FCC Part 15
EMI TEST REPORT

of

E.U.T. : Ping BLE Pedometer
Model : PB-001
Series Model : PB-XXX (X=0~9)
FCC ID : 2AD4KPING001

for

APPLICANT : BESTEK ELECTRONICS CORP.
ADDRESS : F2, NO. 8, ALLEY 2, SI WEI LANE, ZHUNG ZHONG RD., XINDIAN DIST, NEW TAIPEI CITY, TAIWAN, 23148

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34. LIN 5, DINGFU VIL., LINKOU DIST.,
NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.
TEL : (02)26023052 FAX: (02)26010910

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Report Number : 14-12-RBF-032

TEST REPORT CERTIFICATION

Applicant : BESTEK ELECTRONICS CORP.

F2, NO. 8, ALLEY 2, SI WEI LANE, ZHUNG ZHONG RD., XINDIAN DIST, NEW TAIPEI CITY, TAIWAN, 23148

Manufacturer : BESTEK ELECTRONICS CORP.

F2, NO. 8, ALLEY 2, SI WEI LANE, ZHUNG ZHONG RD., XINDIAN DIST, NEW TAIPEI CITY, TAIWAN, 23148

Description of EUT

a) Type of EUT : Ping BLE Pedometer

b) Trade Name : Ping

c) Model : PB-001

d) Series Model : PB-XXX (X=0~9)

e) Power Supply : DC 3.7V Battery

f) Frequency Range : 2402MHz~2480MHz;

Regulation Applied : FCC Rules and Regulations Part 15 Subpart C

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.10-2013, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Summary of Tests

	Test Item	Applicable Standard	Results
1	Radiated Emission	FCC 15.249(a); 15.209	Compliance
2	Conducted Emission	FCC 15.207	Compliance
3	Band Edge Requirement	FCC 15.249(d)	Compliance
4	Operation Bandwidth	FCC 15.215(c)	Compliance

Date Test Item Received	:	*Dec. 19, 2014*
Date Test Campaign Completed	:	*Mar. 24, 2015*
Date of Issue	:	*Mar. 26, 2015*

Test Engineer : Jiapeng Chen
(Jiapeng Chen, Engineer)

Approve & Authorized Signer : S. S. Liou

S. S. Liou, Section Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Ping BLE Pedometer

b) Trade Name : Ping

c) Model : PB-001

d) Series Model : PB-XXX (X=0~9)

e) Power Supply : DC 3.7V Battery

f) Model Difference : The only difference between main model PB-001 and serial models PB-XXX is the model name designation. The device and the PCB design are the same.

1.2 Characteristics of Device

Ping BLE Pedometer / It can transfer data from device to selected mobile device, PC & MAC by Bluetooth function.

<Product specification: >
Size:
Dimensions : 56x24x17mm(include metal clip); 56x24x13(main body)
Weight : 12.8g
Bluetooth 4.0(Single mode)-----TI-CC2540
Material of cap: ABS & PC ; Clip: stainless steel
White color OLED display

- BLE 4.0 (non- downward compatible to BT 3.0 or less)
- Operating frequency range: 2402 ~ 2480MHz
- Number of channel and channel frequencies: 40 channels
  (f = 2402 + i*2 MHz, i=0,…,39)
- Channel spacing: 2MHz
- Modulation type, data rate: GFSK; 1Mbps
- Type of Antenna: Chip antenna
- Ant. gain: 0.5dBi

1.3 Test Methodology

Both conducted and radiated emissions were performed according to the procedures illustrated in ANSI C63.10-2013. Other required measurements were illustrated in separate sections of this test report for details.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No.34, Lin 5, Dingfu Vil., Linkou Dist., New Taipei City, Taiwan 24442, R.O.C.

This site is accredited via APEC TEL MRA.
FCC Designation Number: TW1060
Expiration date: Oct. 08, 2015.

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:
A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :
A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50MH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	**Distance Meters**	**Radiated dBμV/m**	**Radiated μV/m**
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

For intentional radiator device, per §15.249(a), the field strength of emissions shall comply with the following :

Frequency	Distance	Fundamental		Harmonic	
MHz	Meters	dBμV/m	mV/m	dBμV/m	μV/m
902 - 928	3	94	50	54	500
2400 - 2483.5	3	94	50	54	500
5725 - 5875	3	94	50	54	500
24000 - 24250	3	108	250	68	2500

In accordance with §15.249(e), limits shown in above table are based on average limits for frequencies above 1000 MHz, and frequencies below 1000 MHz are based on quasi peak. However, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20 dB.

(3) Spurious in Out Band Requirement

For intentional device, according to §15.249 (d), emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits in §15.209.

(4) Antenna Requirement

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
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	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3360-4400	Above 38.6
13.36-13.41			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation.

All measurement were intentional to maximum the emissions from EUT by varying the connection cables, therefore, the test result is sure to meet the applicable requirement.

3.2 Devices for Tested System

Device	Manufacturer	Model / FCC ID	Description
* Ping BLE Pedometer	BESTEK ELECTRONICS CORP.	PB-001 / 2AD4KPING001	1.6m Shielded USB Line
Notebook PC	DELL	PP25L / E2K4965AGNM	1.8m Unshielded AC Power Cord
Cell Phone	Samsung	SGH-N075T / A3LSGHN075T	---

Remark "*" means equipment under test.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For intentional radiators, according to §15.249 (a), the fundamental field strength shall not exceed 94 dBuV/m and the harmonics shall not exceed 54 dBuV/m. For out band emission except for harmonics shall be comply with §15.209 or at least attenuated by 50 dB below the level of the fundamental.

4.2 Measurement Procedure

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

5. Repeat step 4 until all frequencies need to be measured were complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

7. Check the three frequencies of highest emission with varying the placement of cables associated with EUT to obtain the worse case and record the result.

Note:

- Li-Battery was fully charged during all the necessary test items
- All three X,Y and Z axis and orientations on EUT emission were evaluated, the worst axis and orientation X found then used for all test items.
  Orientation X: EUT lay on table evenly;
  Orientation Y: EUT stands side-up;
  Orientation Z: EUT stands vertically.
- The no. of channel and frequency were selected as representative one for all test items.

Figure 1 : Frequencies measured below 1 GHz configuration

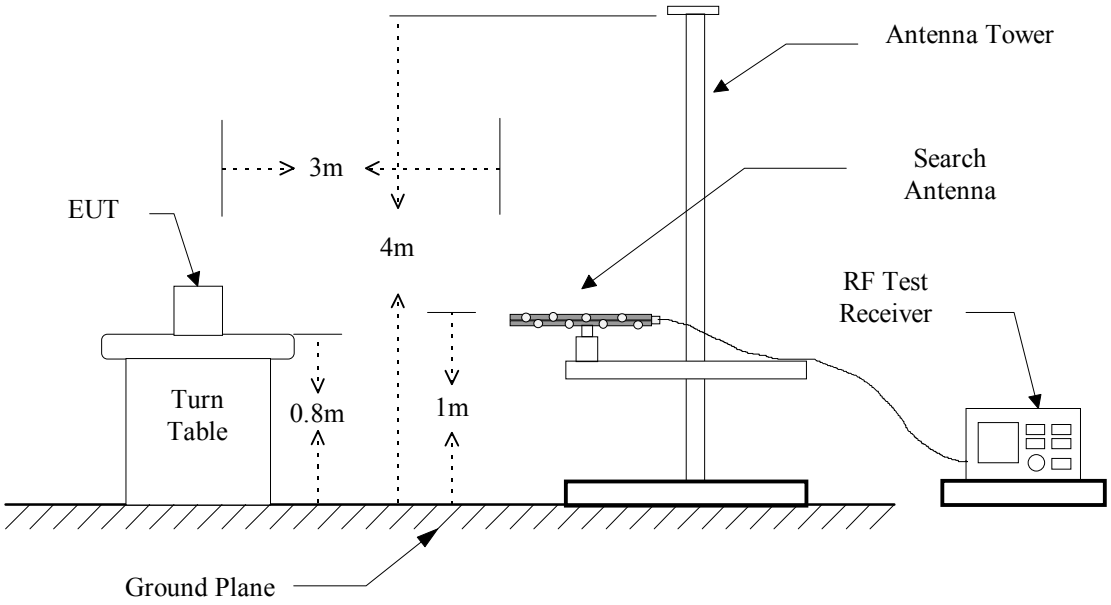
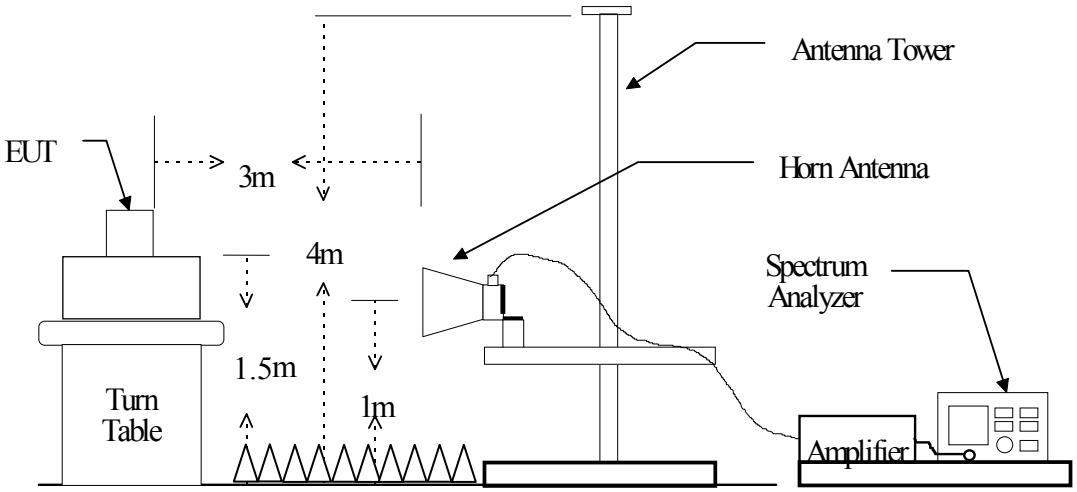


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement:

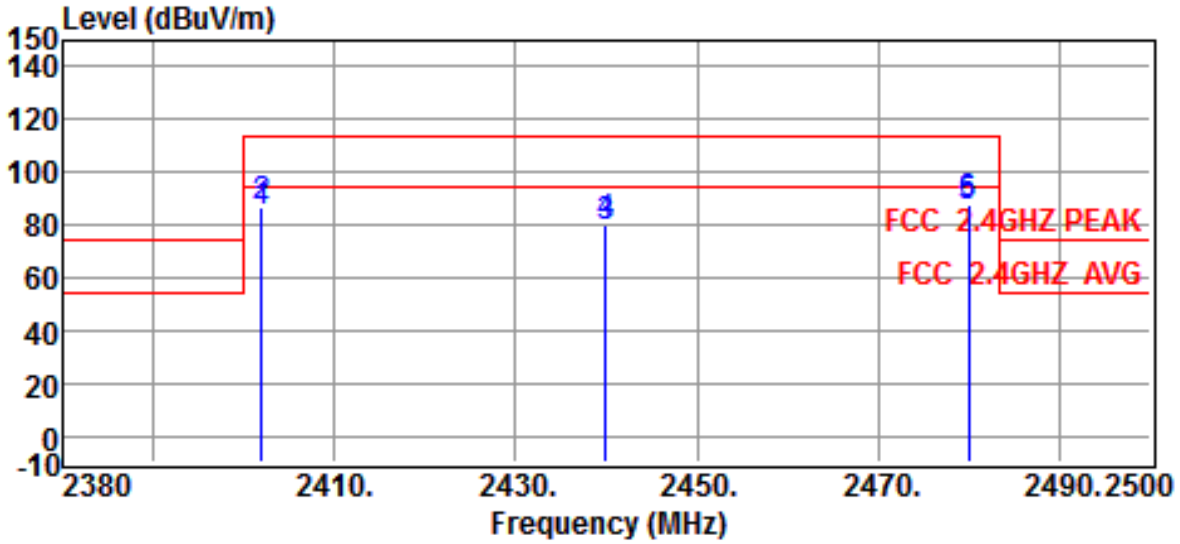
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESL	2014/09/26	2015/09/25
Bi-Log Antenna	ETC	MCTD 2786	2014/06/19	2015/06/18
Log-periodic Antenna	EMCO	3146	2014/11/04	2015/11/03
Double Ridged Guide Horn Antenna	EMCO	3116	2014/08/13	2015/08/12
Biconical Antenna	EMCO	3110	2014/11/04	2015/11/03
Double Ridged Antenna	EMCO	3115	2014/10/22	2015/10/21
Amplifier	HP	8449B	2014/08/12	2015/08/11
Amplifier	HP	83051A	2014/10/22	2015/10/21
Amplifier	HP	8447D	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESU 40	2014/08/15	2015/08/14

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	3 MHz	10 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

4.4 Radiated Emission Data

4.4.1 RF Portion

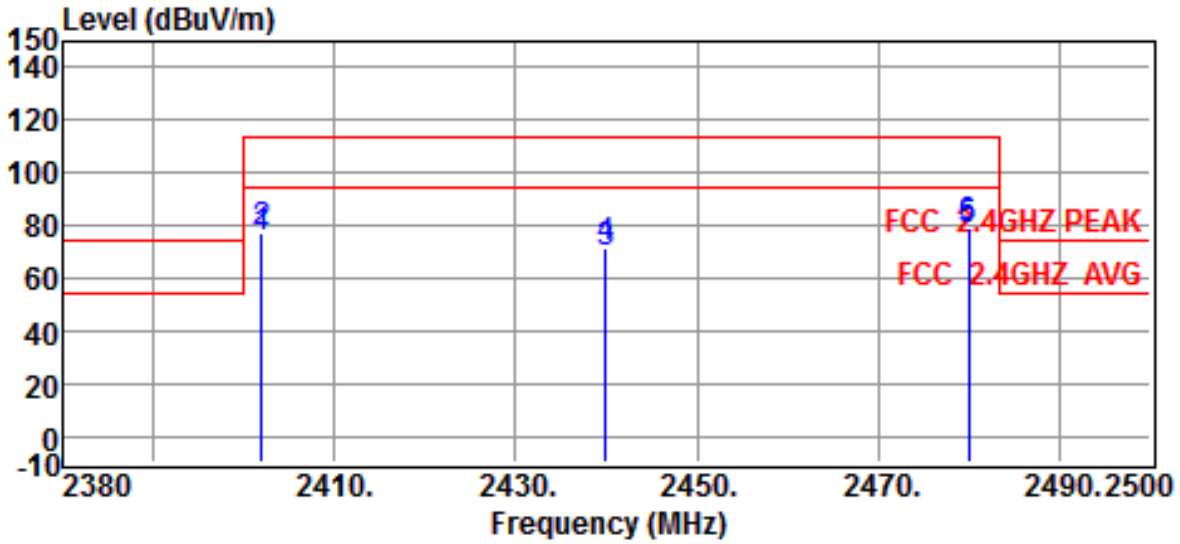


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:FCC 2.4GHZ PEAK	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Fundamental(CH Low/Middle/High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2402.0000	91.1	-6.0	85.1	94.0	-8.9	Average
2402.0000	92.3	-6.0	86.3	114.0	-27.7	Peak
2440.0000	85.0	-6.0	79.0	94.0	-15.0	Average
2440.0000	86.3	-6.0	80.3	114.0	-33.7	Peak
2480.0000	92.9	-5.8	87.1	94.0	-6.9	Average
2480.0000	93.9	-5.8	88.1	114.0	-25.9	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

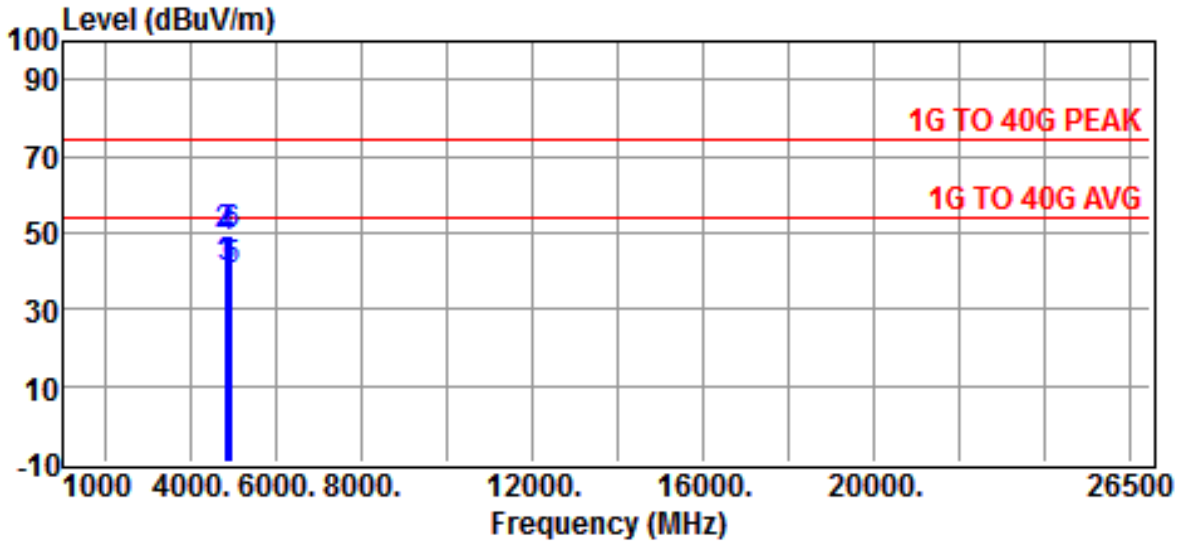


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:FCC 2.4GHZ PEAK	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Fundamental(CH Low/Middle/High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2402.0000	80.9	-6.0	74.9	94.0	-19.1	Average
2402.0000	82.8	-6.0	76.8	114.0	-37.2	Peak
2440.0000	75.9	-6.0	69.9	94.0	-24.1	Average
2440.0000	77.8	-6.0	71.8	114.0	-42.2	Peak
2480.0000	84.0	-5.8	78.2	94.0	-15.8	Average
2480.0000	85.2	-5.8	79.4	114.0	-34.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

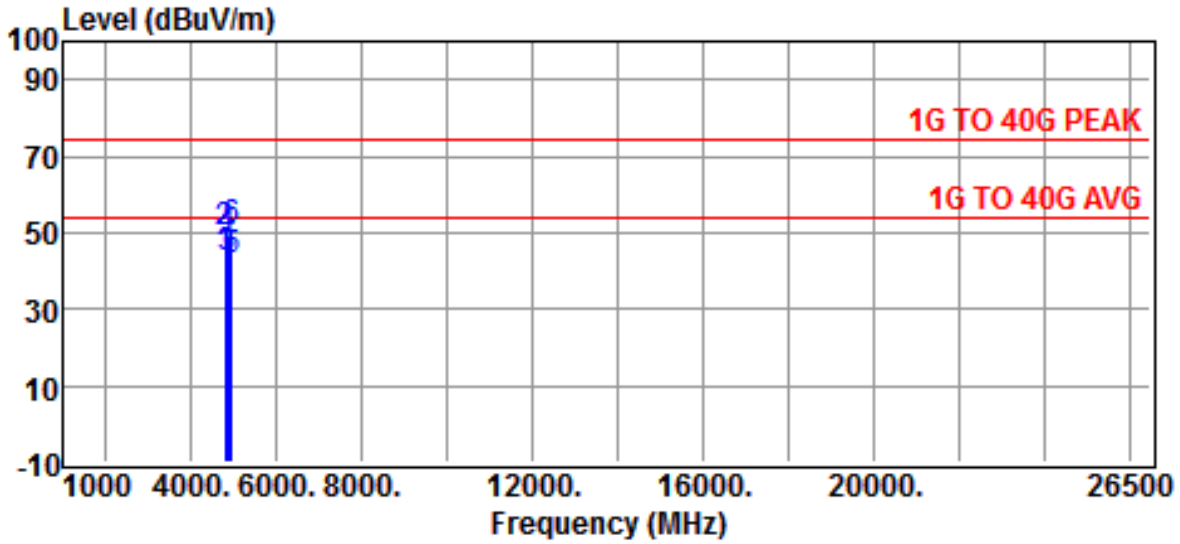


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Harmonics(CH Low/Middle/High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	39.3	1.3	40.6	54.0	-13.4	Average
4804.0000	48.2	1.3	49.5	74.0	-24.5	Peak
4880.0000	39.2	1.4	40.6	54.0	-13.4	Average
4880.0000	47.3	1.4	48.7	74.0	-25.3	Peak
4960.0000	38.5	1.8	40.3	54.0	-13.7	Average
4960.0000	47.7	1.8	49.5	74.0	-24.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

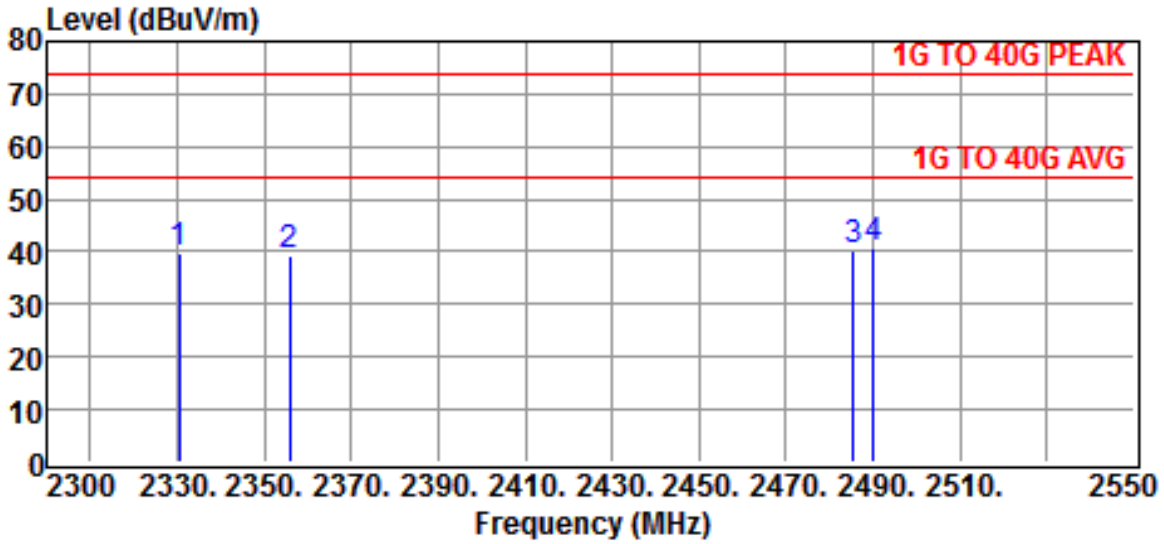


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Harmonics(CH Low/Middle/High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	41.8	1.3	43.1	54.0	-10.9	Average
4804.0000	48.5	1.3	49.8	74.0	-24.2	Peak
4880.0000	41.7	1.4	43.1	54.0	-10.9	Average
4880.0000	47.3	1.4	48.7	74.0	-25.3	Peak
4960.0000	41.1	1.8	42.9	54.0	-11.1	Average
4960.0000	48.8	1.8	50.6	74.0	-23.4	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

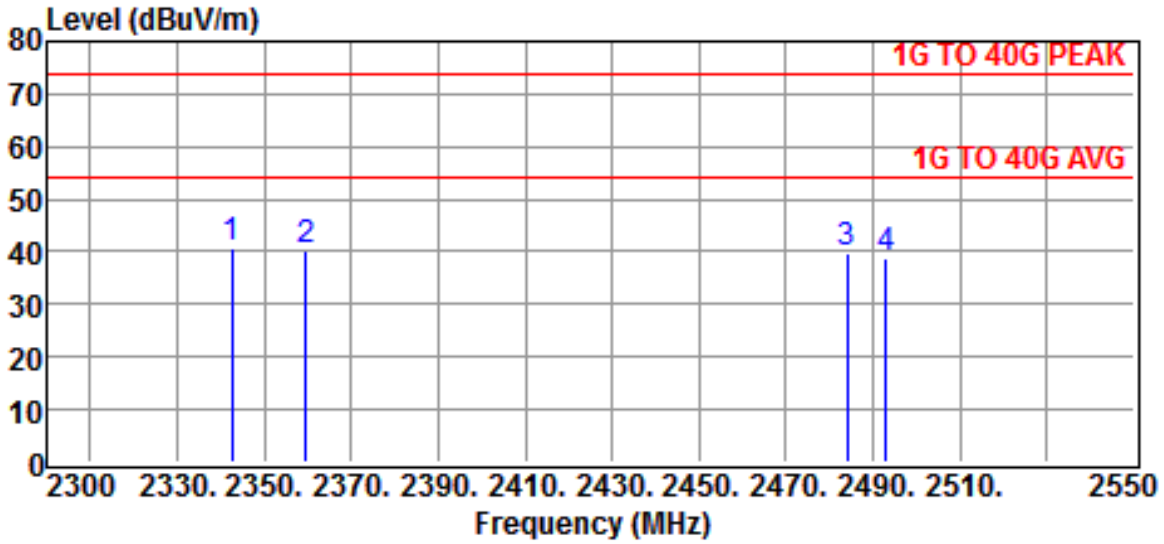


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:1G TO 40G PEAK	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2330.5000	46.1	-6.1	40.0	74.0	-34.0	Peak
2356.0000	45.2	-6.1	39.1	74.0	-34.9	Peak
2485.5000	46.1	-5.8	40.3	74.0	-33.7	Peak
2490.0000	46.5	-5.8	40.7	74.0	-33.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value = Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.



Site	:CHAMBER #2	Date	:2015-03-24
Limit	:1G TO 40G PEAK	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2342.5000	46.8	-6.1	40.7	74.0	-33.3	Peak
2359.5000	46.2	-6.1	40.1	74.0	-33.9	Peak
2484.0000	45.8	-5.8	40.0	74.0	-34.0	Peak
2493.0000	44.8	-5.8	39.0	74.0	-35.0	Peak

Note :

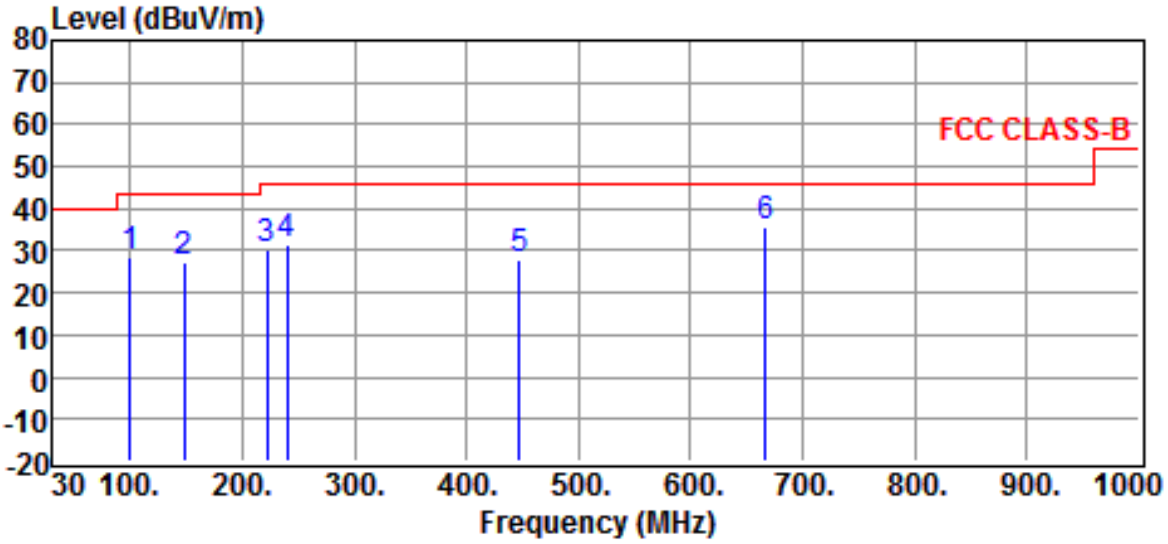
1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value = Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.

4.4.2 Other Emissions

a) Emission frequencies below 1 GHz

Operation Mode : Charging

Test Date : Dec. 31, 2014 Temperature : 20 °C Humidity : 60 %

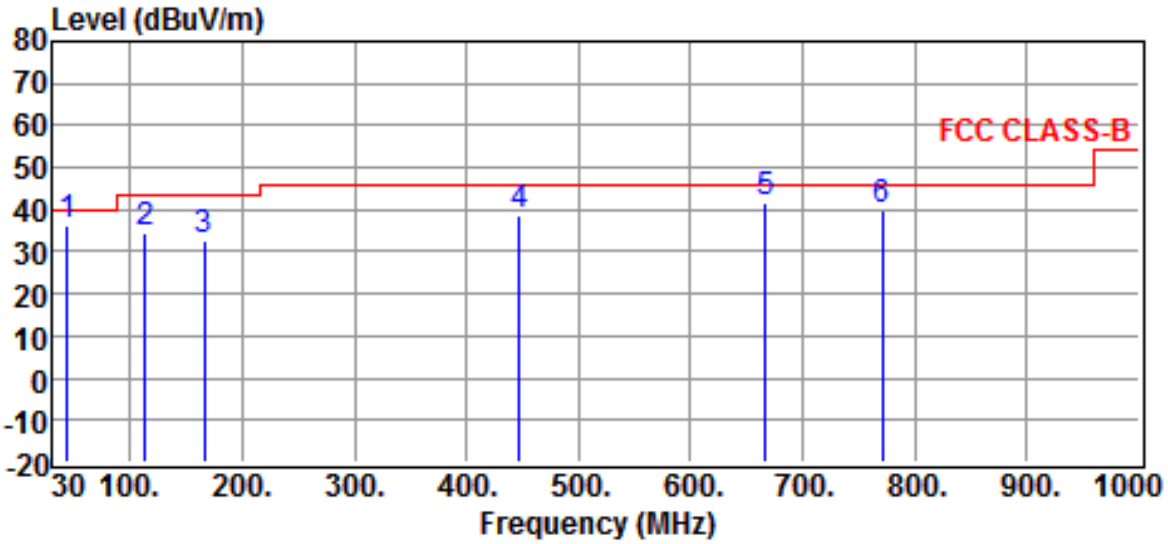


Site	:Open Site	Date	:2014-12-31
Limit	:FCC CLASS-B	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Power From PC	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Charging		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
99.8400	17.0	11.3	28.3	43.5	-15.2	QP
148.3400	13.2	13.9	27.1	43.5	-16.4	QP
222.0600	11.5	18.6	30.1	46.0	-15.9	QP
239.5200	12.0	19.3	31.3	46.0	-14.7	QP
447.1000	7.7	20.3	28.0	46.0	-18.0	QP
666.3200	10.9	24.7	35.6	46.0	-10.4	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:Open Site	Date	:2014-12-31
Limit	:FCC CLASS-B	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Power From PC	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Charging		

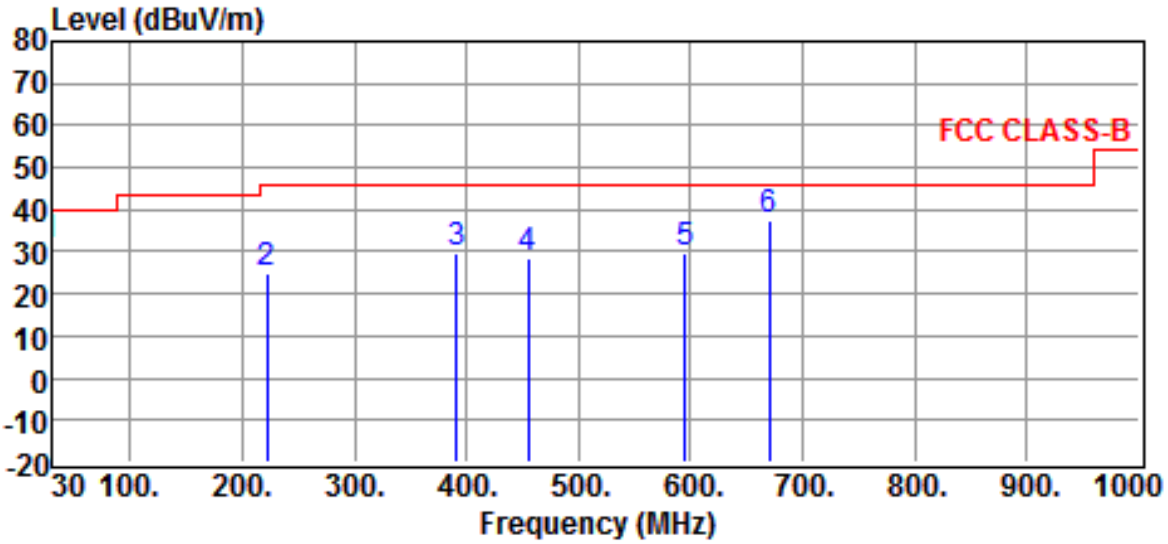
Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
43.5800	23.3	12.9	36.2	40.0	-3.8	QP
113.4200	22.2	12.1	34.3	43.5	-9.2	QP
165.8000	18.5	14.2	32.7	43.5	-10.8	QP
447.1000	18.4	20.3	38.7	46.0	-7.3	QP
666.3200	16.9	24.7	41.6	46.0	-4.4	QP
771.0800	13.6	26.3	39.9	46.0	-6.1	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

Operation Mode : Operation

Test Date : Dec. 31, 2014 Temperature : 20 °C Humidity : 60 %

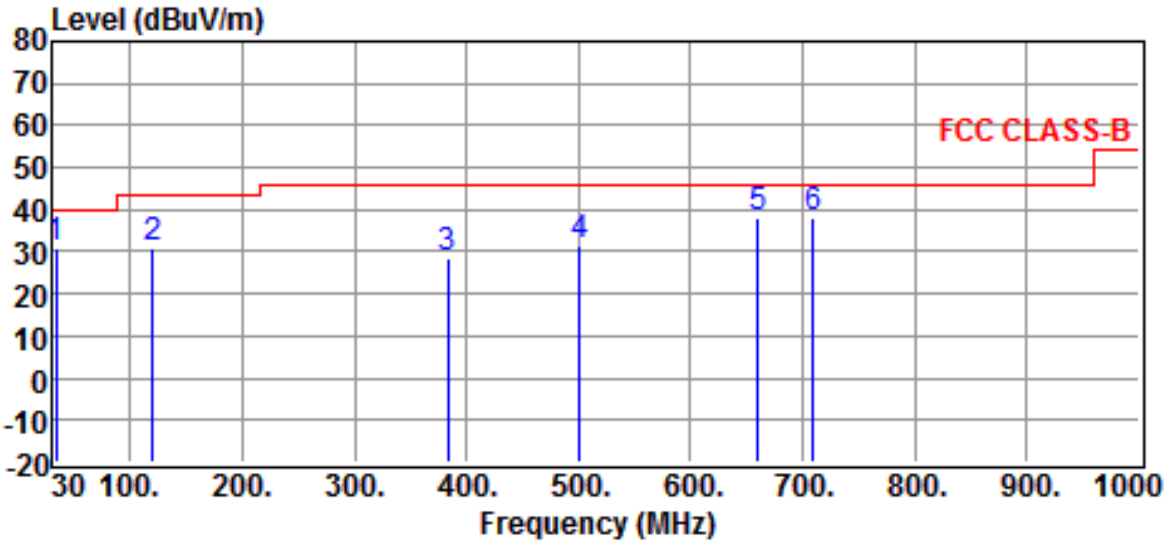


Site	:Open Site	Date	:2014-12-31
Limit	:FCC CLASS-B	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Operation		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
30.0000	14.9	16.4	31.3	40.0	-8.7	QP
222.0600	6.2	18.6	24.8	46.0	-21.2	QP
390.8400	10.7	19.0	29.7	46.0	-16.3	QP
454.8600	7.7	20.6	28.3	46.0	-17.7	QP
595.5100	6.5	23.2	29.7	46.0	-16.3	QP
670.2000	12.5	24.8	37.3	46.0	-8.7	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:Open Site	Date	:2014-12-31
Limit	:FCC CLASS-B	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:Operation		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
33.8800	15.9	14.9	30.8	40.0	-9.2	QP
120.2100	18.7	12.4	31.1	43.5	-12.4	QP
383.0800	9.4	18.9	28.3	46.0	-17.7	QP
501.4200	9.6	21.9	31.5	46.0	-14.5	QP
660.5000	13.3	24.6	37.9	46.0	-8.1	QP
709.0000	12.6	25.7	38.3	46.0	-7.7	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 26.5 GHz were too low to be measured with a pre-amplifier of 35 dB.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where Corrected Factor

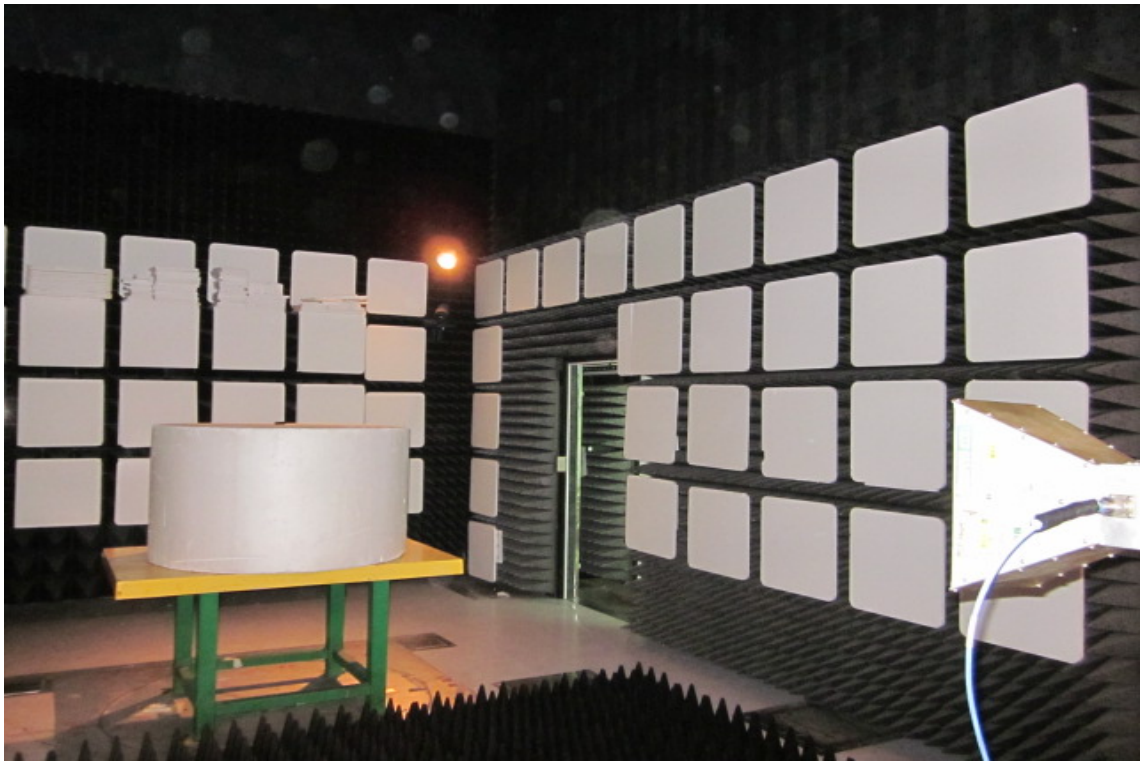
= Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

4.6 Photos of Radiation Measuring Setup

Test Mode: Charging

Test Mode: Operation Mode

Test Mode: Operation Mode (above 1GHz)



5 CONDUCTED EMISSION MEASUREMENT

5.1 Standard Applicable

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

* Decreases with the logarithm of the frequency

5.2 Measurement Procedure

1. Setup the configuration per figure 3.

2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.

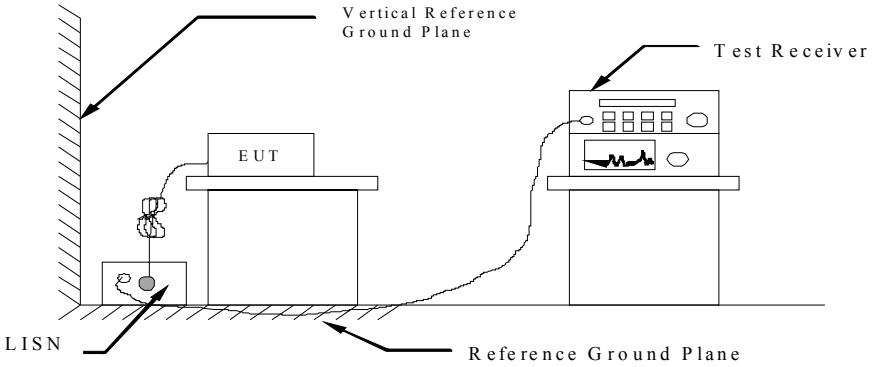
3. Record the 6 or 8 highest emissions relative to the limit.

4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then records the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.

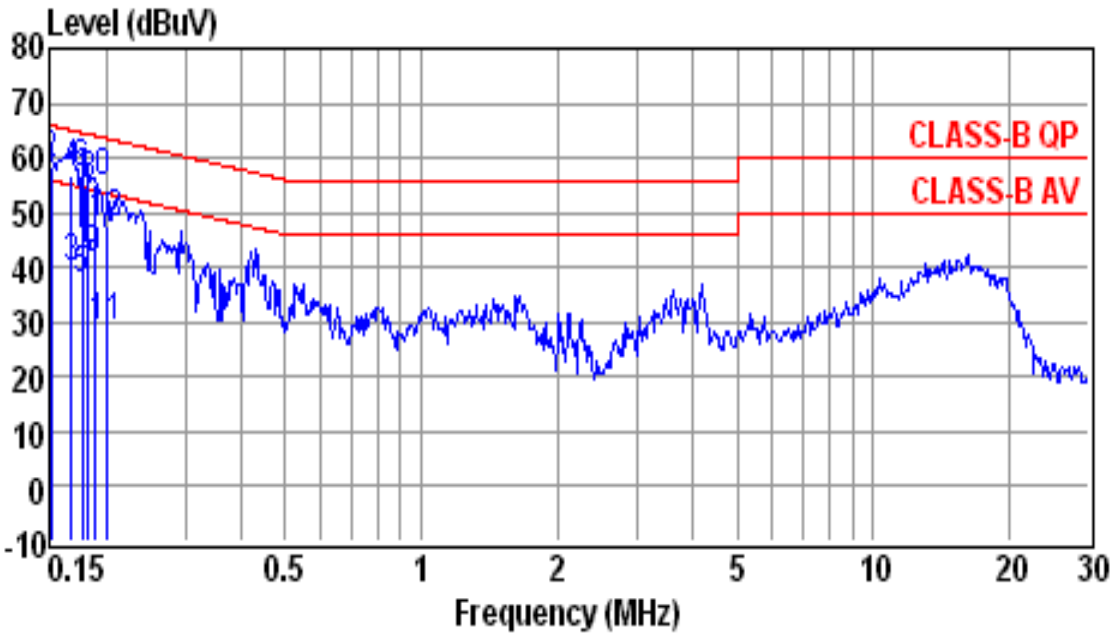
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.

6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3: Conducted emissions measurement configuration



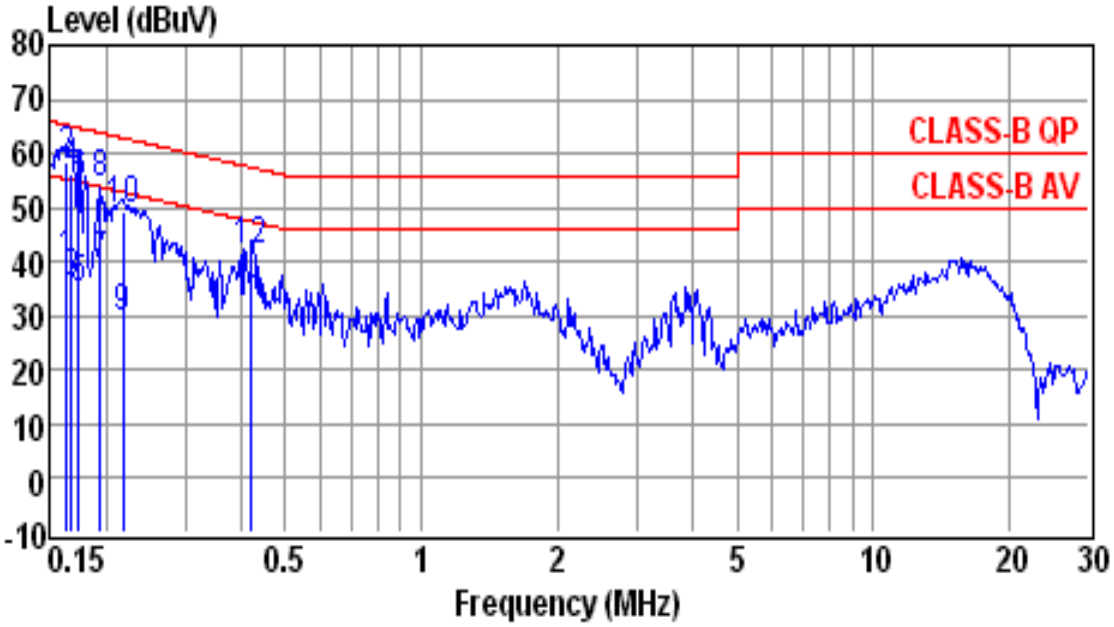
5.3 Conducted Emission Data



Site : conducted #1
Date : 12-31-2014
Condition : CLASS-B QP
LISN : NEUTRAL
Tem / Hum : 20 ℃ / 62%
Test Mode : Charging
EUT :Ping BLE Pedometer
Power Rating : Power From PC

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1516	28.4	10.2	38.6	55.9	-17.3	Average
0.1516	48.1	10.2	58.3	65.9	-7.6	QP
0.1677	29.4	10.2	39.6	55.1	-15.5	Average
0.1677	46.8	10.2	57.0	65.1	-8.1	QP
0.1777	27.3	10.2	37.5	54.6	-17.1	Average
0.1777	46.9	10.2	57.1	64.6	-7.5	QP
0.1835	28.5	10.2	38.7	54.3	-15.6	Average
0.1835	44.6	10.2	54.8	64.3	-9.5	QP
0.1884	31.1	10.2	41.3	54.1	-12.8	Average
0.1884	44.9	10.2	55.1	64.1	-9.0	QP
0.2018	18.6	10.2	28.8	53.5	-24.7	Average
0.2018	37.6	10.2	47.8	63.5	-15.7	QP

Note :
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site	: conducted #1	Date	: 12-31-2014
Condition	: CLASS-B QP	LISN	: LINE
Tem / Hum	: 20 ℃ / 62%	Test Mode	: Charging
EUT	:Ping BLE Pedometer		
Power Rating	: Power From PC		

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.1641	29.5	10.1	39.6	55.3	-15.7	Average
0.1641	48.2	10.1	58.3	65.3	-7.0	QP
0.1677	25.7	10.1	35.8	55.1	-19.3	Average
0.1677	46.0	10.1	56.1	65.1	-9.0	QP
0.1740	24.9	10.1	35.0	54.8	-19.8	Average
0.1740	44.1	10.1	54.2	64.8	-10.6	QP
0.1945	29.2	10.1	39.3	53.8	-14.5	Average
0.1945	43.8	10.1	53.9	63.8	-9.9	QP
0.2185	19.4	10.1	29.5	52.9	-23.4	Average
0.2185	39.2	10.1	49.3	62.9	-13.6	QP
0.4215	22.0	10.2	32.2	47.4	-15.2	Average
0.4215	31.3	10.2	41.5	57.4	-15.9	QP

Note :

1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dBμV is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dBμV.

RESULT = 22.5 + 0.1 = 22.6 dBμV
Level in μV = Common Antilogarithm[(22.6 dBμV)/20]
= 13.48 μV

5.5 Conducted Measurement Equipment

The following test equipments are used during the conducted test.

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2014/09/09	2015/09/08
LISN	EMCO	3625/2	2014/10/29	2015/10/28
LISN	Rohde & Schwarz	ESH2-Z5	2014/04/08	2015/04/07

5.6 Photos of Conduction Measuring Setup

6 ANTENNA REQUIREMENT

6.1 Standard Applicable

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.2 Antenna Construction

The antenna is integrated on the device. No consideration of replacement. Please refer to the construction Photo for details.

7 BAND EDGES MEASUREMENT

7.1 Standard Applicable

According to 15.249(d), out band emission except for harmonics shall be comply with §15.209 or at least attenuated by 50 dB below the level of the fundamental.

7.2 Measurement Procedure

A) 50 dB attenuation method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
4. Repeat above procedures until all measured frequencies were complete.

B) Radiated Emission method

1. Following the measurement procedures in section 4.2 with the EUT set to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
2. Measure the highest amplitude appearing on spectral displayed.
3. Repeat above procedures until all measured frequencies were complete.

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	3 MHz	10 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

7.3 Measurement Equipment

A) 50 dB attenuation method

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESU 40	2014/08/15	2015/08/14

B) Radiated Emission method

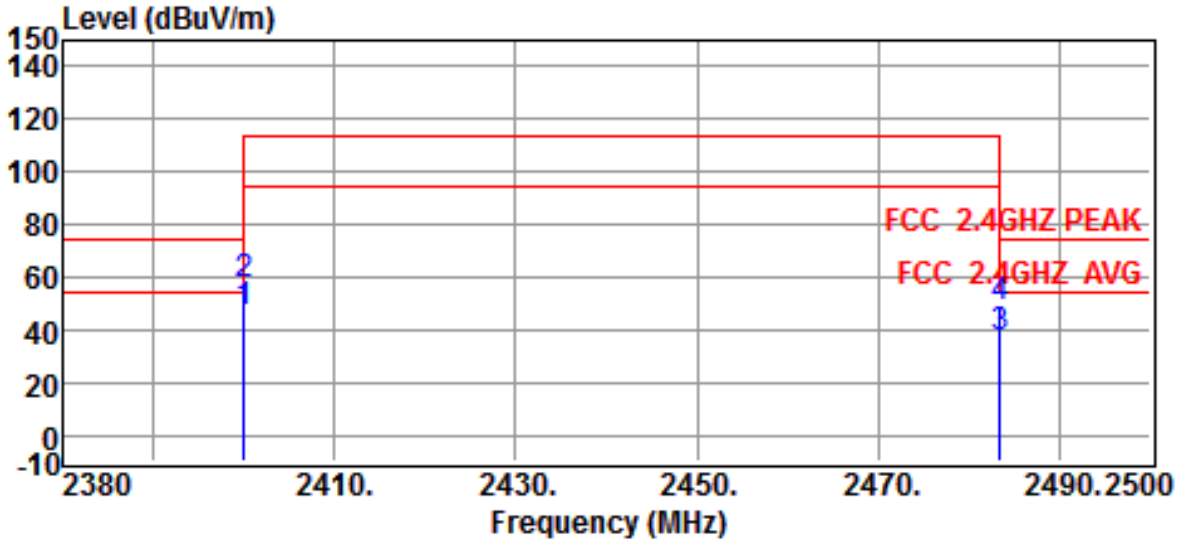
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESL	2014/09/26	2015/09/25
Bi-Log Antenna	ETC	MCTD 2786	2014/06/19	2015/06/18
Log-periodic Antenna	EMCO	3146	2014/11/04	2015/11/03
Double Ridged Guide Horn Antenna	EMCO	3116	2014/08/13	2015/08/12
Biconical Antenna	EMCO	3110	2014/11/04	2015/11/03
Double Ridged Antenna	EMCO	3115	2014/10/22	2015/10/21
Amplifier	HP	8449B	2014/08/12	2015/08/11
Amplifier	HP	83051A	2014/10/22	2015/10/21
Amplifier	HP	8447D	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESU 40	2014/08/15	2015/08/14

7.4 Measurement Data

Test Result: (Radiated Emission method)

The radiated emission test results of the lower and the upper band edges were comply with §15.209. Please refer to the following pages for test results.

Radiated Emission Test Results of the Band Edges

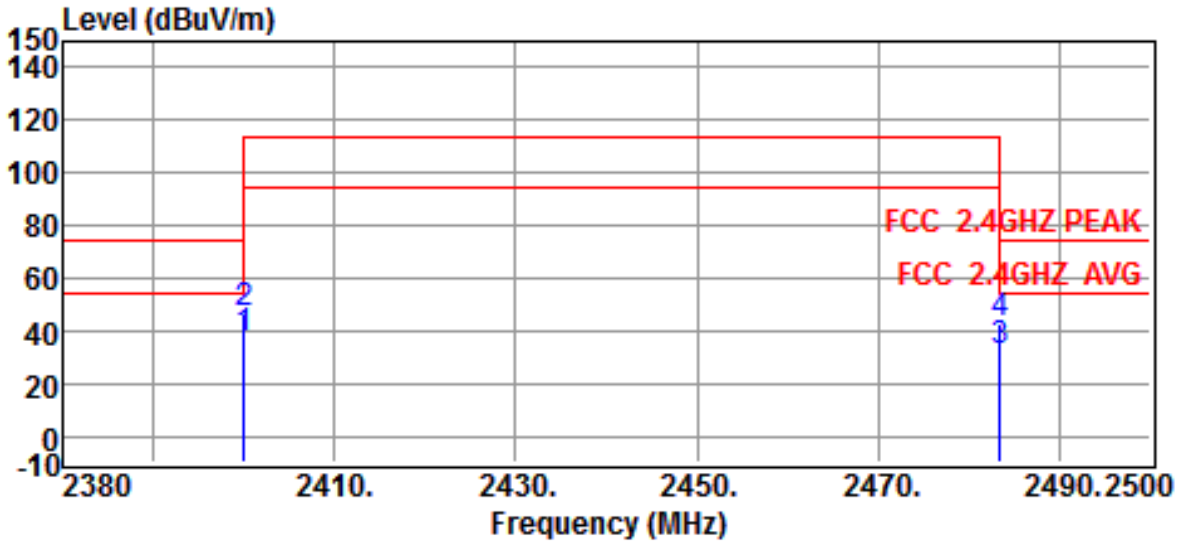


Site	:CHAMBER #2	Date	:2015-03-24
Limit	:FCC 2.4GHZ PEAK	Ant. Pol.	:HORIZONTAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:band edge(CH Low & High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	52.2	-6.0	46.2	54.0	-7.8	Average
2400.0000	62.6	-6.0	56.6	74.0	-17.4	Peak
2483.5000	42.6	-5.8	36.8	54.0	-17.2	Average
2483.5000	54.5	-5.8	48.7	74.0	-25.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:CHAMBER #2	Date	:2015-03-24
Limit	:FCC 2.4GHZ PEAK	Ant. Pol.	:VERTICAL
EUT	:Ping BLE Pedometer	Temp.	:20℃
Power Rating	:Battery	Humi.	:60%
Model	:PB-001	Engineer.	:Jiapeng
Test Mode	:band edge(CH Low & High)		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	42.7	-6.0	36.7	54.0	-17.3	Average
2400.0000	52.4	-6.0	46.4	74.0	-27.6	Peak
2483.5000	38.3	-5.8	32.5	54.0	-21.5	Average
2483.5000	48.3	-5.8	42.5	74.0	-31.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

8 OPERATION BANDWIDTH REQUIREMENT

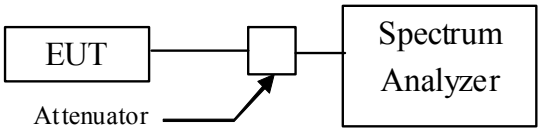
8.1 Standard Applicable

According to §15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value. The settings of spectrum analyzer is as followings.
   1) Set RBW = 30 kHz.
   2) Set the video bandwidth (VBW) ≥ RBW.
   3) Detector = Peak.
   4) Trace mode = max hold.
   5) Sweep = auto couple.
   6) Allow the trace to stabilize.
   7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.
3. Repeat above procedures until all frequencies measured were complete.

Figure 4: Emission bandwidth measurement configuration.



8.3 Measurement Equipment

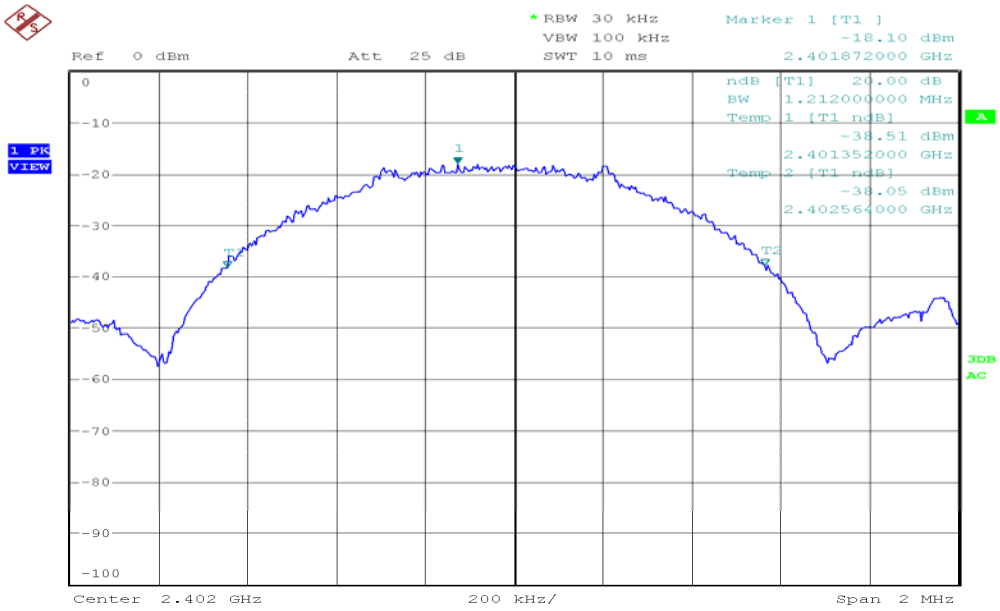
Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Spectrum Analyzer	Rohde & Schwarz	FSP40	2014/01/21	2015/01/20

8.4 Measurement Data

Test Date : Dec. 29, 2014 Temperature : 20 °C Humidity : 60 %

a) Channel Low : 20 dB Emission Bandwidth is 1.212 MHz
b) Channel High : 20 dB Emission Bandwidth is 1.208 MHz

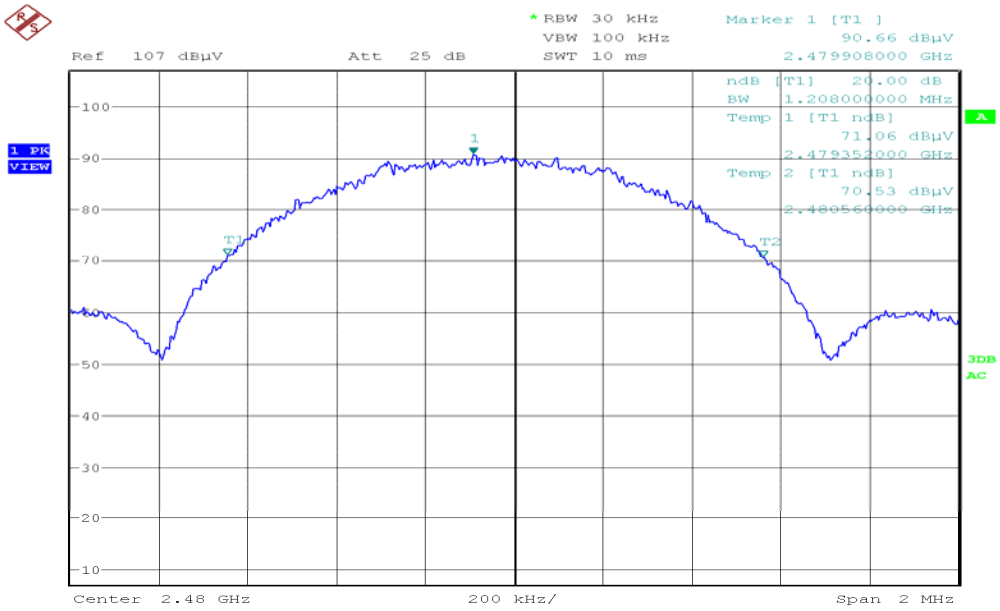
Lower band edge / -20dB BW plot of the lowest channel



KHz
Date: 29.DEC.2014 16:49:03

The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Upper band edge / -20dB BW plot of the highest channel



KHz
Date: 29.DEC.2014 16:56:19

The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.