

FCC Radio Test Report

FCC ID : PPQ-WCBN3512R
Equipment : WCBN3512R
Brand Name : LITEON
Model Name : WCBN3512R
Applicant : LITE-ON Technology Corp.
Bldg. C, 90, Chien 1 Road, Chung Ho, New Taipei
City 23585, Taiwan, R.O.C
Manufacturer : LITE-ON TECHNOLOGY (Changzhou) CO., LTD
A9 Building, No.88 Yanghu Road, Wujin Hi-Tech
Industrial Development Zone, Changzhou City, Jiangsu
Province 213100 China
Standard : 47 CFR FCC Part 15.247

The product was received on Mar. 30, 2022, and testing was started from Apr. 23, 2022 and completed on Jun. 26, 2022. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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


Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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



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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)	20dB Bandwidth	PASS	-
3.2	15.247(a)	Carrier Frequency Separation	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	PASS	-
3.5	15.247(a)	Time of Occupancy (Dwell Time)	PASS	-
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.7	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:

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

Comments and explanations:

None

Reviewed by: Sam Tsai

Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Version	Ch. Frequency (MHz)	Channel Number
2400-2483.5	BR / EDR	2402-2480	0-78 [79]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-BR(1Mbps)	1	1TX
2.4-2.4835GHz	BT-EDR(2Mbps)	1	1TX
2.4-2.4835GHz	BT-EDR(3Mbps)	1	1TX

Note:

- Bluetooth BR uses a GFSK (1Mbps).
- Bluetooth EDR uses a combination of $\pi/4$ -DQPSK (2Mbps) and 8DPSK (3Mbps).
- Bluetooth BR/EDR uses as a system using FHSS modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	SHENZHEN SOUTH STAR	N12-8145-ROA	PCB	I-PEX
2	SHENZHEN SOUTH STAR	N12-8145-ROA	PCB	I-PEX

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	1	4.07	4.56	-
2	2	3.42	4.97	3.42

Note 1: The EUT has two antennas.

For 2.4 GHz function:

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

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

For 5 GHz function:

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

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

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

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

1.1.3 EUT Information

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

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-BR(1Mbps)	0.814	0.89	2.881m	1k
BT-EDR(2Mbps)	0.74	1.31	2.885m	1k
BT-EDR(3Mbps)	0.741	1.3	2.887m	1k

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

1.2 Testing Applied Standards

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

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

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

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

1.3 Testing Location Information

Test Lab. : Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)			
	TEL: 886-3-327-3456		FAX: 886-3-327-0973	
Test site Designation No. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Wayne	21.1~21.8°C / 57~58%	17/May/2022
RF Conducted	TH07-HY	Yuna	22.3~24.9°C / 51~57%	06/May/2022~31/May/2022
Radiated (Co-location)	03CH03-HY	Edward	23.3~24.5°C / 55~61%	26/Jun/2022
☒ 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.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH09-HY	Daniel	22.3~24.3°C / 57~68%	23/Apr/2022~06/May/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)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 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	WCN_Combo Tool#1a
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Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	12
2440MHz	12
2480MHz	12
BT-EDR(2Mbps)	-
2402MHz	12
2440MHz	12
2480MHz	12
BT-EDR(3Mbps)	-
2402MHz	12
2440MHz	12
2480MHz	12

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	Test Fixture mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains ☒ Non-adaptive frequency hopping systems (Non-AFH) ☒ adaptive frequency hopping systems (AFH)
Non-AFH Mode configuration was found to be the worst case and measured during the test.	

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	Test Fixture mode
Operating Mode > 1GHz	CTX
Orthogonal Planes of EUT	Z Plane
	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	CTX
1	2.4GHz WLAN+Bluetooth
2	5GHz WLAN+Bluetooth
Refer to Sporton Test Report No.: FA232501 for Co-location RF Exposure Evaluation and Appendix H for Radiated Emission Co-location.	

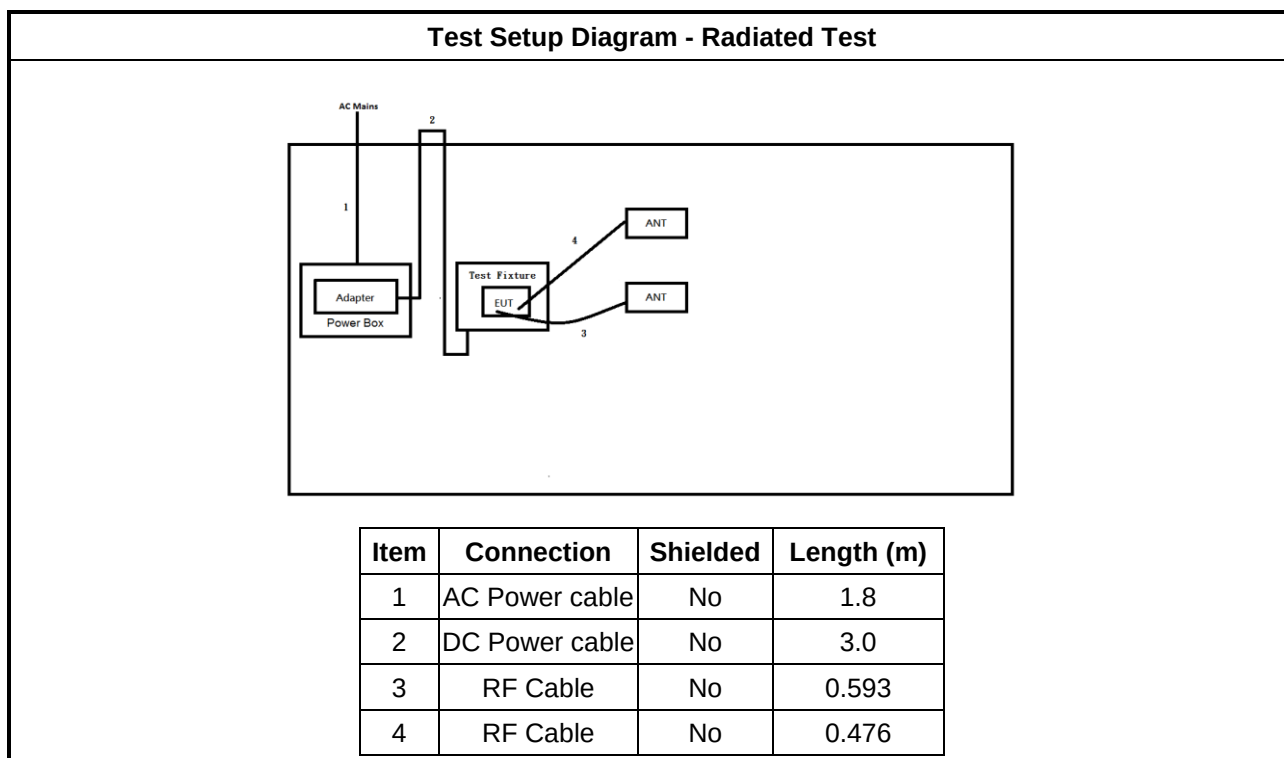
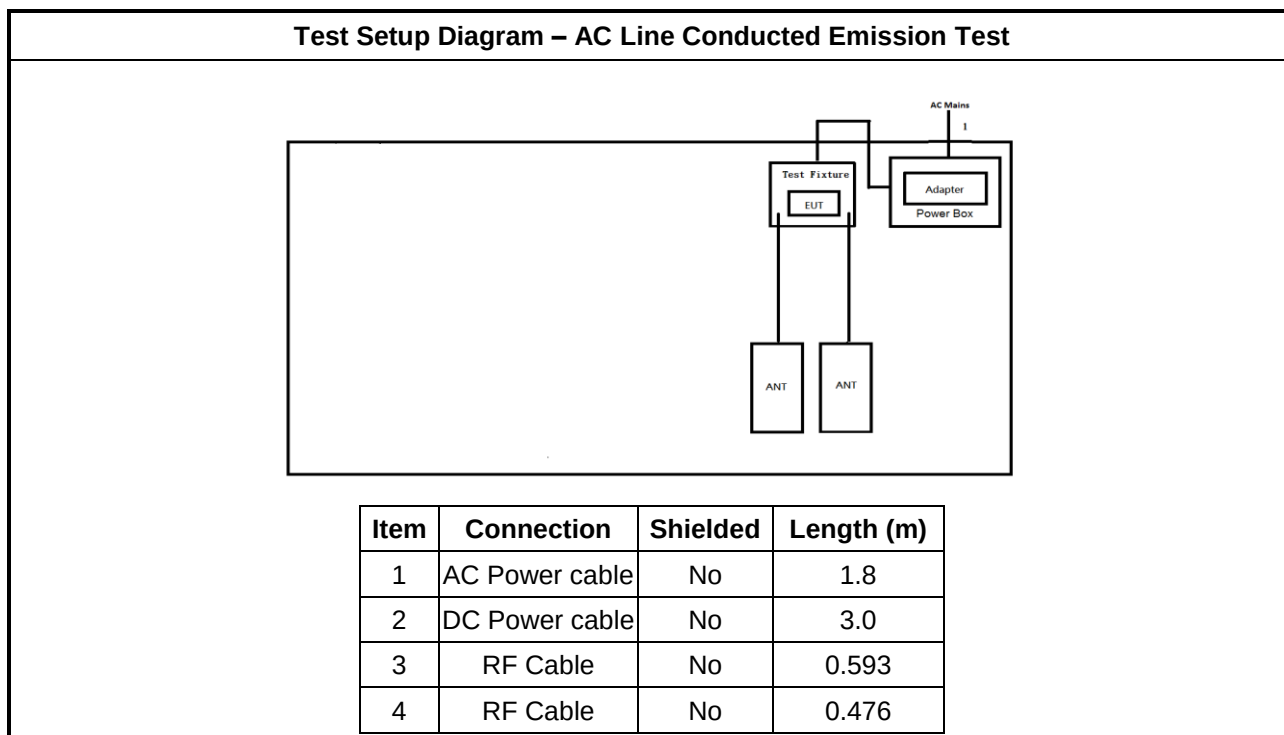
2.3 Support Equipment

Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Test Fixture	-	-	-	Provided by Customer
2	AC Adapter for Test fixture	APD	WB-12G12FU	-	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	-	-

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Test Fixture	-	-	-	Provided by Customer
2	AC Adapter for Test fixture	APD	WB-12G12FU	-	Provided by Customer

2.4 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

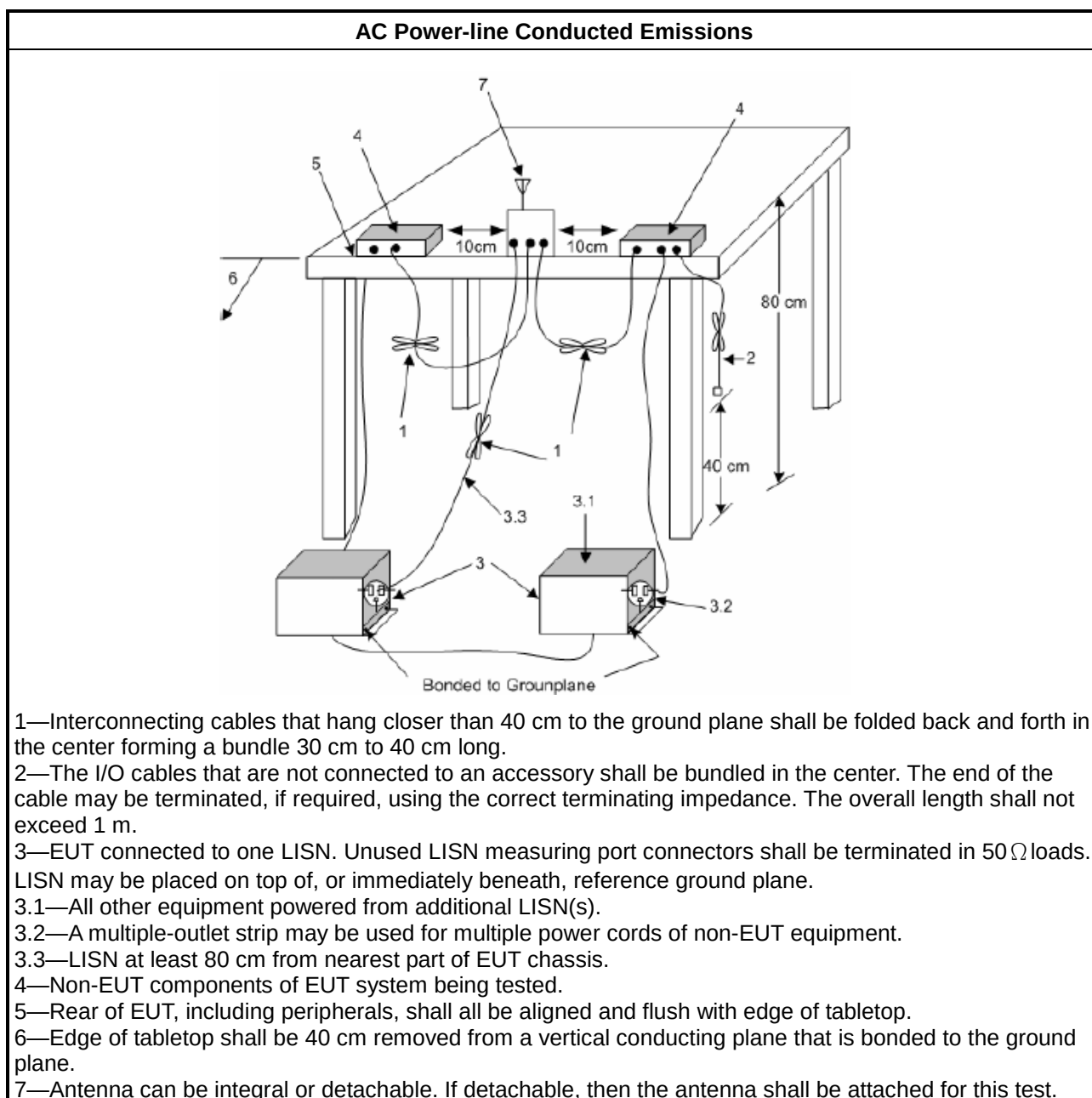
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

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 20dB Bandwidth and Carrier Frequency Separation

3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
▪	2400-2483.5 MHz Band:
	▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz).
	▪ $75 > N \geq 15$ and $ChS \geq MAX$ (20 dB bandwidth 2/3, 25 kHz).
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

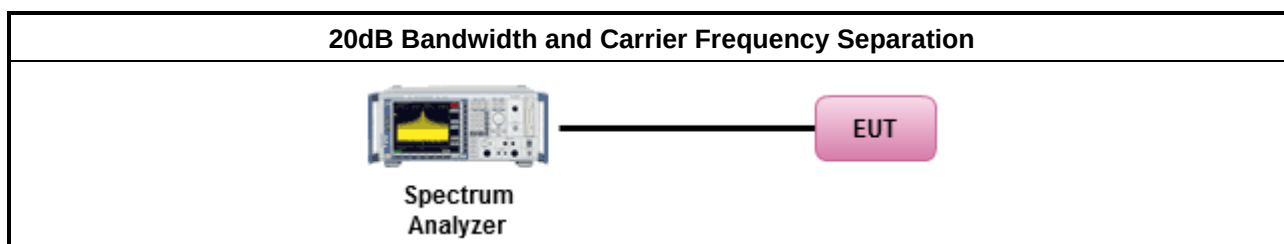
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 6.9.2 for 20 dB bandwidth measurement.
▪ Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement.

3.2.4 Test Setup



3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
2400-2483.5 MHz Band:	
	$N \geq 75$; Power 30dBm; EIRP 36dBm
	$75 > N \geq 15$; Power 21dBm; EIRP 27dBm
N: Number of Hopping Frequencies	

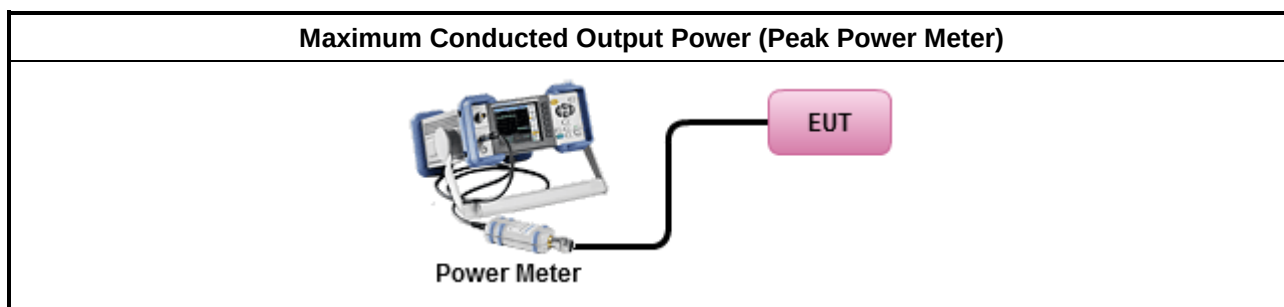
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Number of Hopping Frequencies and Hopping Bandedge

3.4.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit	
2400-2483.5 MHz Band:	
	$N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz).
	$75 > N \geq 15$ and $ChS \geq MAX$ (20 dB bandwidth 2/3, 25 kHz).
N: Number of Hopping Frequencies; ChS : Hopping Channel Separation	

3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

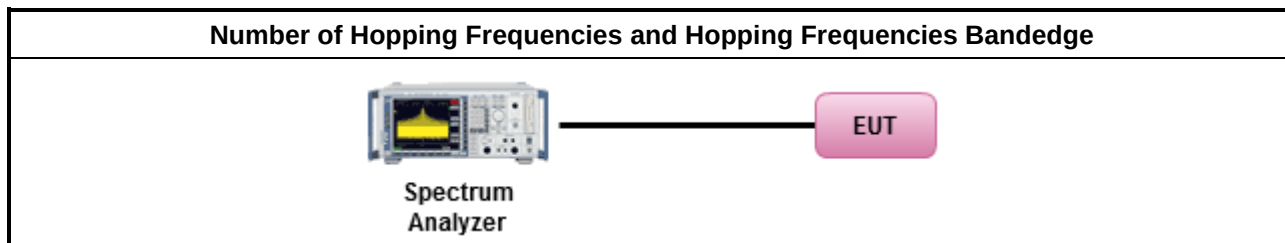
3.4.3 Measuring Instruments

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

3.4.4 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement.
Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.

3.4.5 Test Setup



3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

3.5 Time of Occupancy (Dwell Time)

3.5.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems	
2400-2483.5 MHz Band:	
	$N \geq 75$; 0.4s in $N \times 0.4$ period
	$75 > N \geq 15$; 0.4s in $N \times 0.4$ period
N: Number of Hopping Frequencies	

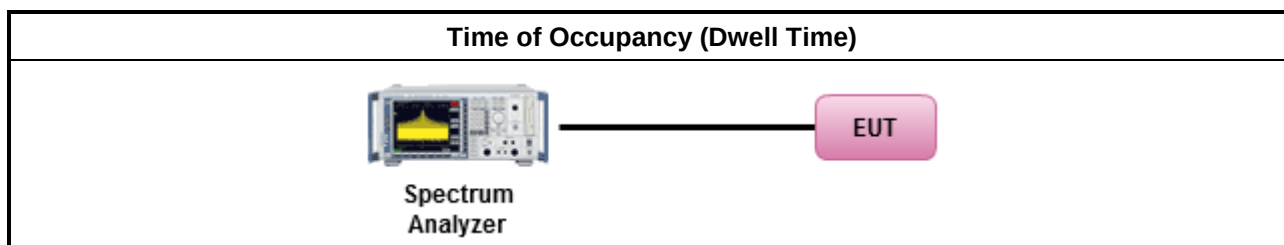
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method	
Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.	
Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.	
	The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $5/1600$ seconds, or 3.125ms. DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel.

3.5.4 Test Setup



3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

3.6 Emissions in Non-restricted Frequency Bands

3.6.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
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.	

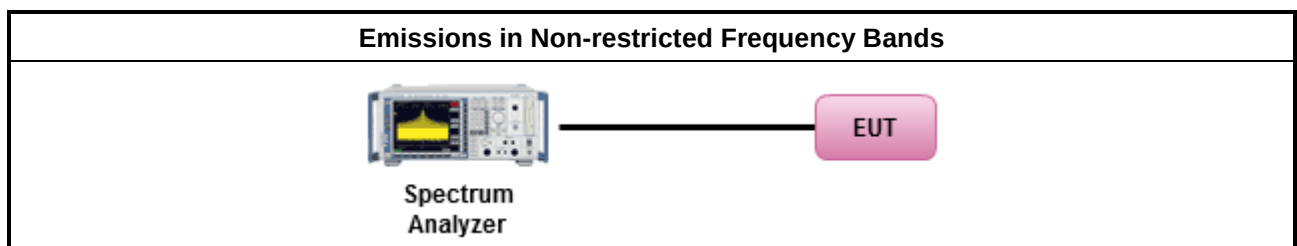
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method
Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.

3.6.4 Test Setup



3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix F

3.7 Emissions in Restricted Frequency Bands

3.7.1 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.

3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

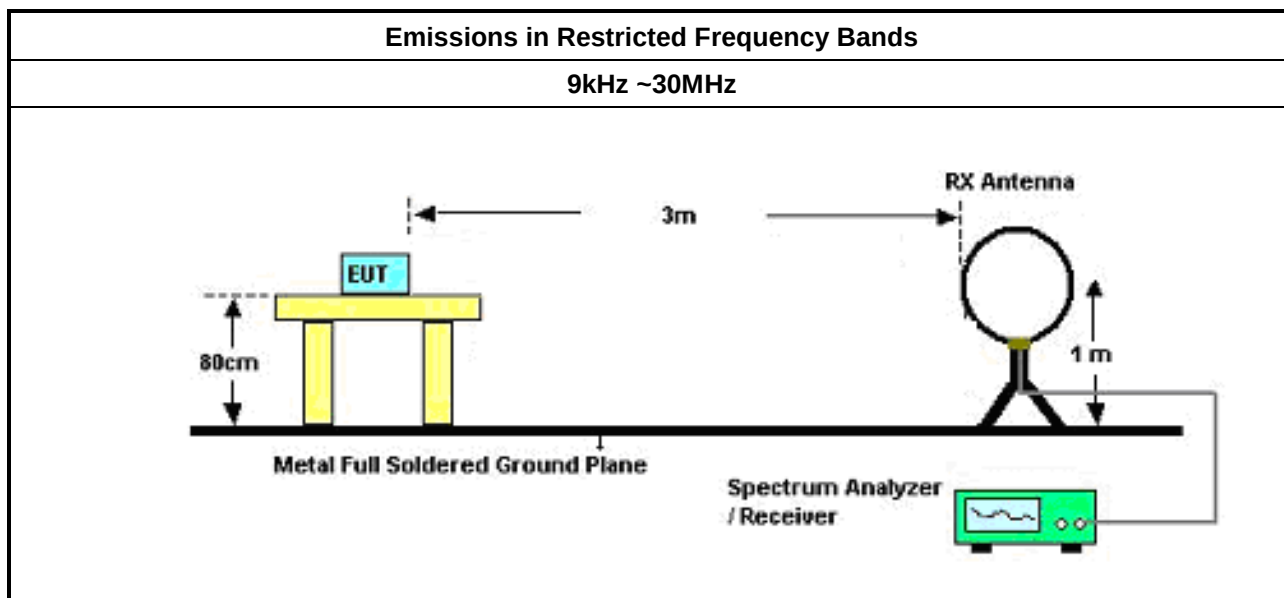
Test Method	
	The average emission levels shall be measured in [hopping duty factor].
	Refer as ANSI C63.10; clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	For the transmitter unwanted emissions shall be measured using following options below:
	- Refer as ANSI C63.10, clause 4.1.4.2.1 QP value. - Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak. - Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.
	KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
	Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

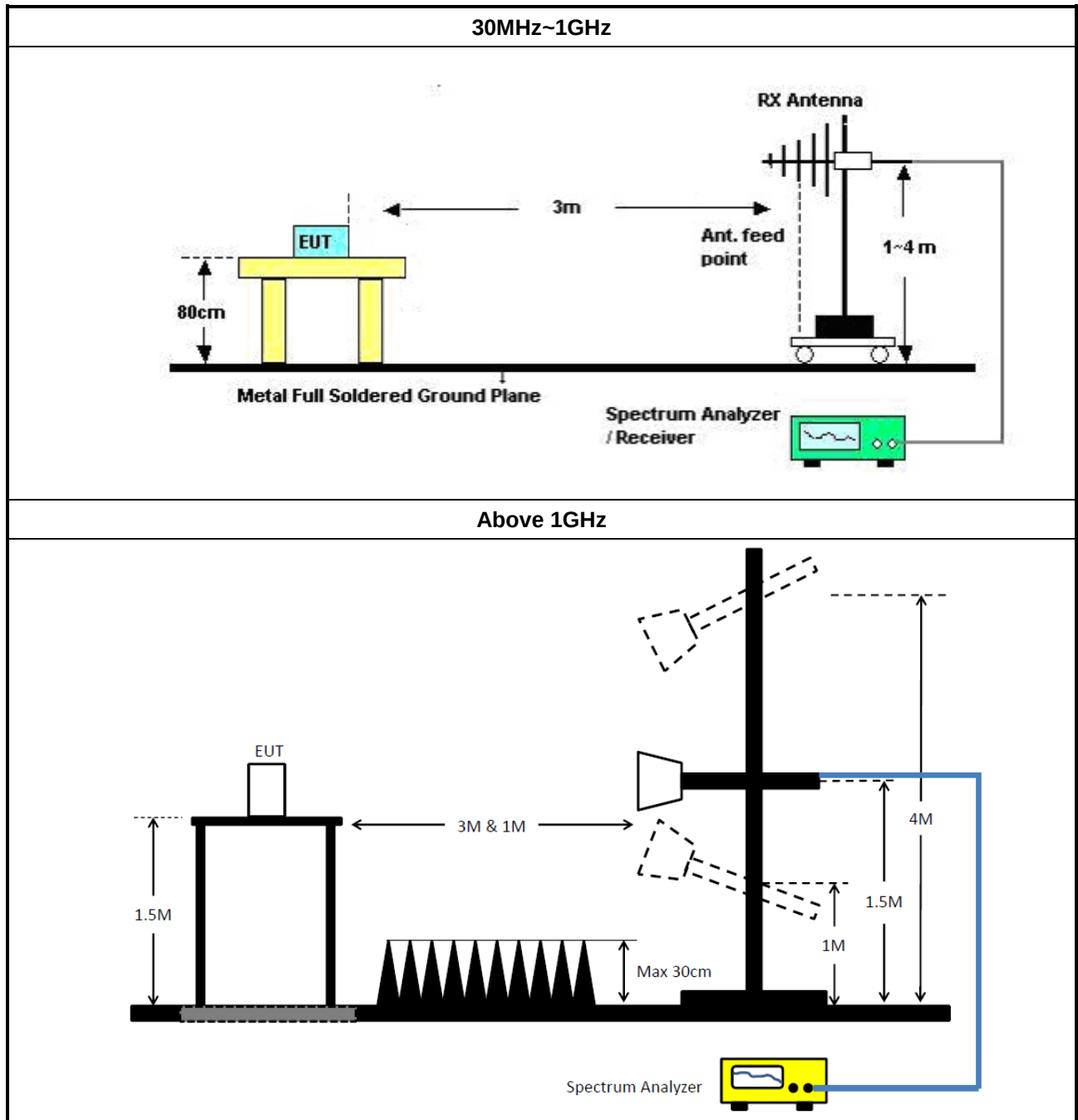
3.7.4 Measurement Results Calculation

The measured Level is calculated using:

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

3.7.5 Test Setup





3.7.6 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.

3.7.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G

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	ESR3	102051	9kHz ~ 3.6GHz	21/May/2021	20/May/2022
Two-Line V-Network	R&S	ENV 216	100003	9kHz ~ 30MHz	18/Feb/2022	17/Feb/2023
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	01/Mar/2022	28/Feb/2023
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	26/Oct/2021	25/Oct/2022
Software	Sporton	SENSE-EMI	V5.10.7	-	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	10Hz~40GHz	14/Feb/2022	13/Feb/2023
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	21/Oct/2021	20/Oct/2022
Pulse Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	17/Dec/2021	16/Dec/2022
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	20/Dec/2021	19/Dec/2022
SENSE-15247_FS	Sporton	V5.10.7.16	N/A	N/A	N/A	N/A

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz~1GHz 3m	25/Mar/2022	24/Mar/2023
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	17/Mar/2022	16/Mar/2023
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	13/Aug/2021	12/Aug/2022
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	27/Dec/2021	26/Dec/2022
Amplifier	EMC	EMC9135	980232	9kHz~1GHz	08/Apr/2022	07/Apr/2023
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	23/Jul/2021	22/Jul/2022
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MT J6102-05	35418 & 3	30MHz~1GHz	04/Sep/2021	03/Sep/2022
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	27/Dec/2021	26/Dec/2022
RF Cable-low	Jye Bao	RG142	CB031+324530/4	9kHz~30MHz	30/Aug/2021	29/Aug/2022
RF Cable-low	Jye Bao	RG142	CB031+324530/4	30MHz~1GHz	07/Feb/2022	06/Feb/2023
RF CABLE 5m+3m+1m	HUBER+SUHNER	SUCOFLEX104	CB009	1GHz~40GHz	13/Aug/2021	12/Aug/2022
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	18/Mar/2022	17/Mar/2023
Microwave Prempplier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	08/Mar/2022	07/Mar/2023
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	18/Mar/2022	17/Mar/2023
EMI Test Receiver	R&S	ESR3	102051	9kHz~3.6GHz	21/May/2021	20/May/2022
SENSE-15247_FS	Sporton	V5.10.7.14	N/A	N/A	N/A	N/A

Instrument for Radiated Test (Co-location)

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz~18GHz 3m	03/Aug/2021	02/Aug/2022
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	12/Oct/2021	11/Oct/2022
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02267	1GHz ~18GHz	14/Sep/2021	13/Sep/2022
RF CABLE 5+6m	HUBER+SUHNER	SUOFLEX 104	SN MY38596/4 +SN 804300/4	1GHz~40GHz	28/Jul/2021	27/Jul/2022
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz~40GHz	18/Mar/2022	17/Mar/2023
Microwave Prempplier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	08/Mar/2022	07/Mar/2023
Microwave Preampplier	Agilent	8449B	3008A02326	1GHz~26.5GHz	15/Jul/2021	14/Jul/2022
Software	Sporton	SENSE-EMI	V5.10.7	-	N/A	N/A



Conducted Emissions at Powerline

Appendix A

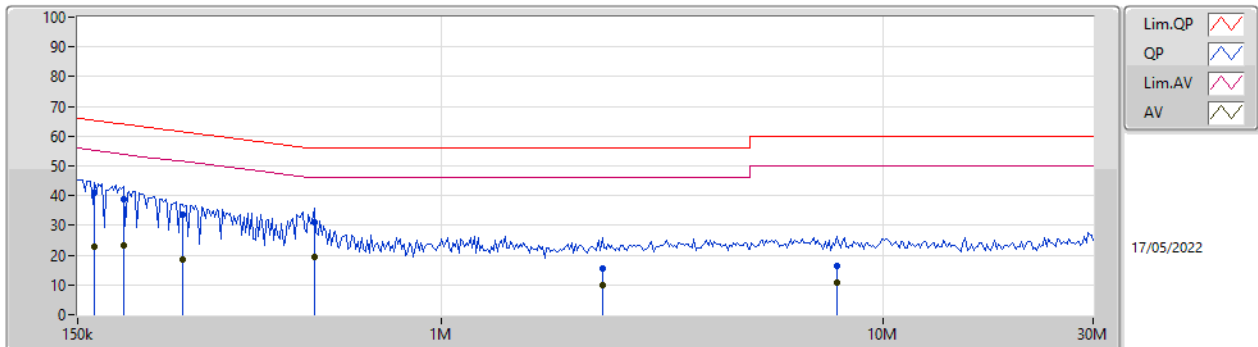
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	510.059k	33.00	46.00	-13.00	Neutral

Mode Configure

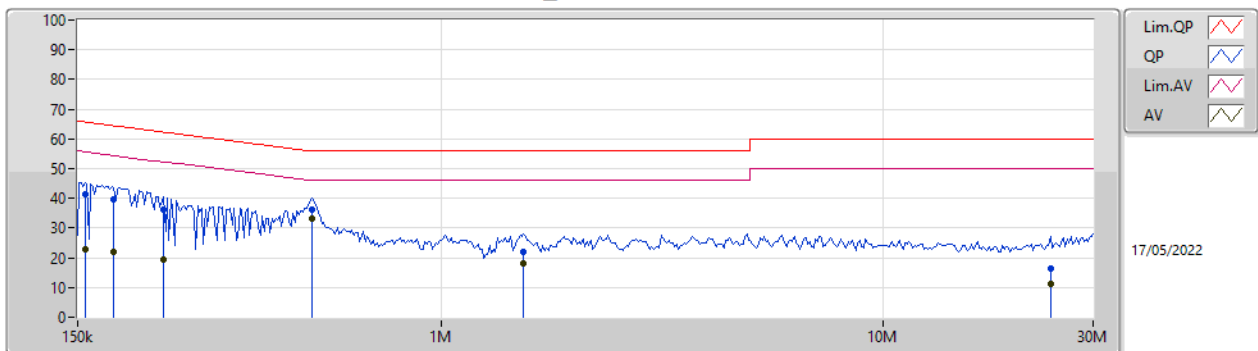
Mode	Result	Type	Freq (Hz)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	164.053k	40.89	65.25	-24.36	Line	-
Mode 1	Pass	AV	164.053k	22.98	55.25	-32.27	Line	-
Mode 1	Pass	QP	190.46k	38.66	64.01	-25.35	Line	-
Mode 1	Pass	AV	190.46k	23.11	54.01	-30.90	Line	-
Mode 1	Pass	QP	259.279k	33.60	61.45	-27.85	Line	-
Mode 1	Pass	AV	259.279k	18.36	51.45	-33.09	Line	-
Mode 1	Pass	QP	515.159k	31.03	56.00	-24.97	Line	-
Mode 1	Pass	AV	515.159k	19.38	46.00	-26.62	Line	-
Mode 1	Pass	QP	2.315M	15.51	56.00	-40.49	Line	-
Mode 1	Pass	AV	2.315M	9.76	46.00	-36.24	Line	-
Mode 1	Pass	QP	7.87M	16.26	60.00	-43.74	Line	-
Mode 1	Pass	AV	7.87M	10.61	50.00	-39.39	Line	-
Mode 1	Pass	QP	156.091k	41.35	65.67	-24.32	Neutral	-
Mode 1	Pass	AV	156.091k	22.81	55.67	-32.86	Neutral	-
Mode 1	Pass	QP	181.216k	39.87	64.43	-24.56	Neutral	-
Mode 1	Pass	AV	181.216k	21.93	54.43	-32.50	Neutral	-
Mode 1	Pass	QP	234.722k	36.25	62.27	-26.02	Neutral	-
Mode 1	Pass	AV	234.722k	19.33	52.27	-32.94	Neutral	-
Mode 1	Pass	QP	510.059k	36.28	56.00	-19.72	Neutral	-
Mode 1	Pass	AV	510.059k	33.00	46.00	-13.00	Neutral	-
Mode 1	Pass	QP	1.539M	21.86	56.00	-34.14	Neutral	-
Mode 1	Pass	AV	1.539M	18.09	46.00	-27.91	Neutral	-
Mode 1	Pass	QP	23.988M	16.31	60.00	-43.69	Neutral	-
Mode 1	Pass	AV	23.988M	11.02	50.00	-38.98	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	164.053k	40.89	65.25	-24.36	19.63	Line	-	21.26	9.69	0.03	9.91				
AV	164.053k	22.98	55.25	-32.27	19.63	Line	-	3.35	9.69	0.03	9.91				
QP	190.46k	38.66	64.01	-25.35	19.63	Line	-	19.03	9.69	0.03	9.91				
AV	190.46k	23.11	54.01	-30.90	19.63	Line	-	3.48	9.69	0.03	9.91				
QP	259.279k	33.60	61.45	-27.85	19.63	Line	-	13.97	9.69	0.03	9.91				
AV	259.279k	18.36	51.45	-33.09	19.63	Line	-	-1.27	9.69	0.03	9.91				
QP	515.159k	31.03	56.00	-24.97	19.63	Line	-	11.40	9.68	0.04	9.91				
AV	515.159k	19.38	46.00	-26.62	19.63	Line	-	-0.25	9.68	0.04	9.91				
QP	2.315M	15.51	56.00	-40.49	19.71	Line	-	-4.20	9.70	0.09	9.92				
AV	2.315M	9.76	46.00	-36.24	19.71	Line	-	-9.95	9.70	0.09	9.92				
QP	7.87M	16.26	60.00	-43.74	19.88	Line	-	-3.62	9.78	0.17	9.93				
AV	7.87M	10.61	50.00	-39.39	19.88	Line	-	-9.27	9.78	0.17	9.93				

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	156.091k	41.35	65.67	-24.32	19.67	Neutral	-	21.68	9.73	0.03	9.91				
AV	156.091k	22.81	55.67	-32.86	19.67	Neutral	-	3.14	9.73	0.03	9.91				
QP	181.216k	39.87	64.43	-24.56	19.66	Neutral	-	20.21	9.72	0.03	9.91				
AV	181.216k	21.93	54.43	-32.50	19.66	Neutral	-	2.27	9.72	0.03	9.91				
QP	234.722k	36.25	62.27	-26.02	19.66	Neutral	-	16.59	9.72	0.03	9.91				
AV	234.722k	19.33	52.27	-32.94	19.66	Neutral	-	-0.33	9.72	0.03	9.91				
QP	510.059k	36.28	56.00	-19.72	19.67	Neutral	-	16.61	9.72	0.04	9.91				
AV	510.059k	33.00	46.00	-13.00	19.67	Neutral	-	13.33	9.72	0.04	9.91				
QP	1.539M	21.86	56.00	-34.14	19.73	Neutral	-	2.13	9.74	0.07	9.92				
AV	1.539M	18.09	46.00	-27.91	19.73	Neutral	-	-1.64	9.74	0.07	9.92				
QP	23.988M	16.31	60.00	-43.69	20.29	Neutral	-	-3.98	10.06	0.30	9.93				
AV	23.988M	11.02	50.00	-38.98	20.29	Neutral	-	-9.27	10.06	0.30	9.93				

**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	798.75k	762.119k	762KF1D	796.25k	759.62k
BT-EDR(2Mbps)	1.308M	1.188M	1M19G1D	1.306M	1.187M
BT-EDR(3Mbps)	1.285M	1.199M	1M20G1D	1.281M	1.196M

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

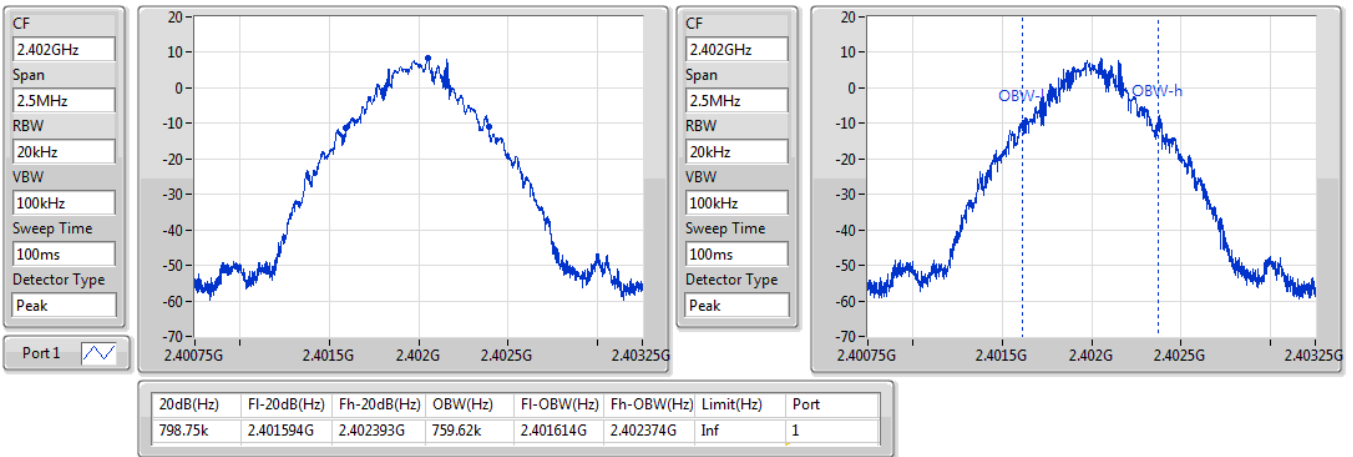
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	798.75k	759.62k
2440MHz	Pass	Inf	798.75k	760.87k
2480MHz	Pass	Inf	796.25k	762.119k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.308M	1.187M
2440MHz	Pass	Inf	1.306M	1.188M
2480MHz	Pass	Inf	1.306M	1.188M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.281M	1.196M
2440MHz	Pass	Inf	1.285M	1.196M
2480MHz	Pass	Inf	1.283M	1.199M

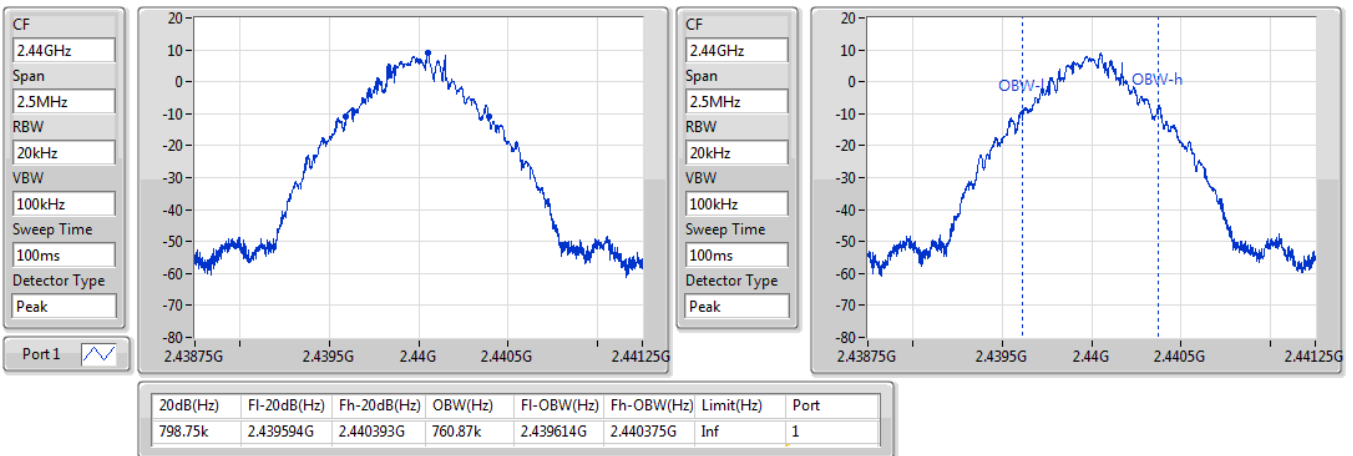
Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

BT-BR(1Mbps)
2402MHz
EBW-FS

06/05/2022

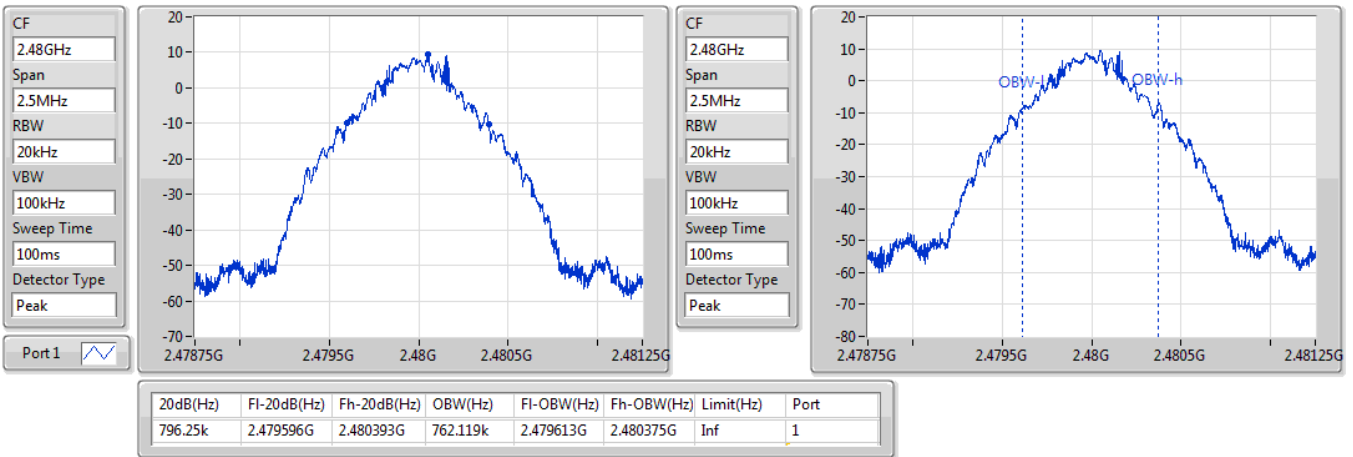

BT-BR(1Mbps)
2440MHz
EBW-FS

06/05/2022

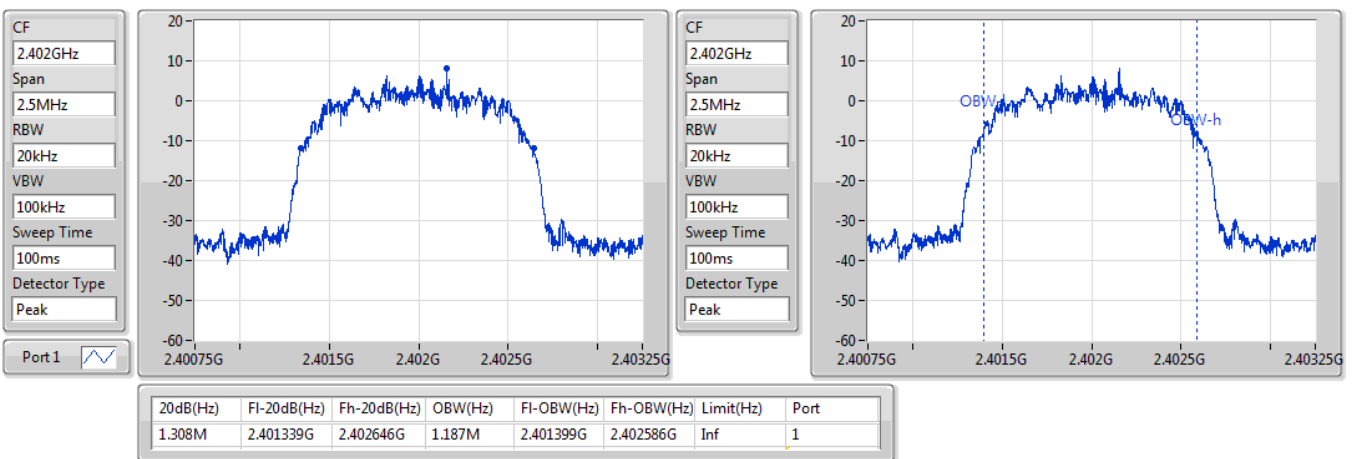


BT-BR(1Mbps)
EBW-FS
2480MHz

06/05/2022

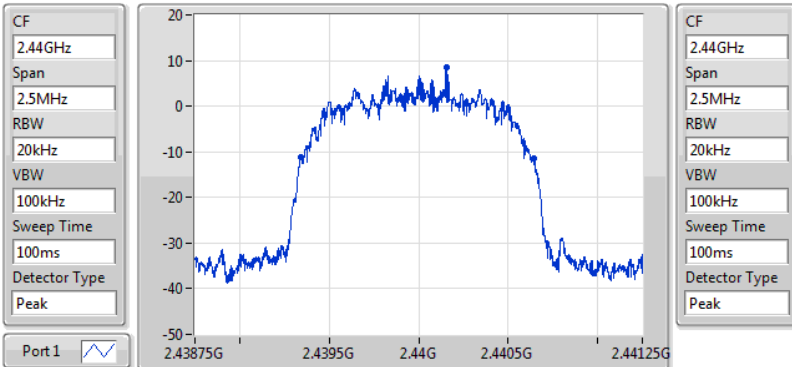

BT-EDR(2Mbps)
EBW-FS
2402MHz

06/05/2022



BT-EDR(2Mbps)

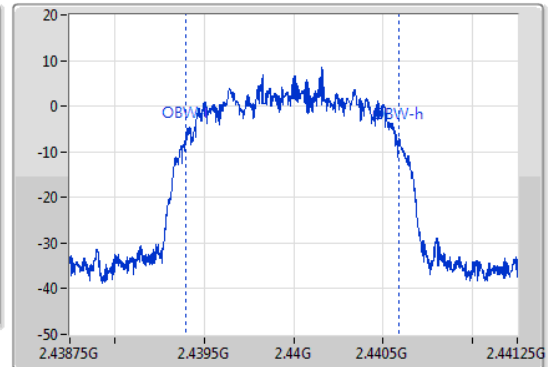
2440MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.306M	2.439339G	2.440645G	1.188M	2.439398G	2.440586G	Inf	1

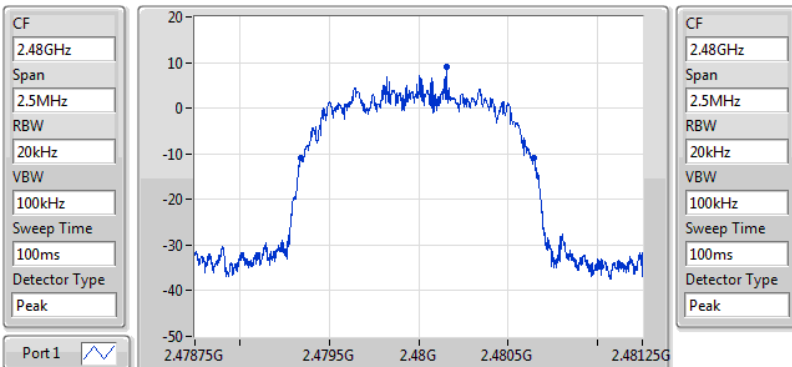
EBW-FS

06/05/2022



BT-EDR(2Mbps)

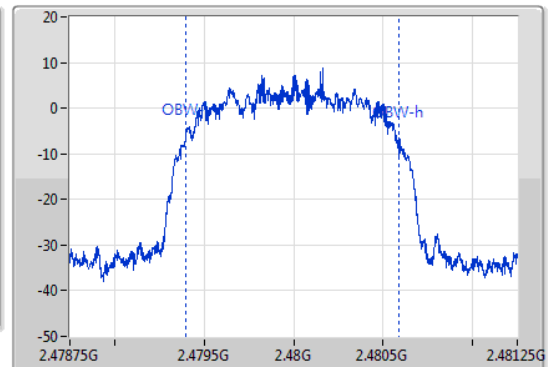
2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.306M	2.479339G	2.480645G	1.188M	2.479398G	2.480586G	Inf	1

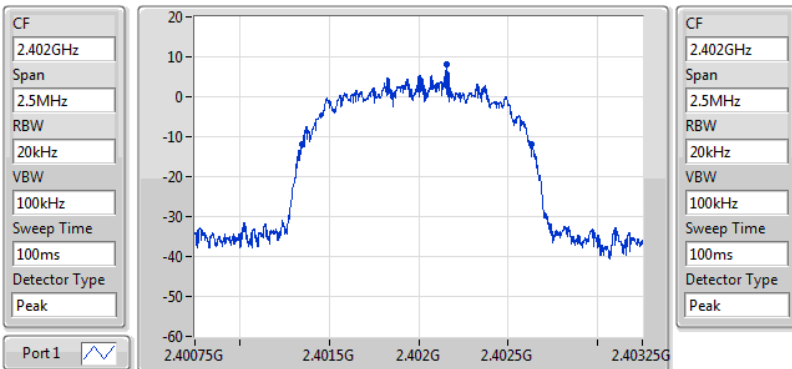
EBW-FS

06/05/2022



BT-EDR(3Mbps)

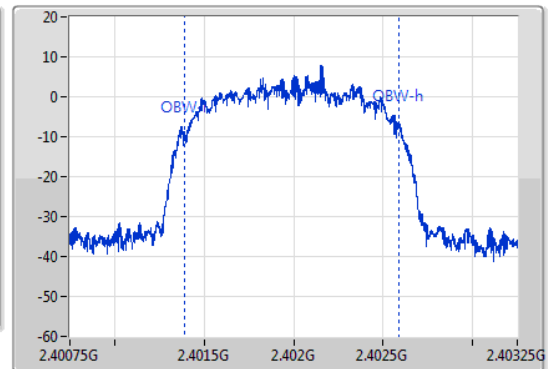
2402MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.281M	2.401349G	2.40263G	1.196M	2.401392G	2.402587G	Inf	1

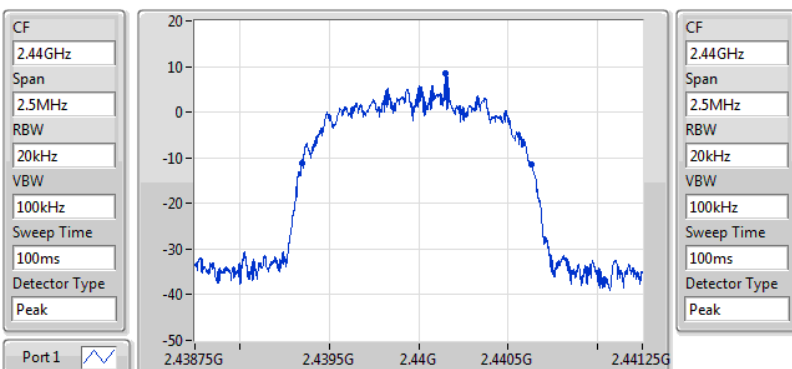
EBW-FS

06/05/2022



BT-EDR(3Mbps)

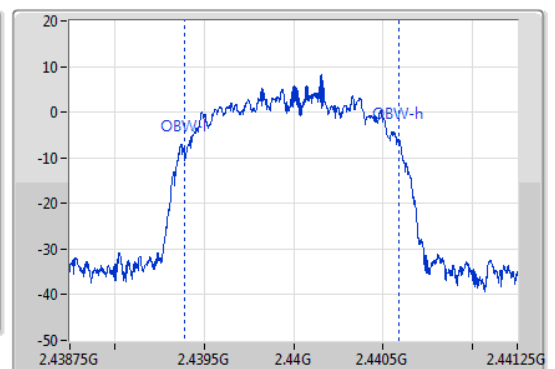
2440MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.285M	2.439348G	2.440633G	1.196M	2.43939G	2.440586G	Inf	1

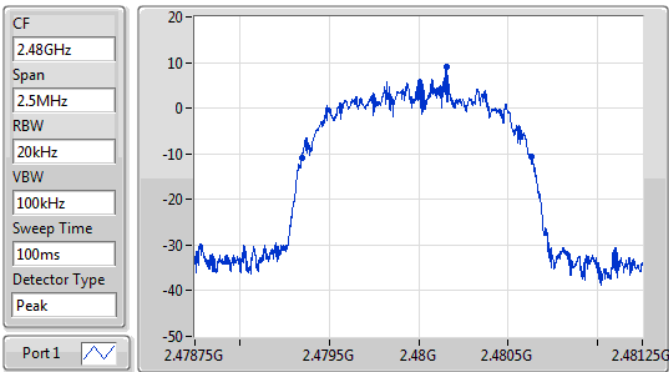
EBW-FS

06/05/2022



BT-EDR(3Mbps)

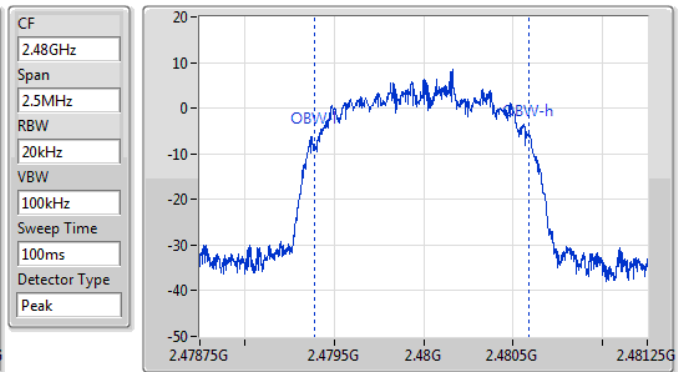
2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.283M	2.479346G	2.480629G	1.199M	2.479388G	2.480587G	Inf	1

EBW-FS

06/05/2022





Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.002M	997.5k
BT-EDR(2Mbps)	1.002M	999k
BT-EDR(3Mbps)	1.002M	1.002M

Result

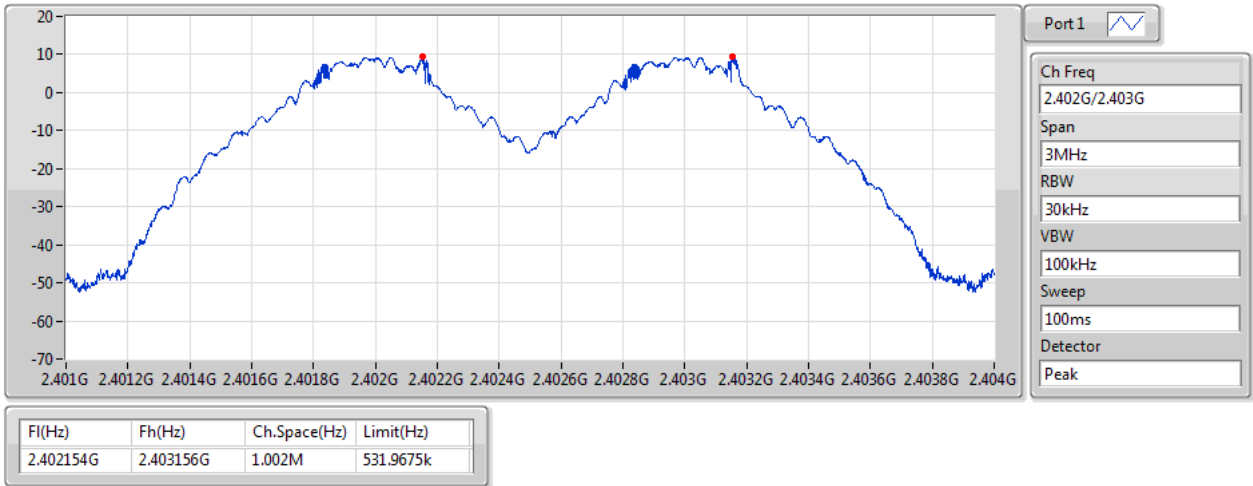
Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.402154G	2.403156G	1.002M	531.9675k
2440MHz	Pass	2.440157G	2.441154G	997.5k	531.9675k
2480MHz	Pass	2.479152G	2.480153G	1.0005M	530.3025k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402157G	2.403156G	999k	871.128k
2440MHz	Pass	2.440157G	2.441157G	1.0005M	869.796k
2480MHz	Pass	2.479154G	2.480156G	1.002M	869.796k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.402155G	2.403157G	1.002M	853.146k
2440MHz	Pass	2.440154G	2.441156G	1.002M	855.81k
2480MHz	Pass	2.479154G	2.480156G	1.002M	854.478k

BT-BR(1Mbps)

2.402G/2.403GHz

Channel Separation-FS

06/05/2022

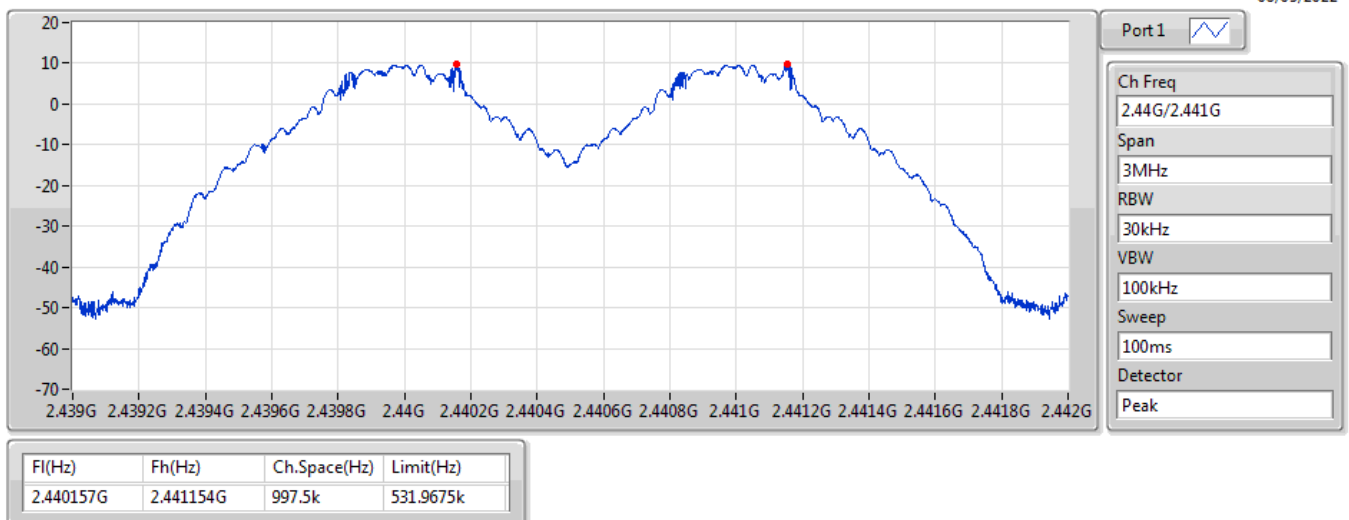


BT-BR(1Mbps)

2.44G/2.441GHz

Channel Separation-FS

06/05/2022

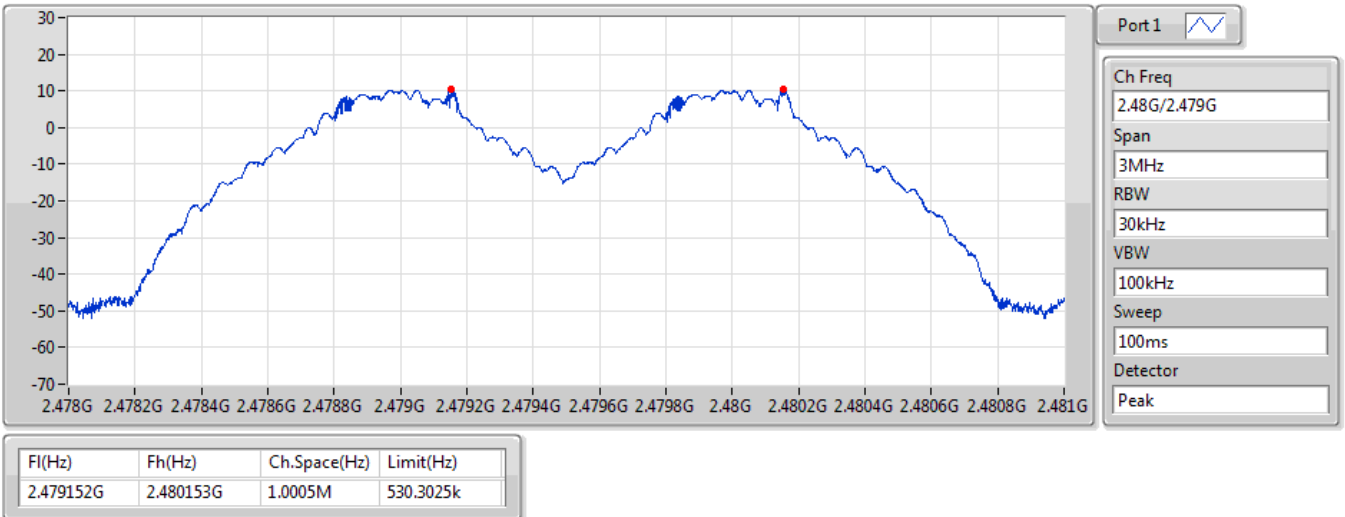


BT-BR(1Mbps)

2.48G/2.479GHz

Channel Separation-FS

06/05/2022

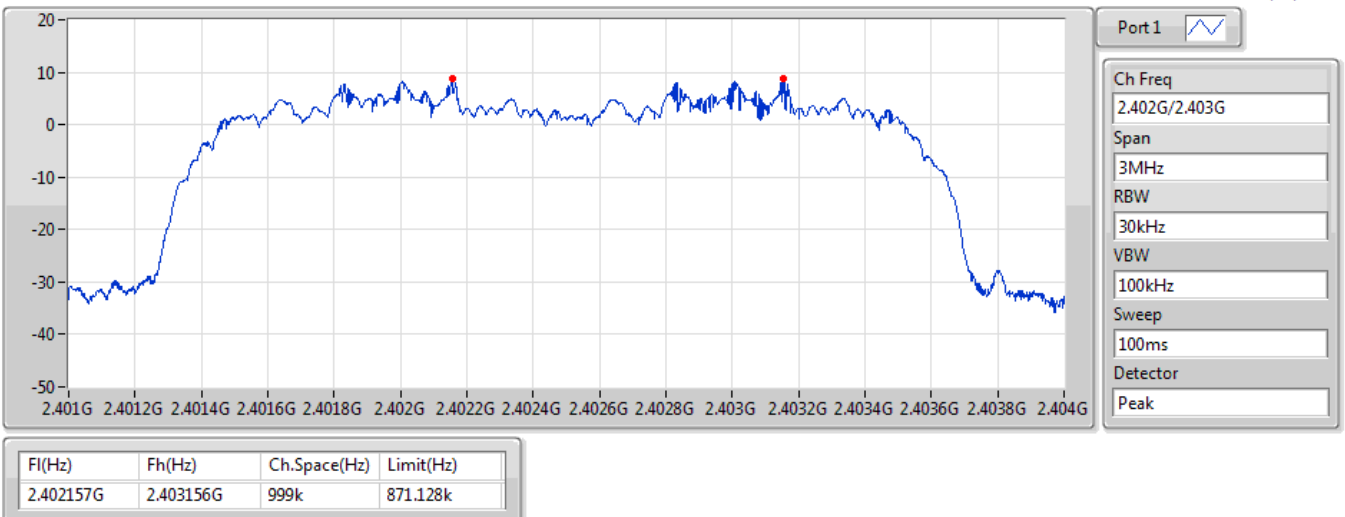


BT-EDR(2Mbps)

2.402G/2.403GHz

Channel Separation-FS

06/05/2022

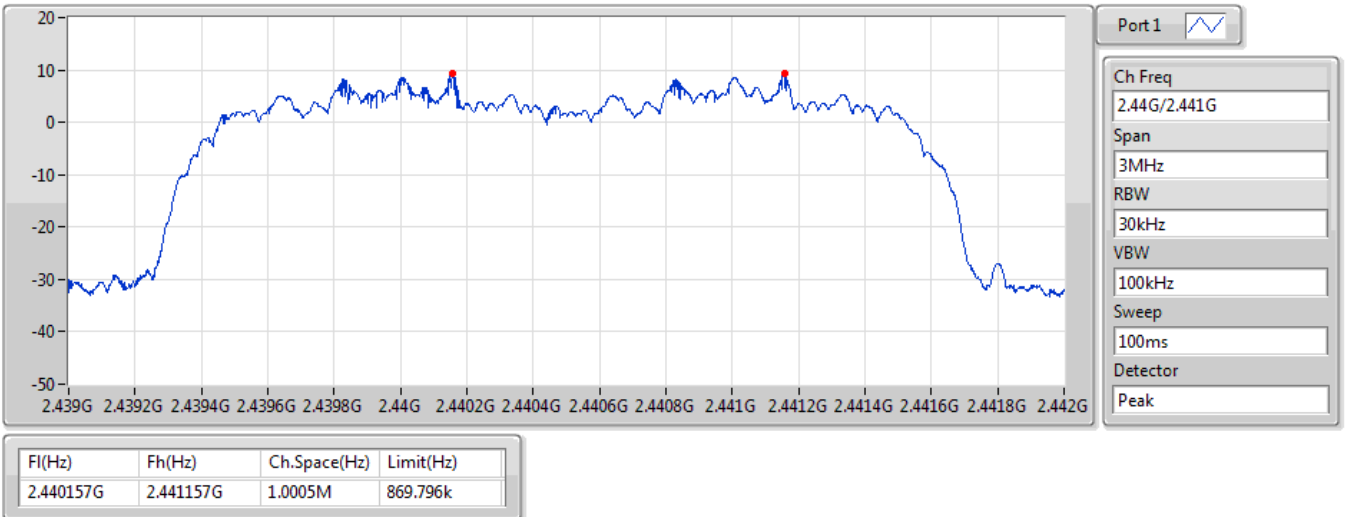


BT-EDR(2Mbps)

2.44G/2.441GHz

Channel Separation-FS

06/05/2022

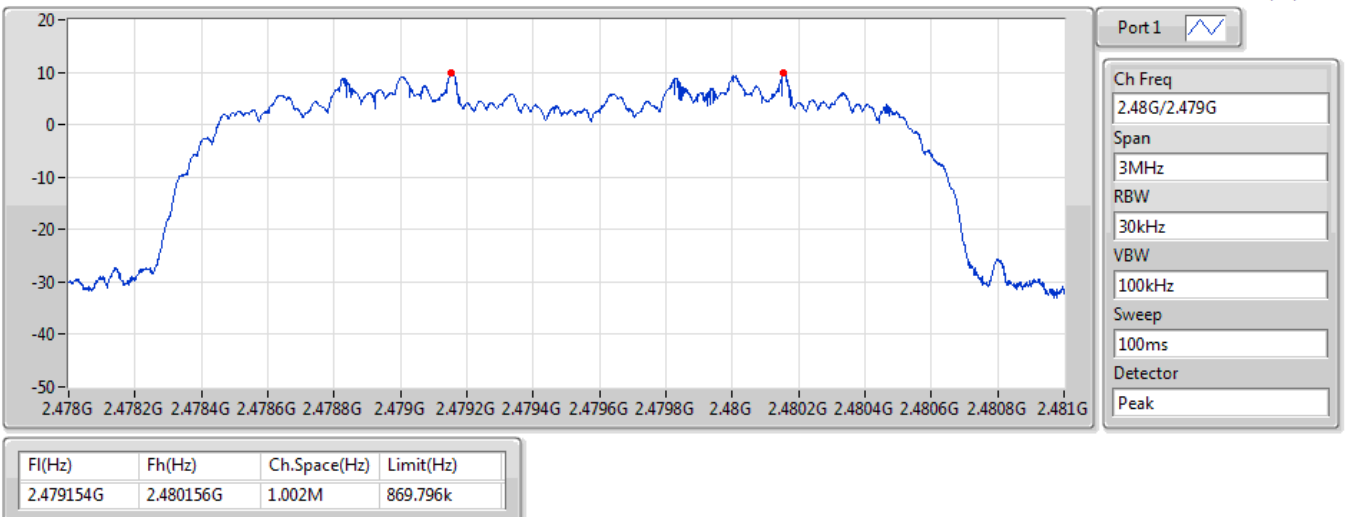


BT-EDR(2Mbps)

2.48G/2.479GHz

Channel Separation-FS

06/05/2022



BT-EDR(3Mbps)

2.402G/2.403GHz

Channel Separation-FS

06/05/2022



BT-EDR(3Mbps)

2.44G/2.441GHz

Channel Separation-FS

06/05/2022

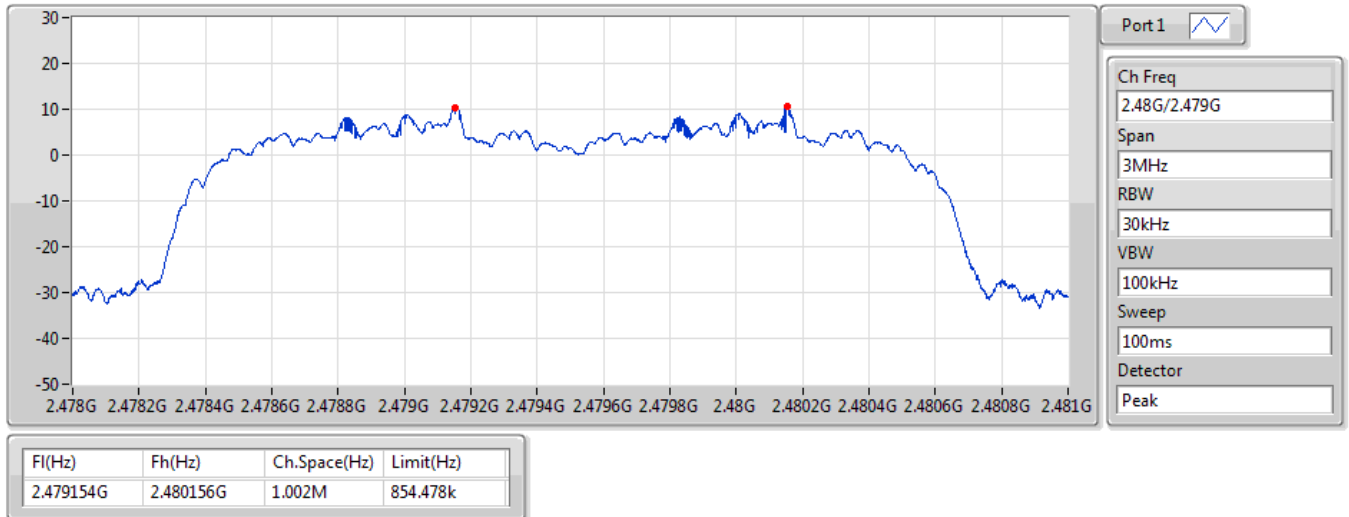


BT-EDR(3Mbps)

2.48G/2.479GHz

Channel Separation-FS

06/05/2022





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	13.31	0.02143
BT-EDR(2Mbps)	15.22	0.03327
BT-EDR(3Mbps)	15.53	0.03573



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	3.42	12.31	21.00
2440MHz	Pass	3.42	12.68	21.00
2480MHz	Pass	3.42	13.31	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	3.42	14.33	21.00
2440MHz	Pass	3.42	14.63	21.00
2480MHz	Pass	3.42	15.22	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	3.42	14.70	21.00
2440MHz	Pass	3.42	14.98	21.00
2480MHz	Pass	3.42	15.53	21.00

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



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	12.89	0.01945
BT-EDR(2Mbps)	12.91	0.01954
BT-EDR(3Mbps)	12.91	0.01954



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	3.42	11.92	21.00
2440MHz	Pass	3.42	12.30	21.00
2480MHz	Pass	3.42	12.89	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	3.42	11.61	21.00
2440MHz	Pass	3.42	12.30	21.00
2480MHz	Pass	3.42	12.91	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	3.42	11.87	21.00
2440MHz	Pass	3.42	12.29	21.00
2480MHz	Pass	3.42	12.91	21.00

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



Summary

Mode	Max-Hop No
2.4-2.4835GHz	-
BT-BR(1Mbps)	79
BT-EDR(2Mbps)	79
BT-EDR(3Mbps)	79



Result

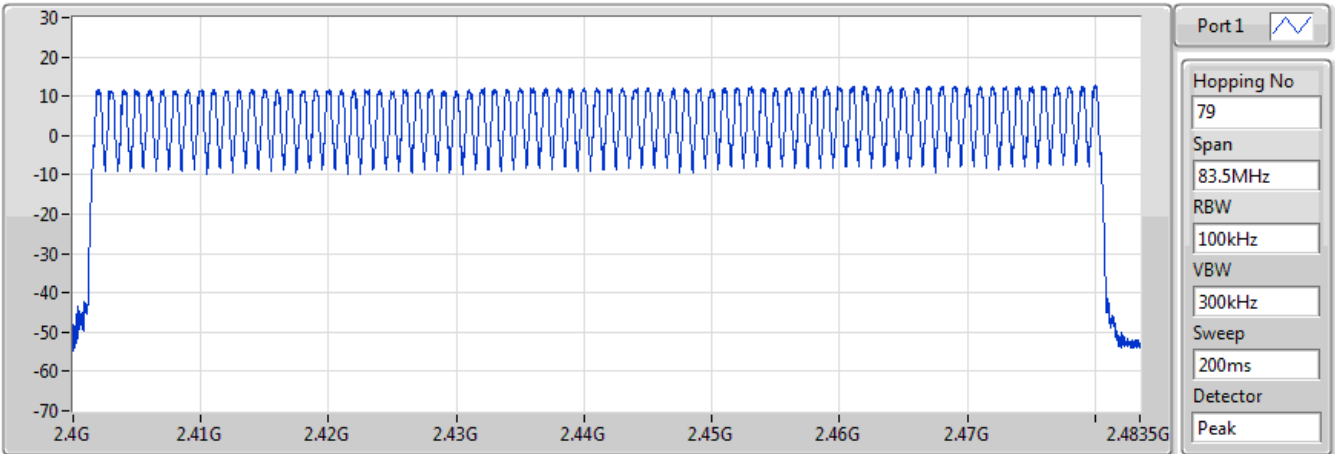
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2440MHz	Pass	79	15

BT-BR(1Mbps)

2440MHz

Hopping-FS

06/05/2022



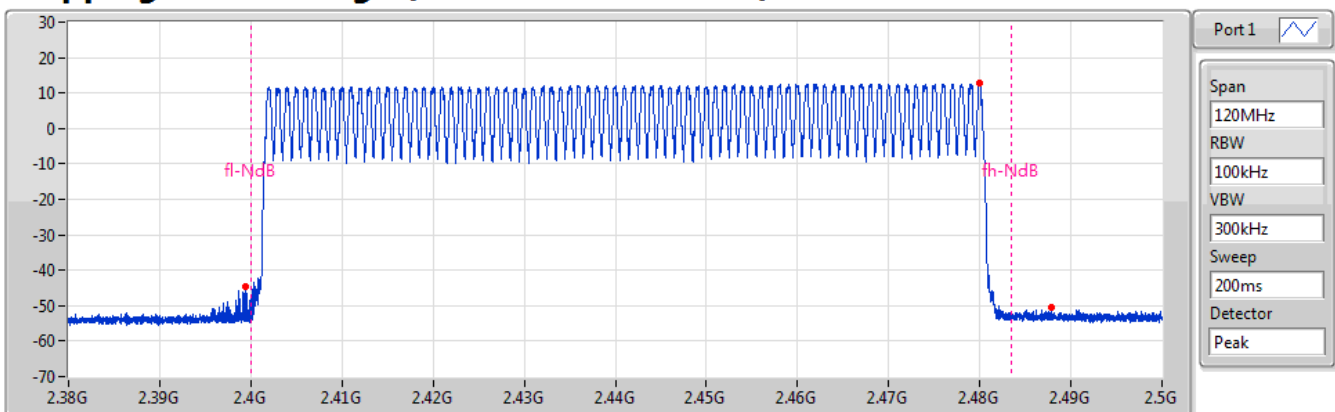
Hopping No	Limit
79	15

BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

06/05/2022



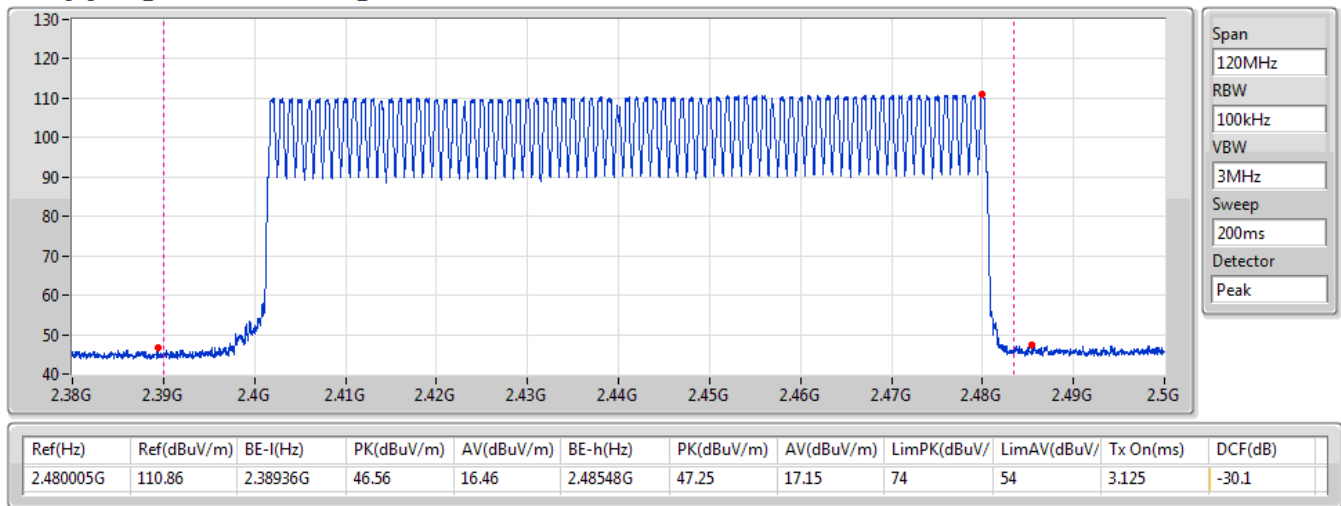
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-7.28	2.480005G	12.72	2.399455G	-44.71	2.48779G	-50.64

BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

06/05/2022

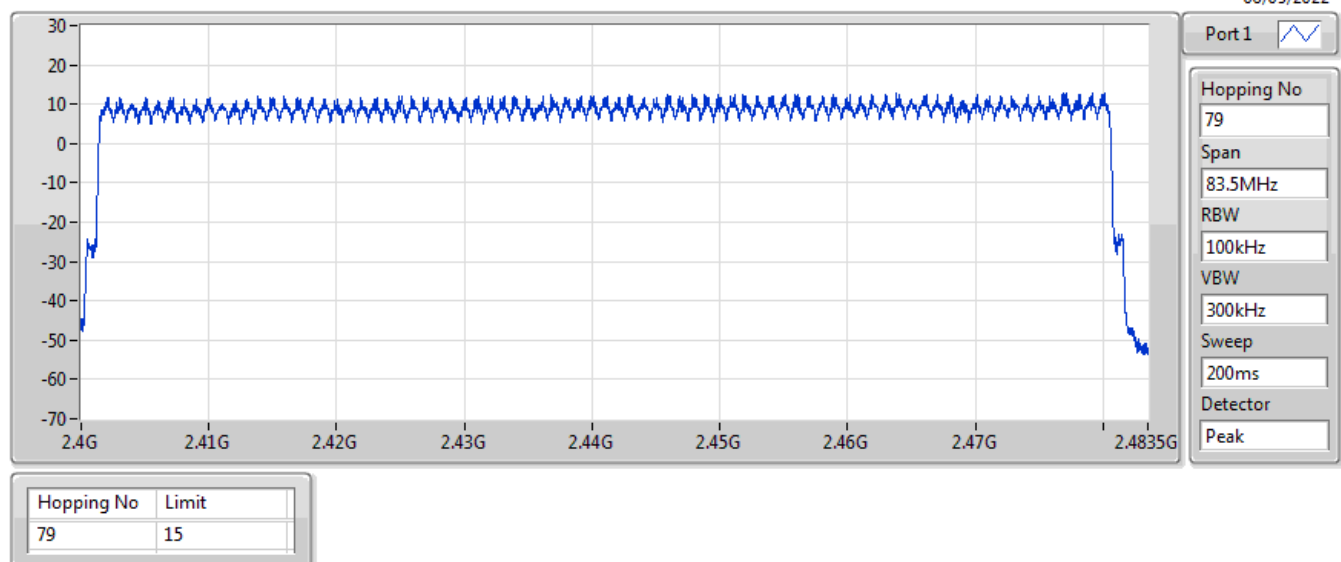


BT-EDR(2Mbps)

2440MHz

Hopping-FS

06/05/2022

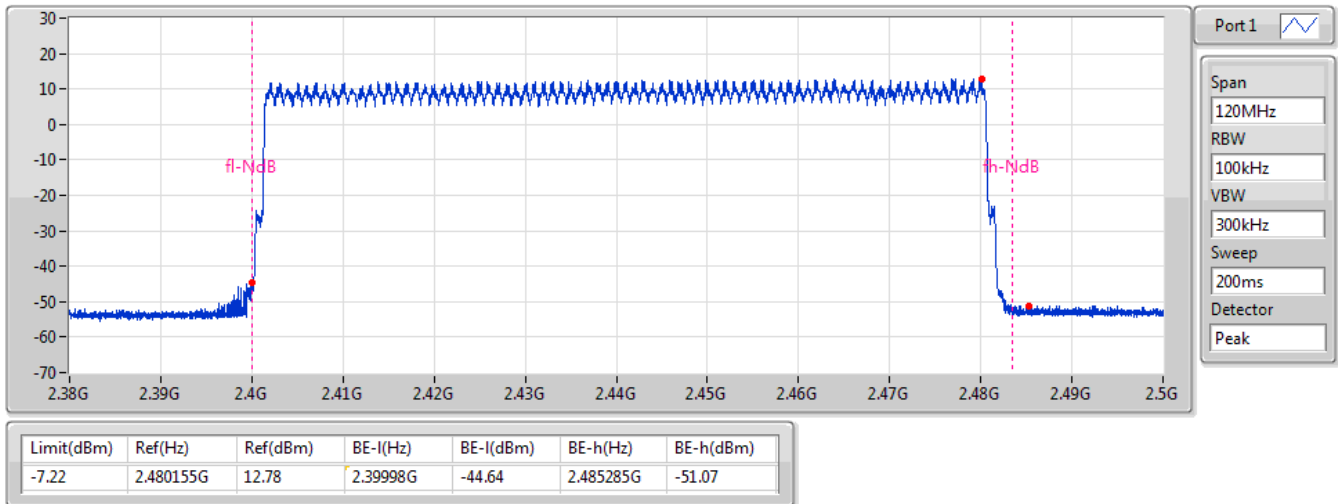


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

06/05/2022

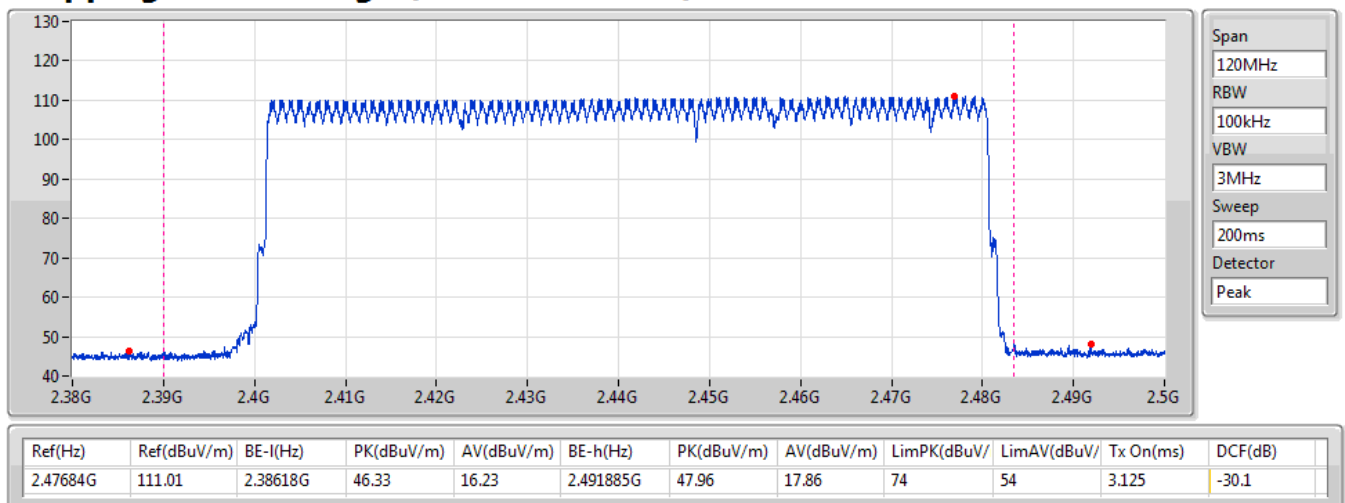


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

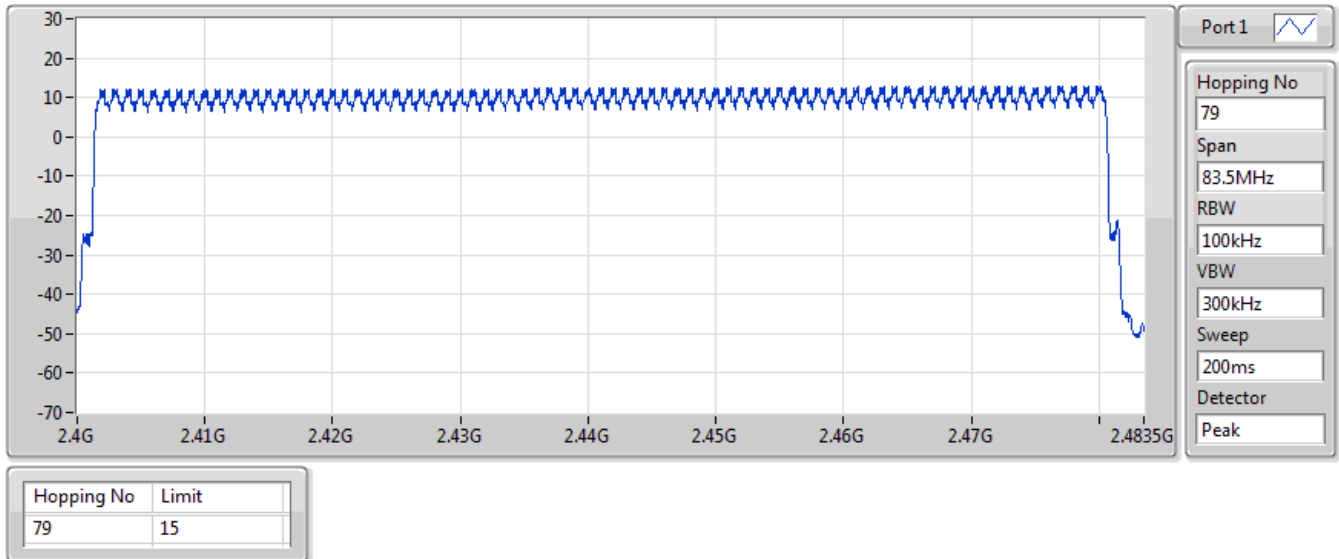
06/05/2022



BT-EDR(3Mbps) 2440MHz

Hopping-FS

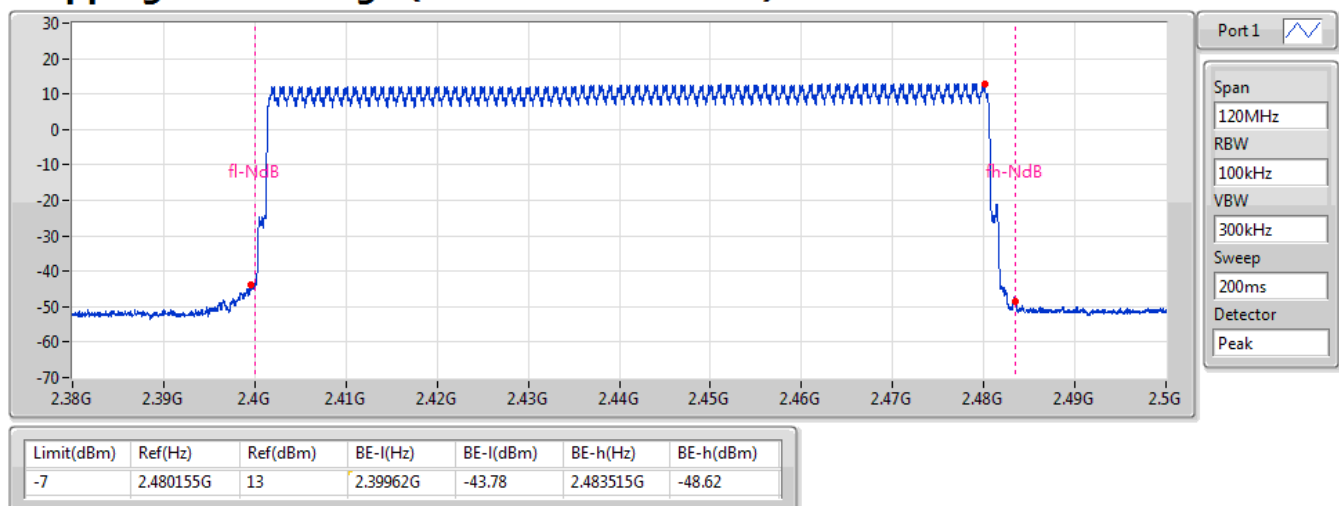
06/05/2022



BT-EDR(3Mbps) 2440MHz

Hopping Ch Bandedge (Non-restricted Band)

06/05/2022

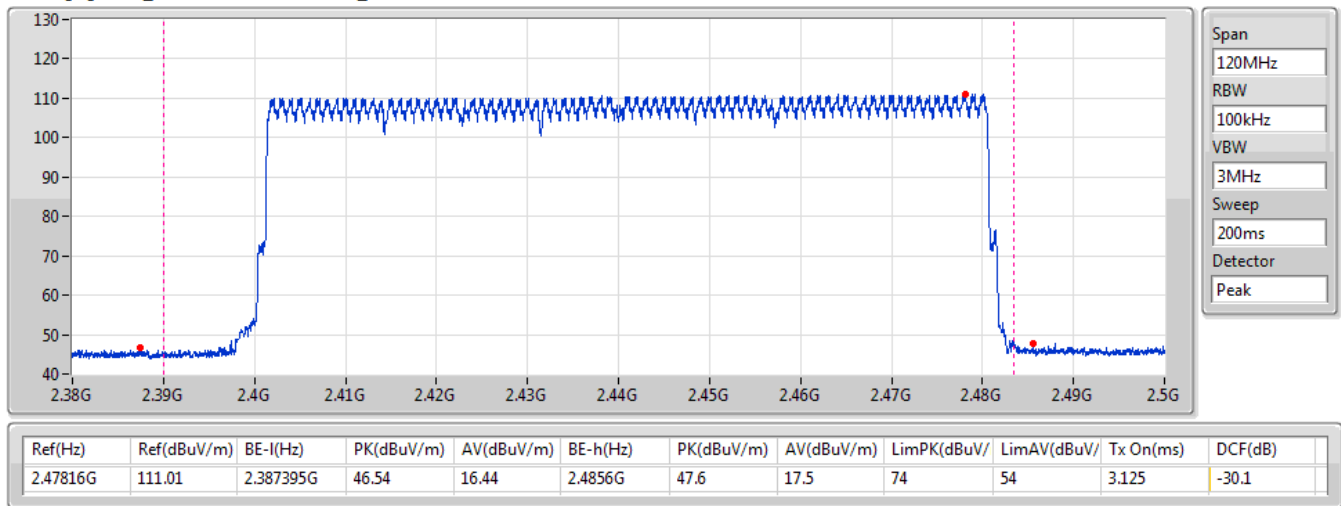


BT-EDR(3Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

06/05/2022





Summary

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	307.3811m_DH5
BT-EDR(2Mbps)	308.9268m_DH5
BT-EDR(3Mbps)	309.0867m_DH5

Result

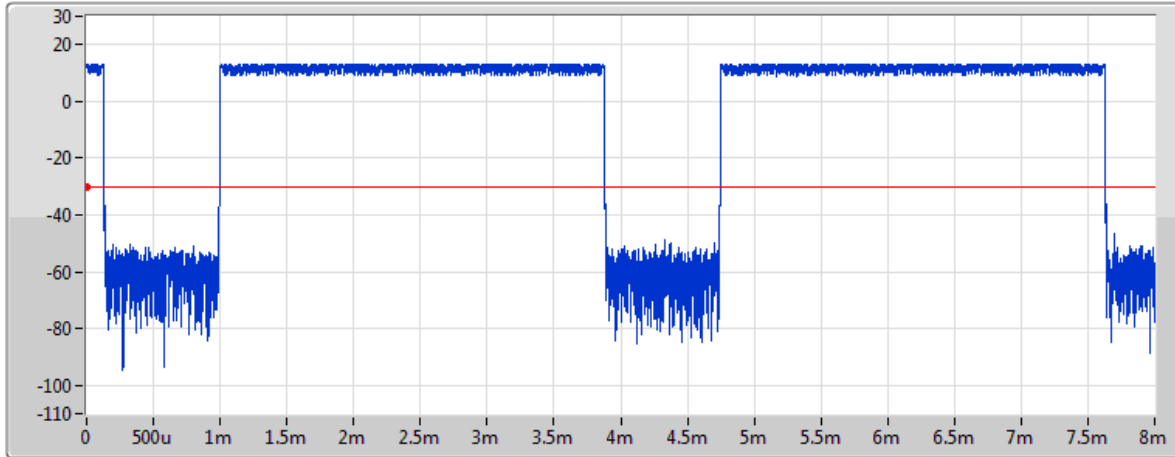
Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	307.3811m_DH5	400m	2.8835m
2440MHz	Pass	8	153.677225m_DH5-AFH	400m	2.88325m
BT-EDR(2Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.9268m_DH5	400m	2.898m
2440MHz	Pass	8	154.210225m_DH5-AFH	400m	2.89325m
BT-EDR(3Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	309.0867m_DH5	400m	2.8995m
2440MHz	Pass	8	154.476725m_DH5-AFH	400m	2.89825m

BT-BR(1Mbps)

Dwell-FS

2440MHz

06/05/2022



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.8835ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	307.3811m_DH5	400m	2.8835m

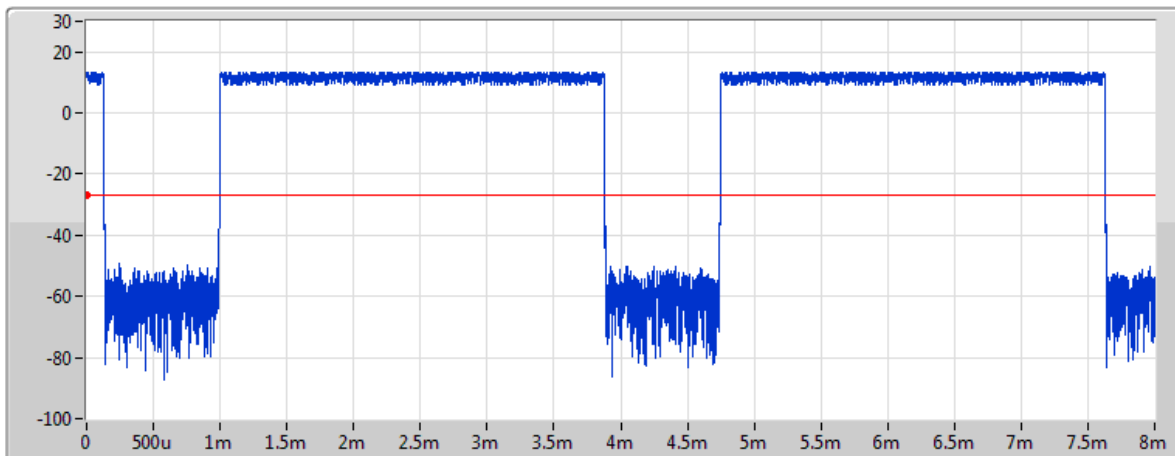
DH5

BT-BR(1Mbps)

Dwell-FS

2440MHz

06/05/2022



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.88325ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	153.677225m_DH5-AFI	400m	2.88325m

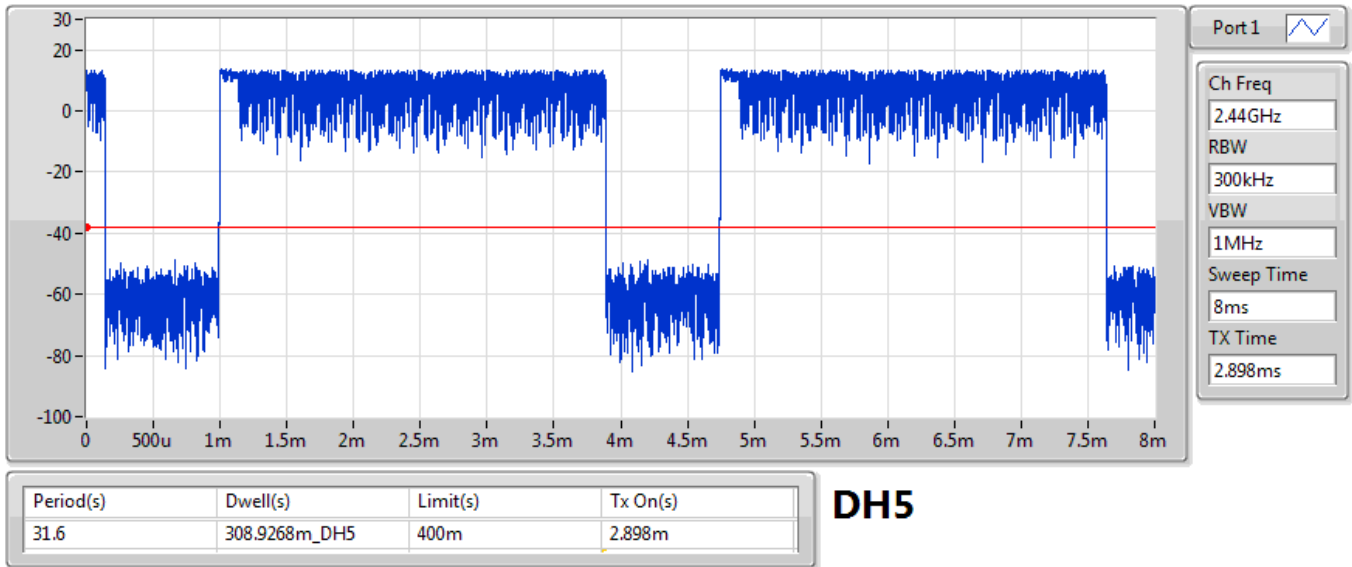
DH5-AFH

BT-EDR(2Mbps)

2440MHz

Dwell-FS

06/05/2022



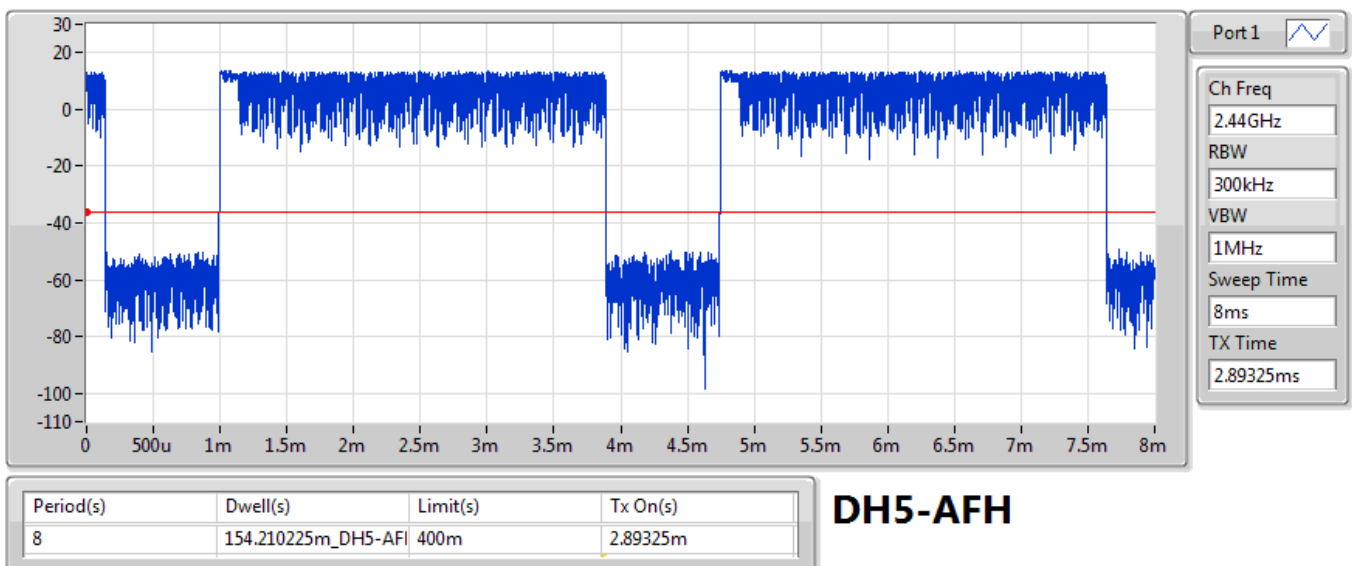
DH5

BT-EDR(2Mbps)

2440MHz

Dwell-FS

06/05/2022



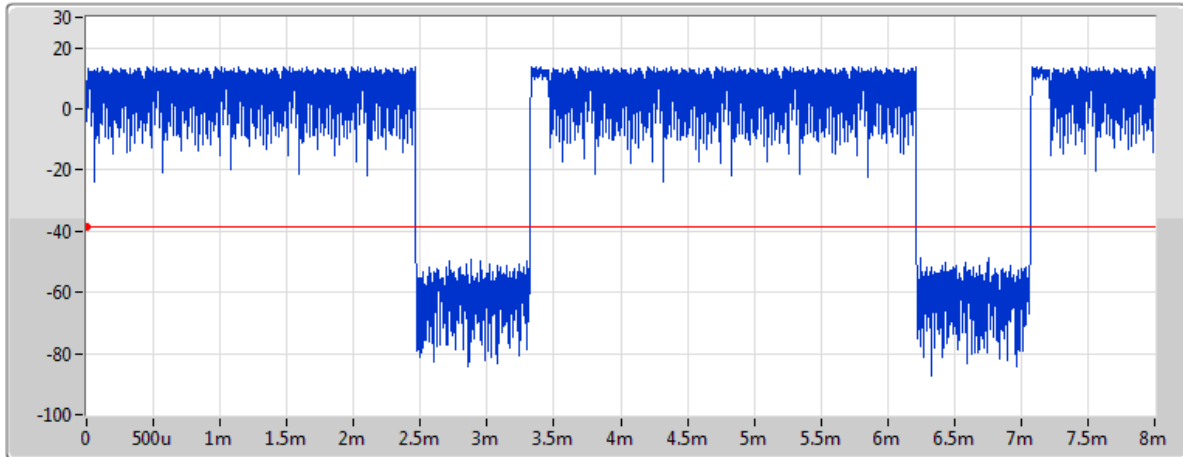
DH5-AFH

BT-EDR(3Mbps)

2440MHz

Dwell-FS

06/05/2022



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.8995ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	309.0867m_DH5	400m	2.8995m

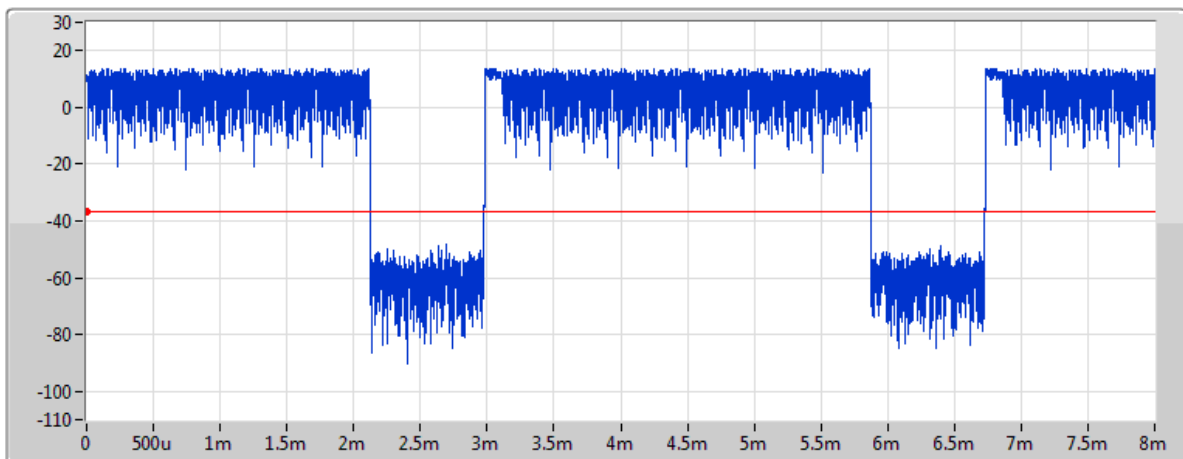
DH5

BT-EDR(3Mbps)

2440MHz

Dwell-FS

06/05/2022



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.89825ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	154.476725m_DH5-AF	400m	2.89825m

DH5-AFH



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-BR(1Mbps)	Pass	2.402G	11.48	-8.52	2.19083G	-54.44	2.39996G	-44.94	2.4G	-44.94	2.50014G	-51.80	16.85345G	-42.17	1
BT-EDR(2Mbps)	Pass	2.40184G	10.29	-9.71	2.11445G	-53.67	2.39976G	-44.78	2.4G	-44.20	2.5023G	-52.84	23.22559G	-41.75	1
BT-EDR(3Mbps)	Pass	2.402G	11.79	-8.21	2.10858G	-53.55	2.39952G	-43.86	2.4G	-44.43	2.50054G	-52.54	13.49585G	-41.70	1

Result

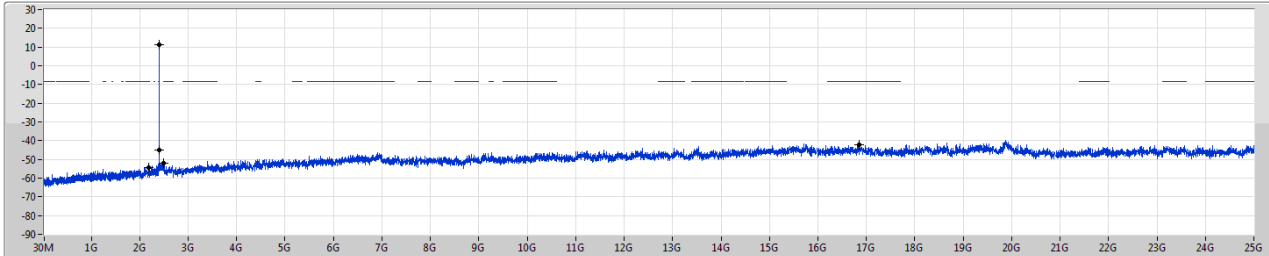
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	11.48	-8.52	2.19083G	-54.44	2.39996G	-44.94	2.4G	-44.94	2.50014G	-51.80	16.85345G	-42.17	1
2440MHz	Pass	2.44008G	12.08	-7.92	2.30363G	-54.21	2.3924G	-53.10	2.4G	-55.00	2.50038G	-52.91	16.8872G	-42.25	1
2480MHz	Pass	2.47999G	12.36	-7.64	2.18965G	-54.44	2.39556G	-51.53	2.4G	-54.82	2.50086G	-52.54	16.77753G	-41.87	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40184G	10.29	-9.71	2.11445G	-53.67	2.39976G	-44.78	2.4G	-44.20	2.5023G	-52.84	23.22559G	-41.75	1
2440MHz	Pass	2.44008G	11.39	-8.61	2.30245G	-52.77	2.39868G	-53.07	2.4G	-54.47	2.50294G	-52.50	16.92938G	-41.62	1
2480MHz	Pass	2.48016G	11.12	-8.88	2.16028G	-53.66	2.3996G	-53.03	2.4G	-55.31	2.50182G	-52.75	17.06717G	-42.03	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	11.79	-8.21	2.10858G	-53.55	2.39952G	-43.86	2.4G	-44.43	2.50054G	-52.54	13.49585G	-41.70	1
2440MHz	Pass	2.43991G	11.73	-8.27	2.00635G	-54.46	2.39796G	-53.07	2.4G	-55.82	2.50258G	-52.83	21.58616G	-42.39	1
2480MHz	Pass	2.48016G	12.82	-7.18	2.13208G	-53.20	2.39372G	-52.62	2.4G	-53.97	2.50318G	-53.05	14.75003G	-42.38	1

BT-BR(1Mbps)

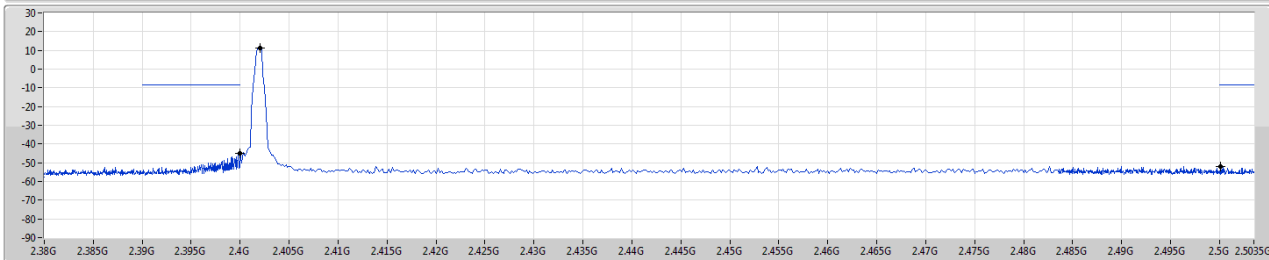
CSENdB-FS

2402MHz

06/05/2022



Port1



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

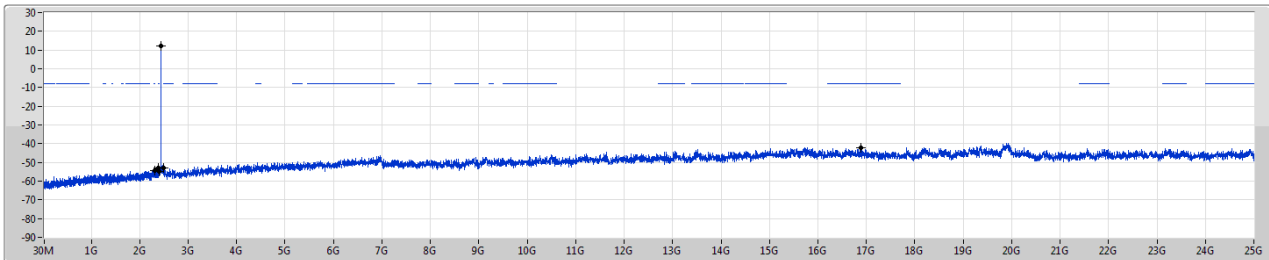
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.402G	11.48	-8.52	2.19083G	-54.44	2.39996G	-44.94	2.4G	-44.94	2.50014G	-51.80	16.85345G	-42.17	1

BT-BR(1Mbps)

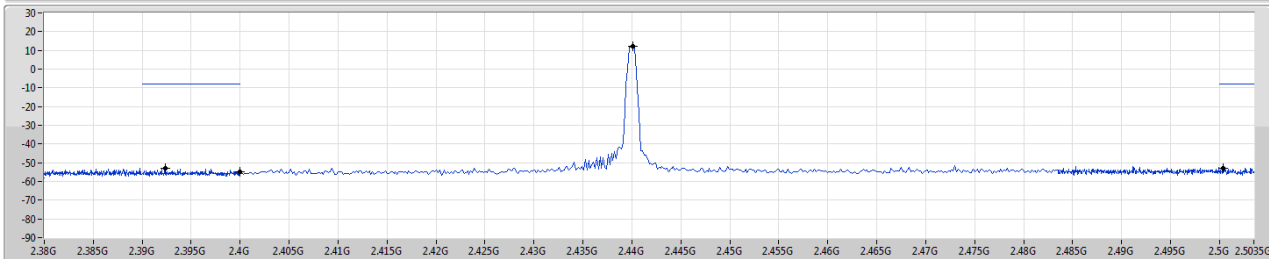
CSENdB-FS

2440MHz

06/05/2022



Port1



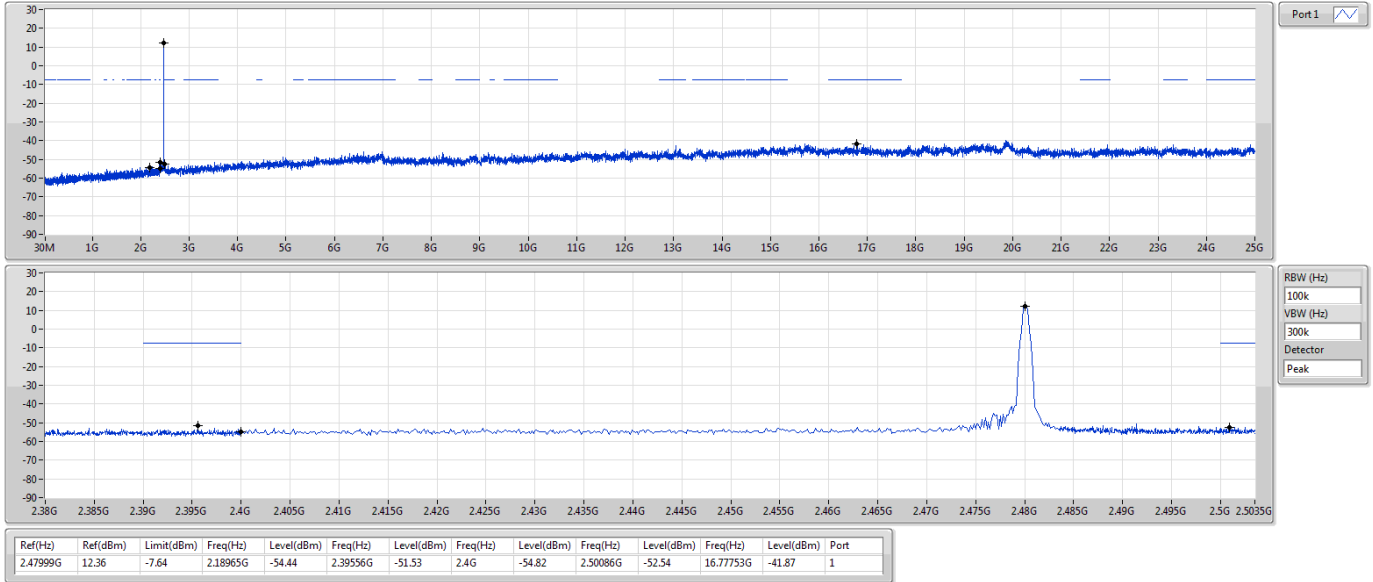
RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44008G	12.08	-7.92	2.30363G	-54.21	2.3924G	-53.10	2.4G	-55.00	2.50038G	-52.91	16.8872G	-42.25	1

BT-BR(1Mbps)

CSEndB-FS

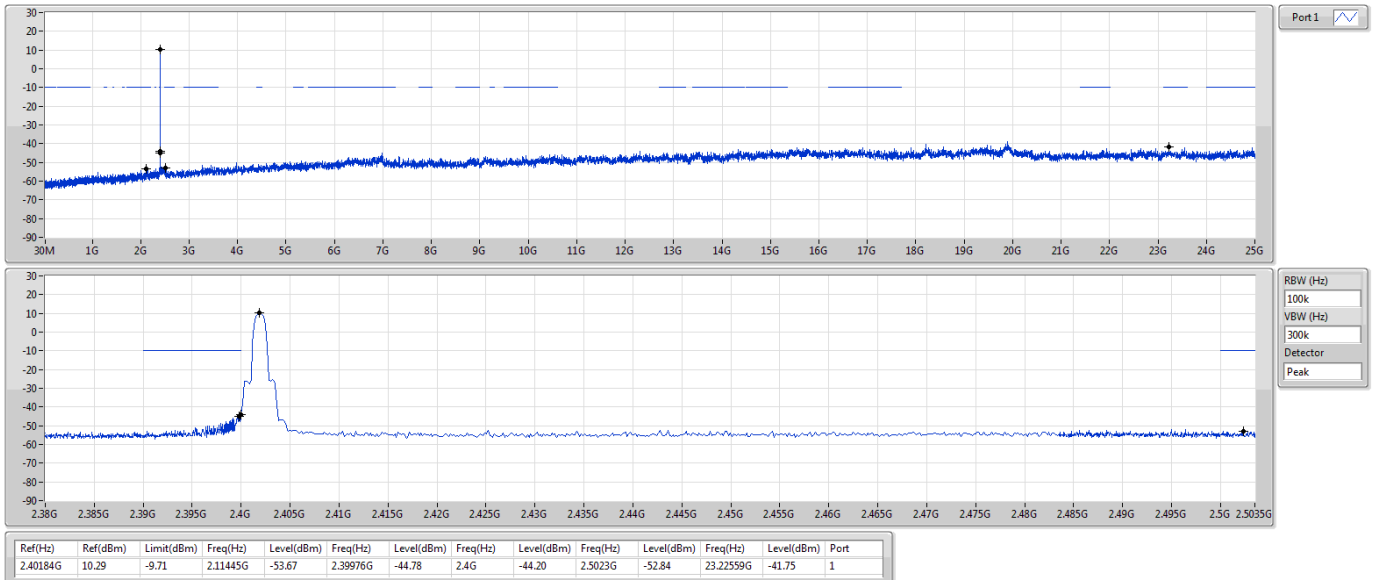
2480MHz



BT-EDR(2Mbps)

CSEndB-FS

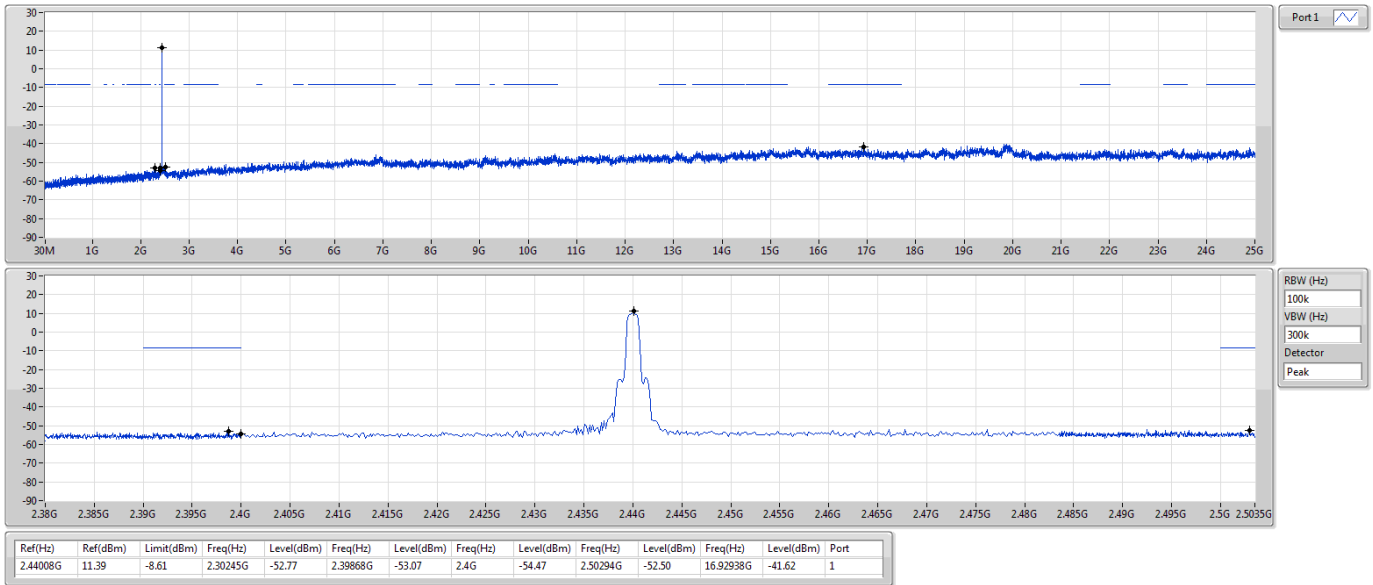
2402MHz



BT-EDR(2Mbps)

CSEndB-FS

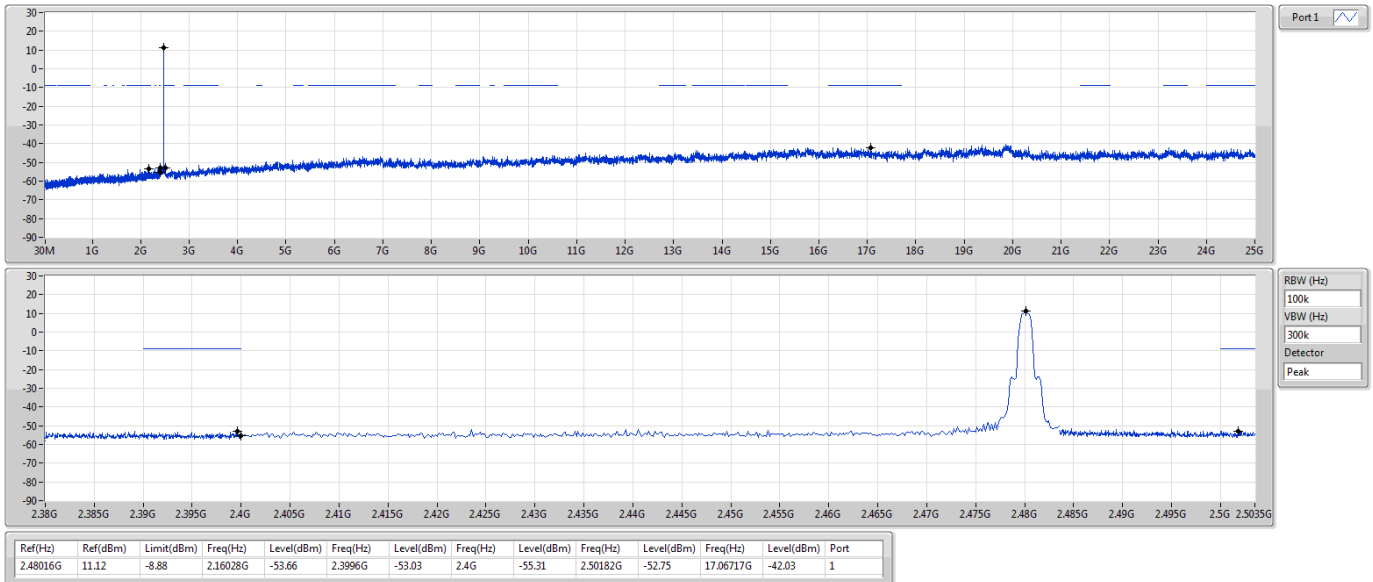
2440MHz



BT-EDR(2Mbps)

CSEndB-FS

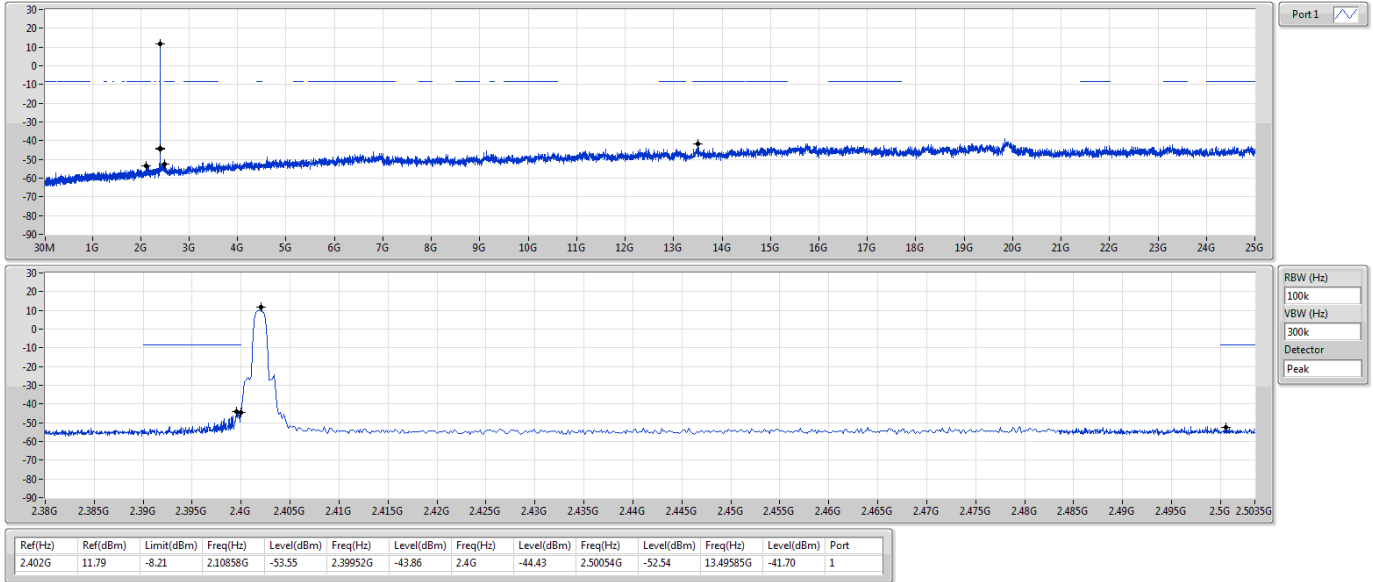
2480MHz



BT-EDR(3Mbps)

CSEndB-FS

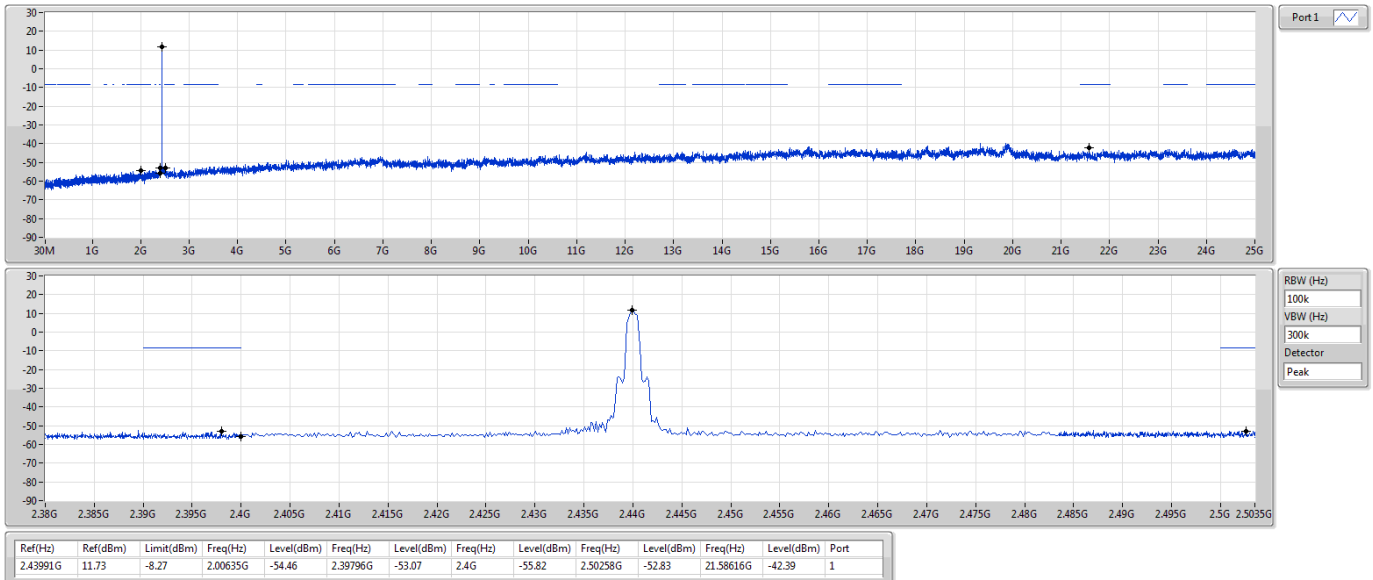
2402MHz



BT-EDR(3Mbps)

CSEndB-FS

2440MHz

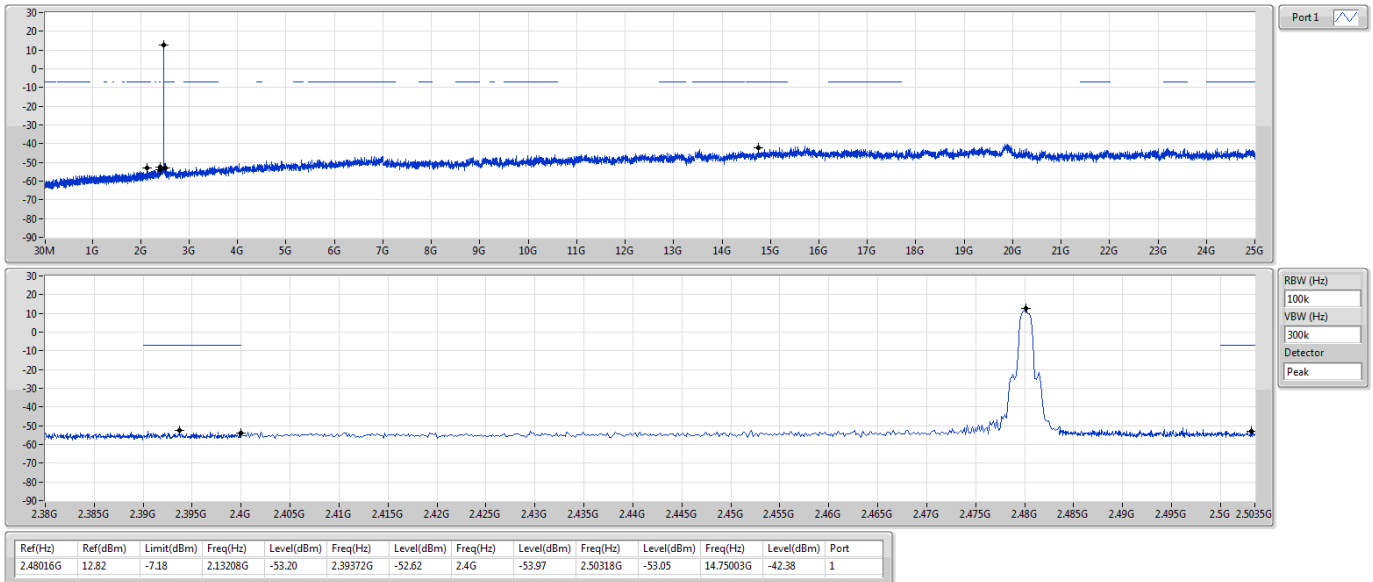


BT-EDR(3Mbps)

CSEndB-FS

2480MHz

06/05/2022





Summary

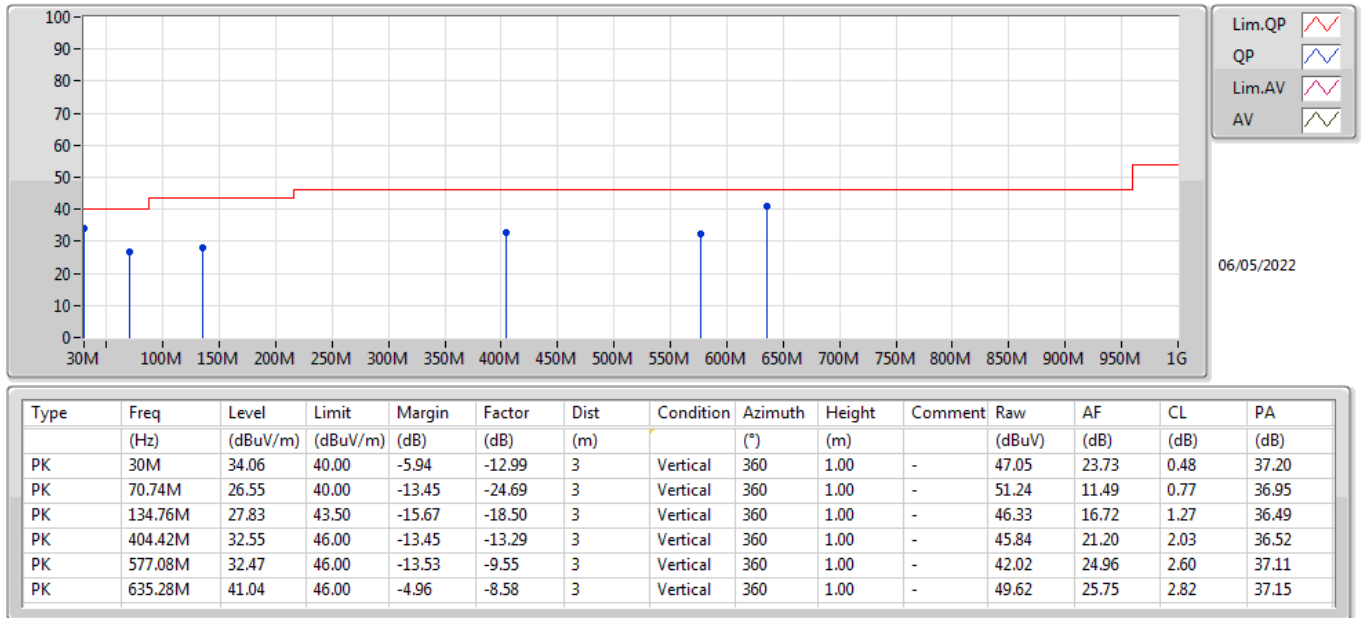
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-EDR(3Mbps)	Pass	PK	635.28M	41.04	46.00	-4.96	3	Vertical	360	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	34.06	40.00	-5.94	3	Vertical	360	1.00	-
2440MHz	Pass	PK	70.74M	26.55	40.00	-13.45	3	Vertical	360	1.00	-
2440MHz	Pass	PK	134.76M	27.83	43.50	-15.67	3	Vertical	360	1.00	-
2440MHz	Pass	PK	404.42M	32.55	46.00	-13.45	3	Vertical	360	1.00	-
2440MHz	Pass	PK	577.08M	32.47	46.00	-13.53	3	Vertical	360	1.00	-
2440MHz	Pass	PK	635.28M	41.04	46.00	-4.96	3	Vertical	360	1.00	-
2440MHz	Pass	PK	30M	25.15	40.00	-14.85	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	134.76M	32.30	43.50	-11.20	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	375.32M	32.71	46.00	-13.29	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	404.42M	34.56	46.00	-11.44	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	639.16M	40.52	46.00	-5.48	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	672.14M	35.92	46.00	-10.08	3	Horizontal	0	1.00	-

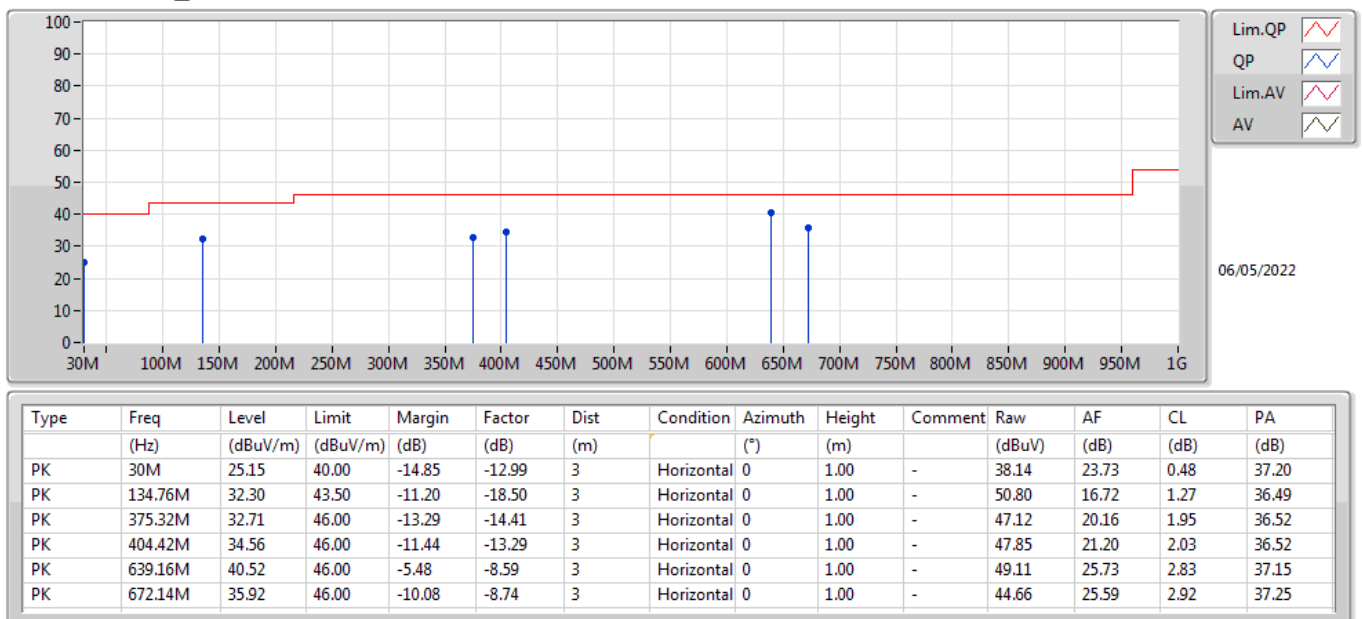
BT-EDR(3Mbps)

2440MHz_Test fixture



BT-EDR(3Mbps)

2440MHz_Test fixture





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-BR(1Mbps)	Pass	PK	2.4842G	60.49	74.00	-13.51	3	Vertical	294	1.00	-
BT-EDR(3Mbps)	Pass	PK	2.4854G	60.55	74.00	-13.45	3	Vertical	293	1.00	-

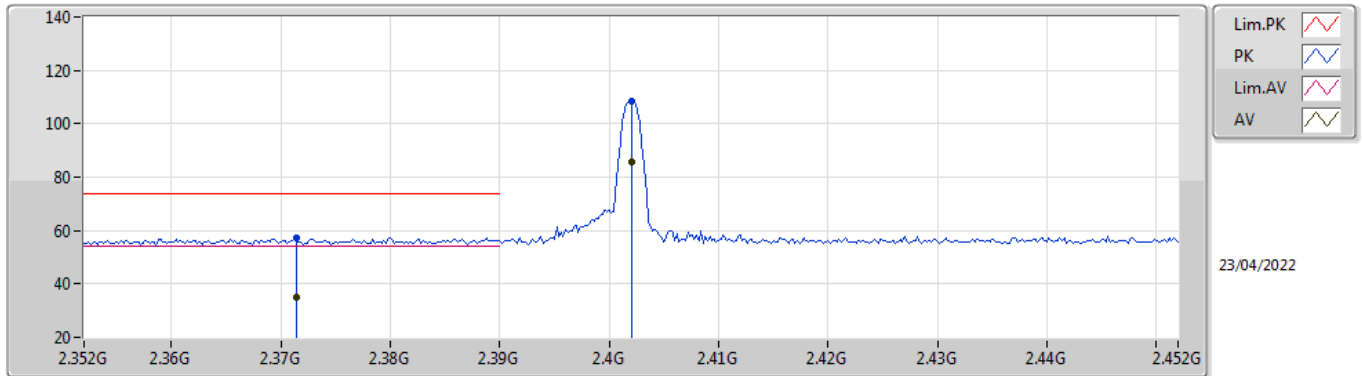
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3714G	34.93	54.00	-19.07	3	Vertical	121	1.53	-
2402MHz	Pass	AV	2.402G	85.86	Inf	-Inf	3	Vertical	121	1.53	-
2402MHz	Pass	PK	2.3714G	57.43	74.00	-16.57	3	Vertical	121	1.53	-
2402MHz	Pass	PK	2.402G	108.36	Inf	-Inf	3	Vertical	121	1.53	-
2402MHz	Pass	AV	2.3832G	34.09	54.00	-19.91	3	Horizontal	349	1.50	-
2402MHz	Pass	AV	2.402G	81.90	Inf	-Inf	3	Horizontal	349	1.50	-
2402MHz	Pass	PK	2.3832G	56.59	74.00	-17.41	3	Horizontal	349	1.50	-
2402MHz	Pass	PK	2.402G	104.40	Inf	-Inf	3	Horizontal	349	1.50	-
2402MHz	Pass	AV	4.80372G	25.38	54.00	-28.62	3	Vertical	308	1.26	-
2402MHz	Pass	PK	4.80372G	47.88	74.00	-26.12	3	Vertical	308	1.26	-
2402MHz	Pass	AV	4.80433G	24.14	54.00	-29.86	3	Horizontal	304	1.00	-
2402MHz	Pass	PK	4.80433G	46.64	74.00	-27.36	3	Horizontal	304	1.00	-
2440MHz	Pass	AV	2.3848G	34.65	54.00	-19.35	3	Vertical	295	1.00	-
2440MHz	Pass	AV	2.44G	87.09	Inf	-Inf	3	Vertical	295	1.00	-
2440MHz	Pass	AV	2.4904G	35.02	54.00	-18.98	3	Vertical	295	1.00	-
2440MHz	Pass	PK	2.3848G	57.15	74.00	-16.85	3	Vertical	295	1.00	-
2440MHz	Pass	PK	2.44G	109.59	Inf	-Inf	3	Vertical	295	1.00	-
2440MHz	Pass	PK	2.4904G	57.52	74.00	-16.48	3	Vertical	295	1.00	-
2440MHz	Pass	AV	2.3552G	34.60	54.00	-19.40	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	2.44G	83.74	Inf	-Inf	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	2.4835G	35.48	54.00	-18.52	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.3552G	57.10	74.00	-16.90	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.44G	106.24	Inf	-Inf	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.4835G	57.98	74.00	-16.02	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	4.87944G	23.80	54.00	-30.20	3	Vertical	150	1.01	-
2440MHz	Pass	AV	7.32021G	30.58	54.00	-23.42	3	Vertical	341	2.63	-
2440MHz	Pass	PK	4.87944G	46.30	74.00	-27.70	3	Vertical	150	1.01	-
2440MHz	Pass	PK	7.32021G	53.08	74.00	-20.92	3	Vertical	341	2.63	-
2440MHz	Pass	AV	4.87953G	23.64	54.00	-30.36	3	Horizontal	301	1.50	-
2440MHz	Pass	AV	7.31975G	29.11	54.00	-24.89	3	Horizontal	23	1.30	-
2440MHz	Pass	PK	4.87953G	46.14	74.00	-27.86	3	Horizontal	301	1.50	-
2440MHz	Pass	PK	7.31975G	51.61	74.00	-22.39	3	Horizontal	23	1.30	-
2480MHz	Pass	AV	2.48G	88.76	Inf	-Inf	3	Vertical	294	1.00	-
2480MHz	Pass	AV	2.4842G	37.99	54.00	-16.01	3	Vertical	294	1.00	-
2480MHz	Pass	PK	2.48G	111.26	Inf	-Inf	3	Vertical	294	1.00	-
2480MHz	Pass	PK	2.4842G	60.49	74.00	-13.51	3	Vertical	294	1.00	-
2480MHz	Pass	AV	2.48G	85.63	Inf	-Inf	3	Horizontal	289	1.11	-
2480MHz	Pass	AV	2.4918G	35.82	54.00	-18.18	3	Horizontal	289	1.11	-
2480MHz	Pass	PK	2.48G	108.13	Inf	-Inf	3	Horizontal	289	1.11	-
2480MHz	Pass	PK	2.4918G	58.32	74.00	-15.68	3	Horizontal	289	1.11	-
2480MHz	Pass	AV	4.95999G	25.72	54.00	-28.28	3	Vertical	154	2.99	-
2480MHz	Pass	AV	7.44001G	30.51	54.00	-23.49	3	Vertical	0	2.41	-
2480MHz	Pass	PK	4.95999G	48.22	74.00	-25.78	3	Vertical	154	2.99	-
2480MHz	Pass	PK	7.44001G	53.01	74.00	-20.99	3	Vertical	0	2.41	-
2480MHz	Pass	AV	4.96023G	24.71	54.00	-29.29	3	Horizontal	302	1.50	-
2480MHz	Pass	AV	7.43997G	28.77	54.00	-25.23	3	Horizontal	22	1.08	-
2480MHz	Pass	PK	4.96023G	47.21	74.00	-26.79	3	Horizontal	302	1.50	-
2480MHz	Pass	PK	7.43997G	51.27	74.00	-22.73	3	Horizontal	22	1.08	-
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.366G	35.35	54.00	-18.65	3	Vertical	116	2.62	-
2402MHz	Pass	AV	2.402G	87.86	Inf	-Inf	3	Vertical	116	2.62	-
2402MHz	Pass	PK	2.366G	57.85	74.00	-16.15	3	Vertical	116	2.62	-
2402MHz	Pass	PK	2.402G	110.36	Inf	-Inf	3	Vertical	116	2.62	-
2402MHz	Pass	AV	2.3588G	34.77	54.00	-19.23	3	Horizontal	347	1.50	-
2402MHz	Pass	AV	2.402G	83.42	Inf	-Inf	3	Horizontal	347	1.50	-
2402MHz	Pass	PK	2.3588G	57.27	74.00	-16.73	3	Horizontal	347	1.50	-
2402MHz	Pass	PK	2.402G	105.92	Inf	-Inf	3	Horizontal	347	1.50	-
2402MHz	Pass	AV	4.80393G	23.67	54.00	-30.33	3	Vertical	46	1.50	-
2402MHz	Pass	PK	4.80393G	46.17	74.00	-27.83	3	Vertical	46	1.50	-
2402MHz	Pass	AV	4.80391G	24.15	54.00	-29.85	3	Horizontal	112	1.50	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz	Pass	PK	4.80391G	46.65	74.00	-27.35	3	Horizontal	112	1.50	-
2440MHz	Pass	AV	2.3712G	34.48	54.00	-19.52	3	Vertical	294	1.00	-
2440MHz	Pass	AV	2.44G	88.39	Inf	-Inf	3	Vertical	294	1.00	-
2440MHz	Pass	AV	2.4848G	35.12	54.00	-18.88	3	Vertical	294	1.00	-
2440MHz	Pass	PK	2.3712G	56.98	74.00	-17.02	3	Vertical	294	1.00	-
2440MHz	Pass	PK	2.44G	110.89	Inf	-Inf	3	Vertical	294	1.00	-
2440MHz	Pass	PK	2.4848G	57.62	74.00	-16.38	3	Vertical	294	1.00	-
2440MHz	Pass	AV	2.374G	34.78	54.00	-19.22	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	2.44G	85.03	Inf	-Inf	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	2.496G	34.74	54.00	-19.26	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.374G	57.28	74.00	-16.72	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.44G	107.53	Inf	-Inf	3	Horizontal	287	1.00	-
2440MHz	Pass	PK	2.496G	57.24	74.00	-16.76	3	Horizontal	287	1.00	-
2440MHz	Pass	AV	4.87936G	24.39	54.00	-29.61	3	Vertical	228	1.90	-
2440MHz	Pass	AV	7.32G	28.77	54.00	-25.23	3	Vertical	125	1.50	-
2440MHz	Pass	PK	4.87936G	46.89	74.00	-27.11	3	Vertical	219	2.15	-
2440MHz	Pass	PK	7.32G	51.27	74.00	-22.73	3	Vertical	125	1.50	-
2440MHz	Pass	AV	4.88G	23.72	54.00	-30.28	3	Horizontal	152	1.47	-
2440MHz	Pass	AV	7.31975G	28.38	54.00	-25.62	3	Horizontal	190	1.07	-
2440MHz	Pass	PK	4.88G	46.22	74.00	-27.78	3	Horizontal	152	1.47	-
2440MHz	Pass	PK	7.31975G	50.88	74.00	-23.12	3	Horizontal	190	1.07	-
2480MHz	Pass	AV	2.48G	90.00	Inf	-Inf	3	Vertical	293	1.00	-
2480MHz	Pass	AV	2.4854G	38.05	54.00	-15.95	3	Vertical	293	1.00	-
2480MHz	Pass	PK	2.48G	112.50	Inf	-Inf	3	Vertical	293	1.00	-
2480MHz	Pass	PK	2.4854G	60.55	74.00	-13.45	3	Vertical	293	1.00	-
2480MHz	Pass	AV	2.48G	86.30	Inf	-Inf	3	Horizontal	289	1.10	-
2480MHz	Pass	AV	2.486G	37.65	54.00	-16.35	3	Horizontal	289	1.10	-
2480MHz	Pass	PK	2.48G	108.80	Inf	-Inf	3	Horizontal	289	1.10	-
2480MHz	Pass	PK	2.486G	60.15	74.00	-13.85	3	Horizontal	289	1.10	-
2480MHz	Pass	AV	4.96039G	24.89	54.00	-29.11	3	Vertical	0	1.50	-
2480MHz	Pass	AV	7.43962G	28.75	54.00	-25.25	3	Vertical	339	2.67	-
2480MHz	Pass	PK	4.96039G	47.39	74.00	-26.61	3	Vertical	0	1.50	-
2480MHz	Pass	PK	7.43962G	51.25	74.00	-22.75	3	Vertical	339	2.67	-
2480MHz	Pass	AV	4.96009G	24.22	54.00	-29.78	3	Horizontal	299	1.50	-
2480MHz	Pass	AV	7.43967G	28.32	54.00	-25.68	3	Horizontal	20	1.50	-
2480MHz	Pass	PK	4.96009G	46.72	74.00	-27.28	3	Horizontal	299	1.50	-
2480MHz	Pass	PK	7.43967G	50.82	74.00	-23.18	3	Horizontal	20	1.50	-

BT-BR(1Mbps)

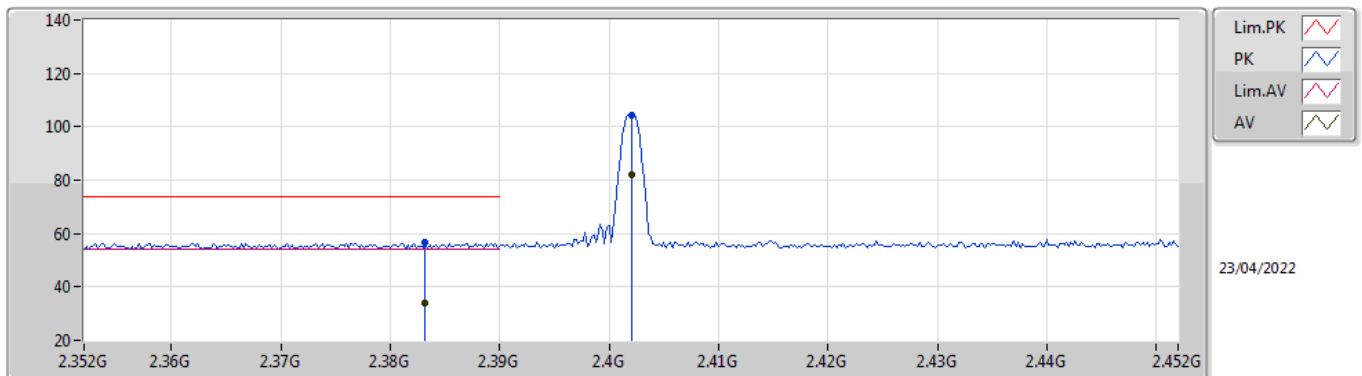
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3714G	34.93	54.00	-19.07	31.88	3	Vertical	121	1.53	-	3.05	27.33	4.55	-
AV	2.402G	85.86	Inf	-Inf	32.08	3	Vertical	121	1.53	-	53.78	27.50	4.58	-
PK	2.3714G	57.43	74.00	-16.57	31.88	3	Vertical	121	1.53	-	25.55	27.33	4.55	-
PK	2.402G	108.36	Inf	-Inf	32.08	3	Vertical	121	1.53	-	76.28	27.50	4.58	-

BT-BR(1Mbps)

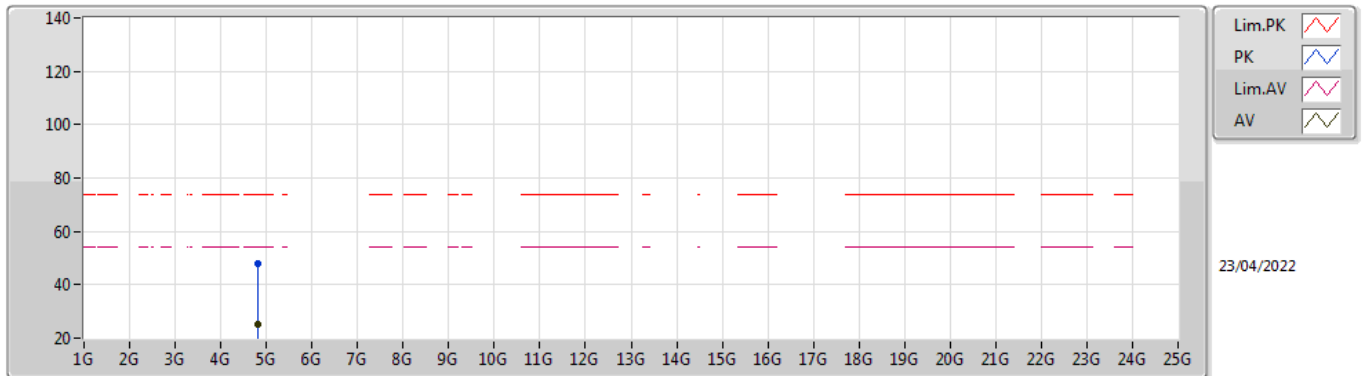
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3832G	34.09	54.00	-19.91	31.96	3	Horizontal	349	1.50	-	2.13	27.40	4.56	-
AV	2.402G	81.90	Inf	-Inf	32.08	3	Horizontal	349	1.50	-	49.82	27.50	4.58	-
PK	2.3832G	56.59	74.00	-17.41	31.96	3	Horizontal	349	1.50	-	24.63	27.40	4.56	-
PK	2.402G	104.40	Inf	-Inf	32.08	3	Horizontal	349	1.50	-	72.32	27.50	4.58	-

BT-BR(1Mbps)

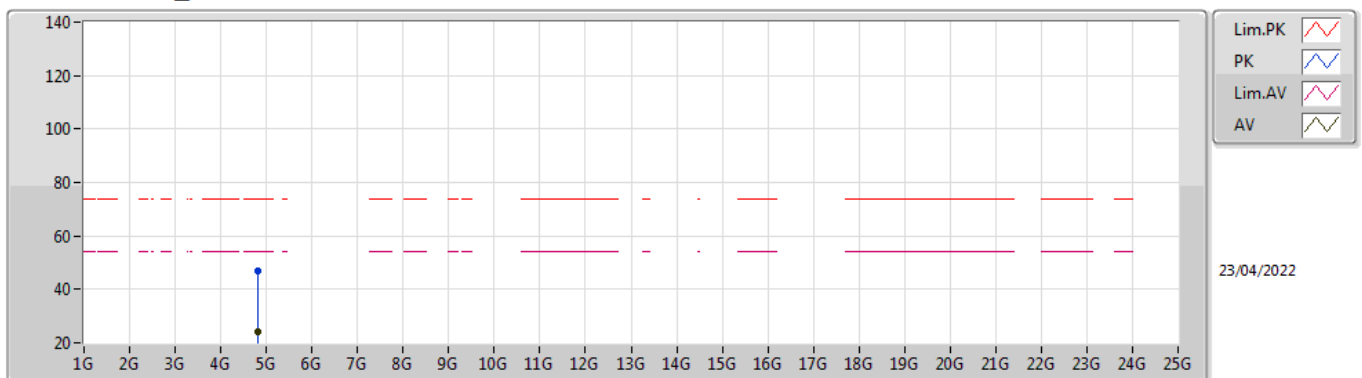
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80372G	25.38	54.00	-28.62	4.17	3	Vertical	308	1.26	-	21.21	32.32	6.66	34.81
PK	4.80372G	47.88	74.00	-26.12	4.17	3	Vertical	308	1.26	-	43.71	32.32	6.66	34.81

BT-BR(1Mbps)

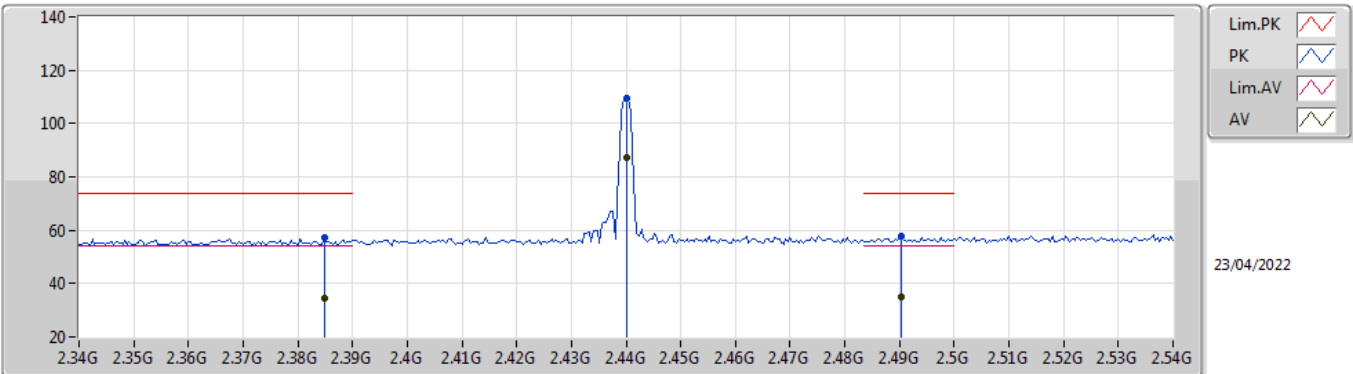
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80433G	24.14	54.00	-29.86	4.18	3	Horizontal	304	1.00	-	19.96	32.33	6.66	34.81
PK	4.80433G	46.64	74.00	-27.36	4.18	3	Horizontal	304	1.00	-	42.46	32.33	6.66	34.81

BT-BR(1Mbps)

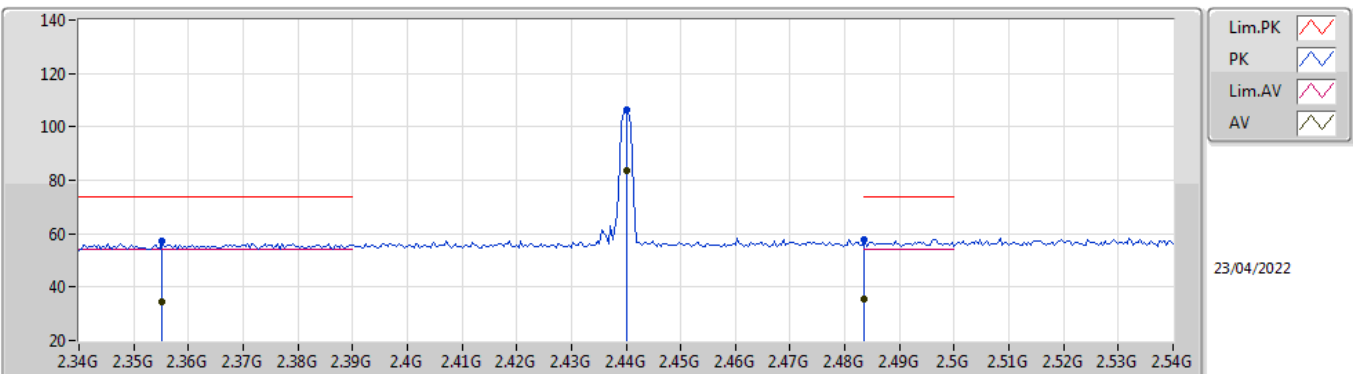
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3848G	34.65	54.00	-19.35	31.98	3	Vertical	295	1.00	-	2.67	27.41	4.57	-
AV	2.44G	87.09	Inf	-Inf	32.18	3	Vertical	295	1.00	-	54.91	27.58	4.60	-
AV	2.4904G	35.02	54.00	-18.98	32.46	3	Vertical	295	1.00	-	2.56	27.84	4.62	-
PK	2.3848G	57.15	74.00	-16.85	31.98	3	Vertical	295	1.00	-	25.17	27.41	4.57	-
PK	2.44G	109.59	Inf	-Inf	32.18	3	Vertical	295	1.00	-	77.41	27.58	4.60	-
PK	2.4904G	57.52	74.00	-16.48	32.46	3	Vertical	295	1.00	-	25.06	27.84	4.62	-

BT-BR(1Mbps)

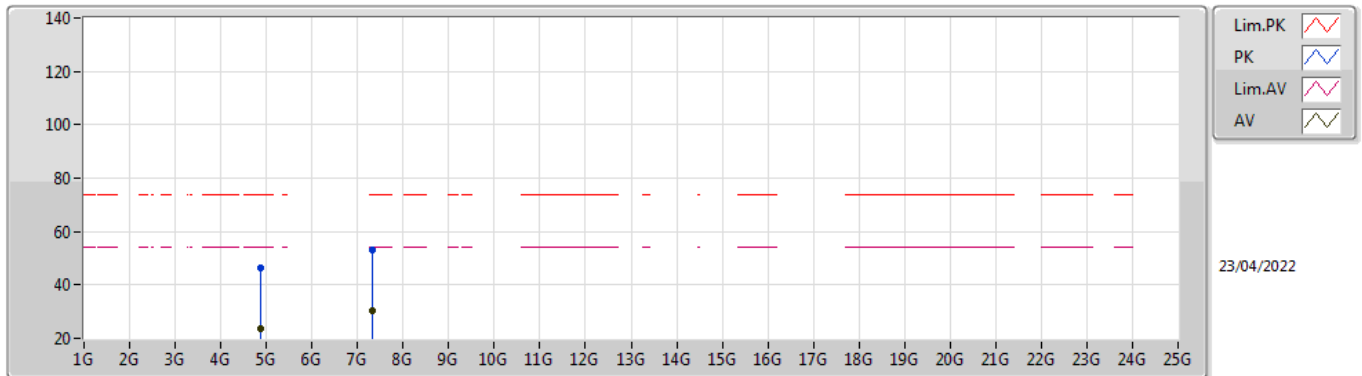
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3552G	34.60	54.00	-19.40	31.77	3	Horizontal	287	1.00	-	2.83	27.23	4.54	-
AV	2.44G	83.74	Inf	-Inf	32.18	3	Horizontal	287	1.00	-	51.56	27.58	4.60	-
AV	2.4835G	35.48	54.00	-18.52	32.41	3	Horizontal	287	1.00	-	3.07	27.80	4.61	-
PK	2.3552G	57.10	74.00	-16.90	31.77	3	Horizontal	287	1.00	-	25.33	27.23	4.54	-
PK	2.44G	106.24	Inf	-Inf	32.18	3	Horizontal	287	1.00	-	74.06	27.58	4.60	-
PK	2.4835G	57.98	74.00	-16.02	32.41	3	Horizontal	287	1.00	-	25.57	27.80	4.61	-

BT-BR(1Mbps)

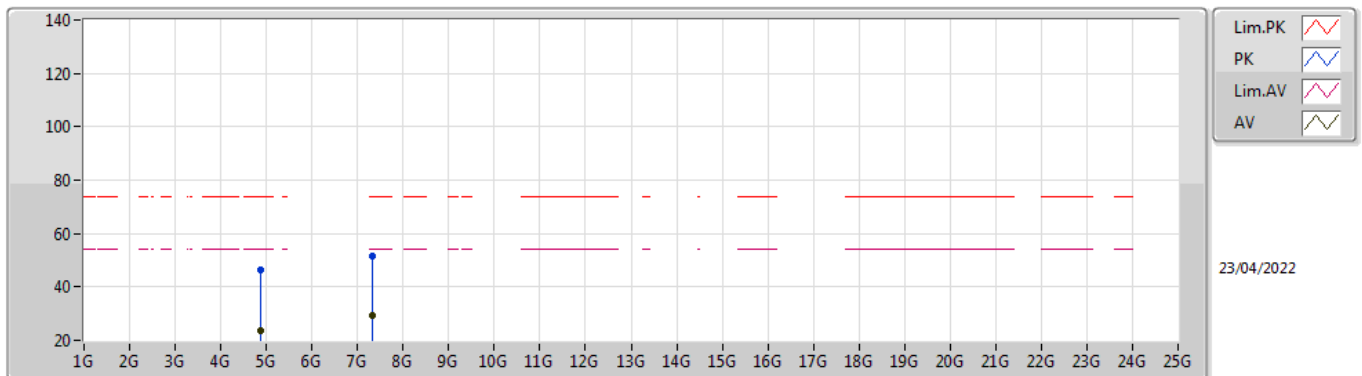
2440MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87944G	23.80	54.00	-30.20	4.65	3	Vertical	150	1.01	-	19.15	32.72	6.72	34.79
AV	7.32021G	30.58	54.00	-23.42	9.73	3	Vertical	341	2.63	-	20.85	36.68	7.87	34.82
PK	4.87944G	46.30	74.00	-27.70	4.65	3	Vertical	150	1.01	-	41.65	32.72	6.72	34.79
PK	7.32021G	53.08	74.00	-20.92	9.73	3	Vertical	341	2.63	-	43.35	36.68	7.87	34.82

BT-BR(1Mbps)

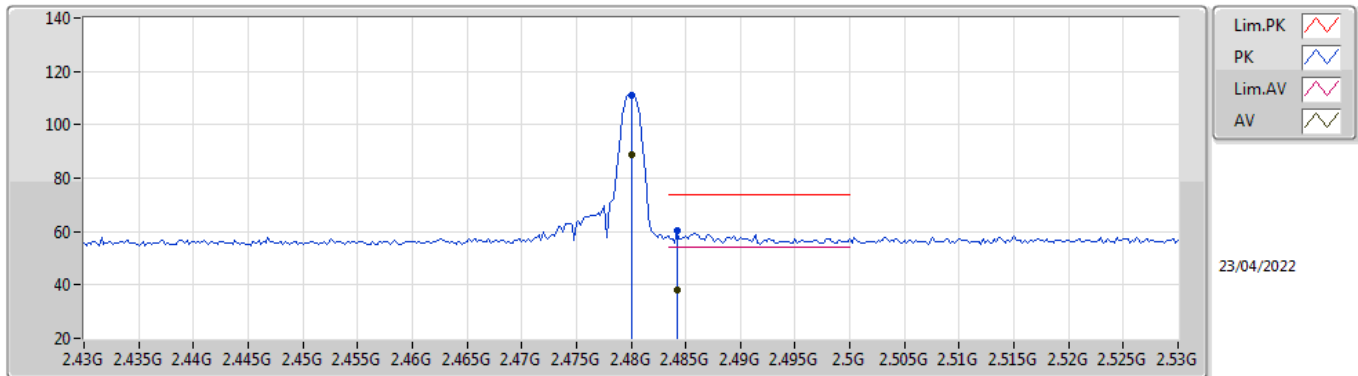
2440MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87953G	23.64	54.00	-30.36	4.65	3	Horizontal	301	1.50	-	18.99	32.72	6.72	34.79
AV	7.31975G	29.11	54.00	-24.89	9.73	3	Horizontal	23	1.30	-	19.38	36.68	7.87	34.82
PK	4.87953G	46.14	74.00	-27.86	4.65	3	Horizontal	301	1.50	-	41.49	32.72	6.72	34.79
PK	7.31975G	51.61	74.00	-22.39	9.73	3	Horizontal	23	1.30	-	41.88	36.68	7.87	34.82

BT-BR(1Mbps)

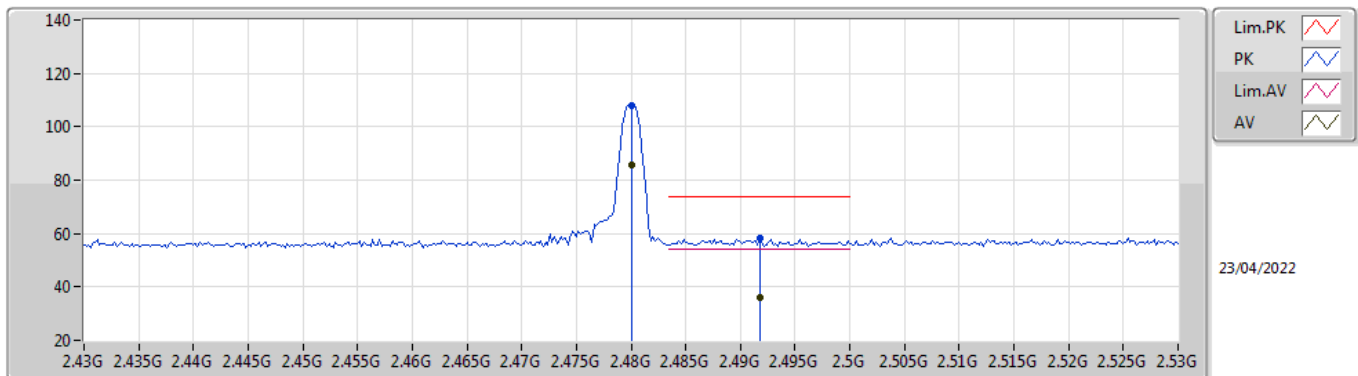
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	88.76	Inf	-Inf	32.39	3	Vertical	294	1.00	-	56.37	27.78	4.61	-
AV	2.4842G	37.99	54.00	-16.01	32.42	3	Vertical	294	1.00	-	5.57	27.81	4.61	-
PK	2.48G	111.26	Inf	-Inf	32.39	3	Vertical	294	1.00	-	78.87	27.78	4.61	-
PK	2.4842G	60.49	74.00	-13.51	32.42	3	Vertical	294	1.00	-	28.07	27.81	4.61	-

BT-BR(1Mbps)

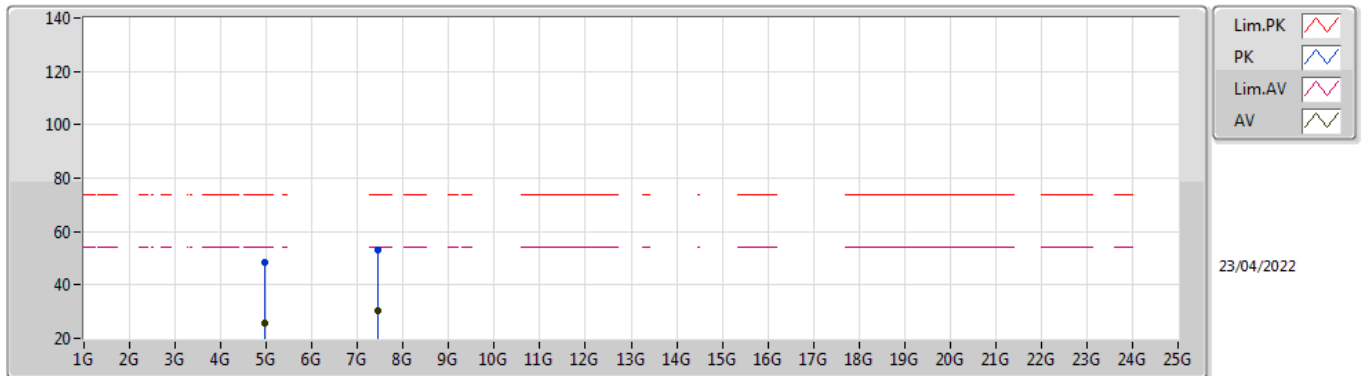
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	85.63	Inf	-Inf	32.39	3	Horizontal	289	1.11	-	53.24	27.78	4.61	-
AV	2.4918G	35.82	54.00	-18.18	32.47	3	Horizontal	289	1.11	-	3.35	27.85	4.62	-
PK	2.48G	108.13	Inf	-Inf	32.39	3	Horizontal	289	1.11	-	75.74	27.78	4.61	-
PK	2.4918G	58.32	74.00	-15.68	32.47	3	Horizontal	289	1.11	-	25.85	27.85	4.62	-

BT-BR(1Mbps)

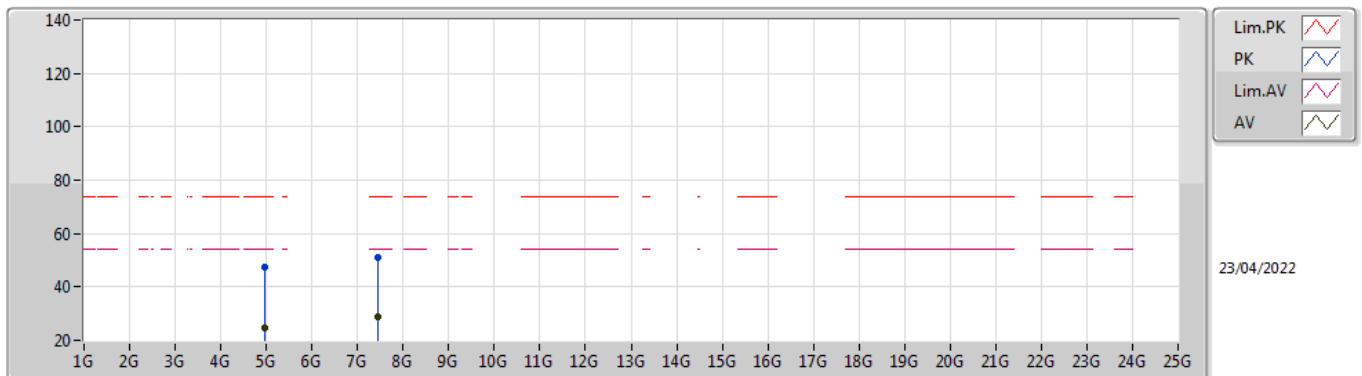
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95999G	25.72	54.00	-28.28	5.03	3	Vertical	154	2.99	-	20.69	33.02	6.78	34.77
AV	7.44001G	30.51	54.00	-23.49	9.52	3	Vertical	0	2.41	-	20.99	36.30	8.06	34.84
PK	4.95999G	48.22	74.00	-25.78	5.03	3	Vertical	154	2.99	-	43.19	33.02	6.78	34.77
PK	7.44001G	53.01	74.00	-20.99	9.52	3	Vertical	0	2.41	-	43.49	36.30	8.06	34.84

BT-BR(1Mbps)

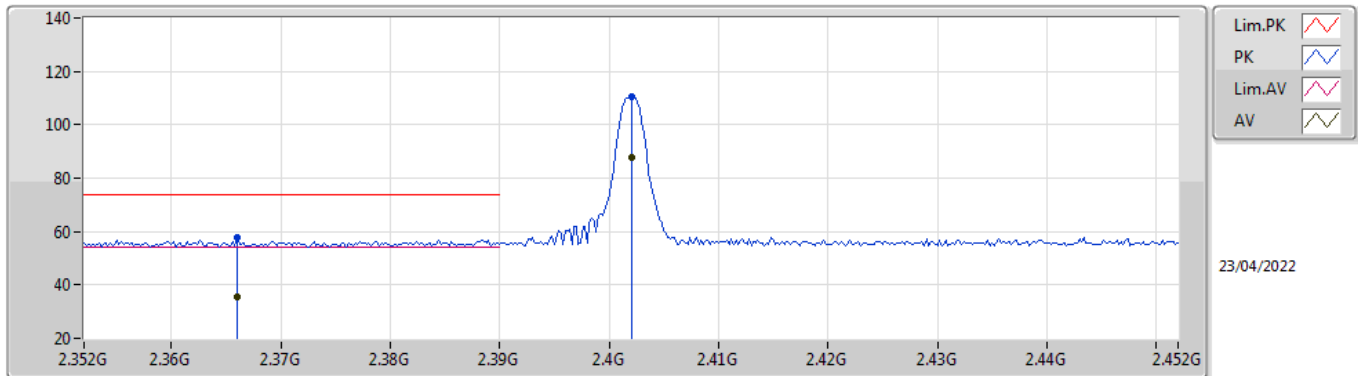
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96023G	24.71	54.00	-29.29	5.03	3	Horizontal	302	1.50	-	19.68	33.02	6.78	34.77
AV	7.43997G	28.77	54.00	-25.23	9.52	3	Horizontal	22	1.08	-	19.25	36.30	8.06	34.84
PK	4.96023G	47.21	74.00	-26.79	5.03	3	Horizontal	302	1.50	-	42.18	33.02	6.78	34.77
PK	7.43997G	51.27	74.00	-22.73	9.52	3	Horizontal	22	1.08	-	41.75	36.30	8.06	34.84

BT-EDR(3Mbps)

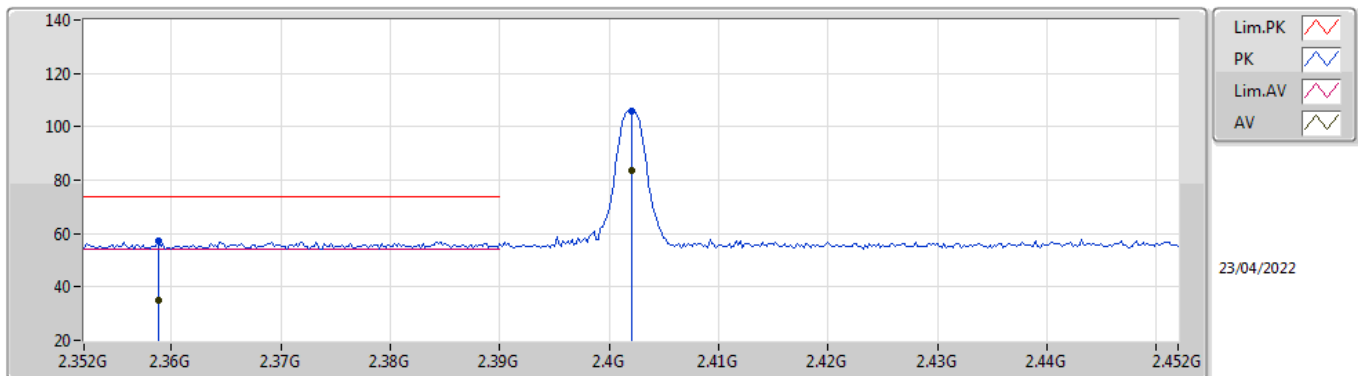
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.366G	35.35	54.00	-18.65	31.85	3	Vertical	116	2.62	-	3.50	27.30	4.55	-
AV	2.402G	87.86	Inf	-Inf	32.08	3	Vertical	116	2.62	-	55.78	27.50	4.58	-
PK	2.366G	57.85	74.00	-16.15	31.85	3	Vertical	116	2.62	-	26.00	27.30	4.55	-
PK	2.402G	110.36	Inf	-Inf	32.08	3	Vertical	116	2.62	-	78.28	27.50	4.58	-

BT-EDR(3Mbps)

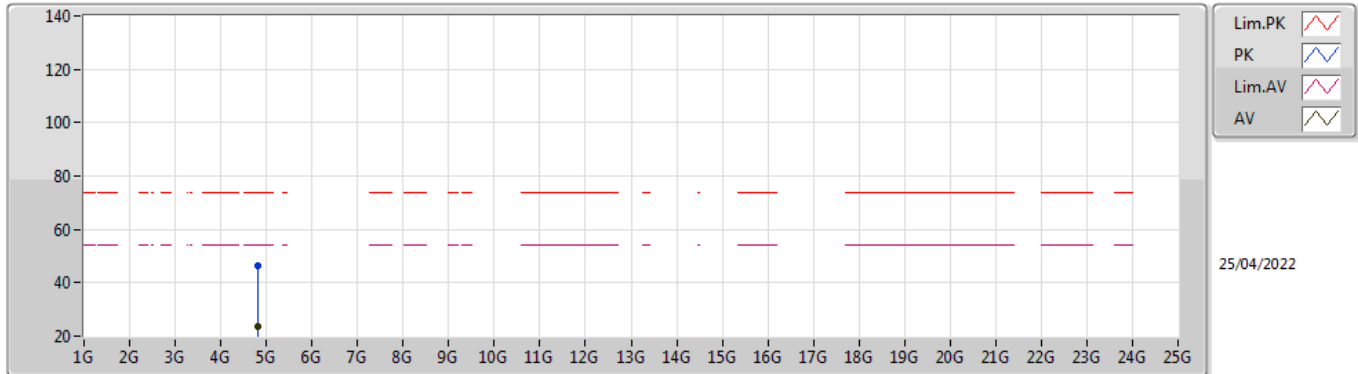
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3588G	34.77	54.00	-19.23	31.79	3	Horizontal	347	1.50	-	2.98	27.25	4.54	-
AV	2.402G	83.42	Inf	-Inf	32.08	3	Horizontal	347	1.50	-	51.34	27.50	4.58	-
PK	2.3588G	57.27	74.00	-16.73	31.79	3	Horizontal	347	1.50	-	25.48	27.25	4.54	-
PK	2.402G	105.92	Inf	-Inf	32.08	3	Horizontal	347	1.50	-	73.84	27.50	4.58	-

BT-EDR(3Mbps)

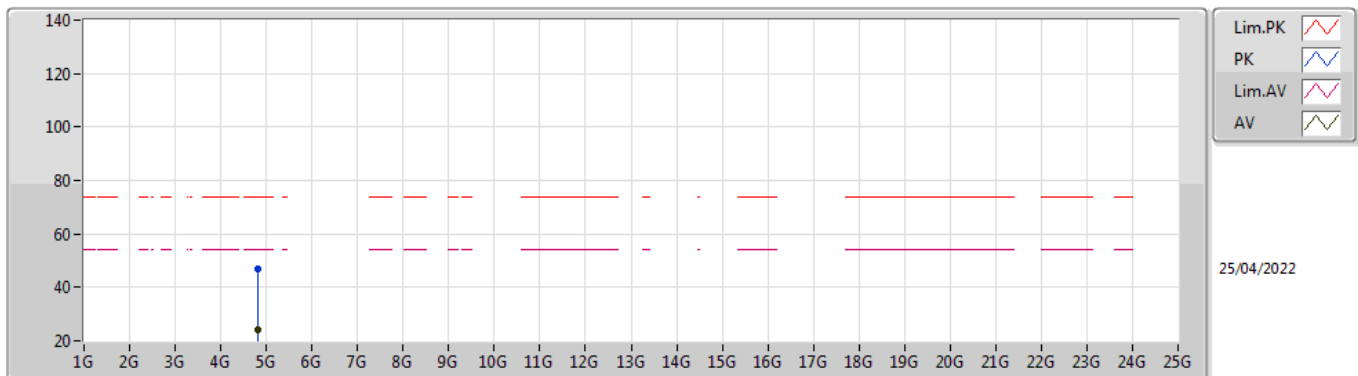
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80393G	23.67	54.00	-30.33	4.17	3	Vertical	46	1.50	-	19.50	32.32	6.66	34.81
PK	4.80393G	46.17	74.00	-27.83	4.17	3	Vertical	46	1.50	-	42.00	32.32	6.66	34.81

BT-EDR(3Mbps)

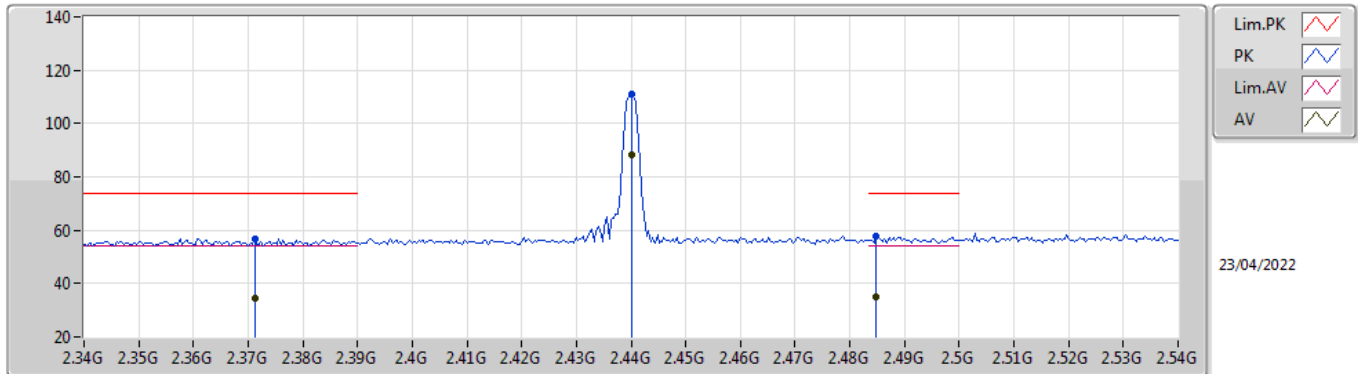
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80391G	24.15	54.00	-29.85	4.17	3	Horizontal	112	1.50	-	19.98	32.32	6.66	34.81
PK	4.80391G	46.65	74.00	-27.35	4.17	3	Horizontal	112	1.50	-	42.48	32.32	6.66	34.81

BT-EDR(3Mbps)

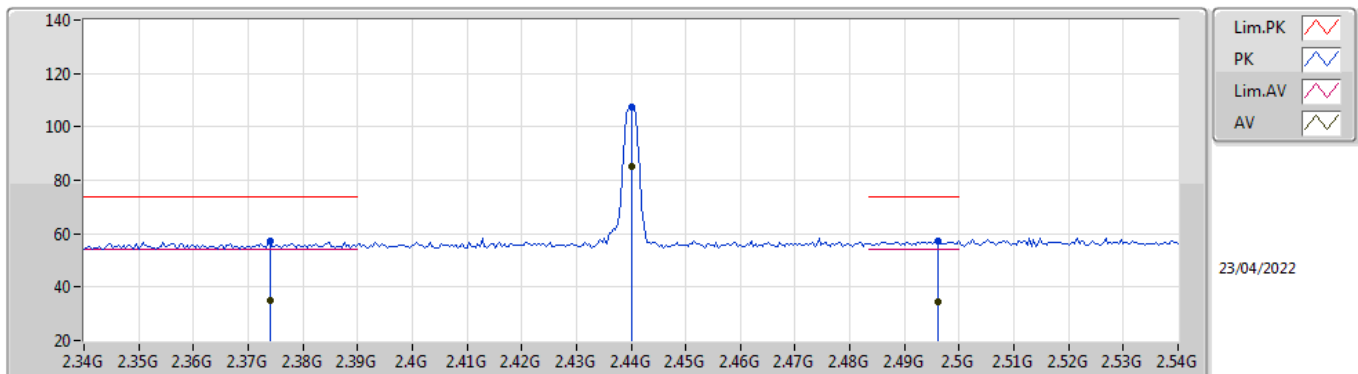
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3712G	34.48	54.00	-19.52	31.88	3	Vertical	294	1.00	-	2.60	27.33	4.55	-
AV	2.44G	88.39	Inf	-Inf	32.18	3	Vertical	294	1.00	-	56.21	27.58	4.60	-
AV	2.4848G	35.12	54.00	-18.88	32.42	3	Vertical	294	1.00	-	2.70	27.81	4.61	-
PK	2.3712G	56.98	74.00	-17.02	31.88	3	Vertical	294	1.00	-	25.10	27.33	4.55	-
PK	2.44G	110.89	Inf	-Inf	32.18	3	Vertical	294	1.00	-	78.71	27.58	4.60	-
PK	2.4848G	57.62	74.00	-16.38	32.42	3	Vertical	294	1.00	-	25.20	27.81	4.61	-

BT-EDR(3Mbps)

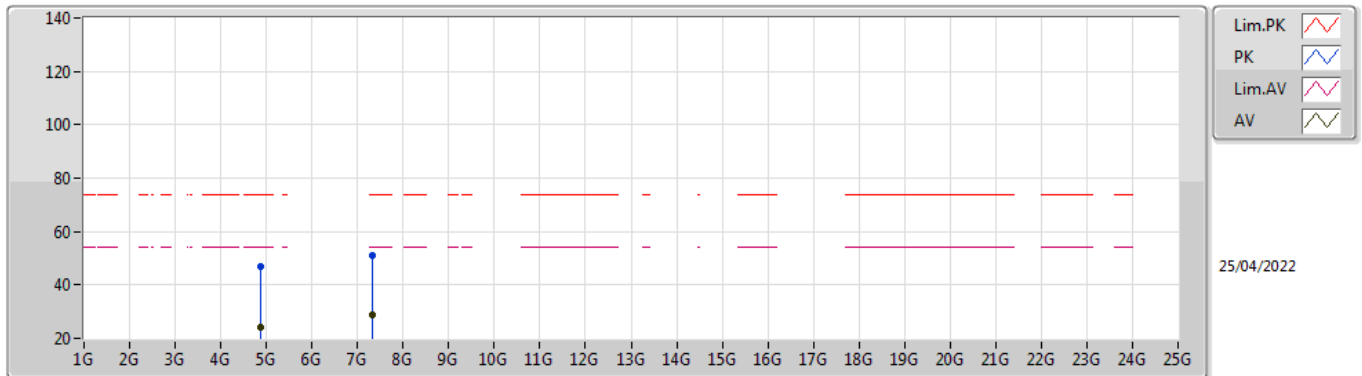
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.374G	34.78	54.00	-19.22	31.90	3	Horizontal	287	1.00	-	2.88	27.34	4.56	-
AV	2.44G	85.03	Inf	-Inf	32.18	3	Horizontal	287	1.00	-	52.85	27.58	4.60	-
AV	2.496G	34.74	54.00	-19.26	32.50	3	Horizontal	287	1.00	-	2.24	27.88	4.62	-
PK	2.374G	57.28	74.00	-16.72	31.90	3	Horizontal	287	1.00	-	25.38	27.34	4.56	-
PK	2.44G	107.53	Inf	-Inf	32.18	3	Horizontal	287	1.00	-	75.35	27.58	4.60	-
PK	2.496G	57.24	74.00	-16.76	32.50	3	Horizontal	287	1.00	-	24.74	27.88	4.62	-

BT-EDR(3Mbps)

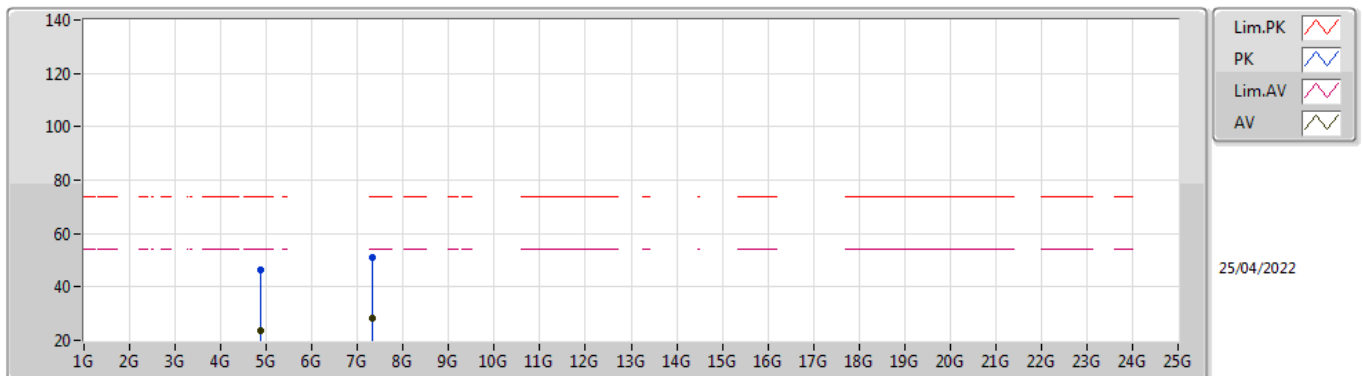
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87936G	24.39	54.00	-29.61	4.65	3	Vertical	228	1.90	-	19.74	32.72	6.72	34.79
AV	7.32G	28.77	54.00	-25.23	9.73	3	Vertical	125	1.50	-	19.04	36.68	7.87	34.82
PK	4.87936G	46.89	74.00	-27.11	4.65	3	Vertical	219	2.15	-	42.24	32.72	6.72	34.79
PK	7.32G	51.27	74.00	-22.73	9.73	3	Vertical	125	1.50	-	41.54	36.68	7.87	34.82

BT-EDR(3Mbps)

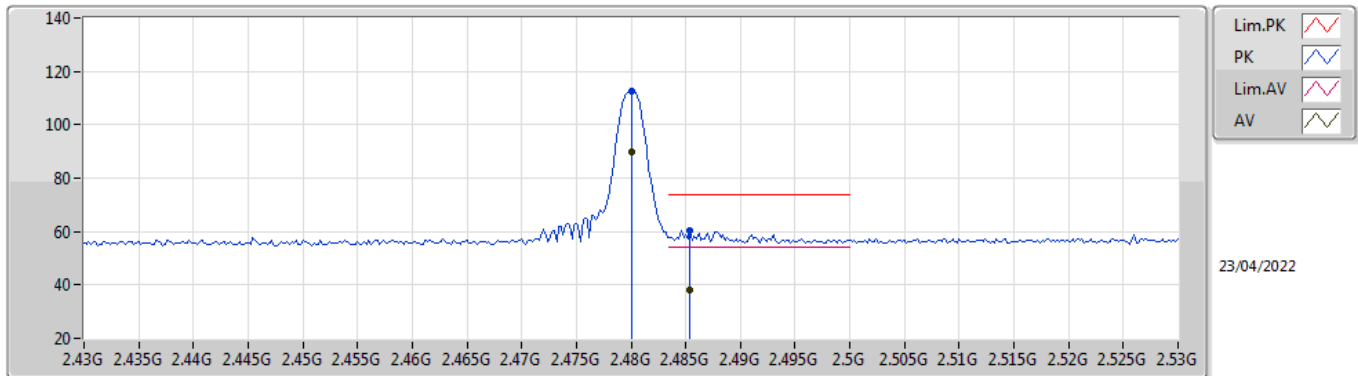
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.88G	23.72	54.00	-30.28	4.65	3	Horizontal	152	1.47	-	19.07	32.72	6.72	34.79
AV	7.31975G	28.38	54.00	-25.62	9.73	3	Horizontal	190	1.07	-	18.65	36.68	7.87	34.82
PK	4.88G	46.22	74.00	-27.78	4.65	3	Horizontal	152	1.47	-	41.57	32.72	6.72	34.79
PK	7.31975G	50.88	74.00	-23.12	9.73	3	Horizontal	190	1.07	-	41.15	36.68	7.87	34.82

BT-EDR(3Mbps)

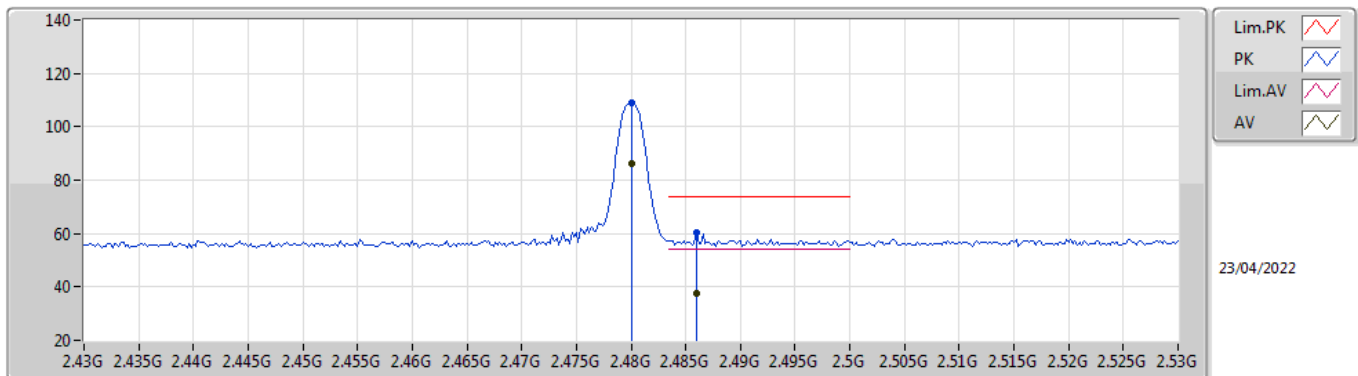
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	90.00	Inf	-Inf	32.39	3	Vertical	293	1.00	-	57.61	27.78	4.61	-
AV	2.4854G	38.05	54.00	-15.95	32.42	3	Vertical	293	1.00	-	5.63	27.81	4.61	-
PK	2.48G	112.50	Inf	-Inf	32.39	3	Vertical	293	1.00	-	80.11	27.78	4.61	-
PK	2.4854G	60.55	74.00	-13.45	32.42	3	Vertical	293	1.00	-	28.13	27.81	4.61	-

BT-EDR(3Mbps)

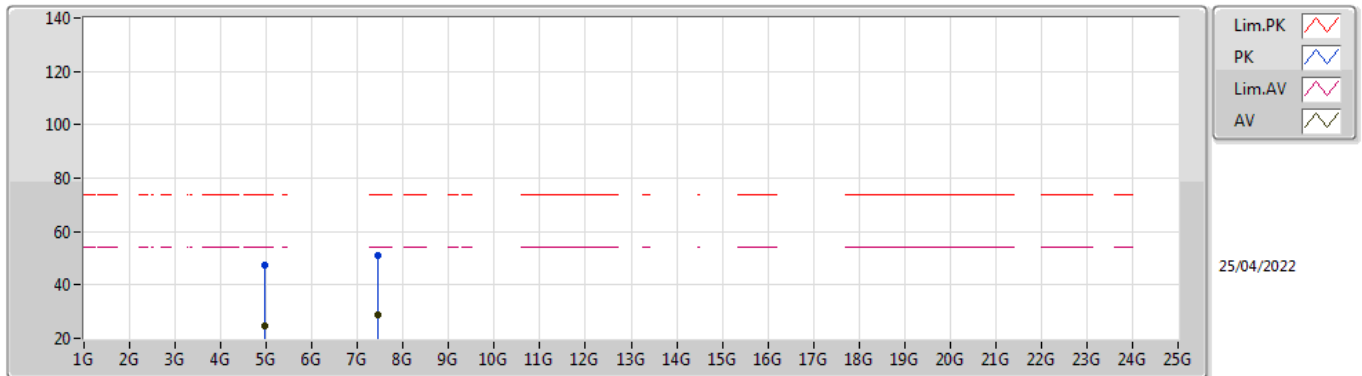
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	86.30	Inf	-Inf	32.39	3	Horizontal	289	1.10	-	53.91	27.78	4.61	-
AV	2.486G	37.65	54.00	-16.35	32.43	3	Horizontal	289	1.10	-	5.22	27.82	4.61	-
PK	2.48G	108.80	Inf	-Inf	32.39	3	Horizontal	289	1.10	-	76.41	27.78	4.61	-
PK	2.486G	60.15	74.00	-13.85	32.43	3	Horizontal	289	1.10	-	27.72	27.82	4.61	-

BT-EDR(3Mbps)

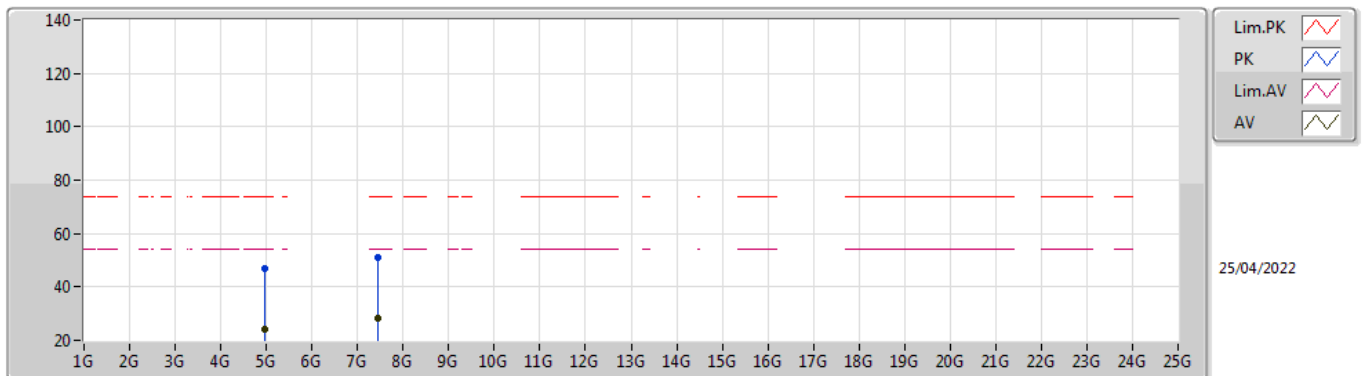
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96039G	24.89	54.00	-29.11	5.03	3	Vertical	0	1.50	-	19.86	33.02	6.78	34.77
AV	7.43962G	28.75	54.00	-25.25	9.52	3	Vertical	339	2.67	-	19.23	36.30	8.06	34.84
PK	4.96039G	47.39	74.00	-26.61	5.03	3	Vertical	0	1.50	-	42.36	33.02	6.78	34.77
PK	7.43962G	51.25	74.00	-22.75	9.52	3	Vertical	339	2.67	-	41.73	36.30	8.06	34.84

BT-EDR(3Mbps)

2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96009G	24.22	54.00	-29.78	5.03	3	Horizontal	299	1.50	-	19.19	33.02	6.78	34.77
AV	7.43967G	28.32	54.00	-25.68	9.52	3	Horizontal	20	1.50	-	18.80	36.30	8.06	34.84
PK	4.96009G	46.72	74.00	-27.28	5.03	3	Horizontal	299	1.50	-	41.69	33.02	6.78	34.77
PK	7.43967G	50.82	74.00	-23.18	9.52	3	Horizontal	20	1.50	-	41.30	36.30	8.06	34.84



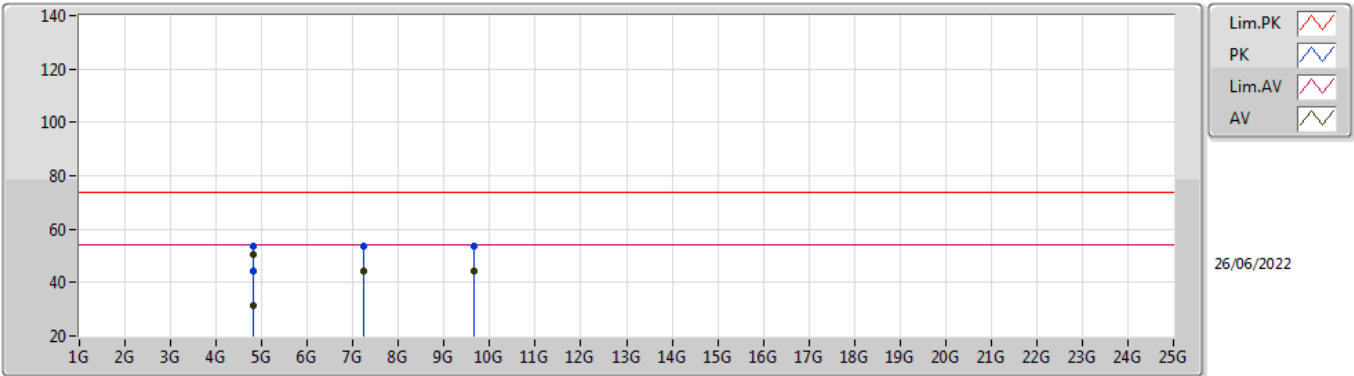
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	4.82397G	52.37	54.00	-1.63	Horizontal
Mode 2	Pass	AV	11.4877G	49.05	54.00	-4.95	Vertical

Result

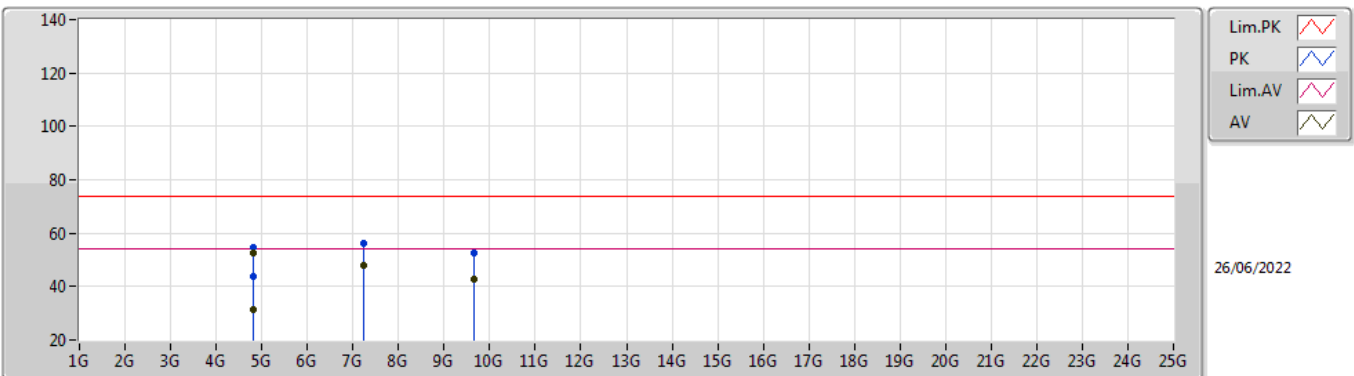
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	4.79973G	31.20	54.00	-22.80	3	Vertical	134	1.50	-
Mode 1	Pass	AV	4.8239G	50.69	54.00	-3.31	3	Vertical	295	1.33	-
Mode 1	Pass	AV	7.23668G	44.13	54.00	-9.87	3	Vertical	267	1.27	-
Mode 1	Pass	AV	9.64786G	44.43	54.00	-9.57	3	Vertical	151	1.06	-
Mode 1	Pass	PK	4.80869G	44.18	74.00	-29.82	3	Vertical	134	1.50	-
Mode 1	Pass	PK	4.8239G	53.46	74.00	-20.54	3	Vertical	295	1.33	-
Mode 1	Pass	PK	7.23696G	53.67	74.00	-20.33	3	Vertical	267	1.27	-
Mode 1	Pass	PK	9.64794G	53.56	74.00	-20.44	3	Vertical	151	1.06	-
Mode 1	Pass	AV	4.8016G	31.26	54.00	-22.74	3	Horizontal	195	1.50	-
Mode 1	Pass	AV	4.82397G	52.37	54.00	-1.63	3	Horizontal	185	2.26	-
Mode 1	Pass	AV	7.23504G	47.72	54.00	-6.28	3	Horizontal	39	2.00	-
Mode 1	Pass	AV	9.64794G	42.54	54.00	-11.46	3	Horizontal	14	1.01	-
Mode 1	Pass	PK	4.80549G	43.63	74.00	-30.37	3	Horizontal	195	1.50	-
Mode 1	Pass	PK	4.82403G	54.77	74.00	-19.23	3	Horizontal	185	2.26	-
Mode 1	Pass	PK	7.235G	56.24	74.00	-17.76	3	Horizontal	39	2.00	-
Mode 1	Pass	PK	9.64758G	52.81	74.00	-21.19	3	Horizontal	14	1.01	-
Mode 2	Pass	AV	4.79909G	42.13	54.00	-11.87	3	Vertical	214	1.30	-
Mode 2	Pass	PK	4.80147G	54.57	74.00	-19.43	3	Vertical	214	1.30	-
Mode 2	Pass	AV	17.2334G	47.17	68.20	-21.03	3	Vertical	190	2.00	-
Mode 2	Pass	PK	17.22582G	58.73	68.20	-9.47	3	Vertical	190	2.00	-
Mode 2	Pass	AV	11.4877G	49.05	54.00	-4.95	3	Vertical	185	1.20	-
Mode 2	Pass	PK	11.48251G	60.56	74.00	-13.44	3	Vertical	185	1.20	-
Mode 2	Pass	AV	4.79951G	42.14	54.00	-11.86	3	Horizontal	43	1.50	-
Mode 2	Pass	PK	4.8044G	54.80	74.00	-19.20	3	Horizontal	43	1.50	-
Mode 2	Pass	PK	11.49449G	61.39	74.00	-12.61	3	Horizontal	45	1.06	-
Mode 2	Pass	AV	11.492G	48.76	54.00	-5.24	3	Horizontal	45	1.06	-
Mode 2	Pass	AV	17.2358G	45.61	68.20	-22.59	3	Horizontal	0	1.16	-
Mode 2	Pass	PK	17.22472G	56.78	68.20	-11.42	3	Horizontal	0	1.16	-

Radiated Emissions above 1GHz_Mode 1



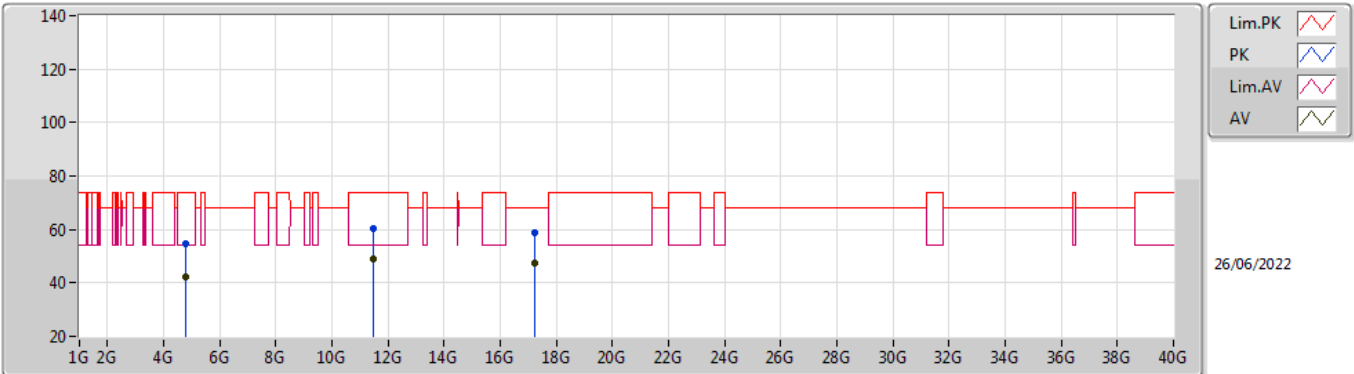
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.79973G	31.20	54.00	-22.80	4.31	3	Vertical	134	1.50	-	26.89	32.50	6.26	34.45
AV	4.8239G	50.69	54.00	-3.31	4.42	3	Vertical	295	1.33	-	46.27	32.60	6.27	34.45
AV	7.23668G	44.13	54.00	-9.87	10.25	3	Vertical	267	1.27	-	33.88	36.87	8.17	34.79
AV	9.64786G	44.43	54.00	-9.57	12.25	3	Vertical	151	1.06	-	32.18	38.40	9.07	35.22
PK	4.80869G	44.18	74.00	-29.82	4.35	3	Vertical	134	1.50	-	39.83	32.53	6.27	34.45
PK	4.8239G	53.46	74.00	-20.54	4.42	3	Vertical	295	1.33	-	49.04	32.60	6.27	34.45
PK	7.23696G	53.67	74.00	-20.33	10.25	3	Vertical	267	1.27	-	43.42	36.87	8.17	34.79
PK	9.64794G	53.56	74.00	-20.44	12.25	3	Vertical	151	1.06	-	41.31	38.40	9.07	35.22

Radiated Emissions above 1GHz_Mode 1



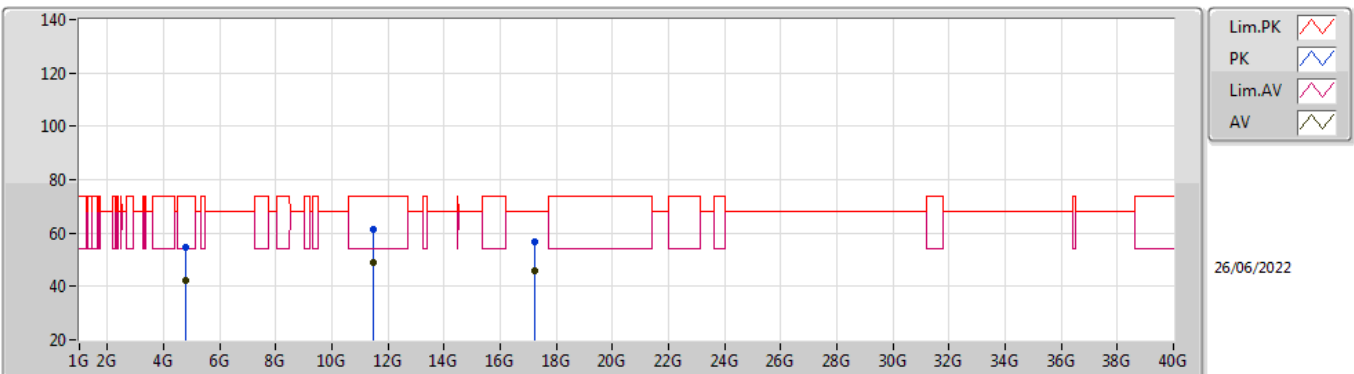
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.8016G	31.26	54.00	-22.74	4.32	3	Horizontal	195	1.50	-	26.94	32.51	6.26	34.45
AV	4.82397G	52.37	54.00	-1.63	4.42	3	Horizontal	185	2.26	-	47.95	32.60	6.27	34.45
AV	7.23504G	47.72	54.00	-6.28	10.25	3	Horizontal	39	2.00	-	37.47	36.87	8.17	34.79
AV	9.64794G	42.54	54.00	-11.46	12.25	3	Horizontal	14	1.01	-	30.29	38.40	9.07	35.22
PK	4.80549G	43.63	74.00	-30.37	4.33	3	Horizontal	195	1.50	-	39.30	32.52	6.26	34.45
PK	4.82403G	54.77	74.00	-19.23	4.42	3	Horizontal	185	2.26	-	50.35	32.60	6.27	34.45
PK	7.235G	56.24	74.00	-17.76	10.25	3	Horizontal	39	2.00	-	45.99	36.87	8.17	34.79
PK	9.64758G	52.81	74.00	-21.19	12.25	3	Horizontal	14	1.01	-	40.56	38.40	9.07	35.22

Radiated Emissions above 1GHz_Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.79909G	42.13	54.00	-11.87	4.30	3	Vertical	214	1.30	-	37.83	32.49	6.26	34.45
PK	4.80147G	54.57	74.00	-19.43	4.32	3	Vertical	214	1.30	-	50.25	32.51	6.26	34.45
AV	17.2334G	47.17	68.20	-21.03	16.72	3	Vertical	190	2.00	-	30.45	38.43	12.33	34.04
PK	17.22582G	58.73	68.20	-9.47	16.72	3	Vertical	190	2.00	-	42.01	38.43	12.33	34.04
AV	11.4877G	49.05	54.00	-4.95	14.95	3	Vertical	185	1.20	-	34.10	39.00	9.91	33.96
PK	11.48251G	60.56	74.00	-13.44	14.95	3	Vertical	185	1.20	-	45.61	39.00	9.91	33.96

Radiated Emissions above 1GHz_Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.79951G	42.14	54.00	-11.86	4.31	3	Horizontal	43	1.50	-	37.83	32.50	6.26	34.45
PK	4.8044G	54.80	74.00	-19.20	4.33	3	Horizontal	43	1.50	-	50.47	32.52	6.26	34.45
PK	11.49449G	61.39	74.00	-12.61	14.96	3	Horizontal	45	1.06	-	46.43	39.00	9.91	33.95
AV	11.492G	48.76	54.00	-5.24	14.95	3	Horizontal	45	1.06	-	33.81	39.00	9.91	33.96
AV	17.2358G	45.61	68.20	-22.59	16.73	3	Horizontal	0	1.16	-	28.88	38.44	12.33	34.04
PK	17.22472G	56.78	68.20	-11.42	16.71	3	Horizontal	0	1.16	-	40.07	38.42	12.33	34.04