



Report No.: FR4O1125A

FCC RADIO TEST REPORT

FCC ID : G95601TX

Equipment : DOCSIS 4.0 Residential Gateway

Brand Name: Vantiva

Model Name : CGM601TCOM, CGM601TCOX

Applicant : Vantiva USA LLC

4855 Peachtree Industrial Blvd. Suite 200

Norcross, Georgia 30092

Manufacturer : Vantiva

4855 Peachtree Industrial Blvd, Suite 200

Norcross GA 30092

Standard : FCC Part 15 Subpart C §15.247

The product was received on Nov. 01, 2024 and testing was performed from Nov. 27, 2024 to Jan. 14, 2025. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Approved by: Louis Wu

TEL: 886-3-327-0868

Louis Wu

Sporton International Inc. Wensan Laboratory

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

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History of this test report

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Report No.	Version	Description	Issue Date
FR4O1125A	01	Initial issue of report	Jan. 16, 2025

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Summary of Test Result

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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 Pass		-
3.2	15.247(b)(3) 15.247(b)(4)	Output Power Pass		-
3.3	15.247(e)	Power Spectral Density Pas		-
3.4	15.247(d)	Conducted Band Edges and Spurious Pass		-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission Pass		-
3.6	15.207	AC Conducted Emission Pass		-
3.7	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:

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

Disclaimer:

- The product specifications of the EUT presented in the test report that may affect the test assessments
 are declared by the manufacturer who shall take full responsibility for the authenticity.
- 2. The purpose of different model name is for marketing segmentation.

Reviewed by: Wei Chen

Report Producer: Michelle Chen

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1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature

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General Specs

Bluetooth - LE, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax/be, Wi-Fi 5GHz 802.11a/n/ac/ax/be, Wi-Fi 6GHz 802.11a/ax/be, and ZigBee.

Antenna Type

Bluetooth - LE: Monopole Antenna

	Antenna inform	nation
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	2.77

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

1.2 Modification of EUT

No modifications made to the EUT during the testing.

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1.3 Testing Location

Test Site	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 FAX: +886-3-328-4978				
Test Site No.	Sporton Site No.			
rest site No.	CO05-HY (TAF Code: 1190)			
Remark	The AC Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.			

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

Test Site	Sporton International Inc. Wensan Laboratory		
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855		
Test Site No.	Sporton Site No. TH05-HY, 03CH20-HY		

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

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

Remark:

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

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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	-	-

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2.2 Test Mode

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

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b. AC power line Conducted Emission was tested under maximum output power.

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

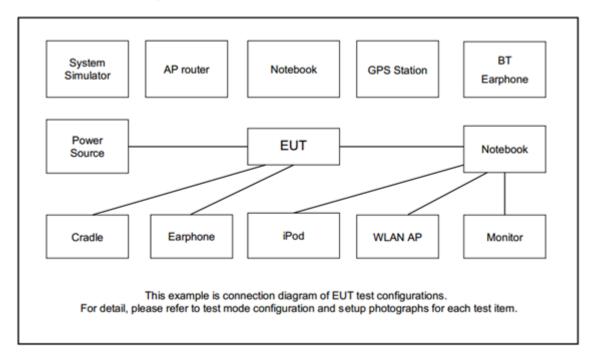
	Summary table of Test Cases			
Test Item	Data Rate / Modulation			
	Bluetooth – LE / GFSK			
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps			
Conducted	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps			
Test Cases	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps			
lest cases	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps			
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps			
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps			
AC Conducted	Mode 1: WLAN (2.4GHz) Link + Bluetooth-LE Link + ZigBee Link + LAN Link + AC			
Emission	Adapter			

Remark:

- 1. The detailed test modes are shown in Appendix C.
- 2. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

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2.3 Connection Diagram of Test System



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2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility "PuTTY Release 0.70" 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.

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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.

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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)

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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.

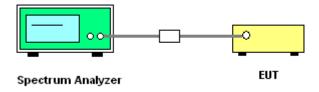
3.1.3 Test Procedures

- 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.

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- 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.
- 5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
- 6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.

3.1.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

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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.

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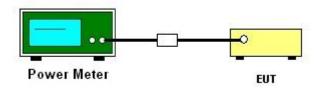
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

- 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

Please refer to Appendix A.

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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.

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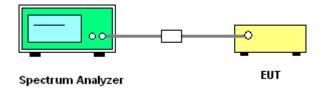
3.3.2 Measuring Instruments

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



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

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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.

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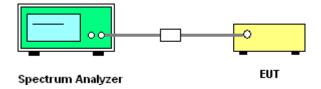
3.4.2 Measuring Instruments

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

3.4.3 Test Procedure

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

3.4.4 Test Setup



3.4.5 Test Result of Conducted Band Edges Plots

Please refer to Appendix A.

3.4.6 Test Result of Conducted Spurious Emission Plots

Please refer to Appendix A.

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3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

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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.

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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.

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- 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.

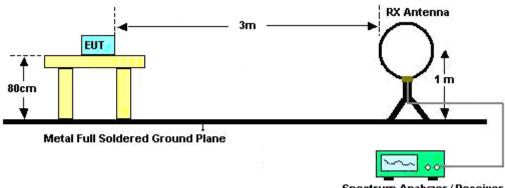
For average measurement:

- 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.

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3.5.4 Test Setup

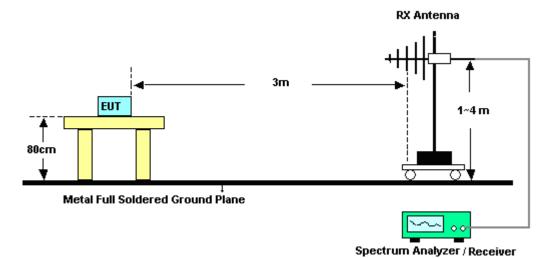
For radiated test below 30MHz



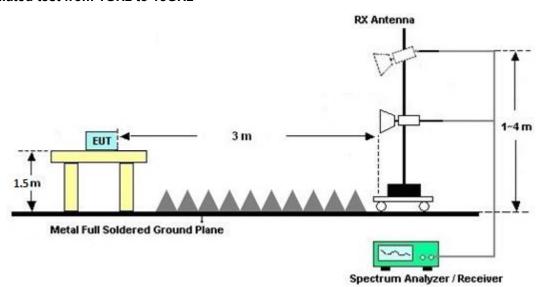
Spectrum Analyzer / Receiver

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For radiated test from 30MHz to 1GHz

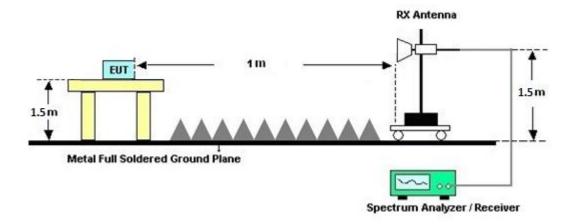


For radiated test from 1GHz to 18GHz



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For radiated test above 18GHz



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

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

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

3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.5.7 Duty Cycle

Please refer to Appendix D.

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

Please refer to Appendix C.

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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.

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Frequency of emission (MHz)	Conducted limit (dBμV)			
Frequency of emission (MHZ)	Quasi-peak	Average		
0.15-0.5	66 to 56*	56 to 46*		
0.5-5	56	46		
5-30	60	50		

^{*}Decreases with the logarithm of the frequency.

3.6.2 Measuring Instruments

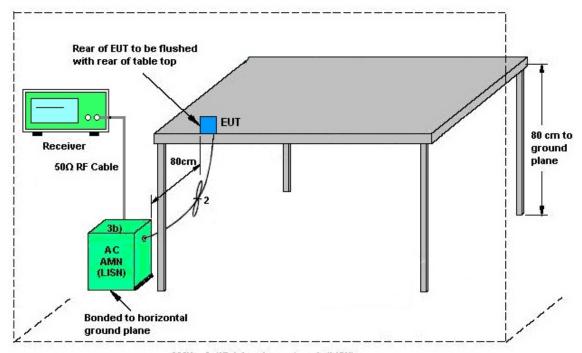
Please refer to the measuring equipment list in this test report.

3.6.3 Test Procedures

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

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3.6.4 Test Setup



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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.

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3.7 Antenna Requirements

3.7.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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3.7.2 Antenna Anti-Replacement Construction

Antenna permanently attached.

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4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	N/A	Oct. 16, 2024	Dec. 04, 2024~ Jan. 14, 2025	Oct. 15, 2025	Radiation (03CH20-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Aug. 29, 2024	Dec. 04, 2024~ Jan. 14, 2025	Aug. 28, 2025	Radiation (03CH20-HY)
Preamplifier	EMEC	EM18G40G	060871	18GHz~40GHz	Aug. 23, 2024	Dec. 04, 2024~ Jan. 14, 2025	Aug. 22, 2025	Radiation (03CH20-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Dec. 04, 2024~ Jan. 14, 2025	N/A	Radiation (03CH20-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Dec. 04, 2024~ Jan. 14, 2025	N/A	Radiation (03CH20-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Dec. 04, 2024~ Jan. 14, 2025	N/A	Radiation (03CH20-HY)
Signal Analyzer	Keysight	N9010B	MY60240520	N/A	Dec. 09, 2024	Dec. 04, 2024~ Jan. 14, 2025	Dec. 08, 2025	Radiation (03CH20-HY)
Signal Analyzer	Keysight	N9010B	MY57290111	N/A	Nov. 22, 2024	Dec. 04, 2024~ Jan. 14, 2025	Nov. 21, 2025	Radiation (03CH20-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800N 1D01N-06	55606 & 08	30MHz~1GHz	Nov. 27, 2024	Dec. 04, 2024~ Jan. 14, 2025	Nov. 26, 2025	Radiation (03CH20-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	02360	1GHz-18GHz	Nov. 01, 2024	Dec. 04, 2024~ Jan. 14, 2025	Oct. 30, 2025	Radiation (03CH20-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1230	18GHz-40GHz	Oct. 25, 2024	Dec. 04, 2024~ Jan. 14, 2025	Oct. 24, 2025	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Jan. 01, 2024	Dec. 04, 2024~ Dec. 30, 2024	Dec. 31, 2024	Radiation (03CH20-HY)
Preamplifier	COM-POWER	PAM-103	18020201	1MHz-1000MHz	Dec. 31, 2024	Dec. 31, 2024~ Jan. 14, 2025	Dec. 30, 2025	Radiation (03CH20-HY)
Amplifier	EMCI	EMC118A45SE	980792	N/A	Nov. 12, 2024	Dec. 04, 2024~ Jan. 14, 2025	Nov. 11, 2025	Radiation (03CH20-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	519229/2,804 015/2,804027 /2	N/A	Jan. 17, 2024	Dec. 04, 2024~ Jan. 14, 2025	Jan. 16, 2025	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP211382	N/A	Mar. 27, 2024	Dec. 04, 2024~ Jan. 14, 2025	Mar. 26, 2025	Radiation (03CH20-HY)
Software	Audix	N/A	RK-002156	N/A	N/A	Dec. 04, 2024~ Jan. 14, 2025	N/A	Radiation (03CH20-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 01, 2024	Nov. 13, 2024~ Jan. 03, 2025	Oct. 30, 2025	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO 35 (NO:109)	10MHz~6GHz	Jan. 15, 2024	Nov. 13, 2024~ Jan. 03, 2025	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101466	10HZ~44GHZ	Jan. 24, 2024	Nov. 13, 2024~ Jan. 03, 2025	Jan. 23, 2025	Conducted (TH05-HY)
Switch Control Mainframe	Burgeon	ETF-058	EC1300484 (BOX3)	N/A	May 20, 2024	Nov. 13, 2024~ Jan. 03, 2025	May 19, 2025	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_v ersion_240513	N/A	Conducted Other Test Item	N/A	Nov. 13, 2024~ Jan. 03, 2025	N/A	Conducted (TH05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Nov. 27, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Nov. 27, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 14, 2024	Nov. 27, 2024	Oct. 13, 2025	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 14, 2024	Nov. 27, 2024	Nov. 13, 2025	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Nov. 27, 2024	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	00691	N/A	Jul. 30, 2024	Nov. 27, 2024	Jul. 29, 2025	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	MQT2408250 1	N/A	Oct. 15, 2024	Nov. 27, 2024	Oct. 14, 2025	Conduction (CO05-HY)

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 Issue Date
 : Jan. 16, 2025

5 Measurement Uncertainty

<u>Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)</u>

Measuring Uncertainty for a Level of Confidence	3.7 dB
of 95% (U = 2Uc(y))	v u.i

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

Measuring Uncertainty for a Level of Confidence	6.7 dB
of 95% (U = 2Uc(y))	0.7 UD

<u>Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)</u>

Measuring Uncertainty for a Level of Confidence	5.4 dB
of 95% (U = 2Uc(y))	5.4 uB

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

Measuring Uncertainty for a Level of Confidence	50.40
of 95% (U = 2Uc(y))	5.6 dB

<u>Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)</u>

Measuring Uncertainty for a Level of Confidence	5.7 dB
of 95% (U = 2Uc(y))	3.7 ub

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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Ju Chang	Temperature:	21~25	°C
Test Date:	2024/11/13-2025/01/03	Relative Humidity:	51~54	%

TEST RESULTS DATA 6dB and 99% Occupied Bandwidth

Mod.	Rate		CH.	CH. Freq. (MHz) 99% Occupied BW (MHz)		6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.041	0.693	0.50	Pass
BLE	1Mbps	1	19	2440	1.042	0.683	0.50	Pass
BLE	1Mbps	1	39	2480	1.041	0.682	0.50	Pass

TEST RESULTS DATA Average Power Table

Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	1Mbps	1	0	2402	7.20	30.00	2.77	9.97	36.00	Pass
BLE	1Mbps	1	19	2440	7.20	30.00	2.77	9.97	36.00	Pass
BLE	1Mbps	1	39	2480	7.10	30.00	2.77	9.87	36.00	Pass

TEST RESULTS DATA Peak Power Density

Mod.	Data Rate	N⊤x	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	9.13	-6.65	2.77	8.00	Pass
BLE	1Mbps	1	19	2440	9.27	-6.48	2.77	8.00	Pass
BLE	1Mbps	1	39	2480	9.48	-6.28	2.77	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

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TEST RESULTS DATA 6dB and 99% Occupied Bandwidth

Mod.	Data Rate	N⊤×	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	2Mbps	1	0	2402 MHz	2.094	1.127	0.50	Pass
BLE	2Mbps	1	19	2440 MHz	2.099	1.126	0.50	Pass
BLE	2Mbps	1	39	2480 MHz	2.104	1.123	0.50	Pass

TEST RESULTS DATA Average Power Table

Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
BLE	2Mbps	1	0	2402 MHz	7.30	30.00	2.77	10.07	36.00	Pass
BLE	2Mbps	1	19	2440 MHz	7.30	30.00	2.77	10.07	36.00	Pass
BLE	2Mbps	1	39	2480 MHz	7.20	30.00	2.77	9.97	36.00	Pass

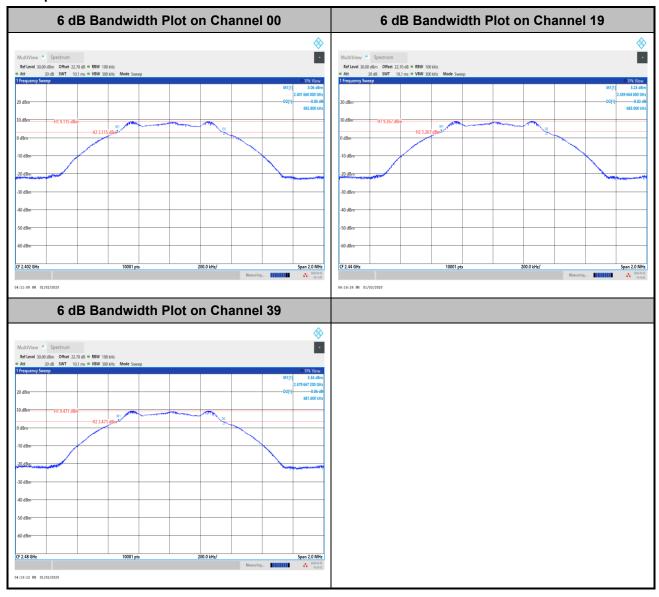
TEST RESULTS DATA Peak Power Density

Mod.	Data Rate	N⊤x	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 MHz	8.62	-7.85	2.77	8.00	Pass
BLE	2Mbps	1	19	2440 MHz	8.71	-7.81	2.77	8.00	Pass
BLE	2Mbps	1	39	2480 MHz	8.92	-7.60	2.77	8.00	Pass

Note: PSD (dBm/ 100kHz) is a reference level used for Conducted Band Edges and Conducted Spurious Emission 30dBc limit.

6dB Bandwidth

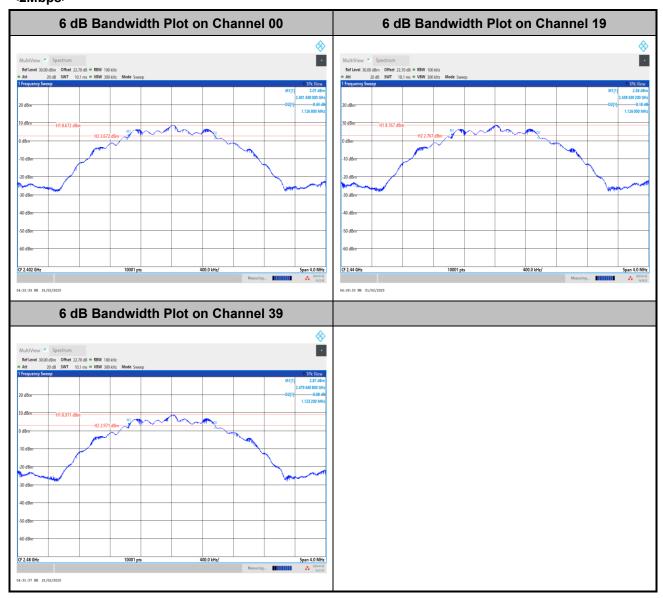
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<2Mbps>

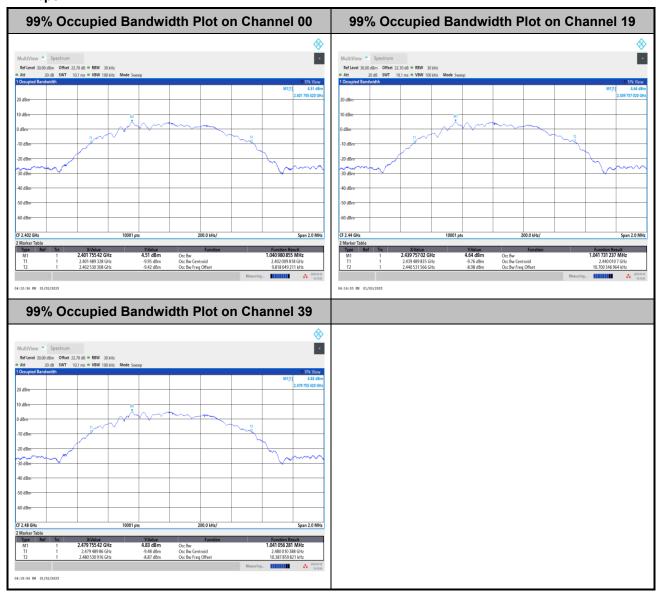


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99% Occupied Bandwidth

<1Mbps>



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40Mlauras

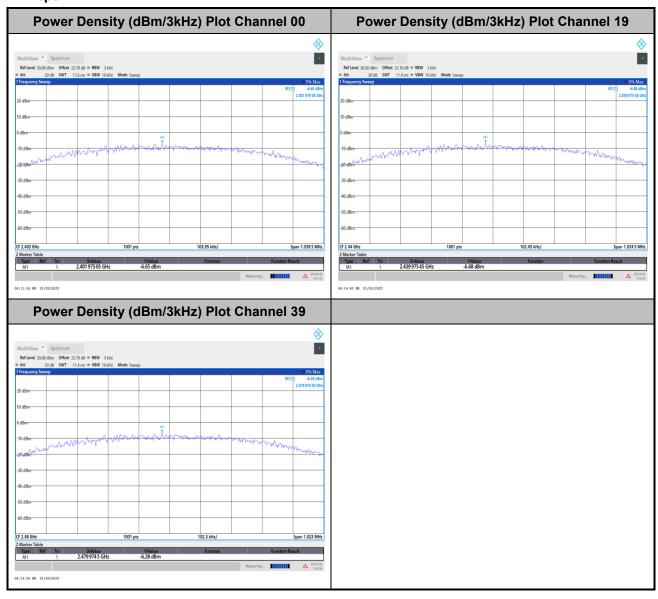


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Power Spectral Density (dBm/3kHz)

<1Mbps>



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<2Mbps>

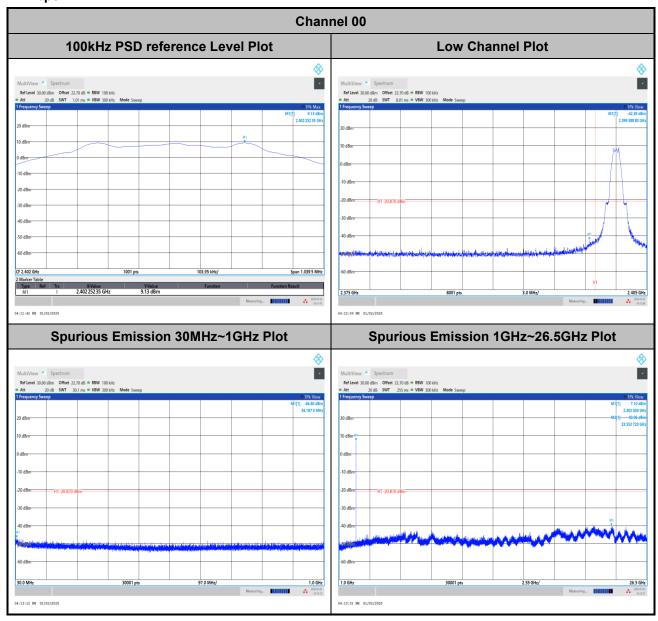


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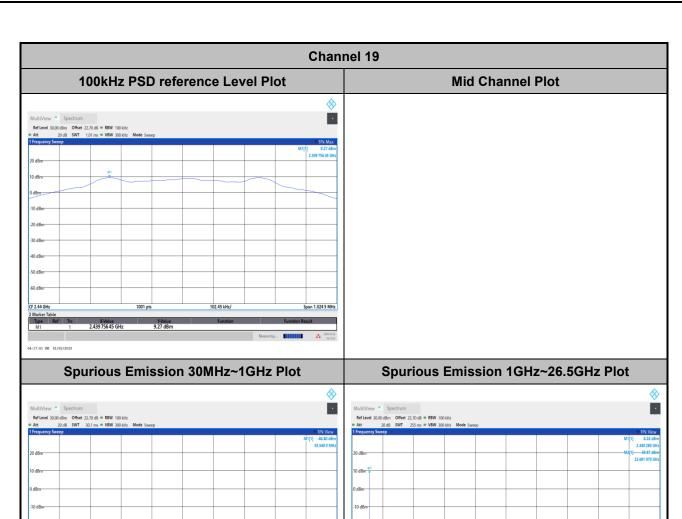
Band Edge and Conducted Spurious Emission

<1Mbps>



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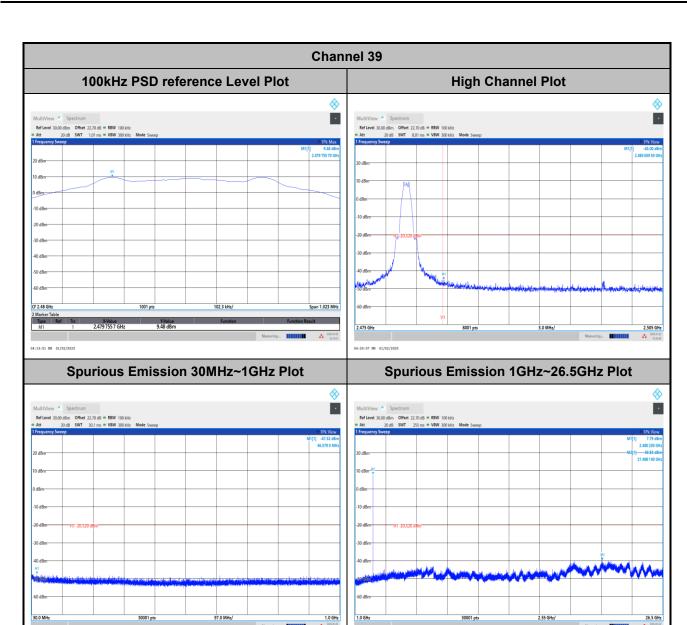


1.0 GHz

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2.55 GHz/

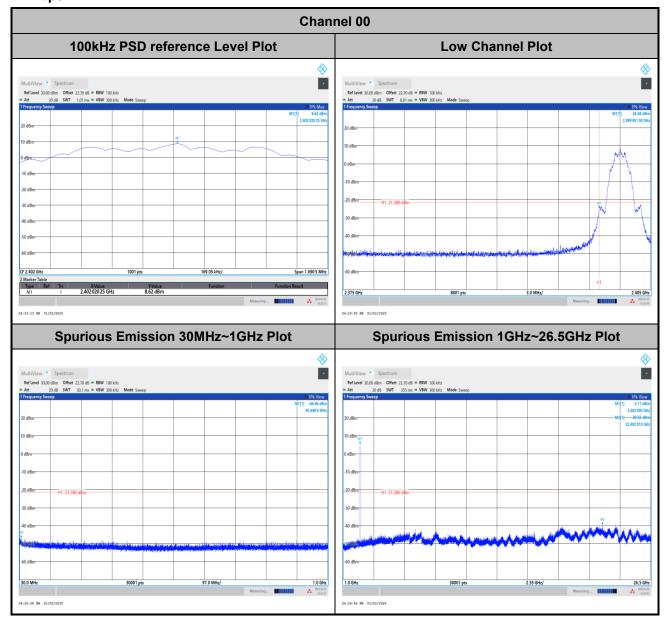
TEL: 886-3-327-0868 Page Number : A2-8 of 12



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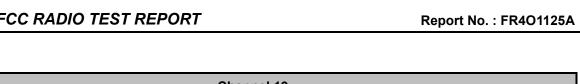
TEL: 886-3-327-0868 Page Number : A2-9 of 12

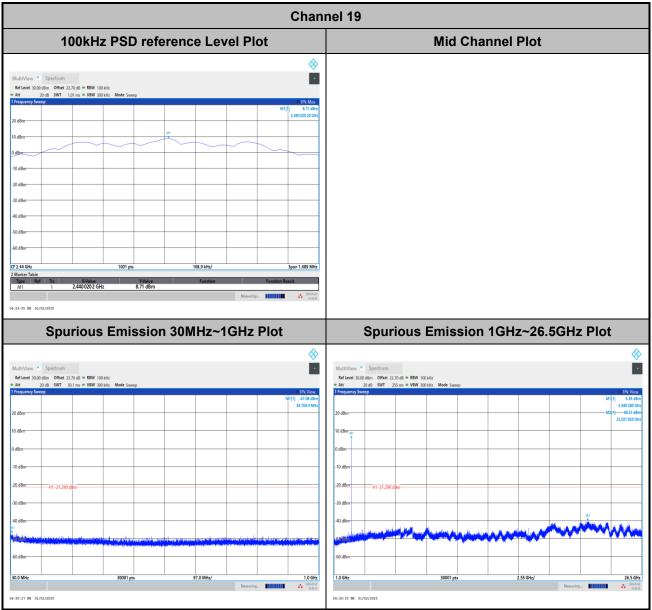
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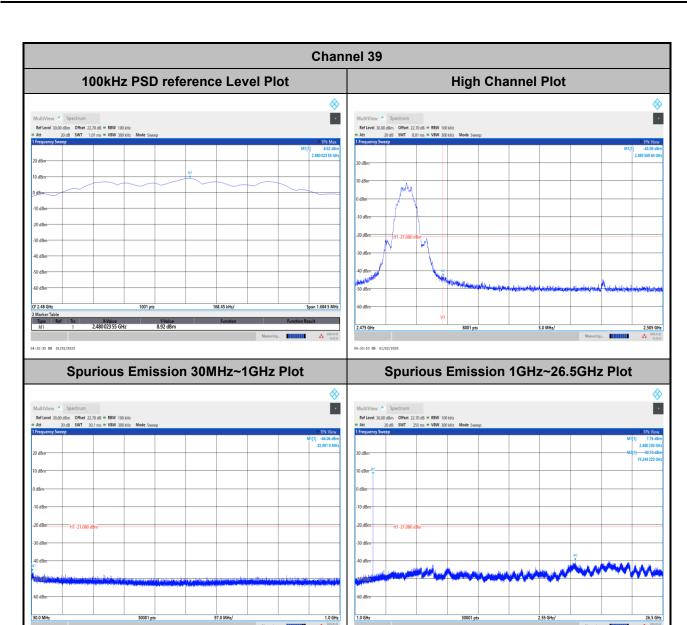
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Appendix B. AC Conducted Emission Test Results

Took Empires v	Calvin Mana	Temperature :	23~26°C
Test Engineer :	Calvin wang	Relative Humidity :	45~55%

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EUT Information

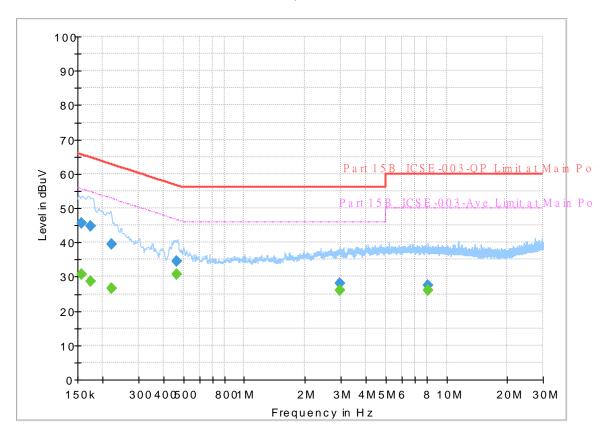
 Report NO :
 401125

 Test Mode :
 Mode 1

 Test Voltage :
 120Vac/60Hz

Phase: Line

Full Spectrum



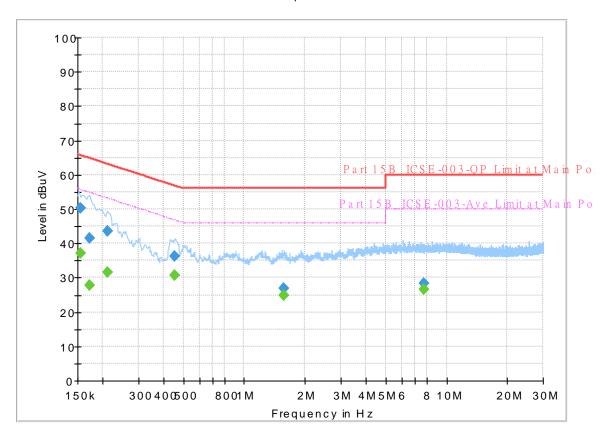
Final Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Filter	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)			(dB)
0.156750		30.65	55.63	24.98	L1	OFF	19.8
0.156750	45.69		65.63	19.94	L1	OFF	19.8
0.174750		28.70	54.73	26.03	L1	OFF	19.8
0.174750	44.85	-	64.73	19.88	L1	OFF	19.8
0.219750		26.62	52.83	26.21	L1	OFF	19.8
0.219750	39.35	-	62.83	23.48	L1	OFF	19.8
0.465000		30.74	46.60	15.86	L1	OFF	19.8
0.465000	34.54		56.60	22.06	L1	OFF	19.8
2.960250		26.12	46.00	19.88	L1	OFF	19.9
2.960250	28.10	-	56.00	27.90	L1	OFF	19.9
8.076750		25.99	50.00	24.01	L1	OFF	20.2
8.076750	27.43		60.00	32.57	L1	OFF	20.2

EUT Information

Report NO: 401125
Test Mode: Mode 1
Test Voltage: 120Vac/60Hz
Phase: Neutral

Full Spectrum



Final_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Line	Filter	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)			(dB)
0.154500		37.27	55.75	18.48	N	OFF	19.8
0.154500	50.38		65.75	15.37	N	OFF	19.8
0.172500		27.79	54.84	27.05	N	OFF	19.8
0.172500	41.37		64.84	23.47	N	OFF	19.8
0.210750	-	31.70	53.18	21.48	N	OFF	19.8
0.210750	43.52		63.18	19.66	N	OFF	19.8
0.453750	1	30.58	46.81	16.23	N	OFF	19.8
0.453750	36.33		56.81	20.48	N	OFF	19.8
1.576500	1	24.75	46.00	21.25	N	OFF	19.9
1.576500	26.76		56.00	29.24	N	OFF	19.9
7.766250	-	26.56	50.00	23.44	N	OFF	20.2
7.766250	28.47		60.00	31.53	N	OFF	20.2

Appendix C. Radiated Spurious Emission Test Data

Toot Engineer	John Chuang, David Dai, and Sam Chou	Temperature :	19.2~21.7°C
Test Engineer :	John Chuang, David Dai, and Sam Chou	Relative Humidity :	64.9~71.1%

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Note symbol

-L	Low channel location
-R	High channel location

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<1Mbps>

C1-1. Radiated Spurious Emission Test Modes

Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	11	Bluetooth-LE GSFK	00	2402	1Mbps	-	-
Mode 2	2400-2483.5	11	Bluetooth-LE GSFK	19	2440	1Mbps	-	-
Mode 3	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	1Mbps	-	-
Mode 7	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	1Mbps	-	LF
Mode 8	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	1Mbps	-	SHF

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C1-2. Summary of each worse mode

Mode	Modulation	Ch.	Freq.	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
	Bluetooth-LE GSFK	00	2389.21	39.12	54.00	-14.88	V	Avg.	Pass	-	Band Edge
1	Bluetooth-LE GSFK	00	4804.00	44.18	74.00	-29.82	V	Peak	Pass	-	Harmonic
2	Bluetooth-LE GSFK	19	2497.30	39.42	54.00	-14.58	V	Avg.	Pass	-	Band Edge
2	Bluetooth-LE GSFK	19	7320.00	40.83	54.00	-13.17	Н	Avg.	Pass	-	Harmonic
3	Bluetooth-LE GSFK	39	2483.52	48.45	54.00	-5.55	Н	Avg.	Pass	-	Band Edge
3	Bluetooth-LE GSFK	39	7440.00	39.90	54.00	-14.10	V	Avg.	Pass	-	Harmonic
7	LF	39	802.12	42.24	46.00	-3.76	V	QP	Pass	-	LF
8	SHF	39	25896.00	43.14	74.00	-30.86	Н	Peak	Pass	-	SHF

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Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK_CH00_2402MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Z Frequency (MHz) 1000 2310 2328.4 2346.8 2365.2 Frequency (MHz) 2383.6 2402 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB/m dB dB dB dB cm deg | 1 2382.77 51.91 74.00 -22.09 42.55 27.26 8.68 36.26 9.68 267 89 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2346.8 2365.2 Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2328.4 2383.6 2402 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:0.560kHz SNT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2389,95 38,94 54,00 -15.06 29.44 27.40 8.69 36.27 9.68 267 89 AVERAGE

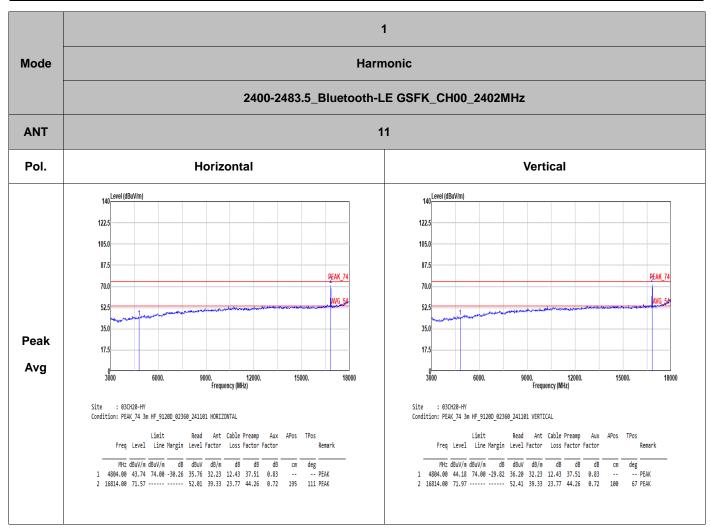
Report No.: FR4O1125A

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Report No.: FR4O1125A Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK_CH00_2402MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Frequency (MHz) 1000 2310 2328.4 2346.8 2365.2 Frequency (MHz) 2383.6 2402 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2382.86 52.54 74.00 -21.46 43.18 27.26 8.68 36.26 9.68 100 118 PEAK | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2402.00 105.29 ----- 95.75 27.42 8.71 36.27 9.68 100 118 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2346.8 2365.2 Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2328.4 2383.6 2402 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2389.21 39.12 54.00 -14.88 29.64 27.38 8.69 36.27 9.68 100 118 AVERAGE MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 104.65 ----- 95.14 27.42 8.71 36.27 9.68 100 118 AVERAGE

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Remark: The unwanted signal 16814.000MHz \cdot 16814.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

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Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK_CH00_2402MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No. : FR4O1125A

TEL: 886-3-327-0868 Page Number : C1-7 of 19



Mode Band Edge - L 2400-2483.5_Bluetooth-LE GSFK_CH19_2440MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Z Frequency (MHz) 1000 2310 2336. 2362. Frequency (MHz) 2388. 2414. 2440 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz | dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | cm | deg | 1 | 2336.91 | 49.27 | 74.00 -24.73 | 40.02 | 27.23 | 8.59 | 36.25 | 9.68 | 137 | 115 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2362. 2388. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2336. 2414. 2440 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:0.560kHz SNT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2386.44 38.61 54.00 -15.39 29.19 27.33 8.68 36.27 9.68 137 115 AVERAGE MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 104.22 ----- 94.44 27.60 8.78 36.28 9.68 137 115 AVERAGE

Report No.: FR4O1125A

TEL: 886-3-327-0868 Page Number : C1-8 of 19



FCC RADIO TEST REPORT Report No. : FR401125A

	2	
Mode	Band Edge -	R
	2400-2483.5_Bluetooth-LE GSI	FK_CH19_2440MHz
ANT	11	
Pol.	Horizontal	Fundamental
Peak	105.0 87.5 105.0 17.5 2440 2452. 2464. Frequency (MHz) Site : 03CH20-HY Condition: PEAK BE 74 3m HF 91200 02360 241101 HORIZONTAL : RBW:1000 0006kHz VBW:3000 0006kHz SNT:Auto Limit Read Ant Cable Preamp Aux APOs TPOs Freq Level Line Margin Level Factor Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB/m db dB dB cm deg 1 2496.64 49.75 74.00 -24.25 39.48 28.00 8.89 36.30 9.68 137 115 PEAK	Blank
Avg	122.5 105.0 2440 2452. 246A. Frequency (MHz) Site : 03CH20-HY Condition: AVG BE 54 3m HF_91200_02360_241101 HORIZONTAL : RBW:1000.000kHz VBN:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APOs TPos Freq Level Line Margin Level Factor Loss Factor Factor NHz dBuV/m dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2485.72 39.38 54.00 -14.62 29.17 27.96 8.87 36.30 9.68 137 115 AVERAGE	Blank

TEL: 886-3-327-0868 Page Number : C1-9 of 19



Mode Band Edge - L 2400-2483.5_Bluetooth-LE GSFK_CH19_2440MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Frequency (MHz) 1000 2310 2336. 2362. Frequency (MHz) 2388. 2414. 2440 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2325.08 49.26 74.00 -24.74 39.96 27.30 8.57 36.25 9.68 121 116 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2362. 2388. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2336. 2414. 2440 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2359.27 38.64 54.00 -15.36 29.29 27.30 8.63 36.26 9.68 121 115 AVERAGE

Report No.: FR4O1125A

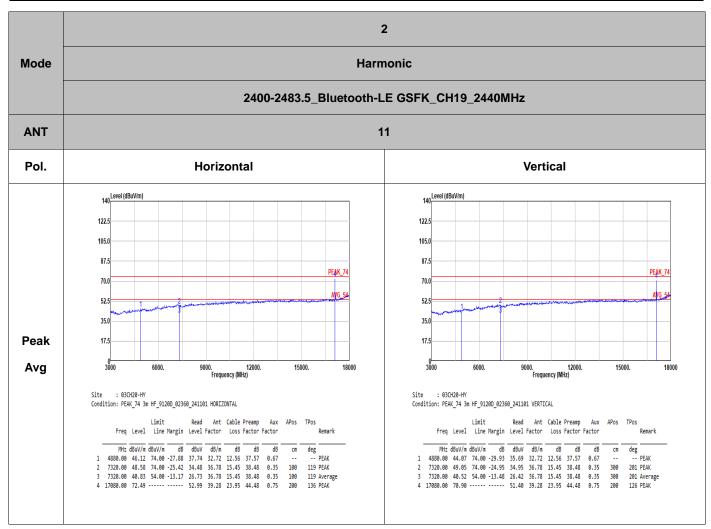
TEL: 886-3-327-0868 Page Number : C1-10 of 19



Mode Band Edge - R 2400-2483.5_Bluetooth-LE GSFK_CH19_2440MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK BE 74 70.0 52.5 35.0 17.5 Peak **Blank** 0 2440 2452. 2464. 2476. Frequency (MHz) 2488. 2500 : 03CH20-HY Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB dB cm deg | 1 2485.60 49.66 74.00 -24.34 39.45 27.96 8.87 36.30 9.68 121 116 PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 17.5 Avg **Blank** 2440 2464, 2476. Frequency (MHz) 2452. 2488. 2500 : 03CH20-HY Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:0.560kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2497.30 39.42 54.00 -14.58 29.15 28.00 8.89 36.30 9.68 121 116 AVERAGE

Report No.: FR4O1125A

TEL: 886-3-327-0868 Page Number : C1-11 of 19



Remark: The unwanted signal 17080.000MHz \cdot 17080.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

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2 Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK_CH19_2440MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No. : FR4O1125A

TEL: 886-3-327-0868 Page Number : C1-13 of 19



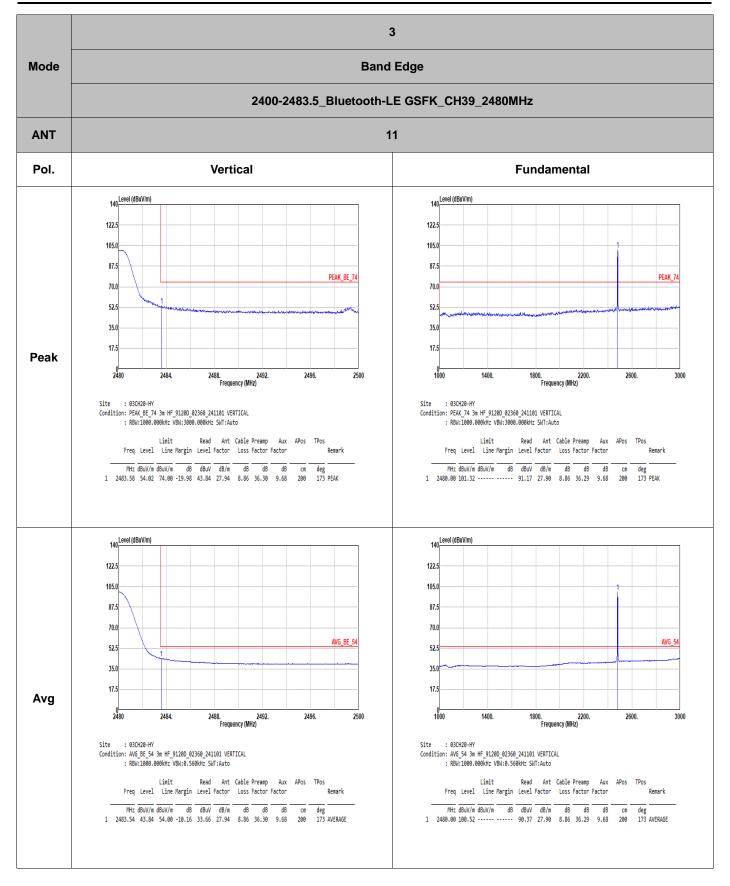
-	3										
Mode	Band	I Edge									
	2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz										
ANT	1	11									
Pol.	Horizontal	Fundamental									
Peak	140 Level (dBuVim) 122.5 105.0 87.5 PEAK_BE_74 70.0 17.5 2480 2484. 2488. 2492. 2496. 2500	140 Level (dBuV/m) 1225 105.0 87.5 PEAK 74 70.0 52.5 35.0 17.5 1000 1400. 1800. 2200. 2600. 3000									
	Site : 03CM20-HY	Site : 03CH20-HY Condition: PEAK_74 3m HF_91200_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz VBW:30000.000kHz VBW:3000.000kHz VBW:3000.000kHz VBW:3000.000kHz VBW:3000.000kHz VBW:3000.000k									

Report No. : FR4O1125A

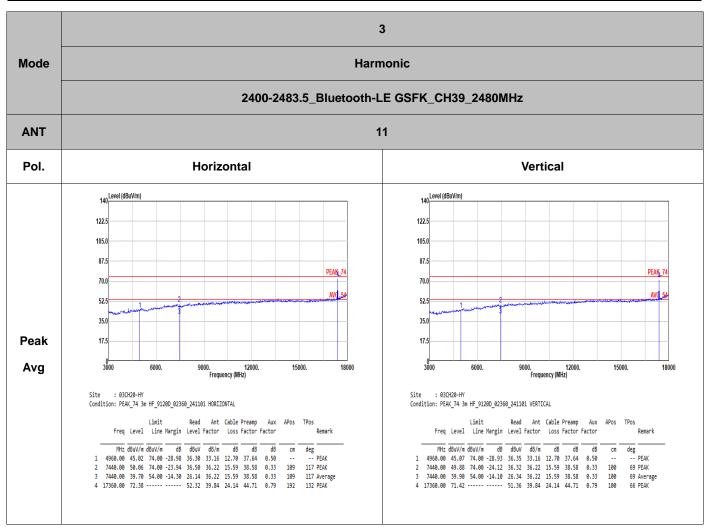
TEL: 886-3-327-0868 Page Number : C1-14 of 19



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TEL: 886-3-327-0868 Page Number : C1-15 of 19



Remark: The unwanted signal 17360.000MHz \cdot 17360.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

TEL: 886-3-327-0868 Page Number : C1-16 of 19

3 Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No. : FR4O1125A

TEL: 886-3-327-0868 Page Number : C1-17 of 19



7 Mode LF 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz **ANT** 11 Pol. Horizontal **Vertical** 80 Level (dBuV/m) 80 Level (dBuV/m) 70.0 70.0 60.0 60.0 50.0 50.0 40. 40.0 30.0 30.0 20.0 QP/ 224. 418. 612. Frequency (MHz) 806. 1000 224. 418. 612. Frequency (MHz) 806. 1000 **Peak** Site : 03CH20-HY Condition: QP 3m Bilog_55606 & 08_241127 VERTICAL : 03CH20-HY Condition: QP 3m Bilog_55606 & 08_241127 HORIZONTAL Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark deg 357 QP -- Peak -- Peak 273 QP 358 QP 360 QP | MHz dBuV/m dBuV/m dB dB dBuV dB/m dB dB dB dB 63,95 29,96 40,00 -10,04 51,95 12,02 1.52 35,72 0.19 156,10 28,75 43,56 -14,75 44,87 16,95 2.33 35,59 0.19 216,24 29,01 46,00 -16,99 46,38 15,20 2.70 35,47 0.20 0.05 40,54 38,99 46,00 -7,04 143,31 21,89 3,64 35,00 0.15 775,93 38,58 46,00 -7,42 38,97 28,26 4,99 33,79 0.15 786,60 40,57 46,00 -5,43 40,89 28,25 5,02 33,74 0.51 | MHz dBuV/m dBuV/m d8 dBuV dB/m d8 dB d8 d8 63,95 34.35 40.00 -5.65 56.34 12.02 1.52 35.72 0.19 196.84 30.66 43.50 -12.84 48.38 15.01 2.58 35.51 0.20 514.03 39.90 46.00 -6.10 46.39 24.00 4.11 34.73 0.13 789.51 41.28 46.00 -4.72 41.58 28.24 5.03 33.73 0.16 802.12 42.24 46.00 -3.76 42.58 28.11 5.07 33.68 0.16 deg -- Peak -- Peak -- Peak -- Peak

Report No.: FR4O1125A

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8 Mode **SHF** 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz ANT 11 Pol. Horizontal **Vertical** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK_74 PEAK_74 70.0 70.0 52.5 52.5 35.0 35.0 **Peak** 17.5 17.5 18000 18000 21200. 22800. Frequency (MHz) 24400. 21200. 22800. Frequency (MHz) 24400. 19600. 26000 19600. 26000 Site : 03CH20-HY Condition: PEAK_74 lm BBHA9170_1230_241025 VERTICAL Site : 03CH20-HY Condition: PEAK_74 1m BBHA9170_1230_241025 HORIZONTAL Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Remark Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg 1 25856.00 42.55 74.00 -31.45 36.70 38.89 29.60 53.10 -9.54 150 360 Peak | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 25896.00 43.14 74.00 -30.86 37.34 38.81 29.63 53.10 -9.54 150 307 Peak

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<2Mbps>

C2-1. Radiated Spurious Emission Test Modes

Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 4	2400-2483.5	11	Bluetooth-LE GSFK	00	2402	2Mbps	-	-
Mode 5	2400-2483.5	11	Bluetooth-LE GSFK	19 2440		2Mbps	-	-
Mode 6	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	2Mbps	-	-
Mode 9	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	2Mbps	-	LF
Mode 10	2400-2483.5	11	Bluetooth-LE GSFK	39	2480	2Mbps	-	SHF

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TEL: 886-3-327-0868 Page Number : C2-1 of 18

C2-2. Summary of each worse mode

Mode	Modulation	Ch.	Freq.	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
4	Bluetooth-LE GSFK	00	2389.95	39.62	54.00	-14.38	V	Avg.	Pass	-	Band Edge
4	Bluetooth-LE GSFK	00	4804.00	44.93	74.00	-29.07	Н	Peak	Pass	-	Harmonic
_	Bluetooth-LE GSFK	19	2498.56	39.82	54.00	-14.18	Н	Avg.	Pass	-	Band Edge
5	Bluetooth-LE GSFK	19	7320.00	40.68	54.00	-13.32	Н	Avg.	Pass	-	Harmonic
	Bluetooth-LE GSFK	39	2483.52	52.01	54.00	-1.99	Н	Avg.	Pass	-	Band Edge
6	Bluetooth-LE GSFK	39	7440.00	47.91	74.00	-26.09	Н	Peak	Pass	-	Harmonic
9	LF	39	827.34	42.94	46.00	-3.06	V	QP	Pass	-	LF
10	SHF	39	25080.00	42.61	74.00	-31.39	Н	Peak	Pass	-	SHF

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TEL: 886-3-327-0868 Page Number : C2-2 of 18



Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK _CH00_2402MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Z Frequency (MHz) 1000 2310 2328.4 2346.8 2365.2 Frequency (MHz) 2383.6 2402 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2382.86 53.01 74.00 -20.99 43.65 27.26 8.68 36.26 9.68 306 126 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2346.8 2365.2 Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2328.4 2383.6 2402 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2388.75 39.47 54.00 -14.53 29.99 27.38 8.69 36.27 9.68 306 125 AVERAGE MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 102.76 ----- 93.22 27.42 8.71 36.27 9.68 306 126 AVERAGE

Report No.: FR4O1125A

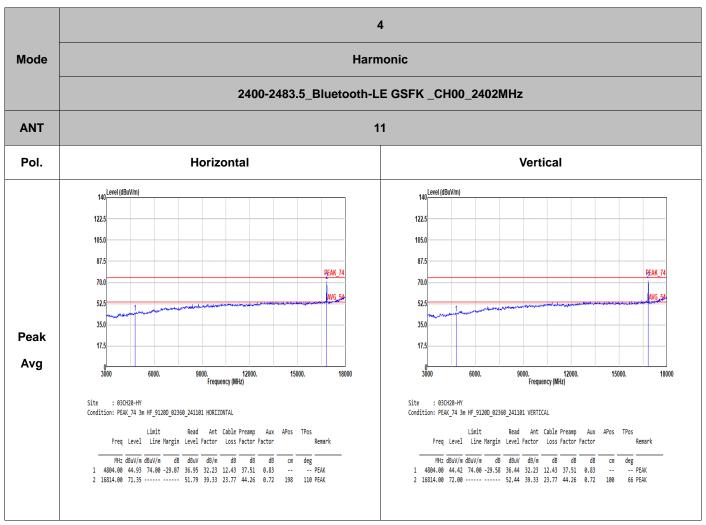
TEL: 886-3-327-0868 Page Number : C2-3 of 18



Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK _CH00_2402MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Frequency (MHz) 1000 2310 2346.8 2 Frequency (MHz) 2328.4 2365.2 2383.6 2402 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB/m dB dB dB dB cm deg | 1 2382.86 52.65 74.00 -21.35 43.29 27.26 8.68 36.26 9.68 100 122 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2346.8 2365.2 Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2328.4 2383.6 2402 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2389,95 39,62 54,00 -14,38 30,12 27,40 8.69 36,27 9.68 100 122 AVERAGE MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2402.00 103.32 ------ 93.78 27.42 8.71 36.27 9.68 100 122 AVERAGE

Report No.: FR4O1125A

TEL: 886-3-327-0868 Page Number : C2-4 of 18



Remark: The unwanted signal 16814.000MHz \cdot 16814.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

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Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK _CH00_2402MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No. : FR4O1125A

TEL: 886-3-327-0868 Page Number : C2-6 of 18



5 Mode Band Edge - L 2400-2483.5_Bluetooth-LE GSFK _CH19_2440MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Frequency (MHz) 2362. Frequency (MHz) 1000 2310 2336. 2388. 2414. 2440 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz | dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | cm | deg | 1 | 2339.51 | 49.40 | 74.00 | -24.60 | 49.17 | 27.20 | 8.60 | 36.25 | 9.68 | 233 | 77 | PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2362. 2388. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2336. 2414. 2440 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2388.91 39.10 54.00 -14.90 29.62 27.38 8.69 36.27 9.68 293 77 AVERAGE

Report No.: FR4O1125A

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5 Mode Band Edge - R 2400-2483.5_Bluetooth-LE GSFK _CH19_2440MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK BE 7 70.0 52.5 35.0 17.5 Peak **Blank** 0 2440 2452. 2464. 2476. Frequency (MHz) 2488. 2500 : 03CH20-HY Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2496.34 50.60 74.00 -23.40 40.33 28.00 8.89 36.30 9.68 293 77 PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 17.5 Avg **Blank** 2440 2464, 2476. Frequency (MHz) 2452. 2488. 2500 : 03CH20-HY Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg | 1 2498.56 39.82 54.00 -14.18 29.55 28.00 8.89 36.30 9.68 293 77 AVERAGE

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5 Mode Band Edge - L 2400-2483.5_Bluetooth-LE GSFK _CH19_2440MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Frequency (MHz) 1000 2310 2336. 2362. Frequency (MHz) 2388. 2414. 2440 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2384.10 49.77 74.00 -24.23 40.40 27.28 8.68 36.27 9.68 123 111 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 17.5 17.5 Avg 2310 2362. 2388. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2336. 2414. 2440 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dB dB dB dB cm deg | 1 2365.64 39.66 54.00 -14.94 29.70 27.30 8.64 36.26 9.68 123 111 AVERAGE MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2440.00 102.30 ----- 92.52 27.60 8.78 36.28 9.68 123 111 AVERAGE

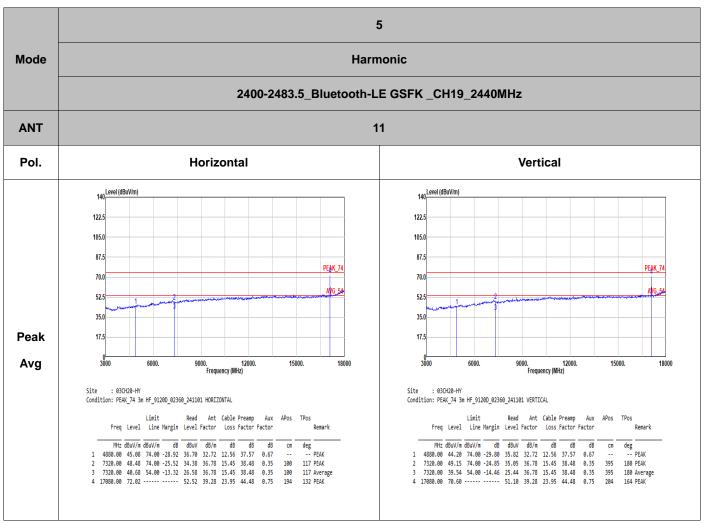
Report No.: FR4O1125A

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Report No.: FR4O1125A 5 Mode Band Edge - R 2400-2483.5_Bluetooth-LE GSFK _CH19_2440MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK BE 74 70.0 52.5 35.0 17.5 Peak **Blank** 0 2440 2452. 2464. 2476. Frequency (MHz) 2488. 2500 : 03CH20-HY Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2497.42 50.94 74.00 -23.06 40.67 28.00 8.89 36.30 9.68 123 111 PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 17.5 Avg **Blank** 2440 2464, 2476. Frequency (MHz) 2452. 2488. 2500 : 03CH20-HY Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2491.90 39.74 54.00 -14.26 29.48 28.00 8.88 36.30 9.68 123 111 AVERAGE

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Remark: The unwanted signal 17080.000MHz \cdot 17080.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

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5 Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK _CH19_2440MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No. : FR4O1125A

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FCC RADIO TEST REPORT Report No.: FR4O1125A Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz **ANT** 11 Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 87.5 87.5 PEAK 74 PEAK BE 7 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 1800. Z Frequency (MHz) 2488. Frequency (MHz) 1000 2480 2484. 2492. 2496. 2500 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2483.66 61.18 74.00 -12.82 51.00 27.94 8.86 36.30 9.68 300 11 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 35.0 17.5 17.5 Avg 2480 2488. 2492. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2484. 2496. 2500 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 HORIZONTAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor Remark

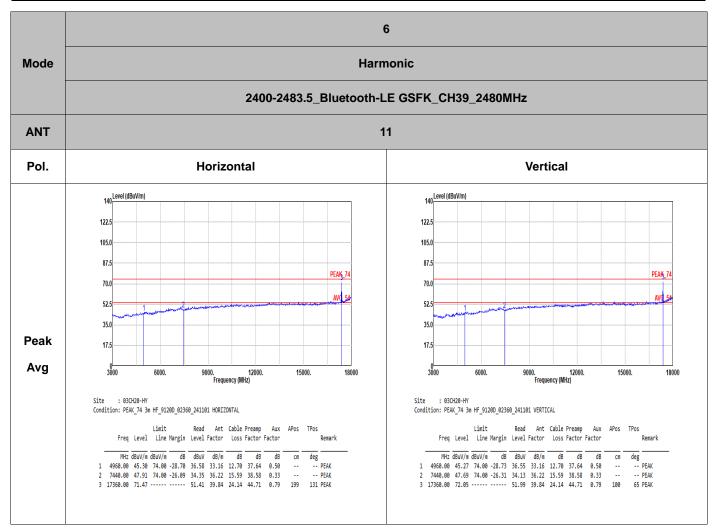
TEL: 886-3-327-0868 Page Number : C2-13 of 18



Mode **Band Edge** 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz **ANT** 11 Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 87.5 87.5 PEAK 74 PEAK BE 74 70.0 70.0 52.5 52.5 35.0 35.0 17.5 17.5 Peak 2488. Frequency (MHz) 1800. Frequency (MHz) 1000 2480 2484. 2492. 2496. 2500 1400. 2200. 2600. 3000 : 03CH20-HY : 03CH20-HY Site Condition: PEAK_BE_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBN:3000.000kHz SWT:Auto Condition: PEAK_74 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2483.72 57.60 74.00 -16.40 47.42 27.94 8.86 36.30 9.68 200 161 PEAK | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 2480.00 102.13 ----- 91.98 27.90 8.86 36.29 9.68 200 161 PEAK 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 52.5 52.5 35.0 17.5 17.5 Avg 2480 2488. 2492. Frequency (MHz) 1000 1800. 2200. Frequency (MHz) 2484. 2496. 2500 1400. 2600. 3000 : 03CH20-HY : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Condition: AVG_BE_54 3m HF_9120D_02360_241101 VERTICAL : RBW:1000.000kHz VBW:1.100kHz SWT:Auto Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor

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Remark: The unwanted signal 17360.000MHz \cdot 17360.000MHz can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).

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6 Mode **Harmonic** 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz ANT 11 Pol. Horizontal Vertical 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 70.0 70.0 17G AVG_54 52.5 52.5 ~18G 35.0 35.0 Avg 17.5 17.5 17400. 17 Frequency (MHz) 17000 17000 17200. 17600. 17800. 18000 17200. 17600. 17800. 18000 Frequency (MHz) Site : 03CH20-HY Site : 03CH20-HY Condition: AVG_54 3m HF_9120D_02360_241101 HORIZONTAL Condition: AVG_54 3m HF_9120D_02360_241101 VERTICAL

Report No.: FR4O1125A

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9 Mode LF 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz **ANT** 11 Pol. Horizontal **Vertical** 80 Level (dBuV/m) 80 Level (dBuV/m) 70.0 70.0 60.0 60.0 50.0 50.0 40.0 40.0 manu Maraha 30.0 30.0 20.0 QP/ 224. 418. 612. Frequency (MHz) 806. 1000 224. 418. 612. Frequency (MHz) 806. 1000 Peak Site : 03CH20-HY Condition: QP 3m Bilog_55606 & 08_241127 VERTICAL : 03CH20-HY Condition: QP 3m Bilog_55606 & 08_241127 HORIZONTAL Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Remark deg 298 QP -- Peak -- Peak 282 QP 307 QP 340 QP | MHz | dBuV/m | dBuV/m | d8 | dBuV | d8/m | d8 | d8 | d8 | 63,95 | 35.16 | 40.00 | -4.84 | 57.15 | 12.02 | 1.52 | 35.72 | 0.19 | 197.81 | 31.78 | 43.59 | -11.72 | 49.47 | 15.03 | 2.59 | 35.51 | 0.20 | 451.95 | 39.23 | 46.00 | -6.77 | 47.01 | 23.10 | 3.87 | 34.09 | 0.14 | 45.67 | 55.71 | 33.40 | 46.00 | -12.60 | 37.68 | 25.93 | 4.27 | 34.60 | 0.12 | 787.57 | 41.34 | 46.00 | -4.66 | 41.63 | 28.26 | 5.03 | 33.74 | 0.16 | 827.34 | 42.94 | 46.00 | -3.06 | 43.20 | 28.06 | 5.13 | 33.58 | 0.13 dB dB dB
1.52 35.72 0.19
2.32 35.59 0.19
2.94 35.38 0.19
3.64 35.00 0.15
5.01 33.77 0.15
5.11 33.60 0.14 deg -- Peak -- Peak -- Peak -- Peak

Report No.: FR4O1125A

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10 Mode SHF 2400-2483.5_Bluetooth-LE GSFK_CH39_2480MHz ANT 11 Pol. Horizontal **Vertical** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK_74 PEAK_74 70.0 70.0 52.5 52.5 35.0 35.0 **Peak** 17.5 17.5 18000 18000 21200. 22800. Frequency (MHz) 24400. 21200. 22800. Frequency (MHz) 24400. 19600. 26000 19600. 26000 Site : 03CH20-HY Condition: PEAK_74 lm BBHA9170_1230_241025 VERTICAL Site : 03CH20-HY Condition: PEAK_74 1m BBHA9170_1230_241025 HORIZONTAL Limit Read Ant Cable Preamp Aux APos TPos
Freq Level Line Margin Level Factor Loss Factor Factor Remark Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Remark | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg 1 25880.00 42.18 74.00 -31.82 36.36 38.84 29.62 53.10 -9.54 150 360 Peak | MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg | 1 25080.00 42.61 74.00 -31.39 36.89 39.30 29.14 53.18 -9.54 150 211 Peak

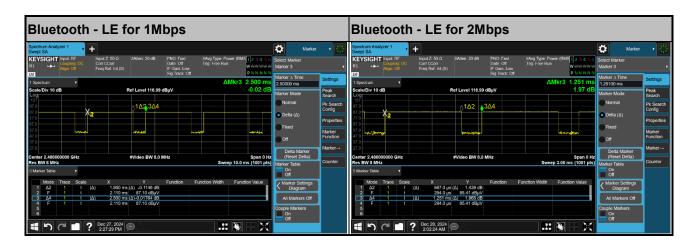
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Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
Bluetooth - LE for 1Mbps	78.00	1950	0.51	560Hz
Bluetooth - LE for 2Mbps	78.90	987	1.01	1.1Hz

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