

FCC Radio Test Report

FCC ID : WS2-WG7A5101
Equipment : WIFI Module
Brand Name : Jorjin
Model Name : WG7A51-01
Applicant : JORJIN TECHNOLOGIES INC.
17F-1, No.239, Sec. 1, Datong Rd., Xizhi
Dist., New Taipei City 22161, Taiwan, R.O.C.
Manufacturer : JORJIN TECHNOLOGIES INC.
17F-1, No.239, Sec. 1, Datong Rd., Xizhi
Dist., New Taipei City 22161, Taiwan, R.O.C.
Standard : 47 CFR FCC Part 15.247

The product was received on Jan. 22, 2025, and testing was started from Mar. 11, 2025 and completed on Jun. 20, 2025. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.



Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



Table of Contents

HISTORY OF THIS TEST REPORT	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Information.....	5
1.2 Testing Applied Standards	7
1.3 Testing Location Information	7
1.4 Measurement Uncertainty	7
2 TEST CONFIGURATION OF EUT.....	8
2.1 Test Channel Mode	8
2.2 The Worst Case Measurement Configuration.....	9
2.3 Support Equipment.....	10
2.4 Test Setup Diagram	11
3 TRANSMITTER TEST RESULT	12
3.1 DTS Bandwidth.....	12
3.2 Maximum Conducted Output Power	13
3.3 Power Spectral Density	15
3.4 Emissions in Non-restricted Frequency Bands	16
3.5 Emissions in Restricted Frequency Bands.....	17
4 TEST EQUIPMENT AND CALIBRATION DATA.....	21
APPENDIX A. TEST RESULTS OF DTS BANDWIDTH	
APPENDIX B. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER	
APPENDIX C. TEST RESULTS OF POWER SPECTRAL DENSITY	
APPENDIX D. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS	
APPENDIX E. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS	
APPENDIX F. TEST PHOTOS	
PHOTOGRAPHS OF EUT V01	



History of this test report

[illegible]

Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
-	15.207	AC Power-line Conducted Emissions	Not Required	Only Employ DC Power Supply
3.1	15.247(a)	DTS Bandwidth	PASS	-
3.2	15.247(b)	Maximum Conducted Output Power	PASS	-
3.3	15.247(e)	Power Spectral Density	PASS	-
3.4	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.5	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and explanations:

None

Reviewed by: Barry Hsiao

Report Producer: Michelle Tsai

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	BT-LE(1Mbps)	2402-2480	0-39 [40]
2400-2483.5	BT-LE(2Mbps)	2404-2478	1-38 [38]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(125kbps)	1.0	1TX
2.4-2.4835GHz	BT-LE(500kbps)	1.0	1TX
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX
2.4-2.4835GHz	BT-LE(2Mbps)	2.0	1TX

Note:

- Bluetooth LE uses a GFSK (125kbps/500kbps/1Mbps/2Mbps) modulation.
- BWch is the nominal channel bandwidth.
- Bluetooth LE 125k/500k/1Mbps uses the same modulation, and 1Mbps was found to be the worst case scenario which was performed full test and recorded in this test report.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	Unictron Technologies Corporation	AA077U	Chip Ant	Reverse SMA	2.4G+5G+BT

Ant.	Port	Gain (dBi)		
		2.4G	5G	Bluetooth
1	1	1.4	2.3	1.4

For 2.4GHz function:

For IEEE 802.11 b/g/n/ax mode (1TX/1RX)

Ant. 1 (port 1) could transmit/receive.

For 5GHz function:

For IEEE 802.11 a/n/ax mode (1TX/1RX)

Ant. 1 (port 1) could transmit/receive.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 1 (port 1) could transmit/receive.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From Test Fixture		
EUT Function	☒ Point-to-multipoint	☐ Point-to-point	
Type of EUT			
☒	Stand-alone		
☐	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:	...	
☐	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:	...	
☐	Other:		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T (s)	VBW (Hz)_1/T
BT-LE(1Mbps)	0.393	4.06	393.75u	3k
BT-LE(2Mbps)	0.208	6.82	210.937u	5k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ KDB 558074 D01 v05r02
- ♦ KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☐ Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
	TEL: 886-3-327-3456		FAX: 886-3-327-0973	
Test site Designation No. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Wayne Chiu	23.4~23.9℃ / 52~55%	13/Mar/2025~20/Jun/2025
☒ Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)			
	TEL: 886-3-327-0868			
Test site Designation No. TW0036 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH25-HY	Henry Ho	22.6~23.2℃ / 51~53%	11/Mar/2025~20/Mar/2025

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Test Items	Uncertainty	Remark
AC Power-line Conducted Emissions	4.53 dB	Confidence levels of 95%
Bandwidth	3 MHz	Confidence levels of 95%
Maximum Conducted Output Power	2 dB	Confidence levels of 95%
Power Spectral Density	2 dB	Confidence levels of 95%
Emissions in Non-restricted Frequency Bands	0.14 dB	Confidence levels of 95%
Emissions in Restricted Frequency Bands	4.8 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Test Software Version	Radio Tool 2.3.0.rt
-----------------------	---------------------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	10
2440MHz	10
2480MHz	5
BT-LE(2Mbps)	-
2404MHz	5
2440MHz	10
2478MHz	5

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	Fixture Mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

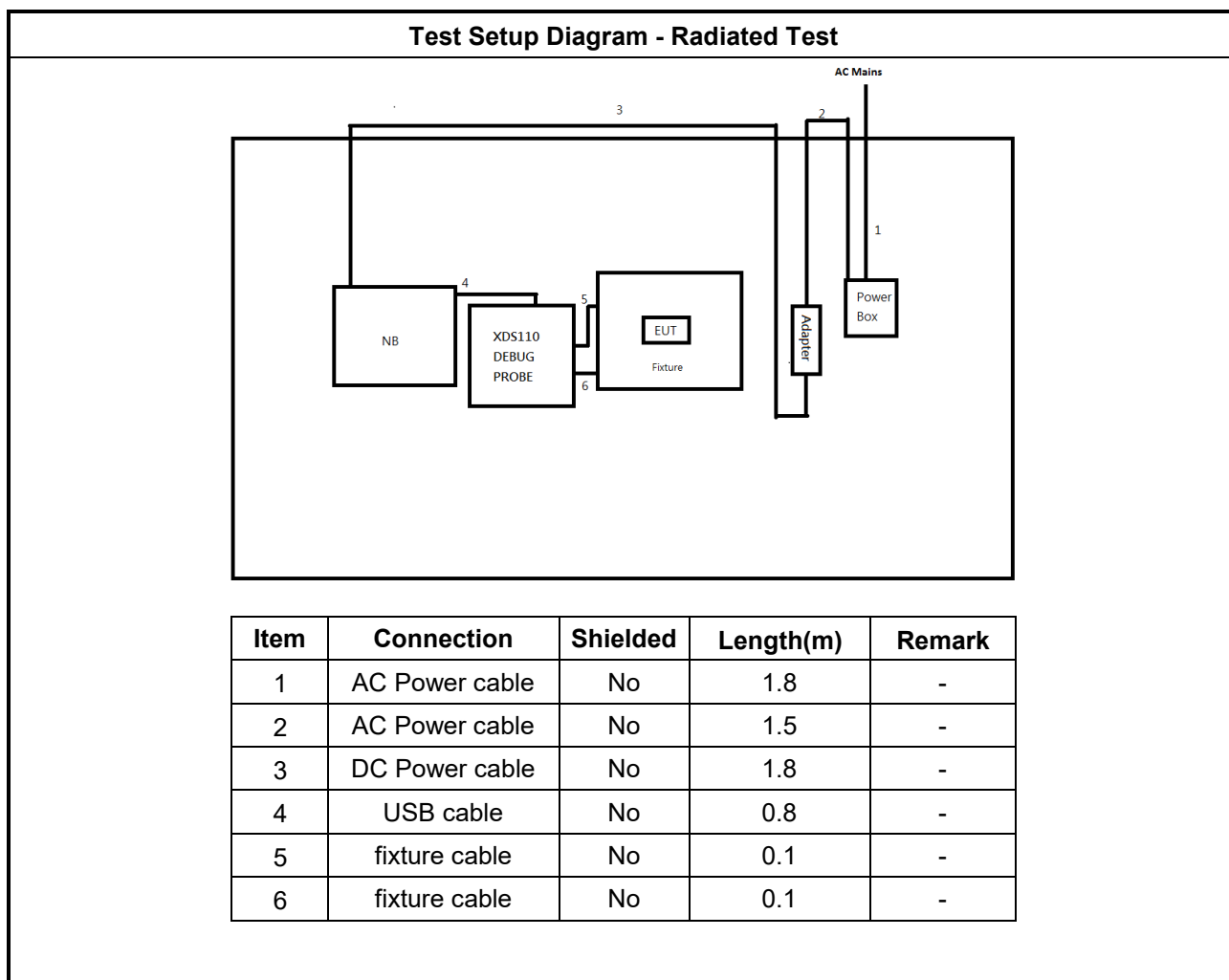


2.3 Support Equipment

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	Test fixture	Texas Instruments	Sitara AM3358	-	Provided by Customer
4	XDSUO DEBUG PROBE	TEXAS INSTRUMENTS	TMDSEMU110-U	-	Provided by Customer
5	USB Cable	Sporton	USB cable-1	-	-

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Adapter for NB	DELL	HA65NM130	-	-
2	AC Power cable	Power sync	PW-GPC180-3	-	-
3	Notebook	DELL	E5410	-	-
4	Test fixture	Texas Instruments	Sitara AM3358	-	Provided by Customer
5	XDSUO DEBUG PROBE	TEXAS INSTRUMENTS	TMDSEMU110-U	-	Provided by Customer
6	USB Cable	Sporton	USB cable-1	-	-

2.4 Test Setup Diagram



3 Transmitter Test Result

3.1 DTS Bandwidth

3.1.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
▪	6 dB bandwidth $\geq$ 500 kHz.

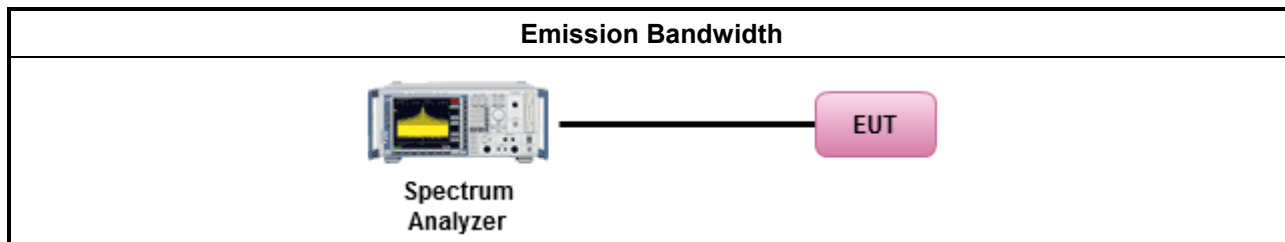
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
☒	Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
☐	Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
☐	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.1.4 Test Setup



3.1.5 Test Result of Emission Bandwidth

Refer as Appendix A

3.2 Maximum Conducted Output Power

3.2.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Smart antenna system (SAS):
	- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:	
	2400-2483.5 MHz Band
	Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	Smart antenna system (SAS)
	- Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

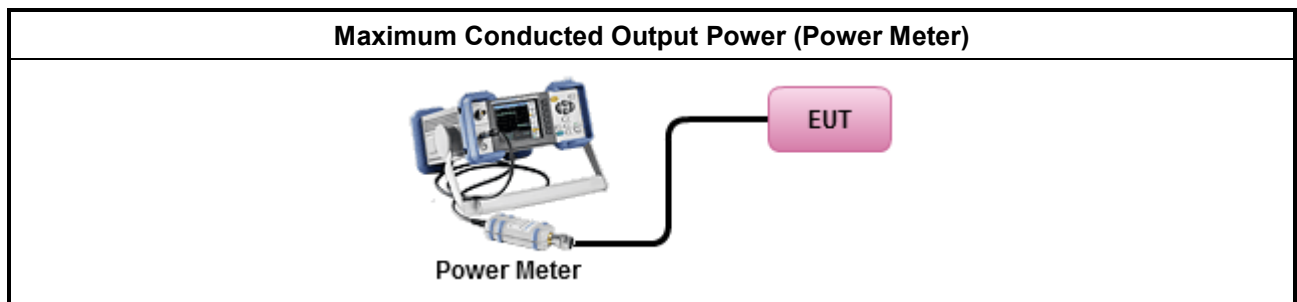
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
Maximum Peak Conducted Output Power	
☐	Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
☐	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
☐	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
Maximum Average Conducted Output Power	
☐	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
☒	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
For conducted measurement.	
If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.	
If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$	

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B

3.3 Power Spectral Density

3.3.1 Power Spectral Density Limit

Power Spectral Density Limit	
▪	Power Spectral Density (PSD) ≤ 8 dBm/3kHz

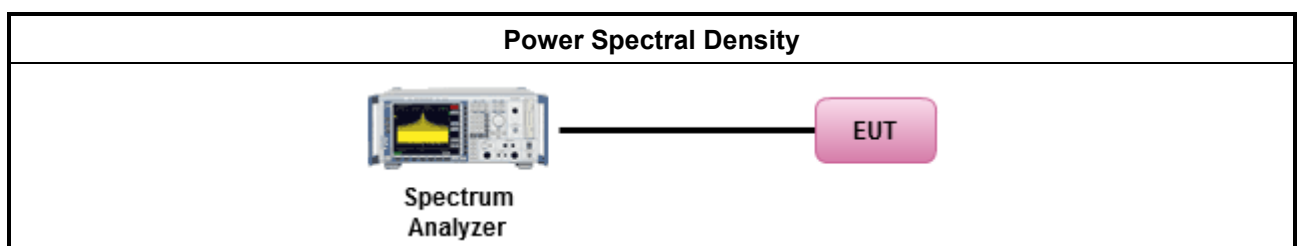
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
▪	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
☒	Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Max. PSD.
▪	For conducted measurement.
▪	If The EUT supports multiple transmit chains using options given below:
▪	Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Refer as Appendix C

3.4 Emissions in Non-restricted Frequency Bands

3.4.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak level. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average level.	

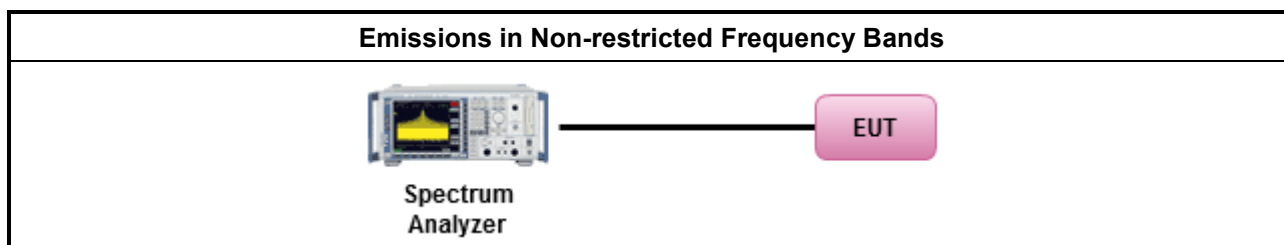
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method
Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.4.4 Test Setup



3.4.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix D

3.5 Emissions in Restricted Frequency Bands

3.5.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

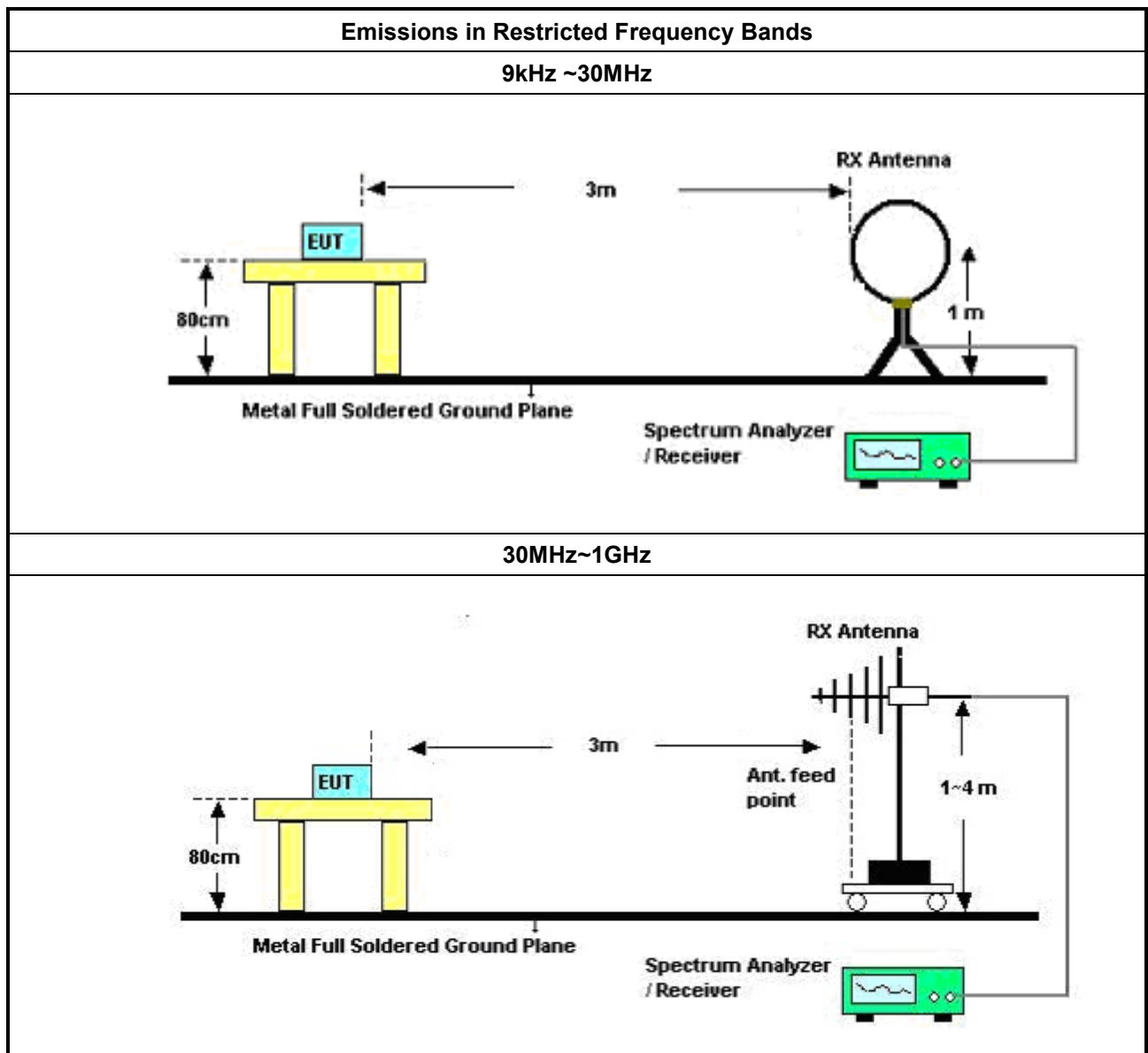
Test Method	
	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	For the transmitter unwanted emissions shall be measured using following options below:
	Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
	For the transmitter band-edge emissions shall be measured using following options below:
	Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
	Use the following spectrum analyzer settings:
	Set RBW=100 kHz for $f < 1$ GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement, refer as 1.1.4.
	KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
	Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

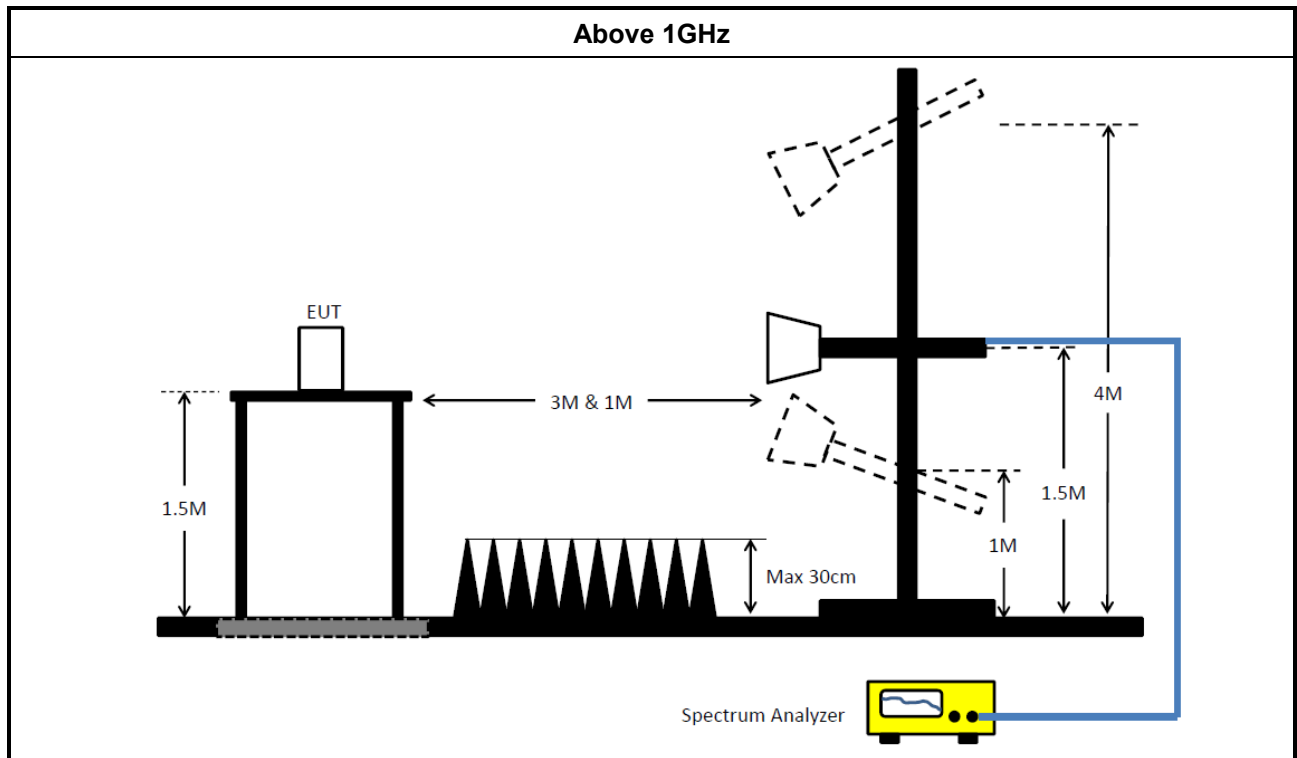
3.5.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor)

3.5.5 Test Setup





3.5.6 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.5.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix E



4 Test Equipment and Calibration Data

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV3044	101438	10Hz~44GHz	08/Nov/2024	07/Nov/2025
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	16/Oct/2024	15/Oct/2025
Power Meter	Anritsu	ML2495A	949003	300MHz~40GHz	13/Feb/2025	12/Feb/2026
Pulse Sensor	Anritsu	MA2411B	917017	300MHz~40GHz	13/Feb/2025	12/Feb/2026
SENSE-15247_FS	Sporton	V5.11.23	N/A	N/A	N/A	N/A

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH25-HY	30MHz~1GHz 3m	20/Jul/2024	19/Jul/2025
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH25-HY	1GHz~18GHz 3m	08/Aug/2024	07/Aug/2025
ESR7 EMI Test Receiver	ROHDE & SCHWARZ	ESR7	102956	9kHz~3.6GHz	27/Aug/2024	26/Aug/2025
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101410	10Hz~44GHz	18/Nov/2024	17/Nov/2025
Loop Antenna	TESEQ	HLA 6120	65417	9kHz~30MHz	17/Oct/2024	16/Oct/2025
Bilog Antenna & 6dB Attenuator	TESEQ & VGT	CBL 6111D & VFA 04002-06	63537/001	30MHz~1GHz	30/May/2024	29/May/2025
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02876	1GHz~18GHz	11/Jul/2024	10/Jul/2025
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	01248	18GHz~40GHz	04/Oct/2024	03/Oct/2025
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB007	9kHz~1GHz	24/Apr/2024	23/Apr/2025
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB007	1GHz~40GHz	15/Feb/2025	14/Feb/2026
Preamplifier	SGH	PRAMP 903	20230515-1	25MHz~3GHz	24/May/2024	23/May/2025
Preamplifier	SGH	PRAMP 118-H	20230515-3	1GHz~18GHz	24/May/2024	23/May/2025
Amplifier	EM	EM18G40GA	060874	18GHz ~ 40GHz	15/Apr/2024	14/Apr/2025
SENSE-15247-FS	Sporton	V5.11.20	NA	NA	NA	NA



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	722.5k	1.042M	1M04F1D	690k	995.752k
BT-LE(2Mbps)	1.43M	2.084M	2M08F1D	800k	2.044M

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

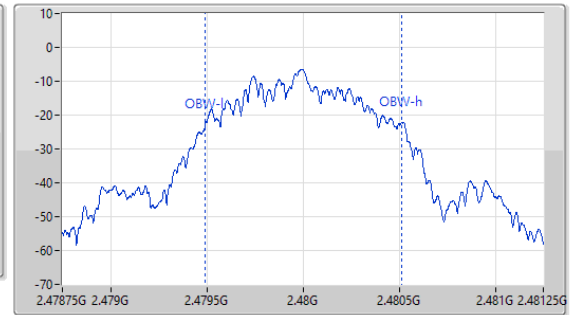
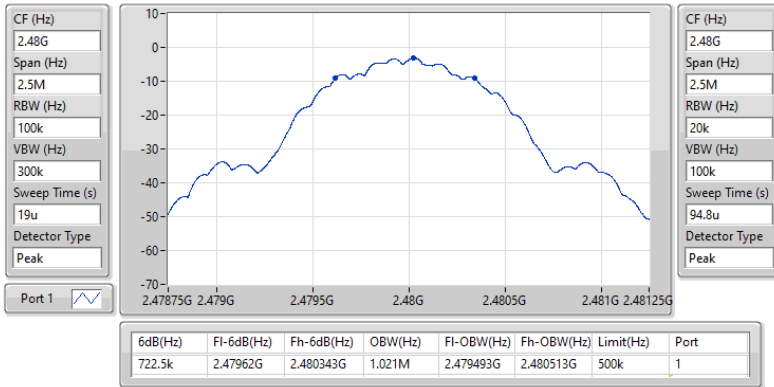
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	690k	1.042M
2440MHz	Pass	500k	692.5k	995.752k
2480MHz	Pass	500k	722.5k	1.021M
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	500k	915k	2.054M
2440MHz	Pass	500k	800k	2.044M
2478MHz	Pass	500k	1.43M	2.084M

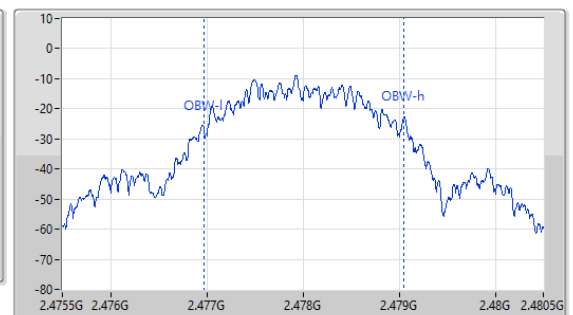
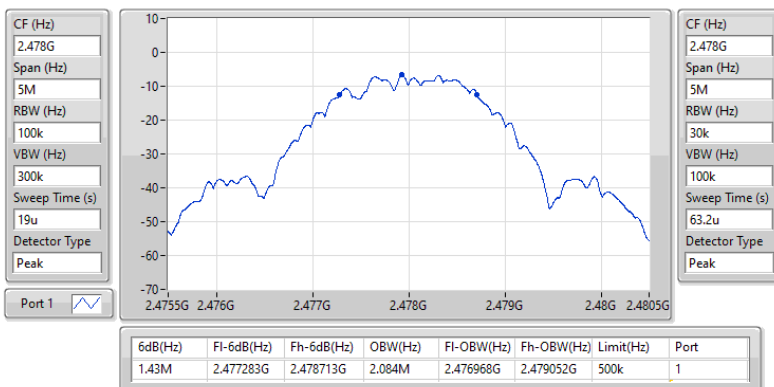
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)
EBW-DTS
2480MHz

14/03/2025


2.4-2.4835GHz_BT-LE(2Mbps)
EBW-DTS
2478MHz

14/03/2025





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	4.94	0.00312
BT-LE(2Mbps)	3.84	0.00242

**Result**

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.40	4.94	30.00
2440MHz	Pass	1.40	3.87	30.00
2480MHz	Pass	1.40	-0.65	30.00
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	1.40	-0.36	30.00
2440MHz	Pass	1.40	3.84	30.00
2478MHz	Pass	1.40	-0.72	30.00

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-10.96
BT-LE(2Mbps)	-14.98

RBW = 3kHz;

**Result**

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.40	-10.96	8.00
2440MHz	Pass	1.40	-11.68	8.00
2480MHz	Pass	1.40	-16.43	8.00
BT-LE(2Mbps)	-	-	-	-
2404MHz	Pass	1.40	-19.39	8.00
2440MHz	Pass	1.40	-14.98	8.00
2478MHz	Pass	1.40	-19.90	8.00

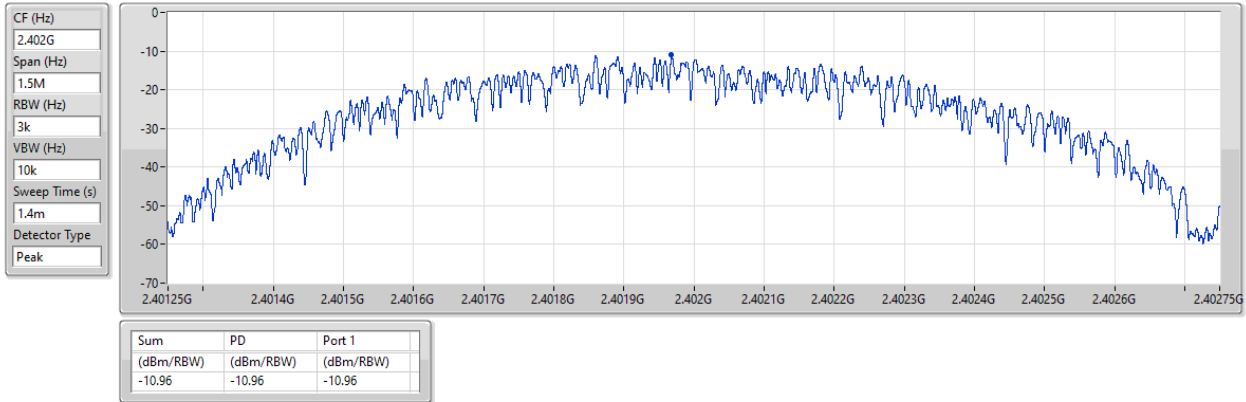
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
Inf = There's no restriction for the limit.

2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2402MHz

20/06/2025

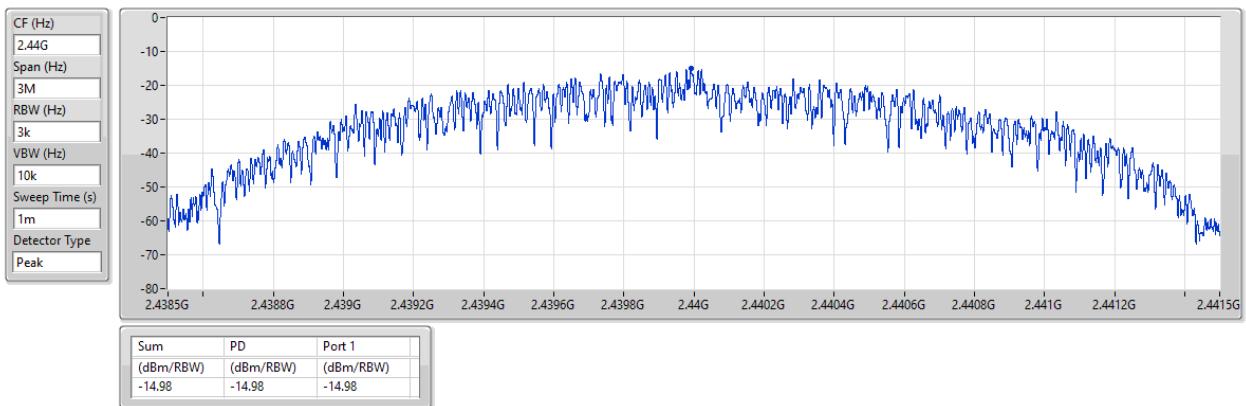


2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2440MHz

14/03/2025



Summary

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40217G	4.15	-25.85	2.09565G	-54.92	2.4G	-48.99	2.4G	-46.43	2.5035G	-55.30	21.7127G	-44.66	1
BT-LE(2Mbps)	Pass	2.44008G	3.37	-26.63	717.38M	-53.39	2.3924G	-54.71	2.4G	-57.68	2.5031G	-55.36	15.24214G	-43.50	1

Result

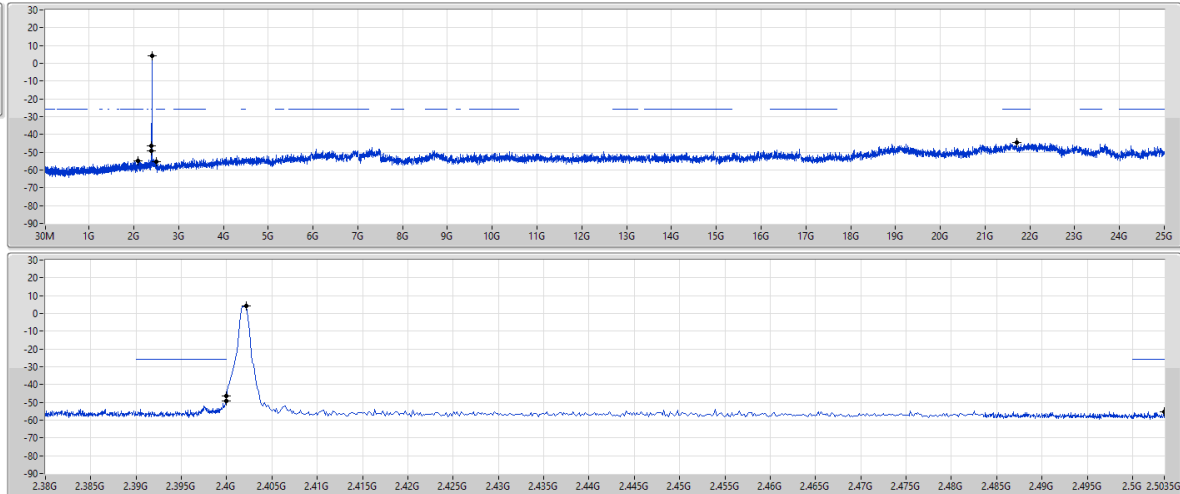
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40217G	4.15	-25.85	2.09565G	-54.92	2.4G	-48.99	2.4G	-46.43	2.5035G	-55.30	21.7127G	-44.66	1
2440MHz	Pass	2.40217G	4.15	-25.85	1.88063G	-55.21	2.3992G	-54.89	2.4G	-56.47	2.50066G	-55.37	21.96297G	-44.04	1
2480MHz	Pass	2.40217G	4.15	-25.85	1.97815G	-54.80	2.391G	-54.82	2.4G	-56.42	2.50238G	-55.31	21.5974G	-44.09	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2404MHz	Pass	2.44008G	3.37	-26.63	2.15558G	-56.64	2.39984G	-54.38	2.4G	-54.94	2.50054G	-55.28	16.27979G	-42.71	1
2440MHz	Pass	2.44008G	3.37	-26.63	717.38M	-53.39	2.3924G	-54.71	2.4G	-57.68	2.5031G	-55.36	15.24214G	-43.50	1
2478MHz	Pass	2.44008G	3.37	-26.63	1.83128G	-56.91	2.39384G	-55.05	2.4G	-58.40	2.5029G	-54.41	17.60146G	-43.63	1

2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

2402MHz

20/06/2025

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

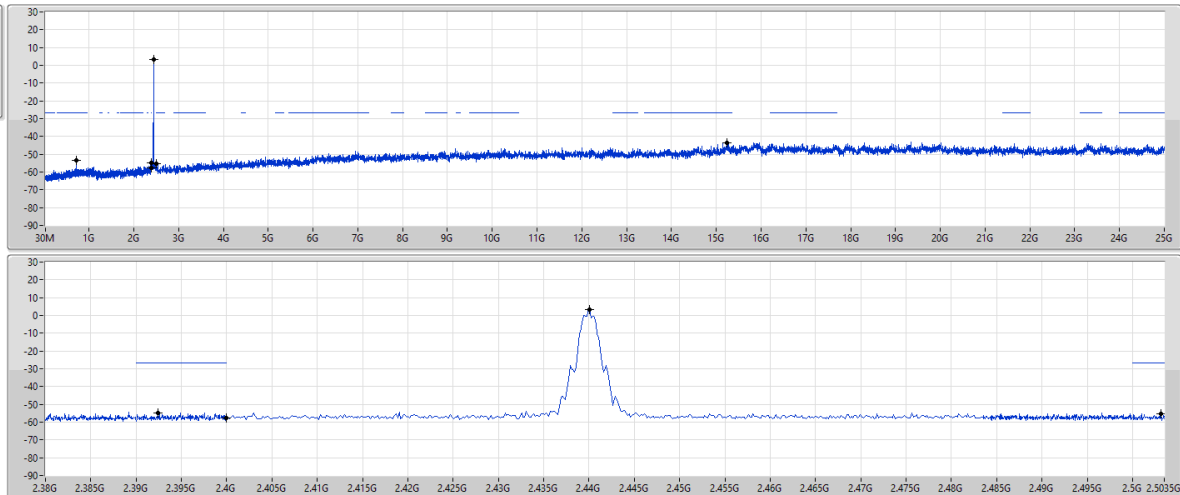
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40217G	4.15	-25.85	2.09565G	-54.92	2.4G	-48.99	2.4G	-46.43	2.5035G	-55.30	2.17127G	-44.66	1

2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2440MHz

14/03/2025

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44008G	3.37	-26.63	717.38M	-53.39	2.3924G	-54.71	2.4G	-57.68	2.5031G	-55.36	15.24214G	-43.50	1



Summary

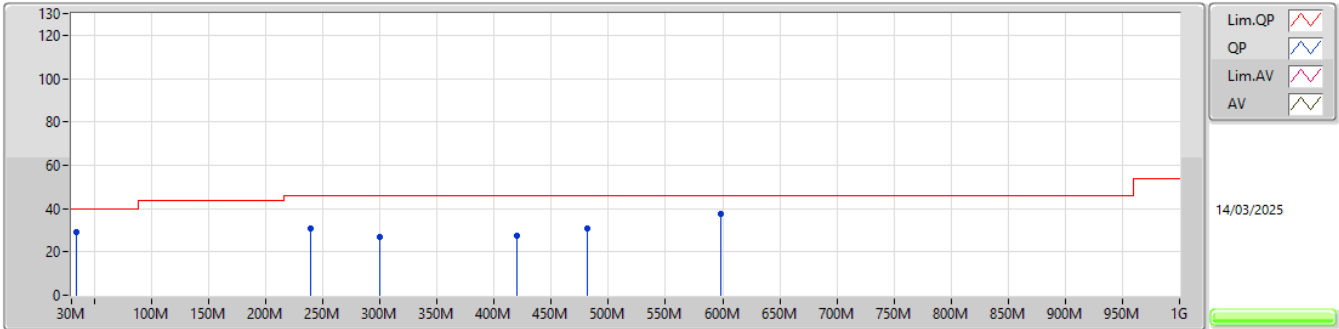
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	239.52M	39.62	46.00	-6.38	3	Horizontal	0	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2440MHz_Fixture	Pass	PK	33.88M	29.20	40.00	-10.80	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	239.52M	30.56	46.00	-15.44	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	299.66M	26.72	46.00	-19.28	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	419.94M	27.65	46.00	-18.35	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	482.02M	30.83	46.00	-15.17	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	598.42M	37.68	46.00	-8.32	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	33.88M	28.07	40.00	-11.93	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	239.52M	39.62	46.00	-6.38	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	299.66M	37.84	46.00	-8.16	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	482.02M	37.56	46.00	-8.44	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	600.36M	34.81	46.00	-11.19	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	720.64M	39.54	46.00	-6.46	3	Horizontal	0	1.00

2.4-2.4835GHz_BT-LE(2Mbps)

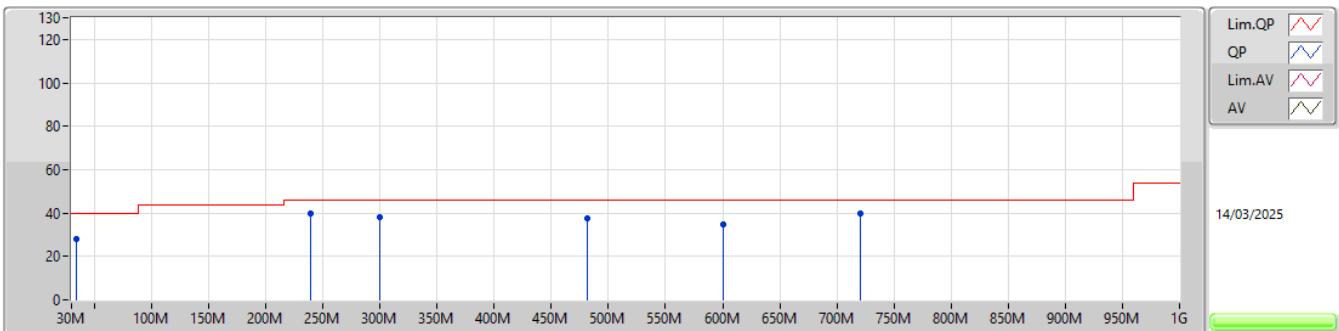
2440MHz_Fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	33.88M	29.20	40.00	-10.80	-21.06	3	Vertical	360	1.00	50.26	22.83	0.45	44.34
PK	239.52M	30.56	46.00	-15.44	-25.93	3	Vertical	360	1.00	56.49	17.32	1.14	44.39
PK	299.66M	26.72	46.00	-19.28	-23.77	3	Vertical	360	1.00	50.49	19.29	1.20	44.26
PK	419.94M	27.65	46.00	-18.35	-19.73	3	Vertical	360	1.00	47.38	22.79	1.47	43.99
PK	482.02M	30.83	46.00	-15.17	-18.57	3	Vertical	360	1.00	49.40	23.73	1.60	43.90
PK	598.42M	37.68	46.00	-8.32	-16.09	3	Vertical	360	1.00	53.77	26.08	1.69	43.86

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_Fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	33.88M	28.07	40.00	-11.93	-21.06	3	Horizontal	0	1.00	49.13	22.83	0.45	44.34
PK	239.52M	39.62	46.00	-6.38	-25.93	3	Horizontal	0	1.00	65.55	17.32	1.14	44.39
PK	299.66M	37.84	46.00	-8.16	-23.77	3	Horizontal	0	1.00	61.61	19.29	1.20	44.26
PK	482.02M	37.56	46.00	-8.44	-18.57	3	Horizontal	0	1.00	56.13	23.73	1.60	43.90
PK	600.36M	34.81	46.00	-11.19	-16.12	3	Horizontal	0	1.00	50.93	26.05	1.69	43.86
PK	720.64M	39.54	46.00	-6.46	-14.30	3	Horizontal	0	1.00	53.84	27.55	1.97	43.82



Summary

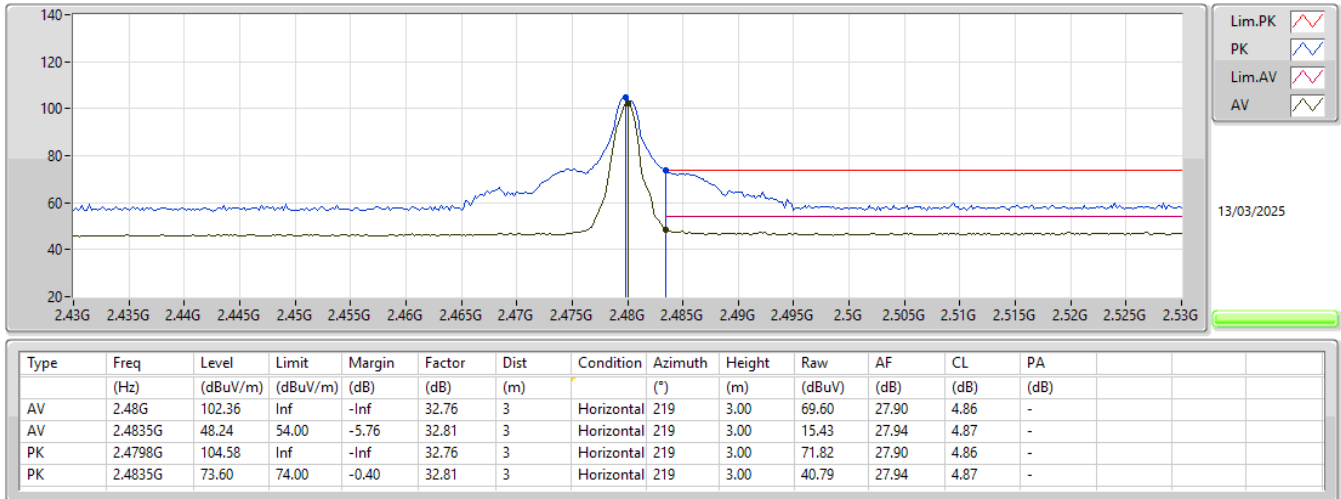
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	2.4835G	73.60	74.00	-0.40	3	Horizontal	219	3.00
BT-LE(2Mbps)	Pass	AV	2.4836G	51.57	54.00	-2.43	3	Horizontal	219	3.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.39G	49.17	54.00	-4.83	3	Horizontal	225	2.88
2402MHz	Pass	AV	2.402G	111.13	Inf	-Inf	3	Horizontal	225	2.88
2402MHz	Pass	PK	2.39G	68.08	74.00	-5.92	3	Horizontal	225	2.88
2402MHz	Pass	PK	2.4018G	113.32	Inf	-Inf	3	Horizontal	225	2.88
2402MHz	Pass	AV	4.80339G	41.61	54.00	-12.39	3	Horizontal	87	2.71
2402MHz	Pass	PK	4.80327G	51.05	74.00	-22.95	3	Vertical	87	2.71
2402MHz	Pass	AV	4.80332G	38.67	54.00	-15.33	3	Horizontal	339	1.00
2402MHz	Pass	PK	4.80346G	48.70	74.00	-25.30	3	Horizontal	339	1.00
2440MHz	Pass	AV	2.3596G	46.43	54.00	-7.57	3	Horizontal	223	2.77
2440MHz	Pass	AV	2.44G	111.49	Inf	-Inf	3	Horizontal	223	2.77
2440MHz	Pass	AV	2.4848G	47.63	54.00	-6.37	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.39G	61.47	74.00	-12.53	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.4396G	113.20	Inf	-Inf	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.4864G	62.38	74.00	-11.62	3	Horizontal	223	2.77
2440MHz	Pass	AV	4.87995G	46.36	54.00	-7.64	3	Vertical	118	1.00
2440MHz	Pass	PK	4.87963G	54.98	74.00	-19.02	3	Vertical	118	1.00
2440MHz	Pass	AV	4.87984G	44.20	54.00	-9.80	3	Horizontal	327	1.00
2440MHz	Pass	PK	4.87977G	53.22	74.00	-20.78	3	Horizontal	327	1.00
2480MHz	Pass	AV	2.48G	102.36	Inf	-Inf	3	Horizontal	219	3.00
2480MHz	Pass	AV	2.4835G	48.24	54.00	-5.76	3	Horizontal	219	3.00
2480MHz	Pass	PK	2.4798G	104.58	Inf	-Inf	3	Horizontal	219	3.00
2480MHz	Pass	PK	2.4835G	73.60	74.00	-0.40	3	Horizontal	219	3.00
2480MHz	Pass	AV	4.95988G	48.07	54.00	-5.93	3	Vertical	129	2.75
2480MHz	Pass	PK	4.95959G	54.94	74.00	-19.06	3	Vertical	129	2.75
2480MHz	Pass	AV	4.95988G	42.10	54.00	-11.90	3	Horizontal	324	1.00
2480MHz	Pass	PK	4.95947G	50.37	74.00	-23.63	3	Horizontal	324	1.00
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2404MHz	Pass	AV	2.3898G	47.77	54.00	-6.23	3	Horizontal	226	2.87
2404MHz	Pass	AV	2.404G	103.08	Inf	-Inf	3	Horizontal	226	2.87
2404MHz	Pass	PK	2.3898G	70.08	74.00	-3.92	3	Horizontal	226	2.87
2404MHz	Pass	PK	2.4034G	106.26	Inf	-Inf	3	Horizontal	226	2.87
2404MHz	Pass	AV	4.80688G	38.25	54.00	-15.75	3	Vertical	86	2.91
2404MHz	Pass	PK	4.80711G	48.38	74.00	-25.62	3	Vertical	86	2.91
2404MHz	Pass	AV	4.80713G	35.85	54.00	-18.15	3	Horizontal	340	2.95
2404MHz	Pass	PK	4.80745G	46.59	74.00	-27.41	3	Horizontal	340	2.95
2440MHz	Pass	AV	2.3828G	46.85	54.00	-7.15	3	Horizontal	223	2.77
2440MHz	Pass	AV	2.44G	107.15	Inf	-Inf	3	Horizontal	223	2.77
2440MHz	Pass	AV	2.4972G	47.59	54.00	-6.41	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.3744G	58.81	74.00	-15.19	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.4396G	110.33	Inf	-Inf	3	Horizontal	223	2.77
2440MHz	Pass	PK	2.4944G	58.92	74.00	-15.08	3	Horizontal	223	2.77
2440MHz	Pass	PK	4.87889G	55.12	74.00	-18.88	3	Vertical	121	2.53
2440MHz	Pass	AV	4.87895G	47.29	54.00	-6.71	3	Vertical	121	2.53
2440MHz	Pass	PK	4.87885G	52.52	74.00	-21.48	3	Horizontal	328	1.00
2440MHz	Pass	AV	4.87902G	44.28	54.00	-9.72	3	Horizontal	328	1.00
2478MHz	Pass	AV	2.478G	100.12	Inf	-Inf	3	Horizontal	219	3.00
2478MHz	Pass	AV	2.4836G	51.57	54.00	-2.43	3	Horizontal	219	3.00
2478MHz	Pass	PK	2.4774G	103.45	Inf	-Inf	3	Horizontal	219	3.00
2478MHz	Pass	PK	2.4835G	66.07	74.00	-7.93	3	Horizontal	219	3.00
2478MHz	Pass	AV	4.95496G	40.68	54.00	-13.32	3	Vertical	114	1.01
2478MHz	Pass	PK	4.95695G	50.49	74.00	-23.51	3	Vertical	114	1.01
2478MHz	Pass	AV	4.95515G	38.32	54.00	-15.68	3	Horizontal	340	2.77
2478MHz	Pass	PK	4.95536G	48.65	74.00	-25.35	3	Horizontal	340	2.77

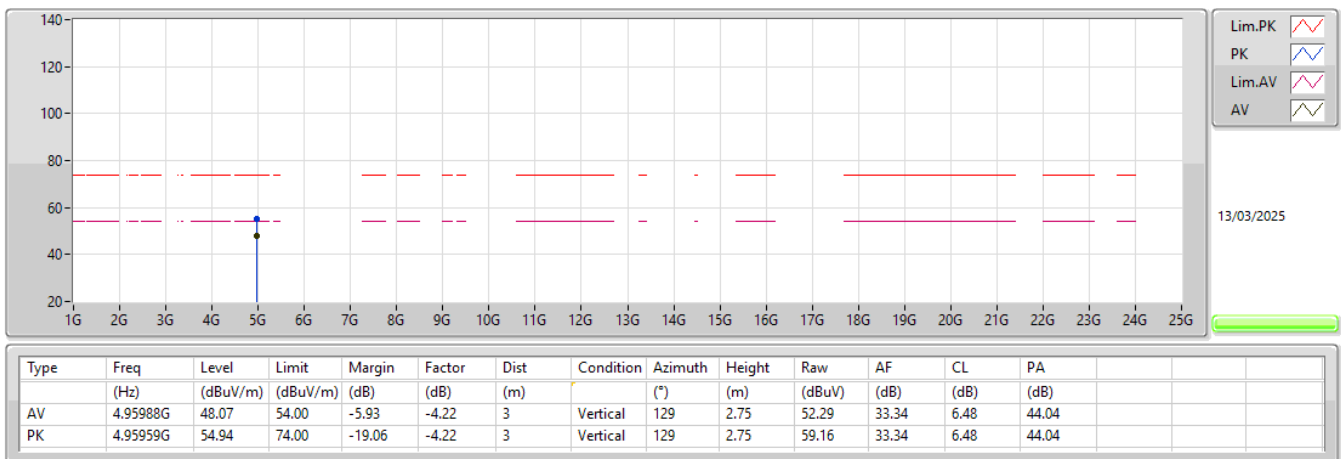
2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX



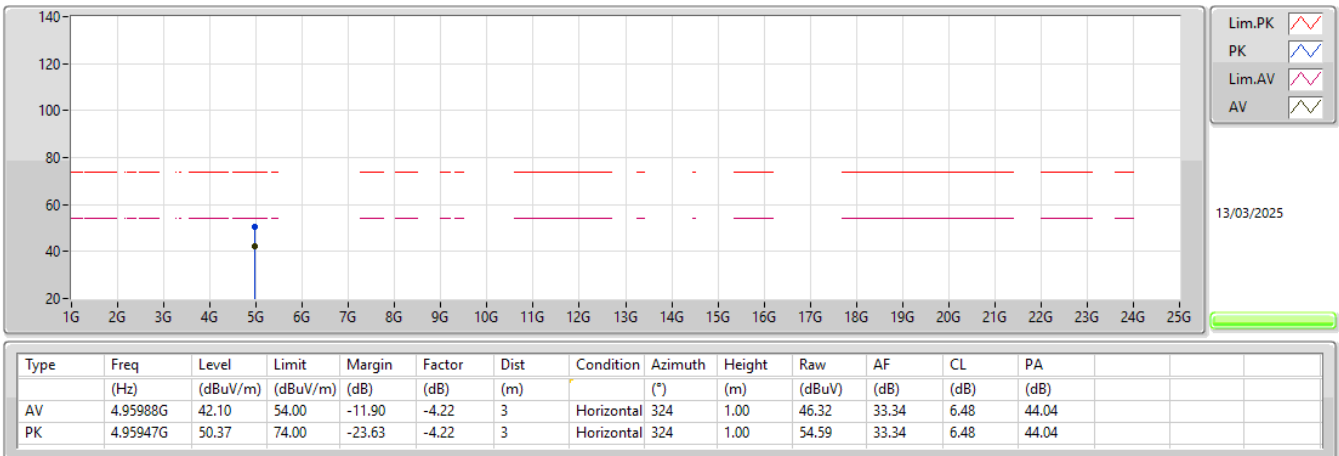
2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX



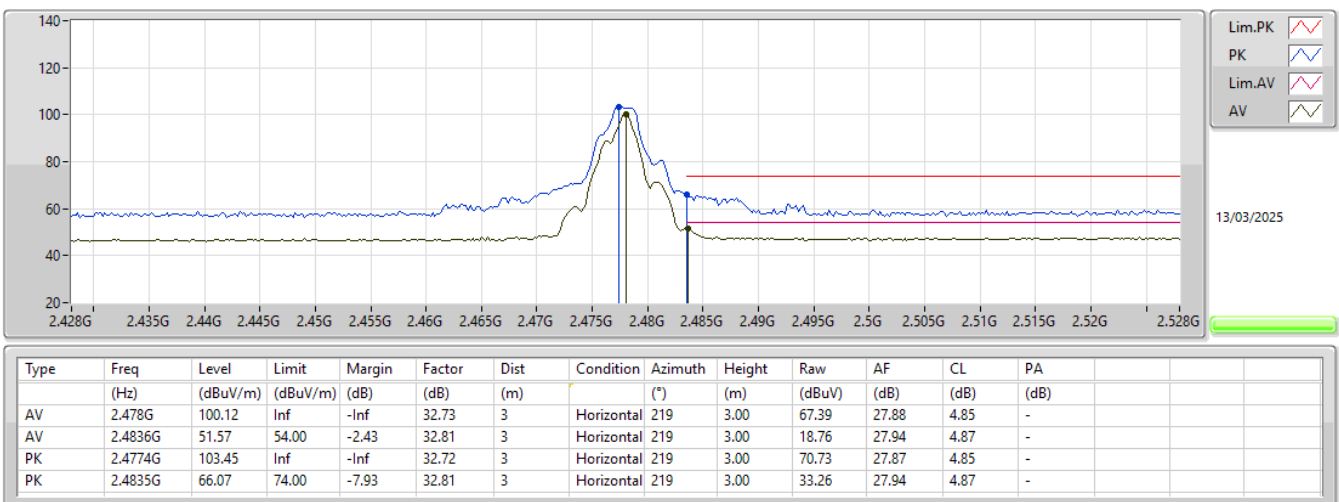
2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX



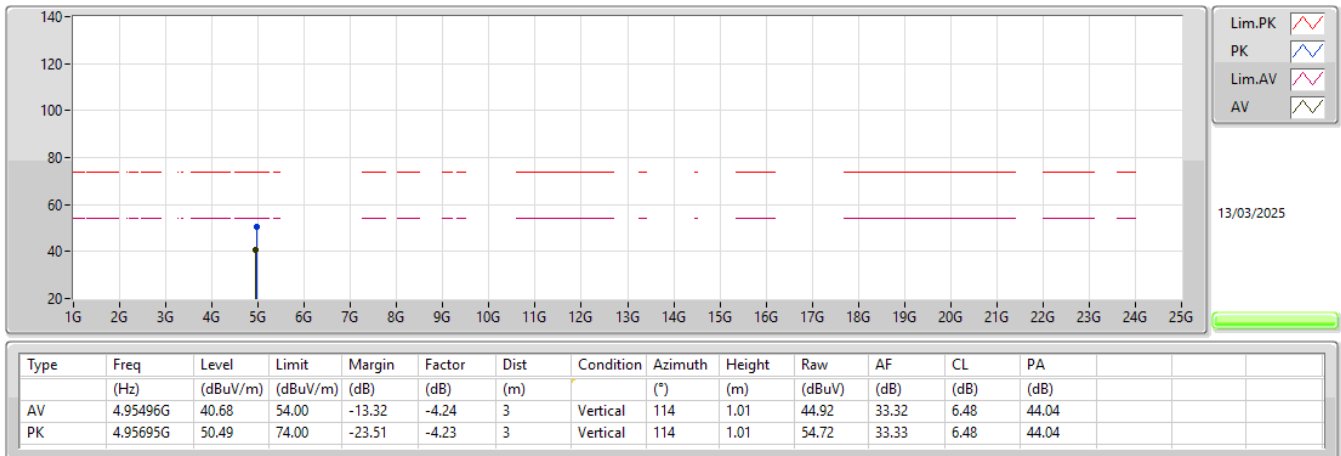
2.4-2.4835GHz_BT-LE(2Mbps)

2478MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

2478MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

2478MHz_TX

