

FCC Test Report

FCC ID : PPQ-WCBN3509R
Equipment : 802.11a/b/g/n/ac 2Tx2R+BT5.0 USB WLAN Module
Brand Name : LITE-ON
Model Name : WCBN3509R, WCBN3509R(AU)
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,
Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 12, 2019, and testing was started from Aug. 21, 2019 and completed on Aug. 23, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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History of this test report

[illegible]

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
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: 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	Support	Remark
1	HONGBO	290-10569	PIFA	I-Pex	2.4G+5G	Group 1
2	HONGBO	290-10569	PIFA	I-Pex	2.4G+5G	
3	HONGBO	290-10569	PIFA	I-Pex	BT	
4	PSA	RFMTA401030IML B702	PIFA	I-Pex	2.4G+5G	Group 2
5	PSA	RFMTA401030IML B702	PIFA	I-Pex	2.4G+5G	
6	PSA	RFMTA401030IML B702	PIFA	I-Pex	BT	
7	HONGBO	290-10843	PIFA	I-Pex	2.4G+5G	Group 3
8	HONGBO	290-10843	PIFA	I-Pex	2.4G+5G	
9	HONGBO	290-10843	PIFA	I-Pex	BT	
10	PSA	RFMTA401050IML B706	PIFA	I-Pex	2.4G+5G	Group 4
11	PSA	RFMTA401050IML B706	PIFA	I-Pex	2.4G+5G	
12	PSA	RFMTA401050IML B706	PIFA	I-Pex	BT	

Ant.	Brand	Model Name	Antenna Type	Connector	Support	Remark
13	HONGBO	290-10844	PIFA	I-Pex	2.4G+5G	Group 5
14	HONGBO	290-10844	PIFA	I-Pex	2.4G+5G	
15	HONGBO	290-10844	PIFA	I-Pex	BT	
16	PSA	RFMTA401080IML B704	PIFA	I-Pex	2.4G+5G	Group 6
17	PSA	RFMTA401080IML B704	PIFA	I-Pex	2.4G+5G	
18	PSA	RFMTA401080IML B704	PIFA	I-Pex	BT	
19	PSA	RFMTA340730IML B305	PIFA	I-Pex	2.4G+5G	Group 7
20	PSA	RFMTA340715IML B302	PIFA	I-Pex	2.4G+5G	
21	PSA	RFMTA340730IML B305	PIFA	I-Pex	BT	

Ant.	Port	Gain (dBi)			Remark
		2.4G	5G	BT	
1	1	3.74	3.8	-	Group 1
2	2	3.74	3.8	-	
3	3	-	-	3.74	
4	1	3.74	3.8	-	Group 2
5	2	3.74	3.8	-	
6	3	-	-	3.74	
7	1	3.05	1.59	-	Group 3
8	2	3.05	1.59	-	
9	3	-	-	3.05	
10	1	3.05	1.59	-	Group 4
11	2	3.05	1.59	-	
12	3	-	-	3.05	
13	1	2.38	1.49	-	Group 5
14	2	2.38	1.49	-	
15	3	-	-	2.38	
16	1	1.72	1.25	-	Group 6
17	2	1.72	1.25	-	
18	3	-	-	1.72	
19	1	-0.5	3.28	-	Group 7
20	2	-1.68	3.08	-	
21	3	-	-	-0.5	

Note 1: The EUT has twenty one antennas.

Note 2: EUT can match with above antennas for using. Group 1 was used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

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

Ant. 1~2, 4~5, 7~8, 10~11, 13~14, 16~17, 19~20 could transmit/receive simultaneously.

For BT function:

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

Ant. 3, 6, 9, 12, 15, 18, 21 could transmit/receive simultaneously.

For 5GHz function:

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

Ant. 1~2, 4~5, 7~8, 10~11, 13~14, 16~17, 19~20 could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From Host System		
EUT Function	☒ Point-to-multipoint	☐ Point-to-point	
AFH Function	☒ Non-AFH	☒ AFH	
Note. Non-AFH: DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $3.37 \times 1.185 = 4$ within 1.185 seconds. AFH: DH5 Packet permit maximum $800 / 20 / 6 = 6.67$ hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $13.33 \times 8 = 106.6$ within 8 seconds. Under the above conditions, Non-AFH Mode configuration was found to be the worst case and measured during the test.			
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)	0.576	2.4	2.878m	1k
BT-EDR(2Mbps)	0.576	2.4	2.881m	1k
BT-EDR(3Mbps)	0.577	2.39	2.883m	1k

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

1.1.5 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
WCBN3509R	All the models are identical, the difference are "chip model name" and "software".
WCBN3509R(AU)	

Note: The Model Name WCBN3509R(AU) configuration was pretested and found to be the worst case and measured during the test.

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
- ♦ KDB 558074 D01 v05r02
- ♦ ANSI C63.10-2013
- ♦ KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Dexter Dai	25.4~25.8°C / 58~60%	22/Aug/2019
Radiated	03CH09-HY	Lego Lin	22.3~23.9°C / 51.1~55.6%	21/Aug/2019~ 22/Aug/2019
AC Conduction	CO04-HY	Edward Wang	23.1~25.4°C / 63.5~67.9%	23/Aug/2019

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software Version	WCN_Combo_Tool 1747
-----------------------	---------------------

Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	7
2441MHz	7
2480MHz	7
BT-EDR(2Mbps)	-
2402MHz	7
2441MHz	7
2480MHz	7
BT-EDR(3Mbps)	-
2402MHz	7
2441MHz	7
2480MHz	7

2.3 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
Operating Mode	CTX
1	USB 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

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	USB Mode
Operating Mode > 1GHz	CTX
Orthogonal Planes of EUT	Z Plane
	
Worst Planes of EUT	V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA980219 for Co-location RF Exposure Evaluation.	

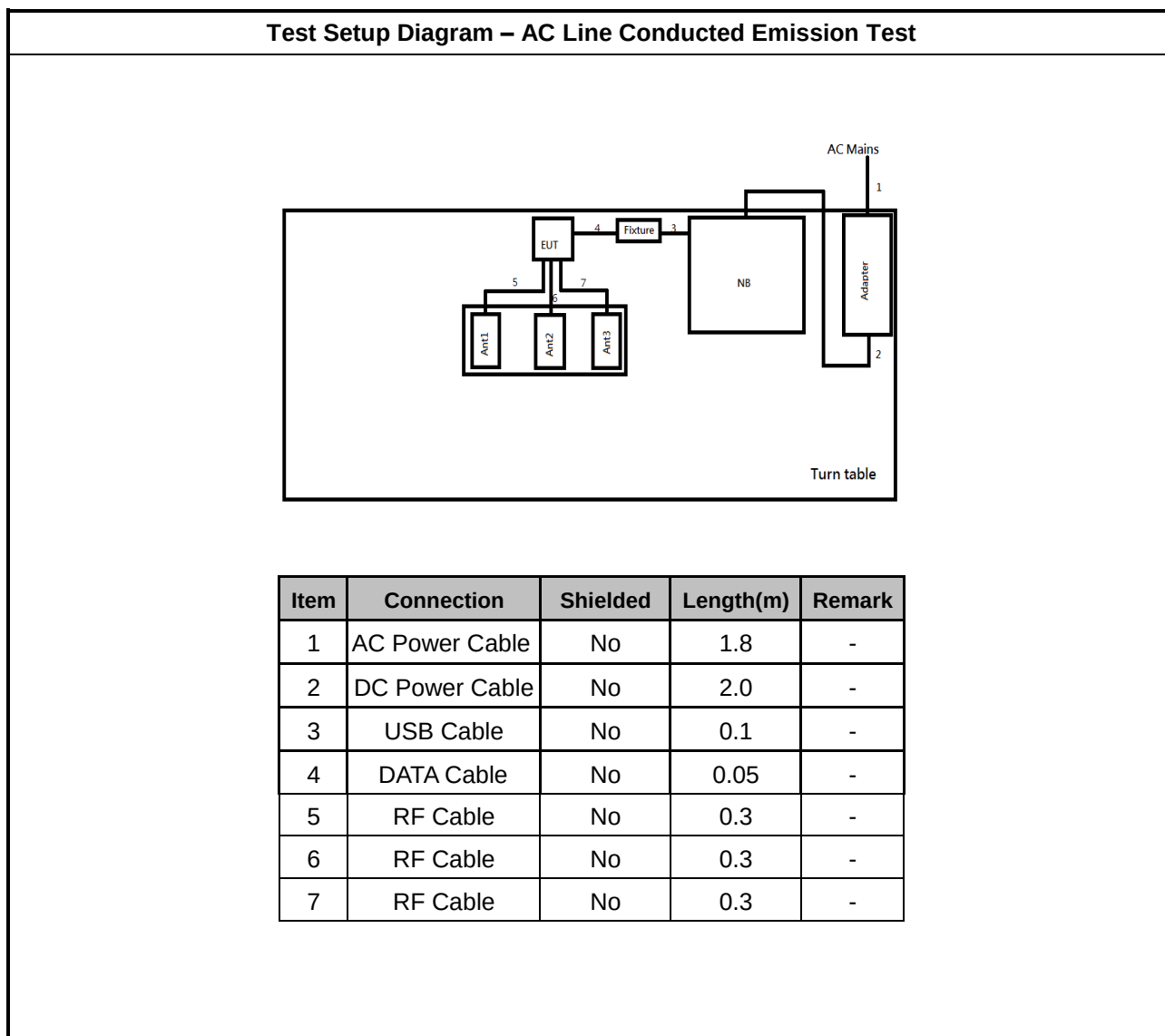
2.4 Support Equipment

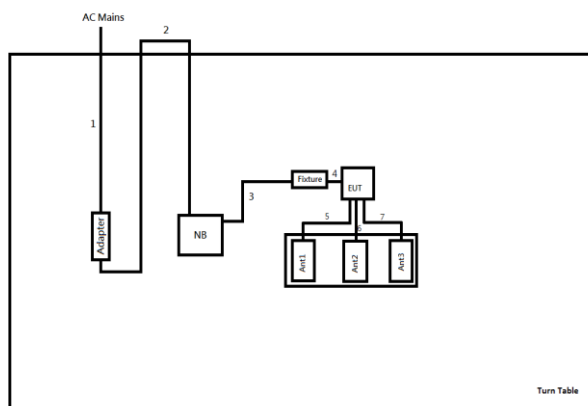
Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Power Cable	Power sync	PW-GPC180-3	N/A
2	Notebook	Dell	E4300	N/A
3	Adapter	DELL	LA90PM111	N/A
4	Fixture	LITE-ON	TB001	N/A
5	Antenna	N/A	N/A	N/A

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	AC Power Source	GW	APS-9102	N/A
4	Fixture	Lite-on	TB001	N/A

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Power Cable	Power sync	PW-GPC180-3	N/A
2	Notebook	Dell	E4300	N/A
3	Adapter	DELL	LA90PM111	N/A
4	Fixture	LITE-ON	TB001	N/A
5	Antenna	N/A	N/A	N/A

2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.8	-
2	DC Power Cable	No	2.0	-
3	USB Cable	No	0.1	-
4	DATA Cable	No	0.05	-
5	RF Cable	No	0.3	-
6	RF Cable	No	0.3	-
7	RF Cable	No	0.3	-

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.		

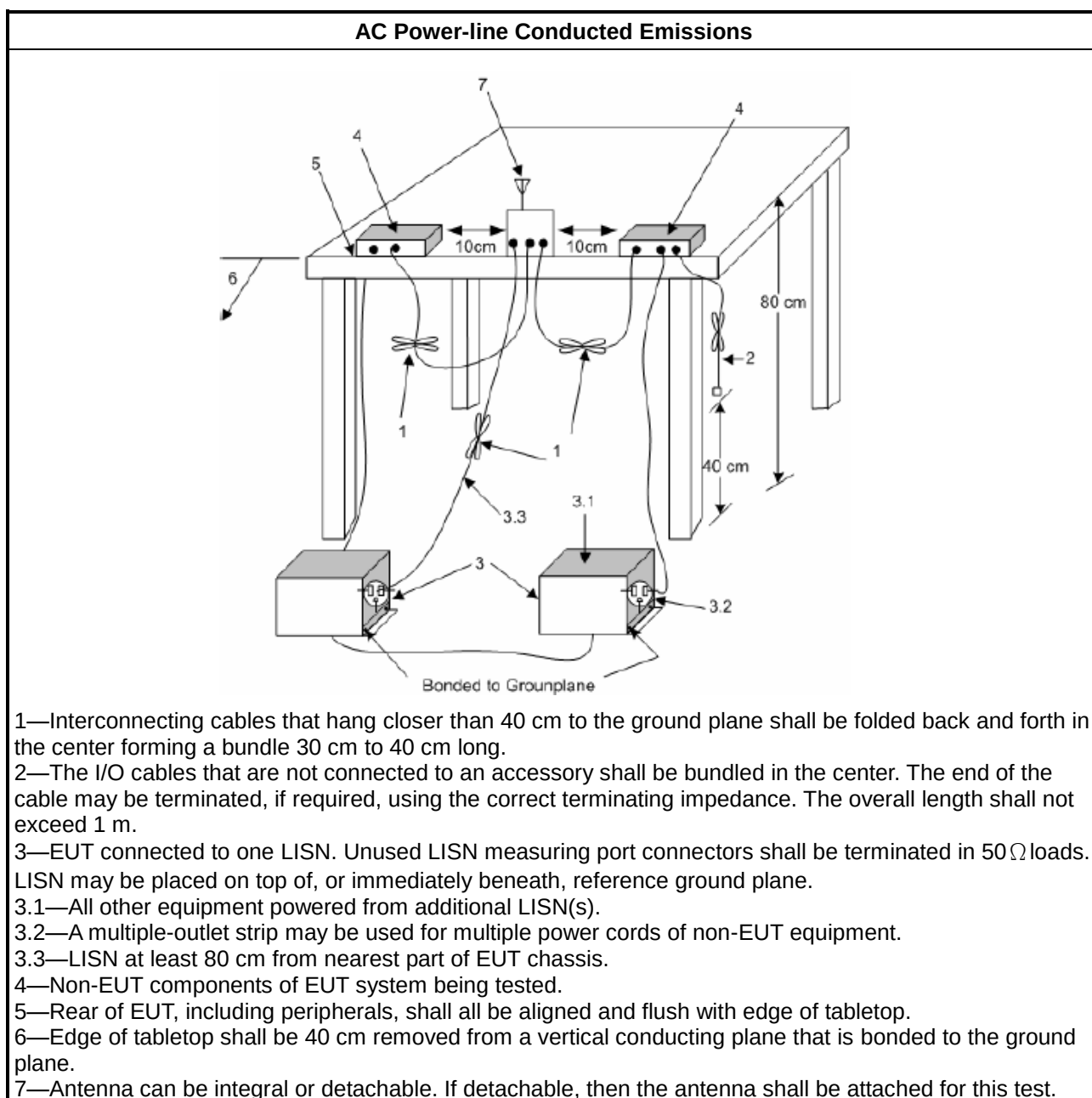
3.1.2 Measuring Instruments

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 foray power-line conducted emissions.

3.1.4 Test Setup



3.1.5 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	

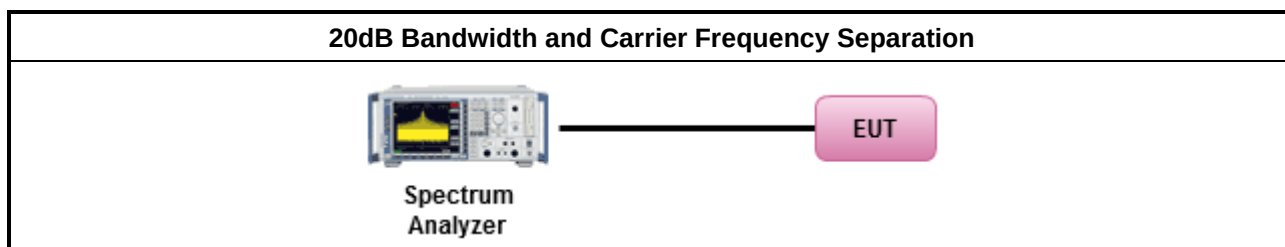
3.2.2 Measuring Instruments

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	

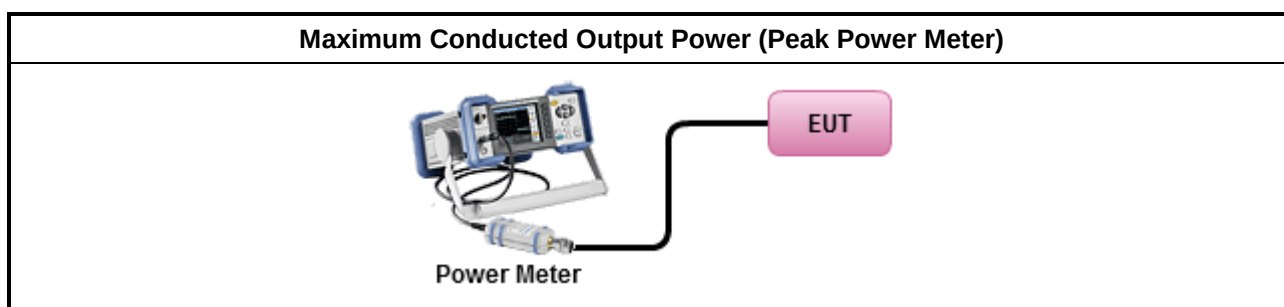
3.3.2 Measuring Instruments

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

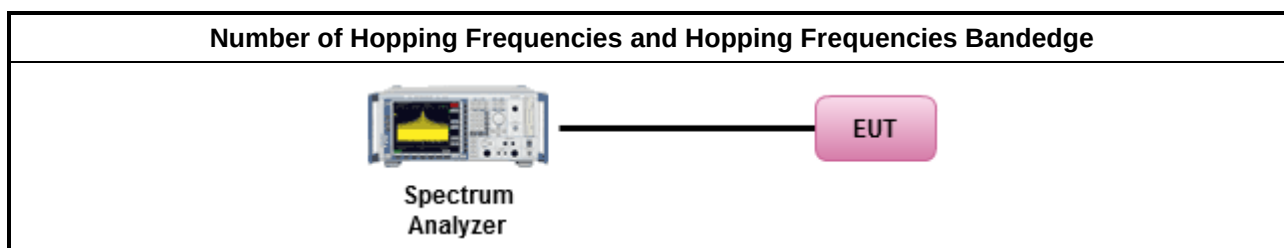
3.4.3 Measuring Instruments

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	

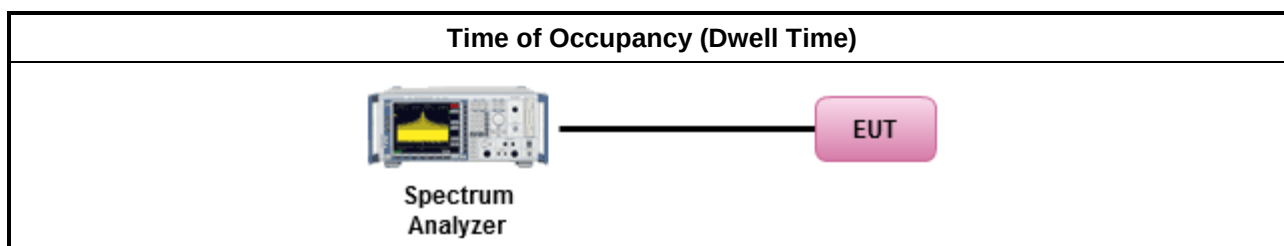
3.5.2 Measuring Instruments

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.	

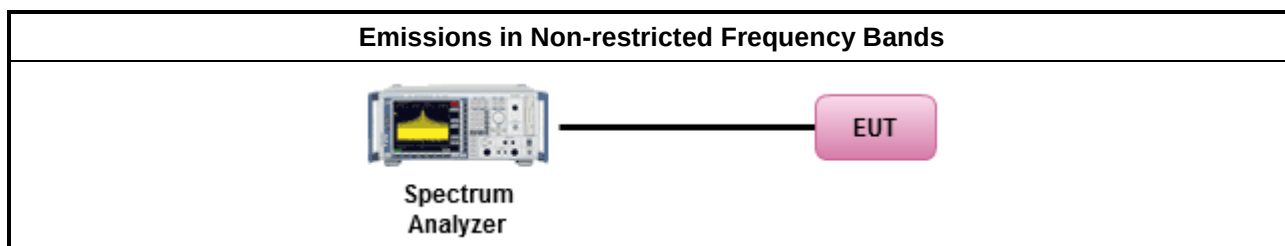
3.6.2 Measuring Instruments

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.

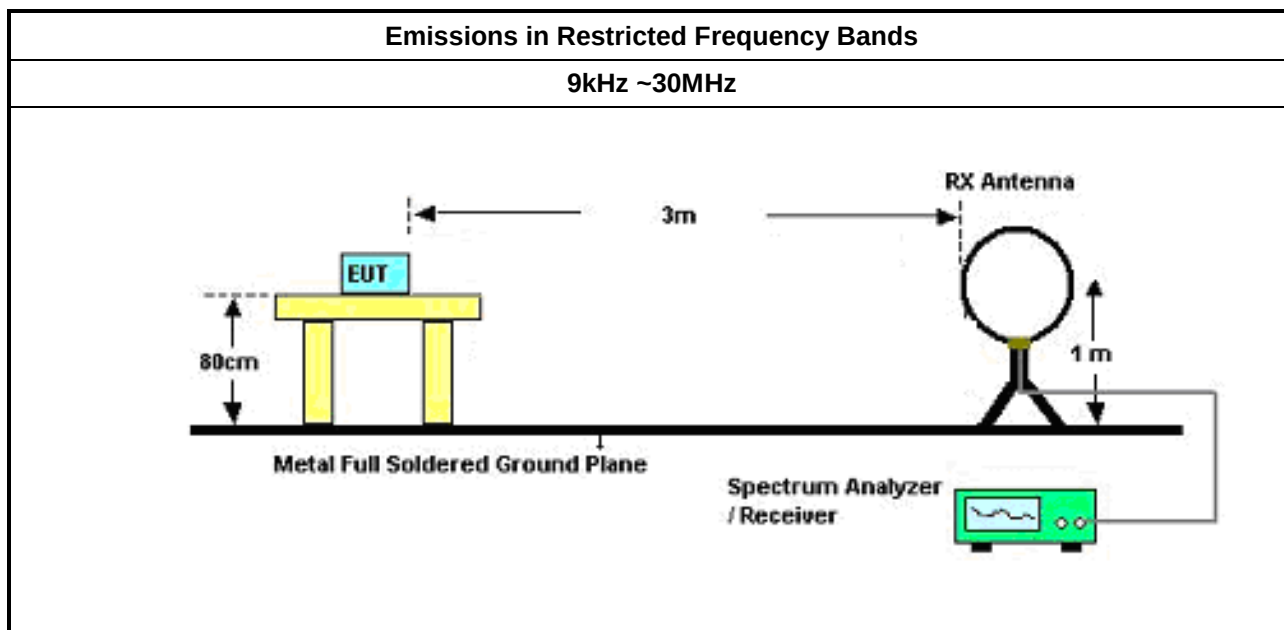
3.7.2 Measuring Instruments

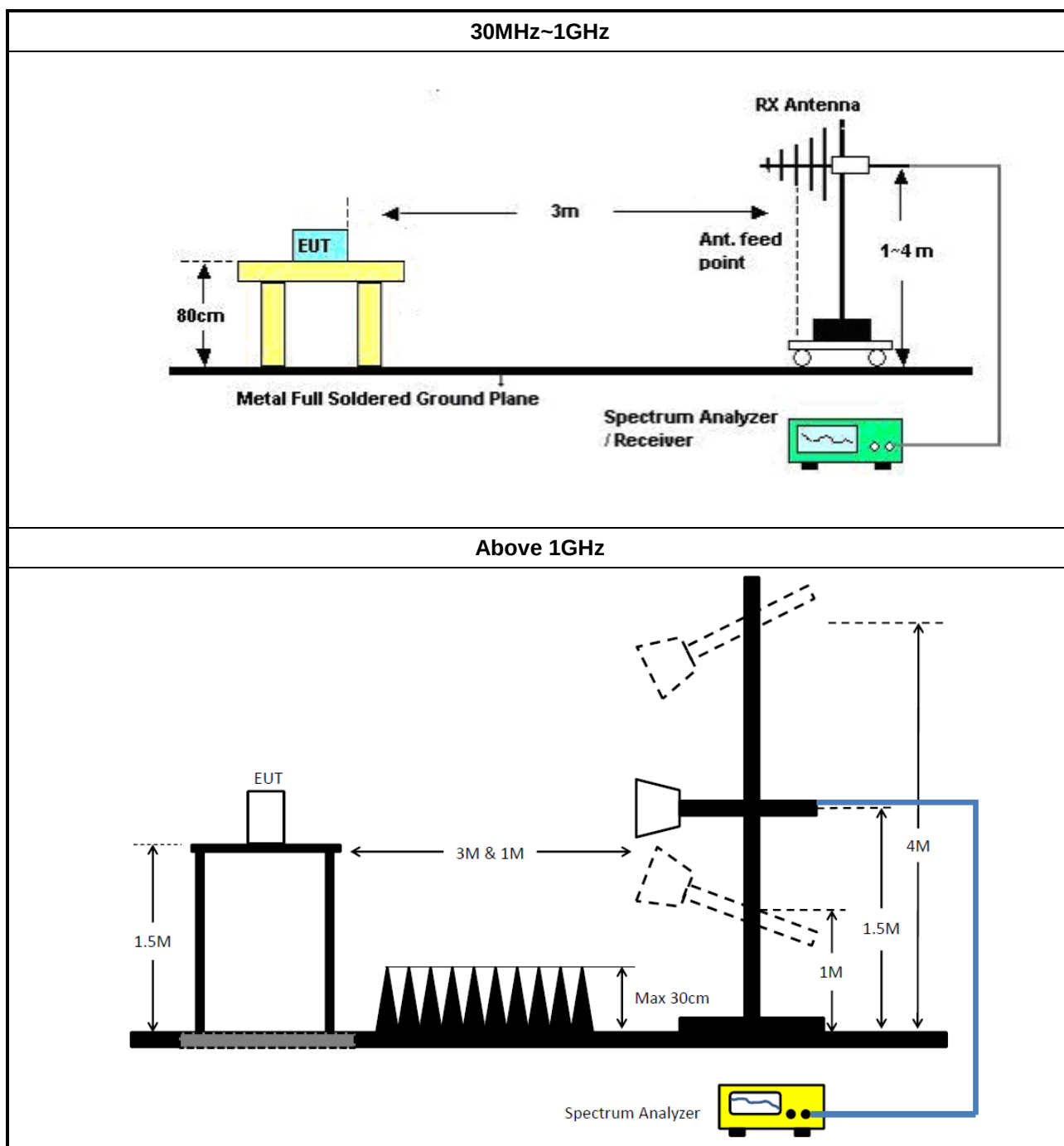
Refer a test equipment and calibration data table in this test report.

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 OATS 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 Test Setup





3.7.5 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.

3.7.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G

3.8 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	17/Sep/2018	16/Sep/2019
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Puls e Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2018	11/Oct/2019

NCR : Non-Calibration Require.

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	22/Apr/2019	21/Apr/2020
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	13/Jun/2019	12/Jun/2020
Microwave System Premplifier	KEYSIGHT	87422A	MY53270197	1GHz ~ 18GHz	30/Nov/2018	29/Nov/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
Spectrum Analyzer	R&S	FSP30	100793	9 kHz ~ 30GHz	05/Jun/2019	04/Jun/2020
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	02/Oct/2018	03/Oct/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	22/May/2019	21/May/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170614	18GHz~40GHz	22/May/2019	21/May/2020
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2018	23/Aug/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
LF-CABLE-2019 0218	Jye Bao	RG142	CB028	9kHz ~ 1GHz	18/Feb/2019	17/Feb/2020
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	13/Mar/2019	12/Mar/2020

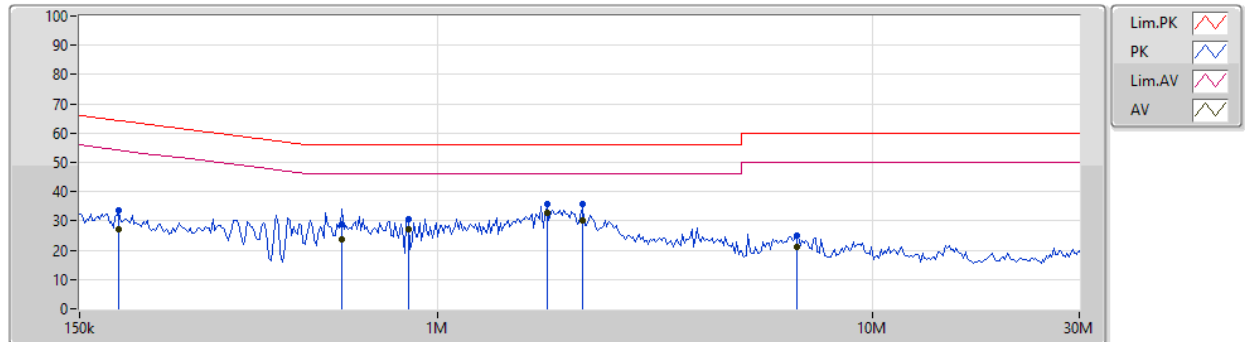
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	10/Jan/2019	09/Jan/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	USB Mode		

23/08/2019

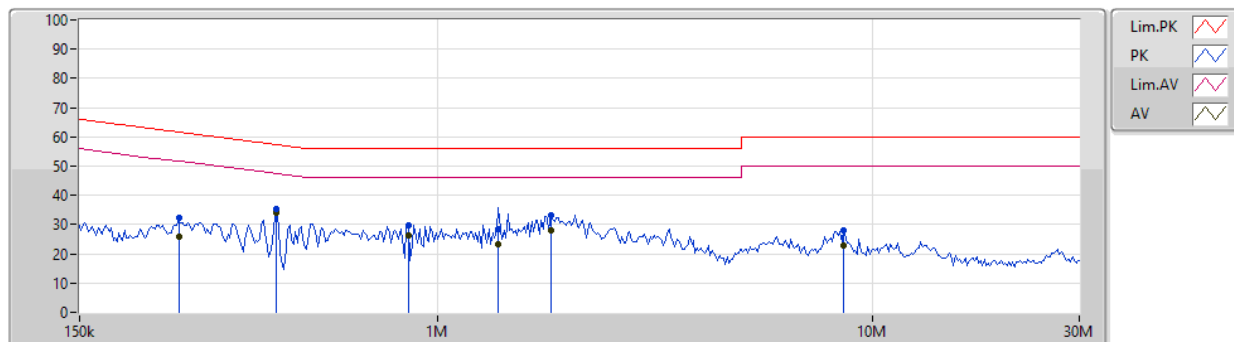


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	184.859k	33.46	64.26	-30.80	19.47	Neutral	-	13.99	9.59	0.01	9.87			
AV	184.859k	27.23	54.26	-27.03	19.47	Neutral	-	7.76	9.59	0.01	9.87			
QP	604.065k	28.75	56.00	-27.25	19.48	Neutral	-	9.27	9.59	0.01	9.88			
AV	604.065k	23.64	46.00	-22.36	19.48	Neutral	-	4.16	9.59	0.01	9.88			
QP	855.72k	30.80	56.00	-25.20	19.49	Neutral	-	11.31	9.59	0.02	9.88			
AV	855.72k	27.36	46.00	-18.64	19.49	Neutral	-	7.87	9.59	0.02	9.88			
QP	1.787M	35.99	56.00	-20.01	19.53	Neutral	-	16.46	9.61	0.03	9.89			
AV	1.787M	32.92	46.00	-13.08	19.53	Neutral	"Worst"	13.39	9.61	0.03	9.89			
QP	2.159M	35.70	56.00	-20.30	19.53	Neutral	-	16.17	9.61	0.03	9.89			
AV	2.159M	30.10	46.00	-15.90	19.53	Neutral	-	10.57	9.61	0.03	9.89			
QP	6.712M	25.11	60.00	-34.89	19.59	Neutral	-	5.52	9.64	0.06	9.89			
AV	6.712M	20.92	50.00	-29.08	19.59	Neutral	-	1.33	9.64	0.06	9.89			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	USB Mode		

23/08/2019



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	254.17k	32.25	61.62	-29.37	19.48	Line	-	12.77	9.60	0.01	9.87			
AV	254.17k	25.66	51.62	-25.96	19.48	Line	-	6.18	9.60	0.01	9.87			
QP	426.418k	35.17	57.32	-22.15	19.48	Line	-	15.69	9.59	0.01	9.88			
AV	426.418k	33.86	47.32	-13.46	19.48	Line	"Worst"	14.38	9.59	0.01	9.88			
QP	855.72k	29.77	56.00	-26.23	19.50	Line	-	10.27	9.60	0.02	9.88			
AV	855.72k	26.50	46.00	-19.50	19.50	Line	-	7.00	9.60	0.02	9.88			
QP	1.38M	28.31	56.00	-27.69	19.52	Line	-	8.79	9.61	0.03	9.88			
AV	1.38M	23.24	46.00	-22.76	19.52	Line	-	3.72	9.61	0.03	9.88			
QP	1.823M	33.15	56.00	-22.85	19.54	Line	-	13.61	9.62	0.03	9.89			
AV	1.823M	28.09	46.00	-17.91	19.54	Line	-	8.55	9.62	0.03	9.89			
QP	8.608M	28.20	60.00	-31.80	19.62	Line	-	8.58	9.66	0.07	9.89			
AV	8.608M	22.87	50.00	-27.13	19.62	Line	-	3.25	9.66	0.07	9.89			

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)	920k	880.81k	881KF1D	918.75k	870.815k
BT-EDR(2Mbps)	1.316M	1.184M	1M18G1D	1.259M	1.183M
BT-EDR(3Mbps)	1.274M	1.192M	1M19G1D	1.263M	1.187M

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;

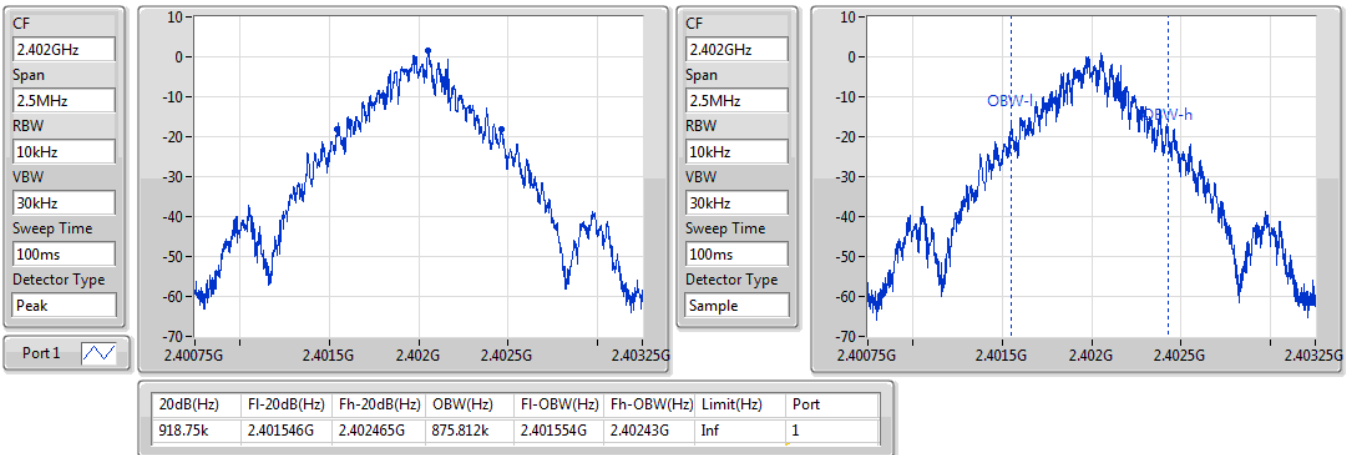
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	Inf	918.75k	875.812k
2441MHz_TnomVnom	Pass	Inf	920k	870.815k
2480MHz_TnomVnom	Pass	Inf	918.75k	880.81k
BT-EDR(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	Inf	1.31M	1.183M
2441MHz_TnomVnom	Pass	Inf	1.259M	1.183M
2480MHz_TnomVnom	Pass	Inf	1.316M	1.184M
BT-EDR(3Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	Inf	1.274M	1.192M
2441MHz_TnomVnom	Pass	Inf	1.263M	1.188M
2480MHz_TnomVnom	Pass	Inf	1.266M	1.187M

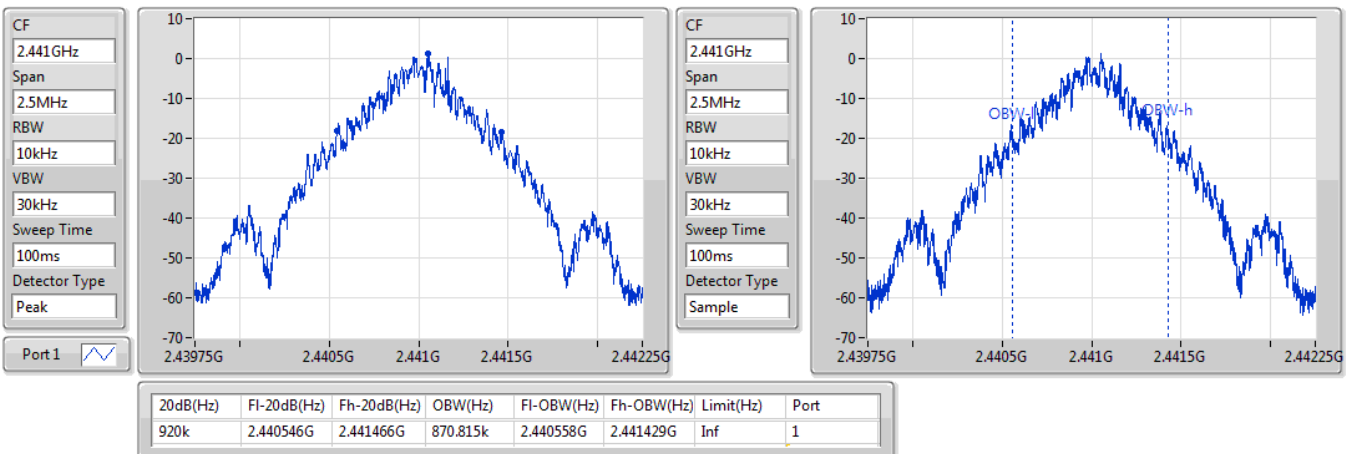
Port X-N dB = Port X 20dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-BR(1Mbps)
2402MHz
EBW

22/08/2019

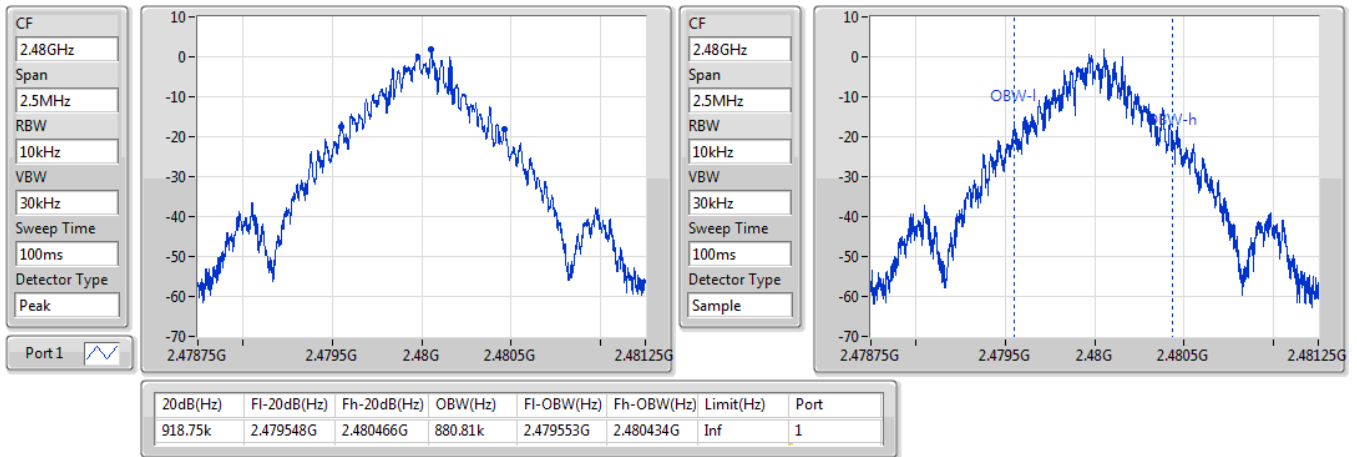

BT-BR(1Mbps)
2441MHz
EBW

22/08/2019

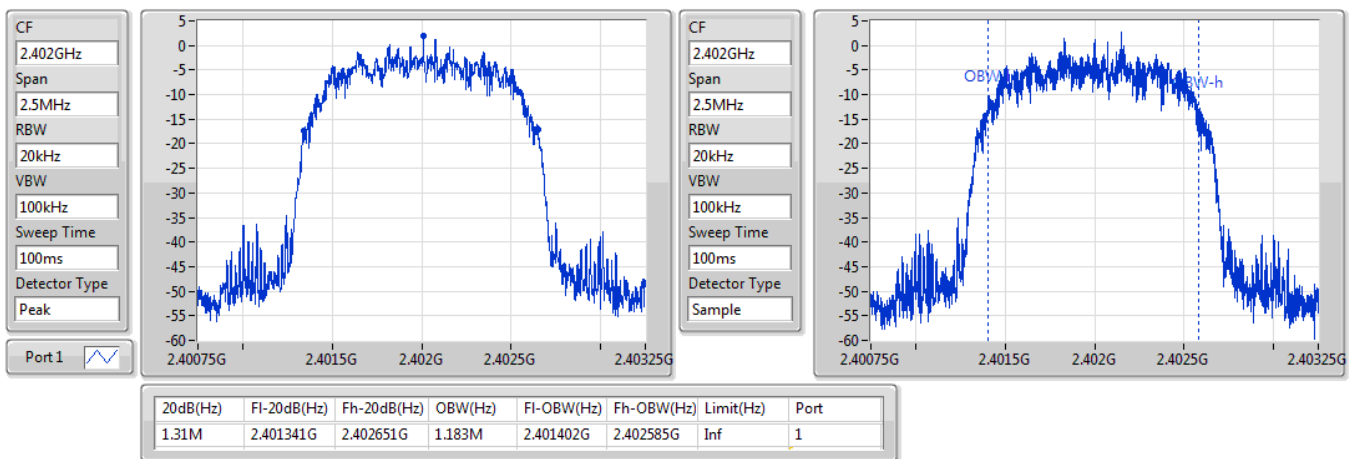


BT-BR(1Mbps)
EBW
2480MHz

22/08/2019

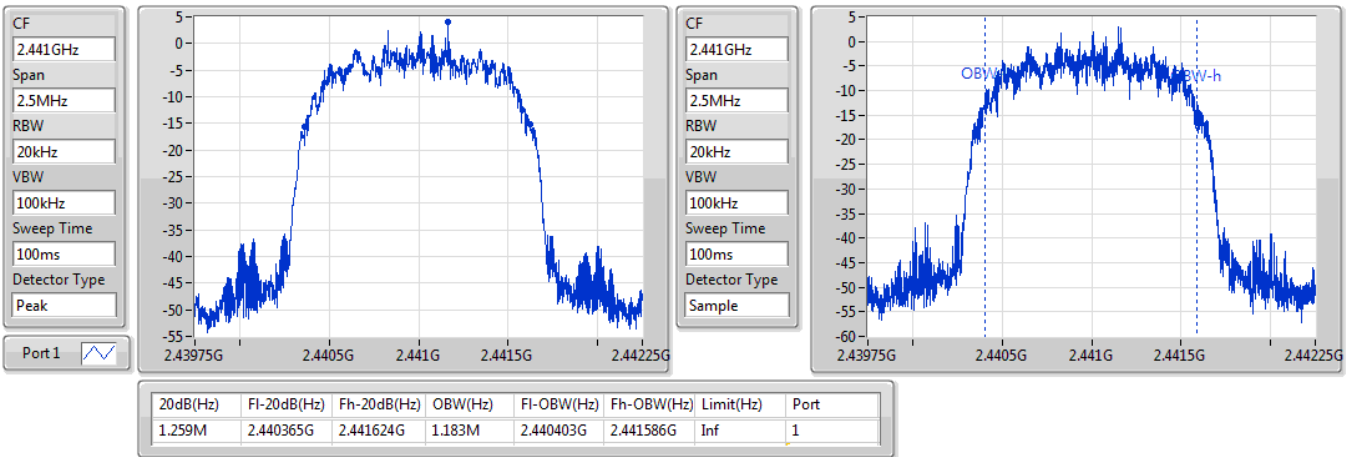

BT-EDR(2Mbps)
EBW
2402MHz

22/08/2019

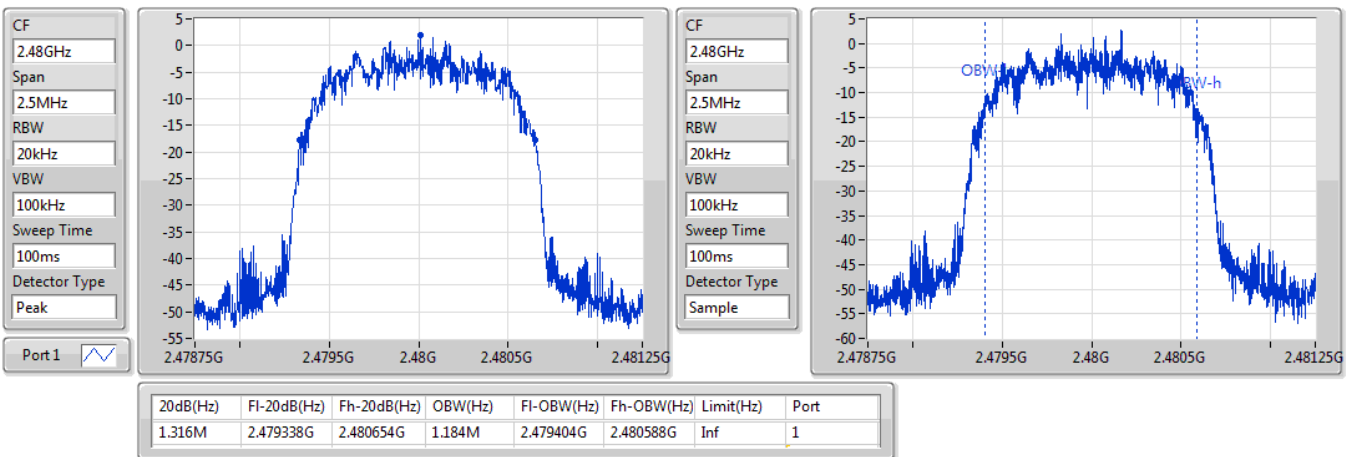


BT-EDR(2Mbps)
EBW
2441MHz

22/08/2019

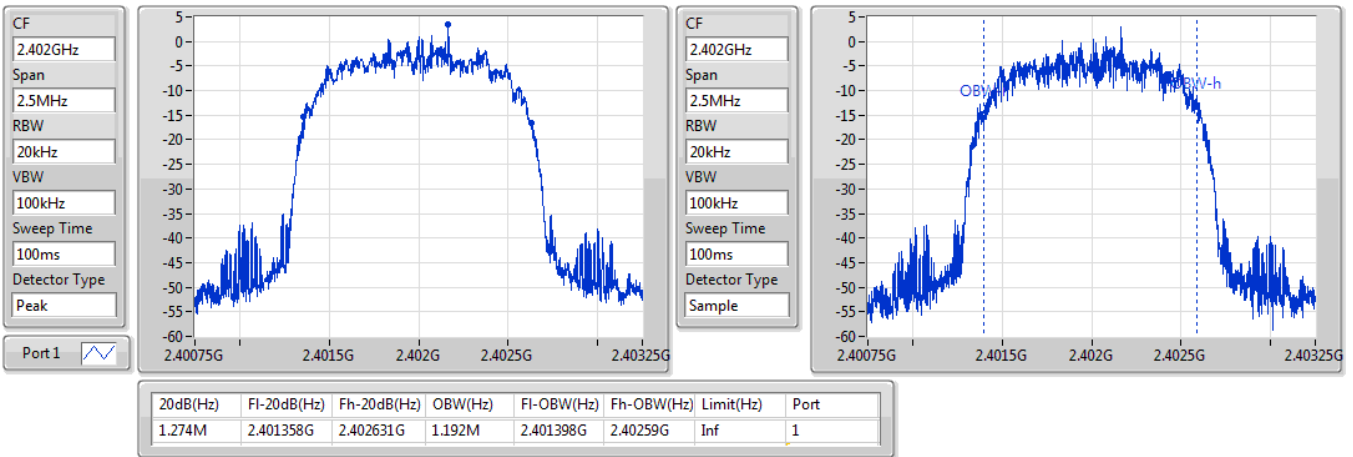

BT-EDR(2Mbps)
EBW
2480MHz

22/08/2019

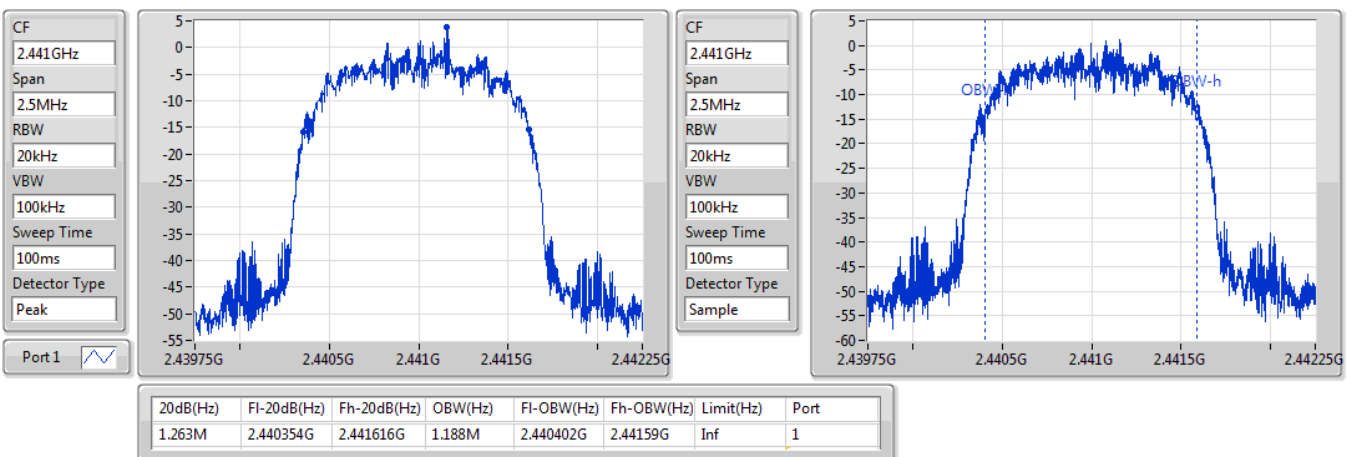


BT-EDR(3Mbps)
EBW
2402MHz

22/08/2019


BT-EDR(3Mbps)
EBW
2441MHz

22/08/2019

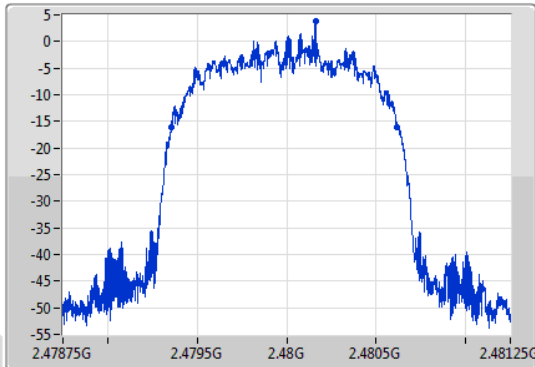


BT-EDR(3Mbps)

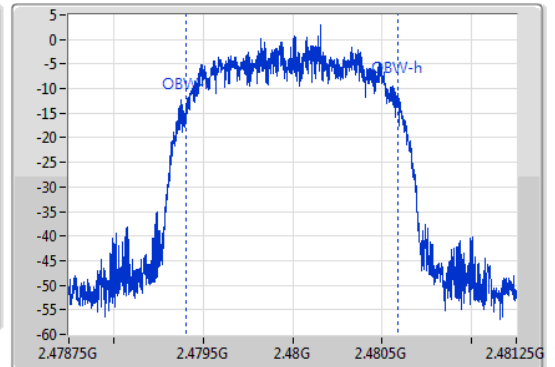
2480MHz

22/08/2019

CF
2.48GHz
Span
2.5MHz
RBW
20kHz
VBW
100kHz
Sweep Time
100ms
Detector Type
Peak
Port 1



CF
2.48GHz
Span
2.5MHz
RBW
20kHz
VBW
100kHz
Sweep Time
100ms
Detector Type
Sample



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.266M	2.479353G	2.480619G	1.187M	2.479402G	2.480588G	Inf	1



Summary

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

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40216G	2.40316G	1.0005M	611.8875k
2441MHz_TnomVnom	Pass	2.441158G	2.44216G	1.002M	612.72k
2480MHz_TnomVnom	Pass	2.479158G	2.480159G	1.0005M	611.8875k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40216G	2.40316G	1.0005M	872.46k
2441MHz_TnomVnom	Pass	2.441161G	2.442162G	1.0005M	838.494k
2480MHz_TnomVnom	Pass	2.47916G	2.480159G	999k	876.456k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.402157G	2.403157G	1.0005M	848.484k
2441MHz_TnomVnom	Pass	2.441157G	2.442157G	1.0005M	841.158k
2480MHz_TnomVnom	Pass	2.479157G	2.480157G	1.0005M	843.156k

BT-BR(1Mbps)

Channel Separation

2.402G/2.403GHz



BT-BR(1Mbps)

Channel Separation

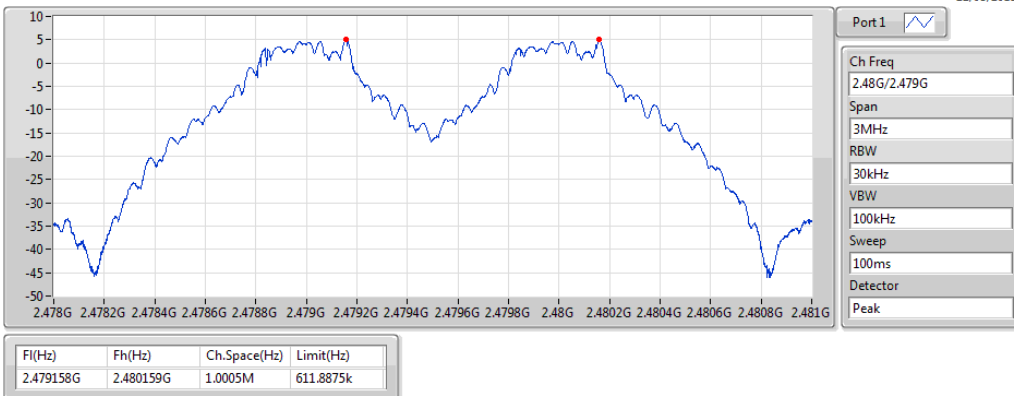
2.441G/2.442GHz



BT-BR(1Mbps)

Channel Separation

2.48G/2.479GHz

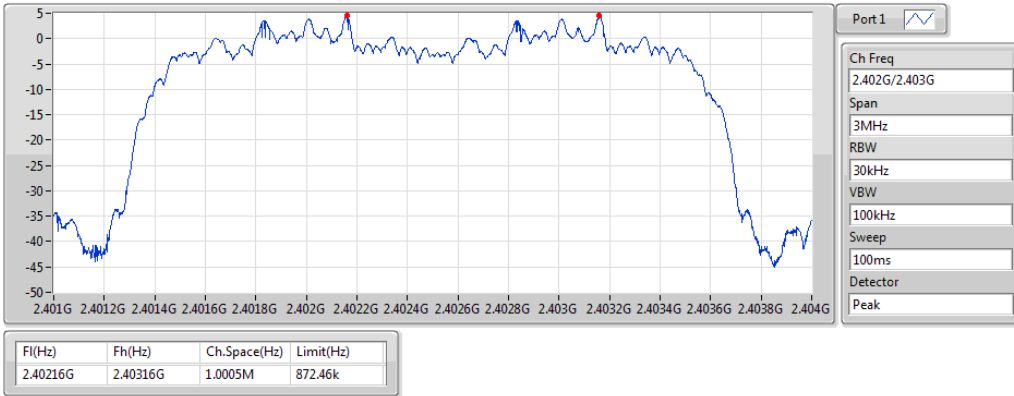


BT-EDR(2Mbps)

2.402G/2.403GHz

Channel Separation

22/08/2019

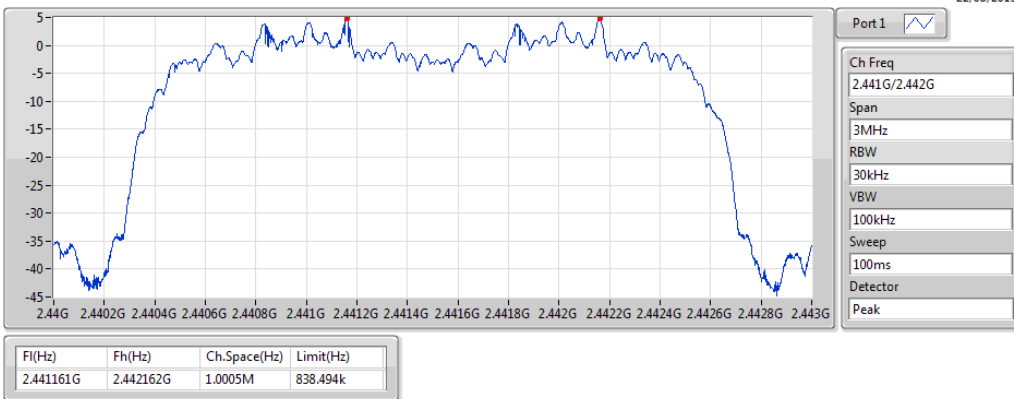


BT-EDR(2Mbps)

2.441G/2.442GHz

Channel Separation

22/08/2019

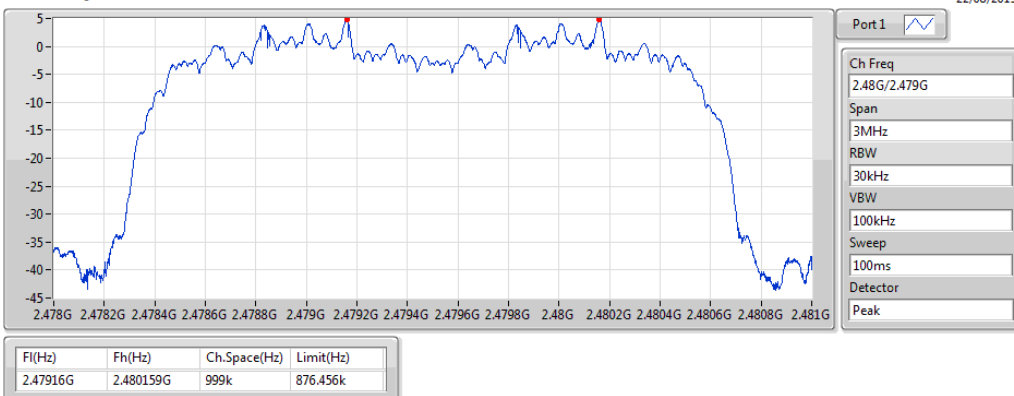


BT-EDR(2Mbps)

2.48G/2.479GHz

Channel Separation

22/08/2019

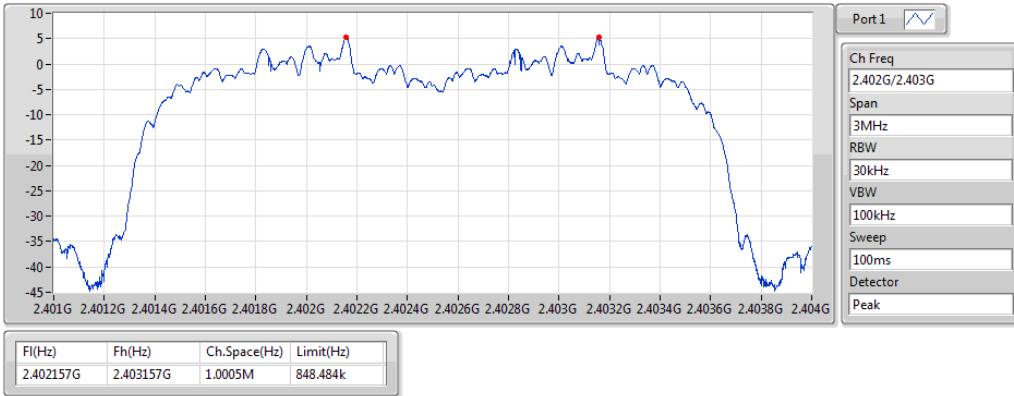


BT-EDR(3Mbps)

2.402G/2.403GHz

Channel Separation

22/08/2019

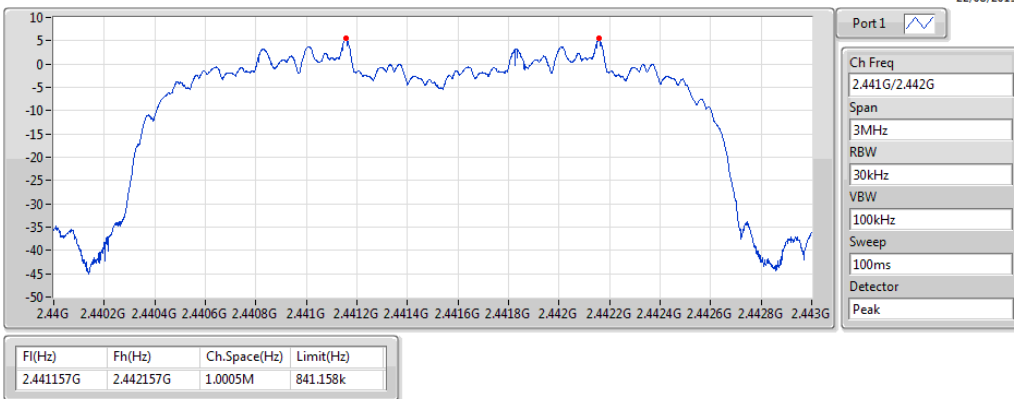


BT-EDR(3Mbps)

2.441G/2.442GHz

Channel Separation

22/08/2019

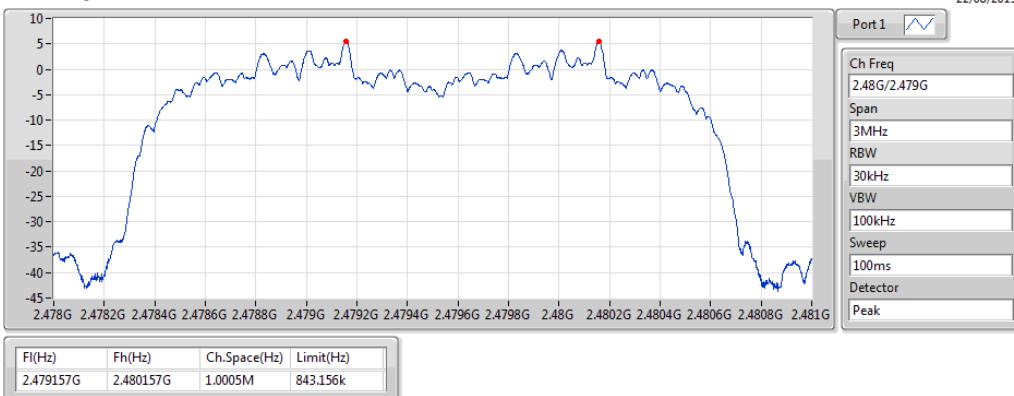


BT-EDR(3Mbps)

2.48G/2.479GHz

Channel Separation

22/08/2019





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	7.95	0.00624
BT-EDR(2Mbps)	10.41	0.01099
BT-EDR(3Mbps)	10.75	0.01189

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	7.35	21.00
2441MHz_TnomVnom	Pass	3.74	7.64	21.00
2480MHz_TnomVnom	Pass	3.74	7.95	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	10.17	21.00
2441MHz_TnomVnom	Pass	3.74	10.34	21.00
2480MHz_TnomVnom	Pass	3.74	10.41	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	10.39	21.00
2441MHz_TnomVnom	Pass	3.74	10.68	21.00
2480MHz_TnomVnom	Pass	3.74	10.75	21.00

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



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	7.53	0.00566
BT-EDR(2Mbps)	7.50	0.00562
BT-EDR(3Mbps)	7.51	0.00564

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	6.99	21.00
2441MHz_TnomVnom	Pass	3.74	7.23	21.00
2480MHz_TnomVnom	Pass	3.74	7.53	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	7.20	21.00
2441MHz_TnomVnom	Pass	3.74	7.46	21.00
2480MHz_TnomVnom	Pass	3.74	7.50	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.74	6.66	21.00
2441MHz_TnomVnom	Pass	3.74	7.46	21.00
2480MHz_TnomVnom	Pass	3.74	7.51	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

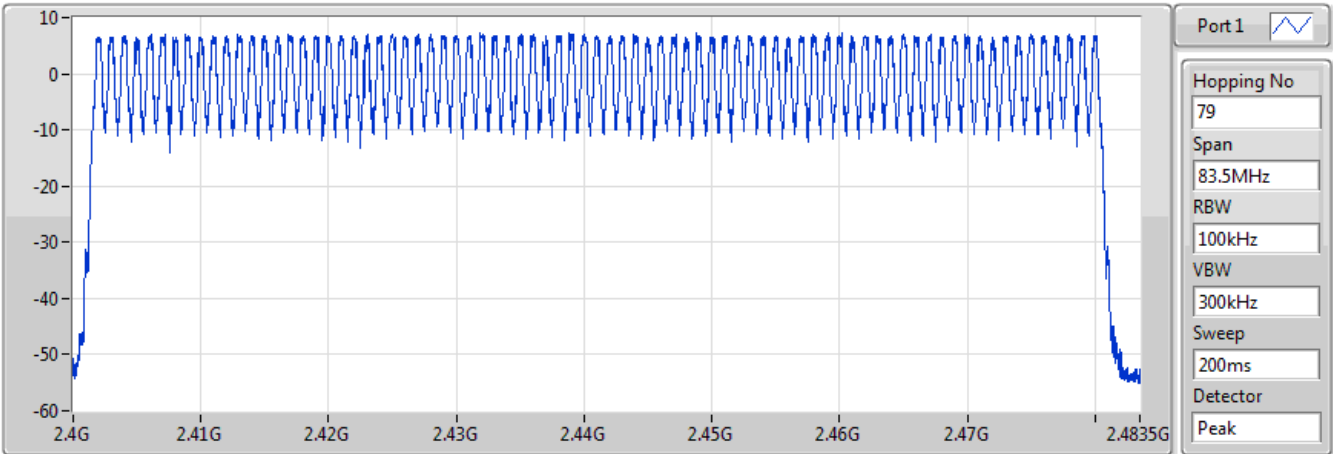
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2441MHz_TnomVnom	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2441MHz_TnomVnom	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2441MHz_TnomVnom	Pass	79	15

BT-BR(1Mbps)

2441MHz

Hopping Ch

22/08/2019



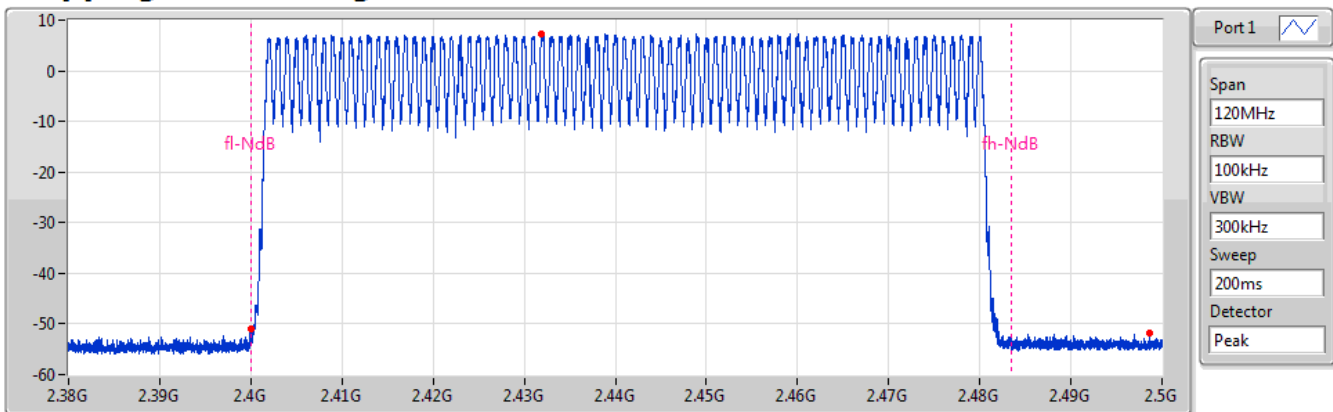
Hopping No	Limit
79	15

BT-BR(1Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

22/08/2019



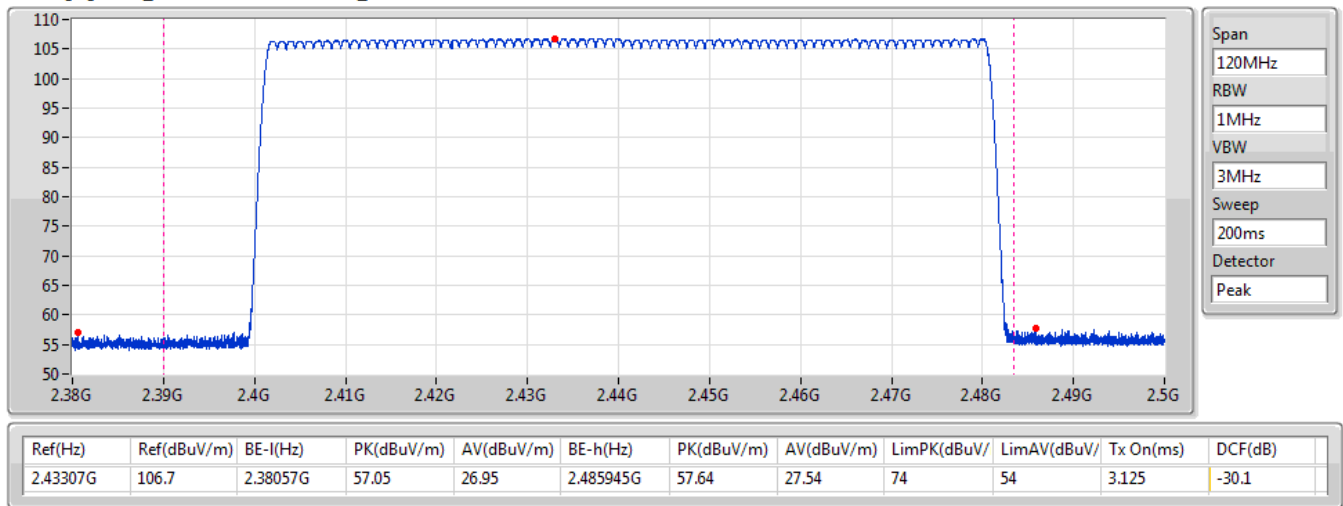
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-12.68	2.43184G	7.32	2.399965G	-51.1	2.498605G	-51.9

BT-BR(1Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)

22/08/2019

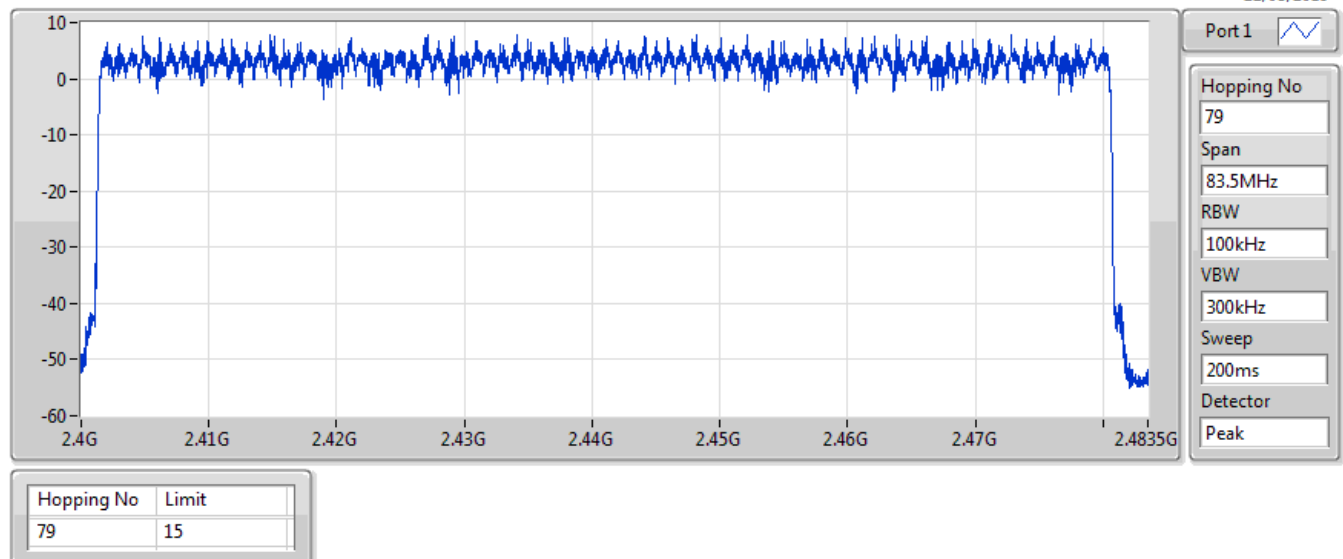


BT-EDR(2Mbps)

2441MHz

Hopping Ch

22/08/2019

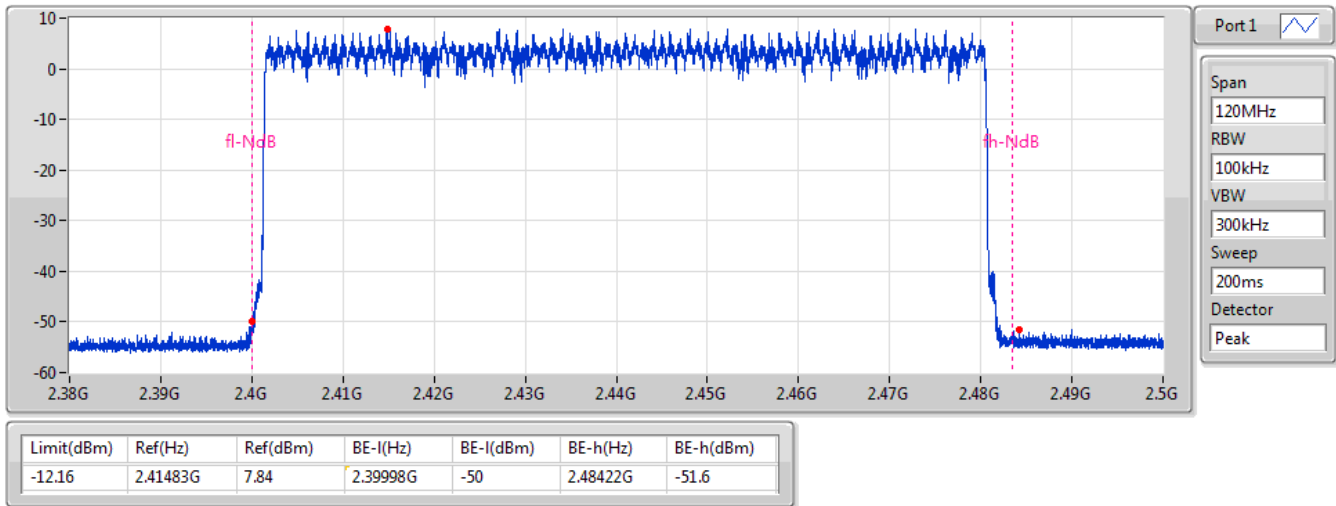


BT-EDR(2Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

22/08/2019

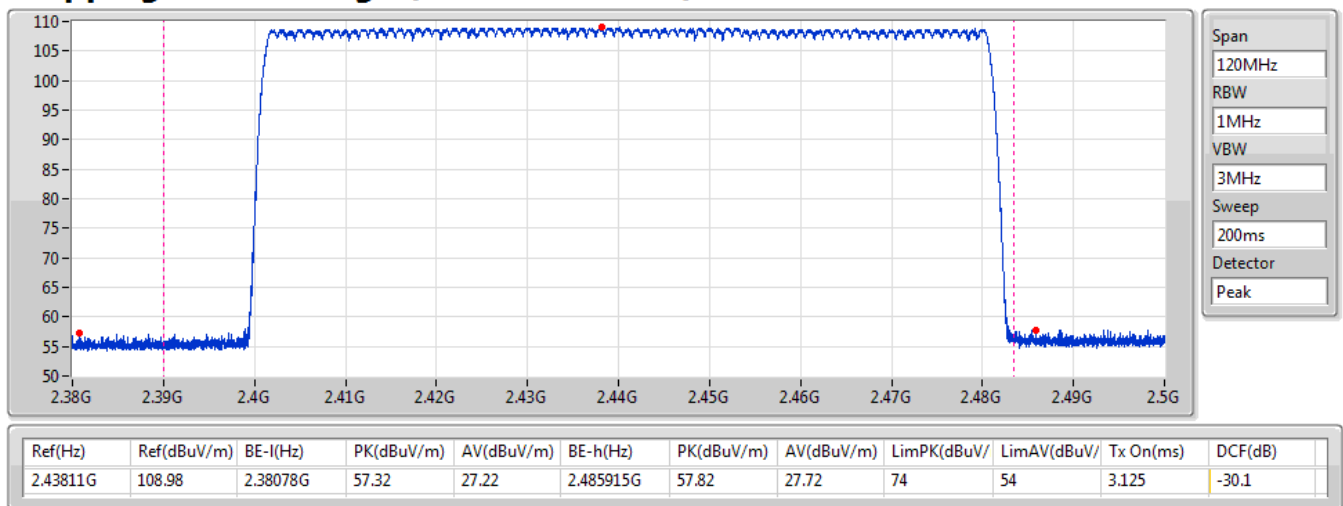


BT-EDR(2Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)

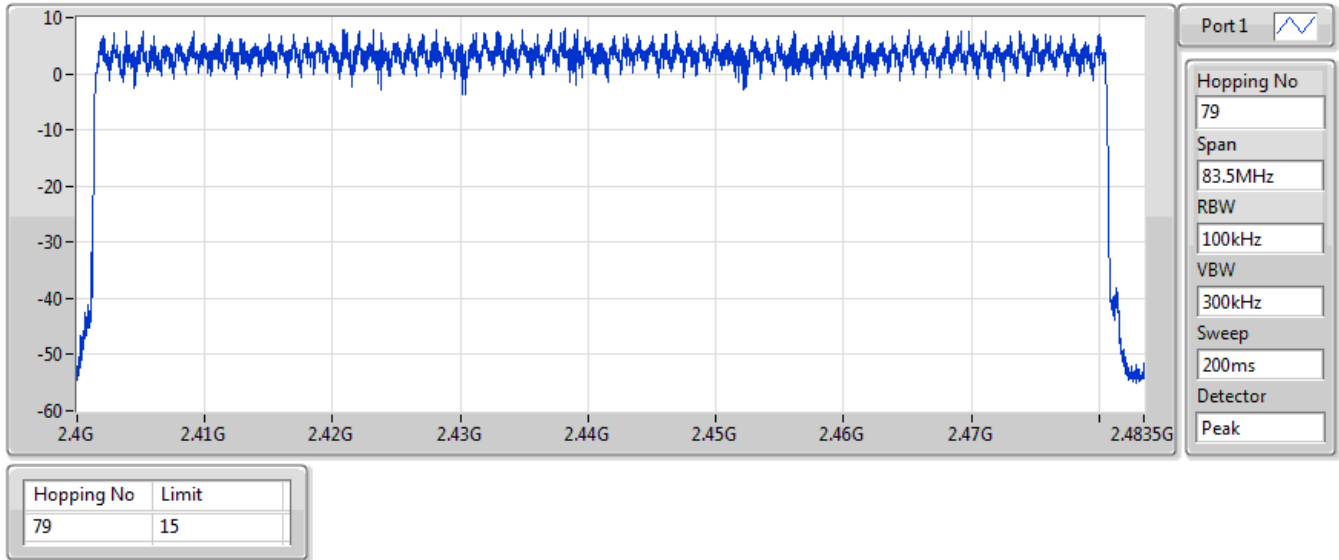
22/08/2019



BT-EDR(3Mbps) 2441MHz

Hopping Ch

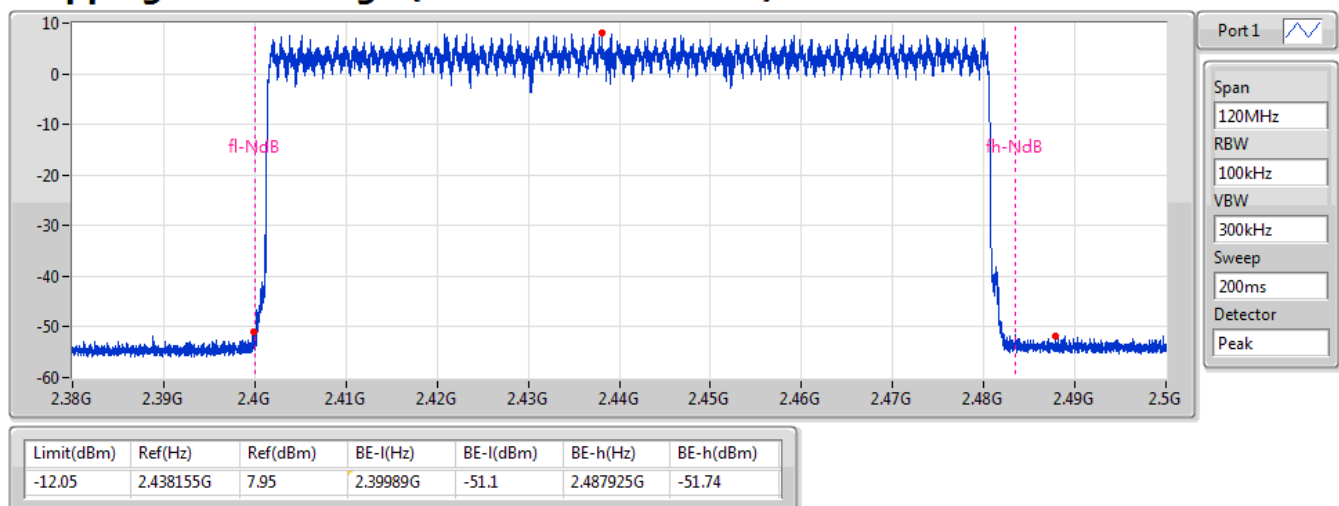
22/08/2019



BT-EDR(3Mbps) 2441MHz

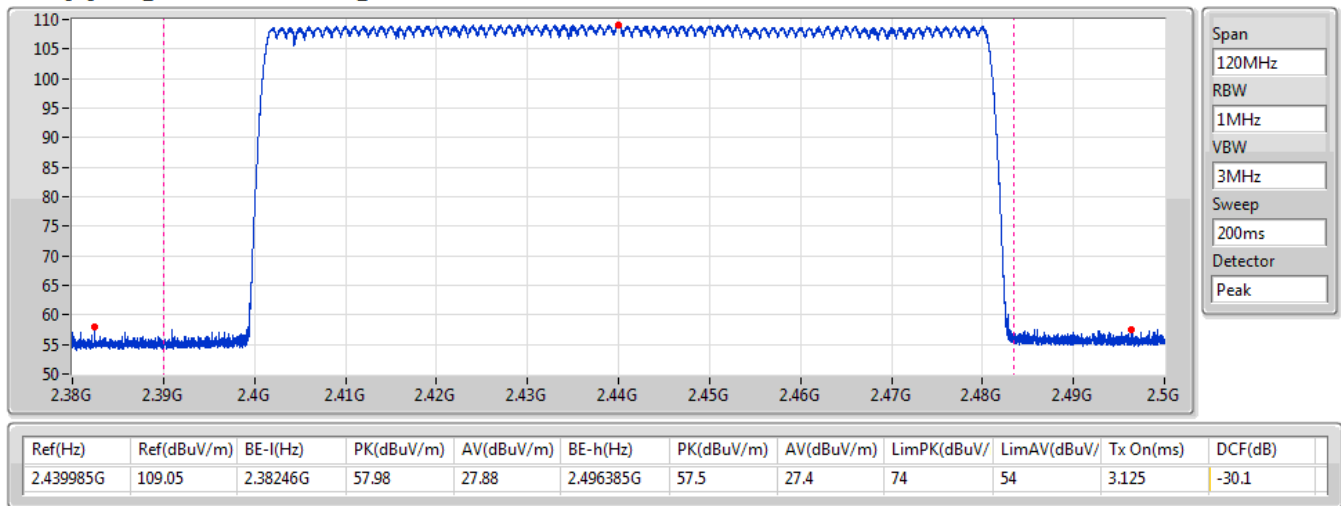
Hopping Ch Bandedge (Non-restricted Band)

22/08/2019



BT-EDR(3Mbps)**2441MHz****Hopping Ch Bandedge (Restricted Band)**

22/08/2019





Summary

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	306.9014m
BT-EDR(2Mbps)	307.3278m
BT-EDR(3Mbps)	307.541m

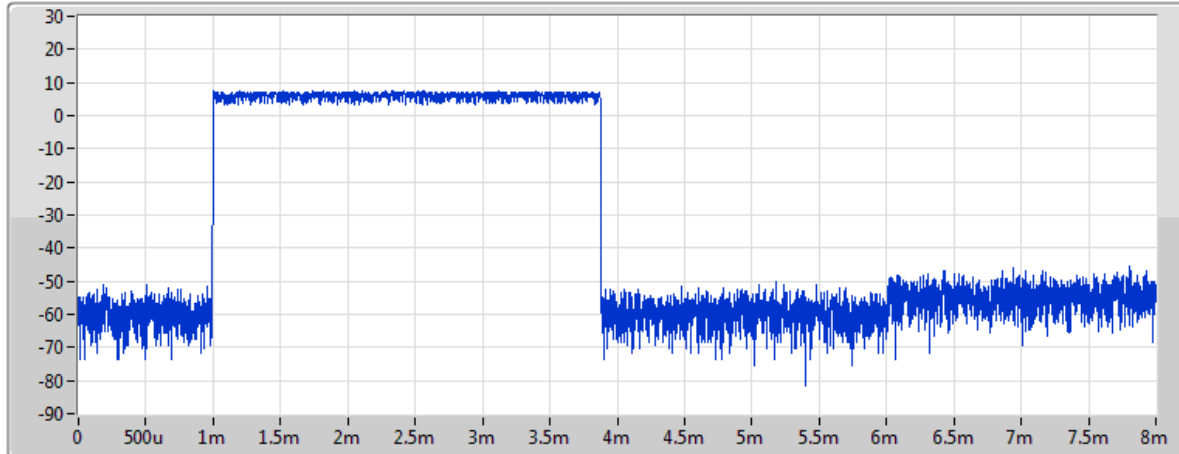
Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2441MHz_TnomVnom	Pass	31.6	306.9014m	400m	2.879m
BT-EDR(2Mbps)	-	-	-	-	-
2441MHz_TnomVnom	Pass	31.6	307.3278m	400m	2.883m
BT-EDR(3Mbps)	-	-	-	-	-
2441MHz_TnomVnom	Pass	31.6	307.541m	400m	2.885m

BT-BR(1Mbps)

2441MHz

22/08/2019



Port1

Ch Freq

2.441GHz

RBW

300kHz

VBW

1MHz

Sweep Time

8ms

TX Time

2.879ms

non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	306.9014m	400m	2.879m

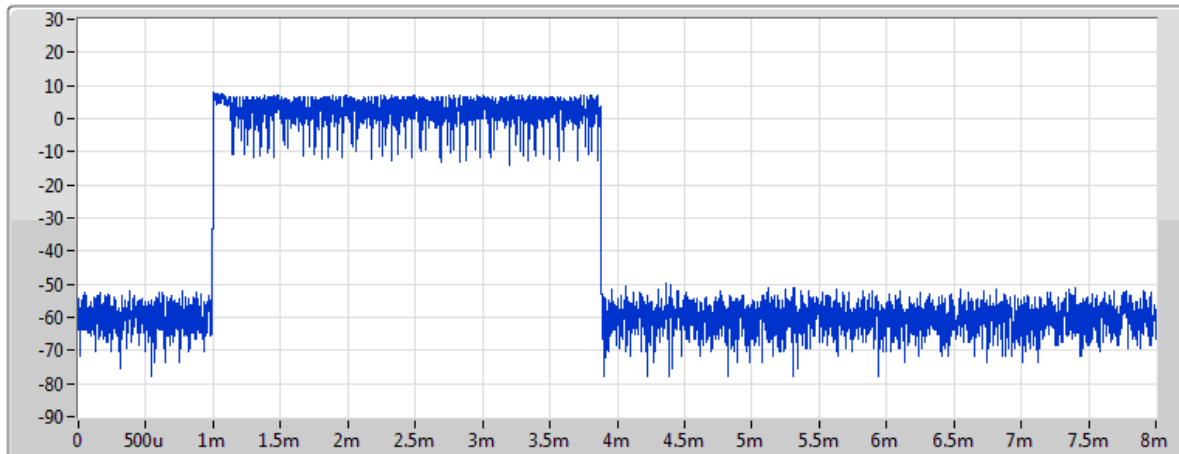
AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	153.4507m	400m	2.879m

BT-EDR(2Mbps)

2441MHz

22/08/2019



Port1

Ch Freq

2.441GHz

RBW

300kHz

VBW

1MHz

Sweep Time

8ms

TX Time

2.883ms

non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	307.3278m	400m	2.883m

AFH Mode

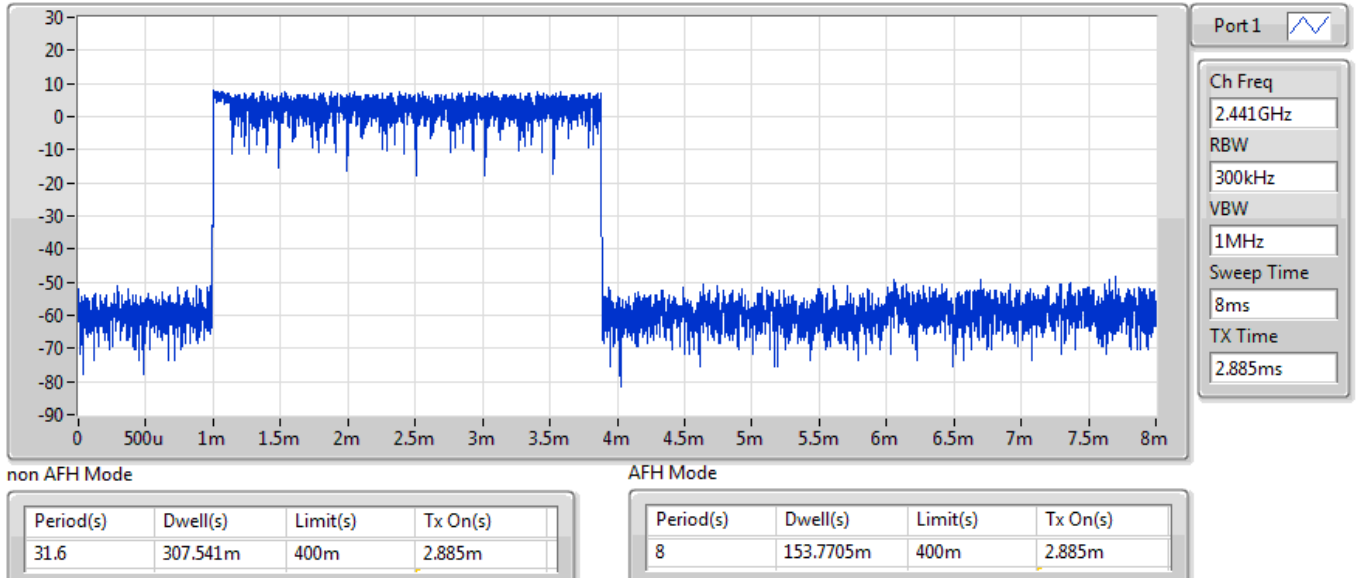
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	153.6639m	400m	2.883m

BT-EDR(3Mbps)

2441MHz

22/08/2019

Dwell



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)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.40192G	6.38	-13.62	2.16919G	-53.84	2.39997G	-49.06	2.48548G	-52.29	14.75872G	-41.64	1
BT-EDR(2Mbps)	Pass	2.40205G	6.49	-13.51	2.3977G	-54.09	2.39992G	-48.22	2.4855G	-53.16	15.34409G	-41.43	1
BT-EDR(3Mbps)	Pass	2.40184G	6.86	-13.14	2.10496G	-54.59	2.39999G	-49.06	2.48439G	-52.91	15.34691G	-41.37	1

Result

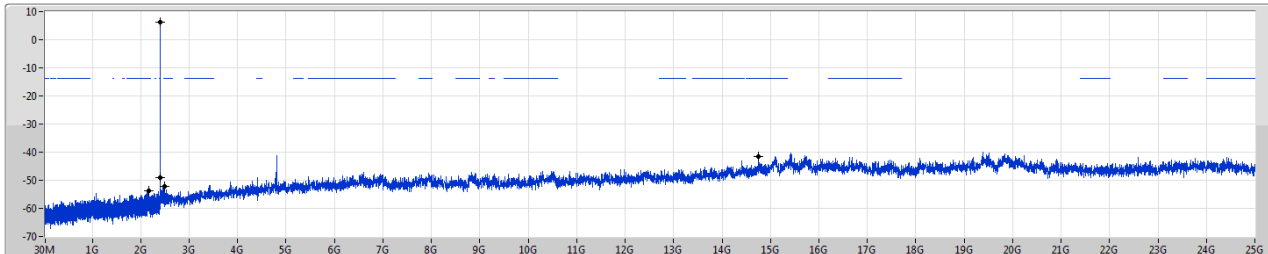
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40192G	6.38	-13.62	2.16919G	-53.84	2.39997G	-49.06	2.48548G	-52.29	14.75872G	-41.64	1
2441MHz_TnomVnom	Pass	2.441G	6.67	-13.33	2.30713G	-54.93	2.39869G	-52.73	2.48402G	-52.46	16.20246G	-41.47	1
2480MHz_TnomVnom	Pass	2.47999G	7.01	-12.99	2.30002G	-54.80	2.39867G	-53.32	2.4838G	-51.26	16.25593G	-41.97	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40205G	6.49	-13.51	2.3977G	-54.09	2.39992G	-48.22	2.4855G	-53.16	15.34409G	-41.43	1
2441MHz_TnomVnom	Pass	2.44083G	7.14	-12.86	1.89214G	-55.09	2.39841G	-53.39	2.48511G	-52.64	24.45121G	-40.78	1
2480MHz_TnomVnom	Pass	2.47987G	7.11	-12.89	2.30387G	-54.12	2.39925G	-53.09	2.48494G	-51.08	15.10206G	-40.86	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40184G	6.86	-13.14	2.10496G	-54.59	2.39999G	-49.06	2.48439G	-52.91	15.34691G	-41.37	1
2441MHz_TnomVnom	Pass	2.44083G	7.73	-12.27	2.14699G	-54.47	2.3995G	-53.04	2.48399G	-52.55	15.08518G	-40.92	1
2480MHz_TnomVnom	Pass	2.47987G	6.97	-13.03	2.30594G	-54.40	2.39816G	-53.26	2.48392G	-50.99	23.44087G	-41.51	1

BT-BR(1Mbps)

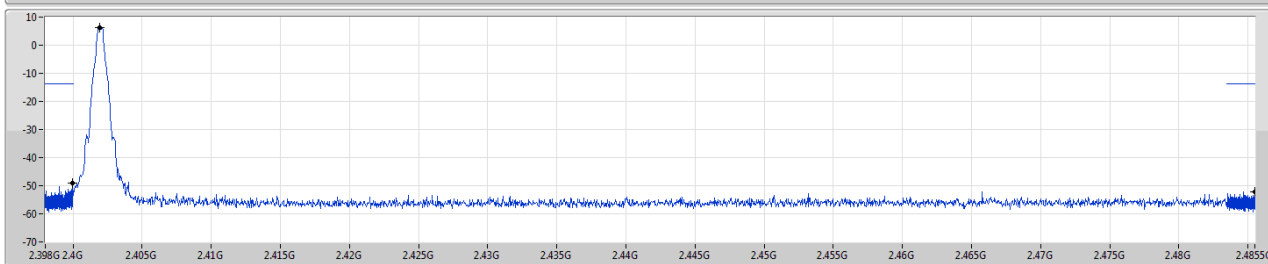
CSE NdB

2402MHz

22/08/2019



Port 1



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

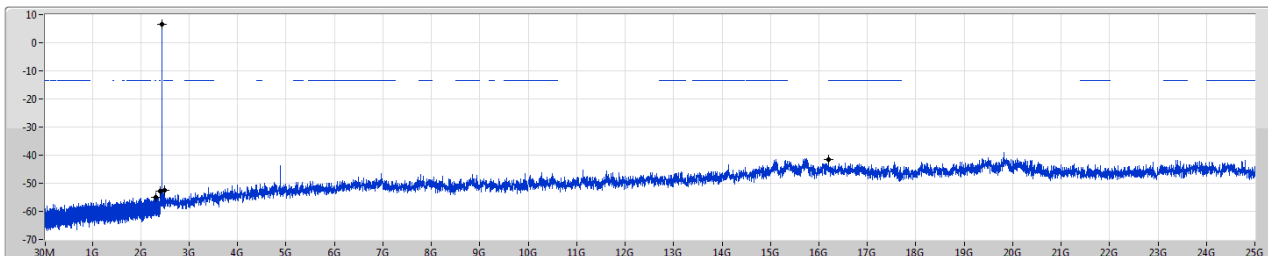
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40192G	6.38	-13.62	2.16919G	-53.84	2.39997G	-49.06	2.48548G	-52.29	14.75872G	-41.64	1

BT-BR(1Mbps)

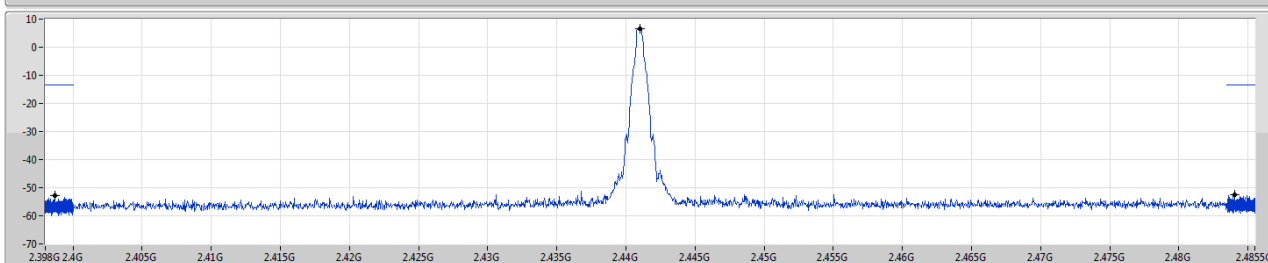
CSE NdB

2441MHz

22/08/2019



Port 1



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)	Port
2.441G	6.67	-13.33	2.30713G	-54.93	2.39869G	-52.73	2.48402G	-52.46	16.20246G	-41.47	1

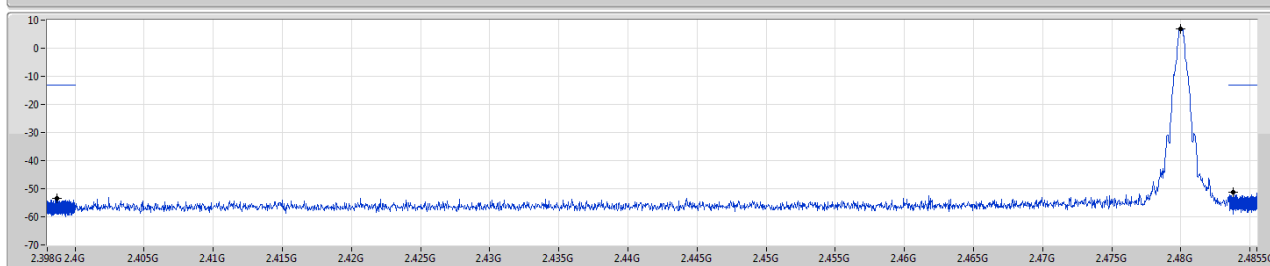
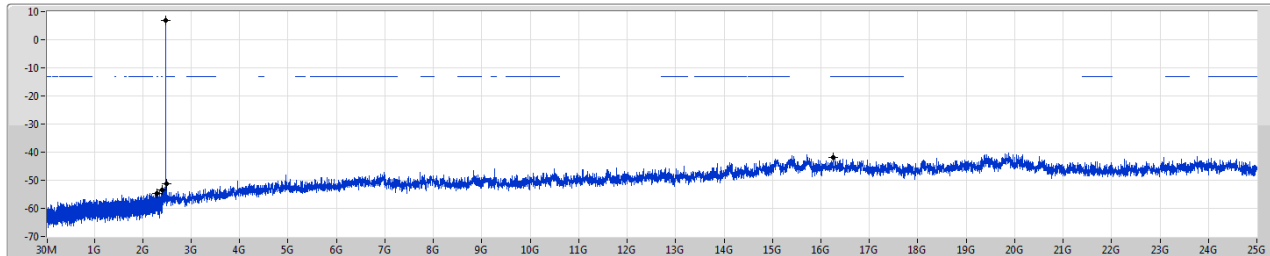
BT-BR(1Mbps)

2480MHz

CSE NdB

22/08/2019

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)	Port
2.47999G	7.01	-12.99	2.30002G	-54.80	2.39867G	-53.32	2.4838G	-51.26	16.25593G	-41.97	1

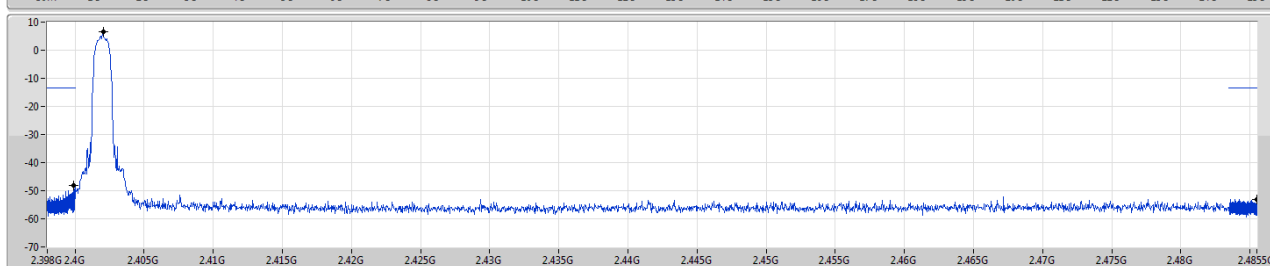
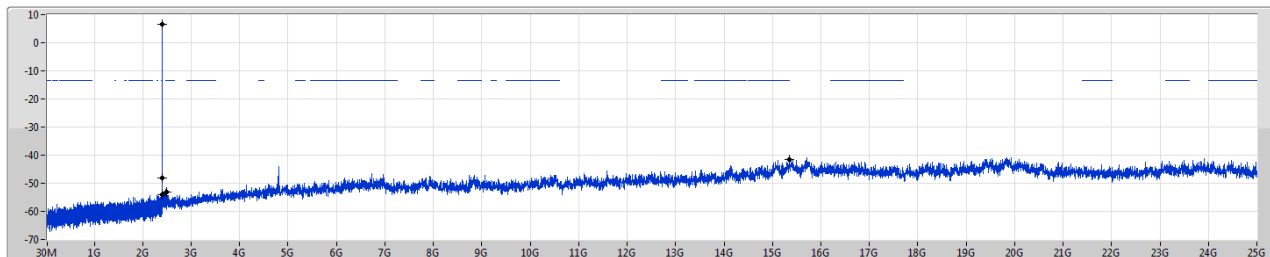
BT-EDR(2Mbps)

2402MHz

CSE NdB

22/08/2019

Port1



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

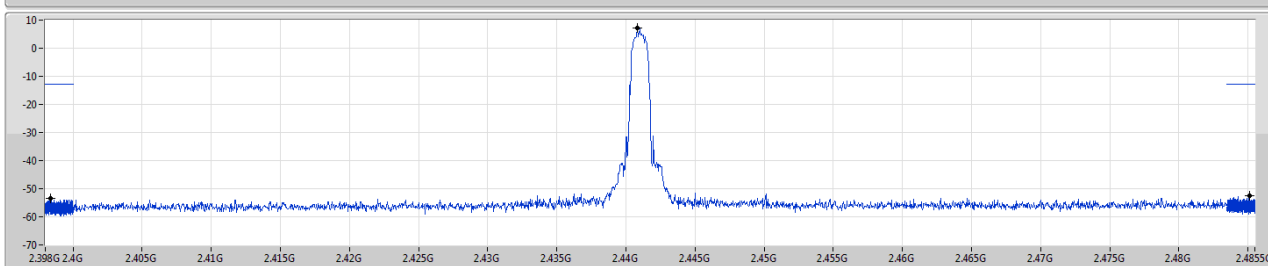
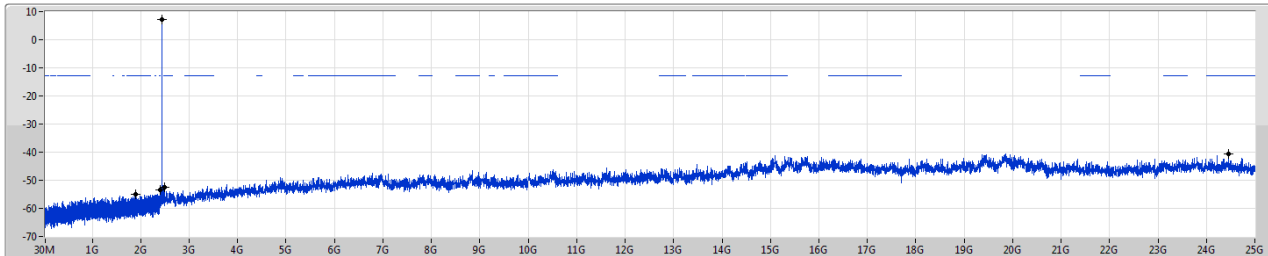
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40205G	6.49	-13.51	2.3977G	-54.09	2.39992G	-48.22	2.4855G	-53.16	15.34409G	-41.43	1

BT-EDR(2Mbps)

2441MHz

CSE NdB

22/08/2019



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

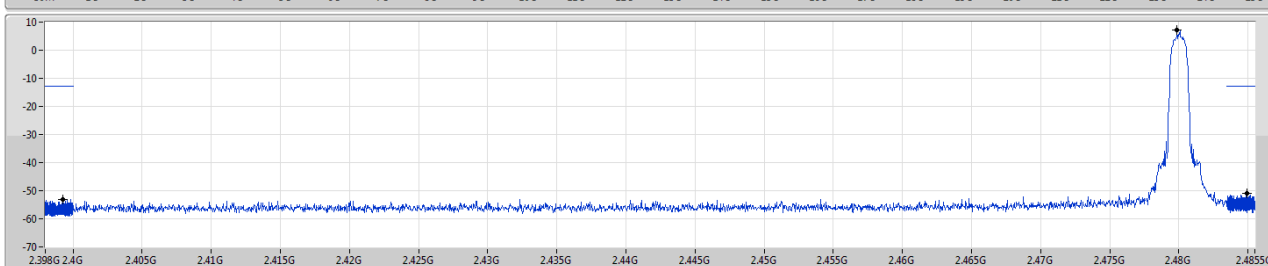
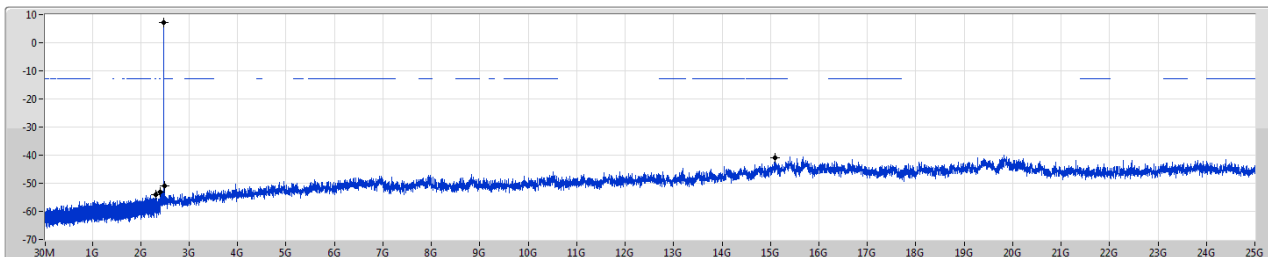
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44083G	7.14	-12.86	1.89214G	-55.09	2.39841G	-53.39	2.48511G	-52.64	2.45121G	-40.78	1

BT-EDR(2Mbps)

2480MHz

CSE NdB

22/08/2019



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

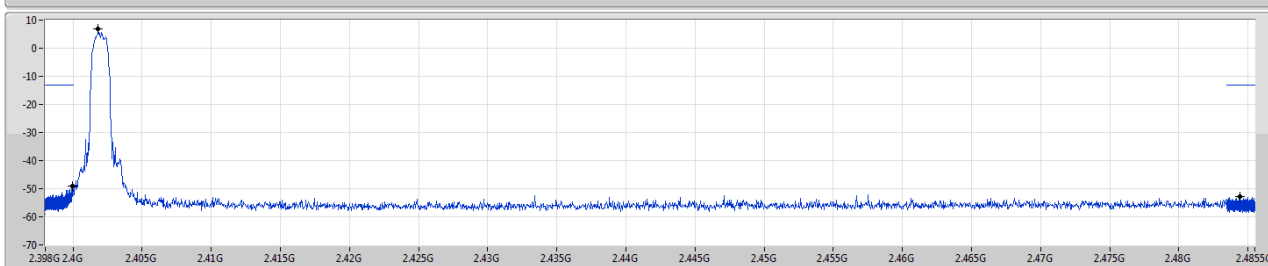
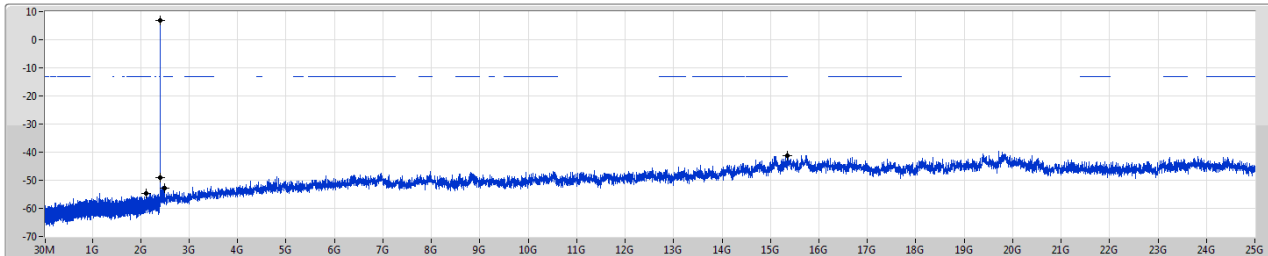
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47987G	7.11	-12.89	2.30387G	-54.12	2.39925G	-53.09	2.48494G	-51.08	15.10206G	-40.86	1

BT-EDR(3Mbps)

2402MHz

CSE NdB

22/08/2019



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

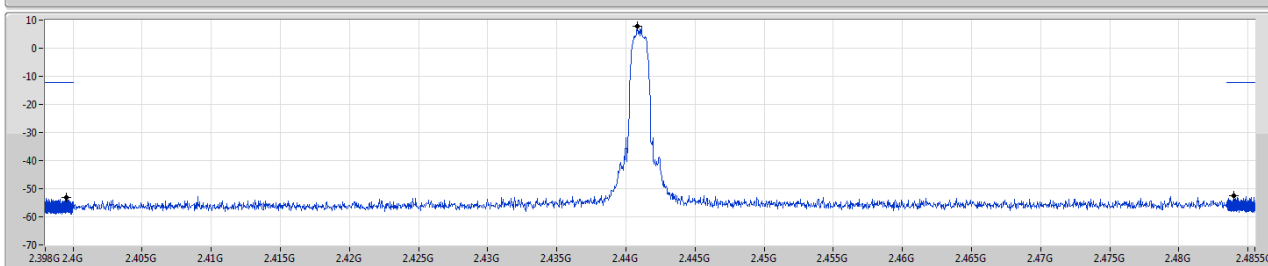
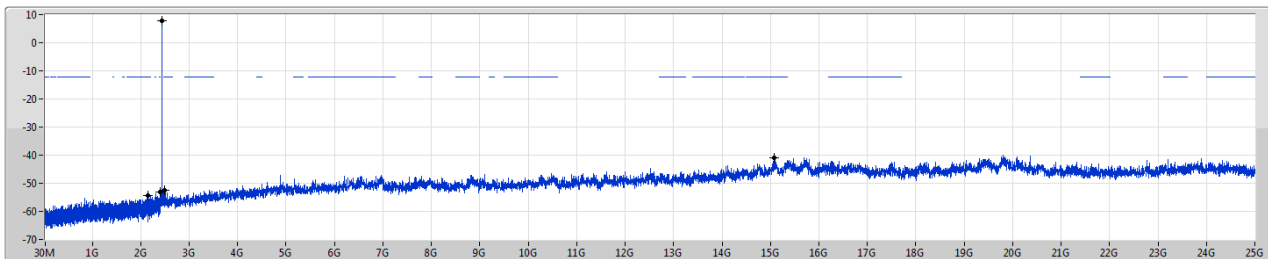
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40184G	6.86	-13.14	2.10496G	-54.59	2.39999G	-49.06	2.48439G	-52.91	15.34691G	-41.37	1

BT-EDR(3Mbps)

2441MHz

CSE NdB

22/08/2019



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

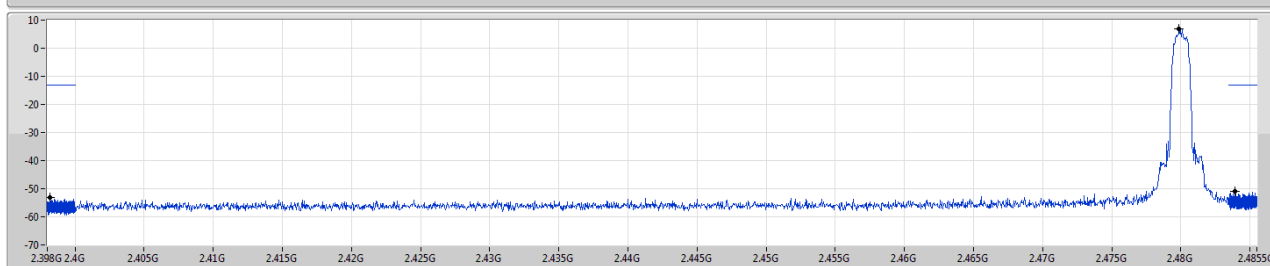
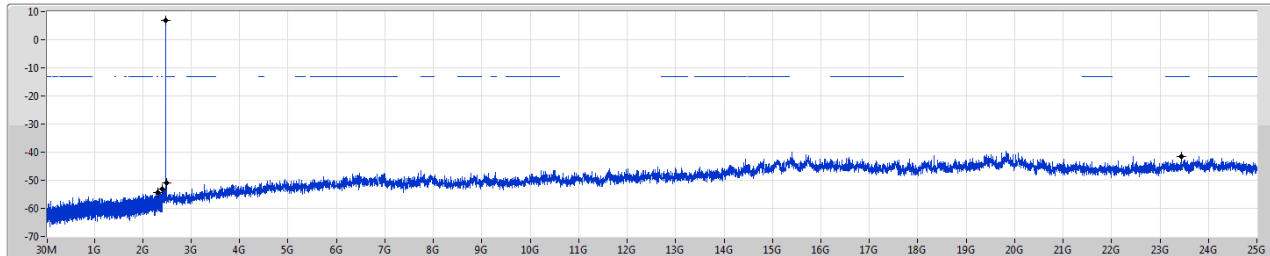
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44083G	7.73	-12.27	2.14699G	-54.47	2.3995G	-53.04	2.48399G	-52.55	15.08518G	-40.92	1

BT-EDR(3Mbps)

2480MHz

CSE NdB

22/08/2019



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)	Port
2.47987G	6.97	-13.03	2.30594G	-54.40	2.39816G	-53.26	2.48392G	-50.99	23.44087G	-41.51	1



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	QP	107.6M	38.54	43.50	-4.96	3	Horizontal	0	2.00	-

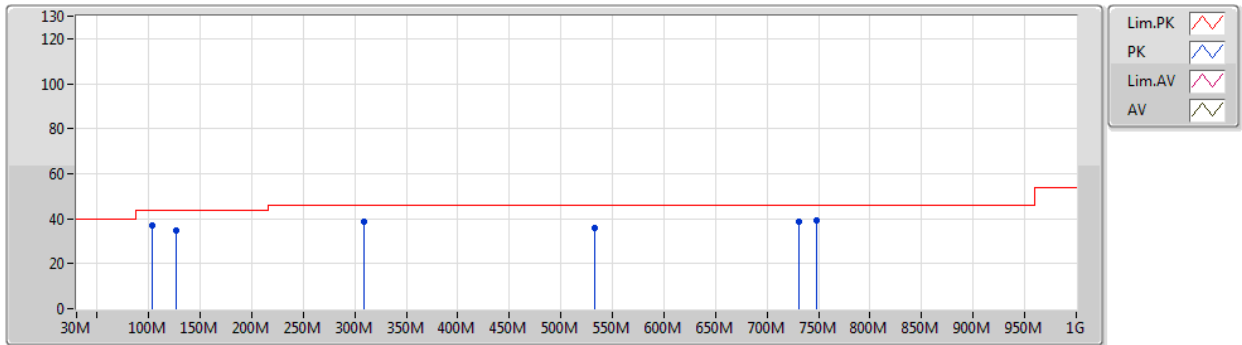
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2441MHz	Pass	PK	103.72M	37.21	43.50	-6.29	3	Vertical	360	1.00	-
2441MHz	Pass	PK	127M	34.56	43.50	-8.94	3	Vertical	360	1.00	-
2441MHz	Pass	PK	309.36M	38.46	46.00	-7.54	3	Vertical	360	1.00	-
2441MHz	Pass	PK	532.46M	36.12	46.00	-9.88	3	Vertical	360	1.00	-
2441MHz	Pass	PK	730.34M	38.88	46.00	-7.12	3	Vertical	360	1.00	-
2441MHz	Pass	PK	747.8M	39.43	46.00	-6.57	3	Vertical	360	1.00	-
2441MHz	Pass	PK	245.34M	39.08	46.00	-6.92	3	Horizontal	0	2.00	-
2441MHz	Pass	PK	307.42M	39.95	46.00	-6.05	3	Horizontal	0	2.00	-
2441MHz	Pass	PK	480.08M	33.74	46.00	-12.26	3	Horizontal	0	2.00	-
2441MHz	Pass	PK	730.34M	39.46	46.00	-6.54	3	Horizontal	0	2.00	-
2441MHz	Pass	PK	747.8M	37.63	46.00	-8.37	3	Horizontal	0	2.00	-
2441MHz	Pass	QP	107.6M	38.54	43.50	-4.96	3	Horizontal	0	2.00	-

BT-BR(1Mbps)

2441MHz_USB

22/08/2019

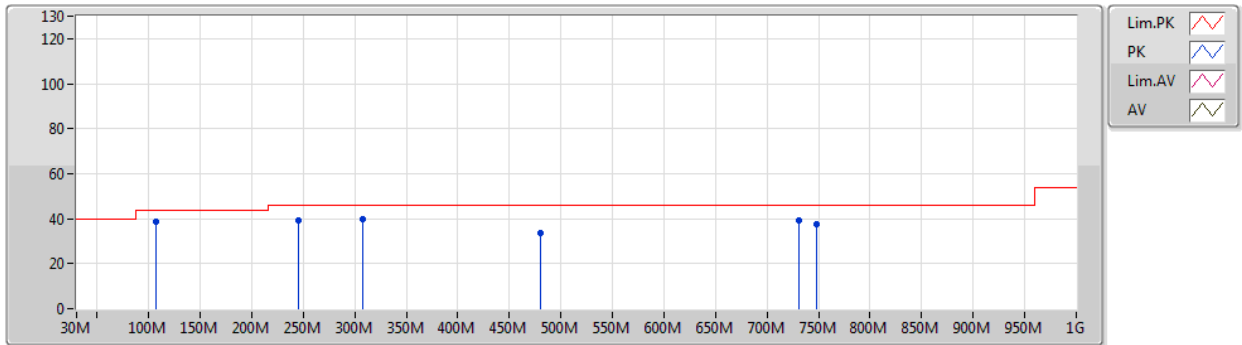


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	103.72M	37.21	43.50	-6.29	-20.43	3	Vertical	360	1.00	-	57.64	15.52	0.82	36.77
PK	127M	34.56	43.50	-8.94	-18.98	3	Vertical	360	1.00	-	53.54	16.77	0.91	36.66
PK	309.36M	38.46	46.00	-7.54	-16.52	3	Vertical	360	1.00	-	54.98	18.50	1.47	36.49
PK	532.46M	36.12	46.00	-9.88	-11.73	3	Vertical	360	1.00	-	47.85	23.32	1.97	37.02
PK	730.34M	38.88	46.00	-7.12	-8.42	3	Vertical	360	1.00	-	47.30	26.66	2.32	37.40
PK	747.8M	39.43	46.00	-6.57	-7.95	3	Vertical	360	1.00	-	47.38	27.13	2.35	37.43

BT-BR(1Mbps)

2441MHz_USB

22/08/2019



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	245.34M	39.08	46.00	-6.92	-17.81	3	Horizontal	0	2.00	-	56.89	17.33	1.28	36.42
PK	307.42M	39.95	46.00	-6.05	-16.55	3	Horizontal	0	2.00	-	56.50	18.48	1.46	36.49
PK	480.08M	33.74	46.00	-12.26	-12.10	3	Horizontal	0	2.00	-	45.84	22.90	1.86	36.86
PK	730.34M	39.46	46.00	-6.54	-8.42	3	Horizontal	0	2.00	-	47.88	26.66	2.32	37.40
PK	747.8M	37.63	46.00	-8.37	-7.95	3	Horizontal	0	2.00	-	45.58	27.13	2.35	37.43
QP	107.6M	38.54	43.50	-4.96	-20.00	3	Horizontal	0	2.00	-	58.54	15.91	0.84	36.75



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	AV	2.4848G	46.63	54.00	-7.37	3	Vertical	173	1.54	-
BT-EDR(3Mbps)	Pass	AV	2.4846G	46.71	54.00	-7.29	3	Horizontal	65	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	2.3534G	46.57	54.00	-7.43	3	Vertical	235	1.23	-
2402MHz	Pass	AV	2.402G	98.35	Inf	-Inf	3	Vertical	235	1.23	-
2402MHz	Pass	PK	2.3758G	59.08	74.00	-14.92	3	Vertical	235	1.23	-
2402MHz	Pass	PK	2.4018G	98.95	Inf	-Inf	3	Vertical	235	1.23	-
2402MHz	Pass	AV	2.3528G	46.31	54.00	-7.69	3	Horizontal	65	1.01	-
2402MHz	Pass	AV	2.402G	102.32	Inf	-Inf	3	Horizontal	65	1.01	-
2402MHz	Pass	PK	2.3724G	59.04	74.00	-14.96	3	Horizontal	65	1.01	-
2402MHz	Pass	PK	2.4022G	102.86	Inf	-Inf	3	Horizontal	65	1.01	-
2402MHz	Pass	AV	4.80398G	45.18	54.00	-8.82	3	Vertical	329	2.76	-
2402MHz	Pass	PK	4.80387G	54.29	74.00	-19.71	3	Vertical	329	2.76	-
2402MHz	Pass	AV	4.80395G	44.91	54.00	-9.09	3	Horizontal	206	2.88	-
2402MHz	Pass	PK	4.80397G	54.24	74.00	-19.76	3	Horizontal	206	2.88	-
2441MHz	Pass	AV	2.3418G	46.28	54.00	-7.72	3	Vertical	25	2.92	-
2441MHz	Pass	AV	2.441G	101.59	Inf	-Inf	3	Vertical	25	2.92	-
2441MHz	Pass	AV	2.4866G	46.47	54.00	-7.53	3	Vertical	25	2.92	-
2441MHz	Pass	PK	2.3666G	59.87	74.00	-14.13	3	Vertical	25	2.92	-
2441MHz	Pass	PK	2.441G	102.14	Inf	-Inf	3	Vertical	25	2.92	-
2441MHz	Pass	PK	2.4858G	59.44	74.00	-14.56	3	Vertical	25	2.92	-
2441MHz	Pass	AV	2.3614G	46.42	54.00	-7.58	3	Horizontal	64	1.00	-
2441MHz	Pass	AV	2.441G	104.06	Inf	-Inf	3	Horizontal	64	1.00	-
2441MHz	Pass	AV	2.4882G	46.48	54.00	-7.52	3	Horizontal	64	1.00	-
2441MHz	Pass	PK	2.3734G	59.22	74.00	-14.78	3	Horizontal	64	1.00	-
2441MHz	Pass	PK	2.441G	104.62	Inf	-Inf	3	Horizontal	64	1.00	-
2441MHz	Pass	PK	2.4974G	58.97	74.00	-15.03	3	Horizontal	64	1.00	-
2441MHz	Pass	AV	4.88199G	40.36	54.00	-13.64	3	Vertical	360	2.54	-
2441MHz	Pass	PK	4.88189G	50.52	74.00	-23.48	3	Vertical	360	2.54	-
2441MHz	Pass	AV	4.88201G	42.26	54.00	-11.74	3	Horizontal	203	2.89	-
2441MHz	Pass	PK	4.88208G	51.92	74.00	-22.08	3	Horizontal	203	2.89	-
2480MHz	Pass	AV	2.48G	99.76	Inf	-Inf	3	Vertical	173	1.54	-
2480MHz	Pass	AV	2.4848G	46.63	54.00	-7.37	3	Vertical	173	1.54	-
2480MHz	Pass	PK	2.4802G	100.36	Inf	-Inf	3	Vertical	173	1.54	-
2480MHz	Pass	PK	2.498G	59.29	74.00	-14.71	3	Vertical	173	1.54	-
2480MHz	Pass	AV	2.48G	102.05	Inf	-Inf	3	Horizontal	66	1.10	-
2480MHz	Pass	AV	2.4864G	46.49	54.00	-7.51	3	Horizontal	66	1.10	-
2480MHz	Pass	PK	2.48G	102.70	Inf	-Inf	3	Horizontal	66	1.10	-
2480MHz	Pass	PK	2.4836G	58.61	74.00	-15.39	3	Horizontal	66	1.10	-
2480MHz	Pass	AV	4.96004G	40.65	54.00	-13.35	3	Vertical	331	2.88	-
2480MHz	Pass	PK	4.96003G	50.83	74.00	-23.17	3	Vertical	331	2.88	-
2480MHz	Pass	AV	4.96G	40.85	54.00	-13.15	3	Horizontal	202	2.80	-
2480MHz	Pass	PK	4.96002G	50.58	74.00	-23.42	3	Horizontal	202	2.80	-
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3554G	46.41	54.00	-7.59	3	Vertical	231	1.42	-
2402MHz	Pass	AV	2.402G	96.91	Inf	-Inf	3	Vertical	231	1.42	-
2402MHz	Pass	PK	2.3692G	59.05	74.00	-14.95	3	Vertical	231	1.42	-
2402MHz	Pass	PK	2.402G	100.88	Inf	-Inf	3	Vertical	231	1.42	-
2402MHz	Pass	AV	2.3724G	46.42	54.00	-7.58	3	Horizontal	64	1.02	-
2402MHz	Pass	AV	2.402G	100.31	Inf	-Inf	3	Horizontal	64	1.02	-

Remark :

Page No. : G2 of G27

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

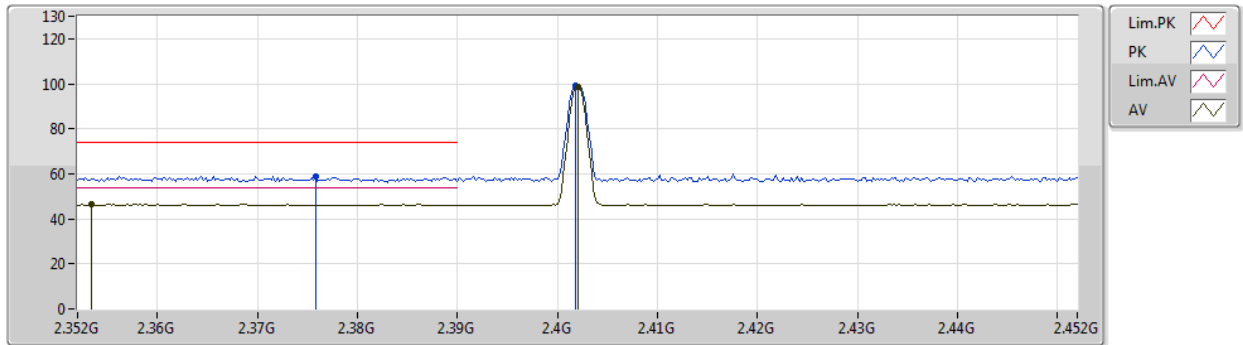
980219

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz	Pass	PK	2.376G	59.11	74.00	-14.89	3	Horizontal	64	1.02	-
2402MHz	Pass	PK	2.402G	104.29	Inf	-Inf	3	Horizontal	64	1.02	-
2402MHz	Pass	AV	4.80401G	45.03	54.00	-8.97	3	Vertical	330	2.96	-
2402MHz	Pass	PK	4.80393G	56.03	74.00	-17.97	3	Vertical	330	2.96	-
2402MHz	Pass	AV	4.80403G	44.07	54.00	-9.93	3	Horizontal	217	3.00	-
2402MHz	Pass	PK	4.80395G	54.95	74.00	-19.05	3	Horizontal	217	3.00	-
2441MHz	Pass	AV	2.3506G	46.30	54.00	-7.70	3	Vertical	232	1.07	-
2441MHz	Pass	AV	2.441G	98.89	Inf	-Inf	3	Vertical	232	1.07	-
2441MHz	Pass	AV	2.4966G	46.39	54.00	-7.61	3	Vertical	232	1.07	-
2441MHz	Pass	PK	2.3518G	59.21	74.00	-14.79	3	Vertical	232	1.07	-
2441MHz	Pass	PK	2.441G	102.87	Inf	-Inf	3	Vertical	232	1.07	-
2441MHz	Pass	PK	2.4938G	58.94	74.00	-15.06	3	Vertical	232	1.07	-
2441MHz	Pass	AV	2.3534G	46.26	54.00	-7.74	3	Horizontal	65	1.00	-
2441MHz	Pass	AV	2.441G	102.01	Inf	-Inf	3	Horizontal	65	1.00	-
2441MHz	Pass	AV	2.497G	46.46	54.00	-7.54	3	Horizontal	65	1.00	-
2441MHz	Pass	PK	2.3642G	59.13	74.00	-14.87	3	Horizontal	65	1.00	-
2441MHz	Pass	PK	2.441G	105.97	Inf	-Inf	3	Horizontal	65	1.00	-
2441MHz	Pass	PK	2.4846G	58.58	74.00	-15.42	3	Horizontal	65	1.00	-
2441MHz	Pass	AV	4.88205G	42.91	54.00	-11.09	3	Vertical	97	2.49	-
2441MHz	Pass	PK	4.88175G	53.12	74.00	-20.88	3	Vertical	97	2.49	-
2441MHz	Pass	AV	4.88204G	41.80	54.00	-12.20	3	Horizontal	200	2.85	-
2441MHz	Pass	PK	4.88185G	52.73	74.00	-21.27	3	Horizontal	200	2.85	-
2480MHz	Pass	AV	2.48G	98.19	Inf	-Inf	3	Vertical	172	1.55	-
2480MHz	Pass	AV	2.4842G	46.63	54.00	-7.37	3	Vertical	172	1.55	-
2480MHz	Pass	PK	2.48G	102.16	Inf	-Inf	3	Vertical	172	1.55	-
2480MHz	Pass	PK	2.489G	59.27	74.00	-14.73	3	Vertical	172	1.55	-
2480MHz	Pass	AV	2.48G	100.00	Inf	-Inf	3	Horizontal	65	1.09	-
2480MHz	Pass	AV	2.4846G	46.71	54.00	-7.29	3	Horizontal	65	1.09	-
2480MHz	Pass	PK	2.48G	103.98	Inf	-Inf	3	Horizontal	65	1.09	-
2480MHz	Pass	PK	2.4838G	59.14	74.00	-14.86	3	Horizontal	65	1.09	-
2480MHz	Pass	AV	4.96011G	39.58	54.00	-14.42	3	Vertical	336	2.91	-
2480MHz	Pass	PK	4.95985G	50.88	74.00	-23.12	3	Vertical	336	2.91	-
2480MHz	Pass	AV	4.95998G	40.10	54.00	-13.90	3	Horizontal	200	2.80	-
2480MHz	Pass	PK	4.96008G	50.91	74.00	-23.09	3	Horizontal	200	2.80	-

BT-BR(1Mbps)

2402MHz_TX

21/08/2019

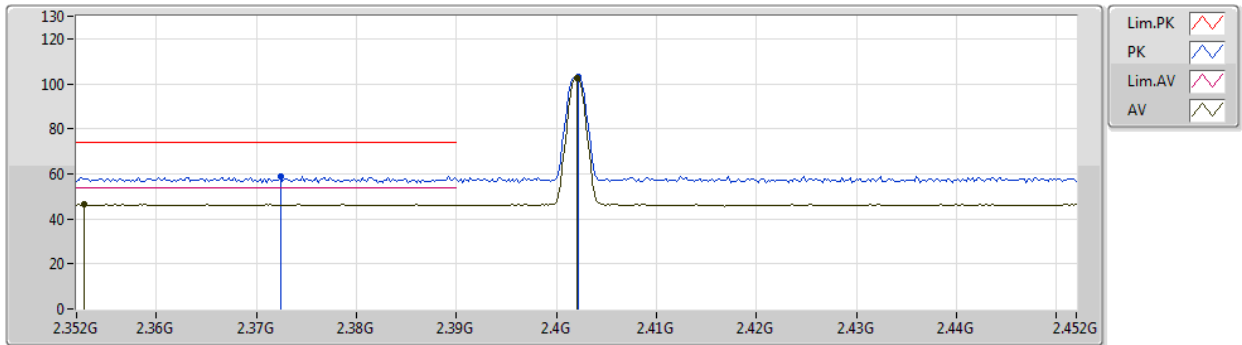


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3534G	46.57	54.00	-7.43	33.91	3	Vertical	235	1.23	-	12.66	27.79	6.12	-
AV	2.402G	98.35	Inf	-Inf	33.71	3	Vertical	235	1.23	-	64.64	27.60	6.11	-
PK	2.3758G	59.08	74.00	-14.92	33.82	3	Vertical	235	1.23	-	25.26	27.70	6.12	-
PK	2.4018G	98.95	Inf	-Inf	33.71	3	Vertical	235	1.23	-	65.24	27.60	6.11	-

BT-BR(1Mbps)

2402MHz_TX

21/08/2019

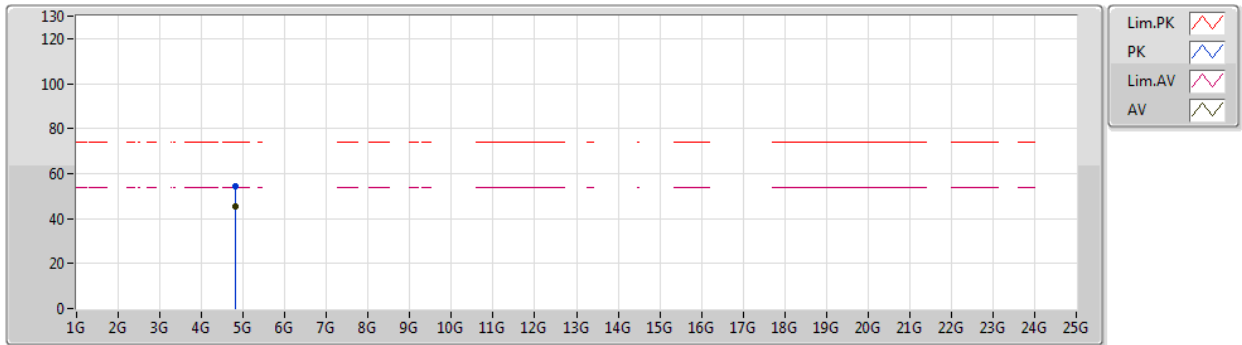


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3528G	46.31	54.00	-7.69	33.91	3	Horizontal	65	1.01	-	12.40	27.79	6.12	-
AV	2.402G	102.32	Inf	-Inf	33.71	3	Horizontal	65	1.01	-	68.61	27.60	6.11	-
PK	2.3724G	59.04	74.00	-14.96	33.83	3	Horizontal	65	1.01	-	25.21	27.71	6.12	-
PK	2.4022G	102.86	Inf	-Inf	33.71	3	Horizontal	65	1.01	-	69.15	27.60	6.11	-

BT-BR(1Mbps)

21/08/2019

2402MHz_TX

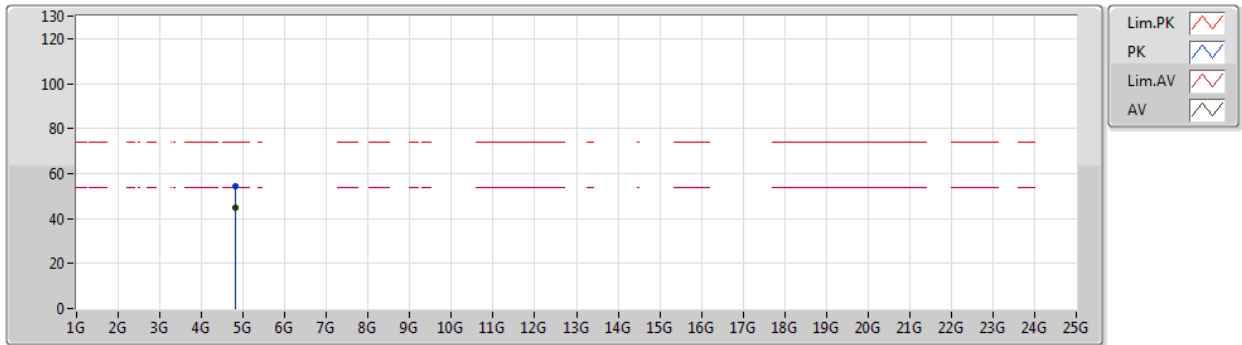


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80398G	45.18	54.00	-8.82	5.70	3	Vertical	329	2.76	-	39.48	31.10	8.90	34.30
PK	4.80387G	54.29	74.00	-19.71	5.70	3	Vertical	329	2.76	-	48.59	31.10	8.90	34.30

BT-BR(1Mbps)

21/08/2019

2402MHz_TX

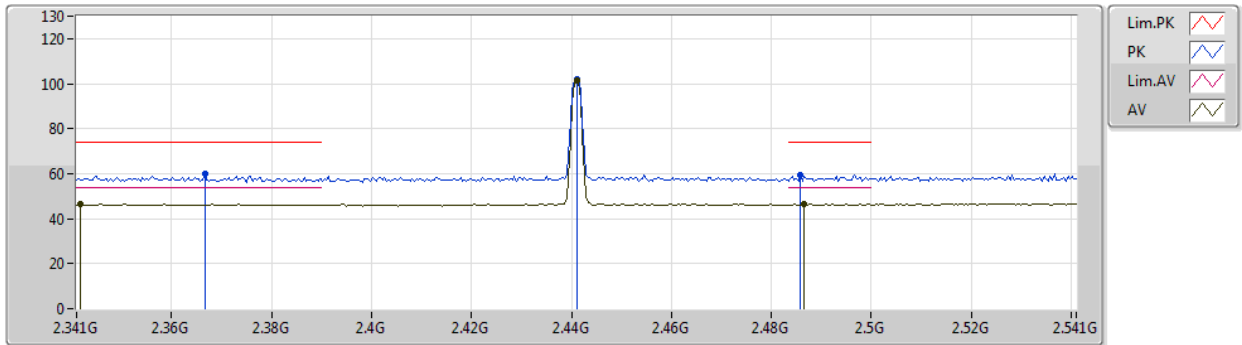


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80395G	44.91	54.00	-9.09	5.70	3	Horizontal	206	2.88	-	39.21	31.10	8.90	34.30
PK	4.80397G	54.24	74.00	-19.76	5.70	3	Horizontal	206	2.88	-	48.54	31.10	8.90	34.30

BT-BR(1Mbps)

2441MHz_TX

22/08/2019

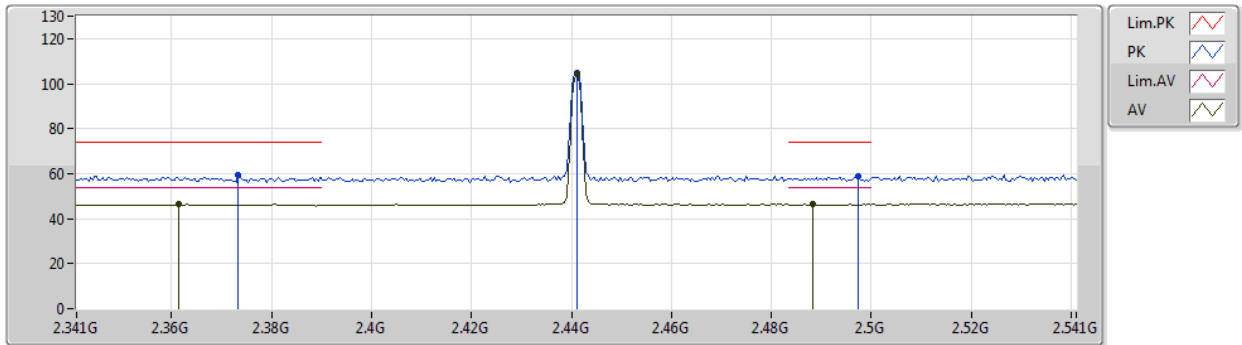


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3418G	46.28	54.00	-7.72	33.95	3	Vertical	25	2.92	-	12.33	27.83	6.12	-
AV	2.441G	101.59	Inf	-Inf	33.69	3	Vertical	25	2.92	-	67.90	27.56	6.13	-
AV	2.4866G	46.47	54.00	-7.53	33.66	3	Vertical	25	2.92	-	12.81	27.51	6.15	-
PK	2.3666G	59.87	74.00	-14.13	33.85	3	Vertical	25	2.92	-	26.02	27.73	6.12	-
PK	2.441G	102.14	Inf	-Inf	33.69	3	Vertical	25	2.92	-	68.45	27.56	6.13	-
PK	2.4858G	59.44	74.00	-14.56	33.66	3	Vertical	25	2.92	-	25.78	27.51	6.15	-

BT-BR(1Mbps)

2441MHz_TX

22/08/2019

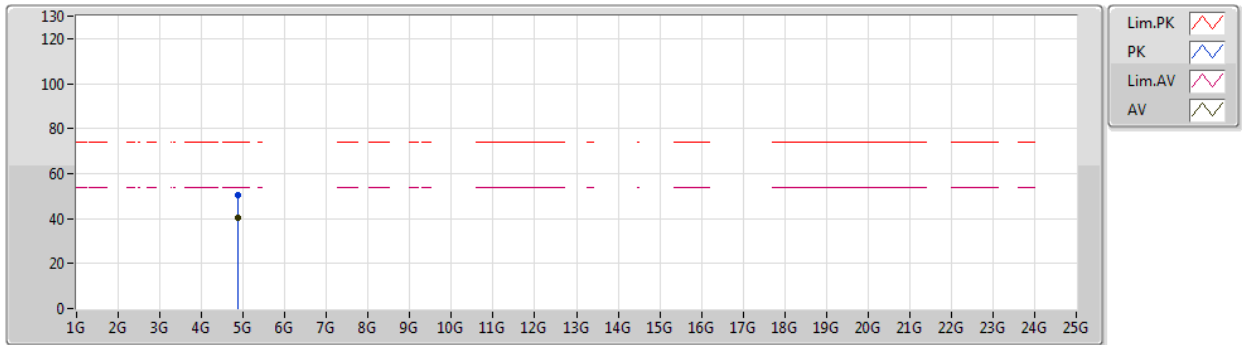


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3614G	46.42	54.00	-7.58	33.87	3	Horizontal	64	1.00	-	12.55	27.75	6.12	-
AV	2.441G	104.06	Inf	-Inf	33.69	3	Horizontal	64	1.00	-	70.37	27.56	6.13	-
AV	2.4882G	46.48	54.00	-7.52	33.66	3	Horizontal	64	1.00	-	12.82	27.51	6.15	-
PK	2.3734G	59.22	74.00	-14.78	33.83	3	Horizontal	64	1.00	-	25.39	27.71	6.12	-
PK	2.441G	104.62	Inf	-Inf	33.69	3	Horizontal	64	1.00	-	70.93	27.56	6.13	-
PK	2.4974G	58.97	74.00	-15.03	33.65	3	Horizontal	64	1.00	-	25.32	27.50	6.15	-

BT-BR(1Mbps)

22/08/2019

2441MHz_TX

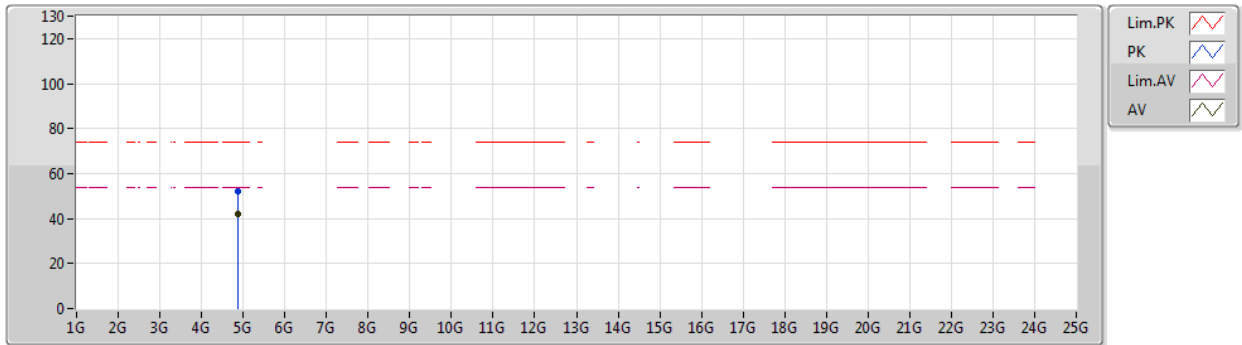


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88199G	40.36	54.00	-13.64	5.78	3	Vertical	360	2.54	-	34.58	31.10	8.96	34.28
PK	4.88189G	50.52	74.00	-23.48	5.78	3	Vertical	360	2.54	-	44.74	31.10	8.96	34.28

BT-BR(1Mbps)

22/08/2019

2441MHz_TX

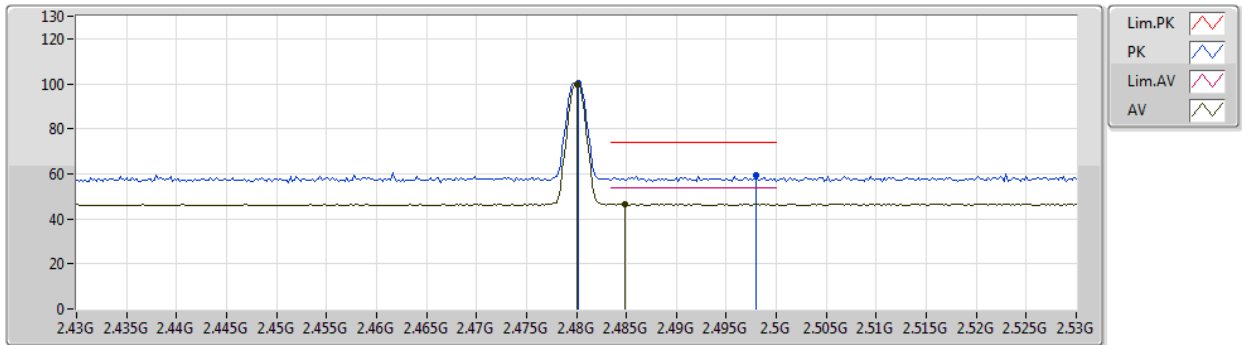


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88201G	42.26	54.00	-11.74	5.78	3	Horizontal	203	2.89	-	36.48	31.10	8.96	34.28
PK	4.88208G	51.92	74.00	-22.08	5.78	3	Horizontal	203	2.89	-	46.14	31.10	8.96	34.28

BT-BR(1Mbps)

2480MHz_TX

21/08/2019

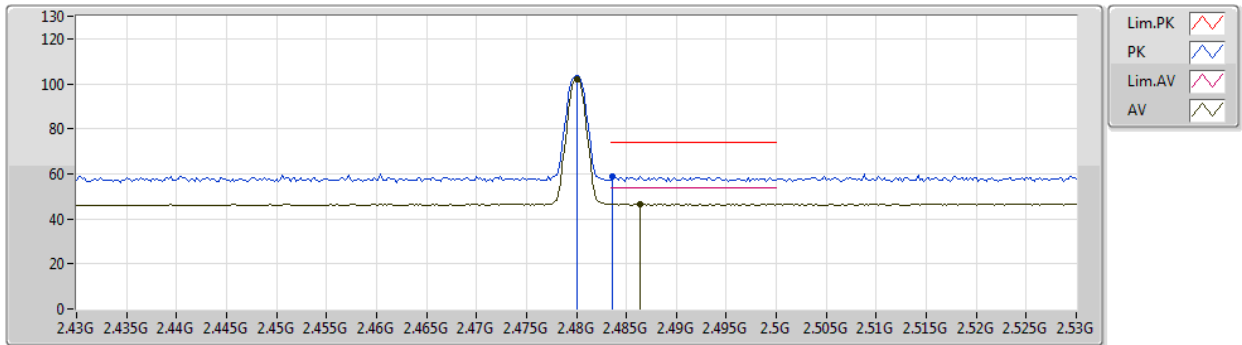


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	99.76	Inf	-Inf	33.67	3	Vertical	173	1.54	-	66.09	27.52	6.15	-
AV	2.4848G	46.63	54.00	-7.37	33.67	3	Vertical	173	1.54	-	12.96	27.52	6.15	-
PK	2.4802G	100.36	Inf	-Inf	33.67	3	Vertical	173	1.54	-	66.69	27.52	6.15	-
PK	2.498G	59.29	74.00	-14.71	33.65	3	Vertical	173	1.54	-	25.64	27.50	6.15	-

BT-BR(1Mbps)

2480MHz_TX

21/08/2019

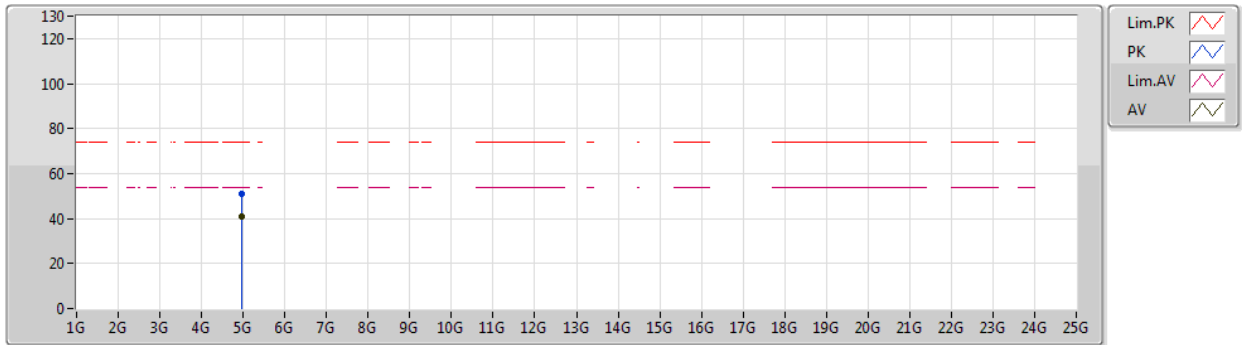


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	102.05	Inf	-Inf	33.67	3	Horizontal	66	1.10	-	68.38	27.52	6.15	-
AV	2.4864G	46.49	54.00	-7.51	33.66	3	Horizontal	66	1.10	-	12.83	27.51	6.15	-
PK	2.48G	102.70	Inf	-Inf	33.67	3	Horizontal	66	1.10	-	69.03	27.52	6.15	-
PK	2.4836G	58.61	74.00	-15.39	33.67	3	Horizontal	66	1.10	-	24.94	27.52	6.15	-

BT-BR(1Mbps)

21/08/2019

2480MHz_TX

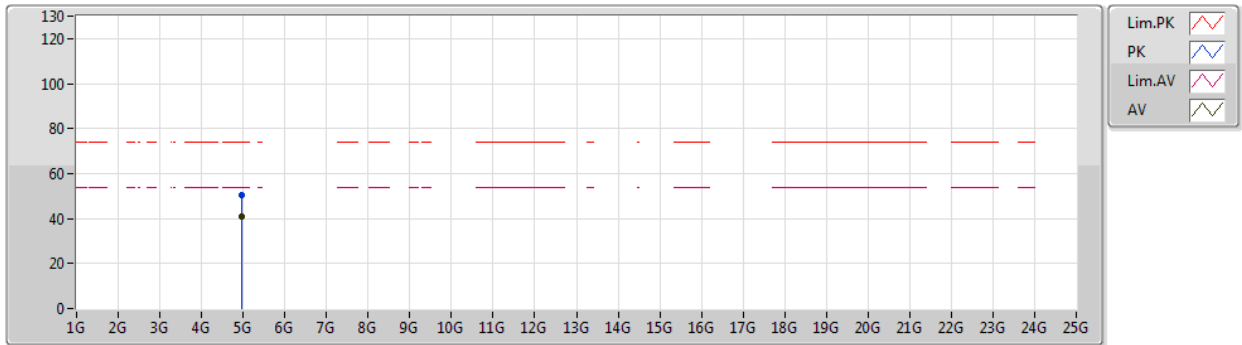


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96004G	40.65	54.00	-13.35	6.21	3	Vertical	331	2.88	-	34.44	31.34	9.03	34.16
PK	4.96003G	50.83	74.00	-23.17	6.21	3	Vertical	331	2.88	-	44.62	31.34	9.03	34.16

BT-BR(1Mbps)

21/08/2019

2480MHz_TX

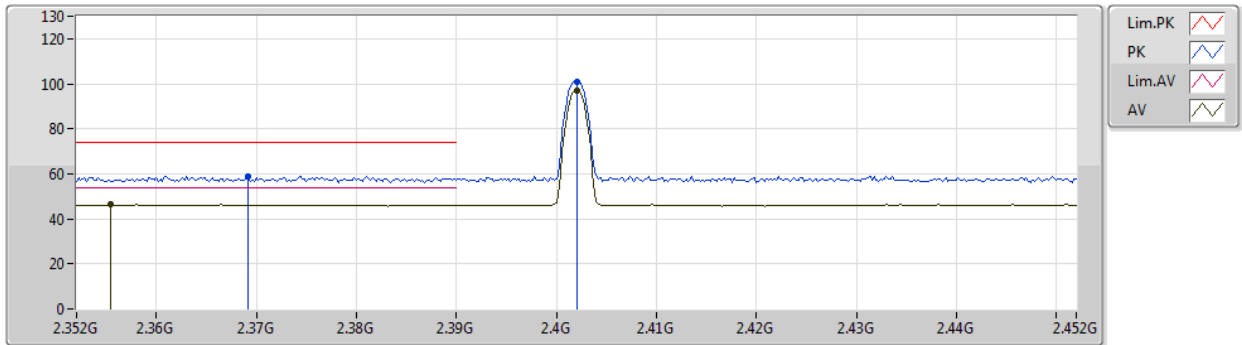


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96G	40.85	54.00	-13.15	6.21	3	Horizontal	202	2.80	-	34.64	31.34	9.03	34.16
PK	4.96002G	50.58	74.00	-23.42	6.21	3	Horizontal	202	2.80	-	44.37	31.34	9.03	34.16

BT-EDR(3Mbps)

22/08/2019

2402MHz_TX

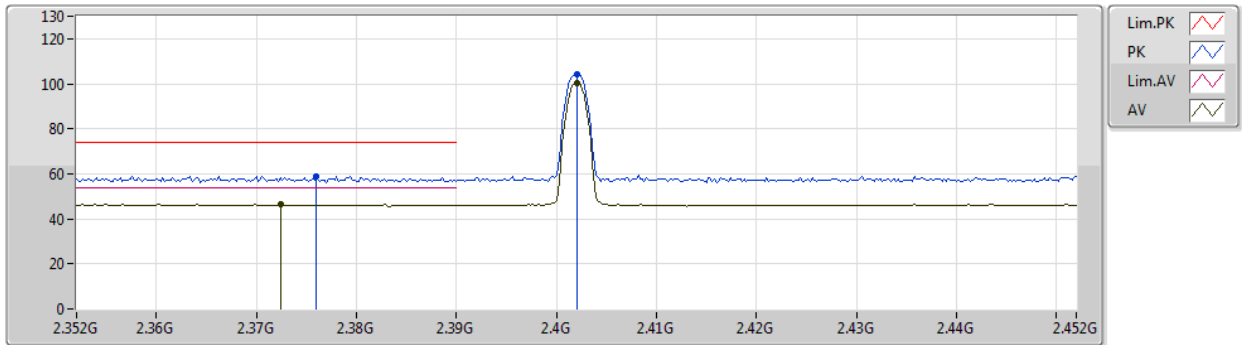


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3554G	46.41	54.00	-7.59	33.90	3	Vertical	231	1.42	-	12.51	27.78	6.12	-
AV	2.402G	96.91	Inf	-Inf	33.71	3	Vertical	231	1.42	-	63.20	27.60	6.11	-
PK	2.3692G	59.05	74.00	-14.95	33.84	3	Vertical	231	1.42	-	25.21	27.72	6.12	-
PK	2.402G	100.88	Inf	-Inf	33.71	3	Vertical	231	1.42	-	67.17	27.60	6.11	-

BT-EDR(3Mbps)

2402MHz_TX

22/08/2019

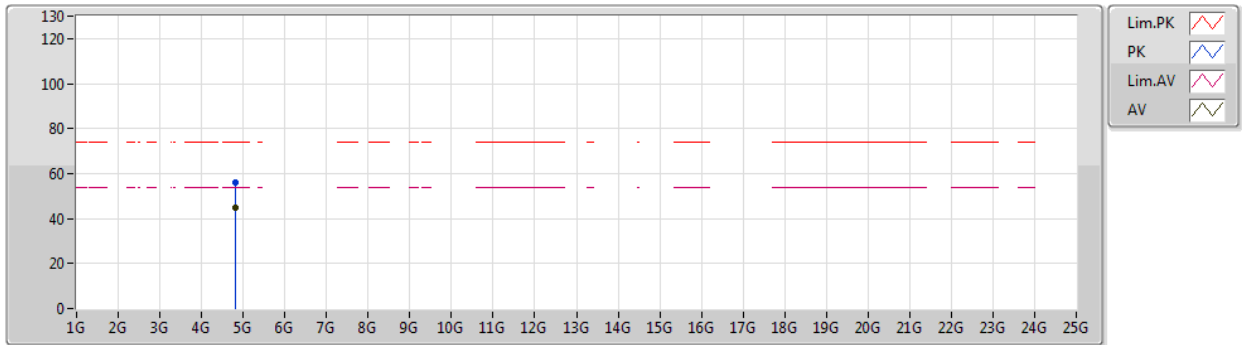


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3724G	46.42	54.00	-7.58	33.83	3	Horizontal	64	1.02	-	12.59	27.71	6.12	-
AV	2.402G	100.31	Inf	-Inf	33.71	3	Horizontal	64	1.02	-	66.60	27.60	6.11	-
PK	2.376G	59.11	74.00	-14.89	33.82	3	Horizontal	64	1.02	-	25.29	27.70	6.12	-
PK	2.402G	104.29	Inf	-Inf	33.71	3	Horizontal	64	1.02	-	70.58	27.60	6.11	-

BT-EDR(3Mbps)

22/08/2019

2402MHz_TX

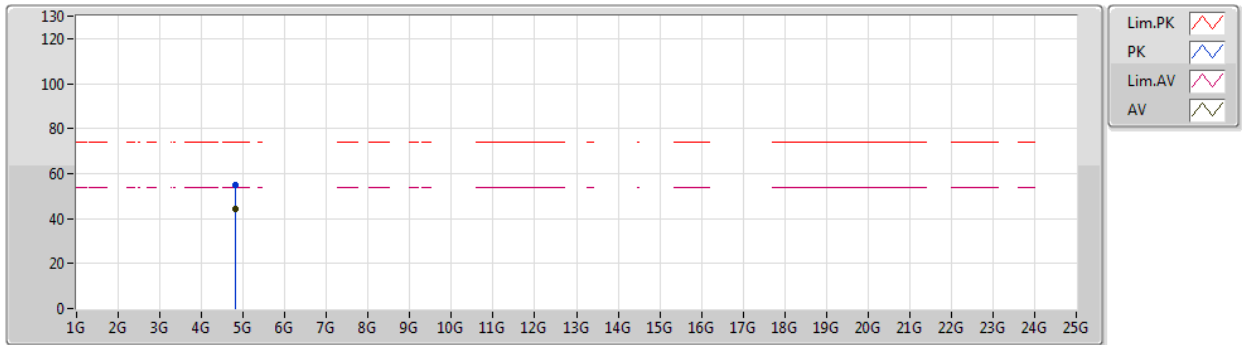


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80401G	45.03	54.00	-8.97	5.70	3	Vertical	330	2.96	-	39.33	31.10	8.90	34.30
PK	4.80393G	56.03	74.00	-17.97	5.70	3	Vertical	330	2.96	-	50.33	31.10	8.90	34.30

BT-EDR(3Mbps)

22/08/2019

2402MHz_TX

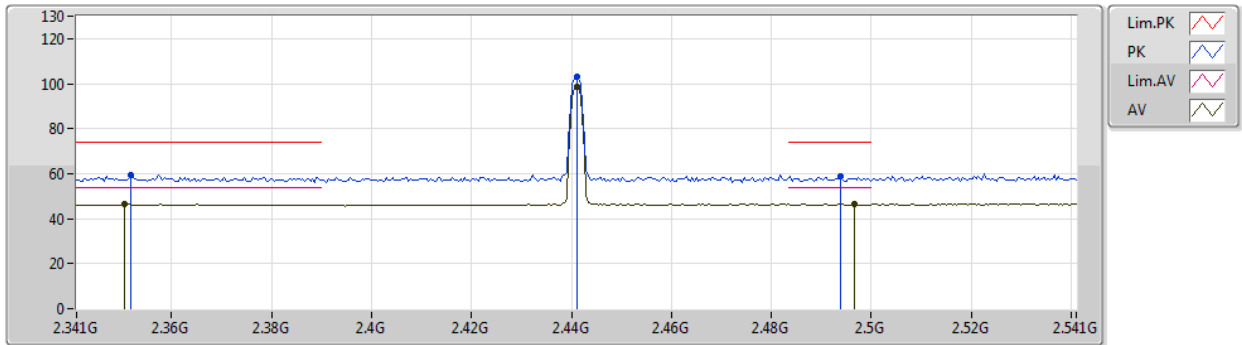


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80403G	44.07	54.00	-9.93	5.70	3	Horizontal	217	3.00	-	38.37	31.10	8.90	34.30
PK	4.80395G	54.95	74.00	-19.05	5.70	3	Horizontal	217	3.00	-	49.25	31.10	8.90	34.30

BT-EDR(3Mbps)

2441MHz_TX

22/08/2019

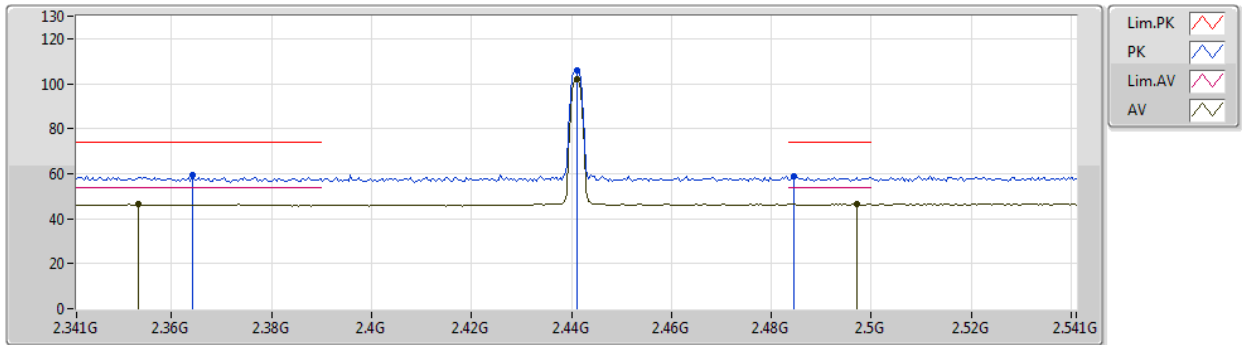


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3506G	46.30	54.00	-7.70	33.92	3	Vertical	232	1.07	-	12.38	27.80	6.12	-
AV	2.441G	98.89	Inf	-Inf	33.69	3	Vertical	232	1.07	-	65.20	27.56	6.13	-
AV	2.4966G	46.39	54.00	-7.61	33.65	3	Vertical	232	1.07	-	12.74	27.50	6.15	-
PK	2.3518G	59.21	74.00	-14.79	33.91	3	Vertical	232	1.07	-	25.30	27.79	6.12	-
PK	2.441G	102.87	Inf	-Inf	33.69	3	Vertical	232	1.07	-	69.18	27.56	6.13	-
PK	2.4938G	58.94	74.00	-15.06	33.66	3	Vertical	232	1.07	-	25.28	27.51	6.15	-

BT-EDR(3Mbps)

2441MHz_TX

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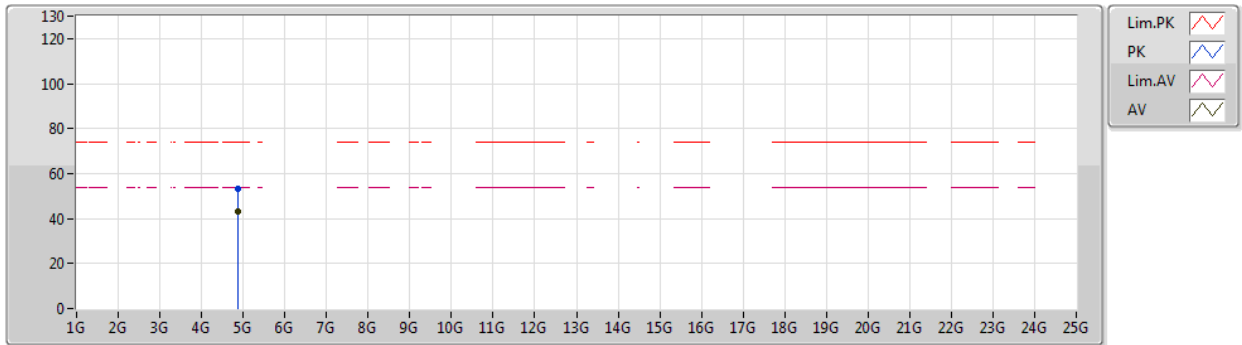


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3534G	46.26	54.00	-7.74	33.91	3	Horizontal	65	1.00	-	12.35	27.79	6.12	-
AV	2.441G	102.01	Inf	-Inf	33.69	3	Horizontal	65	1.00	-	68.32	27.56	6.13	-
AV	2.497G	46.46	54.00	-7.54	33.65	3	Horizontal	65	1.00	-	12.81	27.50	6.15	-
PK	2.3642G	59.13	74.00	-14.87	33.86	3	Horizontal	65	1.00	-	25.27	27.74	6.12	-
PK	2.441G	105.97	Inf	-Inf	33.69	3	Horizontal	65	1.00	-	72.28	27.56	6.13	-
PK	2.4846G	58.58	74.00	-15.42	33.67	3	Horizontal	65	1.00	-	24.91	27.52	6.15	-

BT-EDR(3Mbps)

22/08/2019

2441MHz_TX

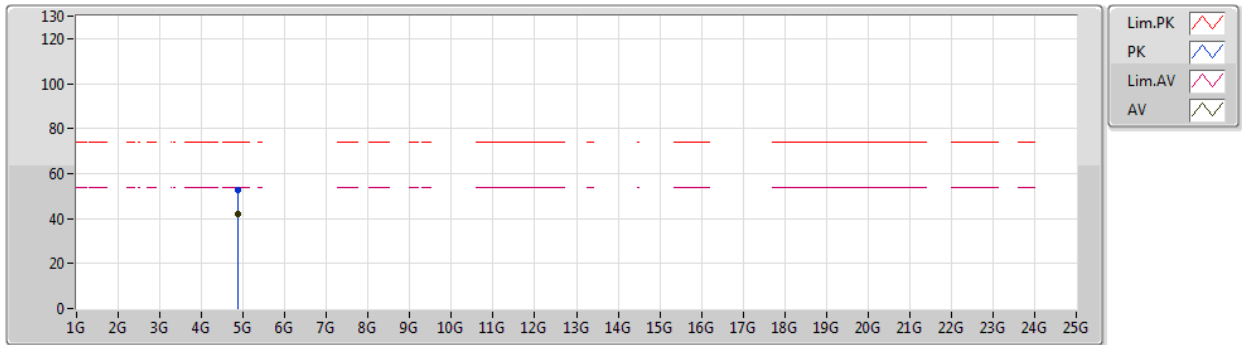


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88205G	42.91	54.00	-11.09	5.78	3	Vertical	97	2.49	-	37.13	31.10	8.96	34.28
PK	4.88175G	53.12	74.00	-20.88	5.78	3	Vertical	97	2.49	-	47.34	31.10	8.96	34.28

BT-EDR(3Mbps)

22/08/2019

2441MHz_TX

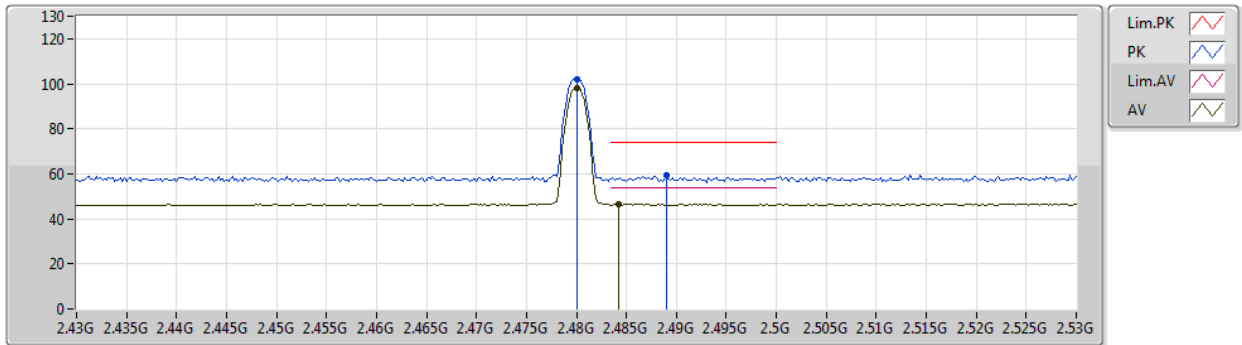


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88204G	41.80	54.00	-12.20	5.78	3	Horizontal	200	2.85	-	36.02	31.10	8.96	34.28
PK	4.88185G	52.73	74.00	-21.27	5.78	3	Horizontal	200	2.85	-	46.95	31.10	8.96	34.28

BT-EDR(3Mbps)

2480MHz_TX

22/08/2019

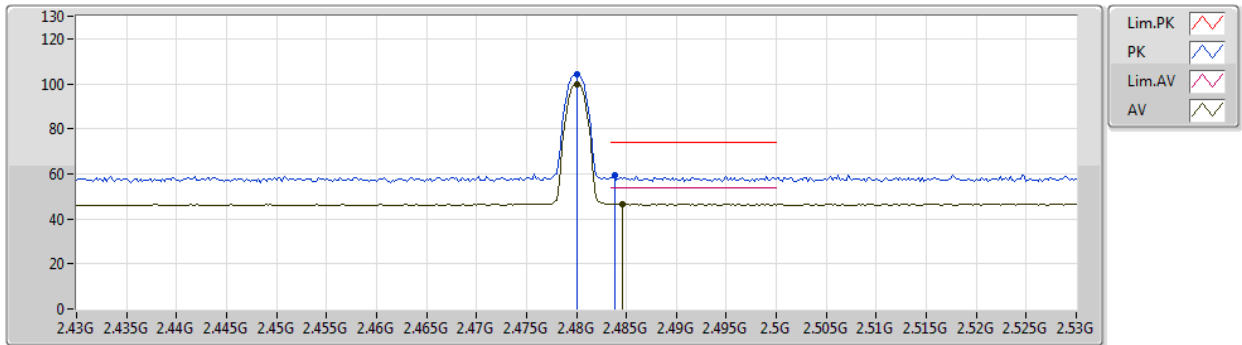


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	98.19	Inf	-Inf	33.67	3	Vertical	172	1.55	-	64.52	27.52	6.15	-
AV	2.4842G	46.63	54.00	-7.37	33.67	3	Vertical	172	1.55	-	12.96	27.52	6.15	-
PK	2.48G	102.16	Inf	-Inf	33.67	3	Vertical	172	1.55	-	68.49	27.52	6.15	-
PK	2.489G	59.27	74.00	-14.73	33.66	3	Vertical	172	1.55	-	25.61	27.51	6.15	-

BT-EDR(3Mbps)

2480MHz_TX

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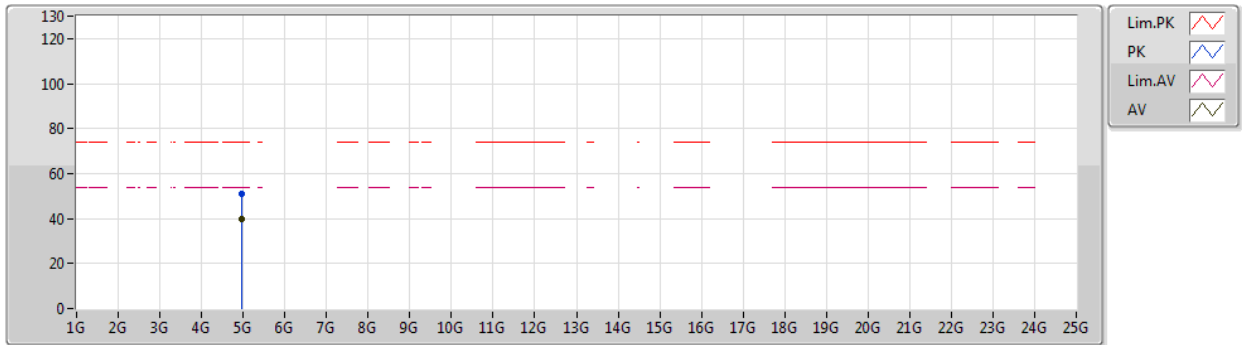


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	100.00	Inf	-Inf	33.67	3	Horizontal	65	1.09	-	66.33	27.52	6.15	-
AV	2.4846G	46.71	54.00	-7.29	33.67	3	Horizontal	65	1.09	-	13.04	27.52	6.15	-
PK	2.48G	103.98	Inf	-Inf	33.67	3	Horizontal	65	1.09	-	70.31	27.52	6.15	-
PK	2.4838G	59.14	74.00	-14.86	33.67	3	Horizontal	65	1.09	-	25.47	27.52	6.15	-

BT-EDR(3Mbps)

22/08/2019

2480MHz_TX

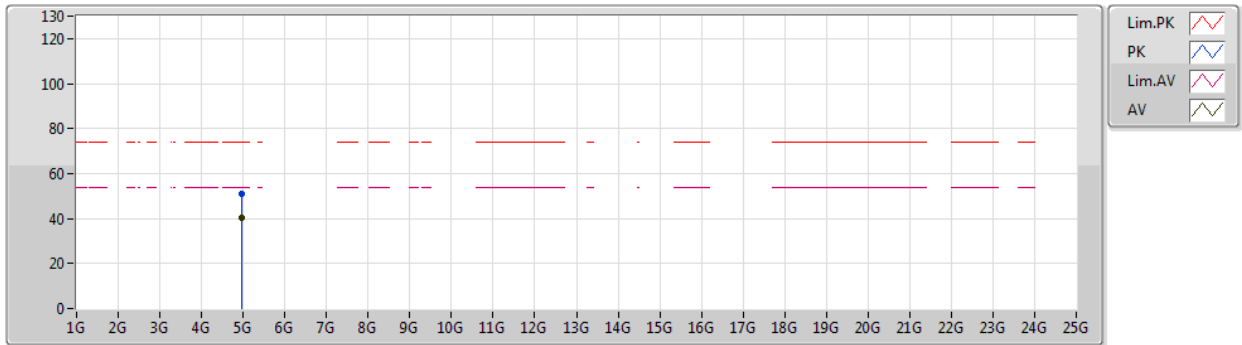


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96011G	39.58	54.00	-14.42	6.21	3	Vertical	336	2.91	-	33.37	31.34	9.03	34.16
PK	4.95985G	50.88	74.00	-23.12	6.21	3	Vertical	336	2.91	-	44.67	31.34	9.03	34.16

BT-EDR(3Mbps)

22/08/2019

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	4.95998G	40.10	54.00	-13.90	6.21	3	Horizontal	200	2.80	-	33.89	31.34	9.03	34.16
PK	4.96008G	50.91	74.00	-23.09	6.21	3	Horizontal	200	2.80	-	44.70	31.34	9.03	34.16