

FCC Radio Test Report

FCC ID : 2A2UE-UF-001
Equipment : unfilter u_puretone
Brand Name : unfilter
Model Name : uf-001
Applicant : UNFILTER COMPANY LTD
5F.-2, No.308, Sec. 1, Neihu Rd., Neihu Dist., Taipei City
114, Taiwan (R.O.C.)
Manufacturer : OBO Pro.2 Inc.
No. 18 Yan-Wu Road, Taoyuan City 330, Taiwan(R.O.C.)
Standard : 47 CFR FCC Part 15.247

The product was received on Jun. 08, 2021, and testing was started from Jun. 25, 2021 and completed on Jun. 28, 2021. 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: Allen Lin

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	-
Note : From Sporton Project No.:FR160334AD.				

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: Howard Lee

Report Producer: Amber Chiu

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	Gain (dBi)
1	FEIMIN TECHNOLOGY CO.,LTD.	SYN3 Antenna 1812	FPC	N/A	0

For BT function:

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

Ant. 1 can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From DC Power supply / From Host system / From Battery		
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)	0.646	1.9	2.897m	1k
BT-EDR(2Mbps)	0.764	1.17	2.912m	1k
BT-EDR(3Mbps)	0.764	1.17	2.912m	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	Billy Wang	25.5~26.9°C / 58~60%	28/Jun/2021
RF Conducted	TH07-HY	Alan Chien	20.1~26.9°C / 50~60%	25/Jun/2021
Radiated	03CH03-HY	Billy Wang	24.9~26.9°C / 50~60%	25/Jun/2021~26/Jun/2021
☐ Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)			
	TEL: 886-3-318-0787		FAX: 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
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	AWRDLab R_1_0_5_199
-----------------------	---------------------

Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	0x00
2440MHz	0x00
2480MHz	0x00
BT-EDR(2Mbps)	-
2402MHz	0x03
2440MHz	0x03
2480MHz	0x03
BT-EDR(3Mbps)	-
2402MHz	0x03
2440MHz	0x03
2480MHz	0x03

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/CRX
1	DC power supply

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)

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/CRX		
1	DC power supply		
Operating Mode > 1GHz	CTX/CRX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	

2.3 Accessories

Accessories				
Charging Case	Brand Name	unfilter	Model Name	Uf-001
	Manufacturer	OBO Pro.2 Inc.	SN	uf29AE000005
Charging Case Battery	Brand Name	Xin Yu GanFeng Eletronices Co.,Ltd.	Model Name	702334
	Manufacturer	Xin Yu GanFeng Eletronices Co.,Ltd.	SN	uf29AE000005
	Power Rating	3.7Vdc, 500mAh	Type	Li-ion
USB Type C Cable	Brand Name	unfilter	Model Name	u_puretone
	Power Cord	0.12 meter, non-shielded cable		
Battery	Brand Name	XINYU GANFENG ELECTRONICS	Model Name	1254
	Manufacturer	XINYU GANFENG ELECTRONICS	SN	Uf11AB999999
	Power Rating	3.7 Vdc, 60 mAh	Type	Li-ion, Yes

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

2.4 Support Equipment

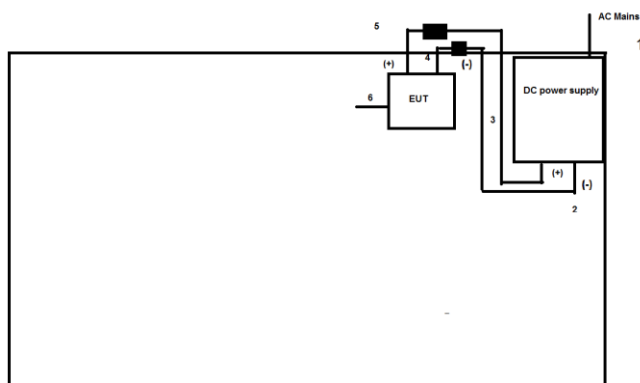
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	DC Power Supply	GW	GPS-3030DD	-	-
2	DC Power cable(+)	MiSUMi	WTN1227-RED	-	-
3	DC Power cable(-)	MiSUMi	WTN1227-BLACK	-	-
4	Fixture Cable	WAVESHARE	FTDI FT232RL USB UART	-	-

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	DC Power Supply	GW	GPS-3030DD	-	-

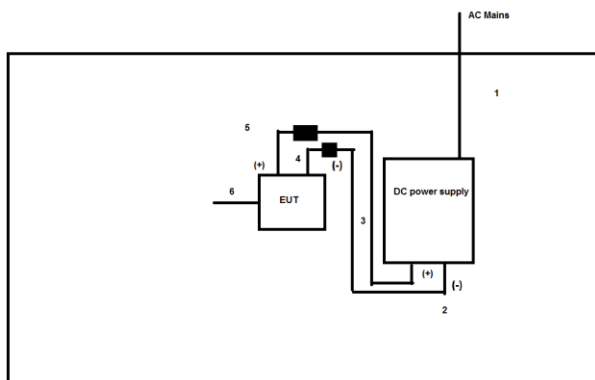
Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	DC Power Supply	GW	GPS-3030DD	-	-
2	DC Power cable(+)	MiSUMi	WTN1227-RED	-	-
3	DC Power cable(-)	MiSUMi	WTN1227-BLACK	-	-
4	Fixture Cable	WAVESHARE	FTDI FT232RL USB UART	-	-

2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable(-)	No	1.0	-
3	DC Power cable(+)	No	1.0	-
4	DC Power cable(-)	No	0.1	-
5	DC Power cable(+)	No	0.1	-
6	Fixture Cable	No	0.07	-

Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable(-)	No	1.0	-
3	DC Power cable(+)	No	1.0	-
4	DC Power cable(-)	No	0.1	-
5	DC Power cable(+)	No	0.1	-
6	Fixture Cable	No	0.07	-

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

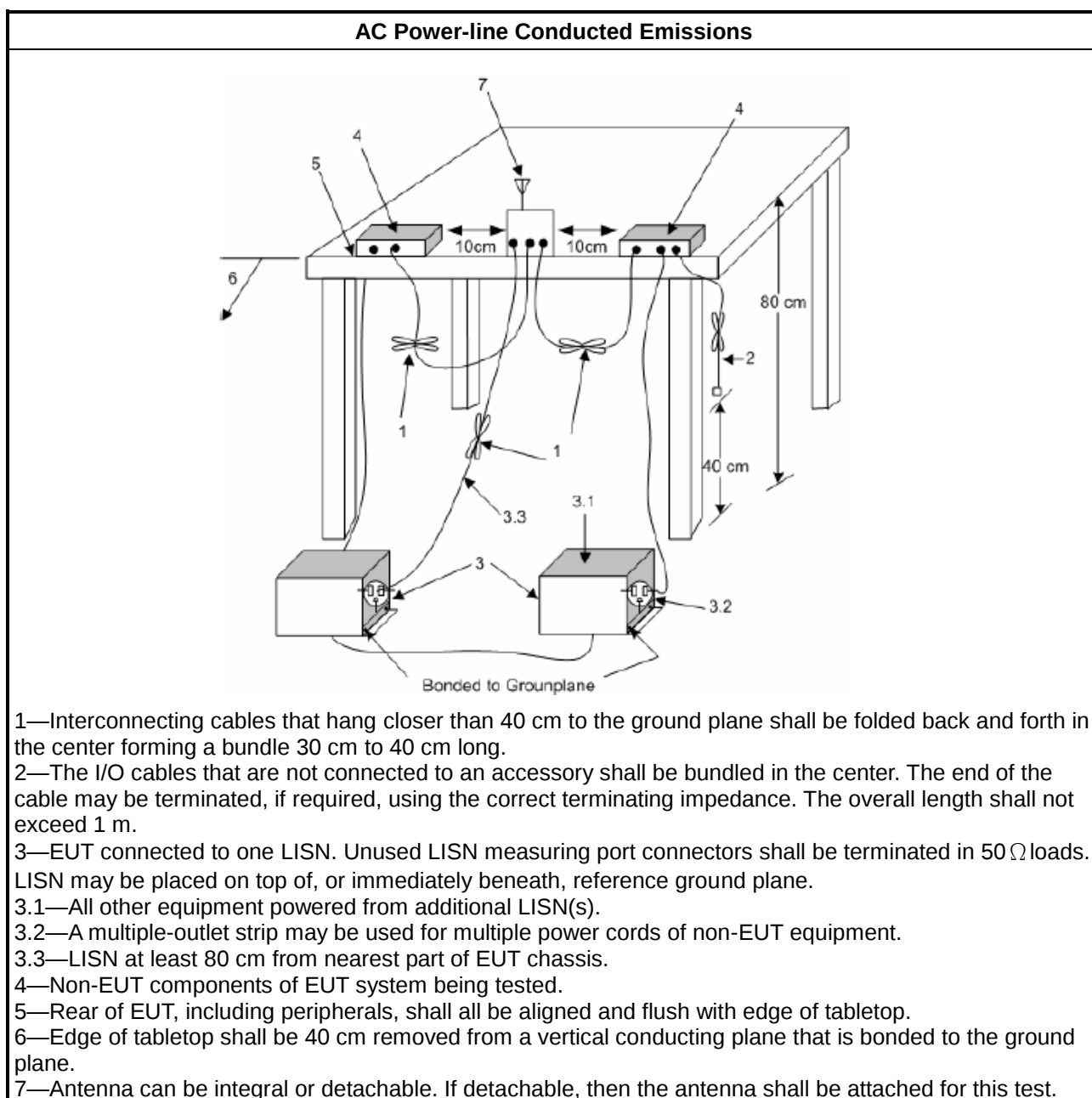
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

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	

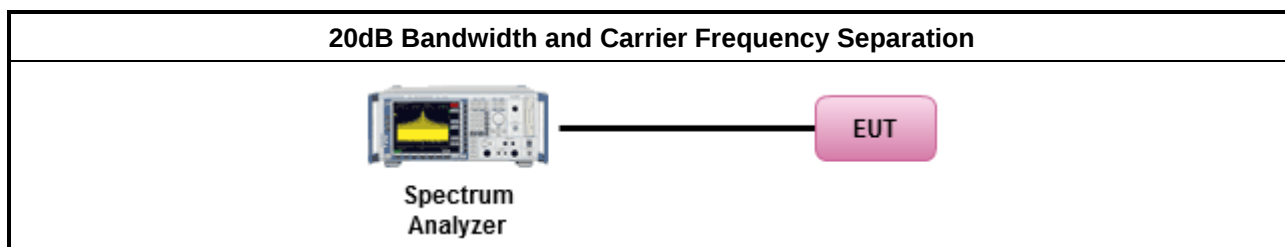
3.2.2 Measuring Instruments

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	

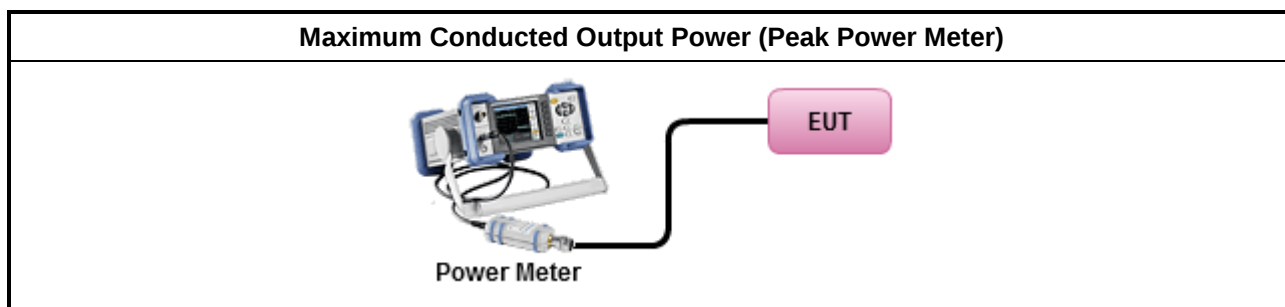
3.3.2 Measuring Instruments

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

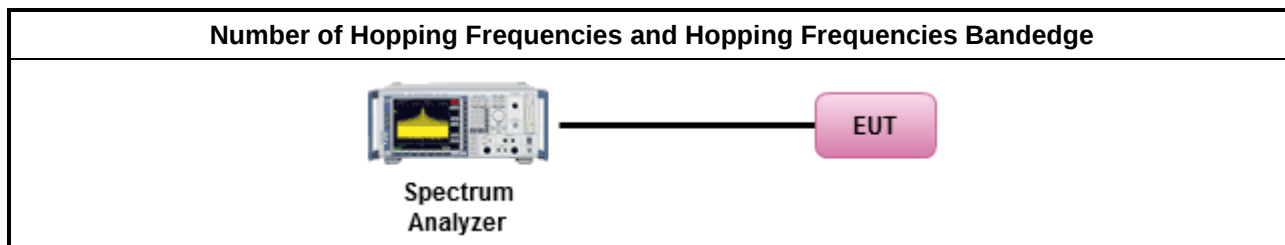
3.4.3 Measuring Instruments

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	

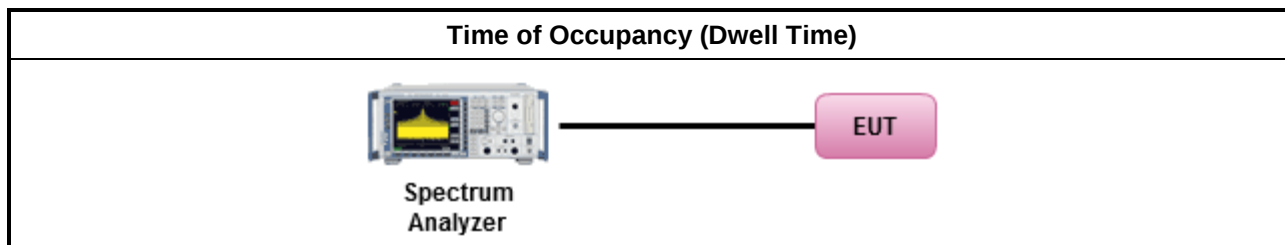
3.5.2 Measuring Instruments

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.	

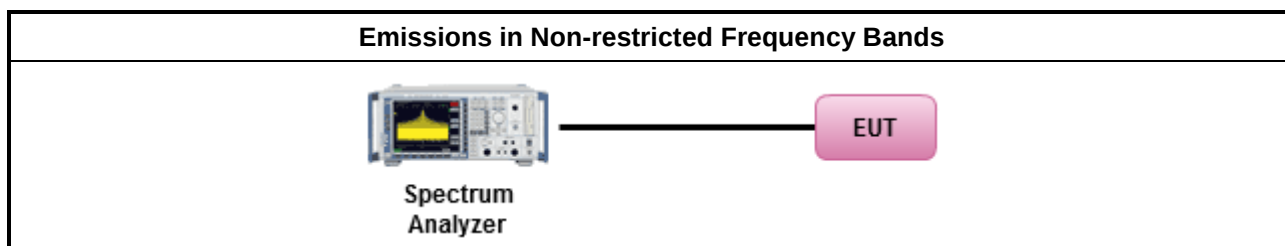
3.6.2 Measuring Instruments

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

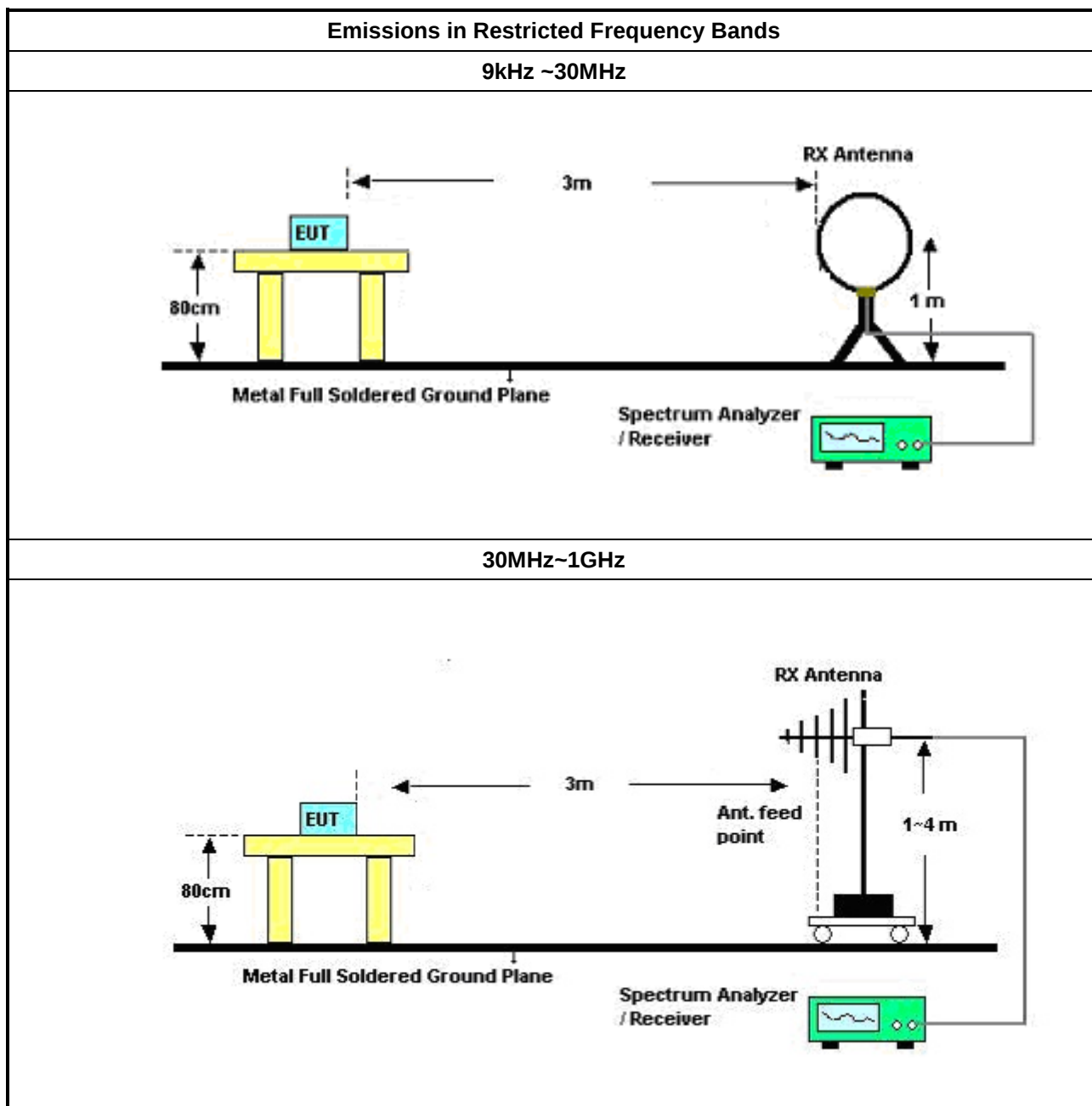
Test Method	
▪ The average emission levels shall be measured in [hopping duty factor].	
▪ Refer as ANSI C63.10; clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
▪ For the transmitter unwanted emissions 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.

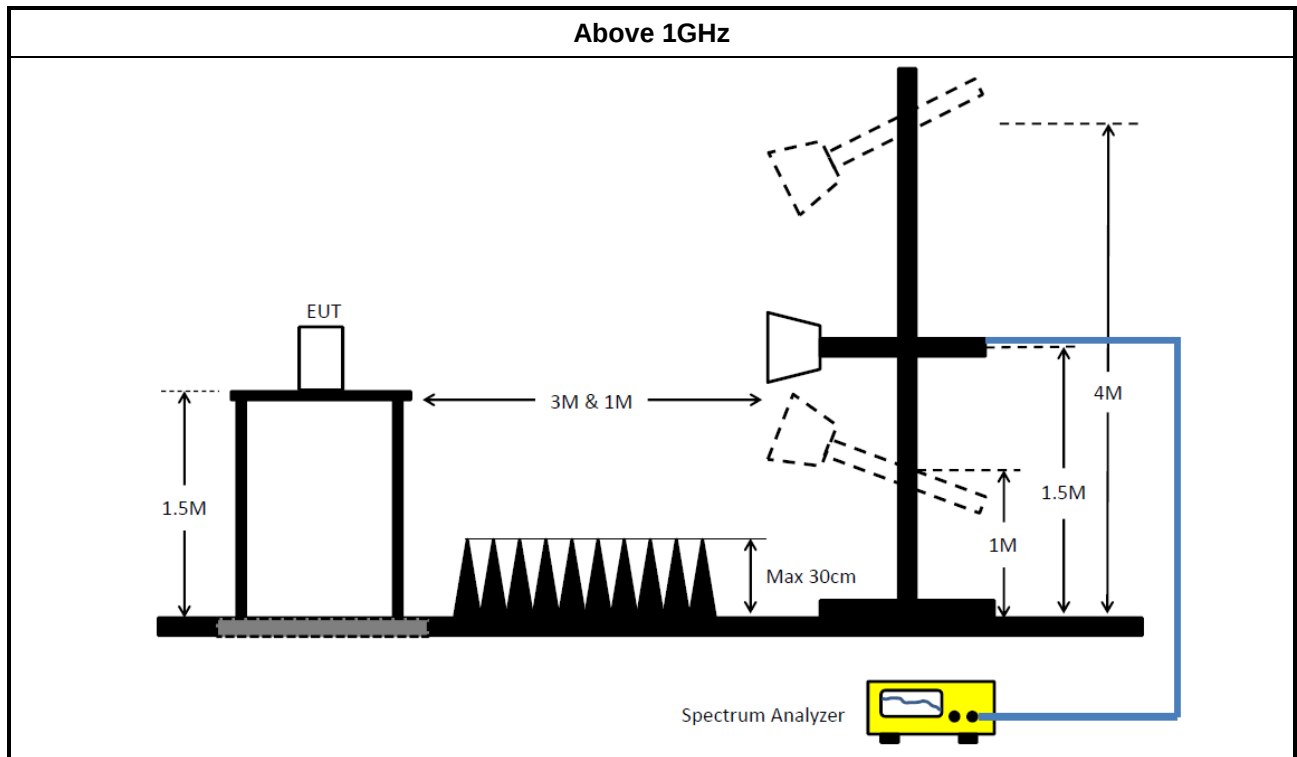
3.7.4 Measurement Results Calculation

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	ESR	102052	9kHz ~ 3.6GHz	19/Apr/2021	18/Apr/2022
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	11/Nov/2020	10/Nov/2021
RF Cable 5m	TITAN	TITAN	CO04-cable-01	0.1MHz~200MHz	03/Mar/2021	02/Mar/2022
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	21/Sep/2020	20/Sep/2021

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	26/Mar/2021	25/Mar/2022
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	20/Oct/2020	19/Oct/2021
Pulse Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	27/Nov/2020	26/Nov/2021
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	27/Nov/2020	26/Nov/2021

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	06/Aug/2020	05/Aug/2021
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz~18GHz 3m	04/Aug/2020	03/Aug/2021
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	19/Aug/2020	18/Aug/2021
Amplifier	HP	8447D	2944A08033	10kHz~1.3GHz	13/Apr/2021	12/Apr/2022
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz~26.5GHz	06/Oct/2020	05/Oct/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	06/Sep/2020	05/Sep/2021
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	24/Mar/2021	23/Mar/2022
RF Cable-R03m	Jye Bao	RG142	MY37335/4+CB021-1+CB021-2	30MHz~1GHz	17/Mar/2021	16/Mar/2022
RF CABLE 5+6m	HUBER+SUHNER	SUOFLEX 104	SN MY38596/4+S N 804300/4	1GHz~40GHz	04/Aug/2020	03/Aug/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz~40GHz	11/Mar/2021	10/Mar/2022
Microwave Premplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	09/Mar/2021	08/Mar/2022
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz~40GHz	18/Mar/2021	17/Mar/2022
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2021	15/Mar/2022
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	19/Apr/2021	18/Apr/2022
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~30MHz	16/Jun/2021	15/Jun/2022



Conducted Emissions at Powerline

Appendix A

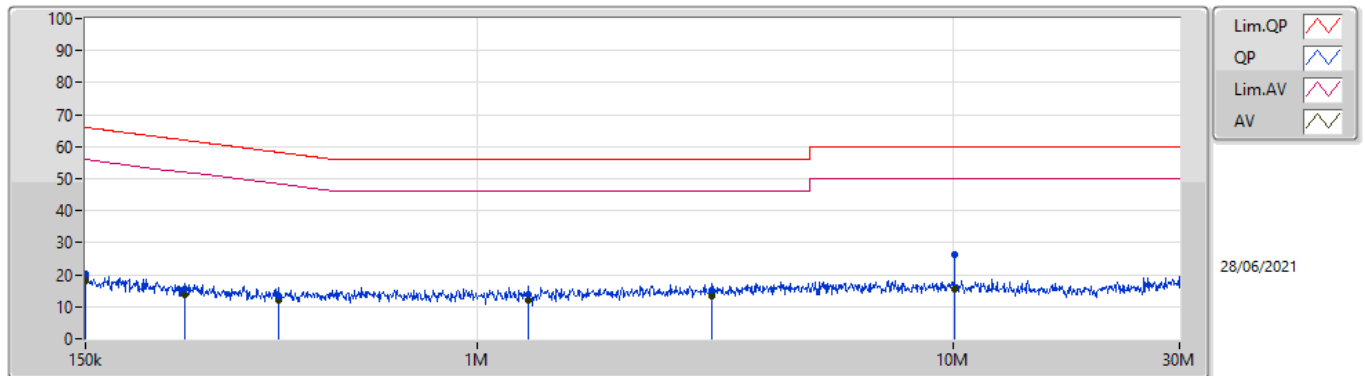
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	3.542M	13.77	46.00	-32.23	Neutral

Mode Config

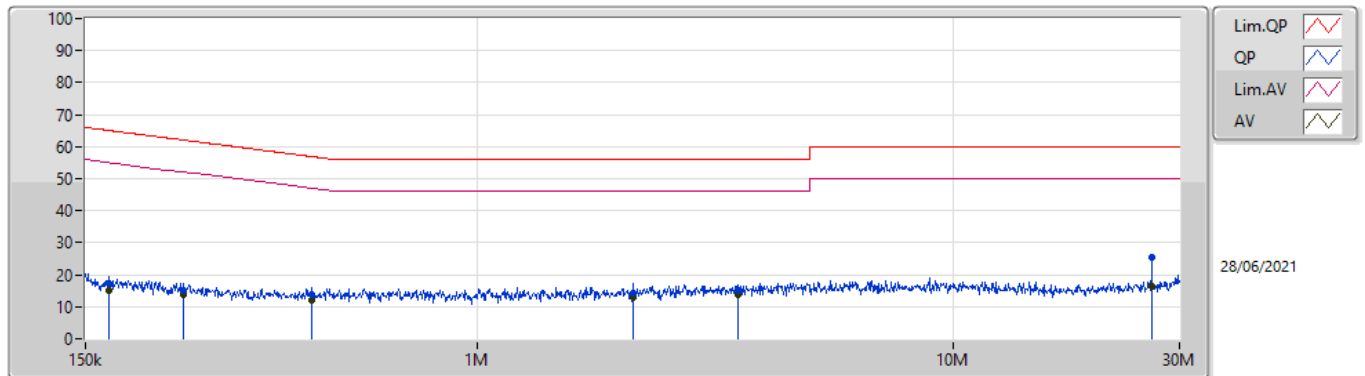
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	150k	20.21	66.00	-45.79	Line	-
Mode 1	Pass	AV	150k	18.09	56.00	-37.91	Line	-
Mode 1	Pass	QP	243.148k	15.52	61.98	-46.46	Line	-
Mode 1	Pass	AV	243.148k	13.88	51.98	-38.10	Line	-
Mode 1	Pass	QP	383.278k	13.57	58.20	-44.63	Line	-
Mode 1	Pass	AV	383.278k	12.28	48.20	-35.92	Line	-
Mode 1	Pass	QP	1.285M	13.65	56.00	-42.35	Line	-
Mode 1	Pass	AV	1.285M	12.08	46.00	-33.92	Line	-
Mode 1	Pass	QP	3.117M	14.92	56.00	-41.08	Line	-
Mode 1	Pass	AV	3.117M	13.54	46.00	-32.46	Line	-
Mode 1	Pass	QP	10.079M	26.11	60.00	-33.89	Line	-
Mode 1	Pass	AV	10.079M	15.50	50.00	-34.50	Line	-
Mode 1	Pass	QP	168.41k	17.11	65.04	-47.93	Neutral	-
Mode 1	Pass	AV	168.41k	15.30	55.04	-39.74	Neutral	-
Mode 1	Pass	QP	241.214k	15.29	62.06	-46.77	Neutral	-
Mode 1	Pass	AV	241.214k	13.77	52.06	-38.29	Neutral	-
Mode 1	Pass	QP	447.846k	13.64	56.92	-43.28	Neutral	-
Mode 1	Pass	AV	447.846k	12.13	46.92	-34.79	Neutral	-
Mode 1	Pass	QP	2.125M	14.02	56.00	-41.98	Neutral	-
Mode 1	Pass	AV	2.125M	12.76	46.00	-33.24	Neutral	-
Mode 1	Pass	QP	3.542M	15.22	56.00	-40.78	Neutral	-
Mode 1	Pass	AV	3.542M	13.77	46.00	-32.23	Neutral	-
Mode 1	Pass	QP	26.169M	25.51	60.00	-34.49	Neutral	-
Mode 1	Pass	AV	26.169M	16.50	50.00	-33.50	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	150k	20.21	66.00	-45.79	19.63	Line	-	0.58	9.69	0.04	9.90			
AV	150k	18.09	56.00	-37.91	19.63	Line	-	-1.54	9.69	0.04	9.90			
QP	243.148k	15.52	61.98	-46.46	19.63	Line	-	-4.11	9.68	0.05	9.90			
AV	243.148k	13.88	51.98	-38.10	19.63	Line	-	-5.75	9.68	0.05	9.90			
QP	383.278k	13.57	58.20	-44.63	19.63	Line	-	-6.06	9.67	0.06	9.90			
AV	383.278k	12.28	48.20	-35.92	19.63	Line	-	-7.35	9.67	0.06	9.90			
QP	1.285M	13.65	56.00	-42.35	19.56	Line	-	-5.91	9.67	0.09	9.80			
AV	1.285M	12.08	46.00	-33.92	19.56	Line	-	-7.48	9.67	0.09	9.80			
QP	3.117M	14.92	56.00	-41.08	19.68	Line	-	-4.76	9.69	0.13	9.86			
AV	3.117M	13.54	46.00	-32.46	19.68	Line	-	-6.14	9.69	0.13	9.86			
QP	10.079M	26.11	60.00	-33.89	19.82	Line	-	6.29	9.72	0.20	9.90			
AV	10.079M	15.50	50.00	-34.50	19.82	Line	-	-4.32	9.72	0.20	9.90			

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	168.41k	17.11	65.04	-47.93	19.63	Neutral	-	-2.52	9.69	0.04	9.90			
AV	168.41k	15.30	55.04	-39.74	19.63	Neutral	-	-4.33	9.69	0.04	9.90			
QP	241.214k	15.29	62.06	-46.77	19.63	Neutral	-	-4.34	9.68	0.05	9.90			
AV	241.214k	13.77	52.06	-38.29	19.63	Neutral	-	-5.86	9.68	0.05	9.90			
QP	447.846k	13.64	56.92	-43.28	19.62	Neutral	-	-5.98	9.67	0.06	9.89			
AV	447.846k	12.13	46.92	-34.79	19.62	Neutral	-	-7.49	9.67	0.06	9.89			
QP	2.125M	14.02	56.00	-41.98	19.59	Neutral	-	-5.57	9.68	0.10	9.81			
AV	2.125M	12.76	46.00	-33.24	19.59	Neutral	-	-6.83	9.68	0.10	9.81			
QP	3.542M	15.22	56.00	-40.78	19.70	Neutral	-	-4.48	9.69	0.13	9.88			
AV	3.542M	13.77	46.00	-32.23	19.70	Neutral	-	-5.93	9.69	0.13	9.88			
QP	26.169M	25.51	60.00	-34.49	19.95	Neutral	-	5.56	9.72	0.33	9.90			
AV	26.169M	16.50	50.00	-33.50	19.95	Neutral	-	-3.45	9.72	0.33	9.90			



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)	933.75k	900.8k	901KF1D	927.5k	890.805k
BT-EDR(2Mbps)	1.255M	1.194M	1M19G1D	1.251M	1.193M
BT-EDR(3Mbps)	1.259M	1.203M	1M20G1D	1.256M	1.199M

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

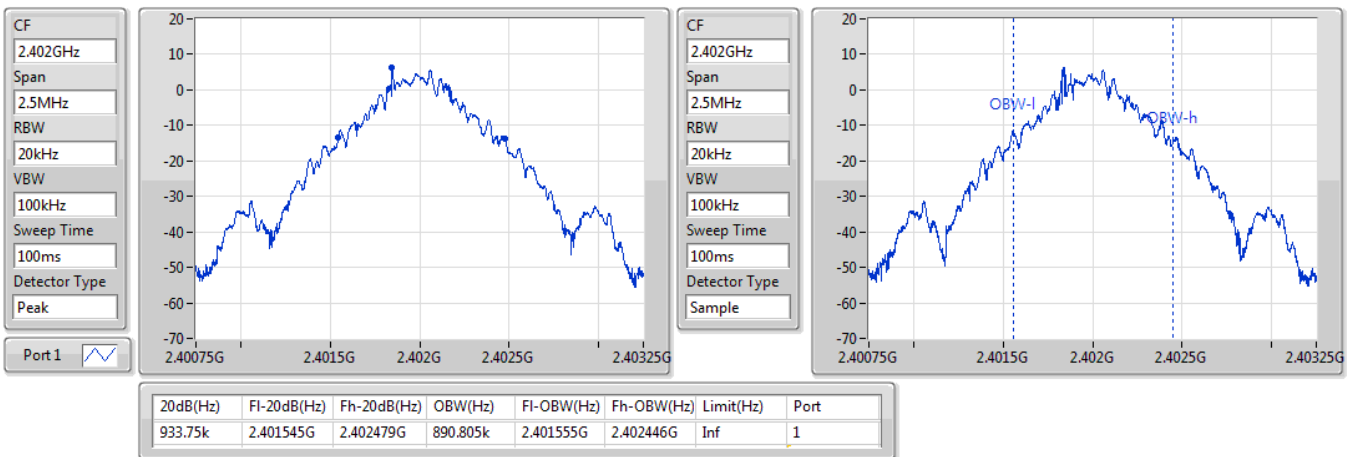
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	933.75k	890.805k
2440MHz	Pass	Inf	927.5k	900.8k
2480MHz	Pass	Inf	928.75k	898.301k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.251M	1.194M
2440MHz	Pass	Inf	1.255M	1.194M
2480MHz	Pass	Inf	1.253M	1.193M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.256M	1.201M
2440MHz	Pass	Inf	1.256M	1.203M
2480MHz	Pass	Inf	1.259M	1.199M

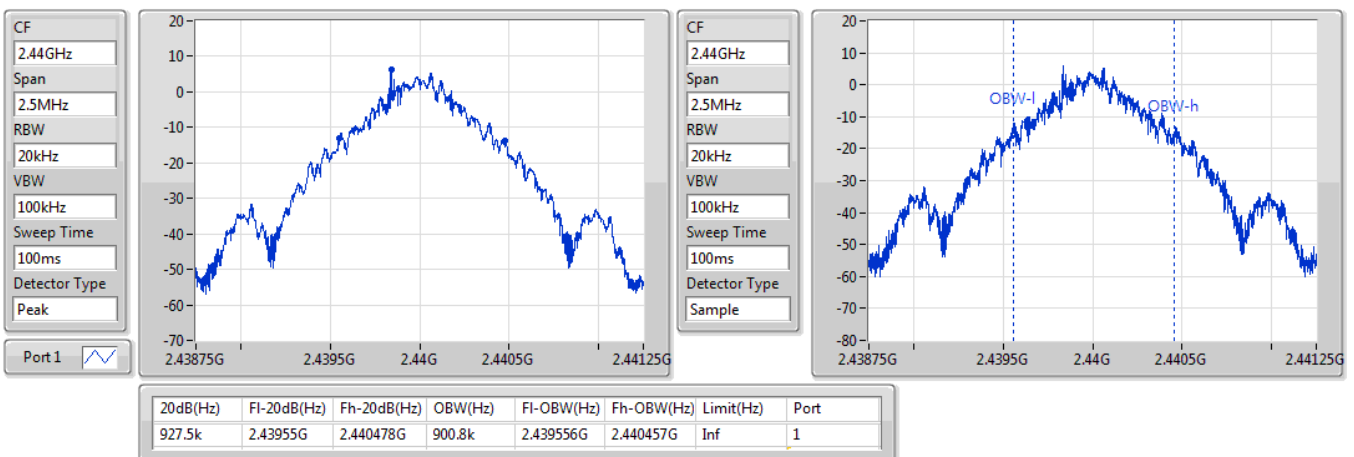
Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

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

25/06/2021

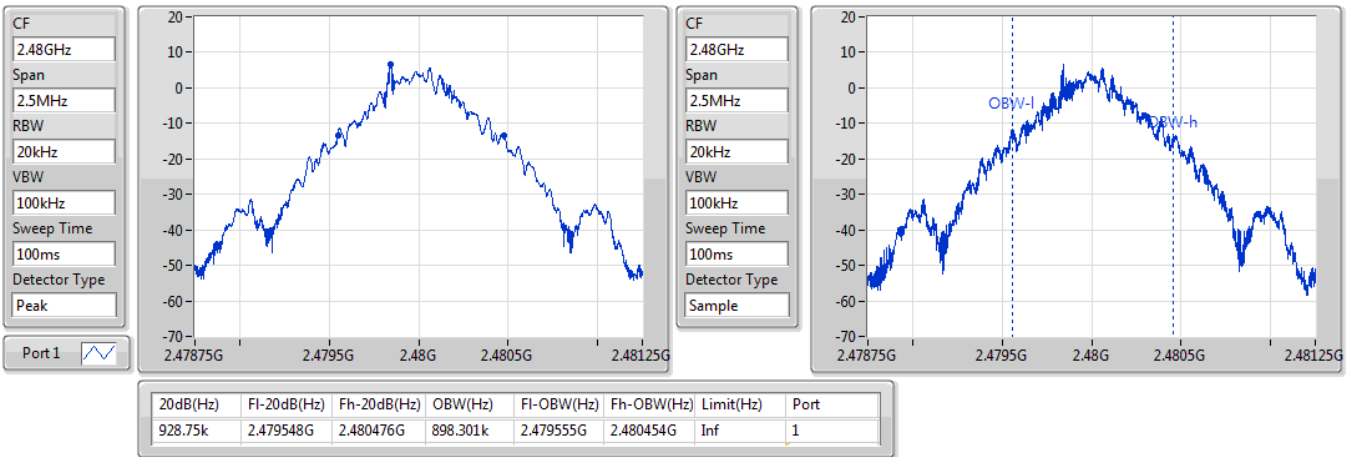

BT-BR(1Mbps)
2440MHz
EBW-FS

25/06/2021

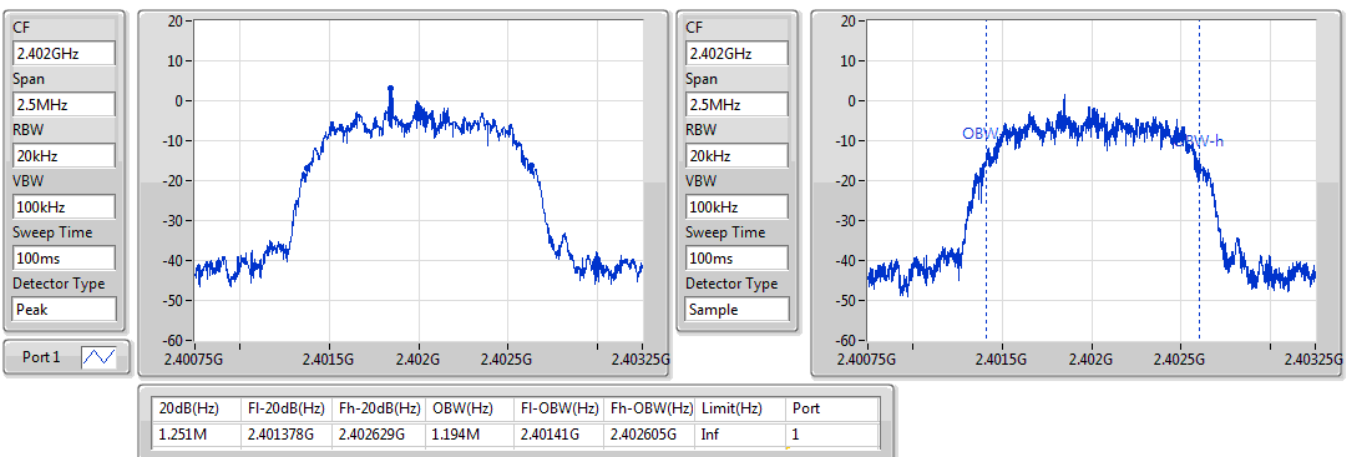


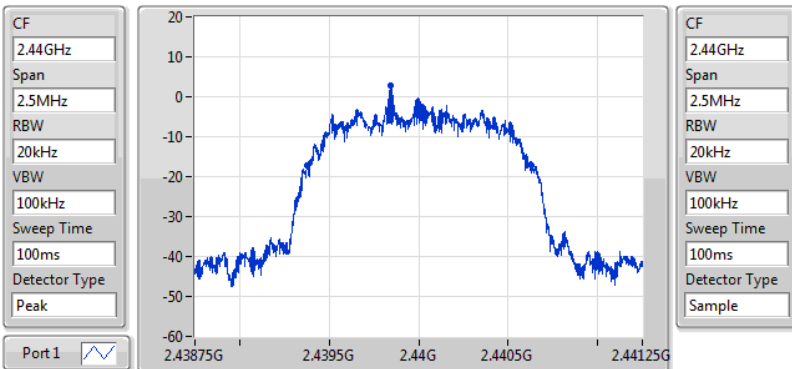
BT-BR(1Mbps)
EBW-FS
2480MHz

25/06/2021


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

25/06/2021

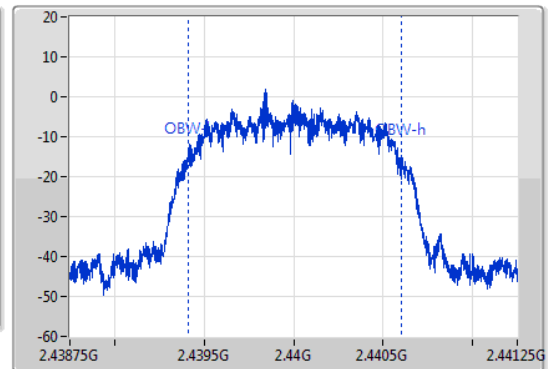
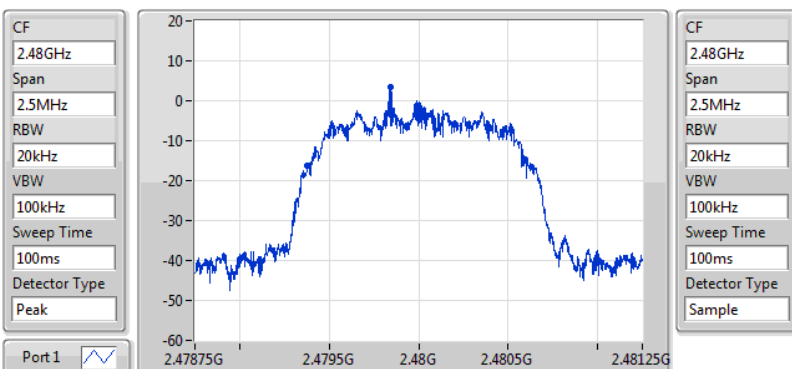


BT-EDR(2Mbps)
2440MHz


20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.255M	2.439378G	2.440633G	1.194M	2.439409G	2.440603G	Inf	1

EBW-FS

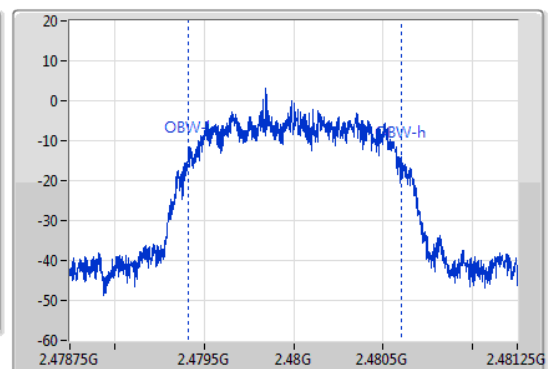
25/06/2021


BT-EDR(2Mbps)
2480MHz


20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.253M	2.479379G	2.480631G	1.193M	2.47941G	2.480603G	Inf	1

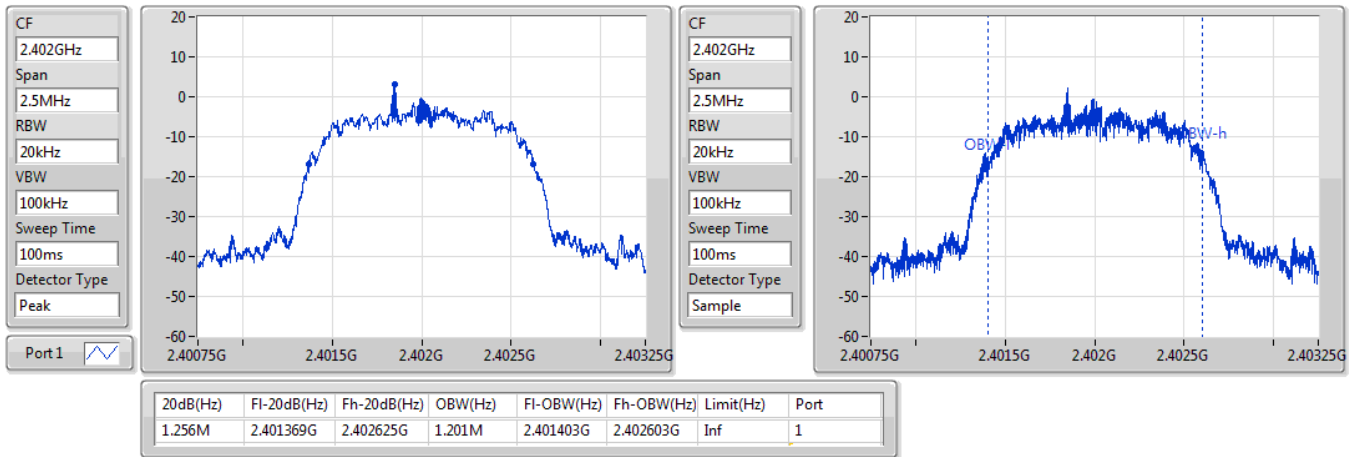
EBW-FS

25/06/2021

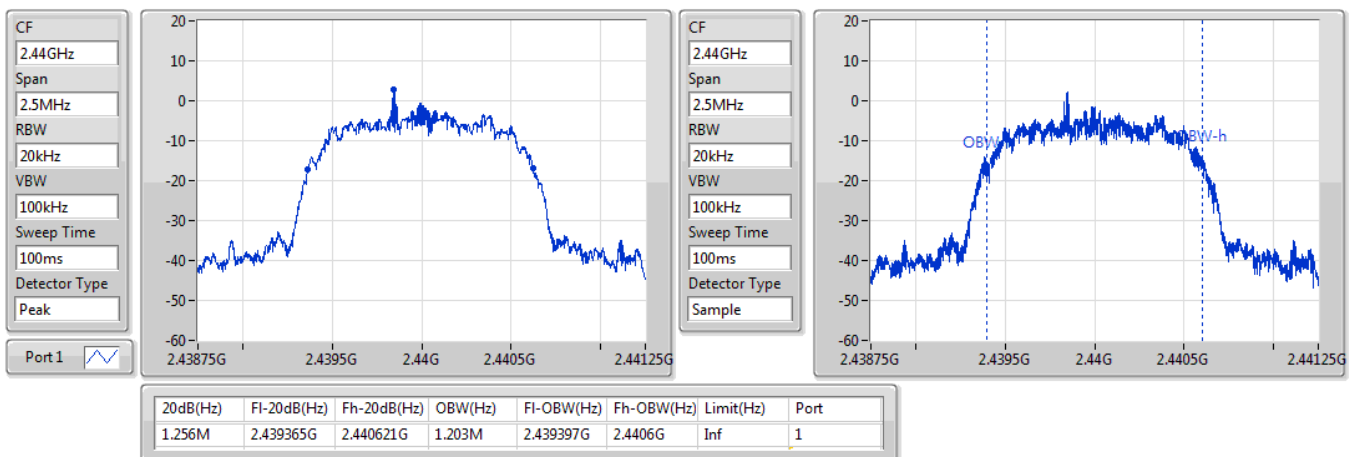


BT-EDR(3Mbps)
EBW-FS
2402MHz

25/06/2021

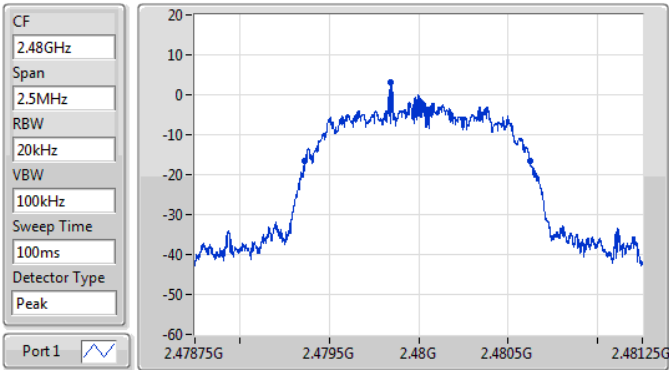

BT-EDR(3Mbps)
EBW-FS
2440MHz

25/06/2021



BT-EDR(3Mbps)

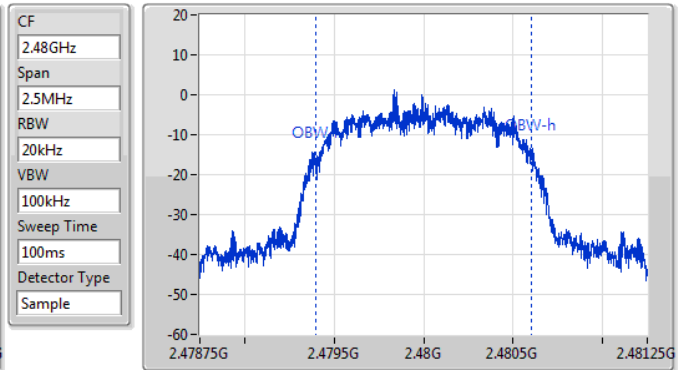
2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.259M	2.479363G	2.480621G	1.199M	2.4794G	2.4806G	Inf	1

EBW-FS

25/06/2021





Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.005M	1.002M
BT-EDR(2Mbps)	1.0035M	999k
BT-EDR(3Mbps)	1.0035M	1.0005M

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.401839G	2.402844G	1.005M	621.8775k
2440MHz	Pass	2.439842G	2.440844G	1.002M	617.715k
2480MHz	Pass	2.478842G	2.479845G	1.0035M	618.5475k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.401842G	2.402844G	1.002M	833.166k
2440MHz	Pass	2.439842G	2.440845G	1.0035M	835.83k
2480MHz	Pass	2.478843G	2.479842G	999k	834.498k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.401843G	2.402844G	1.0005M	836.496k
2440MHz	Pass	2.43984G	2.440844G	1.0035M	836.496k
2480MHz	Pass	2.478843G	2.479844G	1.0005M	838.494k

BT-BR(1Mbps)

2.402G/2.403GHz

Channel Separation-FS

25/06/2021



BT-BR(1Mbps)

2.44G/2.441GHz

Channel Separation-FS

25/06/2021

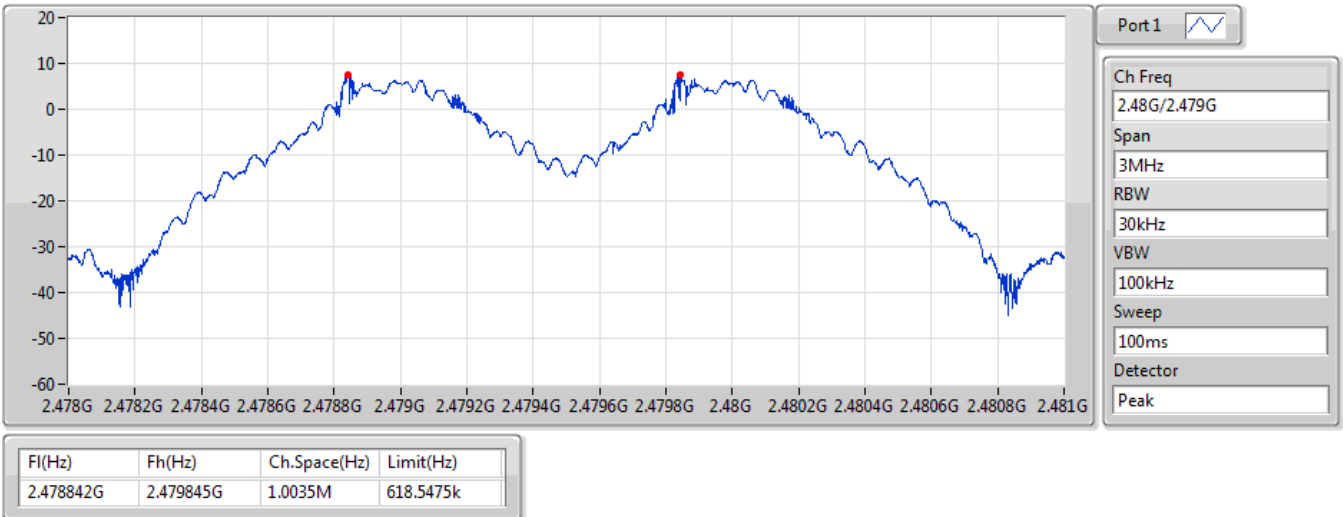


BT-BR(1Mbps)

2.48G/2.479GHz

Channel Separation-FS

25/06/2021

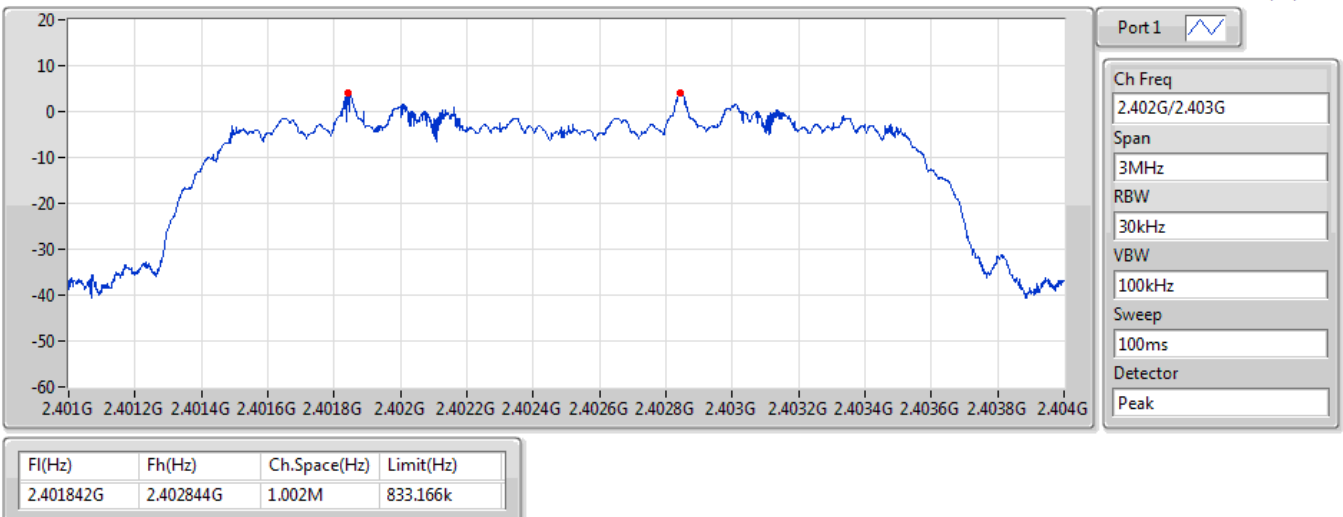


BT-EDR(2Mbps)

2.402G/2.403GHz

Channel Separation-FS

25/06/2021

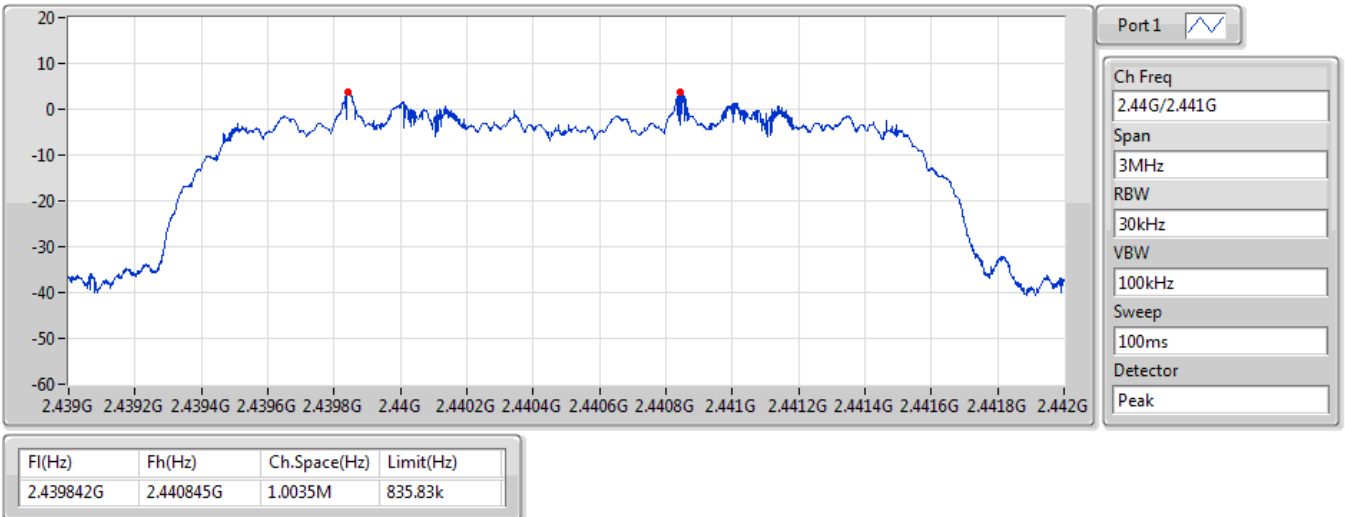


BT-EDR(2Mbps)

2.44G/2.441GHz

Channel Separation-FS

25/06/2021

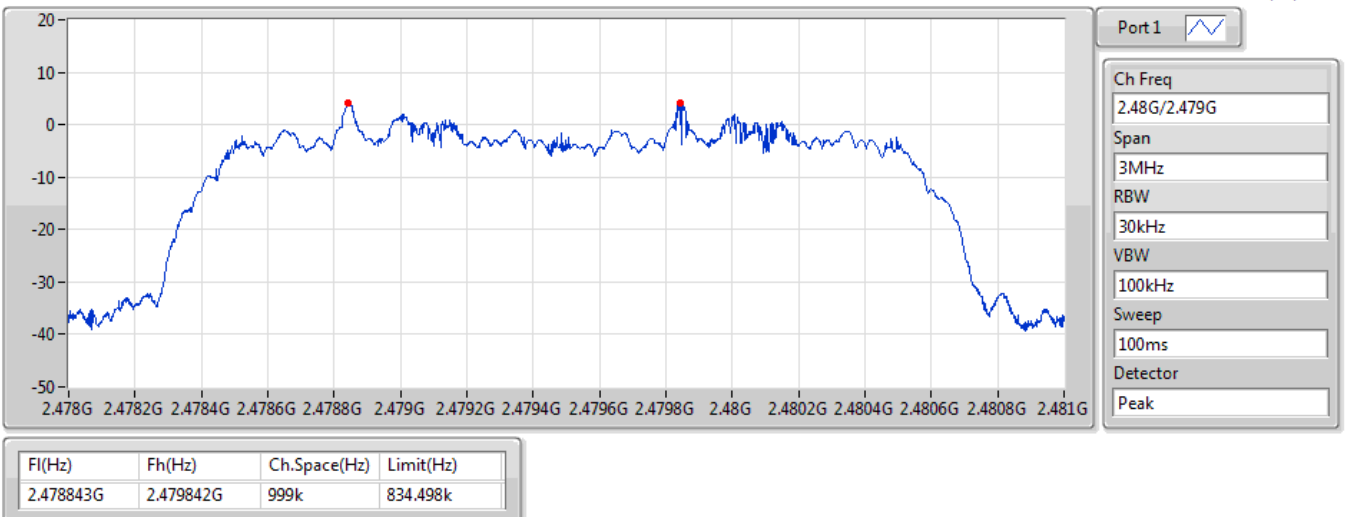


BT-EDR(2Mbps)

2.48G/2.479GHz

Channel Separation-FS

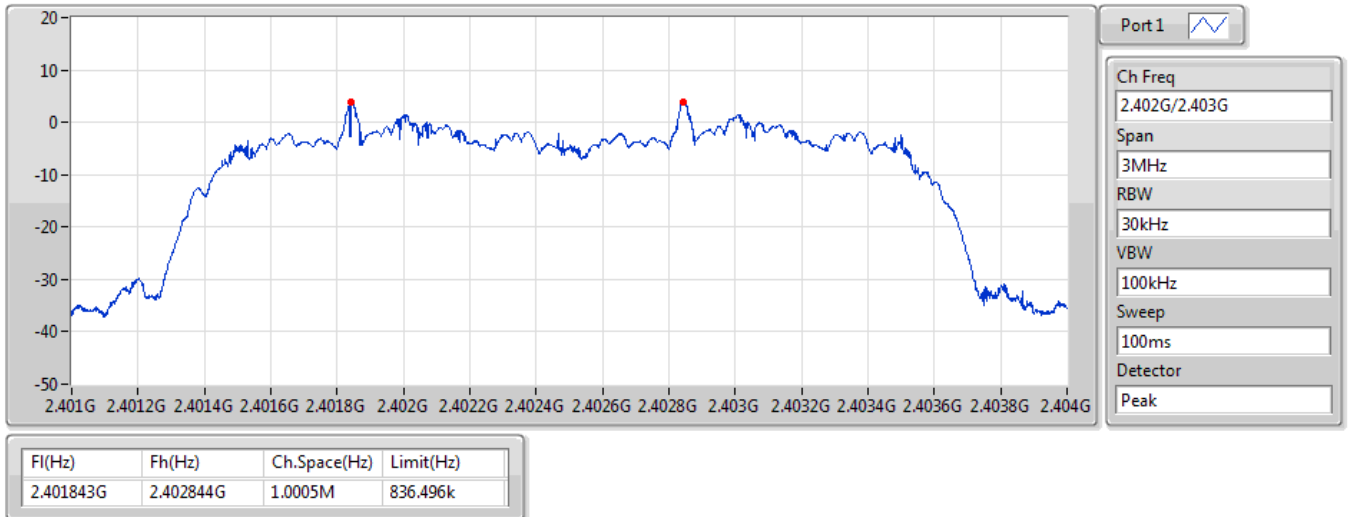
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BT-EDR(3Mbps)

2.402G/2.403GHz

Channel Separation-FS



BT-EDR(3Mbps)

2.44G/2.441GHz

Channel Separation-FS

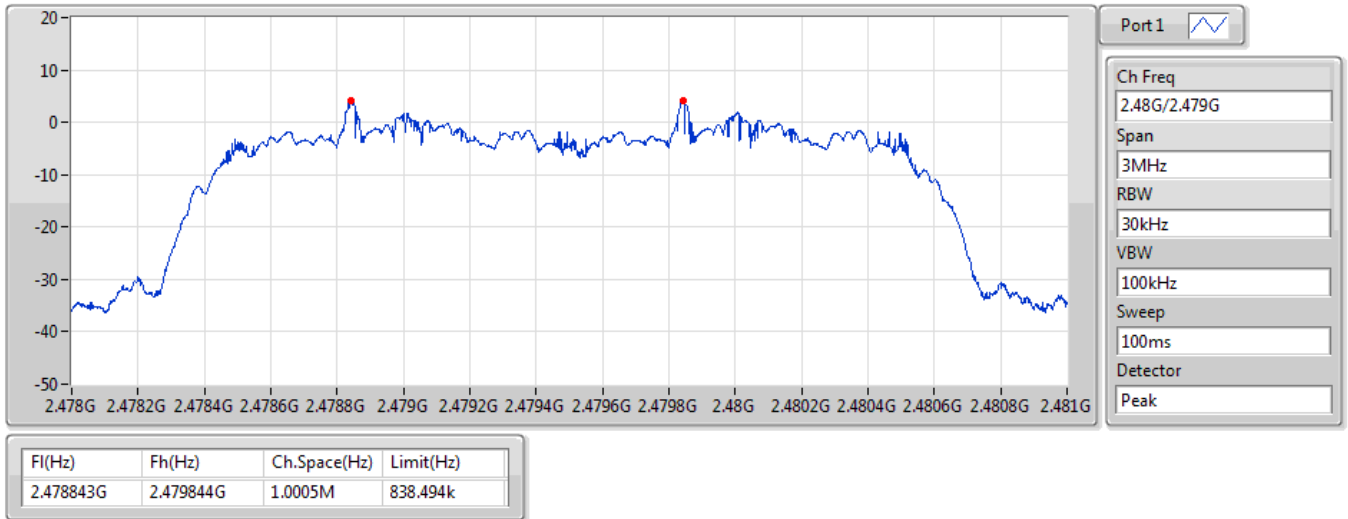


BT-EDR(3Mbps)

2.48G/2.479GHz

Channel Separation-FS

25/06/2021





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	9.27	0.00845
BT-EDR(2Mbps)	8.13	0.00650
BT-EDR(3Mbps)	8.58	0.00721

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	0.00	9.13	21.00
2440MHz	Pass	0.00	8.96	21.00
2480MHz	Pass	0.00	9.27	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	0.00	7.90	21.00
2440MHz	Pass	0.00	7.75	21.00
2480MHz	Pass	0.00	8.13	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	0.00	8.35	21.00
2440MHz	Pass	0.00	8.18	21.00
2480MHz	Pass	0.00	8.58	21.00

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



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	9.26	0.00843
BT-EDR(2Mbps)	5.86	0.00385
BT-EDR(3Mbps)	5.85	0.00385

**Result**

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	0.00	9.11	21.00
2440MHz	Pass	0.00	8.87	21.00
2480MHz	Pass	0.00	9.26	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	0.00	5.58	21.00
2440MHz	Pass	0.00	5.33	21.00
2480MHz	Pass	0.00	5.86	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	0.00	5.57	21.00
2440MHz	Pass	0.00	5.22	21.00
2480MHz	Pass	0.00	5.85	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

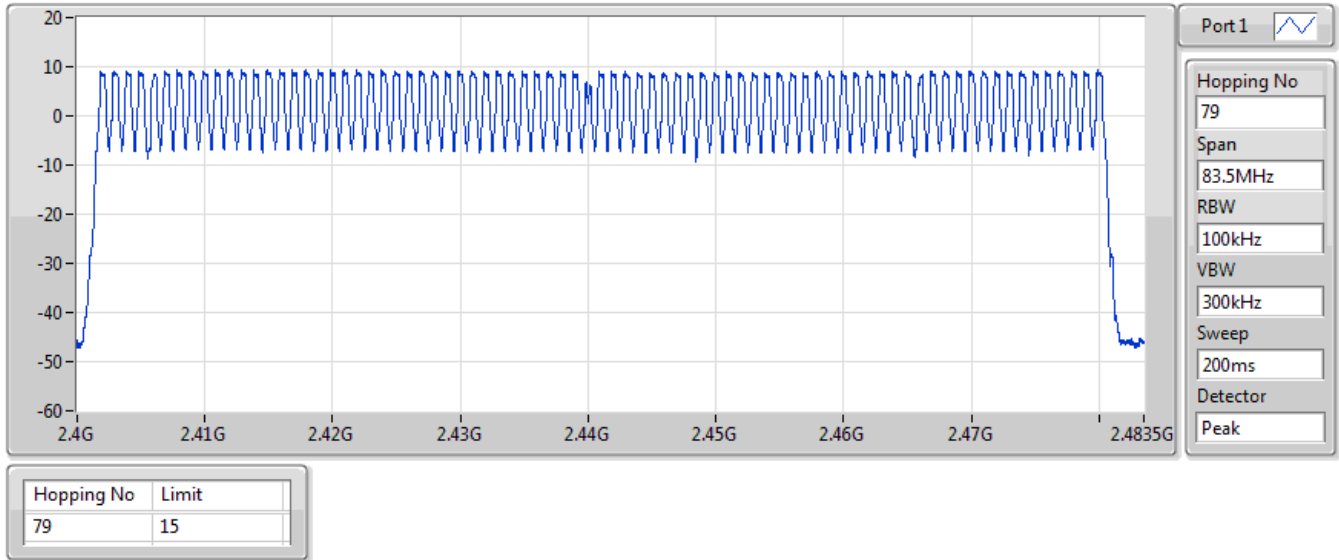
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2440MHz	Pass	79	15

BT-BR(1Mbps)

2440MHz

Hopping-FS

25/06/2021

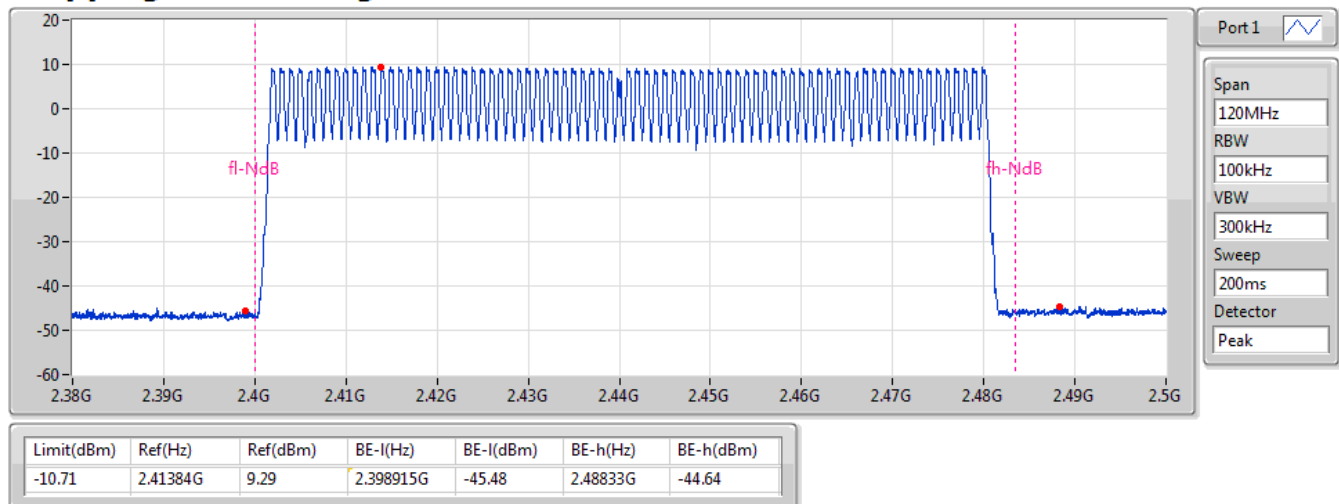


BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

25/06/2021

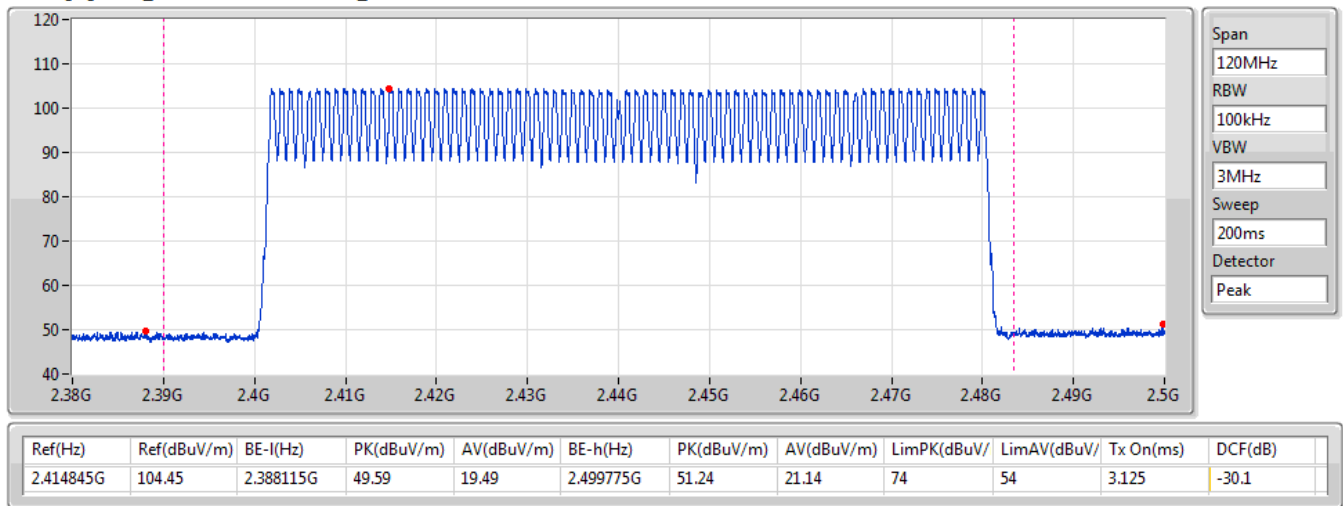


BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

25/06/2021

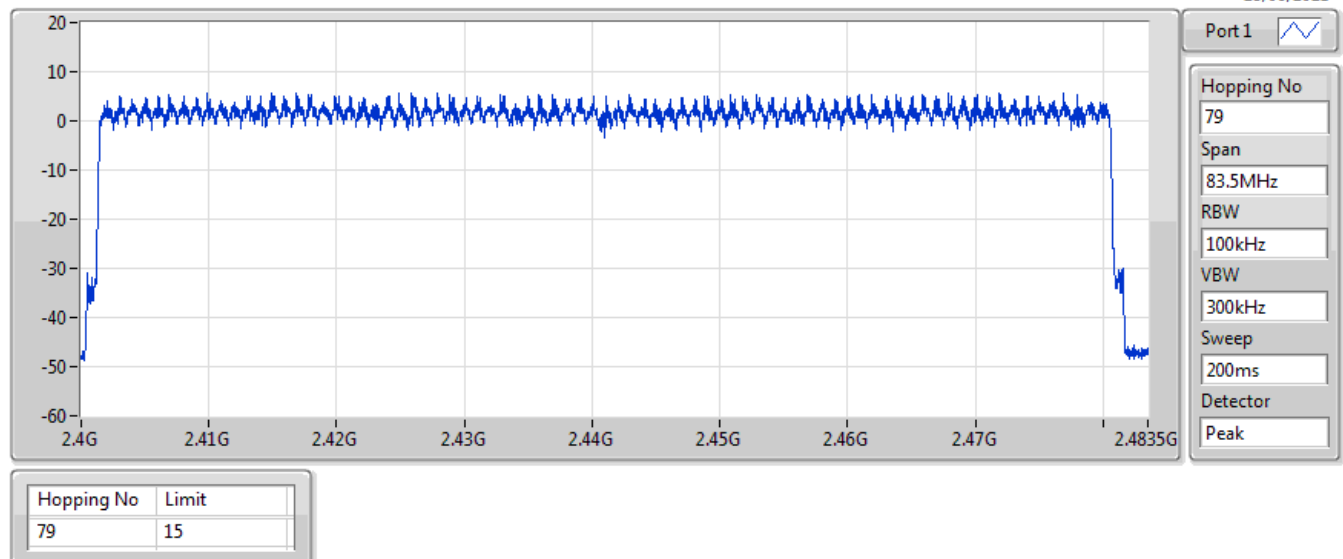


BT-EDR(2Mbps)

2440MHz

Hopping-FS

25/06/2021

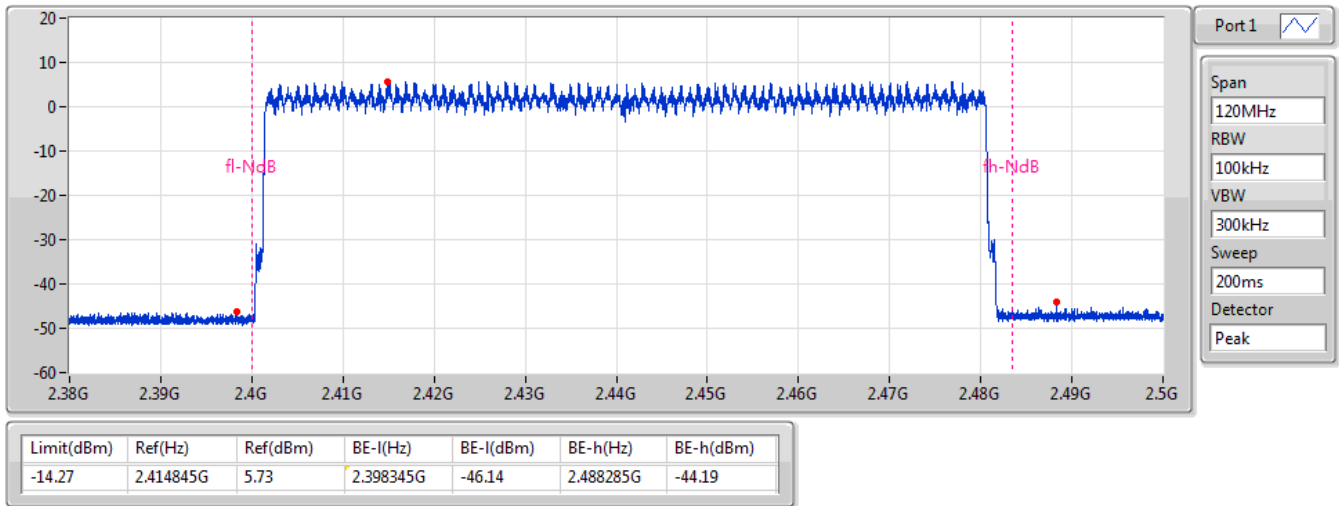


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

25/06/2021

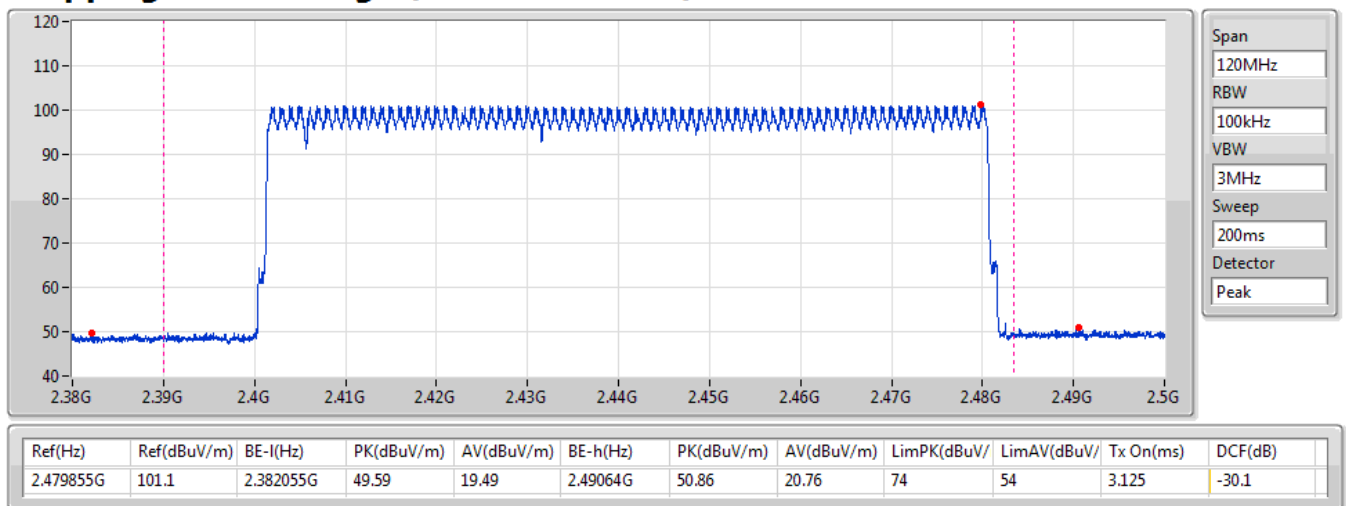


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

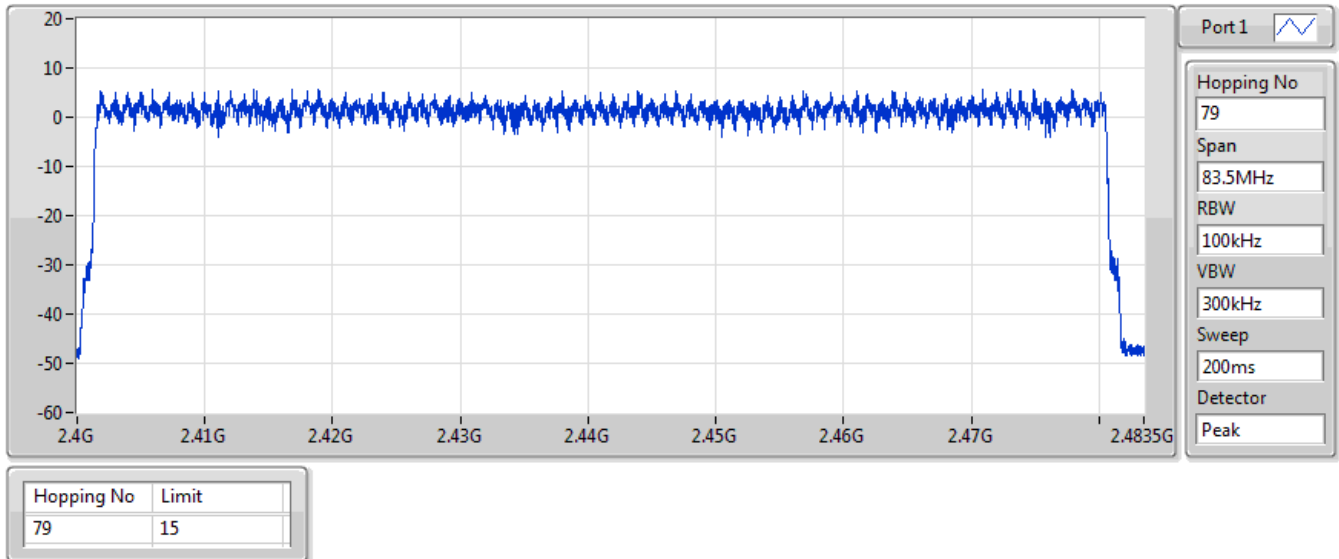
25/06/2021



BT-EDR(3Mbps) 2440MHz

Hopping-FS

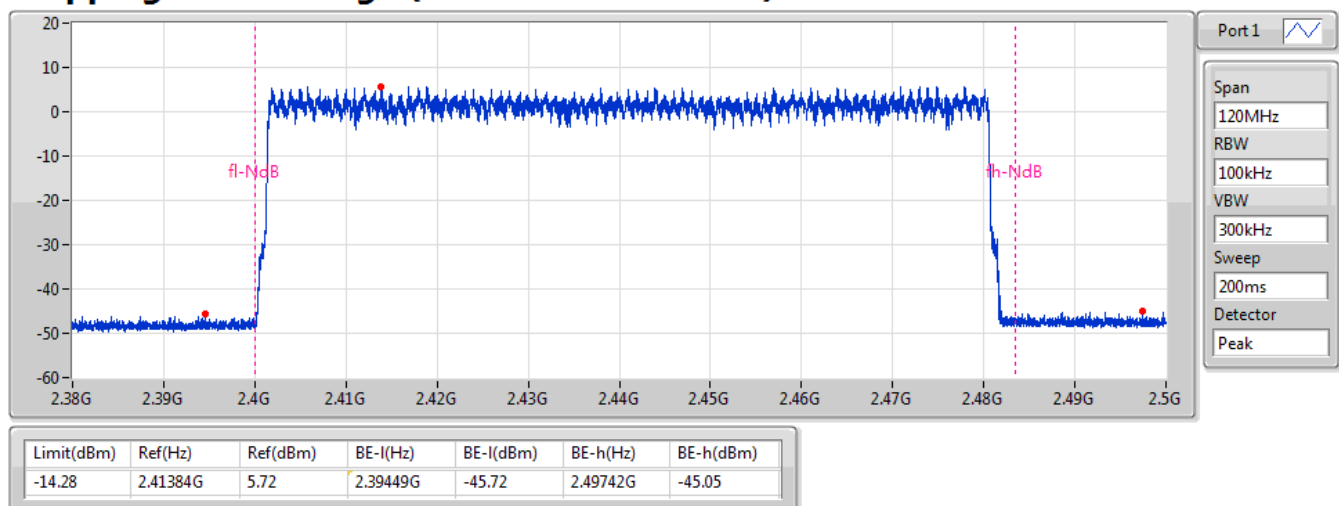
25/06/2021



BT-EDR(3Mbps) 2440MHz

Hopping Ch Bandedge (Non-restricted Band)

25/06/2021

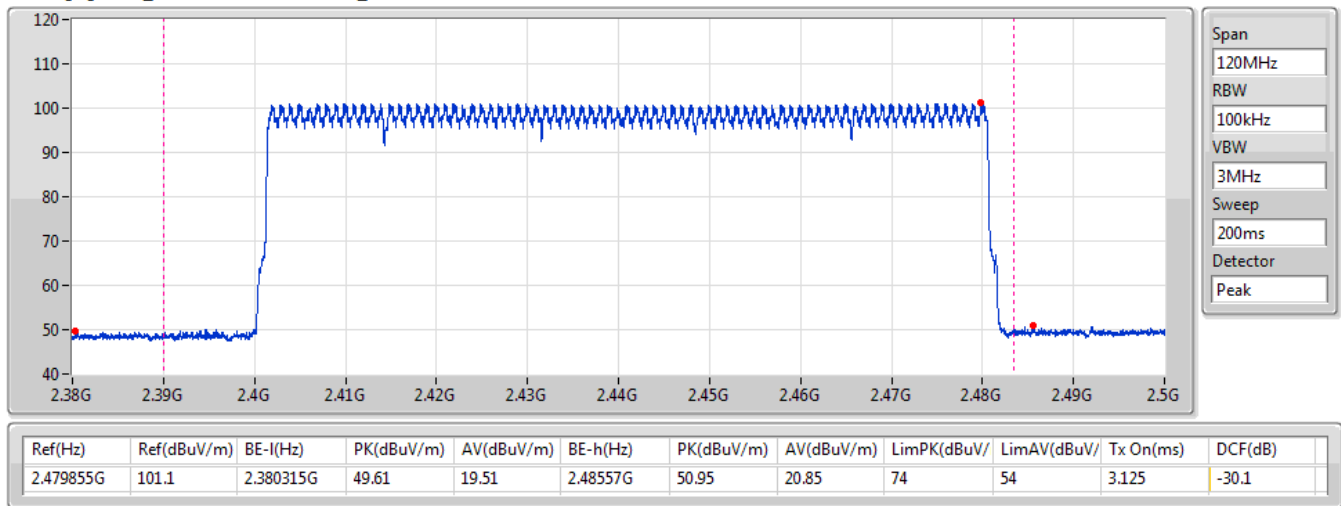


BT-EDR(3Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

25/06/2021





Summary

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	309.16665m_DH5
BT-EDR(2Mbps)	310.76565m_DH5
BT-EDR(3Mbps)	310.97885m_DH5

Result

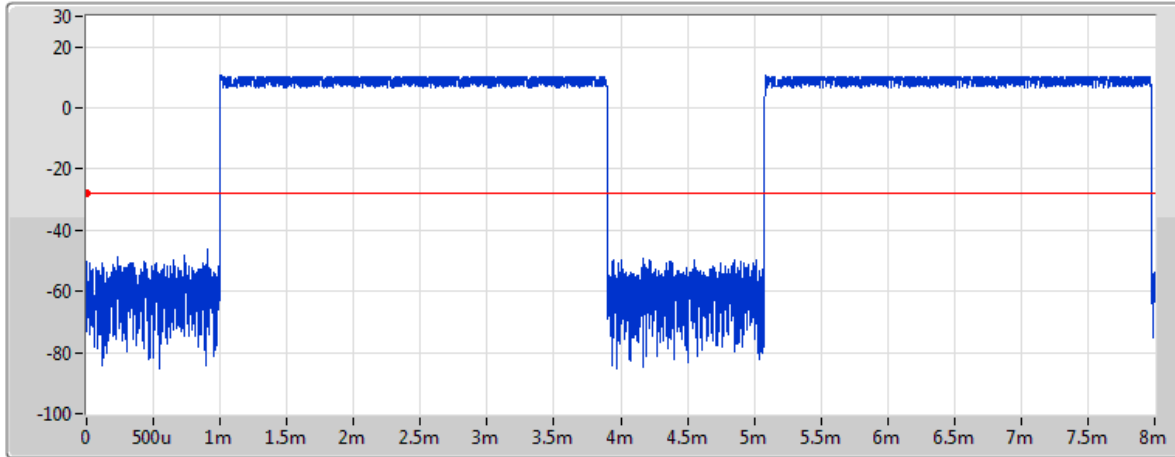
Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	309.16665m_DH5	400m	2.90025m
BT-EDR(2Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	310.76565m_DH5	400m	2.91525m
BT-EDR(3Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	310.97885m_DH5	400m	2.91725m

BT-BR(1Mbps)

2440MHz

Dwell-FS

25/06/2021



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.90025ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	309.16665m_DH5	400m	2.90025m

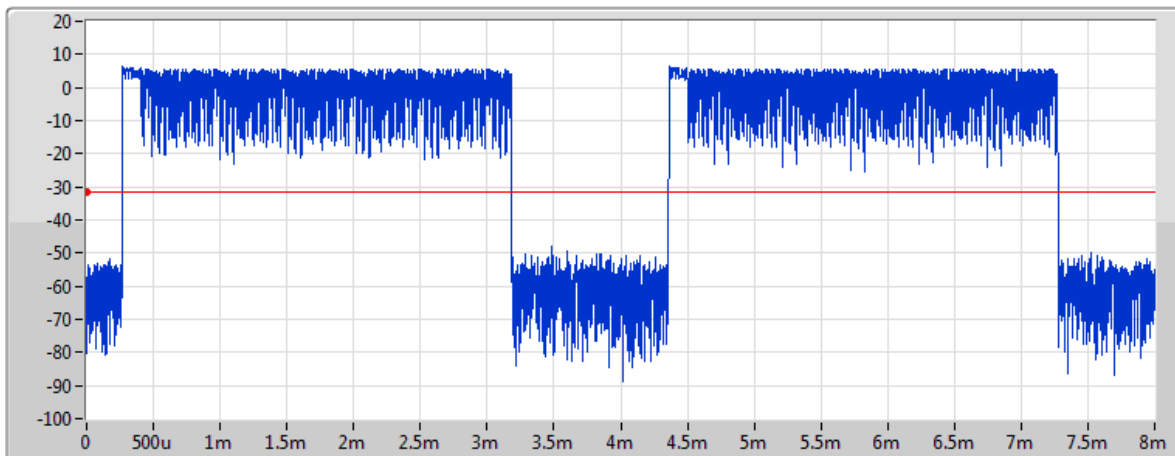
DH5

BT-EDR(2Mbps)

2440MHz

Dwell-FS

25/06/2021



Port 1 

Ch Freq
2.44GHz

RBW
300kHz

VBW
1MHz

Sweep Time
8ms

TX Time
2.91525ms

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	310.76565m_DH5	400m	2.91525m

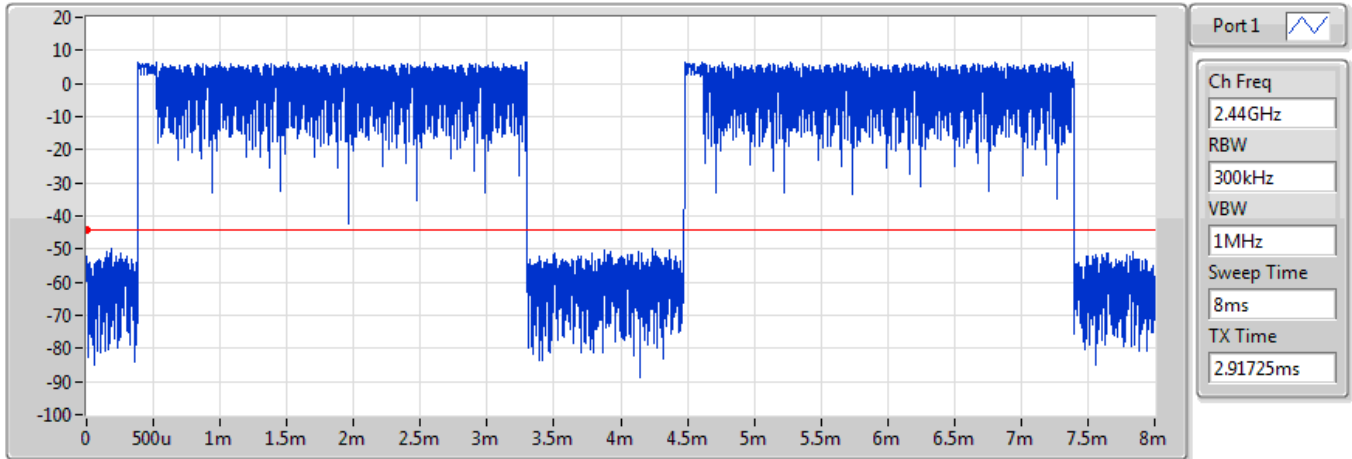
DH5

BT-EDR(3Mbps)

Dwell-FS

2440MHz

25/06/2021



Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	310.97885m_DH5	400m	2.91725m

DH5



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	2.43983G	8.72	-11.28	2.13501G	-48.92	2.39616G	-52.44	2.4835G	-56.46	2.49339G	-52.02	14.82877G	-42.32	1
BT-EDR(2Mbps)	Pass	2.4018G	5.11	-14.89	2.10211G	-54.04	2.39981G	-48.60	2.4G	-50.66	2.48405G	-52.62	16.63974G	-42.20	1
BT-EDR(3Mbps)	Pass	2.40184G	5.34	-14.66	1.99548G	-54.83	2.39991G	-48.04	2.4G	-49.36	2.49172G	-51.41	23.27058G	-41.21	1

Result

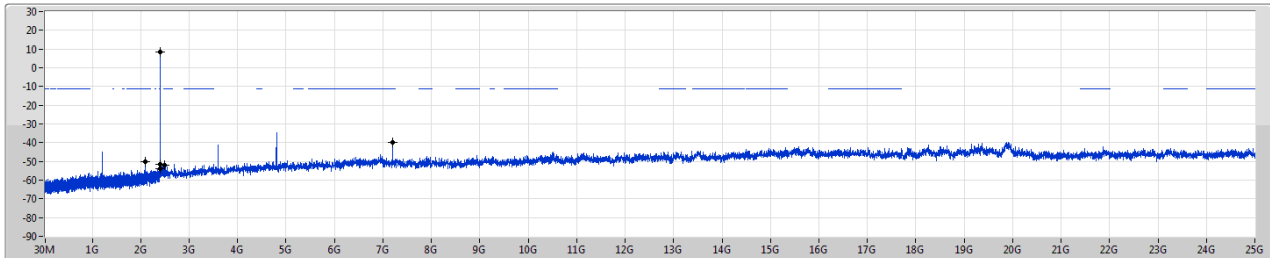
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40184G	8.62	-11.38	2.10182G	-50.22	2.39942G	-51.47	2.4G	-53.75	2.49142G	-51.87	7.20527G	-39.93	1
2440MHz	Pass	2.43983G	8.72	-11.28	2.13501G	-48.92	2.39616G	-52.44	2.4835G	-56.46	2.49339G	-52.02	14.82877G	-42.32	1
2480MHz	Pass	2.48008G	8.41	-11.59	2.17026G	-50.66	2.39546G	-53.63	2.4835G	-52.52	2.48773G	-51.77	16.29385G	-41.84	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.4018G	5.11	-14.89	2.10211G	-54.04	2.39981G	-48.60	2.4G	-50.66	2.48405G	-52.62	16.63974G	-42.20	1
2440MHz	Pass	2.44016G	4.49	-15.51	2.13531G	-52.92	2.39337G	-53.09	2.4835G	-53.73	2.48699G	-51.74	24.55569G	-41.27	1
2480MHz	Pass	2.47983G	5.22	-14.78	2.30451G	-53.73	2.39103G	-52.80	2.4835G	-54.39	2.5012G	-50.69	23.22278G	-42.10	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40184G	5.34	-14.66	1.99548G	-54.83	2.39991G	-48.04	2.4G	-49.36	2.49172G	-51.41	23.27058G	-41.21	1
2440MHz	Pass	2.43983G	5.12	-14.88	2.13531G	-54.27	2.39729G	-52.51	2.4835G	-52.99	2.49027G	-52.03	16.89282G	-42.28	1
2480MHz	Pass	2.47987G	5.57	-14.43	2.30157G	-54.10	2.39502G	-53.53	2.4835G	-53.84	2.48804G	-50.23	24.63724G	-42.21	1

BT-BR(1Mbps)

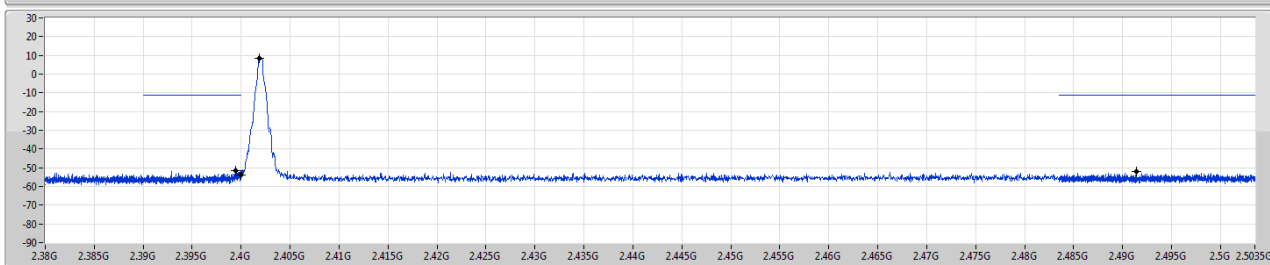
CSENdB-FS

2402MHz

25/06/2021



Port1



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

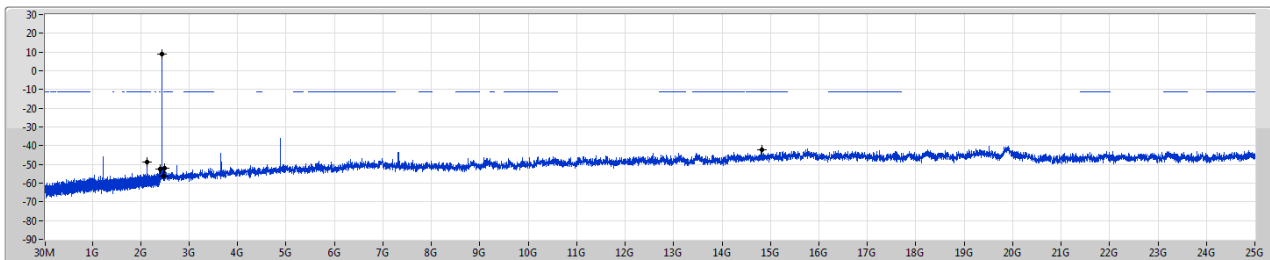
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40184G	8.62	-11.38	2.10182G	-50.22	2.39942G	-51.47	2.4G	-53.75	2.49142G	-51.87	2.20527G	-39.93	1

BT-BR(1Mbps)

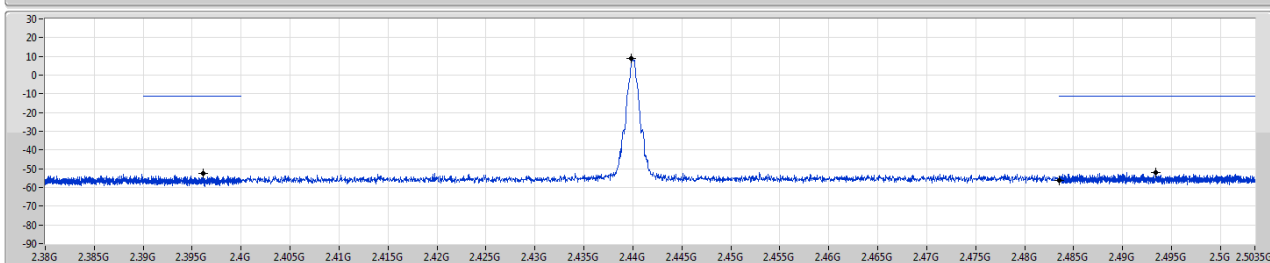
CSENdB-FS

2440MHz

25/06/2021



Port1



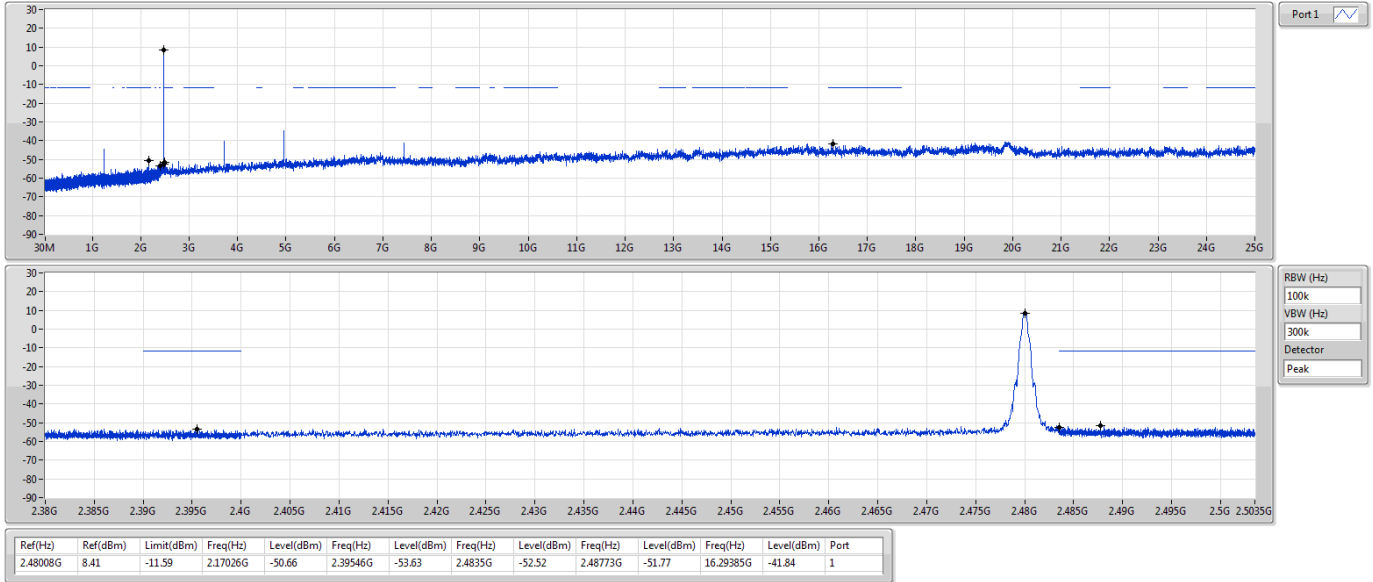
RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

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
2.43983G	8.72	-11.28	2.13501G	-48.92	2.39616G	-52.44	2.4835G	-56.46	2.49339G	-52.02	14.82877G	-42.32	1

BT-BR(1Mbps)

CSEndB-FS

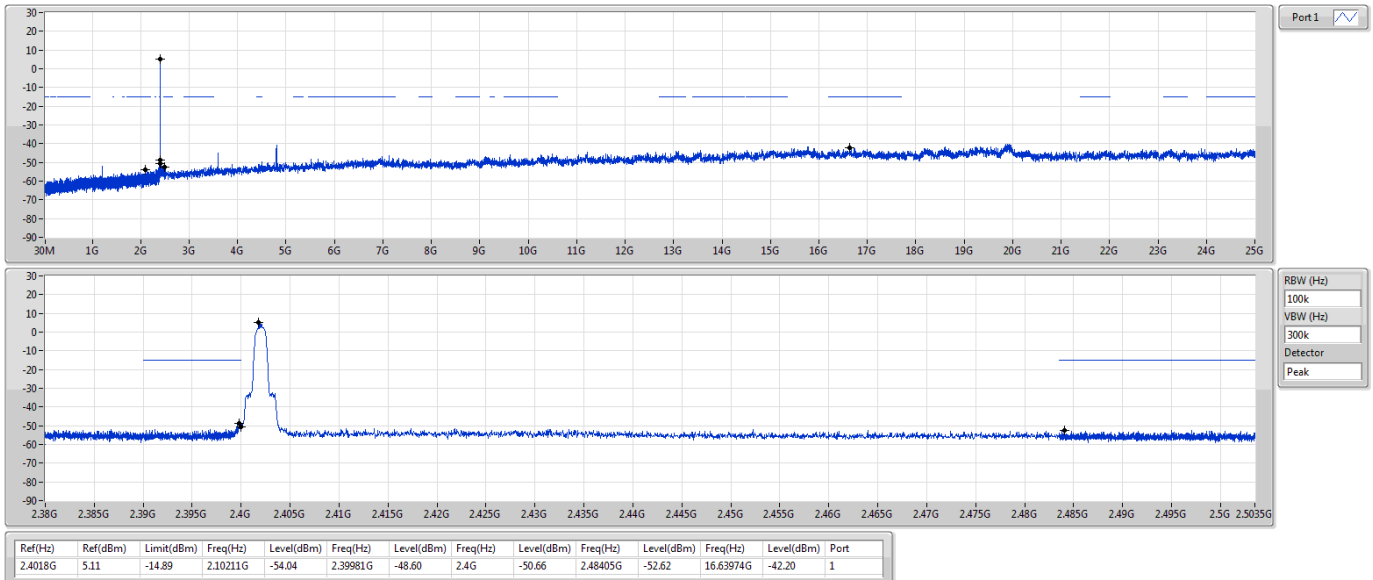
2480MHz



BT-EDR(2Mbps)

CSEndB-FS

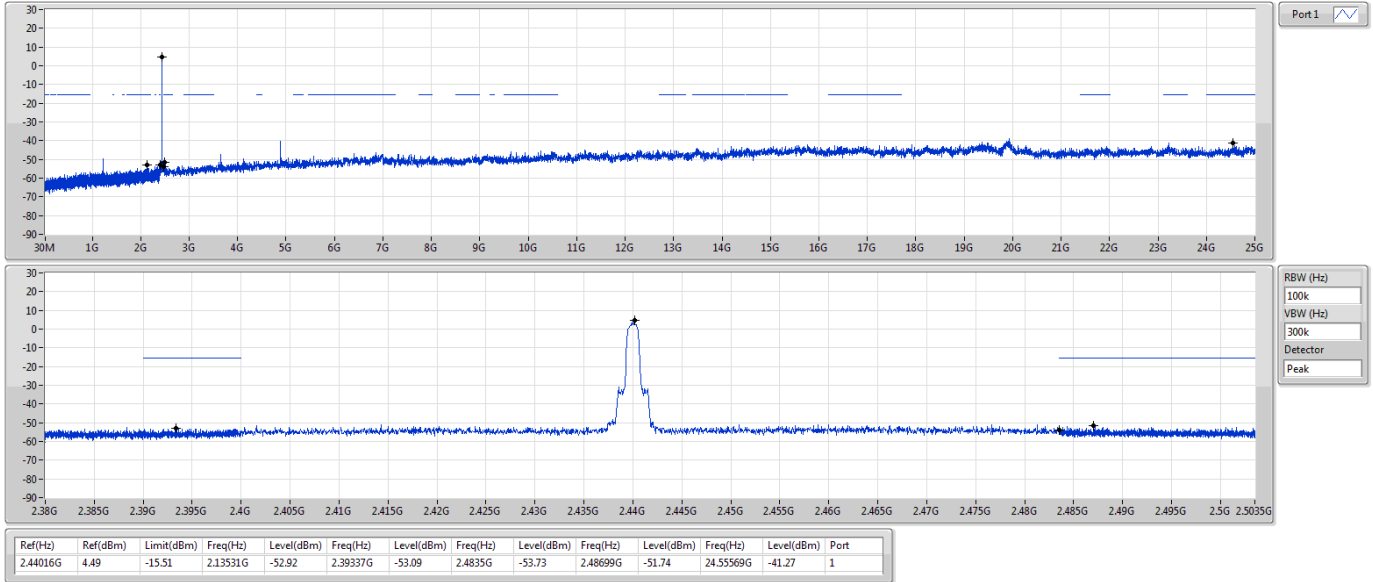
2402MHz



BT-EDR(2Mbps)

CSEndB-FS

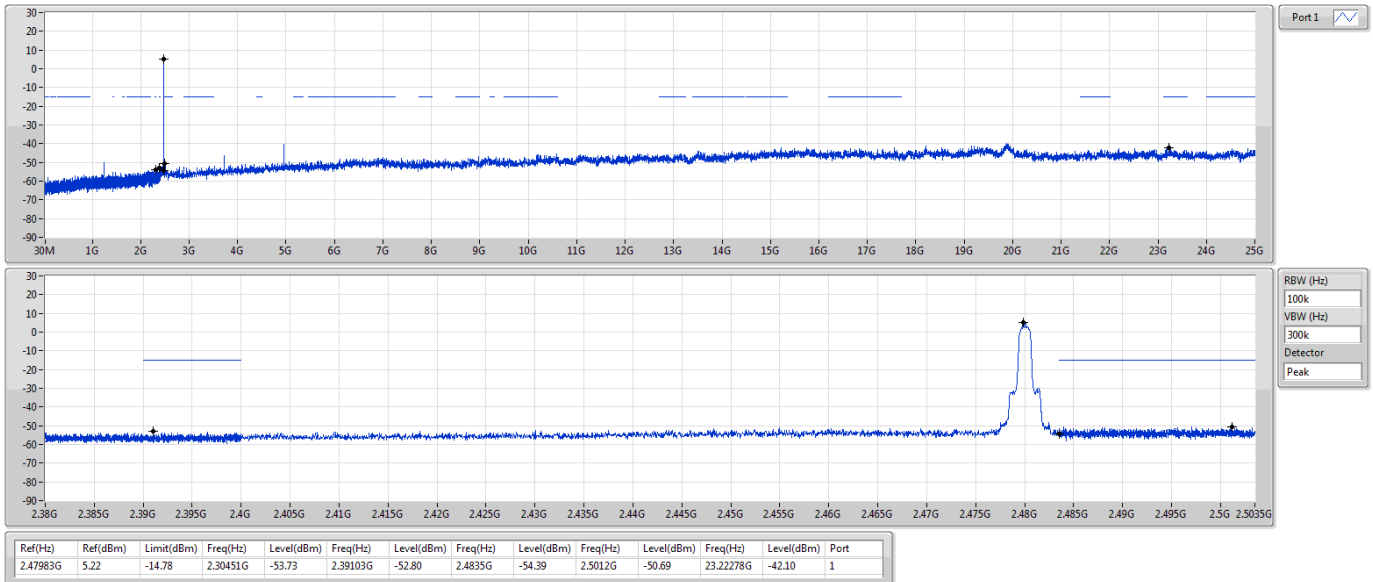
2440MHz



BT-EDR(2Mbps)

CSEndB-FS

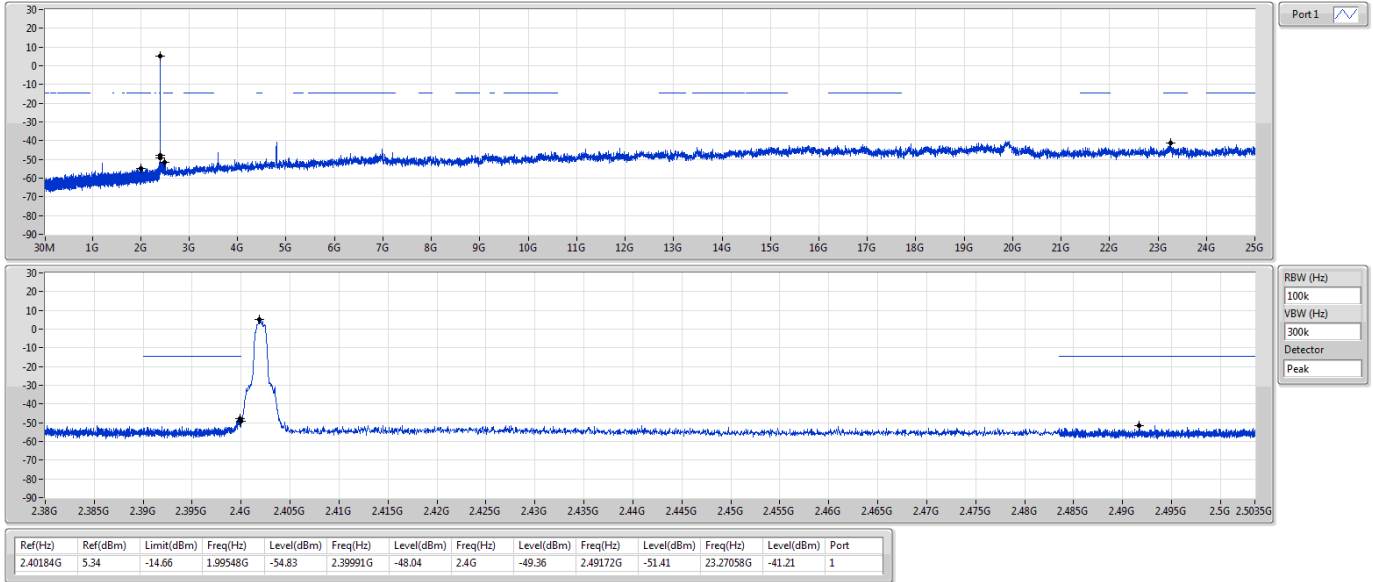
2480MHz



BT-EDR(3Mbps)

CSEndB-FS

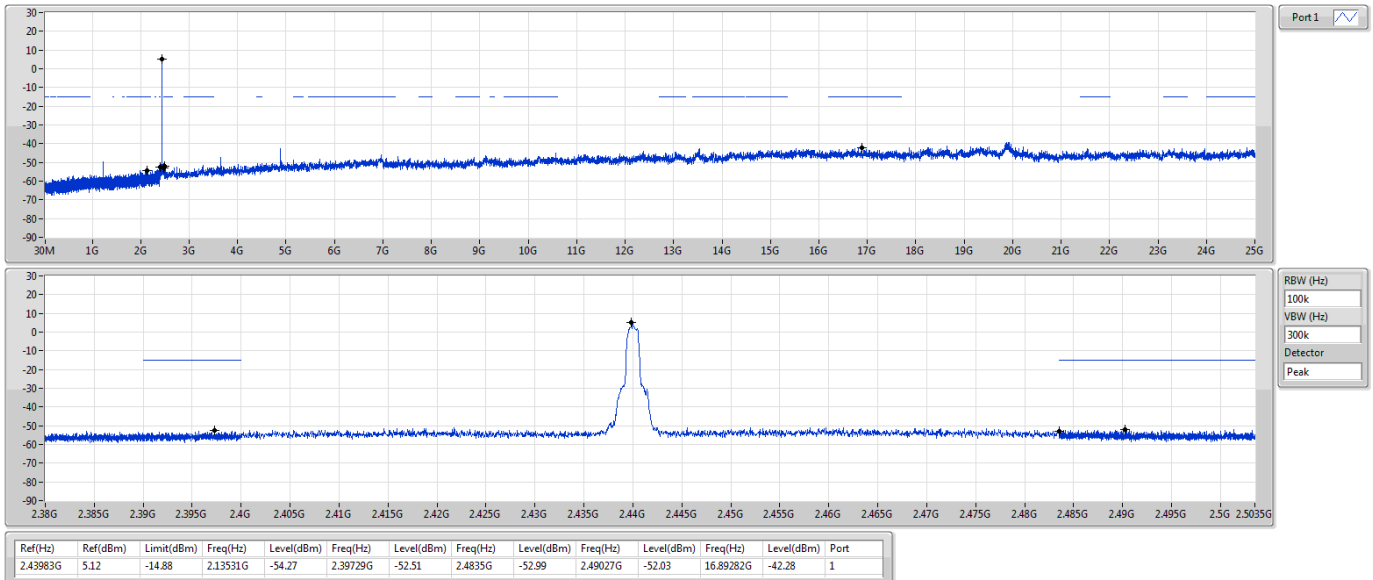
2402MHz



BT-EDR(3Mbps)

CSEndB-FS

2440MHz

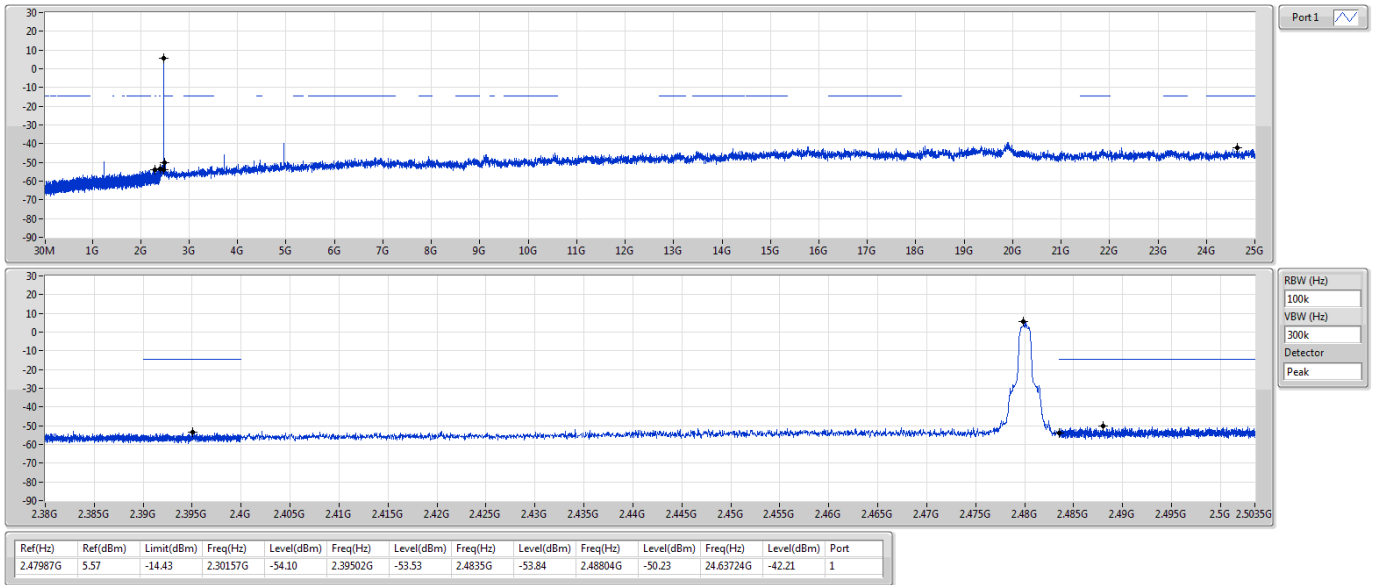


BT-EDR(3Mbps)

CSEndB-FS

2480MHz

25/06/2021





Summary

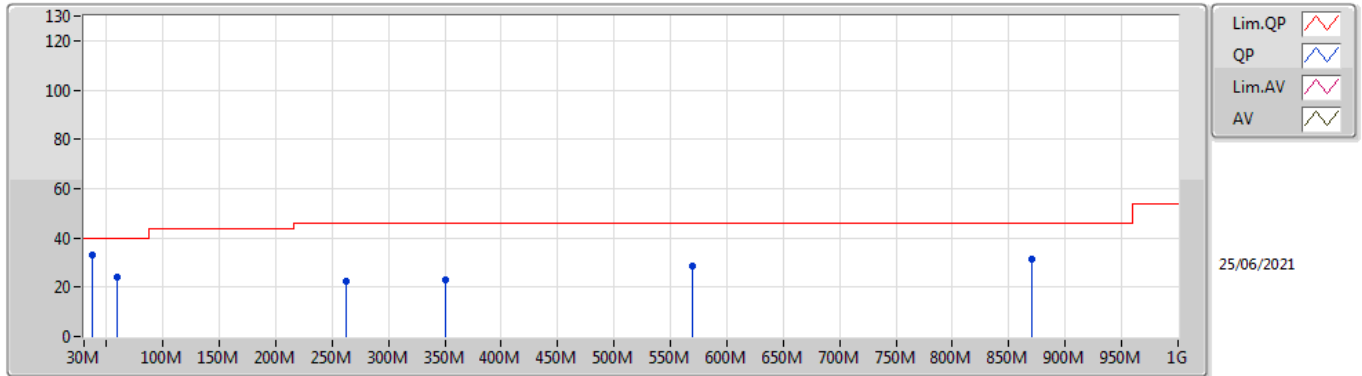
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	PK	37.76M	32.93	40.00	-7.07	3	Vertical	360	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz_DC power supply	Pass	PK	37.76M	32.93	40.00	-7.07	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	59.1M	23.84	40.00	-16.16	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	262.8M	22.15	46.00	-23.85	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	350.1M	23.20	46.00	-22.80	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	569.32M	28.41	46.00	-17.59	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	870.02M	31.12	46.00	-14.88	3	Vertical	360	1.00	-
2440MHz_DC power supply	Pass	PK	30M	31.03	40.00	-8.97	3	Horizontal	0	1.00	-
2440MHz_DC power supply	Pass	PK	109.54M	25.13	43.50	-18.37	3	Horizontal	0	1.00	-
2440MHz_DC power supply	Pass	PK	161.92M	29.94	43.50	-13.56	3	Horizontal	0	1.00	-
2440MHz_DC power supply	Pass	PK	363.68M	26.92	46.00	-19.08	3	Horizontal	0	1.00	-
2440MHz_DC power supply	Pass	PK	629.46M	29.32	46.00	-16.68	3	Horizontal	0	1.00	-
2440MHz_DC power supply	Pass	PK	854.5M	31.62	46.00	-14.38	3	Horizontal	0	1.00	-

BT-BR(1Mbps)

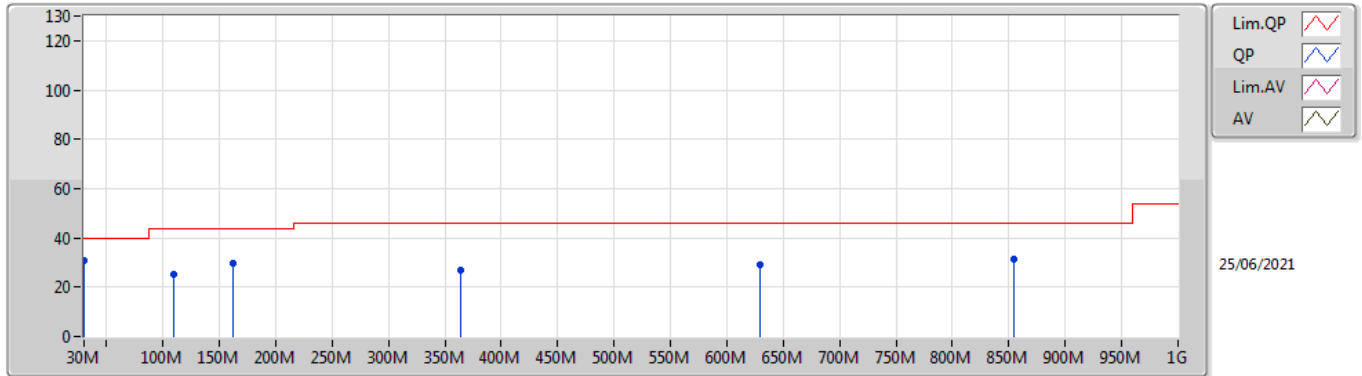
2440MHz_DC power supply



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)
PK	37.76M	32.93	40.00	-7.07	-7.51	3	Vertical	360	1.00	-	40.44	19.08	1.02	27.61
PK	59.1M	23.84	40.00	-16.16	-14.67	3	Vertical	360	1.00	-	38.51	11.67	1.26	27.60
PK	262.8M	22.15	46.00	-23.85	-5.34	3	Vertical	360	1.00	-	27.49	18.67	2.73	26.74
PK	350.1M	23.20	46.00	-22.80	-4.13	3	Vertical	360	1.00	-	27.33	19.58	3.26	26.97
PK	569.32M	28.41	46.00	-17.59	0.14	3	Vertical	360	1.00	-	28.27	24.04	4.20	28.10
PK	870.02M	31.12	46.00	-14.88	3.05	3	Vertical	360	1.00	-	28.07	25.50	5.22	27.67

BT-BR(1Mbps)

2440MHz_DC power supply



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)
PK	30M	31.03	40.00	-8.97	-3.42	3	Horizontal	0	1.00	-	34.45	23.32	0.90	27.64
PK	109.54M	25.13	43.50	-18.37	-8.55	3	Horizontal	0	1.00	-	33.68	17.04	1.79	27.38
PK	161.92M	29.94	43.50	-13.56	-9.87	3	Horizontal	0	1.00	-	39.81	15.18	2.14	27.19
PK	363.68M	26.92	46.00	-19.08	-3.84	3	Horizontal	0	1.00	-	30.76	19.90	3.31	27.05
PK	629.46M	29.32	46.00	-16.68	0.69	3	Horizontal	0	1.00	-	28.63	24.37	4.42	28.10
PK	854.5M	31.62	46.00	-14.38	3.01	3	Horizontal	0	1.00	-	28.61	25.55	5.17	27.71



Summary

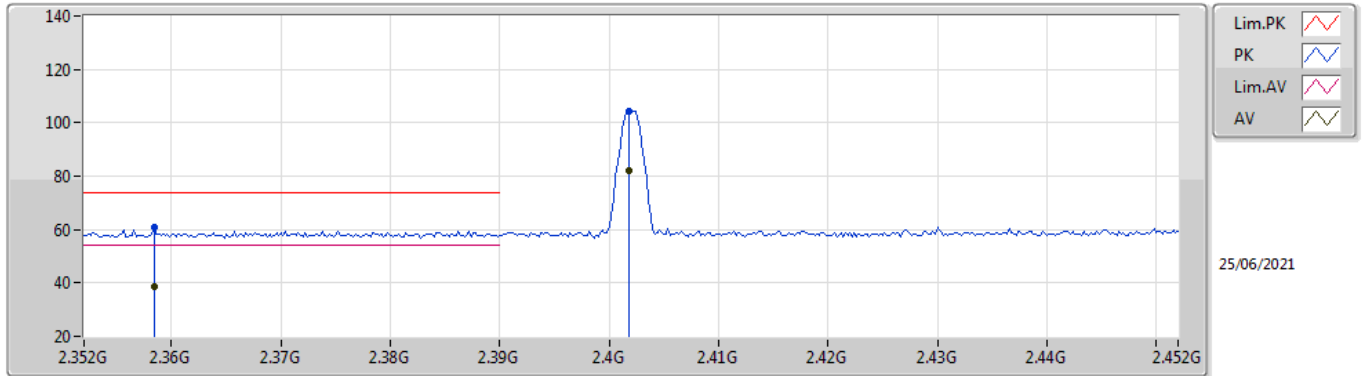
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	PK	2.489G	61.29	74.00	-12.71	3	Vertical	44	1.09	-

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	2.3584G	38.50	54.00	-15.50	3	Vertical	175	1.12	-
2402MHz	Pass	AV	2.4018G	81.96	Inf	-Inf	3	Vertical	175	1.12	-
2402MHz	Pass	PK	2.3584G	61.00	74.00	-13.00	3	Vertical	175	1.12	-
2402MHz	Pass	PK	2.4018G	104.46	Inf	-Inf	3	Vertical	175	1.12	-
2402MHz	Pass	AV	2.3884G	37.68	54.00	-16.32	3	Horizontal	27	1.40	-
2402MHz	Pass	AV	2.4018G	82.38	Inf	-Inf	3	Horizontal	27	1.40	-
2402MHz	Pass	PK	2.3884G	60.18	74.00	-13.82	3	Horizontal	27	1.40	-
2402MHz	Pass	PK	2.4018G	104.88	Inf	-Inf	3	Horizontal	27	1.40	-
2402MHz	Pass	AV	4.80376G	36.76	54.00	-17.24	3	Vertical	162	2.65	-
2402MHz	Pass	PK	4.80376G	59.26	74.00	-14.74	3	Vertical	162	2.65	-
2402MHz	Pass	AV	4.8043G	34.51	54.00	-19.49	3	Horizontal	350	2.05	-
2402MHz	Pass	PK	4.8043G	57.01	74.00	-16.99	3	Horizontal	350	2.05	-
2440MHz	Pass	AV	2.3832G	37.29	54.00	-16.71	3	Vertical	45	1.10	-
2440MHz	Pass	AV	2.44G	82.09	Inf	-Inf	3	Vertical	45	1.10	-
2440MHz	Pass	AV	2.4952G	37.44	54.00	-16.56	3	Vertical	45	1.10	-
2440MHz	Pass	PK	2.3832G	59.79	74.00	-14.21	3	Vertical	45	1.10	-
2440MHz	Pass	PK	2.44G	104.59	Inf	-Inf	3	Vertical	45	1.10	-
2440MHz	Pass	PK	2.4952G	59.94	74.00	-14.06	3	Vertical	45	1.10	-
2440MHz	Pass	AV	2.3728G	37.14	54.00	-16.86	3	Horizontal	12	1.58	-
2440MHz	Pass	AV	2.44G	81.88	Inf	-Inf	3	Horizontal	12	1.58	-
2440MHz	Pass	AV	2.4964G	37.37	54.00	-16.63	3	Horizontal	12	1.58	-
2440MHz	Pass	PK	2.3728G	59.64	74.00	-14.36	3	Horizontal	12	1.58	-
2440MHz	Pass	PK	2.44G	104.38	Inf	-Inf	3	Horizontal	12	1.58	-
2440MHz	Pass	PK	2.4964G	59.87	74.00	-14.13	3	Horizontal	12	1.58	-
2440MHz	Pass	AV	4.88036G	36.97	54.00	-17.03	3	Vertical	252	1.45	-
2440MHz	Pass	AV	7.31964G	35.28	54.00	-18.72	3	Vertical	348	1.44	-
2440MHz	Pass	PK	4.88036G	59.47	74.00	-14.53	3	Vertical	252	1.45	-
2440MHz	Pass	PK	7.31964G	57.78	74.00	-16.22	3	Vertical	348	1.44	-
2440MHz	Pass	AV	4.87964G	35.19	54.00	-18.81	3	Horizontal	324	1.35	-
2440MHz	Pass	AV	7.31964G	35.83	54.00	-18.17	3	Horizontal	203	2.36	-
2440MHz	Pass	PK	4.87964G	57.69	74.00	-16.31	3	Horizontal	324	1.35	-
2440MHz	Pass	PK	7.31964G	58.33	74.00	-15.67	3	Horizontal	203	2.36	-
2480MHz	Pass	AV	2.4802G	83.21	Inf	-Inf	3	Vertical	44	1.09	-
2480MHz	Pass	AV	2.489G	38.79	54.00	-15.21	3	Vertical	44	1.09	-
2480MHz	Pass	PK	2.4802G	105.71	Inf	-Inf	3	Vertical	44	1.09	-
2480MHz	Pass	PK	2.489G	61.29	74.00	-12.71	3	Vertical	44	1.09	-
2480MHz	Pass	AV	2.4802G	82.42	Inf	-Inf	3	Horizontal	11	1.28	-
2480MHz	Pass	AV	2.493G	38.18	54.00	-15.82	3	Horizontal	11	1.28	-
2480MHz	Pass	PK	2.4802G	104.92	Inf	-Inf	3	Horizontal	11	1.28	-
2480MHz	Pass	PK	2.493G	60.68	74.00	-13.32	3	Horizontal	11	1.28	-
2480MHz	Pass	AV	4.95976G	38.54	54.00	-15.46	3	Vertical	250	1.30	-
2480MHz	Pass	AV	7.43964G	35.28	54.00	-18.72	3	Vertical	317	1.44	-
2480MHz	Pass	PK	4.95976G	61.04	74.00	-12.96	3	Vertical	250	1.30	-
2480MHz	Pass	PK	7.43964G	57.78	74.00	-16.22	3	Vertical	317	1.44	-
2480MHz	Pass	AV	4.95964G	36.40	54.00	-17.60	3	Horizontal	10	1.50	-
2480MHz	Pass	AV	7.4403G	35.22	54.00	-18.78	3	Horizontal	224	2.19	-
2480MHz	Pass	PK	4.95964G	58.90	74.00	-15.10	3	Horizontal	10	1.50	-
2480MHz	Pass	PK	7.4403G	57.72	74.00	-16.28	3	Horizontal	224	2.19	-

BT-BR(1Mbps)

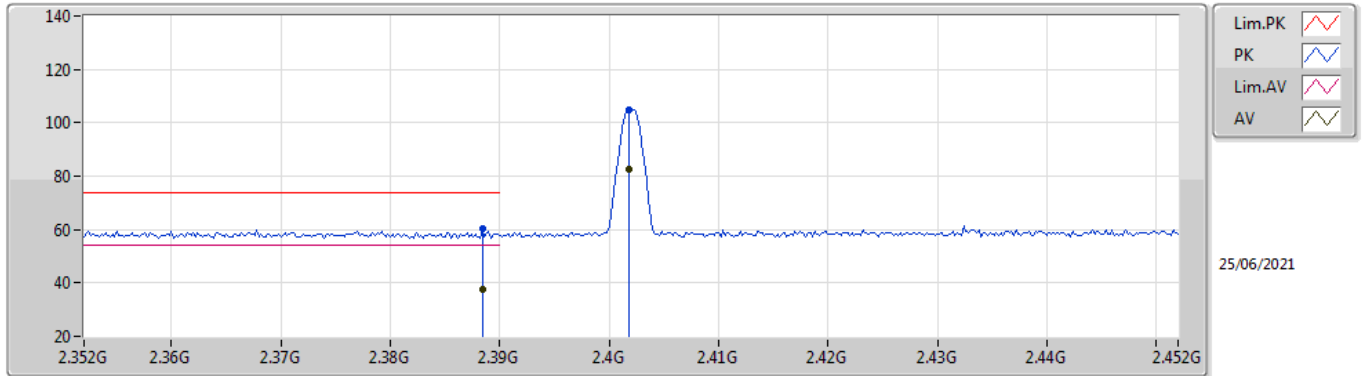
2402MHz_TX



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	2.3584G	38.50	54.00	-15.50	32.03	3	Vertical	175	1.12	-	6.47	27.77	4.26	-
AV	2.4018G	81.96	Inf	-Inf	31.90	3	Vertical	175	1.12	-	50.06	27.60	4.30	-
PK	2.3584G	61.00	74.00	-13.00	32.03	3	Vertical	175	1.12	-	28.97	27.77	4.26	-
PK	2.4018G	104.46	Inf	-Inf	31.90	3	Vertical	175	1.12	-	72.56	27.60	4.30	-

BT-BR(1Mbps)

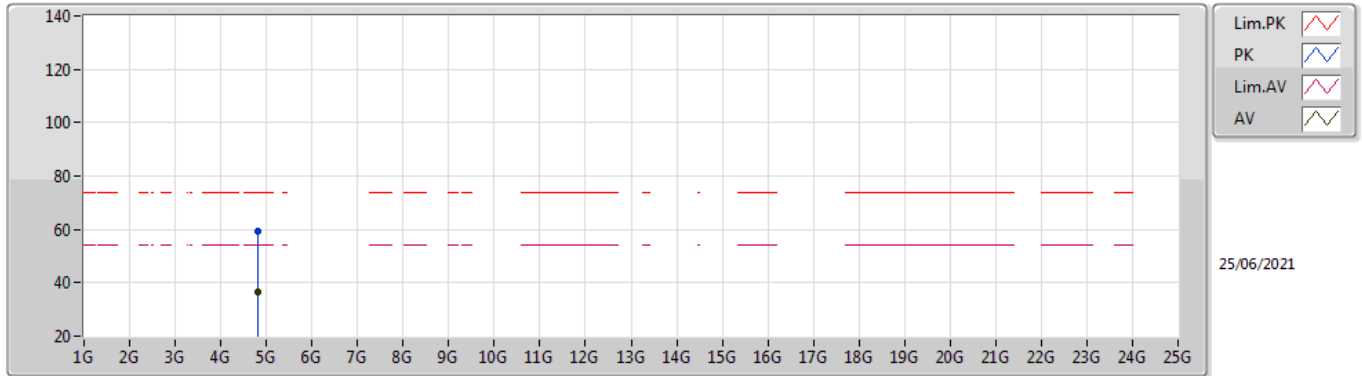
2402MHz_TX



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	2.3884G	37.68	54.00	-16.32	31.94	3	Horizontal	27	1.40	-	5.74	27.65	4.29	-
AV	2.4018G	82.38	Inf	-Inf	31.90	3	Horizontal	27	1.40	-	50.48	27.60	4.30	-
PK	2.3884G	60.18	74.00	-13.82	31.94	3	Horizontal	27	1.40	-	28.24	27.65	4.29	-
PK	2.4018G	104.88	Inf	-Inf	31.90	3	Horizontal	27	1.40	-	72.98	27.60	4.30	-

BT-BR(1Mbps)

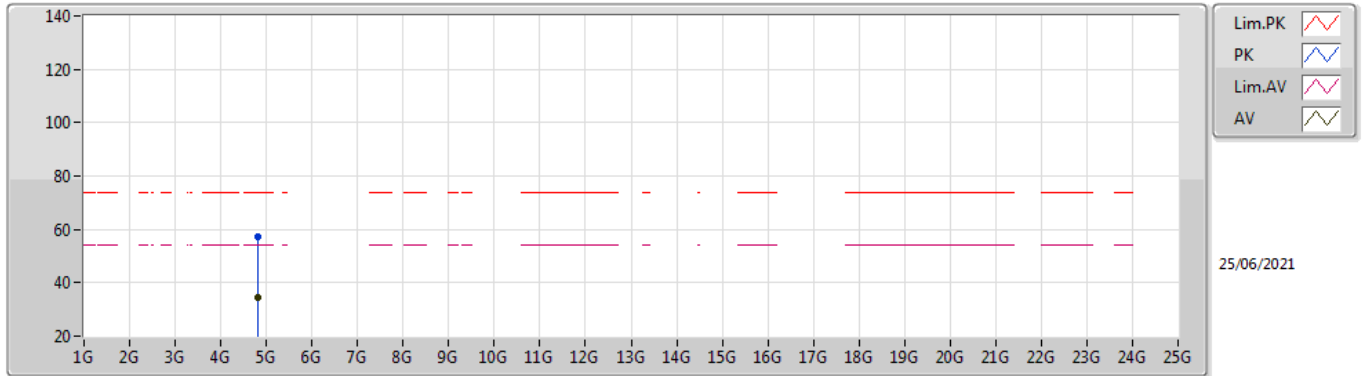
2402MHz_TX



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	4.80376G	36.76	54.00	-17.24	8.38	3	Vertical	162	2.65	-	28.38	31.11	6.50	29.23
PK	4.80376G	59.26	74.00	-14.74	8.38	3	Vertical	162	2.65	-	50.88	31.11	6.50	29.23

BT-BR(1Mbps)

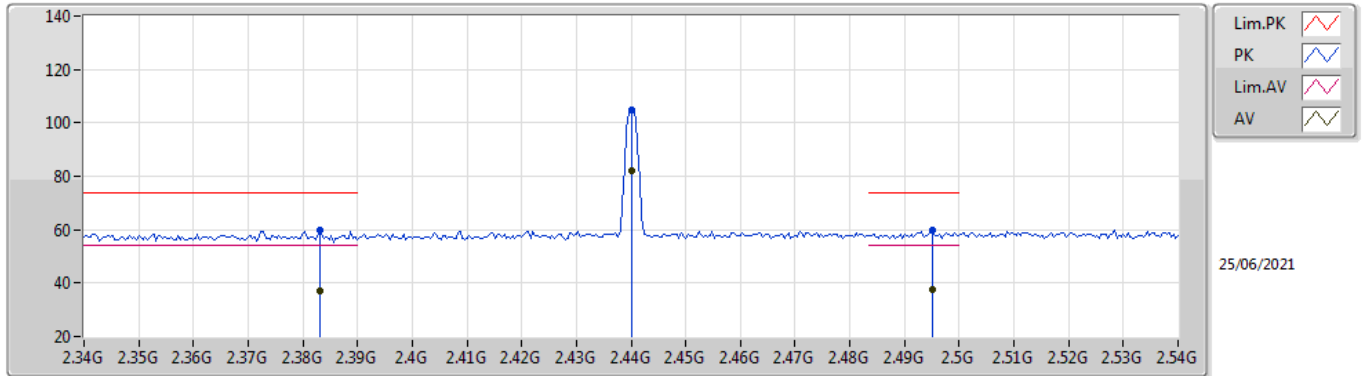
2402MHz_TX



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	4.8043G	34.51	54.00	-19.49	8.38	3	Horizontal	350	2.05	-	26.13	31.11	6.50	29.23
PK	4.8043G	57.01	74.00	-16.99	8.38	3	Horizontal	350	2.05	-	48.63	31.11	6.50	29.23

BT-BR(1Mbps)

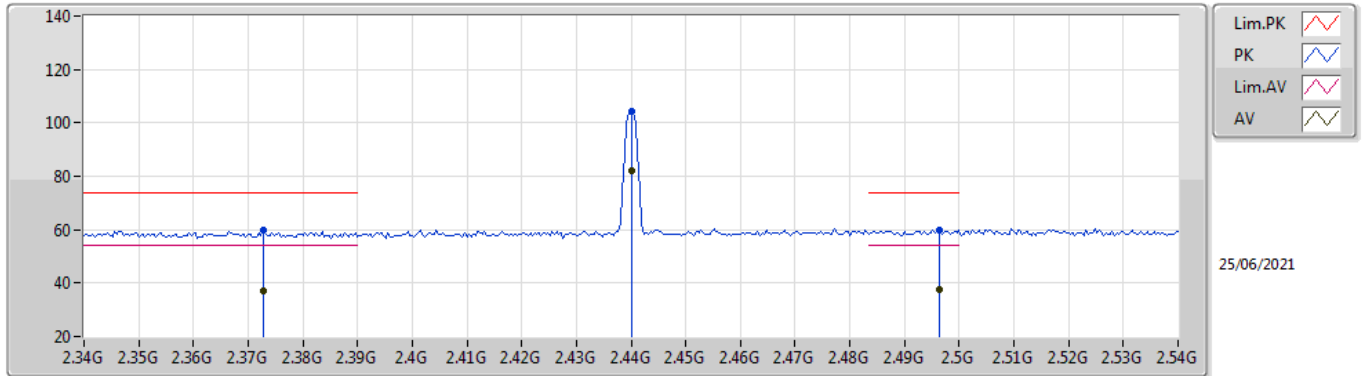
2440MHz_TX



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	2.3832G	37.29	54.00	-16.71	31.95	3	Vertical	45	1.10	-	5.34	27.67	4.28	-
AV	2.44G	82.09	Inf	-Inf	31.94	3	Vertical	45	1.10	-	50.15	27.60	4.34	-
AV	2.4952G	37.44	54.00	-16.56	32.09	3	Vertical	45	1.10	-	5.35	27.69	4.40	-
PK	2.3832G	59.79	74.00	-14.21	31.95	3	Vertical	45	1.10	-	27.84	27.67	4.28	-
PK	2.44G	104.59	Inf	-Inf	31.94	3	Vertical	45	1.10	-	72.65	27.60	4.34	-
PK	2.4952G	59.94	74.00	-14.06	32.09	3	Vertical	45	1.10	-	27.85	27.69	4.40	-

BT-BR(1Mbps)

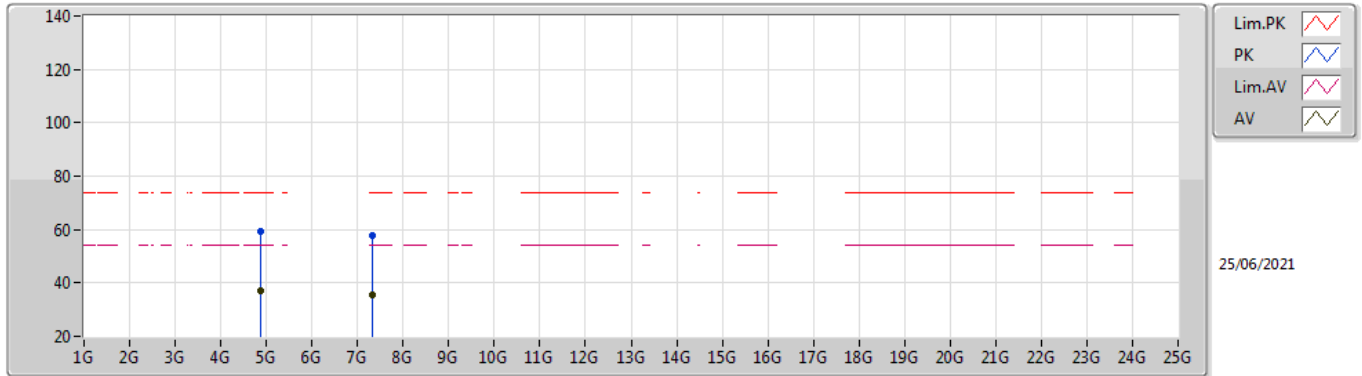
2440MHz_TX



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	2.3728G	37.14	54.00	-16.86	31.98	3	Horizontal	12	1.58	-	5.16	27.71	4.27	-
AV	2.44G	81.88	Inf	-Inf	31.94	3	Horizontal	12	1.58	-	49.94	27.60	4.34	-
AV	2.4964G	37.37	54.00	-16.63	32.09	3	Horizontal	12	1.58	-	5.28	27.69	4.40	-
PK	2.3728G	59.64	74.00	-14.36	31.98	3	Horizontal	12	1.58	-	27.66	27.71	4.27	-
PK	2.44G	104.38	Inf	-Inf	31.94	3	Horizontal	12	1.58	-	72.44	27.60	4.34	-
PK	2.4964G	59.87	74.00	-14.13	32.09	3	Horizontal	12	1.58	-	27.78	27.69	4.40	-

BT-BR(1Mbps)

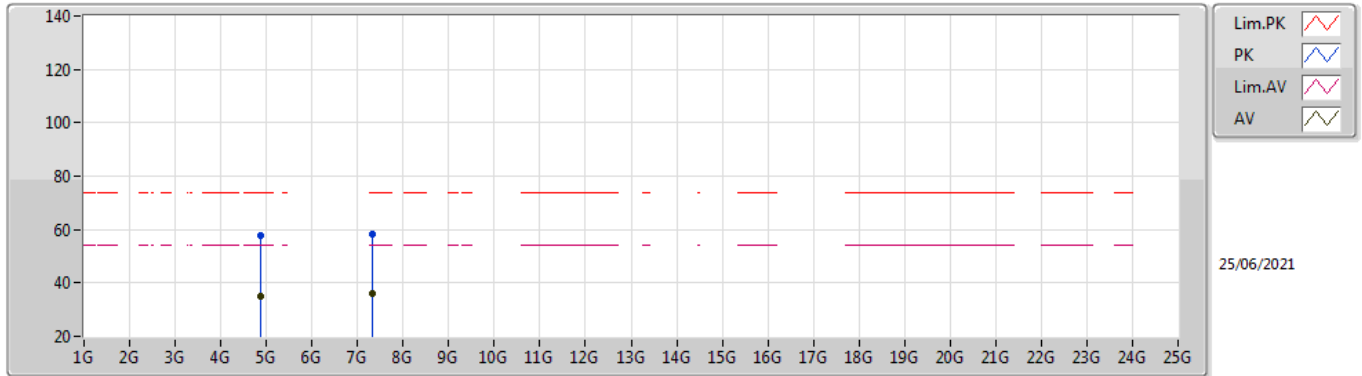
2440MHz_TX



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	4.88036G	36.97	54.00	-17.03	8.57	3	Vertical	252	1.45	-	28.40	31.20	6.58	29.21
AV	7.31964G	35.28	54.00	-18.72	13.69	3	Vertical	348	1.44	-	21.59	36.26	7.60	30.17
PK	4.88036G	59.47	74.00	-14.53	8.57	3	Vertical	252	1.45	-	50.90	31.20	6.58	29.21
PK	7.31964G	57.78	74.00	-16.22	13.69	3	Vertical	348	1.44	-	44.09	36.26	7.60	30.17

BT-BR(1Mbps)

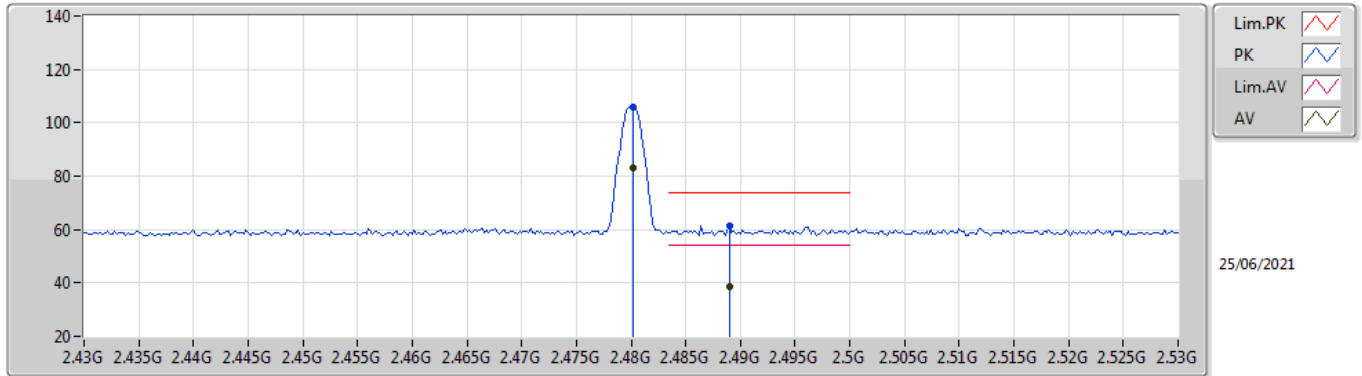
2440MHz_TX



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	4.87964G	35.19	54.00	-18.81	8.57	3	Horizontal	324	1.35	-	26.62	31.20	6.58	29.21
AV	7.31964G	35.83	54.00	-18.17	13.69	3	Horizontal	203	2.36	-	22.14	36.26	7.60	30.17
PK	4.87964G	57.69	74.00	-16.31	8.57	3	Horizontal	324	1.35	-	49.12	31.20	6.58	29.21
PK	7.31964G	58.33	74.00	-15.67	13.69	3	Horizontal	203	2.36	-	44.64	36.26	7.60	30.17

BT-BR(1Mbps)

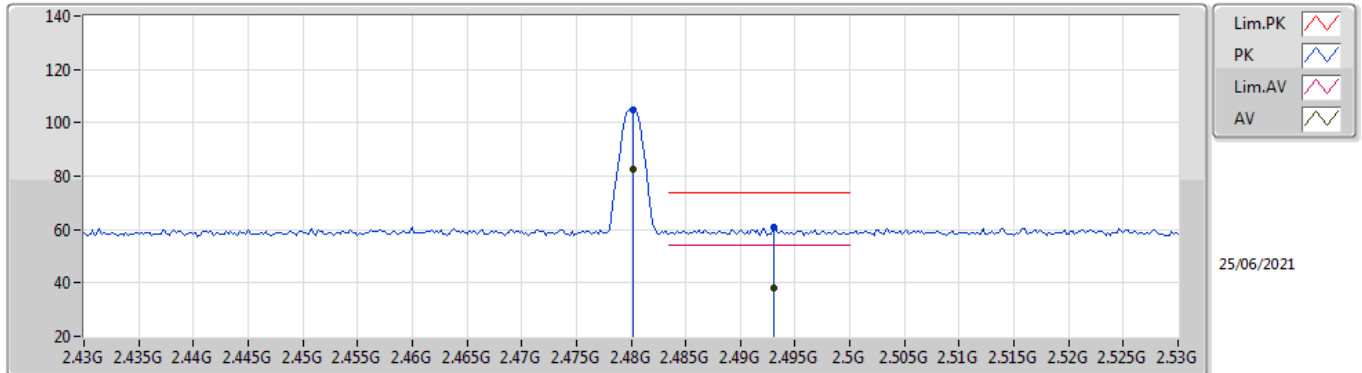
2480MHz_TX



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	2.4802G	83.21	Inf	-Inf	32.04	3	Vertical	44	1.09	-	51.17	27.66	4.38	-
AV	2.489G	38.79	54.00	-15.21	32.07	3	Vertical	44	1.09	-	6.72	27.68	4.39	-
PK	2.4802G	105.71	Inf	-Inf	32.04	3	Vertical	44	1.09	-	73.67	27.66	4.38	-
PK	2.489G	61.29	74.00	-12.71	32.07	3	Vertical	44	1.09	-	29.22	27.68	4.39	-

BT-BR(1Mbps)

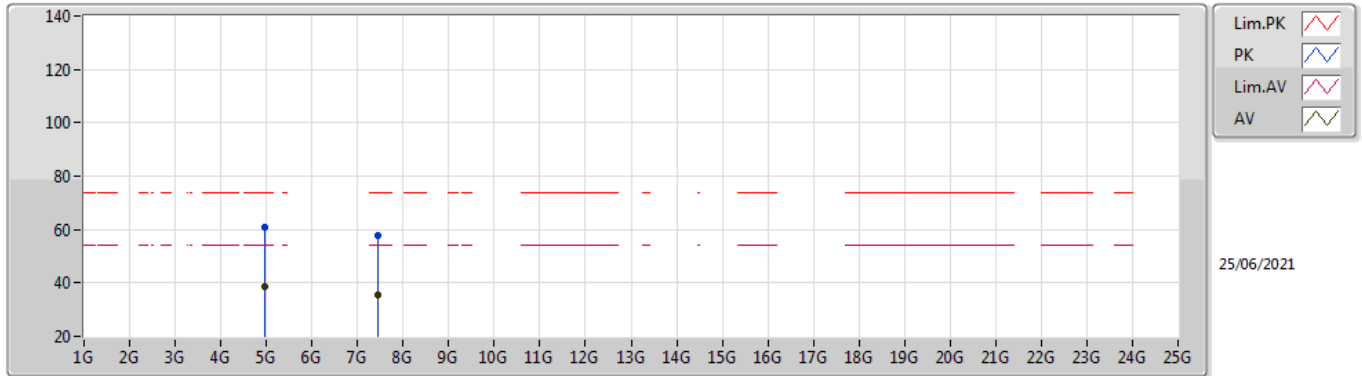
2480MHz_TX



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	2.4802G	82.42	Inf	-Inf	32.04	3	Horizontal	11	1.28	-	50.38	27.66	4.38	-
AV	2.493G	38.18	54.00	-15.82	32.08	3	Horizontal	11	1.28	-	6.10	27.69	4.39	-
PK	2.4802G	104.92	Inf	-Inf	32.04	3	Horizontal	11	1.28	-	72.88	27.66	4.38	-
PK	2.493G	60.68	74.00	-13.32	32.08	3	Horizontal	11	1.28	-	28.60	27.69	4.39	-

BT-BR(1Mbps)

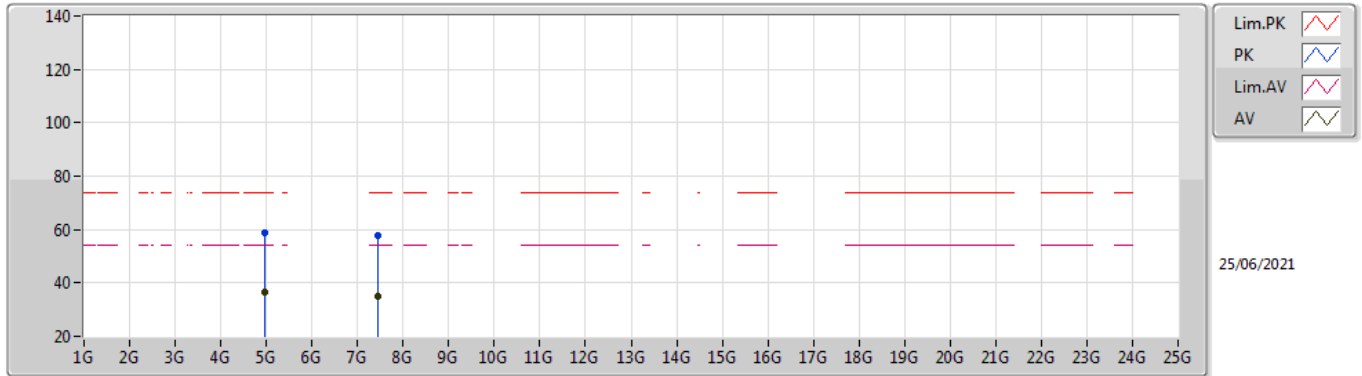
2480MHz_TX



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	4.95976G	38.54	54.00	-15.46	8.82	3	Vertical	250	1.30	-	29.72	31.34	6.66	29.18
AV	7.43964G	35.28	54.00	-18.72	13.64	3	Vertical	317	1.44	-	21.64	36.26	7.64	30.26
PK	4.95976G	61.04	74.00	-12.96	8.82	3	Vertical	250	1.30	-	52.22	31.34	6.66	29.18
PK	7.43964G	57.78	74.00	-16.22	13.64	3	Vertical	317	1.44	-	44.14	36.26	7.64	30.26

BT-BR(1Mbps)

2480MHz_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	4.95964G	36.40	54.00	-17.60	8.82	3	Horizontal	10	1.50	-	27.58	31.34	6.66	29.18
AV	7.4403G	35.22	54.00	-18.78	13.64	3	Horizontal	224	2.19	-	21.58	36.26	7.64	30.26
PK	4.95964G	58.90	74.00	-15.10	8.82	3	Horizontal	10	1.50	-	50.08	31.34	6.66	29.18
PK	7.4403G	57.72	74.00	-16.28	13.64	3	Horizontal	224	2.19	-	44.08	36.26	7.64	30.26