



RADIO TEST REPORT

FCC ID : UDX-60072010
Equipment : SMART Camera
Brand Name : CISCO
Model Name : MV93X-HW, MV93-HW
Applicant : Cisco Systems, Inc.
170 West Tasman Drive, San Jose, CA 95134 USA
Manufacturer : Cisco Systems, Inc.
170 West Tasman Drive, San Jose, CA 95134 USA
Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 25, 2022, and testing was started from Sep. 08, 2022 and completed on Oct. 11, 2022. We, Sporton International Inc. Hsinchu 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. Hsinchu Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Information.....	5
1.2 Applicable Standards	7
1.3 Testing Location Information	7
1.4 Measurement Uncertainty	8
2 Test Configuration of EUT	9
2.1 Test Channel Mode	9
2.2 The Worst Case Measurement Configuration	10
2.3 EUT Operation during Test	12
2.4 Accessories	12
2.5 Support Equipment.....	12
2.6 Test Setup Diagram	13
3 Transmitter Test Result	16
3.1 AC Power-line Conducted Emissions	16
3.2 DTS Bandwidth.....	18
3.3 Maximum Conducted Output Power	19
3.4 Power Spectral Density	22
3.5 Emissions in Non-restricted Frequency Bands	24
3.6 Emissions in Restricted Frequency Bands.....	25
4 Test Equipment and Calibration Data	29
Appendix A. Test Results of AC Power-line Conducted Emissions	
Appendix B. Test Results of DTS Bandwidth	
Appendix C. Test Results of Maximum Conducted Output Power	
Appendix D. Test Results of Power Spectral Density	
Appendix E. Test Results of Emissions in Non-restricted Frequency Bands	
Appendix F. Test Results of Emissions in Restricted Frequency Bands	
Appendix G. Test Results of Radiated Emission Co-location	
Appendix H. Test Photos	
Photographs of EUT v01	



TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_6 Ver1.3



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	-

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.
2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen**Report Producer: Vicky Huang**



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	1TX
2.4-2.4835GHz	BT-LE(500Kb/s)	1	1TX
2.4-2.4835GHz	BT-LE(125Kb/s)	1	1TX
2.4-2.4835GHz	BT-LE(2Mbps)	2	1TX

Note:

- ♦ Bluetooth LE uses a GFSK modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port			Brand	Model Name	Antenna Type	Connector	Gain (dBi)
	2.4GHz	5GHz	Bluetooth					
1	1	1	-	Sercomm	617211LR	PIFA Antenna	I-PEX	Note
2	2	2	1	Sercomm	617211LQ	PIFA Antenna	I-PEX	

Ant.	Antenna Gain (dBi)					
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	Bluetooth
1	6.49	6.34	6.34	6.23	5.13	-
2	2.86	5.26	5.26	5.58	5.05	2.86

Note: The above information was declared by manufacturer.

For 2.4GHz function:

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

The EUT supports the antenna with TX/RX diversity function.

Both Port 1 and Port 2 can be used as transmitting/receiving antennas, but only one of them is used as transmitting/receiving antenna.

The Port 1 generated the worst case, so it was selected to test and record in the report.

For 5GHz function:

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



The EUT supports the antenna with TX/RX diversity function.

Both Port 1 and Port 2 can be used as transmitting/receiving antennas, but only one of them is used as transmitting/receiving antenna

The Port 1 generated the worst case, so it was selected to test and record in the report.

For Bluetooth function

For Bluetooth mode (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.632	1.99	395u	3k
BT-LE(2Mbps)	0.336	4.74	210u	10k

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From PoE			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	QRCT V4.0.72.1			
Support Mode	☒	LE 1M PHY: 1 Mb/s		
	☒	LE Coded PHY (S=2): 500 Kb/s		
	☒	LE Coded PHY (S=8): 125 Kb/s		
	☒	LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The EUT has two model names which are identical to each other in all aspects except for the following table

EUT	Model Name	Memory
1	MV93X-HW	1TB
2	MV93-HW	256GB

Note 1: From the above, EUT 1 has selected to execute all test items and EUT 2 has selected to execute the Emissions in Restricted Frequency Bands Below 1GHz tests.

Note 2: The above information was declared by manufacturer.



1.2 Applicable Standards

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

- ♦ 47 CFR FCC Part 15.247
- ♦ ANSI C63.10-2013

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

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

1.3 Testing Location Information

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH02-CB	Jay Lo	23.9~24.2 / 58-65	Sep. 15, 2022
Radiated (below 1GHz)	03CH05-CB	Simmon Cheng	24.4-25.5 / 55-58	Sep. 15, 2022~ Sep. 29, 2022
Radiated (above 1GHz)	03CH05-CB	Simmon Cheng	24.4-25.5 / 55-58	Sep. 08, 2022~ Sep. 15, 2022
Radiated (co-location)	03CH05-CB	Simmon Cheng	24.4-25.5 / 55-58	Oct. 11, 2022
AC Conduction	CO01-CB	Elvin Yeh	23~24 / 56~57	Sep. 21, 2022



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
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.7 dB	Confidence levels of 95%
Conducted Emission	3.2 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.2 dB	Confidence levels of 95%
Bandwidth Measurement	2%	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

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	Normal Link
1	EUT 1+LAN mode-Day mode+Bluetooth+PoE 1
2	EUT 1+LAN mode-Night mode+Bluetooth+PoE 1
Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 ~ 6 will follow this same test mode.	
3	EUT 1+WLAN 2.4GHz mode-Day mode+Bluetooth+PoE 1
4	EUT 1+WLAN 2.4GHz mode-Day mode+Bluetooth+PoE 2
5	EUT 1+WLAN 5GHz mode-Day mode+Bluetooth+PoE 1
6	EUT 1+WLAN 5GHz mode-Day mode+Bluetooth+PoE 2
For operating mode 1 is the worst case and it was record in this test report.	

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	Normal Link
1	EUT 1 at Z-axis +LAN mode-Day mode+Bluetooth+PoE 1
2	EUT 1 at Y-axis +LAN mode-Day mode+Bluetooth+PoE 1
3	EUT 1 at X-axis +LAN mode-Day mode+Bluetooth+PoE 1
Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT 1 at Z-axis +LAN mode- Night mode+Bluetooth+PoE 1
Mode 4 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5 ~ 8 will follow this same test mode.	



5	EUT 1 at Z-axis +WLAN 2.4GHz mode-Night mode+Bluetooth+PoE 1
6	EUT 1 at Z-axis +WLAN 2.4GHz mode-Night mode+Bluetooth+PoE 2
7	EUT 1 at Z-axis +WLAN 5GHz mode-Night mode+Bluetooth+PoE 1
8	EUT 1 at Z-axis +WLAN 5GHz mode-Night mode+Bluetooth+PoE 2
Mode 4 has been evaluated to be the worst case among Mode 1~8, thus measurement for Mode 9 will follow this same test mode.	
9	EUT 2 at Z-axis +LAN mode-Night mode+Bluetooth+PoE 1
For operating mode 4 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
The EUT was performed at X axis, Y axis and Z axis position. The worst case was found at Z axis, Y axis for harmonic, so it was selected to perform test and its test result was written in the report.	
1	EUT 1 in Y axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Normal Link
The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at Z axis. So the measurement will follow this same test configuration.	
1	EUT 1 in Z axis-WLAN 2.4GHz+Bluetooth
2	EUT 1 in Z axis-WLAN 5GHz+Bluetooth
For operating mode 2 is the worst case and it was record in this test report.	
Refer to Appendix G for Radiated Emission Co-location.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	EUT 1-WLAN 2.4GHz+Bluetooth
2	EUT 1-WLAN 5GHz+Bluetooth
Refer to Sporton Test Report No.: FA282322 for Co-location RF Exposure Evaluation.	

Note: The PoE are for measurement only, would not be marketed.

PoEs information as below:

Support Unit	Brand Name	Model Name
PoE 1	PHIHONG	POEA33U-1ATE
PoE 2	Cisco	MA-PWR-MV-LV



2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.4 Accessories

Wall-mounted rack*4

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	1G LAN1 NB	DELL	E6430	N/A
B	PoE 1	PHIHONG	POEA33U-1ATE	N/A
C	iPhone 4	Apple	A1332	N/A
D	AP Router	ASUS	RP-N53	MSQ-RPN53

For Radiated (below 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	Lenovo	L440	N/A
B	WLAN AP	Netgear	R7500	PY314300288
C	Phone	SAMPO	HT-B 907WL	N/A
D	PoE 1	PHIHONG	POEA33U-1ATE	N/A

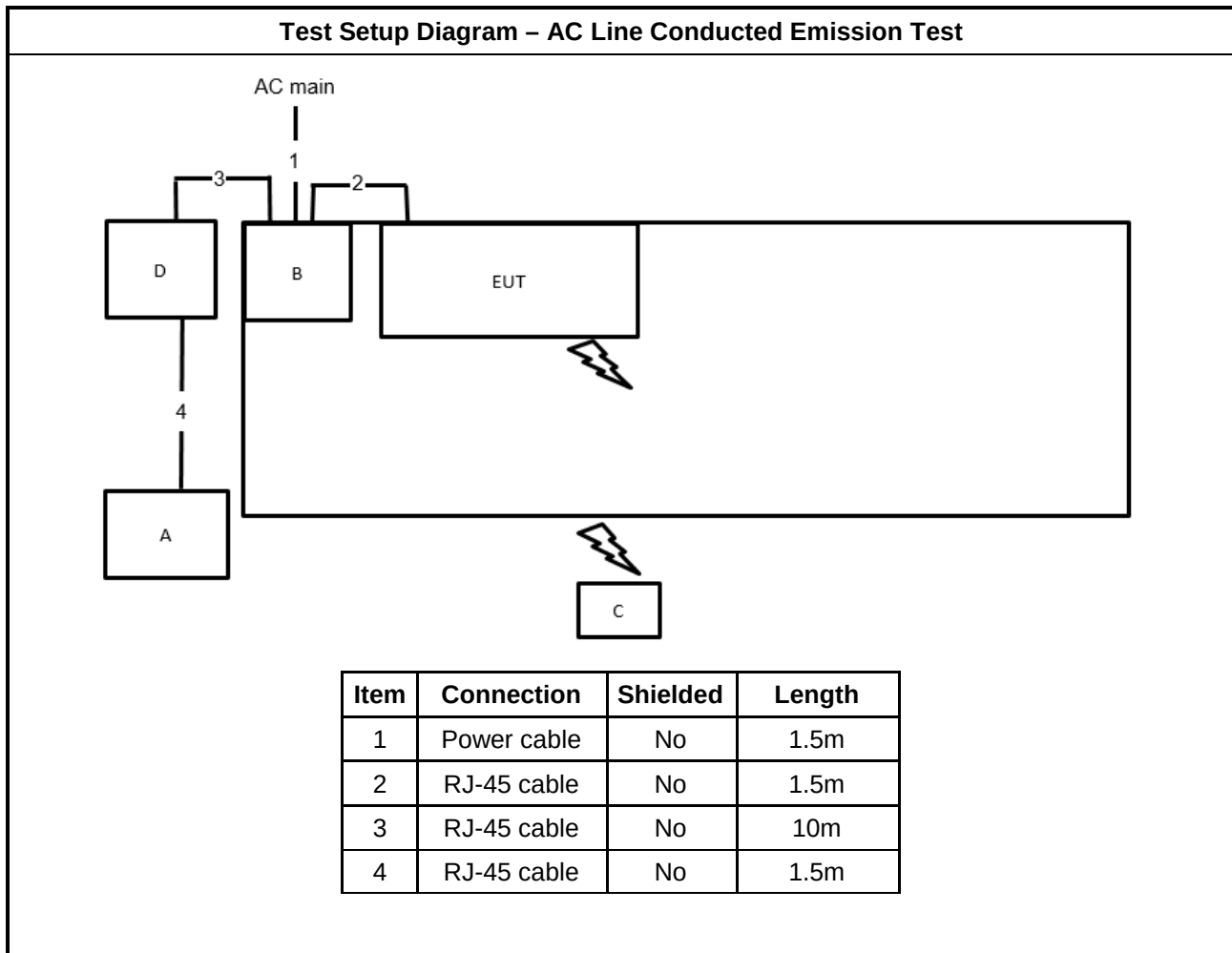
For Radiated (above 1GHz):

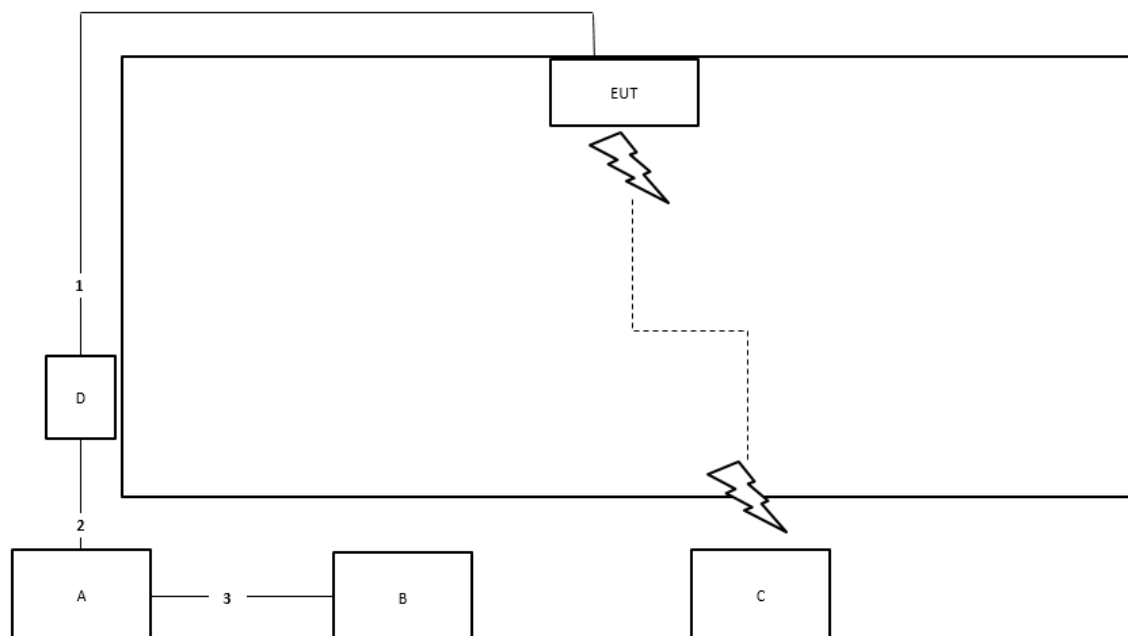
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	PoE 1	PHIHONG	POEA33U-1ATE	N/A

For RF Conducted:

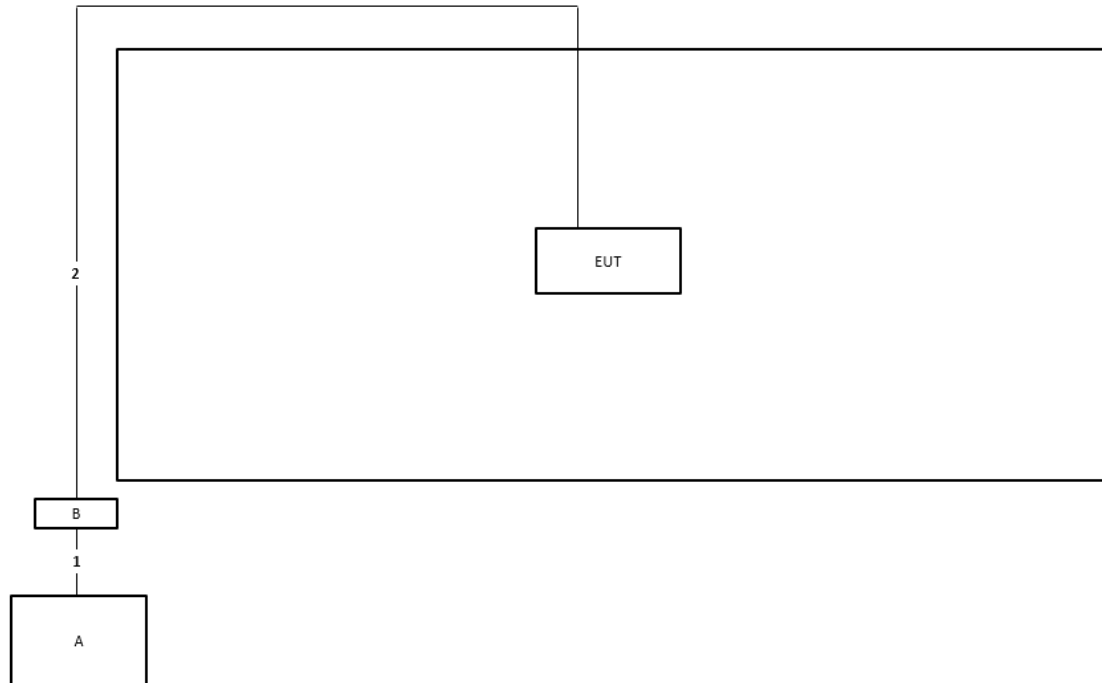
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	PoE 1	PHIHONG	POEA33U-1ATE	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	1.5m

Test Setup Diagram - Radiated Test > 1GHz


Item	Connection	Shielded	Length
1	RJ-45 cable	No	1m
2	RJ-45 cable	No	10m



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.		

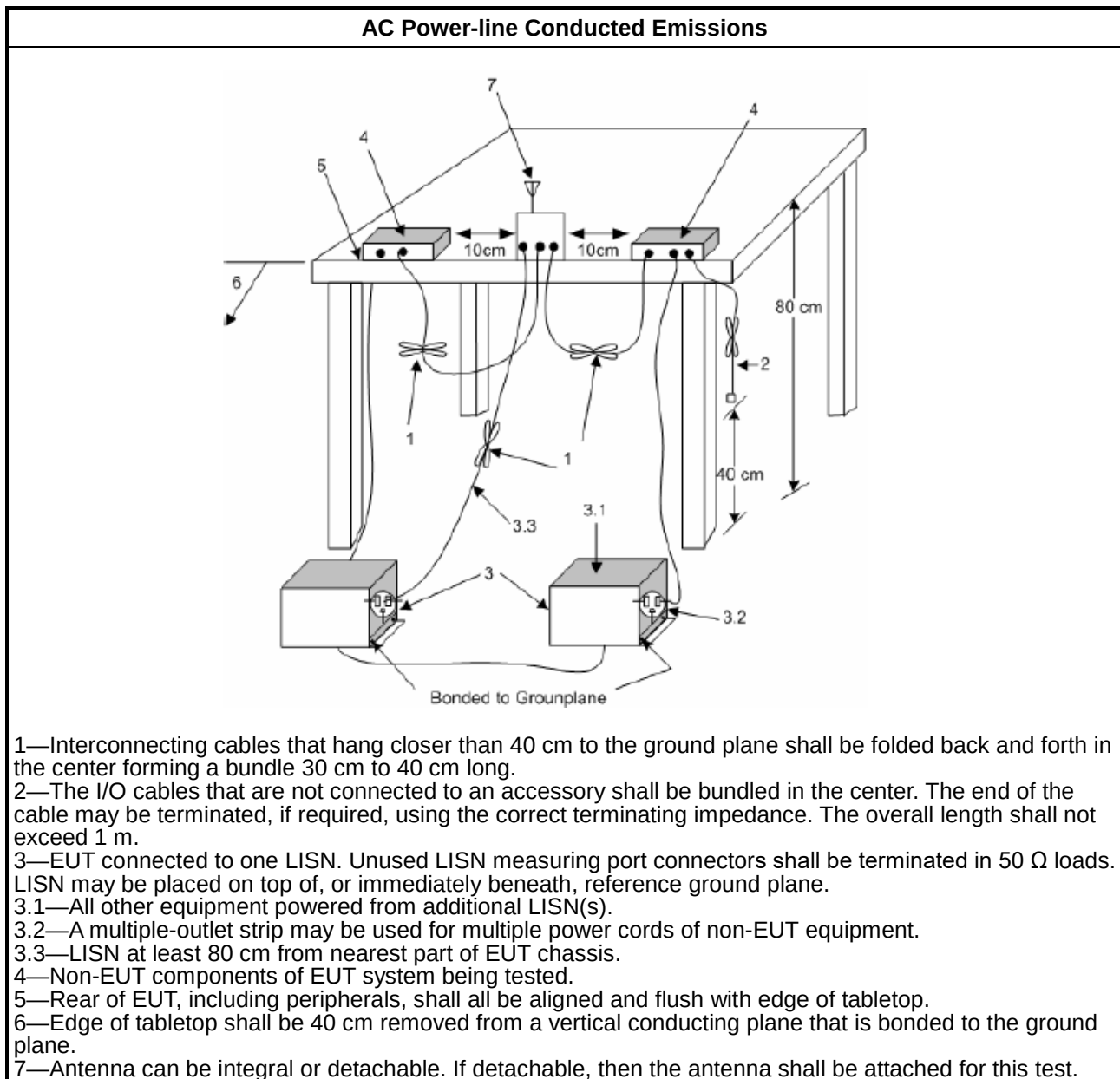
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



1.1.1. Measurement Results Calculation

The measured Level is calculated using:

- Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- Margin = -Limit + Level

3.1.5 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:
6 dB bandwidth $\geq$ 500 kHz.

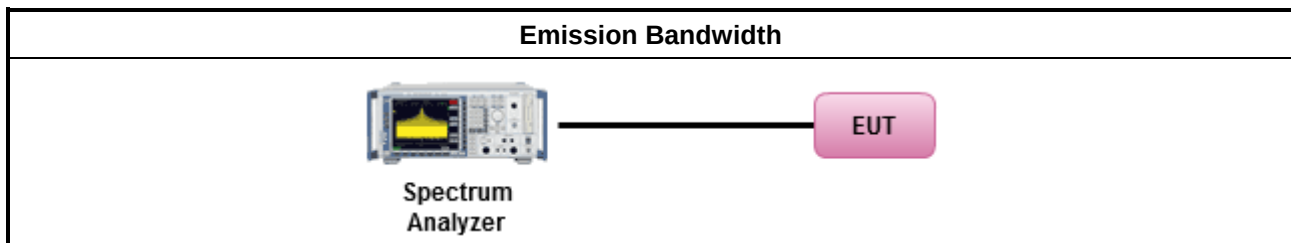
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
For the emission bandwidth shall be measured using one of the options below:
☒ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
☐ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
☐ Refer as ANSI C63.10, clause 6.9.1 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	
	▪ 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
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

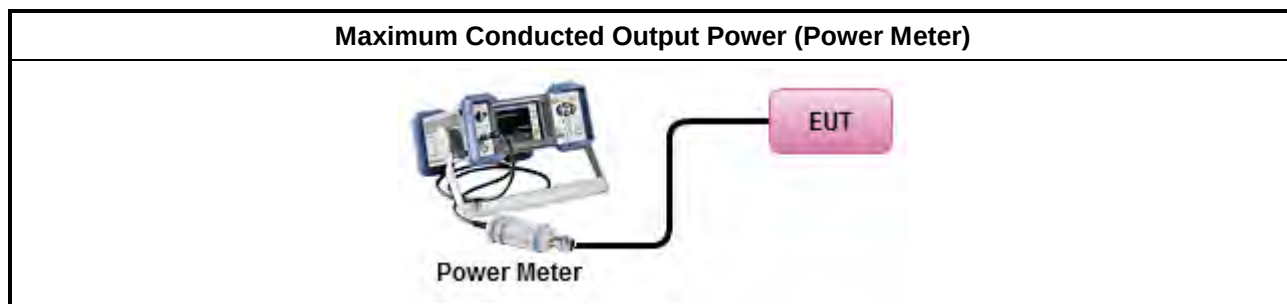
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
Maximum Peak Conducted Output Power	
☐	Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
☐	Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
Maximum Conducted Output Power	
[duty cycle ≥ 98% or external video / power trigger]	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)	
☐	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
☒	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
For conducted measurement.	
If the EUT supports multiple transmit chains using options given below: Refer as FCC 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]) $EIRP_{total} = P_{total} + DG$	

3.3.4 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
▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

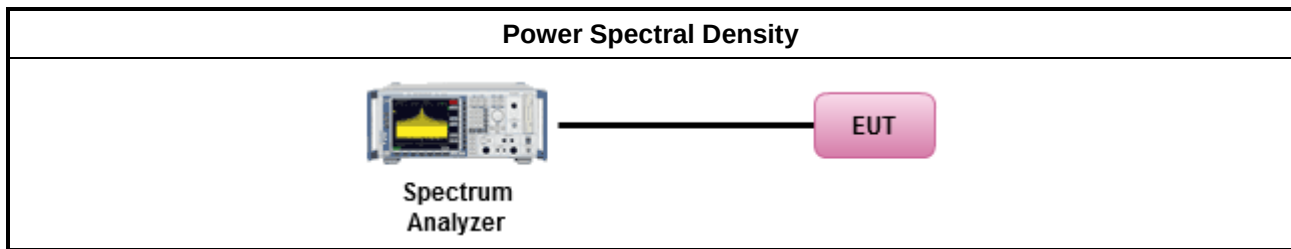
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
▪ 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 FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. [duty cycle ≥ 98% or external video / power trigger]
▪ For conducted measurement.	
▪ If The EUT supports multiple transmit chains using options given below:	
☐	Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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.
☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
☐	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

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 (dBc)
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 PSD 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 PSD level.	

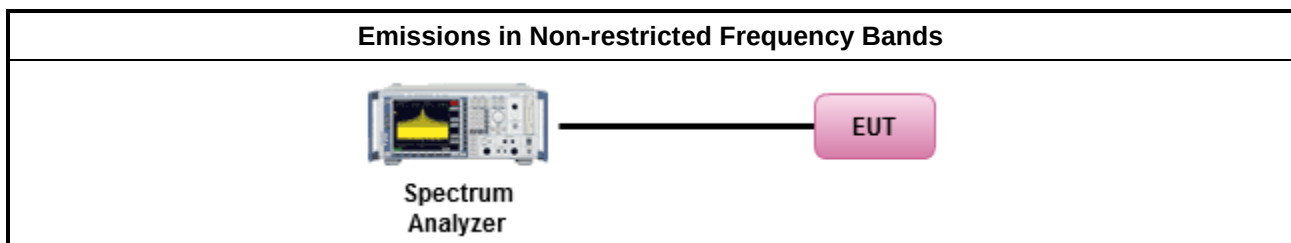
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted 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

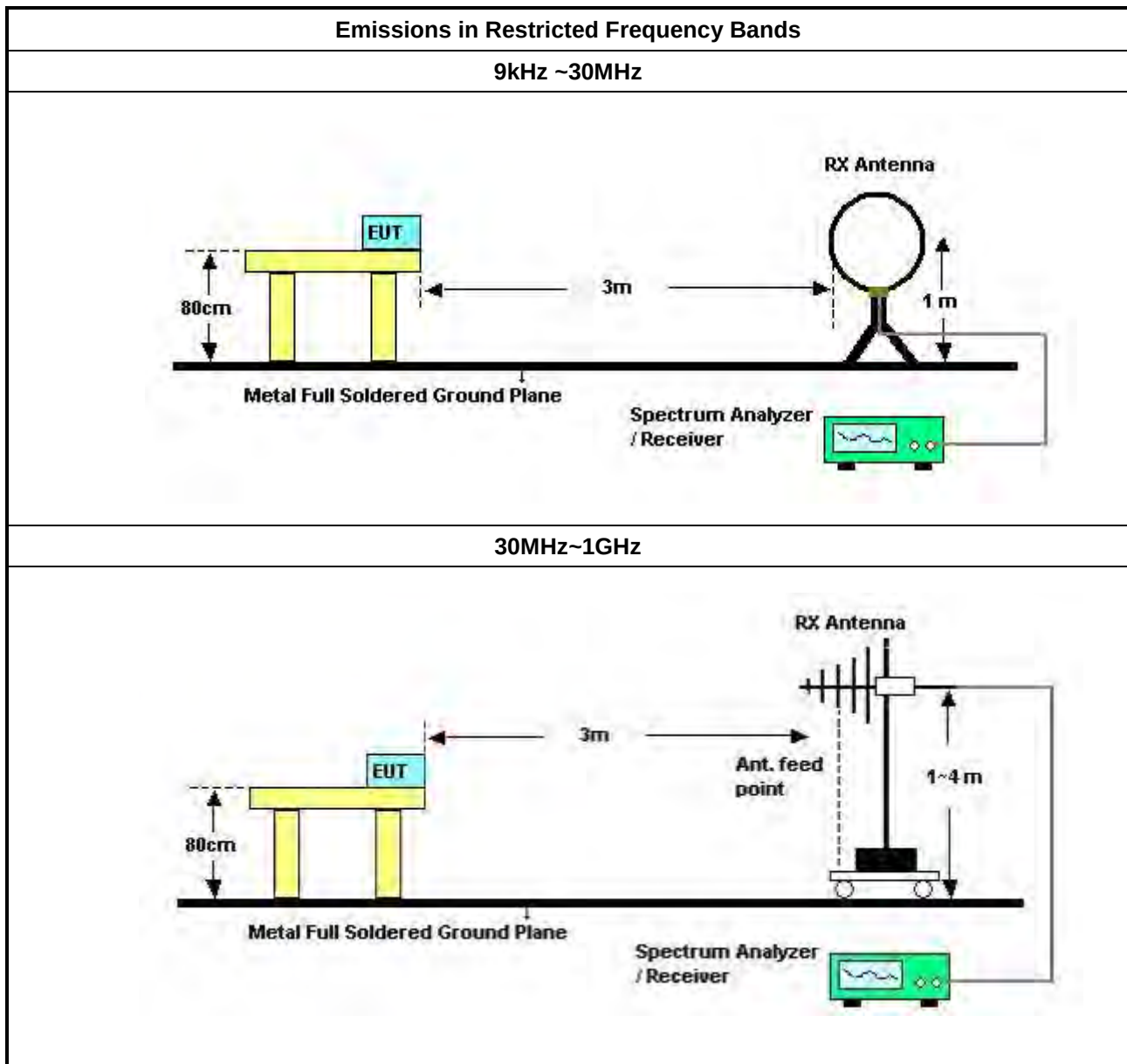
Refer a test equipment and calibration data table in this test report.

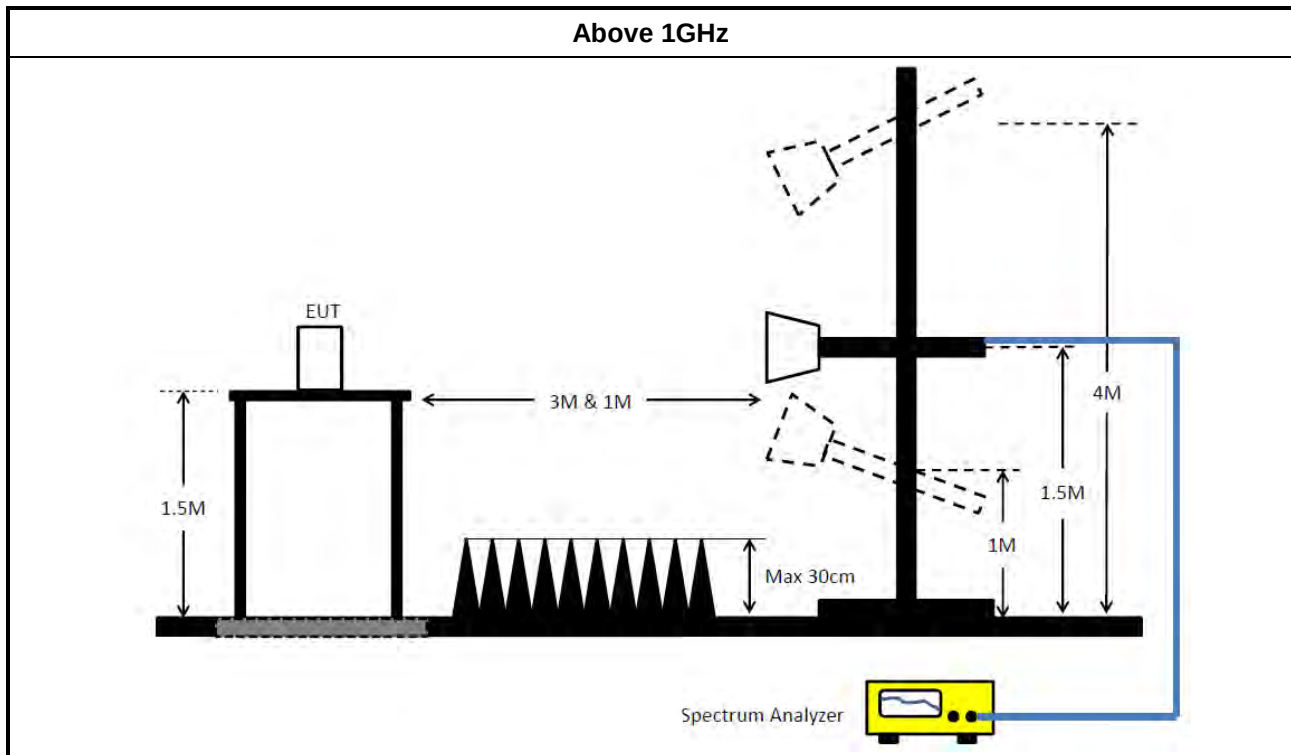


3.6.3 Test Procedures

Test Method	
The average emission levels shall be measured in [duty cycle ≥ 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 FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
	☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle $\geq 98\%$).
	☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
	☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW $\geq 1/T$).
	☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
	☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
For the transmitter band-edge emissions shall be measured using following options below:	
	Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, 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 FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

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

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 22, 2022	Feb. 21, 2023	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 09, 2022	Feb. 08, 2023	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 12, 2022	Apr. 11, 2023	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 10, 2022	Feb. 09, 2023	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 18, 2022	May 17, 2023	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~1 GHz	Aug. 03, 2022	Aug. 02, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 07, 2021	Nov. 06, 2022	Radiation (03CH05-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	May 14, 2022	May 13, 2023	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 25, 2022	Mar. 24, 2023	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120 D	BBHA 9120 D-1291	1GHz~18GHz	Jun. 23, 2022	Jun. 22, 2023	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA917025 2	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 26, 2022	Apr. 25, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630 SE	980287	1GHz ~ 26.5GHz	Jul. 01, 2022	Jun. 30, 2023	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35 -HG	1864479	18GHz ~ 40GHz	Jul. 20, 2022	Jul. 19, 2023	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Mar. 14, 2022	Mar. 13, 2023	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 17, 2022	Jun. 16, 2023	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 13, 2021	Oct. 12, 2022	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 13, 2021	Oct. 12, 2022	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 13, 2021	Oct. 12, 2022	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5+7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 08, 2021	Dec. 07, 2022	Radiation (03CH05-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
High Cable	Woken	WCA0929M	40G#7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Aug. 15, 2022	Aug. 14, 2023	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 25, 2021	Oct. 24, 2022	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 25, 2021	Oct. 24, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH02-CB)
Switch	SPTCB	SP-SWI	SWI-02	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	SWI-02-P1	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	SWI-02-P2	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	SWI-02-P3	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	SWI-02-P4	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	SWI-02-P5	1 GHz – 26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH02-CB)

Note: Calibration Interval of instruments listed above is one year.
NCR means Non-Calibration required.



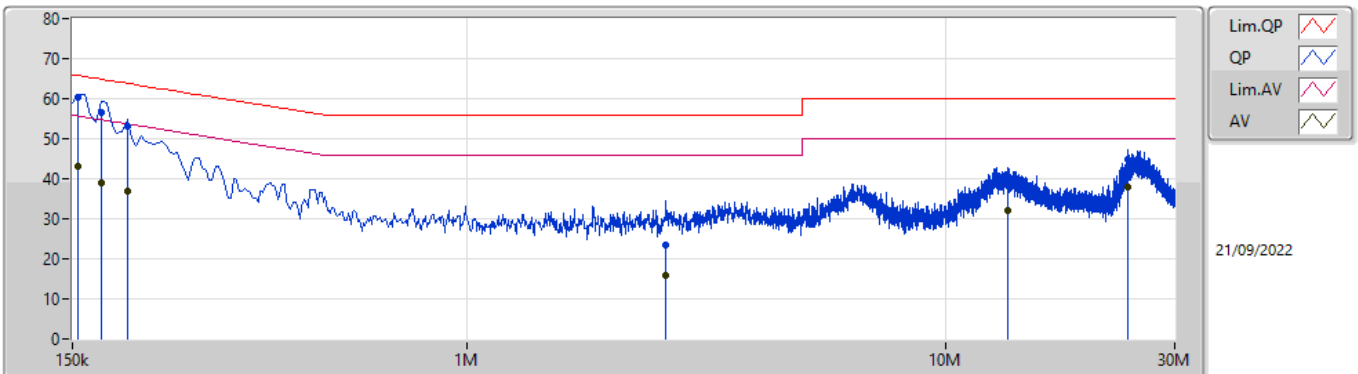
Conducted Emissions at Powerline

Appendix A

Summary

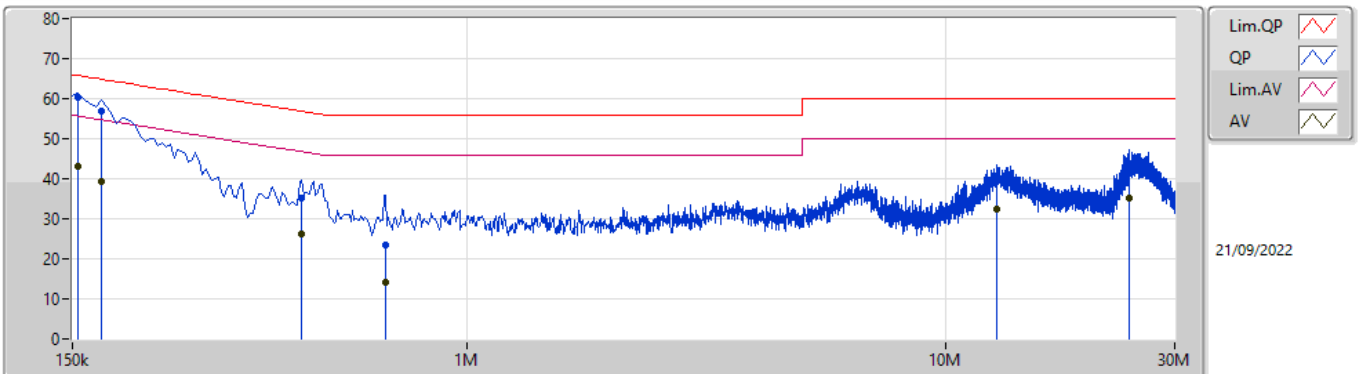
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	154.5k	60.27	65.75	-5.48	Line

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	154.5k	60.27	65.75	-5.48	9.99	Line	"Worst"	50.28	0.06	0.04	9.89			
AV	154.5k	42.99	55.75	-12.76	9.99	Line	-	33.00	0.06	0.04	9.89			
QP	172.5k	56.59	64.83	-8.24	9.99	Line	-	46.60	0.06	0.04	9.89			
AV	172.5k	38.97	54.83	-15.86	9.99	Line	-	28.98	0.06	0.04	9.89			
QP	195k	52.99	63.82	-10.83	9.99	Line	-	43.00	0.06	0.04	9.89			
AV	195k	36.91	53.82	-16.91	9.99	Line	-	26.92	0.06	0.04	9.89			
QP	2.598M	23.39	56.00	-32.61	10.08	Line	-	13.31	0.10	0.09	9.89			
AV	2.598M	15.93	46.00	-30.07	10.08	Line	-	5.85	0.10	0.09	9.89			
QP	13.416M	38.55	60.00	-21.45	10.35	Line	-	28.20	0.25	0.17	9.93			
AV	13.416M	32.10	50.00	-17.90	10.35	Line	-	21.75	0.25	0.17	9.93			
QP	23.933M	44.68	60.00	-15.32	10.58	Line	-	34.10	0.34	0.27	9.97			
AV	23.933M	38.01	50.00	-11.99	10.58	Line	-	27.43	0.34	0.27	9.97			

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	154.5k	60.20	65.75	-5.55	10.00	Neutral	"Worst"	50.20	0.07	0.04	9.89			
AV	154.5k	43.00	55.75	-12.75	10.00	Neutral	-	33.00	0.07	0.04	9.89			
QP	172.5k	56.95	64.83	-7.88	10.00	Neutral	-	46.95	0.07	0.04	9.89			
AV	172.5k	39.32	54.83	-15.51	10.00	Neutral	-	29.32	0.07	0.04	9.89			
QP	451.5k	35.32	56.84	-21.52	10.02	Neutral	-	25.30	0.07	0.06	9.89			
AV	451.5k	26.04	46.84	-20.80	10.02	Neutral	-	16.02	0.07	0.06	9.89			
QP	676.5k	23.47	56.00	-32.53	10.02	Neutral	-	13.45	0.08	0.05	9.89			
AV	676.5k	14.28	46.00	-31.72	10.02	Neutral	-	4.26	0.08	0.05	9.89			
QP	12.795M	39.24	60.00	-20.76	10.36	Neutral	-	28.88	0.26	0.17	9.93			
AV	12.795M	32.55	50.00	-17.45	10.36	Neutral	-	22.19	0.26	0.17	9.93			
QP	24.176M	41.44	60.00	-18.56	10.54	Neutral	-	30.90	0.30	0.27	9.97			
AV	24.176M	35.02	50.00	-14.98	10.54	Neutral	-	24.48	0.30	0.27	9.97			

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)	670k	1.029M	1M03F1D	660k	1.028M
BT-LE(2Mbps)	1.148M	2.037M	2M04F1D	1.14M	2.033M

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

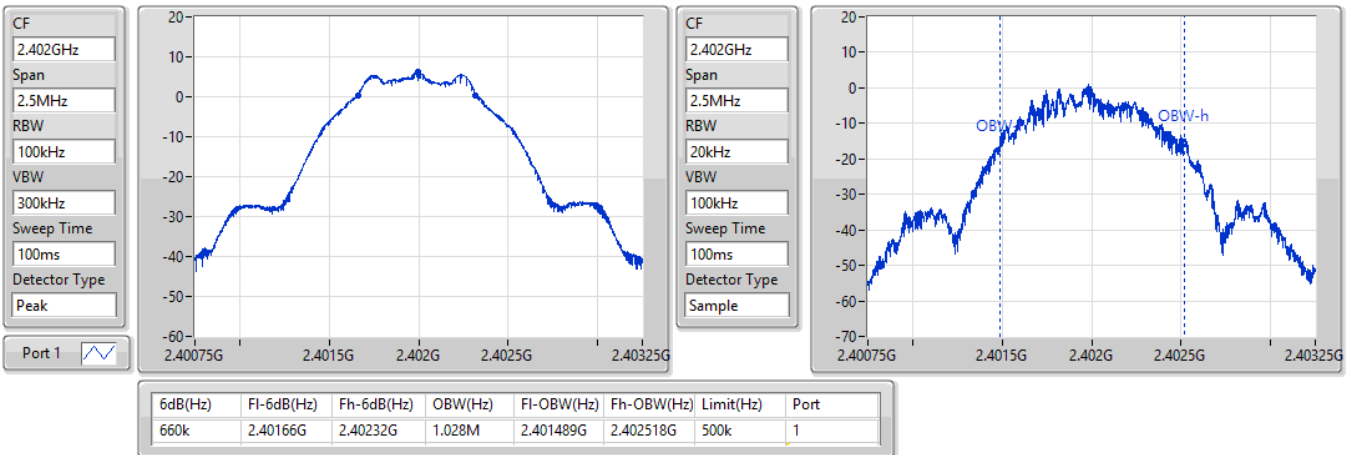
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	660k	1.028M
2440MHz	Pass	500k	670k	1.028M
2480MHz	Pass	500k	665k	1.029M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.14M	2.036M
2440MHz	Pass	500k	1.148M	2.033M
2480MHz	Pass	500k	1.143M	2.037M

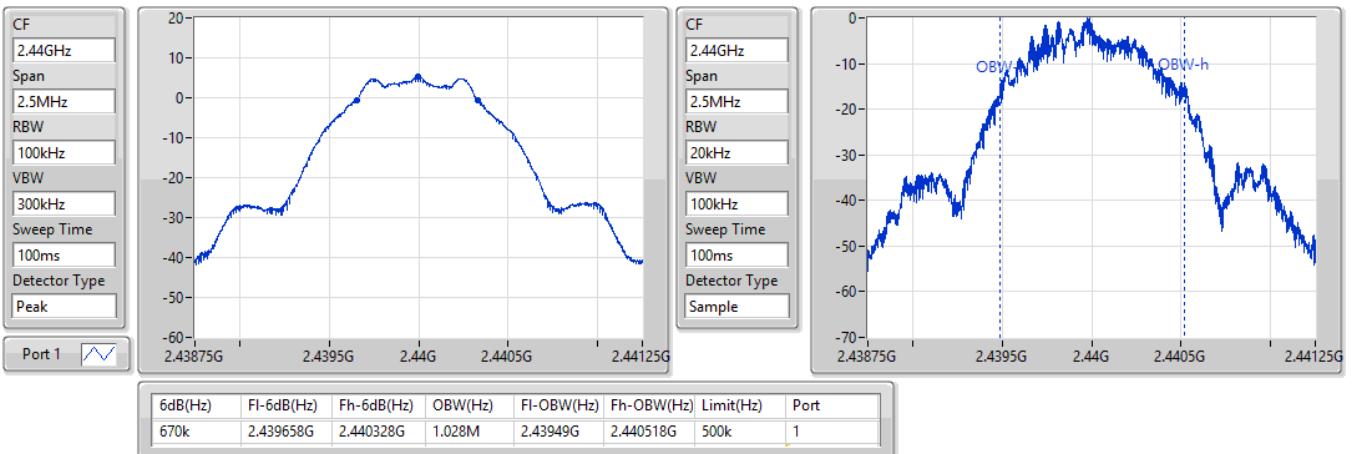
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

BT-LE(1Mbps)
2402MHz
EBW-DTS

15/09/2022

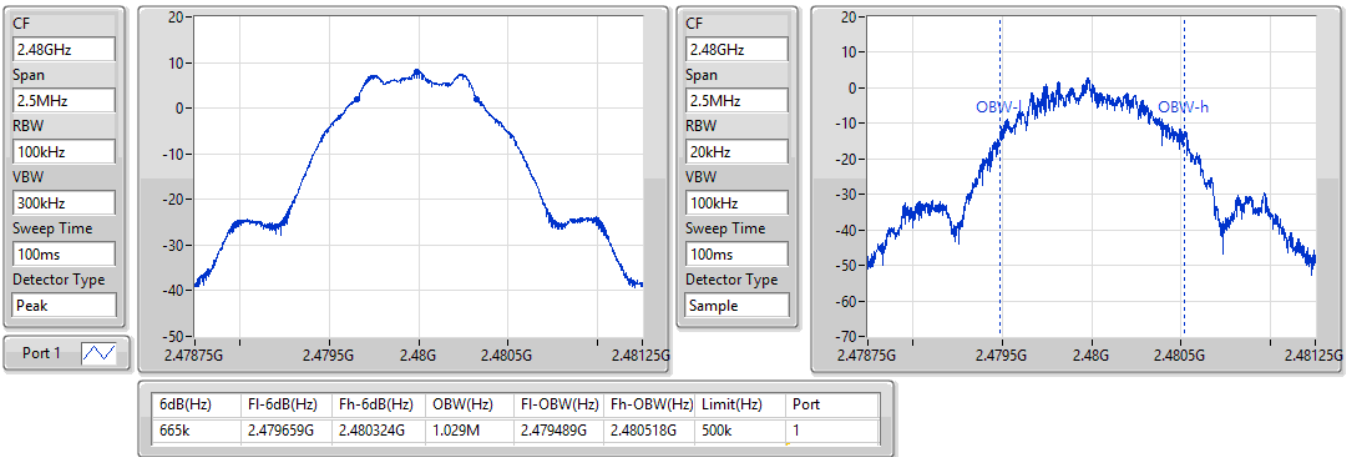

BT-LE(1Mbps)
2440MHz
EBW-DTS

15/09/2022

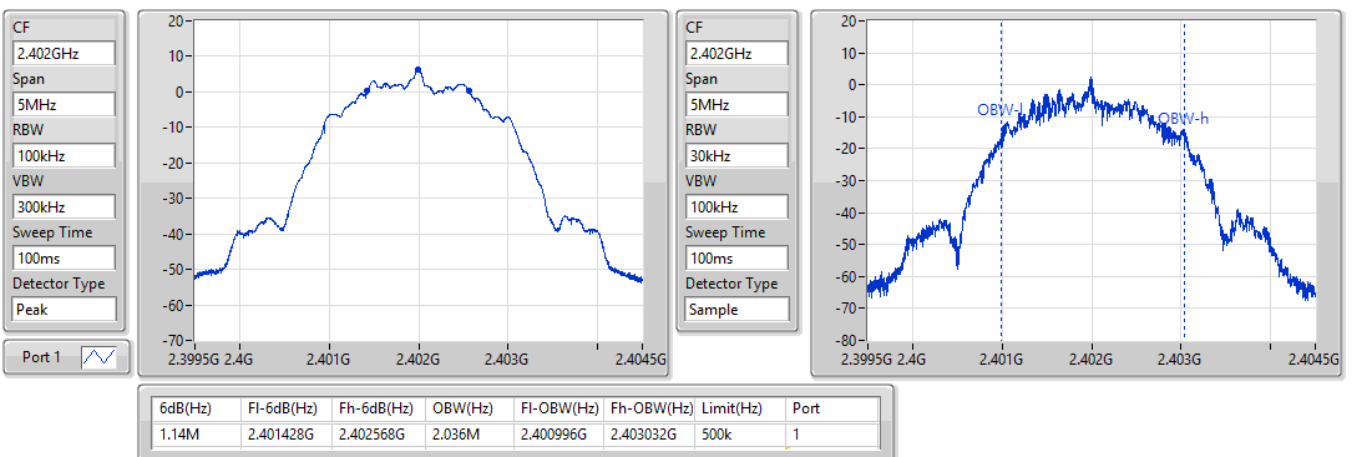


BT-LE(1Mbps)
EBW-DTS
2480MHz

15/09/2022

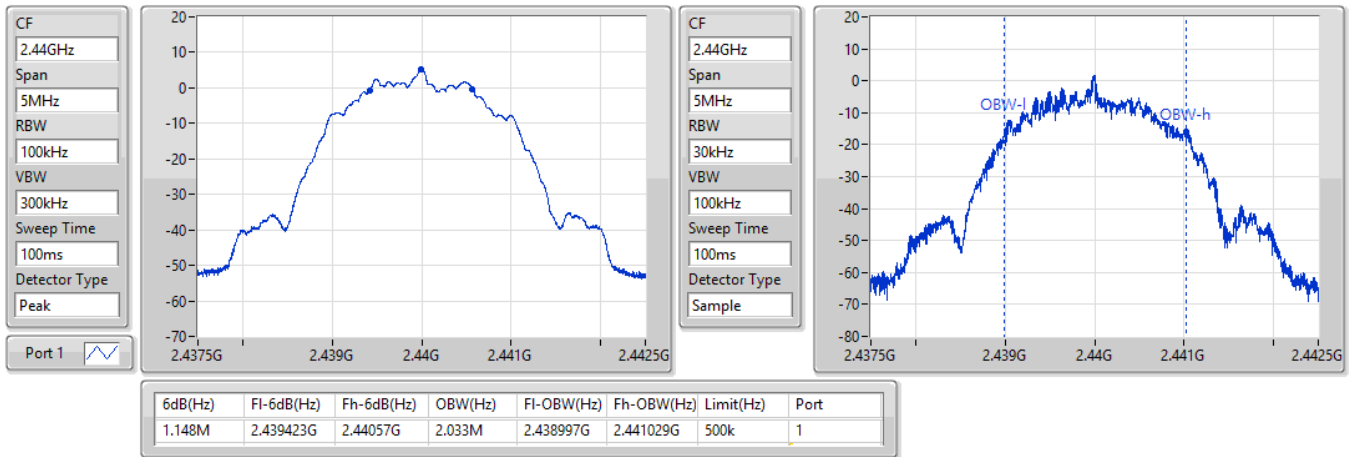

BT-LE(2Mbps)
EBW-DTS
2402MHz

15/09/2022

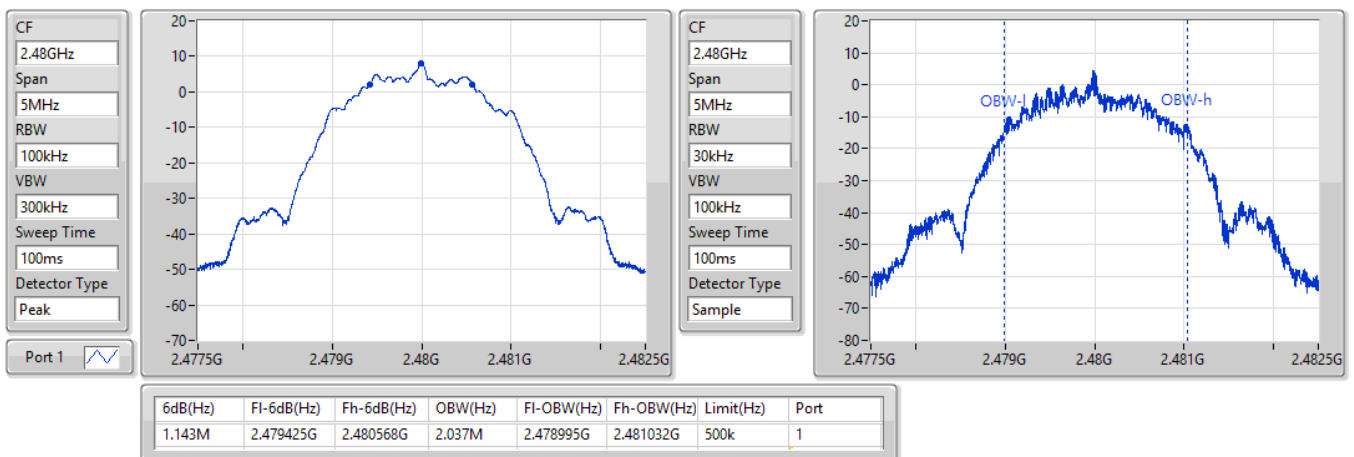


BT-LE(2Mbps)
EBW-DTS
2440MHz

15/09/2022


BT-LE(2Mbps)
EBW-DTS
2480MHz

15/09/2022





Average Power-DTS

Appendix C

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LF(1Mbps)	7.64	0.00581
BT-LF(2Mbps)	7.57	0.00571

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.86	5.99	30.00
2440MHz	Pass	2.86	5.36	30.00
2480MHz	Pass	2.86	7.64	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	2.86	5.45	30.00
2440MHz	Pass	2.86	4.83	30.00
2480MHz	Pass	2.86	7.57	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-6.75
BT-LE(2Mbps)	-10.35

RBW = 3kHz;

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.86	-8.66	8.00
2440MHz	Pass	2.86	-9.93	8.00
2480MHz	Pass	2.86	-6.75	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	2.86	-12.25	8.00
2440MHz	Pass	2.86	-13.91	8.00
2480MHz	Pass	2.86	-10.35	8.00

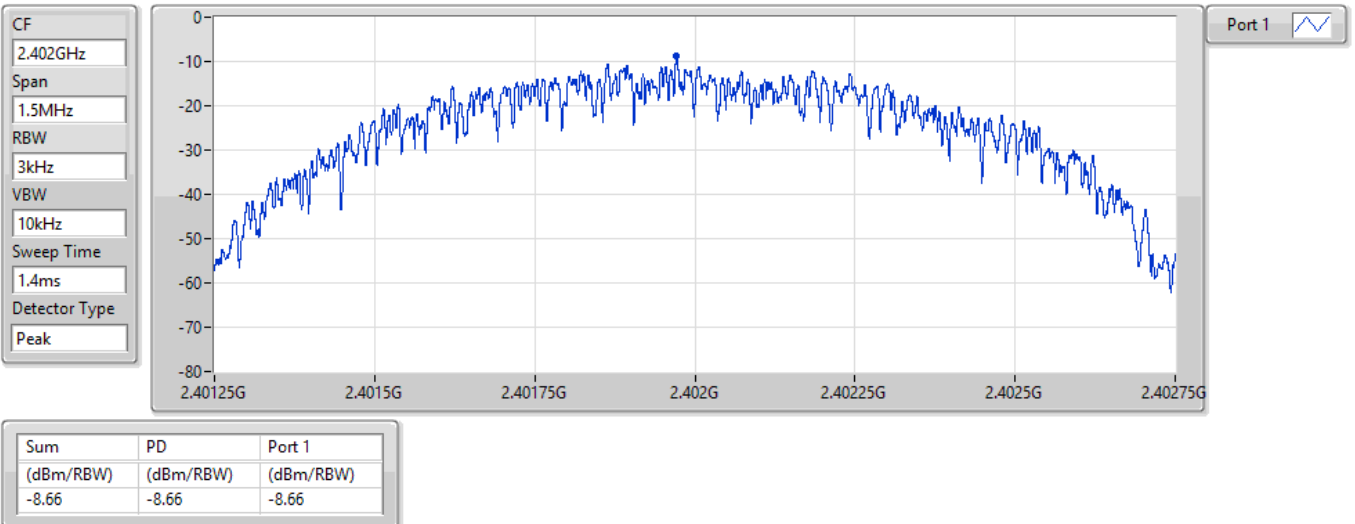
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

BT-LE(1Mbps)

PSD

2402MHz

15/09/2022

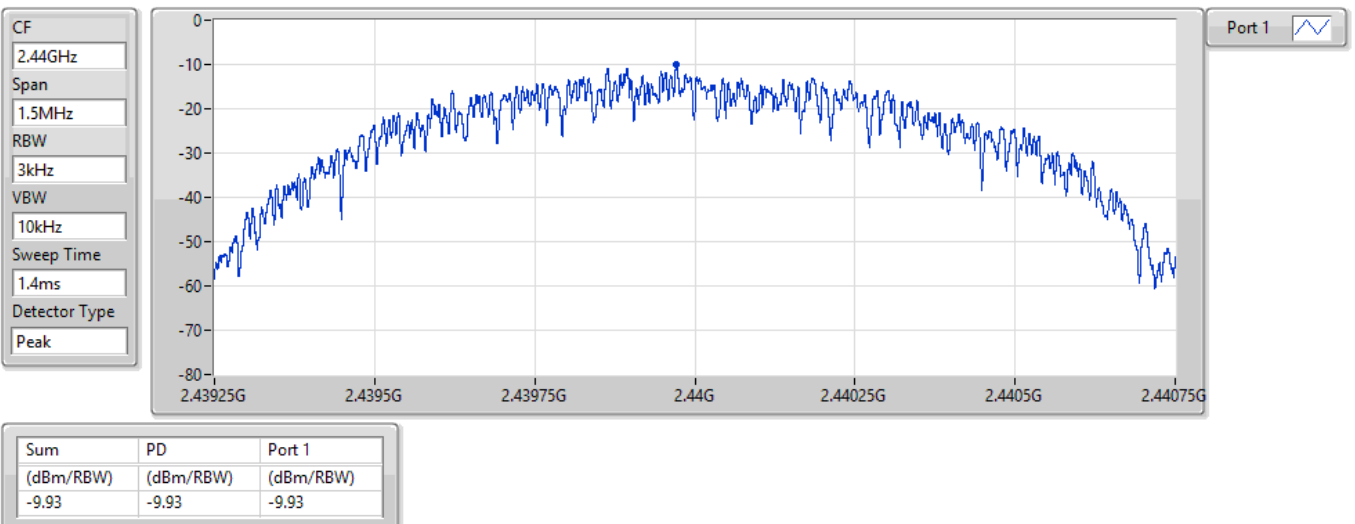


BT-LE(1Mbps)

PSD

2440MHz

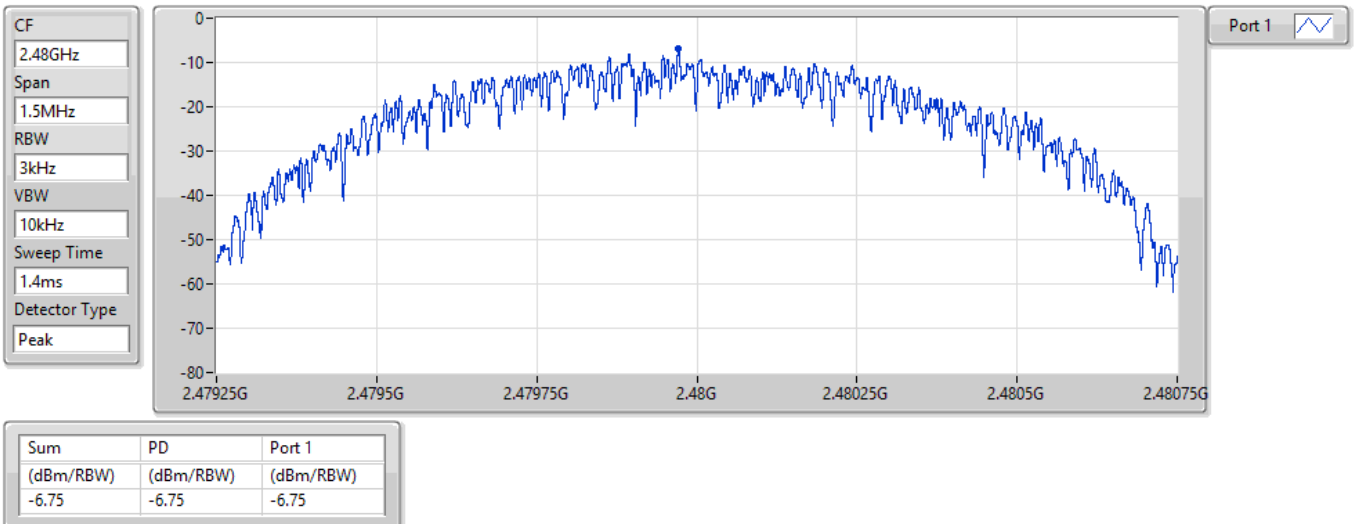
15/09/2022



BT-LE(1Mbps)

2480MHz

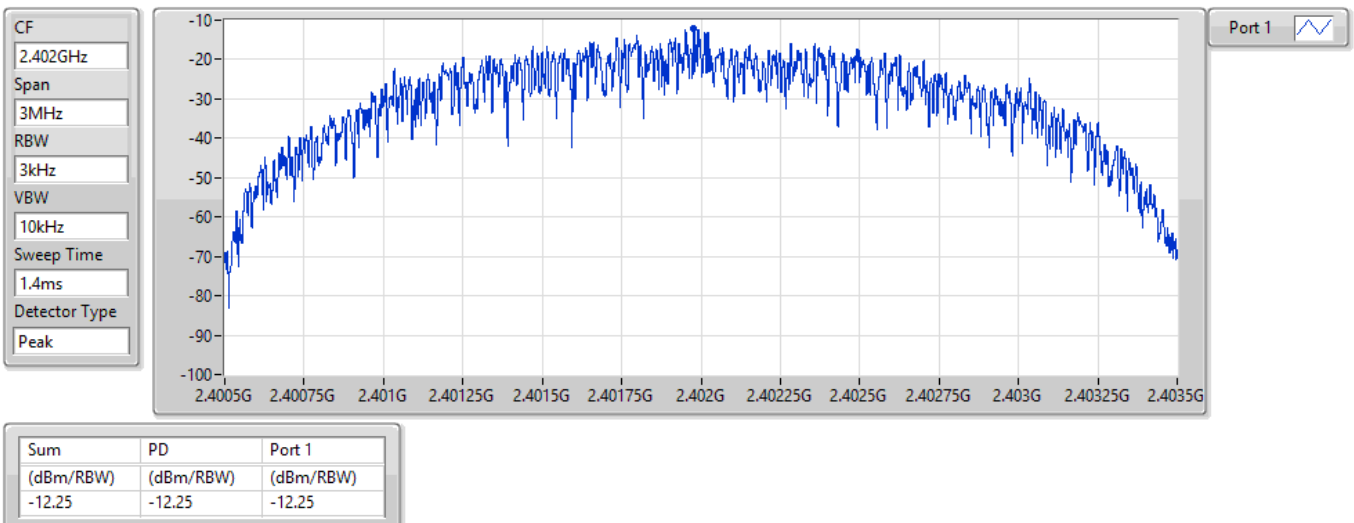
15/09/2022



BT-LE(2Mbps)

2402MHz

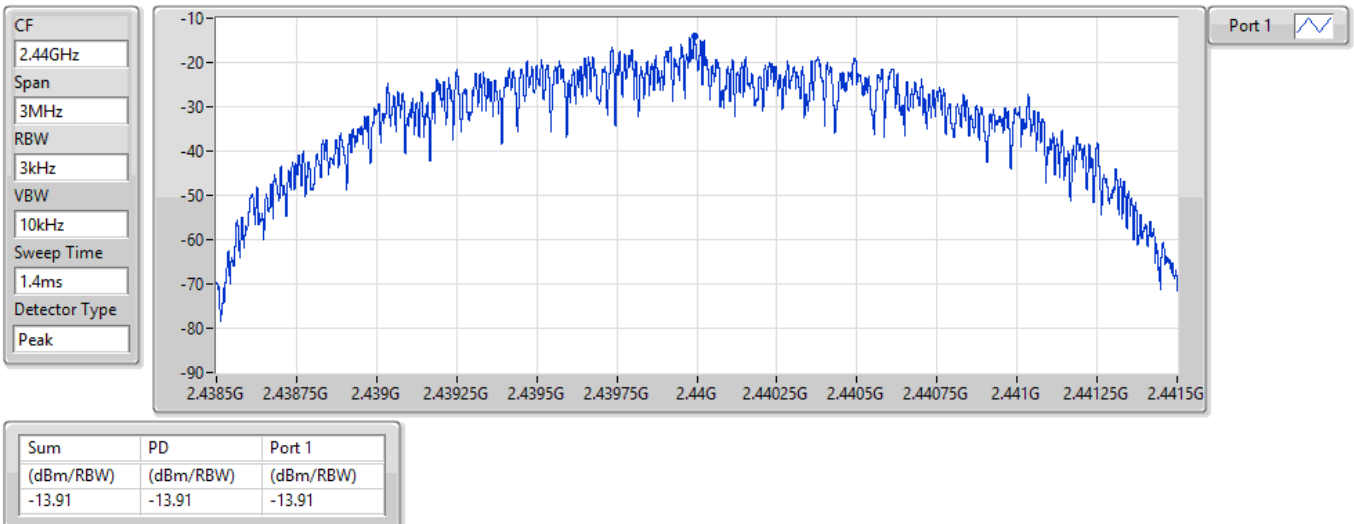
15/09/2022



BT-LE(2Mbps)

2440MHz

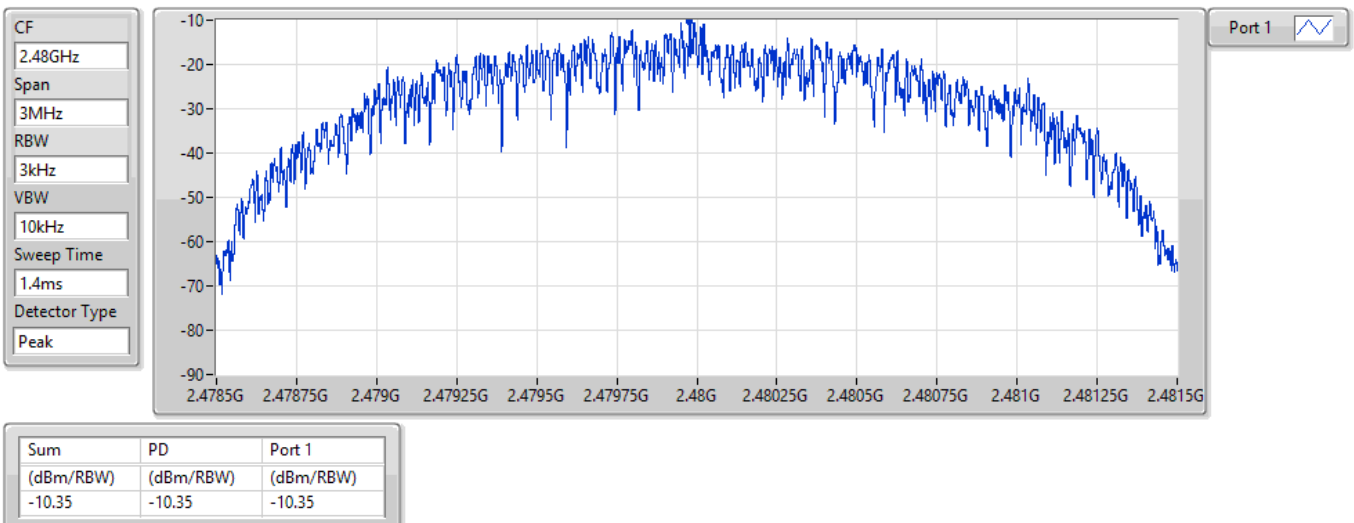
15/09/2022



BT-LE(2Mbps)

2480MHz

15/09/2022





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	2.48003G	8.01	-21.99	2.0792G	-54.75	2.39995G	-48.11	2.4G	-50.25	2.49858G	-51.03	21.48492G	-49.36	1
BT-LE(2Mbps)	Pass	2.47999G	8.00	-22.00	2.17438G	-53.76	2.39999G	-38.95	2.4G	-39.30	2.49413G	-51.94	21.60584G	-47.71	1

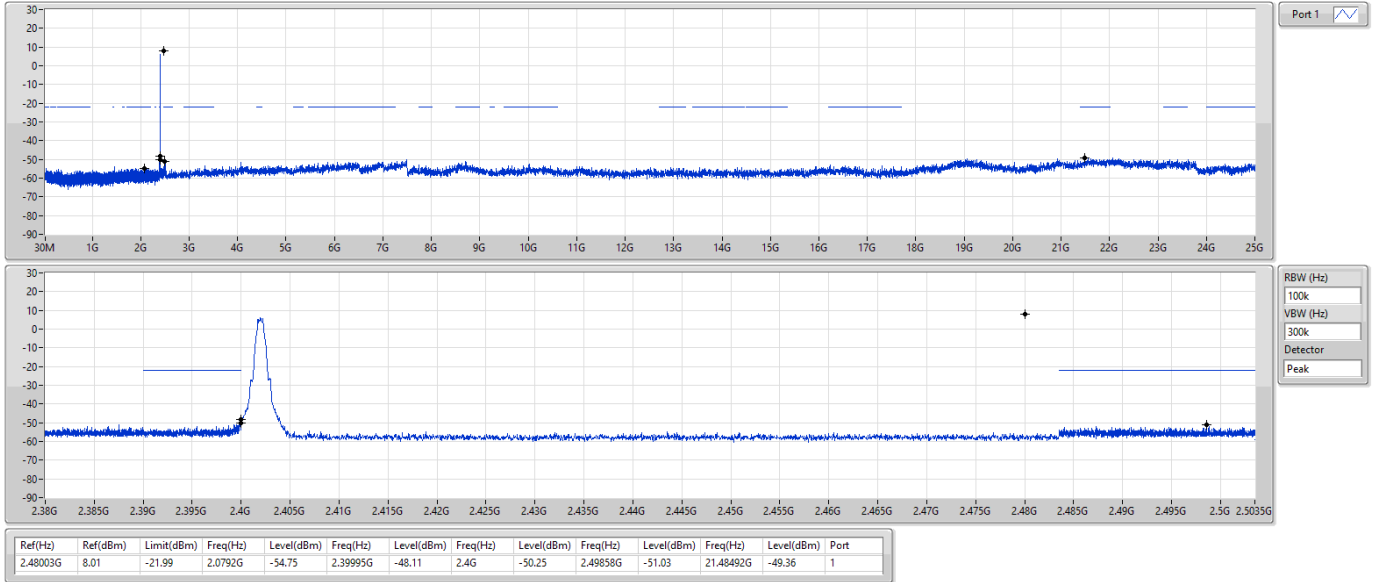
Result

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	2.48003G	8.01	-21.99	2.0792G	-54.75	2.39995G	-48.11	2.4G	-50.25	2.49858G	-51.03	21.48492G	-49.36	1
2440MHz	Pass	2.48003G	8.01	-21.99	2.17379G	-54.57	2.39564G	-52.20	2.4G	-56.96	2.50185G	-52.44	21.5974G	-49.02	1
2480MHz	Pass	2.48003G	8.01	-21.99	1.82158G	-54.48	2.39289G	-52.23	2.4835G	-57.93	2.49574G	-51.59	23.21996G	-49.12	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.47999G	8.00	-22.00	2.17438G	-53.76	2.39999G	-38.95	2.4G	-39.30	2.49413G	-51.94	21.60584G	-47.71	1
2440MHz	Pass	2.47999G	8.00	-22.00	1.81277G	-54.38	2.39393G	-51.71	2.4G	-58.33	2.48399G	-51.95	21.66208G	-49.31	1
2480MHz	Pass	2.47999G	8.00	-22.00	2.16292G	-54.26	2.39458G	-52.42	2.4835G	-55.65	2.48392G	-51.09	21.98266G	-48.24	1

BT-LE(1Mbps)

CSEndB-DTS

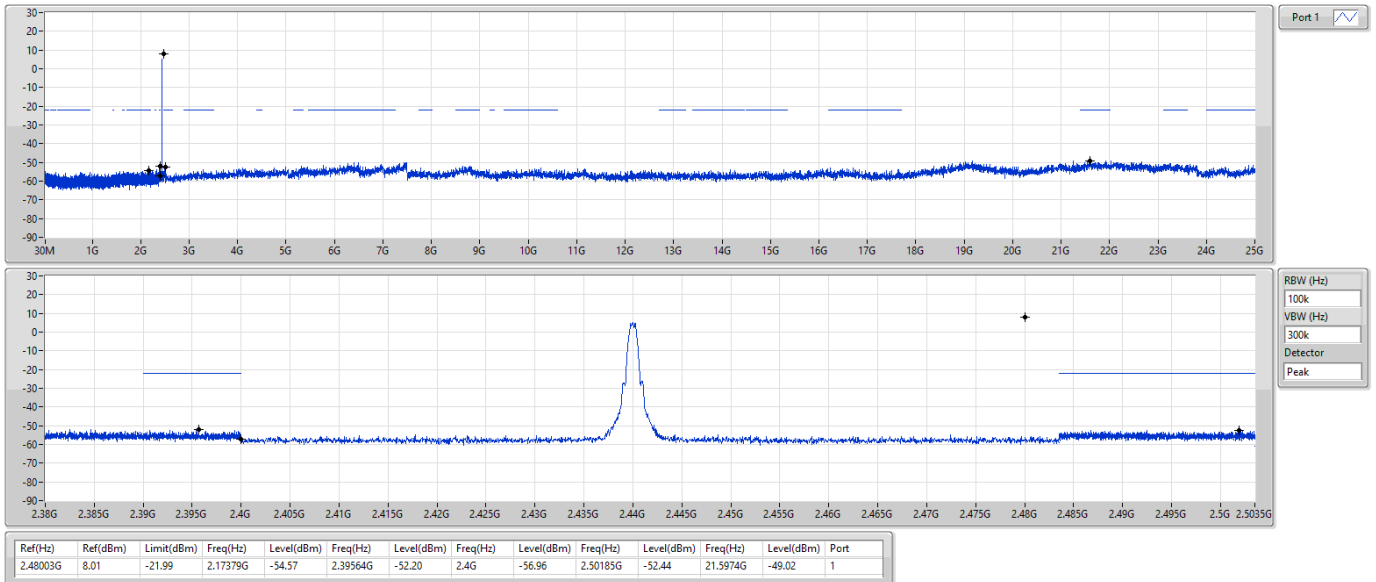
2402MHz



BT-LE(1Mbps)

CSEndB-DTS

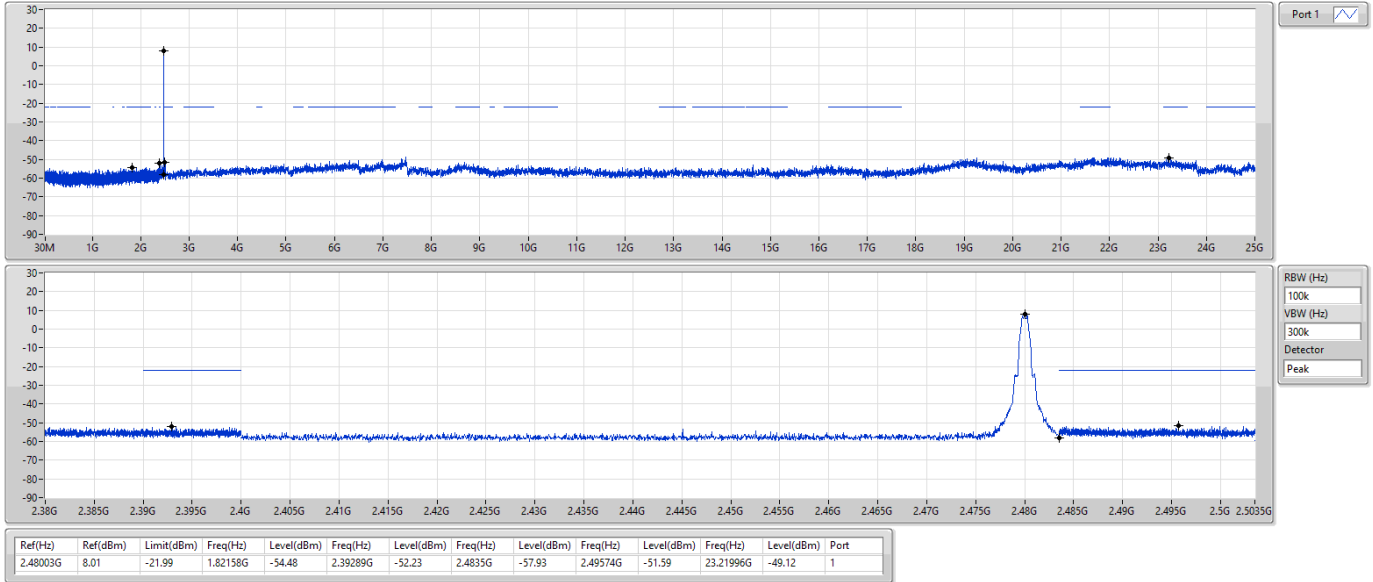
2440MHz



BT-LE(1Mbps)

CSEndB-DTS

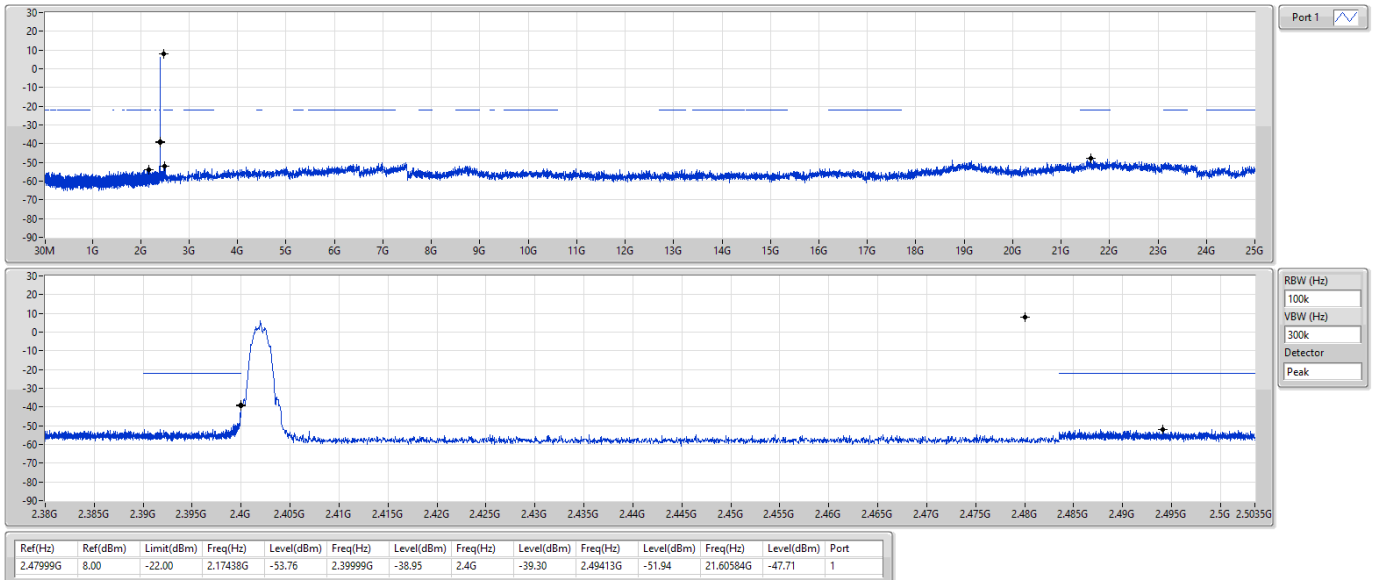
2480MHz



BT-LE(2Mbps)

CSEndB-DTS

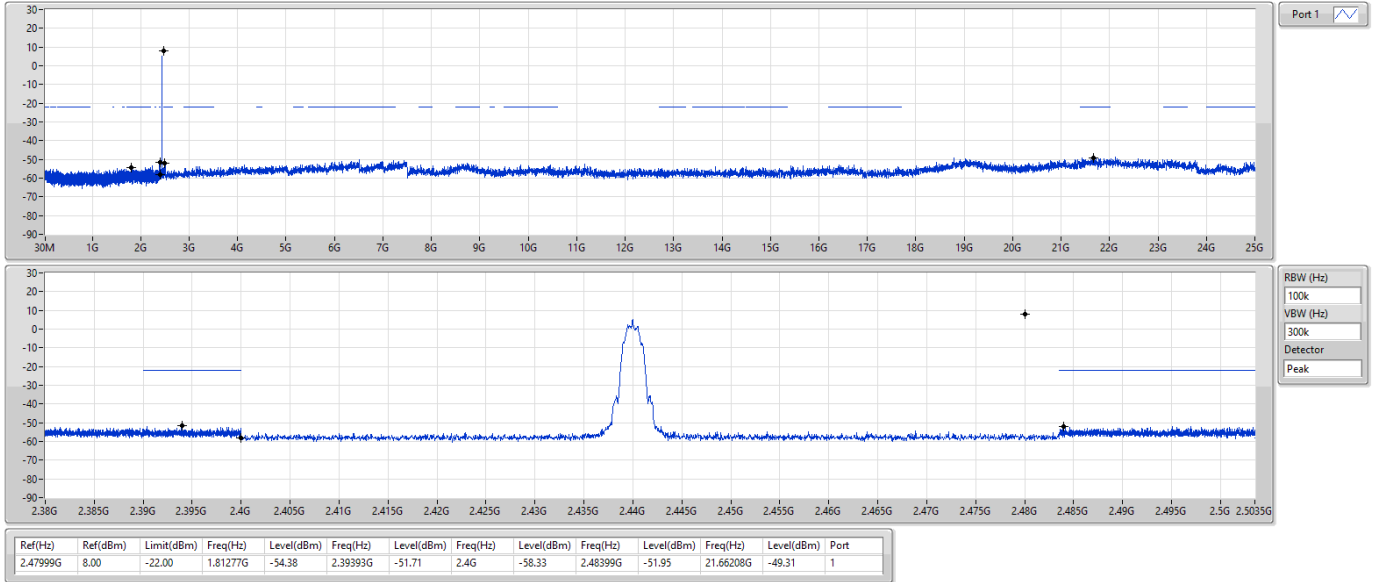
2402MHz



BT-LE(2Mbps)

CSEndB-DTS

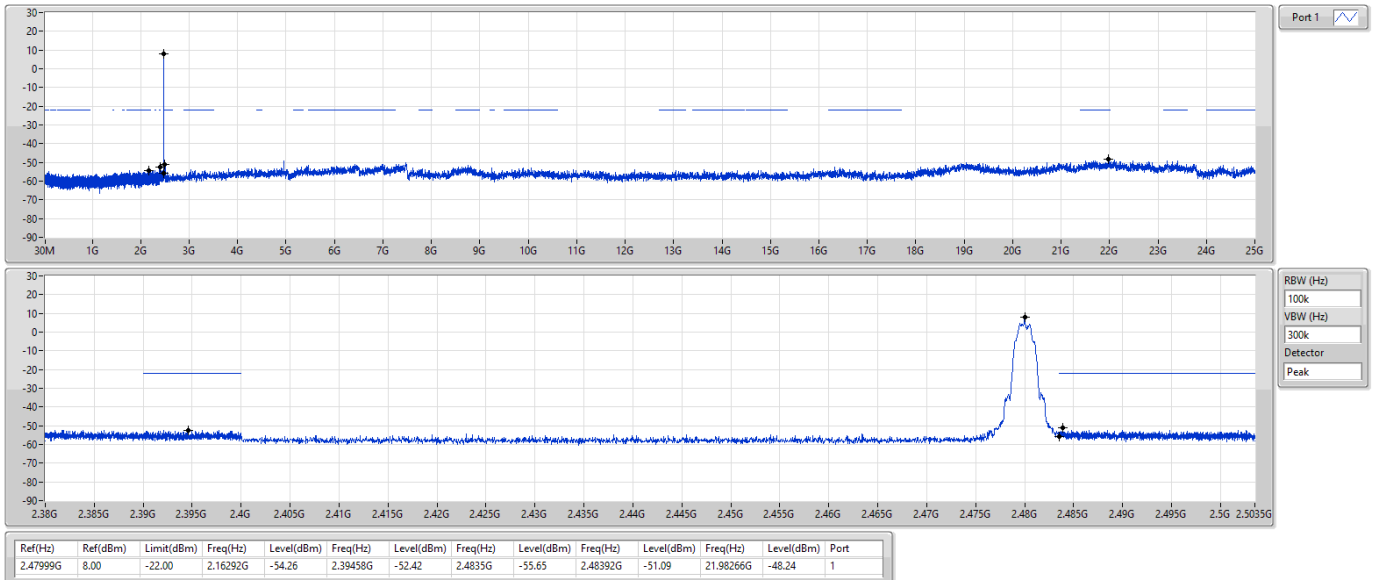
2440MHz



BT-LE(2Mbps)

CSEndB-DTS

2480MHz





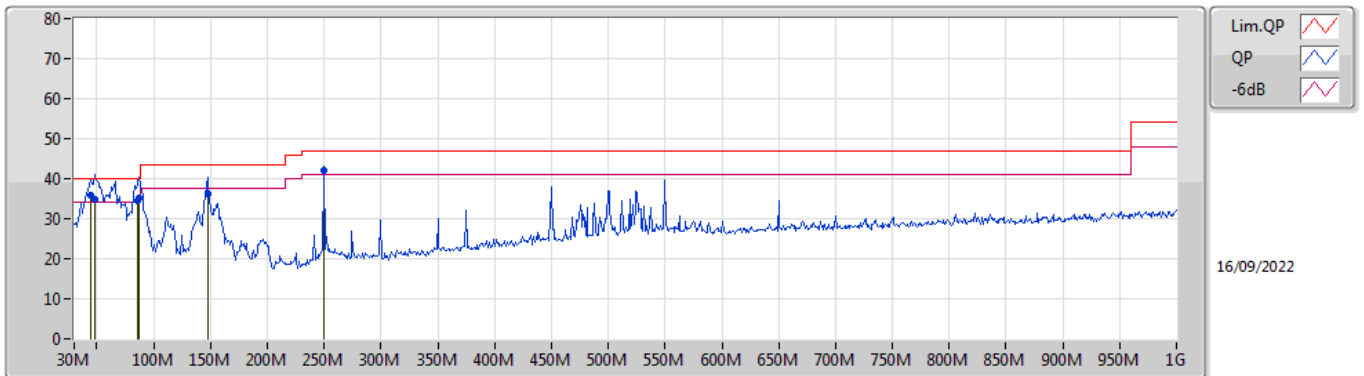
Radiated Emissions below 1GHz

Appendix F.1

Summary

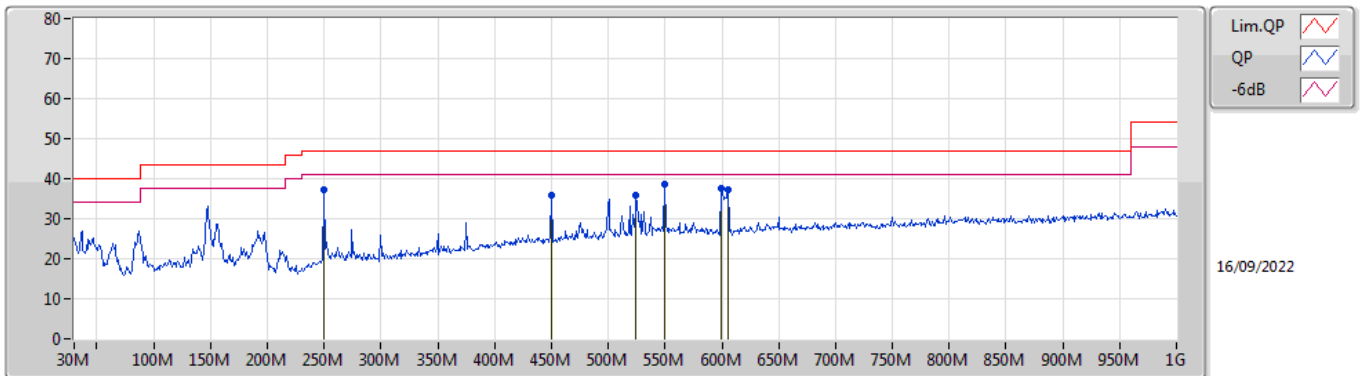
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 4	Pass	QP	250.19M	41.99	46.00	-4.01	Vertical

Mode 4



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)
QP	44.55M	35.94	40.00	-4.06	-14.61	3	Vertical	45	1.00	"Worst"	50.55	16.22	0.99	31.82
QP	48.43M	34.70	40.00	-5.30	-16.19	3	Vertical	5	1.00	-	50.89	14.59	1.07	31.85
QP	86.26M	34.63	40.00	-5.37	-16.63	3	Vertical	176	1.50	-	51.26	13.89	1.43	31.95
QP	87.23M	35.17	40.00	-4.83	-16.49	3	Vertical	106	1.00	-	51.66	14.02	1.44	31.95
QP	147.37M	36.20	43.50	-7.30	-13.77	3	Vertical	2	1.00	-	49.97	16.37	1.87	32.01
QP	250.19M	41.99	47.00	-5.01	-11.28	3	Vertical	143	1.00	-	53.27	18.22	2.50	32.00

Mode 4



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)
PK	250.19M	37.07	47.00	-9.93	-11.28	3	Horizontal	257	2.00	-	48.35	18.22	2.50	32.00
PK	450.01M	35.97	47.00	-11.03	-6.19	3	Horizontal	48	3.00	-	42.16	22.57	3.50	32.26
PK	524.7M	35.92	47.00	-11.08	-5.50	3	Horizontal	277	2.00	-	41.42	23.19	3.70	32.39
PK	549.92M	38.70	47.00	-8.30	-4.10	3	Horizontal	286	2.00	"Worst"	42.80	24.48	3.80	32.38
PK	599.39M	37.49	47.00	-9.51	-4.27	3	Horizontal	231	1.50	-	41.76	24.24	4.00	32.51
PK	605.21M	37.32	47.00	-9.68	-4.28	3	Horizontal	231	1.50	-	41.60	24.21	4.02	32.51

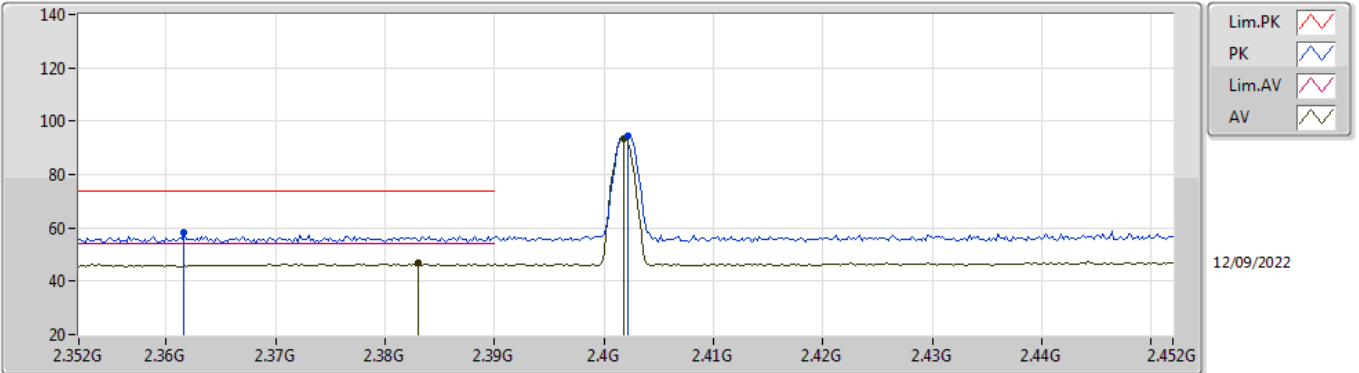


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	AV	2.4948G	49.20	54.00	-4.80	3	Horizontal	360	2.26	-

BT-LE(1Mbps)

2402MHz_TX

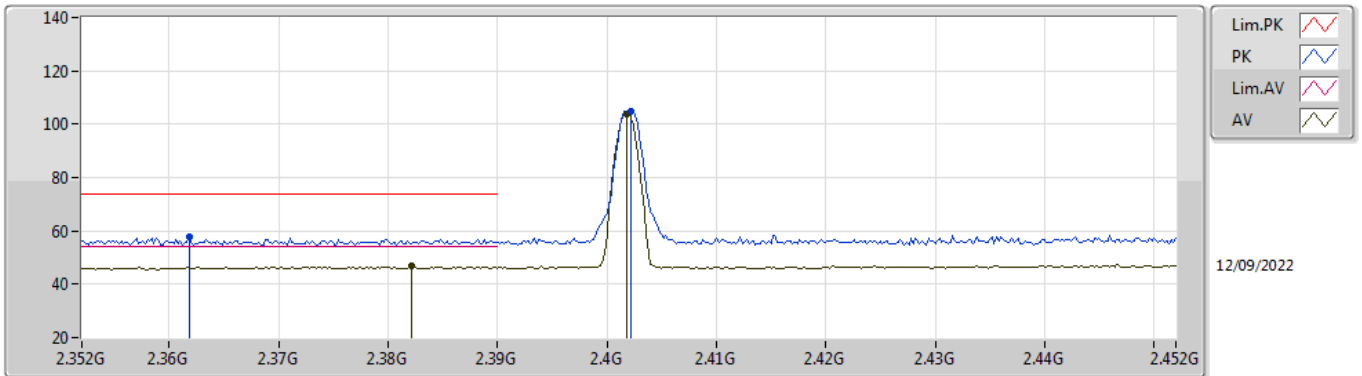


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.3616G	58.08	74.00	-15.92	27.71	3	Vertical	24	1.09	-	27.09	3.28	-	
AV	2.383G	46.68	54.00	-7.32	16.13	3	Vertical	24	1.09	-	27.26	3.29	-	
PK	2.4022G	94.34	Inf	-Inf	63.63	3	Vertical	24	1.09	-	27.41	3.30	-	
AV	2.4018G	93.49	Inf	-Inf	62.78	3	Vertical	24	1.09	-	27.41	3.30	-	

BT-LE(1Mbps)

2402MHz_TX

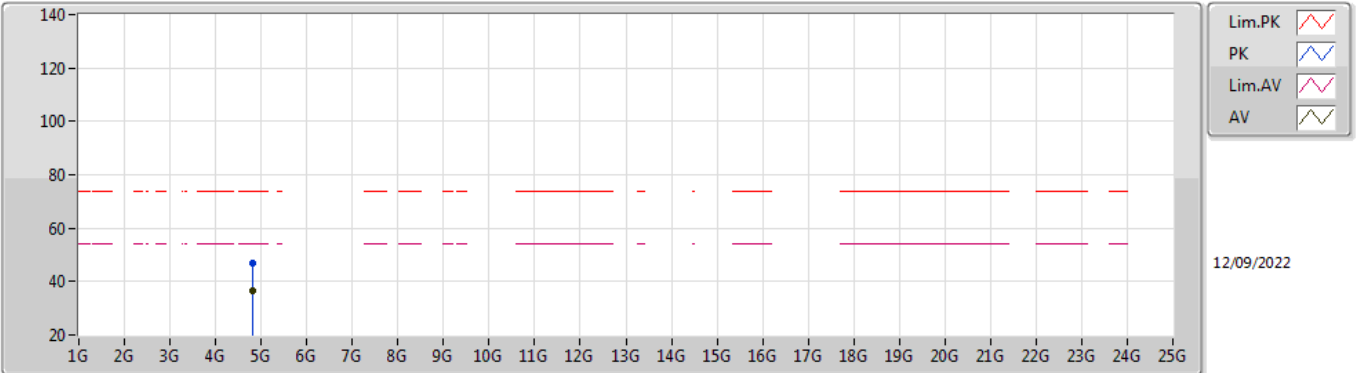


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.3618G	57.54	74.00	-16.46	27.17	3	Horizontal	-0	2.31	-	27.09	3.28	-	
AV	2.3822G	46.68	54.00	-7.32	16.13	3	Horizontal	-0	2.31	-	27.26	3.29	-	
PK	2.4022G	104.78	Inf	-Inf	74.07	3	Horizontal	-0	2.31	-	27.41	3.30	-	
AV	2.4018G	103.93	Inf	-Inf	73.22	3	Horizontal	-0	2.31	-	27.41	3.30	-	

BT-LE(1Mbps)

2402MHz_TX

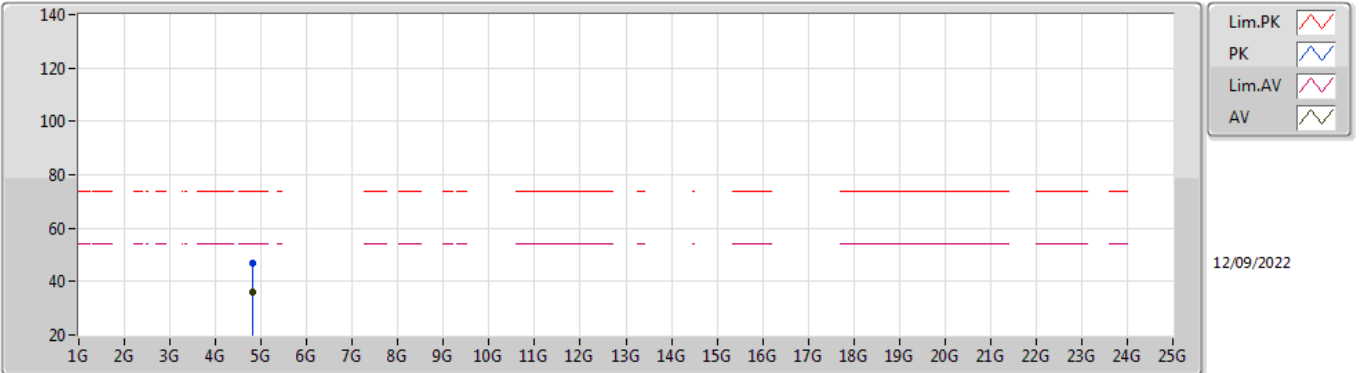


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8017G	47.02	74.00	-26.98	41.93	3	Vertical	147	1.51	-	32.41	6.50	33.82
AV	4.80658G	36.34	54.00	-17.66	31.23	3	Vertical	147	1.51	-	32.43	6.50	33.82

BT-LE(1Mbps)

2402MHz_TX

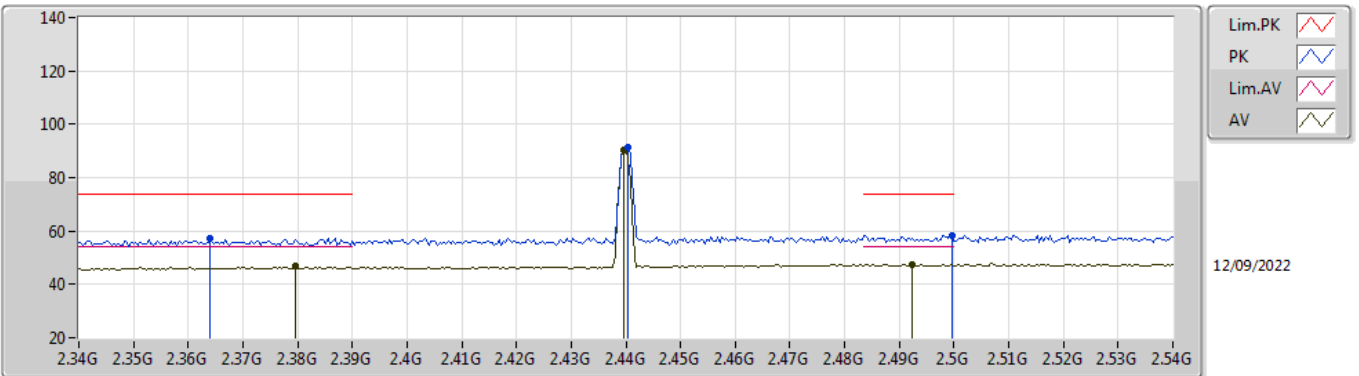


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80388G	46.99	74.00	-27.01	41.89	3	Horizontal	27	2.38	-	32.42	6.50	33.82
AV	4.8034G	35.99	54.00	-18.01	30.90	3	Horizontal	27	2.38	-	32.41	6.50	33.82

BT-LE(1Mbps)

2440MHz_TX

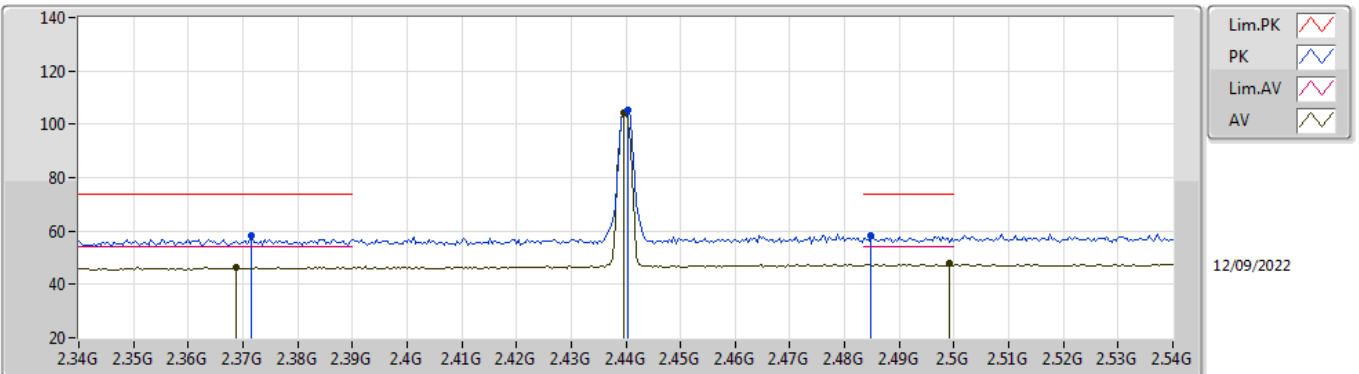


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.364G	57.37	74.00	-16.63	26.98	3	Vertical	31	1.00	-	27.11	3.28	-
AV	2.3796G	46.66	54.00	-7.34	16.13	3	Vertical	31	1.00	-	27.24	3.29	-
PK	2.4404G	91.42	Inf	-Inf	60.44	3	Vertical	31	1.00	-	27.64	3.34	-
AV	2.4396G	90.43	Inf	-Inf	59.45	3	Vertical	31	1.00	-	27.64	3.34	-
PK	2.4996G	58.22	74.00	-15.78	26.82	3	Vertical	31	1.00	-	28.00	3.40	-
AV	2.4924G	47.52	54.00	-6.48	16.18	3	Vertical	31	1.00	-	27.95	3.39	-

BT-LE(1Mbps)

2440MHz_TX

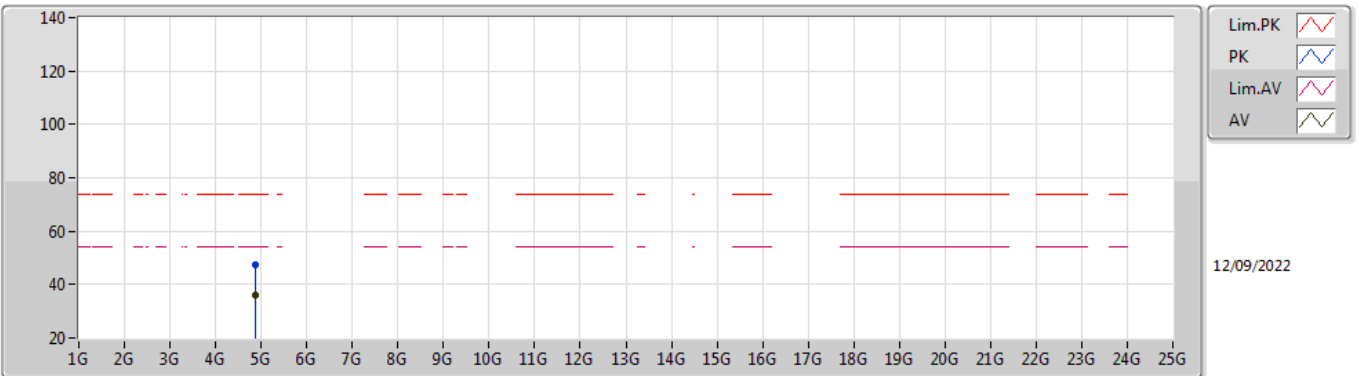


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3716G	58.33	74.00	-15.67	27.87	3	Horizontal	4	2.27	-	27.17	3.29	-
AV	2.3688G	46.58	54.00	-7.42	16.15	3	Horizontal	4	2.27	-	27.15	3.28	-
PK	2.4404G	105.31	Inf	-Inf	74.33	3	Horizontal	4	2.27	-	27.64	3.34	-
AV	2.4396G	104.43	Inf	-Inf	73.45	3	Horizontal	4	2.27	-	27.64	3.34	-
PK	2.4848G	58.06	74.00	-15.94	26.77	3	Horizontal	4	2.27	-	27.91	3.38	-
AV	2.4992G	47.80	54.00	-6.20	16.40	3	Horizontal	4	2.27	-	28.00	3.40	-

BT-LE(1Mbps)

2440MHz_TX

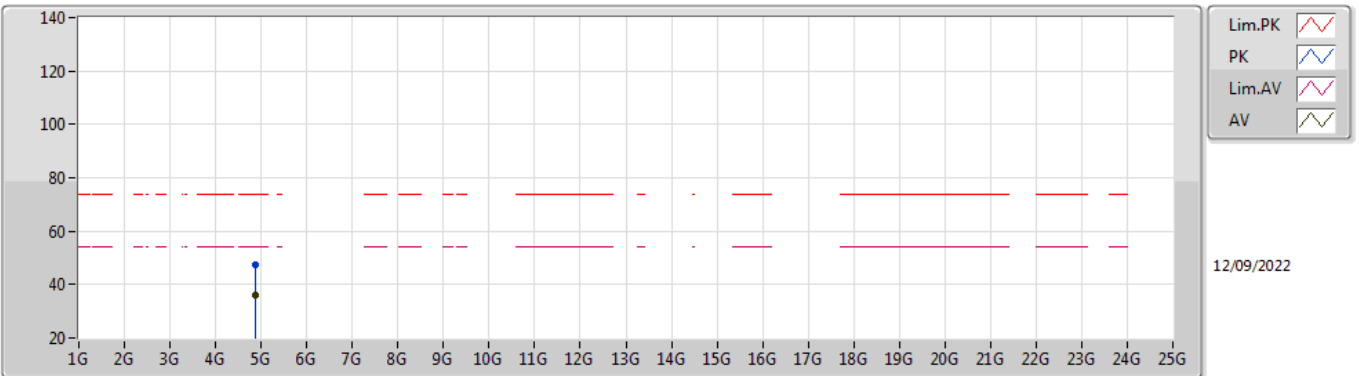


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.88288G	47.23	74.00	-26.77	41.86	3	Vertical	191	2.74	-	32.67	6.54	33.84
AV	4.8849G	36.12	54.00	-17.88	30.75	3	Vertical	191	2.74	-	32.67	6.54	33.84

BT-LE(1Mbps)

2440MHz_TX

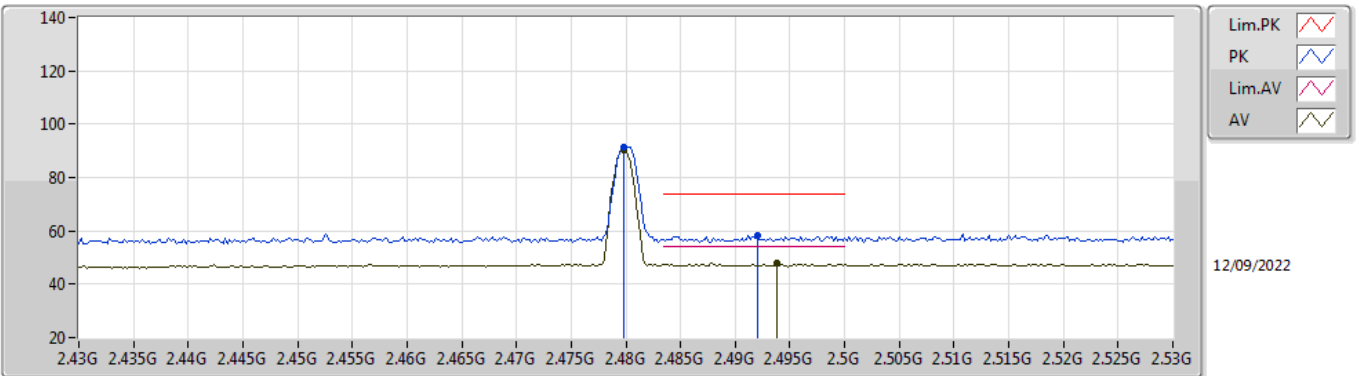


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8842G	47.30	74.00	-26.70	41.93	3	Horizontal	324	2.26	-	32.67	6.54	33.84
AV	4.87554G	36.21	54.00	-17.79	30.86	3	Horizontal	324	2.26	-	32.65	6.54	33.84

BT-LE(1Mbps)

2480MHz_TX

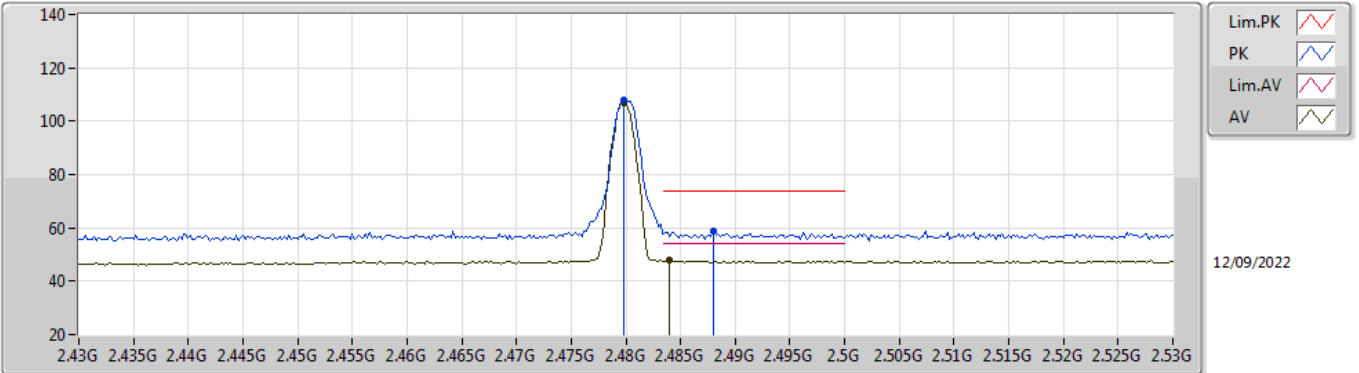


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.4798G	91.24	Inf	-Inf	59.98	3	Vertical	349	2.76	-	27.88	3.38	-	
AV	2.4798G	90.30	Inf	-Inf	59.04	3	Vertical	349	2.76	-	27.88	3.38	-	
PK	2.492G	58.30	74.00	-15.70	26.96	3	Vertical	349	2.76	-	27.95	3.39	-	
AV	2.4938G	47.75	54.00	-6.25	16.40	3	Vertical	349	2.76	-	27.96	3.39	-	

BT-LE(1Mbps)

2480MHz_TX

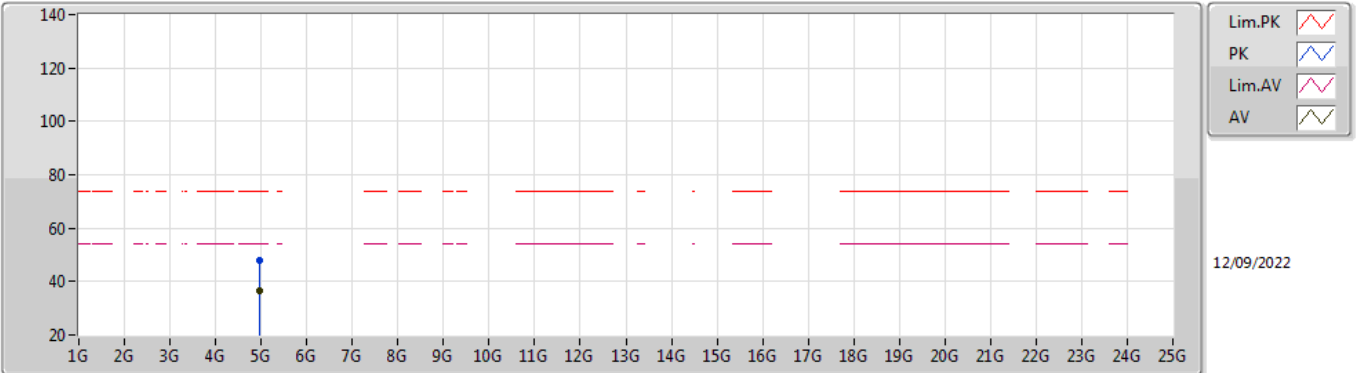


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.4798G	107.68	Inf	-Inf	76.42	3	Horizontal	3	2.45	-	27.88	3.38	-	
AV	2.4798G	106.82	Inf	-Inf	75.56	3	Horizontal	3	2.45	-	27.88	3.38	-	
PK	2.488G	58.79	74.00	-15.21	27.47	3	Horizontal	3	2.45	-	27.93	3.39	-	
AV	2.484G	47.69	54.00	-6.31	16.41	3	Horizontal	3	2.45	-	27.90	3.38	-	

BT-LE(1Mbps)

2480MHz_TX

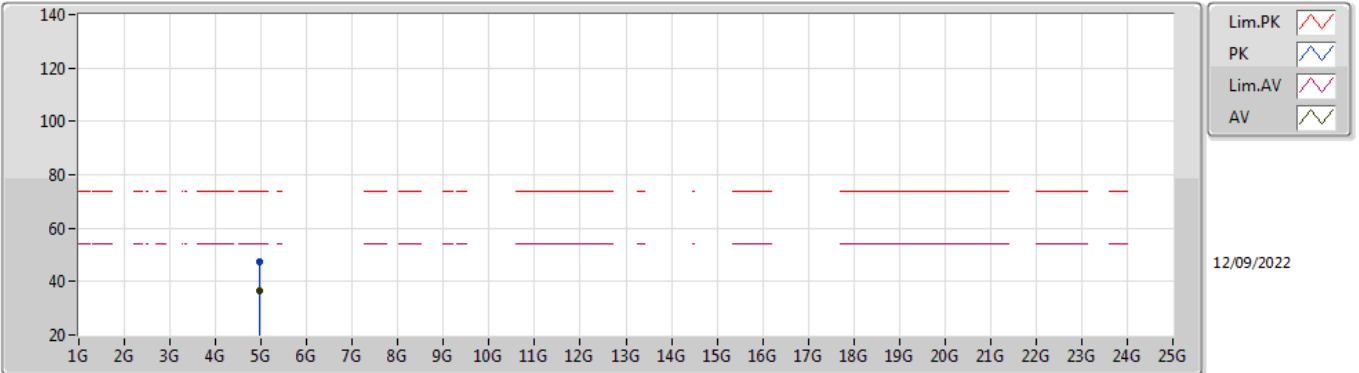


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.96148G	47.97	74.00	-26.03	42.33	3	Vertical	38	2.89	-	32.92	6.58	33.86
AV	4.96484G	36.62	54.00	-17.38	30.97	3	Vertical	38	2.89	-	32.93	6.58	33.86

BT-LE(1Mbps)

2480MHz_TX

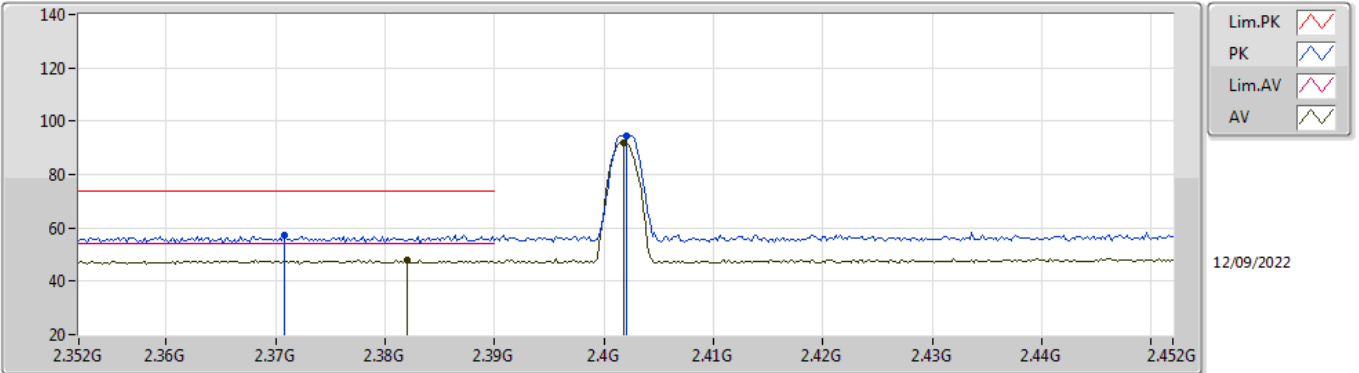


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.96258G	47.57	74.00	-26.43	41.92	3	Horizontal	34	1.33	-	32.93	6.58	33.86
AV	4.96412G	36.73	54.00	-17.27	31.08	3	Horizontal	34	1.33	-	32.93	6.58	33.86

BT-LE(2Mbps)

2402MHz_TX

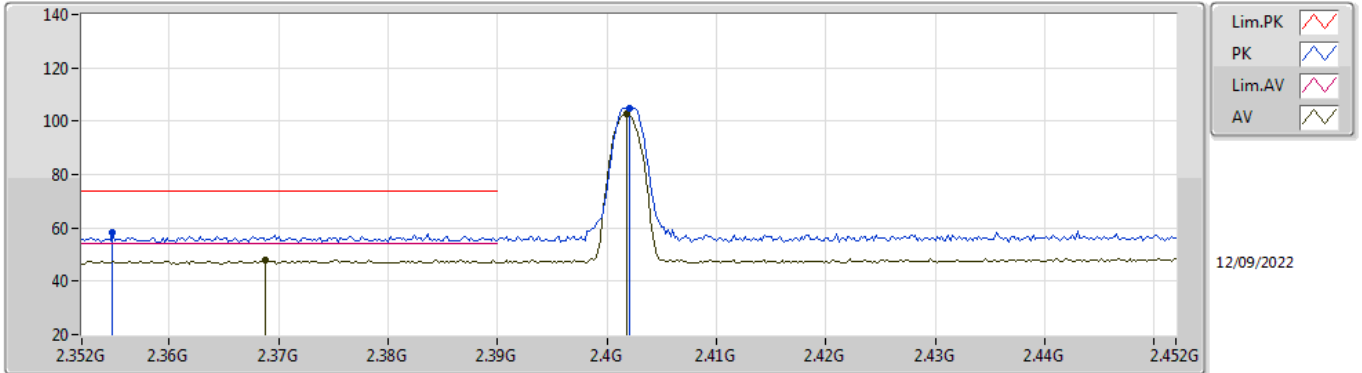


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.3708G	57.42	74.00	-16.58	26.96	3	Vertical	23	1.10	-	27.17	3.29	-	
AV	2.382G	48.11	54.00	-5.89	17.56	3	Vertical	23	1.10	-	27.26	3.29	-	
PK	2.402G	94.40	Inf	-Inf	63.69	3	Vertical	23	1.10	-	27.41	3.30	-	
AV	2.4018G	92.13	Inf	-Inf	61.42	3	Vertical	23	1.10	-	27.41	3.30	-	

BT-LE(2Mbps)

2402MHz_TX

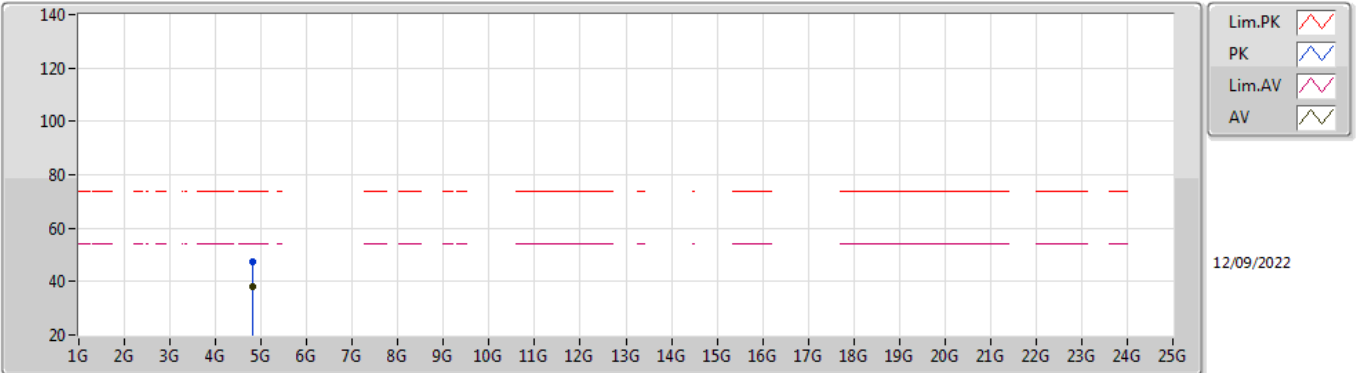


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.3548G	58.43	74.00	-15.57	28.11	3	Horizontal	6	2.32	-	27.04	3.28	-	
AV	2.3688G	48.02	54.00	-5.98	17.59	3	Horizontal	6	2.32	-	27.15	3.28	-	
PK	2.402G	104.87	Inf	-Inf	74.16	3	Horizontal	6	2.32	-	27.41	3.30	-	
AV	2.4018G	102.62	Inf	-Inf	71.91	3	Horizontal	6	2.32	-	27.41	3.30	-	

BT-LE(2Mbps)

2402MHz_TX

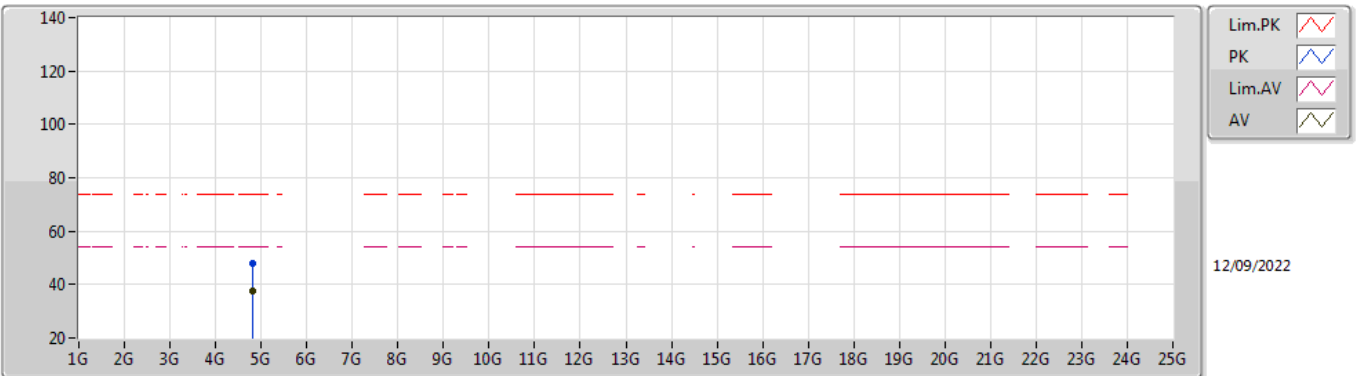


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80532G	47.33	74.00	-26.67	42.23	3	Vertical	302	1.76	-	32.42	6.50	33.82
AV	4.80358G	38.13	54.00	-15.87	33.04	3	Vertical	302	1.76	-	32.41	6.50	33.82

BT-LE(2Mbps)

2402MHz_TX

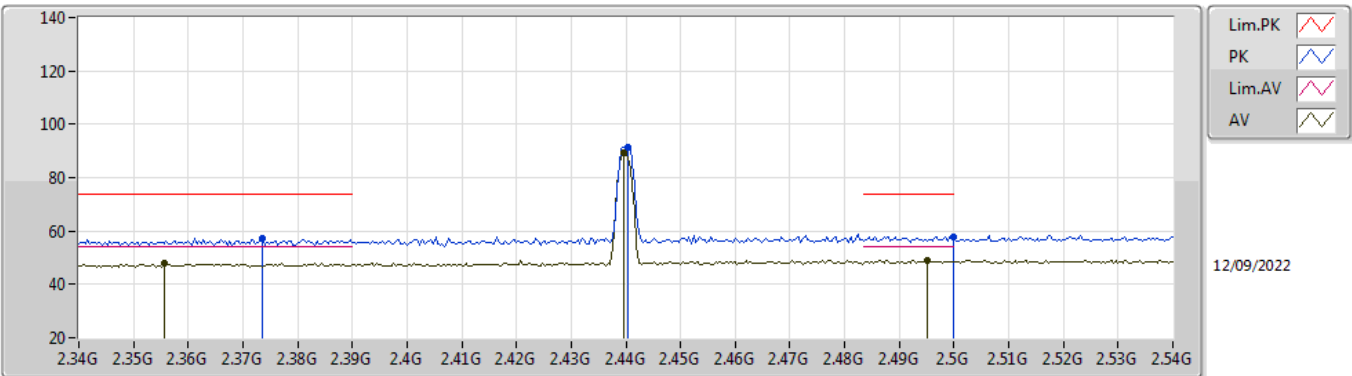


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8034G	48.03	74.00	-25.97	42.94	3	Horizontal	247	2.37	-	32.41	6.50	33.82
AV	4.80226G	37.48	54.00	-16.52	32.39	3	Horizontal	247	2.37	-	32.41	6.50	33.82

BT-LE(2Mbps)

2440MHz_TX

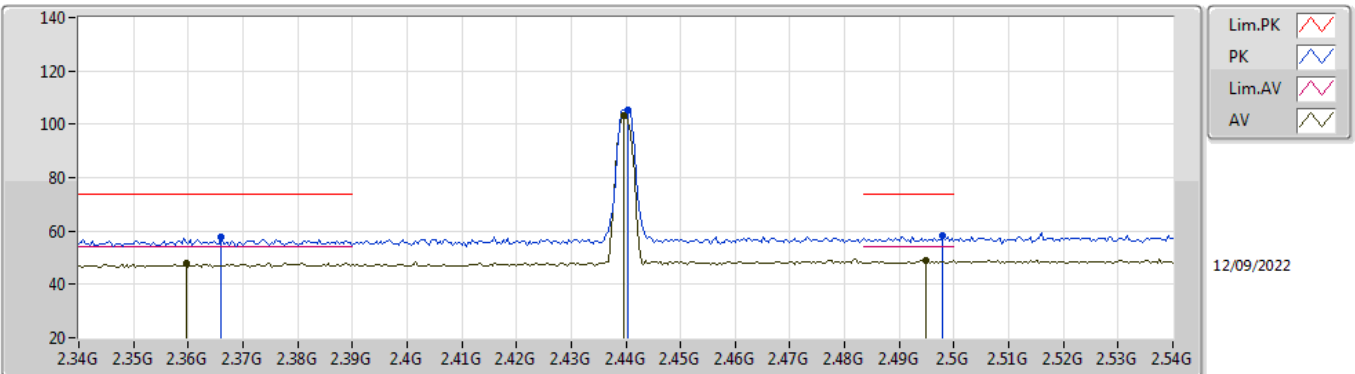


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3736G	57.18	74.00	-16.82	26.70	3	Vertical	27	1.00	-	27.19	3.29	-
AV	2.3556G	47.88	54.00	-6.12	17.56	3	Vertical	27	1.00	-	27.04	3.28	-
PK	2.4404G	91.45	Inf	-Inf	60.47	3	Vertical	27	1.00	-	27.64	3.34	-
AV	2.4396G	89.13	Inf	-Inf	58.15	3	Vertical	27	1.00	-	27.64	3.34	-
PK	2.5G	58.01	74.00	-15.99	26.61	3	Vertical	27	1.00	-	28.00	3.40	-
AV	2.4952G	49.01	54.00	-4.99	17.64	3	Vertical	27	1.00	-	27.97	3.40	-

BT-LE(2Mbps)

2440MHz_TX

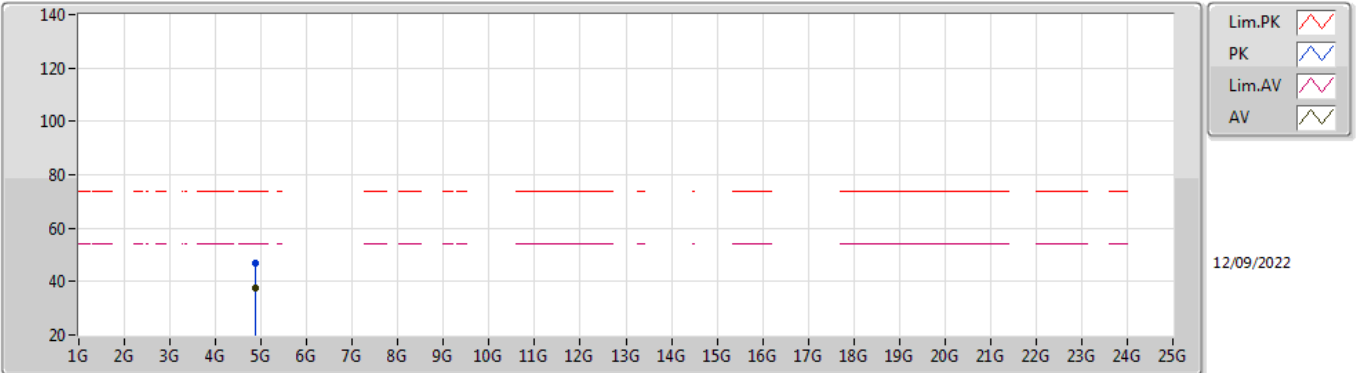


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.366G	57.57	74.00	-16.43	27.16	3	Horizontal	360	2.26	-	27.13	3.28	-
AV	2.3596G	48.15	54.00	-5.85	17.79	3	Horizontal	360	2.26	-	27.08	3.28	-
PK	2.4404G	105.32	Inf	-Inf	74.34	3	Horizontal	360	2.26	-	27.64	3.34	-
AV	2.4396G	103.10	Inf	-Inf	72.12	3	Horizontal	360	2.26	-	27.64	3.34	-
PK	2.498G	58.34	74.00	-15.66	26.95	3	Horizontal	360	2.26	-	27.99	3.40	-
AV	2.4948G	49.20	54.00	-4.80	17.84	3	Horizontal	360	2.26	-	27.97	3.39	-

BT-LE(2Mbps)

2440MHz_TX

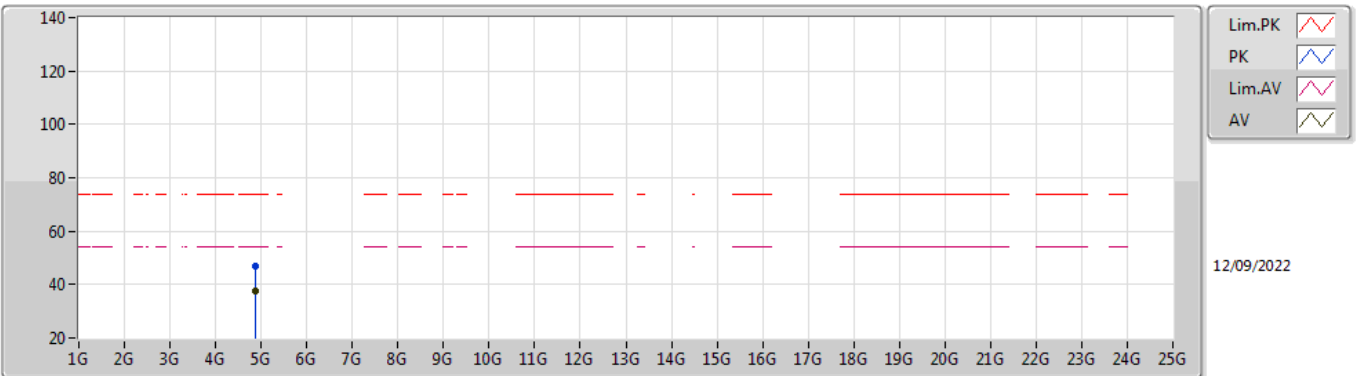


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8805G	46.84	74.00	-27.16	41.48	3	Vertical	41	1.89	-	32.66	6.54	33.84
AV	4.879G	37.59	54.00	-16.41	32.23	3	Vertical	41	1.89	-	32.66	6.54	33.84

BT-LE(2Mbps)

2440MHz_TX

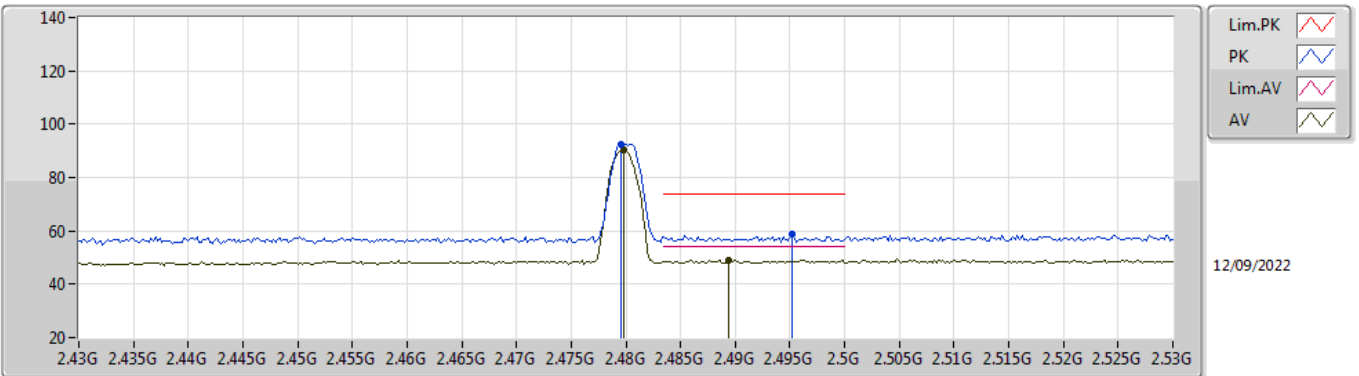


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	4.87786G	47.03	74.00	-26.97	41.67	3	Horizontal	200	1.45	-	32.66	6.54	33.84	
AV	4.88252G	37.61	54.00	-16.39	32.24	3	Horizontal	200	1.45	-	32.67	6.54	33.84	

BT-LE(2Mbps)

2480MHz_TX

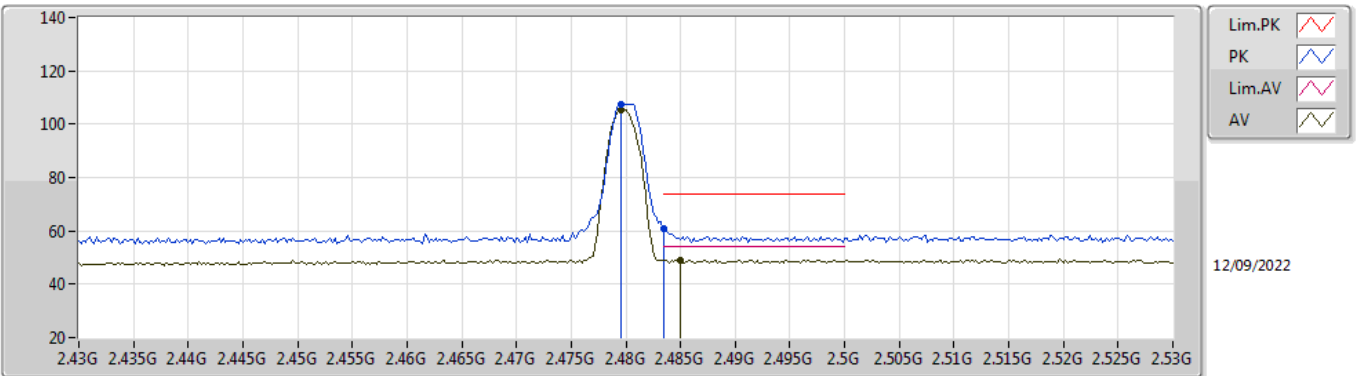


EUT V_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.4796G	92.47	Inf	-Inf	61.21	3	Vertical	23	3.00	-	27.88	3.38	-	
AV	2.4798G	90.21	Inf	-Inf	58.95	3	Vertical	23	3.00	-	27.88	3.38	-	
PK	2.4952G	58.77	74.00	-15.23	27.40	3	Vertical	23	3.00	-	27.97	3.40	-	
AV	2.4894G	48.98	54.00	-5.02	17.65	3	Vertical	23	3.00	-	27.94	3.39	-	

BT-LE(2Mbps)

2480MHz_TX

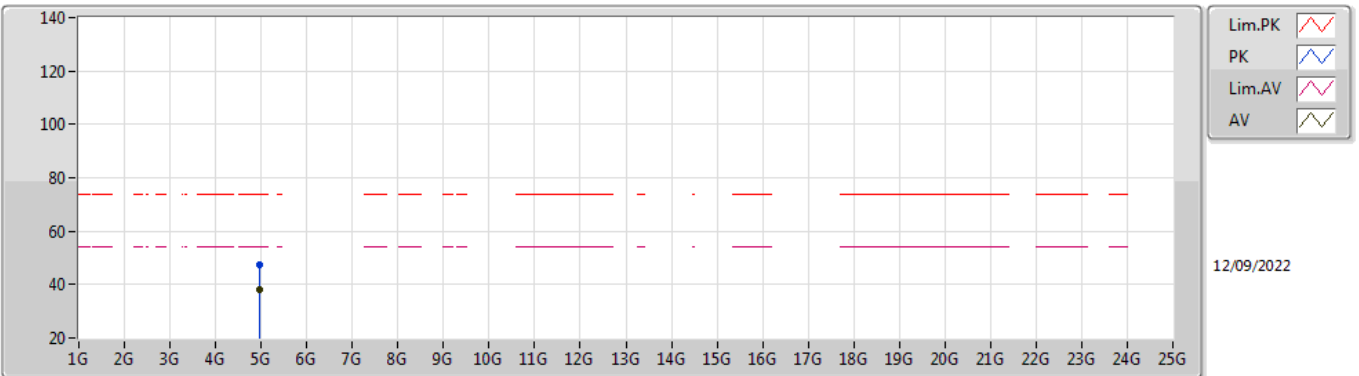


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	2.4796G	107.56	Inf	-Inf	76.30	3	Horizontal	4	2.45	-	27.88	3.38	-	
AV	2.4796G	105.35	Inf	-Inf	74.09	3	Horizontal	4	2.45	-	27.88	3.38	-	
PK	2.4835G	60.69	74.00	-13.31	29.41	3	Horizontal	4	2.45	-	27.90	3.38	-	
AV	2.485G	49.15	54.00	-4.85	17.85	3	Horizontal	4	2.45	-	27.91	3.39	-	

BT-LE(2Mbps)

2480MHz_TX

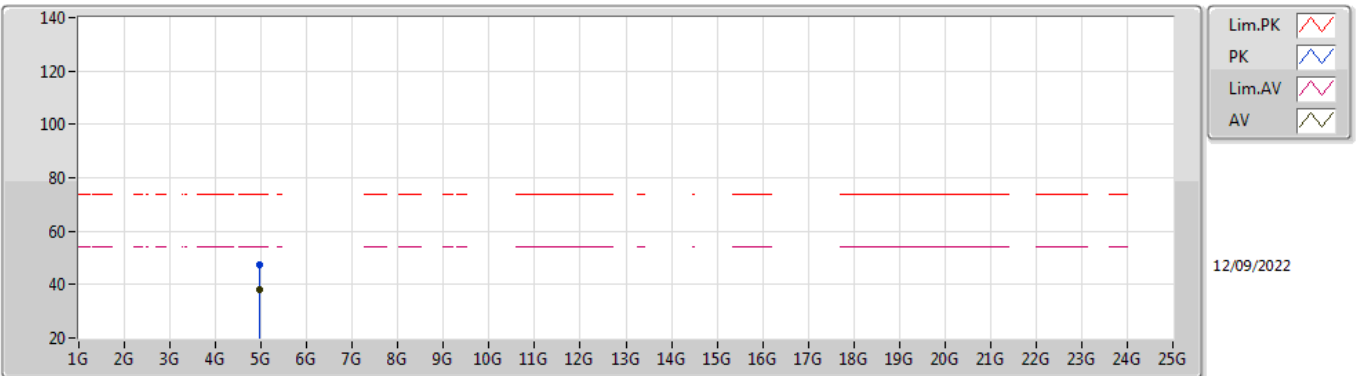


EUT Y_1TX
Setting Default
05-M-S-8

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	4.96388G	47.48	74.00	-26.52	41.83	3	Vertical	106	2.01	-	32.93	6.58	33.86	
AV	4.9554G	38.00	54.00	-16.00	32.37	3	Vertical	106	2.01	-	32.91	6.58	33.86	

BT-LE(2Mbps)

2480MHz_TX



EUT V_1TX
Setting Default
05-M-S-8

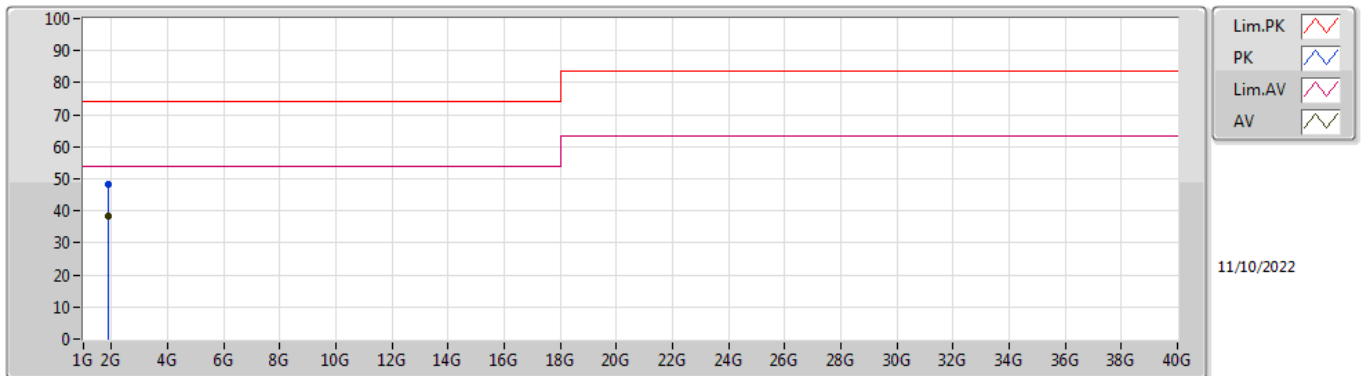
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.962G	47.62	74.00	-26.38	41.98	3	Horizontal	54	2.96	-	32.92	6.58	33.86
AV	4.95562G	38.10	54.00	-15.90	32.47	3	Horizontal	54	2.96	-	32.91	6.58	33.86



Summary

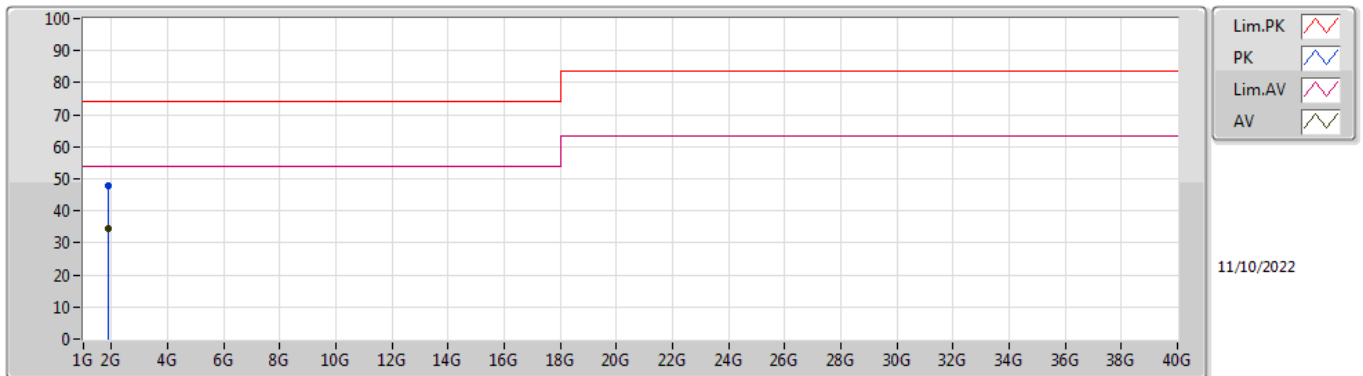
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	AV	1.90085G	38.22	54.00	-15.78	Vertical

Mode 2



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	1.90143G	48.35	74.00	-25.65	-6.99	3	Vertical	218	1.57	-	55.34	25.51	3.90	36.40
AV	1.90085G	38.22	54.00	-15.78	-6.99	3	Vertical	218	1.57	"Worst"	45.21	25.51	3.90	36.40

Mode 2



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	1.90135G	47.68	74.00	-26.32	-6.99	3	Horizontal	176	1.66	-	54.67	25.51	3.90	36.40
AV	1.90183G	34.66	54.00	-19.34	-6.98	3	Horizontal	176	1.66	"Worst"	41.64	25.52	3.90	36.40