

FCC Radio Test Report

FCC ID : YL6-1438852R
Equipment : Wireless Module
Brand Name : ALARM.COM
Model Name : ADC-WM8852-A
Applicant : Alarm.com Incorporated
8281 Greensboro Drive, Suite 100, Tysons,
VA 22102 United States
Manufacturer : Alarm.com Incorporated
8281 Greensboro Drive, Suite 100, Tysons,
VA 22102 United States
Standard : 47 CFR FCC Part 15.247

The product was received on Feb. 06, 2025, and testing was started from Feb. 14, 2025 and completed on Feb. 25, 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 variant 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.)



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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	Refer to 1.1.5
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: Ben Tseng

Report Producer: Amber Chiu

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	LE	2402-2480	0-39 [40]

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

Note:

- Bluetooth LE uses a GFSK (1Mbps/2Mbps/125kbps/500kbps) modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Source	Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	1	PSA	WCBN3511L_PCA	Dipole	I-Pex	2.4G+5G
	2	PSA	WCBN3511L_PCA	Dipole	I-Pex	2.4G+5G+BT
2	3	INPAQ	RFFPA301205IMLB401	Dipole	I-Pex	2.4G+5G
	4	INPAQ	RFFPA301213IMLB401	Dipole	I-Pex	2.4G+5G
3	5	LYNwave	ALX18F-222A A4-00	Dipole	I-Pex	2.4G+5G
	6	LYNwave	ALX18F-222A A5-00	Dipole	I-Pex	2.4G+5G
4	7	LYNwave	ALX18F-222AA2-01	Dipole	I-Pex	2.4G+5G
	8	LYNwave	ALX18F-222AA3-01	Dipole	I-Pex	2.4G+5G
5	9	AWAN	ASF6P-100012	PIFA	I-Pex	2.4G+5G
	10	AWAN	ASF6P-100011	PIFA	I-Pex	2.4G+5G+BT
6	11	INPAQ	RFDPA1615SBLB818	PIFA	I-Pex	2.4G+5G
	12	INPAQ	RFDPA1615SBLB818	PIFA	I-Pex	2.4G+5G+BT

Source	Ant.	Port	Gain (dBi)		
			2.4G	5G	BT
1	1	1	5.3	5.71	-
	2	2	5.3	5.71	5.3
2	3	1	3.94	5.3	-
	4	2	3.78	4.28	-
3	5	1	4.9	5.4	-
	6	2	5.2	4.7	-
4	7	1	5.1	5.6	-
	8	2	3.5	5.5	-
5	9	1	3.3	5.7	-
	10	2	2.9	3.8	2.9
6	11	1	5.59	6.04	-
	12	2	5.59	6.04	5.59

Note 1: The EUT has twelve antennas.

Note 2: The EUT can be matched with the above antennas and Source 6 antennas were used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

Ant. 3 (port 1) and Ant. 4 (port 2) could transmit/receive simultaneously.

Ant. 5 (port 1) and Ant. 6 (port 2) could transmit/receive simultaneously.

Ant. 7 (port 1) and Ant. 8 (port 2) could transmit/receive simultaneously.

Ant. 9 (port 1) and Ant. 10 (port 2) could transmit/receive simultaneously.

Ant. 11 (port 1) and Ant. 12 (port 2) could transmit/receive simultaneously.

For BT function:

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

Ant. 2 (port 2) can be used as transmitting/receiving.

Ant. 10 (port 2) can be used as transmitting/receiving.

Ant. 12 (port 2) can be used as transmitting/receiving.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

Ant. 3 (port 1) and Ant. 4 (port 2) could transmit/receive simultaneously.

Ant. 5 (port 1) and Ant. 6 (port 2) could transmit/receive simultaneously.

Ant. 7 (port 1) and Ant. 8 (port 2) could transmit/receive simultaneously.

Ant. 9 (port 1) and Ant. 10 (port 2) could transmit/receive simultaneously.

Ant. 11 (port 1) and Ant. 12 (port 2) could transmit/receive simultaneously.

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)	0.632	1.99	395u	3k
BT-LE(125kbps)	0.807	0.93	3.107m	500
BT-LE(500kbps)	0.559	2.53	1.073m	1k
BT-LE(2Mbps)	0.335	4.75	209.375u	5k

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

1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR1D0419AL

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Add 4 antennas (Ant 9~12)	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands Emissions in Restricted Frequency Bands
2. Modified antennas brand and model name (Ant 7~8)	After evaluation, no RF test validations are required

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.				
☒ Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)			
	TEL: 886-3-327-086887			
Test site Designation No. TW0036 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH06-HY	Johnny Yu	21.3~21.8°C / 52~55%	14/Feb/2025
Radiated	03CH26-HY	Andy Wang	19.7~20.5°C / 55~58%	21/Feb/2025~25/Feb/2025
Radiated (Co-location)	03CH26-HY	Ivan Chung	20.4~21.3°C / 59~62%	24/Feb/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
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	Bluetooth RF Test Tool (RtBluetoothMP.dll Version 5.3.1.77)
------------------------------	--

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	0x57
2440MHz	0x59
2480MHz	0x57
BT-LE(2Mbps)	-
2402MHz	0x57
2440MHz	0x59
2480MHz	0x55
BT-LE(125kbps)	-
2402MHz	0x57
2440MHz	0x59
2480MHz	0x57
BT-LE(500kbps)	-
2402MHz	0x57
2440MHz	0x59
2480MHz	0x57

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		

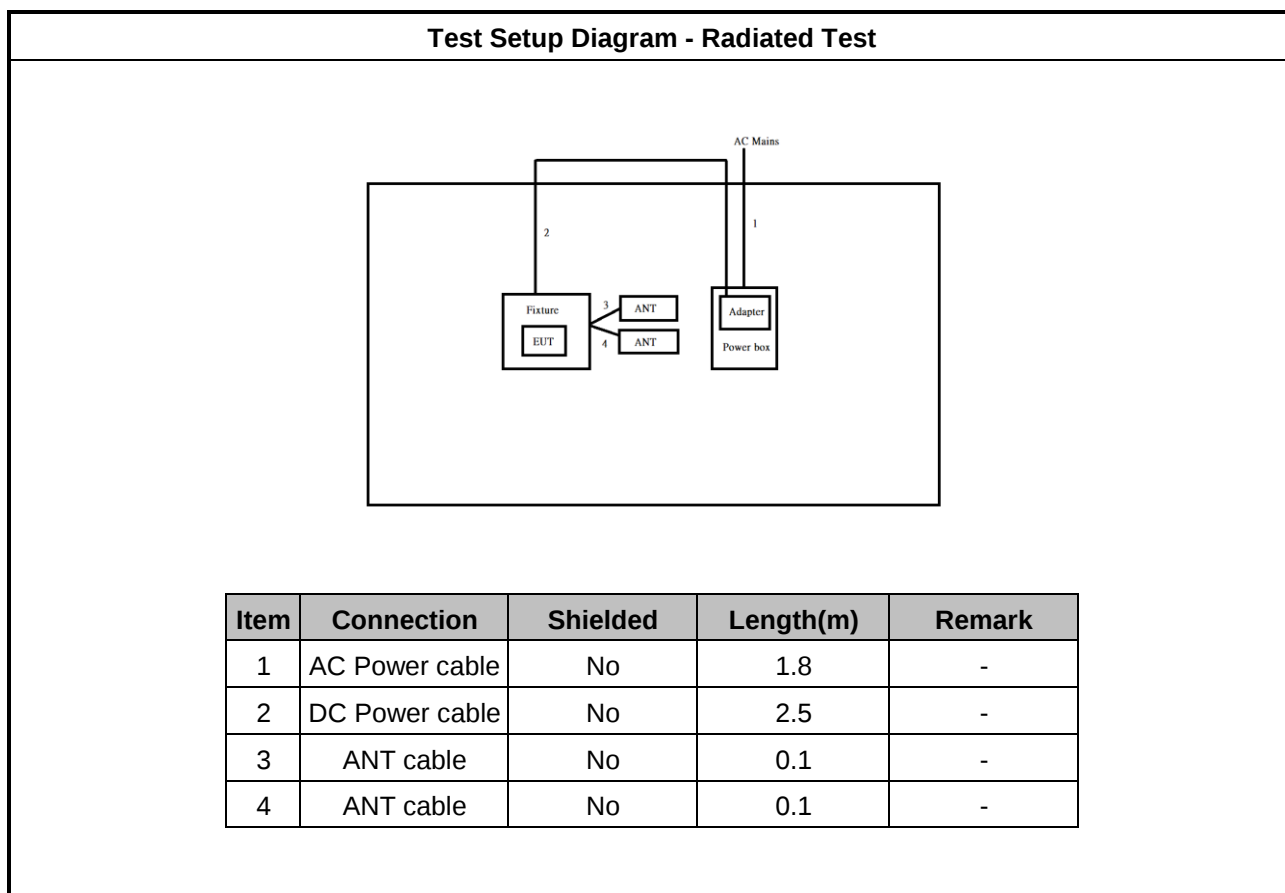
The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated measurement
Operating Mode	CTX
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA1D0419-02 for Co-location RF Exposure Evaluation and Appendix F for Radiated Emission Co-location.	

2.3 Support Equipment

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Adapter for EUT	APD	WB-12G12FU	-	-
2	NB	Lenovo	TP0001A	-	-
3	Adapter for NB	Lenovo	42T5000	-	-

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Adapter for EUT	APD	WB-12G12FU	-	-
2	Antenna*2	inpaq	RFDPA1615SBLB 818	-	Provided by Customer
3	Fixture	-	-	-	Provided by Customer

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.

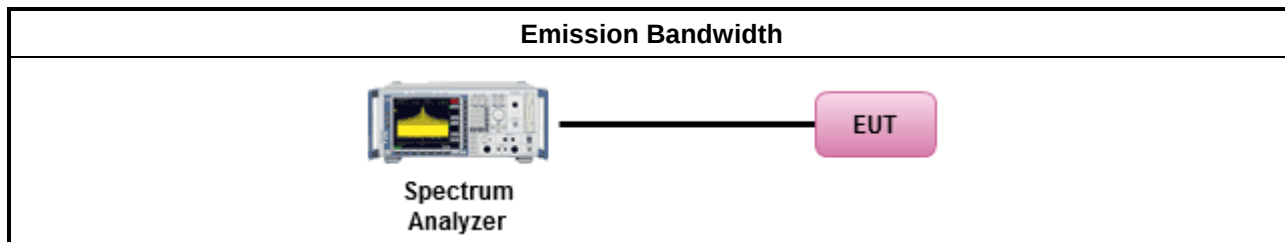
3.1.2 Measuring Instruments

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.	

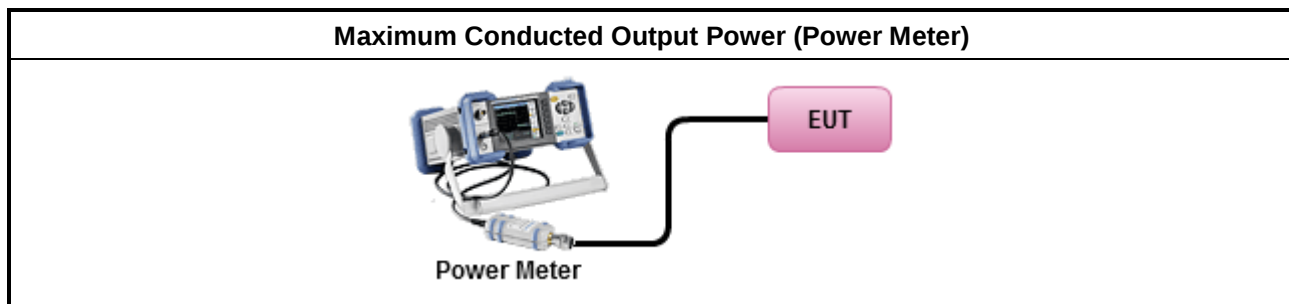
3.2.2 Measuring Instruments

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

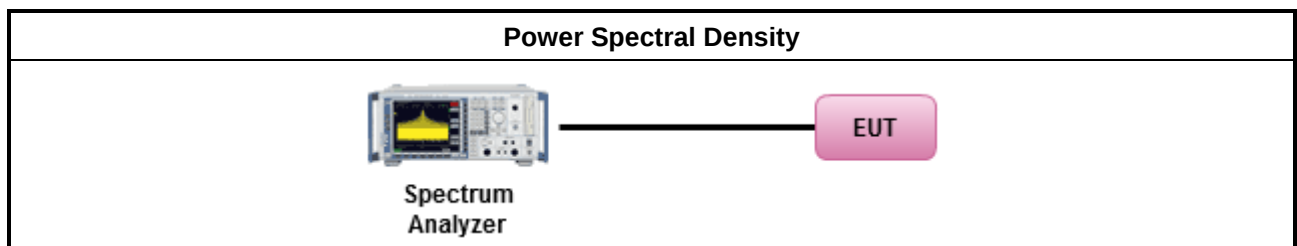
3.3.2 Measuring Instruments

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.	

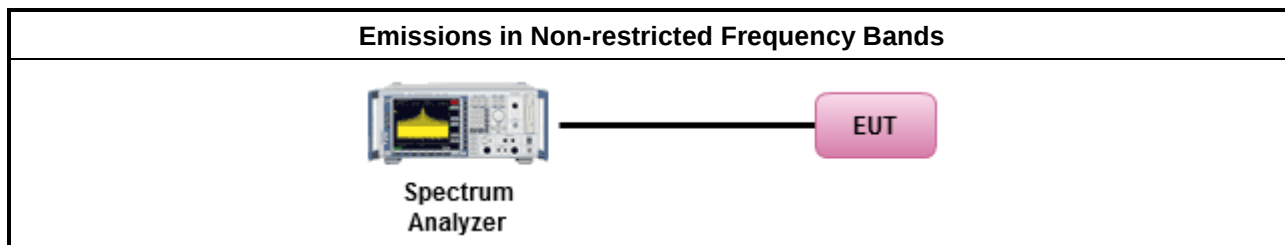
3.4.2 Measuring Instruments

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

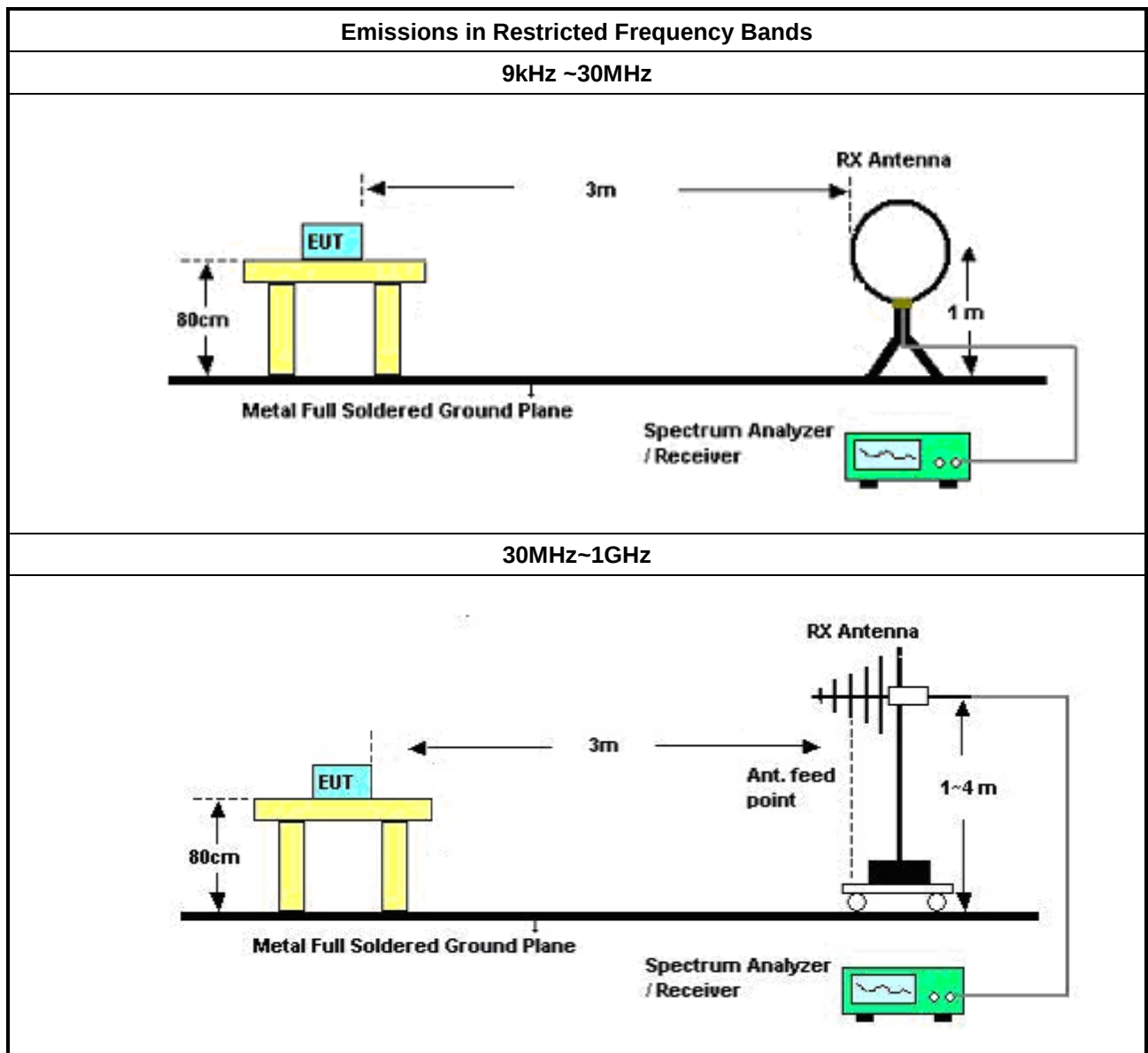
Test Method	
The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].	
Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
For the transmitter unwanted 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.

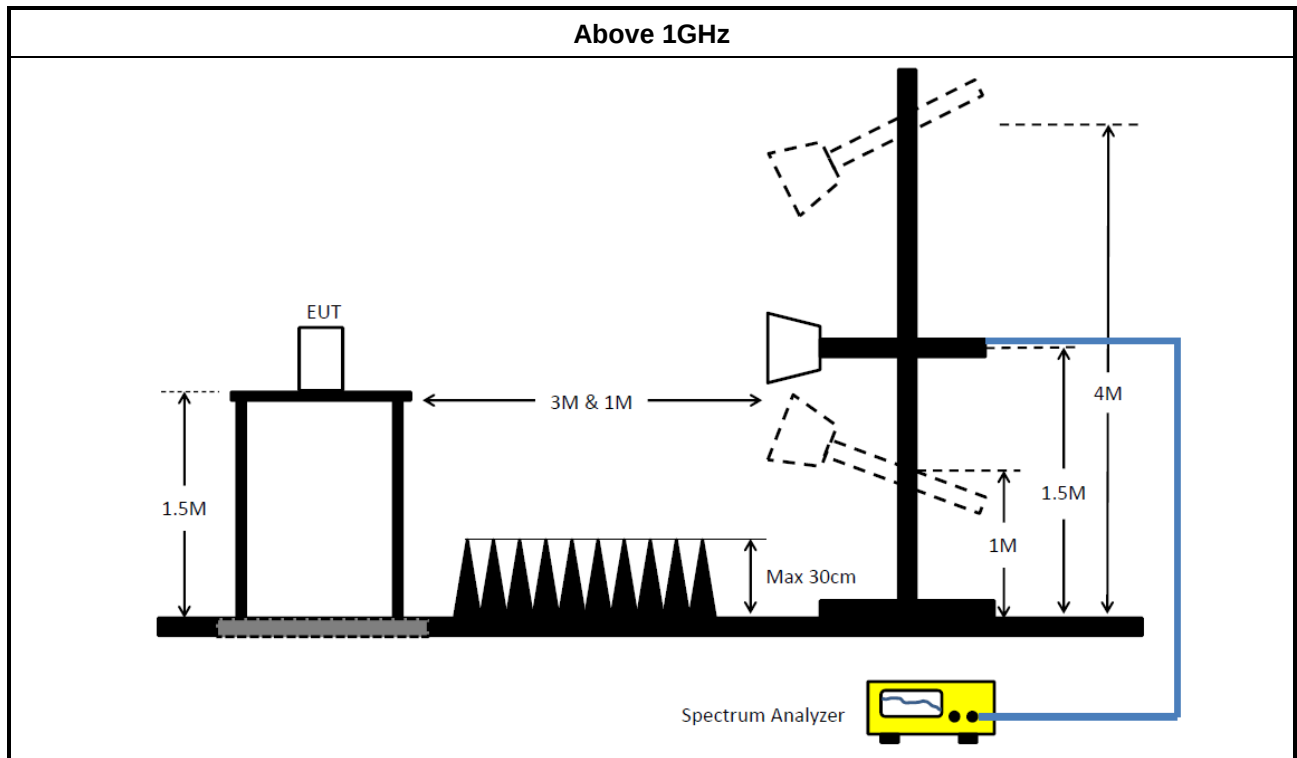
3.5.4 Measurement Results Calculation

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	FSV 40	101029	10Hz~40GHz	28/Oct/2024	27/Oct/2025
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	16/Oct/2024	15/Oct/2025
Power Meter	Anritsu	ML2495A	1124009	300MHz~40GHz	01/Apr/2024	31/Mar/2025
Pulse Sensor	Anritsu	MA2411B	1027452	300MHz~40GHz	02/Apr/2024	01/Apr/2025
SENSE-15247_FS	Sporton	V5.11.23	N/A	N/A	N/A	N/A

Instrument for Radiated Test (03CH26-HY)

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH26-HY	30MHz~1GHz 3m	07/Aug/2024	06/Aug/2025
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH26-HY	1GHz~18GHz 3m	07/Aug/2024	06/Aug/2025
EMI Test Receiver	ROHDE & SCHWARZ	ESR	102318	9kHz~3.6GHz	06/Dec/2024	05/Dec/2025
Signal Analyzer	ROHDE & SCHWARZ	FSV3044	101411	10Hz~44GHz	09/Oct/2024	08/Oct/2025
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	19/Mar/2024	18/Mar/2025
Bilog Antenna & 6dB Attenuator	TESEQ & VGT	CBL 6111D & VFA 04002-06	63540/002	30MHz~1GHz	05/Jun/2024	04/Jun/2025
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02877	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	CB009	9kHz~1GHz	21/Oct/2024	20/Oct/2025
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB009	1GHz~40GHz	21/Oct/2024	20/Oct/2025
Preamplifier	SGH	PRAMP 903	20230515-2	30MHz~1GHz	24/May/2024	23/May/2025
Preamplifier	SGH	PRAMP 118-H	20230515-4	1GHz ~18GHz	24/May/2024	23/May/2025
Amplifier	EM	EM18G40G	060874	18GHz ~ 40GHz	15/Apr/2024	14/Apr/2025
SENSE-15247-FS	Sporton	V5.11.21	NA	NA	NA	NA

**Instrument for Radiated Test (Co-location)**

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH26-HY	1GHz~18GHz 3m	07/Aug/2024	06/Aug/2025
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101411	10Hz~44GHz	09/Oct/2024	08/Oct/2025
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02877	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	CB009	1GHz~40GHz	21/Oct/2024	20/Oct/2025
Preamplifier	SGH	PRAMP 118-H	20230515-4	1GHz ~18GHz	24/May/2024	23/May/2025
Amplifier	EM	EM18G40G	060874	18GHz ~ 40GHz	15/Apr/2024	14/Apr/2025
SENSE-EMI	Sporton	V5.11.8	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)	711.25k	1.038M	1M04F1D	522.5k	1.019M
BT-LE(2Mbps)	925k	2.071M	2M07F1D	675k	2.034M
BT-LE(125kbps)	673.75k	1.054M	1M05F1D	660k	1.044M
BT-LE(500kbps)	731.25k	1.021M	1M02F1D	608.75k	1.016M

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	711.25k	1.019M
2440MHz	Pass	500k	708.75k	1.038M
2480MHz	Pass	500k	522.5k	1.038M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	775k	2.071M
2440MHz	Pass	500k	925k	2.034M
2480MHz	Pass	500k	675k	2.069M
BT-LE(125kbps)	-	-	-	-
2402MHz	Pass	500k	668.75k	1.054M
2440MHz	Pass	500k	660k	1.044M
2480MHz	Pass	500k	673.75k	1.046M
BT-LE(500kbps)	-	-	-	-
2402MHz	Pass	500k	608.75k	1.021M
2440MHz	Pass	500k	731.25k	1.016M
2480MHz	Pass	500k	690k	1.021M

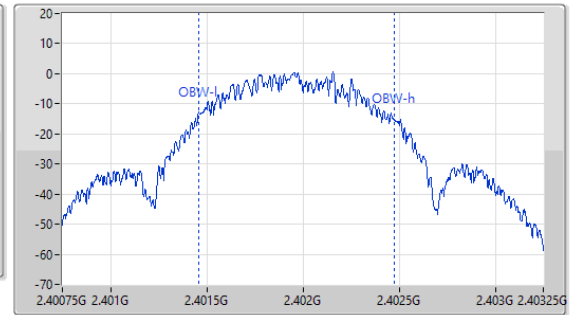
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

2402MHz

14/02/2025

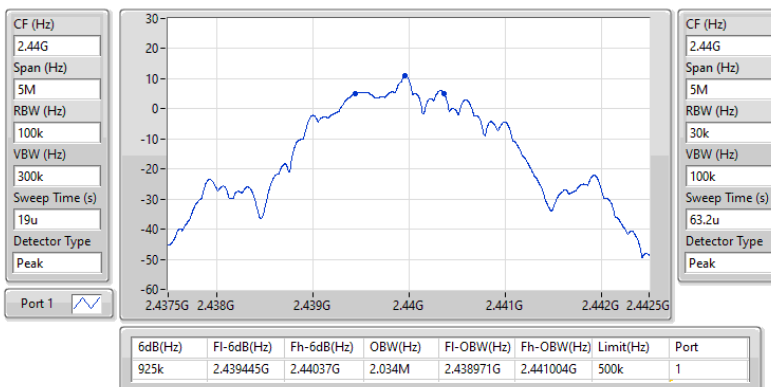


2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2440MHz

14/02/2025

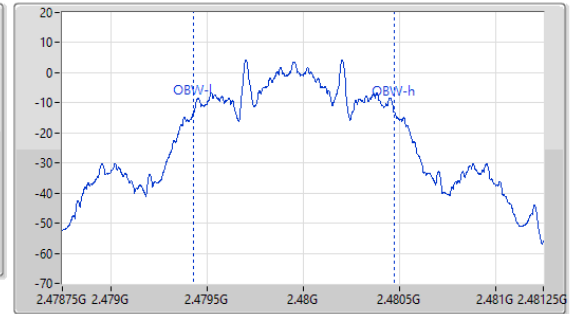
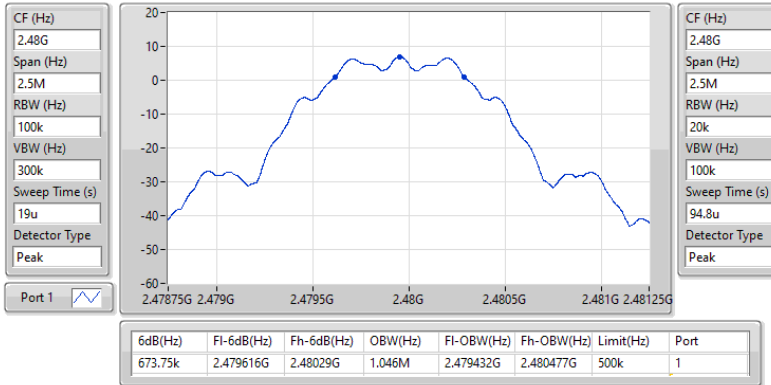


2.4-2.4835GHz_BT-LE(125kbps)

EBW-DTS

2480MHz

14/02/2025

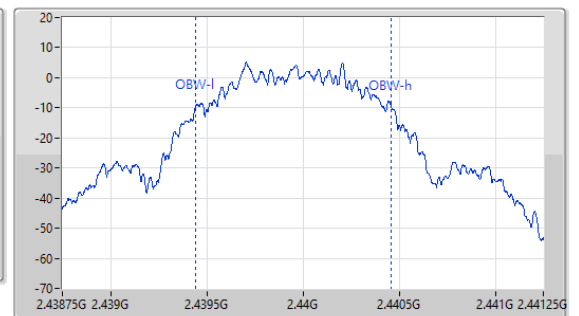
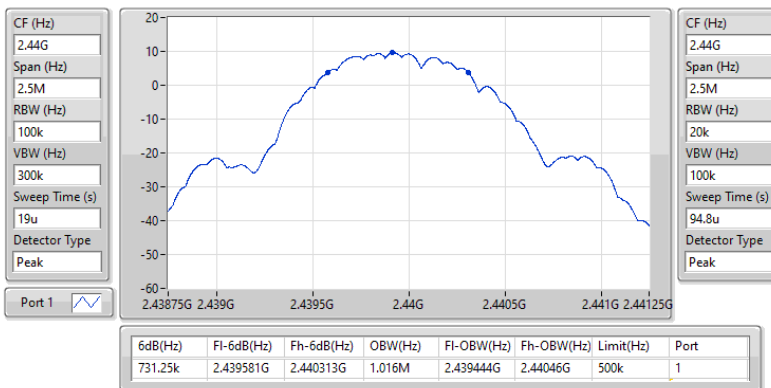


2.4-2.4835GHz_BT-LE(500kbps)

EBW-DTS

2440MHz

14/02/2025





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	11.09	0.01285
BT-LE(2Mbps)	11.10	0.01288
BT-LE(125kbps)	11.22	0.01324
BT-LE(500kbps)	11.28	0.01343

Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	5.59	10.73	30.00
2440MHz	Pass	5.59	11.09	30.00
2480MHz	Pass	5.59	10.47	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	5.59	10.76	30.00
2440MHz	Pass	5.59	11.10	30.00
2480MHz	Pass	5.59	9.61	30.00
BT-LE(125kbps)	-	-	-	-
2402MHz	Pass	5.59	10.86	30.00
2440MHz	Pass	5.59	11.22	30.00
2480MHz	Pass	5.59	10.58	30.00
BT-LE(500kbps)	-	-	-	-
2402MHz	Pass	5.59	10.95	30.00
2440MHz	Pass	5.59	11.28	30.00
2480MHz	Pass	5.59	10.64	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)	-4.51
BT-LE(2Mbps)	-6.16
BT-LE(125kbps)	4.86
BT-LE(500kbps)	4.75

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	5.59	-4.93	8.00
2440MHz	Pass	5.59	-4.51	8.00
2480MHz	Pass	5.59	-4.89	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	5.59	-6.63	8.00
2440MHz	Pass	5.59	-6.16	8.00
2480MHz	Pass	5.59	-7.55	8.00
BT-LE(125kbps)	-	-	-	-
2402MHz	Pass	5.59	4.33	8.00
2440MHz	Pass	5.59	4.86	8.00
2480MHz	Pass	5.59	4.06	8.00
BT-LE(500kbps)	-	-	-	-
2402MHz	Pass	5.59	3.48	8.00
2440MHz	Pass	5.59	4.75	8.00
2480MHz	Pass	5.59	3.82	8.00

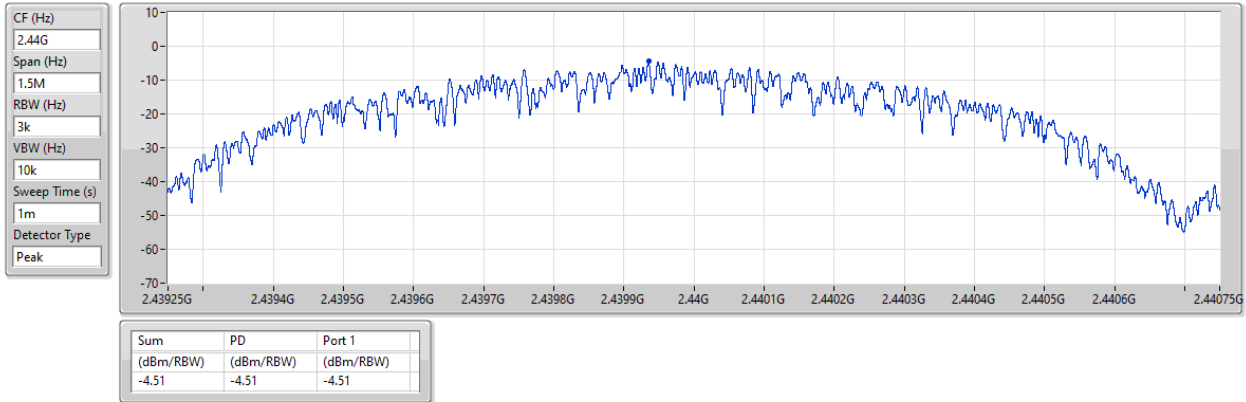
DG = Directional Gain; RBW = 3kHz;
 PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
 Inf = There's no restriction for the limit.

2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2440MHz

14/02/2025

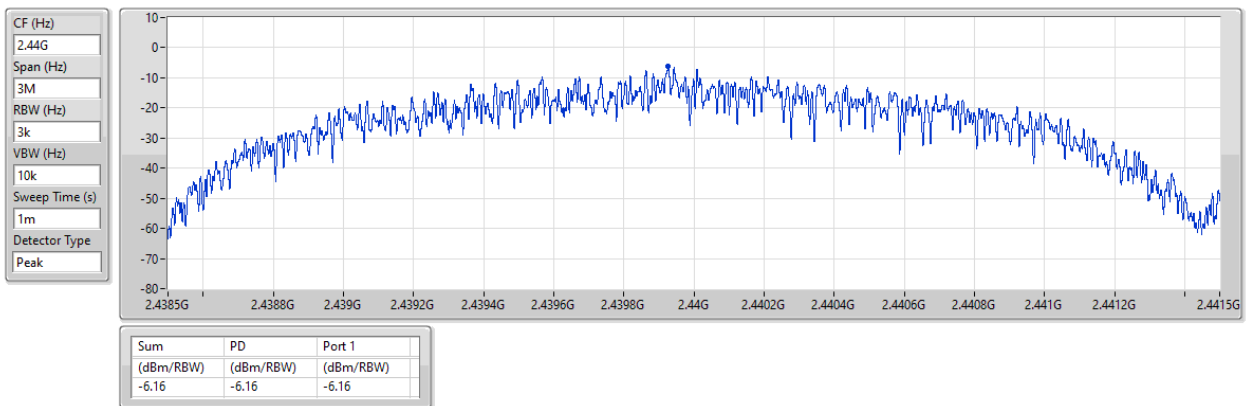


2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2440MHz

14/02/2025

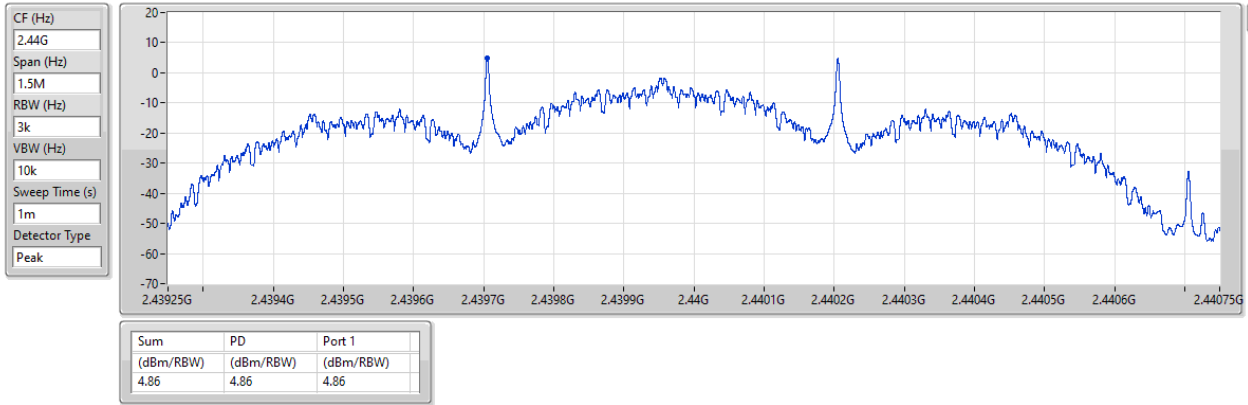


2.4-2.4835GHz_BT-LE(125kbps)

PSD

2440MHz

14/02/2025

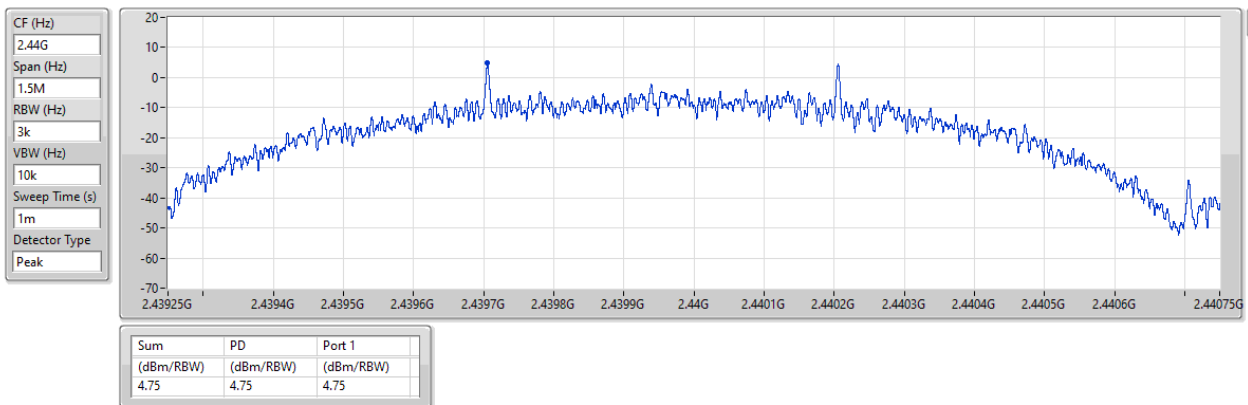


2.4-2.4835GHz_BT-LE(500kbps)

PSD

2440MHz

14/02/2025



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	2.43991G	10.66	-19.34	2.11445G	-57.14	2.39996G	-47.58	2.4G	-49.66	2.5019G	-54.81	16.51601G	-43.69	1
BT-LE(2Mbps)	Pass	2.43991G	10.82	-19.18	845.45M	-57.56	2.39996G	-22.41	2.4G	-23.10	2.50106G	-55.27	15.32088G	-43.35	1
BT-LE(125kbps)	Pass	2.43991G	7.98	-22.02	2.30128G	-56.19	2.4G	-48.80	2.4G	-49.53	2.50066G	-54.40	16.25167G	-42.72	1
BT-LE(500kbps)	Pass	2.43975G	11.04	-18.96	596.35M	-56.66	2.39972G	-48.43	2.4G	-47.57	2.50062G	-55.61	24.68224G	-42.07	1

Result

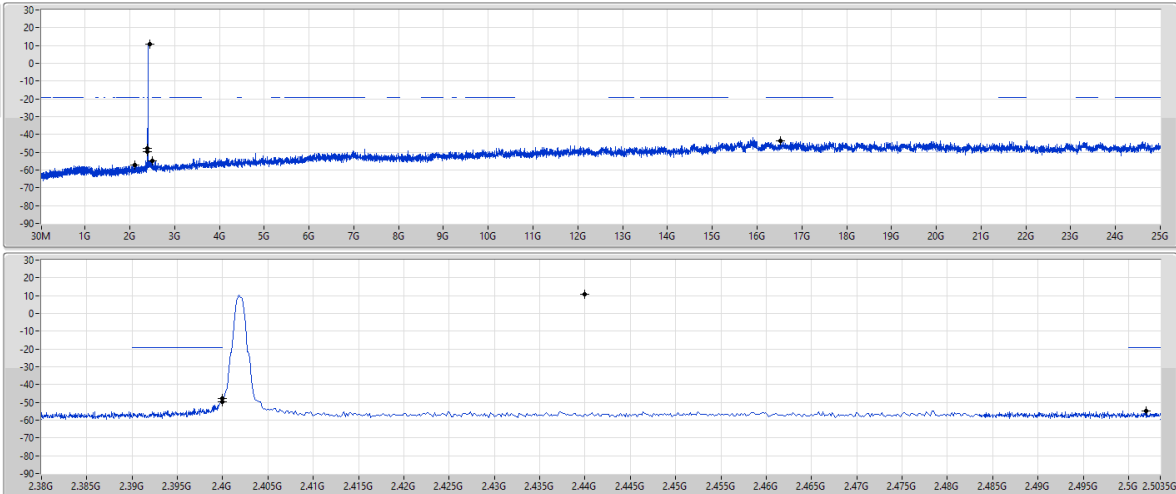
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43991G	10.66	-19.34	2.11445G	-57.14	2.39996G	-47.58	2.4G	-49.66	2.5019G	-54.81	16.51601G	-43.69	1
2440MHz	Pass	2.43991G	10.66	-19.34	2.10858G	-57.43	2.39908G	-54.94	2.4G	-56.86	2.50346G	-55.25	16.24324G	-43.22	1
2480MHz	Pass	2.43991G	10.66	-19.34	1.88768G	-56.92	2.39216G	-54.45	2.4G	-56.30	2.50062G	-55.38	17.67458G	-43.40	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43991G	10.82	-19.18	845.45M	-57.56	2.39996G	-22.41	2.4G	-23.10	2.50106G	-55.27	15.32088G	-43.35	1
2440MHz	Pass	2.43991G	10.82	-19.18	824.3M	-57.47	2.39192G	-55.38	2.4G	-57.58	2.50258G	-54.62	16.82533G	-42.90	1
2480MHz	Pass	2.43991G	10.82	-19.18	753.8M	-56.75	2.39996G	-54.77	2.4G	-56.26	2.50186G	-54.81	16.59475G	-43.72	1
BT-LE(125kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43991G	7.98	-22.02	2.30128G	-56.19	2.4G	-48.80	2.4G	-49.53	2.50066G	-54.40	16.25167G	-42.72	1
2440MHz	Pass	2.43991G	7.98	-22.02	1.89355G	-56.86	2.3972G	-55.29	2.4G	-57.04	2.5029G	-54.79	17.6577G	-42.01	1
2480MHz	Pass	2.43991G	7.98	-22.02	2.19318G	-57.12	2.39976G	-54.37	2.4G	-56.17	2.5019G	-54.94	16.24324G	-43.36	1
BT-LE(500kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43975G	11.04	-18.96	596.35M	-56.66	2.39972G	-48.43	2.4G	-47.57	2.50062G	-55.61	24.68224G	-42.07	1
2440MHz	Pass	2.43975G	11.04	-18.96	2.03573G	-56.89	2.39672G	-55.56	2.4G	-56.93	2.5021G	-55.21	24.4882G	-43.24	1
2480MHz	Pass	2.43975G	11.04	-18.96	2.12855G	-55.77	2.39608G	-55.12	2.4G	-58.23	2.5001G	-53.78	16.28542G	-42.94	1

2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

2402MHz

14/02/2025

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

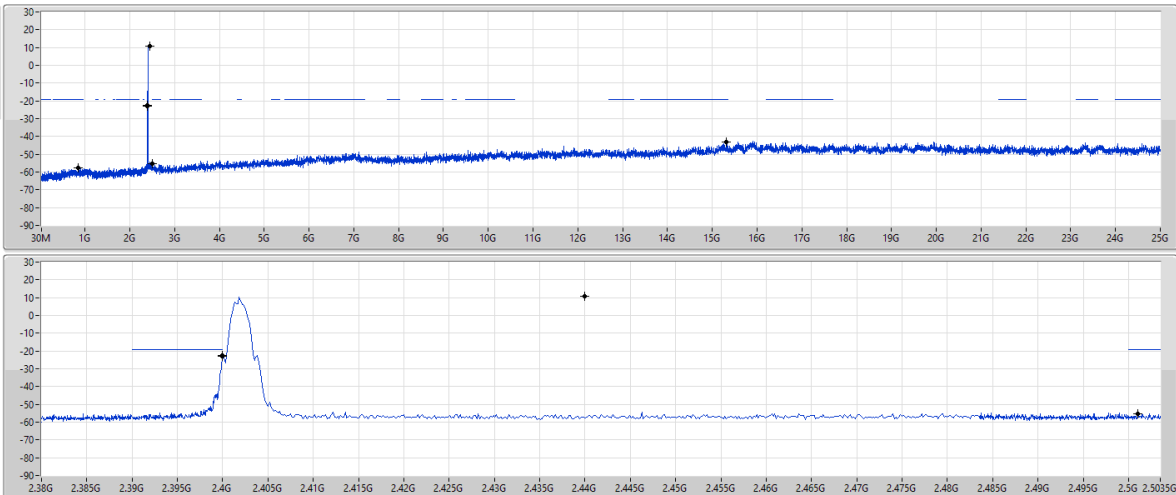
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43991G	10.66	-19.34	2.11443G	-57.14	2.39996G	-47.38	2.4G	-49.66	2.5019G	-54.81	16.51601G	-43.69	1

2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2402MHz

14/02/2025

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

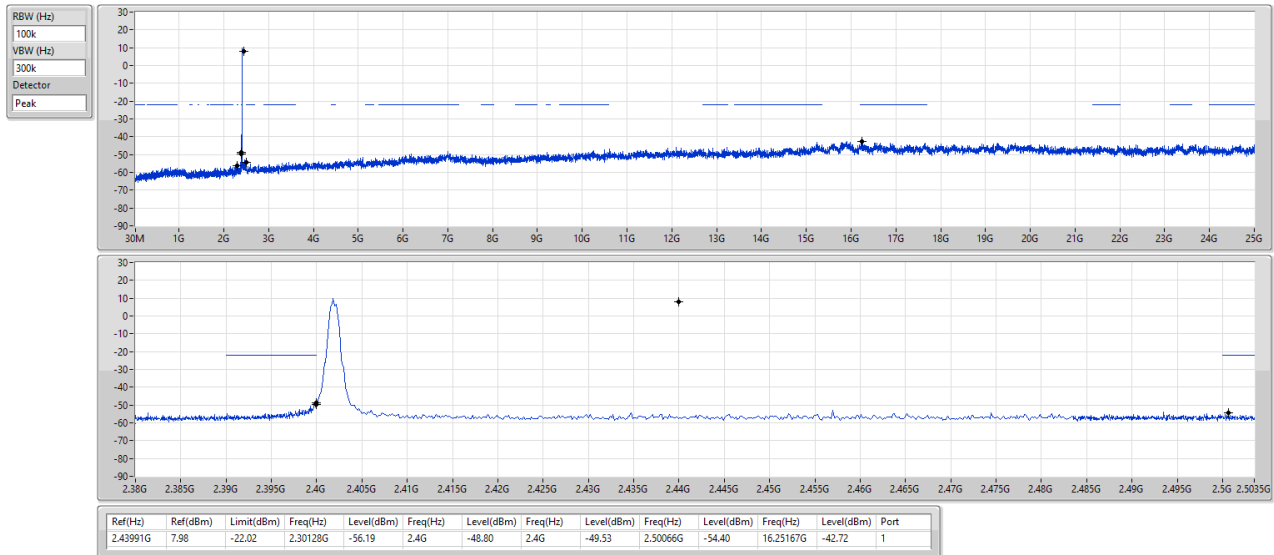
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43991G	10.82	-19.18	845.45M	-57.56	2.39996G	-22.41	2.4G	-23.10	2.50106G	-55.27	15.32088G	-43.35	1

2.4-2.4835GHz_BT-LE(125kbps)

CSEndB-DTS

2402MHz

14/02/2025

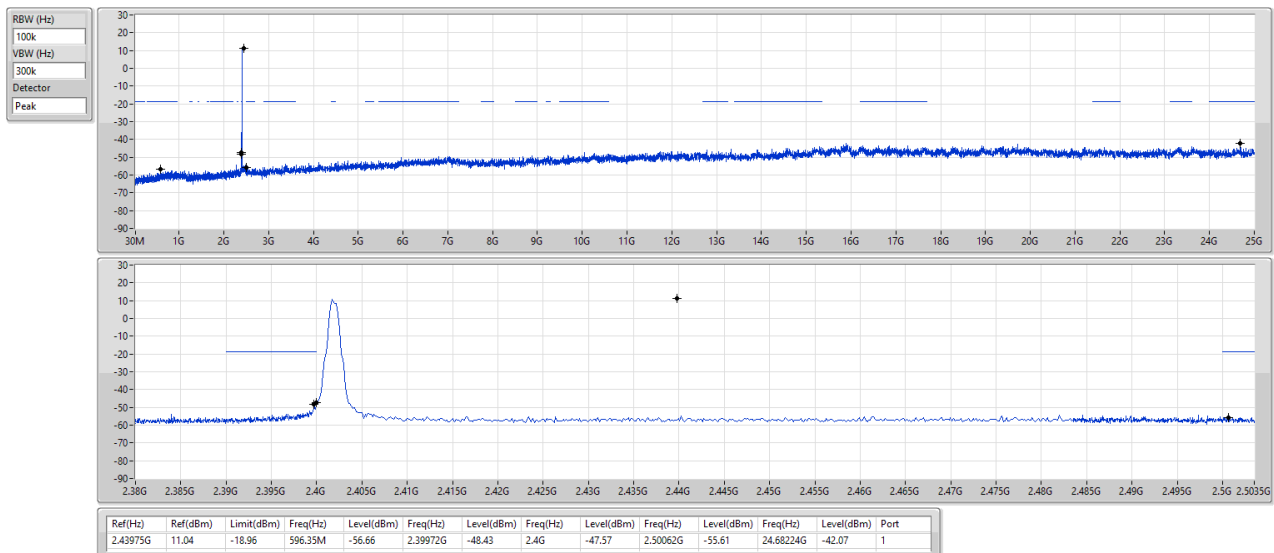


2.4-2.4835GHz_BT-LE(500kbps)

CSEndB-DTS

2402MHz

14/02/2025





Summary

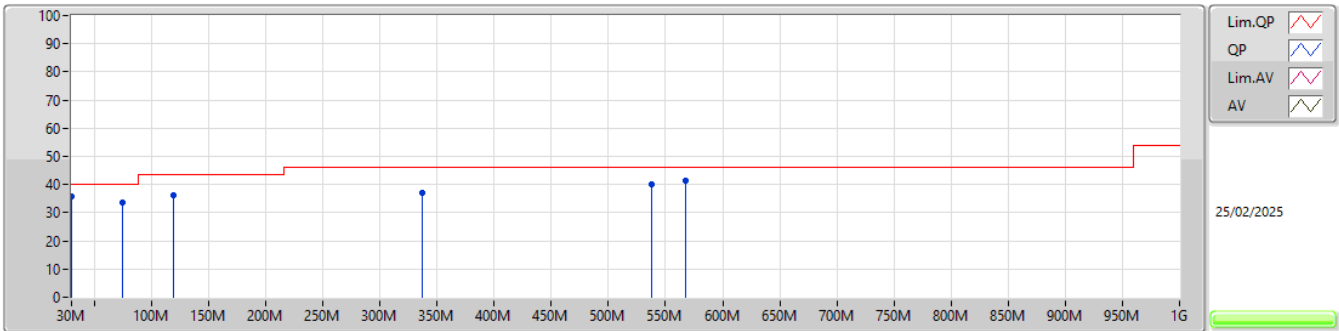
Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	30M	35.97	40.00	-4.03	3	Vertical	360	1.00

Result

Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	35.97	40.00	-4.03	3	Vertical	360	1.00
2440MHz	Pass	PK	74.62M	33.77	40.00	-6.23	3	Vertical	360	1.00
2440MHz	Pass	PK	119.24M	36.04	43.50	-7.46	3	Vertical	360	1.00
2440MHz	Pass	PK	336.52M	37.21	46.00	-8.79	3	Vertical	360	1.00
2440MHz	Pass	PK	538.28M	40.11	46.00	-5.89	3	Vertical	360	1.00
2440MHz	Pass	PK	567.38M	41.48	46.00	-4.52	3	Vertical	360	1.00
2440MHz	Pass	PK	33.88M	28.92	40.00	-11.08	3	Horizontal	0	1.00
2440MHz	Pass	PK	119.24M	37.41	43.50	-6.09	3	Horizontal	0	1.00
2440MHz	Pass	PK	216M	36.14	46.00	-9.86	3	Horizontal	0	1.00
2440MHz	Pass	PK	400.54M	39.31	46.00	-6.69	3	Horizontal	0	1.00
2440MHz	Pass	PK	470.38M	38.58	46.00	-7.42	3	Horizontal	0	1.00
2440MHz	Pass	PK	557.68M	37.65	46.00	-8.35	3	Horizontal	0	1.00

2.4-2.4835GHz_BT-LE(2Mbps)

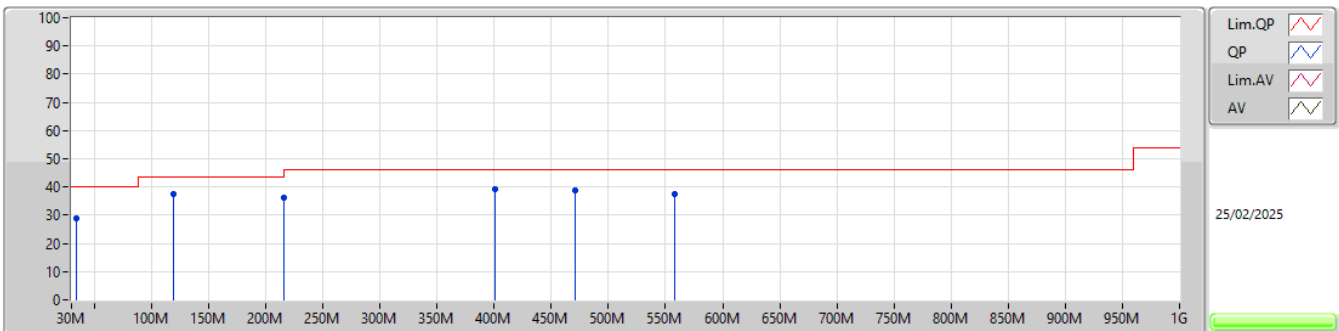
2440MHz_Fixture



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	30M	35.97	40.00	-4.03	-18.87	3	Vertical	360	1.00	54.84	24.67	0.78	44.32
PK	74.62M	33.77	40.00	-6.23	-30.77	3	Vertical	360	1.00	64.54	12.91	1.03	44.71
PK	119.24M	36.04	43.50	-7.46	-25.80	3	Vertical	360	1.00	61.84	17.54	1.28	44.62
PK	336.52M	37.21	46.00	-8.79	-21.85	3	Vertical	360	1.00	59.06	20.25	2.15	44.25
PK	538.28M	40.11	46.00	-5.89	-16.63	3	Vertical	360	1.00	56.74	24.62	2.70	43.95
PK	567.38M	41.48	46.00	-4.52	-14.62	3	Vertical	360	1.00	56.10	26.60	2.73	43.95

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	28.92	40.00	-11.08	-20.79	3	Horizontal	0	1.00	49.71	22.82	0.79	44.40
PK	119.24M	37.41	43.50	-6.09	-25.80	3	Horizontal	0	1.00	63.21	17.54	1.28	44.62
PK	216M	36.14	46.00	-9.86	-27.41	3	Horizontal	0	1.00	63.55	15.42	1.68	44.51
PK	400.54M	39.31	46.00	-6.69	-19.84	3	Horizontal	0	1.00	59.15	22.00	2.26	44.10
PK	470.38M	38.58	46.00	-7.42	-17.87	3	Horizontal	0	1.00	56.45	23.63	2.50	44.00
PK	557.68M	37.65	46.00	-8.35	-14.57	3	Horizontal	0	1.00	52.22	26.66	2.72	43.95



Summary

Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4852G	48.35	54.00	-5.65	3	Horizontal	357	2.52
BT-LE(125kbps)	Pass	AV	2.4836G	47.43	54.00	-6.57	3	Horizontal	357	2.53
BT-LE(500kbps)	Pass	AV	2.4838G	47.49	54.00	-6.51	3	Horizontal	357	2.52
BT-LE(2Mbps)	Pass	AV	2.4835G	49.10	54.00	-4.90	3	Horizontal	357	2.52

Result

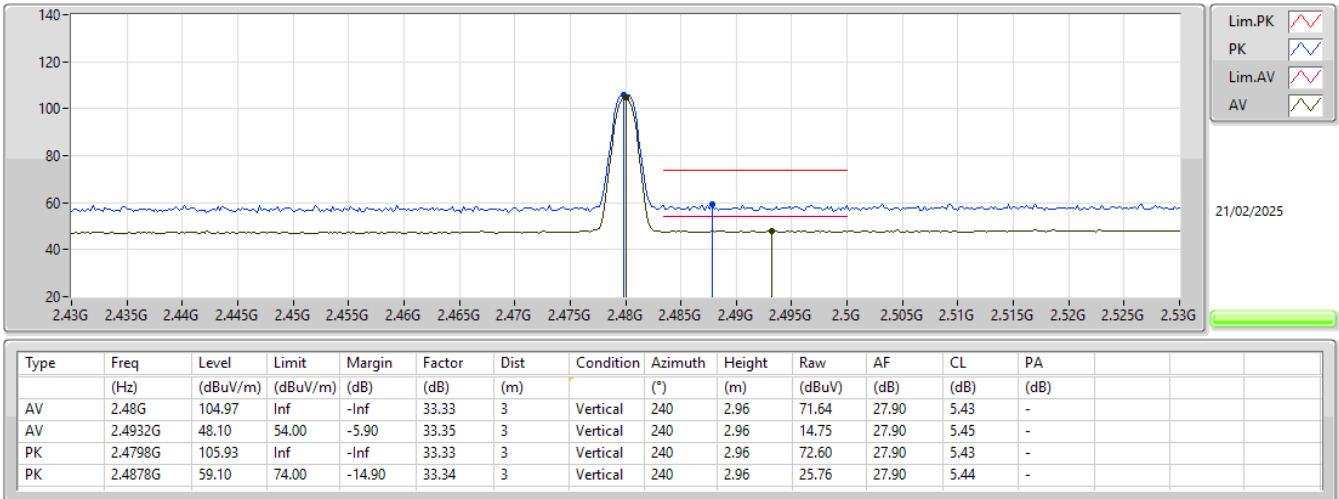
Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3818G	47.27	54.00	-6.73	3	Vertical	234	1.93
2402MHz	Pass	AV	2.402G	102.77	Inf	-Inf	3	Vertical	234	1.93
2402MHz	Pass	PK	2.381G	58.04	74.00	-15.96	3	Vertical	234	1.93
2402MHz	Pass	PK	2.4018G	103.67	Inf	-Inf	3	Vertical	234	1.93
2402MHz	Pass	AV	2.3562G	47.17	54.00	-6.83	3	Horizontal	352	1.50
2402MHz	Pass	AV	2.402G	105.54	Inf	-Inf	3	Horizontal	352	1.50
2402MHz	Pass	PK	2.3728G	58.09	74.00	-15.91	3	Horizontal	352	1.50
2402MHz	Pass	PK	2.4018G	106.51	Inf	-Inf	3	Horizontal	352	1.50
2402MHz	Pass	AV	4.80418G	39.03	54.00	-14.97	3	Vertical	245	2.38
2402MHz	Pass	PK	4.80411G	47.31	74.00	-26.69	3	Vertical	245	2.38
2402MHz	Pass	AV	4.80425G	39.78	54.00	-14.22	3	Horizontal	35	1.50
2402MHz	Pass	PK	4.80369G	48.07	74.00	-25.93	3	Horizontal	35	1.50
2440MHz	Pass	AV	2.3816G	47.16	54.00	-6.84	3	Vertical	294	1.83
2440MHz	Pass	AV	2.44G	102.06	Inf	-Inf	3	Vertical	294	1.83
2440MHz	Pass	AV	2.4876G	48.08	54.00	-5.92	3	Vertical	294	1.83
2440MHz	Pass	PK	2.3692G	58.05	74.00	-15.95	3	Vertical	294	1.83
2440MHz	Pass	PK	2.4396G	103.02	Inf	-Inf	3	Vertical	294	1.83
2440MHz	Pass	PK	2.4996G	59.10	74.00	-14.90	3	Vertical	294	1.83
2440MHz	Pass	AV	2.3512G	47.19	54.00	-6.81	3	Horizontal	353	1.50
2440MHz	Pass	AV	2.44G	105.68	Inf	-Inf	3	Horizontal	353	1.50
2440MHz	Pass	AV	2.5G	48.27	54.00	-5.73	3	Horizontal	353	1.50
2440MHz	Pass	PK	2.37G	57.97	74.00	-16.03	3	Horizontal	353	1.50
2440MHz	Pass	PK	2.4396G	106.64	Inf	-Inf	3	Horizontal	353	1.50
2440MHz	Pass	PK	2.4888G	59.09	74.00	-14.91	3	Horizontal	353	1.50
2440MHz	Pass	AV	4.87998G	41.12	54.00	-12.88	3	Vertical	295	2.89
2440MHz	Pass	PK	4.88003G	49.01	74.00	-24.99	3	Vertical	295	2.89
2440MHz	Pass	AV	4.87997G	40.58	54.00	-13.42	3	Horizontal	42	1.01
2440MHz	Pass	PK	4.88048G	48.34	74.00	-25.66	3	Horizontal	42	1.01
2480MHz	Pass	AV	2.48G	104.97	Inf	-Inf	3	Vertical	240	2.96
2480MHz	Pass	AV	2.4932G	48.10	54.00	-5.90	3	Vertical	240	2.96
2480MHz	Pass	PK	2.4798G	105.93	Inf	-Inf	3	Vertical	240	2.96
2480MHz	Pass	PK	2.4878G	59.10	74.00	-14.90	3	Vertical	240	2.96
2480MHz	Pass	AV	2.48G	107.21	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	AV	2.4852G	48.35	54.00	-5.65	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.4798G	108.18	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.4892G	59.04	74.00	-14.96	3	Horizontal	357	2.52
2480MHz	Pass	AV	4.95994G	40.99	54.00	-13.01	3	Vertical	288	2.14
2480MHz	Pass	PK	4.95966G	48.77	74.00	-25.23	3	Vertical	288	2.14
2480MHz	Pass	AV	4.95992G	41.43	54.00	-12.57	3	Horizontal	46	1.58
2480MHz	Pass	PK	4.96063G	49.01	74.00	-24.99	3	Horizontal	46	1.58
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3894G	47.80	54.00	-6.20	3	Vertical	238	2.82
2402MHz	Pass	AV	2.402G	103.60	Inf	-Inf	3	Vertical	238	2.82
2402MHz	Pass	PK	2.3584G	58.29	74.00	-15.71	3	Vertical	238	2.82
2402MHz	Pass	PK	2.402G	106.12	Inf	-Inf	3	Vertical	238	2.82
2402MHz	Pass	AV	2.3536G	48.03	54.00	-5.97	3	Horizontal	352	2.99
2402MHz	Pass	AV	2.402G	104.87	Inf	-Inf	3	Horizontal	352	2.99
2402MHz	Pass	PK	2.3824G	59.34	74.00	-14.66	3	Horizontal	352	2.99
2402MHz	Pass	PK	2.402G	107.30	Inf	-Inf	3	Horizontal	352	2.99
2402MHz	Pass	AV	4.80484G	37.97	54.00	-16.03	3	Vertical	245	2.09
2402MHz	Pass	PK	4.80513G	47.37	74.00	-26.63	3	Vertical	245	2.09
2402MHz	Pass	AV	4.80486G	39.18	54.00	-14.82	3	Horizontal	37	1.50
2402MHz	Pass	PK	4.80511G	47.76	74.00	-26.24	3	Horizontal	37	1.50
2440MHz	Pass	AV	2.3476G	47.73	54.00	-6.27	3	Vertical	294	1.84
2440MHz	Pass	AV	2.44G	100.68	Inf	-Inf	3	Vertical	294	1.84
2440MHz	Pass	AV	2.486G	48.39	54.00	-5.61	3	Vertical	294	1.84
2440MHz	Pass	PK	2.3752G	57.80	74.00	-16.20	3	Vertical	294	1.84
2440MHz	Pass	PK	2.44G	102.98	Inf	-Inf	3	Vertical	294	1.84
2440MHz	Pass	PK	2.494G	58.47	74.00	-15.53	3	Vertical	294	1.84
2440MHz	Pass	AV	2.3524G	47.60	54.00	-6.40	3	Horizontal	352	1.50

2440MHz	Pass	AV	2.44G	105.33	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	AV	2.4972G	48.36	54.00	-5.64	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.3724G	57.61	74.00	-16.39	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.44G	107.65	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.486G	58.86	74.00	-15.14	3	Horizontal	352	1.50
2440MHz	Pass	AV	4.87886G	40.61	54.00	-13.39	3	Vertical	293	2.90
2440MHz	Pass	PK	4.87901G	49.29	74.00	-24.71	3	Vertical	293	2.90
2440MHz	Pass	AV	4.8789G	39.99	54.00	-14.01	3	Horizontal	41	1.00
2440MHz	Pass	PK	4.8788G	48.40	74.00	-25.60	3	Horizontal	41	1.00
2480MHz	Pass	AV	2.48G	102.02	Inf	-Inf	3	Vertical	240	2.95
2480MHz	Pass	AV	2.486G	48.39	54.00	-5.61	3	Vertical	240	2.95
2480MHz	Pass	PK	2.48G	104.38	Inf	-Inf	3	Vertical	240	2.95
2480MHz	Pass	PK	2.494G	59.69	74.00	-14.31	3	Vertical	240	2.95
2480MHz	Pass	AV	2.4798G	105.08	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	AV	2.4835G	49.10	54.00	-4.90	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.48G	107.43	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.4848G	58.68	74.00	-15.32	3	Horizontal	357	2.52
2480MHz	Pass	AV	4.95884G	39.91	54.00	-14.09	3	Vertical	291	2.92
2480MHz	Pass	PK	4.95894G	48.60	74.00	-25.40	3	Vertical	291	2.92
2480MHz	Pass	AV	4.95894G	40.16	54.00	-13.84	3	Horizontal	38	1.16
2480MHz	Pass	PK	4.9609G	48.63	74.00	-25.37	3	Horizontal	38	1.16
BT-LE(125kbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3624G	46.13	54.00	-7.87	3	Vertical	237	2.81
2402MHz	Pass	AV	2.402G	104.90	Inf	-Inf	3	Vertical	237	2.81
2402MHz	Pass	PK	2.3812G	58.83	74.00	-15.17	3	Vertical	237	2.81
2402MHz	Pass	PK	2.4018G	106.09	Inf	-Inf	3	Vertical	237	2.81
2402MHz	Pass	AV	2.3894G	46.06	54.00	-7.94	3	Horizontal	353	2.67
2402MHz	Pass	AV	2.402G	107.08	Inf	-Inf	3	Horizontal	353	2.67
2402MHz	Pass	PK	2.378G	59.79	74.00	-14.21	3	Horizontal	353	2.67
2402MHz	Pass	PK	2.4018G	108.27	Inf	-Inf	3	Horizontal	353	2.67
2402MHz	Pass	AV	4.80428G	37.98	54.00	-16.02	3	Vertical	245	2.16
2402MHz	Pass	PK	4.80386G	47.85	74.00	-26.15	3	Vertical	245	2.16
2402MHz	Pass	AV	4.80414G	39.04	54.00	-14.96	3	Horizontal	35	1.50
2402MHz	Pass	PK	4.80395G	48.36	74.00	-25.64	3	Horizontal	35	1.50
2440MHz	Pass	AV	2.3552G	46.06	54.00	-7.94	3	Vertical	294	1.85
2440MHz	Pass	AV	2.44G	102.36	Inf	-Inf	3	Vertical	294	1.85
2440MHz	Pass	AV	2.4956G	46.87	54.00	-7.13	3	Vertical	294	1.85
2440MHz	Pass	PK	2.3752G	58.07	74.00	-15.93	3	Vertical	294	1.85
2440MHz	Pass	PK	2.4396G	103.53	Inf	-Inf	3	Vertical	294	1.85
2440MHz	Pass	PK	2.4856G	59.18	74.00	-14.82	3	Vertical	294	1.85
2440MHz	Pass	AV	2.352G	46.06	54.00	-7.94	3	Horizontal	352	1.50
2440MHz	Pass	AV	2.44G	106.11	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	AV	2.5G	46.97	54.00	-7.03	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.3644G	58.32	74.00	-15.68	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.44G	107.28	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.4876G	59.52	74.00	-14.48	3	Horizontal	352	1.50
2440MHz	Pass	AV	4.87997G	40.64	54.00	-13.36	3	Vertical	293	2.93
2440MHz	Pass	PK	4.88025G	50.15	74.00	-23.85	3	Vertical	293	2.93
2440MHz	Pass	AV	4.87977G	39.61	54.00	-14.39	3	Horizontal	43	1.03
2440MHz	Pass	PK	4.88045G	48.48	74.00	-25.52	3	Horizontal	43	1.03
2480MHz	Pass	AV	2.48G	104.33	Inf	-Inf	3	Vertical	239	2.96
2480MHz	Pass	AV	2.4842G	47.05	54.00	-6.95	3	Vertical	239	2.96
2480MHz	Pass	PK	2.4798G	105.54	Inf	-Inf	3	Vertical	239	2.96
2480MHz	Pass	PK	2.4884G	59.48	74.00	-14.52	3	Vertical	239	2.96
2480MHz	Pass	AV	2.48G	107.49	Inf	-Inf	3	Horizontal	357	2.53
2480MHz	Pass	AV	2.4836G	47.43	54.00	-6.57	3	Horizontal	357	2.53
2480MHz	Pass	PK	2.4798G	108.71	Inf	-Inf	3	Horizontal	357	2.53
2480MHz	Pass	PK	2.4972G	58.84	74.00	-15.16	3	Horizontal	357	2.53
2480MHz	Pass	AV	4.95987G	40.71	54.00	-13.29	3	Vertical	287	2.21
2480MHz	Pass	PK	4.96033G	49.53	74.00	-24.47	3	Vertical	287	2.21
2480MHz	Pass	AV	4.96012G	40.67	54.00	-13.33	3	Horizontal	46	1.58
2480MHz	Pass	PK	4.96032G	49.97	74.00	-24.03	3	Horizontal	46	1.58
BT-LE(500kbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3736G	46.37	54.00	-7.63	3	Vertical	238	2.82

2402MHz	Pass	AV	2.402G	104.72	Inf	-Inf	3	Vertical	238	2.82
2402MHz	Pass	PK	2.3776G	58.15	74.00	-15.85	3	Vertical	238	2.82
2402MHz	Pass	PK	2.402G	105.70	Inf	-Inf	3	Vertical	238	2.82
2402MHz	Pass	AV	2.3868G	46.46	54.00	-7.54	3	Horizontal	352	1.50
2402MHz	Pass	AV	2.402G	105.09	Inf	-Inf	3	Horizontal	352	1.50
2402MHz	Pass	PK	2.3732G	57.90	74.00	-16.10	3	Horizontal	352	1.50
2402MHz	Pass	PK	2.4018G	106.11	Inf	-Inf	3	Horizontal	352	1.50
2402MHz	Pass	AV	4.80386G	39.10	54.00	-14.90	3	Vertical	244	2.39
2402MHz	Pass	PK	4.80341G	48.20	74.00	-25.80	3	Vertical	244	2.39
2402MHz	Pass	AV	4.80396G	39.84	54.00	-14.16	3	Horizontal	37	1.50
2402MHz	Pass	PK	4.80456G	48.58	74.00	-25.42	3	Horizontal	37	1.50
2440MHz	Pass	AV	2.354G	46.30	54.00	-7.70	3	Vertical	294	1.85
2440MHz	Pass	AV	2.44G	101.67	Inf	-Inf	3	Vertical	294	1.85
2440MHz	Pass	AV	2.4932G	47.19	54.00	-6.81	3	Vertical	294	1.85
2440MHz	Pass	PK	2.3628G	57.79	74.00	-16.21	3	Vertical	294	1.85
2440MHz	Pass	PK	2.4396G	102.67	Inf	-Inf	3	Vertical	294	1.85
2440MHz	Pass	PK	2.4884G	58.78	74.00	-15.22	3	Vertical	294	1.85
2440MHz	Pass	AV	2.3504G	46.32	54.00	-7.68	3	Horizontal	352	1.50
2440MHz	Pass	AV	2.44G	105.77	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	AV	2.4904G	47.17	54.00	-6.83	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.3696G	57.84	74.00	-16.16	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.4396G	106.72	Inf	-Inf	3	Horizontal	352	1.50
2440MHz	Pass	PK	2.4872G	58.71	74.00	-15.29	3	Horizontal	352	1.50
2440MHz	Pass	AV	4.87985G	41.31	54.00	-12.69	3	Vertical	293	2.93
2440MHz	Pass	PK	4.88029G	50.11	74.00	-23.89	3	Vertical	293	2.93
2440MHz	Pass	AV	4.88003G	40.39	54.00	-13.61	3	Horizontal	43	1.00
2440MHz	Pass	PK	4.8804G	49.40	74.00	-24.60	3	Horizontal	43	1.00
2480MHz	Pass	AV	2.48G	104.11	Inf	-Inf	3	Vertical	246	2.63
2480MHz	Pass	AV	2.4836G	47.28	54.00	-6.72	3	Vertical	246	2.63
2480MHz	Pass	PK	2.4802G	105.18	Inf	-Inf	3	Vertical	246	2.63
2480MHz	Pass	PK	2.4866G	59.58	74.00	-14.42	3	Vertical	246	2.63
2480MHz	Pass	AV	2.48G	107.08	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	AV	2.4838G	47.49	54.00	-6.51	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.48G	108.10	Inf	-Inf	3	Horizontal	357	2.52
2480MHz	Pass	PK	2.4992G	58.90	74.00	-15.10	3	Horizontal	357	2.52
2480MHz	Pass	AV	4.95993G	41.04	54.00	-12.96	3	Vertical	292	2.91
2480MHz	Pass	PK	4.95938G	49.24	74.00	-24.76	3	Vertical	292	2.91
2480MHz	Pass	AV	4.95986G	41.18	54.00	-12.82	3	Horizontal	47	1.59
2480MHz	Pass	PK	4.9596G	49.38	74.00	-24.62	3	Horizontal	47	1.59

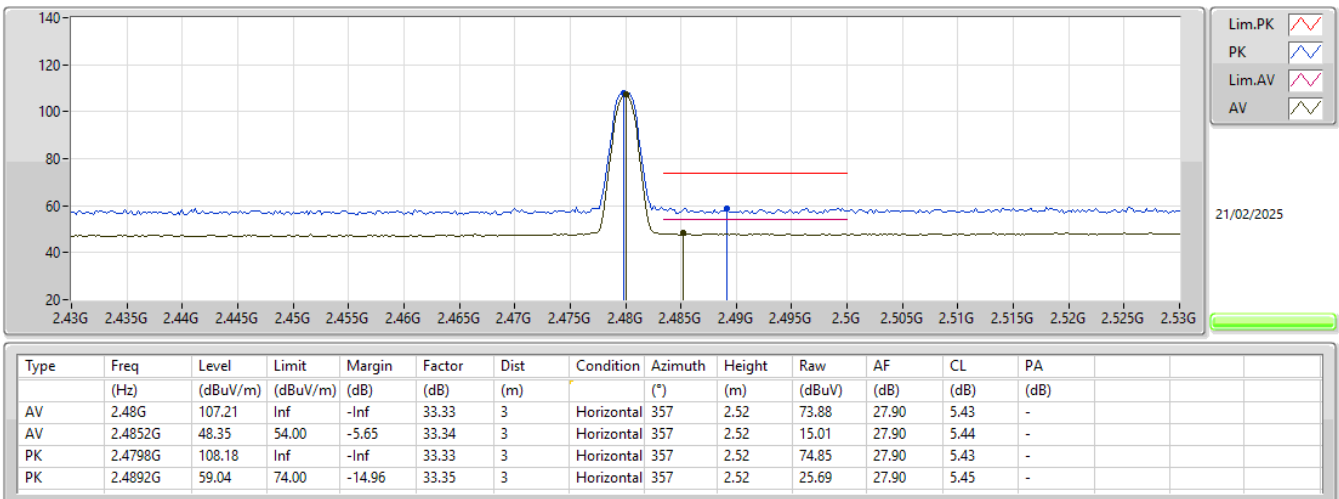
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2480MHz_TX



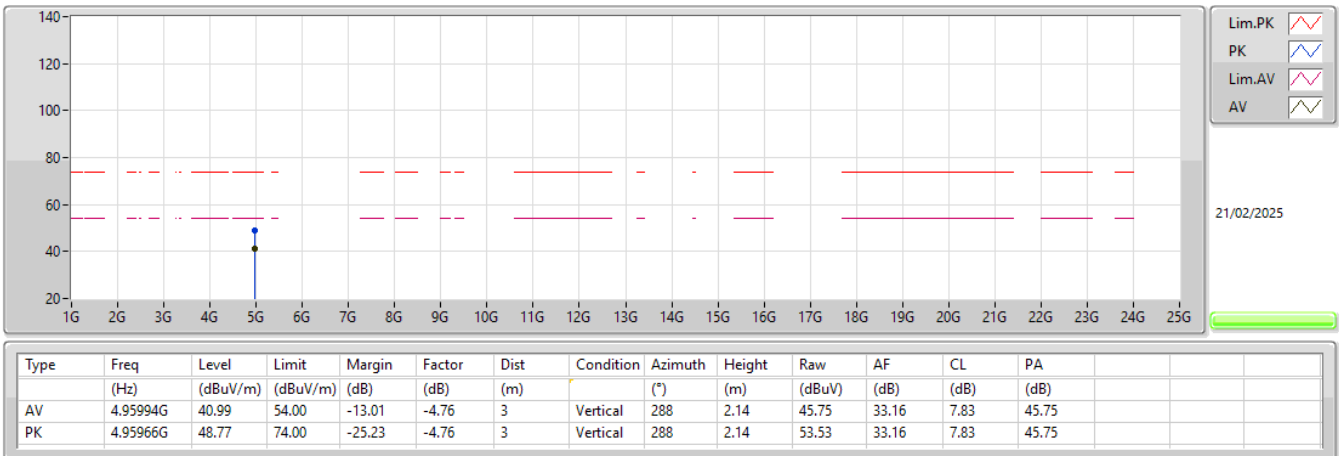
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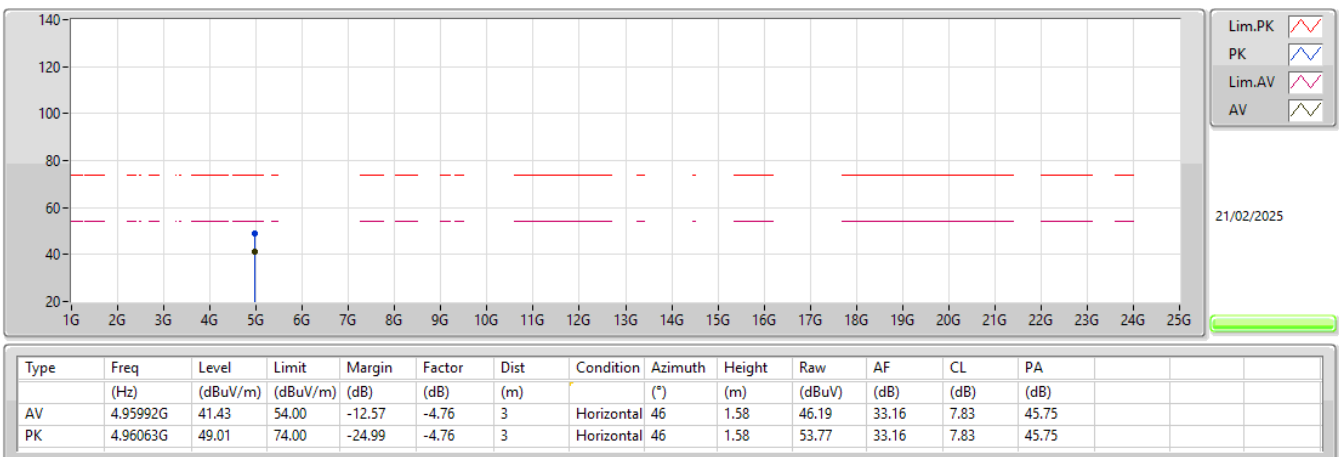
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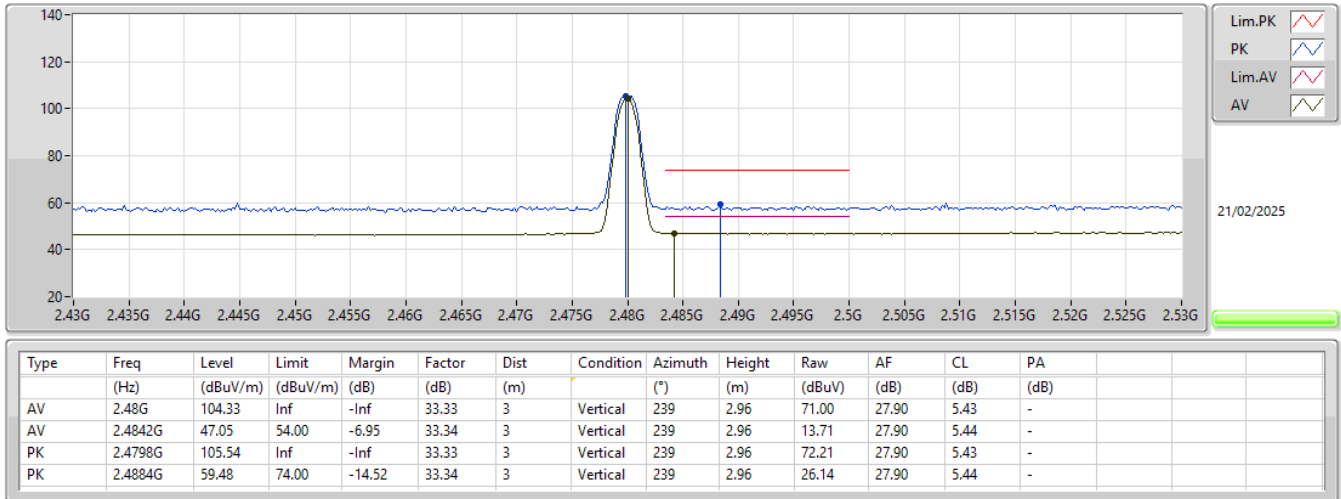
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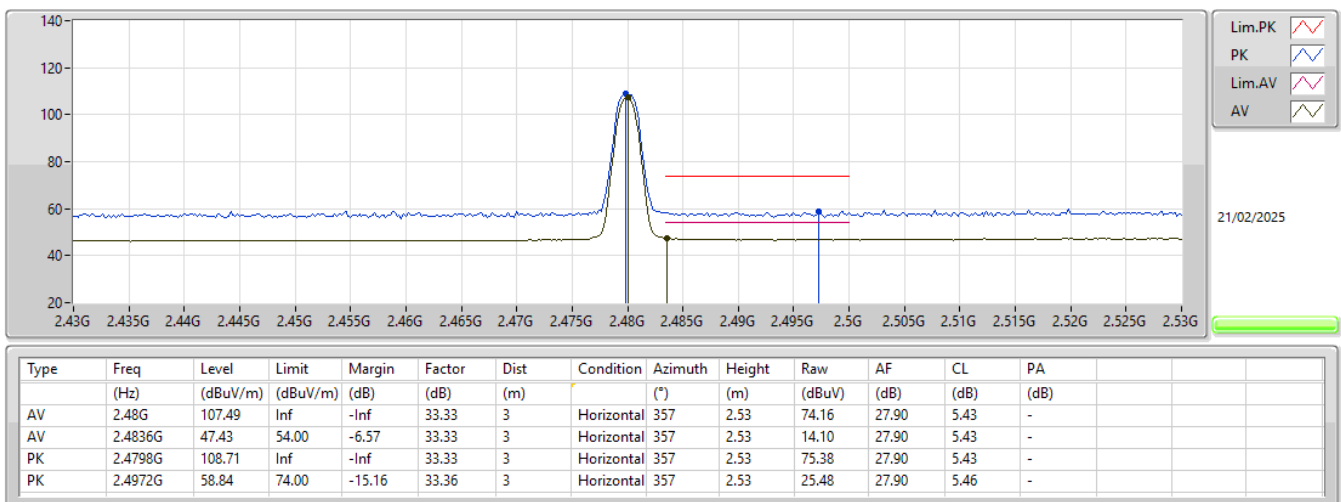
2.4-2.4835GHz_BT-LE(125kbps)

2480MHz_TX



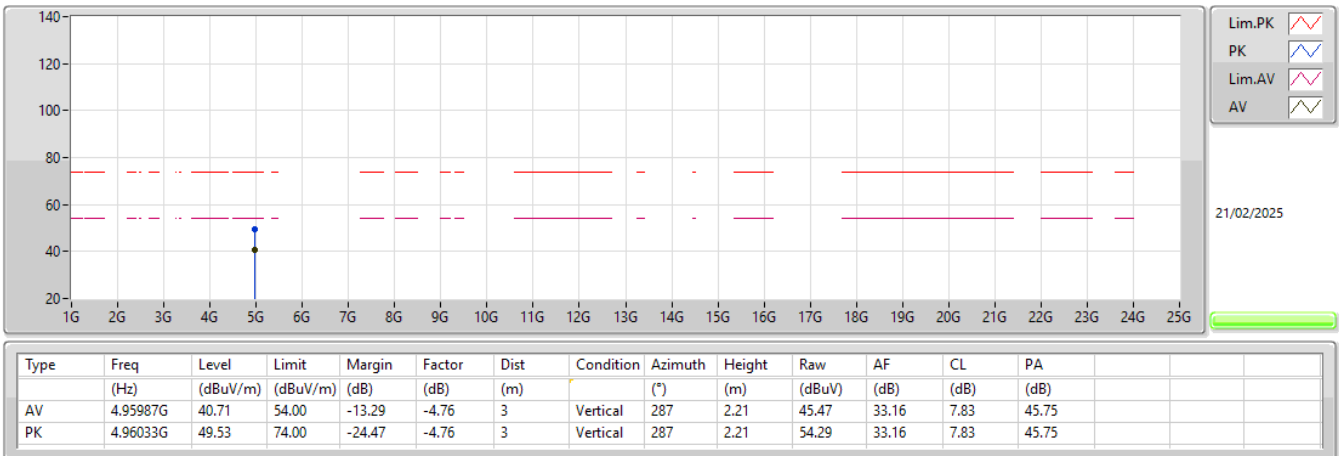
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2480MHz_TX



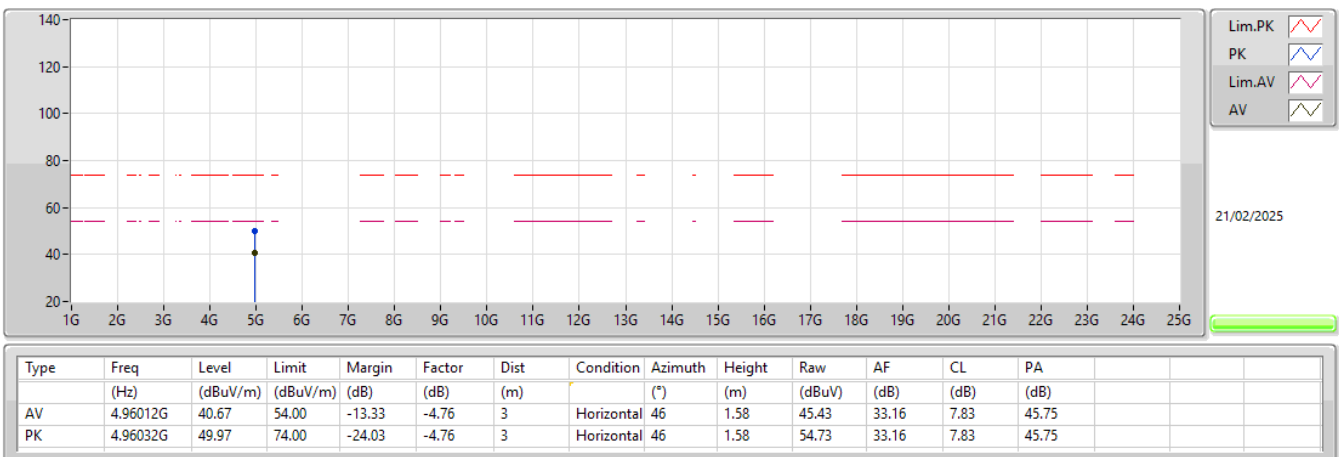
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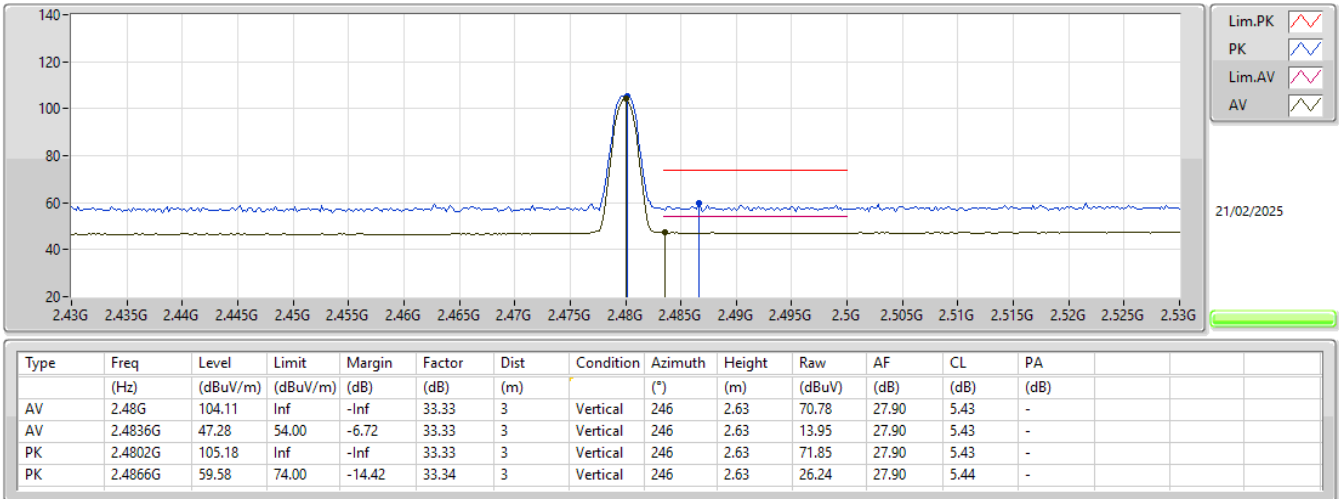
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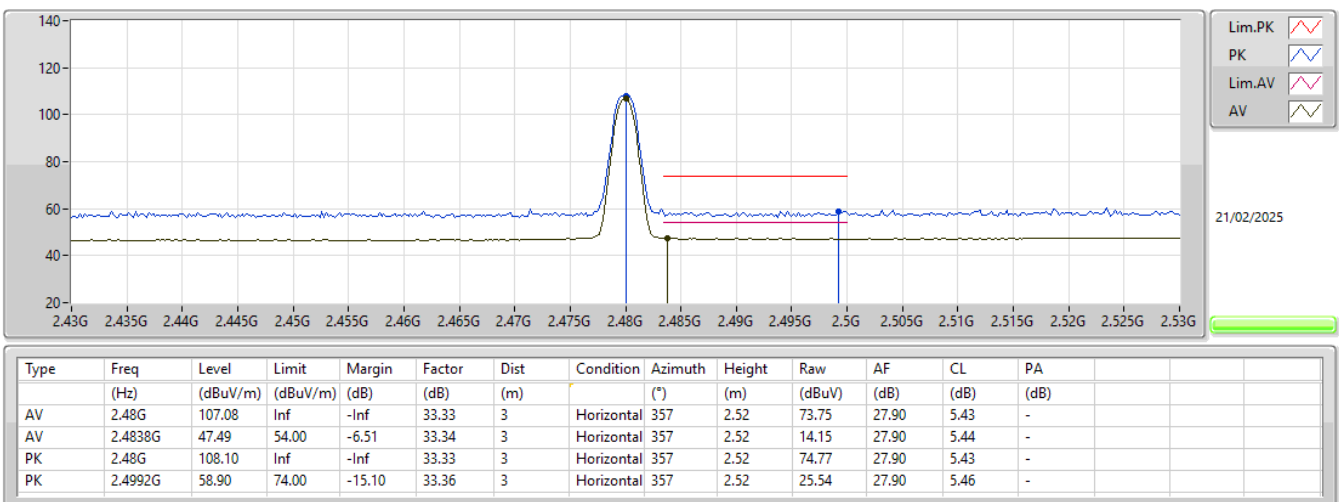
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2480MHz_TX



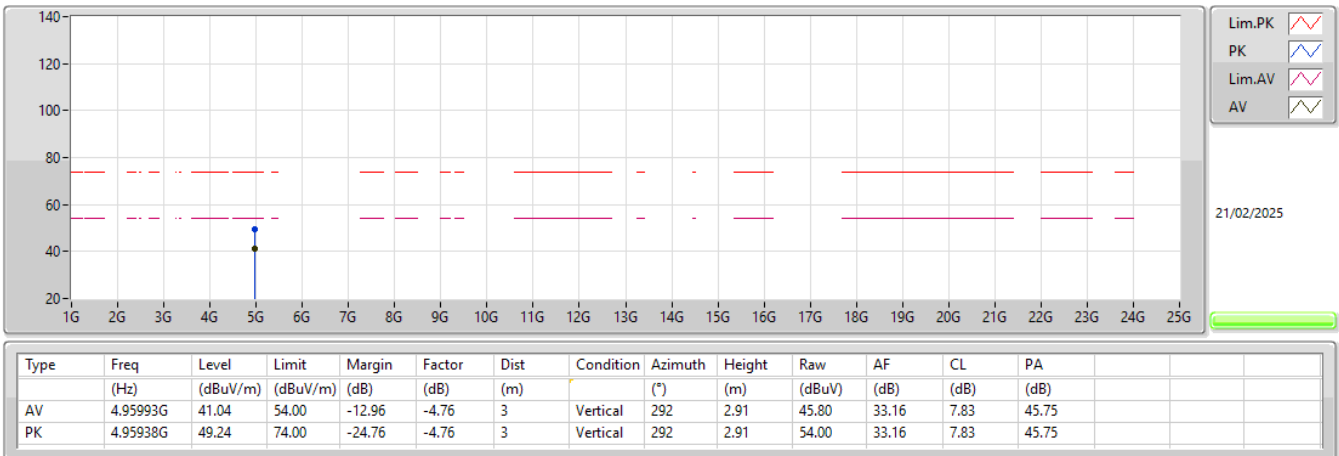
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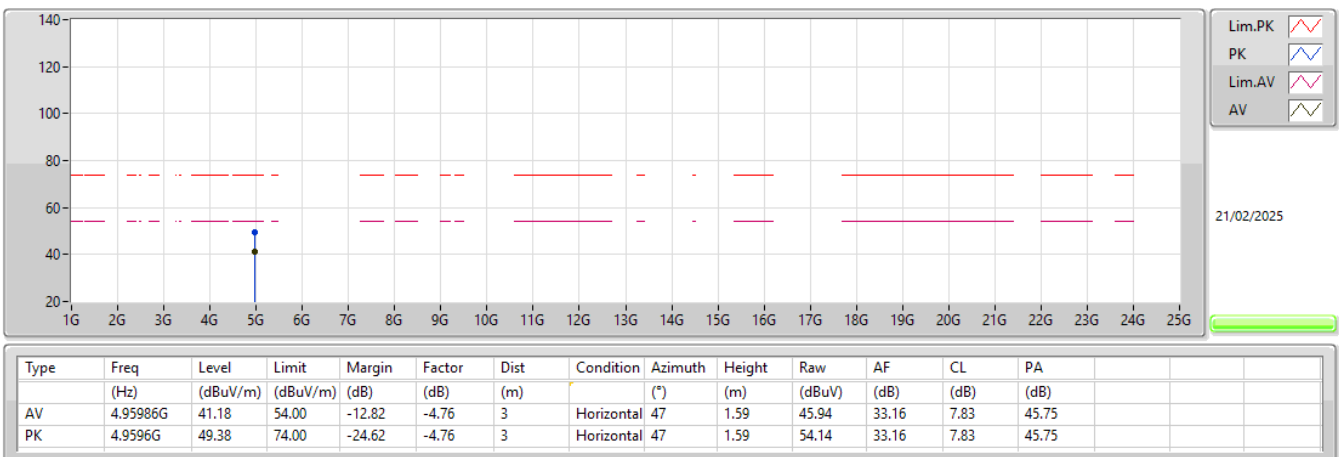
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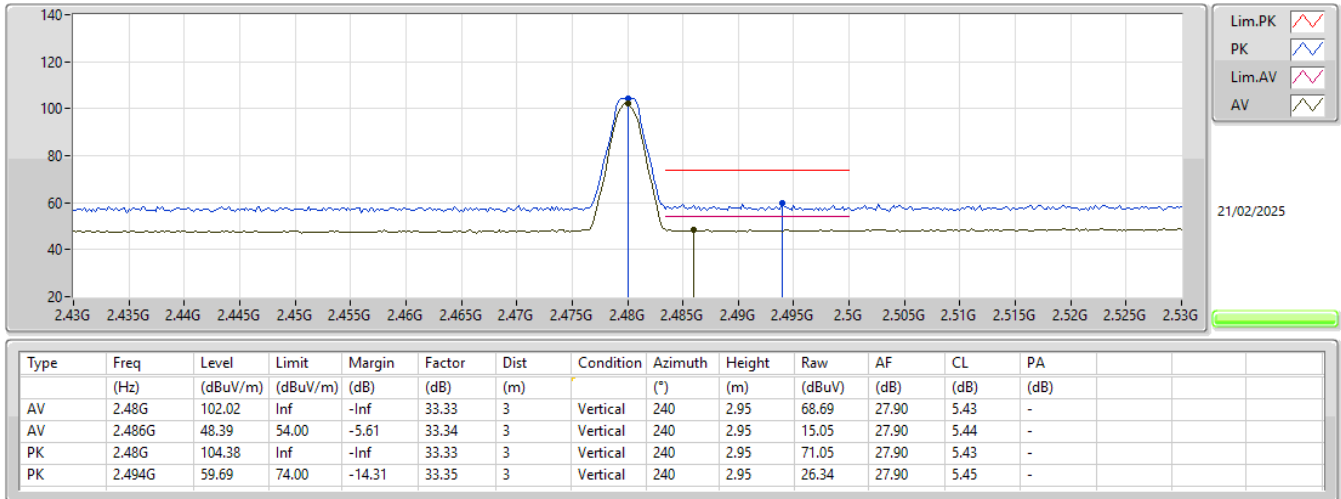
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2480MHz_TX



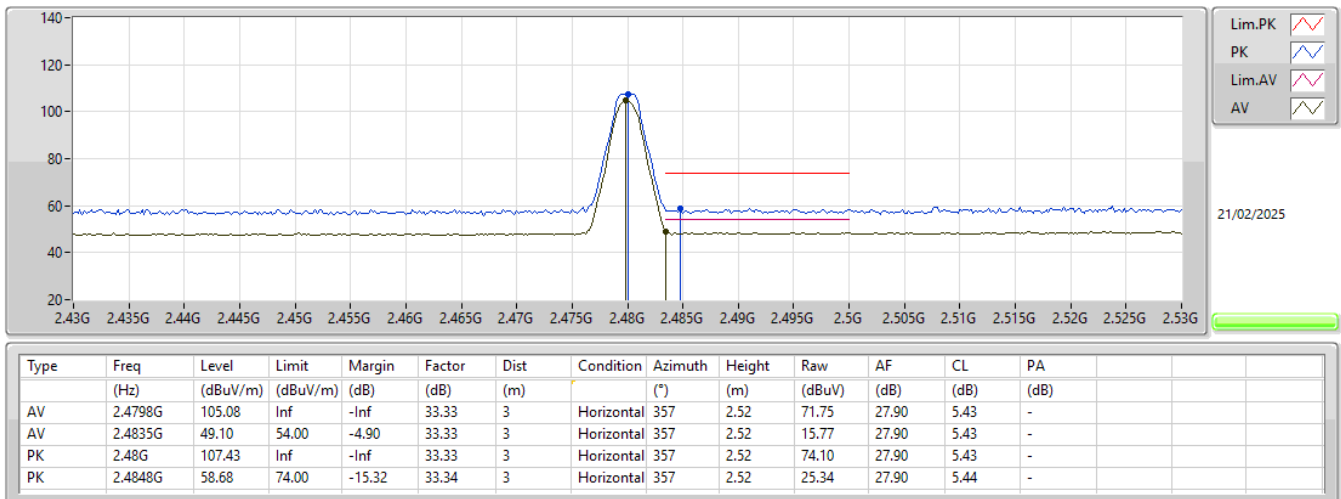
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2480MHz_TX



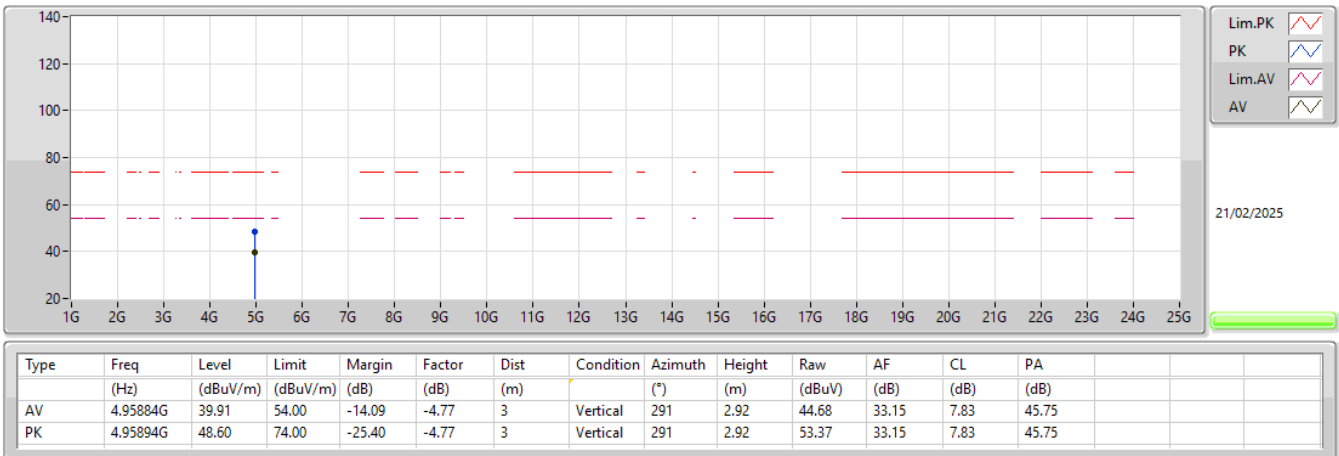
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2480MHz_TX



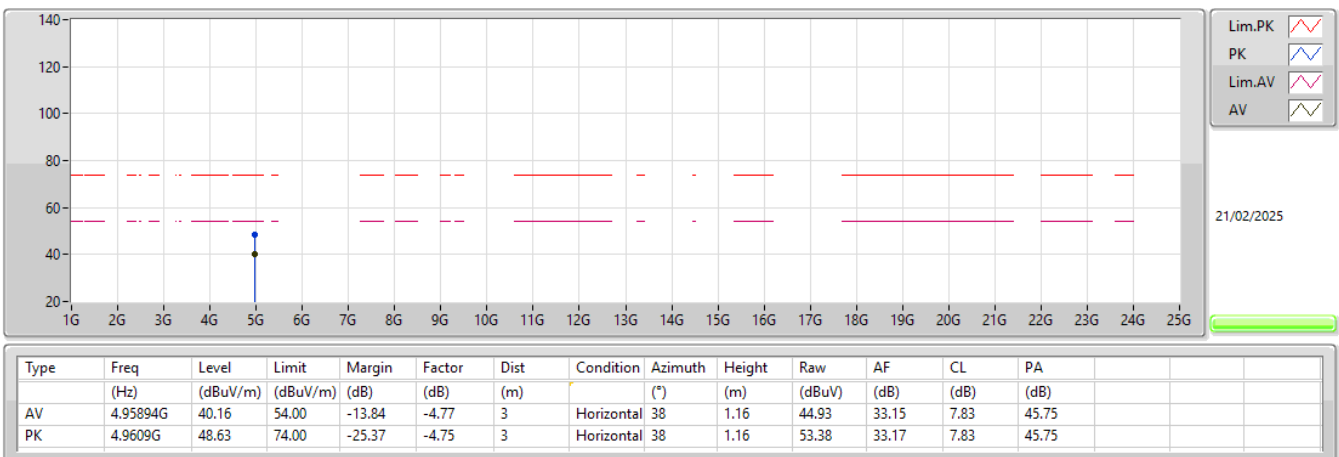
2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX





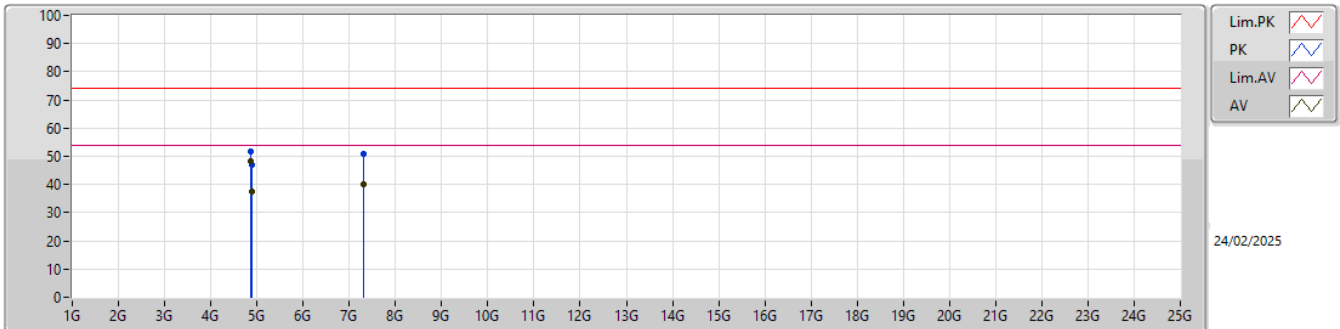
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	4.87385G	49.06	54.00	-4.94	Horizontal
Mode 2	Pass	AV	11.4888G	52.29	54.00	-1.71	Vertical

Result

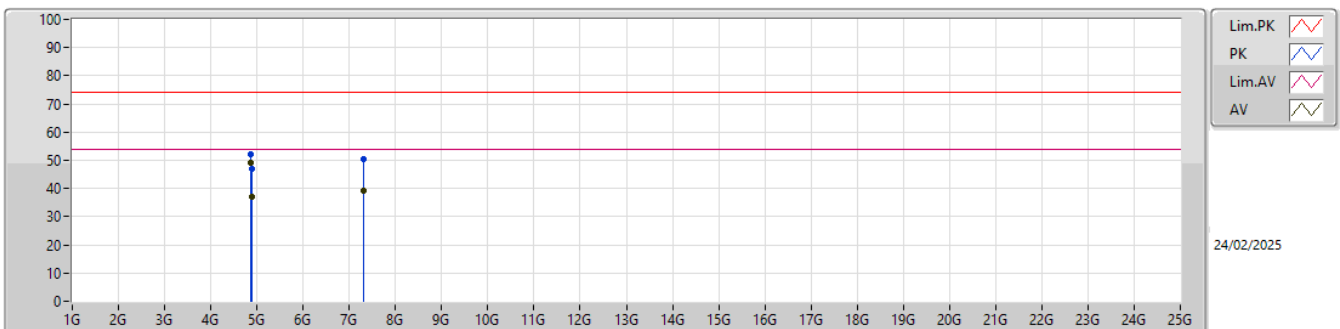
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	4.87386G	48.35	54.00	-5.65	3	Vertical	119	2.69	-
Mode 1	Pass	AV	4.8798G	37.31	54.00	-16.69	3	Vertical	306	1.76	-
Mode 1	Pass	AV	7.32056G	39.90	54.00	-14.10	3	Vertical	316	1.43	-
Mode 1	Pass	PK	4.87386G	51.55	74.00	-22.45	3	Vertical	119	2.69	-
Mode 1	Pass	PK	4.88007G	46.77	74.00	-27.23	3	Vertical	306	1.76	-
Mode 1	Pass	PK	7.3024G	50.91	74.00	-23.09	3	Vertical	316	1.43	-
Mode 1	Pass	AV	4.87385G	49.06	54.00	-4.94	3	Horizontal	127	1.89	-
Mode 1	Pass	AV	4.88G	37.07	54.00	-16.93	3	Horizontal	343	1.50	-
Mode 1	Pass	AV	7.31972G	39.15	54.00	-14.85	3	Horizontal	322	1.41	-
Mode 1	Pass	PK	4.87389G	52.18	74.00	-21.82	3	Horizontal	127	1.89	-
Mode 1	Pass	PK	4.87928G	47.01	74.00	-26.99	3	Horizontal	343	1.50	-
Mode 1	Pass	PK	7.31022G	50.37	74.00	-23.63	3	Horizontal	322	1.41	-
Mode 2	Pass	AV	4.87963G	35.16	54.00	-18.84	3	Vertical	306	1.72	-
Mode 2	Pass	AV	11.4888G	52.29	54.00	-1.71	3	Vertical	317	1.46	-
Mode 2	Pass	AV	17.23628G	48.75	68.20	-19.45	3	Vertical	195	2.78	-
Mode 2	Pass	PK	4.87969G	45.80	74.00	-28.20	3	Vertical	306	1.72	-
Mode 2	Pass	PK	11.49044G	64.24	74.00	-9.76	3	Vertical	317	1.46	-
Mode 2	Pass	PK	17.2278G	61.15	68.20	-7.05	3	Vertical	195	2.78	-
Mode 2	Pass	AV	4.87988G	36.40	54.00	-17.60	3	Horizontal	54	1.00	-
Mode 2	Pass	AV	11.49074G	47.49	54.00	-6.51	3	Horizontal	327	1.39	-
Mode 2	Pass	AV	17.24318G	44.05	68.20	-24.15	3	Horizontal	172	1.50	-
Mode 2	Pass	PK	4.87933G	46.00	74.00	-28.00	3	Horizontal	54	1.00	-
Mode 2	Pass	PK	11.48704G	58.66	74.00	-15.34	3	Horizontal	327	1.39	-
Mode 2	Pass	PK	17.24382G	55.21	68.20	-12.99	3	Horizontal	172	1.50	-

Radiated Emissions above 1GHz_Mode 1



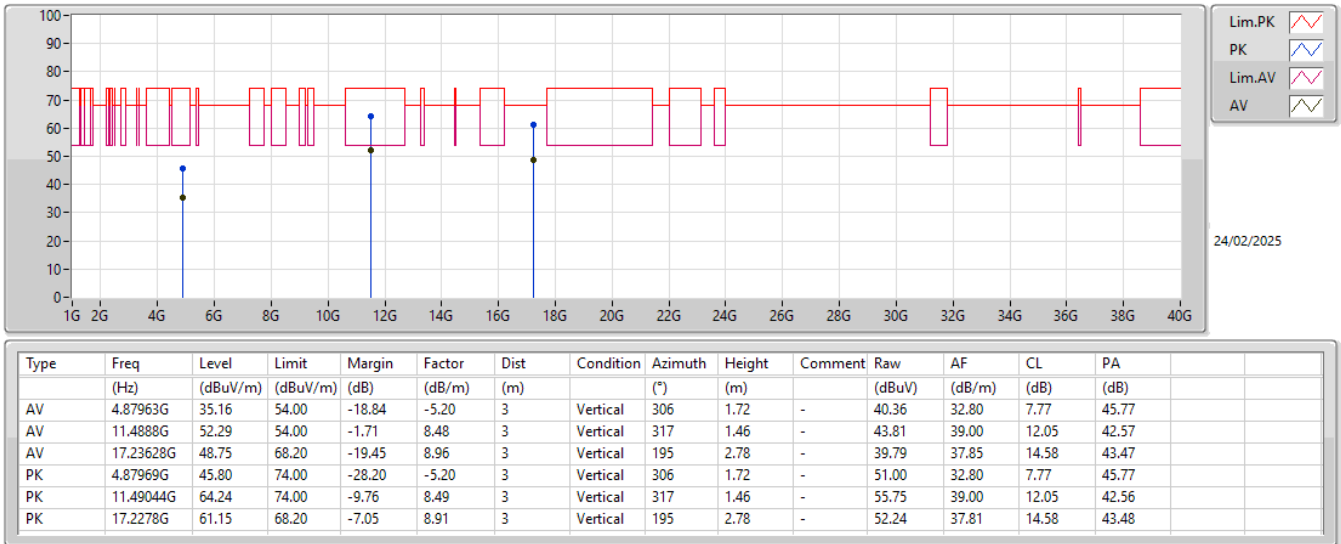
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)
AV	4.87386G	48.35	54.00	-5.65	-5.20	3	Vertical	119	2.69	-	53.55	32.80	7.77	45.77
AV	4.8798G	37.31	54.00	-16.69	-5.20	3	Vertical	306	1.76	-	42.51	32.80	7.77	45.77
AV	7.32056G	39.90	54.00	-14.10	1.25	3	Vertical	316	1.43	-	38.65	37.06	9.46	45.27
PK	4.87386G	51.55	74.00	-22.45	-5.20	3	Vertical	119	2.69	-	56.75	32.80	7.77	45.77
PK	4.88007G	46.77	74.00	-27.23	-5.20	3	Vertical	306	1.76	-	51.97	32.80	7.77	45.77
PK	7.3024G	50.91	74.00	-23.09	1.27	3	Vertical	316	1.43	-	49.64	37.10	9.46	45.29

Radiated Emissions above 1GHz_Mode 1



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)
AV	4.87385G	49.06	54.00	-4.94	-5.20	3	Horizontal	127	1.89	-	54.26	32.80	7.77	45.77
AV	4.88G	37.07	54.00	-16.93	-5.20	3	Horizontal	343	1.50	-	42.27	32.80	7.77	45.77
AV	7.31972G	39.15	54.00	-14.85	1.25	3	Horizontal	322	1.41	-	37.90	37.06	9.46	45.27
PK	4.87389G	52.18	74.00	-21.82	-5.20	3	Horizontal	127	1.89	-	57.38	32.80	7.77	45.77
PK	4.87928G	47.01	74.00	-26.99	-5.20	3	Horizontal	343	1.50	-	52.21	32.80	7.77	45.77
PK	7.31022G	50.37	74.00	-23.63	1.26	3	Horizontal	322	1.41	-	49.11	37.08	9.46	45.28

Radiated Emissions above 1GHz_Mode 2



Radiated Emissions above 1GHz_Mode 2

