



# FCC RADIO TEST REPORT

**FCC ID** : UZ7VC8300  
**Equipment** : Vehicle Computer  
**Brand Name** : Zebra  
**Model Name** : VC8300  
**Applicant** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Manufacturer** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on Nov. 08, 2018 and testing was started from Nov. 22, 2018 and completed on Mar. 22, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



## Table of Contents

<b>History of this test report.....</b>	<b>3</b>
<b>Summary of Test Result.....</b>	<b>4</b>
<b>1 General Description.....</b>	<b>5</b>
1.1 Product Feature of Equipment Under Test.....	5
1.2 Product Specification of Equipment Under Test.....	6
1.3 Modification of EUT .....	7
1.4 Testing Location .....	8
1.5 Applicable Standards.....	8
<b>2 Test Configuration of Equipment Under Test.....</b>	<b>9</b>
2.1 Carrier Frequency Channel .....	9
2.2 Test Mode .....	10
2.3 Connection Diagram of Test System.....	12
2.4 Support Unit used in test configuration and system .....	13
2.5 EUT Operation Test Setup .....	14
2.6 Measurement Results Explanation Example.....	14
<b>3 Test Result.....</b>	<b>15</b>
3.1 6dB and 99% Bandwidth Measurement .....	15
3.2 Output Power Measurement.....	24
3.3 Power Spectral Density Measurement .....	26
3.4 Conducted Band Edges and Spurious Emission Measurement .....	34
3.5 Radiated Band Edges and Spurious Emission Measurement .....	43
3.6 AC Conducted Emission Measurement.....	47
3.7 Antenna Requirements.....	49
<b>4 List of Measuring Equipment .....</b>	<b>50</b>
<b>5 Uncertainty of Evaluation.....</b>	<b>52</b>
<b>Appendix A. AC Conducted Emission Test Result</b>	
<b>Appendix B. Radiated Spurious Emission</b>	
<b>Appendix C. Radiated Spurious Emission Plots</b>	
<b>Appendix D. Duty Cycle Plots</b>	
<b>Appendix E. Setup Photographs</b>	



## History of this test report



## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(2)	6dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.247(b)(3)	Peak Output Power	Pass	-
3.3	15.247(e)	Power Spectral Density	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	Pass	Under limit 5.23 dB at 40.800 MHz
3.6	15.207	AC Conducted Emission	Pass	Under limit 13.80 dB at 0.236 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	Pass	-

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Wii Chang

Report Producer: Maggie Chiang



## 1 General Description

### 1.1 Product Feature of Equipment Under Test

Product Feature	
<b>Equipment</b>	Vehicle Computer
<b>Brand Name</b>	Zebra
<b>Model Name</b>	VC8300
<b>Sample 1</b>	EUT with SKU 1
<b>Sample 2</b>	EUT with SKU 2
<b>Sample 3</b>	EUT with SKU 3
<b>Sample 4</b>	EUT with SKU 4
<b>Sample 5</b>	EUT with SKU 5
<b>Sample 6</b>	EUT with SKU 6
<b>Sample 7</b>	EUT with SKU 7
<b>EUT supports Radios application</b>	WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
<b>HW Version</b>	EVT1
<b>SW Version</b>	Zebra/VC8300/VC8310:8.1.0/01-14-12-00-ON-U00-PRD/266: eng/release-keys
<b>FW Version</b>	01-14-12.00-ON-U00-PRD
<b>MFD</b>	03Nov18
<b>EUT Stage</b>	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer.

Specification of Accessories				
<b>AC Adapter</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	FSP150-AAAN2-Z
<b>Battery</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	BT000254A01
<b>Car Charger</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	CA1210
<b>RJ50/USB cable</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	CBA-U01-S07ZAR
<b>Scanner</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	DS3508
<b>Scanner</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	LS3408
<b>Audio Speaker</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	M1000
<b>Ferrite Core</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	M1000
<b>Keyboard (ikey)</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	SLK-101-M-USB-3F
<b>Keyboard (remote keyboard)</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	KYBD-QWH-VC80
<b>External Antenna (Monopole)</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	AN2010
<b>External Antenna (Monopole)</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	AN2020
<b>External Antenna (Dipole)</b>	<b>Brand Name</b>	Zebra	<b>Model Name</b>	AN2030
<b>Power Pre-regulator</b>	<b>Brand Name</b>	PSION	<b>Model Name</b>	PS1370



## &lt;Sample Information&gt;

Model Name	VC80x 8"			VC80x 10"			
	SKU1	SKU2	SKU3	SKU4	SKU5	SKU6	SKU7
SKU Name	Warehouse 1	Warehouse 2	Freezer SK HYNIX eMMC & MICRON DRAM	Warehouse	Outdoor	Warehouse	Freezer
OS	Android O	Android O	Android O	Android O	Android O	Android O	Android O
Display	Tianma	Tianma	Tianma	AUO	Mitsubishi	AUO	AUO
DTB board / Fuxture	DTB 8" CTP (TCA8414)	DTB 8" CTP (TCA8414)	DTB 8" CTP (TCA8414)	DTB AUO CTP (TCA8414)	DTB MIT CTP (TCA8414)	DTB AUO RTP (TCA8414)	DTB AUO RTP (TCA8414)
TP Type (Gunze)	CTP 8"	CTP 8"	CTP 8" w/ Heater	CTP 10"	CTP 10"	RTP	RTP w/ Heater
KB printing	QWERTY	AZETY	QWERTY				
KB Board	NO	NO	NO	Yes	Yes	Yes	Yes
KB	Yes	Yes	Yes	NO	NO	NO	NO
MLB	SDA660	SDA660	SDA660	SDA660	SDA660	SDA660	SDA660
PWR Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes
USB Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DB9 Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Battery Heater Board	Yes	Yes	Yes	Yes	Yes	Yes	Yes

## 1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
<b>Tx/Rx Frequency Range</b>	2402 MHz ~ 2480 MHz
<b>Number of Channels</b>	40
<b>Carrier Frequency of Each Channel</b>	40 Channel(37 hopping + 3 advertising channel)
<b>Maximum Output Power to Antenna</b>	2.07 dBm (0.0016 W) for 1Mbps 2.13 dBm (0.0016 W) for 2Mbps
<b>99% Occupied Bandwidth</b>	1.034 MHz for 1Mbps 2.052 MHz for 2Mbps
<b>Type of Modulation</b>	Bluetooth LE : GFSK



Antenna No.	Chain No.	Model	Antenna Type	Antenna Gain (dBi) Exclude Cable loss	Internal Cable loss (dB)	External Cable loss (dB)	Antenna Gain (dBi) Include Cable loss	Frequency (GHz)		
1	Int. Chain 0	AN-000242-01	Patch	3.30	N/A	N/A	3.30	2.4~2.4835		
				4.53	N/A	N/A	4.53	5.15~5.85		
	Int. Chain 1			4.00	N/A	N/A	4.00	2.4~2.4835		
				4.79	N/A	N/A	4.79	5.15~5.85		
2	Ext. Chain 0	AN2010	Monopole	2	0.6	1.8	-0.4	2.4~2.4835		
				2	0.9	2.6	-1.5	5.15~5.85		
	Ext. Chain 1			2	0.6	1.8	-0.4	2.4~2.4835		
				2	0.9	2.6	-1.5	5.15~5.85		
3	Ext. Chain 0	AN2020	Monopole	5	0.6	1.8	2.6	2.4~2.4835		
	Ext. Chain 1			5	0.6	1.8	2.6	2.4~2.4835		
4	Ext. Chain 0	AN2030	Dipole	2	0.6	N/A	1.4	2.4~2.4835		
				3.7	0.9	N/A	2.8	5.15~5.85		
	Ext. Chain 1			2	0.6	N/A	1.4	2.4~2.4835		
				3.7	0.9	N/A	2.8	5.15~5.85		

### 1.3 Modification of EUT

No modifications are made to the EUT during all test items.



## 1.4 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	TH05-HY	CO05-HY

**Note:** The test site complies with ANSI C63.4 2014 requirement.

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	
	03CH11-HY	

**Note:** The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW0007

## 1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ ANSI C63.10-2013

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



## 2 Test Configuration of Equipment Under Test

### 2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	21	2444
	1	2404	22	2446
	2	2406	23	2448
	3	2408	24	2450
	4	2410	25	2452
	5	2412	26	2454
	6	2414	27	2456
	7	2416	28	2458
	8	2418	29	2460
	9	2420	30	2462
	10	2422	31	2464
	11	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-



## 2.2 Test Mode

Channel	Frequency	Bluetooth – LE 1Mbps RF Average Output Power
		Data Rate / Modulation
		GFSK
		1Mbps
Ch00	2402MHz	1.05 dBm
Ch19	2440MHz	1.40 dBm
Ch39	2480MHz	1.32 dBm

Channel	Frequency	Bluetooth – LE 1Mbps RF Peak Output Power
		Data Rate / Modulation
		GFSK
		1Mbps
Ch00	2402MHz	1.82 dBm
Ch19	2440MHz	2.07 dBm
Ch39	2480MHz	1.97 dBm

Channel	Frequency	Bluetooth – LE 2Mbps RF Average Output Power
		Data Rate / Modulation
		GFSK
		2Mbps
Ch00	2402MHz	0.92 dBm
Ch19	2440MHz	1.28 dBm
Ch39	2480MHz	1.30 dBm

Channel	Frequency	Bluetooth – LE 2Mbps RF Peak Output Power
		Data Rate / Modulation
		GFSK
		2Mbps
Ch00	2402MHz	1.80 dBm
Ch19	2440MHz	2.13 dBm
Ch39	2480MHz	2.05 dBm



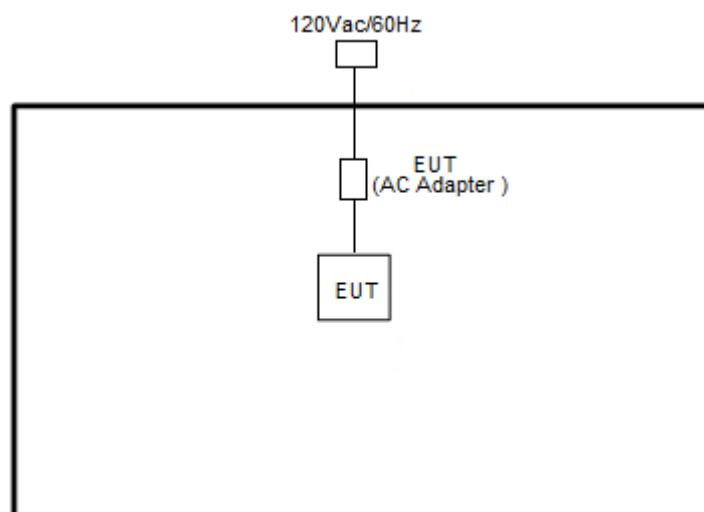
- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane for Antenna 1; Y plane for Antenna 3; Vertical for Antenna 4) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

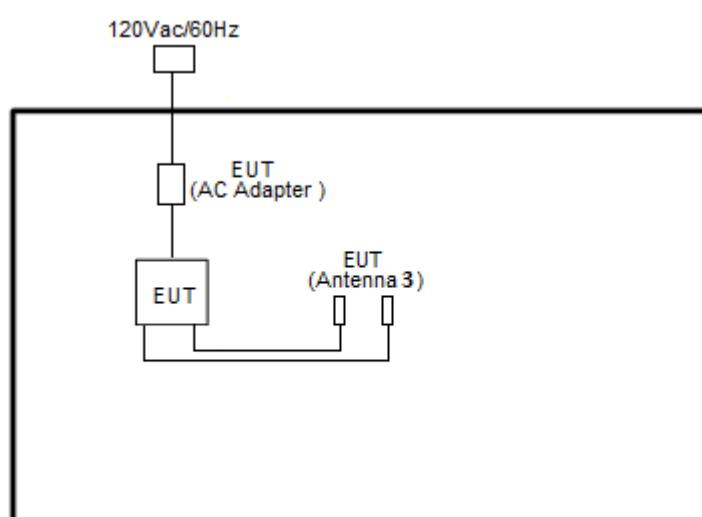
Summary table of Test Cases	
Test Item	Data Rate / Modulation
	Bluetooth – LE / GFSK
Conducted Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps
Radiated Test Cases	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps
AC Conducted Emission	Mode 1: WLAN (2.4GHz) Link + Bluetooth Link + Audio Speaker (M1000) + Keyboard (ikey) + Scanner (LS3408) + RS-232 (cable load)* 2 + Int. Antenna + Ext. Antenna AN2020 + AC/DC Adapter + MPEG4 for Sample 4
<b>Remark:</b> For Radiated Test Cases, the tests were performed with Sample 3, and each antenna (Ant. 1, Ant. 3, Ant. 4) was tested in mode 1~6.	

## 2.3 Connection Diagram of Test System

<EUT with Antenna 1>

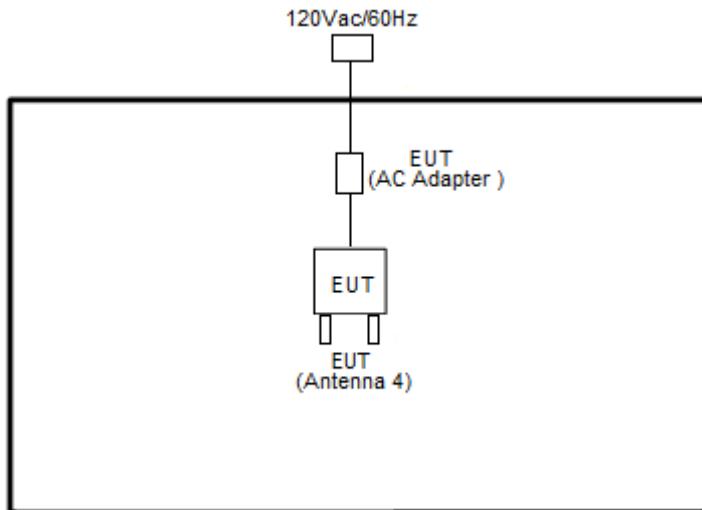


<EUT with Antenna 3>

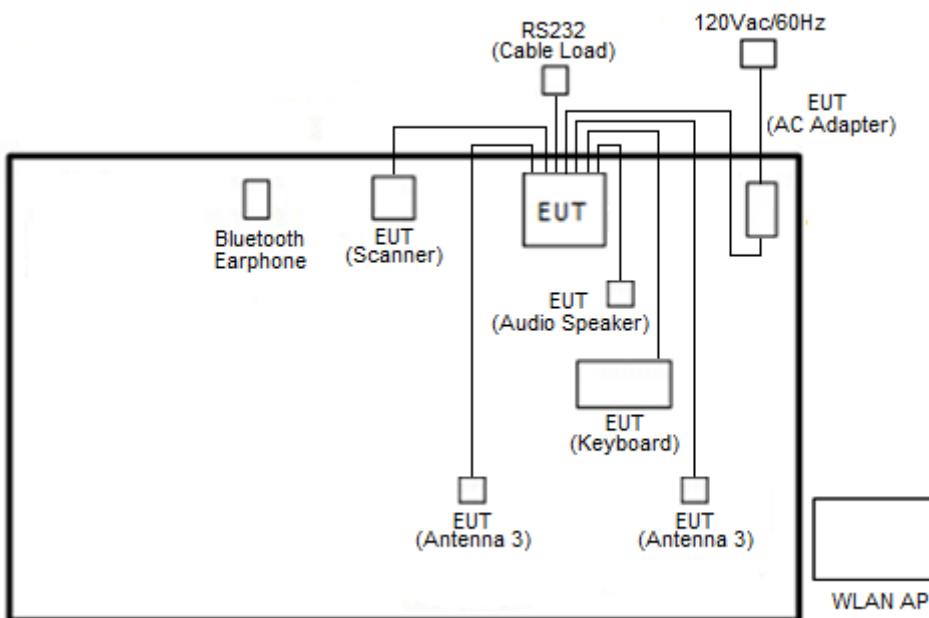




## &lt;EUT with Antenna 4&gt;



## &lt;AC Conducted Emission Mode&gt;



## 2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
2.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m



## 2.5 EUT Operation Test Setup

The RF test items, utility “QRCT” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 4.2 + 10 = 14.2 \text{ (dB)} \end{aligned}$$



### 3 Test Result

#### 3.1 6dB and 99% Bandwidth Measurement

##### 3.1.1 Limit of 6dB and 99% Bandwidth

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

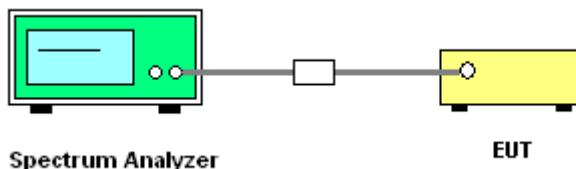
##### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW)  $\geq 3 * \text{RBW}$ .
6. Measure and record the results in the test report.

##### 3.1.4 Test Setup





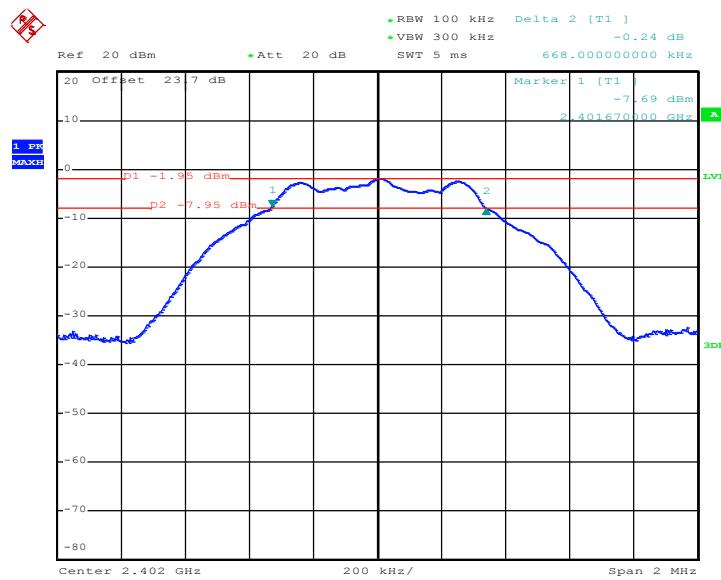
## 3.1.5 Test Result of 6dB Bandwidth

Test Engineer :	Shiming Liu			Temperature :	21~25°C
				Relative Humidity :	51~54%

Mod.	Data Rate	Ntx	CH.	Freq. (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	0.668	0.50	Pass
BLE	1Mbps	1	19	2440	0.664	0.50	Pass
BLE	1Mbps	1	39	2480	0.656	0.50	Pass
BLE	2Mbps	1	0	2402	1.128	0.50	Pass
BLE	2Mbps	1	19	2440	1.144	0.50	Pass
BLE	2Mbps	1	39	2480	1.128	0.50	Pass

## &lt;1 Mbps&gt;

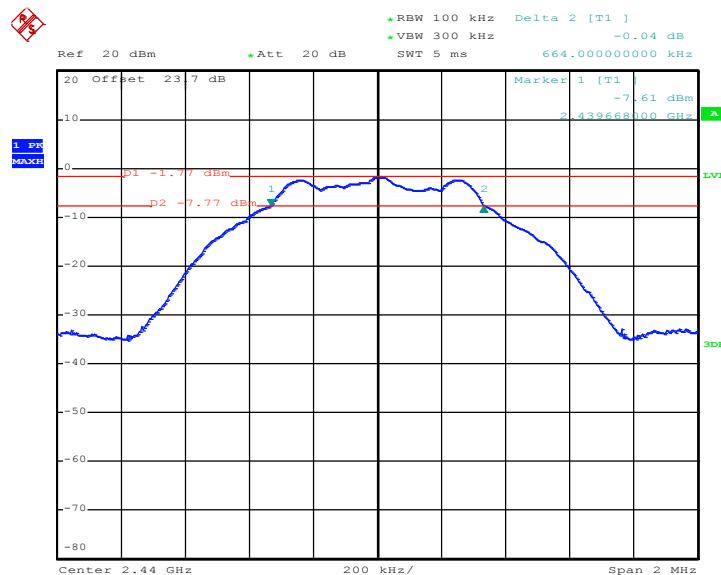
## 6 dB Bandwidth Plot on Channel 00



Date: 22.MAR.2019 16:12:54

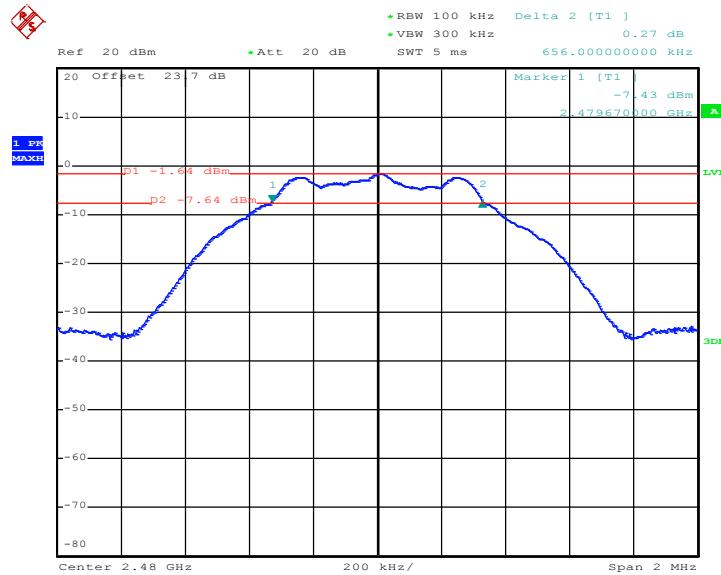


## 6 dB Bandwidth Plot on Channel 19



Date: 22.MAR.2019 16:16:18

## 6 dB Bandwidth Plot on Channel 39

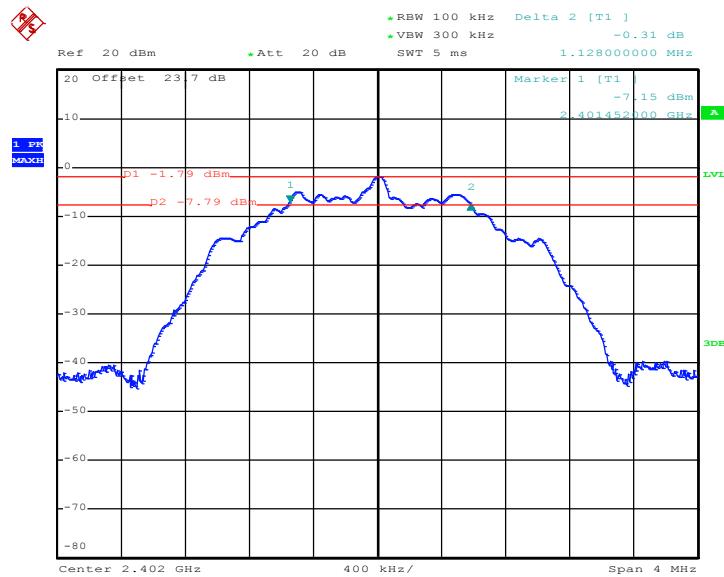


Date: 22.MAR.2019 16:22:30



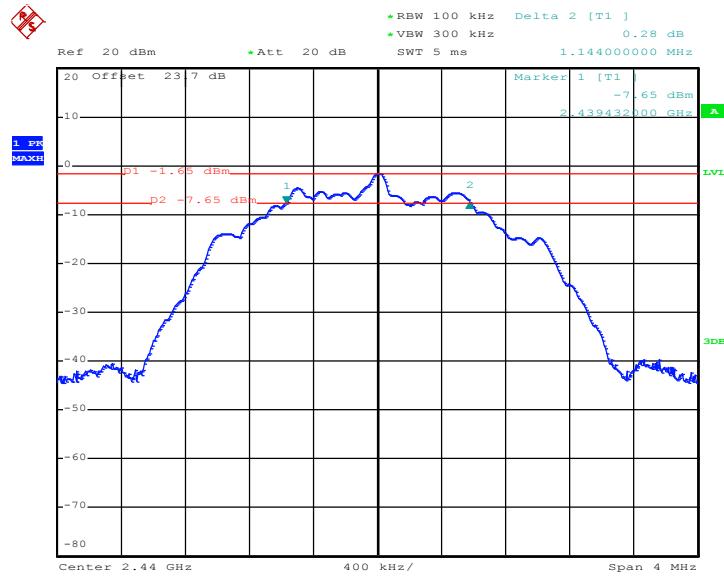
&lt;2 Mbps&gt;

## 6 dB Bandwidth Plot on Channel 00



Date: 22.MAR.2019 16:39:50

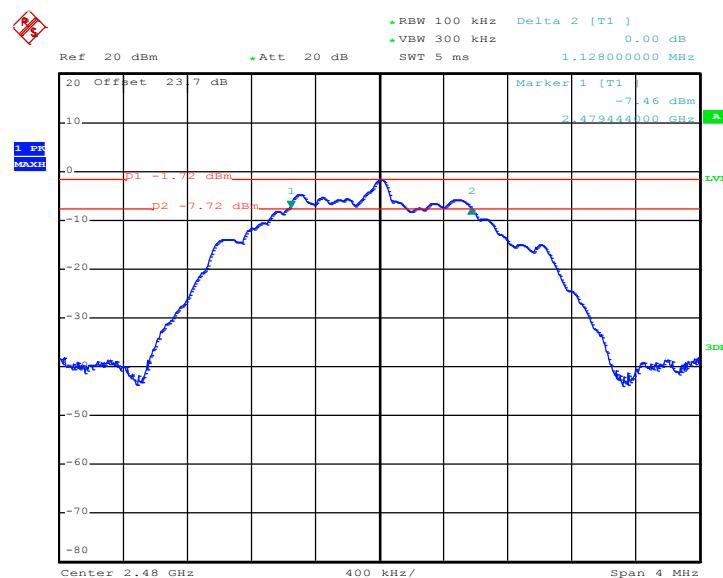
## 6 dB Bandwidth Plot on Channel 19



Date: 22.MAR.2019 16:32:36



## 6 dB Bandwidth Plot on Channel 39



Date: 22.MAR.2019 16:26:07



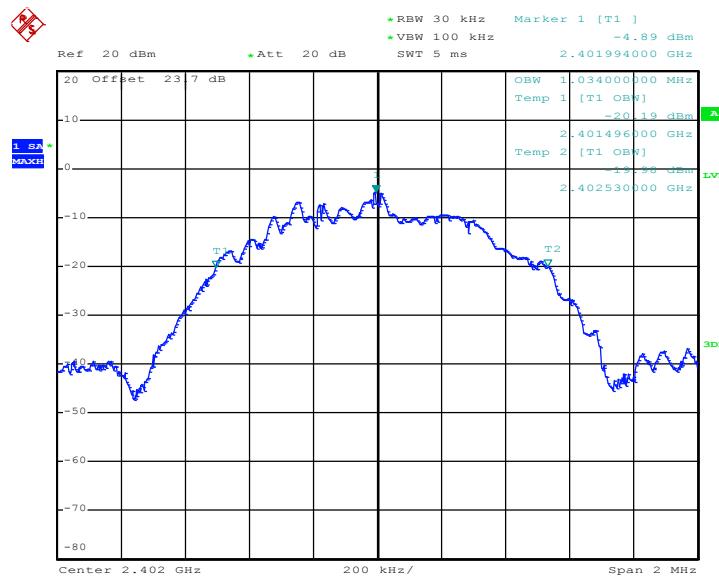
### 3.1.6 Test Result of 99% Occupied Bandwidth

Test Engineer :	Shiming Liu			Temperature :	21~25°C
				Relative Humidity :	51~54%

Mod.	Data Rate	Ntx	Ch.	Freq. (MHz)	99% Occupied BW (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.034	Pass
BLE	1Mbps	1	19	2440	1.032	Pass
BLE	1Mbps	1	39	2480	1.030	Pass
BLE	2Mbps	1	0	2402	2.048	Pass
BLE	2Mbps	1	19	2440	2.044	Pass
BLE	2Mbps	1	39	2480	2.052	Pass

<1 Mbps>

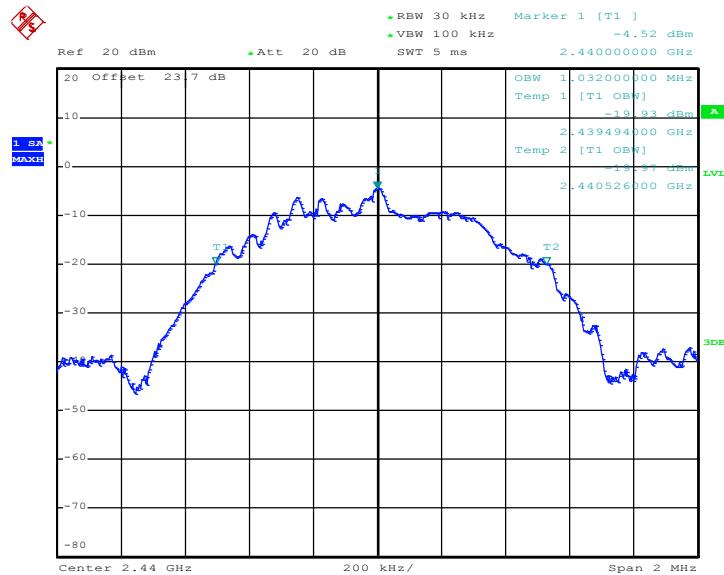
99% Bandwidth Plot on Channel 00



Date: 22.MAR.2019 16:14:42

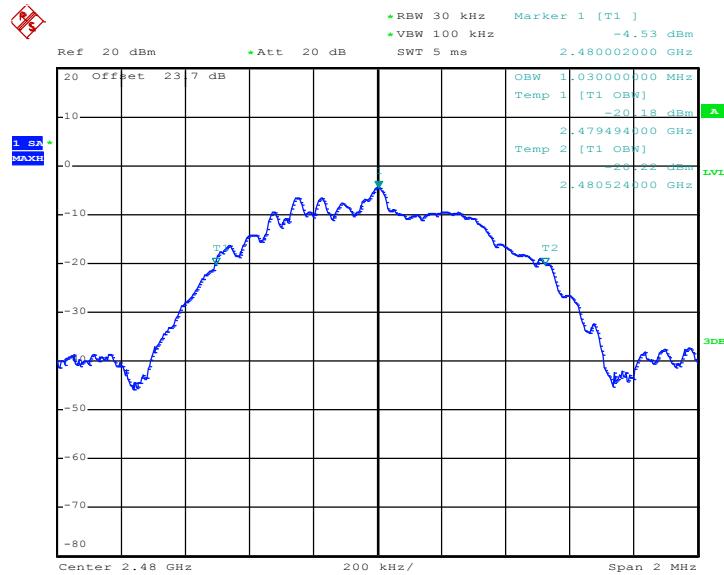


## 99% Occupied Bandwidth Plot on Channel 19



Date: 22.MAR.2019 16:19:09

## 99% Occupied Bandwidth Plot on Channel 39

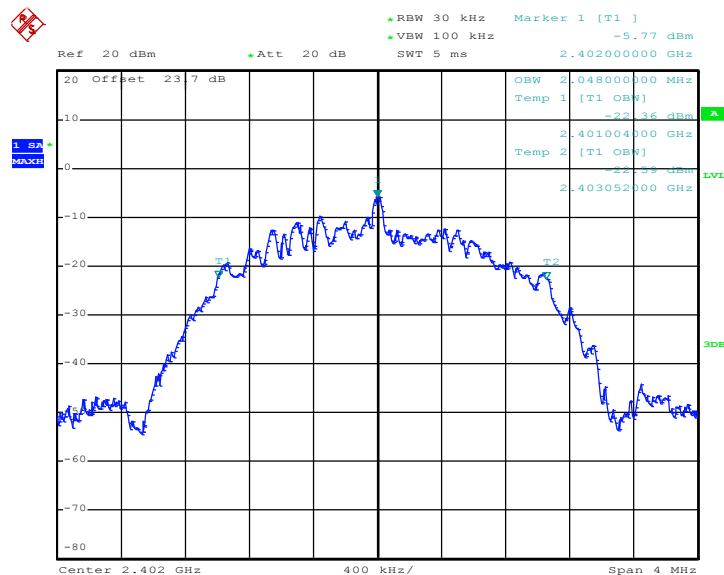


Date: 22.MAR.2019 16:24:13



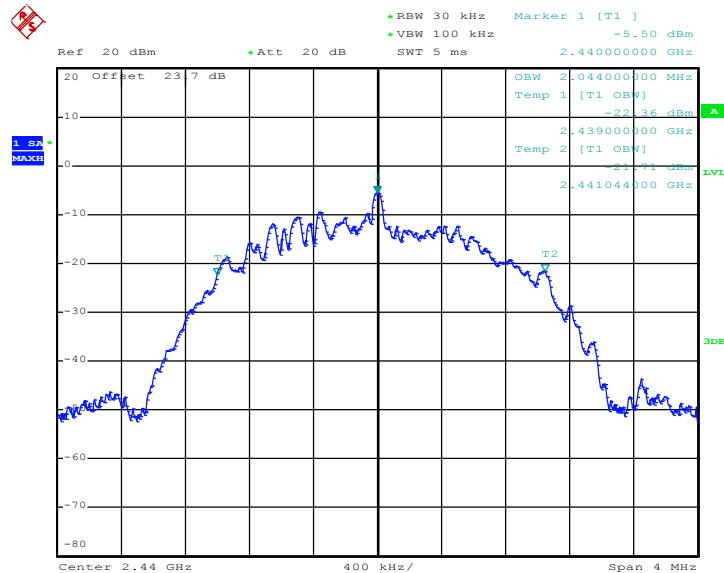
&lt;2 Mbps&gt;

## 99% Bandwidth Plot on Channel 00



Date: 22.MAR.2019 16:41:42

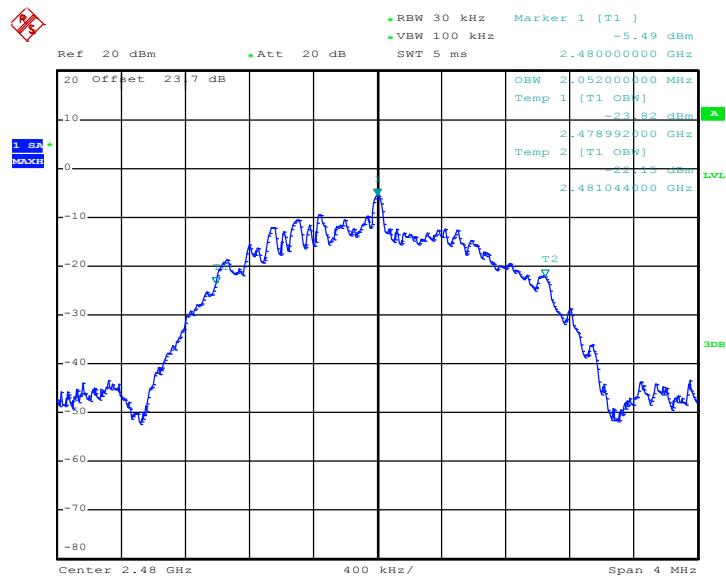
## 99% Occupied Bandwidth Plot on Channel 19



Date: 22.MAR.2019 16:37:56



## 99% Occupied Bandwidth Plot on Channel 39



Date: 22.MAR.2019 16:28:55

**Note:** The occupied channel bandwidth is maintained within the band of operation for all of the modulations.



## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

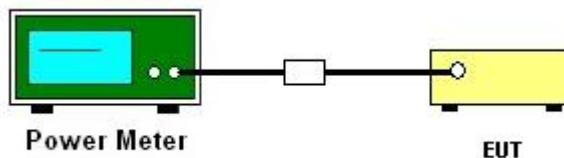
### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1.
2. For Average Power, the testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v05r01 section 9.2.3.1 Method AVGPM.
3. The RF output of EUT was connected to the power meter by RF cable and attenuator.
4. The path loss was compensated to the results for each measurement.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup





## 3.2.5 Test Result of Peak Output Power

Test Engineer :		Shiming Liu				Temperature :		21~25°C	
						Relative Humidity :		51~54%	

Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	1.82	30.00	5.00	6.82	36.00	Pass
BLE	1Mbps	1	19	2440	2.07	30.00	5.00	7.07	36.00	Pass
BLE	1Mbps	1	39	2480	1.97	30.00	5.00	6.97	36.00	Pass
BLE5.0	2Mbps	1	0	2402	1.80	30.00	5.00	6.80	36.00	Pass
BLE5.0	2Mbps	1	19	2440	2.13	30.00	5.00	7.13	36.00	Pass
BLE5.0	2Mbps	1	39	2480	2.05	30.00	5.00	7.05	36.00	Pass



### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

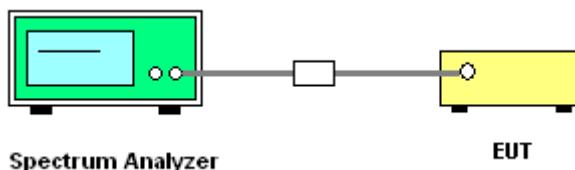
#### 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.
7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

#### 3.3.4 Test Setup





### 3.3.5 Test Result of Power Spectral Density

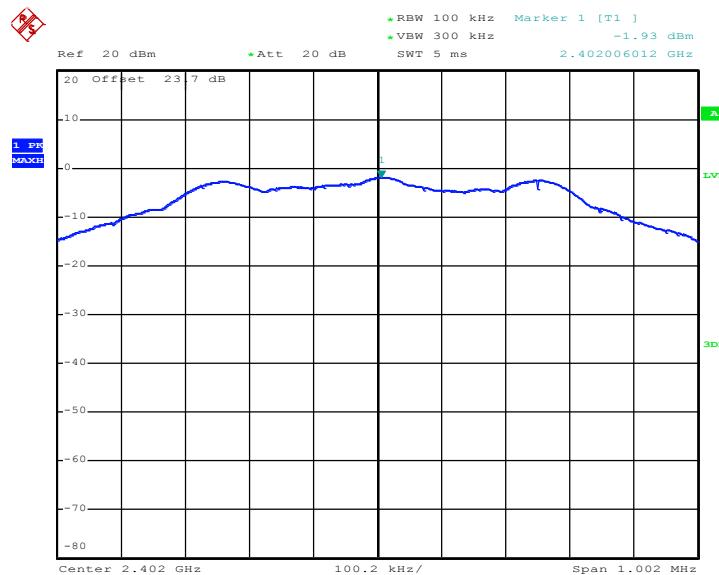
Test Engineer :		Shiming Liu				Temperature :	21~25°C	
						Relative Humidity :	51~54%	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz) Pass/Fail
BLE	1Mbps	1	0	2402	-1.93	-16.69	5.00	8.00 Pass
BLE	1Mbps	1	19	2440	-1.77	-16.45	5.00	8.00 Pass
BLE	1Mbps	1	39	2480	-1.73	-16.91	5.00	8.00 Pass
BLE	2Mbps	1	0	2402	-1.92	-20.25	5.00	8.00 Pass
BLE	2Mbps	1	19	2440	-1.70	-19.95	5.00	8.00 Pass
BLE	2Mbps	1	39	2480	-1.69	-19.97	5.00	8.00 Pass

### 3.3.6 Test Result of Power Spectral Density Plots (100kHz)

Test Engineer :		Shiming Liu				Temperature :	21~25°C	
						Relative Humidity :	51~54%	

&lt;1 Mbps&gt;

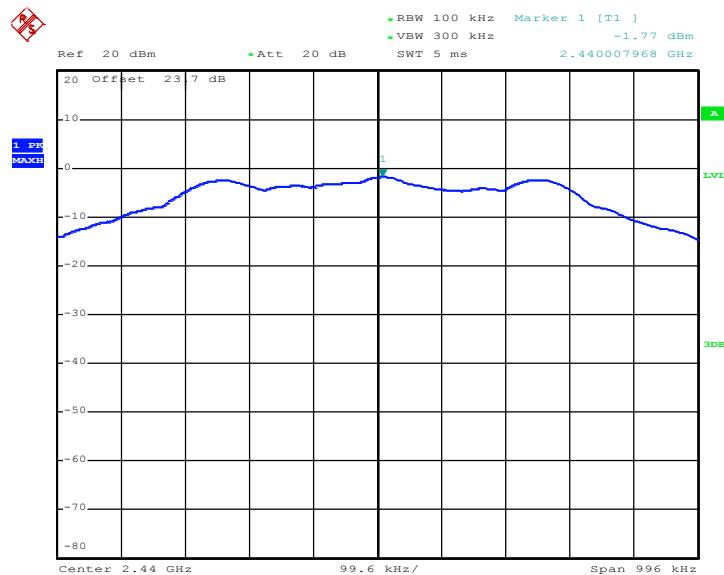
## PSD 100kHz Plot on Channel 00



Date: 22.MAR.2019 16:13:28

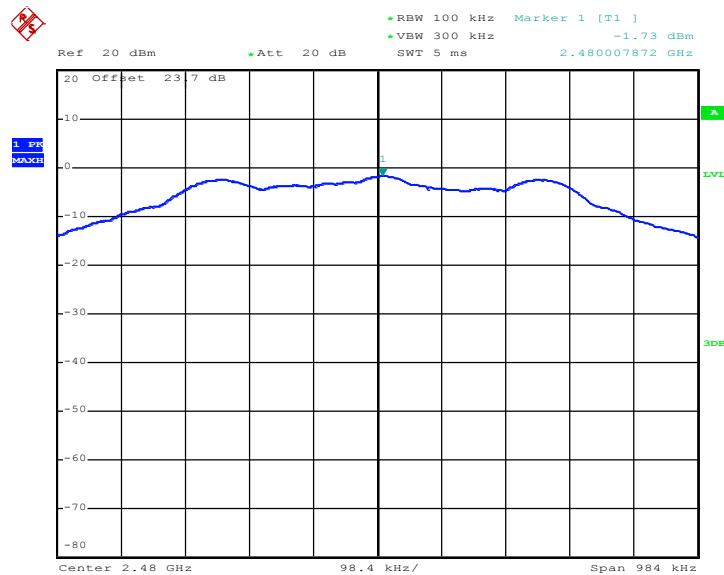


## PSD 100kHz Plot on Channel 19



Date: 22.MAR.2019 16:17:13

## PSD 100kHz Plot on Channel 39

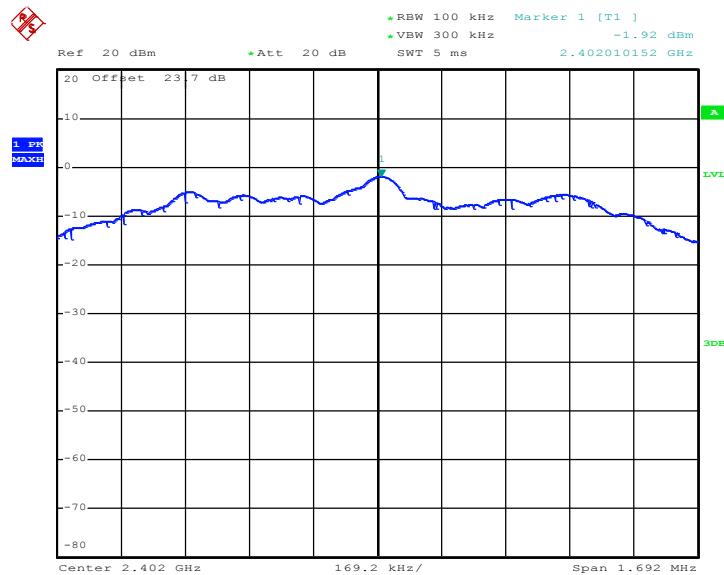


Date: 22.MAR.2019 16:23:00



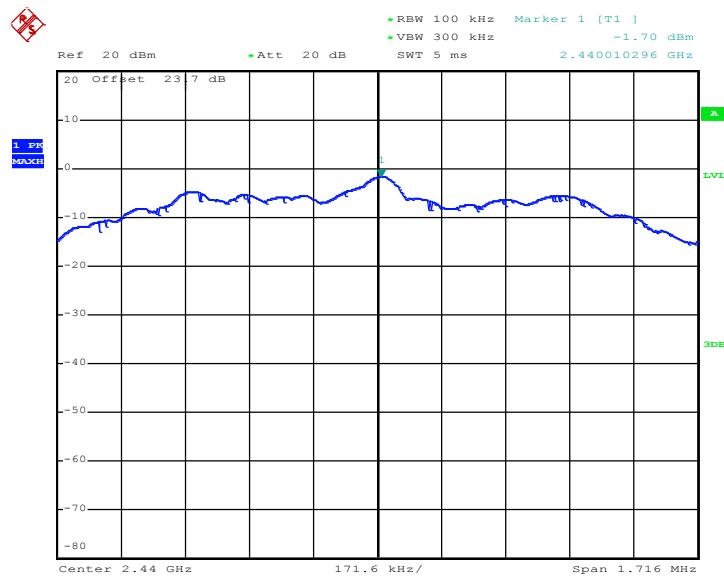
&lt;2 Mbps&gt;

## PSD 100kHz Plot on Channel 00



Date: 22.MAR.2019 16:40:27

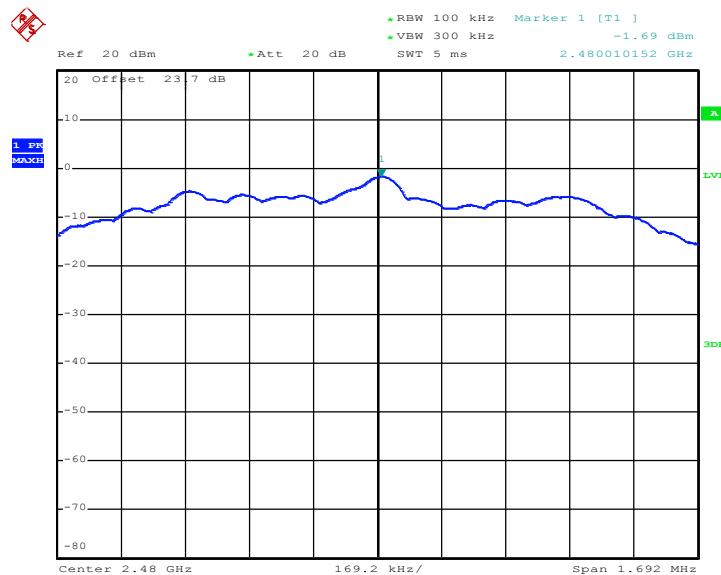
## PSD 100kHz Plot on Channel 19



Date: 22.MAR.2019 16:47:00



## PSD 100kHz Plot on Channel 39



Date: 22.MAR.2019 16:26:40

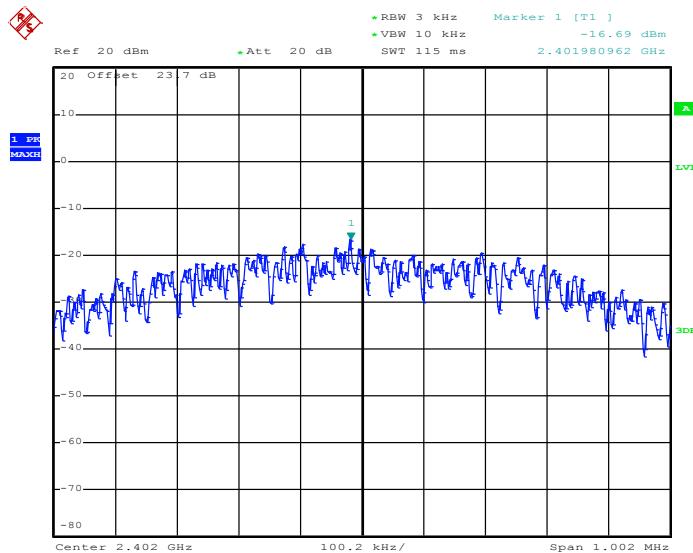


## 3.3.7 Test Result of Power Spectral Density Plots (3kHz)

Test Engineer :	Shiming Liu	Temperature :	21~25°C
		Relative Humidity :	51~54%

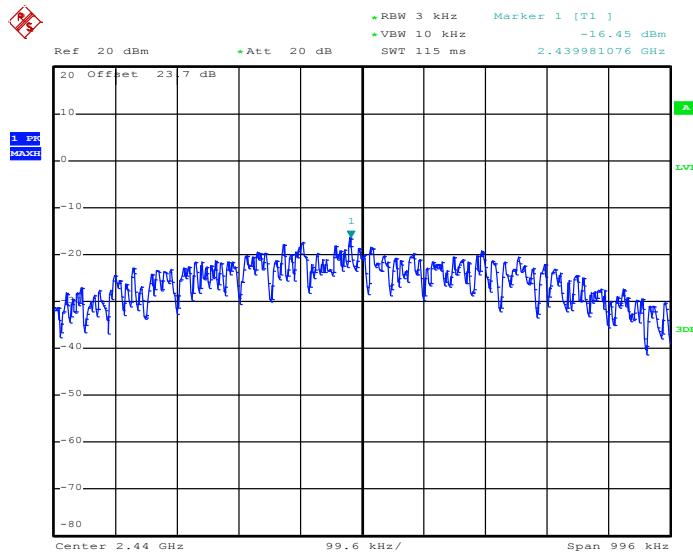
&lt;1 Mbps&gt;

## PSD 3kHz Plot on Channel 00



Date: 22.MAR.2019 16:13:12

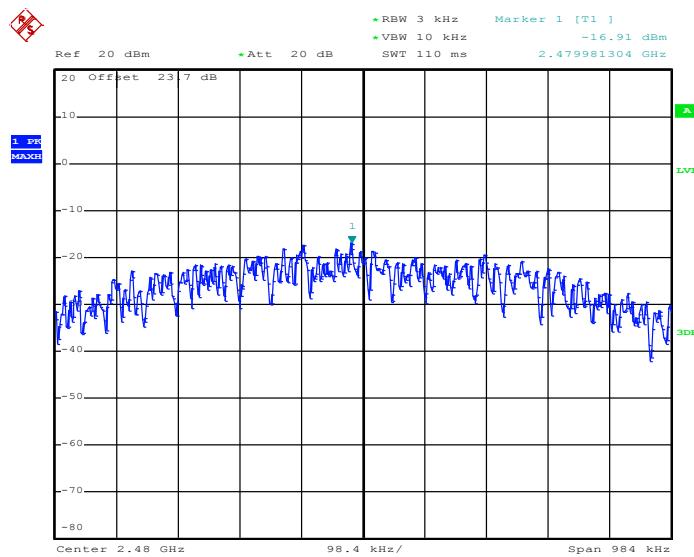
## PSD 3kHz Plot on Channel 19



Date: 22.MAR.2019 16:16:57



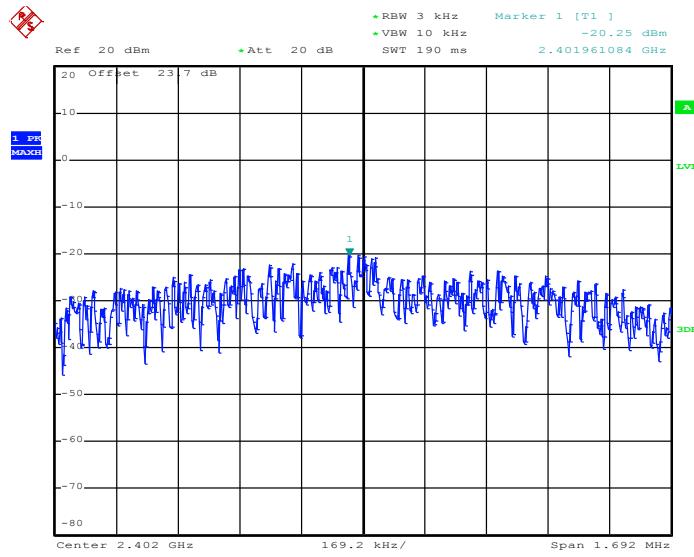
## PSD 3kHz Plot on Channel 39



Date: 22.MAR.2019 16:22:45

## &lt;2 Mbps&gt;

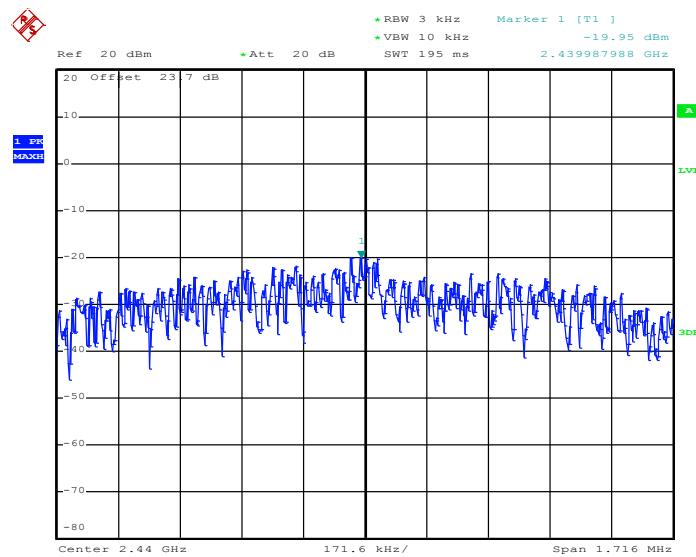
## PSD 3kHz Plot on Channel 00



Date: 22.MAR.2019 16:40:12

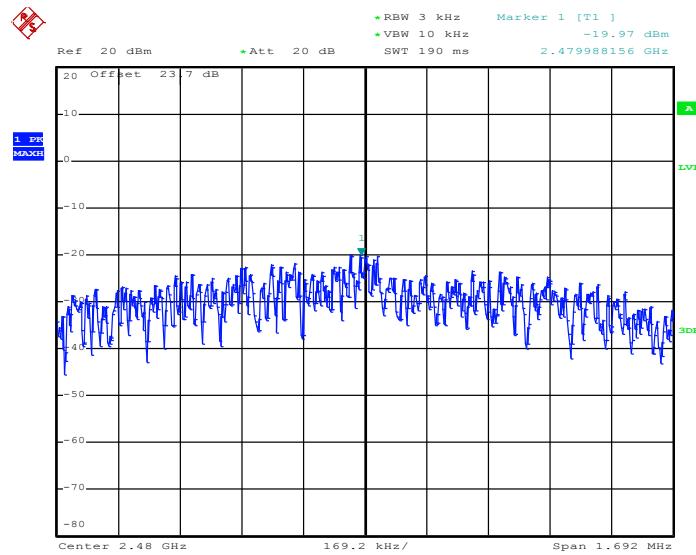


## PSD 3kHz Plot on Channel 19



Date: 22.MAR.2019 16:46:46

## PSD 3kHz Plot on Channel 39



Date: 22.MAR.2019 16:26:24



## 3.4 Conducted Band Edges and Spurious Emission Measurement

### 3.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

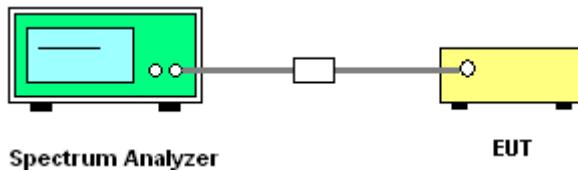
### 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.4.3 Test Procedure

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 3.4.4 Test Setup



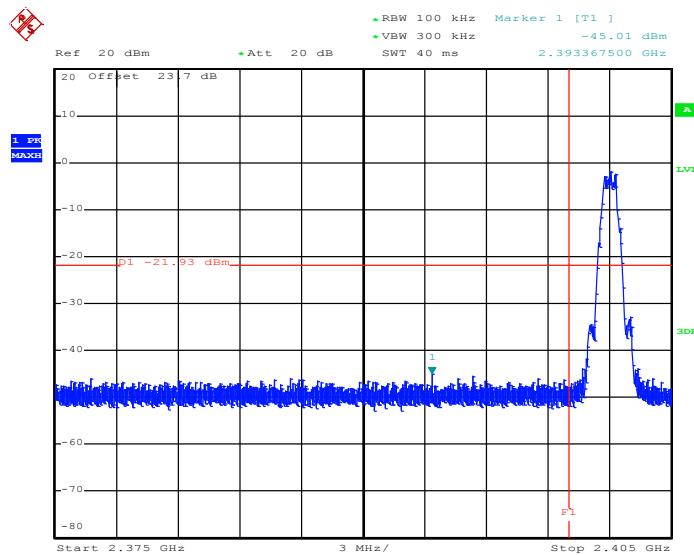


### 3.4.5 Test Result of Conducted Band Edges Plots

Test Engineer :	Shiming Liu	Temperature :	21~25°C
		Relative Humidity :	51~54%

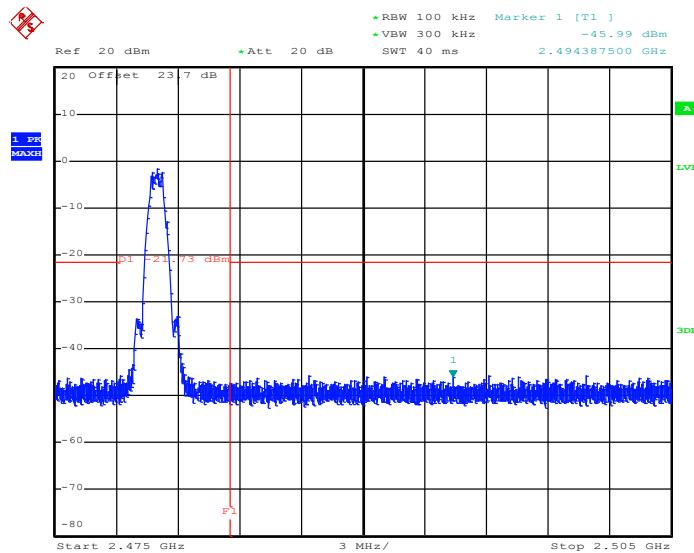
<1 Mbps>

#### Low Band Edge Plot on Channel 00



Date: 22.MAR.2019 16:13:46

#### High Band Edge Plot on Channel 39

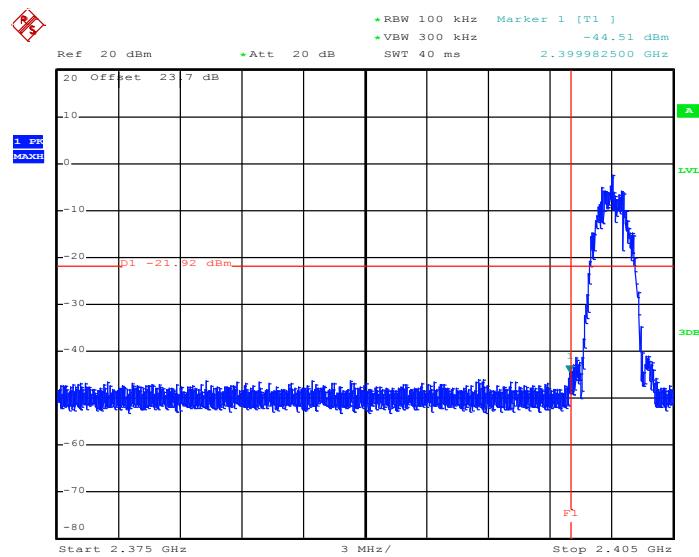


Date: 22.MAR.2019 16:23:20



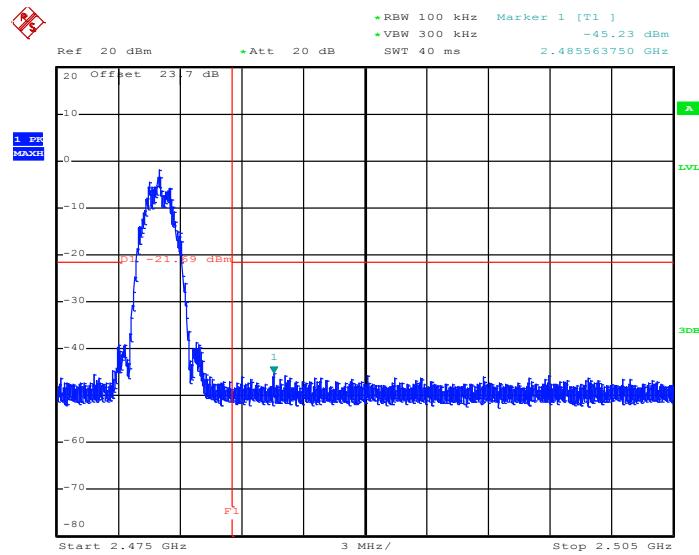
&lt;2 Mbps&gt;

## Low Band Edge Plot on Channel 00



Date: 22.MAR.2019 16:40:45

## High Band Edge Plot on Channel 39



Date: 22.MAR.2019 16:26:58

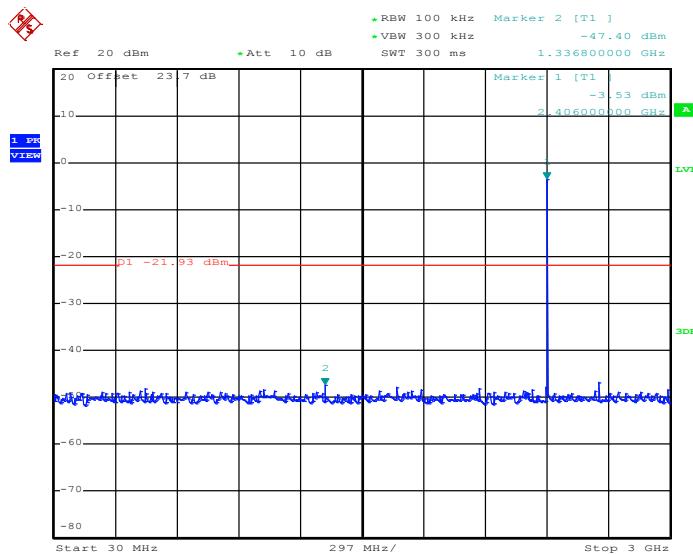


### 3.4.6 Test Result of Conducted Spurious Emission Plots

Test Engineer :	Shiming Liu	Temperature :	21~25°C
		Relative Humidity :	51~54%

#### Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

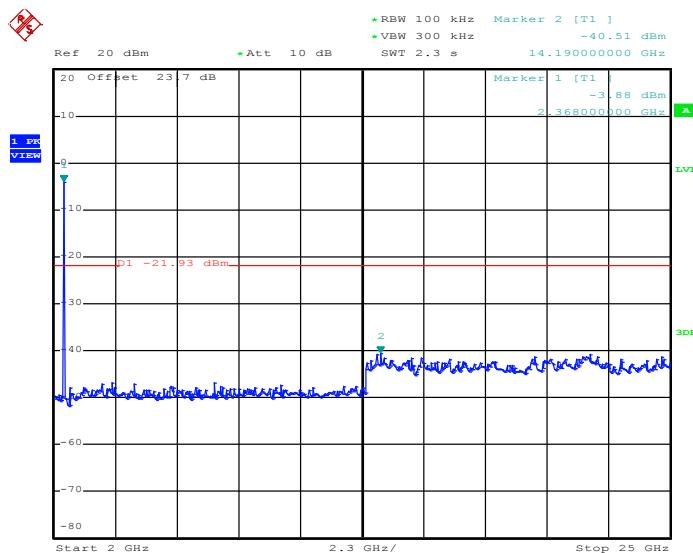
##### GFSK Channel 00



Date: 22.MAR.2019 16:14:06

#### Conducted Spurious Emission Plot on Bluetooth LE 1Mbps

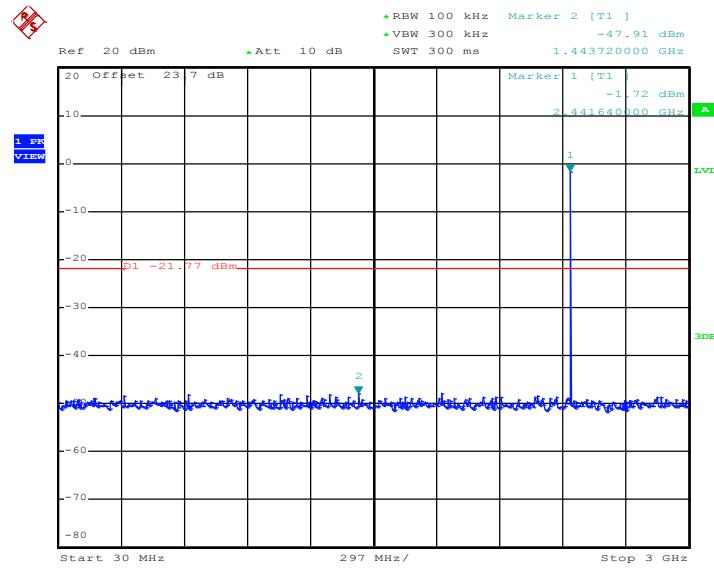
##### GFSK Channel 00



Date: 22.MAR.2019 16:14:21

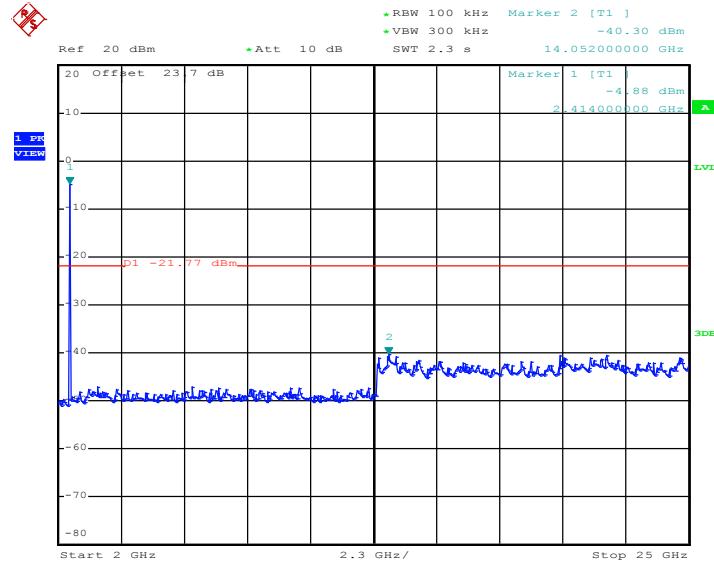


**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 19**



Date: 22.MAR.2019 16:18:40

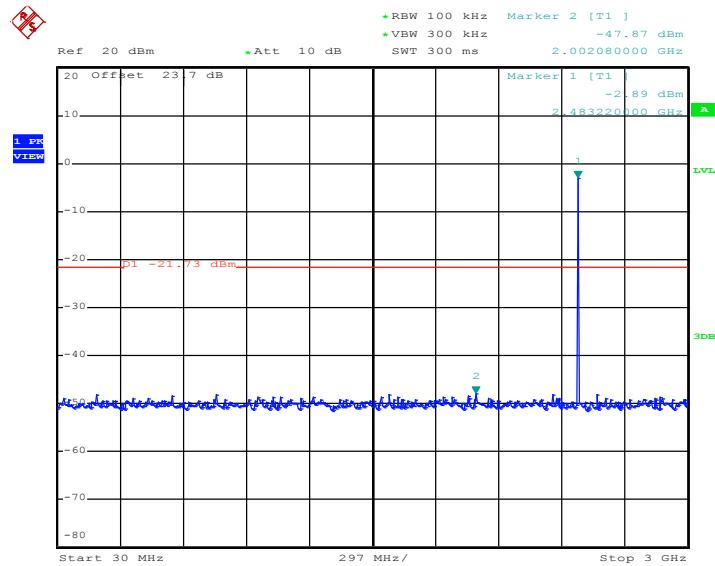
**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 19**



Date: 22.MAR.2019 16:18:55

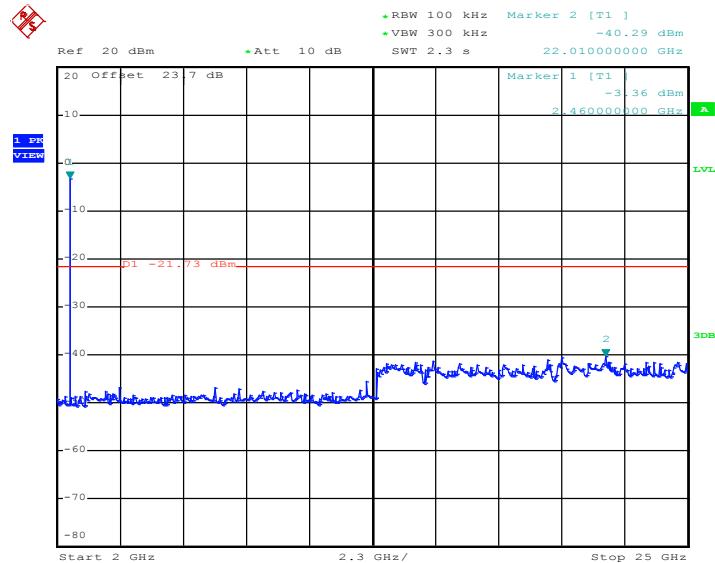


**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 39**



Date: 22.MAR.2019 16:23:40

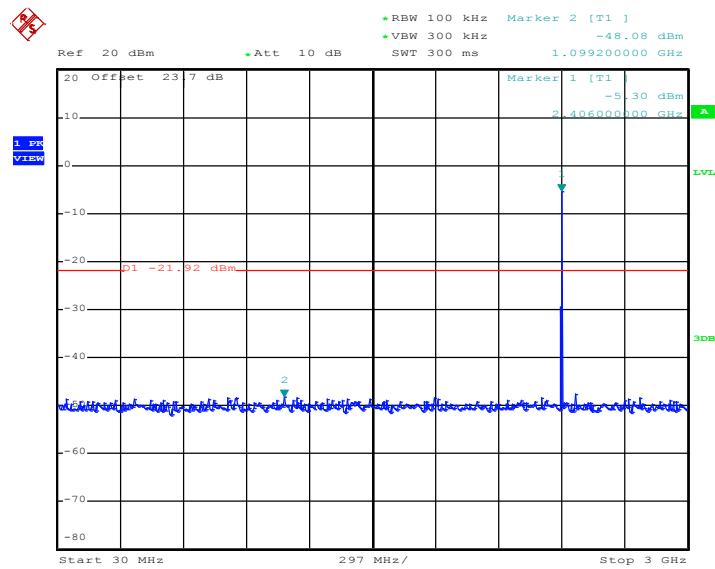
**Conducted Spurious Emission Plot on Bluetooth LE 1Mbps  
GFSK Channel 39**



Date: 22.MAR.2019 16:23:55

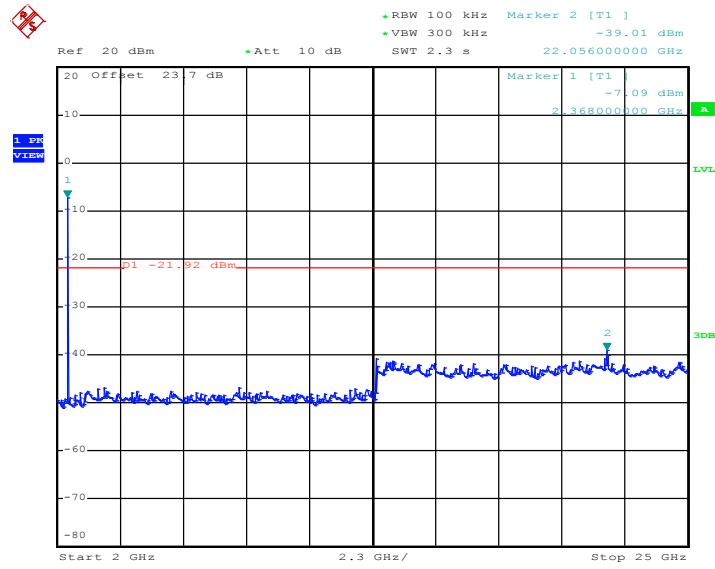


**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps  
GFSK Channel 00**



Date: 22.MAR.2019 16:41:08

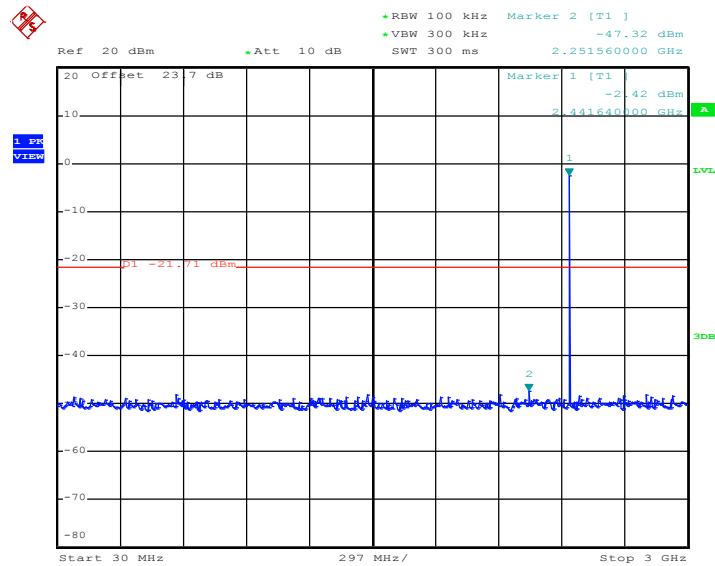
**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps  
GFSK Channel 00**



Date: 22.MAR.2019 16:41:23

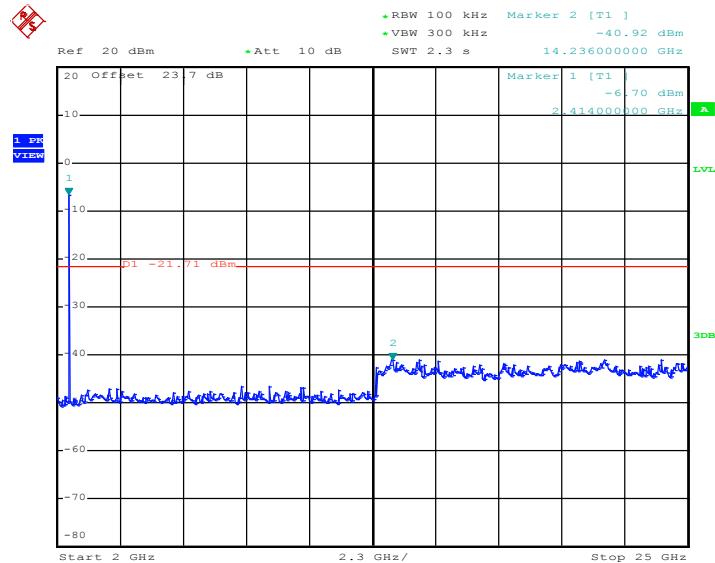


### Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 19



Date: 22.MAR.2019 16:36:50

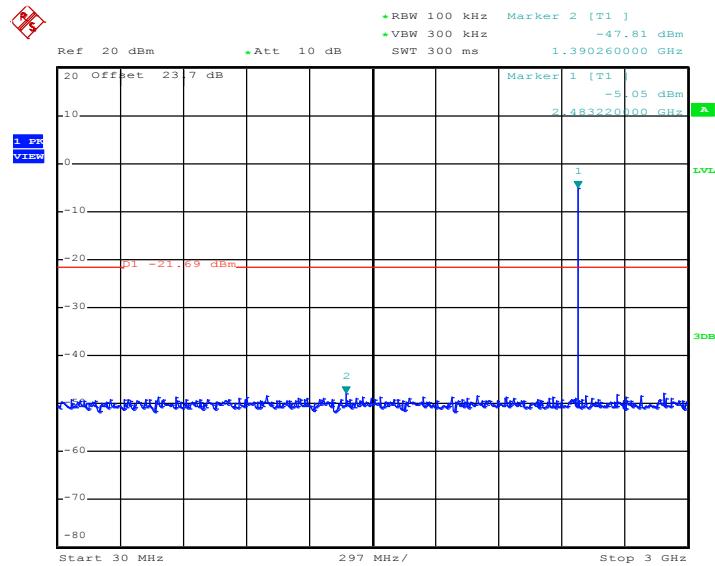
### Conducted Spurious Emission Plot on Bluetooth LE 2Mbps GFSK Channel 19



Date: 22.MAR.2019 16:37:05

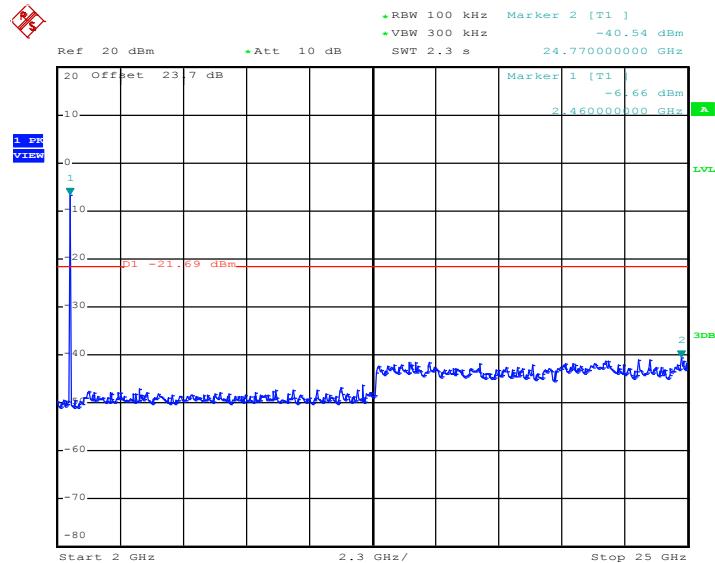


**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps  
GFSK Channel 39**



Date: 22.MAR.2019 16:28:20

**Conducted Spurious Emission Plot on Bluetooth LE 2Mbps  
GFSK Channel 39**



Date: 22.MAR.2019 16:28:34



## 3.5 Radiated Band Edges and Spurious Emission Measurement

### 3.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

### 3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

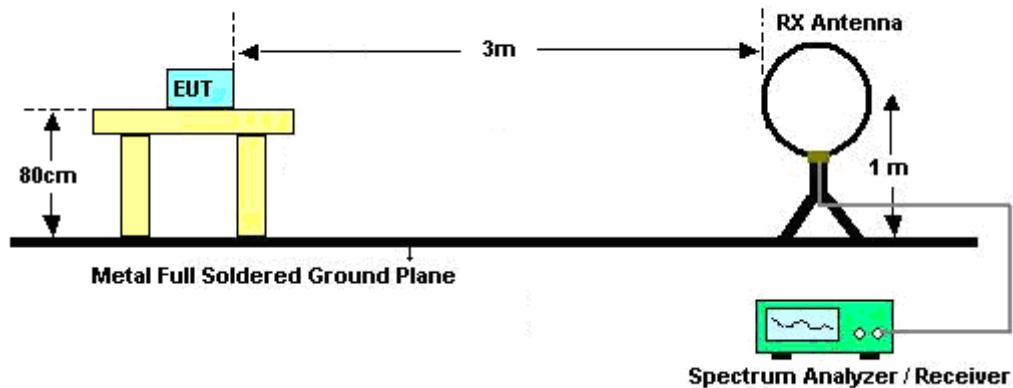


### 3.5.3 Test Procedures

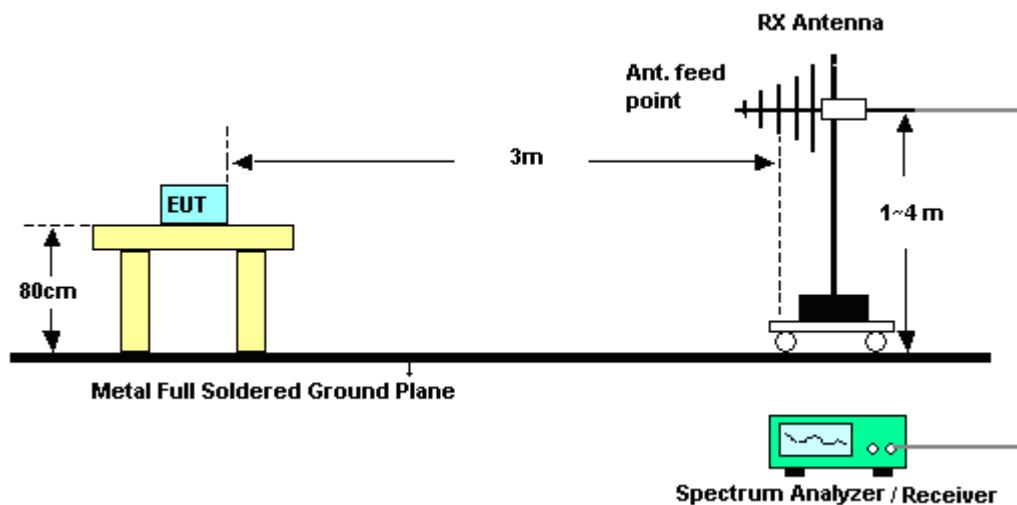
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
  2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
  3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
  4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
  5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
  6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
  7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
  8. Use the following spectrum analyzer settings:
    - (1) Span shall wide enough to fully capture the emission being measured;
    - (2) Set RBW=100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak;  
Trace = max hold;
    - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.
- For average measurement:
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW  $\geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

### 3.5.4 Test Setup

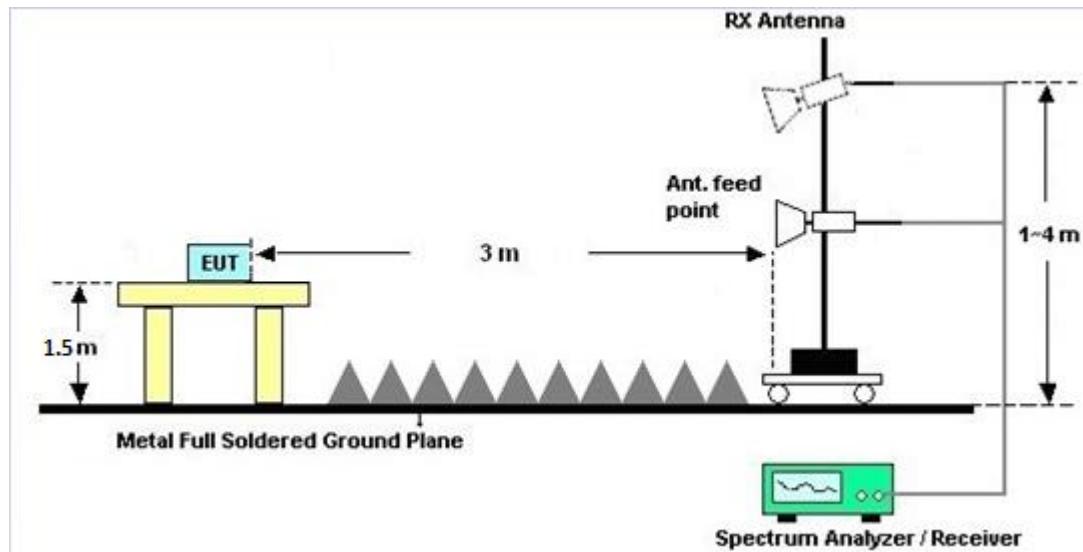
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.5.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B and C.

### 3.5.7 Duty Cycle

Please refer to Appendix D.

### 3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B and C.



## 3.6 AC Conducted Emission Measurement

### 3.6.1 Limit of AC Conducted Emission

For equipment 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 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

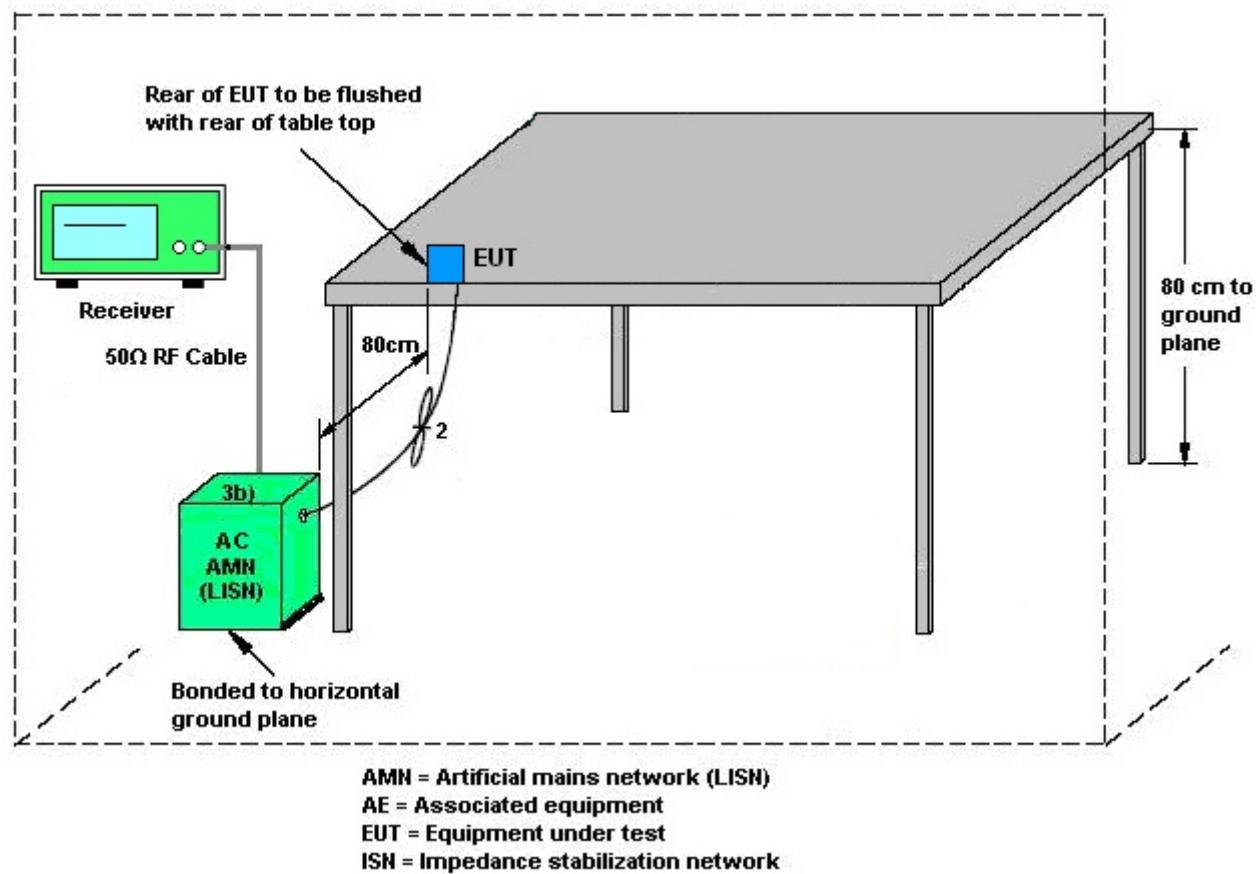
### 3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



## 3.7 Antenna Requirements

### 3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

### 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

### 3.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Agilent	E4416A	GB41292344	N/A	Dec. 27, 2018	Nov. 23, 2018~Mar. 22, 2019	Dec. 26, 2019	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Dec. 27, 2018	Nov. 23, 2018~Mar. 22, 2019	Dec. 26 2019	Conducted (TH05-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP40	100057	9kHz-40GHz	Nov. 21, 2018	Nov. 23, 2018~Mar. 22, 2019	Nov. 20, 2019	Conducted (TH05-HY)
Switch Box & RF Cable	Burgeon	ETF-058	EC1300484	N/A	Apr. 17, 2018	Nov. 23, 2018~Mar. 22, 2019	Apr. 16, 2019	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 27, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Nov. 12, 2018	Dec. 27, 2018	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Dec. 27, 2018	Nov. 13, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 09, 2018	Dec. 27, 2018	Nov. 08, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Dec. 27, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Dec. 27, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Dec. 27, 2018	Jan. 02, 2019	Conduction (CO05-HY)



## FCC RADIO TEST REPORT

Report No. : FR8N0846B

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Amplifier	MITEQ	TTA1840-35-H G	1871923	18GHz~40GHz, VSWR : 2.5:1 max	Jul. 16, 2018	Nov. 22, 2018~Jan. 28, 2019	Jul. 15, 2019	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 04, 2018	Nov. 22, 2018~Jan. 28, 2019	Dec. 03, 2019	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0 602	30MHz~1GHz	Oct. 13, 2018	Nov. 22, 2018~Jan. 28, 2019	Oct. 12, 2019	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 30, 2018	Nov. 22, 2018~Jan. 28, 2019	Oct. 29, 2019	Radiation (03CH11-HY)
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	Mar. 29, 2018	Nov. 22, 2018~Jan. 28, 2019	Mar. 28, 2019	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 14, 2018	Nov. 22, 2018~Jan. 28, 2019	Nov. 13, 2020	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2018	Nov. 22, 2018~Jan. 28, 2019	Oct. 18, 2019	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Dec. 29, 2018~Jan. 26, 2019	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Dec. 29, 2018~Jan. 26, 2019	N/A	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-30 3K	17100018000 54002	1GHz~18GHz	Apr. 17, 2018	Nov. 22, 2018~Jan. 28, 2019	Apr. 16, 2019	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	18GHz- 40GHz	Nov. 20, 2018	Nov. 22, 2018~Jan. 28, 2019	Nov. 19, 2019	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Nov. 22, 2018~Jan. 28, 2019	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz-30MHz	Mar. 14, 2018	Nov. 22, 2018~Jan. 28, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz-40GHz	Mar. 14, 2018	Nov. 22, 2018~Jan. 28, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	30M-18G	Mar. 14, 2018	Nov. 22, 2018~Jan. 28, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY4274/2	30MHz-40GHz	Mar. 14, 2018	Nov. 22, 2018~Jan. 28, 2019	Mar. 13, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OSS	SN3	2.7G High Pass	Sep. 16, 2018	Nov. 22, 2018~Jan. 28, 2019	Sep. 17, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-15 30-8000-40SS	SN11	1G Low Pass	Sep. 16, 2018	Nov. 22, 2018~Jan. 28, 2019	Sep. 17, 2019	Radiation (03CH11-HY)



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	2.2
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.2
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### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

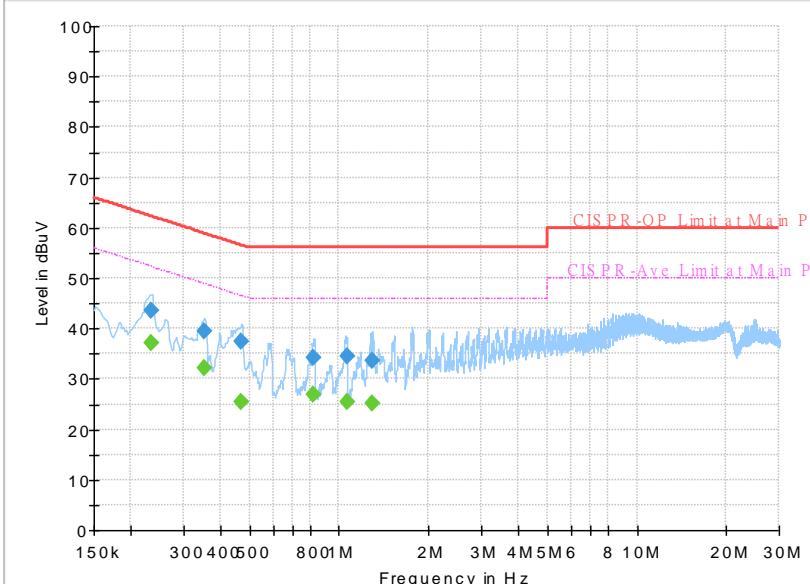
Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.5
---	-----

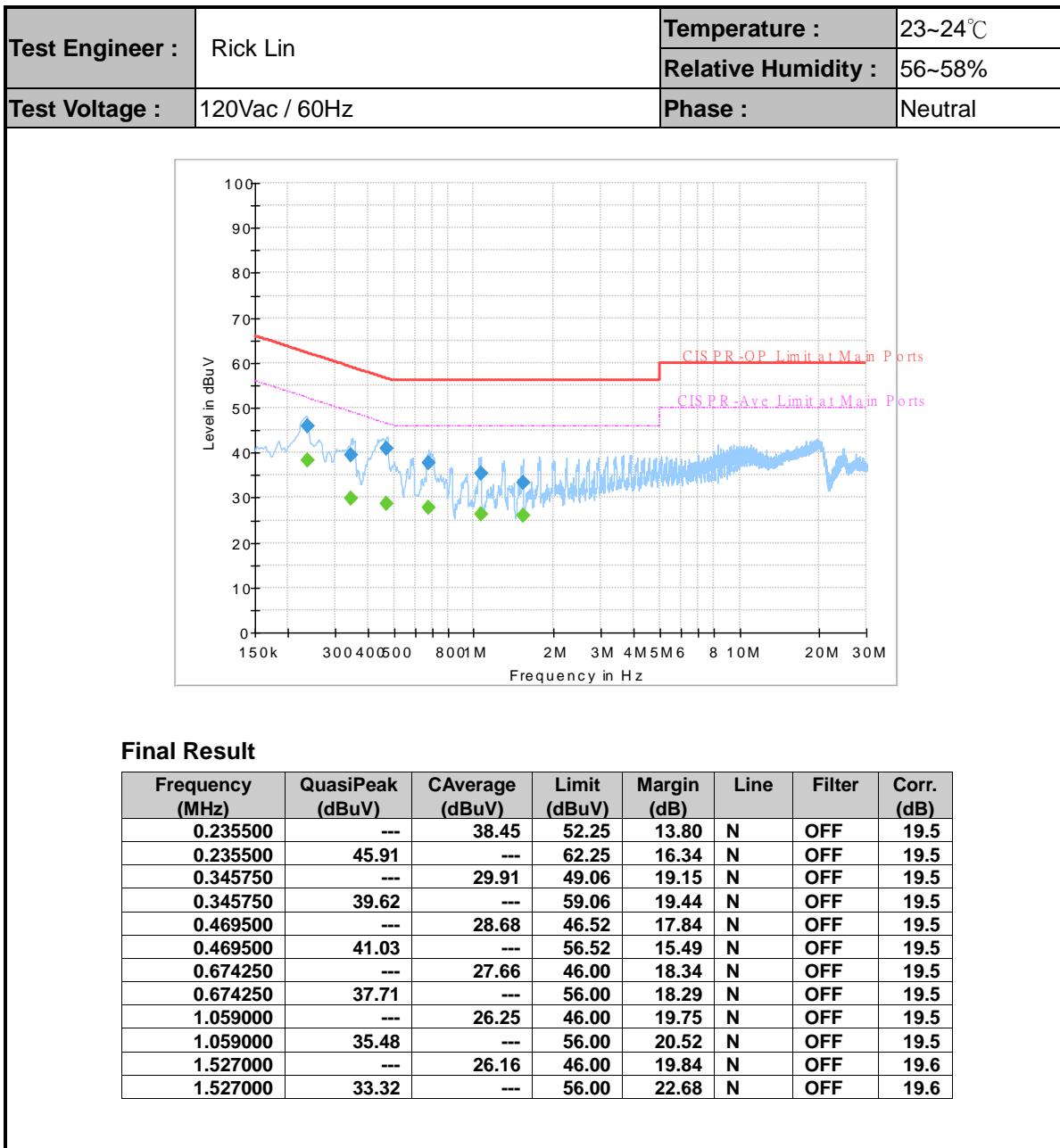
### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_{C(y)}$ )	5.2
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## Appendix A. AC Conducted Emission Test Results

Test Engineer :	Rick Lin	Temperature :	23~24°C				
Relative Humidity :			56~58%				
Test Voltage :	120Vac / 60Hz	Phase :	Line				
							
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.233250	---	37.21	52.33	15.12	L1	OFF	19.5
0.233250	43.51	---	62.33	18.82	L1	OFF	19.5
0.352500	---	32.20	48.90	16.70	L1	OFF	19.5
0.352500	39.44	---	58.90	19.46	L1	OFF	19.5
0.469500	---	25.33	46.52	21.19	L1	OFF	19.5
0.469500	37.37	---	56.52	19.15	L1	OFF	19.5
0.822750	---	26.99	46.00	19.01	L1	OFF	19.5
0.822750	34.24	---	56.00	21.76	L1	OFF	19.5
1.059000	---	25.48	46.00	20.52	L1	OFF	19.5
1.059000	34.55	---	56.00	21.45	L1	OFF	19.5
1.293000	---	25.28	46.00	20.72	L1	OFF	19.6
1.293000	33.59	---	56.00	22.41	L1	OFF	19.6





## Appendix B. Radiated Spurious Emission

Test Engineer :	Hao Xu, Ace Zhu, Ken Wu, and JC Liang	Temperature :	21~26°C
		Relative Humidity :	52~57%

<For Antenna 1>

2.4GHz 2400~2483.5MHz

BLE (1Mbps) (Band Edge @ 3m)

BLE	Note	Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB/m )	Path Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Peak Avg. (P/A)	Pol.
BLE CH 00 2402MHz		2341.815	53.33	-20.67	74	42.37	27.63	16.43	33.1	116	182	P	H
		2378.985	44	-10	54	33.17	27.48	16.49	33.14	116	182	A	H
	*	2402	102.42	-	-	91.67	27.4	16.52	33.17	116	182	P	H
	*	2402	101.86	-	-	91.11	27.4	16.52	33.17	116	182	A	H
													H
		2313.045	53.77	-20.23	74	42.7	27.75	16.39	33.07	104	257	P	V
		2374.575	44.06	-9.94	54	33.22	27.5	16.48	33.14	104	257	A	V
	*	2402	89.71	-	-	78.96	27.4	16.52	33.17	104	257	P	V
	*	2402	89.07	-	-	78.32	27.4	16.52	33.17	104	257	A	V
													V
BLE CH 19 2440MHz		2382	54.11	-19.89	74	43.3	27.47	16.49	33.15	141	180	P	H
		2314.2	44.07	-9.93	54	33.01	27.74	16.39	33.07	141	180	A	H
	*	2440	103.12	-	-	92.47	27.32	16.55	33.22	141	180	P	H
	*	2440	102.55	-	-	91.9	27.32	16.55	33.22	141	180	A	H
		2498.16	53.19	-20.81	74	42.58	27.3	16.6	33.29	141	180	P	H
		2483.52	43.66	-10.34	54	33.04	27.3	16.59	33.27	141	180	A	H
		2327.7	54.22	-19.78	74	43.2	27.69	16.41	33.08	101	291	P	V
		2348.4	43.9	-10.1	54	32.96	27.61	16.44	33.11	101	291	A	V
	*	2440	91.91	-	-	81.26	27.32	16.55	33.22	101	291	P	V
	*	2440	91.21	-	-	80.56	27.32	16.55	33.22	101	291	A	V
		2498.08	52.72	-21.28	74	42.11	27.3	16.6	33.29	101	291	P	V
		2488.88	43.66	-10.34	54	33.05	27.3	16.59	33.28	101	291	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	101.27	-	-	90.66	27.3	16.58	33.27	109	172	P	H
	*	2480	100.65	-	-	90.04	27.3	16.58	33.27	109	172	A	H
		2498.88	53.23	-20.77	74	42.62	27.3	16.6	33.29	109	172	P	H
		2495.44	43.83	-10.17	54	33.21	27.3	16.6	33.28	109	172	A	H
													H
													H
	*	2480	89.72	-	-	79.11	27.3	16.58	33.27	100	295	P	V
	*	2480	89.14	-	-	78.53	27.3	16.58	33.27	100	295	A	V
		2499.88	52.74	-21.26	74	42.13	27.3	16.6	33.29	100	295	P	V
		2487.2	43.6	-10.4	54	32.98	27.3	16.59	33.27	100	295	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**2.4GHz 2400~2483.5MHz****BLE (1Mbps) (Harmonic @ 3m)**

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	37.66	-36.34	74	55.07	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	37.46	-36.54	74	54.87	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.35	-36.65	74	54.71	31.04	10.15	58.55	100	0	P	H
		7320	41.04	-32.96	74	50.83	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	37.35	-36.65	74	54.71	31.04	10.15	58.55	100	0	P	V
		7320	41.69	-32.31	74	51.48	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.9	-35.1	74	55.87	31.32	10.22	58.51	100	0	P	H
		7440	41.65	-32.35	74	51.36	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	39.3	-34.7	74	56.27	31.32	10.22	58.51	100	0	P	V
		7440	41.47	-32.53	74	51.18	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Emission below 1GHz

## 2.4GHz BLE (1Mbps) (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	(dB $\mu$ V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
2.4GHz BLE LF		186.87	35.86	-7.64	43.5	51.6	14.61	1.9	32.25	100	0	P	H
		231.15	34.83	-11.17	46	48.92	16.09	2.04	32.22	-	-	P	H
		243.3	35.66	-10.34	46	48.38	17.41	2.08	32.21	-	-	P	H
		301.4	28.79	-17.21	46	39.58	19.09	2.3	32.18	-	-	P	H
		367.9	29.79	-16.21	46	38.82	20.63	2.51	32.17	-	-	P	H
		850.2	33.56	-12.44	46	32.11	29.13	3.93	31.61	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
													H
Remark	1.	No other spurious found.											
	2.	All results are PASS against limit line.											



## FCC RADIO TEST REPORT

Report No. : FR8N0846B

2.4GHz 2400~2483.5MHz

BLE (2Mbps) (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
BLE CH 00 2402MHz		2370.69	53.69	-20.31	74	43.33	27.52	16.48	33.64	100	177	P	H
		2319.45	45.52	-8.48	54	35.05	27.72	16.4	33.65	100	177	A	H
	*	2402	101.8	-	-	91.51	27.4	16.52	33.63	100	177	P	H
	*	2402	100.27	-	-	89.98	27.4	16.52	33.63	100	177	A	H
													H
													H
		2315.67	53.22	-20.78	74	42.75	27.74	16.39	33.66	155	284	P	V
		2313.255	45.1	-8.9	54	34.62	27.75	16.39	33.66	155	284	A	V
	*	2402	90.47	-	-	80.18	27.4	16.52	33.63	155	284	P	V
	*	2402	89.2	-	-	78.91	27.4	16.52	33.63	155	284	A	V
BLE CH 19 2440MHz													V
		2317.28	53.55	-20.45	74	42.49	27.73	16.4	33.07	140	176	P	H
		2352.28	45.37	-8.63	54	34.44	27.59	16.45	33.11	140	176	A	H
	*	2440	102.54	-	-	91.89	27.32	16.55	33.22	140	176	P	H
	*	2440	101.22	-	-	90.57	27.32	16.55	33.22	140	176	A	H
		2489.85	53.62	-20.38	74	43.01	27.3	16.59	33.28	140	176	P	H
		2497.97	45.62	-8.38	54	35.01	27.3	16.6	33.29	140	176	A	H
		2332.12	53.83	-20.17	74	42.83	27.67	16.42	33.09	123	295	P	V
		2331.14	45.76	-8.24	54	34.75	27.68	16.42	33.09	123	295	A	V
	*	2440	92.38	-	-	81.73	27.32	16.55	33.22	123	295	P	V
	*	2440	91.03	-	-	80.38	27.32	16.55	33.22	123	295	A	V
		2497.06	53.14	-20.86	74	42.53	27.3	16.6	33.29	123	295	P	V
		2492.79	45.38	-8.62	54	34.77	27.3	16.59	33.28	123	295	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	99.94	-	-	89.66	27.3	16.58	33.6	135	171	P	H
	*	2480	98.6	-	-	88.32	27.3	16.58	33.6	135	171	A	H
		2490.88	52.92	-21.08	74	42.62	27.3	16.59	33.59	135	171	P	H
		2492.4	44.94	-9.06	54	34.64	27.3	16.59	33.59	135	171	A	H
													H
													H
	*	2480	89.46	-	-	79.18	27.3	16.58	33.6	120	295	P	V
	*	2480	87.84	-	-	77.56	27.3	16.58	33.6	120	295	A	V
		2486.92	52.54	-21.46	74	42.24	27.3	16.59	33.59	120	295	P	V
		2487.88	44.69	-9.31	54	34.39	27.3	16.59	33.59	120	295	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**2.4GHz 2400~2483.5MHz****BLE (2Mbps) (Harmonic @ 3m)**

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	36.85	-37.15	74	54.26	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	37.04	-36.96	74	54.45	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	38.37	-35.63	74	55.73	31.04	10.15	58.55	100	0	P	H
		7320	42.07	-31.93	74	51.86	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	37.69	-36.31	74	55.05	31.04	10.15	58.55	100	0	P	V
		7320	41.24	-32.76	74	51.03	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.08	-35.92	74	55.05	31.32	10.22	58.51	100	0	P	H
		7440	42.17	-31.83	74	51.88	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	38.43	-35.57	74	55.4	31.32	10.22	58.51	100	0	P	V
		7440	42.03	-31.97	74	51.74	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## **FCC RADIO TEST REPORT**

Report No. : FR8N0846B

## Emission below 1GHz

## 2.4GHz BLE (2Mbps) (LF)



## Note symbol

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak or Average</b>
H/V	<b>Horizontal or Vertical</b>



**A calculation example for radiated spurious emission is shown as below:**

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
<b>BLE CH 00 2402MHz</b>		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)

2. Level(dB $\mu$ V/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dB $\mu$ V) – 35.86 (dB)

= 55.45 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 55.45(dB $\mu$ V/m) – 74(dB $\mu$ V/m)

= -18.55(dB)

#### For Average Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dB $\mu$ V) – 35.86 (dB)

= 43.54 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 43.54(dB $\mu$ V/m) – 54(dB $\mu$ V/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



## &lt;For Antenna 3&gt;

2.4GHz 2400~2483.5MHz

BLE (1Mbps) (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		2381.295	53.02	-20.98	74	42.69	27.47	16.49	33.63	400	292	P	H
		2335.305	43.49	-10.51	54	33.06	27.66	16.42	33.65	400	292	A	H
	*	2402	98.9	-	-	88.61	27.4	16.52	33.63	400	292	P	H
	*	2402	98.42	-	-	88.13	27.4	16.52	33.63	400	292	A	H
													H
		2378.355	52.59	-21.41	74	42.24	27.49	16.49	33.63	121	46	P	V
		2383.185	43.59	-10.41	54	33.26	27.47	16.49	33.63	121	46	A	V
	*	2402	95.89	-	-	85.6	27.4	16.52	33.63	121	46	P	V
	*	2402	95.36	-	-	85.07	27.4	16.52	33.63	121	46	A	V
													V
BLE CH 19 2440MHz		2367.6	52.66	-21.34	74	42.3	27.53	16.47	33.64	400	271	P	H
		2311.6	43.58	-10.42	54	33.1	27.75	16.39	33.66	400	271	A	H
	*	2440	100.92	-	-	90.66	27.32	16.55	33.61	400	271	P	H
	*	2440	100.44	-	-	90.18	27.32	16.55	33.61	400	271	A	H
		2484.56	52.41	-21.59	74	42.12	27.3	16.59	33.6	400	271	P	H
		2497.28	43.19	-10.81	54	32.88	27.3	16.6	33.59	400	271	A	H
		2371.92	52.65	-21.35	74	42.3	27.51	16.48	33.64	112	45	P	V
		2380.88	43.59	-10.41	54	33.25	27.48	16.49	33.63	112	45	A	V
	*	2440	94.95	-	-	84.69	27.32	16.55	33.61	112	45	P	V
	*	2440	94.49	-	-	84.23	27.32	16.55	33.61	112	45	A	V
		2491.04	52.52	-21.48	74	42.22	27.3	16.59	33.59	112	45	P	V
		2489.52	43.34	-10.66	54	33.04	27.3	16.59	33.59	112	45	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	100.3	-	-	90.02	27.3	16.58	33.6	393	264	P	H
	*	2480	99.74	-	-	89.46	27.3	16.58	33.6	393	264	A	H
		2483.76	52.68	-21.32	74	42.39	27.3	16.59	33.6	393	264	P	H
		2495.92	43.48	-10.52	54	33.17	27.3	16.6	33.59	393	264	A	H
													H
													H
	*	2480	94.11	-	-	83.83	27.3	16.58	33.6	103	47	P	V
	*	2480	93.28	-	-	83	27.3	16.58	33.6	103	47	A	V
		2495.04	53.5	-20.5	74	43.19	27.3	16.6	33.59	103	47	P	V
		2494.96	43.38	-10.62	54	33.07	27.3	16.6	33.59	103	47	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**2.4GHz 2400~2483.5MHz****BLE (1Mbps) (Harmonic @ 3m)**

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	37.45	-36.55	74	54.86	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	37.15	-36.85	74	54.56	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.11	-36.89	74	54.47	31.04	10.15	58.55	100	0	P	H
		7320	41.38	-32.62	74	51.17	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	37.81	-36.19	74	55.17	31.04	10.15	58.55	100	0	P	V
		7320	40.86	-33.14	74	50.65	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.44	-35.56	74	55.41	31.32	10.22	58.51	100	0	P	H
		7440	41.66	-32.34	74	51.37	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	38.59	-35.41	74	55.56	31.32	10.22	58.51	100	0	P	V
		7440	41.93	-32.07	74	51.64	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Emission below 1GHz

## 2.4GHz BLE (1Mbps) (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	(dB $\mu$ V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
2.4GHz BLE LF		138.81	35.23	-8.27	43.5	48.77	17.16	1.59	32.29	-	-	P	H
		186.6	37.81	-5.69	43.5	53.55	14.61	1.9	32.25	100	0	P	H
		241.41	34.06	-11.94	46	47.02	17.19	2.07	32.22	-	-	P	H
		366.5	28.67	-17.33	46	37.71	20.62	2.51	32.17	-	-	P	H
		649.3	27.93	-18.07	46	30.54	26.18	3.38	32.17	-	-	P	H
		958.7	33.59	-12.41	46	29.27	30.95	4.18	30.81	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
Remark	1. No other spurious found. 2. All results are PASS against limit line.												

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**2.4GHz 2400~2483.5MHz****BLE (2Mbps) (Band Edge @ 3m)**

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
												Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
BLE CH 00 2402MHz		2376.465	52.78	-21.22	74	42.44	27.49	16.48	33.63	349	287	P	H
		2351.475	45.02	-8.98	54	34.62	27.59	16.45	33.64	349	287	A	H
	*	2402	99.11	-	-	88.82	27.4	16.52	33.63	349	287	P	H
	*	2402	97.85	-	-	87.56	27.4	16.52	33.63	349	287	A	H
													H
													H
		2349.9	53.24	-20.76	74	42.84	27.6	16.44	33.64	110	52	P	V
		2336.25	45.32	-8.68	54	34.89	27.66	16.42	33.65	110	52	A	V
	*	2402	95.2	-	-	84.91	27.4	16.52	33.63	110	52	P	V
	*	2402	93.78	-	-	83.49	27.4	16.52	33.63	110	52	A	V
BLE CH 19 2440MHz		2342.9	52.6	-21.4	74	42.19	27.63	16.43	33.65	341	287	P	H
		2373.56	45.04	-8.96	54	34.69	27.51	16.48	33.64	341	287	A	H
	*	2440	99.79	-	-	89.53	27.32	16.55	33.61	341	287	P	H
	*	2440	98.41	-	-	88.15	27.32	16.55	33.61	341	287	A	H
		2492.44	52.39	-21.61	74	42.09	27.3	16.59	33.59	341	287	P	H
		2495.87	44.61	-9.39	54	34.3	27.3	16.6	33.59	341	287	A	H
		2344.16	52.95	-21.05	74	42.54	27.62	16.44	33.65	107	50	P	V
		2322.74	45.11	-8.89	54	34.65	27.71	16.4	33.65	107	50	A	V
	*	2440	95.08	-	-	84.82	27.32	16.55	33.61	107	50	P	V
	*	2440	93.79	-	-	83.53	27.32	16.55	33.61	107	50	A	V
		2486.21	53.21	-20.79	74	42.91	27.3	16.59	33.59	107	50	P	V
		2497.9	44.84	-9.16	54	34.53	27.3	16.6	33.59	107	50	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	99.6	-	-	89.32	27.3	16.58	33.6	344	259	P	H
	*	2480	98.2	-	-	87.92	27.3	16.58	33.6	344	259	A	H
		2483.56	53.5	-20.5	74	43.21	27.3	16.59	33.6	344	259	P	H
		2483.52	45.09	-8.91	54	34.8	27.3	16.59	33.6	344	259	A	H
													H
													H
	*	2480	94.97	-	-	84.69	27.3	16.58	33.6	100	49	P	V
	*	2480	93.64	-	-	83.36	27.3	16.58	33.6	100	49	A	V
		2493.76	53.63	-20.37	74	43.32	27.3	16.6	33.59	100	49	P	V
		2499.28	45.16	-8.84	54	34.85	27.3	16.6	33.59	100	49	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## FCC RADIO TEST REPORT

Report No. : FR8N0846B

2.4GHz 2400~2483.5MHz

## BLE (2Mbps) (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	37.37	-36.63	74	54.78	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	37.28	-36.72	74	54.69	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.75	-36.25	74	55.11	31.04	10.15	58.55	100	0	P	H
		7320	41.09	-32.91	74	50.88	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	38.12	-35.88	74	55.48	31.04	10.15	58.55	100	0	P	V
		7320	40.83	-33.17	74	50.62	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.24	-35.76	74	55.21	31.32	10.22	58.51	100	0	P	H
		7440	41.91	-32.09	74	51.62	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	38.44	-35.56	74	55.41	31.32	10.22	58.51	100	0	P	V
		7440	41.92	-32.08	74	51.63	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## **FCC RADIO TEST REPORT**

Report No. : FR8N0846B

## Emission below 1GHz

## 2.4GHz BLE (2Mbps) (LF)

**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak or Average</b>
H/V	<b>Horizontal or Vertical</b>



**A calculation example for radiated spurious emission is shown as below:**

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
<b>BLE CH 00 2402MHz</b>		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)

2. Level(dB $\mu$ V/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dB $\mu$ V) – 35.86 (dB)

= 55.45 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 55.45(dB $\mu$ V/m) – 74(dB $\mu$ V/m)

= -18.55(dB)

#### For Average Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dB $\mu$ V) – 35.86 (dB)

= 43.54 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 43.54(dB $\mu$ V/m) – 54(dB $\mu$ V/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**<For Antenna 4>****2.4GHz 2400~2483.5MHz****BLE (1Mbps) (Band Edge @ 3m)**

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
												Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		2340.975	52.84	-21.16	74	42.42	27.64	16.43	33.65	273	323	P	H
		2377.83	43.25	-10.75	54	32.9	27.49	16.49	33.63	273	323	A	H
	*	2402	93.09	-	-	82.8	27.4	16.52	33.63	273	323	P	H
	*	2402	92.53	-	-	82.24	27.4	16.52	33.63	273	323	A	H
													H
		2318.715	52.51	-21.49	74	42.04	27.73	16.4	33.66	348	3	P	V
		2344.44	43.4	-10.6	54	32.99	27.62	16.44	33.65	348	3	A	V
	*	2402	99.92	-	-	89.63	27.4	16.52	33.63	348	3	P	V
	*	2402	99.24	-	-	88.95	27.4	16.52	33.63	348	3	A	V
													V
BLE CH 19 2440MHz		2374.96	52.44	-21.56	74	42.1	27.5	16.48	33.64	269	326	P	H
		2312.4	43.43	-10.57	54	32.95	27.75	16.39	33.66	269	326	A	H
	*	2440	91.59	-	-	81.33	27.32	16.55	33.61	269	326	P	H
	*	2440	90.64	-	-	80.38	27.32	16.55	33.61	269	326	A	H
		2499.68	52.64	-21.36	74	42.33	27.3	16.6	33.59	269	326	P	H
		2485.2	43.55	-10.45	54	33.26	27.3	16.59	33.6	269	326	A	H
		2317.36	52.93	-21.07	74	42.46	27.73	16.4	33.66	331	4	P	V
		2368.88	43.55	-10.45	54	33.2	27.52	16.47	33.64	331	4	A	V
	*	2440	99.32	-	-	89.06	27.32	16.55	33.61	331	4	P	V
	*	2440	98.86	-	-	88.6	27.32	16.55	33.61	331	4	A	V
		2488.08	53.17	-20.83	74	42.87	27.3	16.59	33.59	331	4	P	V
		2487.84	46.48	-7.52	54	36.18	27.3	16.59	33.59	331	4	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	90.53	-	-	80.25	27.3	16.58	33.6	303	117	P	H
	*	2480	89.92	-	-	79.64	27.3	16.58	33.6	303	117	A	H
		2485.84	53.15	-20.85	74	42.86	27.3	16.59	33.6	303	117	P	H
		2493.36	43.43	-10.57	54	33.13	27.3	16.59	33.59	303	117	A	H
													H
													H
	*	2480	99.06	-	-	88.78	27.3	16.58	33.6	331	360	P	V
	*	2480	98.55	-	-	88.27	27.3	16.58	33.6	331	360	A	V
		2490.52	53.02	-20.98	74	42.72	27.3	16.59	33.59	331	360	P	V
		2487.6	43.57	-10.43	54	33.27	27.3	16.59	33.59	331	360	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

**2.4GHz 2400~2483.5MHz****BLE (1Mbps) (Harmonic @ 3m)**

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	37.27	-36.73	74	54.68	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	37.34	-36.66	74	54.75	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.49	-36.51	74	54.85	31.04	10.15	58.55	100	0	P	H
		7320	40.58	-33.42	74	50.37	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	37.12	-36.88	74	54.48	31.04	10.15	58.55	100	0	P	V
		7320	40.47	-33.53	74	50.26	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.73	-35.27	74	55.7	31.32	10.22	58.51	100	0	P	H
		7440	41.61	-32.39	74	51.32	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	38.62	-35.38	74	55.59	31.32	10.22	58.51	100	0	P	V
		7440	41.76	-32.24	74	51.47	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Emission below 1GHz

## 2.4GHz BLE (1Mbps) (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	(dB $\mu$ V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
2.4GHz BLE LF		186.87	37.33	-6.17	43.5	53.07	14.61	1.9	32.25	100	0	P	H
		195.51	32.25	-11.25	43.5	47.79	14.76	1.94	32.24	-	-	P	H
		241.41	37.14	-8.86	46	50.1	17.19	2.07	32.22	-	-	P	H
		301.4	29.12	-16.88	46	39.91	19.09	2.3	32.18	-	-	P	H
		753.6	30.89	-15.11	46	31.38	27.85	3.66	32	-	-	P	H
		955.9	33.75	-12.25	46	29.59	30.83	4.17	30.84	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
2.4GHz BLE LF		40.8	34.17	-5.83	40	47.03	18.64	0.87	32.37	100	0	P	V
		187.14	30.01	-13.49	43.5	45.74	14.61	1.91	32.25	-	-	P	V
		241.41	32.15	-13.85	46	45.11	17.19	2.07	32.22	-	-	P	V
		730.5	29.26	-16.74	46	30.2	27.53	3.58	32.05	-	-	P	V
		815.2	30.69	-15.31	46	30.52	28.15	3.82	31.8	-	-	P	V
		953.1	33.97	-12.03	46	29.96	30.71	4.16	30.86	-	-	P	V
													V
													V
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													V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



## FCC RADIO TEST REPORT

Report No. : FR8N0846B

2.4GHz 2400~2483.5MHz

BLE (2Mbps) (Band Edge @ 3m)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
BLE CH 00 2402MHz		2312.94	52.71	-21.29	74	42.23	27.75	16.39	33.66	273	323	P	H
		2347.17	45.11	-8.89	54	34.71	27.61	16.44	33.65	273	323	A	H
	*	2402	93.3	-	-	83.01	27.4	16.52	33.63	273	323	P	H
	*	2402	91.96	-	-	81.67	27.4	16.52	33.63	273	323	A	H
													H
													H
		2322.6	52.98	-21.02	74	42.52	27.71	16.4	33.65	349	4	P	V
		2342.76	44.86	-9.14	54	34.45	27.63	16.43	33.65	349	4	A	V
	*	2402	99.88	-	-	89.59	27.4	16.52	33.63	349	4	P	V
	*	2402	98.54	-	-	88.25	27.4	16.52	33.63	349	4	A	V
BLE CH 19 2440MHz													V
		2365.3	53.4	-20.6	74	43.03	27.54	16.47	33.64	269	326	P	H
		2339.96	45.34	-8.66	54	34.92	27.64	16.43	33.65	269	326	A	H
	*	2440	91.35	-	-	81.09	27.32	16.55	33.61	269	326	P	H
	*	2440	90.05	-	-	79.79	27.32	16.55	33.61	269	326	A	H
		2485.37	52.53	-21.47	74	42.24	27.3	16.59	33.6	269	326	P	H
		2495.8	44.62	-9.38	54	34.31	27.3	16.6	33.59	269	326	A	H
		2319.1	54.19	-19.81	74	43.73	27.72	16.4	33.66	331	4	P	V
		2350.32	44.75	-9.25	54	34.34	27.6	16.45	33.64	331	4	A	V
	*	2440	99.2	-	-	88.94	27.32	16.55	33.61	331	4	P	V
	*	2440	97.97	-	-	87.71	27.32	16.55	33.61	331	4	A	V
		2488.03	53.41	-20.59	74	43.11	27.3	16.59	33.59	331	4	P	V
		2487.89	46.52	-7.48	54	36.22	27.3	16.59	33.59	331	4	A	V

**FCC RADIO TEST REPORT**

Report No. : FR8N0846B

BLE CH 39 2480MHz	*	2480	90.08	-	-	79.8	27.3	16.58	33.6	295	325	P	H
	*	2480	88.69	-	-	78.41	27.3	16.58	33.6	295	325	A	H
		2497.56	52.81	-21.19	74	42.5	27.3	16.6	33.59	295	325	P	H
		2500	44.76	-9.24	54	34.45	27.3	16.6	33.59	295	325	A	H
													H
													H
	*	2480	97.8	-	-	87.52	27.3	16.58	33.6	325	0	P	V
	*	2480	96.48	-	-	86.2	27.3	16.58	33.6	325	0	A	V
		2483.6	52.76	-21.24	74	42.47	27.3	16.59	33.6	325	0	P	V
		2498.52	44.84	-9.16	54	34.53	27.3	16.6	33.59	325	0	A	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## FCC RADIO TEST REPORT

Report No. : FR8N0846B

2.4GHz 2400~2483.5MHz

## BLE (2Mbps) (Harmonic @ 3m)

BLE	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
BLE CH 00 2402MHz		4804	37	-37	74	54.41	31.1	10.07	58.58	100	0	P	H
													H
													H
													H
		4804	38.44	-35.56	74	55.85	31.1	10.07	58.58	100	0	P	V
													V
													V
													V
BLE CH 19 2440MHz		4880	37.4	-36.6	74	54.76	31.04	10.15	58.55	100	0	P	H
		7320	41.37	-32.63	74	51.16	36.54	12.48	58.81	100	0	P	H
													H
													H
		4880	37.92	-36.08	74	55.28	31.04	10.15	58.55	100	0	P	V
		7320	42.46	-31.54	74	52.25	36.54	12.48	58.81	100	0	P	V
													V
													V
BLE CH 39 2480MHz		4960	38.26	-35.74	74	55.23	31.32	10.22	58.51	100	0	P	H
		7440	41.28	-32.72	74	50.99	36.48	12.47	58.66	100	0	P	H
													H
													H
		4960	38.84	-35.16	74	55.81	31.32	10.22	58.51	100	0	P	V
		7440	42.47	-31.53	74	52.18	36.48	12.47	58.66	100	0	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



## Emission below 1GHz

## 2.4GHz BLE (2Mbps) (LF)

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	(dB $\mu$ V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
2.4GHz BLE LF		186.87	37.22	-6.28	43.5	52.96	14.61	1.9	32.25	100	0	P	H
		231.42	36.11	-9.89	46	50.17	16.12	2.04	32.22	-	-	P	H
		241.41	36.71	-9.29	46	49.67	17.19	2.07	32.22	-	-	P	H
		301.4	29.01	-16.99	46	39.8	19.09	2.3	32.18	-	-	P	H
		858.6	32.3	-13.7	46	30.64	29.28	3.95	31.57	-	-	P	H
		954.5	33.42	-12.58	46	29.34	30.77	4.16	30.85	-	-	P	H
													H
													H
													H
													H
													H
													H
													H
													H
Remark	1.	No other spurious found.											
	2.	All results are PASS against limit line.											

**Note symbol**

*	<b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is <b>over limit</b> line.
P/A	<b>Peak or Average</b>
H/V	<b>Horizontal or Vertical</b>



**A calculation example for radiated spurious emission is shown as below:**

BLE	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		( MHz )	( dB $\mu$ V/m )	( dB )	( dB $\mu$ V/m )	( dB $\mu$ V )	( dB/m )	( dB )	( dB )	( cm )	( deg )	( P/A )	( H/V )
<b>BLE CH 00 2402MHz</b>		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)

2. Level(dB $\mu$ V/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dB $\mu$ V) – 35.86 (dB)

= 55.45 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 55.45(dB $\mu$ V/m) – 74(dB $\mu$ V/m)

= -18.55(dB)

#### For Average Limit @ 2390MHz:

1. Level(dB $\mu$ V/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dB $\mu$ V) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dB $\mu$ V) – 35.86 (dB)

= 43.54 (dB $\mu$ V/m)

2. Over Limit(dB)

= Level(dB $\mu$ V/m) – Limit Line(dB $\mu$ V/m)

= 43.54(dB $\mu$ V/m) – 54(dB $\mu$ V/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



## Appendix C. Radiated Spurious Emission Plots

Test Engineer :	Hao Xu, Ace Zhu, Ken Wu, and JC Liang	Temperature :	21~26°C
		Relative Humidity :	52~57%

### Note symbol

-L	Low channel location
-R	High channel location



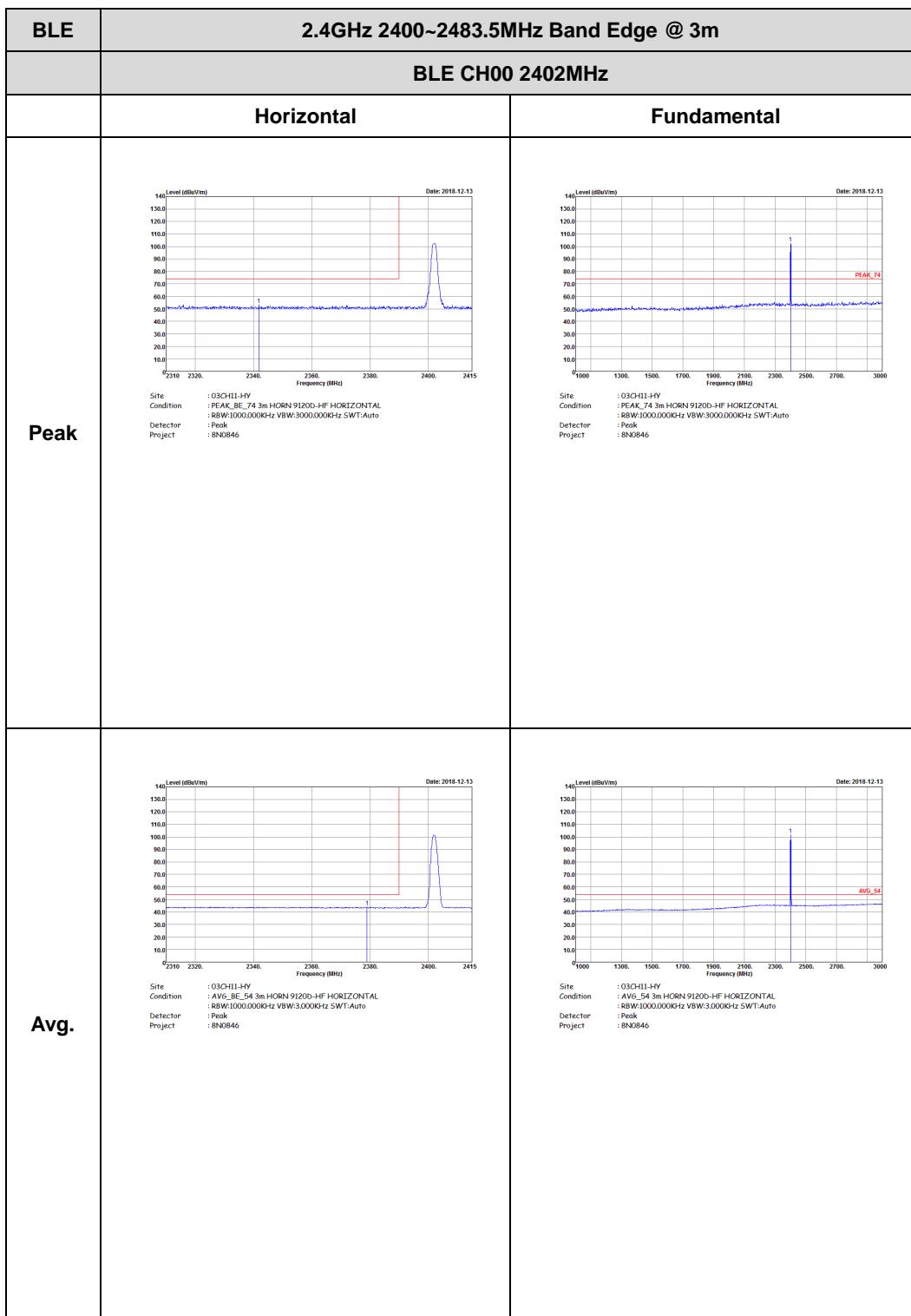
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

<For Antenna 1>

**2.4GHz 2400~2483.5MHz**

**BLE (1Mbps) (Band Edge @ 3m)**





# FCC RADIO TEST REPORT

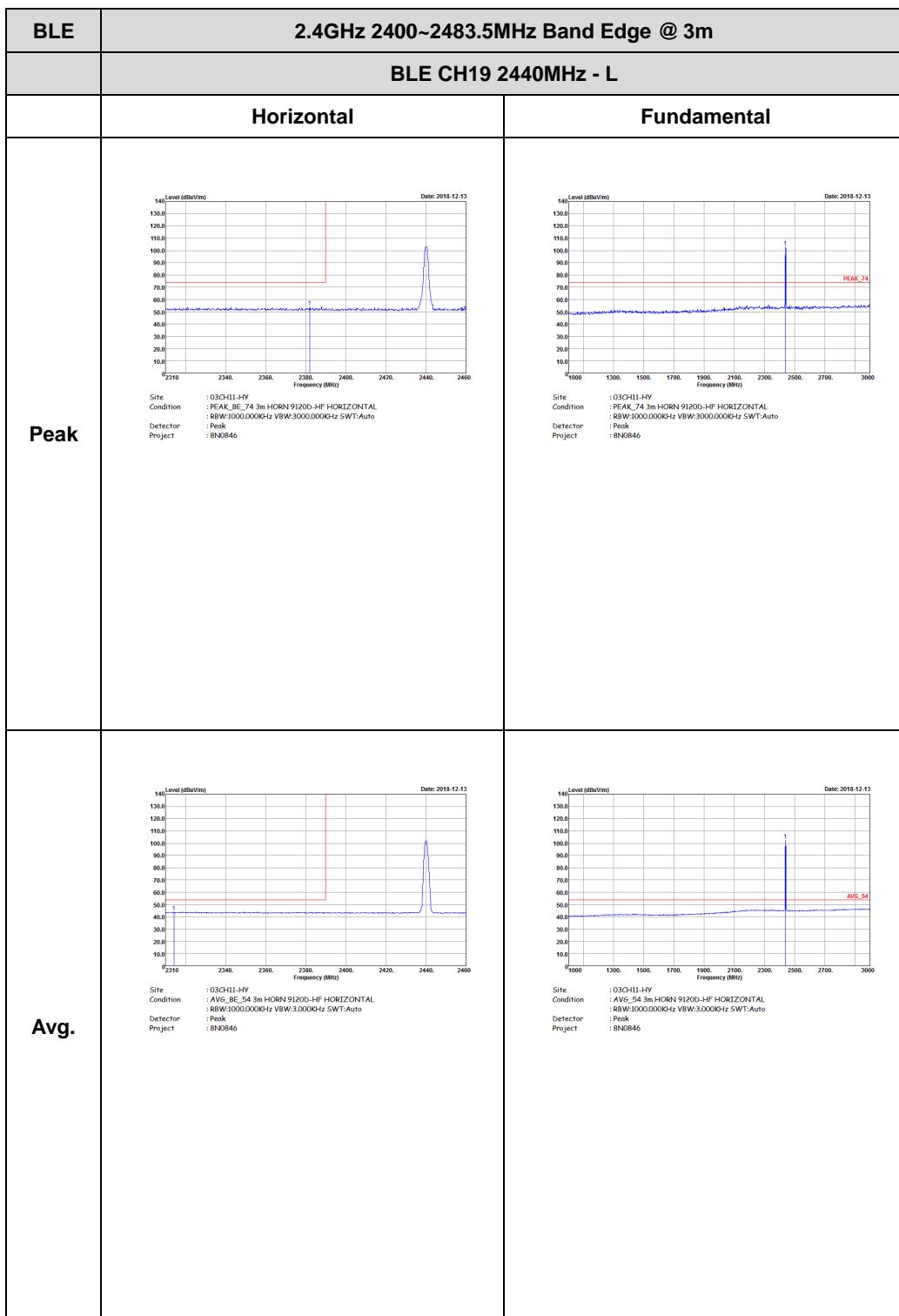
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>	<p>Level (dBcV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>
Avg	<p>Level (dBcV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : Peak Project : 8N0846</p>	<p>Level (dBcV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2018-12-13</p> <p>Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2018-12-13</p> <p>Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	<p>Date: 2018-12-13 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : BN0846</p>	<p>Date: 2018-12-13 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : BN0846</p>
Avg.	<p>Date: 2018-12-13 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : BN0846</p>	<p>Date: 2018-12-13 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : BN0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2018-12-13</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846



# FCC RADIO TEST REPORT

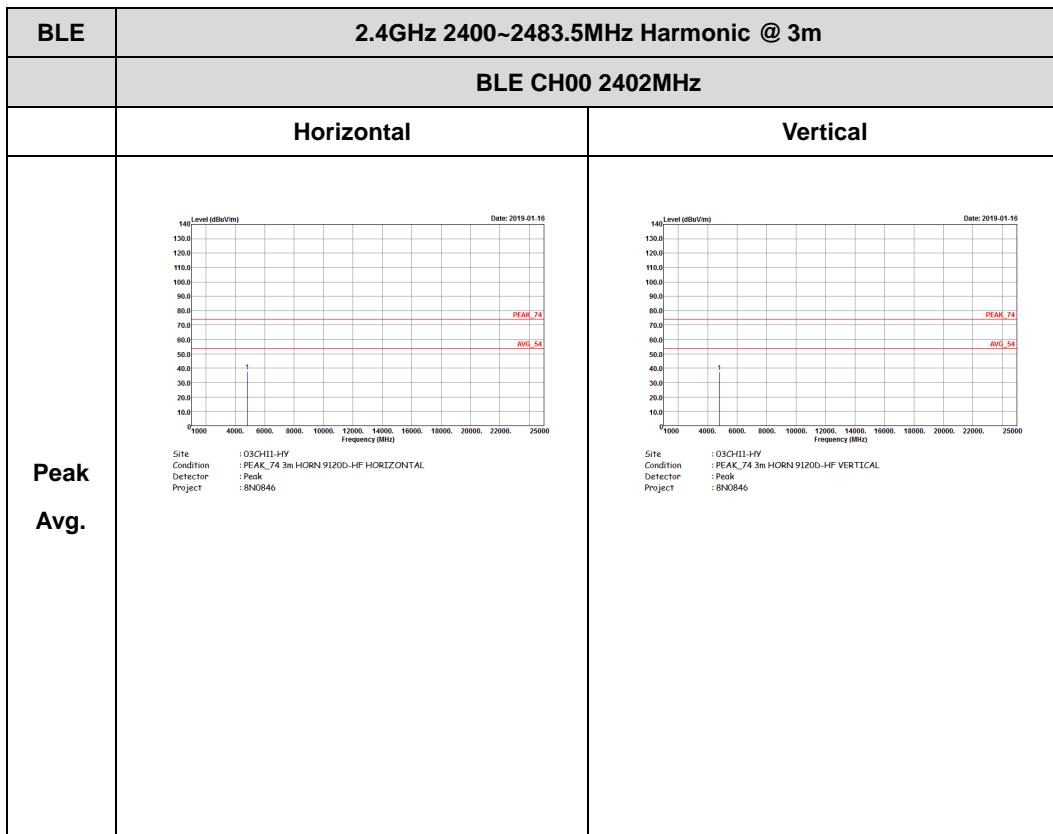
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	<p>Graph showing Level (dBc/1m) vs Frequency (MHz). The peak is labeled PEAK_BE_74. Test conditions: Site: 03CH11-HV, Condition: PEAK_BE_74 3m HORN 91200-HF VERTICAL, Detector: Peak, Project: 8N0846.</p>	<p>Graph showing Level (dBc/1m) vs Frequency (MHz). The peak is labeled PEAK_74. Test conditions: Site: 03CH11-HV, Condition: PEAK_74 3m HORN 91200-HF VERTICAL, Detector: Peak, Project: 8N0846.</p>
Avg.	<p>Graph showing Level (dBc/1m) vs Frequency (MHz). The peak is labeled AVG_BE_54. Test conditions: Site: 03CH11-HV, Condition: AVG_BE_54 3m HORN 91200-HF VERTICAL, Detector: Peak, Project: 8N0846.</p>	<p>Graph showing Level (dBc/1m) vs Frequency (MHz). The peak is labeled AVG_54. Test conditions: Site: 03CH11-HV, Condition: AVG_54 3m HORN 91200-HF VERTICAL, Detector: Peak, Project: 8N0846.</p>



## 2.4GHz 2400~2483.5MHz

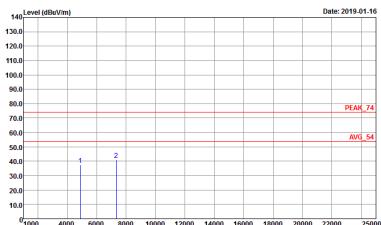
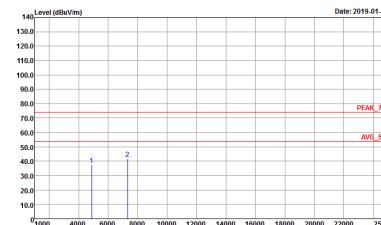
BLE (1Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak	 <p>Site : 03CH11-HY Condition : PEAK, 74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	 <p>Site : 03CH11-HY Condition : PEAK, 74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>
Avg.		



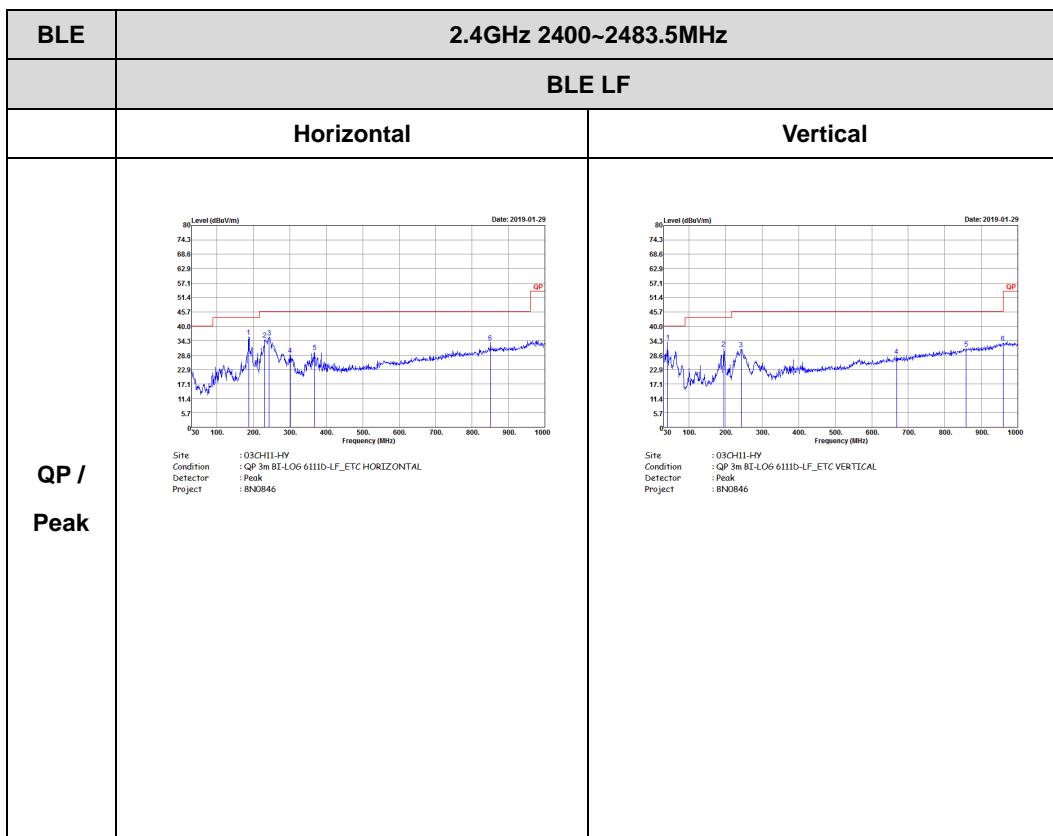
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-16</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-16</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



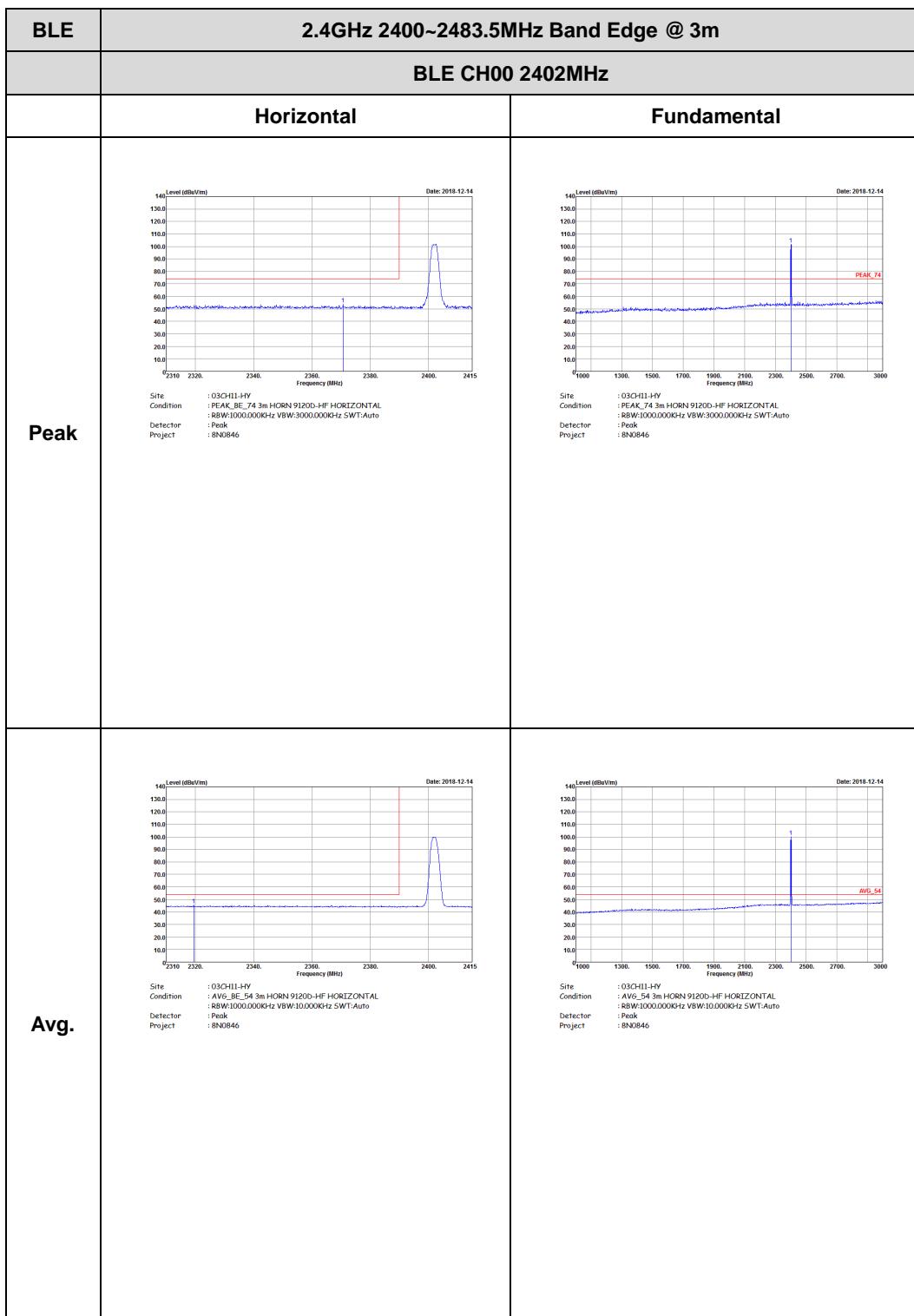
**Emission below 1GHz**  
**2.4GHz BLE (1Mbps) (LF)**





## 2.4GHz 2400~2483.5MHz

BLE (2Mbps) (Band Edge @ 3m)





# FCC RADIO TEST REPORT

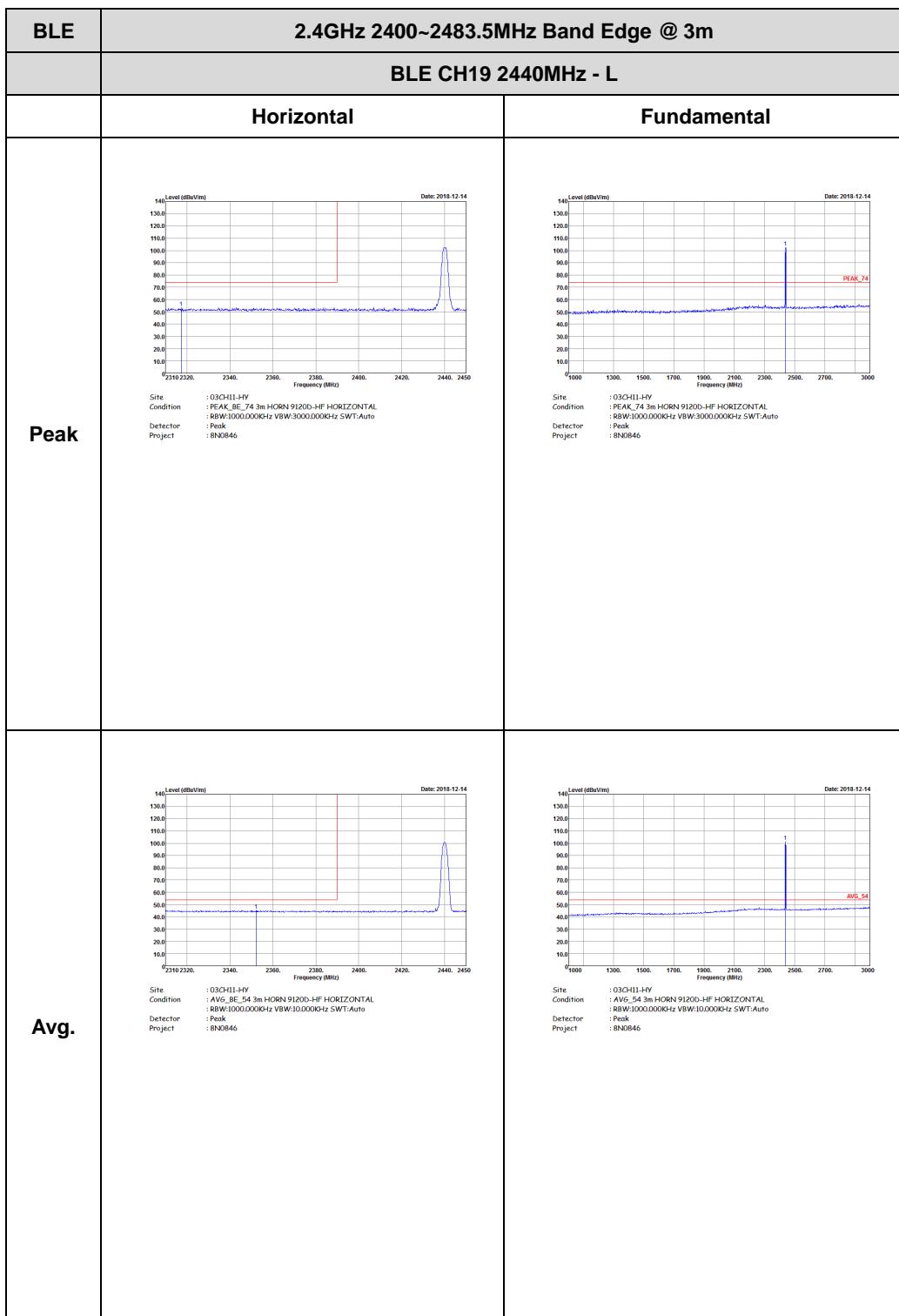
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	<p>Level (dBc/V/m) vs Frequency (MHz) from 2310 to 2415. A red step function shows a flat level of approximately 55 dBc/V/m from 2310 to 2380 MHz, followed by a sharp rise to about 135 dBc/V/m at 2402 MHz, which then drops back to 55 dBc/V/m. A blue line shows a small peak at 2402 MHz. The plot is dated 2018-12-14.</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>	<p>Level (dBc/V/m) vs Frequency (MHz) from 1000 to 3000. A red step function shows a flat level of approximately 50 dBc/V/m from 1000 to 2300 MHz, followed by a sharp rise to about 90 dBc/V/m at 2402 MHz, which then drops back to 50 dBc/V/m. The plot is dated 2018-12-14.</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>
Avg	<p>Level (dBc/V/m) vs Frequency (MHz) from 2310 to 2415. A red step function shows a flat level of approximately 45 dBc/V/m from 2310 to 2380 MHz, followed by a sharp rise to about 90 dBc/V/m at 2402 MHz, which then drops back to 45 dBc/V/m. The plot is dated 2018-12-14.</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : Peak Project : 8N0846</p>	<p>Level (dBc/V/m) vs Frequency (MHz) from 1000 to 3000. A red step function shows a flat level of approximately 45 dBc/V/m from 1000 to 2300 MHz, followed by a sharp rise to about 90 dBc/V/m at 2402 MHz, which then drops back to 45 dBc/V/m. The plot is dated 2018-12-14.</p> <p>Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2018-12-14</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2018-12-14</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Project : BN0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Project : BN0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : BN0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : Peak Project : BN0846



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2018-12-14</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2018-12-14</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

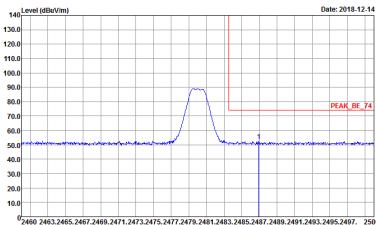
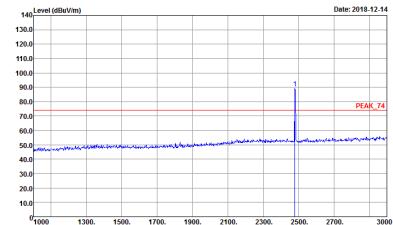
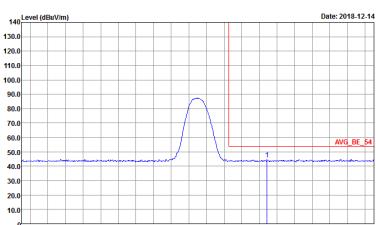
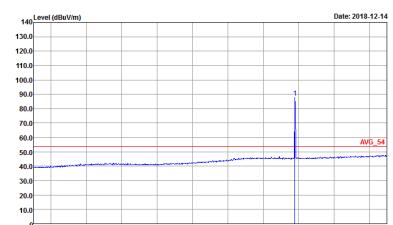
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846



# FCC RADIO TEST REPORT

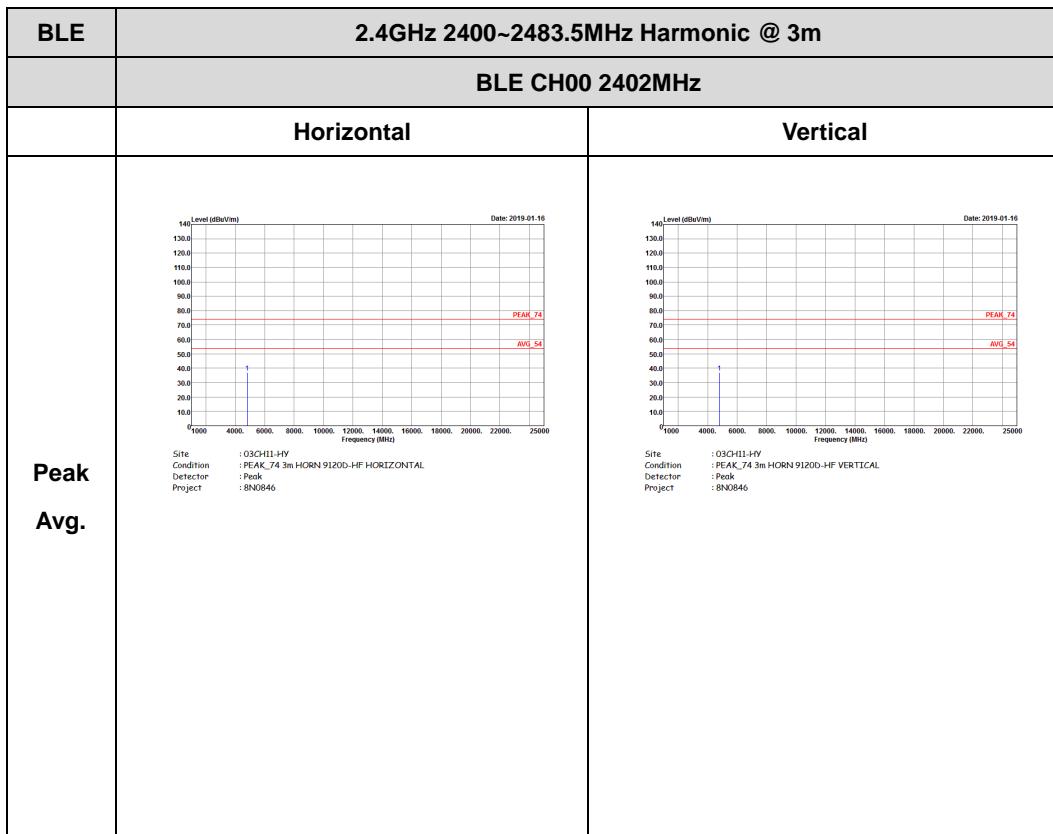
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2018-12-14 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2018-12-14 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>
Avg.	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2018-12-14 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2018-12-14 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>



## 2.4GHz 2400~2483.5MHz

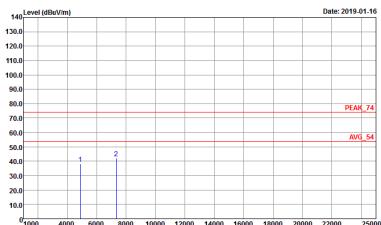
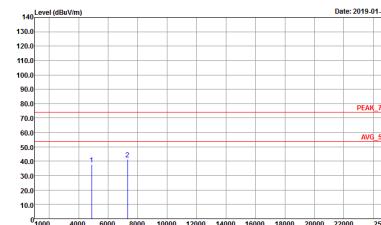
BLE (2Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak	 <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	 <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>
	Avg.	



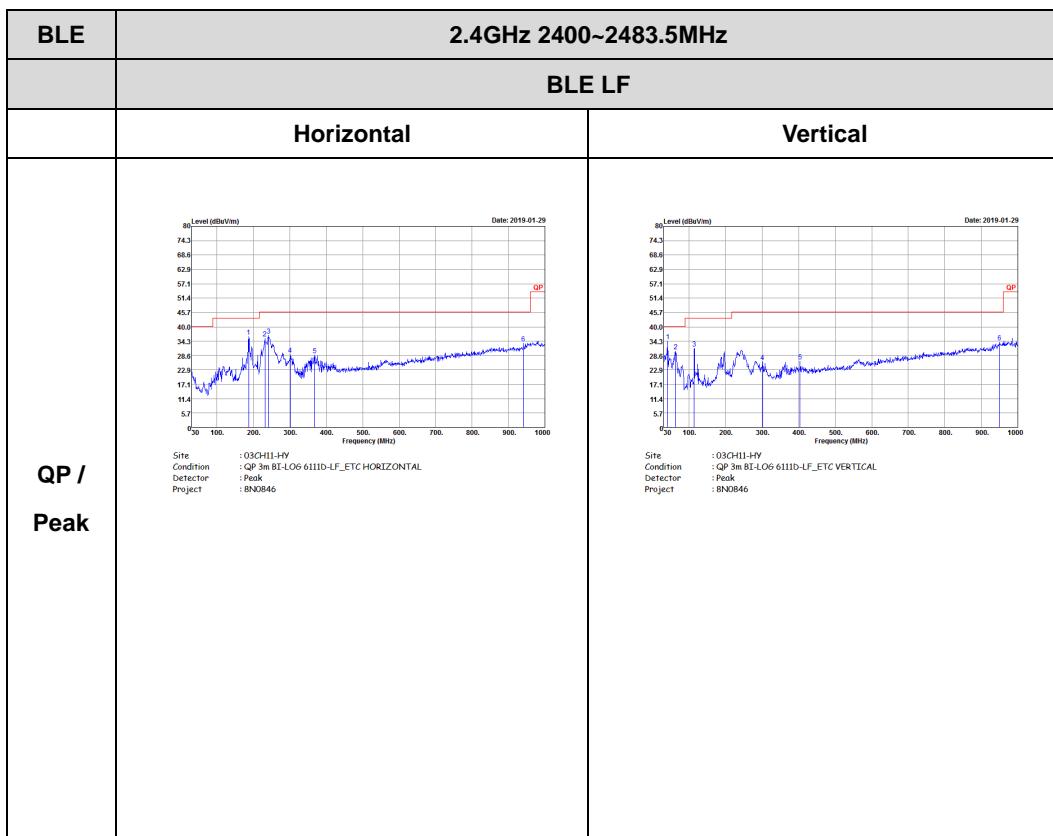
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-16</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-16</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



**Emission below 1GHz**  
**2.4GHz BLE (2Mbps) (LF)**

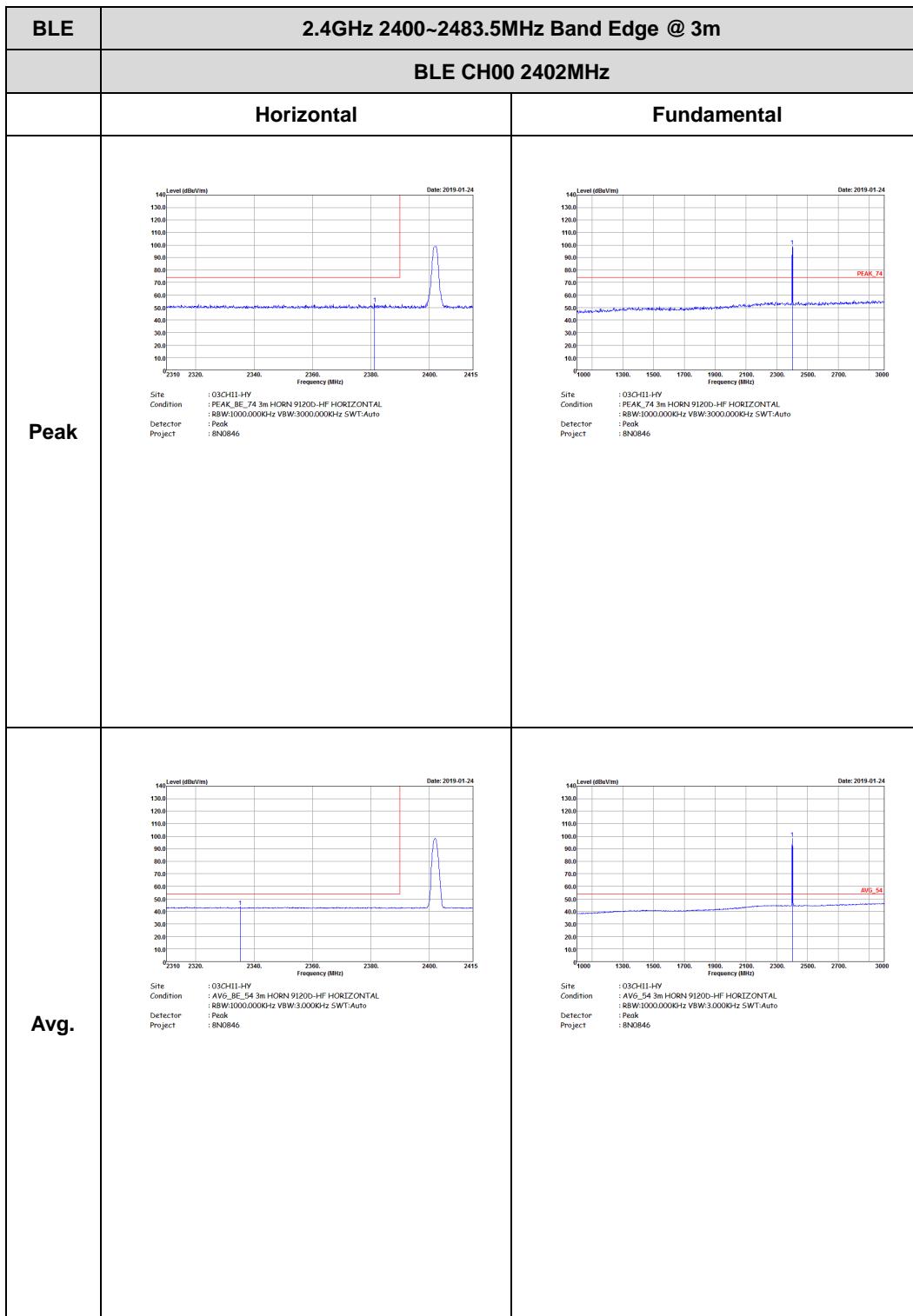




## &lt;For Antenna 3&gt;

2.4GHz 2400~2483.5MHz

BLE (1Mbps) (Band Edge @ 3m)





# FCC RADIO TEST REPORT

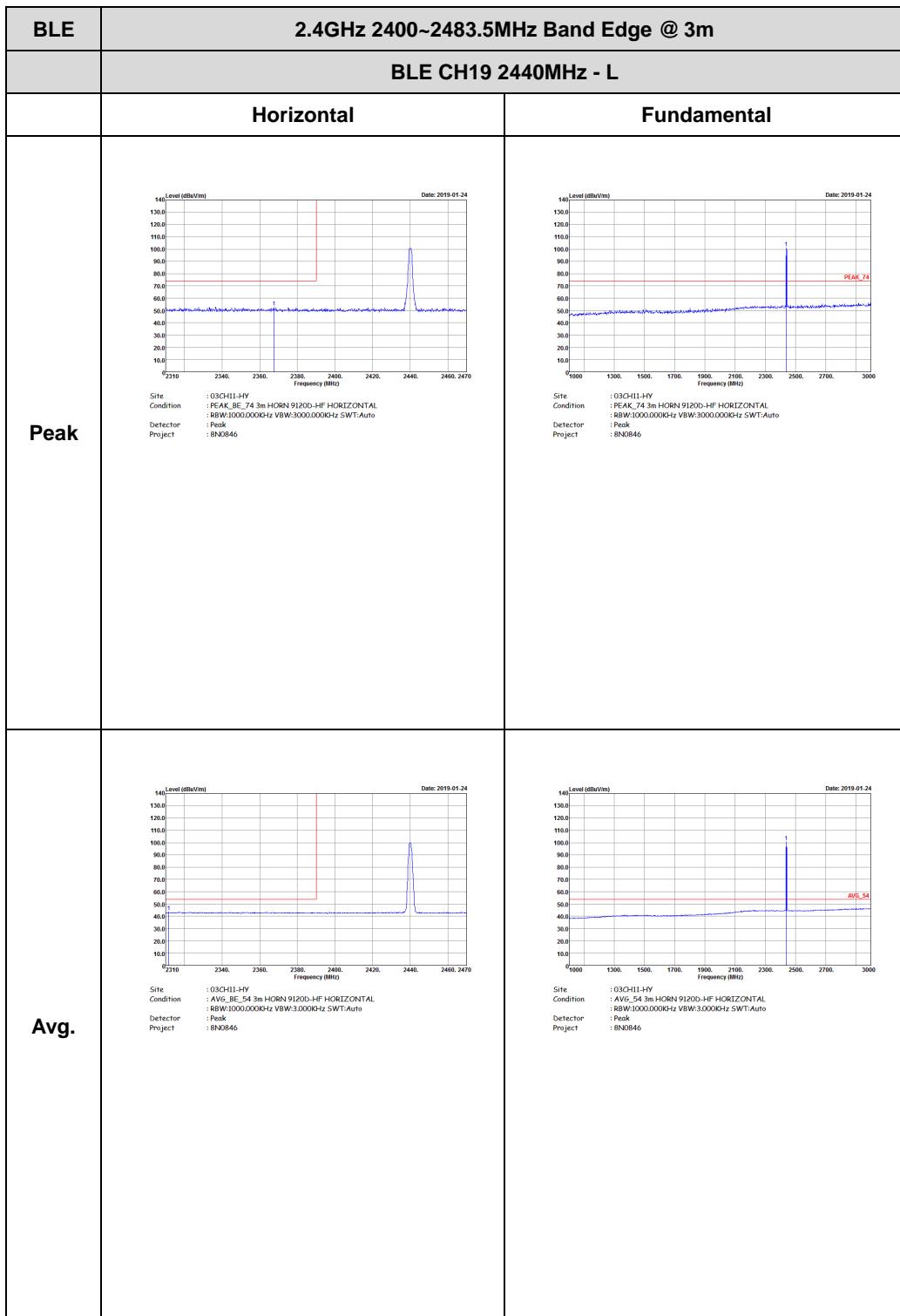
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8N0846
Avg	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846



# FCC RADIO TEST REPORT

Report No. : FR8N0846B





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2019-01-24</p> <p>Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2019-01-24</p> <p>Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Date: 2019-01-24	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Date: 2019-01-24
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Date: 2019-01-24	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak Date: 2019-01-24



# FCC RADIO TEST REPORT

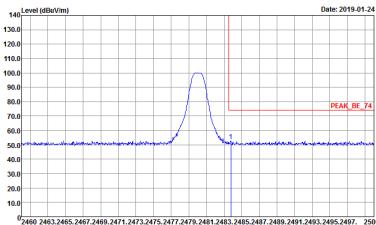
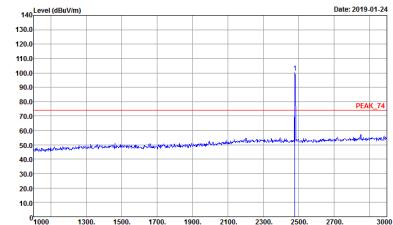
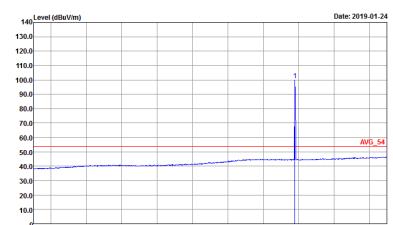
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 2460 2463.2465.2467.2469.2471.2473.2475.2477.2479.2481.2483.2485.2487.2489.2491.2493.2495.2497. 2500 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 1000 1300. 1500. 1700. 1900. 2100. 2300. 2500. 2700. 3000 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>
Avg.	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 2460 2463.2465.2467.2469.2471.2473.2475.2477.2479.2481.2483.2485.2487.2489.2491.2493.2495.2497. 2500 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 1000 1300. 1500. 1700. 1900. 2100. 2300. 2500. 2700. 3000 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

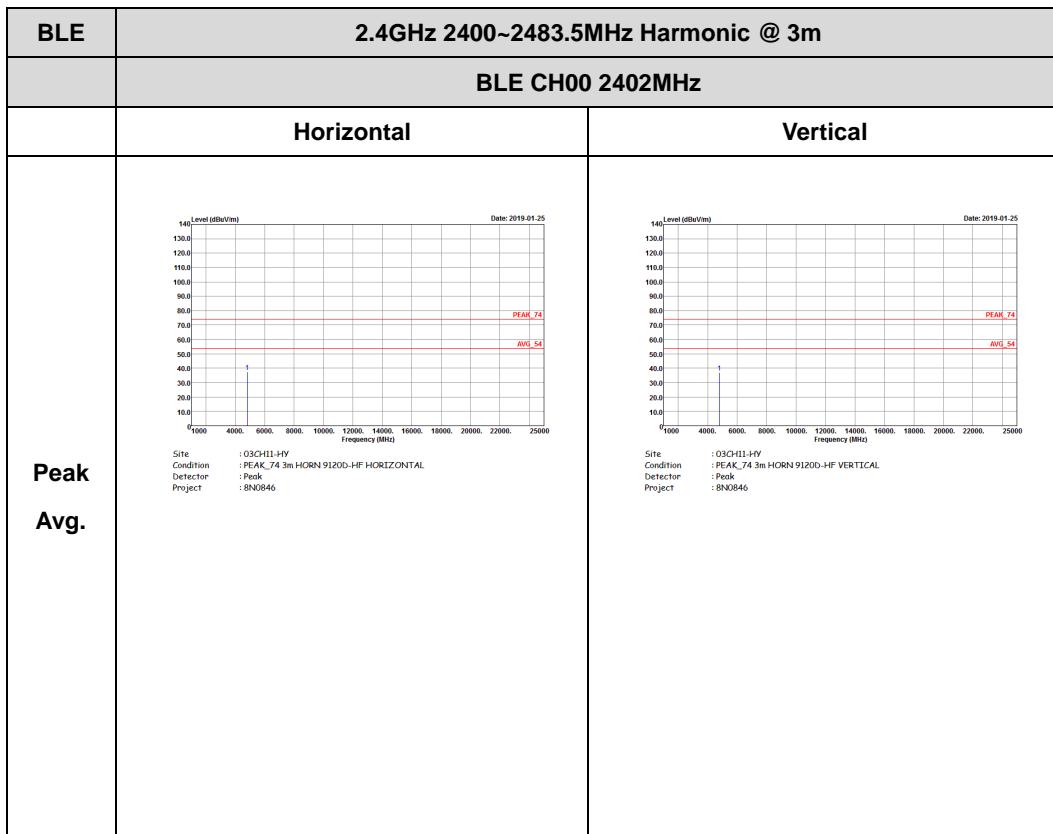
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846



## 2.4GHz 2400~2483.5MHz

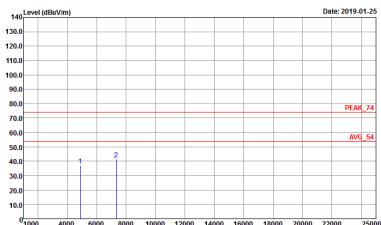
BLE (1Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak	 <p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	 <p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>
	Avg.	



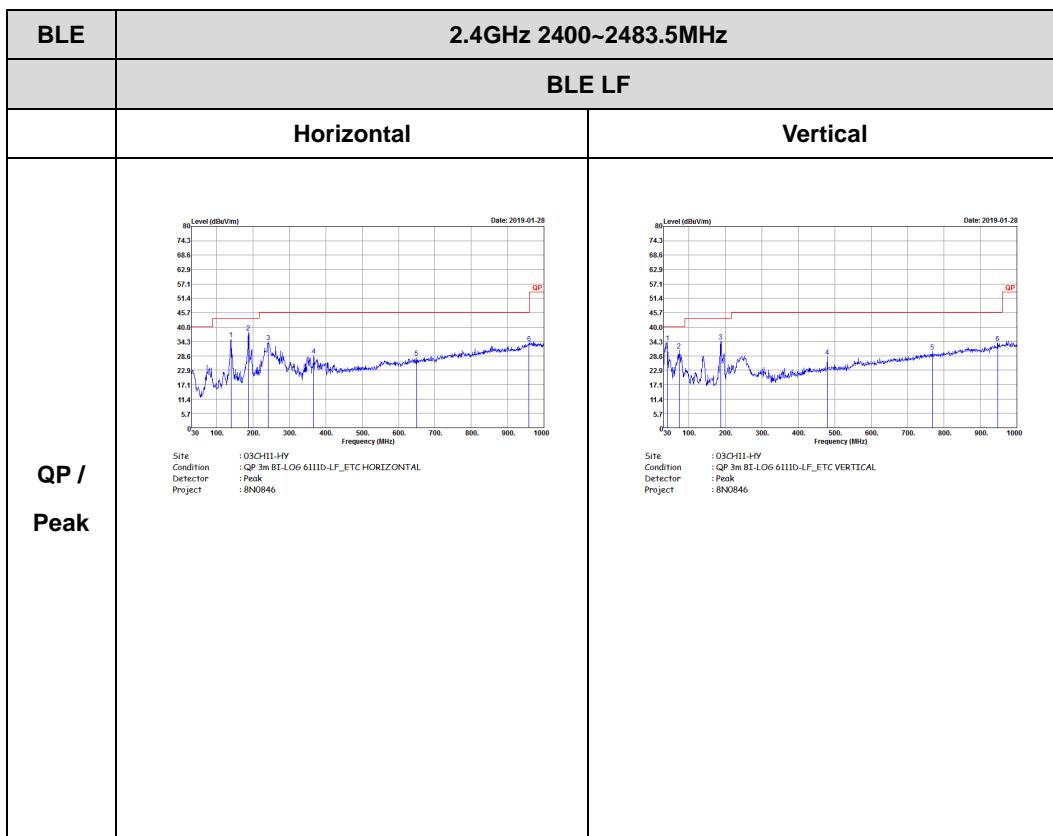
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



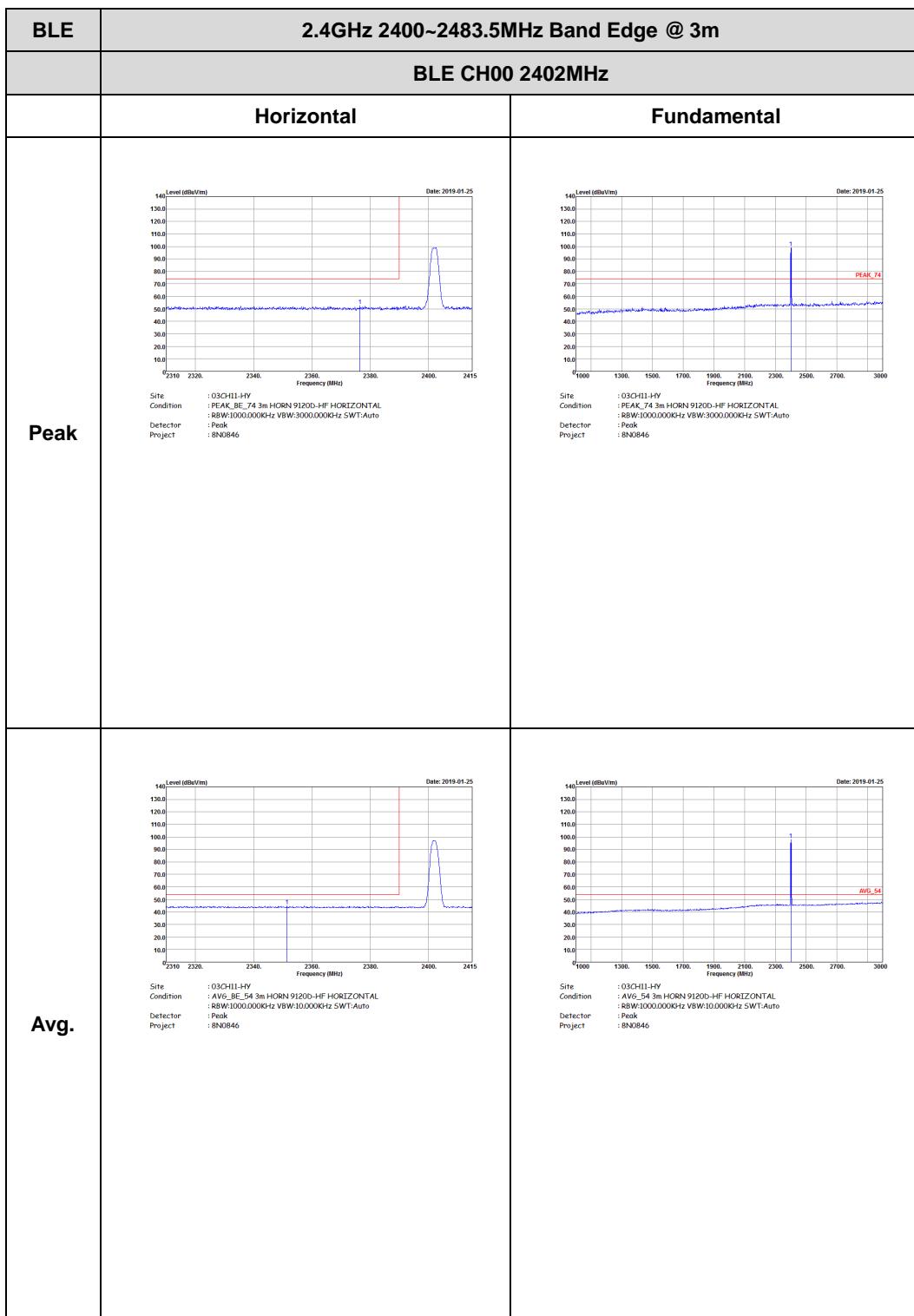
**Emission below 1GHz**  
**2.4GHz BLE (1Mbps) (LF)**





## 2.4GHz 2400~2483.5MHz

## BLE (2Mbps) (Band Edge @ 3m)





# FCC RADIO TEST REPORT

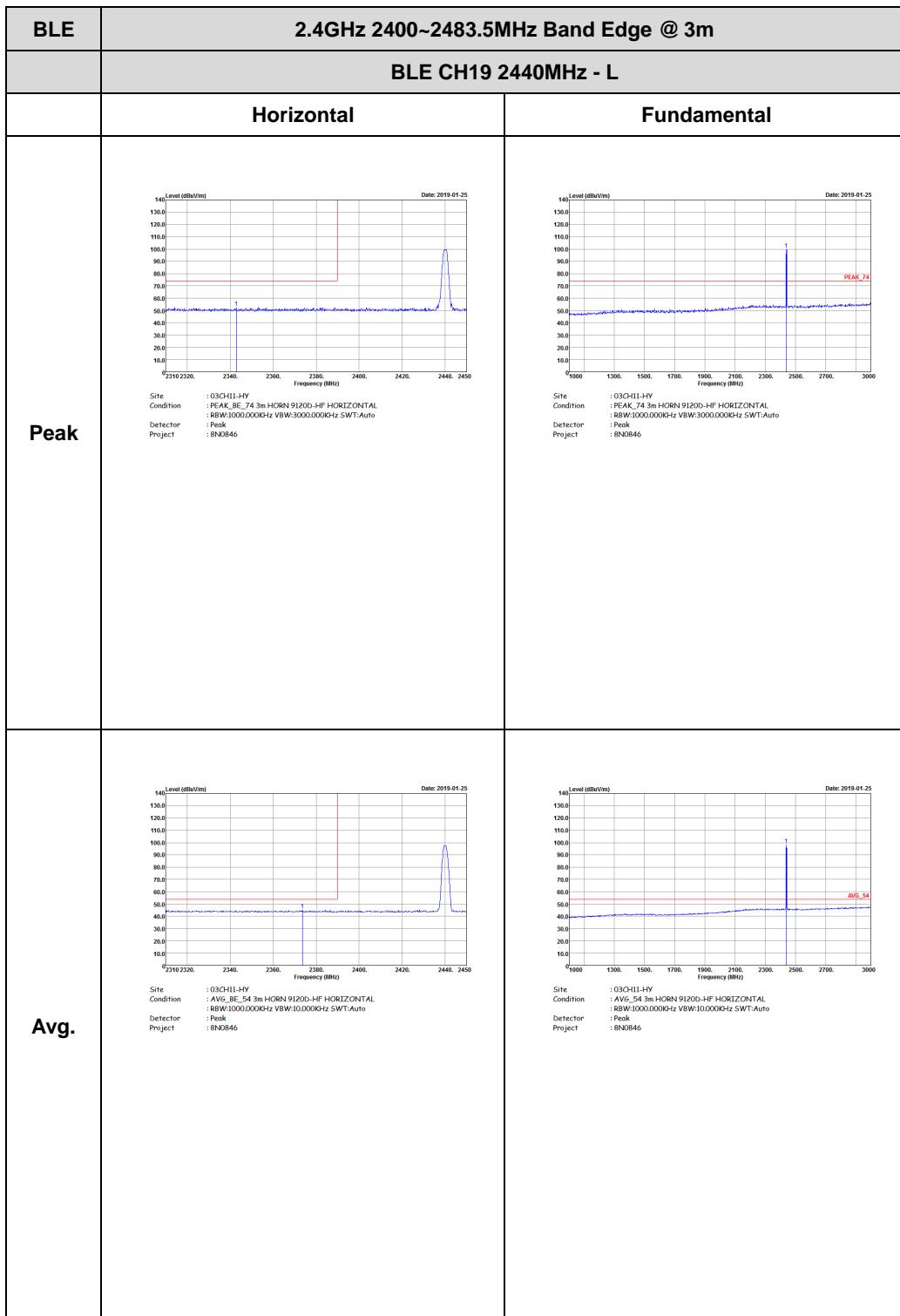
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	<p>Date: 2019-01-25 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>	<p>Date: 2019-01-25 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846</p>
Avg	<p>Date: 2019-01-25 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : 8N0846</p>	<p>Date: 2019-01-25 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : 8N0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2019-01-25</p> <p>2430 2440. 2450. 2460. 2470. 2480. 2490. 2500 Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2019-01-25</p> <p>2430 2440. 2450. 2460. 2470. 2480. 2490. 2500 Frequency (MHz)</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : 8N0846



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846



# FCC RADIO TEST REPORT

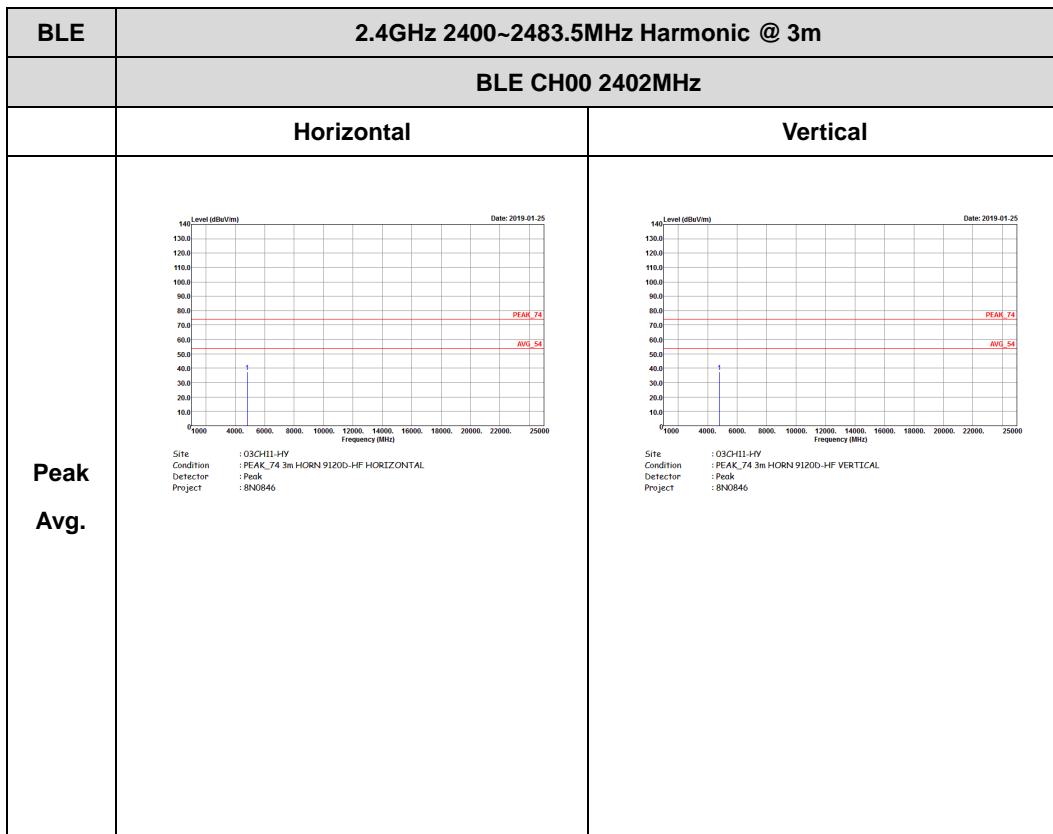
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846



## 2.4GHz 2400~2483.5MHz

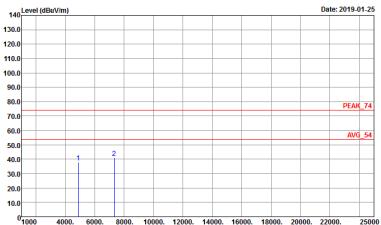
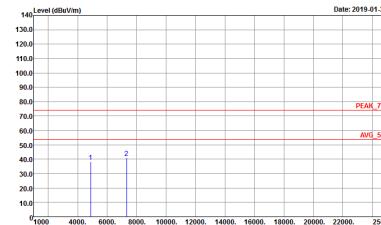
BLE (2Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak	 <p>Date: 2019-01-25 Site: 03CH11-HY Condition: PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector: Peak Project: 8N0846</p>	 <p>Date: 2019-01-25 Site: 03CH11-HY Condition: PEAK_74 3m HORN 9120D-HF VERTICAL Detector: Peak Project: 8N0846</p>
	Avg.	



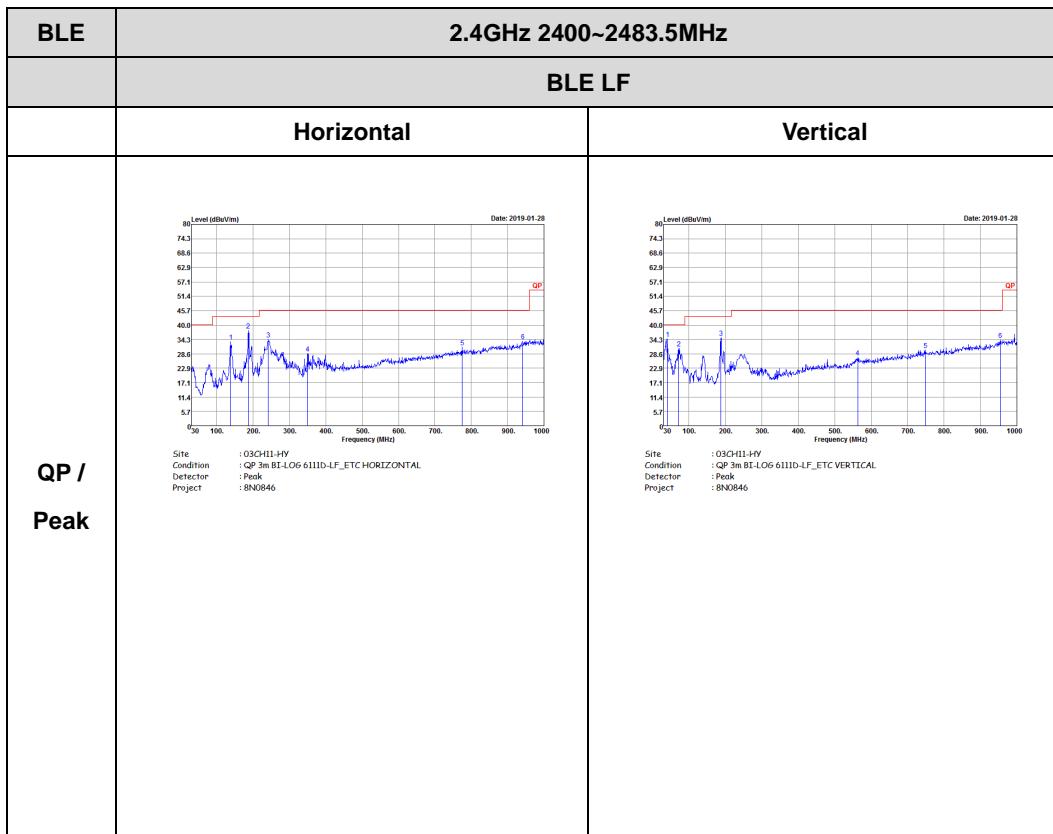
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-25</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



**Emission below 1GHz**  
**2.4GHz BLE (2Mbps) (LF)**





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

<For Antenna 4>

**2.4GHz 2400~2483.5MHz**

**BLE (1Mbps) (Band Edge @ 3m)**

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000kHz VBW:3000.000Hz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000kHz VBW:3000.000Hz SWT:Auto Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000kHz VBW:3.000Hz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 9120D-HF HORIZONTAL Detector : RBW:1000.000kHz VBW:3.000Hz SWT:Auto Project : 8N0846



# FCC RADIO TEST REPORT

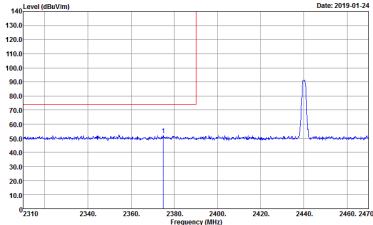
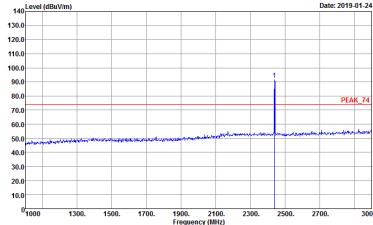
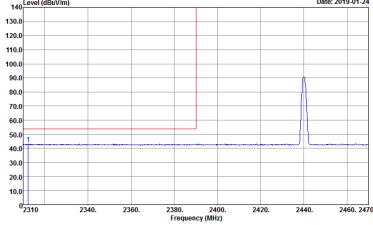
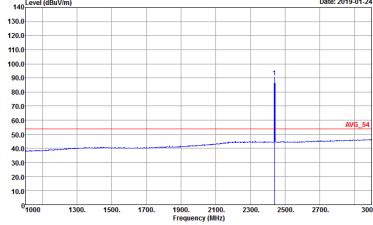
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Project : 8N0846
Avg	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : 8N0846



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Horizontal	Fundamental
Peak	 <p>Site : 03CH11-HV Condition : PEAK_86_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto Detector : Peak Project : 8N0846</p>
Avg.	 <p>Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.0000Hz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.0000Hz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p> <p>Frequency (MHz)</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : 8N0846



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBmV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBmV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3.000KHz SWT:Auto Detector : Peak Project : 8N0846



# FCC RADIO TEST REPORT

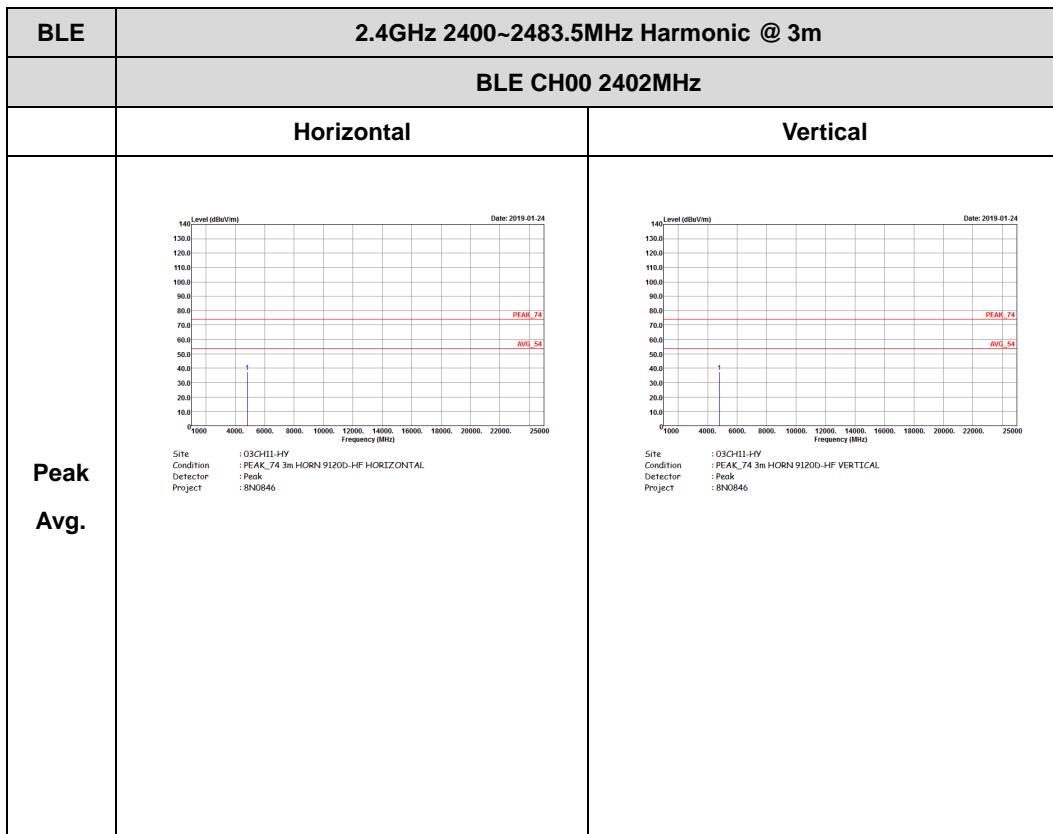
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846



## 2.4GHz 2400~2483.5MHz

BLE (1Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak		
	<p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>
Avg.		



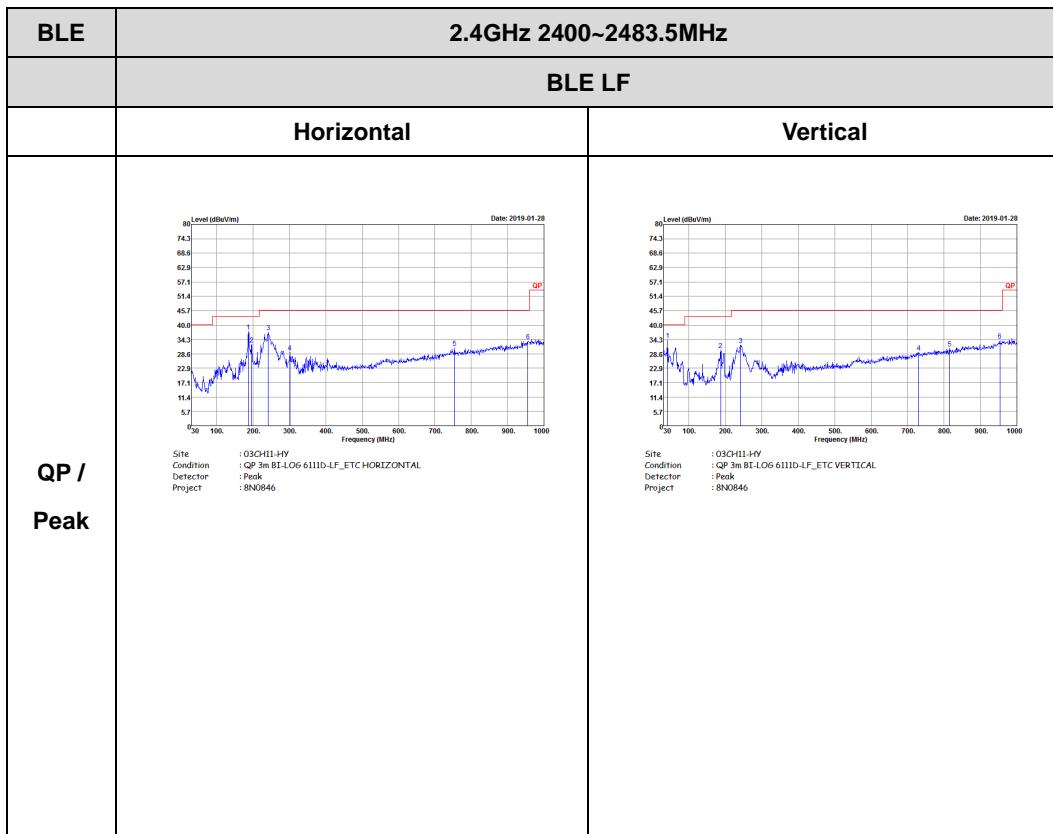
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



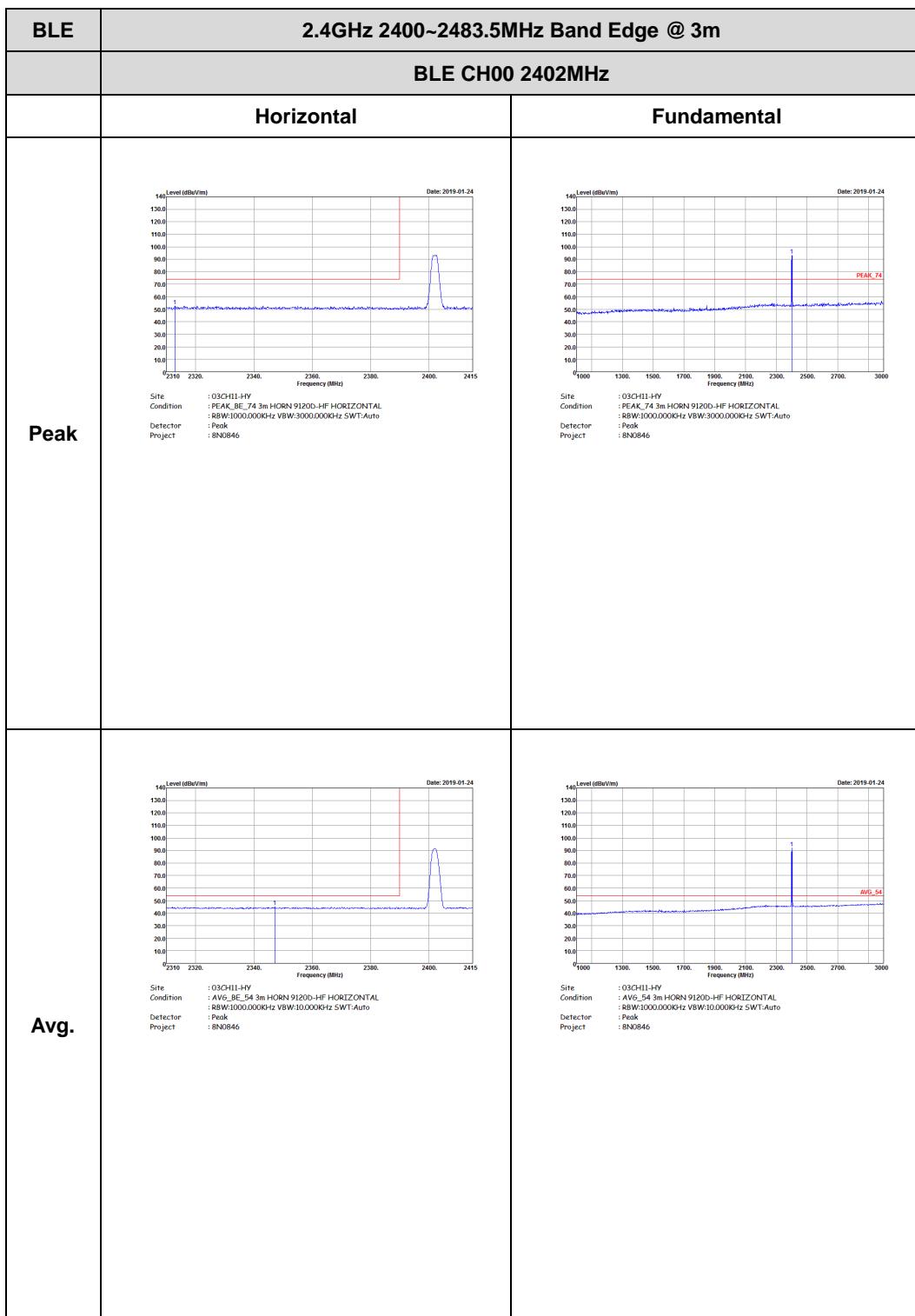
**Emission below 1GHz**  
**2.4GHz BLE (1Mbps) (LF)**





## 2.4GHz 2400~2483.5MHz

BLE (2Mbps) (Band Edge @ 3m)





# FCC RADIO TEST REPORT

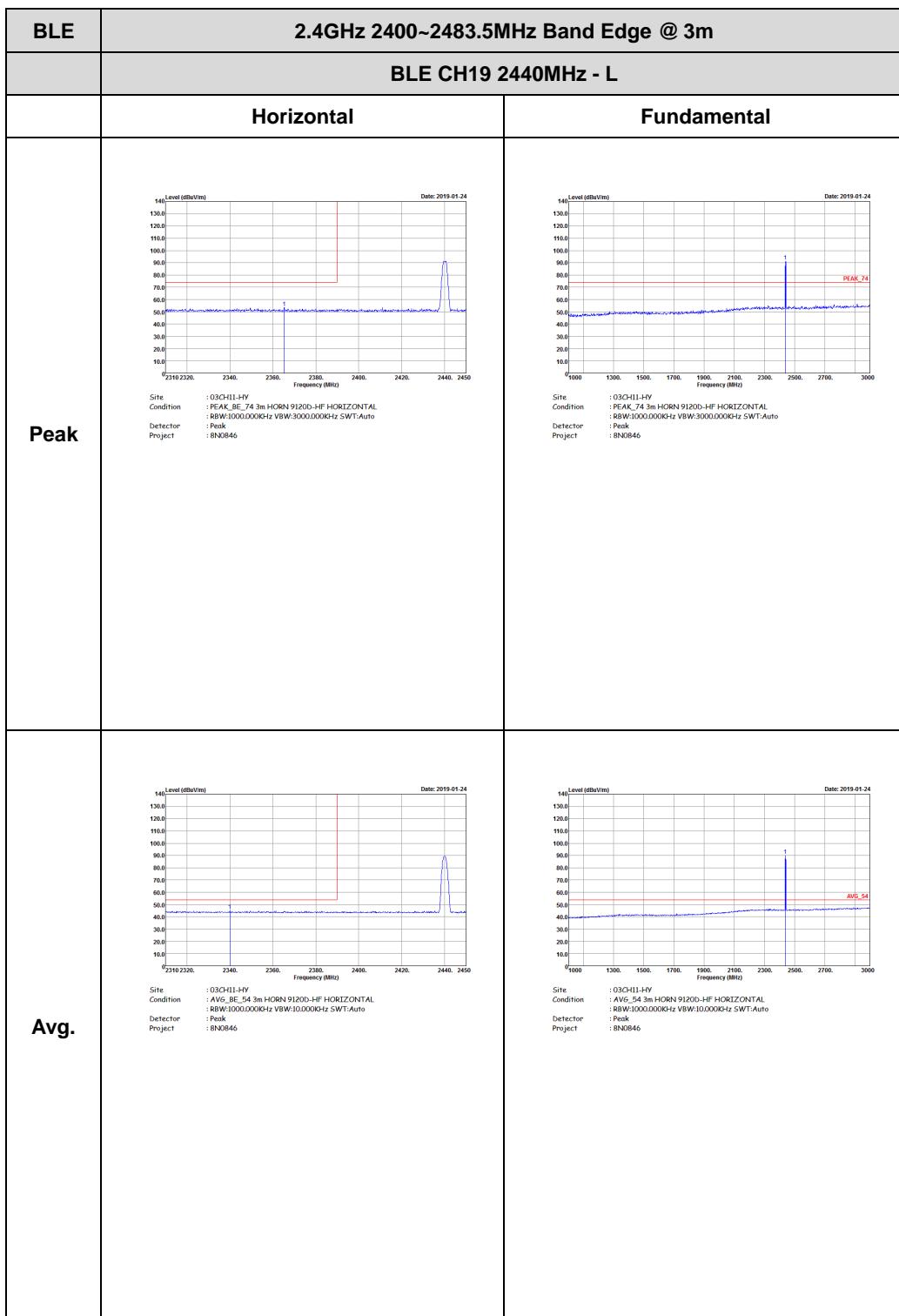
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH00 2402MHz	
	Vertical	Fundamental
Peak	<p>Date: 2019-01-24 Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-24 Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>
Avg	<p>Date: 2019-01-24 Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-24 Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

Report No. : FR8N0846B





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Horizontal	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - L	
	Vertical	Fundamental
Peak	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : BN0846</p>	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : BN0846</p>
Avg.	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : BN0846</p>	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : BN0846</p>



# FCC RADIO TEST REPORT

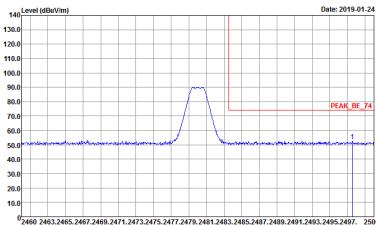
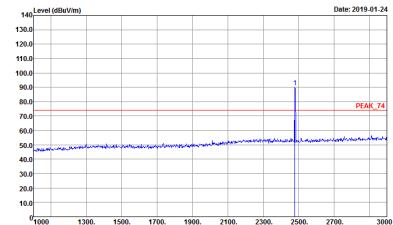
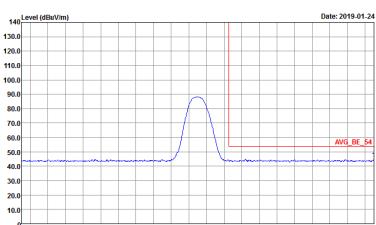
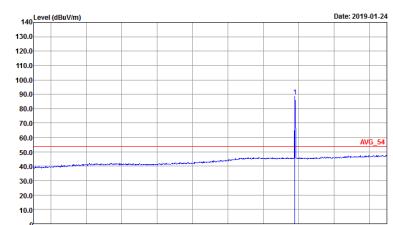
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH19 2440MHz - R	
	Vertical	Fundamental
Peak	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank
Avg.	<p>Level (dBcV/m)</p> <p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL Detector : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Project : Peak : 8N0846</p>	Left blank



# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Fundamental
Peak	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 2460 2463.2465.2467.2469.2471.2473.2475.2477.2479.2481.2483.2485.2487.2489.2491.2493.2495.2497. 2500 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 1000 1300. 1500. 1700. 1900. 2100. 2300. 2500. 2700. 3000 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846</p>
Avg.	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 2460 2463.2465.2467.2469.2471.2473.2475.2477.2479.2481.2483.2485.2487.2489.2491.2493.2495.2497. 2500 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>	 <p>Level (dBc/Vm) vs Frequency (MHz) Date: 2019-01-24 1000 1300. 1500. 1700. 1900. 2100. 2300. 2500. 2700. 3000 Site : 03CH11-HV Condition : AVG_54 3m HORN 91200-HF HORIZONTAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846</p>



# FCC RADIO TEST REPORT

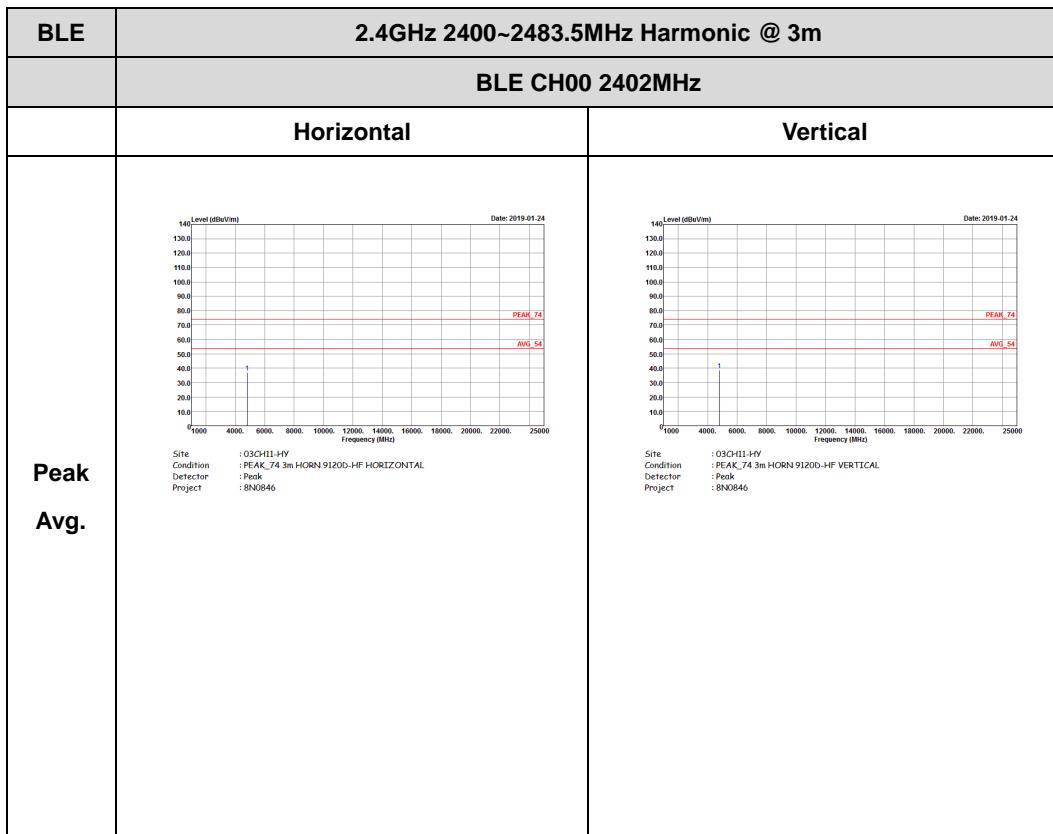
Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Band Edge @ 3m	
	BLE CH39 2480MHz	
	Vertical	Fundamental
Peak	 Site : 03CH11-HV Condition : PEAK_BE_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : PEAK_74 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:3000.000Hz SWT:Auto Detector : Peak Project : 8N0846
Avg.	 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846	 Site : 03CH11-HV Condition : AVG_BE_54 3m HORN 91200-HF VERTICAL : RBW:1000.000KHz VBW:10.000KHz SWT:Auto Detector : Peak Project : 8N0846



## 2.4GHz 2400~2483.5MHz

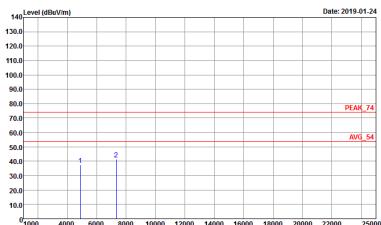
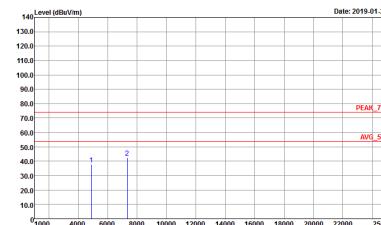
BLE (2Mbps) (Harmonic @ 3m)





# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH19 2440MHz	
	Horizontal	Vertical
Peak	 <p>Site: 03CH11-HY Condition: PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector: Peak Project: 8N0846</p>	 <p>Site: 03CH11-HY Condition: PEAK_74 3m HORN 9120D-HF VERTICAL Detector: Peak Project: 8N0846</p>
Avg.		



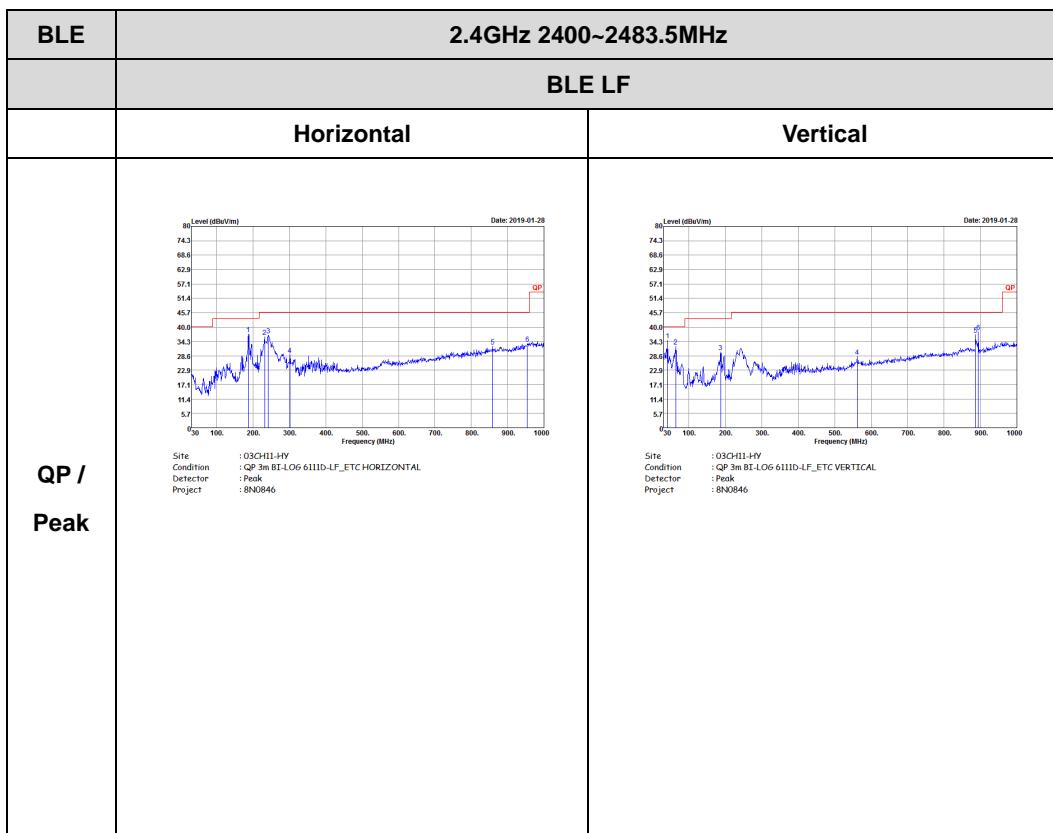
# FCC RADIO TEST REPORT

Report No. : FR8N0846B

BLE	2.4GHz 2400~2483.5MHz Harmonic @ 3m	
	BLE CH39 2480MHz	
	Horizontal	Vertical
Peak	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF HORIZONTAL Detector : Peak Project : 8N0846</p>	<p>Date: 2019-01-24</p> <p>Site : 03CH11-HY Condition : PEAK_74 3m HORN 9120D-HF VERTICAL Detector : Peak Project : 8N0846</p>



**Emission below 1GHz**  
**2.4GHz BLE (2Mbps) (LF)**



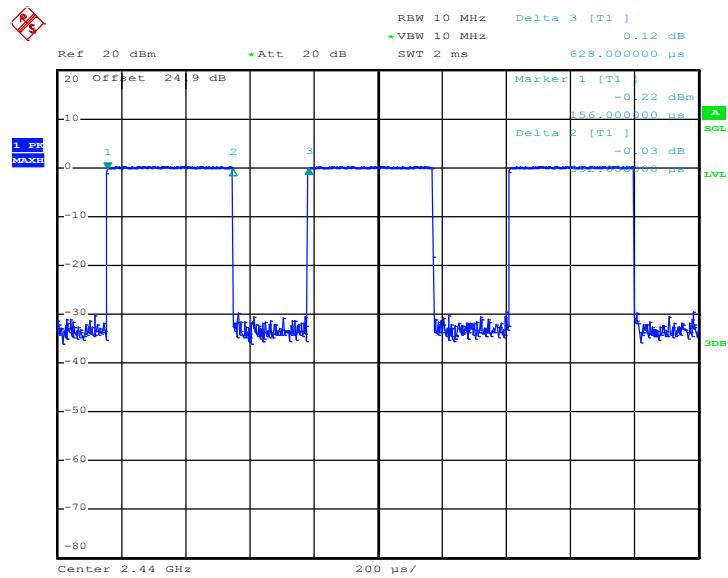


## Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting	Duty Factor(dB)
Bluetooth -LE for 1Mbps	62.42	392	2.55	3kHz	2.05
Bluetooth -LE for 2Mbps	32.48	204	4.90	10kHz	4.88

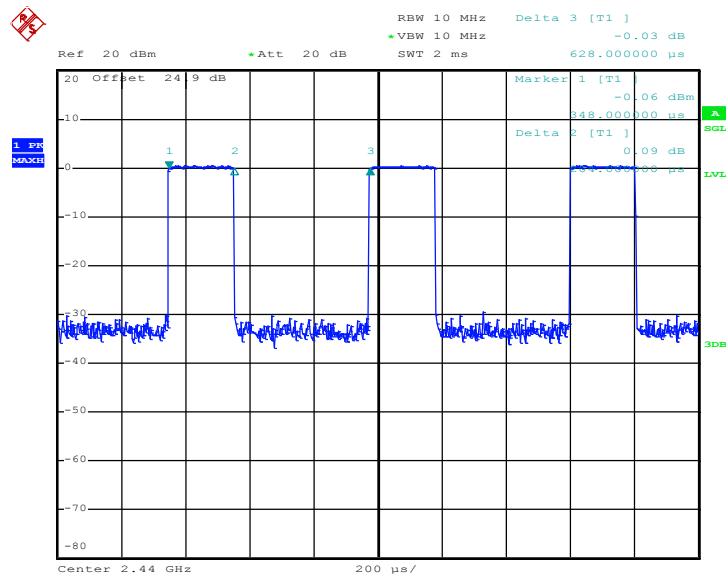


## Bluetooth – LE for 1Mbps



Date: 23.NOV.2018 00:35:28

## Bluetooth – LE for 2Mbps



Date: 23.NOV.2018 00:38:10