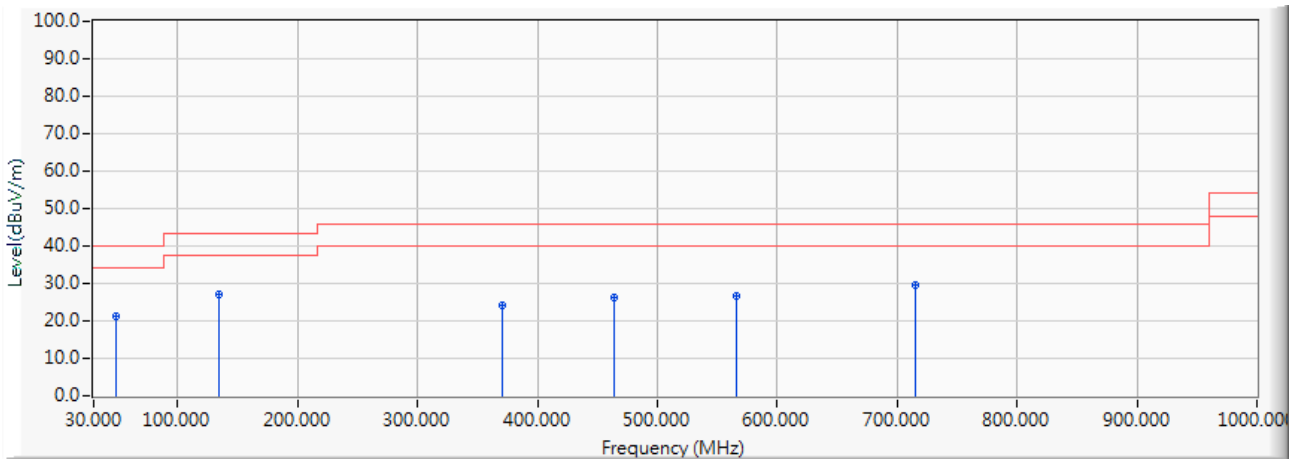
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

4.6. Test Result

30MHz-1GHz Spurious

Site : DEKRA Taiwan CB4-H	**Time : 2018/02/05**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

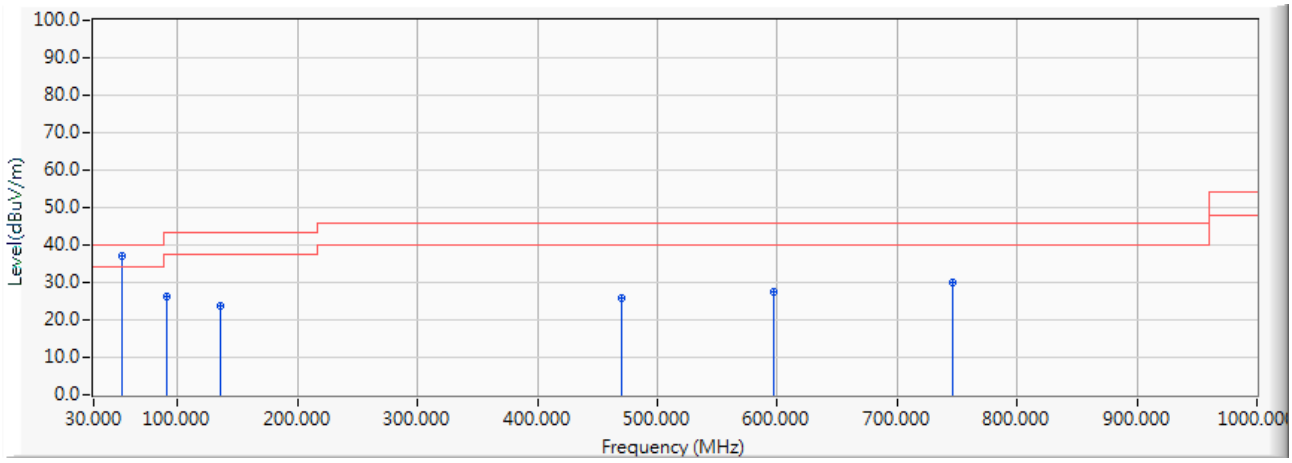


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		49.109	-25.161	46.429	21.268	-18.732	40.000	QUASIPEAK
2	*	135.051	-21.838	48.973	27.136	-16.364	43.500	QUASIPEAK
3		370.955	-16.883	41.247	24.364	-21.636	46.000	QUASIPEAK
4		463.590	-14.984	41.364	26.380	-19.620	46.000	QUASIPEAK
5		566.022	-13.648	40.374	26.726	-19.274	46.000	QUASIPEAK
6		715.596	-12.025	41.646	29.621	-16.379	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : DEKRA Taiwan CB4-H	**Time : 2018/02/05**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

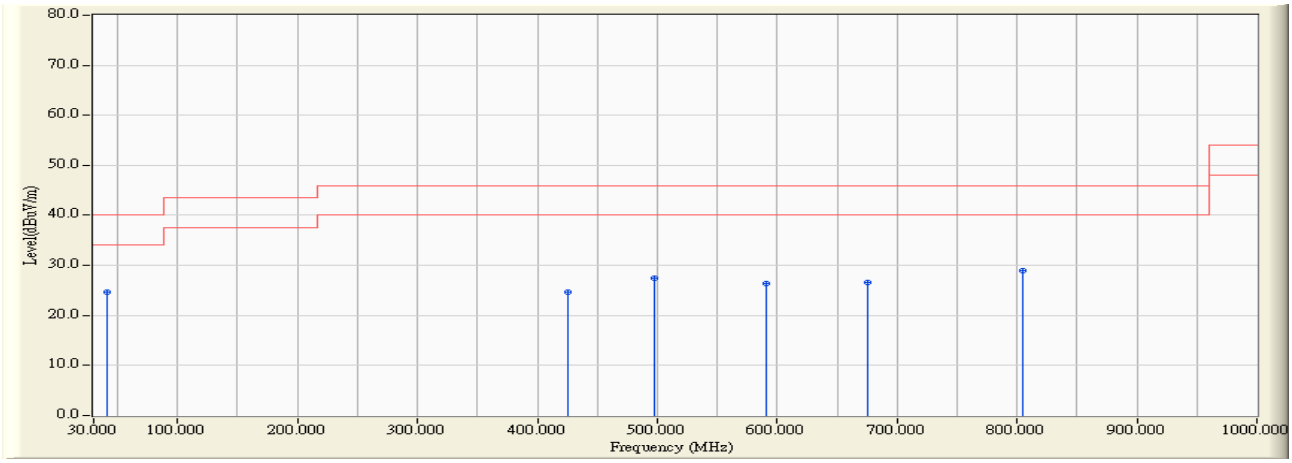


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	54.153	-26.784	63.797	37.012	-2.988	40.000	QUASIPEAK
2		90.625	-25.669	51.876	26.206	-17.294	43.500	QUASIPEAK
3		135.148	-21.838	45.671	23.832	-19.668	43.500	QUASIPEAK
4		470.477	-14.883	40.697	25.813	-20.187	46.000	QUASIPEAK
5		597.450	-13.270	40.962	27.692	-18.308	46.000	QUASIPEAK
6		746.927	-11.763	41.568	29.806	-16.194	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

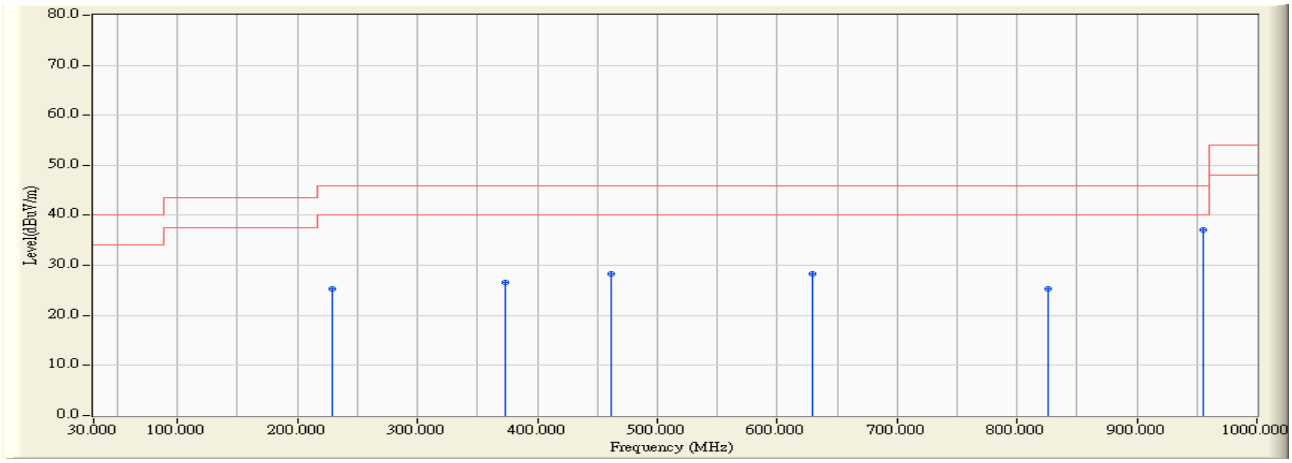


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	40.670	-16.811	41.445	24.635	-15.365	40.000	QUASIPEAK
2		425.275	-15.850	40.457	24.607	-21.393	46.000	QUASIPEAK
3		497.540	-14.467	42.020	27.553	-18.447	46.000	QUASIPEAK
4		590.660	-13.239	39.667	26.428	-19.572	46.000	QUASIPEAK
5		675.050	-12.400	38.956	26.557	-19.443	46.000	QUASIPEAK
6		804.545	-10.829	39.871	29.041	-16.959	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

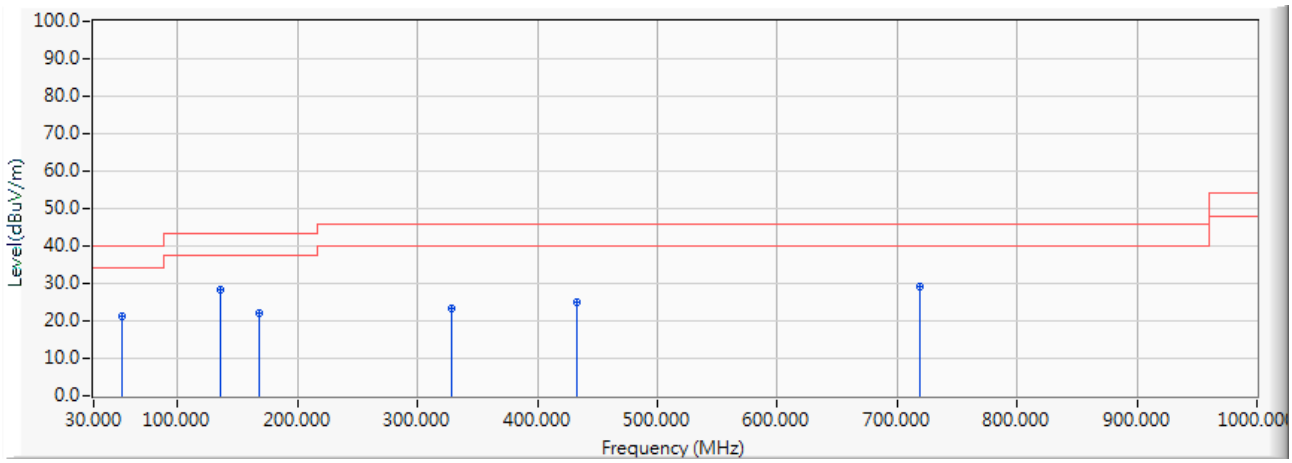


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		228.365	-21.642	46.983	25.341	-20.659	46.000	QUASIPEAK
2		372.895	-17.227	43.904	26.677	-19.323	46.000	QUASIPEAK
3		461.165	-15.120	43.471	28.350	-17.650	46.000	QUASIPEAK
4		628.975	-12.872	41.192	28.319	-17.681	46.000	QUASIPEAK
5		825.885	-10.668	35.902	25.234	-20.766	46.000	QUASIPEAK
6	*	954.895	-8.940	45.946	37.006	-8.994	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : DEKRA Taiwan CB4-H	**Time : 2018/02/05**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

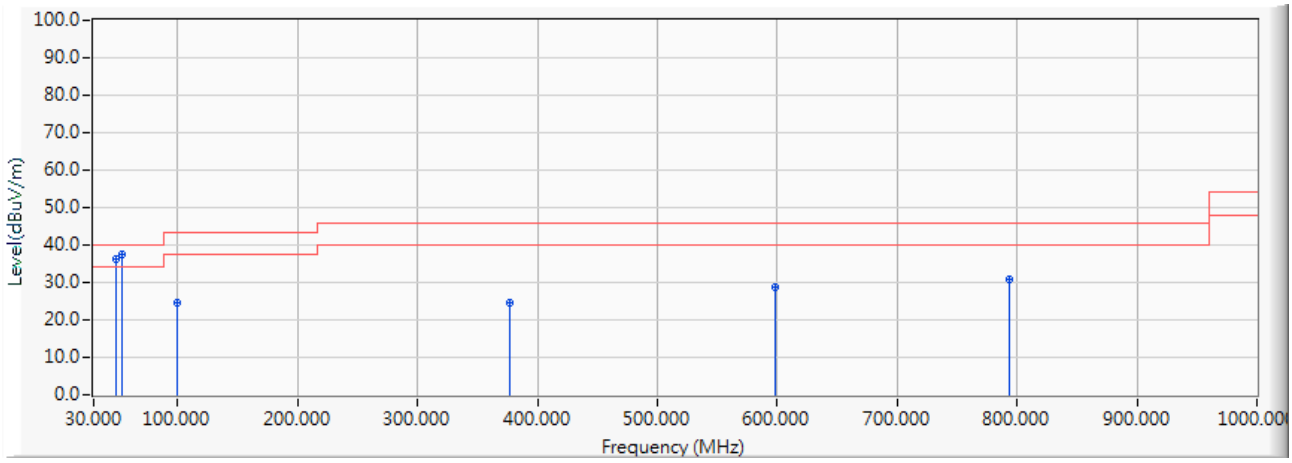


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		53.086	-26.503	47.564	21.061	-18.939	40.000	QUASIPEAK
2	*	135.148	-21.838	50.050	28.211	-15.289	43.500	QUASIPEAK
3		167.546	-23.490	45.562	22.072	-21.428	43.500	QUASIPEAK
4		328.469	-18.188	41.567	23.379	-22.621	46.000	QUASIPEAK
5		432.938	-15.430	40.245	24.815	-21.185	46.000	QUASIPEAK
6		719.282	-12.003	40.998	28.994	-17.006	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : DEKRA Taiwan CB4-H	**Time : 2018/02/05**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**



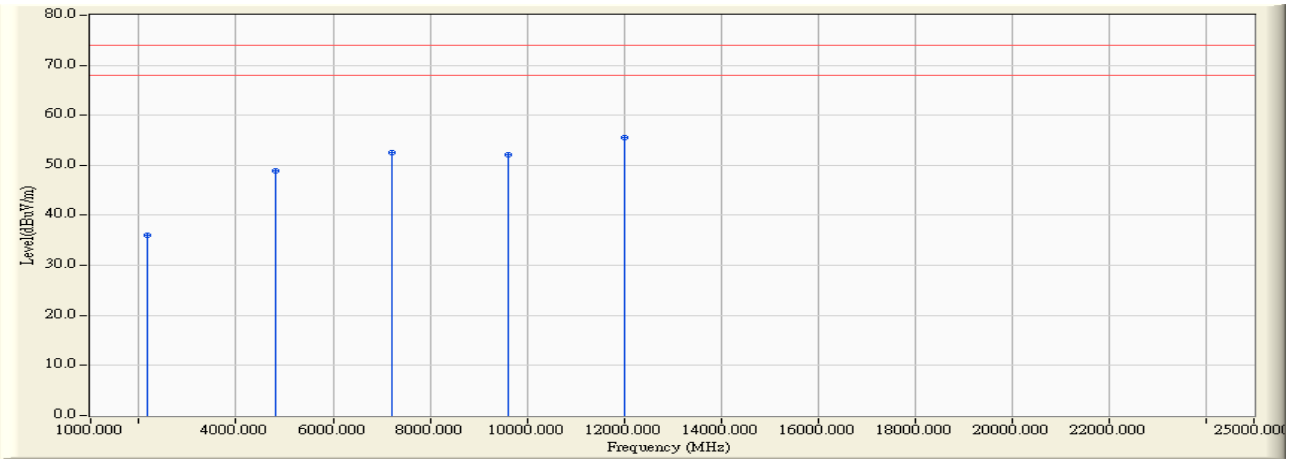
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		49.109	-25.161	61.507	36.346	-3.654	40.000	QUASIPEAK
2	*	54.250	-26.810	64.173	37.363	-2.637	40.000	QUASIPEAK
3		99.258	-23.720	48.317	24.596	-18.904	43.500	QUASIPEAK
4		376.775	-16.702	41.434	24.732	-21.268	46.000	QUASIPEAK
5		598.905	-13.266	42.157	28.891	-17.109	46.000	QUASIPEAK
6		793.972	-11.201	41.883	30.682	-15.318	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

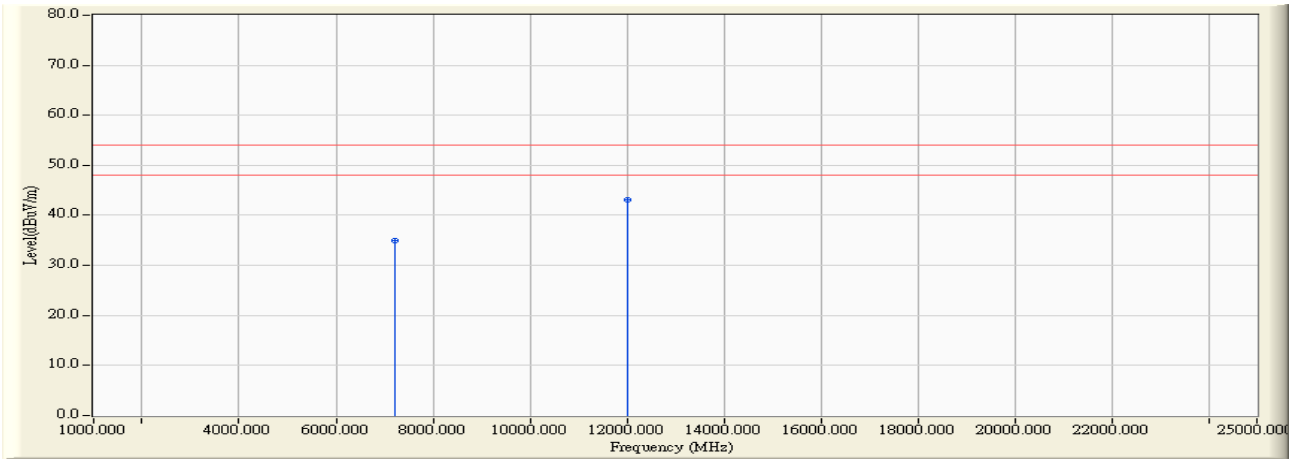


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2182.500	-1.309	37.440	36.131	-37.869	74.000	PEAK
2		4800.960	7.377	41.450	48.827	-25.173	74.000	PEAK
3		7202.800	15.896	36.720	52.616	-21.384	74.000	PEAK
4		9604.980	21.723	30.340	52.063	-21.937	74.000	PEAK
5	*	12007.230	26.137	29.490	55.628	-18.372	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

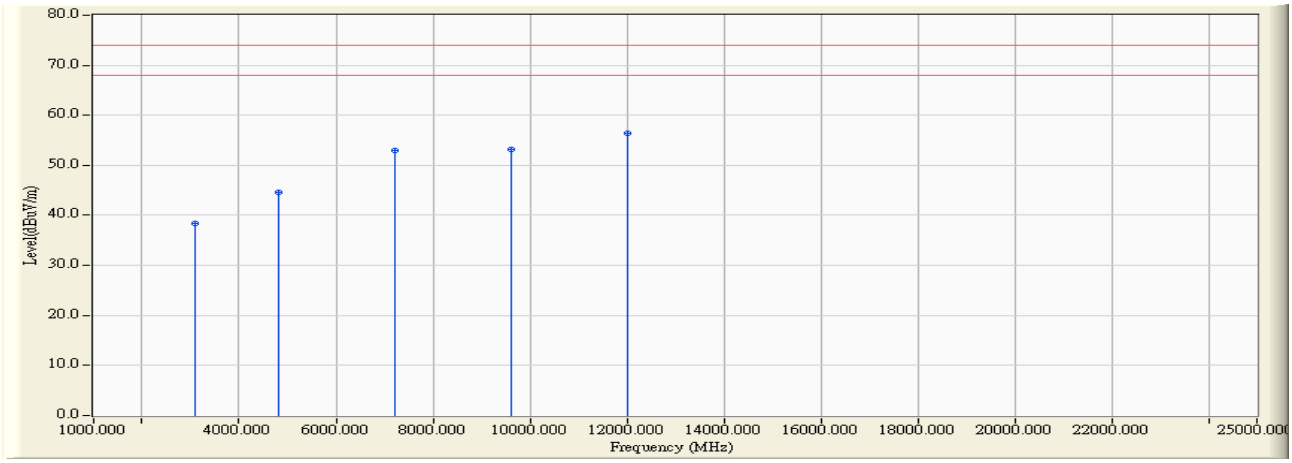


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		7206.550	15.914	18.950	34.864	-19.136	54.000	AVERAGE
2	*	12007.230	26.137	16.880	43.018	-10.982	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

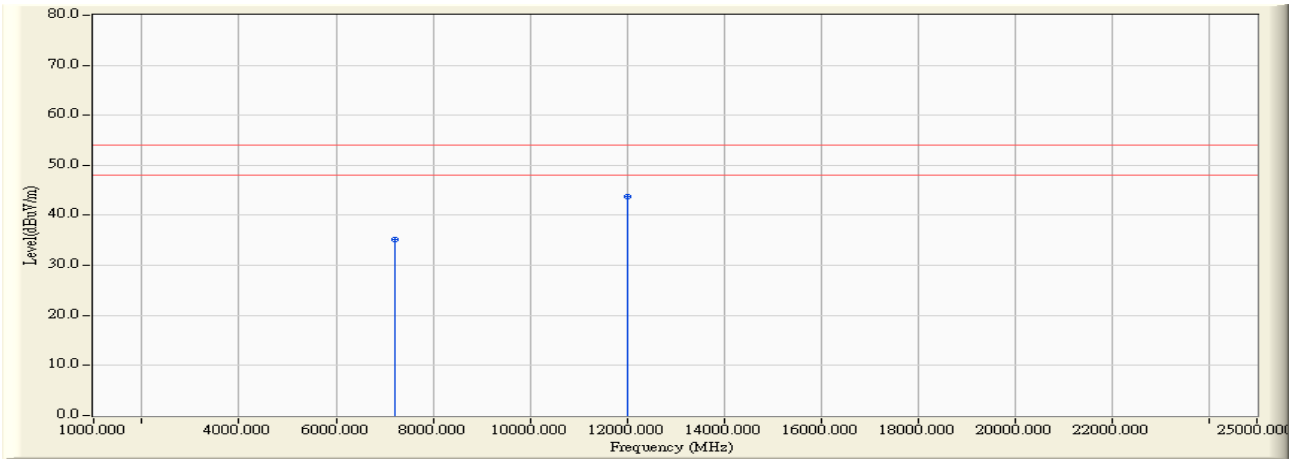


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		3101.500	1.997	36.500	38.497	-35.503	74.000	PEAK
2		4804.350	7.385	37.140	44.526	-29.474	74.000	PEAK
3		7207.300	15.918	37.110	53.027	-20.973	74.000	PEAK
4		9609.350	21.735	31.350	53.086	-20.914	74.000	PEAK
5	*	12012.130	26.129	30.300	56.429	-17.571	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

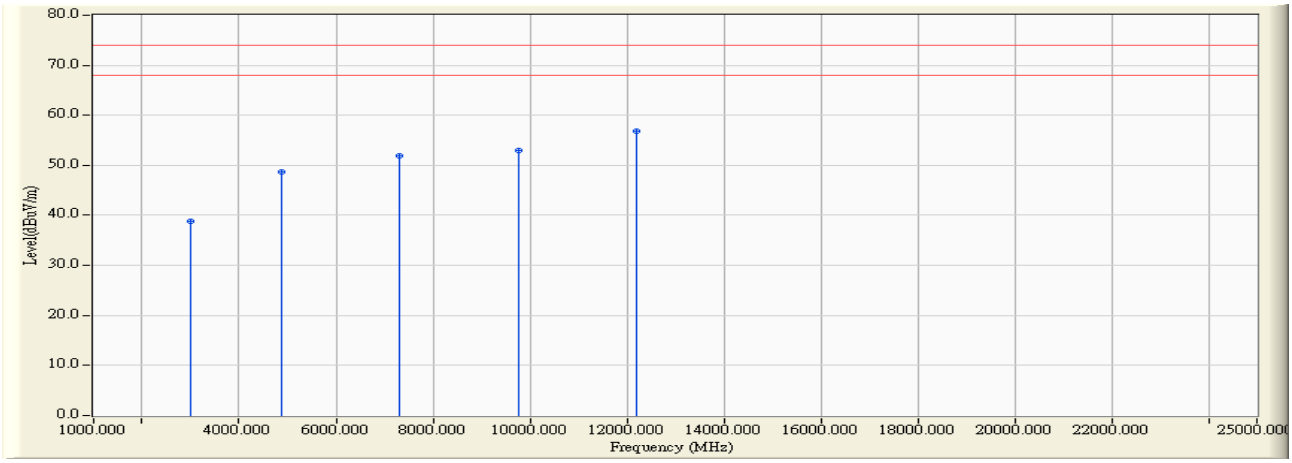


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		7207.300	15.918	19.220	35.137	-18.863	54.000	AVERAGE
2	*	12012.580	26.127	17.580	43.708	-10.292	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

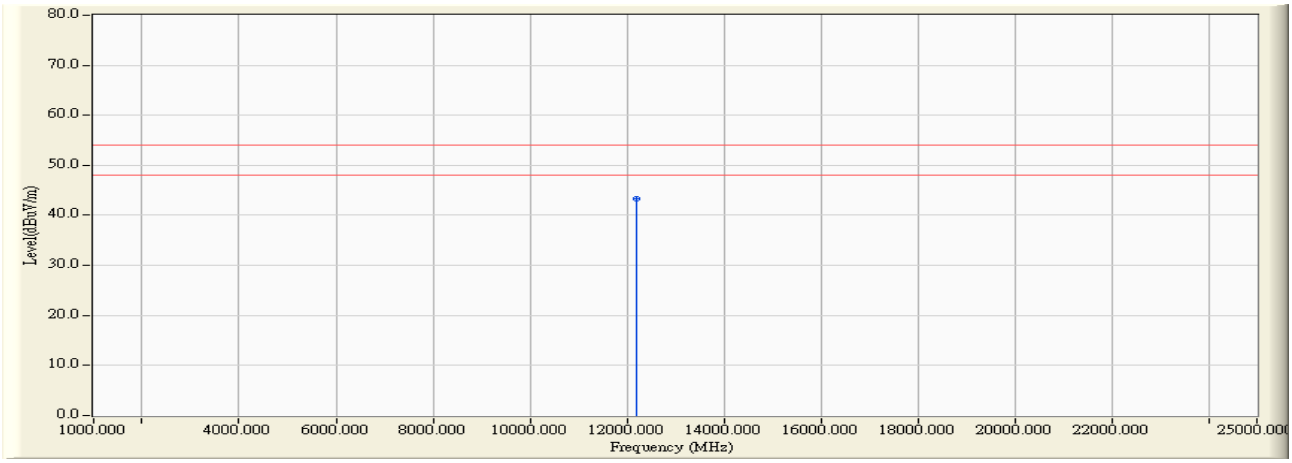


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2988.000	1.780	37.080	38.859	-35.141	74.000	PEAK
2		4881.300	7.576	41.030	48.606	-25.394	74.000	PEAK
3		7320.420	16.428	35.380	51.808	-22.192	74.000	PEAK
4		9758.200	22.156	30.730	52.885	-21.115	74.000	PEAK
5	*	12199.065	25.778	31.050	56.827	-17.173	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

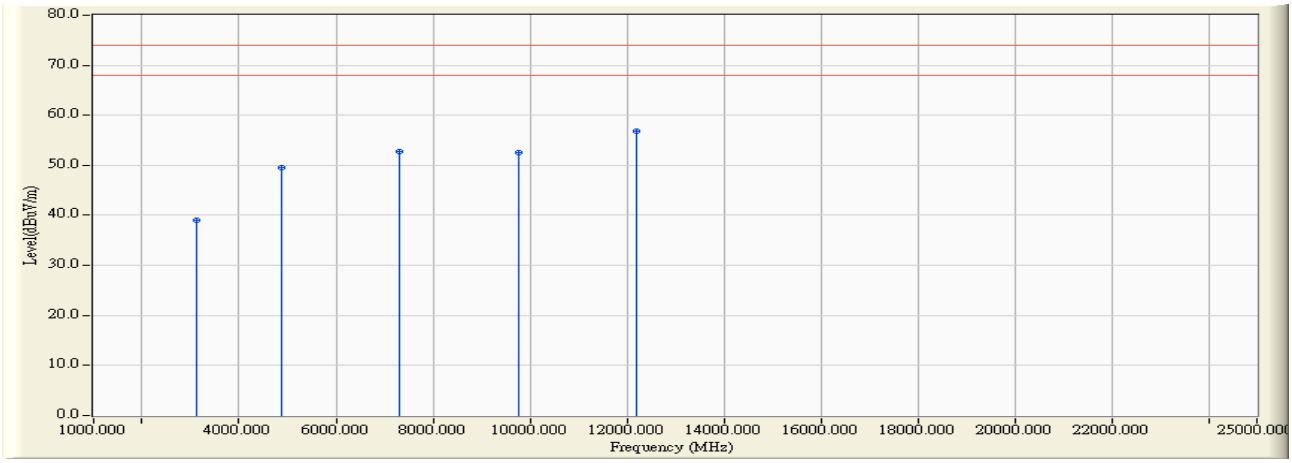


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	12199.065	25.778	17.650	43.427	-10.573	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

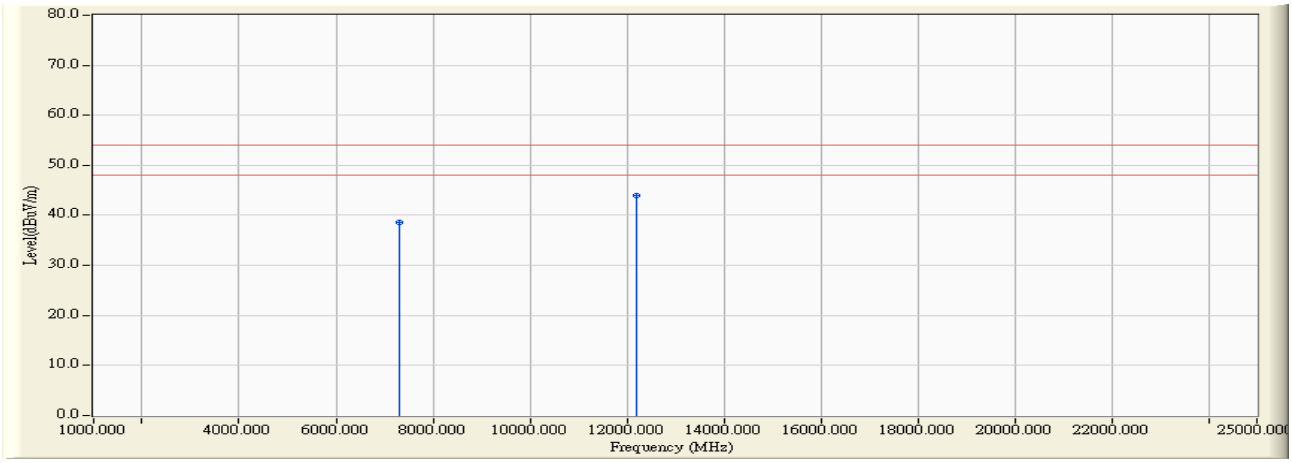


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		3138.000	2.054	36.890	38.944	-35.056	74.000	PEAK
2		4879.990	7.573	42.050	49.623	-24.377	74.000	PEAK
3		7320.200	16.428	36.240	52.667	-21.333	74.000	PEAK
4		9759.990	22.159	30.440	52.599	-21.401	74.000	PEAK
5	*	12199.900	25.775	31.090	56.865	-17.135	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

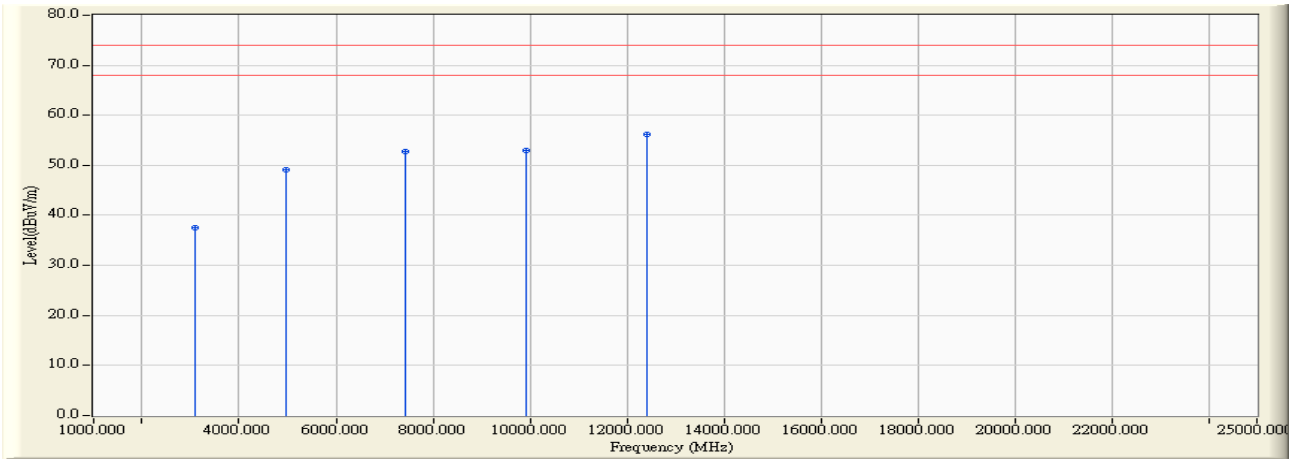


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		7320.120	16.427	22.220	38.647	-15.353	54.000	AVERAGE
2	*	12199.900	25.775	18.230	44.005	-9.995	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

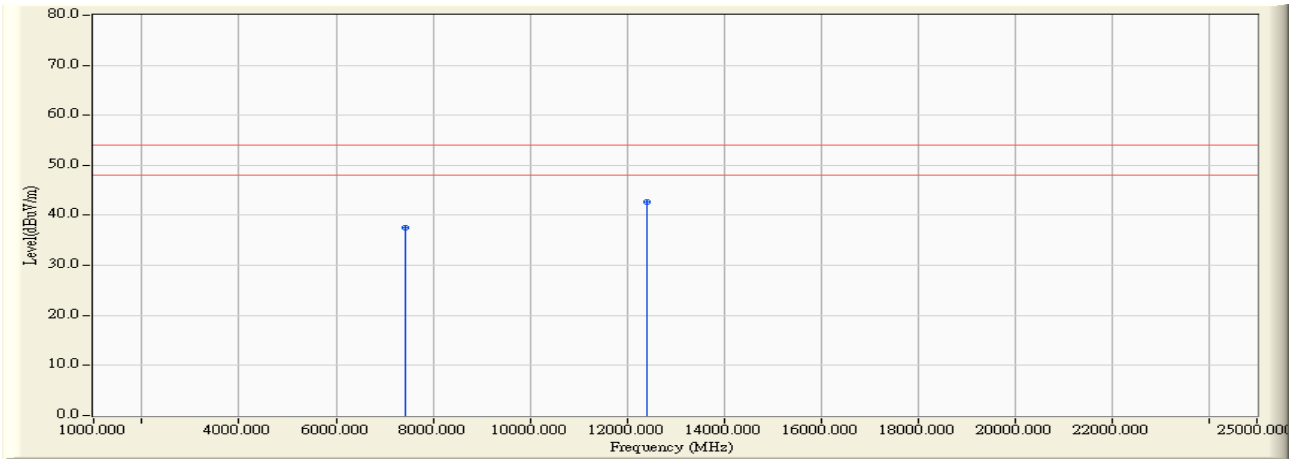


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		3104.400	2.002	35.620	37.622	-36.378	74.000	PEAK
2		4959.990	7.771	41.320	49.090	-24.910	74.000	PEAK
3		7440.000	16.948	35.860	52.808	-21.192	74.000	PEAK
4		9920.000	22.512	30.410	52.922	-21.078	74.000	PEAK
5	*	12400.000	25.408	30.800	56.208	-17.792	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

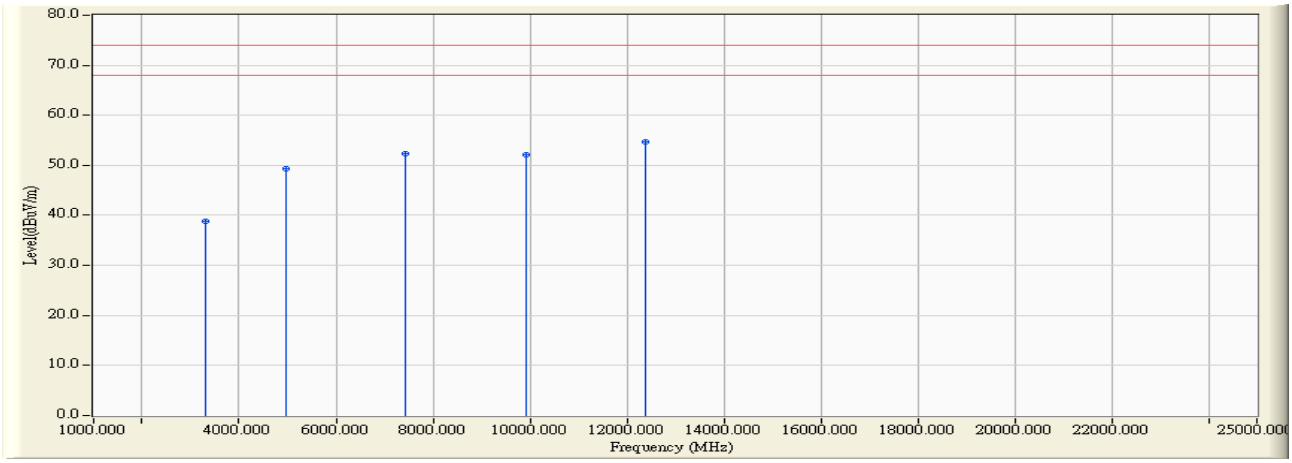


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		7440.000	16.948	20.550	37.498	-16.502	54.000	AVERAGE
2	*	12400.000	25.408	17.360	42.768	-11.232	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

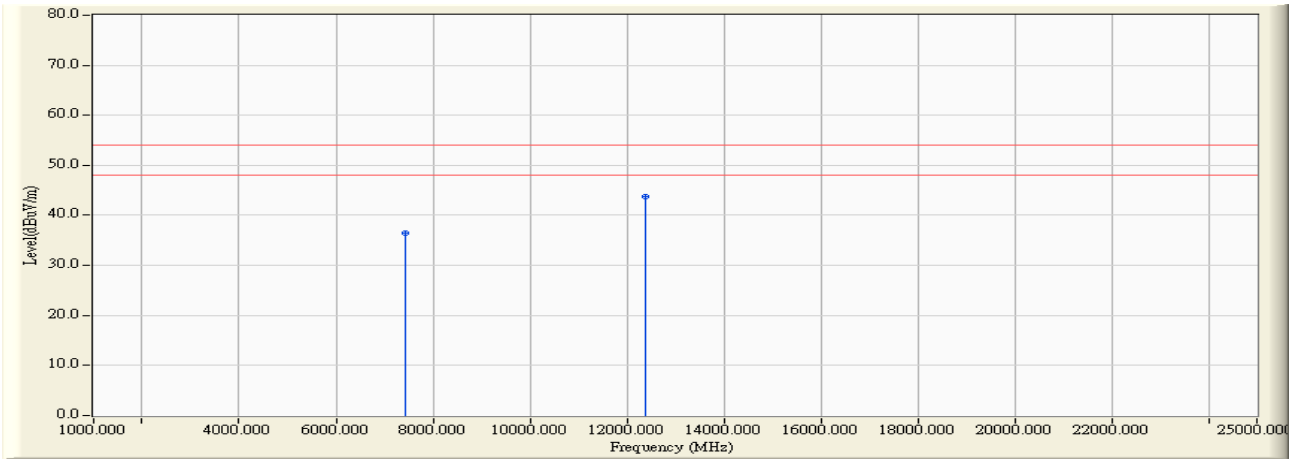


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		3322.000	2.322	36.410	38.732	-35.268	74.000	PEAK
2		4964.740	7.782	41.520	49.302	-24.698	74.000	PEAK
3		7442.920	16.960	35.450	52.411	-21.589	74.000	PEAK
4		9916.310	22.504	29.690	52.194	-21.806	74.000	PEAK
5	*	12396.000	25.414	29.360	54.775	-19.225	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		7442.920	16.960	19.580	36.541	-17.459	54.000	AVERAGE
2	*	12396.000	25.414	18.430	43.845	-10.155	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipment is used during the test:

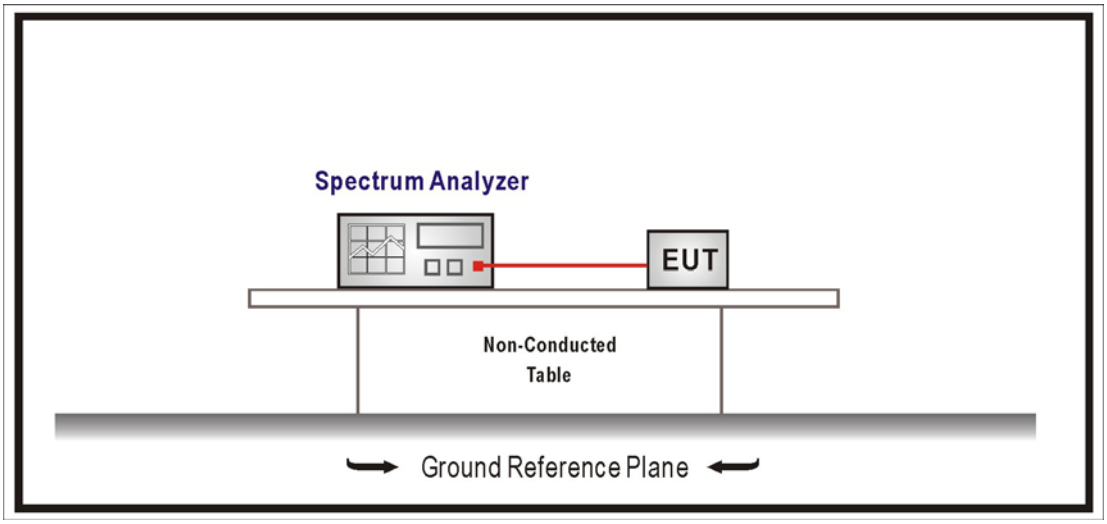
RF antenna conducted test / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12

Note: All equipment that need to calibrate are with calibration period of 1 year.

5.2. Test Setup

RF Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. 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)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

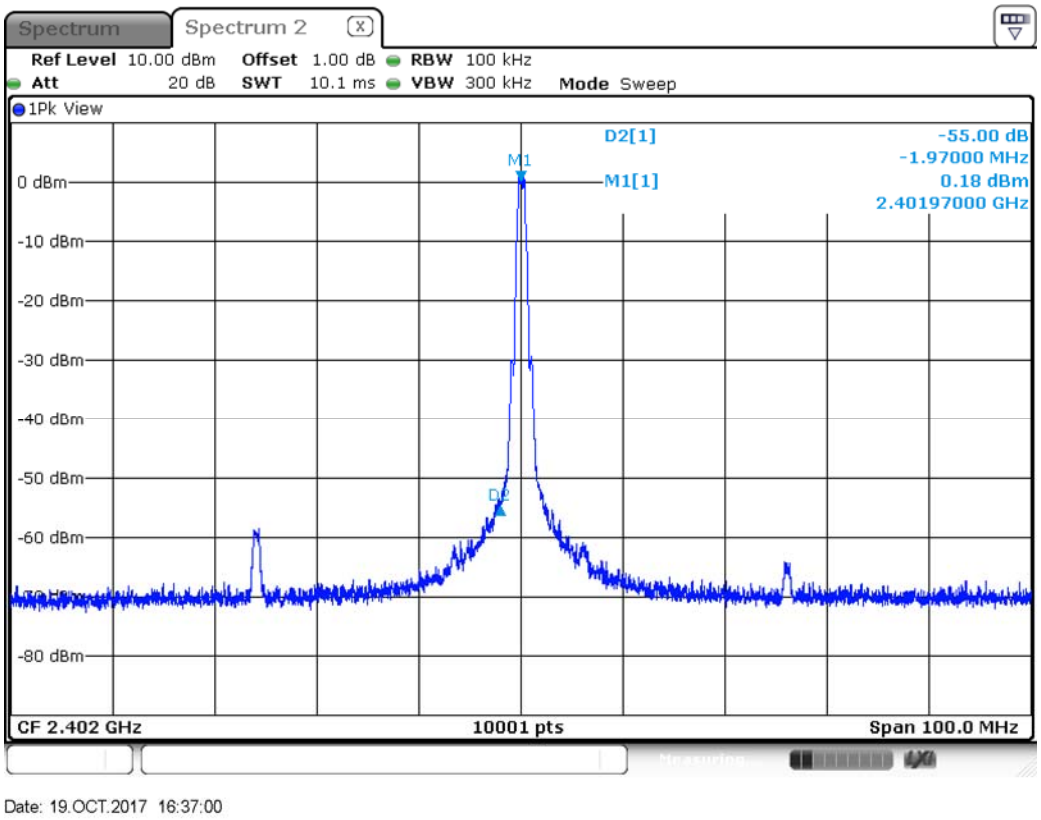
5.6. Test Result

Product	TX-only beacon		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/10/19	Test Site	SR10-H

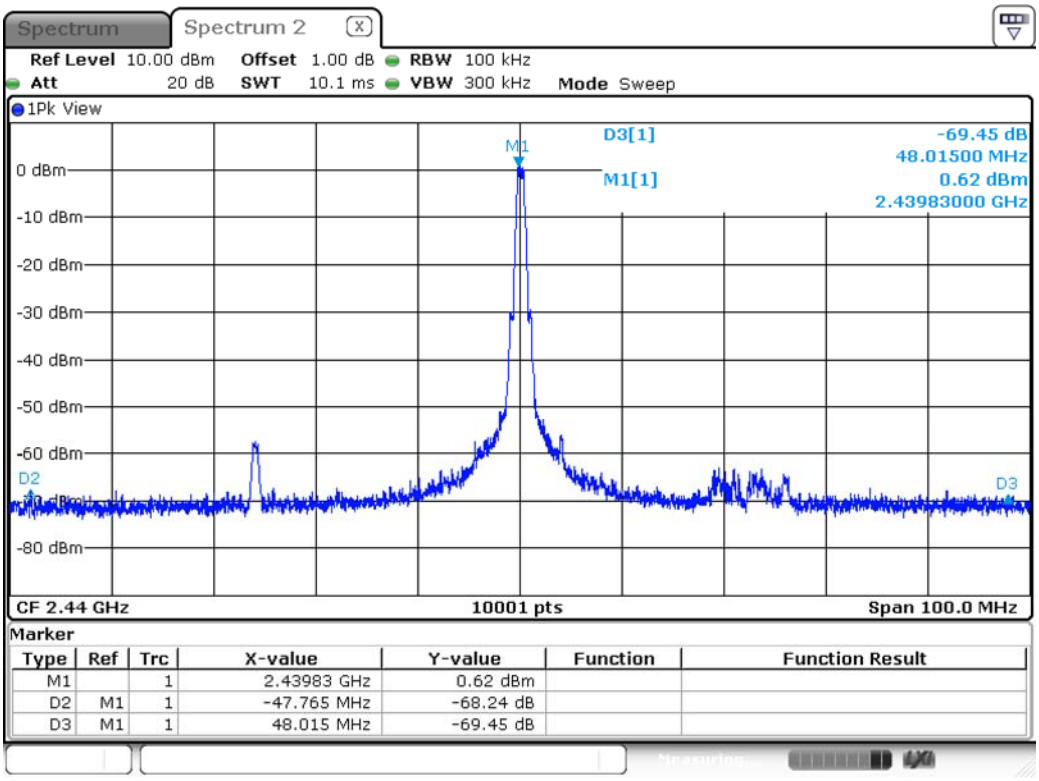
GFSK

Channel	Frequency (MHz)	Measure Level (dBc)	Limit (dBc)	Result
00	2402	55.000	≧20	Pass
19	2440	68.240	≧20	Pass
39	2480	59.520	≧20	Pass

Channel 00

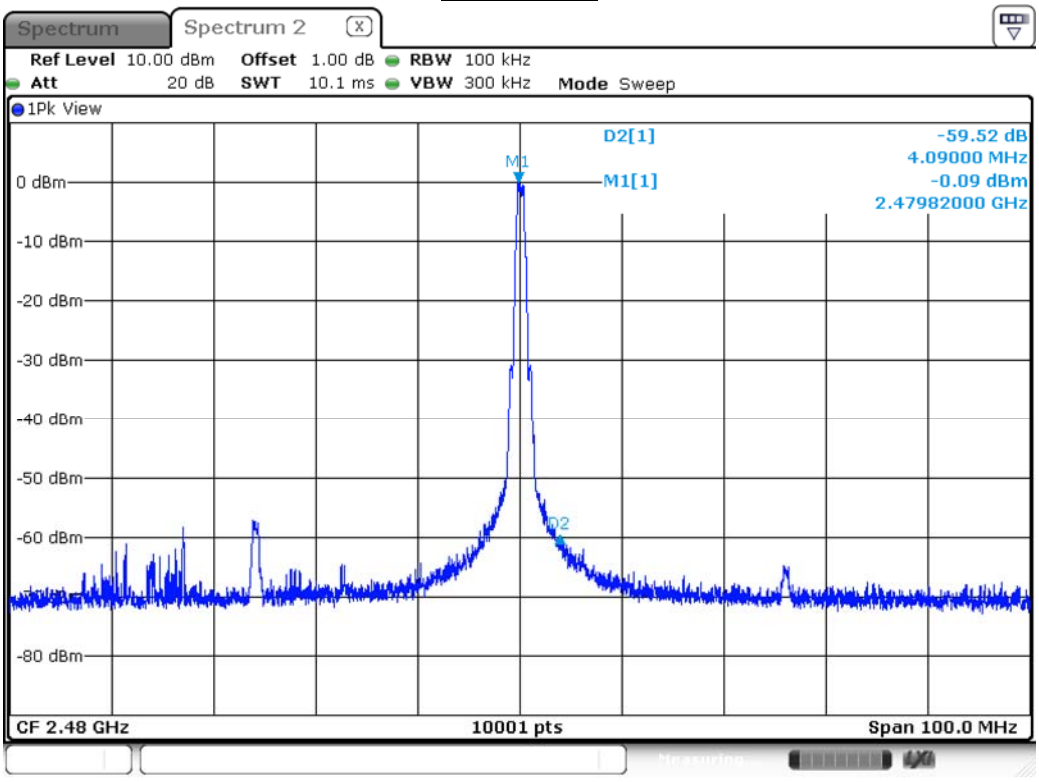


Channel 19



Date: 19.OCT.2017 17:43:24

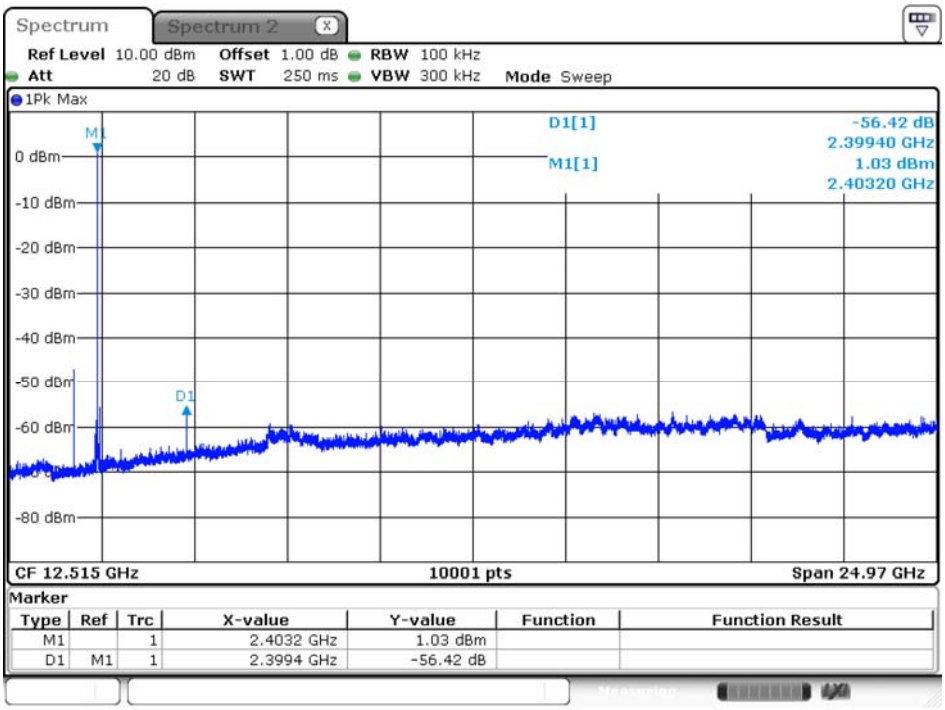
Channel 39



Date: 19.OCT.2017 16:45:47

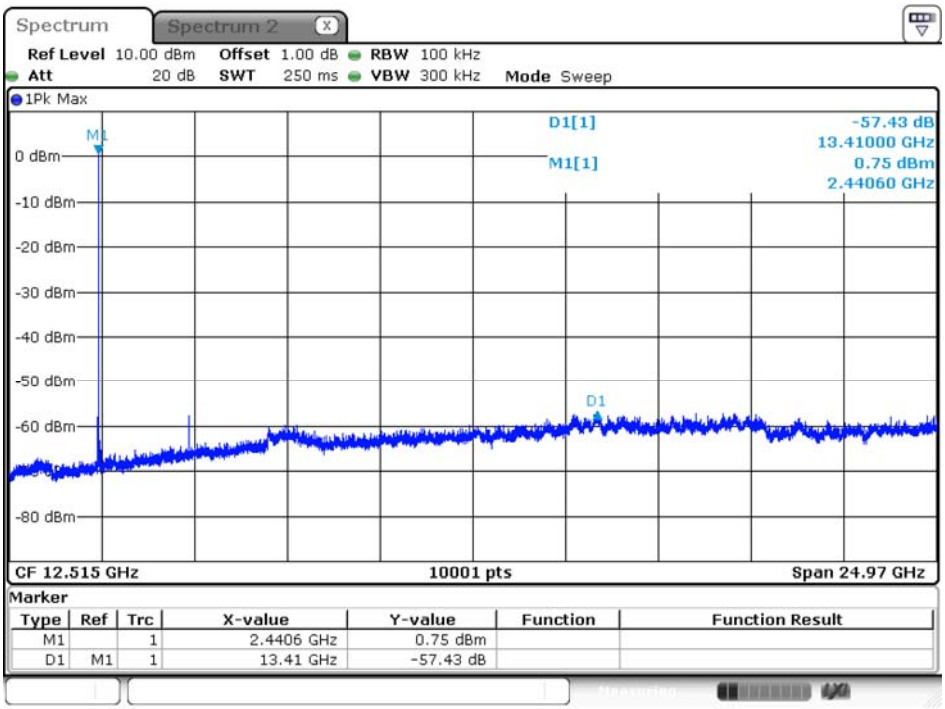
Product	TX-only beacon		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/10/19	Test Site	SR10-H

Channel 00 (30MHz-25GHz)



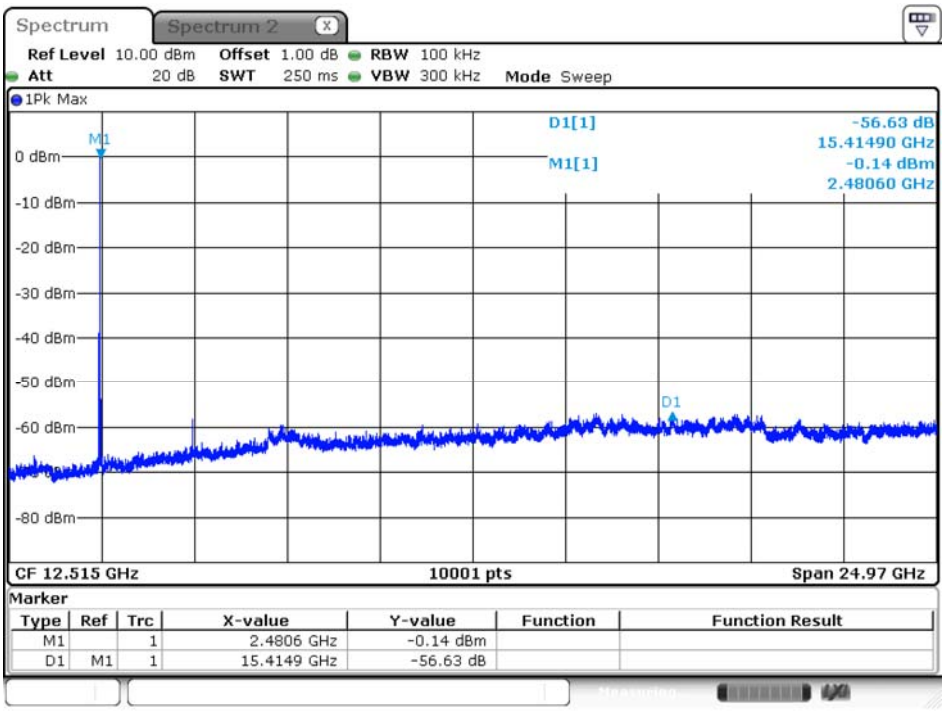
Date: 19.OCT.2017 16:30:16

Channel 19 (30MHz-25GHz)



Date: 19.OCT.2017 16:38:39

Channel 39 (30MHz-25GHz)



Date: 19.OCT.2017 16:44:42

6. Band Edge

6.1. Test Equipment

The following test equipment are used during the test:

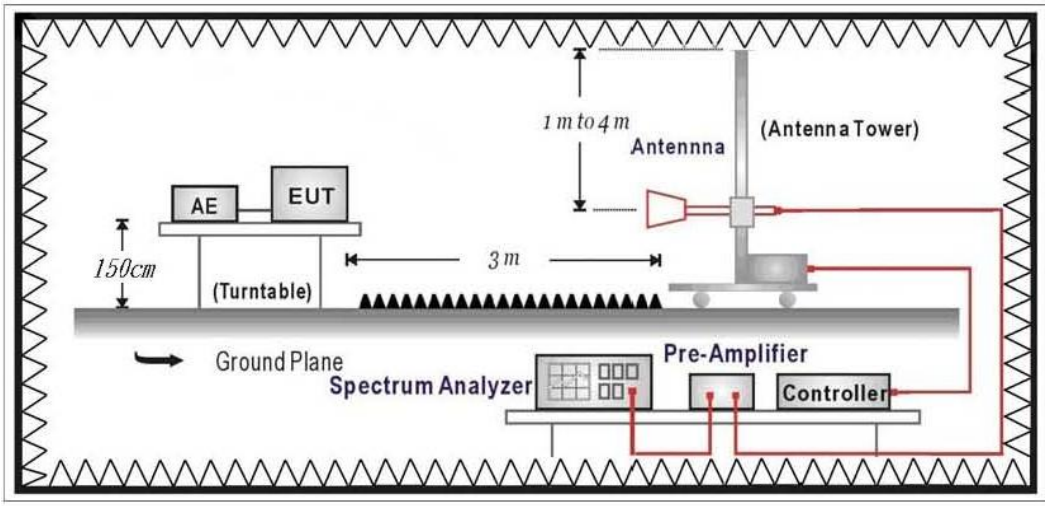
Band Edge / CB4-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal Analyzer	R&S	FSVA40	101455	2016/11/28	2017/11/27
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12
Bilog Antenna	Teseq	CBL6112D	23191	2017/06/28	2018/06/27
Horn Antenna	Schwarzbeck	BBHA 9120D	639	2017/06/14	2018/06/13
Horn Antenna	Schwarzbeck	BBHA 9170	202	2017/02/15	2018/02/14
Pre-Amplifier	RF Bay Inc.	LNA-1330	12162511	2017/03/09	2018/03/08
Pre-Amplifier	EMCI	EMCI 1830I	980366	2017/01/23	2018/01/22
Pre-Amplifier	MITEQ	JS44-45-8P	2014754	2016/12/26	2017/12/25

Note: All equipment that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

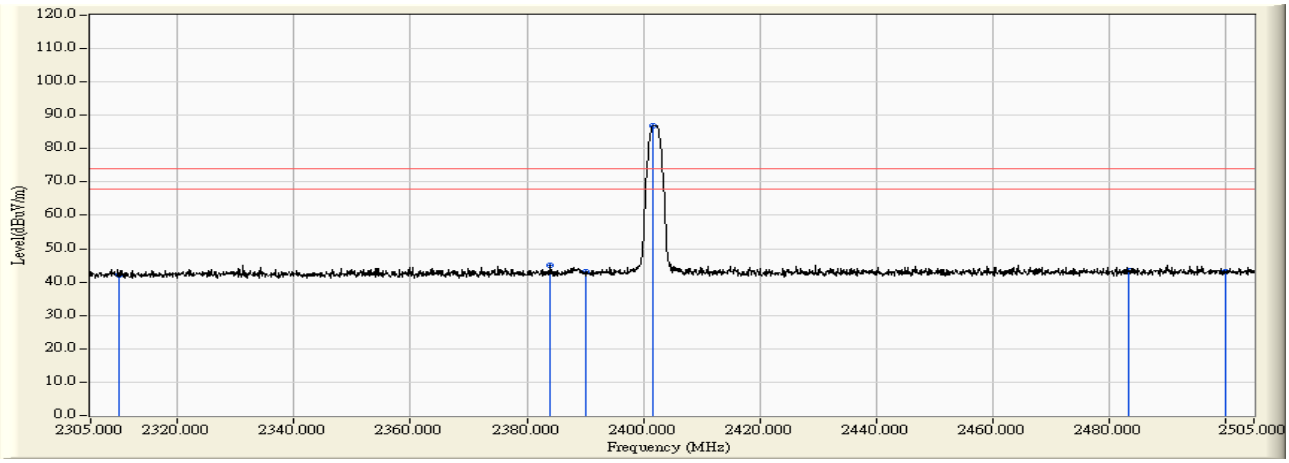
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

6.6. Test Result

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

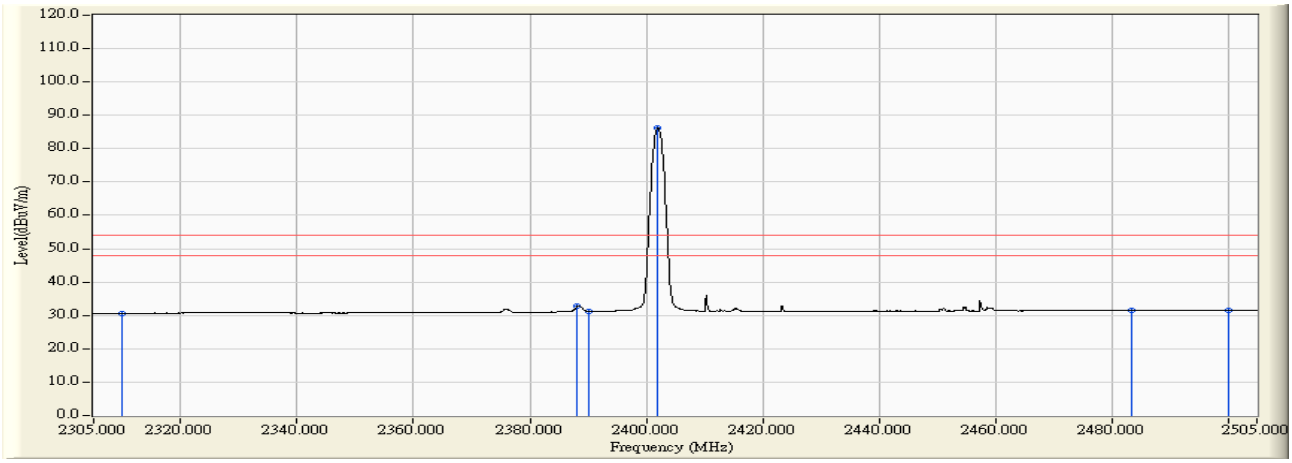


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	28.572	42.149	-31.851	74.000	PEAK
2		2383.900	14.002	30.922	44.925	-29.075	74.000	PEAK
3		2390.000	14.038	28.945	42.983	-31.017	74.000	PEAK
4	*	2401.700	14.105	72.816	86.921	12.921	74.000	PEAK
5		2483.500	14.568	28.706	43.275	-30.725	74.000	PEAK
6		2500.000	14.661	28.435	43.096	-30.904	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

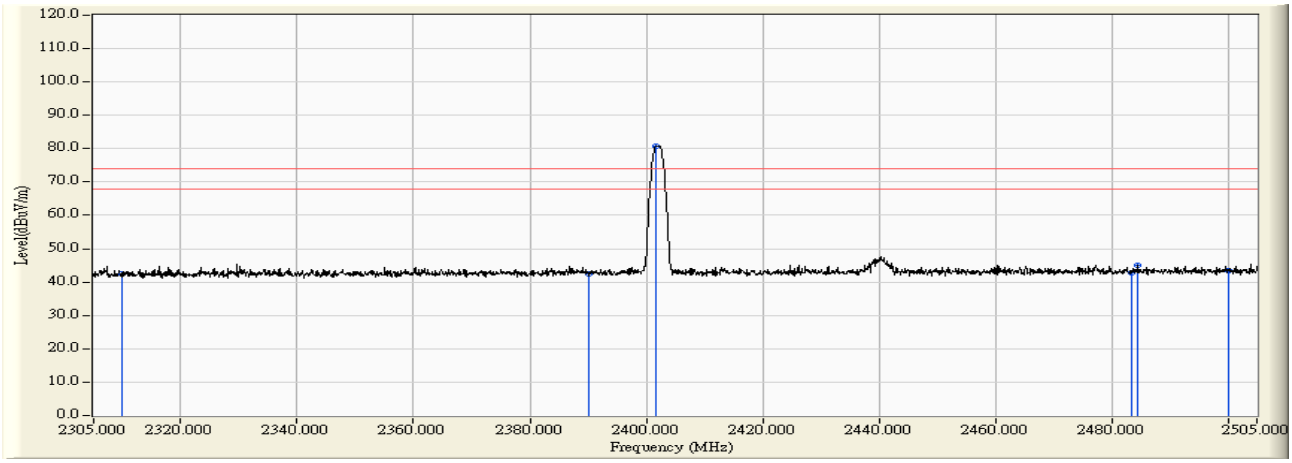


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	17.014	30.591	-23.409	54.000	AVERAGE
2		2388.200	14.029	18.761	32.789	-21.211	54.000	AVERAGE
3		2390.000	14.038	17.165	31.203	-22.797	54.000	AVERAGE
4	*	2402.000	14.108	72.225	86.332	32.332	54.000	AVERAGE
5		2483.500	14.568	16.980	31.549	-22.451	54.000	AVERAGE
6		2500.000	14.661	16.799	31.460	-22.540	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

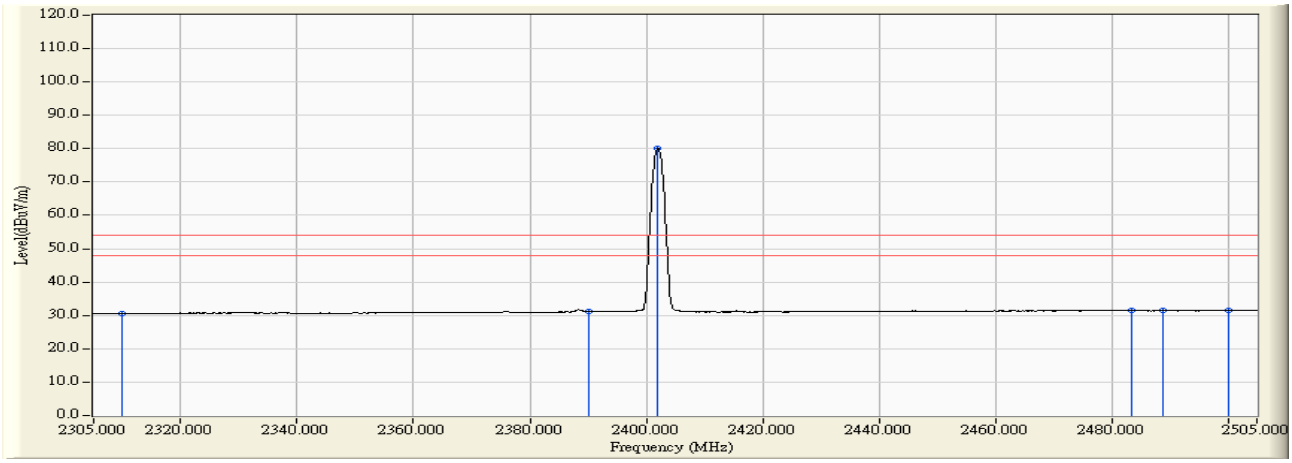


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	28.849	42.426	-31.574	74.000	PEAK
2		2390.000	14.038	28.535	42.573	-31.427	74.000	PEAK
3	*	2401.700	14.105	66.772	80.877	6.877	74.000	PEAK
4		2483.500	14.568	28.275	42.844	-31.156	74.000	PEAK
5		2484.600	14.575	30.520	45.095	-28.905	74.000	PEAK
6		2500.000	14.661	28.784	43.445	-30.555	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2402MHz**

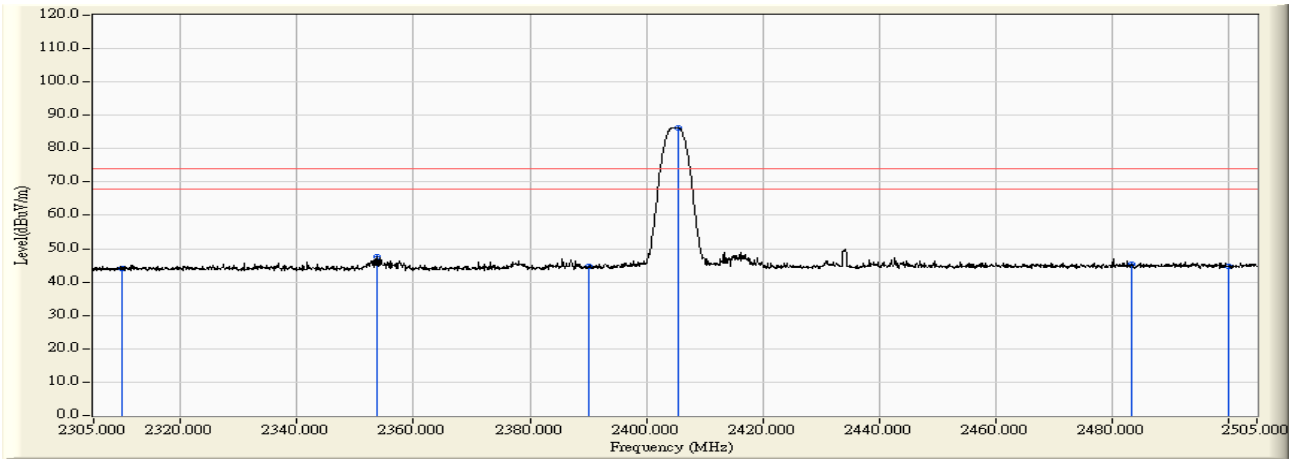


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	16.945	30.522	-23.478	54.000	AVERAGE
2		2390.000	14.038	17.057	31.095	-22.905	54.000	AVERAGE
3	*	2402.000	14.108	66.115	80.222	26.222	54.000	AVERAGE
4		2483.500	14.568	16.869	31.438	-22.562	54.000	AVERAGE
5		2488.800	14.599	16.870	31.469	-22.531	54.000	AVERAGE
6		2500.000	14.661	16.731	31.392	-22.608	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

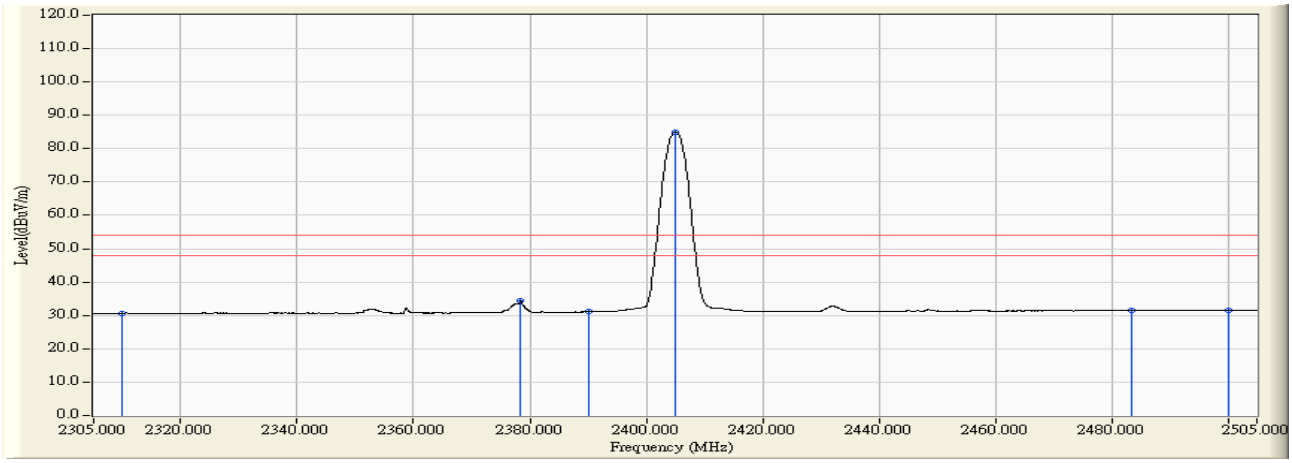


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	30.574	44.151	-29.849	74.000	PEAK
2		2353.600	13.829	33.706	47.534	-26.466	74.000	PEAK
3		2390.000	14.038	30.572	44.610	-29.390	74.000	PEAK
4	*	2405.500	14.127	72.119	86.246	12.246	74.000	PEAK
5		2483.500	14.568	30.746	45.315	-28.685	74.000	PEAK
6		2500.000	14.661	30.024	44.685	-29.315	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

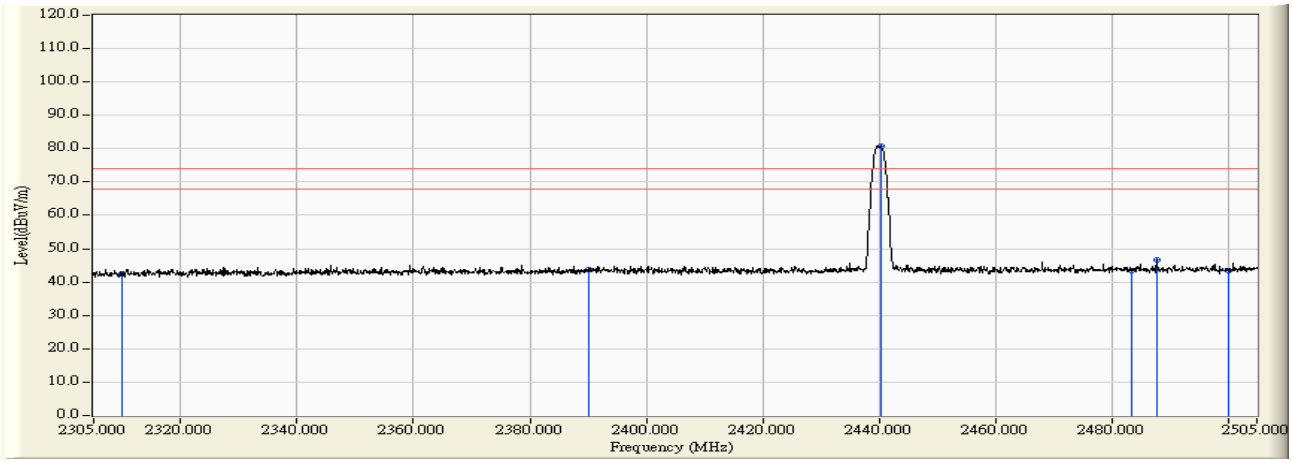


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	17.056	30.633	-23.367	54.000	AVERAGE
2		2378.400	13.971	20.350	34.321	-19.679	54.000	AVERAGE
3		2390.000	14.038	17.035	31.073	-22.927	54.000	AVERAGE
4	*	2405.000	14.124	70.967	85.091	31.091	54.000	AVERAGE
5		2483.500	14.568	16.925	31.494	-22.506	54.000	AVERAGE
6		2500.000	14.661	16.851	31.512	-22.488	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

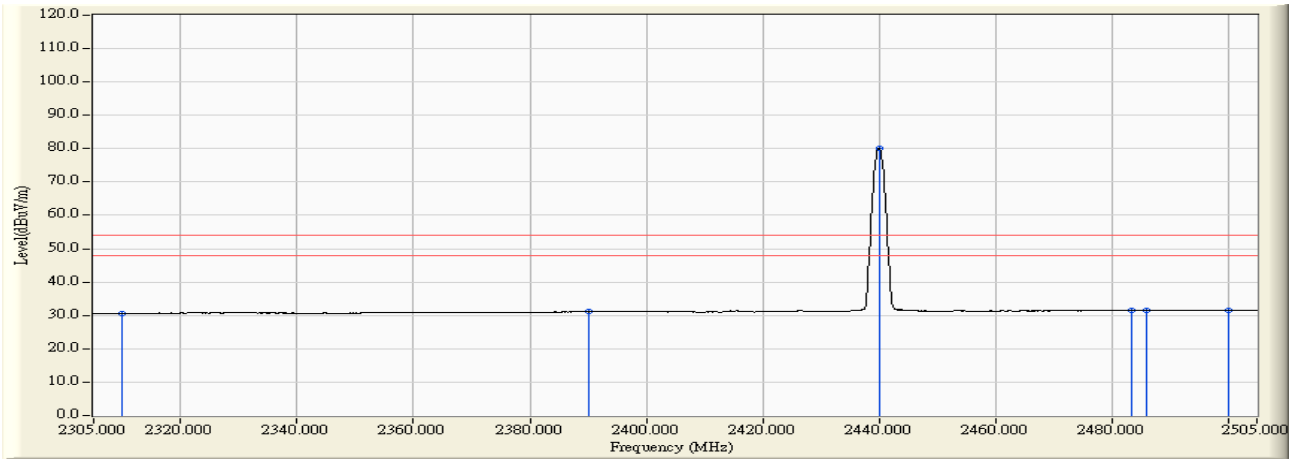


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	28.831	42.408	-31.592	74.000	PEAK
2		2390.000	14.038	29.723	43.761	-30.239	74.000	PEAK
3	*	2440.400	14.325	66.304	80.629	6.629	74.000	PEAK
4		2483.500	14.568	28.967	43.536	-30.464	74.000	PEAK
5		2487.700	14.592	32.084	46.676	-27.324	74.000	PEAK
6		2500.000	14.661	28.840	43.501	-30.499	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2440MHz**

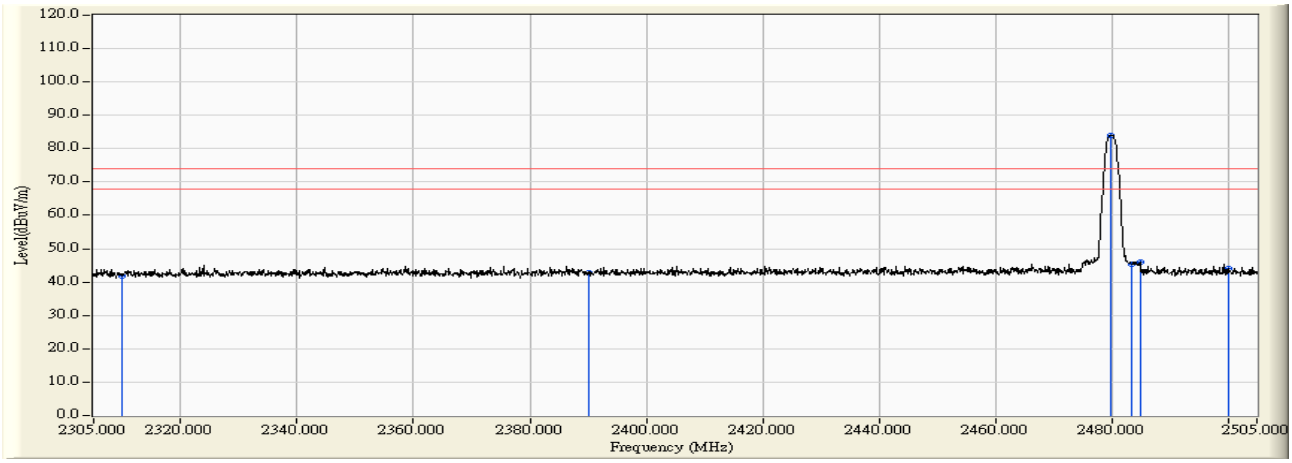


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	16.989	30.566	-23.434	54.000	AVERAGE
2		2390.000	14.038	17.036	31.074	-22.926	54.000	AVERAGE
3	*	2440.000	14.322	65.689	80.011	26.011	54.000	AVERAGE
4		2483.500	14.568	16.925	31.494	-22.506	54.000	AVERAGE
5		2485.900	14.583	16.884	31.466	-22.534	54.000	AVERAGE
6		2500.000	14.661	16.792	31.453	-22.547	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

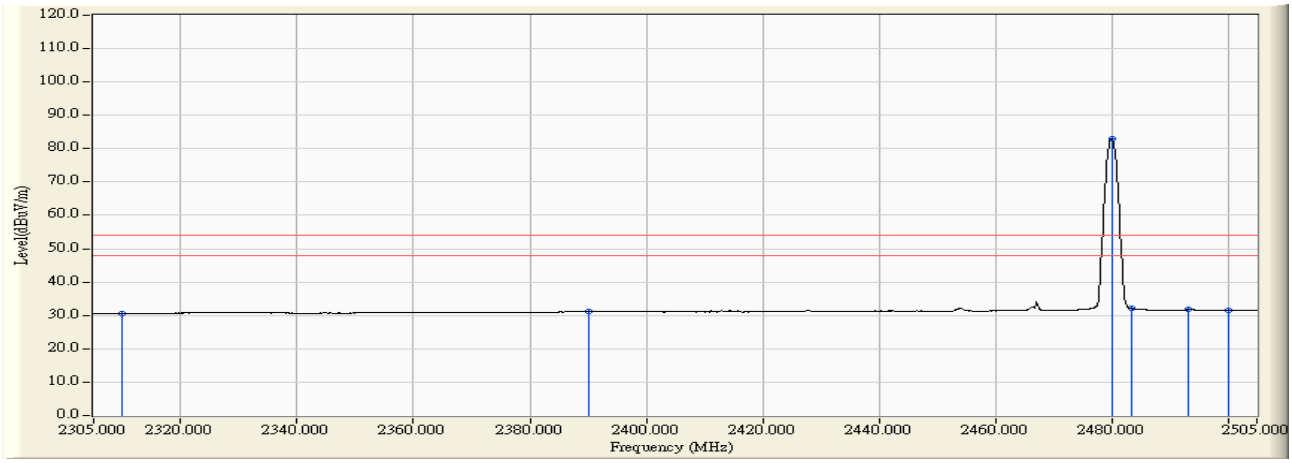


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	28.121	41.698	-32.302	74.000	PEAK
2		2390.000	14.038	28.641	42.679	-31.321	74.000	PEAK
3	*	2479.800	14.549	69.414	83.962	9.962	74.000	PEAK
4		2483.500	14.568	30.852	45.421	-28.579	74.000	PEAK
5		2484.900	14.577	31.280	45.857	-28.143	74.000	PEAK
6		2500.000	14.661	29.260	43.921	-30.079	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

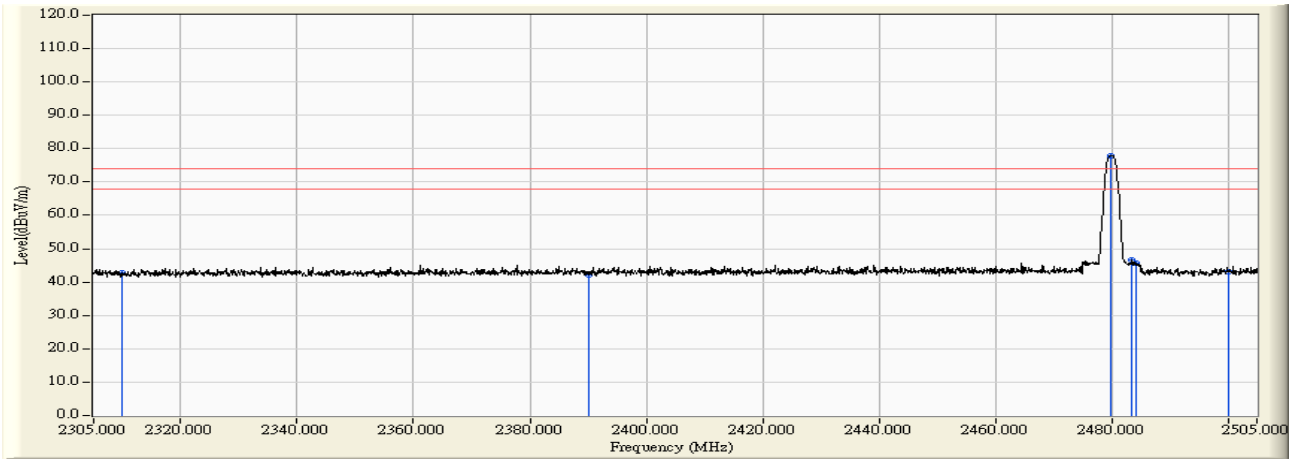


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	17.002	30.579	-23.421	54.000	AVERAGE
2		2390.000	14.038	17.057	31.095	-22.905	54.000	AVERAGE
3	*	2480.000	14.549	68.472	83.021	29.021	54.000	AVERAGE
4		2483.500	14.568	17.477	32.046	-21.954	54.000	AVERAGE
5		2493.100	14.623	17.186	31.809	-22.191	54.000	AVERAGE
6		2500.000	14.661	16.774	31.435	-22.565	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**

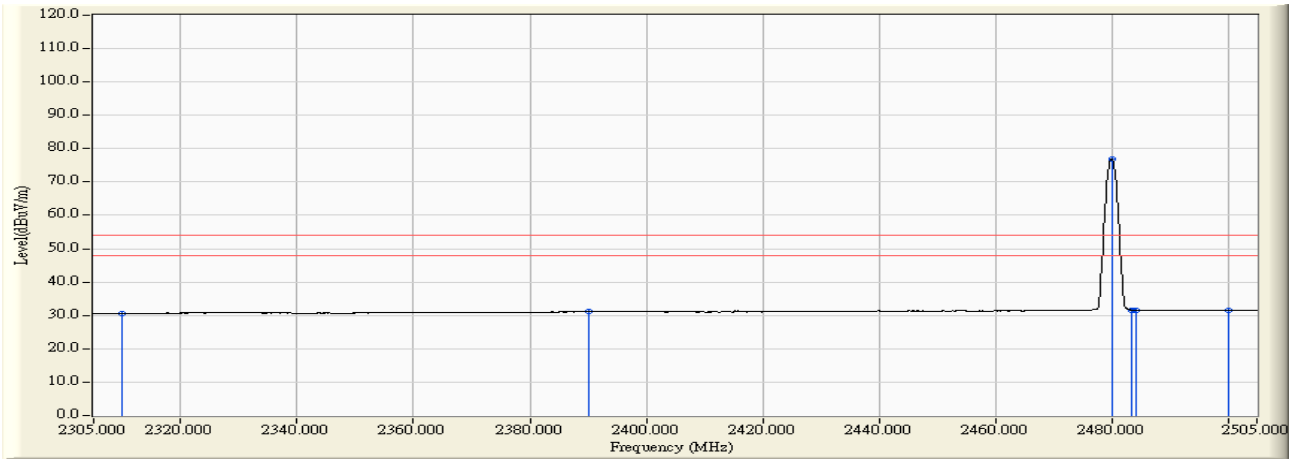


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	29.225	42.802	-31.198	74.000	PEAK
2		2390.000	14.038	28.244	42.282	-31.718	74.000	PEAK
3	*	2479.800	14.549	63.363	77.911	3.911	74.000	PEAK
4		2483.500	14.568	31.954	46.523	-27.477	74.000	PEAK
5		2484.300	14.573	30.967	45.540	-28.460	74.000	PEAK
6		2500.000	14.661	28.347	43.008	-30.992	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB4-H	**Time : 2017/10/12**
Limit : FCC_SpartC_15.209_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 5V**
EUT : TX-only beacon	**Note : 802.15.1_BLE_2480MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	13.577	16.988	30.565	-23.435	54.000	AVERAGE
2		2390.000	14.038	17.041	31.079	-22.921	54.000	AVERAGE
3	*	2480.000	14.549	62.393	76.942	22.942	54.000	AVERAGE
4		2483.500	14.568	17.091	31.660	-22.340	54.000	AVERAGE
5		2484.200	14.573	17.002	31.575	-22.425	54.000	AVERAGE
6		2500.000	14.661	16.798	31.459	-22.541	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Occupied Bandwidth

7.1. Test Equipment

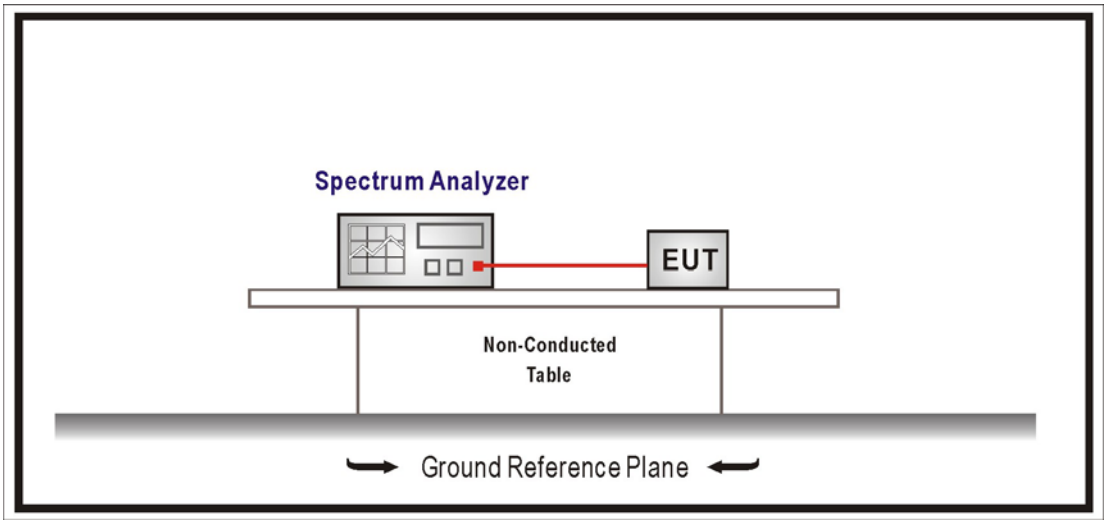
The following test equipment is used during the test:

Occupied Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12

Note: All equipment that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 1% of EBW, Span greater than RBW.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

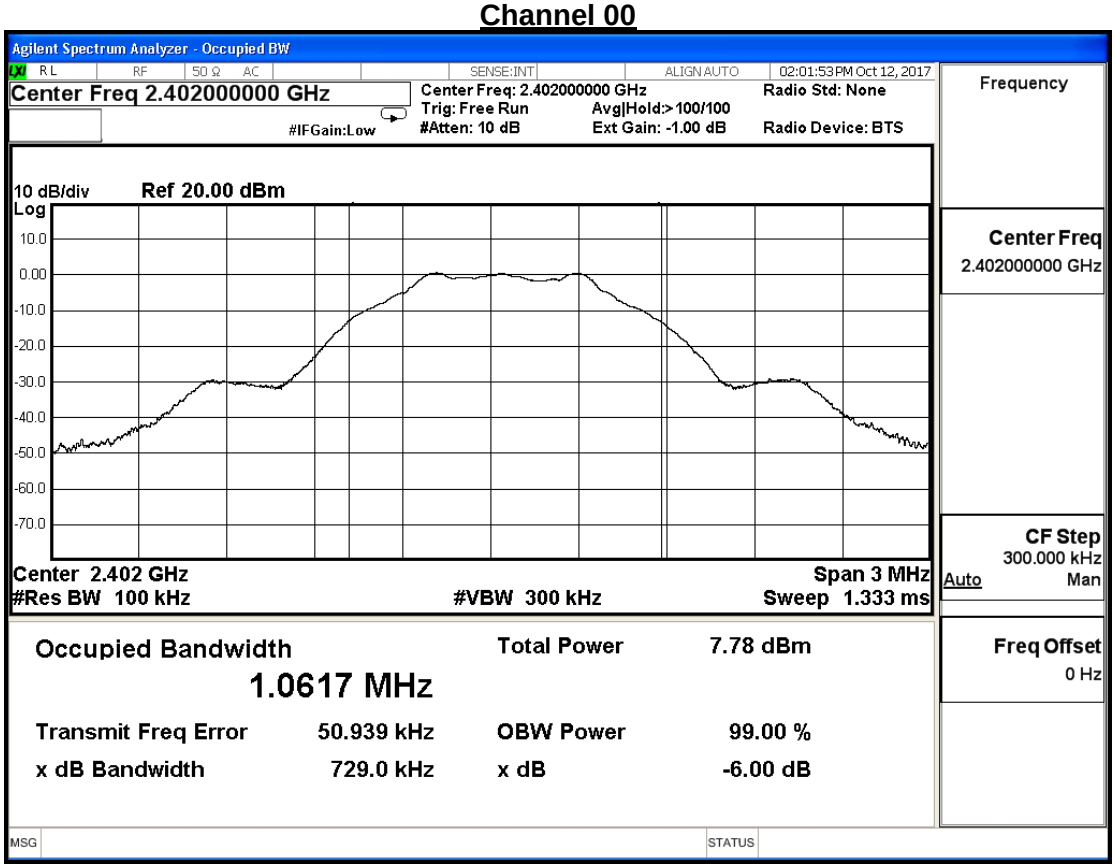
7.6. Test Result

Product	TX-only beacon		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/10/12	Test Site	SR10-H

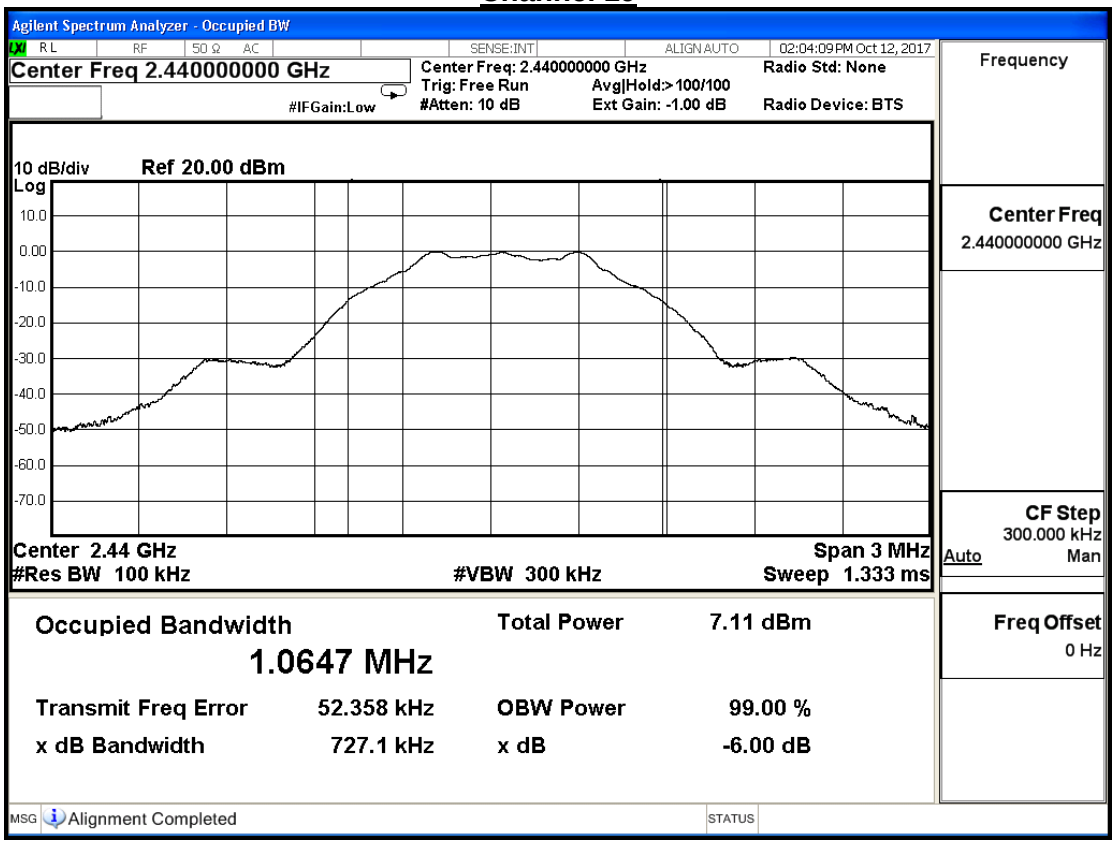
GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	0.729	≧0.5	Pass
19	2440	0.727	≧0.5	Pass
39	2480	0.722	≧0.5	Pass

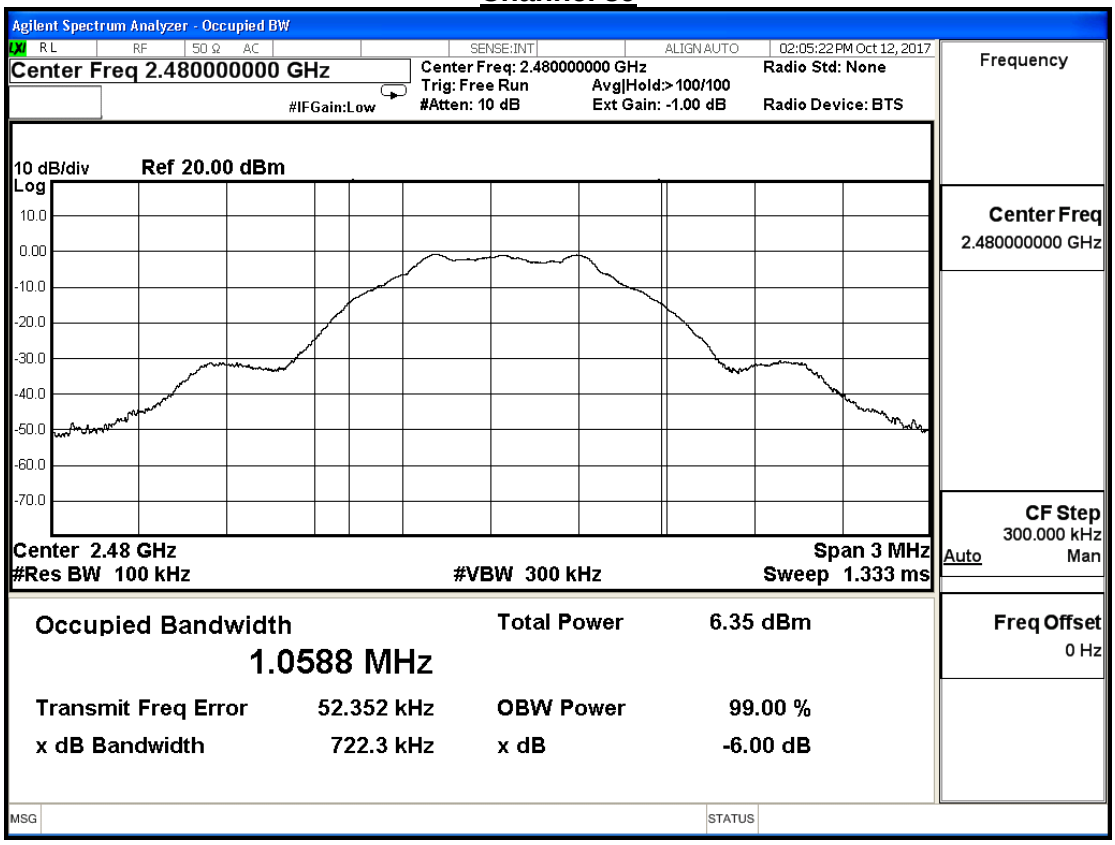
Channel 00



Channel 19



Channel 39



8. Power Density

8.1. Test Equipment

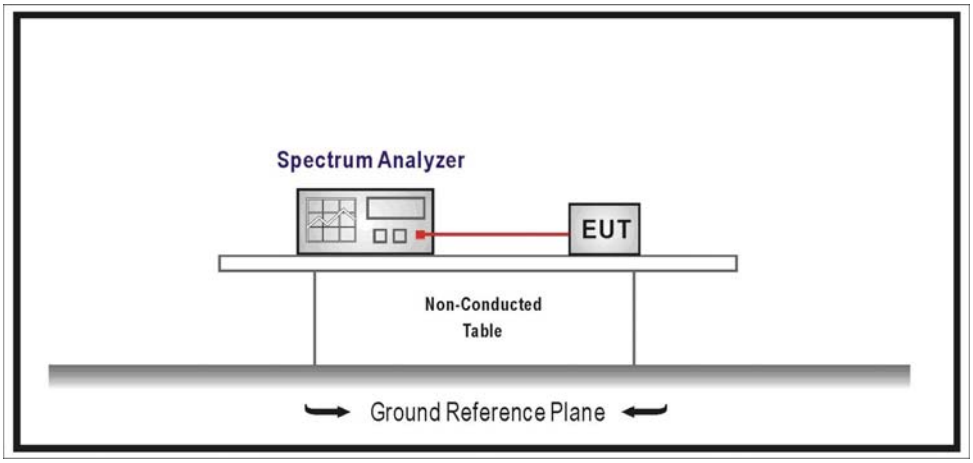
The following test equipment is used during the test:

Power Density / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2017/01/23	2018/01/22
EXA Signal Analyzer	Keysight	N9010A	MY51440132	2017/03/13	2018/03/12

Note: All equipment that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.10: 2013; tested according to DTS test procedure of KDB558074 D01 V04 for compliance to FCC 47CFR 15.247 requirements.

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247

8.6. Uncertainty

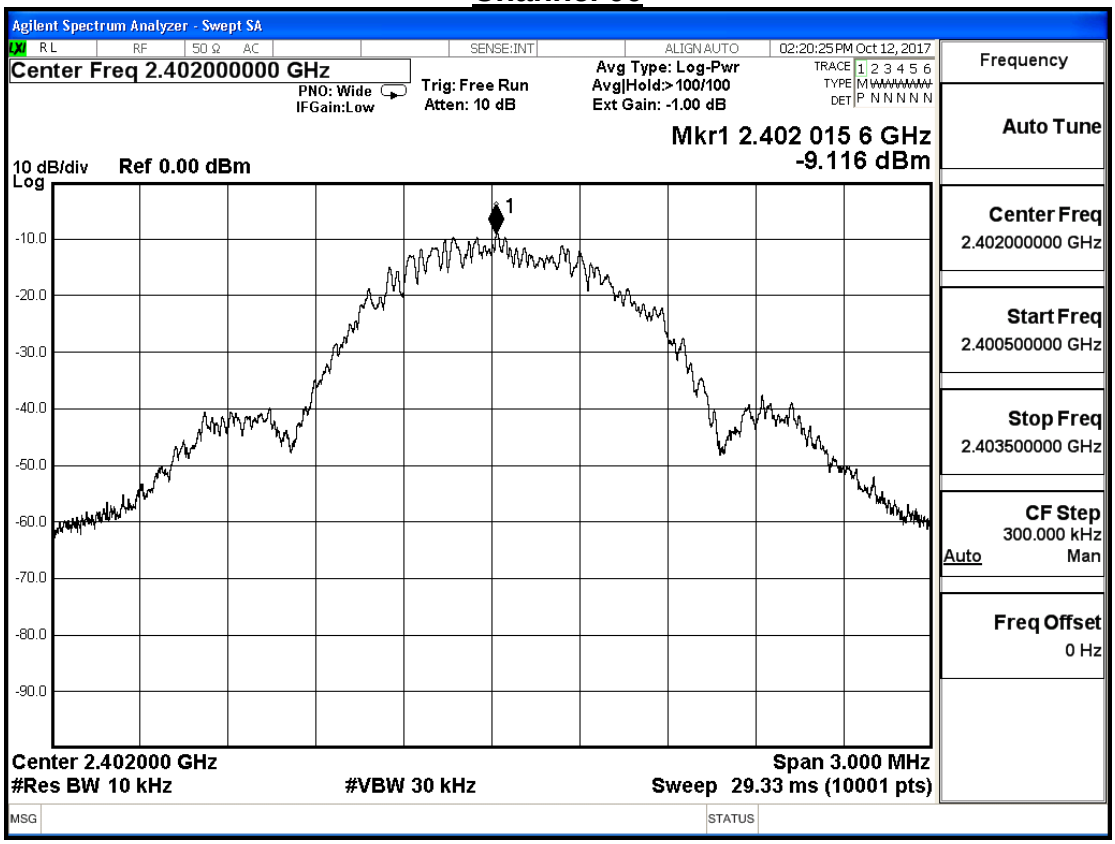
The measurement uncertainty is defined as ±1.27dB.

8.7. Test Result

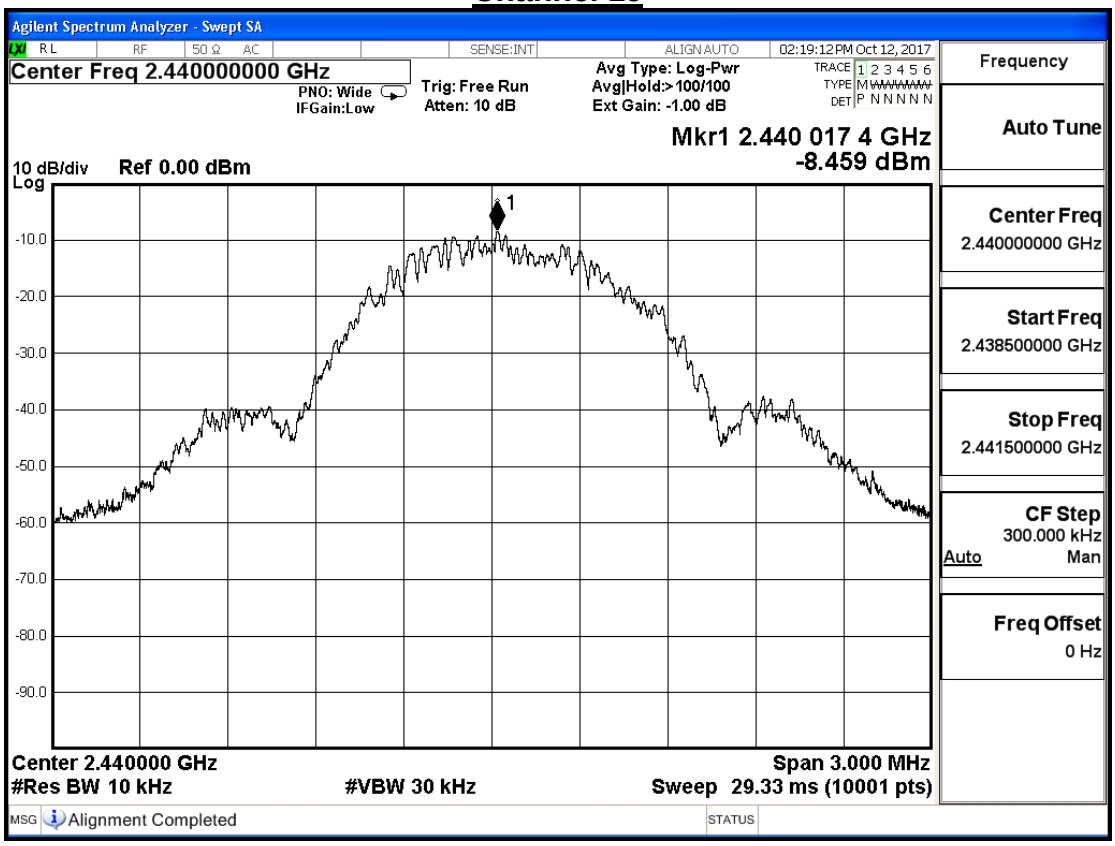
Product	TX-only beacon		
Test Item	Power Density		
Test Mode	Mode 1: Transmit Mode		
Date of Test	2017/10/12	Test Site	SR10-H

Channel No.	Frequency (MHz)	Measure Values (dBm)	Limit (dBm)	Result
00	2402	-9.116	≦8	Pass
19	2440	-8.459	≦8	Pass
39	2480	-8.992	≦8	Pass

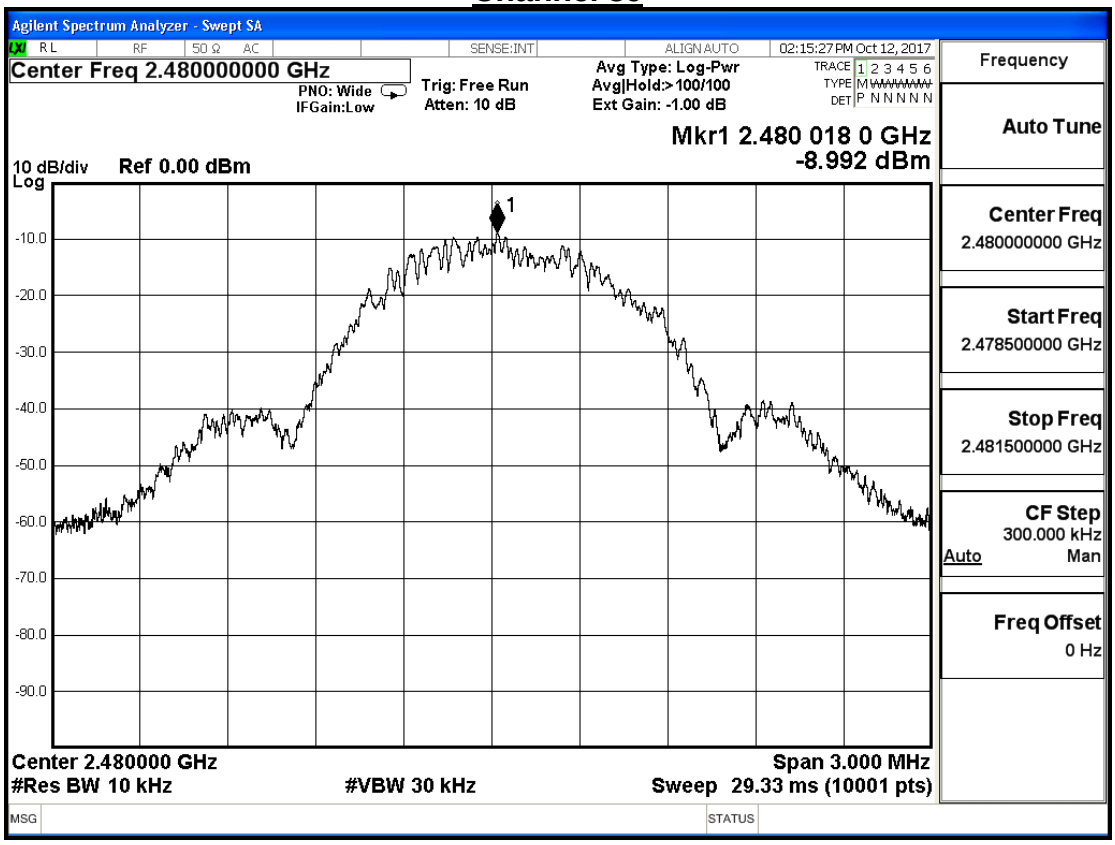
Channel 00



Channel 19



Channel 39



Attachment 1

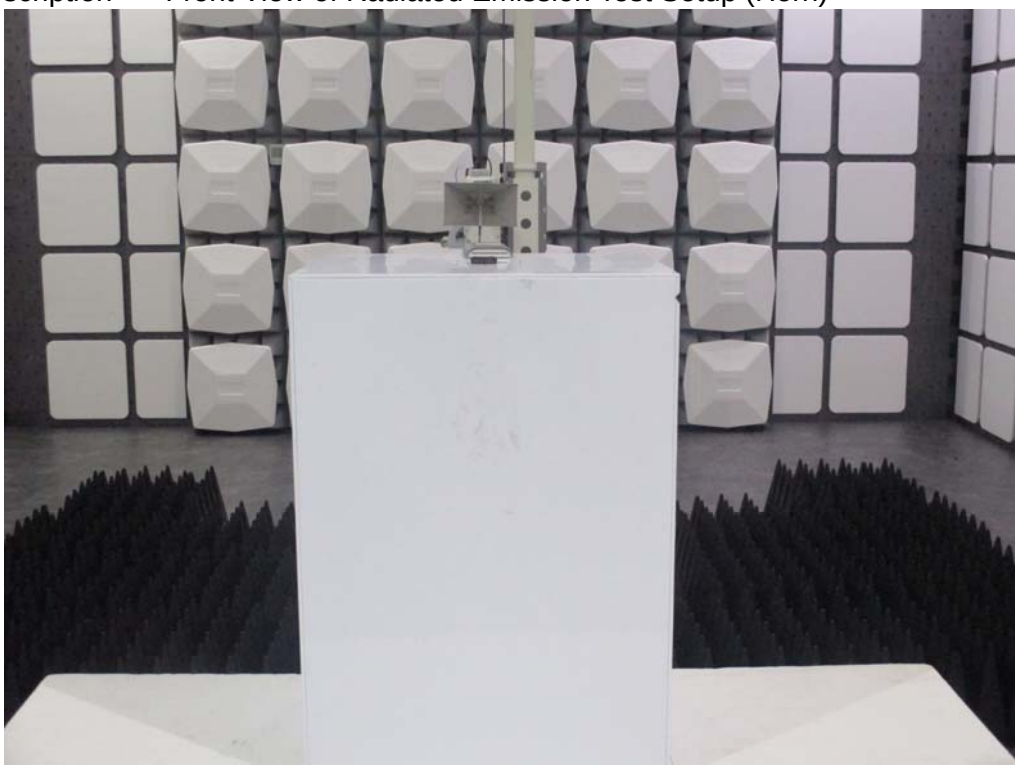
➢ Test Setup Photograph

<Radiated Emission>

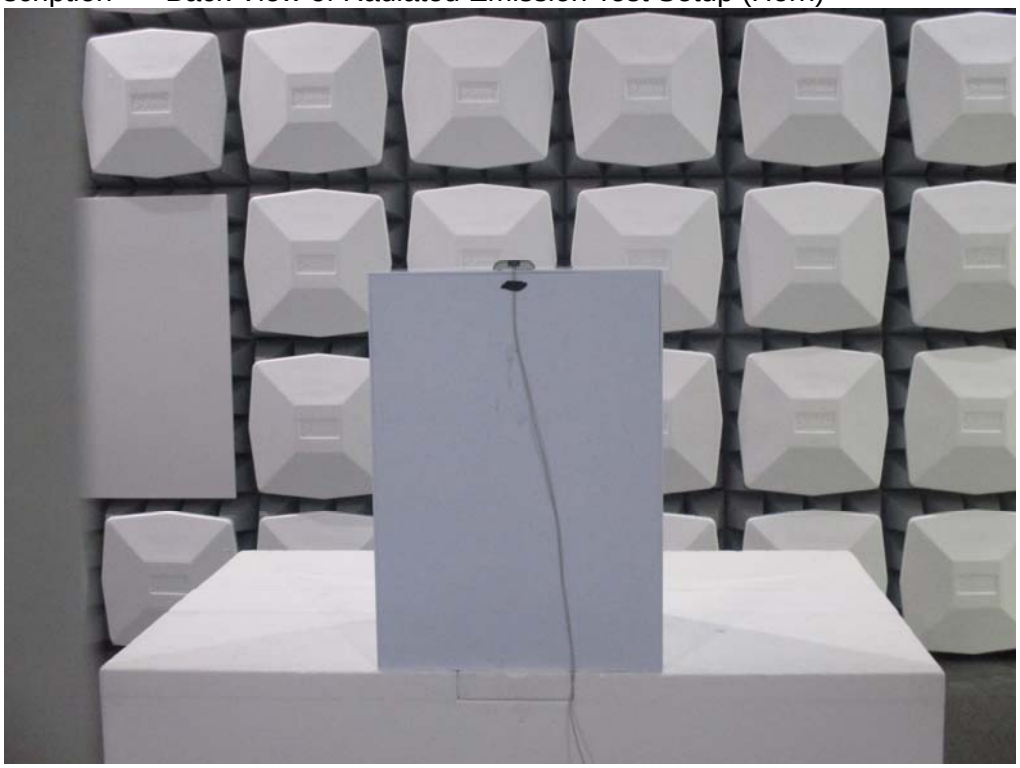
Test Mode ： Mode 1: Transmit Mode
Description： Front View of Radiated Emission Test Setup (Bi-Log)

Test Mode ： Mode 1: Transmit Mode
Description： Back View of Radiated Emission Test Setup (Bi-Log)

Test Mode ： Mode 1: Transmit Mode
Description： Front View of Radiated Emission Test Setup (Horn)



Test Mode ： Mode 1: Transmit Mode
Description： Back View of Radiated Emission Test Setup (Horn)



Attachment 2

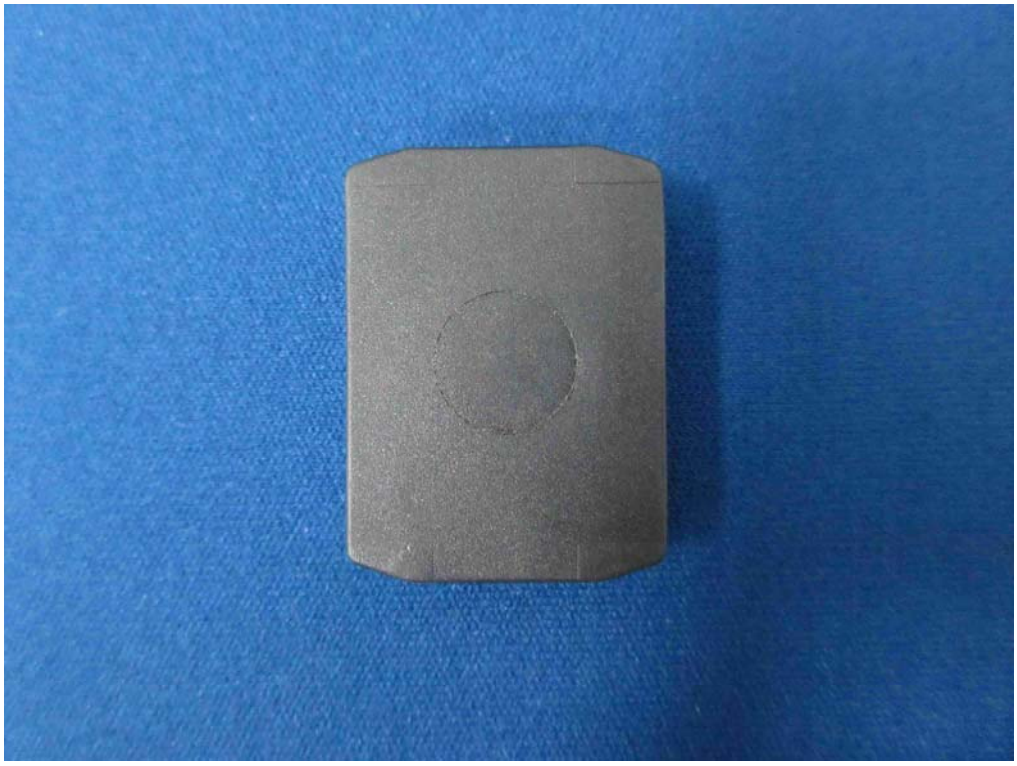
➢ EUT External Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo

(4) EUT Photo



(5) EUT Photo

(6) EUT Photo

(7) EUT Photo

(8) EUT Photo

(9) EUT Photo (Antenna)