## **FCC RF Test Report**

APPLICANT : VeriFone, Inc. EQUIPMENT : Card Reader

BRAND NAME : Verifone or VERIFONE or verifone

MODEL NAME : VR1.0 FCC ID : B32VR1

STANDARD : FCC Part 15 Subpart C §15.247

CLASSIFICATION : (DTS) Digital Transmission System

TEST DATE(S) : Nov. 07, 2024 ~ Jan. 02, 2025

We, Sporton International Inc. (Kunshan), 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 of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

JasonJia

Approved by: Jason Jia



## Sporton International Inc. (Kunshan)

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 1 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

## **TABLE OF CONTENTS**

REV	ISION	N HISTORY	3
SUN	/MAR	Y OF TEST RESULT	4
1	GENE	ERAL DESCRIPTION	5
	1.1	Applicant	5
	1.2	Manufacturer	5
	1.3	Product Feature of Equipment Under Test	5
	1.4	Product Specification of Equipment Under Test	5
	1.5	Modification of EUT	5
	1.6	Testing Location	6
	1.7	Test Software	6
	1.8	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	Support Unit used in test configuration and system	10
	2.5	EUT Operation Test Setup	10
	2.6	Measurement Results Explanation Example	10
3	TEST	RESULT	11
	3.1	6dB and 99% Bandwidth Measurement	11
	3.2	Output Power Measurement	18
	3.3	Power Spectral Density Measurement	19
	3.4	Conducted Band Edges and Spurious Emission Measurement	26
	3.5	Radiated Band Edges and Spurious Emission Measurement	35
	3.6	AC Conducted Emission Measurement	39
	3.7	Antenna Requirements	41
4	LIST	OF MEASURING EQUIPMENT	42
5	MEAS	SUREMENT UNCERTAINTY	43
APF	PENDI	X A. CONDUCTED TEST RESULTS	
APF	PENDI	X B. AC CONDUCTED EMISSION TEST RESULT	
APF	PENDI	X C. RADIATED SPURIOUS EMISSION	
APF	PENDI	X D. DUTY CYCLE PLOTS	
APF	PENDI	X E. SETUP PHOTOGRAPHS	

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 2 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

## **REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4O1830A	Rev. 01	Initial issue of report	Feb. 06, 2025

Report Version : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

#### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	99% Bandwidth	-	Report only	-
3.2	15.247(b)(3)	Peak Output Power	≤ 30dBm	Pass	-
3.3	15.247(e)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission	≤ 20dBc	Pass	-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.58 dB at 12200.00 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.67 dB at 15.066 MHz
3.7	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	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.

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 4 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

## 1 General Description

## 1.1 Applicant

VeriFone, Inc.

1400 West Stanford Ranch Road Suite 150 Rocklin CA 95765 USA

#### 1.2 Manufacturer

VeriFone, Inc.

1400 West Stanford Ranch Road Suite 150 Rocklin CA 95765 USA

## 1.3 Product Feature of Equipment Under Test

Product Feature				
Equipment	Card Reader			
Brand Name	Verifone or VERIFONE or verifone			
Model Name VR1.0				
FCC ID B32VR1				
	Conducted: 031-327-285			
SN Code	Conduction: 031-334-328			
	Radiation: 031-334-347			
EUT Stage Identical Prototype				

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

## 1.4 Product Specification of Equipment Under Test

Standards-related Product Specification			
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	BLE 1Mbps: 4.49 dBm (0.0028 W)		
Maximum Output Fower to Antenna	BLE 2Mbps: 4.43 dBm (0.0028 W)		
99% Occupied Bandwidth	BLE 1Mbps:1.07MHz		
39 % Occupied Baildwidth	BLE 2Mbps:2.14MHz		
Antenna Type / Gain	PIFA Antenna type with gain -3.825 dBi		
Type of Modulation Bluetooth LE : GFSK			

#### 1.5 Modification of EUT

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

 Sporton International Inc (Kunshan)
 Page Number
 : 5 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 1.6 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)			
	No. 1098, Pengxi North Road, Kunshan Economic Development Zone			
Test Site Location	Jiangsu Province 215300 People's Republic of China			
	TEL: +86-512-57900158			
	Sparton Sito No.	ECC Decignation No.	FCC Test Firm	
Test Site No.	Sporton Site No.	FCC Designation No.	Registration No.	
rest site NO.	CO01-KS 03CH05-KS TH01-KS	CN1257	314309	

#### 1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	SPORTON	FCC 15C-15E Test Tools Ver10.0_210607	10.0
2.	03CH05-KS	AUDIX	E3	210616
3.	CO01-KS	AUDIX	E3	6.2009-8-24

## 1.8 Applicable Standards

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

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

#### Remark:

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

 Sporton International Inc (Kunshan)
 Page Number
 : 6 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 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	2430	35	2472
	15	2432	36	2474
	16	2434	37	2476
	17	2436	38	2478
	18	2438	39	2480
	19	2440	-	-
	20	2442	-	-

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 7 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

#### 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, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

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

	Summary table of Test Cases					
Test Item	Data Rate / Modulation					
rest item	Bluetooth – LE / GFSK					
	Mode 1: Bluetooth Tx CH00_2402 MHz_BLE 1Mbps					
	Mode 2: Bluetooth Tx CH19_2440 MHz_BLE 1Mbps					
Conducted	Mode 3: Bluetooth Tx CH39_2480 MHz_BLE 1Mbps					
TCs	Mode 4: Bluetooth Tx CH00_2402 MHz_BLE 2Mbps					
	Mode 5: Bluetooth Tx CH19_2440 MHz_BLE 2Mbps					
	Mode 6: Bluetooth Tx CH39_2480 MHz_BLE 2Mbps					
	Mode 1: Bluetooth Tx CH00_2402 MHz_BLE 1Mbps					
	Mode 2: Bluetooth Tx CH19_2440 MHz_BLE 1Mbps					
Radiated	Mode 3: Bluetooth Tx CH39_2480 MHz_BLE 1Mbps					
TCs Mode 4: Bluetooth Tx CH00_2402 MHz_BLE 2Mbps						
Mode 5: Bluetooth Tx CH19_2440 MHz_BLE 2Mbps						
	Mode 6: Bluetooth Tx CH39_2480 MHz_BLE 2Mbps					
AC						
Conducted	Mode 1: BT Link + Charging from Charging Base					
Emission						
Remark: For Radiated Test Cases, The tests were performance with Adapter and USB Cable.						

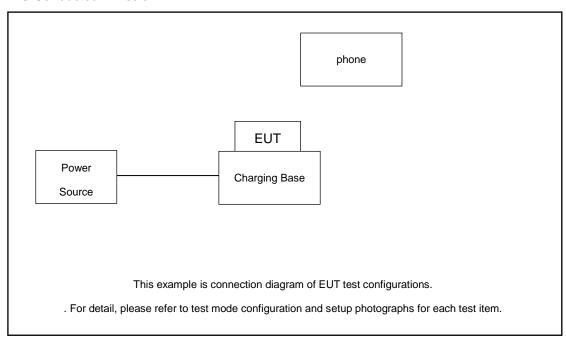
Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 8 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

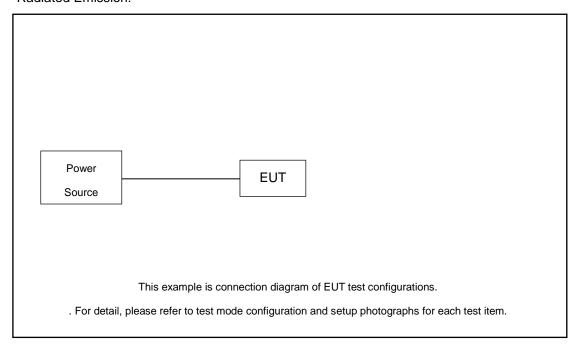
Report No.: FR4O1830A

## 2.3 Connection Diagram of Test System

#### AC Conducted Emission:



#### Radiated Emission:



TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 9 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

## 2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Phone	N/A	N/A	N/A	N/A	N/A
2.	Charging Base	Verifone	VR1-B	N/A	N/A	N/A

## 2.5 EUT Operation Test Setup

For BLE function, the engineering test program was provided and enabled to make EUT continuous transmit.

## 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 0.80 dB and 10dB attenuator.

$$Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$$
  
= 0.80 + 10 = 10.80 (dB)

Report Template No.: BU5-FR15CBT4.0 Version 2.0

#### 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.

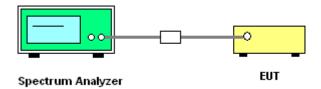
#### 3.1.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

#### 3.1.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 11.8
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
- 5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1% to 5% of the 99% OBW and the VBW is set to 3 times of the RBW.
- 6. Measure and record the results in the test report.

#### 3.1.4 Test Setup



TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 11 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

#### 3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

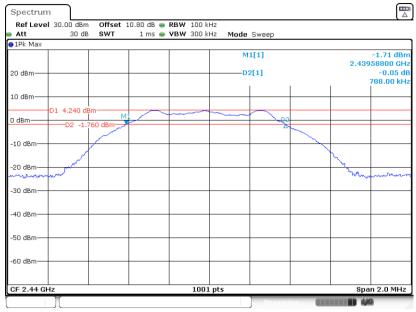
#### **BLE 1Mbps**

#### 6 dB Bandwidth Plot on Channel 00



Date: 17.DEC.2024 20:38:34

#### 6 dB Bandwidth Plot on Channel 19



Date: 17.DEC.2024 20:44:16

 Sporton International Inc (Kunshan)
 Page Number
 : 12 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

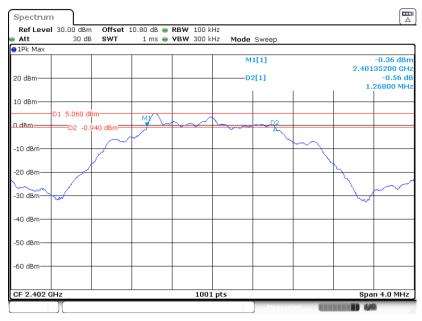
#### 6 dB Bandwidth Plot on Channel 39



Date: 17.DEC.2024 20:49:19

#### **BLE 2Mbps**

#### 6 dB Bandwidth Plot on Channel 00



Date: 17.DEC.2024 20:55:50

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 13 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

#### 6 dB Bandwidth Plot on Channel 19



Date: 17.DEC.2024 20:59:49

#### 6 dB Bandwidth Plot on Channel 39



Date: 17.DEC.2024 21:02:25

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 14 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

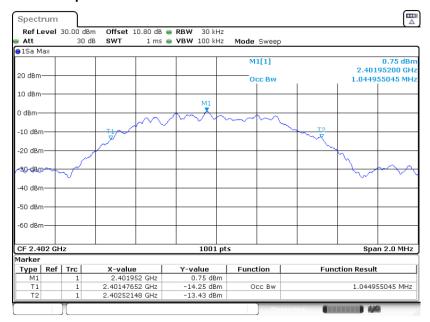
Report No.: FR4O1830A

#### 3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

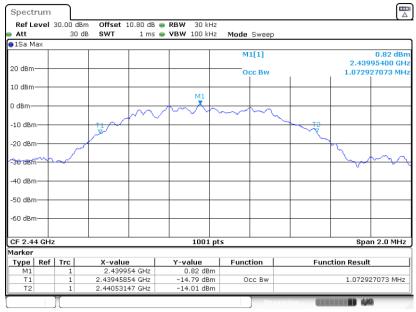
#### **BLE 1Mbps**

#### 99% Occupied Bandwidth Plot on Channel 00



Date: 17.DEC.2024 20:40:21

#### 99% Occupied Bandwidth Plot on Channel 19



Date: 17.DEC.2024 20:45:45

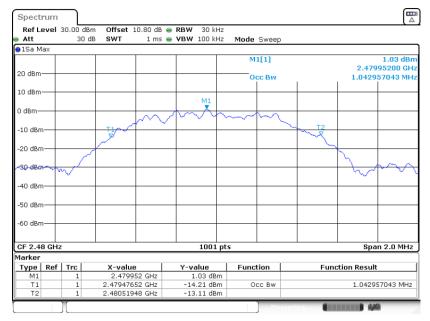
 Sporton International Inc (Kunshan)
 Page Number
 : 15 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

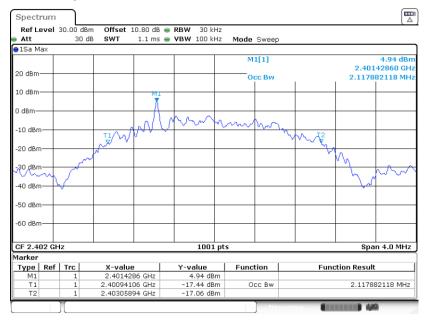
#### 99% Occupied Bandwidth Plot on Channel 39



Date: 17.DEC.2024 20:51:06

#### **BLE 2Mbps**

#### 99% Occupied Bandwidth Plot on Channel 00



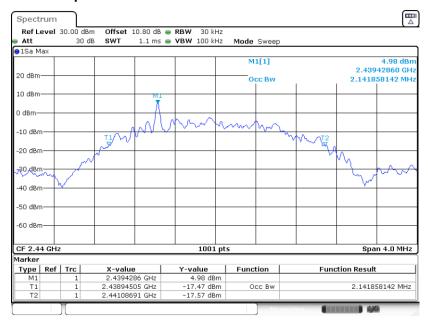
Date: 17.DEC.2024 20:57:37

Sporton International Inc (Kunshan) Page Number : 16 of 43 TEL: +86-512-57900158 Report Issued Date: Feb. 06, 2025 FCC ID: B32VR1

: Rev. 01 Report Version

Report Template No.: BU5-FR15CBT4.0 Version 2.0

#### 99% Occupied Bandwidth Plot on Channel 19



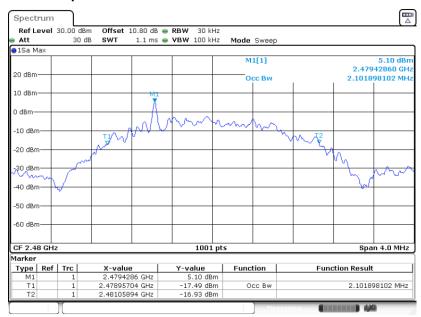
Report No.: FR4O1830A

: 17 of 43

Date: 17.DEC.2024 21:01:18

Date: 17.DEC.2024 21:04:12

#### 99% Occupied Bandwidth Plot on Channel 39



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

Sporton International Inc (Kunshan) Page Number TEL: +86-512-57900158 Report Issued Date: Feb. 06, 2025

FCC ID: B32VR1 Report Version : Rev. 01 Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.2 Output Power Measurement

#### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

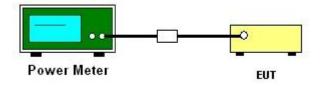
#### 3.2.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

#### 3.2.3 Test Procedures

- The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.1.3 PKPM1 Peak power meter or ANSI C63.10-2013 clause 11.9.2.3.1 Method AVGPM method.
- 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Measure the conducted output power and record the results in the test report.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Peak Output Power

Please refer to Appendix A.

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

Please refer to Appendix A.

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

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

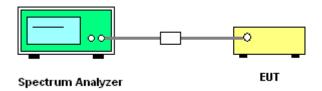
### 3.3.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

#### 3.3.3 Test Procedures

- The testing follows Measurement Procedure of ANSI C63.10-2013 clause 11.10.2 Method PKPSD.
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
- 5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
- 6. Measure and record the results in the test report.
- 7. The Measured power density (dBm)/ 100kHz is a reference level and used as 20dBc down limit line for Conducted Band Edges and Conducted Spurious Emission.

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 19 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

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

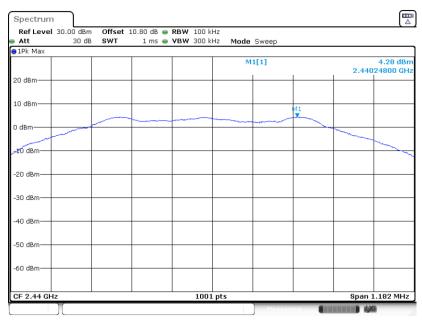
#### **BLE 1Mbps**

#### PSD 100kHz Plot on Channel 00



Date: 17.DEC.2024 20:39:11

#### PSD 100kHz Plot on Channel 19



Date: 17.DEC.2024 20:44:55

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 20 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

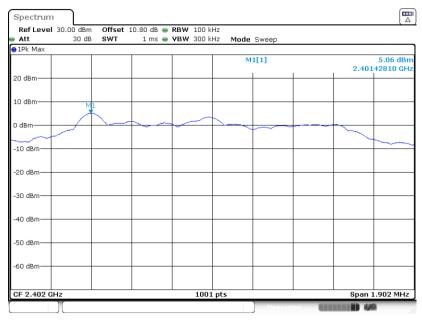
#### PSD 100kHz Plot on Channel 39



Date: 17.DEC.2024 20:49:57

#### **BLE 2Mbps**

#### PSD 100kHz Plot on Channel 00



Date: 17.DEC.2024 20:56:28

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 21 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

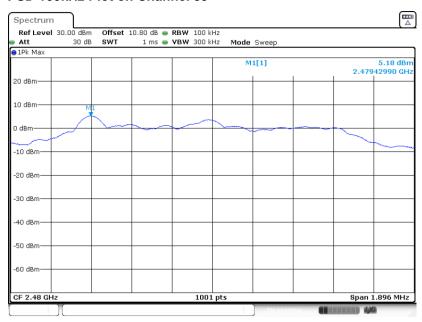
Report No.: FR4O1830A

#### **PSD 100kHz Plot on Channel 19**



Date: 17.DEC.2024 21:00:28

#### PSD 100kHz Plot on Channel 39



Date: 17.DEC.2024 21:03:03

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 22 of 43
Report Issued Date : Feb. 06, 2025

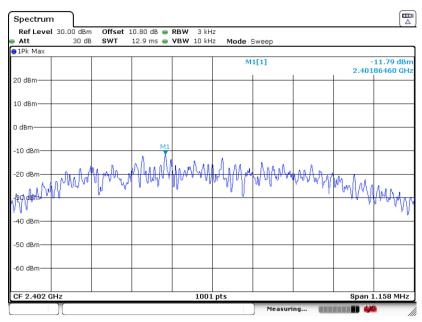
Report No.: FR4O1830A

Report Version : Rev. 01

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

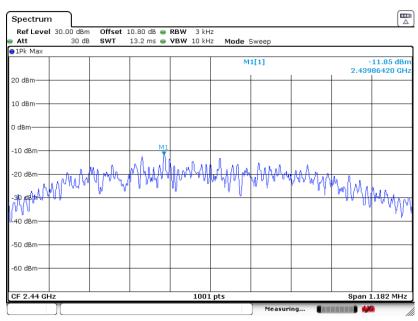
#### **BLE 1Mbps**

#### PSD 3kHz Plot on Channel 00



#### Date: 2.JAN.2025 13:40:50

#### **PSD 3kHz Plot on Channel 19**



Date: 2.JAN.2025 13:42:32

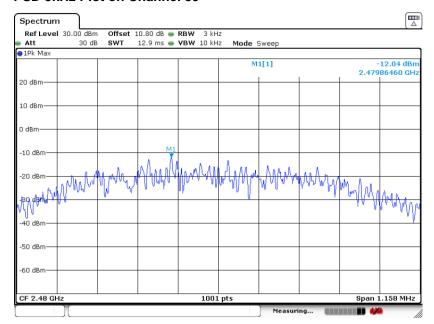
 Sporton International Inc (Kunshan)
 Page Number
 : 23 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

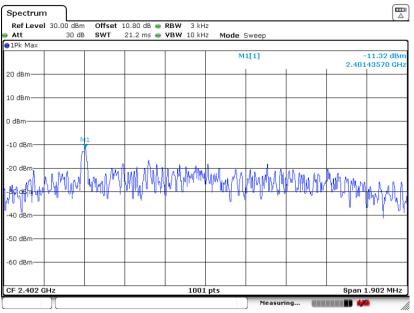
#### PSD 3kHz Plot on Channel 39



Date: 2.JAN.2025 13:43:49

#### **BLE 2Mbps**

#### PSD 3kHz Plot on Channel 00



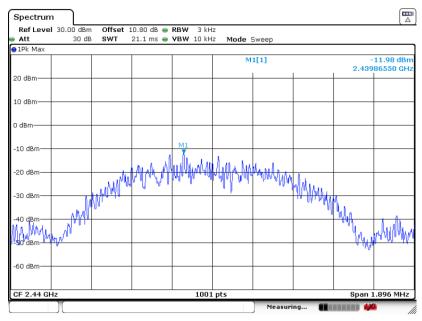
Date: 2.JAN.2025 13:45:12

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 24 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

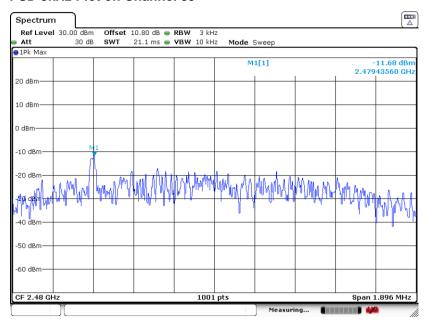
Report No.: FR4O1830A

#### **PSD 3kHz Plot on Channel 19**



Date: 2.JAN.2025 13:47:26

#### PSD 3kHz Plot on Channel 39



Date: 2.JAN.2025 13:48:37

TEL: +86-512-57900158 FCC ID: B32VR1

Page Number : 25 of 43 Report Issued Date: Feb. 06, 2025

Report No.: FR4O1830A

Report Version : Rev. 01

## 3.4 Conducted Band Edges and Spurious Emission Measurement

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

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

### 3.4.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

#### 3.4.3 Test Procedure

- 1. The testing follows ANSI C63.10-2013 clause 11.13
- 2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 3. Set to the maximum power setting and enable the EUT transmit continuously.
- 4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

#### 3.4.4 Test Setup



 Sporton International Inc (Kunshan)
 Page Number
 : 26 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

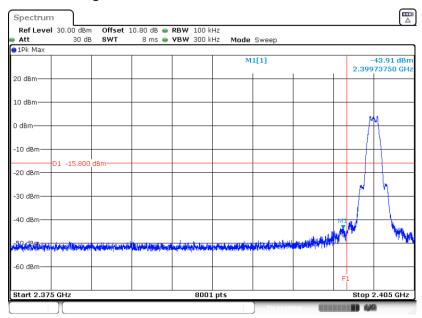
 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.4.5 Test Result of Conducted Band Edges Plots

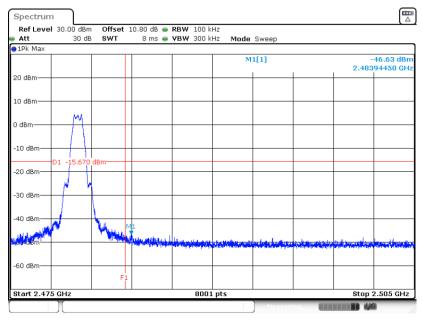
#### **BLE 1Mbps**

#### Low Band Edge Plot on Channel 00



#### Date: 17.DEC.2024 20:39:31

#### **High Band Edge Plot on Channel 39**



Date: 17.DEC.2024 20:50:16

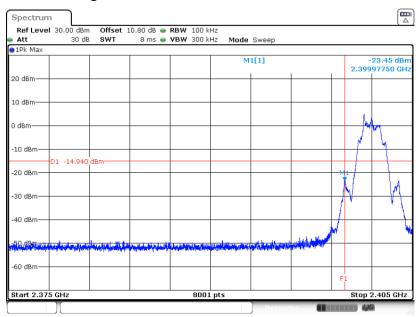
FCC ID: B32VR1

Page Number : 27 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

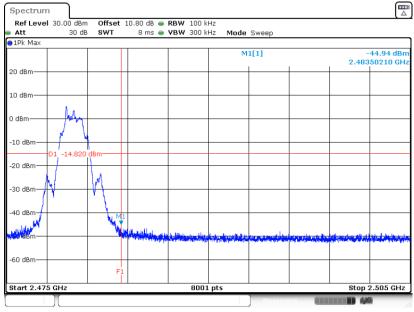
#### **BLE 2Mbps**

#### Low Band Edge Plot on Channel 00



#### Date: 17.DEC.2024 20:56:47

#### **High Band Edge Plot on Channel 39**



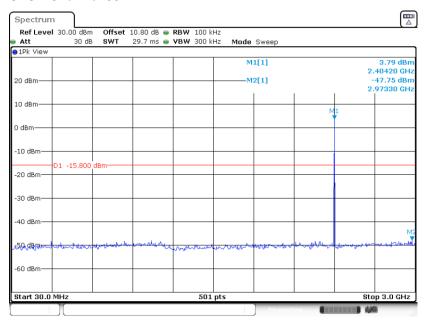
Date: 17.DEC.2024 21:03:22

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 28 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

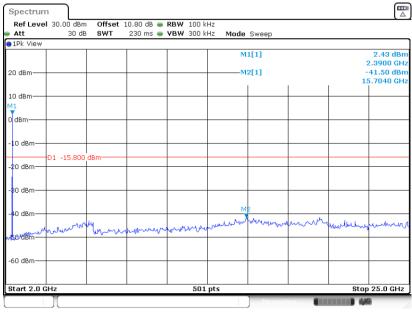
### 3.4.6 Test Result of Conducted Spurious Emission Plots

# Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 00



#### Date: 17.DEC.2024 20:39:52

## Conducted Spurious Emission Plot on Bluetooth LE 1Mbps GFSK Channel 00



Date: 17.DEC.2024 20:40:12

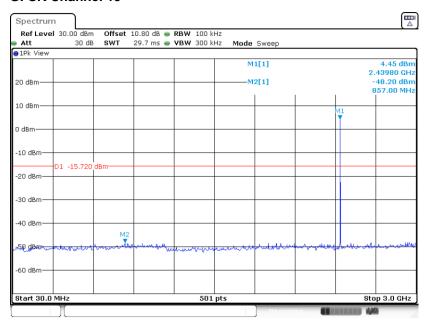
Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 29 of 43
Report Issued Date : Feb. 06, 2025

Report No.: FR4O1830A

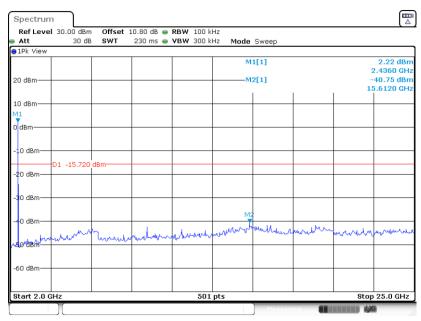
Report Version : Rev. 01

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



Date: 17.DEC.2024 20:45:16

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



Date: 17.DEC.2024 20:45:36

Sporton International Inc (Kunshan)

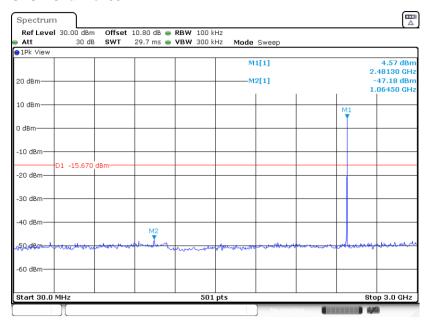
TEL: +86-512-57900158 FCC ID: B32VR1

Page Number : 30 of 43 Report Issued Date: Feb. 06, 2025

Report No.: FR4O1830A

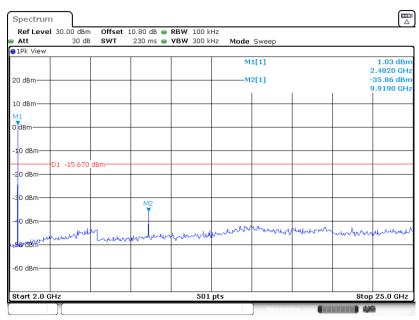
Report Version : Rev. 01

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



Date: 17.DEC.2024 20:50:37

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



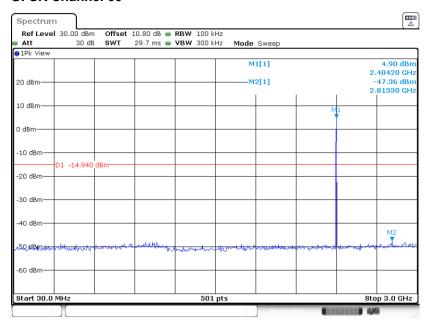
Date: 17.DEC.2024 20:50:57

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 31 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

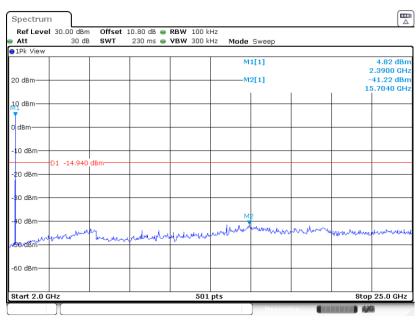
Report No.: FR4O1830A

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



Date: 17.DEC.2024 20:57:08

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



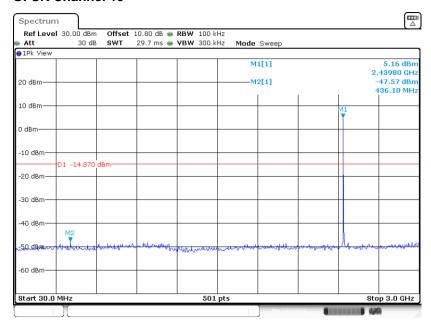
Date: 17.DEC.2024 20:57:28

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 32 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

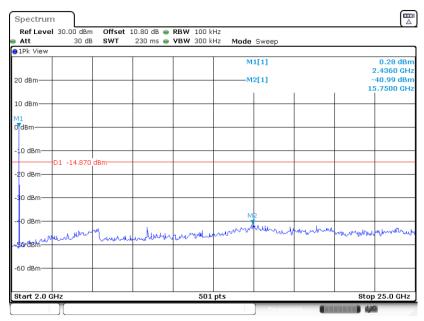
Report No.: FR4O1830A

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



Date: 17.DEC.2024 21:00:49

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



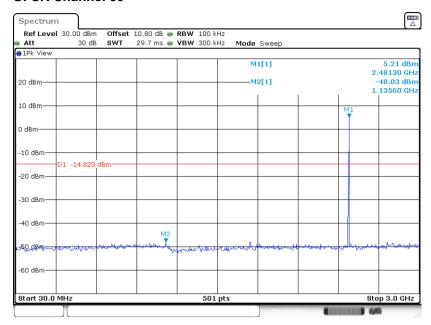
Date: 17.DEC.2024 21:01:09

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 33 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

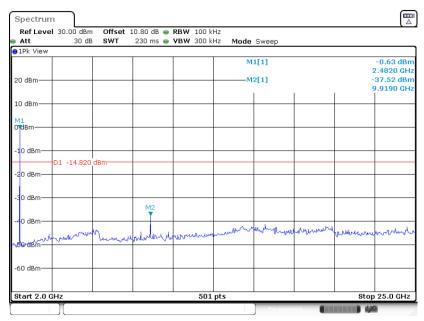
Report No.: FR4O1830A

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



Date: 17.DEC.2024 21:03:43

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



Date: 17.DEC.2024 21:04:03

Sporton International Inc (Kunshan)

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 34 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

## 3.5 Radiated Band Edges and Spurious Emission Measurement

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

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

Frequency	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

The section 4.0 of List of Measuring Equipment of this test report is used for test.

Sporton International Inc (Kunshan)

FCC ID: B32VR1

TEL: +86-512-57900158

Page Number : 35 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

#### 3.5.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
- 3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz 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.

 Sporton International Inc (Kunshan)
 Page Number
 : 36 of 43

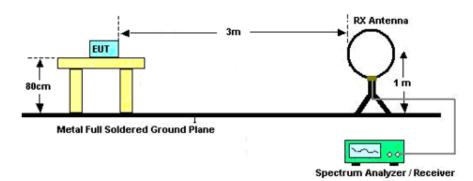
 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

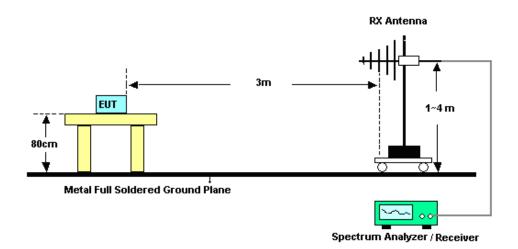
Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.5.4 Test Setup

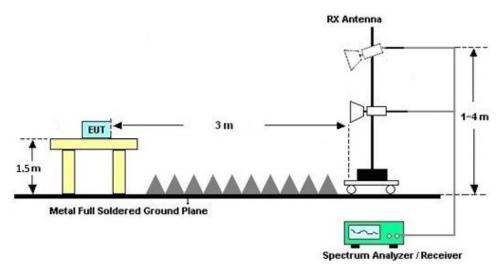
#### For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



#### For radiated emissions above 1GHz



TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 37 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

Report Template No.: BU5-FR15CBT4.0 Version 2.0

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

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

Report No.: FR4O1830A

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came 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 (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C.

 Sporton International Inc (Kunshan)
 Page Number
 : 38 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 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 emission (MUz)	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			

<sup>\*</sup>Decreases with the logarithm of the frequency.

## 3.6.2 Measuring Instruments

The section 4.0 of List of Measuring Equipment of this test report is used for test.

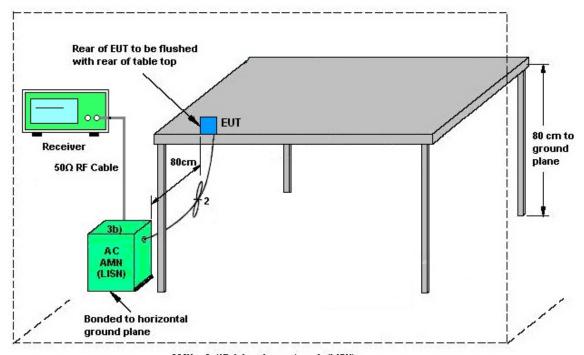
## 3.6.3 Test Procedures

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

Sporton International Inc (Kunshan) Page Number : 39 of 43 TEL: +86-512-57900158 Report Issued Date: Feb. 06, 2025 FCC ID: B32VR1 Report Version : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.6.4 Test Setup



AMN = Artificial mains network (LISN)

AE = Associated equipment

EUT = Equipment under test

ISN = Impedance stabilization network

## 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

TEL: +86-512-57900158 FCC ID: B32VR1 Page Number : 40 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 3.7 Antenna Requirements

## 3.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

## 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.7.3 Antenna Gain

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

Sporton International Inc (Kunshan) Page Number TEL: +86-512-57900158 Report Issued Date: Feb. 06, 2025

FCC ID: B32VR1 : Rev. 01 Report Version

: 41 of 43

# 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY572901 51	3Hz~8.5GHz;M ax 30dBm	Jul. 04, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jul. 03, 2025	Radiation (03CH05-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY602421 26	10Hz-44G,MAX 30dB	Oct. 10, 2024	Nov. 07, 2024~ Dec. 07, 2024	Oct. 09, 2025	Radiation (03CH05-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Nov. 07, 2024~ Dec. 07, 2024	Sep. 07, 2025	Radiation (03CH05-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz-1GHz	Apr. 18, 2024	Nov. 07, 2024~ Dec. 07, 2024	Apr. 17, 2025	Radiation (03CH05-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218642	1GHz~18GHz	Apr. 11, 2024	Nov. 07, 2024~ Dec. 07, 2024	Apr. 10, 2025	Radiation (03CH05-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jan. 05, 2025	Radiation (03CH05-KS)
Amplifier	SONOMA	310N	381512	9KHz-1GHz	Jan. 02, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jan. 01, 2025	Radiation (03CH05-KS)
Amplifier	EM	EM18G40GA	060852	18~40GHz	Jan. 02, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jan. 01, 2025	Radiation (03CH05-KS)
high gain Amplifier	EM	EM01G18GA	060843	1Ghz-18Ghz	Jan. 03, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jan. 02, 2025	Radiation (03CH05-KS)
Amplifier	EM	EM01G18GA	060833	1Ghz-18Ghz	Jan. 03, 2024	Nov. 07, 2024~ Dec. 07, 2024	Jan. 02, 2025	Radiation (03CH05-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Nov. 07, 2024~ Dec. 07, 2024	NCR	Radiation (03CH05-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 07, 2024~ Dec. 07, 2024	NCR	Radiation (03CH05-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 07, 2024~ Dec. 07, 2024	NCR	Radiation (03CH05-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Dec. 07, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Dec. 07, 2024	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Dec. 07, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Dec. 07, 2024	Oct. 08, 2025	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Dec. 17, 2024~ Jan. 02, 2025	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 02, 2024	Dec. 17, 2024~	Jan. 01, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GH z	Jan. 01, 2025	Jan. 02, 2025	Dec. 31, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Dec. 17, 2024~	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 01, 2025	Jan. 02, 2025	Dec. 31, 2025	Conducted (TH01-KS)

NCR: No Calibration Required

**Sporton International Inc (Kunshan)** TEL: +86-512-57900158

FCC ID: B32VR1

Page Number : 42 of 43
Report Issued Date : Feb. 06, 2025
Report Version : Rev. 01

Report No.: FR4O1830A

Report Template No.: BU5-FR15CBT4.0 Version 2.0

## 5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

#### **Uncertainty of Conducted Measurement**

Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	±0.04 Hz

## Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence	2.84 dB
of 95% (U = 2Uc(y))	2.04 UB

#### Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence	3.30 dB
of 95% (U = 2Uc(y))	3.30 UB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.02 dB
---	---------

## Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence	5.22 dB
of 95% (U = 2Uc(y))	3.22 dB

## Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence	5.34 dB
of 95% (U = 2Uc(y))	5.34 GB

----- THE END -----

 Sporton International Inc (Kunshan)
 Page Number
 : 43 of 43

 TEL: +86-512-57900158
 Report Issued Date
 : Feb. 06, 2025

 FCC ID: B32VR1
 Report Version
 : Rev. 01

Report Template No.: BU5-FR15CBT4.0 Version 2.0

# **Appendix A. Conducted Test Results**

TEL: +86-512-57900158 FCC ID: B32VR1

Report Number : FR4O1830A

## **Bluetooth Low Energy**

Test Engineer:	Jacob Zhang	Temperature:	20~26	°C
Test Date:	2024/12/17~2025/1/2	Relative Humidity:	40~51	%

#### BLE1M-Ant1

## TEST RESULTS DATA

## 6dB and 99% Occupied Bandwidth

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.04	0.77	0.50	Pass
BLE	1Mbps	1	19	2440	1.07	0.79	0.50	Pass
BLE	1Mbps	1	39	2480	1.04	0.77	0.50	Pass

## TEST RESULTS DATA

## Peak Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	4.47	30.00	-3.825	0.65	36.00	Pass
BLE	1Mbps	1	19	2440	4.38	30.00	-3.825	0.56	36.00	Pass
BLE	1Mbps	1	39	2480	4.49	30.00	-3.825	0.67	36.00	Pass

## TEST RESULTS DATA

## <u>Average Power Table</u> (Reporting Only)

Mod.			Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	
BLE	1Mbps	1	0	2402	2.78	3.84
BLE	1Mbps	1	19	2440	2.78	3.76
BLE	1Mbps	1	39	2480	2.78	3.85

# TEST RESULTS DATA Peak Power Density

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	4.20	-11.79	-3.825	8.00	Pass
BLE	1Mbps	1	19	2440	4.28	-11.85	-3.825	8.00	Pass
BLE	1Mbps	1	39	2480	4.33	-12.04	-3.825	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

Report Number : FR4O1830A

## **Bluetooth Low Energy**

## BLE2M-Ant1

## TEST RESULTS DATA 6dB and 99% Occupied Bandwidth

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	2.12	1.27	0.50	Pass
BLE	2Mbps	1	19	2440	2.14	1.26	0.50	Pass
BLE	2Mbps	1	39	2480	2.10	1.26	0.50	Pass

## TEST RESULTS DATA

#### Peak Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	2Mbps	1	0	2402	4.43	30.00	-3.825	0.61	36.00	Pass
BLE	2Mbps	1	19	2440	4.38	30.00	-3.825	0.56	36.00	Pass
BLE	2Mbps	1	39	2480	4.23	30.00	-3.825	0.41	36.00	Pass

## TEST RESULTS DATA

# Average Power Table (Reporting Only)

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
BLE	2Mbps	1	0	2402	4.65	3.83
BLE	2Mbps	1	19	2440	4.65	3.59
BLE	2Mbps	1	39	2480	4.65	3.31

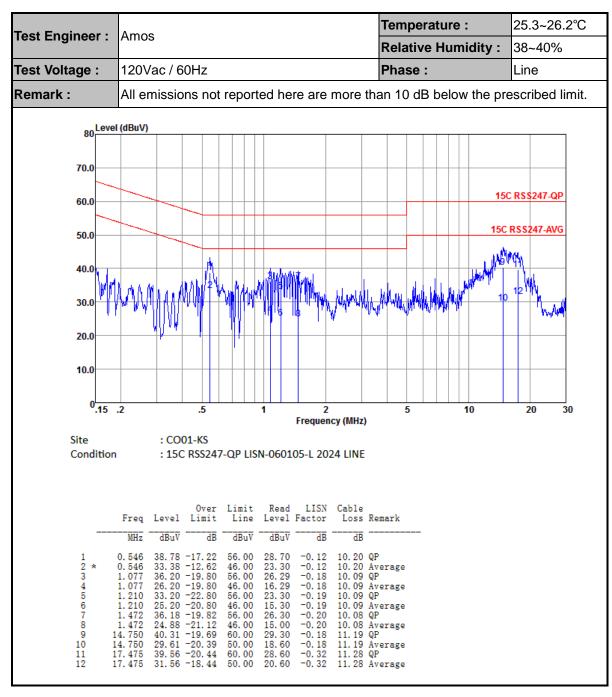
## TEST RESULTS DATA

## Peak Power Density

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	5.06	-11.32	-3.825	8.00	Pass
BLE	2Mbps	1	19	2440	5.13	-11.98	-3.825	8.00	Pass
BLE	2Mbps	1	39	2480	5.18	-11.68	-3.825	8.00	Pass

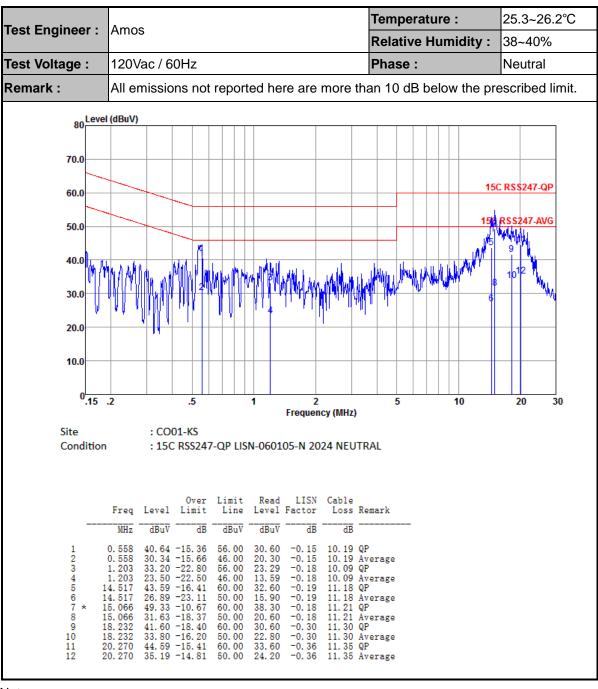
Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 20dBc limit.

## **Appendix B. AC Conducted Emission Test Results**



TEL: +86-512-57900158 FCC ID: B32VR1





#### Note:

- 1. Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dB $\mu$ V) Limit Line(dB $\mu$ V)

TEL: +86-512-57900158 FCC ID: B32VR1

# **Appendix C Radiated Spurious Emission Test Data**

Test Engineer :	Jerry Xu	Relative Humidity :	41~42%
rest Engineer.	Jeny Au	Temperature :	22~23°C

## **Radiated Spurious Emission Test Modes**

	•							
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	SISO	Bluetooth-LE_GSFK	00	2402	1Mbps	-	-
Mode 2	2400-2483.5	SISO	Bluetooth-LE_GSFK	19	2440	1Mbps	-	-
Mode 3	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	1Mbps	-	-
Mode 4	2400-2483.5	SISO	Bluetooth-LE_GSFK	00	2402	2Mbps		-
Mode 5	2400-2483.5	SISO	Bluetooth-LE_GSFK	19	2440	2Mbps	-	-
Mode 6	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	2Mbps	-	-

## Summary of each worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	Remark
1	Bluetooth-LE_GSFK	00	2385.79	38.81	54.00	-15.19	٧	AVERAGE	Pass	Band Edge
1	Bluetooth-LE_GSFK	00	12012.00	49.02	54.00	-4.98	Η	Average	Pass	Harmonic
2	Bluetooth-LE_GSFK	19	-	-	-	-	-	-	-	Band Edge
2	Bluetooth-LE_GSFK	19	12200.00	50.42	54.00	-3.58	Η	AVERAGE	Pass	Harmonic
3	Bluetooth-LE_GSFK	39	2483.50	42.51	54.00	-11.49	٧	AVERAGE	Pass	Band Edge
3	Bluetooth-LE_GSFK	39	12400.00	50.40	54.00	-3.60	Н	AVERAGE	Pass	Harmonic
4	Bluetooth-LE_GSFK	00	2388.65	39.53	54.00	-14.47	V	AVERAGE	Pass	Band Edge
4	Bluetooth-LE_GSFK	00	12007.00	49.77	54.00	-4.23	Н	Average	Pass	Harmonic
5	Bluetooth-LE_GSFK	19	-	-	-	-	-	-	-	Band Edge
5	Bluetooth-LE_GSFK	19	12202.00	48.93	54.00	-5.07	Н	Average	Pass	Harmonic
6	Bluetooth-LE_GSFK	39	2483.50	43.61	54.00	-10.39	V	AVERAGE	Pass	Band Edge
6	Bluetooth-LE_GSFK	39	12402.00	49.80	54.00	-4.20	Н	Average	Pass	Harmonic

Sporton International Inc (Kunshan)
TEL: +86-512-57900158
FCC ID: B32VR1



1 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz SISO **ANT** Pol. Horizontal **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 1000 2310 z. 2388. Frequency (MHz) 2440 1400. 3000 2336. 2362. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2389.95 52.92 74.00 -21.08 45.12 31.87 7.16 37.23 6.00 315 360 PEAK 1 2402.00 96.82 ----- 88.95 31.91 7.18 37.22 6.00 315 360 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 2310 1000 2. 2388. Frequency (MHz) 2336. 2362. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Lime Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor Remark Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg CM 1 2388.65 38.74 54.00 -15.26 30.94 31.87 7.16 37.23 6.00 315 360 AVERAGE 1 2402.00 95.93 ----- 88.06 31.91 7.18 37.22 6.00 315 360 AVERAGE

TEL: +86-512-57900158 FCC ID: B32VR1



1 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz SISO **ANT** Pol. Vertical **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 Peak 32.5 32.5 16.3 16.3 1000 2310 z. 2388. Frequency (MHz) 2440 2336. 1400. 3000 2362. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2388.39 52.98 74.00 -21.02 45.18 31.87 7.16 37.23 6.00 111 79 PEAK 1 2402.00 97.48 ----- 89.61 31.91 7.18 37.22 6.00 111 79 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 2310 1000 2. 2388. Frequency (MHz) 2336. 2362. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg 1 2402.00 96.59 ----- 88.72 31.91 7.18 37.22 6.00 111 79 AVERAGE 1 2385.79 38.81 54.00 -15.19 31.02 31.86 7.16 37.23 6.00 111 79 AVERAGE

1 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz SISO **ANT** Pol. Horizontal Vertical 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG FCC PART 15C (AV 48.8 32.5 32.5 Peak 16.3 Avg 3000 3000 6000. 9000. 12000. Frequency (MHz) 15000. 18000 6000. 12000. 15000. 18000 Frequency (MHz) Limit Read Ant Cable Preamp Aux APos TPos Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Freq Level Line Margin Level Factor Loss Factor Factor Remark deg -- PEAK MHz dBuV/m dBuV/m dB dBuV dB/m MHz dBuV/m dBuV/m dB dBuV dB/m cm deg cm 4804.00 41.10 74.00 -32.90 62.30 34.08 10.20 65.48 0.00 7206.00 51.03 75.48 -24.45 68.64 35.70 12.71 66.02 0.00 4804.00 44.87 74.00 -29.13 66.07 34.08 10.20 65.48 0.00 5995.00 45.15 75.25 -30.10 63.99 35.20 11.47 65.51 0.00 -- PEAK -- Peak 78 PEAK -- Peak 100 9609.00 46.30 75.48 -29.18 61.74 36.70 14.92 67.06 7206.00 51.24 75.25 -24.01 68.85 35.70 12.71 66.02 0.00 288 171 PEAK 0.00 4 12012.00 53.43 74.00 -20.57 64.45 38.61 16.69 66.32 0.00 306 Peak 9607.00 45.13 75.25 -30.12 60.57 36.70 14.92 67.06 0.00 5 12012.00 49.02 54.00 -4.98 60.04 38.61 16.69 66.32 0.00 6 14410.00 55.38 75.48 -20.10 62.60 39.11 18.31 64.64 0.00 306 Average -- Peak 5 12010.00 47.78 74.00 -26.22 58.80 38.61 16.69 66.32 0.00 6 14410.00 49.84 75.25 -25.41 57.06 39.11 18.31 64.64 0.00 -- Peak 100 -- Peak

TEL: +86-512-57900158 FCC ID: B32VR1



2 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz SISO **ANT** Pol. Horizontal Vertical 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 150 65.0 FCC PART 15C (AVG 48.8 48.8 32.5 Peak Avg 3000 3000 6000. 6000. 9000. 1 Frequency (MHz) 12000. 15000. 18000 9000. 12000. 15000. 18000 Frequency (MHz) Limit Read Ant Cable Preamp Aux APos TPos Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Freq Level Line Margin Level Factor Loss Factor Factor Remark Remark deg -- PEAK -- PEAK 
 MHz
 dBuV/m
 dB uV/m
 dB dBuV
 dB dBuV
 dB dBu
 dB dBuV
 dB d deg -- PEAK MHz dBuV/m dBuV/m dB dBuV dB/m cm cm 3586.00 45.15 73.44 -28.29 69.02 32.93 8.74 65.54 0.00 4880.00 41.18 74.00 -32.82 62.26 34.15 10.30 65.53 0.00 0 PEAK 7320.00 53.45 74.00 -20.55 71.31 35.74 12.72 66.32 7320.00 49.48 54.00 -4.52 67.34 35.74 12.72 66.32 7320.00 53.10 74.00 -20.90 70.96 35.74 12.72 66.32 7320.00 49.33 54.00 -4.67 67.19 35.74 12.72 66.32 127 127 0.00 151 PEAK 151 AVERAGE 102 242 PEAK 102 242 AVERAGE 5 9759.00 49.71 74.26 -24.55 64.92 36.90 14.99 67.10 6 12200.00 52.45 74.00 -21.55 62.98 38.80 16.81 66.14 9760.00 46.64 73.44 -26.80 61.85 36.90 14.99 67.10 12200.00 54.94 74.00 -19.06 65.47 38.80 16.81 66.14 0.00 -- PEAK 0.00 0.00 100 -- PEAK 314 140 PEAK 119 PEAK 7 12200.00 50.42 54.00 -3.58 60.95 38.80 16.81 66.14 8 14641.00 55.56 73.44 -17.88 62.22 39.34 18.46 64.46 7 12200.00 46.80 54.00 -7.20 57.33 38.80 16.81 66.14 0.00 8 14641.00 51.53 74.26 -22.73 58.19 39.34 18.46 64.46 0.00 119 AVERAGE -- PEAK 140 AVERAGE -- PEAK

TEL: +86-512-57900158 FCC ID: B32VR1

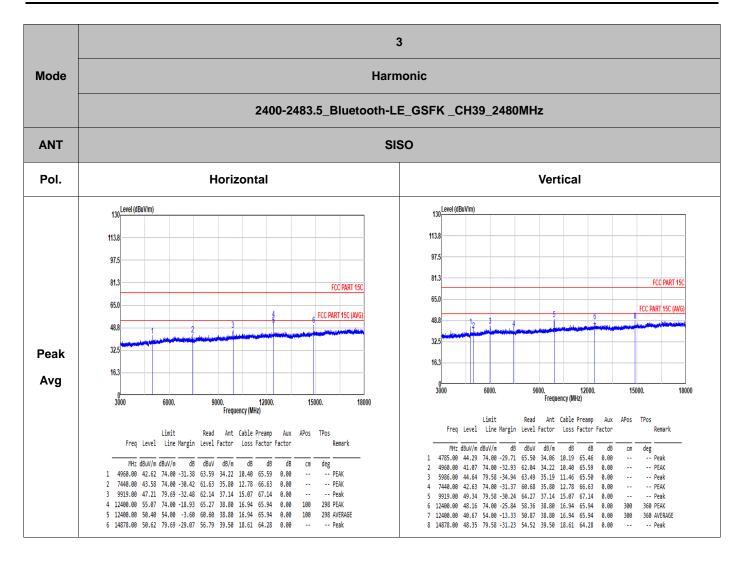


3 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz SISO **ANT** Pol. Horizontal **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 →. 2476. Frequency (MHz) 2452. 3000 2500 1400. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2483.62 57.67 74.00 -16.33 49.39 32.15 7.33 37.20 6.00 379 17 PEAK 1 2480.00 93.63 ----- 85.37 32.14 7.32 37.20 6.00 379 17 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 4. 2476. Frequency (MHz) 2452. 2464. 2488. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM CM 1 2483.50 41.89 54.00 -12.11 33.61 32.15 7.33 37.20 6.00 379 17 AVERAGE 1 2480.00 92.81 ----- 84.55 32.14 7.32 37.20 6.00 379 17 AVERAGE

TEL: +86-512-57900158 FCC ID: B32VR1

3 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz SISO **ANT** Pol. Vertical **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 4. 2476. Frequency (MHz) 2452. 2488. 3000 2500 1400. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2483.56 60.07 74.00 -13.93 51.79 32.15 7.33 37.20 6.00 139 73 PEAK 1 2480.00 95.23 ----- 86.97 32.14 7.32 37.20 6.00 139 73 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 4. 2476. Frequency (MHz) 2452. 2464. 2488. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg CM 1 2483.50 42.51 54.00 -11.49 34.23 32.15 7.33 37.20 6.00 139 73 AVERAGE 1 2480.00 94.36 ----- 86.10 32.14 7.32 37.20 6.00 139 73 AVERAGE





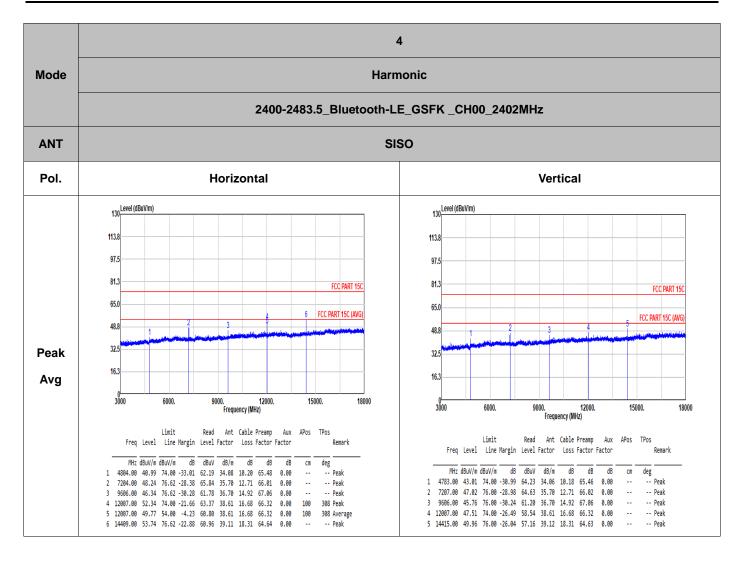
TEL: +86-512-57900158 FCC ID: B32VR1



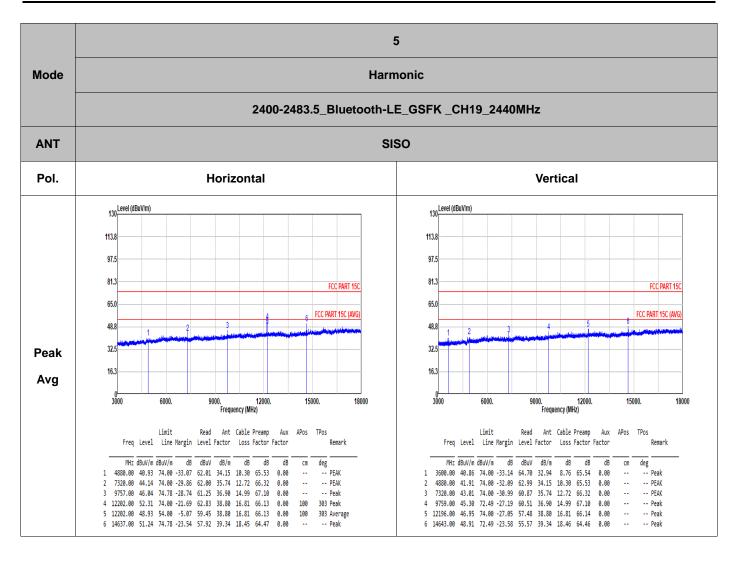
Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz SISO **ANT** Pol. Horizontal **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 Peak 32.5 32.5 16.3 16.3 2310 1000 z. 2388. Frequency (MHz) 2440 1400. 3000 2336. 2362. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB 1 2388.26 52.76 74.00 -21.24 44.97 31.86 7.16 37.23 6.00 315 360 PEAK 1 2402.00 96.86 ----- 88.99 31.91 7.18 37.22 6.00 315 360 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 2310 1000 2. 2388. Frequency (MHz) 1400. 2336. 2362. 2414. 2440 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Lime Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor Remark Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg CM 1 2388.13 39.39 54.00 -14.61 31.60 31.86 7.16 37.23 6.00 315 360 AVERAGE 1 2402.00 95.52 ----- 87.65 31.91 7.18 37.22 6.00 315 360 AVERAGE

TEL: +86-512-57900158 FCC ID: B32VR1

Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz SISO **ANT** Pol. Vertical **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 1000 2310 z. 2388. Frequency (MHz) 2440 3000 2336. 2362. 1400. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2388.00 53.42 74.00 -20.58 45.63 31.86 7.16 37.23 6.00 138 76 PEAK 1 2402.00 97.87 ----- 90.00 31.91 7.18 37.22 6.00 138 76 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 2310 1000 2. 2388. Frequency (MHz) 2336. 2362. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg CM 1 2388.65 39.53 54.00 -14.47 31.73 31.87 7.16 37.23 6.00 138 76 AVERAGE 1 2402.00 96.63 ----- 88.76 31.91 7.18 37.22 6.00 138 76 AVERAGE



TEL: +86-512-57900158 FCC ID: B32VR1



TEL: +86-512-57900158 FCC ID: B32VR1

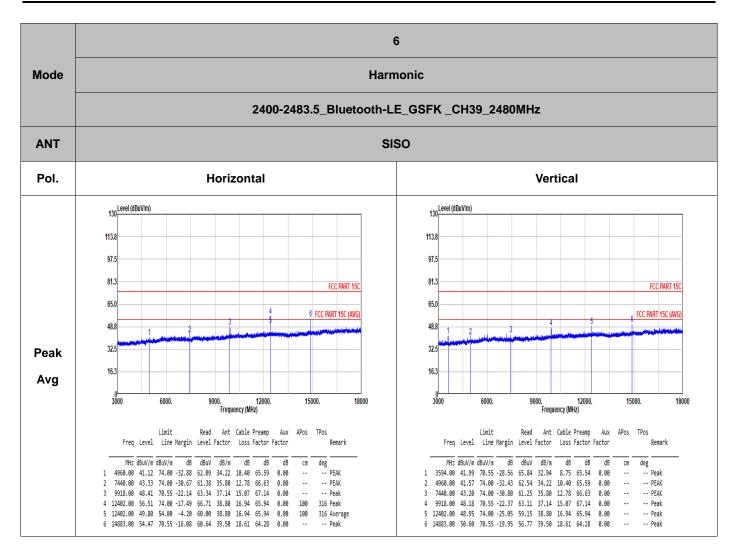


6 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz SISO **ANT** Pol. Horizontal **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 →. 2476. Frequency (MHz) 2452. 1400. 3000 2500 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.56 57.15 74.00 -16.85 48.87 32.15 7.33 37.20 6.00 303 35 PEAK 1 2480.00 93.78 ----- 85.52 32.14 7.32 37.20 6.00 303 35 PEAK 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 4. 2476. Frequency (MHz) 2452. 2464. 2488. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg CM 1 2483.50 43.12 54.00 -10.88 34.84 32.15 7.33 37.20 6.00 303 35 AVERAGE 1 2480.00 92.76 ----- 84.50 32.14 7.32 37.20 6.00 303 35 AVERAGE



6 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz SISO **ANT** Pol. Vertical **Fundamental** 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 150 65.0 65.0 48.8 48.8 Peak 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 →. 2476. Frequency (MHz) 2452. 2488. 3000 2500 1400. Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Remark Freq Level Line Limit Level Factor Loss Factor Factor Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB deg 1 2483.56 58.95 74.00 -15.05 50.67 32.15 7.33 37.20 6.00 157 70 PEAK 1 2480.00 94.65 ----- 86.39 32.14 7.32 37.20 6.00 157 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 113.8 97.5 97.5 81.3 81.3 65.0 65.0 FCC PART 15C (AVG) FCC PART 15C (AVG) 48.8 Avg 32.5 32.5 16.3 16.3 0<u>--</u> 2440 1000 4. 2476. Frequency (MHz) 2452. 2464. 2488. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Limit Over Read Ant Cable Preamp Aux APos TPos Limit Over Read Ant Cable Preamp Aux APos TPos Freq Level Line Limit Level Factor Loss Factor Factor Remark Freq Level Line Limit Level Factor Loss Factor Factor Remark MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB CM deg 1 2483.50 43.61 54.00 -10.39 35.33 32.15 7.33 37.20 6.00 157 70 AVERAGE 1 2480.00 93.57 ----- 85.31 32.14 7.32 37.20 6.00 157 70 AVERAGE

TEL: +86-512-57900158 FCC ID: B32VR1



TEL: +86-512-57900158 FCC ID: B32VR1

2 Mode 18G-25G 2400-2483.5\_Bluetooth-LE\_GSFK\_CH19\_2440MHz SISO ANT Pol. Vertical Horizontal 130 Level (dBuV/m) 130 Level (dBuV/m) 113.8 97.5 97.5 81.3 81.3 FCC PART 15C FCC PART 15C Peak 65.0 65.0 FCC PART 15C (AVG) Avg 32.5 16.3 16.3

25000

18000

19400.

20800.

22200.

Frequency (MHz)

TEL: +86-512-57900158 FCC ID: B32VR1

18000

19400.

22200.

Frequency (MHz)

23600.

25000

2 Mode 30-1G 2400-2483.5\_Bluetooth-LE\_GSFK\_CH19\_2440MHz SISO **ANT** Pol. Horizontal Vertical 80 Level (dBuV/m) 80 Level (dBuV/m) 70.0 60.0 60.0 FCC PART 150 FCC PART 150 50.0 50.0 30.0 20.0 10.0 10.0 **Peak** -10.0 -20<sub>30</sub> -2030 100. 200. 300. 400. 500. 700. 800. 900. 1000 100. 200. 500. 60 Frequency (MHz) 700. 800. 900. Frequency (MHz) Aux A/Pos T/Pos Remark Limit Over ReadAntenna Cable Preamp Aux A/Pos T/Pos Freq Level Line Limit Level Factor Loss Factor Factor Remark Limit Over ReadAntenna Cable Preamp Aux Freq Level Line Limit Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg dB dBuV dB/m deg 46.49 24.62 40.00 -15.38 40.83 15.76 0.99 32.96 0.00 121.18 29.96 43.50 -13.54 44.37 16.79 1.65 32.85 0.00 121.23 31.00 43.50 -12.44 45.50 16.16 2.22 32.82 0.00 121.27 28.81 46.00 -17.19 39.37 19.60 2.69 32.85 0.00 425.76 23.79 46.00 -22.21 31.47 22.12 3.15 32.95 0.00 725.49 28.55 46.00 -17.45 31.82 25.54 4.12 32.93 0.00 --- Peak
--- Peak
--- Peak
--- Peak
--- Peak
--- Peak 30.00 29.53 40.00 -10.47 35.77 25.14 0.83 32.21 0.00 47.46 34.81 40.00 -5.19 50.23 15.68 1.04 32.14 0.00 121.18 26.56 43.50 -16.94 39.45 17.50 1.67 32.06 0.00 212.36 27.90 43.59 -15.60 42.92 14.80 2.21 32.03 0.00 284.14 25.97 46.00 -20.03 36.67 18.67 2.58 23.15 0.00 587.75 26.13 46.00 -19.87 28.90 25.59 3.69 32.05 0.00 --- Peak --- Peak --- Peak --- Peak --- Peak

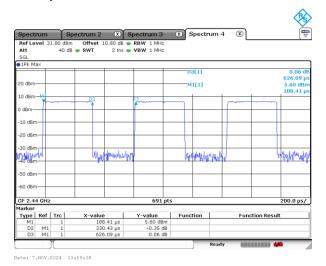
TEL: +86-512-57900158 FCC ID: B32VR1



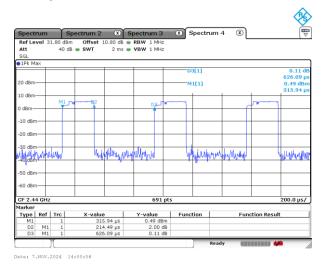
# Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
Bluetooth LE 1Mbps	52.78	0.330	3.026	3.3KHz
Bluetooth LE 2Mbps	34.26	0.214	4.662	5.1KHz

## **Bluetooth LE 1Mbps**



## **Bluetooth LE 2Mbps**



TEL: +86-512-57900158 FCC ID: B32VR1