

FCC Radio Test Report

FCC ID : U2M-IAP2701A
Equipment : WiFi 7 Tri-radio concurrent indoor ceiling mount AP
Brand Name : Senao
Model Name : IAP2701A
Applicant : Senao Networks, Inc.
3F., No.529, Zhongzheng Rd., Xindian Dist.,
New Taipei City, Taiwan
Manufacturer : Senao Networks, Inc.
3F., No.529, Zhongzheng Rd., Xindian Dist.,
New Taipei City, Taiwan
Standard : 47 CFR FCC Part 15.247

The product was received on Nov. 28, 2023, and testing was started from Nov. 28, 2023 and completed on Mar. 27, 2024. 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: Ben Tseng

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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



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PHOTOGRAPHS OF EUT V01



Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Note 1: From Sporton Project No.: FR422116AL (Conducted, Radiated above 1G)

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: Terry Chang

Report Producer: Ann Hou

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(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	Senao	5718A0751300	PIFA	I-Pex	Radio 1_2.4G
2	Senao	5718A0750300	PIFA	I-Pex	Radio 1_2.4G
3	Senao	5718A0753300	PIFA	I-Pex	Radio 2_5G 2*2
4	Senao	5718A0752300	PIFA	I-Pex	Radio 2_5G 2*2
5	AWAN	7102A0951000	Alford Loop	I-Pex	Radio 2_6E
6	AWAN	7102A0952000	Alford Loop	I-Pex	Radio 2_6E
7	AWAN	7102A0953000	Dipole	I-Pex	BT

Ant.	Port	Gain (dBi)						
		2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	6E	BT
1	1	2.24	-	-	-	-	-	-
2	2	3.12	-	-	-	-	-	-
3	1	-	5.55	5.98	5.87	5.49	-	-
4	2	-	5.48	5.41	4.88	4.65	-	-
5	1	-	-	-	-	-	5.1	-
6	2	-	-	-	-	-	5.6	-
7	1	-	-	-	-	-	-	3.2

Composite Gain (dBi)							
	2.4G	2.45G	2.4835G	5.2G	5.3G	5.6G	5.785G
DG [1SS]	3.33	3.92	4.52	6.77	7	7.46	6.35
DG [2SS]	2.24	2.35	3.12	5.55	5.98	5.87	5.49

Note 1: The EUT has seven antennas.

Note 2: The composite gain is derived as KDB 662911 D03 v01 which was used as directional gain. For more detail information, please refer to the Antenna Pattern Report AP421504.

For 2.4GHz function:

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

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

For 5GHz function:

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

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

For 6GHz function:

For IEEE 802.11 ax/be mode (2TX/2RX)

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

For Bluetooth function:

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

Ant. 7 (port 1) could transmit/receive.

1.1.3 EUT Information

Operational Condition	
EUT Power Type	From Adapter / PoE
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint <input type="checkbox"/> Point-to-point
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)
	Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)
	Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.32	4.95	400u	3k
BT-LE(2Mbps)	0.34	4.69	213.75u	10k

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				
<input checked="" type="checkbox"/>	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
AC Conduction	CO04-HY	Ivan Chung	21.1~22.4°C / 50~56%	27/Mar/2024
RF Conducted	TH07-HY	Xun Hsieh	24.2~24.8°C / 55~58%	25/Mar/2024
Radiated (Below 1GHz)	03CH02-HY	Daniel Lin	22.3~24.1°C / 56~58%	27/Mar/2024
Radiated (Above 1GHz)	03CH02-HY	Daniel Lin	23.5~24.2°C / 55~59%	28/Nov/2023
Radiated (Co-location)	03CH02-HY	Darren Cho	21.8~24.4°C / 55~58%	27/Mar/2024
<input type="checkbox"/>	Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)		
		TEL: 886-3-318-0787	FAX: 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				

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	Putty 0.62
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Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	default
2440MHz	default
2480MHz	default
BT-LE(2Mbps)	-
2402MHz	default
2440MHz	default
2480MHz	default

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	CTX
1	PoE mode

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	PoE 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
Test Condition	Radiated measurement
Operating Mode	CTX
1	WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz + Bluetooth

Refer to Sporton Test Report No.: FA421504 for Co-location RF Exposure Evaluation and Appendix G for Radiated Emission Co-location.

2.3 Accessories

Accessories					
Bracket	Brand Name	Dragonjet	Part Number	6301A6543000	

Reminder: Regarding to more detail and other information, please refer to user manual.

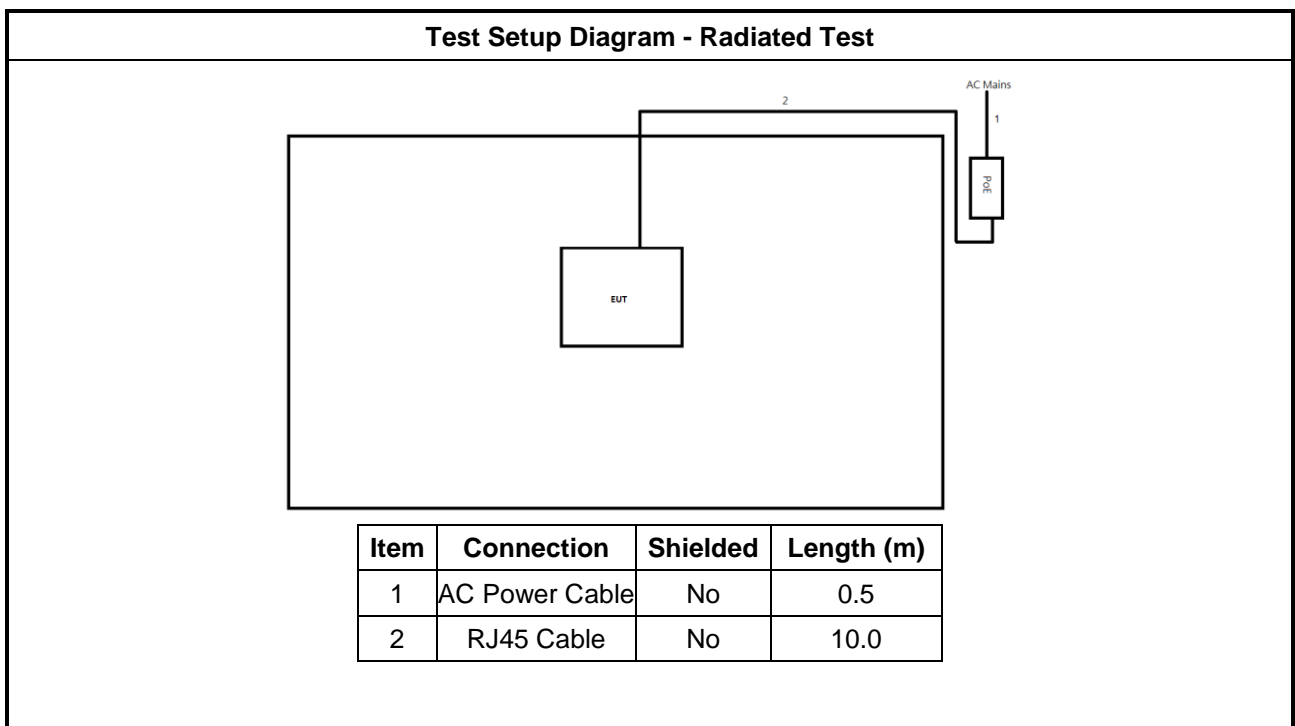
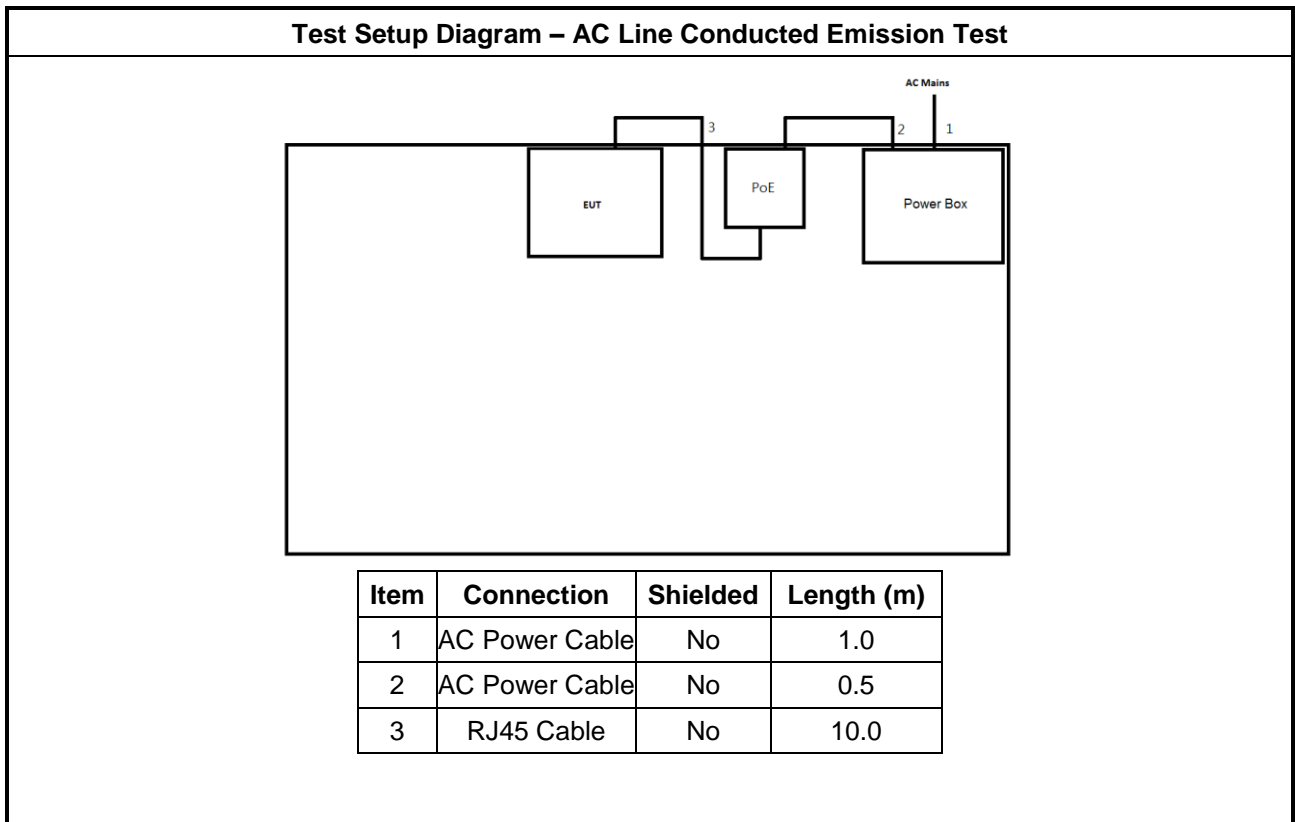
2.4 Support Equipment

Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	PoE	SENAO	PNA60BGS-54	-	Provided by Customer

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	AC Adapter	SPC	ZZU1588-300120-2A	-	Provided by Customer

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	RJ45 cable	Power Sync	CAT-6E-10	-	-
2	PoE	SENAO	PNA60BGS-54	-	Remote Provided by Customer
3	Notebook	DELL	E5410	-	Remote
4	RJ45 cable	Power Sync	CAT-6E-01	-	Remote

2.5 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

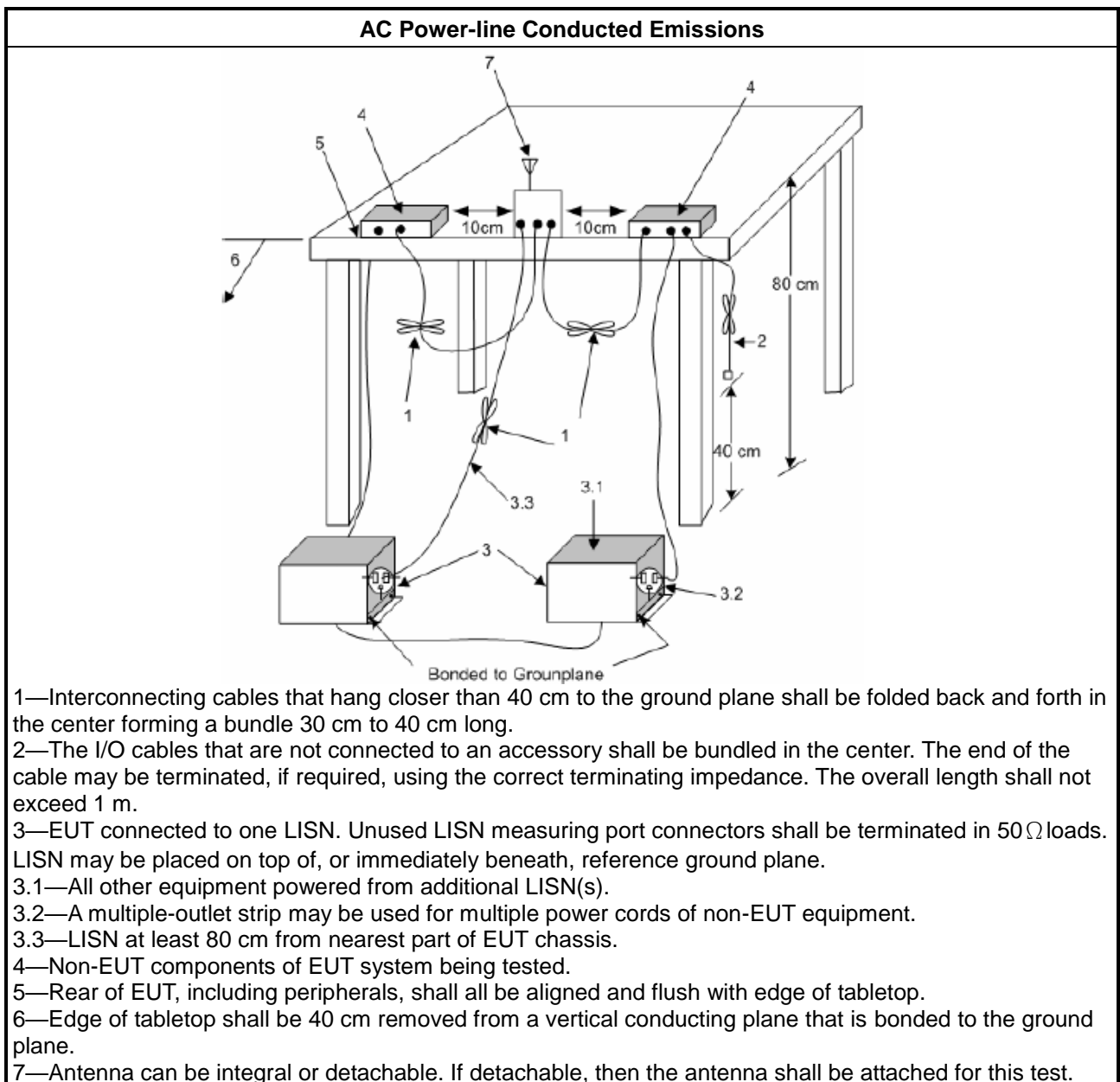
Test Method
<ul style="list-style-type: none"> Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

3.1.5 Test Setup



3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
<ul style="list-style-type: none"> ▪ 6 dB bandwidth \geq 500 kHz.

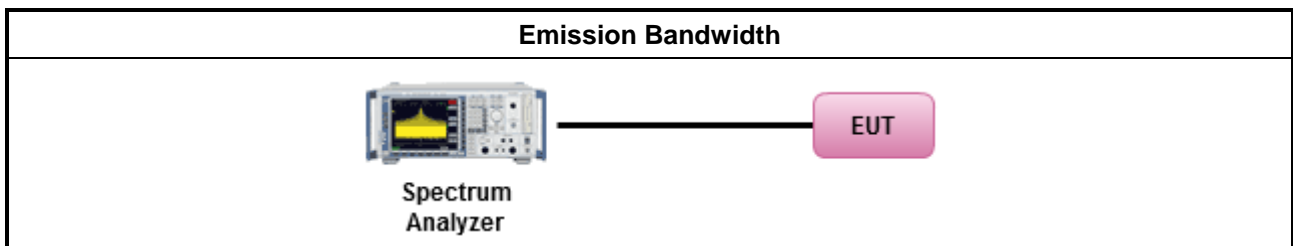
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> ▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
<input type="checkbox"/> Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none"> ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - 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:	
	<ul style="list-style-type: none"> ▪ 2400-2483.5 MHz Band
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - 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.	

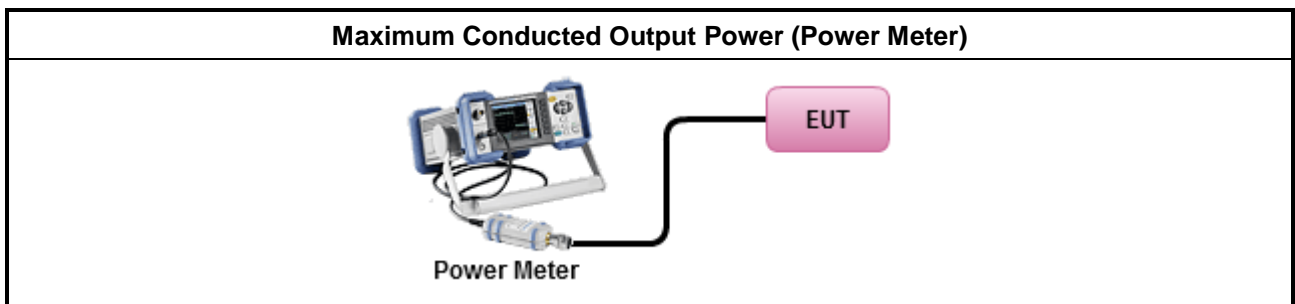
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
<ul style="list-style-type: none"> ▪ Maximum Average Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ 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. 	
<ul style="list-style-type: none"> ▪ 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]) $EIRP_{total} = P_{total} + DG$ 	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<ul style="list-style-type: none"> Power Spectral Density (PSD) ≤ 8 dBm/3kHz

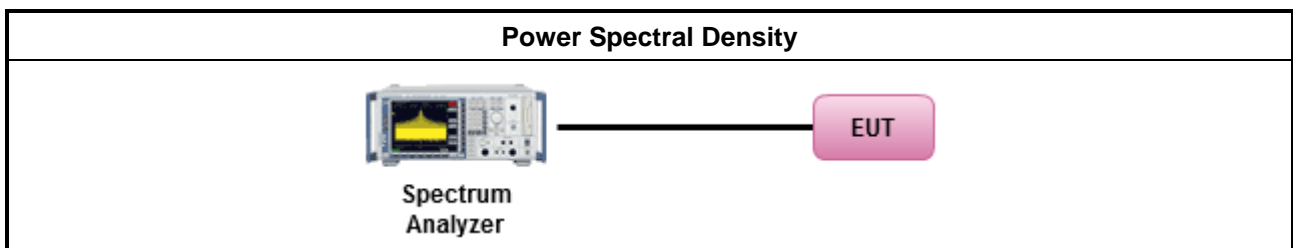
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> 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). 	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Max. PSD.
<ul style="list-style-type: none"> For conducted measurement. <ul style="list-style-type: none"> If The EUT supports multiple transmit chains using options given below: <ul style="list-style-type: none"> 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. 	

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 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.

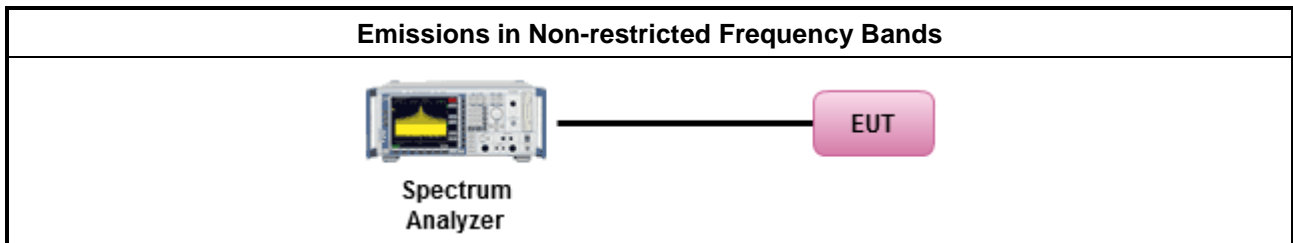
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 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.

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

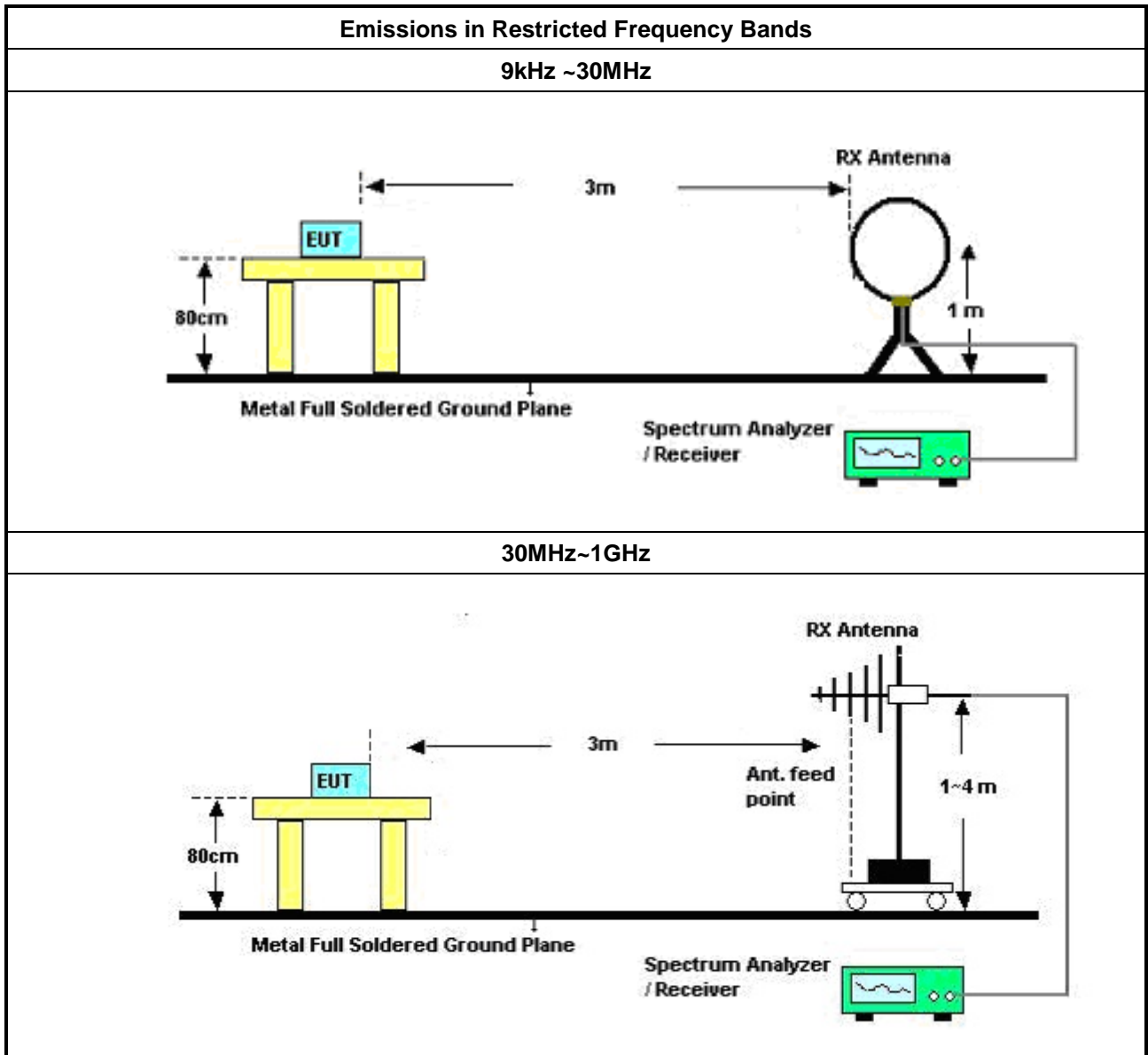
Test Method	
	<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below:
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
	<ul style="list-style-type: none"> ▪ For the transmitter band-edge emissions shall be measured using following options below:
	<ul style="list-style-type: none"> ▪ 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.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
	<ul style="list-style-type: none"> ▪ Use the following spectrum analyzer settings:
	<ul style="list-style-type: none"> ▪ Set RBW=100 kHz for $f < 1$ GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	<ul style="list-style-type: none"> ▪ Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement, refer as 1.1.4.
	<ul style="list-style-type: none"> ▪ KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
	<ul style="list-style-type: none"> ▪ 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.
	<ul style="list-style-type: none"> ▪ Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

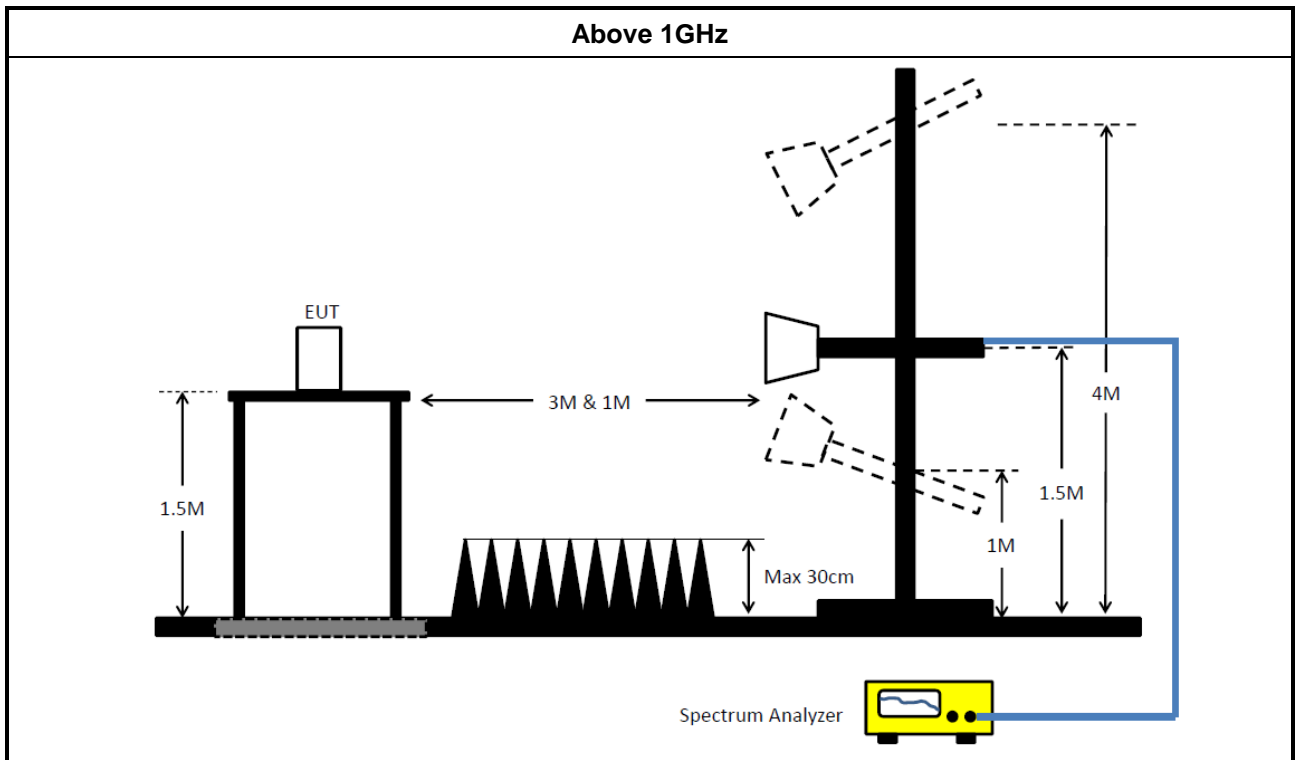
3.6.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.6.5 Test Setup





3.6.6 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.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR	102051	9kHz ~ 3.6GHz	16/May/2023	15/May/2024
Two-Line V-Network	R&S	ENV 216	101295	9kHz ~ 30MHz	05/Feb/2024	04/Feb/2025
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	27/Feb/2024	26/Feb/2025
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	18/Oct/2023	17/Oct/2024
Software	Sporton	SENSE-EMI	V5.11.3	-	NCR	NCR

NCR: No Calibration Required

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101515	9kHz~40GHz	02/Feb/2024	01/Feb/2025
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	20/Oct/2023	19/Oct/2024
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	15/Dec/2023	14/Dec/2024
Pulse Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	15/Dec/2023	14/Dec/2024
SENSE-15247_FS	Sporton	V5.11.15	N/A	N/A	N/A	N/A



Instrument for Radiated Test

Table with 7 columns: Instrument, Manufacturer /Brand, Model No., Serial No., Spec., Calibration Date, Calibration Due Date. Contains 17 rows of instrument details.

Instrument for Radiated Test (Co-location)

Table with 7 columns: Instrument, Manufacturer /Brand, Model No., Serial No., Spec., Calibration Date, Calibration Due Date. Contains 9 rows of instrument details.



Summary

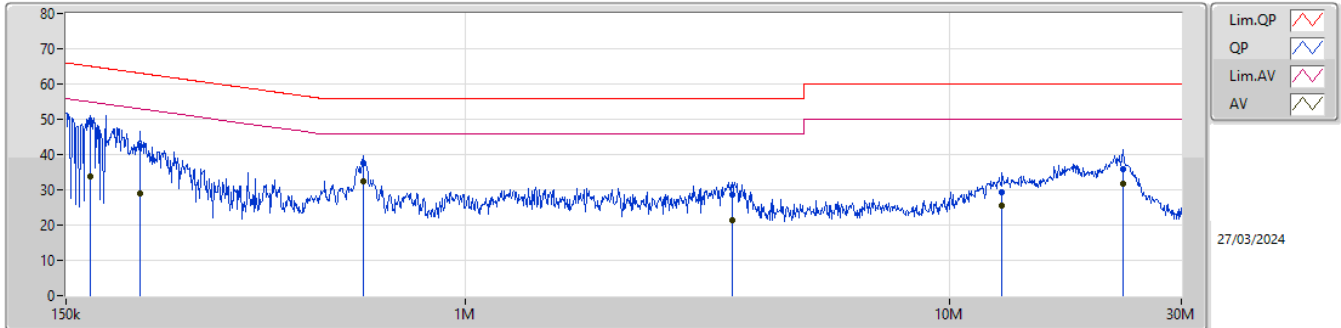
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	616.347k	32.37	46.00	-13.63	Line



Result

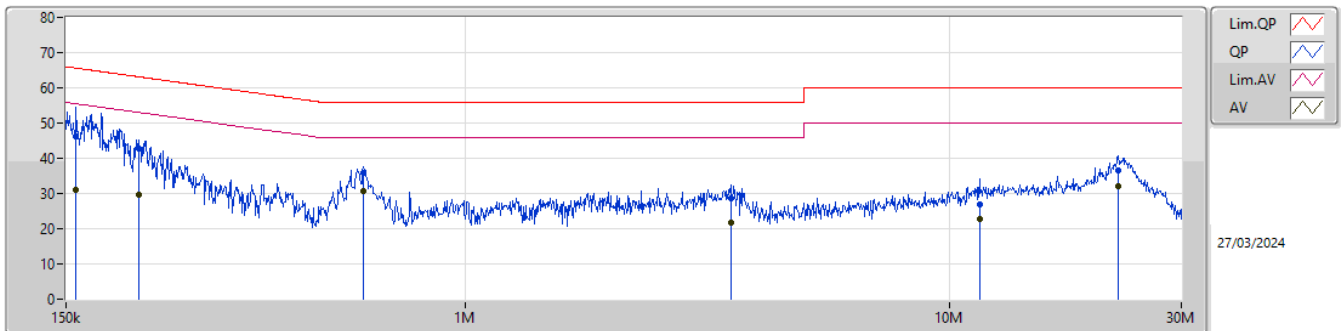
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	168.41k	49.31	65.04	-15.73	Line
Mode 1	Pass	AV	168.41k	33.64	55.04	-21.40	Line
Mode 1	Pass	QP	213.137k	42.45	63.07	-20.62	Line
Mode 1	Pass	AV	213.137k	28.88	53.07	-24.19	Line
Mode 1	Pass	QP	616.347k	37.46	56.00	-18.54	Line
Mode 1	Pass	AV	616.347k	32.37	46.00	-13.63	Line
Mode 1	Pass	QP	3.556M	28.66	56.00	-27.34	Line
Mode 1	Pass	AV	3.556M	21.49	46.00	-24.51	Line
Mode 1	Pass	QP	12.807M	29.38	60.00	-30.62	Line
Mode 1	Pass	AV	12.807M	25.46	50.00	-24.54	Line
Mode 1	Pass	QP	22.756M	35.82	60.00	-24.18	Line
Mode 1	Pass	AV	22.756M	31.63	50.00	-18.37	Line
Mode 1	Pass	QP	157.361k	46.22	65.60	-19.38	Neutral
Mode 1	Pass	AV	157.361k	31.12	55.60	-24.48	Neutral
Mode 1	Pass	QP	211.442k	42.66	63.15	-20.49	Neutral
Mode 1	Pass	AV	211.442k	29.70	53.15	-23.45	Neutral
Mode 1	Pass	QP	616.347k	36.02	56.00	-19.98	Neutral
Mode 1	Pass	AV	616.347k	30.60	46.00	-15.40	Neutral
Mode 1	Pass	QP	3.527M	28.54	56.00	-27.46	Neutral
Mode 1	Pass	AV	3.527M	21.67	46.00	-24.33	Neutral
Mode 1	Pass	QP	11.498M	26.96	60.00	-33.04	Neutral
Mode 1	Pass	AV	11.498M	22.87	50.00	-27.13	Neutral
Mode 1	Pass	QP	22.218M	36.51	60.00	-23.49	Neutral
Mode 1	Pass	AV	22.218M	32.04	50.00	-17.96	Neutral

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	168.41k	49.31	65.04	-15.73	19.42	Line	-	29.89	9.61	0.08	9.73
AV	168.41k	33.64	55.04	-21.40	19.42	Line	-	14.22	9.61	0.08	9.73
QP	213.137k	42.45	63.07	-20.62	19.39	Line	-	23.06	9.61	0.09	9.69
AV	213.137k	28.88	53.07	-24.19	19.39	Line	-	9.49	9.61	0.09	9.69
QP	616.347k	37.46	56.00	-18.54	19.50	Line	-	17.96	9.61	0.11	9.78
AV	616.347k	32.37	46.00	-13.63	19.50	Line	-	12.87	9.61	0.11	9.78
QP	3.556M	28.66	56.00	-27.34	19.51	Line	-	9.15	9.64	0.08	9.79
AV	3.556M	21.49	46.00	-24.51	19.51	Line	-	1.98	9.64	0.08	9.79
QP	12.807M	29.38	60.00	-30.62	19.52	Line	-	9.86	9.64	0.07	9.81
AV	12.807M	25.46	50.00	-24.54	19.52	Line	-	5.94	9.64	0.07	9.81
QP	22.756M	35.82	60.00	-24.18	19.52	Line	-	16.30	9.55	0.13	9.84
AV	22.756M	31.63	50.00	-18.37	19.52	Line	-	12.11	9.55	0.13	9.84

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	157.361k	46.22	65.60	-19.38	19.44	Neutral	-	26.78	9.62	0.07	9.75
AV	157.361k	31.12	55.60	-24.48	19.44	Neutral	-	11.68	9.62	0.07	9.75
QP	211.442k	42.66	63.15	-20.49	19.39	Neutral	-	23.27	9.61	0.09	9.69
AV	211.442k	29.70	53.15	-23.45	19.39	Neutral	-	10.31	9.61	0.09	9.69
QP	616.347k	36.02	56.00	-19.98	19.50	Neutral	-	16.52	9.61	0.11	9.78
AV	616.347k	30.60	46.00	-15.40	19.50	Neutral	-	11.10	9.61	0.11	9.78
QP	3.527M	28.54	56.00	-27.46	19.51	Neutral	-	9.03	9.64	0.08	9.79
AV	3.527M	21.67	46.00	-24.33	19.51	Neutral	-	2.16	9.64	0.08	9.79
QP	11.498M	26.96	60.00	-33.04	19.55	Neutral	-	7.41	9.69	0.06	9.80
AV	11.498M	22.87	50.00	-27.13	19.55	Neutral	-	3.32	9.69	0.06	9.80
QP	22.218M	36.51	60.00	-23.49	19.65	Neutral	-	16.86	9.69	0.12	9.84
AV	22.218M	32.04	50.00	-17.96	19.65	Neutral	-	12.39	9.69	0.12	9.84



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)	698.75k	1.052M	1M05F1D	571.25k	1.005M
BT-LE(2Mbps)	1.375M	2.01M	2M01F1D	1.05M	1.984M

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	698.75k	1.005M
2440MHz	Pass	500k	571.25k	1.052M
2480MHz	Pass	500k	693.75k	1.008M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.27M	2.01M
2440MHz	Pass	500k	1.05M	2.001M
2480MHz	Pass	500k	1.375M	1.984M

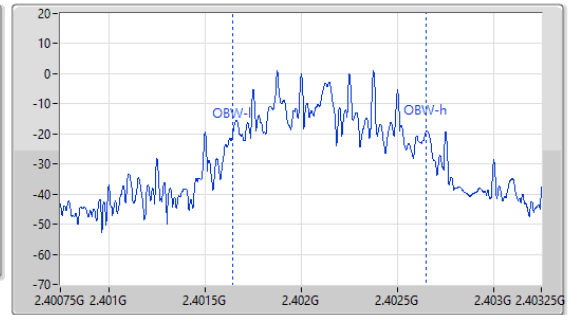
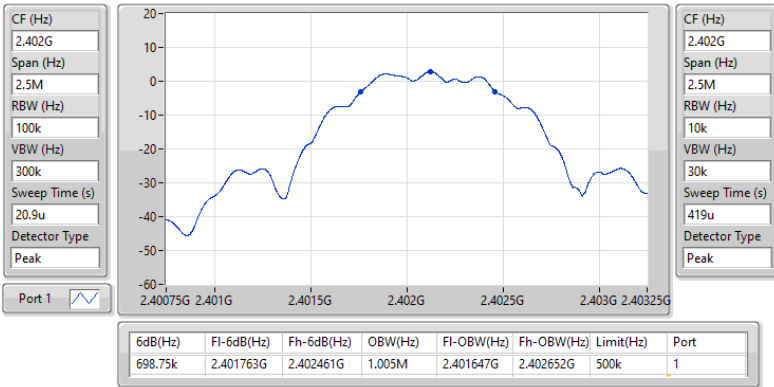
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

2402MHz

25/03/2024

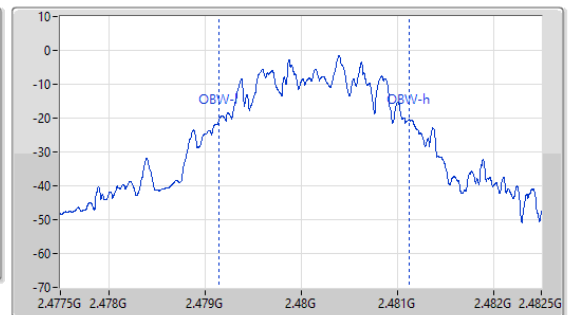
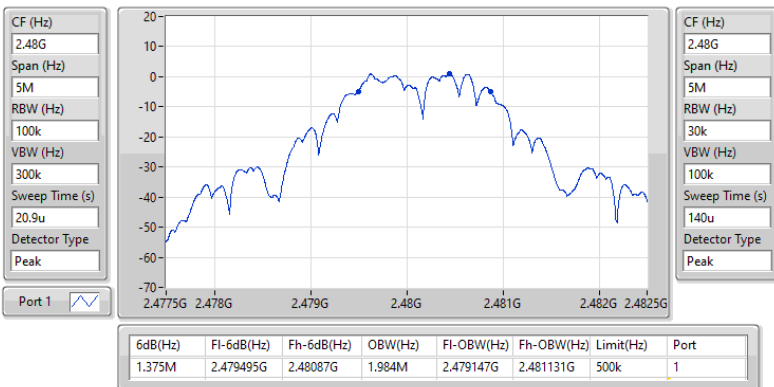


2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2480MHz

25/03/2024





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	6.74	0.00472
BT-LE(2Mbps)	6.41	0.00438



Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.20	6.74	30.00
2440MHz	Pass	3.20	6.66	30.00
2480MHz	Pass	3.20	6.64	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	3.20	6.41	30.00
2440MHz	Pass	3.20	6.35	30.00
2480MHz	Pass	3.20	6.34	30.00

DG = Directional Gain; Port X = Port X output power



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-3.97
BT-LE(2Mbps)	-5.87

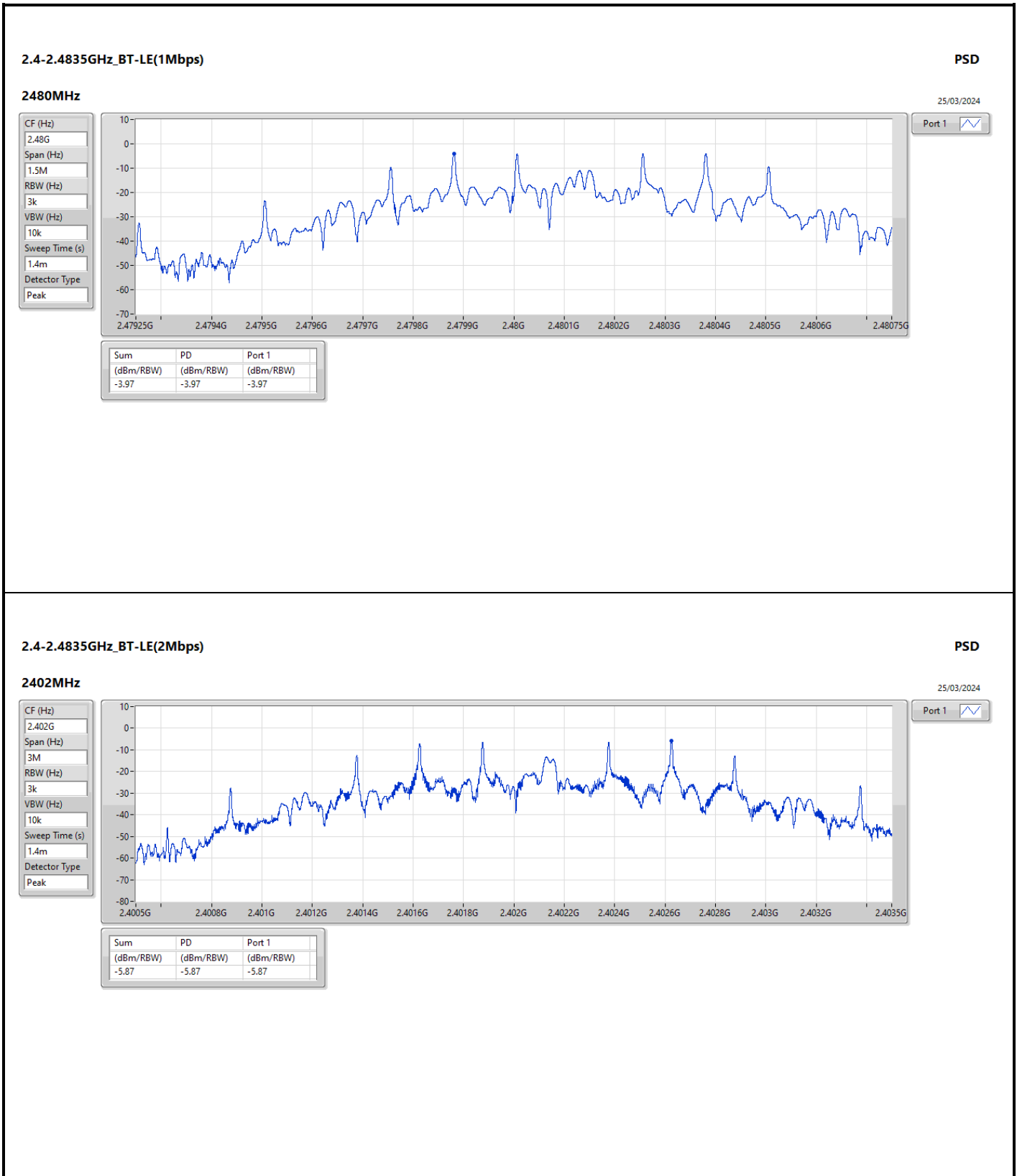
RBW = 3kHz;



Result

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.20	-10.62	8.00
2440MHz	Pass	3.20	-7.70	8.00
2480MHz	Pass	3.20	-3.97	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	3.20	-5.87	8.00
2440MHz	Pass	3.20	-6.81	8.00
2480MHz	Pass	3.20	-6.51	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;





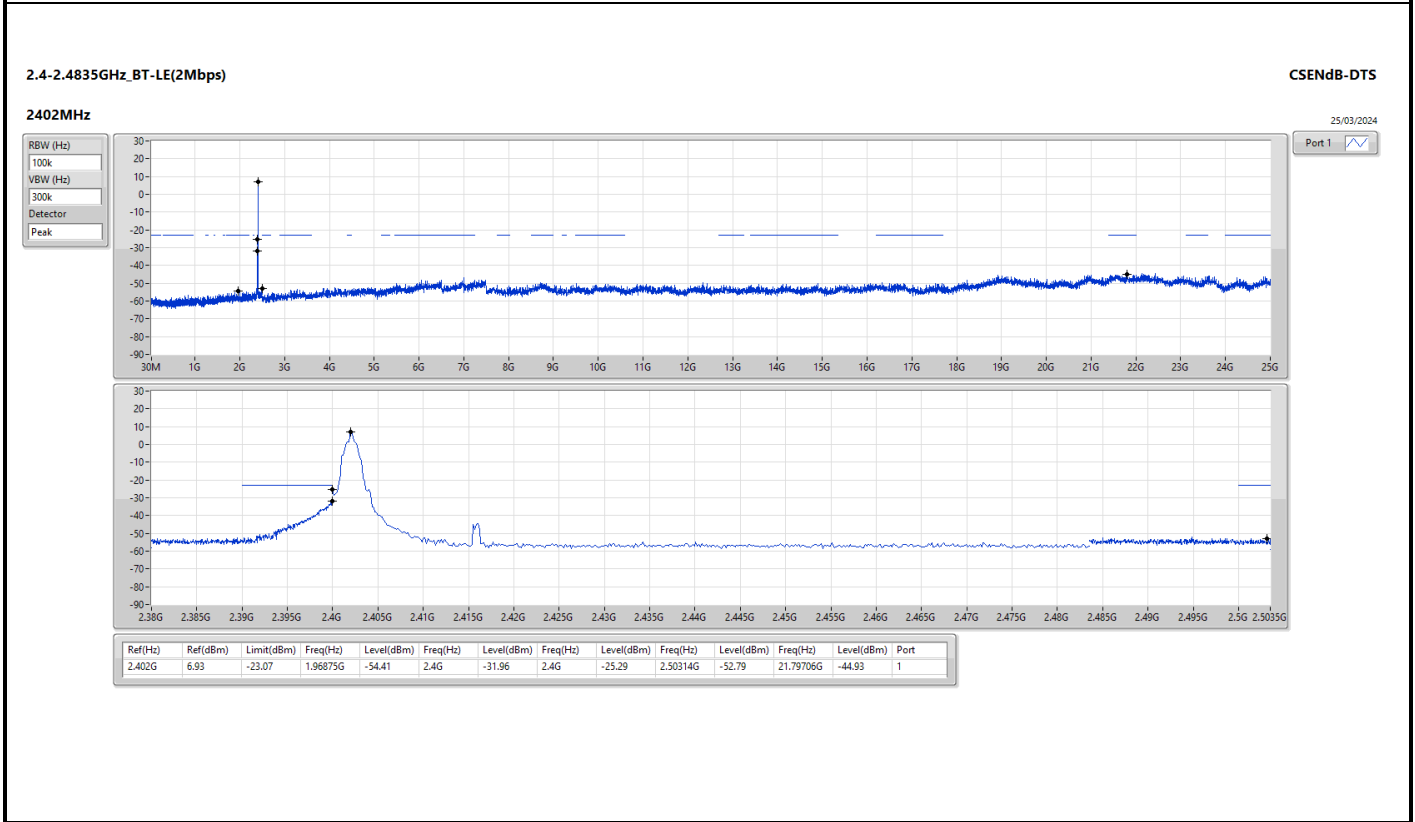
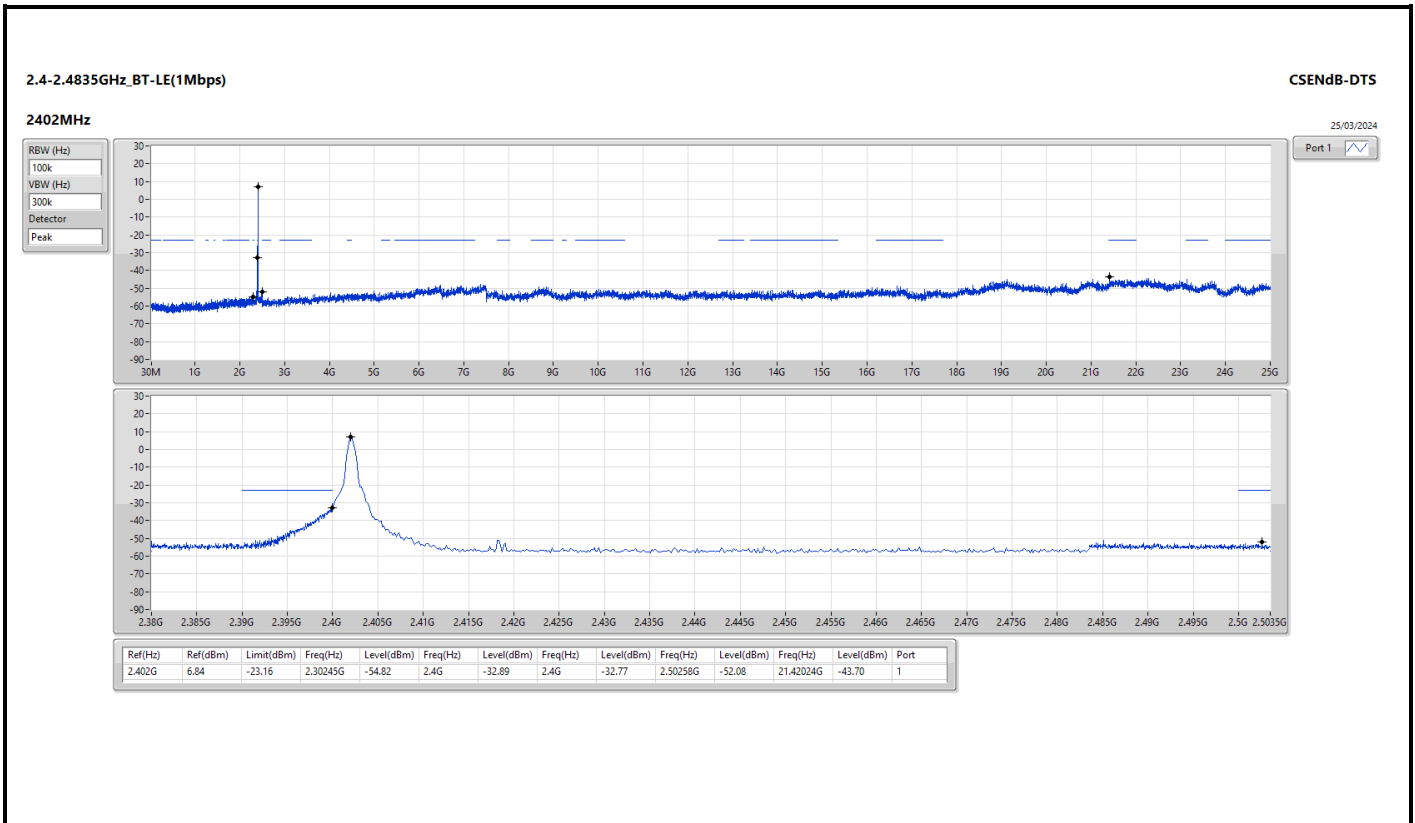
Summary

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	2.402G	6.84	-23.16	2.30245G	-54.82	2.4G	-32.89	2.4G	-32.77	2.50258G	-52.08	21.42024G	-43.70	1
BT-LE(2Mbps)	Pass	2.402G	6.93	-23.07	1.96875G	-54.41	2.4G	-31.96	2.4G	-25.29	2.50314G	-52.79	21.79706G	-44.93	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	2.402G	6.84	-23.16	2.30245G	-54.82	2.4G	-32.89	2.4G	-32.77	2.50258G	-52.08	21.42024G	-43.70	1
2440MHz	Pass	2.402G	6.84	-23.16	1.7126G	-54.97	2.39072G	-52.75	2.4G	-56.87	2.50186G	-53.05	21.66208G	-43.23	1
2480MHz	Pass	2.402G	6.84	-23.16	2.03925G	-54.83	2.4G	-52.21	2.4G	-56.95	2.50158G	-52.49	21.58897G	-44.41	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	6.93	-23.07	1.96875G	-54.41	2.4G	-31.96	2.4G	-25.29	2.50314G	-52.79	21.79706G	-44.93	1
2440MHz	Pass	2.402G	6.93	-23.07	2.16615G	-55.00	2.39036G	-52.45	2.4G	-57.58	2.50182G	-52.73	21.61146G	-44.42	1
2480MHz	Pass	2.402G	6.93	-23.07	2.16028G	-55.71	2.3912G	-51.63	2.4G	-57.64	2.50186G	-53.13	21.9686G	-44.42	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(1Mbps)	Pass	PK	31.94M	35.68	40.00	-4.32	3	Vertical	0	3.00

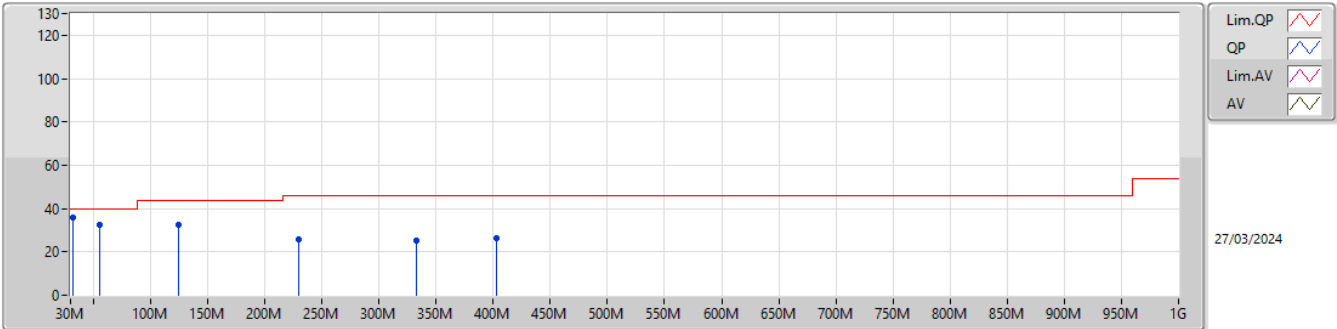


Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	31.94M	35.68	40.00	-4.32	3	Vertical	0	3.00
2440MHz	Pass	PK	55.22M	32.59	40.00	-7.41	3	Vertical	0	3.00
2440MHz	Pass	PK	125.06M	32.77	43.50	-10.73	3	Vertical	0	3.00
2440MHz	Pass	PK	229.82M	25.82	46.00	-20.18	3	Vertical	0	3.00
2440MHz	Pass	PK	332.64M	25.45	46.00	-20.55	3	Vertical	0	3.00
2440MHz	Pass	PK	402.48M	26.32	46.00	-19.68	3	Vertical	0	3.00
2440MHz	Pass	PK	30M	33.20	40.00	-6.80	3	Horizontal	360	3.00
2440MHz	Pass	PK	62.98M	30.81	40.00	-9.19	3	Horizontal	360	3.00
2440MHz	Pass	PK	138.64M	32.12	43.50	-11.38	3	Horizontal	360	3.00
2440MHz	Pass	PK	229.82M	28.65	46.00	-17.35	3	Horizontal	360	3.00
2440MHz	Pass	PK	334.58M	32.16	46.00	-13.84	3	Horizontal	360	3.00
2440MHz	Pass	PK	400.54M	28.42	46.00	-17.58	3	Horizontal	360	3.00

2.4-2.4835GHz_BT-LE(1Mbps)

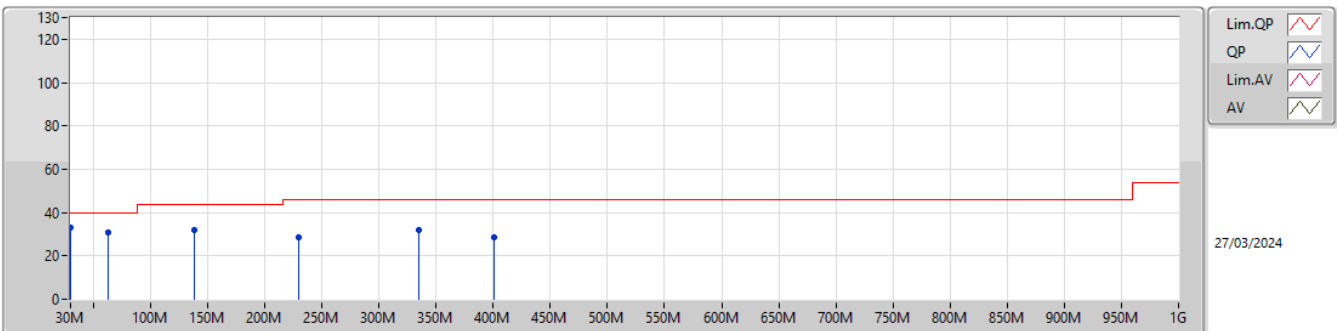
2440MHz_PoE



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	31.94M	35.68	40.00	-4.32	-4.18	3	Vertical	0	3.00	39.86	21.80	1.26	27.24
PK	55.22M	32.59	40.00	-7.41	-13.50	3	Vertical	0	3.00	46.09	12.05	1.62	27.17
PK	125.06M	32.77	43.50	-10.73	-8.22	3	Vertical	0	3.00	40.99	17.31	2.27	27.80
PK	229.82M	25.82	46.00	-20.18	-8.96	3	Vertical	0	3.00	34.78	15.24	3.12	27.32
PK	332.64M	25.45	46.00	-20.55	-4.82	3	Vertical	0	3.00	30.27	18.87	3.79	27.48
PK	402.48M	26.32	46.00	-19.68	-2.61	3	Vertical	0	3.00	28.93	21.08	4.25	27.94

2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_PoE



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	33.20	40.00	-6.80	-3.19	3	Horizontal	360	3.00	36.39	22.98	1.23	27.40
PK	62.98M	30.81	40.00	-9.19	-14.32	3	Horizontal	360	3.00	45.13	11.42	1.73	27.47
PK	138.64M	32.12	43.50	-11.38	-8.83	3	Horizontal	360	3.00	40.95	16.55	2.39	27.77
PK	229.82M	28.65	46.00	-17.35	-8.96	3	Horizontal	360	3.00	37.61	15.24	3.12	27.32
PK	334.58M	32.16	46.00	-13.84	-4.77	3	Horizontal	360	3.00	36.93	18.92	3.80	27.49
PK	400.54M	28.42	46.00	-17.58	-2.73	3	Horizontal	360	3.00	31.15	20.96	4.23	27.92



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	70.62	74.00	-3.38	3	Horizontal	21	2.07
BT-LE(2Mbps)	Pass	AV	2.4835G	52.66	54.00	-1.34	3	Horizontal	345	2.09



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	2.3806G	44.39	54.00	-9.61	3	Vertical	14	1.97
2402MHz	Pass	AV	2.40215G	89.42	Inf	-Inf	3	Vertical	14	1.97
2402MHz	Pass	PK	2.3896G	55.83	74.00	-18.17	3	Vertical	14	1.97
2402MHz	Pass	PK	2.4024G	91.12	Inf	-Inf	3	Vertical	14	1.97
2402MHz	Pass	AV	2.38985G	44.68	54.00	-9.32	3	Horizontal	348	1.95
2402MHz	Pass	AV	2.40215G	103.86	Inf	-Inf	3	Horizontal	348	1.95
2402MHz	Pass	PK	2.3897G	58.77	74.00	-15.23	3	Horizontal	348	1.95
2402MHz	Pass	PK	2.40185G	105.56	Inf	-Inf	3	Horizontal	348	1.95
2402MHz	Pass	AV	4.8039G	33.61	54.00	-20.39	3	Vertical	23	1.80
2402MHz	Pass	PK	4.80476G	44.27	74.00	-29.73	3	Vertical	23	1.80
2402MHz	Pass	AV	4.80442G	36.44	54.00	-17.56	3	Horizontal	36	1.84
2402MHz	Pass	PK	4.80377G	45.71	74.00	-28.29	3	Horizontal	36	1.84
2440MHz	Pass	AV	2.3556G	44.50	54.00	-9.50	3	Vertical	360	2.20
2440MHz	Pass	AV	2.4402G	89.34	Inf	-Inf	3	Vertical	360	2.20
2440MHz	Pass	AV	2.4932G	44.76	54.00	-9.24	3	Vertical	360	2.20
2440MHz	Pass	PK	2.3864G	56.25	74.00	-17.75	3	Vertical	360	2.20
2440MHz	Pass	PK	2.4398G	90.94	Inf	-Inf	3	Vertical	360	2.20
2440MHz	Pass	PK	2.4972G	56.76	74.00	-17.24	3	Vertical	360	2.20
2440MHz	Pass	AV	2.3522G	44.49	54.00	-9.51	3	Horizontal	16	1.37
2440MHz	Pass	AV	2.4402G	102.05	Inf	-Inf	3	Horizontal	16	1.37
2440MHz	Pass	AV	2.4896G	44.99	54.00	-9.01	3	Horizontal	16	1.37
2440MHz	Pass	PK	2.3608G	56.09	74.00	-17.91	3	Horizontal	16	1.37
2440MHz	Pass	PK	2.4404G	103.71	Inf	-Inf	3	Horizontal	16	1.37
2440MHz	Pass	PK	2.4866G	55.97	74.00	-18.03	3	Horizontal	16	1.37
2440MHz	Pass	AV	4.88038G	36.28	54.00	-17.72	3	Vertical	20	1.99
2440MHz	Pass	AV	7.32106G	35.43	54.00	-18.57	3	Vertical	7	2.21
2440MHz	Pass	PK	4.88079G	45.98	74.00	-28.02	3	Vertical	20	1.99
2440MHz	Pass	PK	7.32124G	47.13	74.00	-26.87	3	Vertical	7	2.21
2440MHz	Pass	AV	4.88042G	35.48	54.00	-18.52	3	Horizontal	297	1.12
2440MHz	Pass	AV	7.31968G	36.69	54.00	-17.31	3	Horizontal	309	1.86
2440MHz	Pass	PK	4.87969G	45.34	74.00	-28.66	3	Horizontal	297	1.12
2440MHz	Pass	PK	7.31975G	47.67	74.00	-26.33	3	Horizontal	309	1.86
2480MHz	Pass	AV	2.4802G	88.62	Inf	-Inf	3	Vertical	353	1.75
2480MHz	Pass	AV	2.48845G	44.87	54.00	-9.13	3	Vertical	353	1.75
2480MHz	Pass	PK	2.4799G	90.33	Inf	-Inf	3	Vertical	353	1.75
2480MHz	Pass	PK	2.4837G	60.76	74.00	-13.24	3	Vertical	353	1.75
2480MHz	Pass	AV	2.48015G	102.52	Inf	-Inf	3	Horizontal	21	2.07
2480MHz	Pass	AV	2.4835G	49.94	54.00	-4.06	3	Horizontal	21	2.07
2480MHz	Pass	PK	2.4804G	104.15	Inf	-Inf	3	Horizontal	21	2.07
2480MHz	Pass	PK	2.4835G	70.62	74.00	-3.38	3	Horizontal	21	2.07
2480MHz	Pass	AV	4.96026G	36.36	54.00	-17.64	3	Vertical	17	2.16
2480MHz	Pass	AV	7.43971G	37.00	54.00	-17.00	3	Vertical	313	2.88
2480MHz	Pass	PK	4.96063G	46.34	74.00	-27.66	3	Vertical	17	2.16
2480MHz	Pass	PK	7.43961G	47.97	74.00	-26.03	3	Vertical	313	2.88
2480MHz	Pass	AV	4.96047G	35.43	54.00	-18.57	3	Horizontal	46	1.80
2480MHz	Pass	AV	7.43971G	34.92	54.00	-19.08	3	Horizontal	23	1.50
2480MHz	Pass	PK	4.96072G	45.38	74.00	-28.62	3	Horizontal	46	1.80
2480MHz	Pass	PK	7.43933G	46.50	74.00	-27.50	3	Horizontal	23	1.50
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3891G	45.54	54.00	-8.46	3	Vertical	16	1.97
2402MHz	Pass	AV	2.40225G	87.34	Inf	-Inf	3	Vertical	16	1.97
2402MHz	Pass	PK	2.3882G	56.33	74.00	-17.67	3	Vertical	16	1.97
2402MHz	Pass	PK	2.40165G	90.76	Inf	-Inf	3	Vertical	16	1.97
2402MHz	Pass	AV	2.3829G	45.65	54.00	-8.35	3	Horizontal	353	1.99
2402MHz	Pass	AV	2.40225G	101.71	Inf	-Inf	3	Horizontal	353	1.99
2402MHz	Pass	PK	2.39G	60.79	74.00	-13.21	3	Horizontal	353	1.99
2402MHz	Pass	PK	2.40165G	105.18	Inf	-Inf	3	Horizontal	353	1.99
2402MHz	Pass	AV	4.80427G	35.27	54.00	-18.73	3	Vertical	45	1.80
2402MHz	Pass	PK	4.80444G	43.75	74.00	-30.25	3	Vertical	45	1.80
2402MHz	Pass	AV	4.80418G	38.69	54.00	-15.31	3	Horizontal	56	1.85



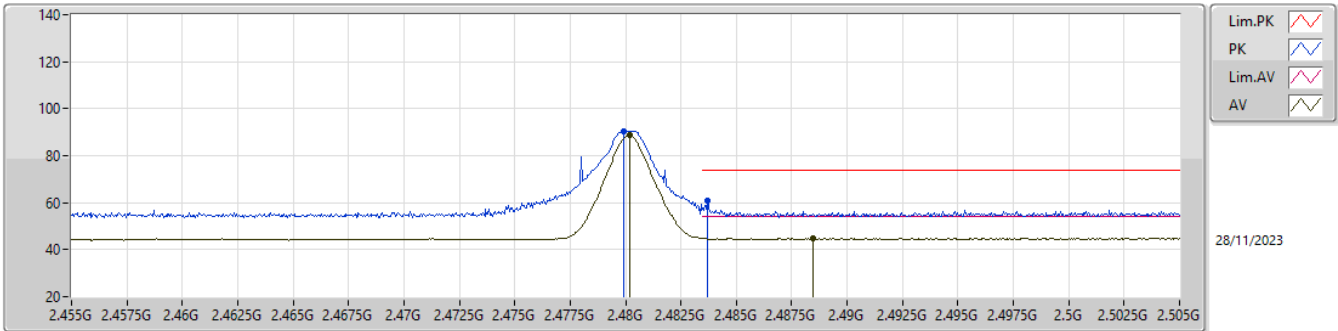
RSE TX above 1GHz_Non-Beamforming

Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2402MHz	Pass	PK	4.80433G	45.91	74.00	-28.09	3	Horizontal	56	1.85
2440MHz	Pass	AV	2.3478G	45.53	54.00	-8.47	3	Vertical	360	2.20
2440MHz	Pass	AV	2.4402G	86.95	Inf	-Inf	3	Vertical	360	2.20
2440MHz	Pass	AV	2.4976G	46.14	54.00	-7.86	3	Vertical	360	2.20
2440MHz	Pass	PK	2.343G	56.52	74.00	-17.48	3	Vertical	360	2.20
2440MHz	Pass	PK	2.4402G	90.43	Inf	-Inf	3	Vertical	360	2.20
2440MHz	Pass	PK	2.4994G	56.42	74.00	-17.58	3	Vertical	360	2.20
2440MHz	Pass	AV	2.3726G	45.82	54.00	-8.18	3	Horizontal	20	1.42
2440MHz	Pass	AV	2.4402G	100.31	Inf	-Inf	3	Horizontal	20	1.42
2440MHz	Pass	AV	2.493G	45.76	54.00	-8.24	3	Horizontal	20	1.42
2440MHz	Pass	PK	2.3434G	55.82	74.00	-18.18	3	Horizontal	20	1.42
2440MHz	Pass	PK	2.4402G	103.79	Inf	-Inf	3	Horizontal	20	1.42
2440MHz	Pass	PK	2.4922G	55.82	74.00	-18.18	3	Horizontal	20	1.42
2440MHz	Pass	AV	4.8803G	38.02	54.00	-15.98	3	Vertical	31	1.98
2440MHz	Pass	AV	7.32184G	36.99	54.00	-17.01	3	Vertical	20	1.37
2440MHz	Pass	PK	4.88027G	45.58	74.00	-28.42	3	Vertical	31	1.98
2440MHz	Pass	PK	7.32173G	47.39	74.00	-26.61	3	Vertical	20	1.37
2440MHz	Pass	AV	4.88028G	38.70	54.00	-15.30	3	Horizontal	50	1.97
2440MHz	Pass	AV	7.32034G	37.86	54.00	-16.14	3	Horizontal	324	1.90
2440MHz	Pass	PK	4.88124G	46.17	74.00	-27.83	3	Horizontal	50	1.97
2440MHz	Pass	PK	7.31896G	48.23	74.00	-25.77	3	Horizontal	324	1.90
2480MHz	Pass	AV	2.48025G	99.05	Inf	-Inf	3	Vertical	348	2.56
2480MHz	Pass	AV	2.4835G	51.63	54.00	-2.37	3	Vertical	348	2.56
2480MHz	Pass	PK	2.48015G	102.53	Inf	-Inf	3	Vertical	348	2.56
2480MHz	Pass	PK	2.48375G	71.52	74.00	-2.48	3	Vertical	348	2.56
2480MHz	Pass	AV	2.48025G	100.77	Inf	-Inf	3	Horizontal	345	2.09
2480MHz	Pass	AV	2.4835G	52.66	54.00	-1.34	3	Horizontal	345	2.09
2480MHz	Pass	PK	2.48015G	104.19	Inf	-Inf	3	Horizontal	345	2.09
2480MHz	Pass	PK	2.4835G	70.87	74.00	-3.13	3	Horizontal	345	2.09
2480MHz	Pass	AV	4.95854G	35.15	54.00	-18.85	3	Vertical	314	2.14
2480MHz	Pass	AV	7.43886G	36.13	54.00	-17.87	3	Vertical	9	1.57
2480MHz	Pass	PK	4.96129G	43.83	74.00	-30.17	3	Vertical	314	2.14
2480MHz	Pass	PK	7.442G	47.04	74.00	-26.96	3	Vertical	9	1.57
2480MHz	Pass	AV	4.96026G	39.29	54.00	-14.71	3	Horizontal	360	2.64
2480MHz	Pass	AV	7.43905G	37.48	54.00	-16.52	3	Horizontal	346	2.50
2480MHz	Pass	PK	4.9593G	46.99	74.00	-27.01	3	Horizontal	360	2.64
2480MHz	Pass	PK	7.43899G	47.03	74.00	-26.97	3	Horizontal	346	2.50

2.4-2.4835GHz_BT-LE(1Mbps)

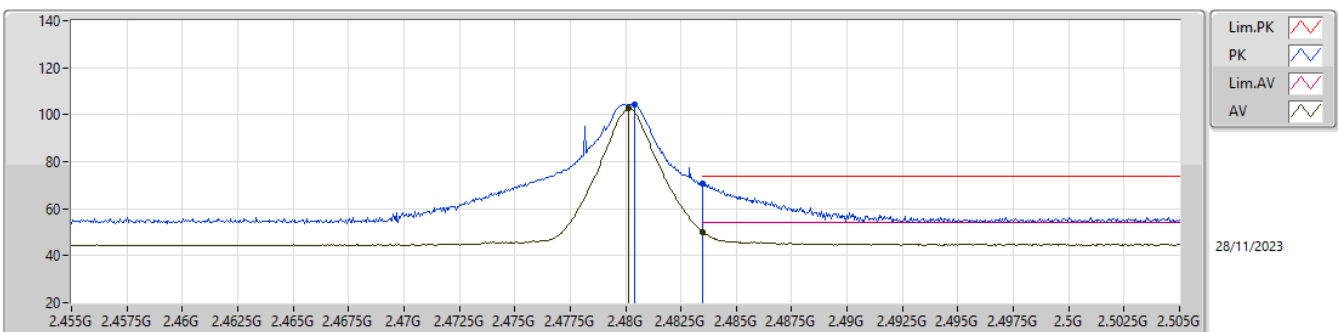
2480MHz_TX



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)
AV	2.4802G	88.62	Inf	-Inf	31.81	3	Vertical	353	1.75	56.81	27.50	4.31	-
AV	2.48845G	44.87	54.00	-9.13	31.89	3	Vertical	353	1.75	12.98	27.58	4.31	-
PK	2.4799G	90.33	Inf	-Inf	31.81	3	Vertical	353	1.75	58.52	27.50	4.31	-
PK	2.4837G	60.76	74.00	-13.24	31.85	3	Vertical	353	1.75	28.91	27.54	4.31	-

2.4-2.4835GHz_BT-LE(1Mbps)

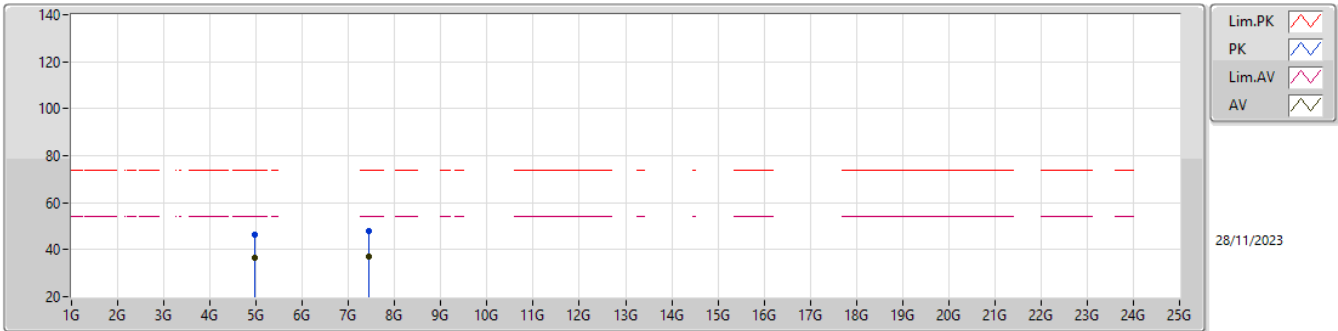
2480MHz_TX



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)
AV	2.48015G	102.52	Inf	-Inf	31.81	3	Horizontal	21	2.07	70.71	27.50	4.31	-
AV	2.4835G	49.94	54.00	-4.06	31.85	3	Horizontal	21	2.07	18.09	27.54	4.31	-
PK	2.4804G	104.15	Inf	-Inf	31.81	3	Horizontal	21	2.07	72.34	27.50	4.31	-
PK	2.4835G	70.62	74.00	-3.38	31.85	3	Horizontal	21	2.07	38.77	27.54	4.31	-

2.4-2.4835GHz_BT-LE(1Mbps)

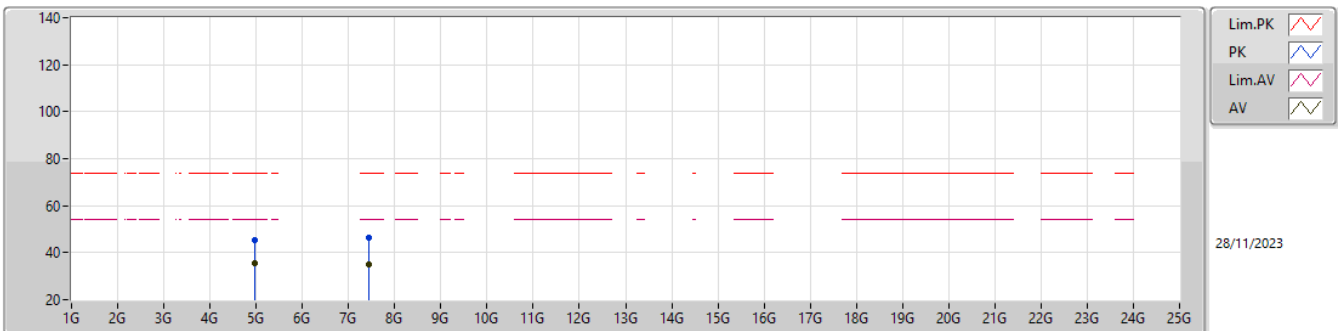
2480MHz_TX



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)
AV	4.96026G	36.36	54.00	-17.64	4.43	3	Vertical	17	2.16	31.93	32.94	6.27	34.78
AV	7.43971G	37.00	54.00	-17.00	9.01	3	Vertical	313	2.88	27.99	36.12	7.89	35.00
PK	4.96063G	46.34	74.00	-27.66	4.43	3	Vertical	17	2.16	41.91	32.94	6.27	34.78
PK	7.43961G	47.97	74.00	-26.03	9.01	3	Vertical	313	2.88	38.96	36.12	7.89	35.00

2.4-2.4835GHz_BT-LE(1Mbps)

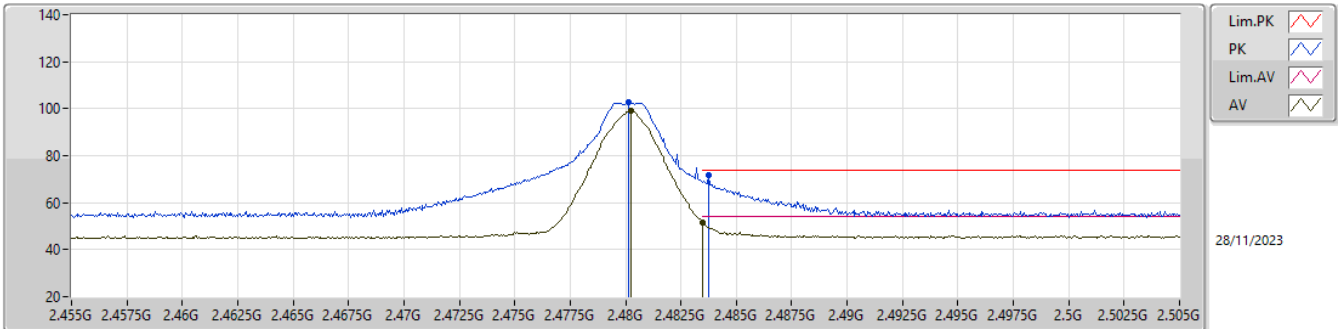
2480MHz_TX



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)
AV	4.96047G	35.43	54.00	-18.57	4.43	3	Horizontal	46	1.80	31.00	32.94	6.27	34.78
AV	7.43971G	34.92	54.00	-19.08	9.01	3	Horizontal	23	1.50	25.91	36.12	7.89	35.00
PK	4.96072G	45.38	74.00	-28.62	4.43	3	Horizontal	46	1.80	40.95	32.94	6.27	34.78
PK	7.43933G	46.50	74.00	-27.50	9.01	3	Horizontal	23	1.50	37.49	36.12	7.89	35.00

2.4-2.4835GHz_BT-LE(2Mbps)

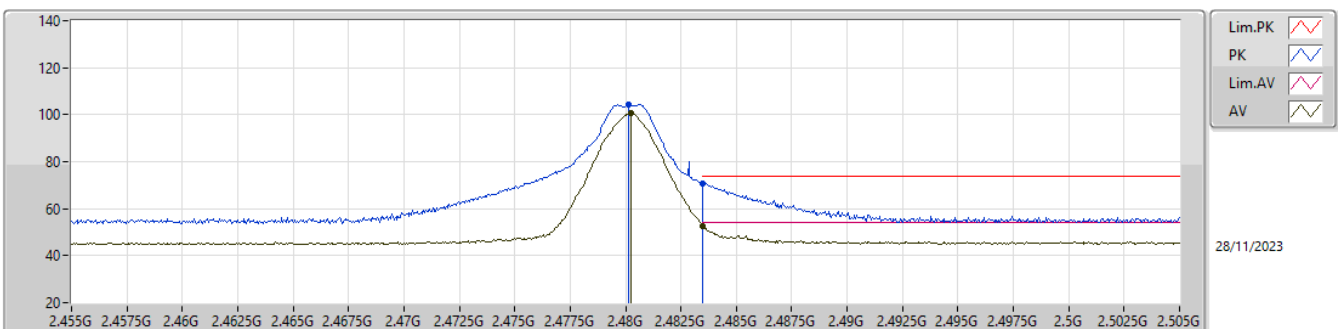
2480MHz_TX



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)
AV	2.48025G	99.05	Inf	-Inf	31.81	3	Vertical	348	2.56	67.24	27.50	4.31	-
AV	2.4835G	51.63	54.00	-2.37	31.85	3	Vertical	348	2.56	19.78	27.54	4.31	-
PK	2.48015G	102.53	Inf	-Inf	31.81	3	Vertical	348	2.56	70.72	27.50	4.31	-
PK	2.48375G	71.52	74.00	-2.48	31.85	3	Vertical	348	2.56	39.67	27.54	4.31	-

2.4-2.4835GHz_BT-LE(2Mbps)

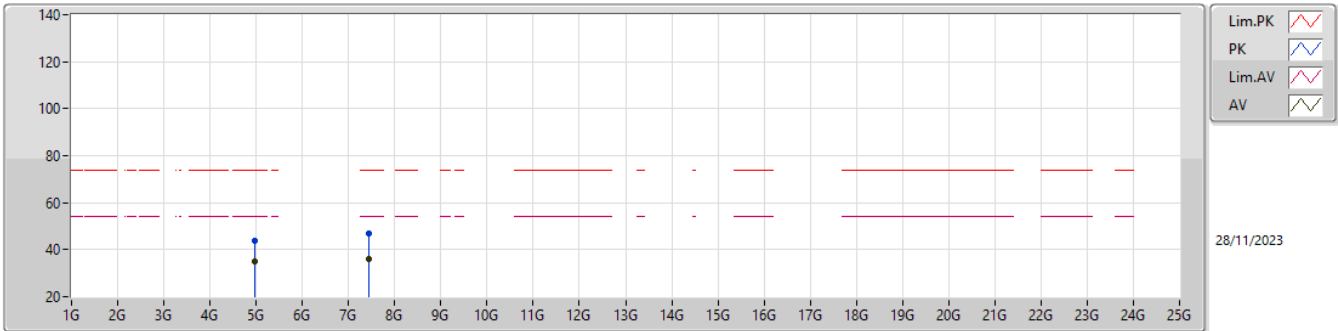
2480MHz_TX



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)
AV	2.48025G	100.77	Inf	-Inf	31.81	3	Horizontal	345	2.09	68.96	27.50	4.31	-
AV	2.4835G	52.66	54.00	-1.34	31.85	3	Horizontal	345	2.09	20.81	27.54	4.31	-
PK	2.48015G	104.19	Inf	-Inf	31.81	3	Horizontal	345	2.09	72.38	27.50	4.31	-
PK	2.4835G	70.87	74.00	-3.13	31.85	3	Horizontal	345	2.09	39.02	27.54	4.31	-

2.4-2.4835GHz_BT-LE(2Mbps)

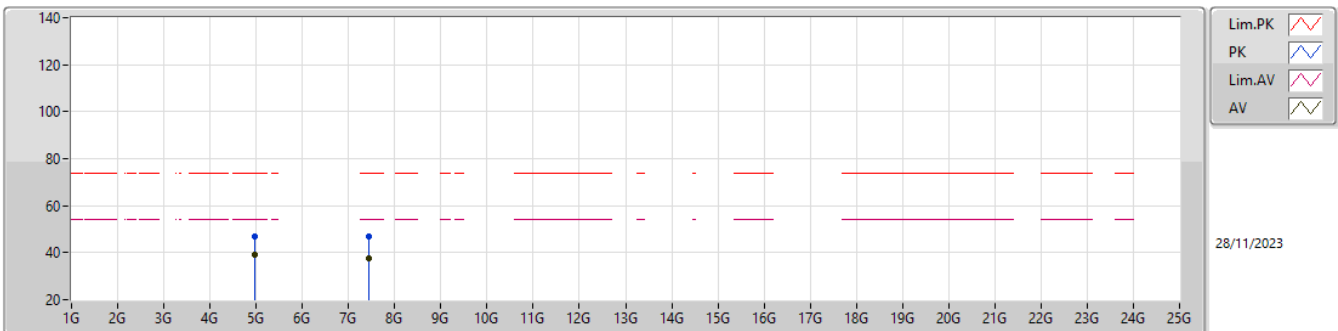
2480MHz_TX



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)
AV	4.95854G	35.15	54.00	-18.85	4.42	3	Vertical	314	2.14	30.73	32.93	6.27	34.78
AV	7.43886G	36.13	54.00	-17.87	9.00	3	Vertical	9	1.57	27.13	36.12	7.88	35.00
PK	4.96129G	43.83	74.00	-30.17	4.44	3	Vertical	314	2.14	39.39	32.95	6.27	34.78
PK	7.442G	47.04	74.00	-26.96	9.01	3	Vertical	9	1.57	38.03	36.12	7.89	35.00

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX



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)
AV	4.96026G	39.29	54.00	-14.71	4.43	3	Horizontal	360	2.64	34.86	32.94	6.27	34.78
AV	7.43905G	37.48	54.00	-16.52	9.01	3	Horizontal	346	2.50	28.47	36.12	7.89	35.00
PK	4.9593G	46.99	74.00	-27.01	4.43	3	Horizontal	360	2.64	42.56	32.94	6.27	34.78
PK	7.43899G	47.03	74.00	-26.97	9.01	3	Horizontal	346	2.50	38.02	36.12	7.89	35.00



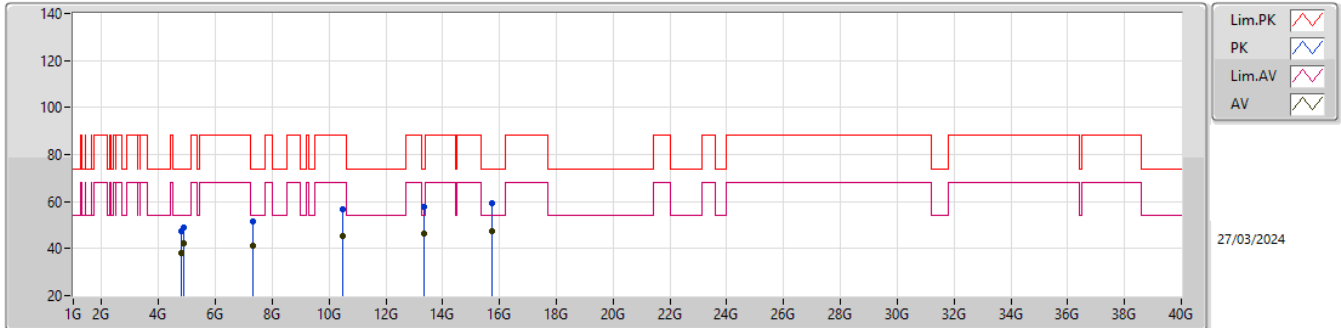
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	15.71638G	47.68	54.00	-6.32	Horizontal

Result

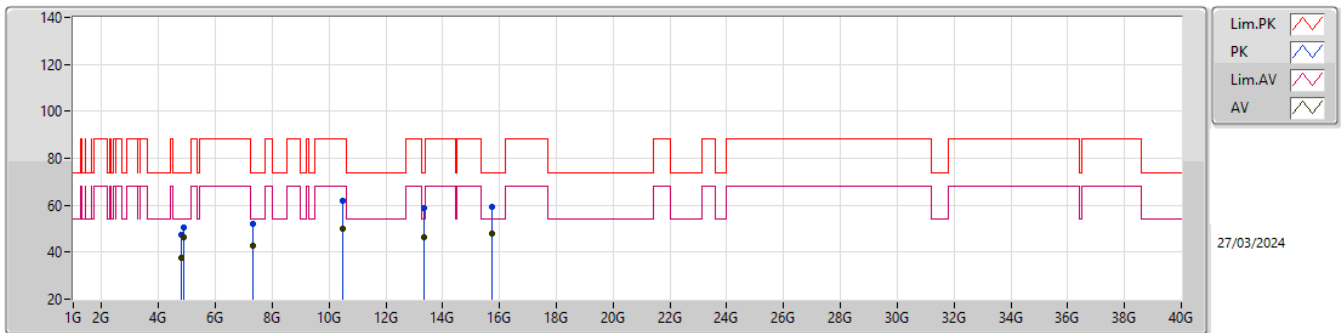
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	4.80453G	37.97	54.00	-16.03	3	Vertical	29	2.91	-
Mode 1	Pass	AV	4.87396G	42.33	54.00	-11.67	3	Vertical	59	2.75	-
Mode 1	Pass	AV	7.31348G	41.17	54.00	-12.83	3	Vertical	0	1.30	-
Mode 1	Pass	AV	10.4766G	45.40	68.20	-22.80	3	Vertical	300	2.91	-
Mode 1	Pass	AV	13.33812G	46.19	54.00	-7.81	3	Vertical	192	1.64	-
Mode 1	Pass	AV	15.71925G	47.50	54.00	-6.50	3	Vertical	152	1.50	-
Mode 1	Pass	PK	4.80492G	47.49	74.00	-26.51	3	Vertical	29	2.91	-
Mode 1	Pass	PK	4.8739G	48.80	74.00	-25.20	3	Vertical	59	2.75	-
Mode 1	Pass	PK	7.31292G	51.62	74.00	-22.38	3	Vertical	0	1.30	-
Mode 1	Pass	PK	10.47395G	56.96	88.20	-31.24	3	Vertical	300	2.91	-
Mode 1	Pass	PK	13.32555G	57.85	74.00	-16.15	3	Vertical	192	1.64	-
Mode 1	Pass	PK	15.71755G	59.49	74.00	-14.51	3	Vertical	152	1.50	-
Mode 1	Pass	AV	4.80454G	37.73	54.00	-16.27	3	Horizontal	356	1.53	-
Mode 1	Pass	AV	4.87394G	46.31	54.00	-7.69	3	Horizontal	360	1.50	-
Mode 1	Pass	AV	7.30932G	42.82	54.00	-11.18	3	Horizontal	295	1.44	-
Mode 1	Pass	AV	10.47408G	50.03	68.20	-18.17	3	Horizontal	274	2.18	-
Mode 1	Pass	AV	13.33964G	46.31	54.00	-7.69	3	Horizontal	350	1.50	-
Mode 1	Pass	AV	15.71638G	47.68	54.00	-6.32	3	Horizontal	292	1.85	-
Mode 1	Pass	PK	4.80477G	47.67	74.00	-26.33	3	Horizontal	356	1.53	-
Mode 1	Pass	PK	4.8739G	50.72	74.00	-23.28	3	Horizontal	360	1.50	-
Mode 1	Pass	PK	7.30925G	52.26	74.00	-21.74	3	Horizontal	295	1.44	-
Mode 1	Pass	PK	10.4746G	62.14	88.20	-26.06	3	Horizontal	274	2.18	-
Mode 1	Pass	PK	13.33534G	58.80	74.00	-15.20	3	Horizontal	70	1.74	-
Mode 1	Pass	PK	15.71578G	59.46	74.00	-14.54	3	Horizontal	292	1.85	-

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/m)	AF (dB/m)	CL (dB)	PA (dB)
AV	4.80453G	37.97	54.00	-16.03	3.90	3	Vertical	29	2.91	-	34.07	32.22	6.51	34.83
AV	4.87396G	42.33	54.00	-11.67	4.28	3	Vertical	59	2.75	-	38.05	32.50	6.59	34.81
AV	7.31348G	41.17	54.00	-12.83	10.03	3	Vertical	0	1.30	-	31.14	36.65	8.30	34.92
AV	10.4766G	45.40	68.20	-22.80	14.03	3	Vertical	300	2.91	-	31.37	38.55	10.36	34.88
AV	13.33812G	46.19	54.00	-7.81	18.45	3	Vertical	192	1.64	-	27.74	39.85	11.50	32.90
AV	15.71925G	47.50	54.00	-6.50	16.86	3	Vertical	152	1.50	-	30.64	38.20	13.14	34.48
PK	4.80492G	47.49	74.00	-26.51	3.91	3	Vertical	29	2.91	-	43.58	32.22	6.52	34.83
PK	4.8739G	48.80	74.00	-25.20	4.28	3	Vertical	59	2.75	-	44.52	32.50	6.59	34.81
PK	7.31292G	51.62	74.00	-22.38	10.03	3	Vertical	0	1.30	-	41.59	36.65	8.30	34.92
PK	10.47395G	56.96	88.20	-31.24	14.03	3	Vertical	300	2.91	-	42.93	38.55	10.36	34.88
PK	13.32555G	57.85	74.00	-16.15	18.37	3	Vertical	192	1.64	-	39.48	39.80	11.49	32.92
PK	15.71755G	59.49	74.00	-14.51	16.87	3	Vertical	152	1.50	-	42.62	38.20	13.14	34.47

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/m)	AF (dB/m)	CL (dB)	PA (dB)
AV	4.80454G	37.73	54.00	-16.27	3.90	3	Horizontal	356	1.53	-	33.83	32.22	6.51	34.83
AV	4.87394G	46.31	54.00	-7.69	4.28	3	Horizontal	360	1.50	-	42.03	32.50	6.59	34.81
AV	7.30932G	42.82	54.00	-11.18	10.03	3	Horizontal	295	1.44	-	32.79	36.66	8.29	34.92
AV	10.47408G	50.03	68.20	-18.17	14.03	3	Horizontal	274	2.18	-	36.00	38.55	10.36	34.88
AV	13.33964G	46.31	54.00	-7.69	18.46	3	Horizontal	350	1.50	-	27.85	39.86	11.50	32.90
AV	15.71638G	47.68	54.00	-6.32	16.86	3	Horizontal	292	1.85	-	30.82	38.20	13.13	34.47
PK	4.80477G	47.67	74.00	-26.33	3.91	3	Horizontal	356	1.53	-	43.76	32.22	6.52	34.83
PK	4.8739G	50.72	74.00	-23.28	4.28	3	Horizontal	360	1.50	-	46.44	32.50	6.59	34.81
PK	7.30925G	52.26	74.00	-21.74	10.03	3	Horizontal	295	1.44	-	42.23	36.66	8.29	34.92
PK	10.4746G	62.14	88.20	-26.06	14.03	3	Horizontal	274	2.18	-	48.11	38.55	10.36	34.88
PK	13.33534G	58.80	74.00	-15.20	18.44	3	Horizontal	70	1.74	-	40.36	39.84	11.50	32.90
PK	15.71578G	59.46	74.00	-14.54	16.86	3	Horizontal	292	1.85	-	42.60	38.20	13.13	34.47