



# FCC RADIO TEST REPORT

FCC ID	:	HLZA24003
Equipment	:	Tablet PC
Brand Name	:	acer
Model Name	:	A24003
Marketing Name	:	Acer Iconia Tab A10, A10-21
Applicant	:	Acer Incorporated
		8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)
Manufacturer	:	Acer Incorporated
		8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 22181, Taiwan (R.O.C)
Standard	:	FCC Part 15 Subpart C §15.247

The product was received on May 28, 2024 and testing was performed from Jun. 04, 2024 to Jun. 24, 2024. We, Sporton International Inc. Wensan 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 test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)

Page Number: 1 of 25Issue Date: Jul. 05, 2024Report Version: 02



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## History of this test report

Report No.	Version	Description	Issue Date
FR452713B	01	Initial issue of report	Jul. 02, 2024
FR452713B	02	Revise Appendix C. This report is an updated version, replacing the report issued on Jul. 02, 2024	Jul. 05, 2024



## 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) 15.247(b)(4)	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	2.08 dB under the limit at 4880.00 MHz
3.6	15.207	AC Conducted Emission	Pass	7.41 dB under the limit at 0.16 MHz
3.7	15.203	Antenna Requirement	Pass	-

#### Conformity Assessment Condition:

 The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.

2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

#### Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

#### Reviewed by: Danny Lee Report Producer: Mila Chen



## **1** General Description

## **1.1 Product Feature of Equipment Under Test**

Product Feature					
General Specs					
Bluetooth, Wi-Fi 2.4GHz 802.11b/g	/n/ax, Wi-Fi 5GHz 8	02.11a/n/ac/ax, and GNSS.			
Antenna Type					
WLAN: PIFA Antenna					
Bluetooth: PIFA Antenna					
GPS / BDS: PIFA Antenna					
Antenna information					
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	1.84			

**Remark:** The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

	SKU List					
	SKU1_4G+64G	SKU2_4G+64G	SKU3_4G+128G	SKU4_4G+128G		
Memory	Shenzhen Gcai Electronic Technology Co., /4GB/GD84D32MJ0-4 2C2	Rayson/4GB/RS1G32 LF4D2BDS-53BT	Shenzhen Gcai Electronic Technology Co., /4GB/GD84D32MJ0-4 2C2	Rayson/4GB/RS1G32LO 4D2BDS-53BT		
eMMC Rayson/64GB/RS70B Shenzhen 64G4S16G Techwinsemi 7echnology Co., Ltd. /64GB/UEMCGS63S0		Rayson/128GB/RS70 BT7G4S09F	Shenzhen Techwinsemi Technology Co., Ltd. /128GB/UEMDGS63S0			

## **1.2 Modification of EUT**

No modifications made to the EUT during the testing.



## **1.3 Testing Location**

Test Site	Sporton International Inc. Wensan Laboratory		
Test Site Location         No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)           TEL: +886-3-327-0868           FAX: +886-3-327-0855			
Test Site No.	Sporton Site No.		
1651 SILE 140.	TH05-HY, CO07-HY, 03CH21-HY		

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

FCC designation No.: TW3786

## **1.4 Applicable Standards**

According to the specifications declared by 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 15.247 Meas Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

#### Remark:

- 1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
- 2. The TAF code is not including all the FCC KDB listed without accreditation.

## 2 Test Configuration of Equipment Under Test

## 2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (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
2400-2483.5 MHz	10	2422	31	2464
	11 12 13 14	2424	32	2466
		2426	33	2468
		2428	34	2470
		2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17 18	2436	38	2478
		2438	39	2480
	19	2440	-	-
	20	2442	-	-



## 2.2 Test Mode

- 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, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

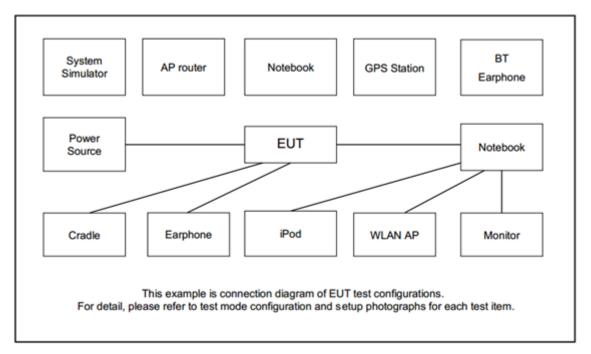


Summary table of Test Cases				
Test Item	Data Rate / Modulation			
	Bluetooth – LE / GFSK			
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps			
Conducted	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps			
Test Cases	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps			
Test Cases	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps			
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps			
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps			
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps			
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps			
Radiated	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps			
Test Cases	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps			
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps			
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps			
	Mode 1 :Bluetooth Link + WLAN (2.4GHz) Link + H-Patten + Earphone + SD			
	Card + USB Cable (Charging from Adapter) for SKU 4			
	Mode 2 : Bluetooth Link + WLAN (5GHz) Link + MPEG4 (Color Bar) + Earphone			
	+ SD Card + USB Cable (Charging from Adapter) for SKU 4			
AC Conducted	Mode 3 : Bluetooth Link + WLAN (2.4GHz) Idle + Camera (Front) + Earphone +			
Emission	SD Card + USB Cable (Data Link with Notebook) (Read) for SKU 4			
	Mode 4 : Bluetooth Link + WLAN (5GHz) Idle + Camera (Rear) + Earphone + SD			
	Card + USB Cable (Data Link with Notebook) (Write) for SKU 4			
	Mode 5 : Bluetooth Link + WLAN (2.4GHz) Link + GPS RX + Earphone + SD			
	Card + USB Cable (Data Link with Notebook) (Read) for SKU 4			
<ol> <li>Remark:</li> <li>The worst case of Conducted Emission is mode 3; only the test data of it was reported.</li> <li>For Radiated Test Cases, the tests were performed with SKU 3.</li> <li>For radiation spurious emission, the modulation and the data rate picked for testing are</li> </ol>				

determined by the Max. RF conducted power.



## 2.3 Connection Diagram of Test System



## 2.4 Support Unit used in test configuration and system

ltem	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	N/A	N/A
2.	GPS Emulator	Spectracom	GSG-6	N/A	N/A	N/A
3.	Earphone + Mic	Samsung	Ecouteur	N/A	Unshielded, 1.8m	N/A
4.	WLAN AP	ASUS	RT-AC52	MSQ-RTAC4A00	N/A	Unshielded, 1.8m
5.	Notebook	DELL	Latitude 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0m	N/A
7.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A



## 2.5 EUT Operation Test Setup

The RF test items, utility "ADB commend" 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 10 dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)



## 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.

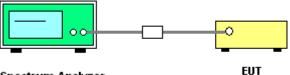
### 3.1.2 Measuring Instruments

Please refer to the measuring equipment list in 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 is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 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 6dB 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)  $\ge$  3 \* RBW.
- 6. Measure and record the results in the test report.

## 3.1.4 Test Setup



Spectrum Analyzer

## 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

## 3.1.6 Test Result of 99% Occupied Bandwidth



## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna of directional gain greater than 6 dBi 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 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

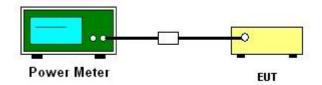
#### 3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

#### 3.2.3 Test Procedures

- 1. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
- 2. The RF output of EUT is connected to the power meter by RF cable and attenuator.
- 3. The path loss is compensated to the results for each measurement.
- 4. Set the maximum power setting and enable the EUT to transmit continuously.
- 5. Measure the conducted output power and record the results in the test report.

#### 3.2.4 Test Setup



## 3.2.5 Test Result of Average Output Power



## 3.3 Power Spectral Density Measurement

### 3.3.1 Limit of Power Spectral Density

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

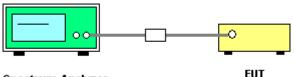
### 3.3.2 Measuring Instruments

Please refer to the measuring equipment list in 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 is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 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. (6 dB 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)/ 100 kHz is a reference level and is used as 20 dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

## 3.3.4 Test Setup



Spectrum Analyzer

## 3.3.5 Test Result of Power Spectral Density



## 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 30 dB down from the highest emission level within the authorized band.

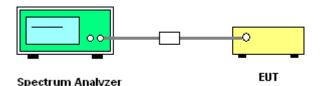
### 3.4.2 Measuring Instruments

Please refer to the measuring equipment list in 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 is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to 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

Please refer to Appendix A.

## 3.4.6 Test Result of Conducted Spurious Emission Plots

## 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 transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required 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	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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

Please refer to the measuring equipment list in this test report.

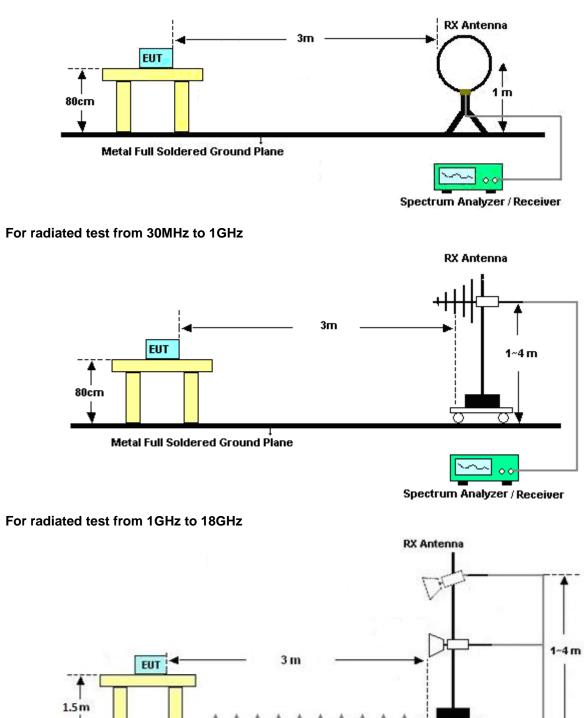
### 3.5.3 Test Procedures

- 1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
- 2. The EUT is 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 is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
- 4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
- 7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".
- 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  $\ge$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW = 3 MHz for f  $\geq$  1 GHz for peak measurement. For average measurement:
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW ≥ 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 test below 30MHz

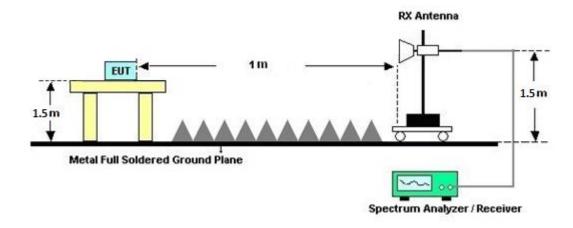


Spectrum Analyzer / Receiver

TEL : 886-3-327-0868 FAX : 886-3-327-0855 Report Template No.: BU5-FR15CBT4.0 Version 2.4



#### For radiated test above 18GHz



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

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

There is adequate comparison measurement of both open-field test site and alternative test site -

semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

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

Please refer to Appendix C.

#### 3.5.7 Duty Cycle

Please refer to Appendix D.

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



## 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.

Eroquency of omission (MHz)	Conducted limit (dBµV)						
Frequency of emission (MHz)	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

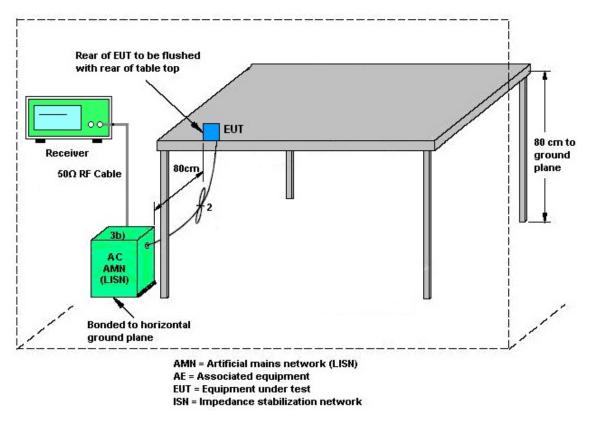
Please refer to the measuring equipment list in this test report.

#### 3.6.3 Test Procedures

- 1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is 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 shall be used.
- 6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
- 7. The frequency range from 150 kHz to 30 MHz is scanned.
- Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) 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



## 3.7 Antenna Requirements

## 3.7.1 Standard Applicable

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.



## 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jun. 04, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jun. 04, 2024 N/A		Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2023	Jun. 04, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Jun. 04, 2024	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Jun. 04, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Jun. 04, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Jun. 04, 2024	Sep. 19, 2024	Conduction (CO07-HY)
LOOP Antenna	Rohde & Schwarz	HFH2-Z2	100488	9kHz~30MHz	Sep. 12, 2023	Jun. 12, 2024~ Jun. 24, 2024	Sep. 11, 2024	Radiation (03CH21-HY)
Bilog Antenna	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63303 & 001	30MHz~1GHz	Oct. 15, 2023	Jun. 12, 2024~ Jun. 24, 2024	Oct. 14, 2024	Radiation (03CH21-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C03A18E N	1GHz~18GHz	Jul. 12, 2023	Jun. 12, 2024~ Jun. 24, 2024	Jul. 11, 2024	Radiation (03CH21-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1223	18GHz~40GHz	Jul. 10, 2023	Jun. 12, 2024~ Jun. 24, 2024	Jul. 09, 2024	Radiation (03CH21-HY)
Amplifier	SONOMA	310N	421580	30MHz~1GHz	Jul. 15, 2023	Jun. 12, 2024~ Jun. 24, 2024	Jul. 14, 2024	Radiation (03CH21-HY)
Amplifier	EMEC	EM01G18GA	060876	1GHz~18GHz	Sep. 28, 2023	Jun. 12, 2024~ Jun. 24, 2024	Sep. 27, 2024	Radiation (03CH21-HY)
Preamplifier	EMEC	EM18G40G	060871	18GHz~40GHz	Aug. 30, 2023	Jun. 12, 2024~ Jun. 24, 2024	Aug. 29, 2024	Radiation (03CH21-HY)
Spectrum Analyzer	Keysight	N9010B	MY62170358	10Hz~44GHz	Aug. 28, 2023	Jun. 12, 2024~ Jun. 24, 2024	Aug. 27, 2024	Radiation (03CH21-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Jun. 12, 2024~ Jun. 24, 2024	Mar. 05, 2025	Radiation (03CH21-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804397/2,804 612/2,804614 /2	30MHz~40GHz	Oct. 24, 2023	Jun. 12, 2024~ Jun. 24, 2024	Oct. 23, 2024	Radiation (03CH21-HY)
Hygrometer	TECPEL	DTM-303A	TP211568	N/A	Oct. 30, 2023	Jun. 12, 2024~ Jun. 24, 2024	Oct. 14, 2024	Radiation (03CH21-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Jun. 12, 2024~ Jun. 24, 2024	N/A	Radiation (03CH21-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jun. 12, 2024~ Jun. 24, 2024	N/A	Radiation (03CH21-HY)
Turn Table	EMEC	C TT 2000		0~360 Degree	N/A	Jun. 12, 2024~ Jun. 24, 2024	N/A	Radiation (03CH21-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Jun. 12, 2024~ Jun. 24, 2024	N/A	Radiation (03CH21-HY)

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Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jun. 05, 2024~ Jun. 19, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO 35 (NO:109)	10MHz~6GHz	Jan. 15, 2024	Jun. 05, 2024~ Jun. 19, 2024	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Jun. 05, 2024~ Jun. 19, 2024	Aug. 22, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101466	10HZ~44GHZ	Jan. 24, 2024	Jun. 05, 2024~ Jun. 19, 2024	Jan. 23, 2025	Conducted (TH05-HY)
Switch Control Mainframe	EM Electronics	EMSW18SE	SW191204 (BOX8)	N/A	Jan. 02, 2024	Jun. 05, 2024~ Jun. 19, 2024	Jan. 01, 2025	Conducted (TH05-HY)
Software1	Sporton	BTWIFI_Final_ version:1.0(20 24-04-11)	N/A	Conducted Items	N/A	Jun. 05, 2024~ Jun. 19, 2024	N/A	Conducted (TH05-HY)
Software2	Raditeq	RadiMation 2021.1.8	N/A	Conducted Power	N/A	Jun. 05, 2024~ Jun. 19, 2024	N/A	Conducted (TH05-HY)



## 5 Measurement Uncertainty

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

Measuring Uncertainty for a Level of Confidence	3.44 dB
of 95% (U = 2Uc(y))	3.44 UB

#### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence	6 4 dP
of 95% (U = 2Uc(y))	6.4 dB

#### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence	
of 95% (U = 2Uc(y))	4.6 dB

#### Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	4.6 dB
of 95% (U = 2Uc(y))	4.0 dB

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

Measuring Uncertainty for a Level of Confidence	5.5 dB
of 95% (U = 2Uc(y))	5.5 UB

Report Number : FR452713B

## Appendix A. Test Result of Conducted Test Items

Test Engineer:	Wei Shun	Temperature:	21~25	°C
Test Date:	2024/6/5~2024/6/19	Relative Humidity:	51~54	%

					6dF		<u>RESULTS</u> 6 Occupie	<u>DATA</u> d Bandwi	dth			
					<u>-042</u>		Cocupic	<u>a Danam</u>	am			
Mod.	Data Rate	ΝTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail				
BLE	1Mbps	1	0	2402	1.033	0.706	0.50	Pass				
BLE	1Mbps	1	19	2440	1.035	0.706	0.50	Pass				
BLE	1Mbps	1	39	2480	1.031	0.703	0.50	Pass				
							RESULTS					
						<u>Avera</u>	ge Power	Table				
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)		Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	
BLE	1Mbps	1	0	2402	5.9	90	30.00	1.84	7.74	36.00	Pass	
BLE	1Mbps	1	19	2440	6.	10	30.00	1.84	7.94	36.00	Pass	
BLE	1Mbps	1	39	2480	6.2	20	30.00	1.84	8.04	36.00	Pass	
						-	RESULTS					
						Реак	Power De	ensity				
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	4.67	-10.25	1.84	8.00	Pass			
BLE	1Mbps	1	19	2440	5.06	-9.83	1.84	8.00	Pass			
BLE	1Mbps	1	39	2480	5.15	-9.74	1.84	8.00	Pass			
lote: P	SD (dBr	n/10	00kHz)	is a refe	rence level i	used for Cor	nducted Bar	d Edges and	d Conducted	Spurious E	mission 30d	3c limit.

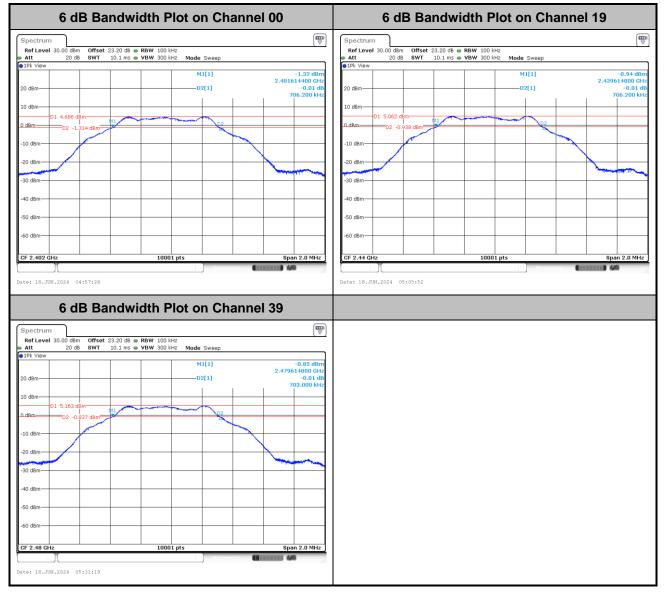
Report Number : FR452713B

					<u>6d</u> E		RESULTS 6 Occupie	<u>DATA</u> d Bandwi	<u>dth</u>			
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail				
BLE	2Mbps	1	0	2402	2.074	1.268	0.50	Pass				
BLE	2Mbps	1	19	2440	2.078	1.268	0.50	Pass				
BLE	2Mbps	1	39	2480	2.070	1.266	0.50	Pass				
						<u>TEST I</u>	RESULTS	DATA				
						<u>Avera</u>	ge Power	Table				
Mod.	Data Rate	Ντx	CH.	Freq. (MHz)	Cond Pov	Average Conducted Power (dBm)		DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	
BLE	2Mbps	1	0	2402	5.	90	30.00	1.84	7.74	36.00	Pass	
BLE	2Mbps	1	19	2440	6.	10	30.00	1.84	7.94	36.00	Pass	
BLE	2Mbps	1	39	2480	6.	20	30.00	1.84	8.04	36.00	Pass	
						<u>TEST I</u>	RESULTS	DATA				
						<u>Peak</u>	Power De	ensity				
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	2Mbps	1	0	2402	4.10	-12.56	1.84	8.00	Pass			
BLE	2Mbps	1	19	2440	4.42	-12.20	1.84	8.00	Pass			
BLE	2Mbps	1	39	2480	4.47	-12.16	1.84	8.00	Pass			
Note: F	SD (dBr	m/ 10	)0kHz)	is a refe	rence level u	used for Cor	Inducted Ban	d Edges and	d Conducted	Sourious F	mission 30c	IBc limit



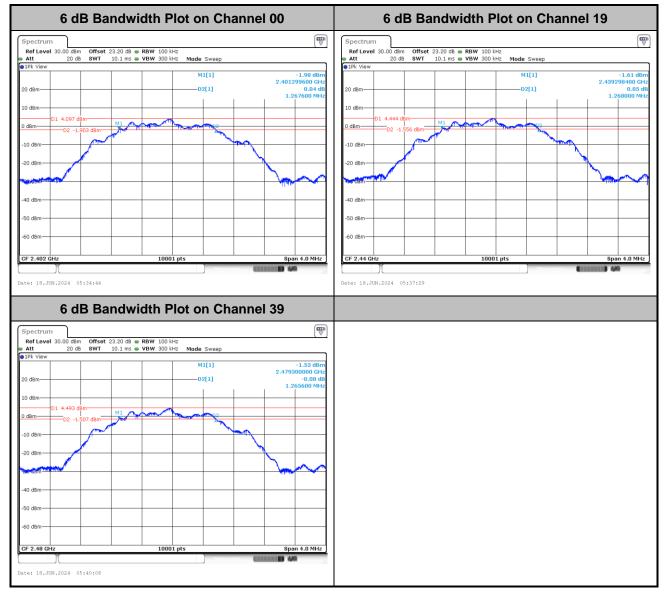
### 6dB Bandwidth

#### <1Mbps>





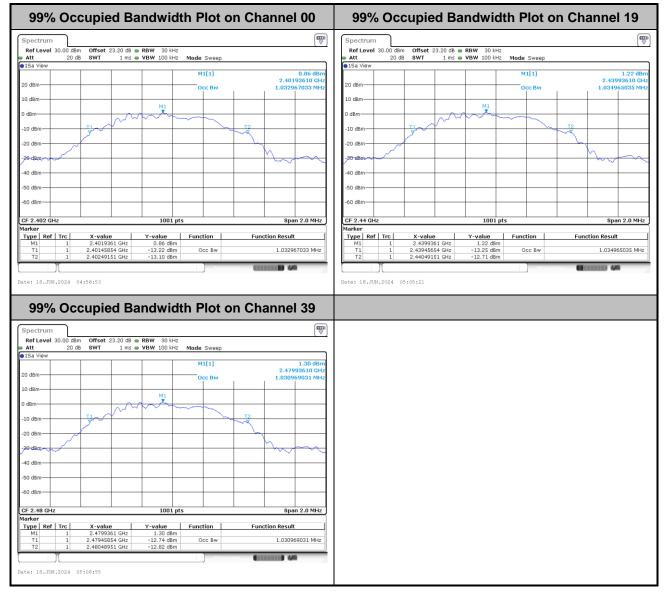
#### <2Mbps>





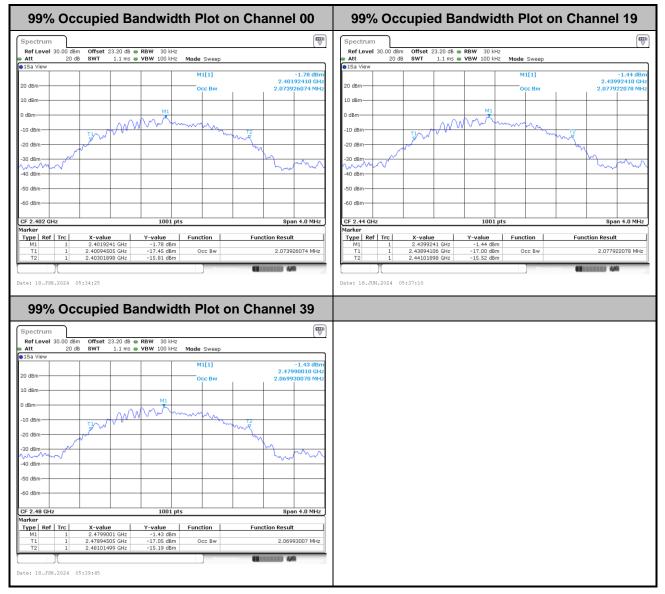
## 99% Occupied Bandwidth

#### <1Mbps>





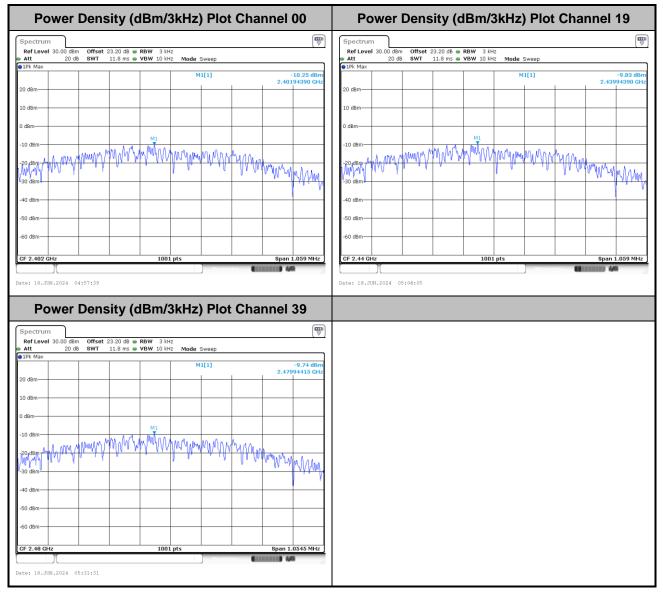
#### <2Mbps>





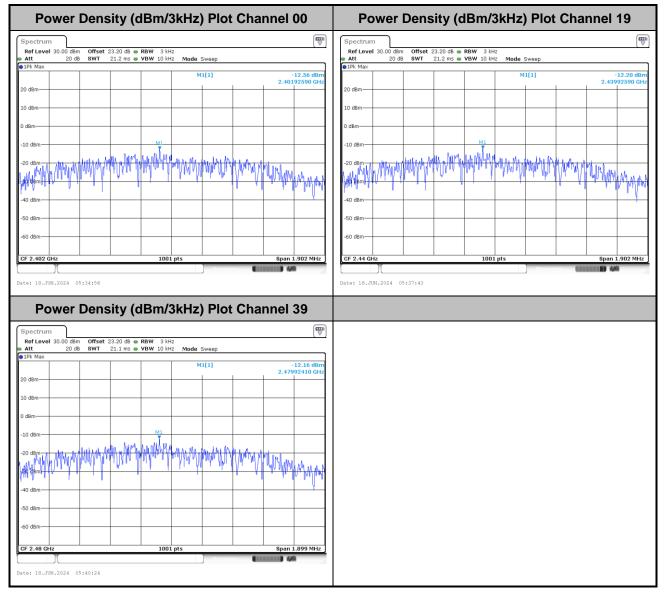
## Power Spectral Density (dBm/3kHz)

#### <1Mbps>





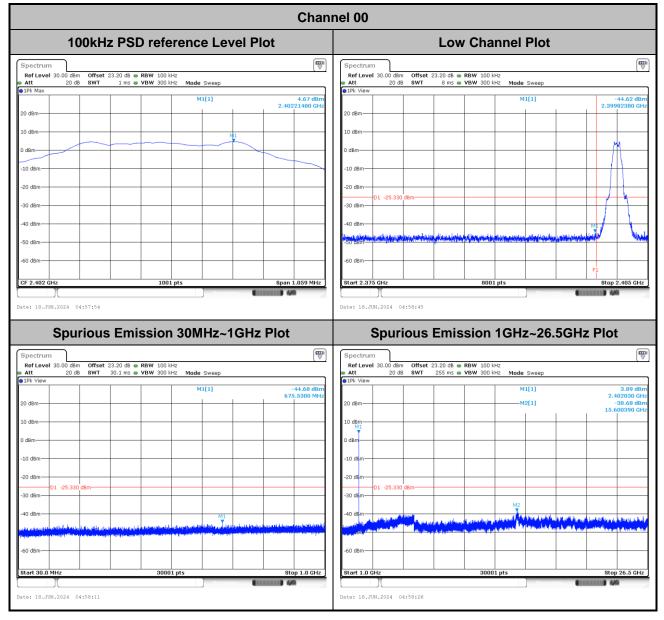
#### <2Mbps>



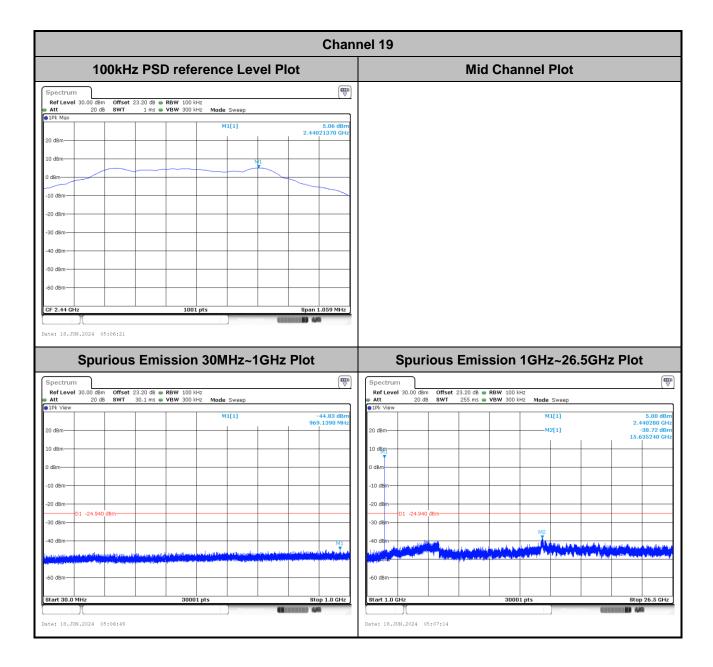


### Band Edge and Conducted Spurious Emission

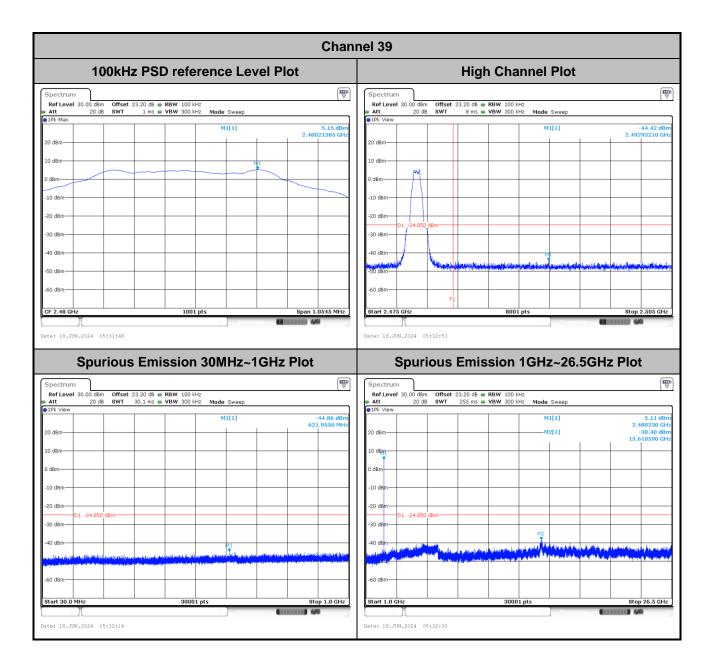
#### <1Mbps>









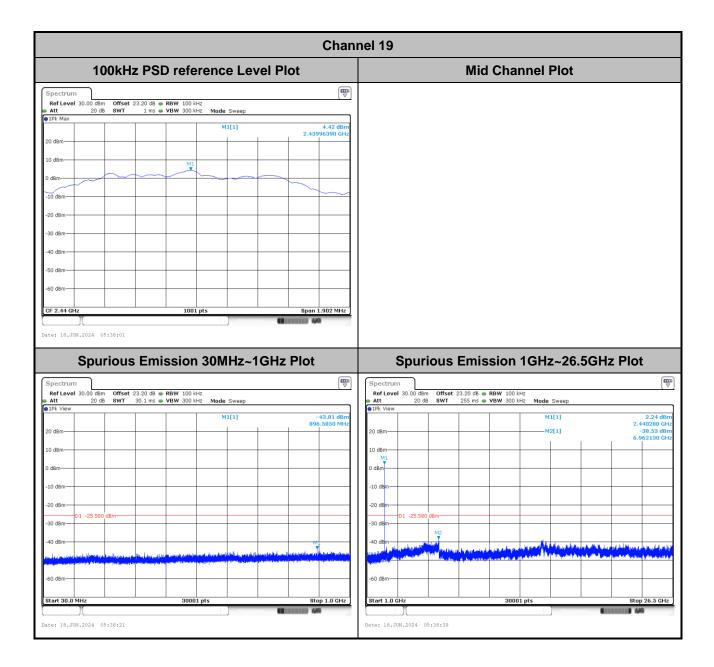




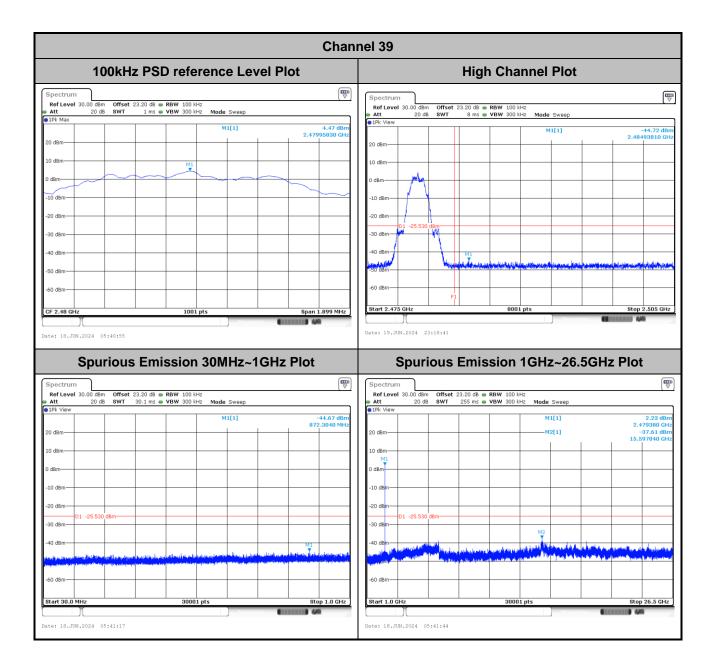
### <2Mbps>

Channel 00										
100kHz	z PSD reference Le	evel Plot		Low Chan	nel Plot					
Spectrum			Spectrum							
Att 20 dB SWT	23.20 dB • RBW 100 kHz 1 ms • VBW 300 kHz Mode Sweep		Att 20 dB SWT	et 23.20 dB 👄 RBW 100 kHz f 8 ms 👄 VBW 300 kHz						
• 1Pk Max	M1[1]	4.10 dBm	9 1Pk View		M1[1]	-28.19 dBr				
20 dBm		2.40195820 GHz	20 dBm			2.39994750 GH				
10 dBm			10 dBm							
0 dBm	M1 ¥		0 dBm							
						- 1 / M				
-10 dBm			-10 dBm							
-20 dBm			-20 dBm D1 -25.900 dBm			M1				
-30 dBm			-30 dBm			- M - M				
-40 dBm			-40 dBm							
-50 dBm			ni dinini fini pia bili kali yia Musa	and a state of the	Wayers and shere has she and	winnerstaft 🕴 👌				
-60 dBm			-60 dBm							
oo dam						F1				
		0				Stop 2.405 GHz				
CF 2.402 GHz	1001 pts	8pan 1.902 MHz	Start 2.375 GHz	8001 pi	Measuring	() 440				
Date: 18.JUN.2024 05:35:15	Emission 30MHz-	~1GHz Plot	Date: 18.JUN.2024 05:36:09		Measuring.	GHz Plot				
Date: 18.JUN.2024 05:35:15 Spurious Spectrum Ref Level 30.00 dbm Offset 2	Emission 30MHz-		Date: 18.JUN.2024 05:36:09 Spurious Spectrum Ref Level 30.00 dBm Offs	9 <b>S Emission 1</b> 101 HHz	GHz~26.50	(mmmm) 446				
Spectrum Ref Level 30.00 dBm Offset 2	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	~1GHz Plot	Date: 18.JJN.2024 05:36:09 Spurious Spectrum	9 <b>S Emission 1</b> set 23.20 dB • RBW 100 kHz	GHz~26.50	GHz Plot				
Spectrum           Ref Level 30.00 dBm offset 2           Att         20 dB sWT	Emission 30MHz-	~1GHz Plot	Date: 18.JUN.2024 05:36:09  Spectrum Ref Level 30.00 dBm Offs Att 20 dB SWT  1Pk View	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	GHz Plot				
Spectrum         05:35:15           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Dete: 18.JUN-2024 05:36:09  Spectrum Ref Level 30.00 dBm Offs Att 20 dB SWT  1Pk View 20 dBm	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50	GHz Plot				
Atte:         18.JUN.2024         05:35:15           Spectrum         Spectrum           Ref Level         30.00 dBm         Offset:           Att         20 dB         SWT           20 dBm         10 dBm         10 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Date: 18.JUN.2024         05:36:09           Spectrum         Ref Level 30.00 dBm         Offs           Att         20 dB         Swr           10 dBm         10 dBm         Mit	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	€				
Spectrum         05:35:15           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Spectrum         Offsectrum           Ref Level 30.00 dBm         Offsectrum           10 dBm         10 dBm	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	€				
Spectrum           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT           20 dBm         10 dBm         10 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Date:         18.JUN.2024         05:36:09           Spectrum           Ref Level 30.00 dBm         Offs           Att         20 dB         Swr           10 dBm         10 dBm         Min	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	€				
Spectrum           Ref Level 30.00 dBm           Offset 2           20 dB           10 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Spectrum         Offsectrum           RefLevel 30.00 dBm         Offsectrum           10 dBm         0 dBm           10 dBm         0 dBm	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	€				
Spectrum         O5:35:15           Ref Level 30.00 dBm         Offset 20 dB           Att         20 dB           20 dBm         10 dBm           -10 dBm         -10 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Date: 18.JUN.2024         05:36:09           Spectrum         Ref Lovel 30.00 dbm         Offs           Ref Lovel 30.00 dbm         20 db         Swr           1Pk View         20 dbm         10 dbm           10 dbm         01         0           -10 dbm         0 dbm         0	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	€				
Spectrum           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT           10 dBm         0         0           -20 dBm         01 -25.900 dBm         -30 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Dete: 18.JUN-2024 05:36:09  Dete: 18.JUN-2024 05:36:09  Spectrum Ref Level 30.00 dBm Offs Att 20 dB SWT  10 dBm 0 dBm 10 dBm -10 dBm -10 dBm -20 dBm -30 dBm 01 -25.900 dBm -30	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50	GHz Plot     Total     Total				
Spectrum         Spectrum           Ref Level 30.00 dbm         Offset 2           Att         20 db           20 dbm         0           10 dbm         0           -20 dbm         01 - 25.900 dbm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Spectrum           Ref Level 30.00 dBm         Offsectrum           10 dBm         0 dBm           10 dBm         0 dBm           -20 dBm         0 1 -25,900 dBm	9 <b>S Emission 1</b> 101 Htt 23.20 dB <b>•</b> RBW 100 Htt2	GHz~26.50 Mode Sweep M1[1]	Community #4  GHz Plot				
Spectrum           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT           10 dBm         0         0           -20 dBm         01 -25.900 dBm         -30 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Spectrum         Offsection           Ref Level 30.00 dBm         Offsection           10 dBm         0 dBm           -20 dBm         0 dBm           -10 dBm         0 dBm           -20 dBm         0 1 -25,900 dBm           -30 dBm         0 1 -25,900 dBm	9 <b>s Emission 1 st</b> 23.20 dB <b>e RBW</b> 100 kHz <b>s</b> 255 ms <b>e VBW</b> 300 kHz	GHz~26.50	GHz Plot     Total     Total				
Spectrum           Ref Level 30.00 dBm         Offset 2           Att         20 dB         SWT           10 dBm         0         0           -20 dBm         01 -25.900 dBm         -30 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Dete: 18.JUN-2024 05:36:09  Dete: 18.JUN-2024 05:36:09  Spectrum Ref Level 30.00 dBm Offs Att 20 dB SWT  10 dBm 0 dBm 10 dBm -10 dBm -10 dBm -20 dBm -30 dBm 01 -25.900 dBm -30	9 <b>s Emission 1 st</b> 23.20 dB <b>e RBW</b> 100 kHz <b>s</b> 255 ms <b>e VBW</b> 300 kHz	GHz~26.50	GHz Plot     Total     Total				
Spectrum         Spectrum           Ref Level 30.00 dBm         Offset 2           Att         20 dB           10 dBm         0           -20 dBm         01 -25.900 dBm           -30 dBm         01 -25.900 dBm	Emission 30MHz- 23.20 dB • RBW 100 kHz 30.1 ms • VBW 300 kHz Mode Sweep	-1GHz Plot ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Spectrum         Offsection           Ref Level 30.00 dBm         Offsection           10 dBm         0 dBm           -20 dBm         0 dBm           -10 dBm         0 dBm           -20 dBm         0 1 -25,900 dBm           -30 dBm         0 1 -25,900 dBm	9 <b>s Emission 1 st</b> 23.20 dB <b>e RBW</b> 100 kHz <b>s</b> 255 ms <b>e VBW</b> 300 kHz	GHz~26.50	GHz Plot     Total     Total				









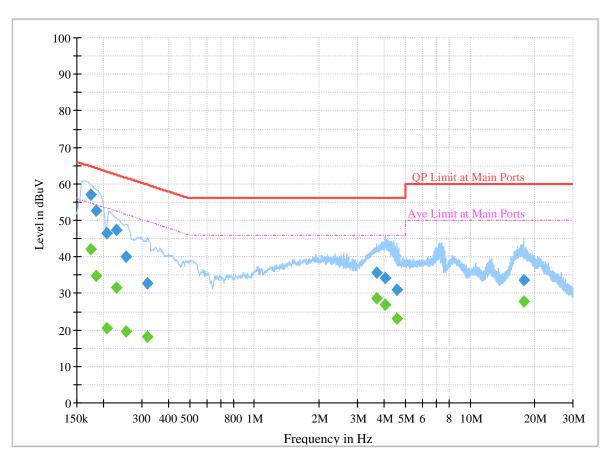


## Appendix B. AC Conducted Emission Test Results

Toot Engineer	est Engineer : Louis Chung	Temperature :	<b>22.8~24.6</b> ℃
Test Engineer.		Relative Humidity :	53.4~61.2%

## **EUT Information**

Report NO : Test Mode : Test Voltage : Phase : 452713 Mode 3 Power from system Line



#### Full Spectrum

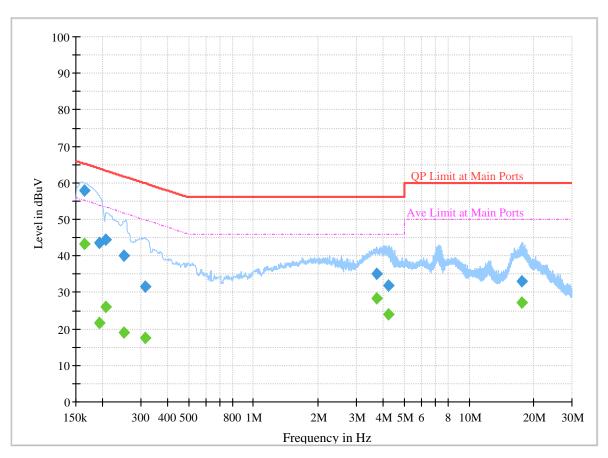
## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.173310		42.09	54.80	12.71	L1	OFF	19.9
0.173310	57.06		64.80	7.74	L1	OFF	19.9
0.183750		34.82	54.31	19.49	L1	OFF	19.9
0.183750	52.52		64.31	11.79	L1	OFF	19.9
0.206250		20.43	53.36	32.93	L1	OFF	19.9
0.206250	46.63		63.36	16.73	L1	OFF	19.9
0.228750		31.65	52.50	20.85	L1	OFF	19.9
0.228750	47.46		62.50	15.04	L1	OFF	19.9
0.253500		19.59	51.64	32.05	L1	OFF	19.9
0.253500	40.00		61.64	21.64	L1	OFF	19.9
0.319740		18.08	49.71	31.63	L1	OFF	19.9
0.319740	32.66		59.71	27.05	L1	OFF	19.9
3.679350		28.72	46.00	17.28	L1	OFF	20.0
3.679350	35.62		56.00	20.38	L1	OFF	20.0
4.026750		26.80	46.00	19.20	L1	OFF	20.0
4.026750	34.21		56.00	21.79	L1	OFF	20.0
4.569900		23.15	46.00	22.85	L1	OFF	20.0
4.569900	31.07		56.00	24.93	L1	OFF	20.0
17.697030		27.74	50.00	22.26	L1	OFF	20.1

17.697030 33.55	60.00	26.45	L1	OFF	20.1
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## **EUT Information**

Report NO : Test Mode : Test Voltage : Phase : 452713 Mode 3 Power from system Neutral



#### Full Spectrum

## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.164670		43.34	55.23	11.89	Ν	OFF	19.9
0.164670	57.82		65.23	7.41	Ν	OFF	19.9
0.192750		21.66	53.92	32.26	Ν	OFF	19.9
0.192750	43.46		63.92	20.46	Ν	OFF	19.9
0.206250		25.92	53.36	27.44	Ν	OFF	19.9
0.206250	44.43		63.36	18.93	Ν	OFF	19.9
0.249450		18.94	51.78	32.84	Ν	OFF	19.9
0.249450	40.02		61.78	21.76	Ν	OFF	19.9
0.314250		17.50	49.86	32.36	Ν	OFF	19.9
0.314250	31.65		59.86	28.21	Ν	OFF	19.9
3.728040		28.26	46.00	17.74	Ν	OFF	20.0
3.728040	35.05		56.00	20.95	Ν	OFF	20.0
4.236000		23.88	46.00	22.12	Ν	OFF	20.0
4.236000	31.95		56.00	24.05	Ν	OFF	20.0
17.508840		27.10	50.00	22.90	Ν	OFF	20.2
17.508840	33.05		60.00	26.95	Ν	OFF	20.2



## Appendix C. Radiated Spurious Emission Test Data

Toot Engineer	Jack Cheng, Ray Lung and Sky Chang	Temperature :	18~ 26℃
Test Engineer :	Jack Cheng, Kay Lung and Sky Chang	Relative Humidity :	50~70%

<1Mbps>

## **C1. Radiated Spurious Emission Test Modes**

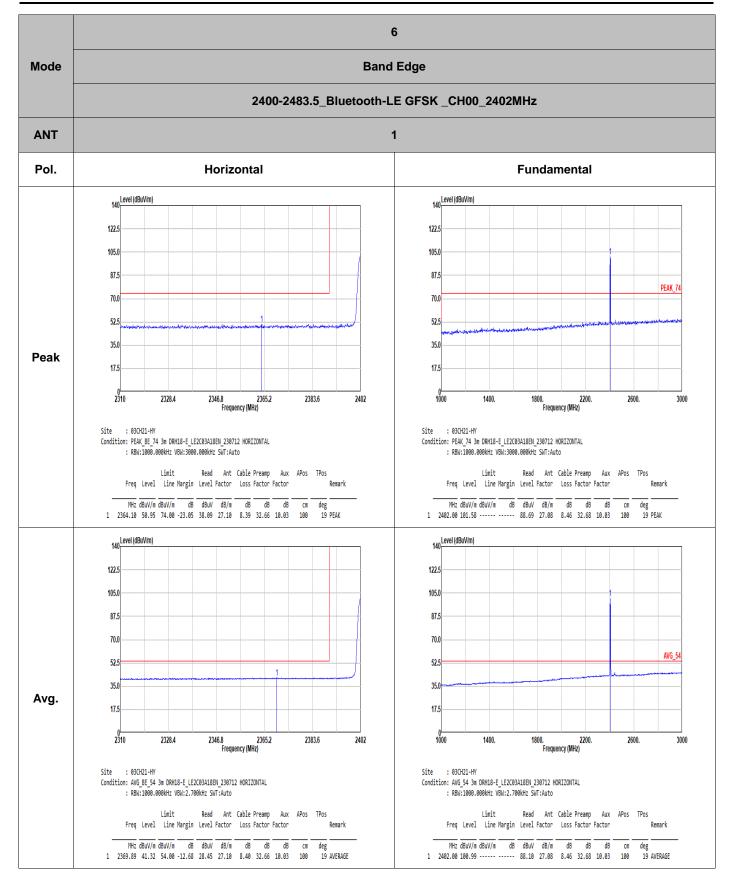
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 6	2400-2483.5	1	Bluetooth-LE GFSK	00 2402		1Mbps	-	-
Mode 7	2400-2483.5	1	Bluetooth-LE GFSK	19 2440		1Mbps	-	-
Mode 8	2400-2483.5	1	Bluetooth-LE GFSK	39	2480	1Mbps	-	-
Mode 12	2400-2483.5	1	Bluetooth-LE GFSK	19	2440	1Mbps	-	SHF
Mode 13	2400-2483.5	1	Bluetooth-LE GFSK	19	2440	1Mbps	-	LF



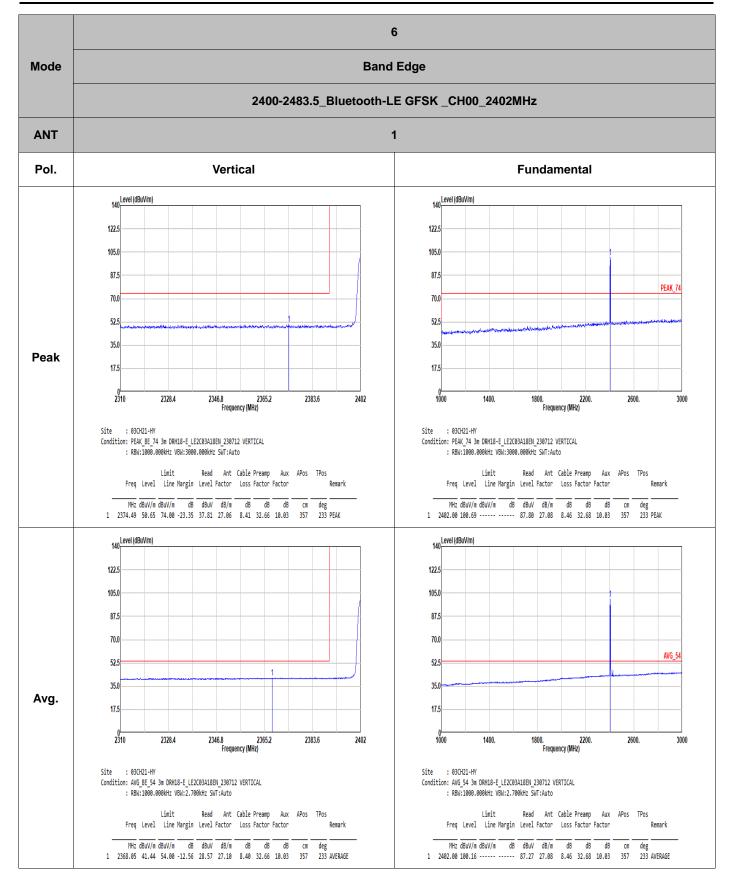
## C2. Summary of each worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
6	Bluetooth-LE GFSK	00	2368.05	41.44	54.00	-12.56	V	Avg.	Pass	-	Band Edge
0	Bluetooth-LE GFSK	00	4804.00	51.03	54.00	-2.97	Н	Avg.	Pass	-	Harmonic
7	Bluetooth-LE GFSK	19	2365.38	41.40	54.00	-12.60	V	Avg.	Pass	-	Band Edge
7	Bluetooth-LE GFSK	19	4880.00	51.92	54.00	-2.08	V	Avg.	Pass	-	Harmonic
	Bluetooth-LE GFSK	39	2483.86	41.60	54.00	-12.40	Н	Avg.	Pass	-	Band Edge
8	Bluetooth-LE GFSK	39	4960.00	51.26	54.00	-2.74	V	Avg.	Pass	-	Harmonic
12	SHF	19	24735.29	40.23	74.00	-33.77	V	Peak	Pass	-	SHF
13	LF	19	72.68	28.13	40.00	-11.87	V	QP	Pass	-	LF

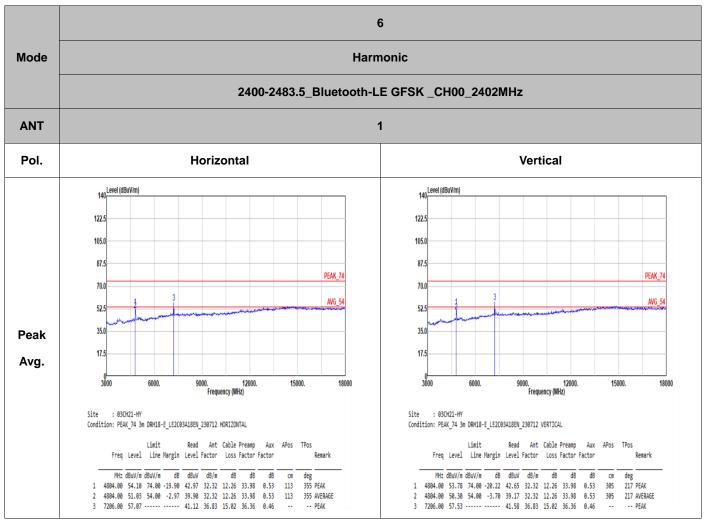






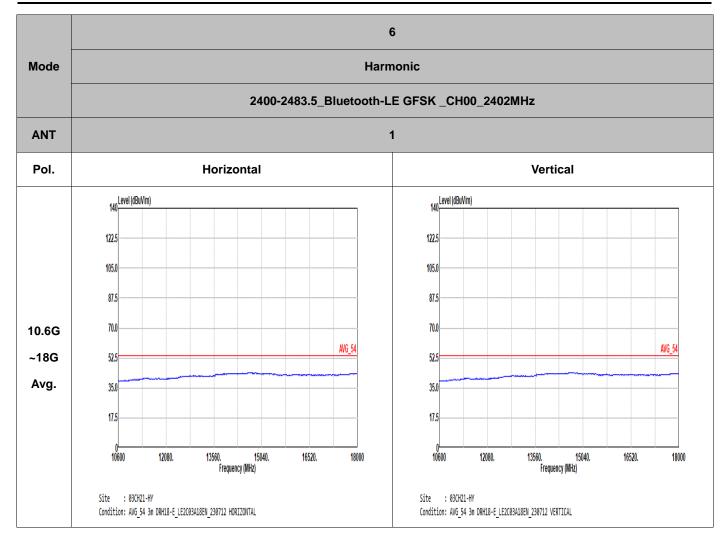




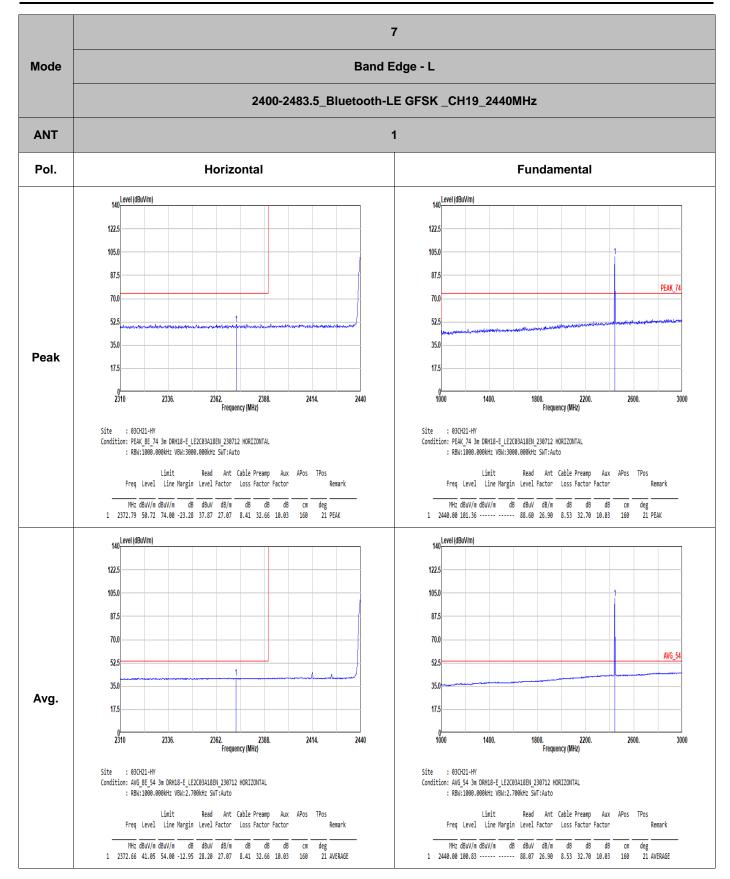


**Remark:** The unwanted signal #3 can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

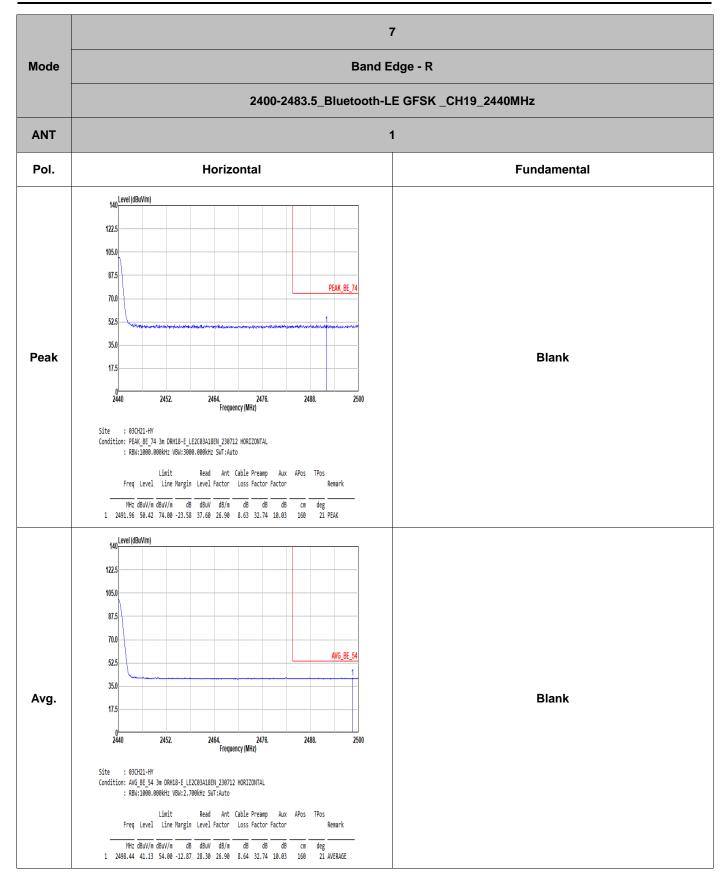




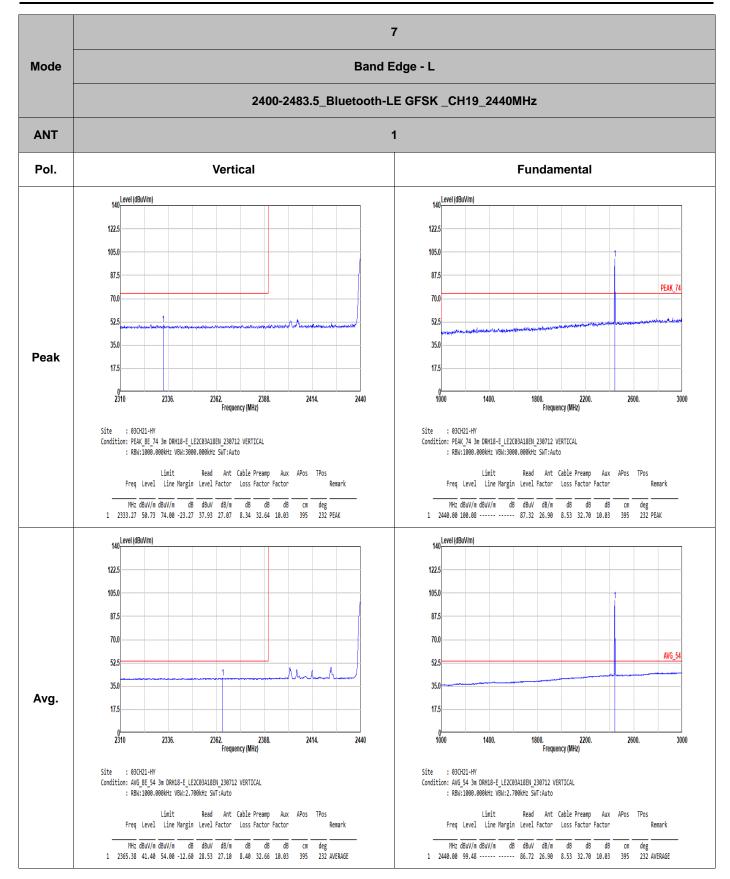




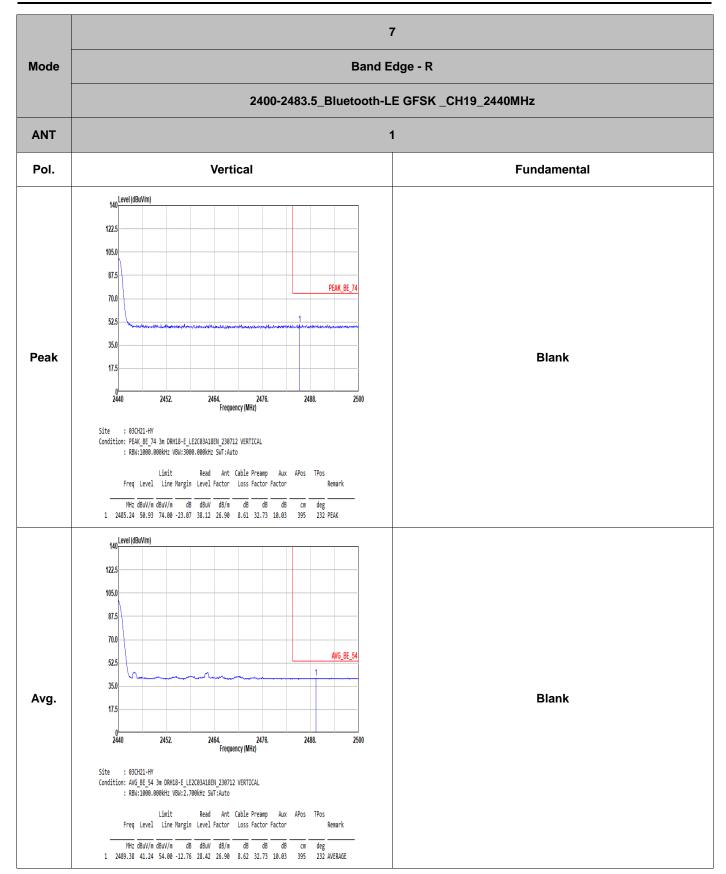




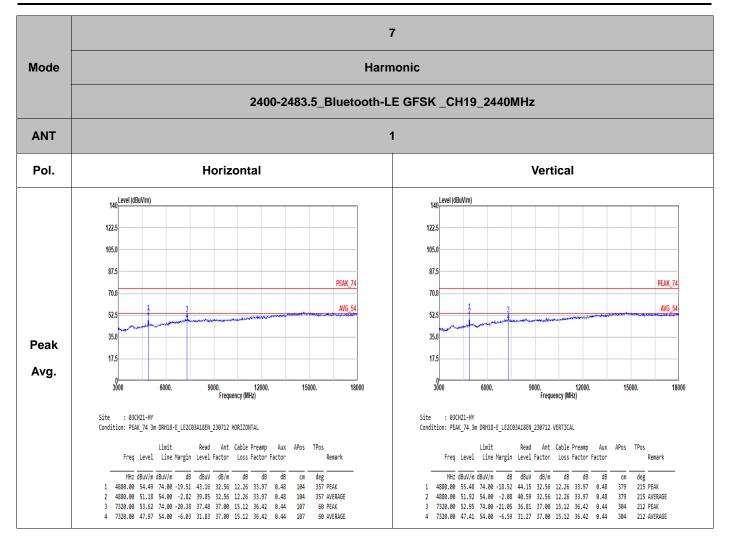




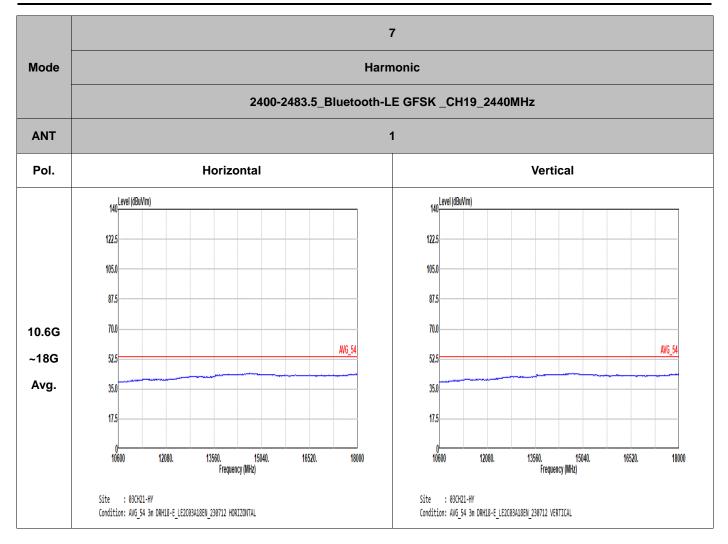




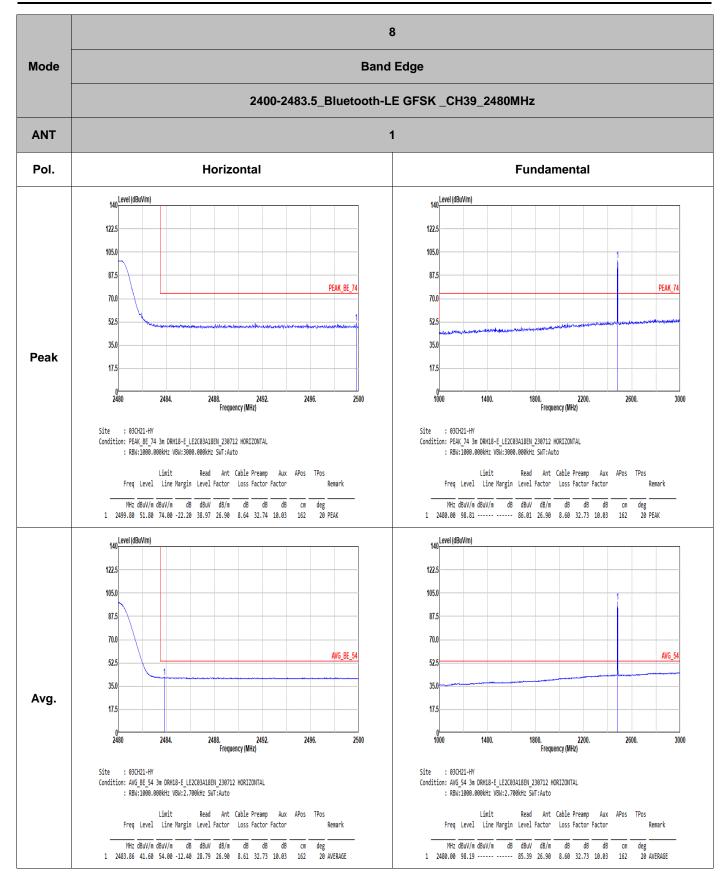




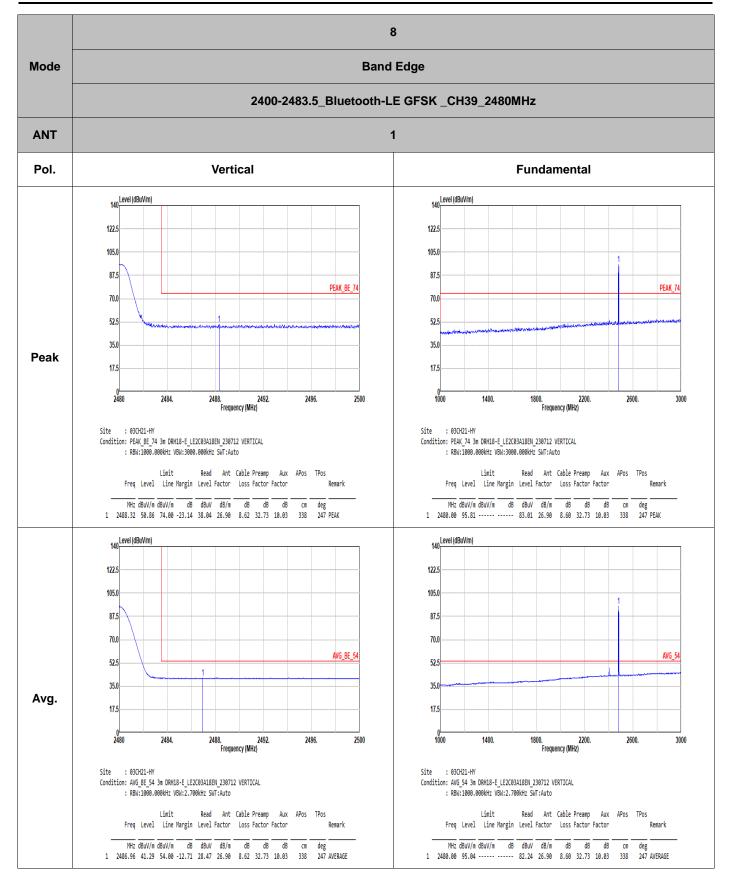




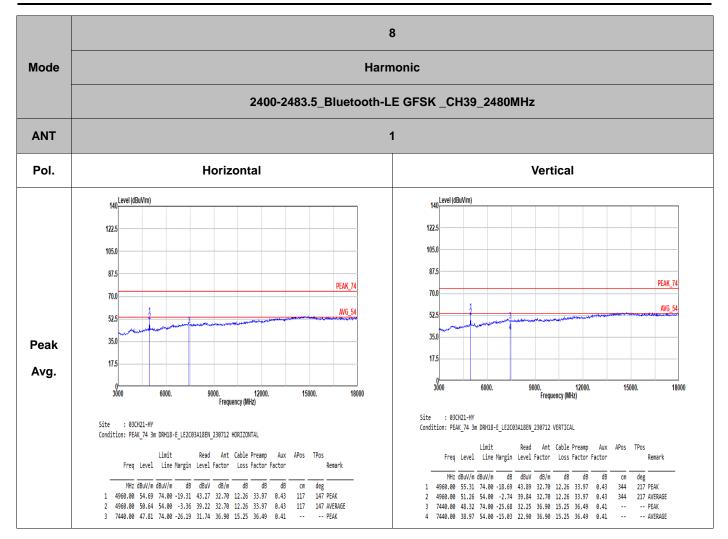




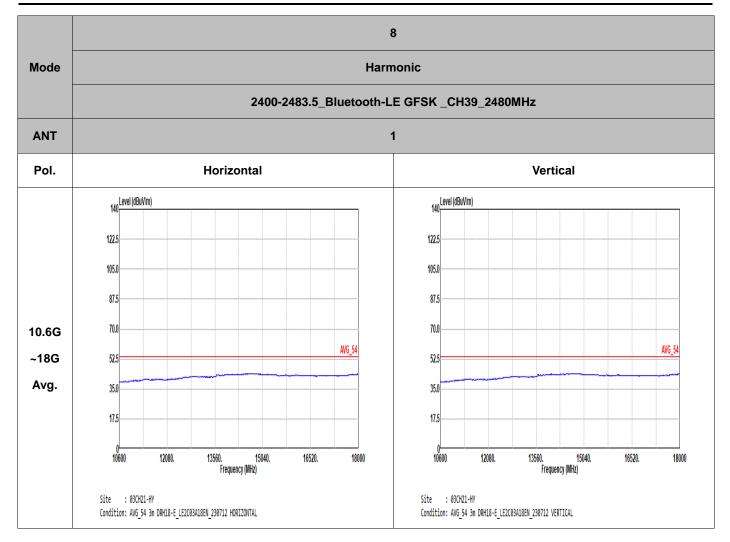




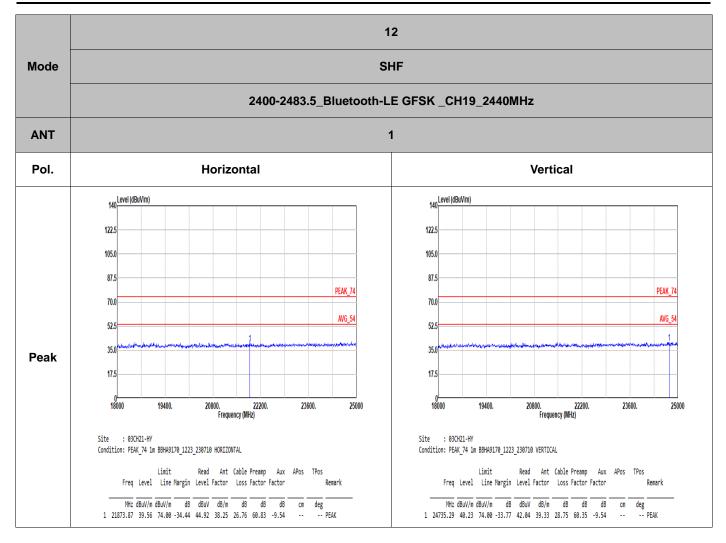




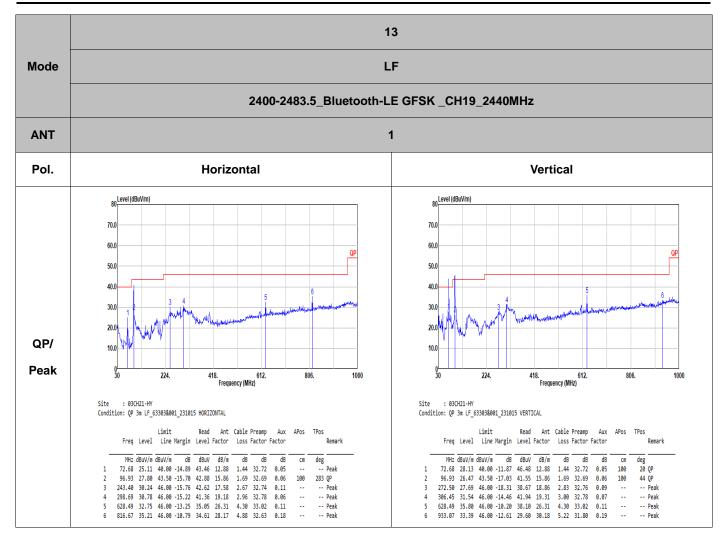














### <2Mbps>

## **C1. Radiated Spurious Emission Test Modes**

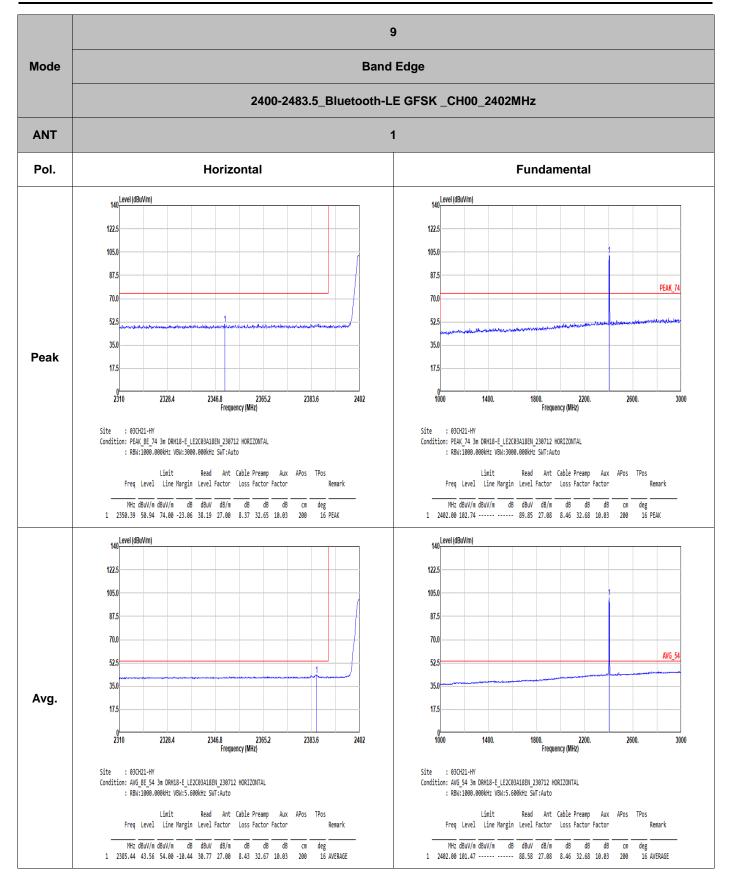
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 9	2400-2483.5	1	Bluetooth-LE GFSK	00	2402	2Mbps	-	-
Mode 10	2400-2483.5	1	Bluetooth-LE GFSK	19	2440	2Mbps	-	-
Mode 11	2400-2483.5	1	Bluetooth-LE GFSK	39	2480	2Mbps	-	-



## C2. Summary of each worse mode

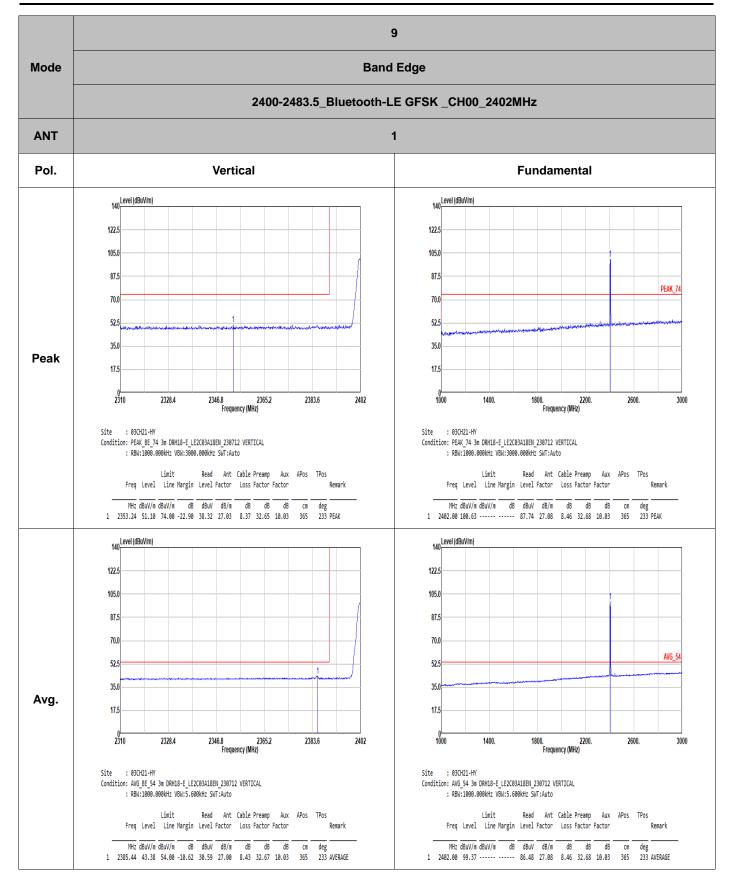
Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
9	Bluetooth-LE GFSK	00	2385.44	43.56	54.00	-10.44	Н	Avg.	Pass	-	Band Edge
9	Bluetooth-LE GFSK	00	4804.00	49.59	54.00	-4.41	Н	Avg.	Pass	-	Harmonic
10	Bluetooth-LE GFSK	19	2359.40	42.18	54.00	-11.82	Н	Avg.	Pass	-	Band Edge
10	Bluetooth-LE GFSK	19	4880.00	50.87	54.00	-3.13	V	Avg.	Pass	-	Harmonic
11	Bluetooth-LE GFSK	39	2483.52	43.48	54.00	-10.52	Н	Avg.	Pass	-	Band Edge
	Bluetooth-LE GFSK	39	4960.00	49.77	54.00	-4.23	Н	Avg.	Pass	-	Harmonic



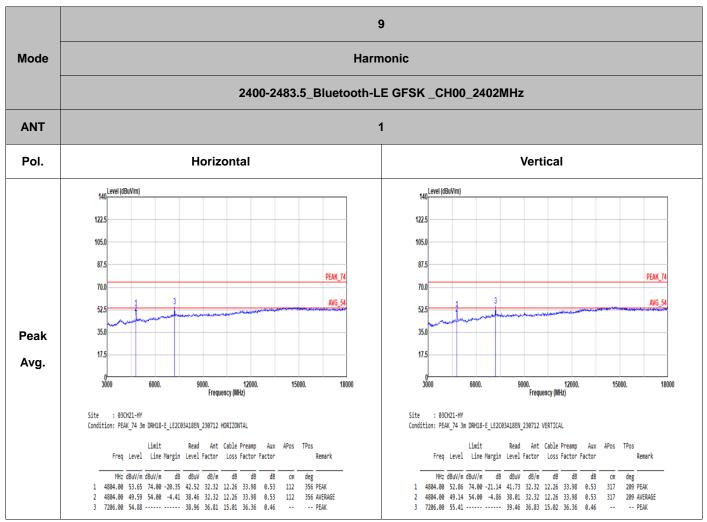




### FCC RADIO TEST REPORT

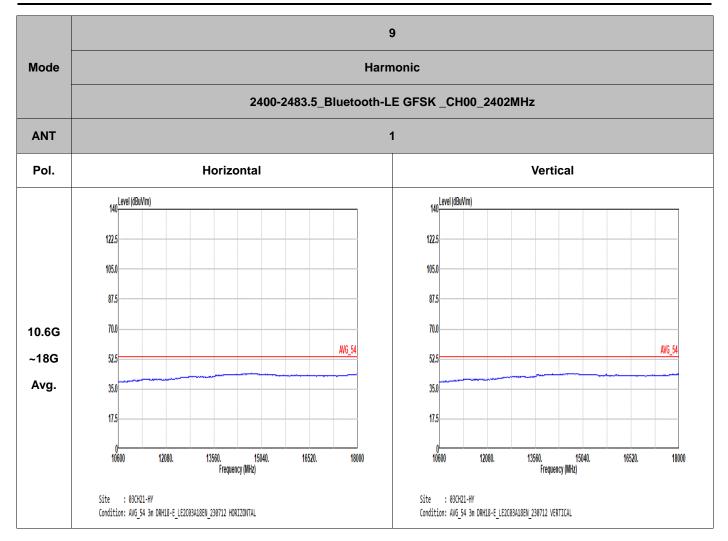




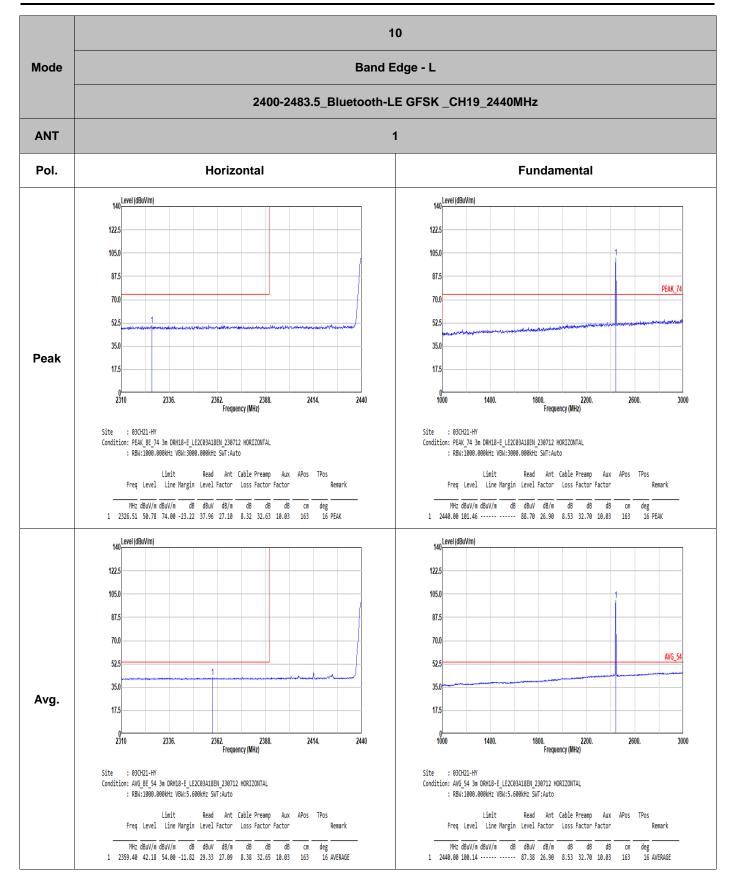


**Remark:** The unwanted signal #3 can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

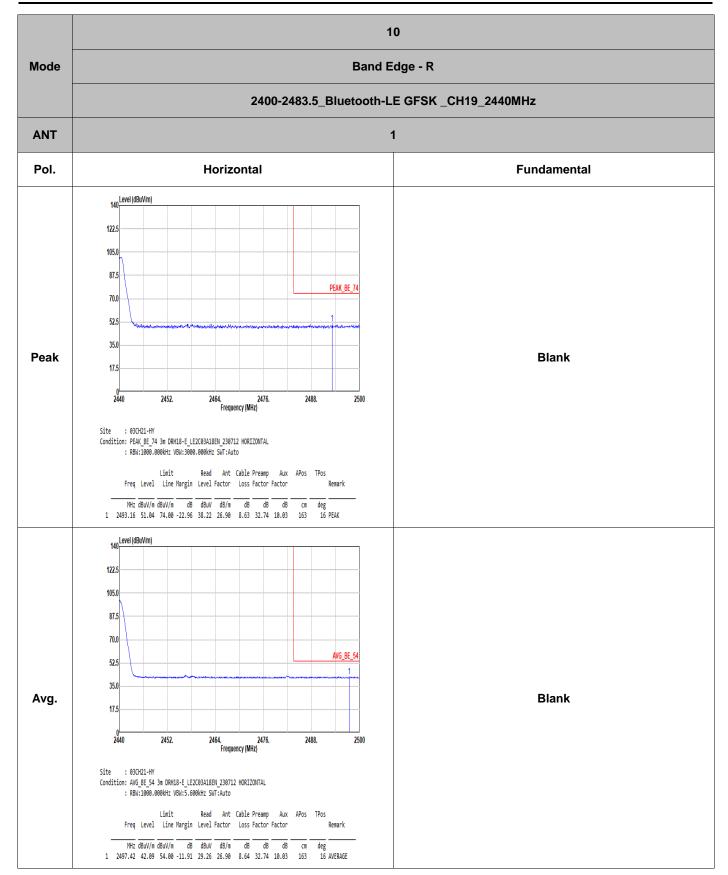




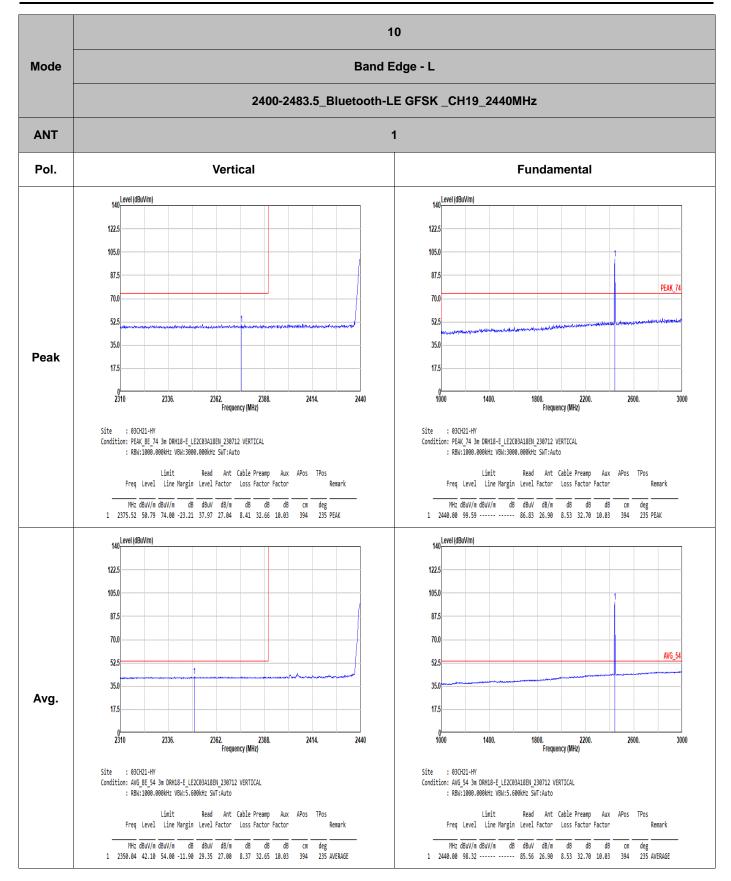




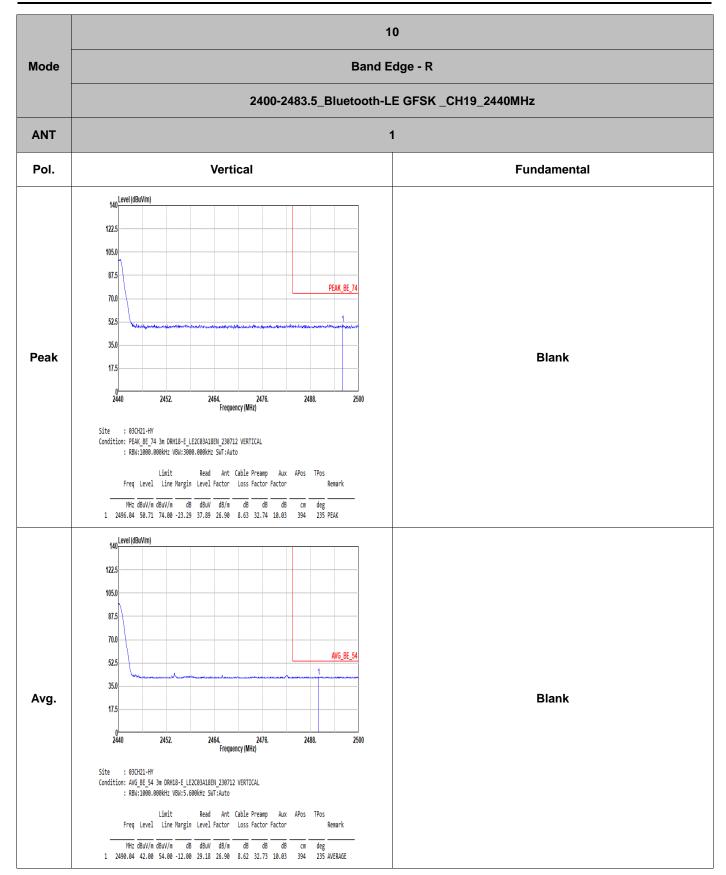




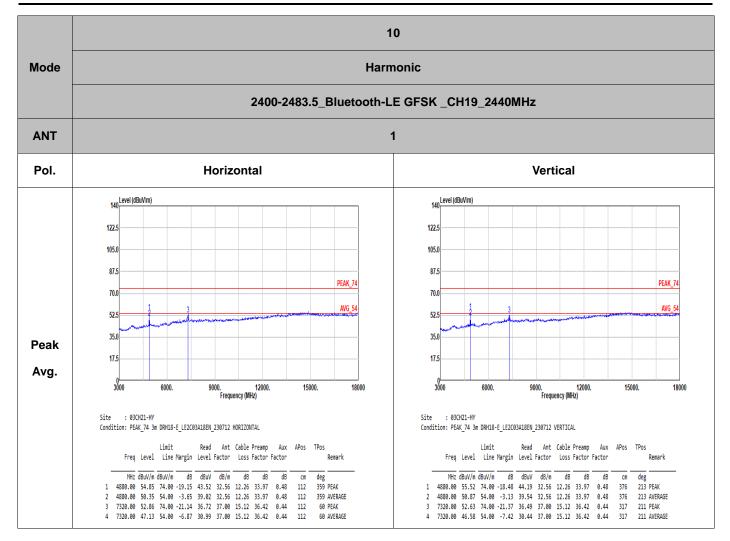




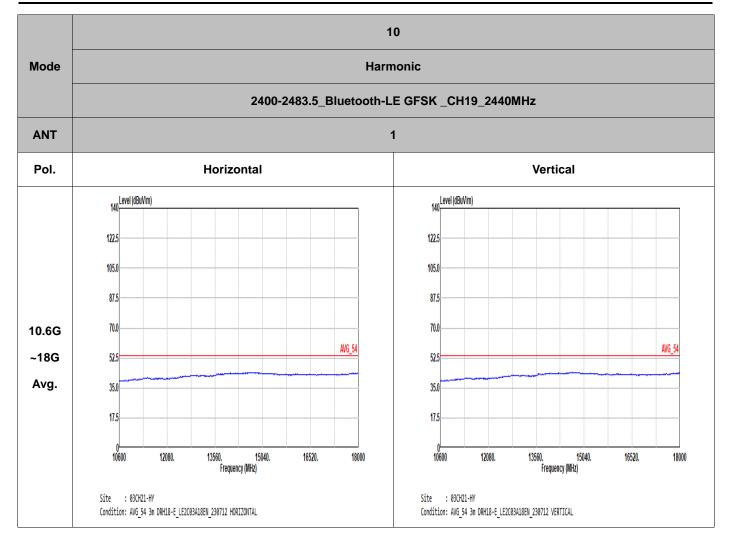




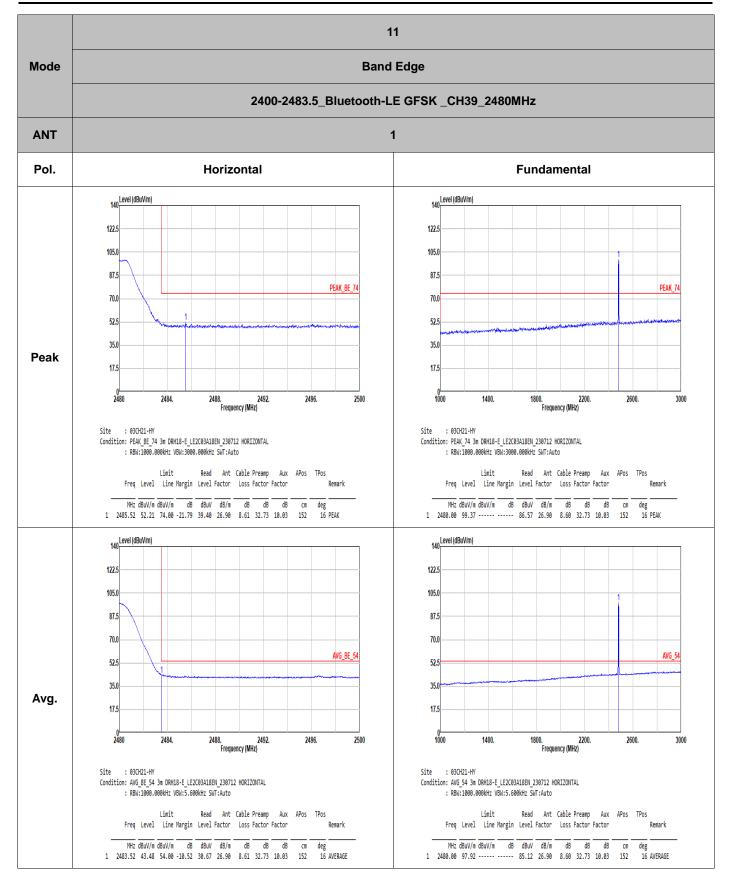




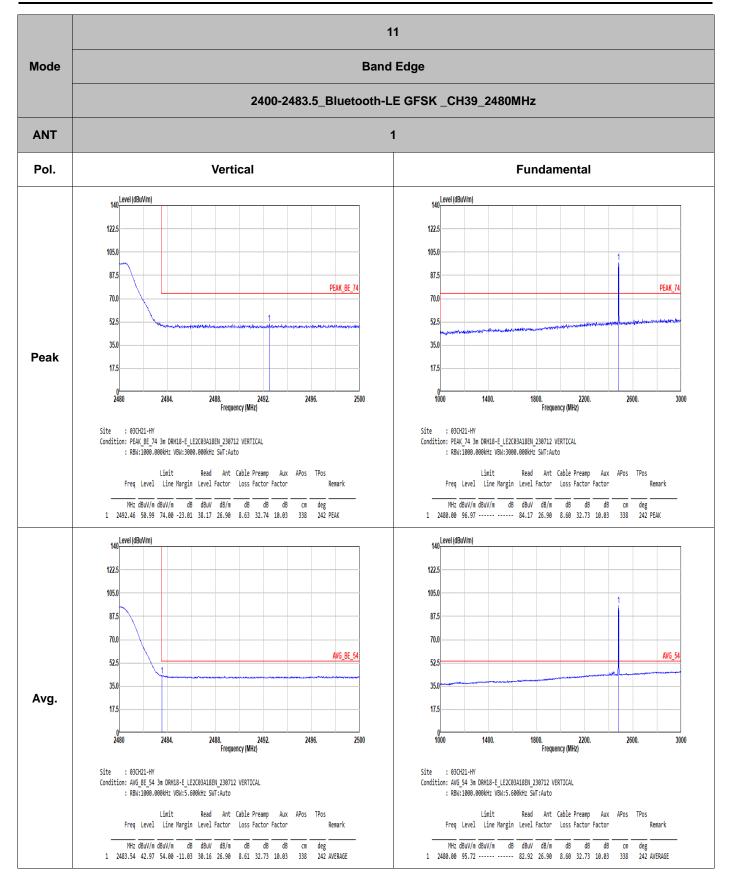




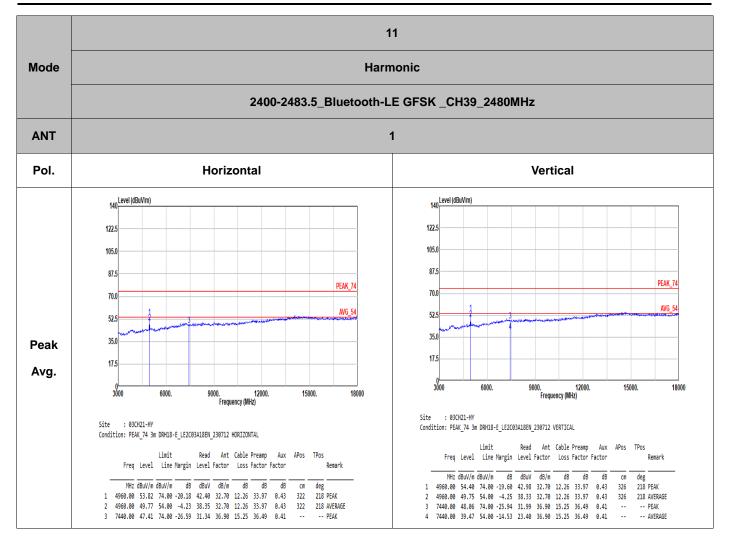




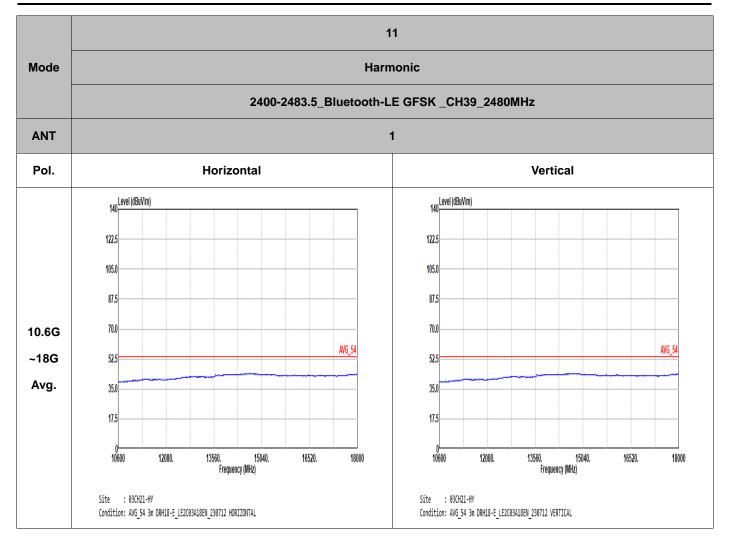














# Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)			VBW Setting
Bluetooth - LE for 1Mbps	60.29	378	2.65	2.7kHz
Bluetooth - LE for 2Mbps	30.77	192	5.21	5.6kHz

