

# MEASUREMENT REPORT

## FCC PART 15.247 Bluetooth BLE

**FCC ID:** 2AC6AC71

**APPLICANT:** Shenzhen Chainway Information Technology Co., Ltd.

**Application Type:** Certification

**Product:** Mobile Data Terminal

**Model No.:** C71

**Brand Name:** CHAINWAY

**FCC Classification:** Digital Transmission System (DTS)

**FCC Rule Part(s):** Part 15 Subpart C (Section 15.247)

**Test Procedure(s):** ANSI C63.10-2013, KDB 558074 D01v04

**Test Date:** October 31 ~ November 15, 2017

Reviewed By : Kevin Guo

( Kevin Guo )



Approved By : Marlin Chen

( Marlin Chen )



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 558074 D01v04. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

## Revision History

Report No.	Version	Description	Issue Date	Note
1710RSU02702	Rev. 01	Initial report	12-07-2017	Valid

## CONTENTS

Description	Page
<b>1. INTRODUCTION</b>	<b>6</b>
1.1. Scope .....	6
1.2. MRT Test Location .....	6
<b>2. PRODUCT INFORMATION</b>	<b>7</b>
2.1. Feature of Equipment under Test .....	7
2.2. Product Specification Subjective to this Report.....	7
2.3. Working Frequencies.....	8
2.4. Description of Available Antennas.....	9
2.5. Test Mode .....	9
2.6. Test Software .....	9
2.7. Device Capabilities .....	10
2.8. Test Configuration .....	11
2.9. EMI Suppression Device(s)/Modifications.....	11
2.10. Labeling Requirements.....	11
<b>3. DESCRIPTION OF TEST</b>	<b>12</b>
3.1. Evaluation Procedure .....	12
3.2. AC Line Conducted Emissions .....	12
3.3. Radiated Emissions.....	13
<b>4. ANTENNA REQUIREMENTS</b>	<b>14</b>
<b>5. TEST EQUIPMENT CALIBRATION DATE</b>	<b>15</b>
<b>6. MEASUREMENT UNCERTAINTY</b>	<b>16</b>
<b>7. TEST RESULT</b>	<b>17</b>
7.1. Summary .....	17
7.2. 6dB Bandwidth Measurement.....	18
7.2.1. Test Limit .....	18
7.2.2. Test Procedure used.....	18
7.2.3. Test Setting.....	18
7.2.4. Test Setup.....	18
7.2.5. Test Result.....	19
7.3. Output Power Measurement.....	20
7.3.1. Test Limit .....	20
7.3.2. Test Procedure Used .....	20
7.3.3. Test Setting.....	20
7.3.4. Test Setup.....	20

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7.3.5. Test Result of Output Power .....	21
7.4. Power Spectral Density Measurement.....	22
7.4.1. Test Limit .....	22
7.4.2. Test Procedure Used .....	22
7.4.3. Test Setting.....	22
7.4.4. Test Setup.....	22
7.4.5. Test Result.....	23
7.5. Conducted Band Edge and Out-of-Band Emissions.....	24
7.5.1. Test Limit .....	24
7.5.2. Test Procedure Used .....	24
7.5.3. Test Settiting .....	24
7.5.4. Test Setup.....	25
7.5.5. Test Result.....	26
7.6. Radiated Spurious Emission Measurement .....	28
7.6.1. Test Limit .....	28
7.6.2. Test Procedure Used .....	28
7.6.3. Test Setting.....	28
7.6.4. Test Setup.....	30
7.6.5. Test Result.....	32
7.7. Radiated Restricted Band Edge Measurement .....	37
7.7.1. Test Limit .....	37
7.7.2. Test Procedure Used .....	38
7.7.3. Test Setting.....	38
7.7.4. Test Setup.....	39
7.7.5. Test Result.....	40
7.8. AC Conducted Emissions Measurement.....	48
7.8.1. Test Limit .....	48
7.8.2. Test Setup.....	48
7.8.3. Test Result.....	49
<b>8. CONCLUSION.....</b>	<b>51</b>

## §2.1033 General Information

<b>Applicant:</b>	Shenzhen Chainway Information Technology Co., Ltd.
<b>Applicant Address:</b>	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen, China
<b>Manufacturer:</b>	Shenzhen Chainway Information Technology Co., Ltd.
<b>Manufacturer Address:</b>	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen, China
<b>Test Site:</b>	MRT Technology (Suzhou) Co., Ltd
<b>Test Site Address:</b>	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
<b>MRT Registration No.:</b>	893164
<b>MRT designation No.:</b>	CN1166
<b>FCC Rule Part(s):</b>	Part 15.247
<b>Test Device Serial No.:</b>	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
<b>FCC Classification:</b>	Digital Transmission System (DTS)

## Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



## 2. PRODUCT INFORMATION

### 2.1. Feature of Equipment under Test

Product Name	Mobile Data Terminal
Model No.	C71
Brand Name:	CHAINWAY
Hardware Version:	C70SEA_mb_v12
Software Version:	C71A_MT6735_V1.1_AM_GITDOOFOC3
Wi-Fi Specification	802.11a/b/g/n
Bluetooth Version	V4.0 single mode
GSM Operation Band (s):	GSM 850 / 900 / 1800 / 1900
WCDMA Operation Band (s):	Band II / IV / V
LTE Operation Band (s):	FDD Band 2 / 4 / 7 / 12 / 17
NFC:	13.56MHz
GPS:	1575.42MHz
<b>Components</b>	
Adapter	Model No.: GME10D-050200FUu Input Power: 100 - 240V ~ 50 - 60Hz, 0.28A Output Power: 5VDC 2A

### 2.2. Product Specification Subjective to this Report

Bluetooth Frequency	2402~2480MHz
Channel Number	40
Type of modulation	GFSK
Data Rate	1Mbps(GFSK)

Note: For other features of this EUT, test report will be issued separately.

## 2.3. Working Frequencies

Channel List for BLE

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

## 2.4. Description of Available Antennas

Antenna Type	Frequency Band	Max Peak Gain (dBi)
<b>GPS Internal Antenna</b>		
PIFA	1575.42MHz	0.92
<b>2G Internal Antenna</b>		
PIFA	GSM850	-0.72
	GSM1900	-0.29
<b>3G Internal Antenna</b>		
PIFA	WCDMA Band II	0.40
	WCDMA Band IV	0.30
	WCDMA Band V	0.21
<b>4G Internal Antenna</b>		
PIFA	FDD-LTE Band 2	-0.76
	FDD-LTE Band 4	-0.52
	FDD-LTE Band 7	-0.43
	FDD-LTE Band 12	-0.28
	FDD-LTE Band 17	-0.72
<b>Wi-Fi Internal Antenna</b>		
PIFA	2400 ~ 2483.5MHz	0.44
	5150 ~ 5250MHz	0.49
	5250 ~ 5350MHz	0.52
	5725 ~ 5850MHz	0.50
<b>Bluetooth Internal Antenna</b>		
PIFA	2400 ~ 2483.5MHz	0.50
<b>NFC Internal Antenna</b>		
PIFA	13.56MHz	1.10

## 2.5. Test Mode

Test Mode	Mode 1: Transmit by BLE
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## 2.6. Test Software

The test utility software used during testing was supplied by manufacturer.

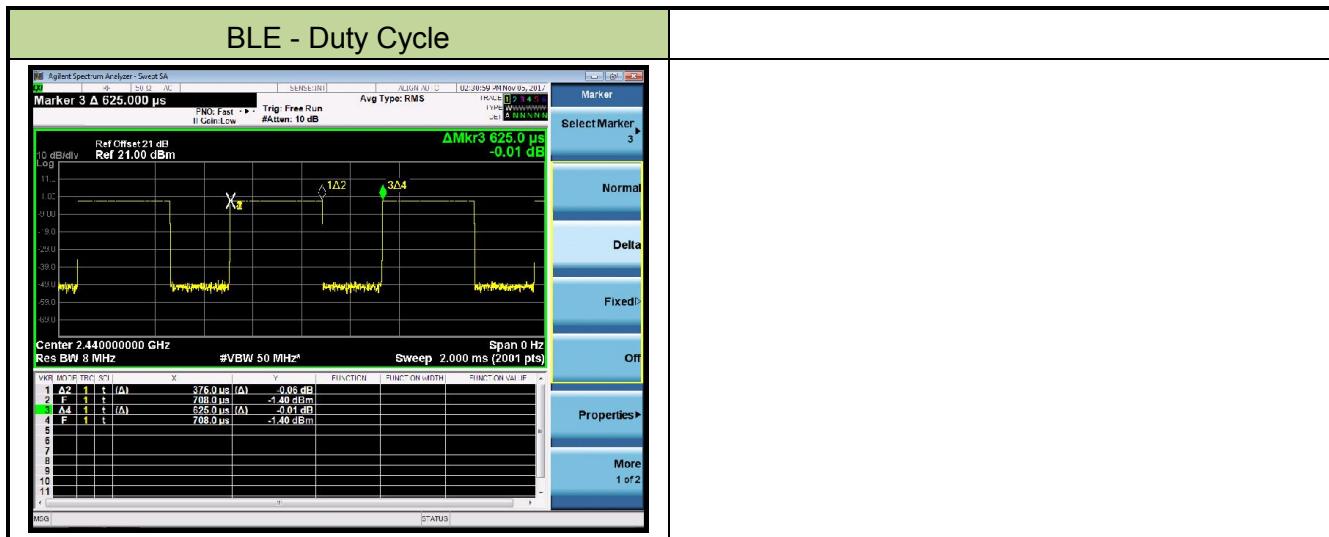
## 2.7. Device Capabilities

This device contains the following capabilities:

GSM 850/900/1800/1900, WCDMA Band II/IV/V, LTE FDD Band 2/4/7/12/17, 2.4GHz WLAN (DTS), 5GHz WLAN (UNII), Bluetooth (v4.0 single mode), NFC.

**Note:** The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section 6.0 b) of KDB 558074 D01v04. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Duty Cycle
BLE	60.0%



## 2.8. Test Configuration

The **Mobile Data Terminal** was tested per the guidance of KDB 558074 D01v04. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

## 2.9. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.10. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

### 3. DESCRIPTION OF TEST

#### 3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 558074 D01v04 were used in the measurement of the **Mobile Data Terminal**.

Deviation from measurement procedure.....**None**

#### 3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions were used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.8.

### 3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the Antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive Antenna height using a broadband Antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn Antennas were used. For frequencies below 30MHz, a calibrated loop Antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband Antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive Antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn Antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive Antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive Antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn Antenna, the horn Antenna should be always directed to the EUT when rising height.

## 4. ANTENNA REQUIREMENTS

### **Excerpt from §15.203 of the FCC Rules/Regulations:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the **Mobile Data Terminal** is **permanently attached**.
- There are no provisions for connection to an external antenna.

### **Conclusion:**

The **Mobile Data Terminal** unit complies with the requirement of §15.203.

## 5. TEST EQUIPMENT CALIBRATION DATE

### Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2018/04/25
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2018/06/21
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2018/06/21
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06181	1 year	2017/12/22
Shielding Anechoic Chamber	Mikebang	Chamber-SR2	MRTSUE06214	1 year	2018/05/10

### Radiated Emissions - AC2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2018/08/18
Loop Antenna	Schwarzbeck	FMZB1519	MRTSUE06025	1 year	2018/11/21
Bilog Period Antenna	Schwarzbeck	VULB9162	MRTSUE06022	1 year	2018/10/21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06171	1 year	2017/12/10
Broadband Coaxial Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06106	1 year	2017/12/10
Broadband Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06024	1 year	2018/01/04
Digital Thermometer & Hygrometer	Minggao	ETH529	MRTSUE06170	1 year	2017/11/30
Anechoic Chamber	RIKEN	Chamber-AC2	MRTSUE06213	1 year	2018/05/10

### Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2017/12/06
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06180	1 year	2017/12/22

Software	Version	Function
e3	V8.3.5	EMI Test Software

## 6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

AC Conducted Emission Measurement - SR2
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 150kHz~30MHz: 3.46dB
Radiated Emission Measurement – AC2
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 9kHz ~ 1GHz: 4.18dB 1GHz ~ 25GHz: 4.76dB
Spurious Emissions, Conducted - TR3
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 0.78dB
Output Power - TR3
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 1.13dB
Power Spectrum Density - TR3
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 1.15dB
Occupied Bandwidth - TR3
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_{c(y)}$ ): 0.28%

## 7. TEST RESULT

### 7.1. Summary

Company Name: Shenzhen Chainway Information Technology Co., Ltd.

FCC ID: 2AC6AC71

FCC Classification: Digital Transmission System (DTS)

Data Rate(s) Tested: 1Mbps(GFSK) (BLE)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
15.247(b)(3)	Output Power	$\leq 1\text{Watt}$		Pass	Section 7.3
15.247(e)	Power Spectral Density	$\leq 8\text{dBm} / 3\text{kHz}$		Pass	Section 7.4
15.247(d)	Band Edge / Out-of-Band Emissions	$\geq 20\text{dBc(Peak)}$		Pass	Section 7.5
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.6 & 7.7
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.8

#### Notes:

- 1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.

## 7.2. 6dB Bandwidth Measurement

### 7.2.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

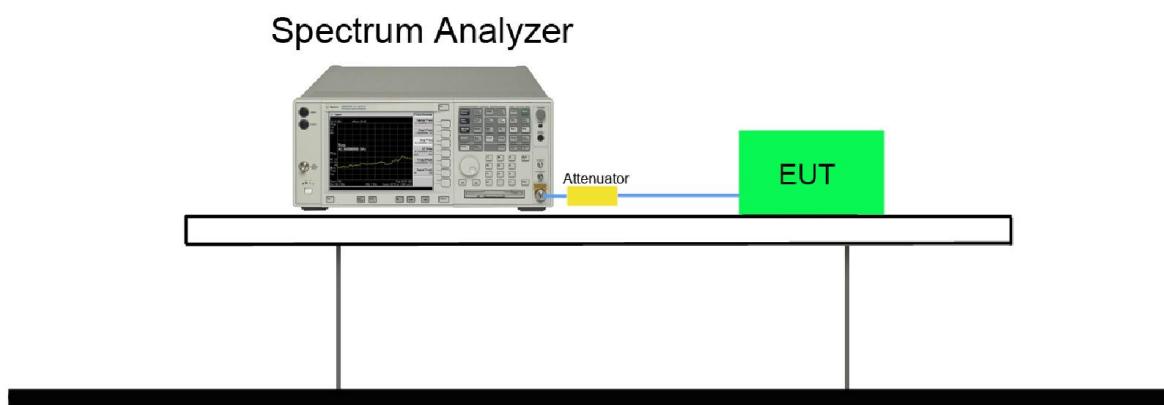
### 7.2.2. Test Procedure used

KDB 558074 D01v04 - Section 8.2 Option 2

### 7.2.3. Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

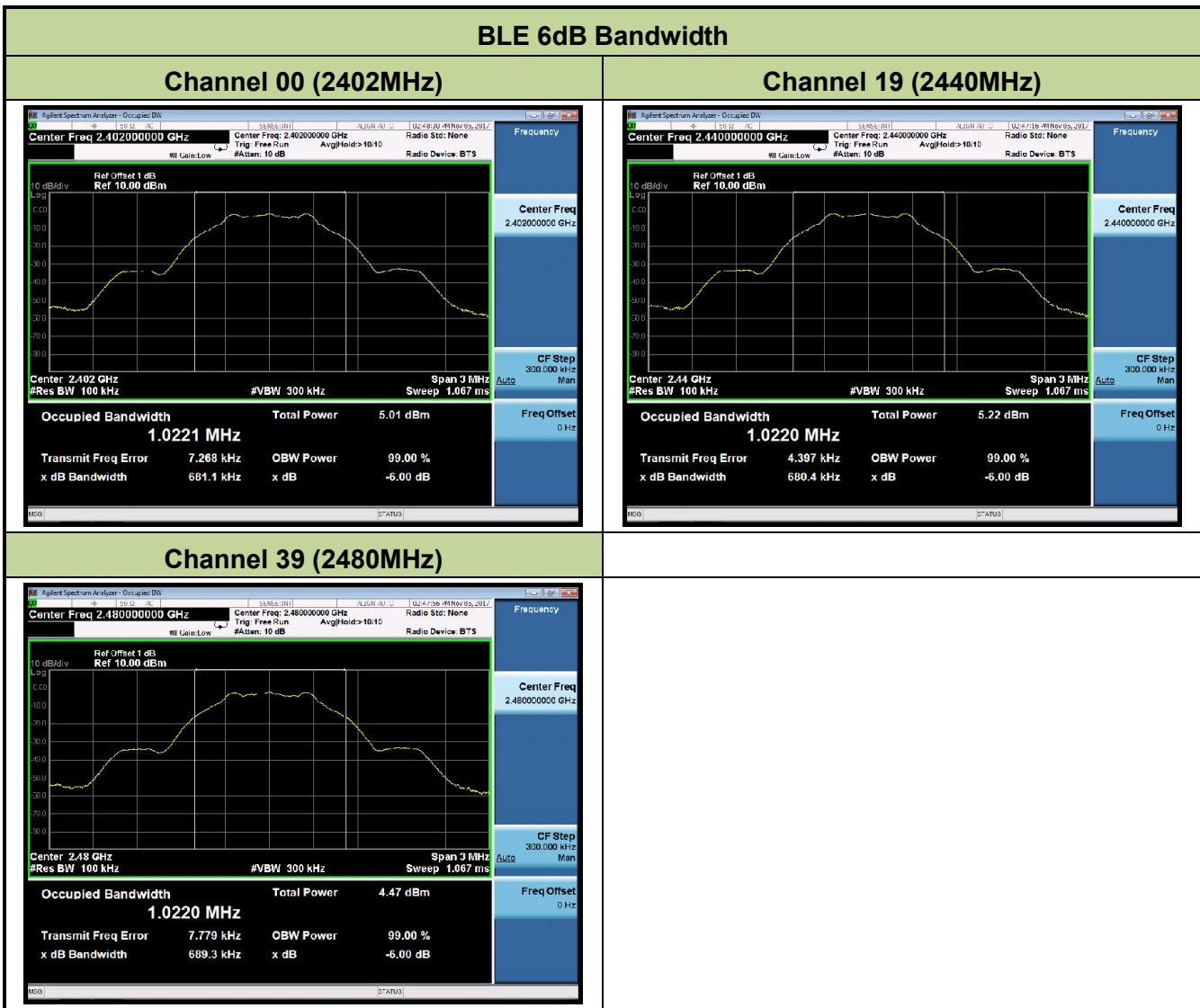
### 7.2.4. Test Setup



### 7.2.5. Test Result

Product	Mobile Data Terminal	Temperature	23°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2017/11/05
Test Item	6dB Bandwidth		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	1	00	2402	0.68	≥ 0.5	Pass
BLE	1	19	2440	0.68	≥ 0.5	Pass
BLE	1	39	2480	0.69	≥ 0.5	Pass



### 7.3. Output Power Measurement

#### 7.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm).

#### 7.3.2. Test Procedure Used

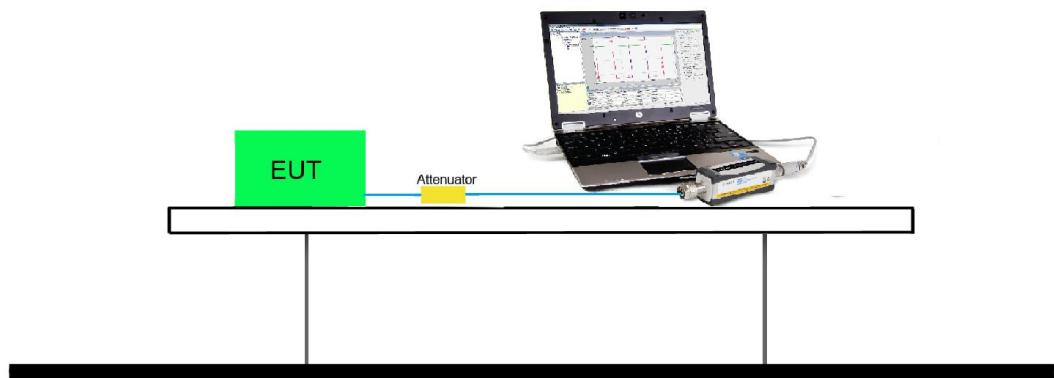
KDB 558074 D01v04 - Section 9.1.2 PKPM1 - Peak Power Method

#### 7.3.3. Test Setting

##### **Method PKPM1 (Peak Power Measurement of Signals with DTS BW ≤ 50MHz)**

Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The pulse sensor employs a  $VBW = 50MHz$  so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

#### 7.3.4. Test Setup



### 7.3.5. Test Result of Output Power

Product	Mobile Data Terminal	Temperature	23°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2017/11/05
Test Item	Output Power		

#### Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	-0.39	≤ 30	Pass
BLE	1	19	2440	-0.32	≤ 30	Pass
BLE	1	39	2480	-0.76	≤ 30	Pass

#### Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	-0.86	≤ 30	Pass
BLE	1	19	2440	-0.77	≤ 30	Pass
BLE	1	39	2480	-1.33	≤ 30	Pass

## 7.4. Power Spectral Density Measurement

### 7.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

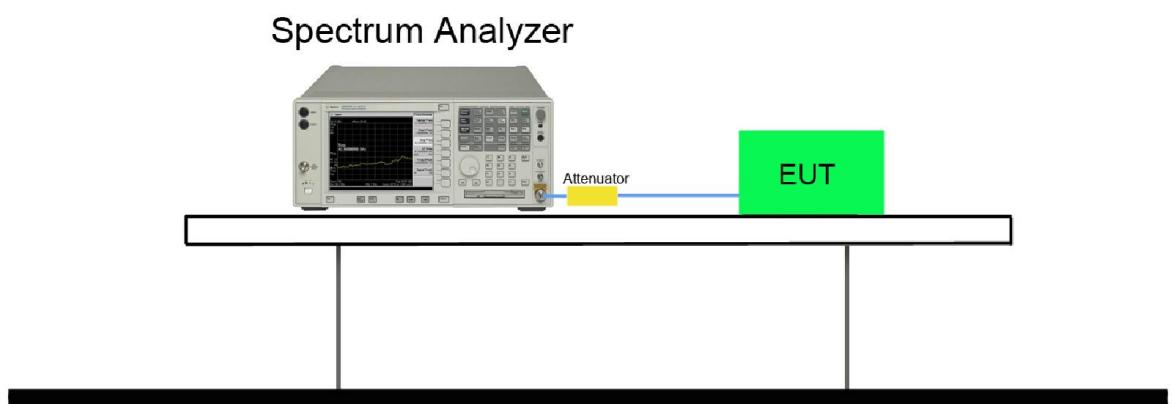
### 7.4.2. Test Procedure Used

KDB 558074 D01v04 - Section 10.2 Method PKPSD

### 7.4.3. Test Setting

- 1) Analyzer was set to the center frequency of the DTS channel under investigation
- 2) Span = 1.5 times the DTS channel bandwidth
- 3) RBW = 3kHz
- 4) VBW = 10kHz
- 5) Detector = peak
- 6) Sweep time = auto couple
- 7) Trace mode = max hold
- 8) Trace was allowed to stabilize

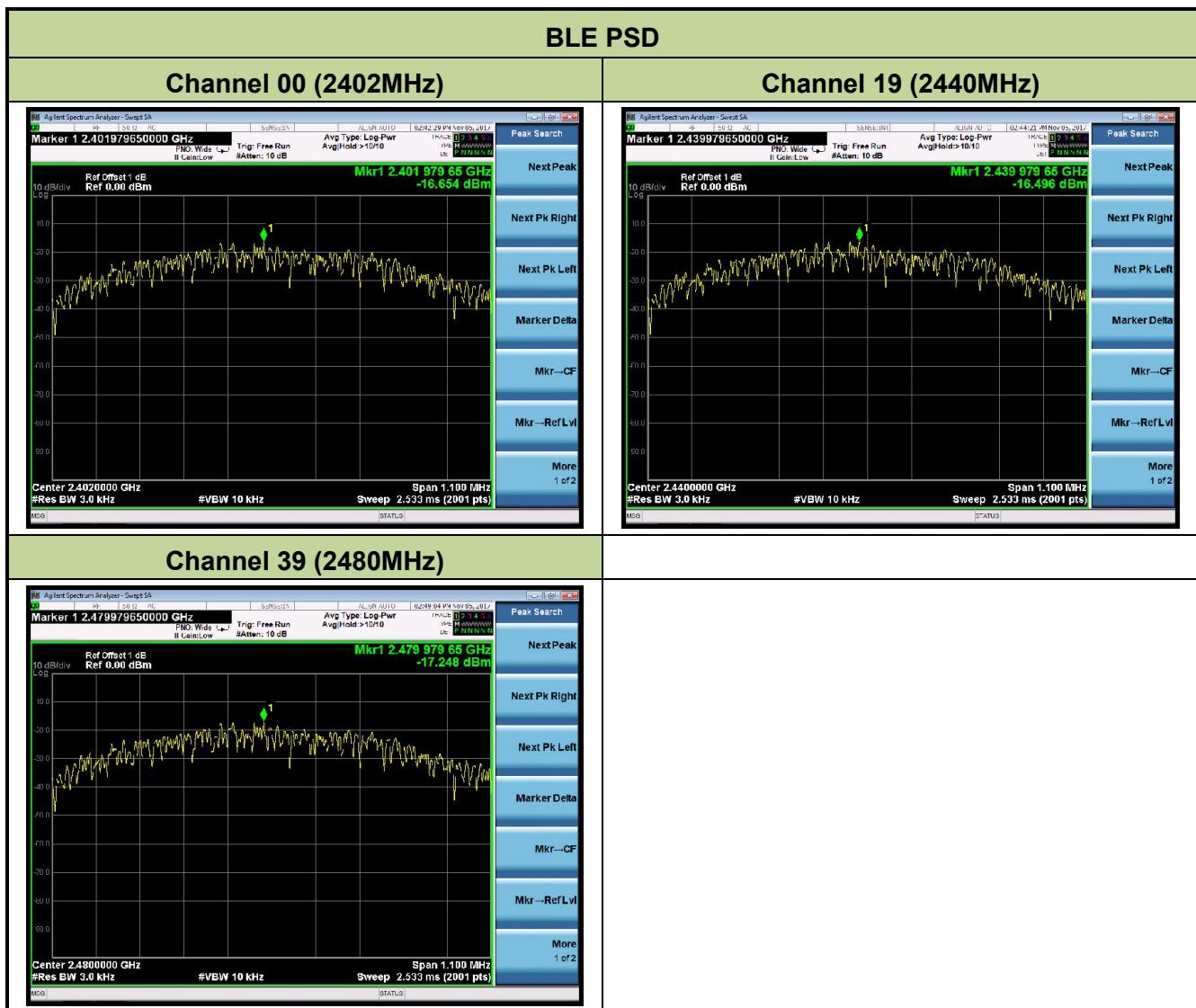
### 7.4.4. Test Setup



#### 7.4.5. Test Result

Product	Mobile Data Terminal	Temperature	23°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2017/11/05
Test Item	Power Spectral Density		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1	00	2402	-16.65	≤ 8	Pass
BLE	1	19	2440	-16.50	≤ 8	Pass
BLE	1	39	2480	-17.25	≤ 8	Pass



## 7.5. Conducted Band Edge and Out-of-Band Emissions

### 7.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the PSD procedure.

### 7.5.2. Test Procedure Used

KDB 558074 D01v04 - Section 11.2 & Section 11.3

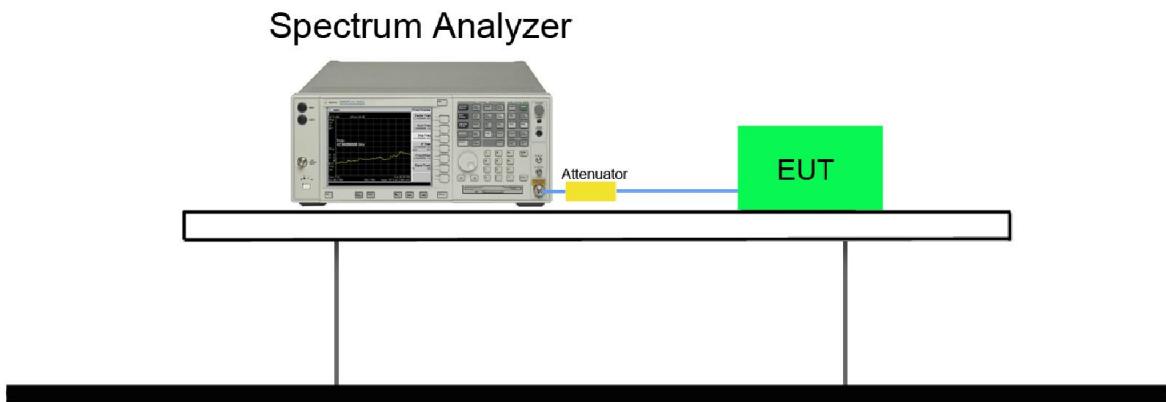
### 7.5.3. Test Setting

#### Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to  $\geq$  1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW  $\geq$  3 x RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

#### Emission level measurement

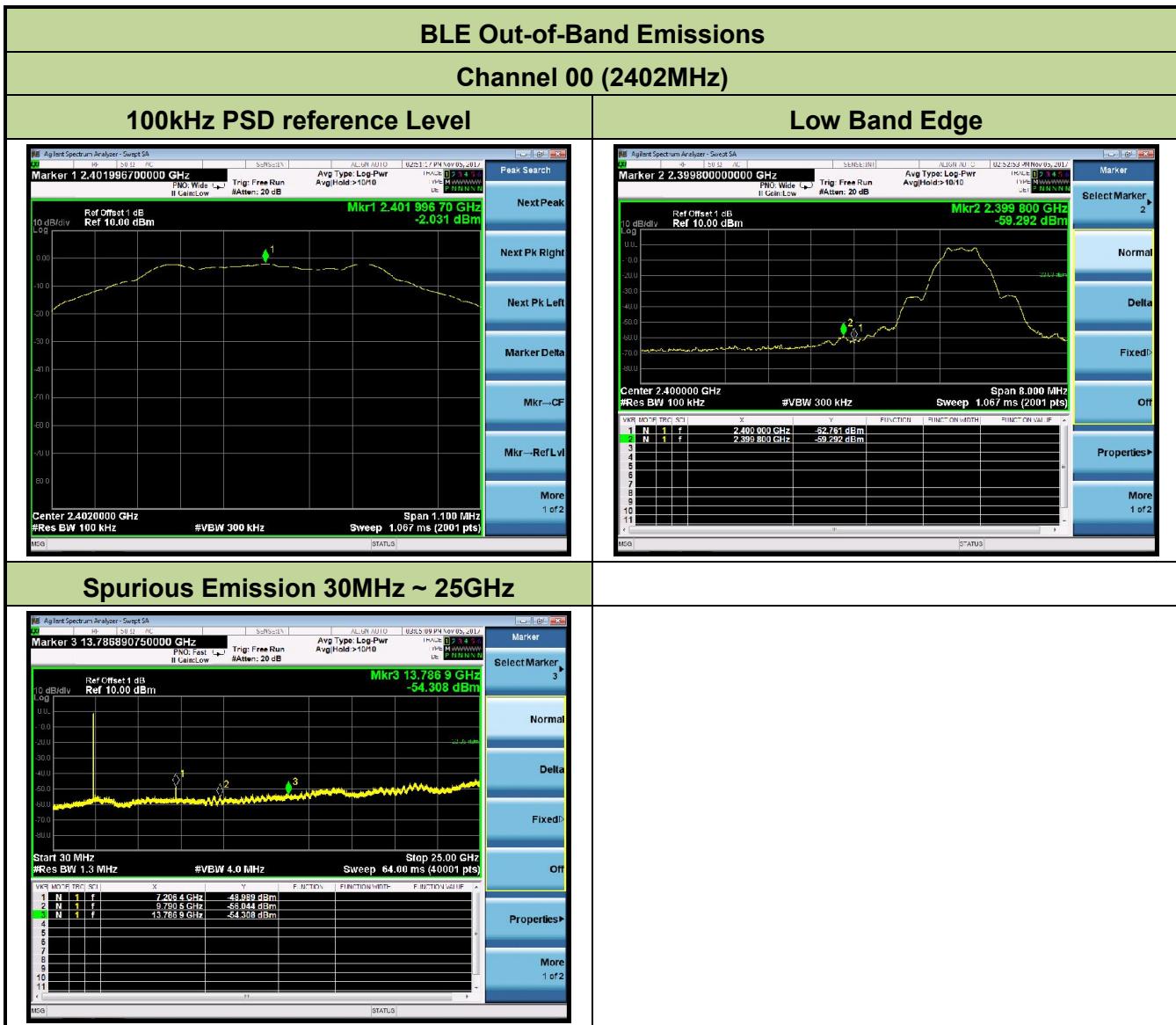
1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = Peak
5. Number of sweep points  $\geq$  2 x Span/RBW
6. Trace mode = max hold
7. Sweep time = auto couple
8. The trace was allowed to stabilize

**7.5.4. Test Setup**

### 7.5.5. Test Result

Product	Mobile Data Terminal	Temperature	23°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2017/11/05
Test Item	Conducted Band Edge and Out-of-Band Emissions		

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
BLE	1	00	2402	20dBc	Pass
BLE	1	19	2440	20dBc	Pass
BLE	1	39	2480	20dBc	Pass

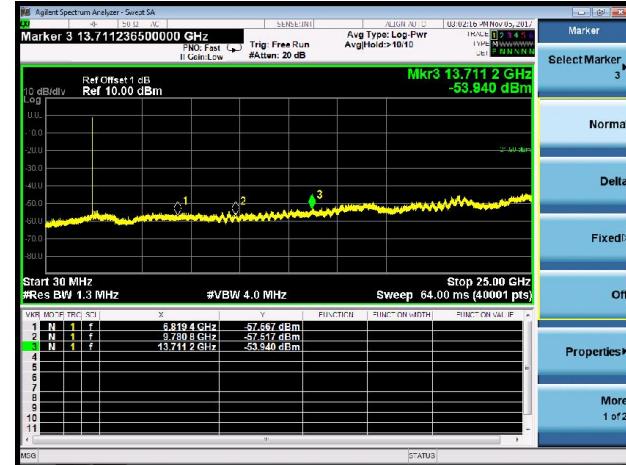


## Channel 19 (2440MHz)

## 100kHz PSD reference Level



## Spurious Emission 30MHz ~ 25GHz

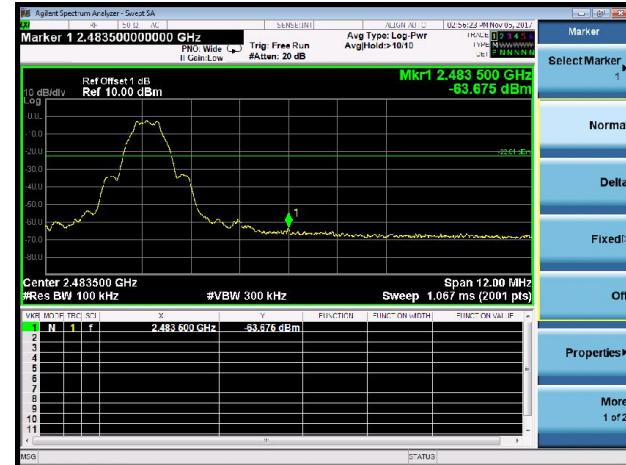


## Channel 39 (2480MHz)

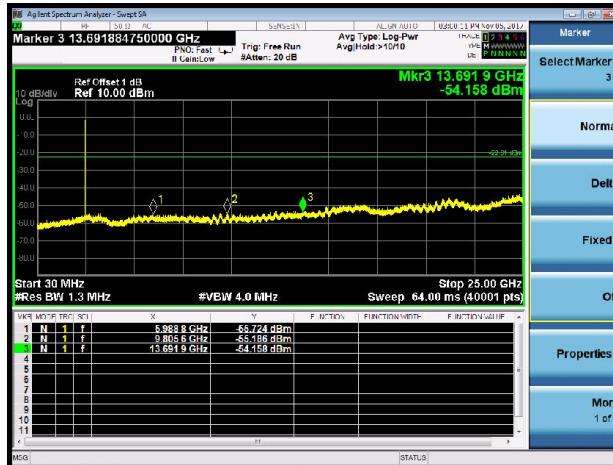
## 100kHz PSD reference Level



## High Band Edge



## Spurious Emission 30MHz ~ 25GHz



## 7.6. Radiated Spurious Emission Measurement

### 7.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

### 7.6.2. Test Procedure Used

KDB 558074 D01v04 - Section 12.2.3 (quasi-peak measurements)

KDB 558074 D01v04 - Section 12.2.4 (peak power measurements)

KDB 558074 D01v04 - Section 12.2.5 (average power measurements)

### 7.6.3. Test Setting

#### Peak Field Strength Measurements per Section 12.2.4 of KDB 558074 D01v04

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

**Table 1 - RBW as a function of frequency**

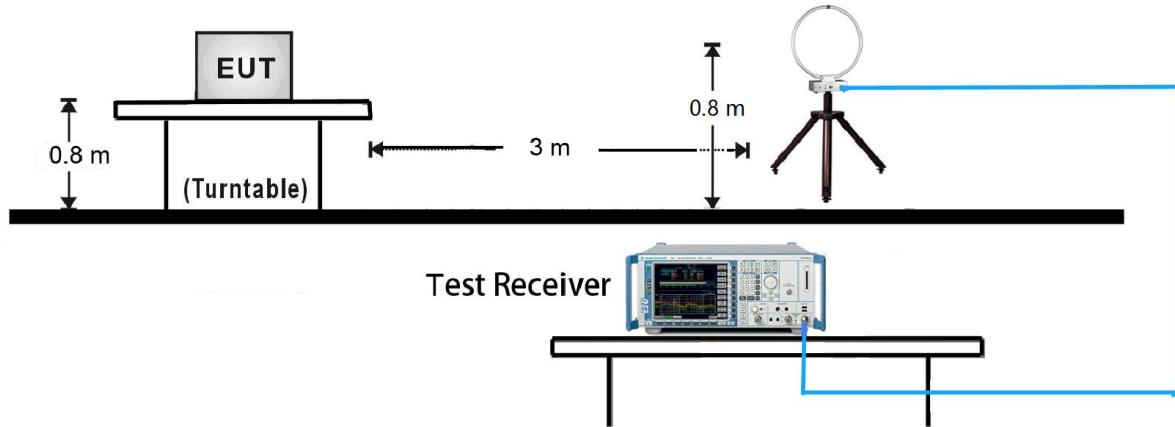
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

**Average Field Strength Measurements per Section 12.2.4 of KDB 558074 D01v04**

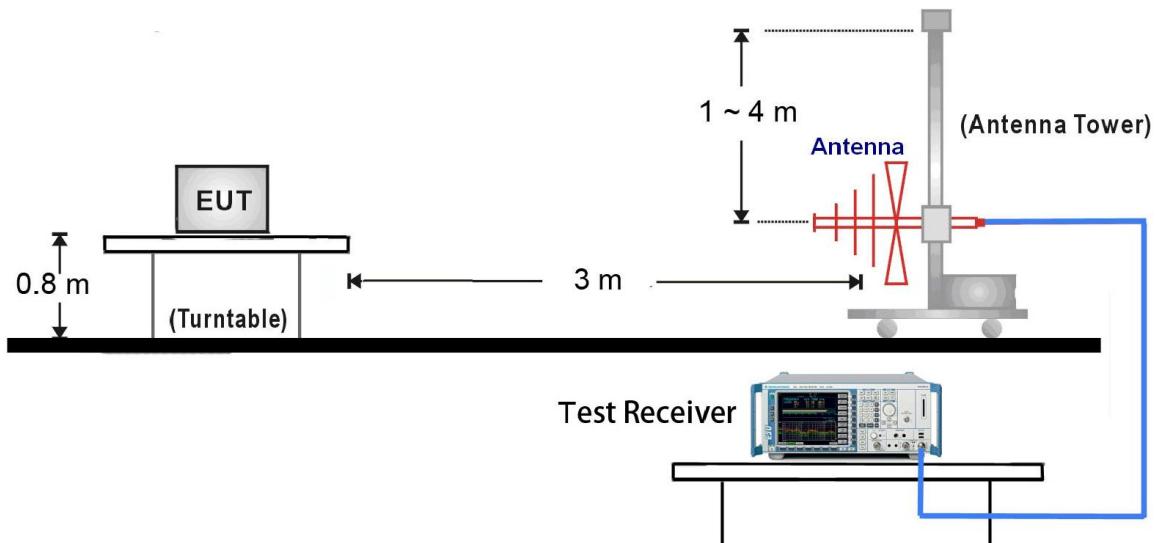
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW  $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

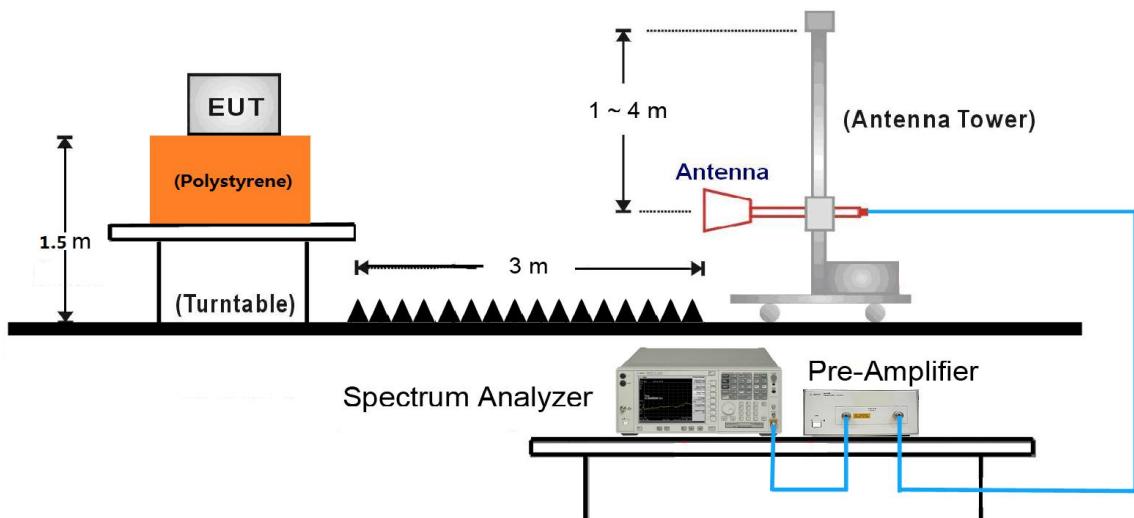
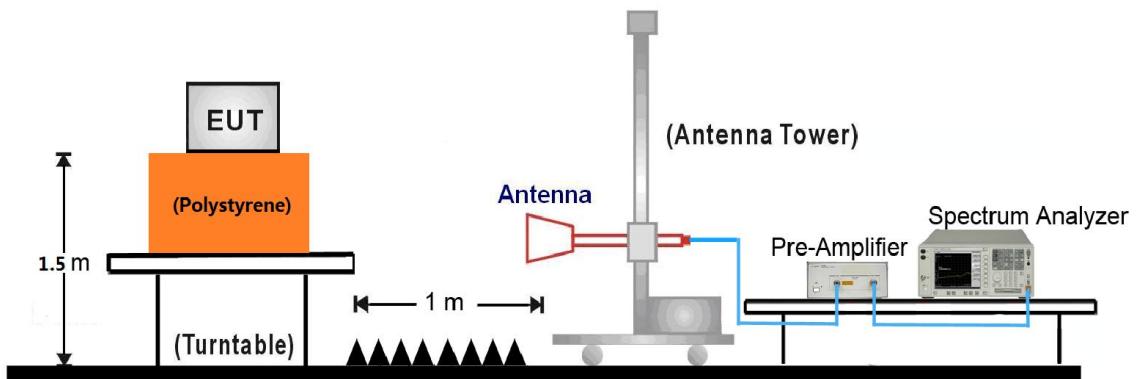
#### 7.6.4. Test Setup

##### 9kHz ~ 30MHz Test Setup:



##### 30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:18GHz ~25GHz Test Setup:

### 7.6.5. Test Result

Product	Mobile Data Terminal	Temperature	26°C
Test Engineer	Dandy Li	Relative Humidity	56%
Test Site	AC2	Test Date	2017/11/03
Test Mode:	BLE	Test Channel:	00
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dB $\mu$ V)	Factor (dB)	Measure Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector	Polarization
*	7876.5	30.4	10.5	40.9	74	-33.1	Peak	Horizontal
*	8718.0	30.7	11.4	42.1	74	-31.9	Peak	Horizontal
	9474.5	30.9	12.3	43.2	74	-30.8	Peak	Horizontal
	11030.0	31.1	16.7	47.8	74	-26.2	Peak	Horizontal
*	7936.0	32.2	10.7	42.9	74	-31.1	Peak	Vertical
*	8692.5	31.2	11.3	42.5	74	-31.5	Peak	Vertical
	9330.0	30.5	12.9	43.4	74	-30.6	Peak	Vertical
	11123.5	30.2	16.6	46.8	74	-27.2	Peak	Vertical

Note 1: “\*” is not in restricted band, its limit is 20dBc of the fundamental emission level (89.2dB $\mu$ V/m) or 15.209 which is higher.

Note 2: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Product	Mobile Data Terminal	Temperature	26°C
Test Engineer	Dandy Li	Relative Humidity	56%
Test Site	AC2	Test Date	2017/11/03
Test Mode:	BLE	Test Channel:	19
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dB $\mu$ V)	Factor (dB)	Measure Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector	Polarization
*	7936.0	32.2	10.7	42.9	74	-31.1	Peak	Horizontal
*	8667.0	31.9	11.3	43.2	74	-30.8	Peak	Horizontal
	9466.0	30.2	12.5	42.7	74	-31.3	Peak	Horizontal
	10715.5	32.3	15.6	47.9	74	-26.1	Peak	Horizontal
*	7783.0	31.6	10.5	42.1	74	-31.9	Peak	Vertical
*	8786.0	31.5	11.8	43.3	74	-30.7	Peak	Vertical
	9423.5	30.6	12.4	43.0	74	-31.0	Peak	Vertical
	11412.5	31.8	17.2	49.0	74	-25.0	Peak	Vertical

Note 1: “\*” is not in restricted band, its limit is 20dBc of the fundamental emission level (88.3dB $\mu$ V/m) or 15.209 which is higher.

Note 2: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Product	Mobile Data Terminal	Temperature	26°C
Test Engineer	Dandy Li	Relative Humidity	56%
Test Site	AC2	Test Date	2017/11/03
Test Mode:	BLE	Test Channel:	39
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dB $\mu$ V)	Factor (dB)	Measure Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector	Polarization
*	7783.0	31.6	10.5	42.1	74	-31.9	Peak	Horizontal
*	8735.0	31.5	11.6	43.1	74	-30.9	Peak	Horizontal
	9381.0	30.9	12.5	43.4	74	-30.6	Peak	Horizontal
	11497.5	31.7	17.3	49.0	74	-25.0	Peak	Horizontal
*	7774.5	31.9	10.5	42.4	74	-31.6	Peak	Vertical
*	8735.0	29.6	11.6	41.2	74	-32.8	Peak	Vertical
	9474.5	31.6	12.3	43.9	74	-30.1	Peak	Vertical
	11565.5	30.6	17.6	48.2	74	-25.8	Peak	Vertical

Note 1: “\*” is not in restricted band, its limit is 20dBc of the fundamental emission level (87.9dB $\mu$ V/m) or 15.209 which is higher.

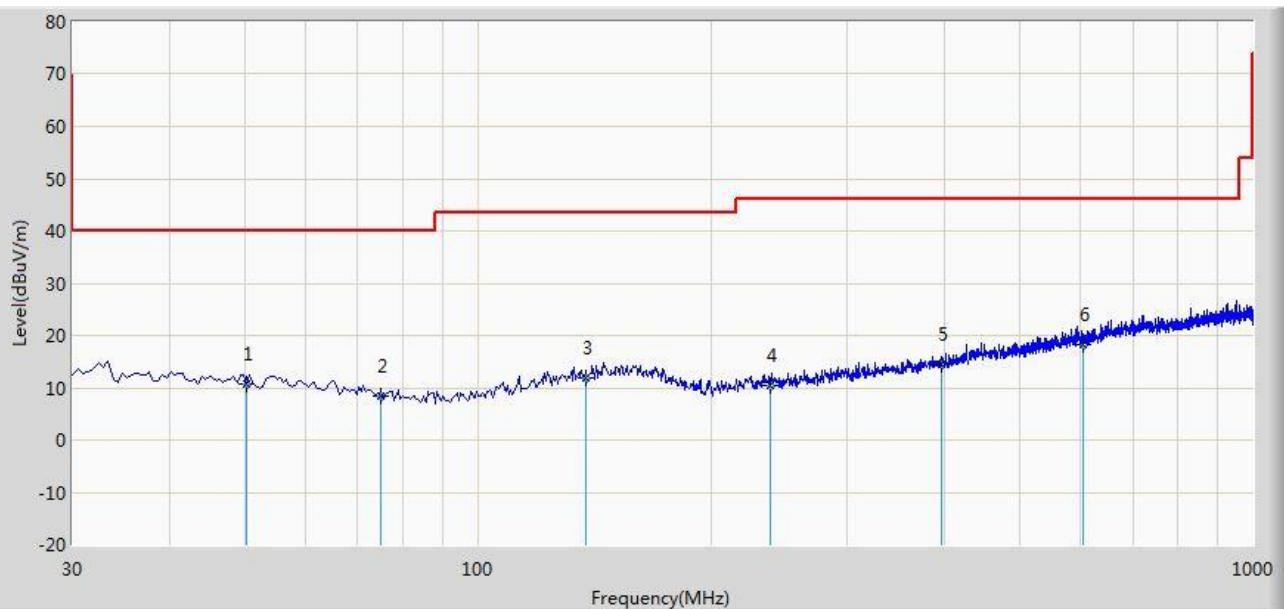
Note 2: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

**The worst case of Radiated Emission below 1GHz:**

Site: AC1	Time: 2017/11/19 - 17:09
Limit: FCC_Part15.209_RE(3m)	Engineer: Bruce Wang
Probe: VULB9168_20-2000MHz	Polarity: Horizontal
EUT: Mobile Data Terminal	Power: AC 120V/60Hz

**Note: There is the worst case within frequency range 30MHz~1GHz.**



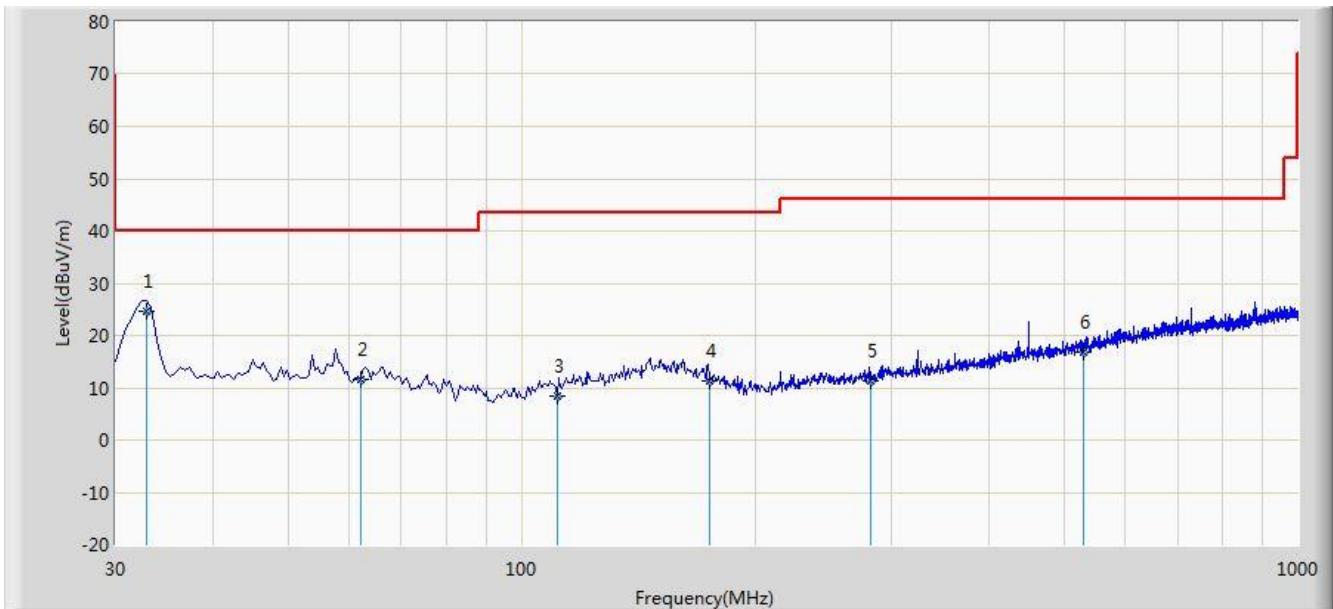
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			50.370	10.796	-3.231	-29.204	40.000	14.027	QP
2			75.105	8.532	-2.202	-31.468	40.000	10.734	QP
3			137.670	12.021	-2.280	-31.479	43.500	14.301	QP
4			238.550	10.567	-2.158	-35.433	46.000	12.725	QP
5			396.175	14.440	-1.976	-31.560	46.000	16.416	QP
6	*		603.270	18.266	-2.300	-27.734	46.000	20.566	QP

Note 1: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Site: AC1	Time: 2017/11/19 - 17:10
Limit: FCC_Part15.209_RE(3m)	Engineer: Bruce Wang
Probe: VULB9168_20-2000MHz	Polarity: Vertical
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
<b>Note: There is the worst case within frequency range 30MHz~1GHz.</b>	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB $\mu$ V/m)	Reading Level (dB $\mu$ V)	Over Limit (dB)	Limit (dB $\mu$ V/m)	Factor (dB)	Type
1		*	32.910	24.507	10.780	-15.493	40.000	13.727	QP
2			62.010	11.661	-1.330	-28.339	40.000	12.991	QP
3			111.480	8.348	-3.828	-35.152	43.500	12.176	QP
4			175.015	11.258	-2.287	-32.242	43.500	13.546	QP
5			281.715	11.323	-2.538	-34.677	46.000	13.860	QP
6			529.550	16.738	-2.335	-29.262	46.000	19.073	QP

Note 1: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

## 7.7. Radiated Restricted Band Edge Measurement

### 7.7.1. Test Limit

#### For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42-16.423	399.9 - 410	4.5-5.15
<sup>1</sup> 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	8.25 - 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	156.52475-156.525	2483.5 - 2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690 - 2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260 - 3267	23.6-24.0
12.29-12.293	167.72-173.2	3332 - 3339	31.2-31.8
12.51975-12.52025	240 - 285	3345.8 - 3358	36.43-36.5
12.57675-12.57725	322-335.4	3600 - 4400	( <sup>2</sup> )
13.36-13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

### 7.7.2. Test Procedure Used

KDB 558074 D01v04 - Section 12.2.4 (peak power measurements)

KDB 558074 D01v04 - Section 13.3.3 (average power measurements)

### 7.7.3. Test Setting

#### Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

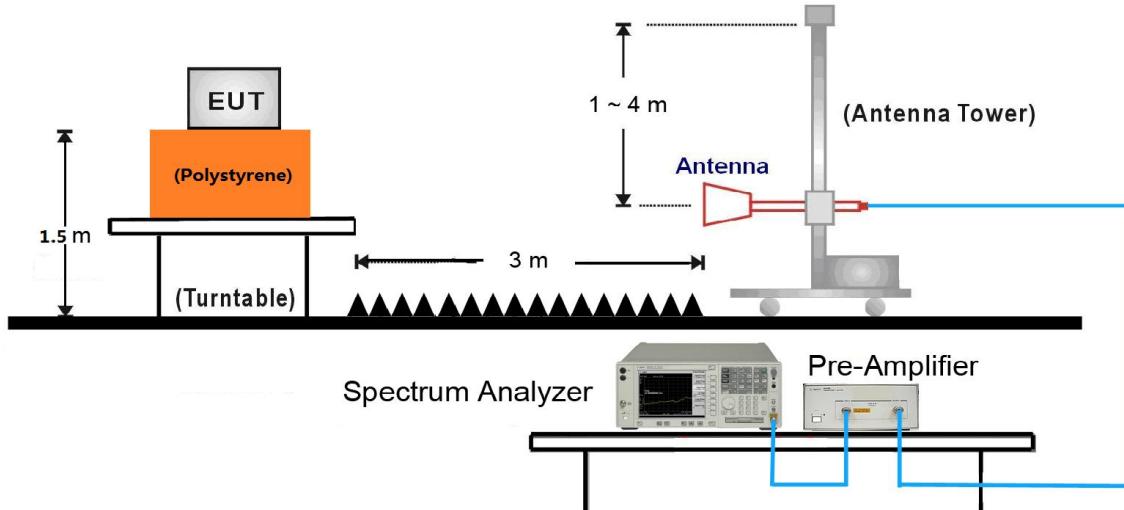
Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

### Average Field Strength Measurements

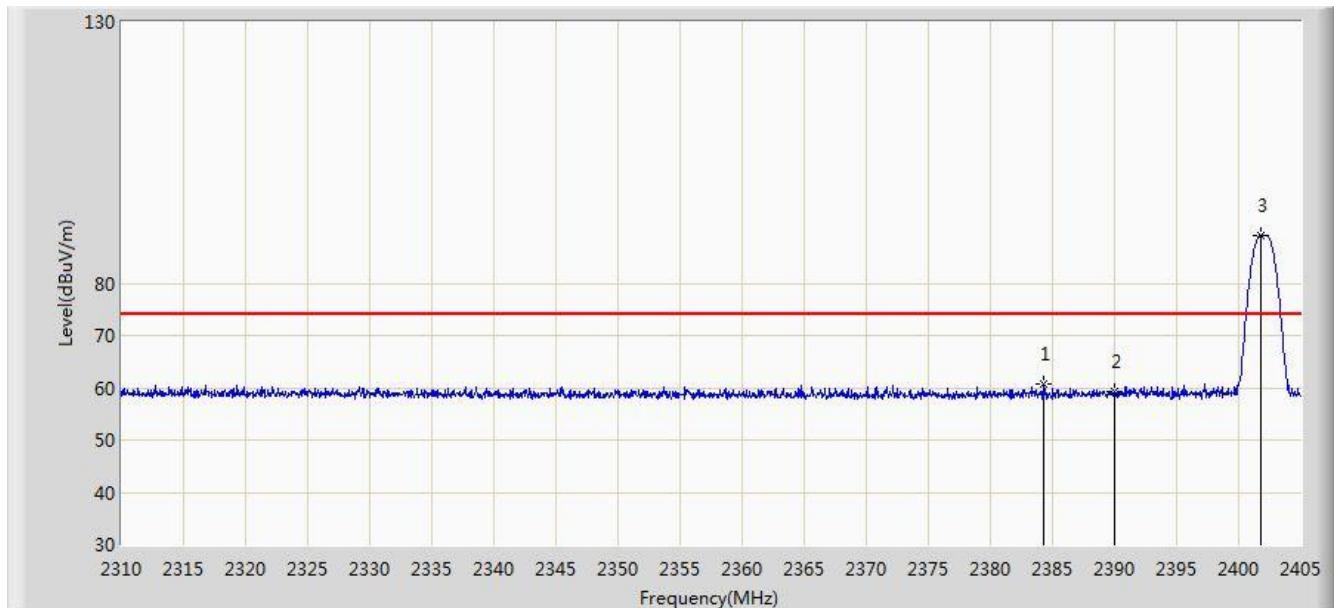
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW  $\geq 1/T$
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

#### 7.7.4. Test Setup



### 7.7.5. Test Result

Site: AC2	Time: 2017/11/03 - 02:02
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

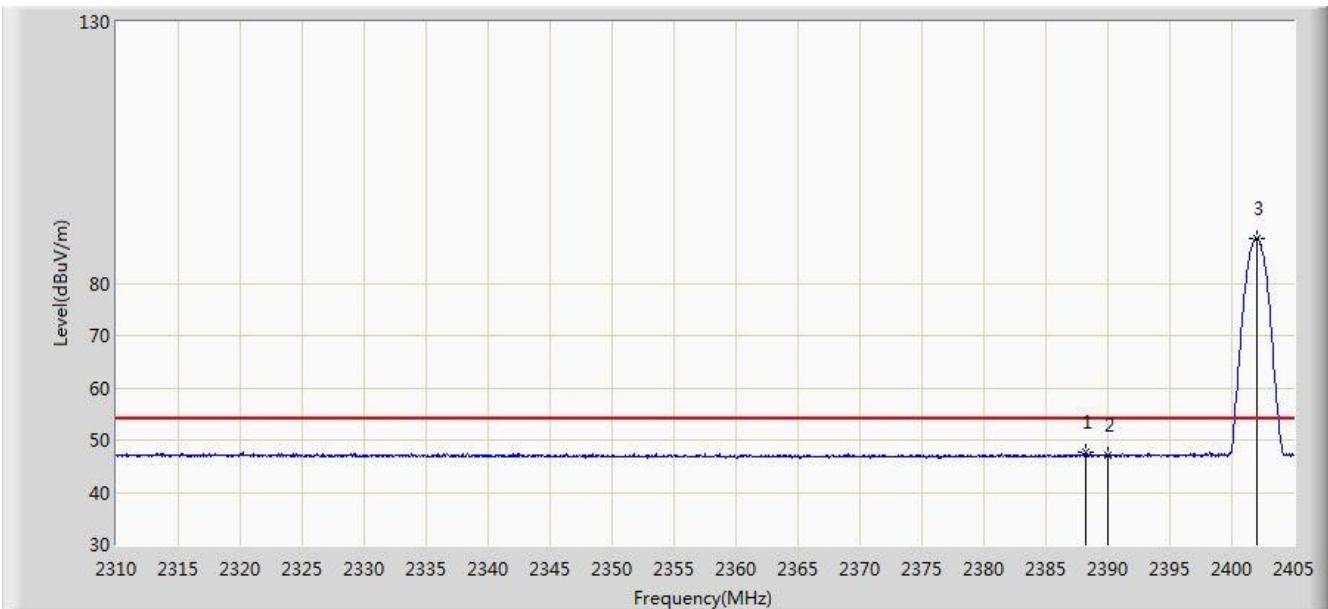


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2384.337	60.756	28.509	-13.244	74.000	32.247	PK
2			2390.000	59.296	27.018	-14.704	74.000	32.278	PK
3		*	2401.817	89.194	56.920	N/A	N/A	32.274	PK

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:04
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

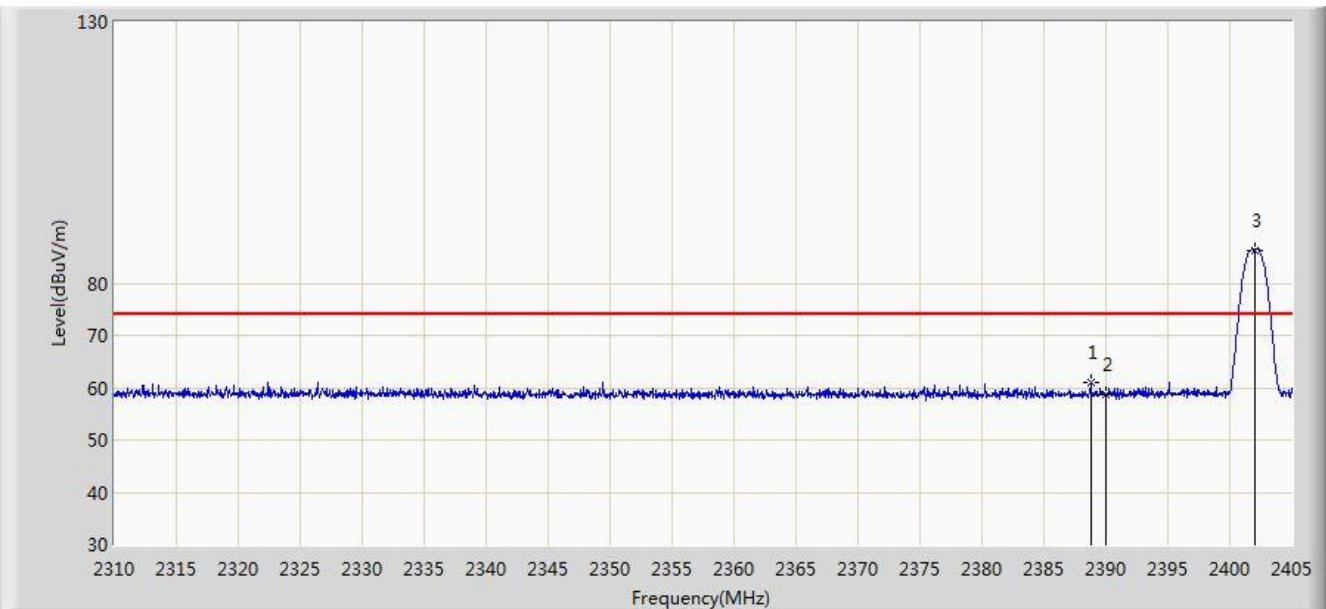


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.232	47.649	15.381	-6.351	54.000	32.268	AV
2			2390.000	46.997	14.719	-7.003	54.000	32.278	AV
3		*	2402.008	88.538	56.264	N/A	N/A	32.274	AV

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:09
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

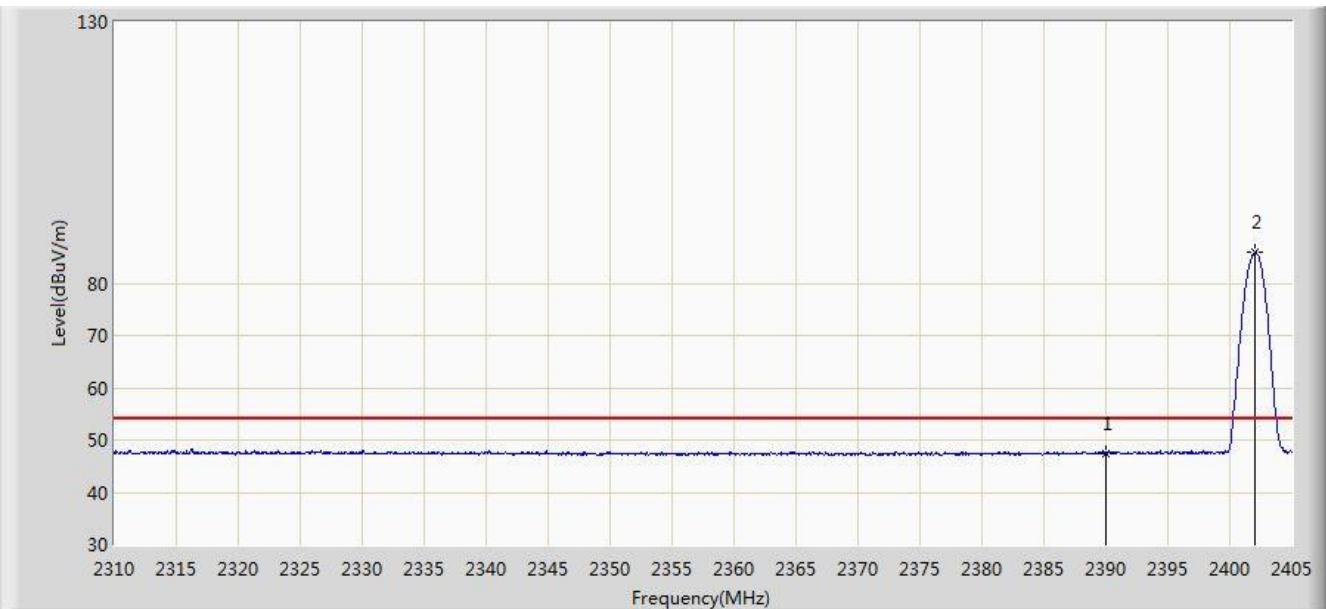


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2388.755	60.876	28.605	-13.124	74.000	32.271	PK
2			2390.000	58.681	26.403	-15.319	74.000	32.278	PK
3		*	2402.008	86.370	54.096	N/A	N/A	32.274	PK

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:10
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

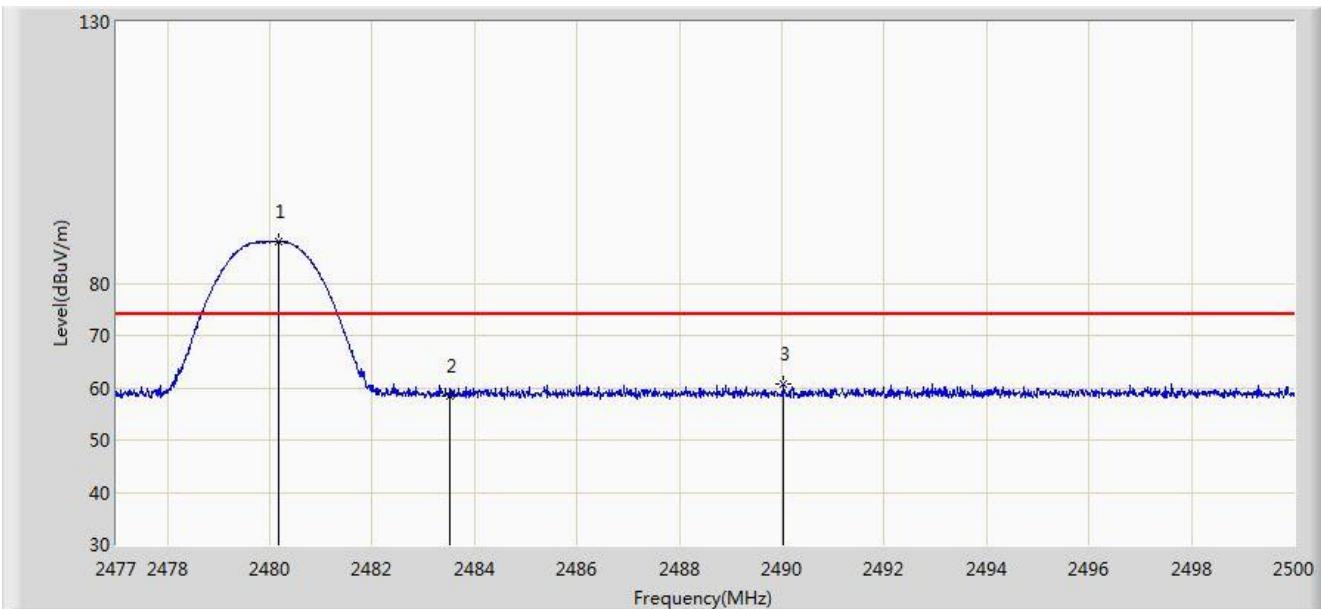


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	47.388	15.110	-6.612	54.000	32.278	AV
2		*	2402.055	85.843	53.569	N/A	N/A	32.273	AV

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:11
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

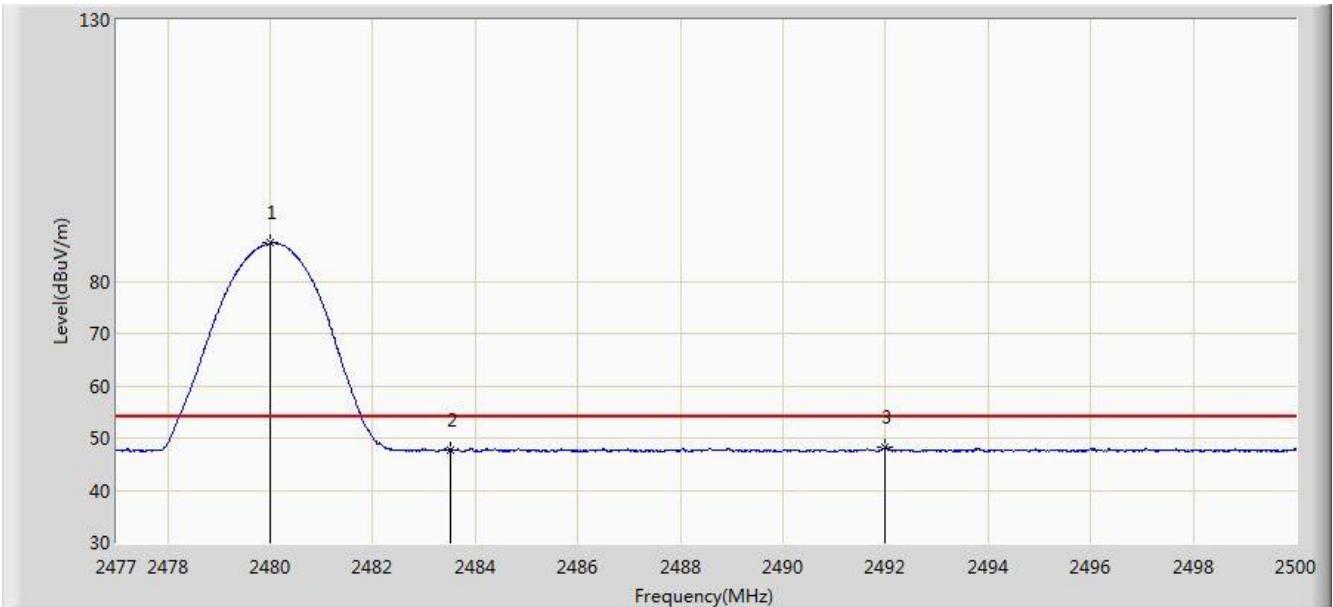


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.174	87.920	55.650	N/A	N/A	32.270	PK
2			2483.500	58.527	26.246	-15.473	74.000	32.282	PK
3			2490.030	60.613	28.309	-13.387	74.000	32.303	PK

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:13
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

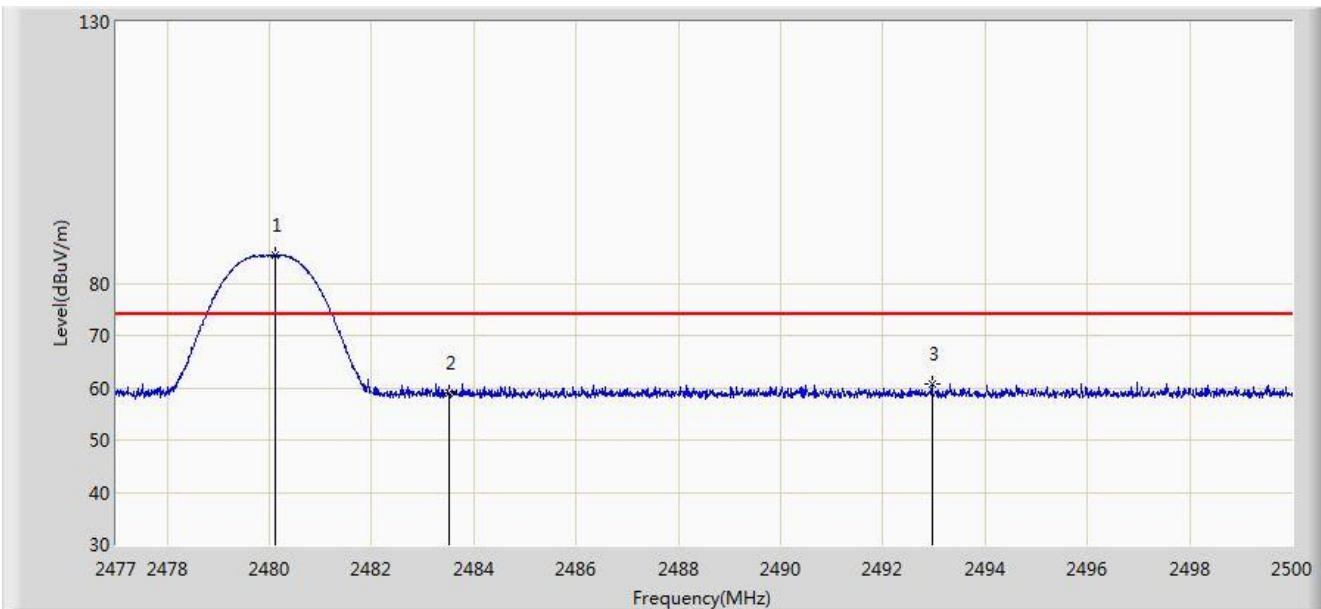


No	Flag	Mark	Frequency (MHz)	Measure Level (dB $\mu$ V/m)	Reading Level (dB $\mu$ V)	Over Limit (dB)	Limit (dB $\mu$ V/m)	Factor (dB)	Type
1		*	2479.990	87.256	54.987	N/A	N/A	32.269	AV
2			2483.500	47.601	15.320	-6.399	54.000	32.282	AV
3			2491.996	48.170	15.859	-5.830	54.000	32.311	AV

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:13
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

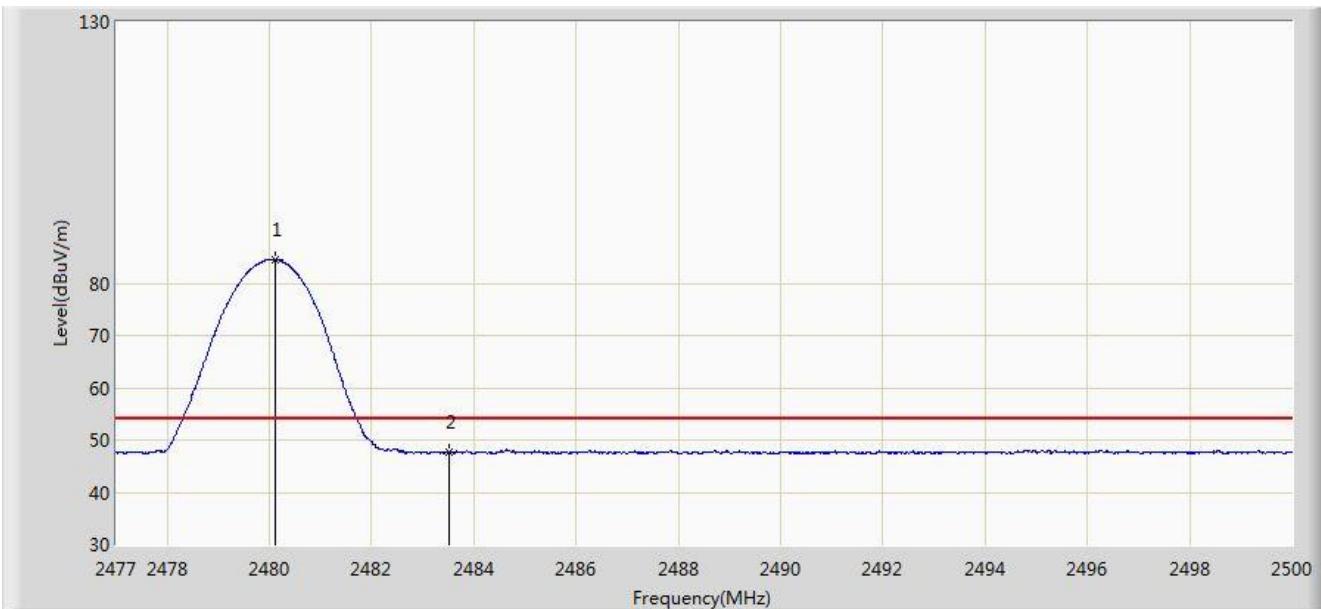


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.105	85.272	53.003	N/A	N/A	32.269	PK
2			2483.500	59.001	26.720	-14.999	74.000	32.282	PK
3			2492.962	60.617	28.303	-13.383	74.000	32.314	PK

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

Site: AC2	Time: 2017/11/03 - 02:15
Limit: FCC_Part15.209_RE(3m)	Engineer: Snake Ni
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB $\mu$ V/m)	Reading Level (dB $\mu$ V)	Over Limit (dB)	Limit (dB $\mu$ V/m)	Factor (dB)	Type
1		*	2480.105	84.555	52.286	N/A	N/A	32.269	AV
2			2483.500	47.563	15.282	-6.437	54.000	32.282	AV

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

## 7.8. AC Conducted Emissions Measurement

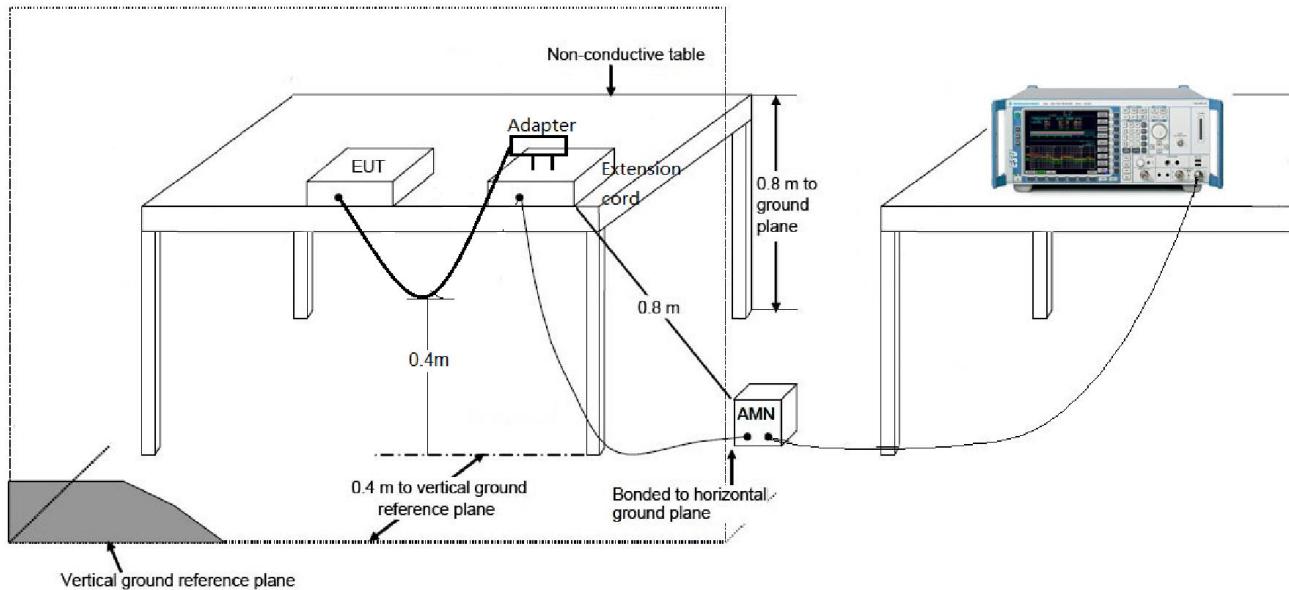
### 7.8.1. Test Limit

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

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

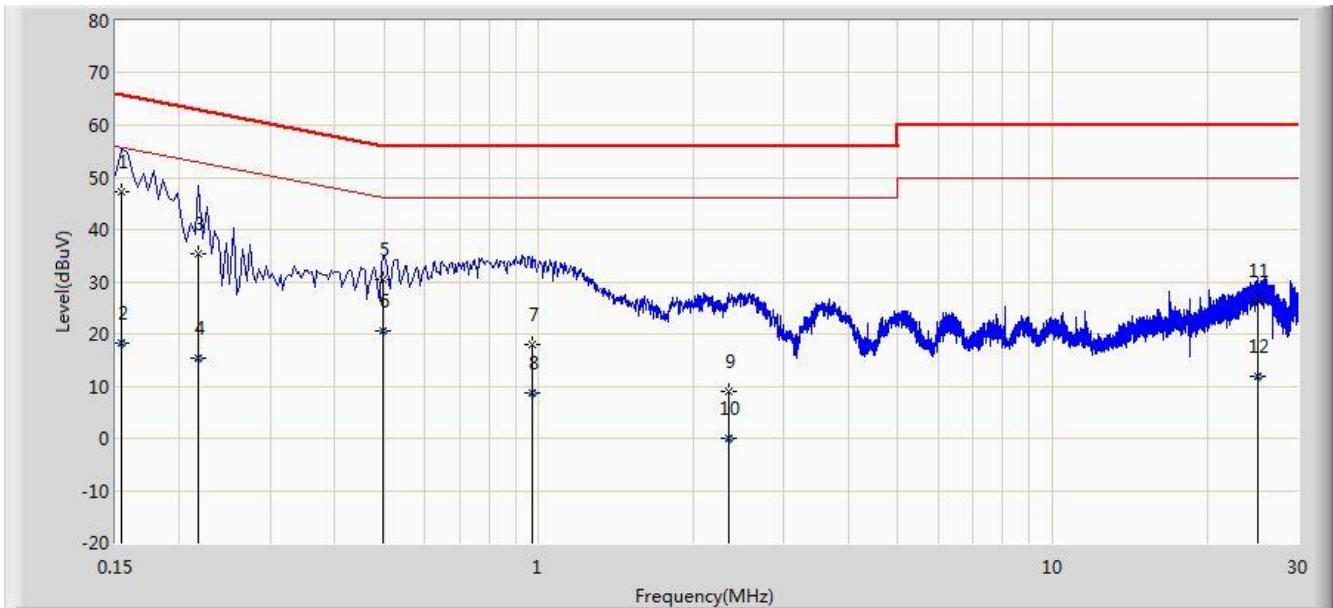
### 7.8.2. Test Setup



### 7.8.3. Test Result

Site: SR2	Time: 2017/11/13 - 10:47
Limit: FCC_Part15.207_CE_AC Power	Engineer: Polly Zong
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: Mobile Data Terminal	Power: AC 120V/60Hz

**Worst Case Mode:** Transmit by BLE at channel 2402MHz

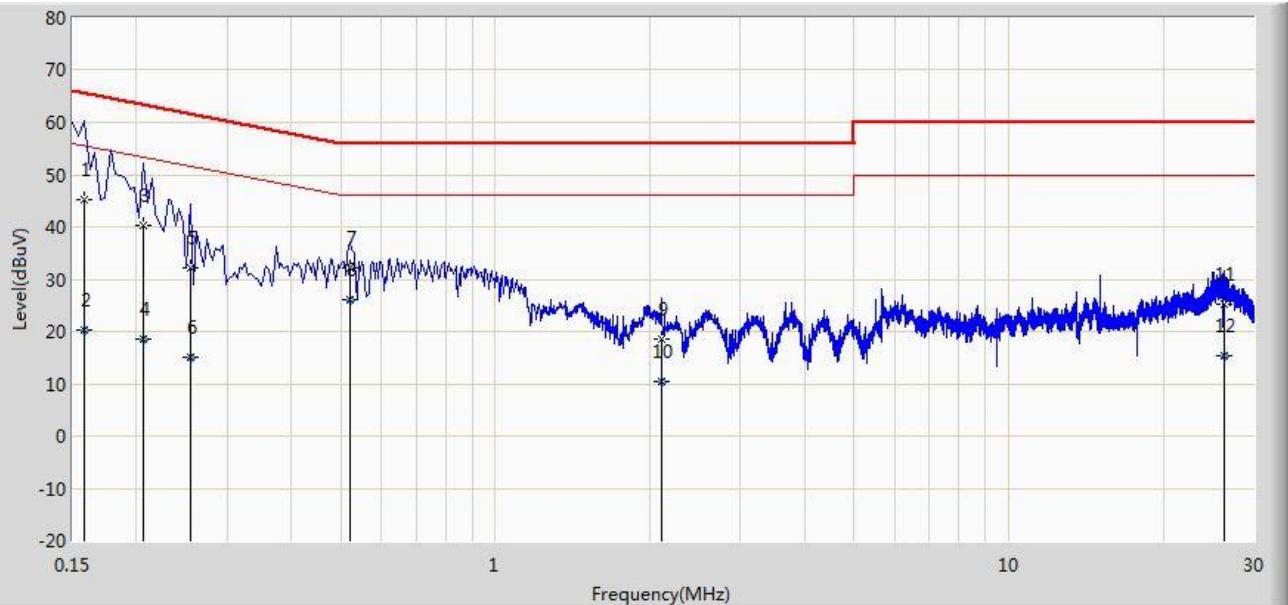


No	Flag	Mark	Frequency (MHz)	Measure Level (dB $\mu$ V)	Reading Level (dB $\mu$ V)	Over Limit (dB)	Limit (dB $\mu$ V)	Factor (dB)	Type
1		*	0.154	47.285	36.546	-18.496	65.781	10.740	QP
2			0.154	18.193	7.453	-37.589	55.781	10.740	AV
3			0.218	35.385	25.440	-27.510	62.895	9.945	QP
4			0.218	15.258	5.313	-37.637	52.895	9.945	AV
5			0.498	30.359	20.201	-25.675	56.033	10.157	QP
6			0.498	20.492	10.334	-25.541	46.033	10.157	AV
7			0.974	17.859	7.937	-38.141	56.000	9.922	QP
8			0.974	8.828	-1.093	-37.172	46.000	9.922	AV
9			2.338	9.070	-0.792	-46.930	56.000	9.862	QP
10			2.338	0.006	-9.856	-45.994	46.000	9.862	AV
11			25.142	26.245	16.029	-33.755	60.000	10.216	QP
12			25.142	11.981	1.765	-38.019	50.000	10.216	AV

Note: Measure Level (dB $\mu$ V) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SR2	Time: 2017/11/13 - 10:55
Limit: FCC_Part15.207_CE_AC Power	Engineer: Polly Zong
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: Mobile Data Terminal	Power: AC 120V/60Hz
<b>Worst Case Mode:</b> Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dB $\mu$ V)	Reading Level (dB $\mu$ V)	Over Limit (dB)	Limit (dB $\mu$ V)	Factor (dB)	Type
1			0.158	45.148	34.859	-20.420	65.568	10.290	QP
2			0.158	20.305	10.015	-35.264	55.568	10.290	AV
3			0.206	40.334	30.333	-23.031	63.365	10.001	QP
4			0.206	18.580	8.579	-34.785	53.365	10.001	AV
5			0.254	32.210	22.206	-29.415	61.625	10.004	QP
6			0.254	15.105	5.101	-36.520	51.625	10.004	AV
7			0.522	32.278	22.105	-23.722	56.000	10.174	QP
8	*		0.522	26.017	15.843	-19.983	46.000	10.174	AV
9			2.106	18.647	8.776	-37.353	56.000	9.871	QP
10			2.106	10.326	0.455	-35.674	46.000	9.871	AV
11			26.206	25.294	14.955	-34.706	60.000	10.339	QP
12			26.206	15.312	4.973	-34.688	50.000	10.339	AV

Note: Measure Level (dB $\mu$ V) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

## 8. CONCLUSION

The data collected relate only the item(s) tested and show that the **Mobile Data Terminal** is in compliance with Part 15C of the FCC Rules.

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The End

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