



Report No.: FR452223A

# FCC RADIO TEST REPORT

FCC ID : TVE-240604

Equipment : Network Security Gateway

Brand Name : FORTINET

Model Name : FortiWiFi 70Gxxxxxxxxxx, FORTIWIFI-70Gxxxxxxxxxx,

FortiWiFi 71Gxxxxxxxxxxx, FORTIWIFI-71Gxxxxxxxxxxx,

FWF-71Gxxxxxxxxxx

(where "x" can be used as "0-9", or "A-Z", or "-", or blank

for software changes or marketing purposes only)

Applicant : Fortinet Inc.

909 Kifer Rd., Sunnyvale, CA 94086, United States

Manufacturer : Fortinet Inc.

909 Kifer Rd., Sunnyvale, CA 94086, United States

Standard : FCC Part 15 Subpart C §15.247

The product was received on Jun. 15, 2024 and testing was performed from Jun. 26, 2024 to Aug. 01, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Approved by: Louis Wu

Lunis Win

Sporton International Inc. Wensan Laboratory

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
FR452223A	01	Initial issue of report	Oct. 09, 2024

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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	-	
3.2	15.247(b)(3) 15.247(b)(4)	Output Power	Pass	-
3.3	15.247(e)	Power Spectral Density Pass		-
3.4	15.247(d)	Conducted Band Edges and Spurious Emission Pass		-
3.5	15.247(d)	Radiated Band Edges and Spurious Emission	Pass	2.35 dB under the limit at 7440.00 MHz
3.6	15.207	AC Conducted Emission Pass		14.07 dB under the limit at 0.50 MHz
3.7	15.203	Antenna Requirement	Pass	-

#### Conformity Assessment Condition:

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

#### Disclaimer:

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

Reviewed by: Yun Huang Report Producer: Wilda Wei

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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/ax, and Wi-Fi 5GHz 802.11a/n/ac/ax.

#### **Antenna Type**

WLAN:

<Ant. 1>: Dipole Antenna
<Ant. 2>: Dipole Antenna
<Ant. 3>: Dipole Antenna

Bluetooth-LE: Monopole Antenna

Antenna information				
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	1.53		

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

Model differences description						
Model Feature	FWF-71G	FWF-70G				
M.2 SSD	V	X				

Remark: All the tests were performed with Model: FWF-71G

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# 1.2 Modification of EUT

No modifications made to the EUT during the testing.

# 1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.
Test Site NO.	TH05-HY, CO07-HY, 03CH22-HY

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

FCC designation No.: TW3786

# 1.4 Applicable Standards

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

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

#### Remark:

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

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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 33.5 MHz 10	2420	30	2462
2400-2483.5 MHz		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 two antenna degrees (Ant. degrees 0 and Ant. Degrees 90), 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.

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

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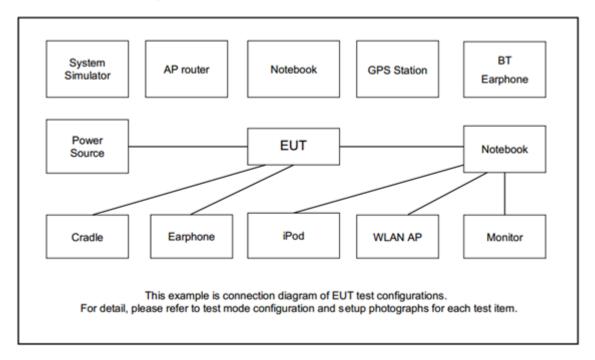
Summary table of Test Cases				
Test Item	Data Rate / Modulation			
	Bluetooth – LE / GFSK			
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps			
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps			
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps			
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps			
Conducted	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps			
Test Cases	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps			
rest oases	Mode 7: Bluetooth Tx CH00_2402 MHz_125kbps			
	Mode 8: Bluetooth Tx CH19_2440 MHz_125kbps			
	Mode 9: Bluetooth Tx CH39_2480 MHz_125kbps			
	Mode 10: Bluetooth Tx CH00_2402 MHz_500kbps			
	Mode 11: Bluetooth Tx CH19_2440 MHz_500kbps			
	Mode 12: Bluetooth Tx CH39_2480 MHz_500kbps			
	Mode 1: Bluetooth Tx CH00_2402 MHz_1Mbps			
	Mode 2: Bluetooth Tx CH19_2440 MHz_1Mbps			
	Mode 3: Bluetooth Tx CH39_2480 MHz_1Mbps			
	Mode 4: Bluetooth Tx CH00_2402 MHz_2Mbps			
	Mode 5: Bluetooth Tx CH19_2440 MHz_2Mbps			
	Mode 6: Bluetooth Tx CH39_2480 MHz_2Mbps			
Radiated	Mode 7: Bluetooth Tx CH00_2402 MHz_125kbps			
Test Cases	Mode 8: Bluetooth Tx CH19_2440 MHz_125kbps			
	Mode 9: Bluetooth Tx CH39_2480 MHz_125kbps			
	Mode 10: Bluetooth Tx CH00_2402 MHz_500kbps			
	Mode 11: Bluetooth Tx CH19_2440 MHz_500kbps			
	Mode 12: Bluetooth Tx CH39_2480 MHz_500kbps			
	Mode 13: Bluetooth Tx CH39_2480 MHz_500kbps			
	Mode 14: Bluetooth Tx CH39_2480 MHz_500kbps			
AC Conducted	Mode 1: Bluetooth-LE Link + WLAN (2.4GHz) Link +Adapter			
Emission	mode 1. Didotooti LE Liik 1 WEAR (2.70112) Liik TAdaptei			

#### Remark

- 1. For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.
- For Radiated Spurious Emission above 18GHz and below 1GHz, the modulation and the data rate picked for testing are determined by the worst from Remark 1.

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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 3400	FCC DoC	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8m
2.	Mobile Phone	Asus	Zenfone5	MSQX00QSA	N/A	N/A

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# 2.5 EUT Operation Test Setup

The RF test items, utility "Tera Term Version4.95" 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.

#### 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.

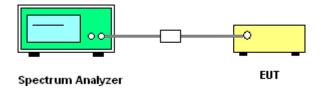
#### 3.1.3 Test Procedures

- 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.
- 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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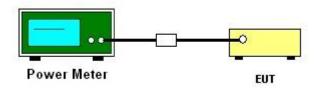
### 3.2.2 Measuring Instruments

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

#### 3.2.3 Test Procedures

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

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Average Output Power

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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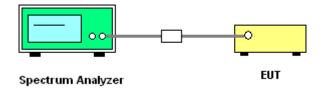
### 3.3.2 Measuring Instruments

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.
- 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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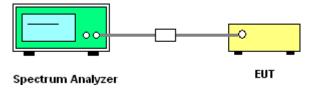
# 3.4.2 Measuring Instruments

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.

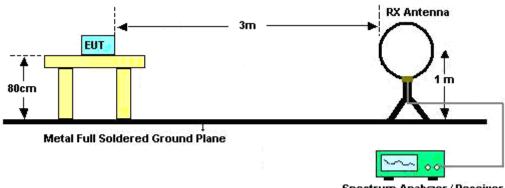
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- 3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
- 4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
- 7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".
- 8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW = 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW = 3 MHz for  $f \ge 1$  GHz for peak measurement. For average measurement:
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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# 3.5.4 Test Setup

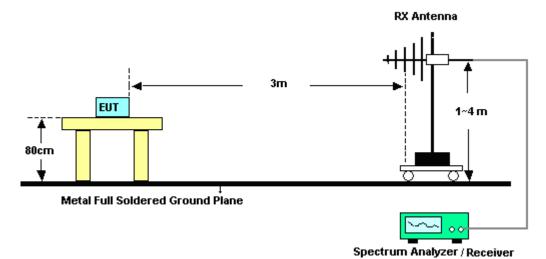
#### For radiated test below 30MHz



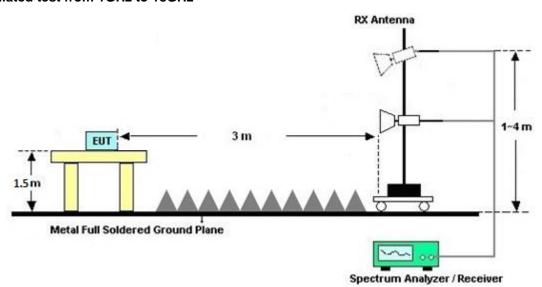
Spectrum Analyzer / Receiver

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

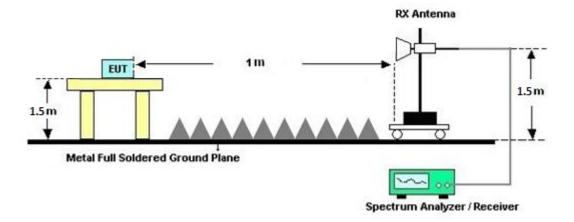


For radiated test from 1GHz to 18GHz



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

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

### 3.6.2 Measuring Instruments

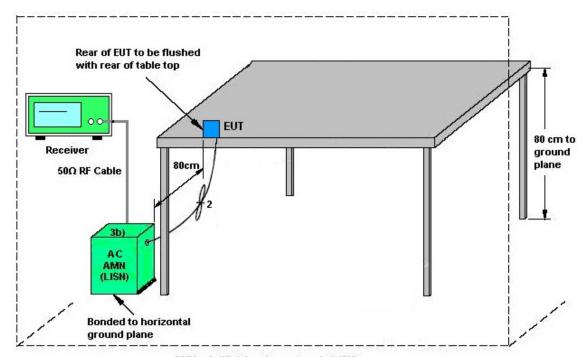
Please refer to the measuring equipment list in this test report.

#### 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

The EUT requires professional installation.

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# 4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9kHz~30MHz	Sep. 12, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Sep. 11, 2024	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Oct. 15, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Oct. 14, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 15, 2023	Jul. 05, 2024 ~ Jul. 13, 2024	Jul. 14, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 14, 2024	Jul. 14, 2024 ~ Aug. 01, 2024	Jul. 13, 2025	Radiation (03CH22-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	Mar. 21, 2024	Jul. 05, 2024 ~ Aug. 01, 2024	Mar. 20, 2024	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18E N	1GHz~18GHz	Jul. 12, 2023	Jul. 05, 2024 ~ Jul. 10, 2024	Jul. 11, 2024	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18E N	1GHz~18GHz	Jul. 11, 2024	Jul. 11, 2024 ~ Aug. 01, 2024	Jul. 10, 2025	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	1223	18GHz-40GHz	Jun. 24, 2024	Jul. 05, 2024 ~ Aug. 01, 2024	Jun. 23, 2025	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 28, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Sep. 27, 2024	Radiation (03CH22-HY)
Preamplifier	EMEC	EM18G40G	060872	18-40GHz	Sep. 06, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Sep. 05, 2024	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY62170278	10Hz~44GHz	Aug. 31, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Aug. 30, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP211469	N/A	Jan. 03, 2024	Jul. 05, 2024 ~ Aug. 01, 2024	Jan. 02, 2025	Radiation (03CH22-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 05, 2024 ~ Aug. 01, 2024	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 05, 2024 ~ Aug. 01, 2024	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 05, 2024 ~ Aug. 01, 2024	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019 122	RK-002347	N/A	N/A	Jul. 05, 2024 ~ Aug. 01, 2024	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Jul. 05, 2024 ~ Aug. 01, 2024	Mar. 05, 2025	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,804 611/2,804615/ 2	N/A	Oct. 24, 2023	Jul. 05, 2024 ~ Aug. 01, 2024	Oct. 23, 2024	Radiation (03CH22-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Jul. 04, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 04, 2024	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2023	Jul. 04, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Jul. 04, 2024	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Jul. 04, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Jul. 04, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Jul. 04, 2024	Sep. 19, 2024	Conduction (CO07-HY)

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Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jun. 26, 2024~ Jul. 13, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO 35 (NO:109)	10MHz~6GHz	Jan. 15, 2024	Jun. 26, 2024~ Jul. 13, 2024	Jan. 14, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Jun. 26, 2024~ Jul. 13, 2024	Aug. 22, 2024	Conducted (TH05-HY)
Switch Control Mainframe	E-Instument	ETF-1405-0	EC1900157 (BOX6)	N/A	Feb. 16, 2024	Jun. 26, 2024~ Jul. 13, 2024	Feb. 15, 2025	Conducted (TH05-HY)
Software1	Sporton	BTWIFI_Final_ version:1.0(20 24-04-11)	N/A	Conducted Items	N/A	Jun. 26, 2024~ Jul. 13, 2024	N/A	Conducted (TH05-HY)
Software2	Raditeq	RadiMation 2021.1.8	N/A	Conducted Power	N/A	Jun. 26, 2024~ Jul. 13, 2024	N/A	Conducted (TH05-HY)

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# **5** Measurement Uncertainty

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

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

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

Measuring Uncertainty for a Level of Confidence	6,50 dB
of 95% (U = 2Uc(y))	6.50 GB

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

Measuring Uncertainty for a Level of Confidence	4.50 dB
of 95% (U = 2Uc(y))	

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

Measuring Uncertainty for a Level of Confidence	4.50 dB
of 95% $(U = 2Uc(y))$	4.30 db

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

Measuring Uncertainty for a Level of Confidence	E 40 dD
of 95% (U = 2Uc(y))	5.40 dB

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# Appendix A. Test Result of Conducted Test Items

Test Engineer:	Junyu Jhou	Temperature:	21~25	°C
Test Date:	2024/06/26~2024/07/13	Relative Humidity:	51~54	%

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

Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	1Mbps	1	0	2402	1.065	0.694	0.50	Pass
BLE	1Mbps	1	19	2440	1.075	0.696	0.50	Pass
BLE	1Mbps	1	39	2480	1.073	0.699	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	7.30	30.00	1.53	8.83	36.00	Pass
BLE	1Mbps	1	19	2440	7.30	30.00	1.53	8.83	36.00	Pass
BLE	1Mbps	1	39	2480	7.10	30.00	1.53	8.63	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	7.18	-2.63	1.53	8.00	Pass
BLE	1Mbps	1	19	2440	7.20	-2.66	1.53	8.00	Pass
BLE	1Mbps	1	39	2480	7.07	-2.66	1.53	8.00	Pass

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## 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	2.054	1.307	0.50	Pass
BLE	2Mbps	1	19	2440	2.066	1.352	0.50	Pass
BLE	2Mbps	1	39	2480	2.078	1.367	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	2Mbps	1	0	2402	7.30	30.00	1.53	8.83	36.00	Pass
BLE	2Mbps	1	19	2440	7.30	30.00	1.53	8.83	36.00	Pass
BLE	2Mbps	1	39	2480	7.10	30.00	1.53	8.63	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	5.94	-5.92	1.53	8.00	Pass
BLE	2Mbps	1	19	2440	6.01	-5.93	1.53	8.00	Pass
BLE	2Mbps	1	39	2480	5.76	-6.03	1.53	8.00	Pass

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

Mod.	Data Rate	N⊤x	CH.	Freq. (MHz)	99% Occupied BW (MHz)	6dB BW (MHz)	6dB BW Limit (MHz)	Pass/Fail
BLE	125kbps	1	0	2402	1.079	0.692	0.50	Pass
BLE	125kbps	1	19	2440	1.089	0.722	0.50	Pass
BLE	125kbps	1	39	2480	1.087	0.714	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	125kbps	1	0	2402	7.30	30.00	1.53	8.83	36.00	Pass
BLE	125kbps	1	19	2440	7.30	30.00	1.53	8.83	36.00	Pass
BLE	125kbps	1	39	2480	7.10	30.00	1.53	8.63	36.00	Pass

# 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	125kbps	1	0	2402	4.23	1.22	1.53	8.00	Pass
BLE	125kbps	1	19	2440	4.01	1.41	1.53	8.00	Pass
BLE	125kbps	1	39	2480	4.00	1.19	1.53	8.00	Pass

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### 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	500kbps	1	0	2402	1.047	0.686	0.50	Pass
BLE	500kbps	1	19	2440	1.055	0.690	0.50	Pass
BLE	500kbps	1	39	2480	1.053	0.678	0.50	Pass

# TEST RESULTS DATA Average Power Table

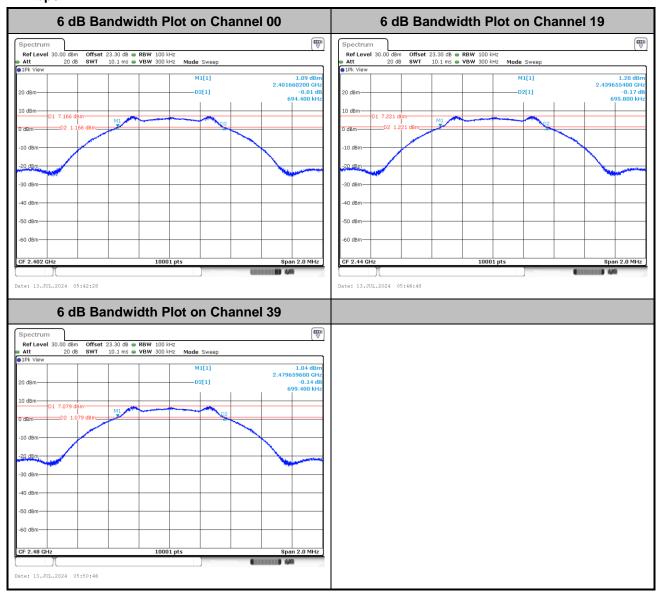
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power (dBm)	Conducted Power Limit (dBm)	Power DG Limit (dBi)		EIRP Power Limit (dBm)	Pass /Fail
BLE	500kbps	1	0	2402	7.30	30.00	1.53	8.83	36.00	Pass
BLE	500kbps	1	19	2440	7.20	30.00	1.53	8.73	36.00	Pass
BLE	500kbps	1	39	2480	7.10	30.00	1.53	8.63	36.00	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	500kbps	1	0	2402	7.31	-3.94	1.53	8.00	Pass
BLE	500kbps	1	19	2440	7.35	-3.93	1.53	8.00	Pass
BLE	500kbps	1	39	2480	7.18	-1.24	1.53	8.00	Pass

# 6dB Bandwidth

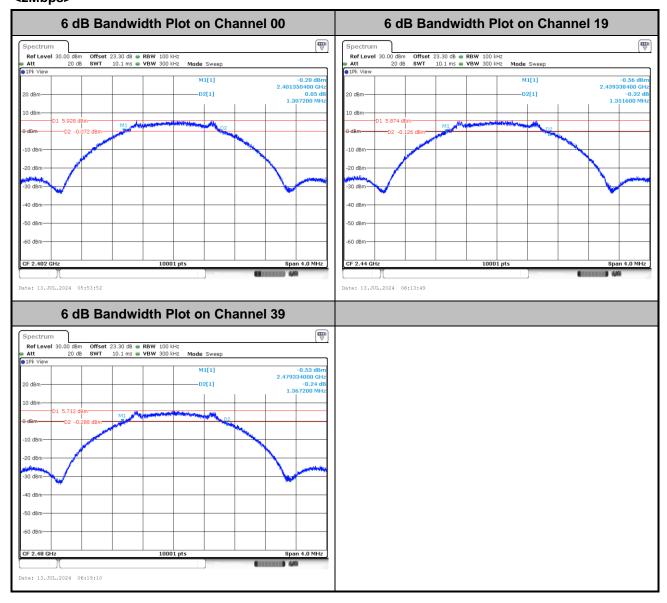
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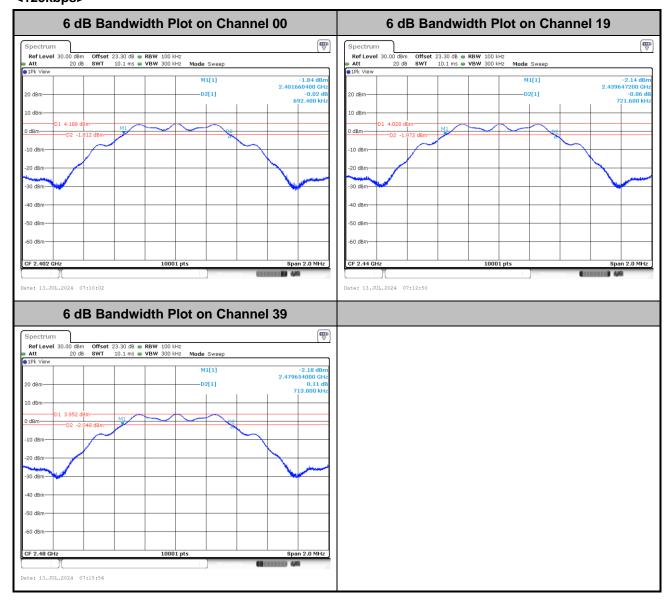
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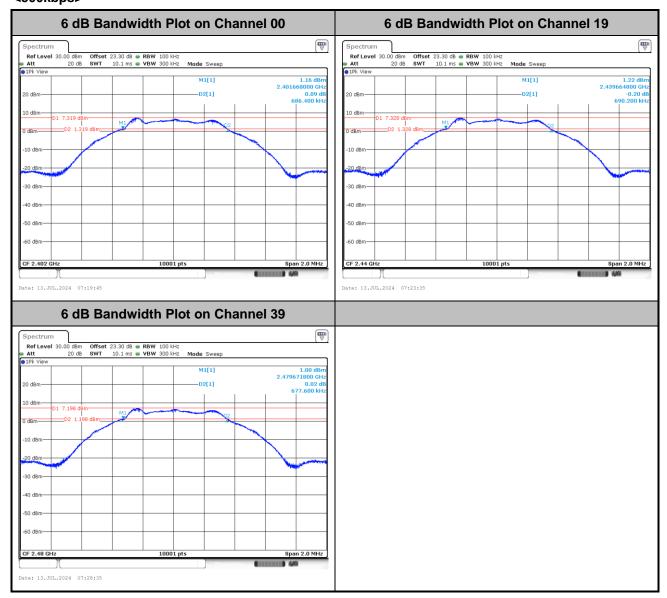
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## <500kbps>

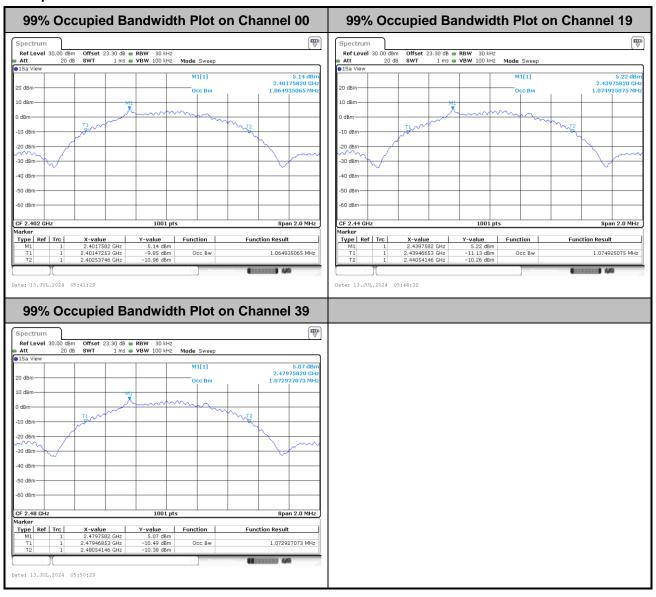


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# 99% Occupied Bandwidth

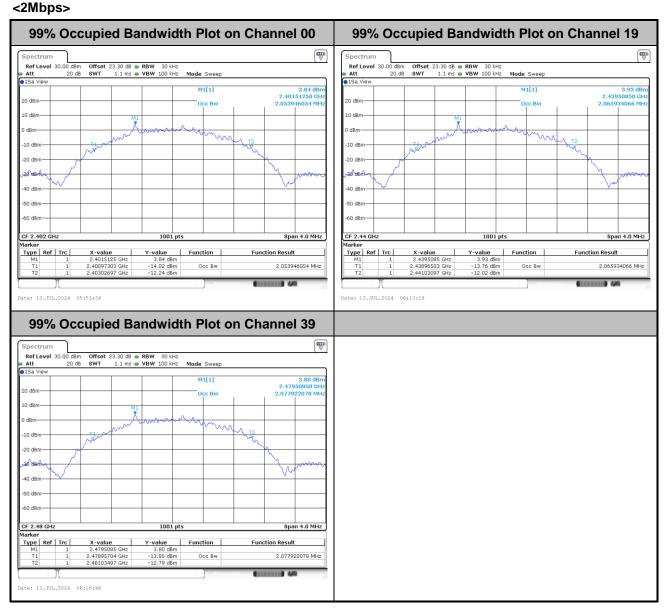
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#### -2Mbno



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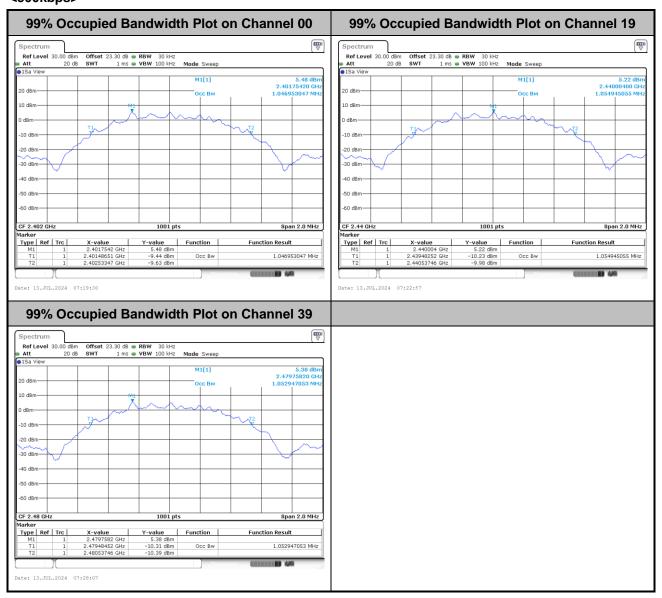
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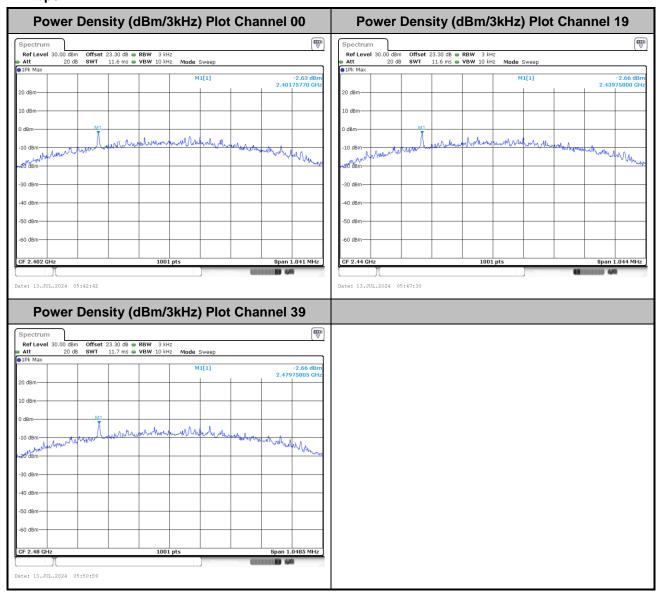


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# Power Spectral Density (dBm/3kHz)

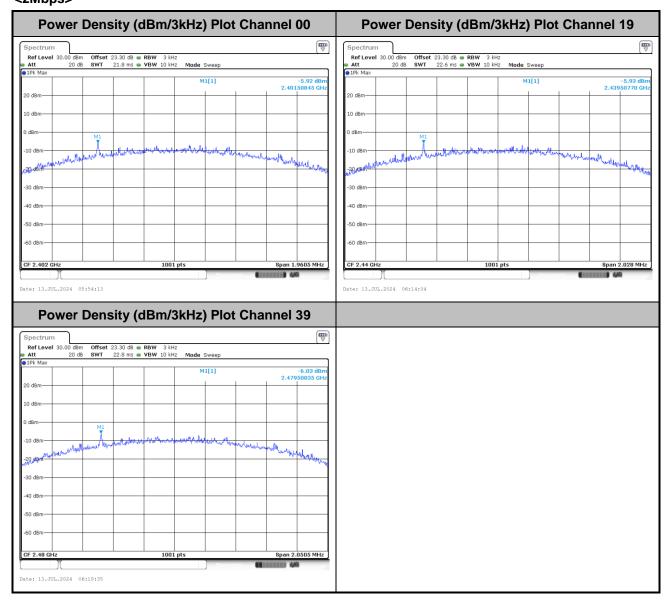
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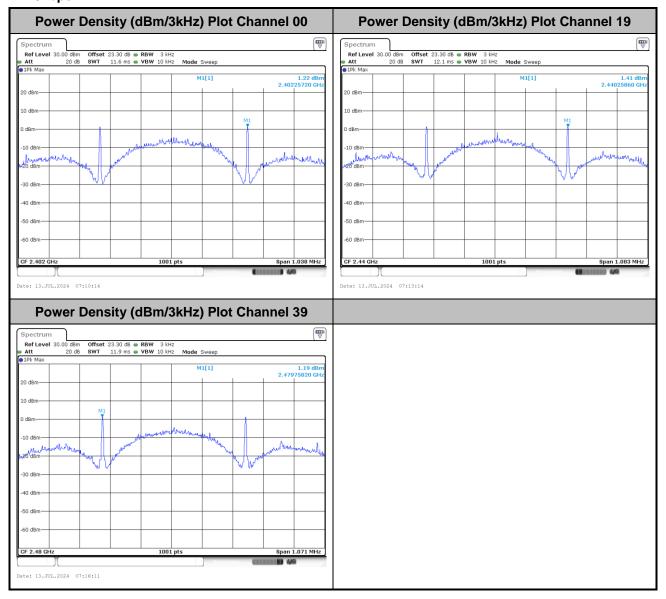
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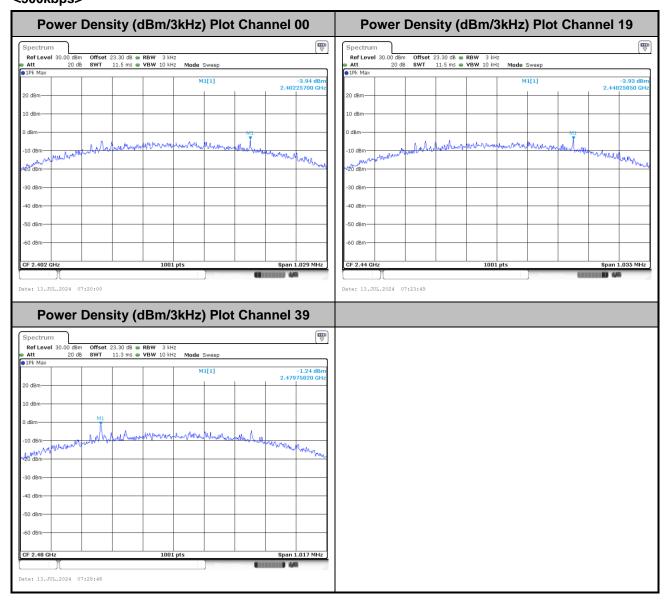
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#### <500kbps>

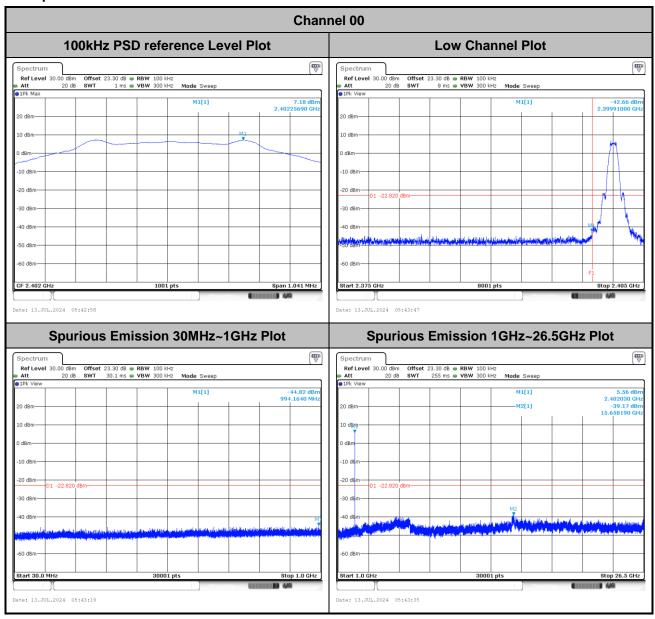


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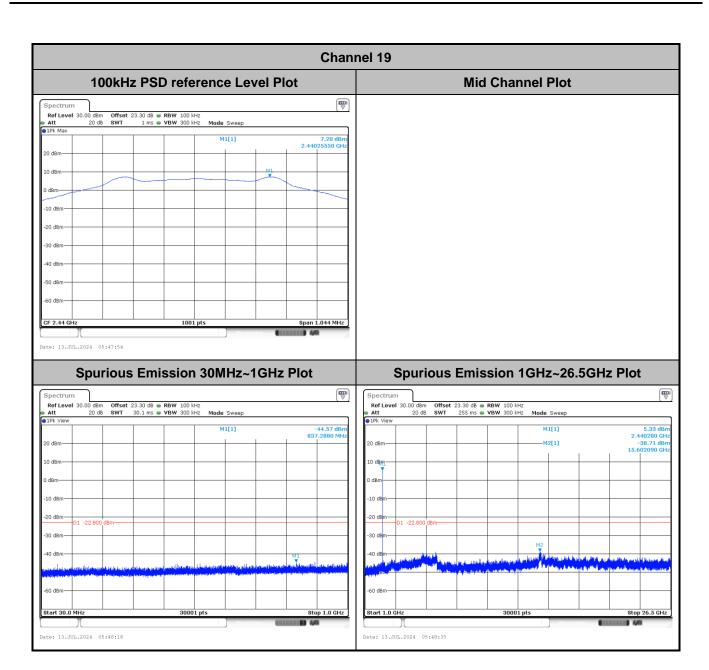
## **Band Edge and Conducted Spurious Emission**

#### <1Mbps>



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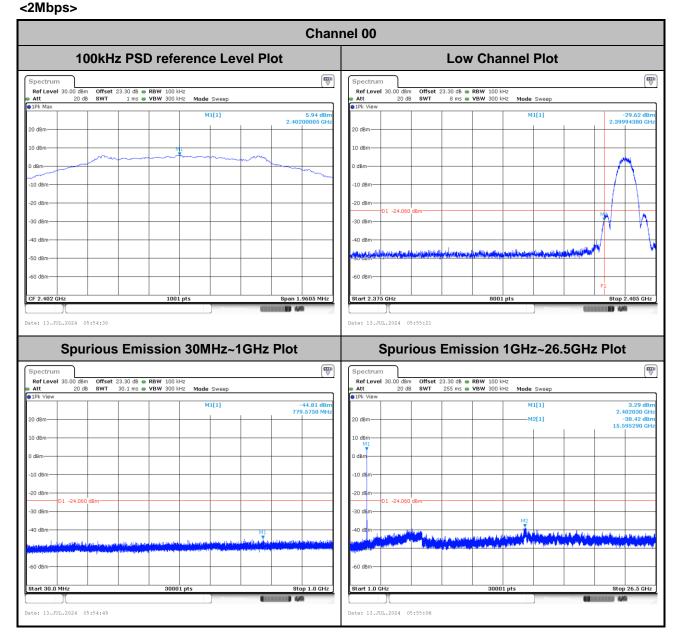
TEL: 886-3-327-0868 Page Number : A2-14 of 24

**Channel 39** 100kHz PSD reference Level Plot **High Channel Plot** Ref Level 30.00 7.07 dBn 2.48025875 GH: -43.57 dBn 2.48557180 GH 20 dBn 10 dBm .505 GHz Spurious Emission 30MHz~1GHz Plot Spurious Emission 1GHz~26.5GHz Plot Ref Level 30.00 Att -44.54 dBm 898.5900 MHz -38.23 dBn 15.616540 GH: 20 dBm 30 dBrr Date: 13.JUL.2024 05:51:34 Date: 13.JUL.2024 05:51:49

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**Channel 19 Mid Channel Plot** 100kHz PSD reference Level Plot | Spectrum | Ref Level | 30.00 dBm | Offset | 23.30 dB | RBW | 100 kHz | RBW | 20 dB | RBW | 20 dB | RBW | Mode | Sweep | RBW | 20 dB | RBW | 300 kHz | RBW | Mode | Sweep | RBW | MI[1] 20 dBn 10 dBm 10 dBm Spurious Emission 30MHz~1GHz Plot Spurious Emission 1GHz~26.5GHz Plot Ref Level 30.00 Att
1Pk View -45.11 dBm 864.9000 MHz 2.440280 GH: -38.49 dBn 15.570640 GH: 20 dBm 01 -23.99 30 dBm 40 dBrr Date: 13.JUL.2024 06:14:37 Date: 13.JUL.2024 06:14:52

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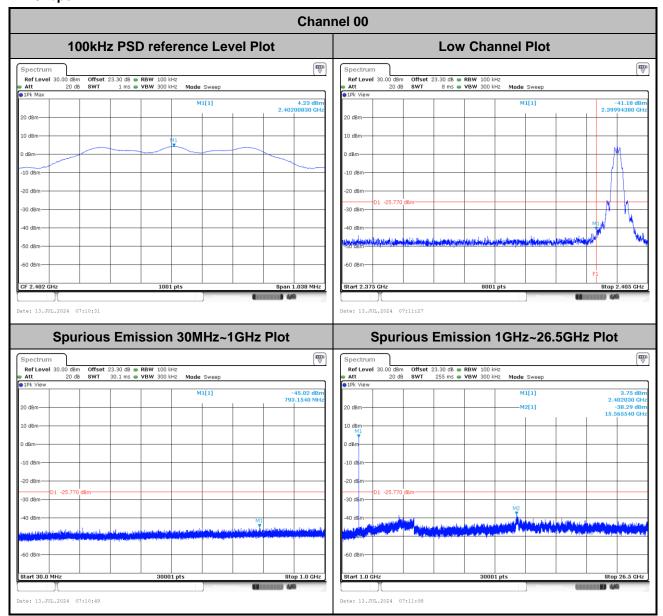
TEL: 886-3-327-0868 Page Number : A2-17 of 24

**Channel 39** 100kHz PSD reference Level Plot **High Channel Plot** Ref Level 30.00 10 dBn -24.24 .505 GHz Spurious Emission 30MHz~1GHz Plot Spurious Emission 1GHz~26.5GHz Plot Ref Level 30.00 Att 00 dBm Offset 23.30 dB • RBW 100 kHz 20 dB SWT 255 ms • VBW 300 kHz Mode Swee; 20 dBm 30 dBrr Date: 13.JUL.2024 06:20:25 Date: 13.JUL.2024 06:20:42

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#### <125kbps>



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**Channel 19 Mid Channel Plot** 100kHz PSD reference Level Plot | Spectrum | Ref Level | 30.00 dBm | Offset | 23.30 dB | RBW | 100 kHz | RBW | 20 dB | RBW | 20 dB | RBW | Mode | Sweep | RBW | 20 dB | RBW | 300 kHz | RBW | Mode | Sweep | RBW | MI[1] 10 dBm Spurious Emission 30MHz~1GHz Plot Spurious Emission 1GHz~26.5GHz Plot Ref Level 30.00 Att
1Pk View 00 dBm Offset 23.30 dB • RBW 100 kHz 20 dB SWT 255 ms • VBW 300 kHz Mode Sweep -39.15 dBn 15.684540 GH 20 dBm-30 dBm 40 dBrr

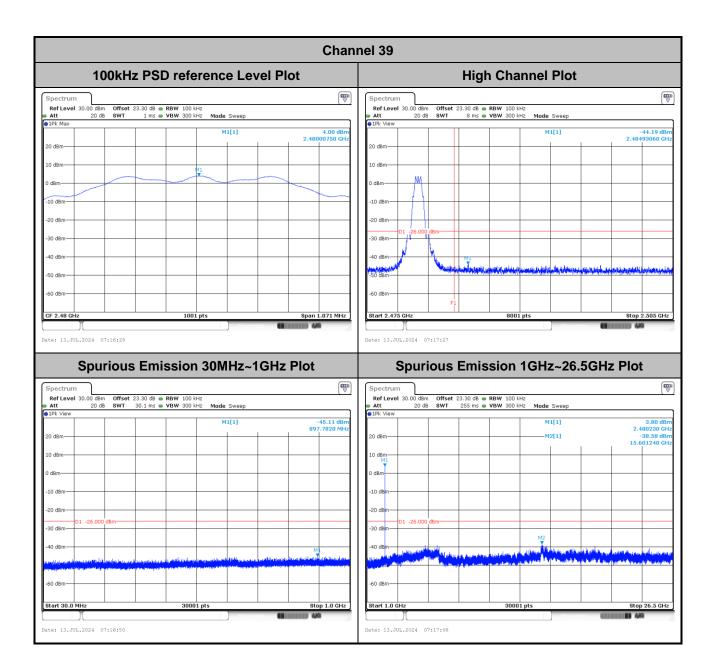
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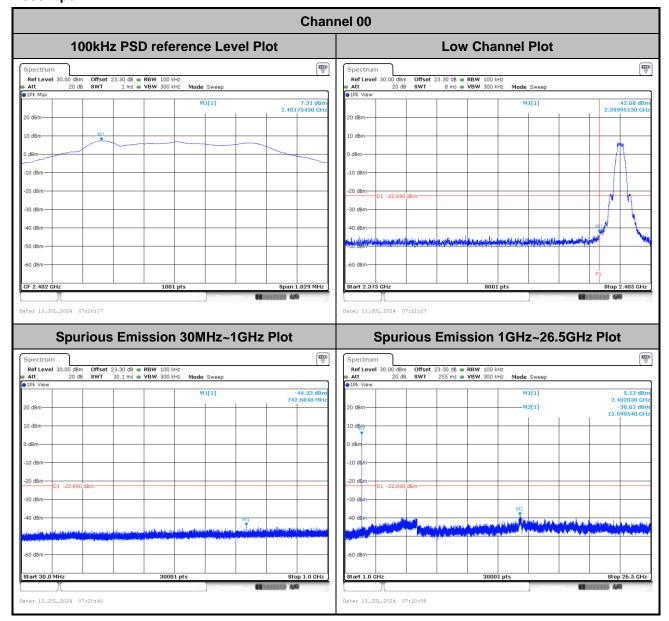
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Report No.: FR452223A

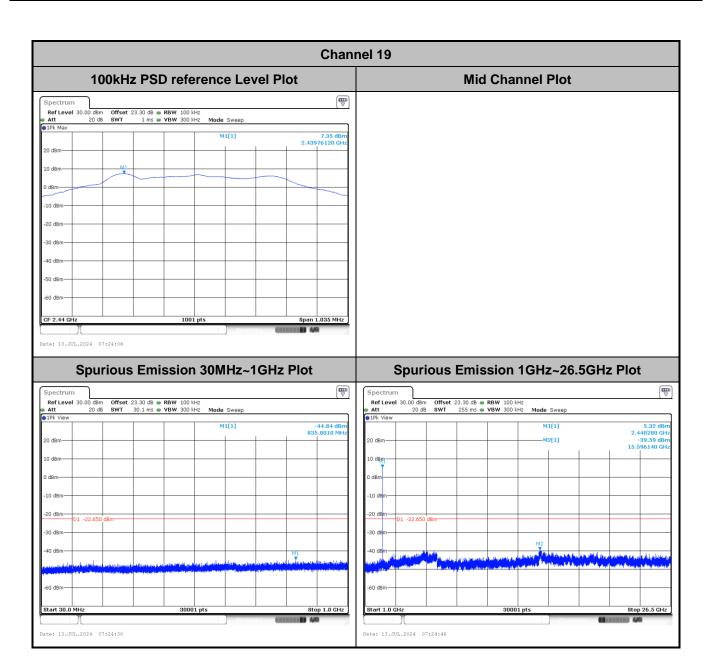
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#### <500kbps>



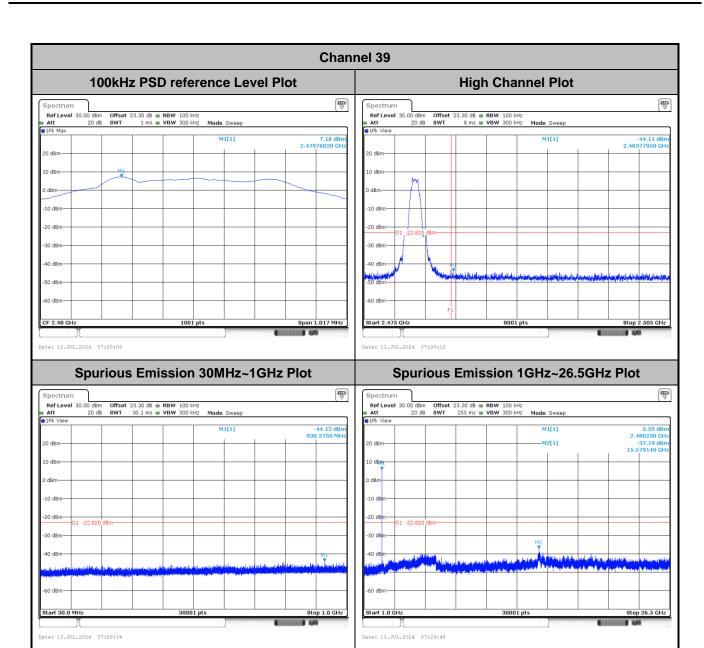
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# **Appendix B. AC Conducted Emission Test Results**

Test Engineer :	Lauia Chung	Temperature :	23.8~26.7°C
	Louis Chung	Relative Humidity :	43.6~55.5%

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### **EUT Information**

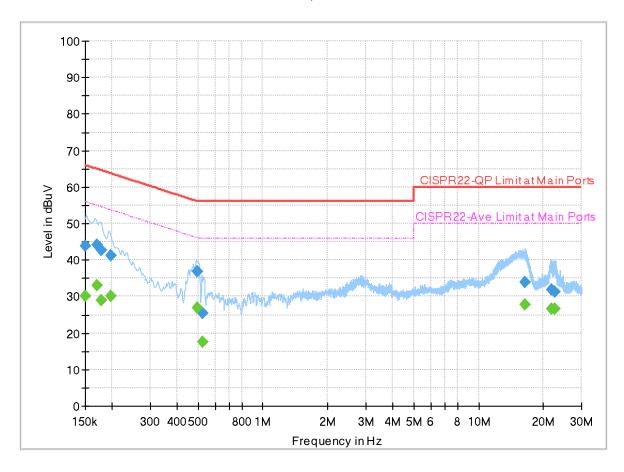
 Report NO :
 452223

 Test Mode :
 Mode 1

 Test Voltage :
 120Vac/60Hz

Phase: Line

Full Spectrum



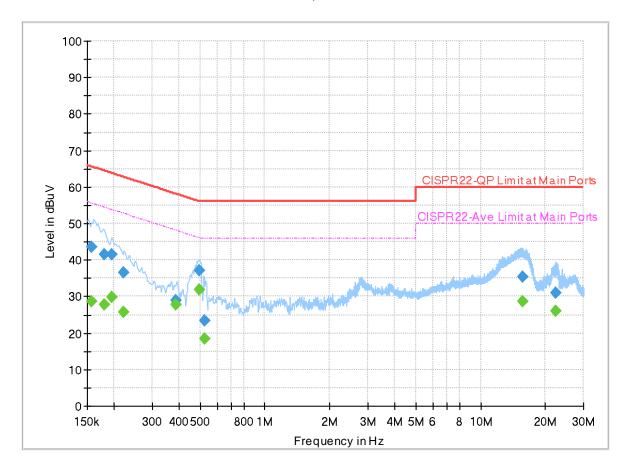
## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150270		30.03	55.99	25.96	L1	OFF	19.9
0.150270	43.98		65.99	22.01	L1	OFF	19.9
0.170250		33.06	54.95	21.89	L1	OFF	19.9
0.170250	44.22		64.95	20.73	L1	OFF	19.9
0.178170		28.87	54.57	25.70	L1	OFF	19.9
0.178170	42.65	-	64.57	21.92	L1	OFF	19.9
0.196530		30.21	53.76	23.55	L1	OFF	19.9
0.196530	41.16		63.76	22.60	L1	OFF	19.9
0.494250		27.04	46.10	19.06	L1	OFF	19.9
0.494250	36.82		56.10	19.28	L1	OFF	19.9
0.525750		17.68	46.00	28.32	L1	OFF	19.9
0.525750	25.54		56.00	30.46	L1	OFF	19.9
16.430460		27.73	50.00	22.27	L1	OFF	20.1
16.430460	33.93		60.00	26.07	L1	OFF	20.1
21.844500		26.69	50.00	23.31	L1	OFF	20.1
21.844500	31.99	-	60.00	28.01	L1	OFF	20.1
22.497090		26.59	50.00	23.41	L1	OFF	20.1
22.497090	31.29		60.00	28.71	L1	OFF	20.1

### **EUT Information**

Report NO: 452223
Test Mode: Mode 1
Test Voltage: 120Vac/60Hz
Phase: Neutral

Full Spectrum



## Final\_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750		28.70	55.63	26.93	N	OFF	19.9
0.156750	43.45		65.63	22.18	N	OFF	19.9
0.180960		27.75	54.44	26.69	N	OFF	19.9
0.180960	41.44	-	64.44	23.00	N	OFF	19.9
0.194100		29.86	53.86	24.00	N	OFF	19.9
0.194100	41.45		63.86	22.41	N	OFF	19.9
0.221280		25.66	52.77	27.11	N	OFF	19.9
0.221280	36.67	-	62.77	26.10	N	OFF	19.9
0.388050		27.67	48.11	20.44	N	OFF	19.9
0.388050	29.07		58.11	29.04	N	OFF	19.9
0.496950		31.98	46.05	14.07	N	OFF	19.9
0.496950	37.05		56.05	19.00	N	OFF	19.9
0.525750		18.46	46.00	27.54	N	OFF	19.9
0.525750	23.35	-	56.00	32.65	N	OFF	19.9
15.742140		28.70	50.00	21.30	N	OFF	20.2
15.742140	35.38	-	60.00	24.62	N	OFF	20.2
22.427250		26.09	50.00	23.91	N	OFF	20.2
22.427250	31.12		60.00	28.88	N	OFF	20.2

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

Test Engineer :	Fred Toong and Karl Hau	Relative Humidity: 54.2~62.19 Temperature: 18.2~20.59	54.2~62.1%
	Fred Tseng and Karl Hou	Temperature :	18.2~20.5℃

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### C1. 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	-	-
Mode 7	2400-2483.5	SISO	Bluetooth-LE_GSFK	00	2402	125kbps	-	-
Mode 8	2400-2483.5	SISO	Bluetooth-LE_GSFK	19	2440	125kbps	-	-
Mode 9	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	125kbps	-	-
Mode 10	2400-2483.5	SISO	Bluetooth-LE_GSFK	00	2402	500kbps	-	-
Mode 11	2400-2483.5	SISO	Bluetooth-LE_GSFK	19	2440	500kbps	-	-
Mode 12	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	500kbps	-	-
Mode 13	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	500kbps	-	SHF
Mode 14	2400-2483.5	SISO	Bluetooth-LE_GSFK	39	2480	500kbps	-	LF

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## C2. Summary of each worse mode

Meda	Modulation	01	Freq.	Level	Limit	Margin	Pol.	Peak	D I/	<b>D</b>	
Mode	Modulation	Ch.	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	Avg.	Avg.	Result	RU	Remark
4	Bluetooth-LE_GSFK	00	2386.18	39.49	54.00	-14.51	Н	Avg.	Pass	-	Band Edge
1	Bluetooth-LE_GSFK	00	7206.00	54.70	74.00	-19.30	Н	Peak	Pass	-	Harmonic
	Bluetooth-LE_GSFK	19	2500.00	39.57	54.00	-14.43	V	Avg.	Pass	-	Band Edge
2	Bluetooth-LE_GSFK	19	7320.00	50.41	54.00	-3.59	Н	Avg.	Pass	-	Harmonic
3	Bluetooth-LE_GSFK	39	2483.52	41.96	54.00	-12.04	Н	Avg.	Pass	-	Band Edge
3	Bluetooth-LE_GSFK	39	7440.00	51.17	54.00	-2.83	Н	Avg.	Pass	-	Harmonic
4	Bluetooth-LE_GSFK	00	2389.21	39.44	54.00	-14.56	Н	Avg.	Pass	-	Band Edge
4	Bluetooth-LE_GSFK	00	7206.00	55.01	74.00	-18.99	Н	Peak	Pass	-	Harmonic
5	Bluetooth-LE_GSFK	19	2500.00	39.58	54.00	-14.42	V	Avg.	Pass	-	Band Edge
5	Bluetooth-LE_GSFK	19	7320.00	49.25	54.00	-4.75	Н	Avg.	Pass	-	Harmonic
6	Bluetooth-LE_GSFK	39	2483.52	45.73	54.00	-8.27	Н	Avg.	Pass	-	Band Edge
Ö	Bluetooth-LE_GSFK	39	7440.00	49.65	54.00	-4.35	Н	Avg.	Pass	-	Harmonic
7	Bluetooth-LE_GSFK	00	2368.33	39.45	54.00	-14.55	Н	Avg.	Pass	-	Band Edge
,	Bluetooth-LE_GSFK	00	7206.00	55.48	74.00	-18.52	Н	Peak	Pass	-	Harmonic
8	Bluetooth-LE_GSFK	19	2499.88	39.47	54.00	-14.53	V	Avg.	Pass	-	Band Edge
0	Bluetooth-LE_GSFK	19	7320.00	50.31	54.00	-3.69	Н	Avg.	Pass	-	Harmonic
9	Bluetooth-LE_GSFK	39	2483.52	41.86	54.00	-12.14	Н	Avg.	Pass	-	Band Edge
9	Bluetooth-LE_GSFK	39	7440.00	50.98	54.00	-3.02	Н	Avg.	Pass	-	Harmonic
10	Bluetooth-LE_GSFK	00	2389.49	39.49	54.00	-14.51	Н	Avg.	Pass	-	Band Edge
10	Bluetooth-LE_GSFK	00	7200.00	48.95	74.00	-25.05	V	Peak	Pass	-	Harmonic
11	Bluetooth-LE_GSFK	19	2499.82	39.43	54.00	-14.57	Н	Avg.	Pass	-	Band Edge
''	Bluetooth-LE_GSFK	19	7320.00	51.26	54.00	-2.74	Н	Avg.	Pass	-	Harmonic
12	Bluetooth-LE_GSFK	39	2483.52	41.78	54.00	-12.22	Н	Avg.	Pass	_	Band Edge
12	Bluetooth-LE_GSFK	39	7440.00	51.65	54.00	-2.35	Н	Avg.	Pass	-	Harmonic
13	Bluetooth-LE_GSFK	39	25385.20	39.61	74.00	-34.39	Н	Peak	Pass	-	SHF
14	Bluetooth-LE_GSFK	39	749.74	38.21	46.00	-7.79	Н	Peak	Pass	-	LF

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1 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2328.4 2383.6 1400. 2365.2 2402 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2387.10 50.76 74.00 -23.24 37.83 26.73 8.52 32.35 10.03 107 117 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2328.4 2383.6 2346.8 2365.2 2402 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz SWT:Auto 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 | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2386.18 39.49 54.00 -14.51 26.56 26.74 8.51 32.35 10.03 107 117 AVERAGE 

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1 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2383.6 2328.4 1400. 2600. 2365.2 2402 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2329.14 50.97 74.00 -23.03 37.05 27.00 8.41 32.32 10.03 383 338 PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2402.00 99.65 ----- 86.62 26.82 8.54 32.36 10.03 383 338 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2328.4 2383.6 2346.8 2365.2 2402 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2388.84 39.44 54.00 -14.56 26.53 26.71 8.52 32.35 10.03 383 338 AVERAGE 

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Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 Peak 17.5 17.5 Avg 3000 3000 6000. 15000. 6000. 15000. 18000 12000. 18000 12000. Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL 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 -- Peak -- Peak -- Peak -- Peak

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1 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz ANT SISO 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 10.6G ~18G 52.5 52.5 Avg 35.0 35.0 17.5 17.5 10600 10600 12080. 16520. 18000 12080. 16520. 18000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL

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2 Band Edge - L Mode 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2414. 2336. 2362. 1400. 2600. 2440 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2353.55 50.79 74.00 -23.21 37.70 26.94 8.45 32.33 10.03 116 120 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2336. 2362. 2388. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz SWT:Auto 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 | MHz dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | dB | cm | deg | | 1 | 2368.89 | 39.39 | 54.00 -14.61 | 26.22 | 27.00 | 8.48 | 32.34 | 10.03 | 116 | 120 | AVERAGE 

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2 Mode Band Edge - R 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK\_BE\_74 70.0 52.5 Peak Blank 17.5 2440 2452. 2488. 2464. 2500 Frequency (MHz) : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 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 | cm | deg | |
| 1 | 2493.04 | 50.85 | 74.00 | -23.15 | 37.83 | 26.70 | 8.71 | 32.42 | 10.03 | 116 | 120 | PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 35.0 Avg **Blank** 17.5 2464. Frequency (MHz) 2452. 2488. 2476. 2500 Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto 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 2493.76 39.46 54.00 -14.54 26.44 26.70 8.71 32.42 10.03 116 120 AVERAGE

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2 Band Edge - L Mode 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2414. 2336. 2362. 1400. 2600. 2440 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2359.92 50.98 74.00 -23.02 37.02 27.00 8.47 32.34 10.03 370 336 PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2440.00 98.92 ----- 85.96 26.70 8.61 32.38 10.03 370 336 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2336. 2362. 2388. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2367.98 39.36 54.00 -14.64 26.19 27.00 8.48 32.34 10.03 370 336 AVERAGE | MHz dBuV/m dBuV/m dB dB v dB/m dB dB dB cm deg | 1 2440.00 98.35 ----- 85.39 26.70 8.61 32.38 10.03 370 336 AVERAGE

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2 Mode Band Edge - R 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO Pol. Vertical **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK\_BE\_74 70.0 52.5 Peak Blank 17.5 2440 2452. 2488. 2464. 2500 Frequency (MHz) : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 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 | cm | deg | 1 | 2493.46 | 50.70 | 74.00 | -23.30 | 37.68 | 26.70 | 8.71 | 32.42 | 10.03 | 370 | 336 | PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 35.0 Avg **Blank** 17.5 2464. Frequency (MHz) 2452. 2488. 2476. 2500 Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz 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 2500.00 39.57 54.00 -14.43 26.54 26.70 8.72 32.42 10.03 370 336 AVERAGE

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2 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Avg 9000. Frequency (MHz) 3000 3000 6000. 15000. 6000. 15000. 18000 12000. 18000 Frequency (MHz) Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL 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 d8uV/m d8uV/m d8 d8uV d8/m d8 d8u d8 d8 d8 1 4800,00 44.13 74.00 -29.87 32.11 32.45 12.36 33.49 0.70 2 7320.00 57.20 74.00 -16.80 39.84 37.20 15.37 35.85 0.64 cm deg Cm deg -- Peak 107 Peak 66 Peak 3 7320.00 50.41 54.00 -3.59 33.05 37.20 15.37 35.85 0.64 107 Average 3 7320.00 47.56 54.00 -6.44 30.20 37.20 15.37 35.85 0.64 220 66 Average

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2 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz ANT SISO 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 10.6G ~18G 52.5 52.5 Avg 35.0 35.0 17.5 17.5 10600 10600 12080. 16520. 18000 12080. 16520. 18000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL

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3 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz **ANT** SISO Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122. 105.0 105.0 87.5 87.5 PEAK\_BE\_74 PEAK\_74 70.0 70.0 52.5 52.5 Peak 17.5 17.5 2480 1000 2496. 2484. 2488. 1400. 2600. 2500 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.88 52.42 74.00 -21.58 39.41 26.70 8.69 32.41 10.03 100 117 PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2480.00 101.62 ----- 88.62 26.70 8.68 32.41 10.03 100 117 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 35.0 Avg 17.5 17.5 2480 1000 2496. 2484 2488. 2492. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2483.52 41.96 54.00 -12.04 28.95 26.70 8.69 32.41 10.03 100 117 AVERAGE 

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3 Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz **ANT** SISO Pol. Vertical **Fundamental** 140 Level (dBuV/m) 140 Level (dBuV/m) 122.5 122.5 105.0 105.0 87.5 87.5 PEAK\_BE\_74 PEAK\_74 70.0 70.0 52.5 52.5 Peak 17.5 17.5 2480 1000 2496. 2484. 2488. 1400. 2600. 2500 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2483.60 51.70 74.00 -22.30 38.69 26.70 8.69 32.41 10.03 400 337 PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2480.00 100.00 ----- 87.09 26.70 8.68 32.41 10.03 400 337 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 35.0 Avg 17.5 17.5 2480 1000 2496. 2484 2488. 2492. 2500 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2483.52 41.11 54.00 -12.89 28.10 26.70 8.69 32.41 10.03 400 337 AVERAGE | MHz dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | dB | cm | deg | 1 2480.00 99.50 ------ 86.50 26.70 8.68 32.41 10.03 400 337 AVERAGE

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3 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz **ANT** SISO 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 Avg 9000. Frequency (MHz) 3000 3000 6000. 15000. 6000. 15000. 18000 12000. 18000 Frequency (MHz) Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL 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 Remark | MHz | dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | cm | d960,00 | 45,46 | 74,60 | -28.54 | 33.11 | 32.70 | 12.43 | 33.47 | 0.69 | -- 27440.00 | 55.31 | 74.00 | -18.69 | 37.83 | 37.26 | 15.52 | 35.93 | 0.63 | 219 cm deg deg -- Peak 107 Peak 65 Peak 3 7440.00 51.17 54.00 -2.83 33.69 37.26 15.52 35.93 0.63 113 107 Average 3 7440.00 48.22 54.00 -5.78 30.74 37.26 15.52 35.93 0.63 219 65 Average

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3 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH39\_2480MHz ANT SISO 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 10.6G ~18G 52.5 52.5 Avg 35.0 35.0 17.5 17.5 10600 10600 12080. 16520. 18000 12080. 16520. 18000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL

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Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2328.4 2383.6 2365.2 1400. 2600. 2402 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2358.48 50.90 74.00 -23.10 37.77 26.98 8.46 32.34 10.03 107 113 PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2402.00 100.56 ----- 87.53 26.82 8.54 32.36 10.03 107 113 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2328.4 2383.6 2346.8 2365.2 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 2402.00 99.17 ------ 86.14 26.82 8.54 32.36 10.03 107 113 AVERAGE | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2389.21 39.44 54.00 -14.56 26.53 26.71 8.52 32.35 10.03 107 113 AVERAGE

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Mode **Band Edge** 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2328.4 2383.6 1400. 2600. 2365.2 2402 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2402.00 99.67 ----- 86.64 26.82 8.54 32.36 10.03 384 335 PEAK NHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB dB cm deg 1 2311.20 51.21 74.00 -22.79 38.11 27.00 8.38 32.31 10.03 384 335 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2328.4 2383.6 2346.8 2365.2 2402 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2371.73 39.39 54.00 -14.61 26.24 26.97 8.49 32.34 10.03 384 335 AVERAGE 

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Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz **ANT** SISO 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 AVG\_54 52.5 52.5 Peak 17.5 17.5 Avg 3000 3000 6000. 15000. 6000. 15000. 18000 12000. 18000 12000. Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Limit Read Ant Cable Preamp Aux APos TPos Freq Level Line Margin Level Factor Loss Factor Factor Read Ant Cable Preamp Aux APos TPos Limit Freq Level Line Margin Level Factor Loss Factor Factor -- Peak -- Peak -- Peak -- Peak

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Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH00\_2402MHz ANT SISO 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 10.6G ~18G 52.5 52.5 Avg 35.0 35.0 17.5 17.5 10600 10600 12080. 16520. 18000 12080. 16520. 18000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL

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5 Band Edge - L Mode 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2414. 2336. 2362. 1400. 2600. 2440 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg 1 2313.77 50.49 74.00 -23.51 37.39 27.00 8.38 32.31 10.03 138 114 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2336. 2362. 2388. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz SWT:Auto 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 | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2440.00 99.37 ----- 86.41 26.70 8.61 32.38 10.03 138 114 AVERAGE | MHz dBuV/m dBuV/m dB dB dB dB cm deg | 1 2370.45 39.37 54.00 -14.63 26.20 26.99 8.49 32.34 10.03 138 114 AVERAGE

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5 Mode Band Edge - R 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO Pol. Horizontal **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK\_BE\_74 70.0 52.5 Peak Blank 17.5 2440 2452. 2488. 2464. 2500 Frequency (MHz) : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 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 cm deg
1 2488.06 50.75 74.00 -23.25 37.73 26.70 8.70 32.41 10.03 138 114 PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 35.0 Avg **Blank** 17.5 2464. Frequency (MHz) 2452. 2488. 2500 2476. Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto 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 | 2500.00 | 39.55 | 54.00 -14.45 | 26.52 | 26.70 | 8.72 | 32.42 | 10.03 | 138 | 114 | AVERAGE

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5 Band Edge - L Mode 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Peak 17.5 17.5 2310 1000 2336. 2414. 2362. 1400. 2600. 2440 3000 Frequency (MHz) Frequency (MHz) : 03CH22-HY Site : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Read Ant Cable Preamp Aux APos TPos 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 | MHz | dBuV/m | dBuV/m | dB | dBuV | dB/m | dB | dB | dB | cm | deg | 1 | 2346.79 | 51.04 | 74.00 | -22.96 | 38.00 | 26.90 | 8.44 | 32.33 | 10.03 | 370 | 334 | PEAK MHz dBuV/m dBuV/m dB dBuV dB/m dB dB dB cm deg
1 2440.00 98.60 ----- 85.64 26.70 8.61 32.38 10.03 370 334 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 35.0 35.0 Avg 17.5 17.5 1000 2310 2336. 2362. 2388. 2414. 2440 1400. 1800. 2200. 2600. 3000 Frequency (MHz) Frequency (MHz) Site : 03CH22-HY Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL Condition: AVG\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto : RBW:1000.000kHz VBW:0.010kHz 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 dB dB dB cm deg | 1 2361.74 39.42 54.00 -14.58 26.26 27.00 8.47 32.34 10.03 370 334 AVERAGE 

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5 Mode Band Edge - R 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO Pol. Vertical **Fundamental** 140 Level (dBuV/m) 122.5 105.0 87.5 PEAK\_BE\_74 70.0 52.5 Peak Blank 17.5 2440 2452. 2488. 2464. 2500 Frequency (MHz) : 03CH22-HY Condition: PEAK\_BE\_74 3m DRH18-E\_LE2C04A18EN\_240711 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 | Cm | deg | 1 | 2484.52 | 50.29 | 74.00 | -23.71 | 37.28 | 26.70 | 8.69 | 32.41 | 10.03 | 370 | 334 | PEAK 140 Level (dBuV/m) 122.5 105.0 87.5 70.0 52.5 35.0 Avg **Blank** 17.5 2464. Frequency (MHz) 2452. 2488. 2476. 2500 Site : 03CH22-HY Condition: AVG\_BE\_54 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL : RBW:1000.000kHz VBW:0.010kHz 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 2500.00 39.58 54.00 -14.42 26.55 26.70 8.72 32.42 10.03 370 334 AVERAGE

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5 Mode Harmonic 2400-2483.5\_Bluetooth-LE\_GSFK \_CH19\_2440MHz **ANT** SISO 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 Avg 9000. Frequency (MHz) 3000 3000 6000. 15000. 6000. 15000. 18000 12000. 18000 Frequency (MHz) Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 HORIZONTAL Site : 03CH22-HY Condition: PEAK\_74 3m DRH18-E\_LE2C04A18EN\_240711 VERTICAL 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 dB dB dB dB cm deg | 1 4888.00 44.95 74.00 -29.05 32.93 32.45 12.36 33.49 0.70 --- -- Peak | 2 7320.00 54.99 74.00 -19.01 37.63 37.20 15.37 35.85 0.64 374 180 Peak | deg -- Peak 108 Peak 3 7320.00 49.25 54.00 -4.75 31.89 37.20 15.37 35.85 0.64 111 108 Average 3 7320.00 47.00 54.00 -7.00 29.64 37.20 15.37 35.85 0.64 374 180 Average

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