



Report No.: FR252407B

: 02

# **FCC RADIO TEST REPORT**

FCC ID : UZ7RFD8500

Equipment : RFD8500 UHF RFID READER

Brand Name : ZEBRA Model Name : RFD8500

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 Jul. 07, 2022 and testing was performed from Jul. 28, 2022 to Aug. 13, 2022. 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 test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Lunis Win

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

TEL: 886-3-327-3456 Page Number : 1 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## **Table of Contents**

Report No. : FR252407B

His	tory o	of this test report	3
Su	mmar	y of Test Result	4
1	Gen	eral Description	5
	1.1	Product Feature of Equipment Under Test	5
	1.2	Product Specification of Equipment Under Test	5
	1.3	Modification of EUT	5
	1.4	Testing Location	6
	1.5	Applicable Standards	6
2	Test	Configuration of Equipment Under Test	7
	2.1	Carrier Frequency Channel	7
	2.2	Test Mode	8
	2.3	Connection Diagram of Test System	9
	2.4	EUT Operation Test Setup	9
	2.5	Measurement Results Explanation Example	9
3	Test	Result	10
	3.1	6dB and 99% Bandwidth Measurement	10
	3.2	Output Power Measurement	13
	3.3	Power Spectral Density Measurement	14
	3.4	Conducted Band Edges and Spurious Emission Measurement	17
	3.5	Radiated Band Edges and Spurious Emission Measurement	21
	3.6	Antenna Requirements	25
4	List	of Measuring Equipment	26
5	Unce	ertainty of Evaluation	27
Аp	pendi	ix A. Radiated Spurious Emission	
Аp	pendi	ix B. Radiated Spurious Emission Plots	
Аp	pendi	ix C. Duty Cycle Plots	
Αn	nendi	ix D. Setup Photographs	

TEL: 886-3-327-3456 Page Number : 2 of 27 FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022 : 02

# History of this test report

Report No.: FR252407B

Report No.	Version	Description	Issue Date
FR252407B	01	Initial issue of report	Aug. 19, 2022
FR252407B	02	Revise typo	Sep. 01, 2022

TEL: 886-3-327-3456 Page Number : 3 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## **Summary of Test Result**

Report No.: FR252407B

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)	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	2.01 dB under the limit at 7320.000 MHz
3.6	15.203 & 15.247(b)	Antenna Requirement	Pass	-

#### **Declaration of Conformity:**

- 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
  - It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
- 2. The measurement uncertainty please refer to report "Uncertainty of Evaluation".

#### Comments and Explanations:

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

Reviewed by: Wei Chen
Report Producer: Ming Chen

TEL: 886-3-327-3456 Page Number : 4 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 1 General Description

## 1.1 Product Feature of Equipment Under Test

Product Feature				
Equipment	RFD8500 UHF RFID READER			
Brand Name	ZEBRA			
Model Name	RFD8500			
FCC ID	UZ7RFD8500			
EUT supports Radios application	UHF RFID			
EOT Supports Radios application	Bluetooth BR/EDR/LE			
HW Version	EV1			
SW Version	PAACPS00-008-N02D0			
MFD	28JUN22			
EUT Stage	Identical Prototype			

Report No.: FR252407B

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

Specification of Accessories					
Battery Brand Name symbol Part Number 82-172087-01					
Micro USB Cable	<b>Brand Name</b>	ZEBRA	Part Number	25-MCXUSB-01R	

Supported Unit used in test configuration and system						
AC Adapter	AC Adapter Brand Name ZEBRA Part Number PWR-WUA5V6W0WHT					
Terminal	<b>Brand Name</b>	Zebra	Model Name	TC26BK		

## 1.2 Product Specification of Equipment Under Test

Product Specification is subject to this standard			
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz		
Number of Channels	40		
Carrier Frequency of Each Channel	40 Channel (37 hopping + 3 advertising channel)		
Maximum Output Power to Antenna	Bluetooth – LE (1Mbps): -4.20 dBm / 0.0026 W		
Antenna Type / Gain	PIFA and PCB chip Antenna type with gain 2.6 dBi		
Type of Modulation	Bluetooth LE : GFSK		

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

## 1.3 Modification of EUT

No modifications made to the EUT during the testing.

TEL: 886-3-327-3456 Page Number : 5 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 1.4 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No.
Test Site No.	03CH07-HY

Report No.: FR252407B

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

Test Site	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.			
Test Site No.	TH05-HY (TAF Code: 3786)			
Remark	The Conducted test item subcontracted to Sporton International Inc. Wensan Laboratory.			

FCC designation No.: TW1190 and TW3786

## 1.5 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.
- 3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

TEL: 886-3-327-3456 Page Number : 6 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

# 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	2424	32	2466
	12	2426	33	2468
	13	2428	34	2470
	14 15 16	2430	35	2472
		2432	36	2474
		2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

Report No.: FR252407B

TEL: 886-3-327-3456 Page Number : 7 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

### 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: 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 find Y plane with Adapter as worst plane.

Report No.: FR252407B

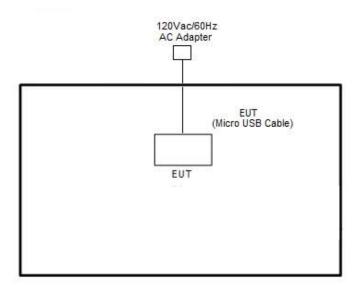
The following summary table is showing all test modes to demonstrate in compliance with the standard.

	Summary table of Test Cases					
Test Item	Data Rate / Modulation					
	Bluetooth – LE / GFSK					
Conducted	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps					
Test Cases	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps					
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps					
Radiated	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps					
Test Cases	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps					
rest Cases	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps					

TEL: 886-3-327-3456 Page Number : 8 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 2.3 Connection Diagram of Test System

<Bluetooth - LE Tx Mode>



Report No.: FR252407B

## 2.4 EUT Operation Test Setup

The RF test items, utility "BT Regulatory Test App - 1.2" 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.

## 2.5 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)

TEL: 886-3-327-3456 Page Number : 9 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 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.

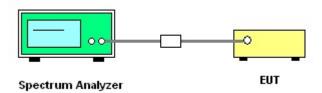
#### 3.1.3 Test Procedures

- 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.

Report No.: FR252407B

- 3. Set the maximum power setting and enable the EUT to 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 6dB bandwidth must be greater than 500 kHz.
- 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) ≥ 3 \* RBW.
- 6. Measure and record the results in the test report.

#### 3.1.4 Test Setup



TEL: 886-3-327-3456 Page Number : 10 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

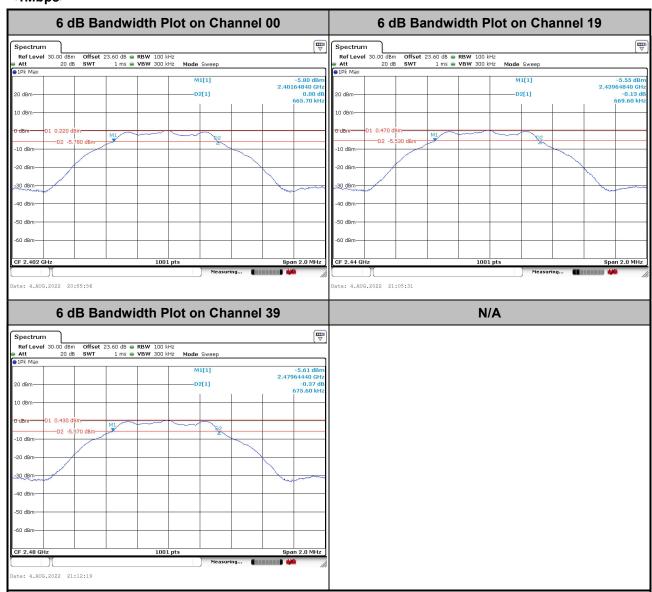
### 3.1.5 Test Result of 6dB Bandwidth

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

Report No.: FR252407B

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	0.666	0.50	Pass
BLE	1Mbps	1	19	2440	0.670	0.50	Pass
BLE	1Mbps	1	39	2480	0.676	0.50	Pass

### <1Mbps>



TEL: 886-3-327-3456 Page Number : 11 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

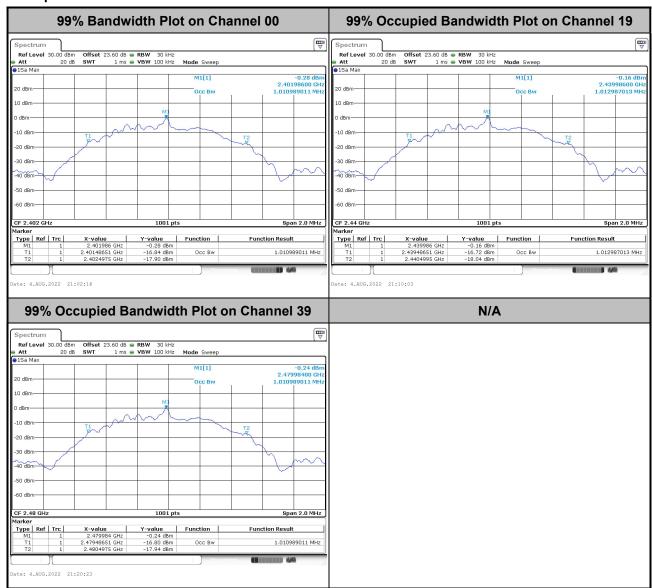
## 3.1.6 Test Result of 99% Occupied Bandwidth

Tost Engineer:	Shiming Liu	Temperature :	21~25℃
Test Engineer :		Relative Humidity :	51~54%

Report No.: FR252407B

Mod.	Data Rate	NTX	СН.	Freq. (MHz)	99% Occupied BW (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.011	Pass
BLE	1Mbps	1	19	2440	1.013	Pass
BLE	1Mbps	1	39	2480	1.011	Pass

### <1Mbps>



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

TEL: 886-3-327-3456 Page Number : 12 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 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.

Report No.: FR252407B

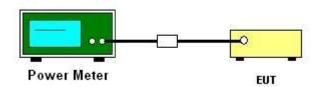
#### 3.2.2 Measuring Instruments

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

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

Mod.	Data Rate	NTX	СН.	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	-4.40	30.00	2.60	-1.80	36.00	Pass
BLE	1Mbps	1	19	2440	-4.30	30.00	2.60	-1.70	36.00	Pass
BLE	1Mbps	1	39	2480	-4.20	30.00	2.60	-1.60	36.00	Pass

TEL: 886-3-327-3456 Page Number : 13 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 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.

Report No.: FR252407B

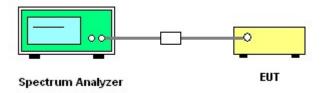
## 3.3.2 Measuring Instruments

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.
- 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. (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



TEL: 886-3-327-3456 Page Number : 14 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 3.3.5 Test Result of Power Spectral Density

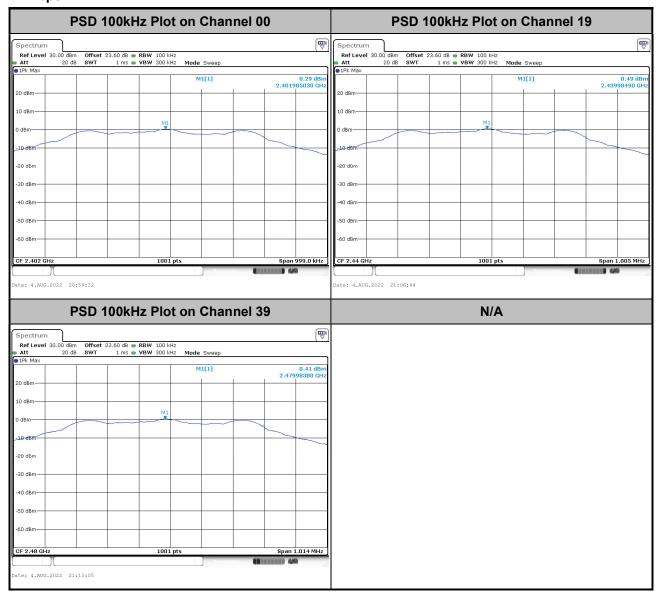
Took Fundance	01: : 1:	Temperature :	21~25°C
Test Engineer :	Shiming Liu	Relative Humidity :	51~54%

Report No.: FR252407B

Mod.	Data Rate	NTX	СН.	Freq. (MHz)	Peak PSD (dBm /100kHz)	Peak PSD (dBm /3kHz)	DG (dBi)	Peak PSD Limit (dBm /3kHz)	Pass/Fail
BLE	1Mbps	1	0	2402	0.29	-14.29	2.60	8.00	Pass
BLE	1Mbps	1	19	2440	0.49	-14.10	2.60	8.00	Pass
BLE	1Mbps	1	39	2480	0.41	-14.15	2.60	8.00	Pass

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

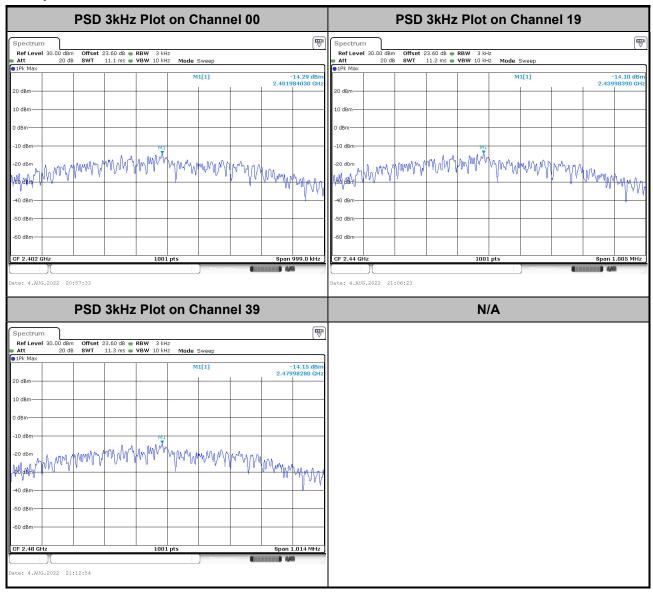
#### <1Mbps>



TEL: 886-3-327-3456 Page Number : 15 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

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

#### <1Mbps>



Report No.: FR252407B

TEL: 886-3-327-3456 Page Number : 16 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 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.

Report No.: FR252407B

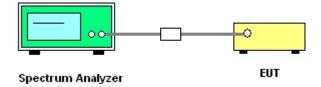
## 3.4.2 Measuring Instruments

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



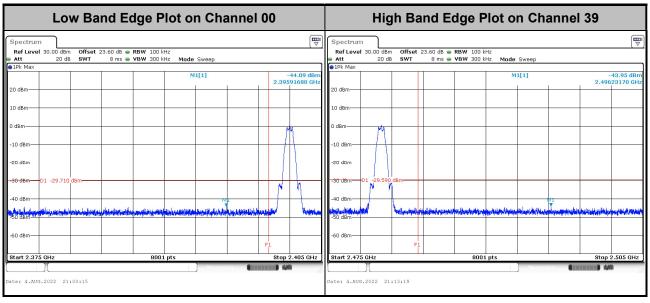
TEL: 886-3-327-3456 Page Number : 17 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 3.4.5 Test Result of Conducted Band Edges Plots

Tost Engineer :	Chiming Liu	Temperature :	21~25℃
Test Engineer :	Shiming Liu	Relative Humidity :	51~54%

Report No.: FR252407B

## <1Mbps>



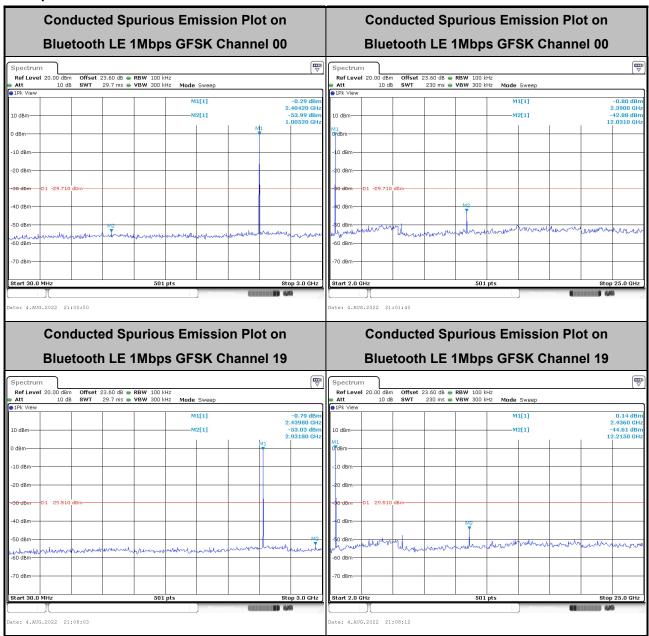
TEL: 886-3-327-3456 Page Number : 18 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 3.4.6 Test Result of Conducted Spurious Emission Plots

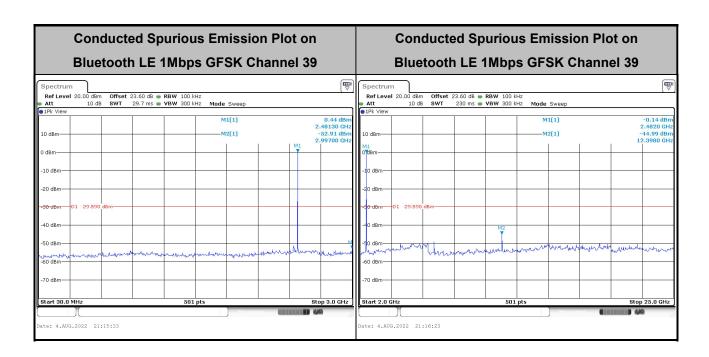
Tost Engineer :	Chiming Liu	Temperature :	21~25℃
Test Engineer :	Shiming Liu	Relative Humidity :	51~54%

Report No.: FR252407B

#### <1Mbps>



TEL: 886-3-327-3456 Page Number : 19 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022



Report No.: FR252407B

TEL: 886-3-327-3456 Page Number : 20 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 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 is 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.

Report No.: FR252407B

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.

TEL: 886-3-327-3456 Page Number : 21 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

### 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.

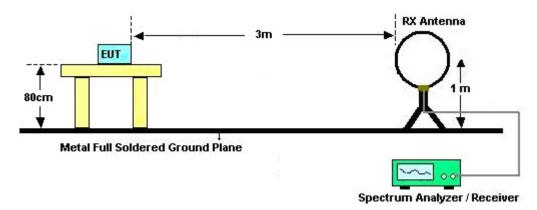
Report No.: FR252407B

- 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 ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW = 3 MHz for  $f \ge 1$  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.

TEL: 886-3-327-3456 Page Number : 22 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

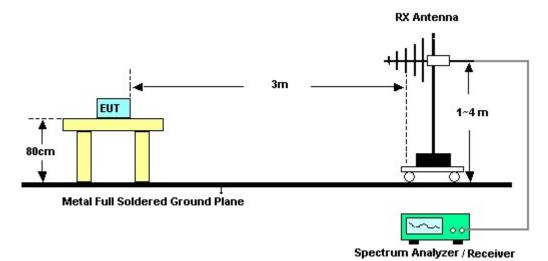
## 3.5.4 Test Setup

#### For radiated test below 30MHz

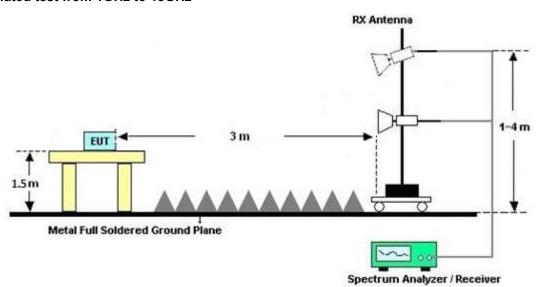


Report No.: FR252407B

#### For radiated test from 30MHz to 1GHz

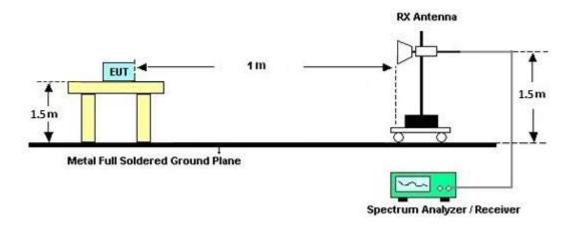


#### For radiated test from 1GHz to 18GHz



TEL: 886-3-327-3456 Page Number : 23 of 27 FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

#### For radiated test above 18GHz



Report No.: FR252407B

### 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 A and B.

### 3.5.7 Duty Cycle

Please refer to Appendix C.

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

Please refer to Appendix A and B.

TEL: 886-3-327-3456 Page Number : 24 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

## 3.6 Antenna Requirements

## 3.6.1 Standard Applicable

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

Report No.: FR252407B

## 3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.6.3 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.

TEL: 886-3-327-3456 Page Number : 25 of 27
FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

# 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	35419 & 03	30MHz~1GHz	Apr. 24, 2022	Aug. 08, 2022~ Aug. 13, 2022	Apr. 23, 2023	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Dec. 03, 2021	Aug. 08, 2022~ Aug. 13, 2022	Dec. 02, 2022	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 07, 2022	Aug. 08, 2022~ Aug. 13, 2022	Jan. 06, 2023	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-001018 00-30-10P	1590075	1GHz~18GHz	Apr. 21, 2022	Aug. 08, 2022~ Aug. 13, 2022	Apr. 20, 2023	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Oct. 04, 2021	Aug. 08, 2022~ Aug. 13, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Oct. 04, 2021	Aug. 08, 2022~ Aug. 13, 2022	Oct. 03, 2022	Radiation (03CH07-HY)
Preamplifier	EMEC	EM18G40G	0600789	18-40GHz	Jul. 21, 2022	Aug. 08, 2022~ Aug. 13, 2022	Jul. 20, 2023	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Jul. 22, 2022	Aug. 08, 2022~ Aug. 13, 2022	Jul. 21, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY15682/4	30MHz to 18GHz	Feb. 23, 2022	Aug. 08, 2022~ Aug. 13, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24971/4	9kHz to 18GHz	Feb. 23, 2022	Aug. 08, 2022~ Aug. 13, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4	9kHz to 18GHz	Feb. 23, 2022	Aug. 08, 2022~ Aug. 13, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 17, 2021	Aug. 08, 2022~ Aug. 13, 2022	Sep. 16, 2022	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2858/2	18GHz~40GHz	Feb. 23, 2022	Aug. 08, 2022~ Aug. 13, 2022	Feb. 22, 2023	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	Apr. 14, 2022	Aug. 08, 2022~ Aug. 13, 2022	Apr. 13, 2023	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Aug. 08, 2022~ Aug. 13, 2022	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Aug. 08, 2022~ Aug. 13, 2022	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Aug. 08, 2022~ Aug. 13, 2022	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Aug. 08, 2022~ Aug. 13, 2022	N/A	Radiation (03CH07-HY)
Attenuator	HONOVA	5910 SMA-50-005-19- NE	ATT-36	N/A	Oct. 30, 2021	Aug. 08, 2022~ Aug. 13, 2022	Oct. 29, 2022	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	Aug. 08, 2022~ Aug. 13, 2022	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Mar. 07, 2022	Aug. 08, 2022~ Aug. 13, 2022	Mar. 06, 2023	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170251	18GHz~40GHz	Nov. 30, 2021	Aug. 08, 2022~ Aug. 13, 2022	Nov. 29, 2022	Radiation (03CH07-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 16, 2021	Jul. 28, 2022~ Aug. 04, 2022	Nov. 15, 2022	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO 10 (NO:248)	10MHz~6GHz	Dec. 29, 2021	Jul. 28, 2022~ Aug. 04, 2022	Dec. 28, 2022	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 30, 2021	Jul. 28, 2022~ Aug. 04, 2022	Aug. 29, 2022	Conducted (TH05-HY)

Report No.: FR252407B

TEL: 886-3-327-3456 Page Number : 26 of 27 FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

# 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence	5.1 dB
of 95% (U = 2Uc(y))	5.1 UB

Report No.: FR252407B

#### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	5.8 dB
of 95% (U = 2Uc(y))	3.0 UB

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

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

TEL: 886-3-327-3456 Page Number : 27 of 27 FAX: 886-3-328-4978 Issue Date : Sep. 01, 2022

# Appendix A. Radiated Spurious Emission

Test Engineer :	Jees Wang	Temperature :	24~26°C
rest Engineer .		Relative Humidity :	55~65%

Report No. : FR252407B

#### 2.4GHz 2400~2483.5MHz

## BLE (Band Edge @ 3m)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	( dBµV/m )	( dB )	( dBµV/m )	(dB <sub>µ</sub> V)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	(H/V)
		2333.835	54.33	-19.67	74	39.99	31.46	18.27	35.39	202	27	Р	Н
		2330.475	45.12	-8.88	54	30.76	31.48	18.27	35.39	202	27	Α	Н
	*	2402	97.72	-	-	83.24	31.42	18.48	35.42	202	27	Р	Н
	*	2402	97.23	-	-	82.75	31.42	18.48	35.42	202	27	Α	Н
BLE													Н
CH 00													Н
2402MHz		2371.425	54.39	-19.61	74	40.01	31.4	18.39	35.41	380	53	Р	V
		2339.82	45.4	-8.6	54	31.06	31.44	18.3	35.4	380	53	Α	V
	*	2402	90.87	-	-	76.39	31.42	18.48	35.42	380	53	Р	V
	*	2402	90.31	-	-	75.83	31.42	18.48	35.42	380	53	Α	V
													V
													V
		2380.7	54.2	-19.8	74	39.79	31.4	18.42	35.41	232	25	Р	Н
		2311.82	45.46	-8.54	54	31.08	31.55	18.21	35.38	232	25	Α	Н
	*	2440	98.04	-	-	83.21	31.72	18.54	35.43	232	25	Р	Н
	*	2440	97.59	-	-	82.76	31.72	18.54	35.43	232	25	Α	Н
DI E		2486.56	54.2	-19.8	74	38.95	32.09	18.61	35.45	232	25	Р	Н
BLE CH 19		2494.47	46.04	-7.96	54	30.72	32.16	18.62	35.46	232	25	Α	Н
2440MHz		2385.18	54.21	-19.79	74	39.78	31.4	18.44	35.41	372	50	Р	<b>V</b>
Z44UIVINZ		2317.56	45.23	-8.77	54	30.86	31.53	18.23	35.39	372	50	Α	٧
	*	2440	90.65	-	-	75.82	31.72	18.54	35.43	372	50	Р	V
	*	2440	90.17	-	-	75.34	31.72	18.54	35.43	372	50	Α	V
		2495.52	55.36	-18.64	74	40.04	32.16	18.62	35.46	372	50	Р	٧
		2494.96	46.45	-7.55	54	31.13	32.16	18.62	35.46	372	50	Α	V

TEL: 886-3-327-3456 Page Number: A1 of A6



	*	2480	97.62	-	-	82.43	32.04	18.6	35.45	170	25	Р	Н
	*	2480	97.05	-	-	81.86	32.04	18.6	35.45	170	25	Α	Н
		2494.84	55.03	-18.97	74	39.71	32.16	18.62	35.46	170	25	Р	Н
		2483.76	46.07	-7.93	54	30.85	32.07	18.6	35.45	170	25	Α	Н
													Н
BLE													Н
CH 39 2480MHz	*	2480	90.92	-	-	75.73	32.04	18.6	35.45	396	47	Р	٧
2400WITIZ	*	2480	90.34	-	-	75.15	32.04	18.6	35.45	396	47	Α	V
		2496.76	55.42	-18.58	74	40.09	32.17	18.62	35.46	396	47	Р	V
		2499.68	46.18	-7.82	54	30.81	32.2	18.63	35.46	396	47	Α	٧
													٧
					_								V
	1. No	o other spurious	s found.										
Remark		l results are PA		Peak and	Average lir	nit line.							

Report No. : FR252407B

TEL: 886-3-327-3456 Page Number : A2 of A8

### 2.4GHz 2400~2483.5MHz

Report No. : FR252407B

## BLE (Harmonic @ 3m)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		(MHz)	( dBµV/m )	( dB )	Line ( dBµV/m )	Level ( dBµV )	Factor ( dB/m )	Loss (dB)	Factor (dB)	Pos ( cm )	Pos ( deg )	Avg. (P/A)	(H/V)
		4804	52.36	-21.64	74	64.65	34.01	12.7	59	217	59	Р	Н
		4804	48.64	-5.36	54	60.93	34.01	12.7	59	217	59	Α	Н
		12010	49.88	-24.12	74	48.11	38.72	19.23	56.18	-	-	Р	Н
													Н
													Н
													Н
													Н
													Н
													Н
													Н
51.5													Н
BLE CH 00													Н
2402MHz		4804	50.29	-23.71	74	62.58	34.01	12.7	59	357	107	Р	V
2402141112		4804	45.98	-8.02	54	58.27	34.01	12.7	59	357	107	Α	V
		12010	55.16	-18.84	74	53.39	38.72	19.23	56.18	207	2	Р	V
		12010	50.3	-3.7	54	48.53	38.72	19.23	56.18	207	2	Α	V
													V
													V
													V
													V
													V
													V
													V
													V

TEL: 886-3-327-3456 Page Number : A3 of A8

**BLE** Antenna Table Peak Pol. Note Frequency Level Margin Limit Read Path Preamp Ant Line Level **Factor** Loss Factor Pos Pos Avg. (dBµV/m) (MHz) (dB) (dBµV/m) (dB<sub>µ</sub>V) ( dB/m ) (dB) (dB) ( deg ) (P/A) (H/V) ( cm ) 4880 47.27 -26.73 74 59.34 34.04 12.75 58.86 Н 7320 55.56 -18.44 74 62.35 35.68 15.03 57.5 187 262 Ρ Н 7320 51.99 -2.01 54 58.78 35.68 15.03 57.5 187 262 Α Н Η Н Н Н Н Н Н Н BLE Н **CH 19** 4880 43.64 -30.36 74 55.71 34.04 12.75 58.86 Ρ V 2440MHz ٧ 7320 53.59 -20.41 74 60.38 35.68 15.03 57.5 Ρ 400 56 ٧ 7320 49.54 -4.46 54 56.33 35.68 15.03 57.5 400 56 Α ٧ ٧ ٧ ٧ ٧ ٧ ٧ ٧ ٧

Report No.: FR252407B

TEL: 886-3-327-3456 Page Number : A4 of A8

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
		, <b></b> .		( 15 )	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	4100
		( <b>MHz</b> ) 4960	( dBµV/m ) 46.16	(dB) -27.84	( dBµV/m )	( <b>dBµV</b> ) 57.95	( <b>dB/m</b> ) 34.1	( <b>dB</b> ) 12.82	( <b>dB</b> ) 58.71	( cm )	( deg )	( <b>P/A)</b>	( <b>H/V)</b> H
		7440	52.68	-21.32	74	59.42	35.82	15.03	57.59	179	255	P	Н
		7440	48.41	-5.59	54			15.03	57.59	179	255		Н
		7440	40.41	-5.59	54	55.15	35.82	15.03	57.59	179	255	Α	
													Н
													Н
													Н
													Н
													Н
													Н
													Н
BLE													Н
CH 39													Н
2480MHz		4960	47.62	-26.38	74	59.41	34.1	12.82	58.71	-	-	Р	V
		7440	47.63	-26.37	74	54.37	35.82	15.03	57.59	-	-	Р	V
													V
													V
													V
													V
													V
													V
													V
													V
													V
													V
		o other spurious											
Remark		results are PA											
		e emission pos	sition marked	l as "-" m	eans no sus	pected em	ission found	d with suf	ficient mar	gin agai	inst limit	line or	noise
	flo	or only.											

Report No. : FR252407B

TEL: 886-3-327-3456 Page Number : A5 of A8

#### **Emission below 1GHz**

Report No.: FR252407B

#### 2.4GHz BLE (LF)

BLE	Note	Frequency	Level	Margin	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
					Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	( dBµV/m )	,	( dBµV/m )	(dBµV)	( dB/m )	( dB )	( dB )	( cm )	( deg )	(P/A)	
		31.35	22.1	-17.9	40	27.56	23.65	0.99	30.1	-	-	Р	Н
		91.02	25.15	-18.35	43.5	38.75	14.73	1.7	30.03	-	-	Р	Н
		295.14	26.03	-19.97	46	33.61	19.23	2.96	29.77	-	-	Р	Н
		887.3	31.56	-14.44	46	26.39	28.66	5.38	28.87	-	-	Р	Н
		922.3	31.98	-14.02	46	26.23	28.99	5.5	28.74	-	-	Р	Н
		953.1	33.61	-12.39	46	26.23	30.46	5.56	28.64	-	-	Р	Н
													Н
													Н
													Н
													Н
													Н
2.4GHz													Н
BLE LF		41.88	33.28	-6.72	40	43.88	18.43	1.03	30.06	-	-	Р	V
LF		91.02	23.01	-20.49	43.5	36.61	14.73	1.7	30.03	-	-	Р	V
		265.44	18.59	-27.41	46	25.9	19.69	2.76	29.76	-	-	Р	V
		878.2	31.54	-14.46	46	26.39	28.75	5.32	28.92	-	-	Р	٧
		920.9	32.29	-13.71	46	26.58	28.95	5.5	28.74	-	-	Р	V
		959.4	32.62	-13.38	46	24.86	30.8	5.58	28.62	-	-	Р	V
													V
													V
													V
													V
													V
													V

1. No other spurious found.

## Remark

2. All results are PASS against limit line.

3. The emission position marked as "-" means no suspected emission found and emission level has at least 6dB margin against limit or emission is noise floor only.

TEL: 886-3-327-3456 Page Number: A6 of A8

## Note symbol

Report No. : FR252407B

*	Fundamental Frequency 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	Peak or Average
H/V	Horizontal or Vertical

TEL: 886-3-327-3456 Page Number : A7 of A8

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

Report No.: FR252407B

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

- 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. Margin(dB) = Level(dB $\mu$ V/m) Limit Line(dB $\mu$ V/m)

#### For Peak Limit @ 2390MHz:

- Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBµV) 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. Margin(dB)
- = Level(dBµV/m) Limit Line(dBµV/m)
- $= 55.45(dB\mu V/m) 74(dB\mu V/m)$
- = -18.55(dB)

#### For Average Limit @ 2390MHz:

- 1. Level(dBµV/m)
- = Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) 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. Margin(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".

TEL: 886-3-327-3456 Page Number: A8 of A8

# Appendix B. Radiated Spurious Emission Plots

Toot Engineer		Temperature :	24~26°C
Test Engineer :	Jees Wang	Relative Humidity :	55~65%

Report No. : FR252407B

# Note symbol

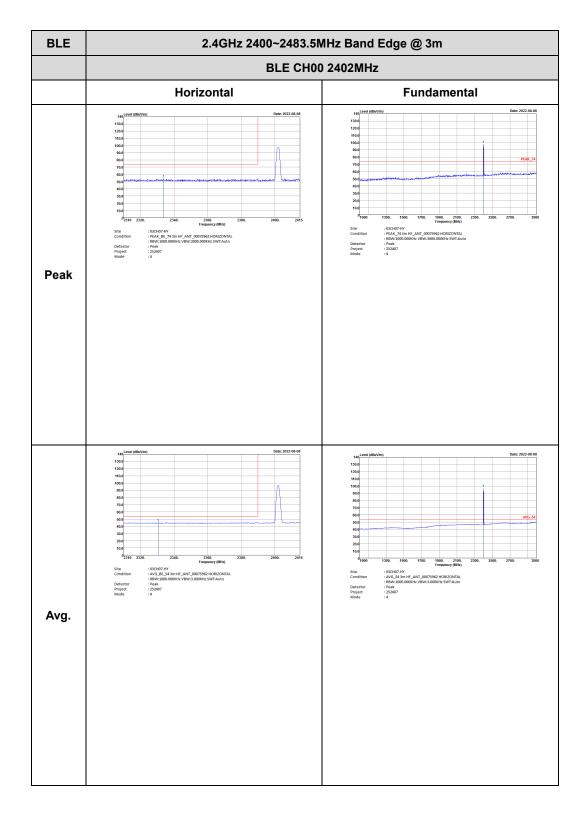
-L	Low channel location
-R	High channel location

TEL: 886-3-327-3456 Page Number : B1 of B13

#### 2.4GHz 2400~2483.5MHz

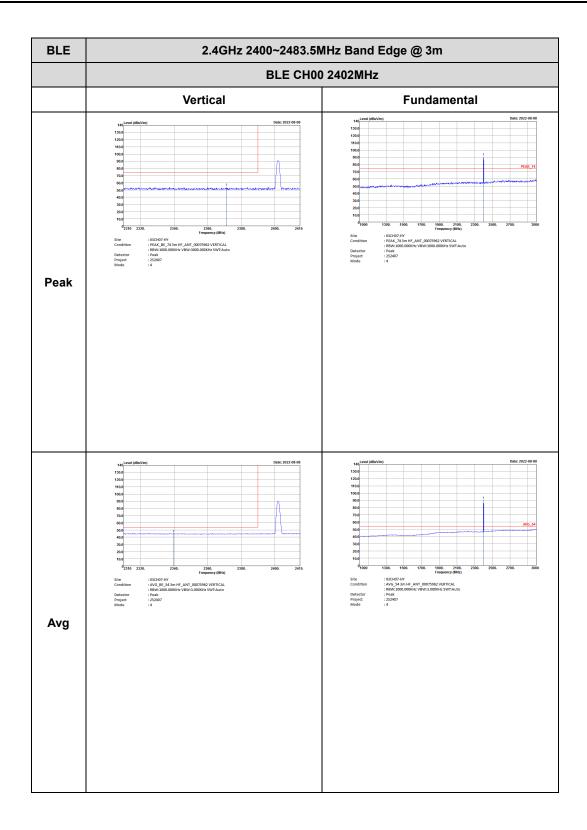
Report No.: FR252407B

### BLE (Band Edge @ 3m)



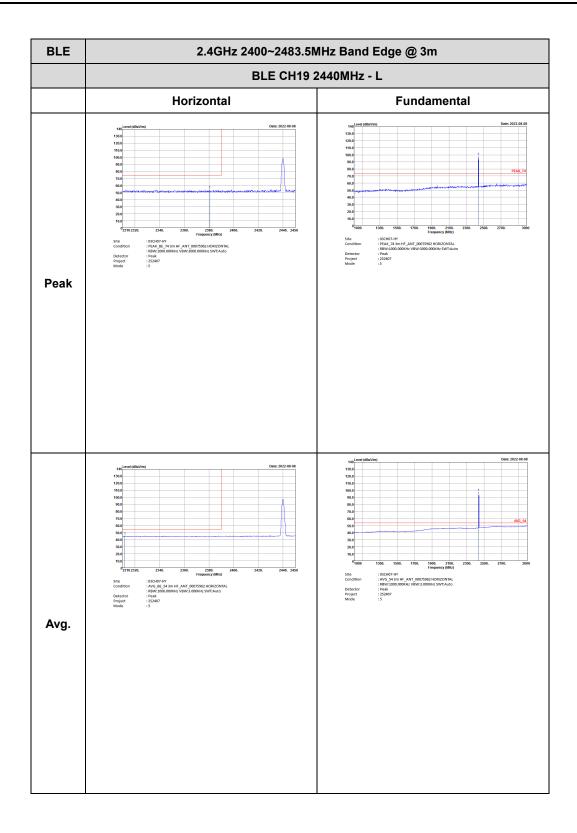
TEL: 886-3-327-3456 Page Number: B2 of B13

Report No. : FR252407B



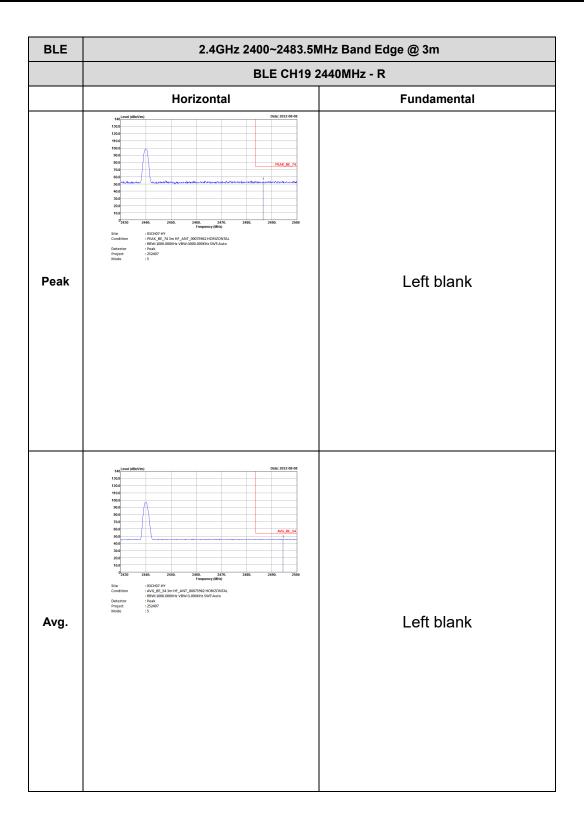
TEL: 886-3-327-3456 : B3 of B13 Page Number

Report No. : FR252407B



TEL: 886-3-327-3456 Page Number: B4 of B13

DIO TEST REPORT Report No. : FR252407B



TEL: 886-3-327-3456 Page Number: B5 of B13

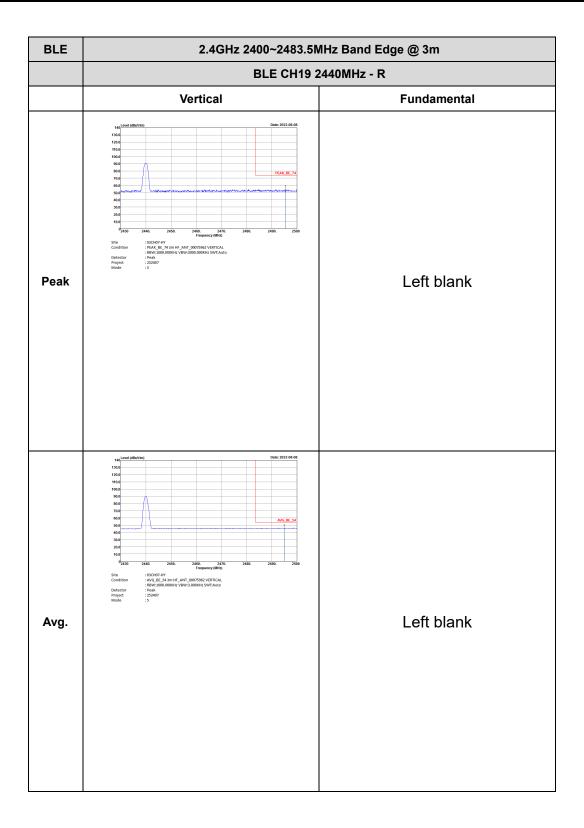


BLE 2.4GHz 2400~2483.5MHz Band Edge @ 3m BLE CH19 2440MHz - L Vertical **Fundamental** Peak Avg.

Report No. : FR252407B

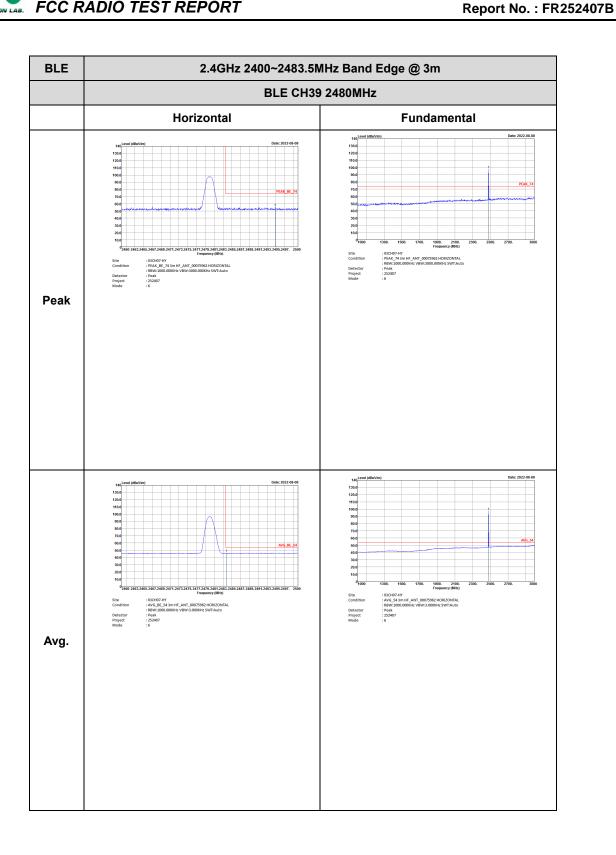
TEL: 886-3-327-3456 Page Number: B6 of B13

Report No. : FR252407B



TEL: 886-3-327-3456 : B7 of B13 Page Number





TEL: 886-3-327-3456 : B8 of B13 Page Number



BLE 2.4GHz 2400~2483.5MHz Band Edge @ 3m **BLE CH39 2480MHz** Vertical **Fundamental** Peak Avg.

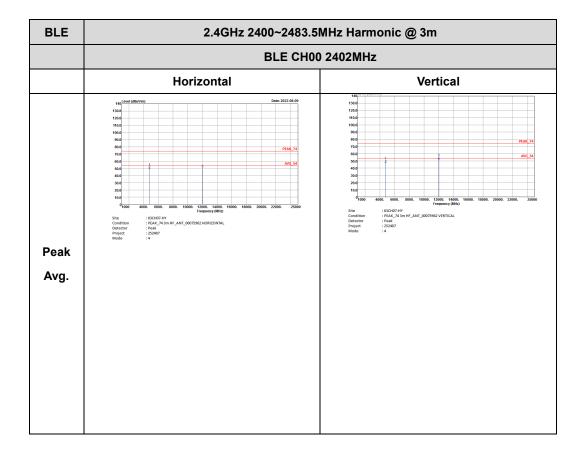
Report No. : FR252407B

TEL: 886-3-327-3456 Page Number: B9 of B13

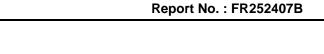
#### 2.4GHz 2400~2483.5MHz

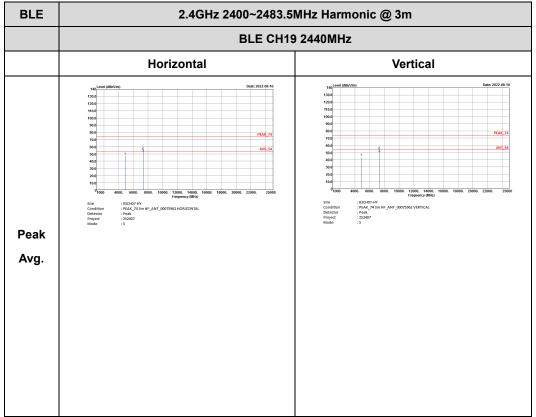
Report No. : FR252407B

#### BLE (Harmonic @ 3m)



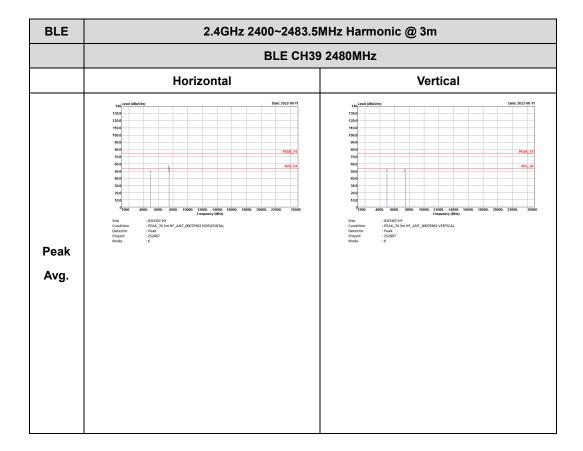
TEL: 886-3-327-3456 Page Number: B10 of B13





TEL: 886-3-327-3456 Page Number: B11 of B13

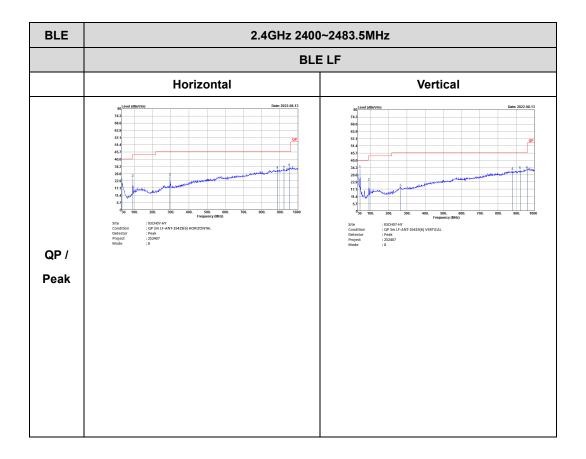




TEL: 886-3-327-3456 Page Number: B12 of B13

## Emission below 1GHz 2.4GHz BLE (LF)

Report No. : FR252407B

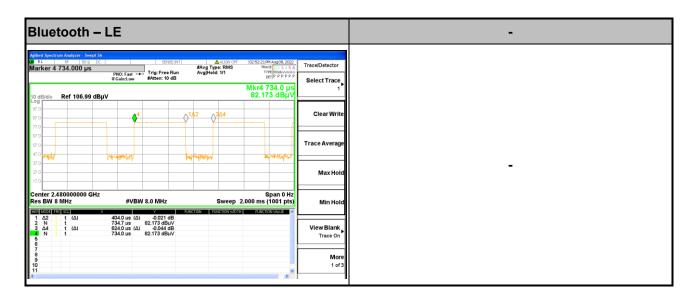


TEL: 886-3-327-3456 Page Number: B13 of B13

# **Appendix C. Duty Cycle Plots**

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth -LE	64.74	404	2.48	3kHz

Report No. : FR252407B



TEL: 886-3-327-3456 Page Number : C1 of C1