FCC Test Report

FCC ID	:	**TTUBEOPLAYH4G2**
Equipment	:	**Bluetooth Headphone**
Brand Name	:	**Bang & Olufsen**
Model Name	:	**Beoplay H4 2nd Gen**
Applicant/ Manufacturer	:	**Bang & Olufsen A/S Bang og Olufsen Allé 1, 7600 Struer, Denmark**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Aug. 07, 2019, and testing was started from Aug. 12, 2019 and completed on Aug. 26, 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.

Allen Lin

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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PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR971118AD	01	Initial issue of report	Sep. 05, 2019
FR971118AD	02	Update Information of 1.1.1 Section and 1.1.3 Section. This report is the latest version replacing for the report issued on Sep. 05, 2019	Sep. 10, 2019

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	FCC 15.207
3.2	15.247(a)	20dB Bandwidth	PASS	15.247(a)
3.2	15.247(a)	Carrier Frequency Separation	PASS	15.247(a)
3.3	15.247(b)	Maximum Conducted Output Power	PASS	15.247(b)
3.4	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	PASS	15.247(a)
3.5	15.247(a)	Time of Occupancy (Dwell Time)	PASS	15.247(a)
3.6	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	15.247(d)
3.7	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

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: Kate Lo

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 π/4-DQPSK (2Mbps) and 8DPSK (3Mbps).
- Bluetooth BR/EDR uses as a system using FHSS modulation.
- BWch is the nominal channel bandwidth.
- The EUT Bluetooth version is v4.2 and it can be downward compatibility.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Sage Elephant Tech co., Ltd	S306300001000-A	Chip Antenna	N/A	0.69

For BT function:

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

Ant. 1 could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From host system (NB)			
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 x 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 x 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) ≥ 1/T
BT-BR(1Mbps)	0.775	1.11	2.906m	1k
BT-EDR(2Mbps)	0.777	1.1	2.915m	1k
BT-EDR(3Mbps)	0.778	1.09	2.916m	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
- KDB 558074 D01 v05r02
- ANSI C63.10-2013

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
AC Conduction	CO04-HY	Lego	24.2~25.3°C / 63.1~67.2%	15/Aug/2019
RF Conducted	TH06-HY	Gary	23.5~25.6°C / 65~68%	12/Aug/2019~ 26/Aug/2019
Radiated	03CH03-HY	Justin	20.9~24.5°C / 50.1~55.6%	13/Aug/2019~ 15/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	InstallBlueSuite_2_5_8_667

Mode	Power Setting
BT-BR(1Mbps)	-
2402MHz	48
2441MHz	37
2480MHz	40
BT-EDR(2Mbps)	-
2402MHz	65
2441MHz	57
2480MHz	59
BT-EDR(3Mbps)	-
2402MHz	65
2441MHz	57
2480MHz	59

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	**X Plane**	**Y Plane**	**Z Plane**
Worst Planes of EUT		V	

2.4 Accessories and Support Equipment

Accessories				
Battery	**Brand Name**	Synergy	**Model Name**	AHB622540PMT-04
	Power Rating	3.7Vdc, 600mAh	**Type**	Lithium-ion Polymer Battery Pack
USB Cable	**Brand Name**	Bang & Olufsen	**Model Name**	4021XW01850ZAU
	Signal Line	1.25 meter, D-shielded cable, w/o ferrite core		
Audio Cable	**Brand Name**	Bang & Olufsen	**Model Name**	4021XW01852ZAS
	Signal Line	1.25 meter, non-shielded cable, w/o ferrite core		

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

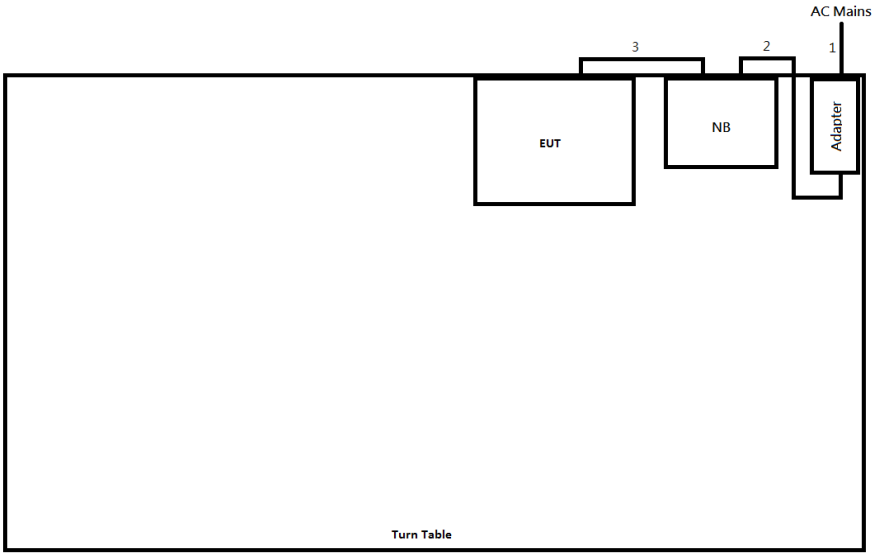
Support Equipment – RF Conducted				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	Fixture	-	-	-

Note: Support equipment No.3 was provided by customer.

Support Equipment –AC Conduction and Radiated Emission				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E4300	-
2	Adapter for NB	DELL	AA90PM111	-
3	Mouse(USB)	DEXIN	17C06227	-
4	IPod	APPLE	YM719D8YVQ5	-
5	Earphone	APPLE	-	-

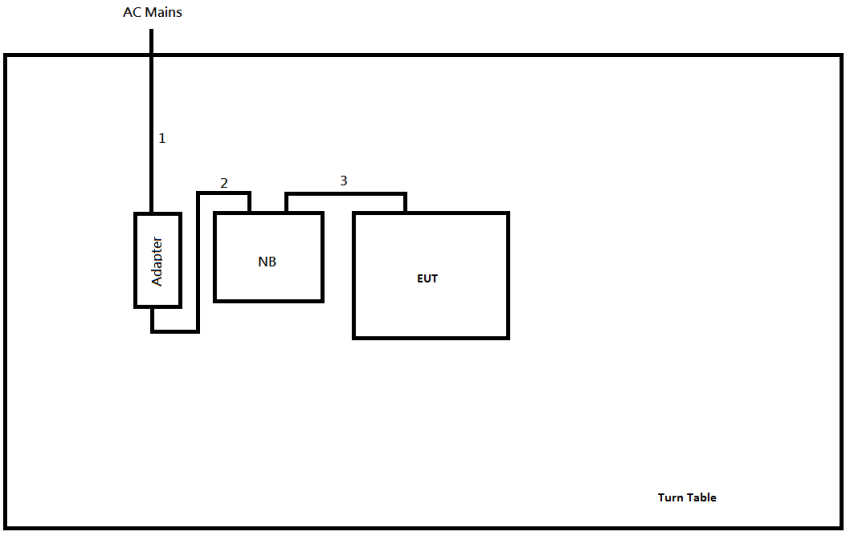
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	Power Cable	No	1.8	-
2	DC Power Cable	No	1.0	-
3	USB Cable	Yes	1.25	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	Power Cable	No	1.8	-
2	DC Power Cable	No	1.0	-
3	USB Cable	Yes	1.25	-

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

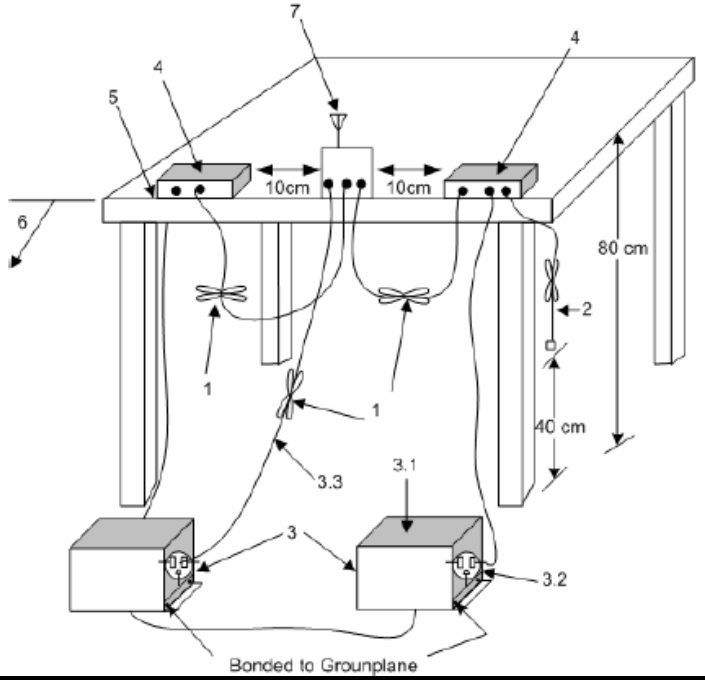
Refer a test equipment and calibration data table in this test report.

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

AC Power-line Conducted Emissions



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 ≥75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).
	▪ 75>N ≥ 15 and ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz).
N:Number of Hopping Frequencies; **ChS**: Hopping Channel Separation	

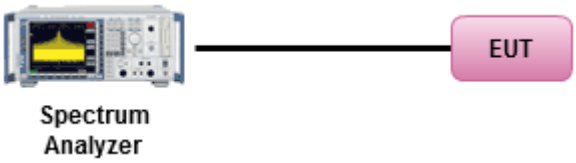
3.2.2 Measuring Instruments

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

20dB Bandwidth and Carrier Frequency Separation


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 ≥ 75; Power 30dBm; EIRP 36dBm
	▪ 75 >N ≥ 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

Maximum Conducted Output Power (Peak Power Meter)

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 ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).
	▪ 75 >N ≥ 15 and ChS ≥ 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

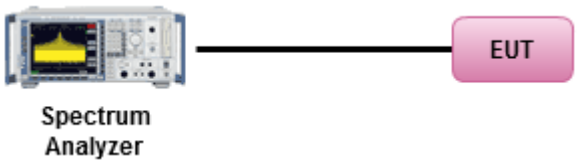
3.4.3 Measuring Instruments

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

Number of Hopping Frequencies and Hopping Frequencies Bandedge


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 ≥ 75; 0.4s in N x 0.4 period
	▪ 75 >N ≥ 15; 0.4s in N x 0.4 period
N:Number of Hopping Frequencies	

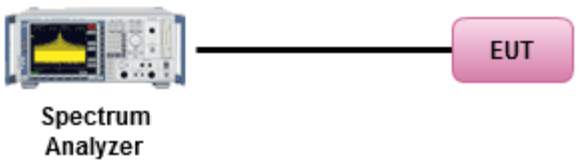
3.5.2 Measuring Instruments

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

Time of Occupancy (Dwell Time)


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

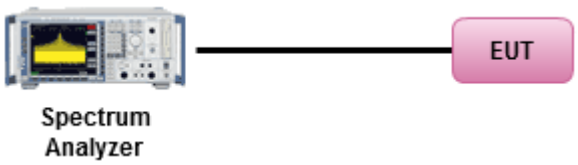
Refer a test equipment and calibration data table in this test report.

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

Emissions in Non-restricted Frequency Bands



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 below30 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.

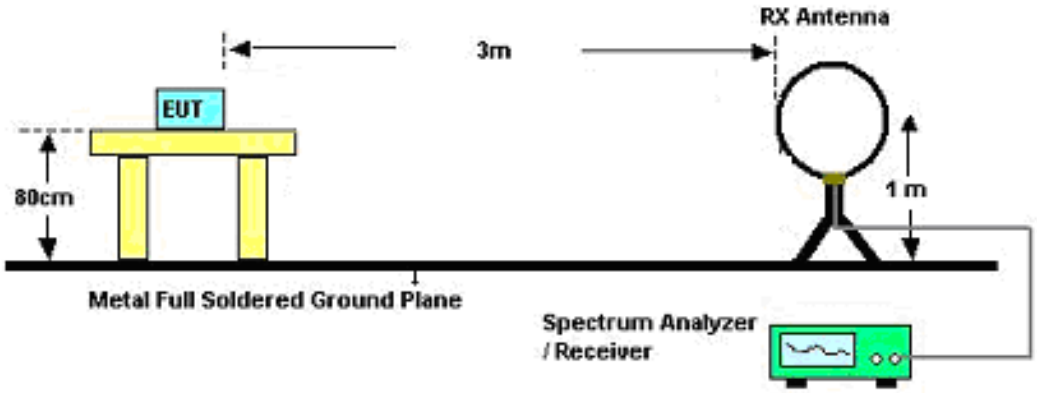
3.7.3 Test Procedures

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.

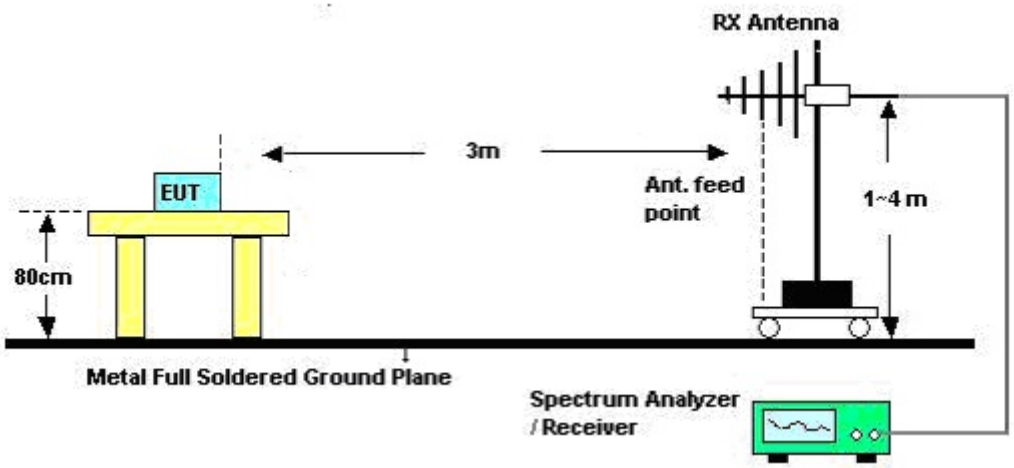
3.7.4 Test Setup

Emissions in Restricted Frequency Bands

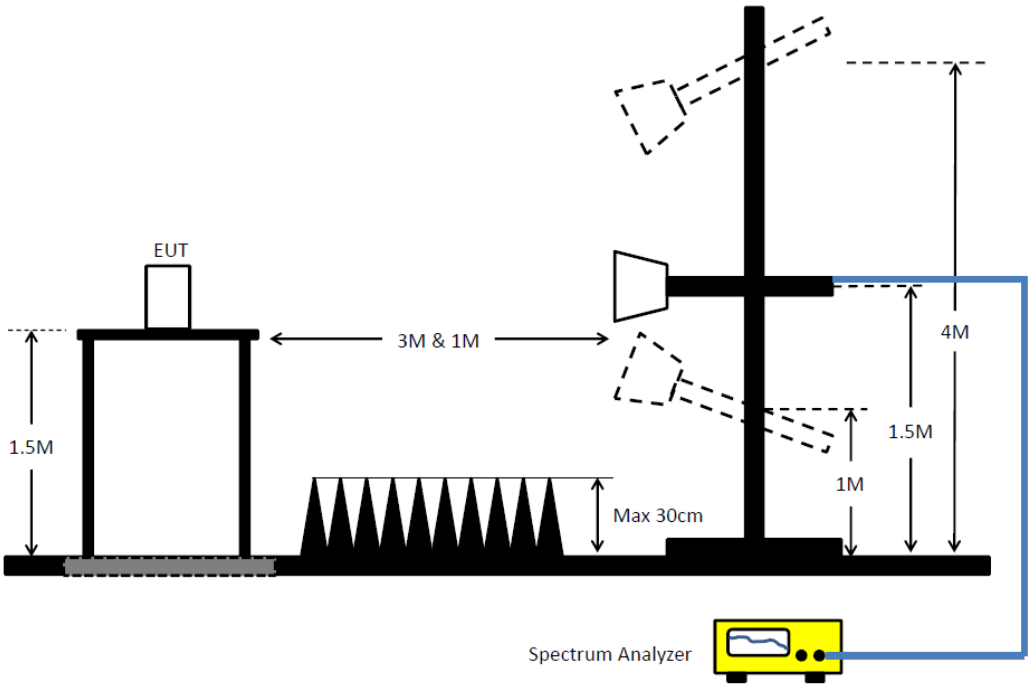
9kHz~30MHz



30MHz~1GHz



Above 1GHz



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

4 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 Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz~30 MHz	12/Oct/2018	11/Oct/2019

NCR : Non-Calibration Require

Instrument for Conducted Test

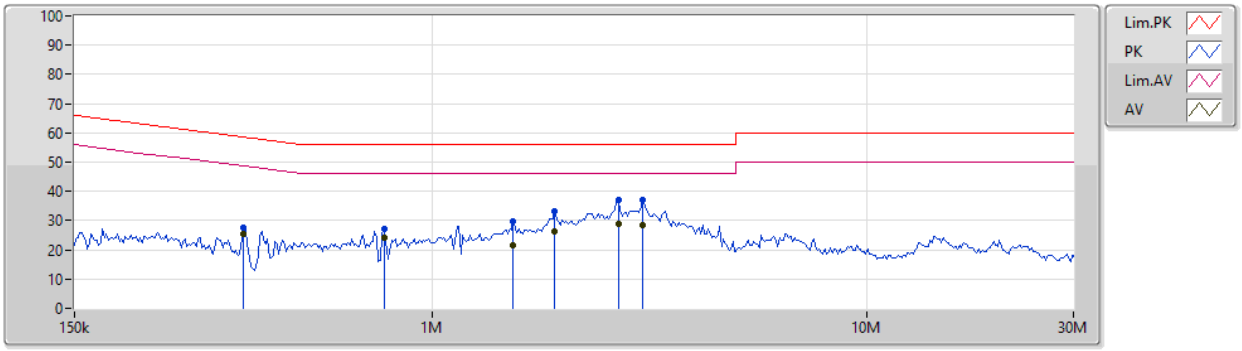
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
Power Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	17/Nov/2018	16/Nov/2019
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
CABLE 1.5m	HUBER	MY33066/4	RF Cable - 30	1~18GHz	10/Jan/2019	09/Jan/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	30/Oct/2018	29/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz~18GHz 3m	30/Oct/2018	29/Oct/2019
Amplifier	HP	8447D	2944A08033	10kHz~1.3GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna with 5dB Pad	ETS	3142B & MTJ6102-05	00022055	26MHz~3GHz	19/Nov/2018	18/Nov/2019
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz~26.5GHz	05/Sep/2018	04/Sep/2019
Signal Analyzer	R&S	FSV40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~1GHz	22/Mar/2019	21/Mar/2020
RF CABLE 6m	HUBER+SUHNER	SUOFLEX 104	SN 805801/4	1GHz~40GHz	21/Mar/2019	20/Mar/2020
RF CABLE	HUBER+SUHNER	SUOFLEX 104	802378/4	1GHz~18GHz	04/Jul/2019	03/Jul/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz~40GHz	22/Mar/2019	21/Mar/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	09/Mar/ 2019	08/Mar/2020
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz~40GHz	24/Aug/2018	23/Aug/2019

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	USB Mode		

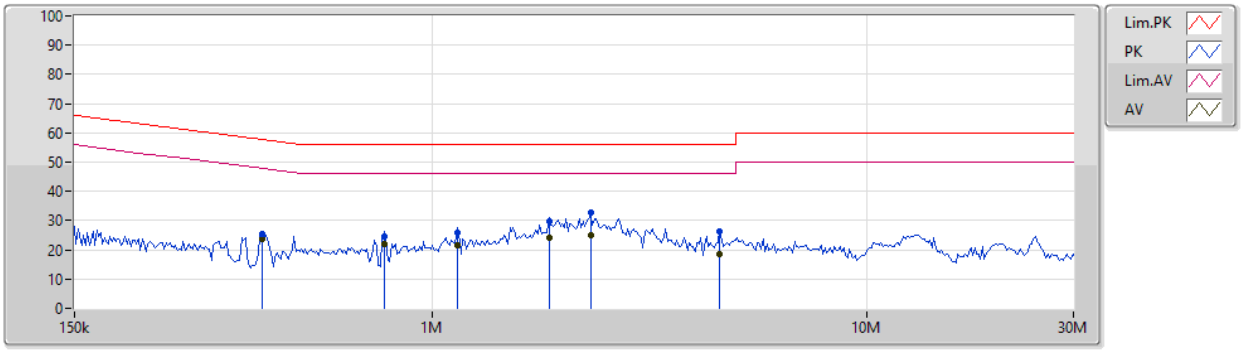
15/08/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	367.295k	27.52	58.56	-31.04	19.48	Neutral	-	8.04	9.59	0.01	9.88
AV	367.295k	25.40	48.56	-23.16	19.48	Neutral	-	5.92	9.59	0.01	9.88
QP	774.672k	27.17	56.00	-28.83	19.49	Neutral	-	7.68	9.59	0.02	9.88
AV	774.672k	24.21	46.00	-21.79	19.49	Neutral	-	4.72	9.59	0.02	9.88
QP	1.539M	29.73	56.00	-26.27	19.52	Neutral	-	10.21	9.60	0.03	9.89
AV	1.539M	21.63	46.00	-24.37	19.52	Neutral	-	2.11	9.60	0.03	9.89
QP	1.916M	33.27	56.00	-22.73	19.53	Neutral	-	13.74	9.61	0.03	9.89
AV	1.916M	26.12	46.00	-19.88	19.53	Neutral	-	6.59	9.61	0.03	9.89
QP	2.687M	37.16	56.00	-18.84	19.54	Neutral	-	17.62	9.61	0.04	9.89
AV	2.687M	28.94	46.00	-17.06	19.54	Neutral	"Worst"	9.40	9.61	0.04	9.89
QP	3.058M	37.04	56.00	-18.96	19.54	Neutral	-	17.50	9.61	0.04	9.89
AV	3.058M	28.59	46.00	-17.41	19.54	Neutral	-	9.05	9.61	0.04	9.89

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	USB Mode		

15/08/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	405.722k	25.62	57.74	-32.12	19.48	Line	-	6.14	9.59	0.01	9.88
AV	405.722k	23.62	47.74	-24.12	19.48	Line	-	4.14	9.59	0.01	9.88
QP	774.672k	24.70	56.00	-31.30	19.50	Line	-	5.20	9.60	0.02	9.88
AV	774.672k	21.92	46.00	-24.08	19.50	Line	-	2.42	9.60	0.02	9.88
QP	1.142M	25.78	56.00	-30.22	19.50	Line	-	6.28	9.60	0.02	9.88
AV	1.142M	21.54	46.00	-24.46	19.50	Line	-	2.04	9.60	0.02	9.88
QP	1.86M	29.65	56.00	-26.35	19.54	Line	-	10.11	9.62	0.03	9.89
AV	1.86M	24.06	46.00	-21.94	19.54	Line	-	4.52	9.62	0.03	9.89
QP	2.315M	32.67	56.00	-23.33	19.55	Line	-	13.12	9.62	0.04	9.89
AV	2.315M	25.08	46.00	-20.92	19.55	Line	"Worst"	5.53	9.62	0.04	9.89
QP	4.599M	26.09	56.00	-29.91	19.58	Line	-	6.51	9.64	0.05	9.89
AV	4.599M	18.69	46.00	-27.31	19.58	Line	-	-0.89	9.64	0.05	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	878.311k	878KF1D	917.5k	870.815k
BT-EDR(2Mbps)	1.236M	1.209M	1M21G1D	1.23M	1.193M
BT-EDR(3Mbps)	1.255M	1.212M	1M21G1D	1.251M	1.204M

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

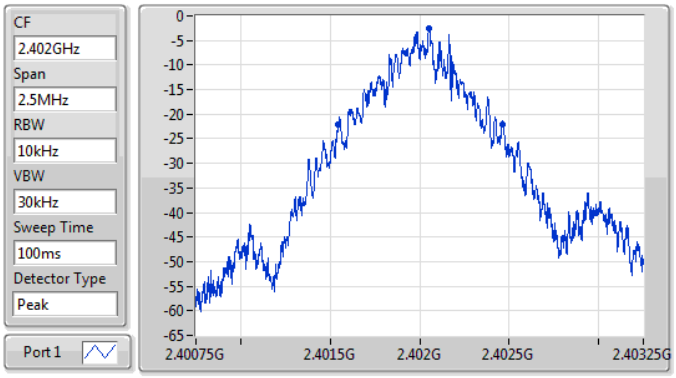
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	920k	878.311k
2441MHz	Pass	Inf	918.75k	870.815k
2480MHz	Pass	Inf	917.5k	873.313k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.23M	1.209M
2441MHz	Pass	Inf	1.234M	1.199M
2480MHz	Pass	Inf	1.236M	1.193M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.253M	1.212M
2441MHz	Pass	Inf	1.255M	1.211M
2480MHz	Pass	Inf	1.251M	1.204M

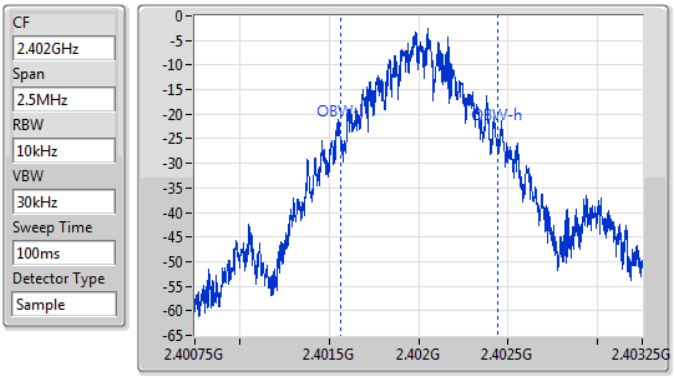
Port X-N dB = Port **X** 20dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

BT-BR(1Mbps) EBW

2402MHz

12/08/2019



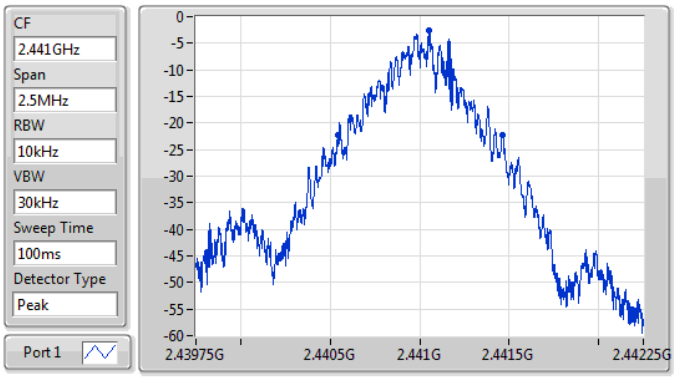


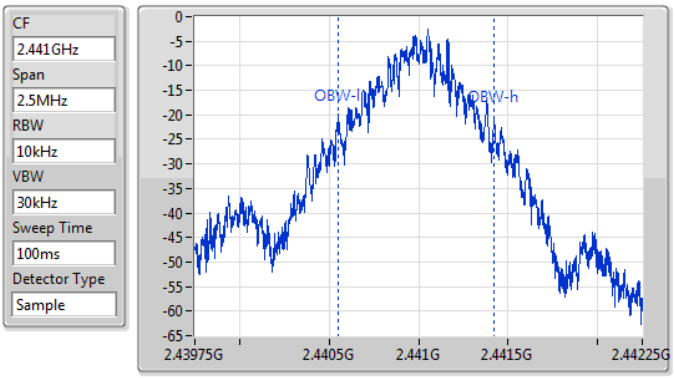
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
920k	2.401546G	2.402466G	878.311k	2.401563G	2.402441G	Inf	1

BT-BR(1Mbps) EBW

2441MHz

12/08/2019



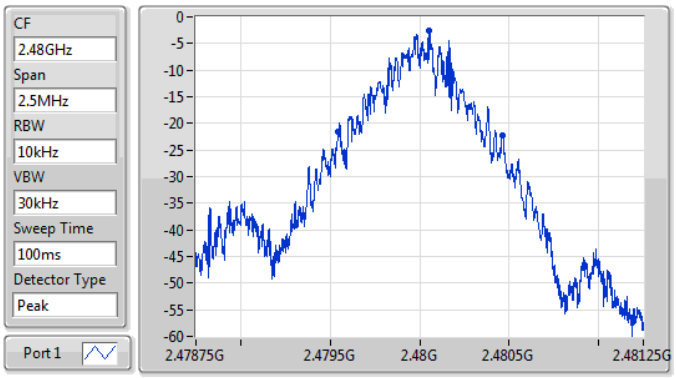


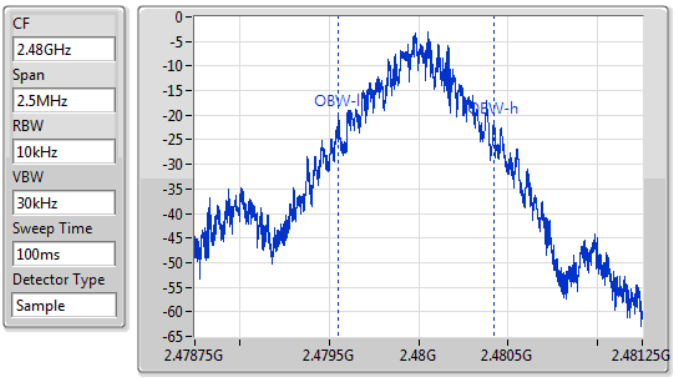
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
918.75k	2.440546G	2.441465G	870.815k	2.44055G	2.441421G	Inf	1

BT-BR(1Mbps) EBW

2480MHz

12/08/2019



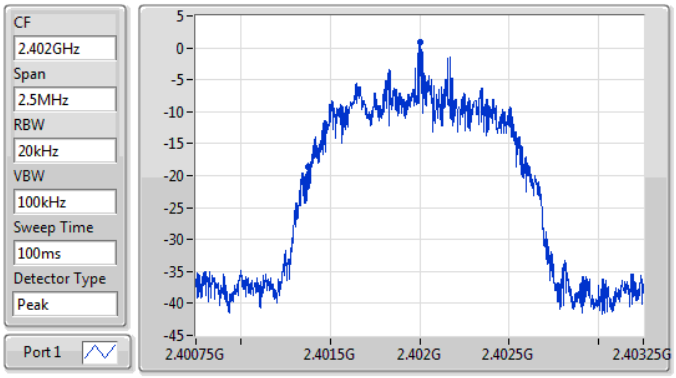


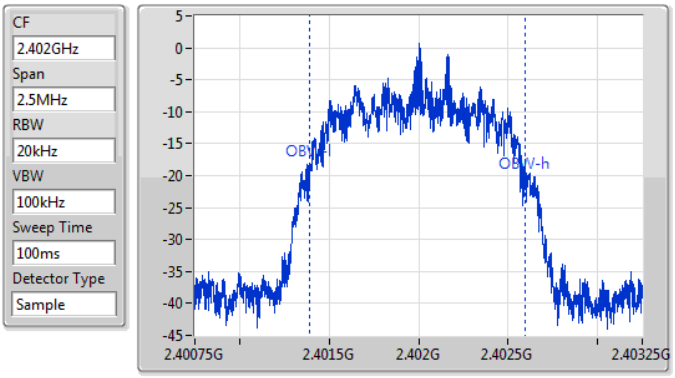
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
917.5k	2.479546G	2.480464G	873.313k	2.479548G	2.480421G	Inf	1

BT-EDR(2Mbps) EBW

2402MHz

12/08/2019



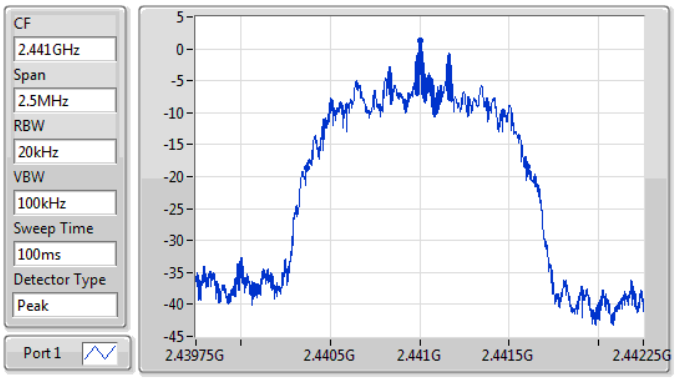


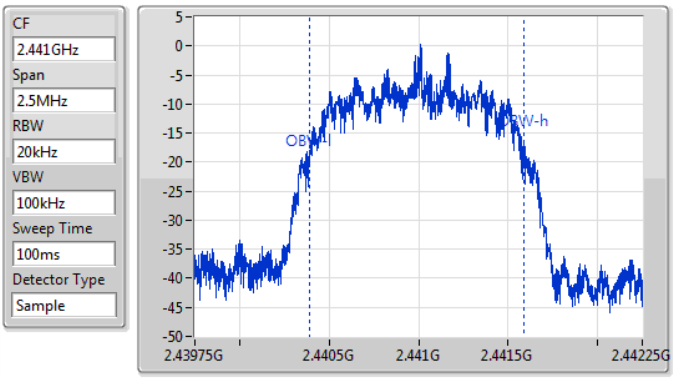
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.23M	2.401375G	2.402605G	1.209M	2.401388G	2.402597G	Inf	1

BT-EDR(2Mbps) EBW

2441MHz

12/08/2019



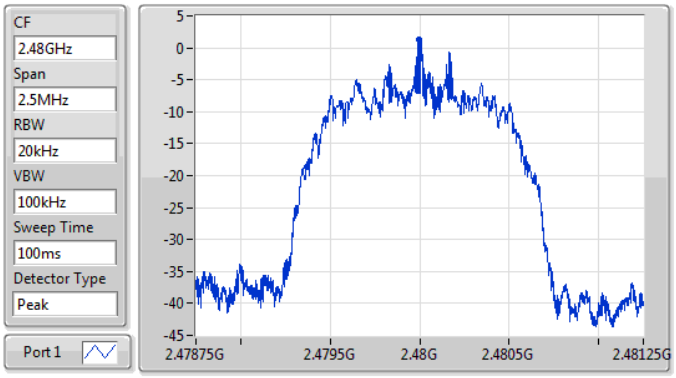


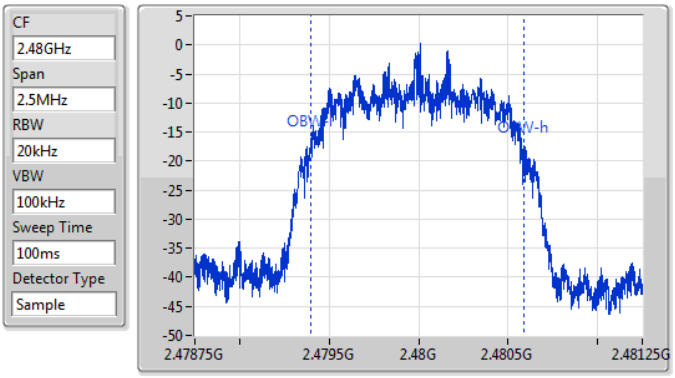
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.234M	2.440369G	2.441603G	1.199M	2.440392G	2.441591G	Inf	1

BT-EDR(2Mbps) EBW

2480MHz

12/08/2019



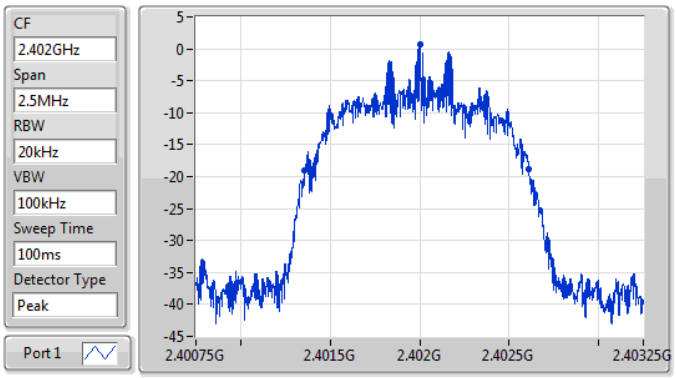


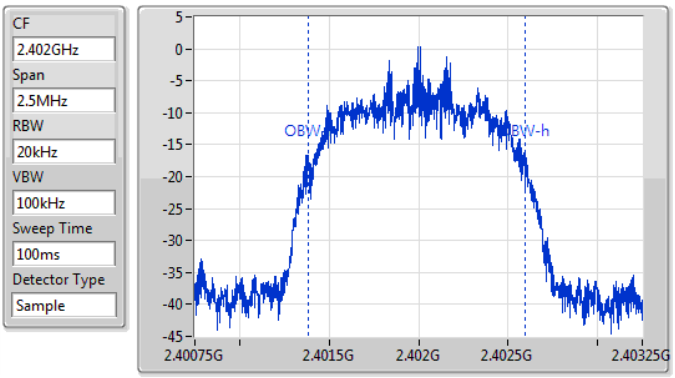
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.236M	2.479368G	2.480604G	1.193M	2.479395G	2.480588G	Inf	1

BT-EDR(3Mbps) EBW

2402MHz

12/08/2019



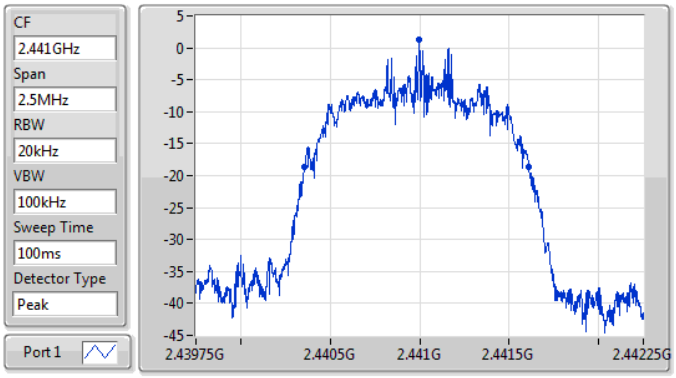


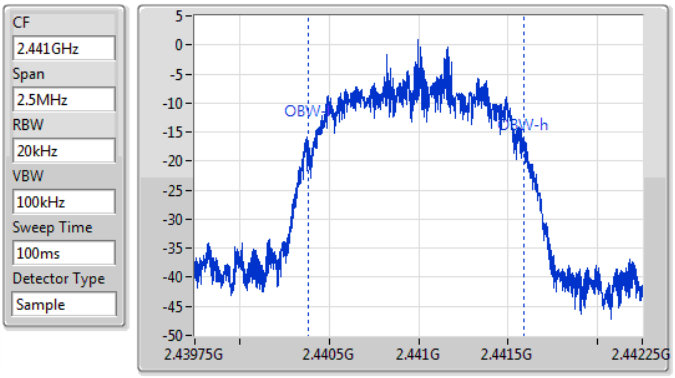
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.253M	2.401359G	2.402611G	1.212M	2.401384G	2.402596G	Inf	1

BT-EDR(3Mbps) EBW

2441MHz

12/08/2019



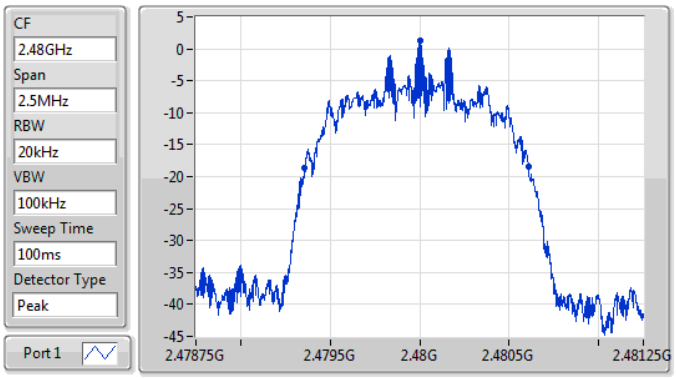


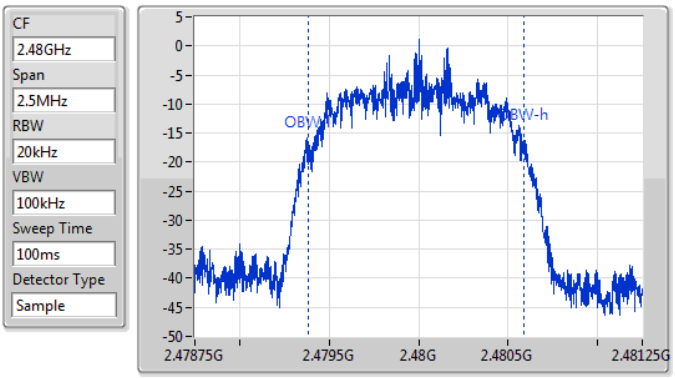
20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.255M	2.440355G	2.44161G	1.211M	2.44038G	2.441591G	Inf	1

BT-EDR(3Mbps) **EBW**

2480MHz

12/08/2019





20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.251M	2.479358G	2.480609G	1.204M	2.479384G	2.480588G	Inf	1

Summary

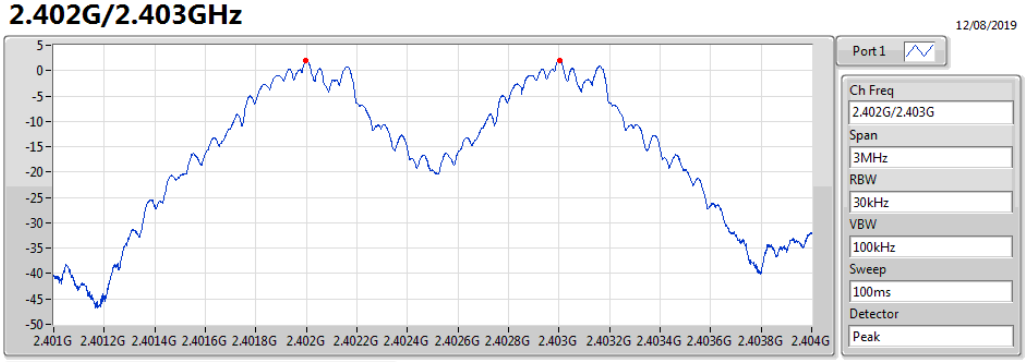
Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.002M	999k
BT-EDR(2Mbps)	1.0005M	997.5k
BT-EDR(3Mbps)	1.0005M	999k

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.401999G	2.403001G	1.002M	612.72k
2441MHz	Pass	2.441002G	2.442003G	1.0005M	611.8875k
2480MHz	Pass	2.479001G	2.48G	999k	611.055k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402002G	2.403003G	1.0005M	819.18k
2441MHz	Pass	2.441002G	2.442G	997.5k	821.844k
2480MHz	Pass	2.479001G	2.480001G	1.0005M	823.176k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.402004G	2.403004G	1.0005M	834.498k
2441MHz	Pass	2.441001G	2.442001G	1.0005M	835.83k
2480MHz	Pass	2.479002G	2.480001G	999k	833.166k

BT-BR(1Mbps) **Channel Separation**

2.402G/2.403GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.401999G	2.403001G	1.002M	612.72k

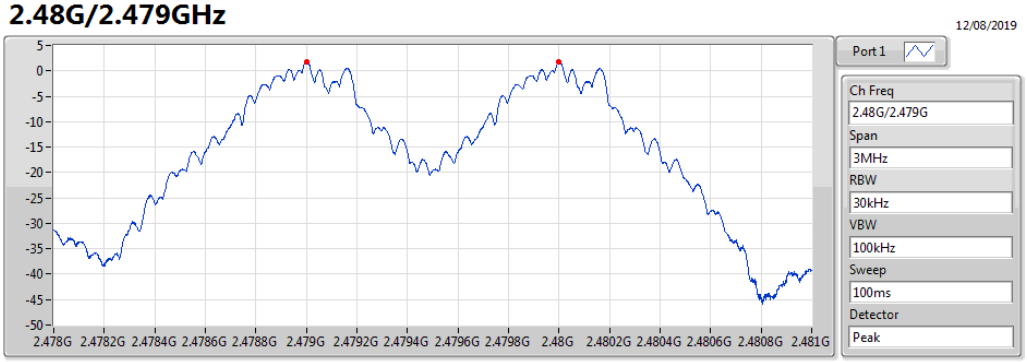
BT-BR(1Mbps) **Channel Separation**

2.441G/2.442GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.441002G	2.442003G	1.0005M	611.8875k

BT-BR(1Mbps) **Channel Separation**

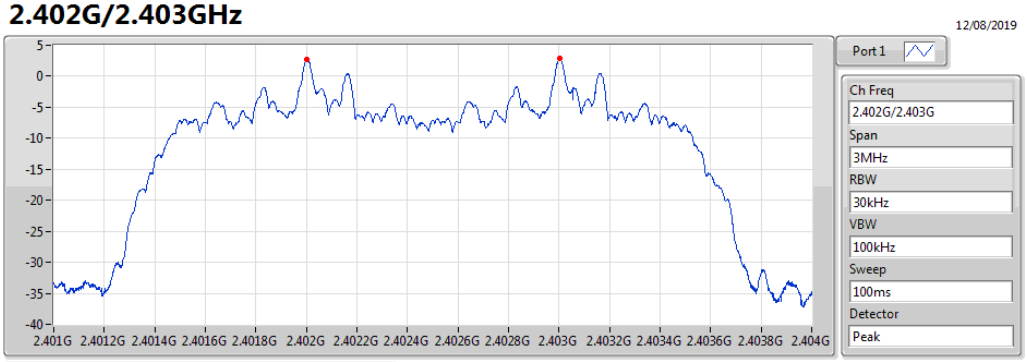
2.48G/2.479GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479001G	2.48G	999k	611.055k

BT-EDR(2Mbps) **Channel Separation**

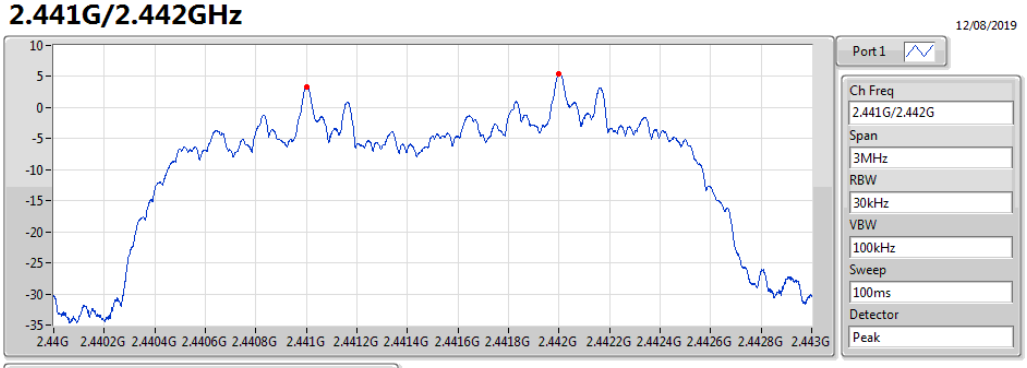
2.402G/2.403GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.402002G	2.403003G	1.0005M	819.18k

BT-EDR(2Mbps) **Channel Separation**

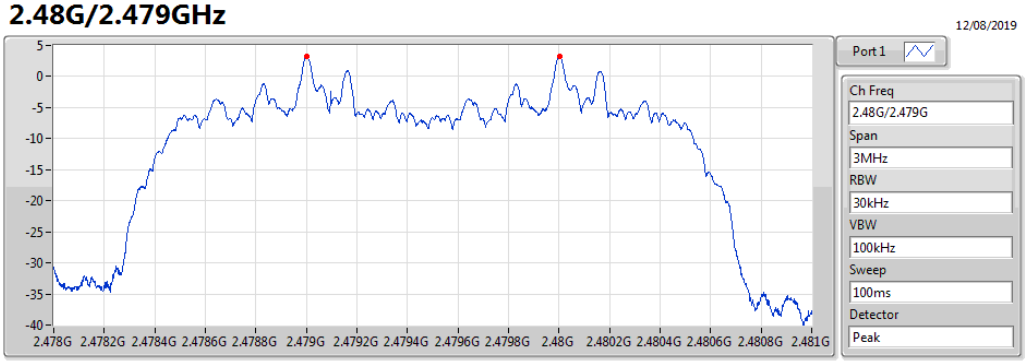
2.441G/2.442GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.441002G	2.442G	997.5k	821.844k

BT-EDR(2Mbps) **Channel Separation**

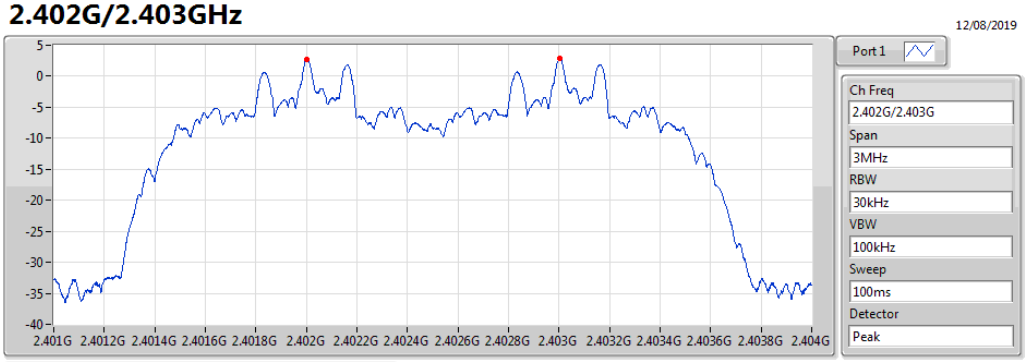
2.48G/2.479GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479001G	2.480001G	1.0005M	823.176k

BT-EDR(3Mbps) **Channel Separation**

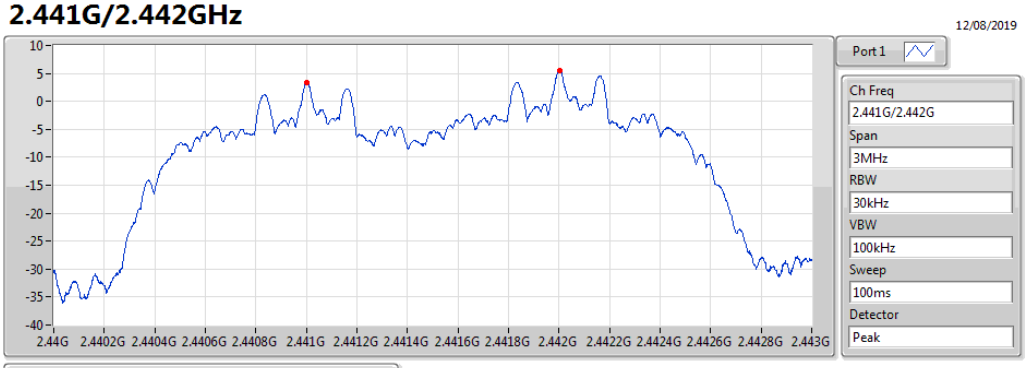
2.402G/2.403GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.402004G	2.403004G	1.0005M	834.498k

BT-EDR(3Mbps) **Channel Separation**

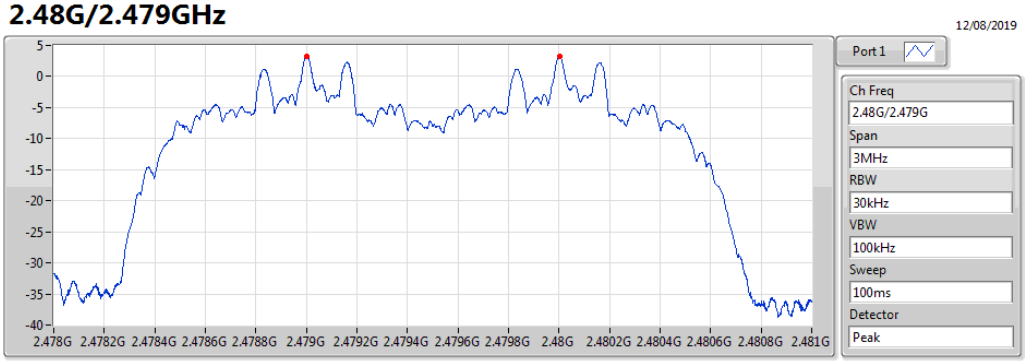
2.441G/2.442GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.441001G	2.442001G	1.0005M	835.83k

BT-EDR(3Mbps) **Channel Separation**

2.48G/2.479GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479002G	2.480001G	999k	833.166k

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	4.13	0.00259
BT-EDR(2Mbps)	5.70	0.00372
BT-EDR(3Mbps)	6.06	0.00404

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	0.69	4.06	21.00
2441MHz	Pass	0.69	4.13	21.00
2480MHz	Pass	0.69	4.03	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	0.69	4.82	21.00
2441MHz	Pass	0.69	5.49	21.00
2480MHz	Pass	0.69	5.70	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	0.69	4.98	21.00
2441MHz	Pass	0.69	5.72	21.00
2480MHz	Pass	0.69	6.06	21.00

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

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	3.30	0.00214
BT-EDR(2Mbps)	3.26	0.00212
BT-EDR(3Mbps)	3.27	0.00212

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	0.69	3.30	21.00
2441MHz	Pass	0.69	3.28	21.00
2480MHz	Pass	0.69	3.16	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	0.69	2.83	21.00
2441MHz	Pass	0.69	3.16	21.00
2480MHz	Pass	0.69	3.26	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	0.69	2.83	21.00
2441MHz	Pass	0.69	3.16	21.00
2480MHz	Pass	0.69	3.27	21.00

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

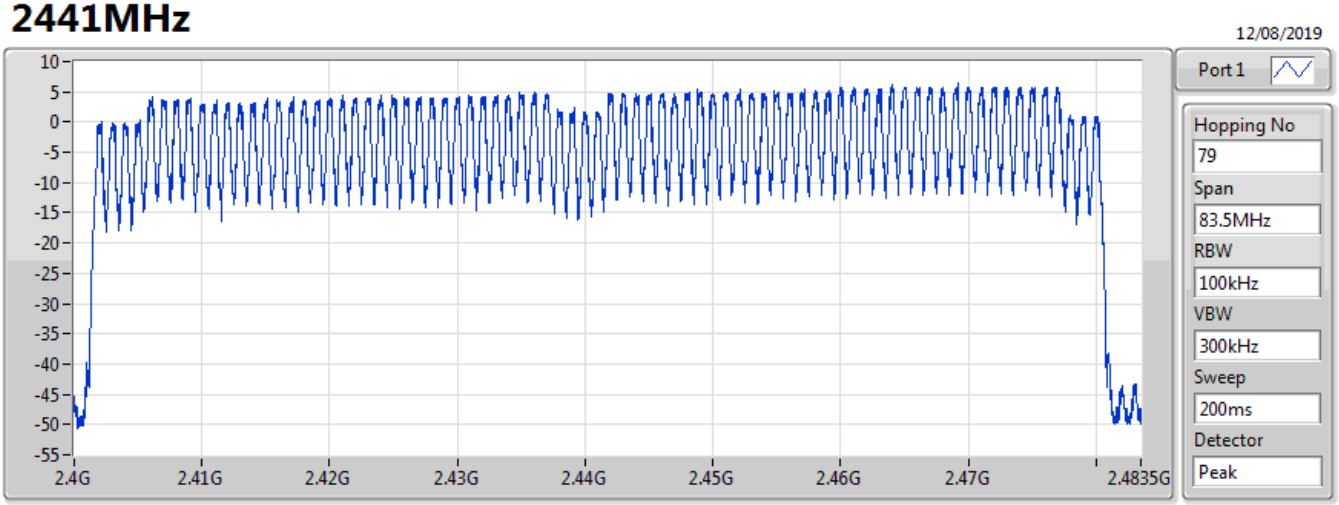
Summary

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

Result

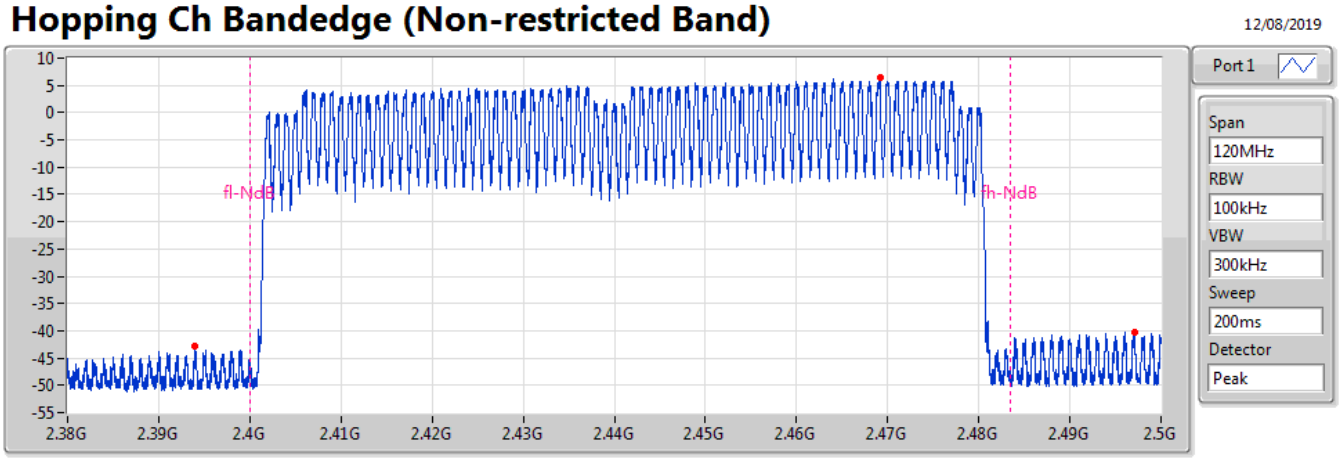
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2441MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2441MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2441MHz	Pass	79	15

BT-BR(1Mbps) Hopping Ch
2441MHz



Hopping No	Limit
79	15

BT-BR(1Mbps)
2441MHz
Hopping Ch Bandedge (Non-restricted Band)



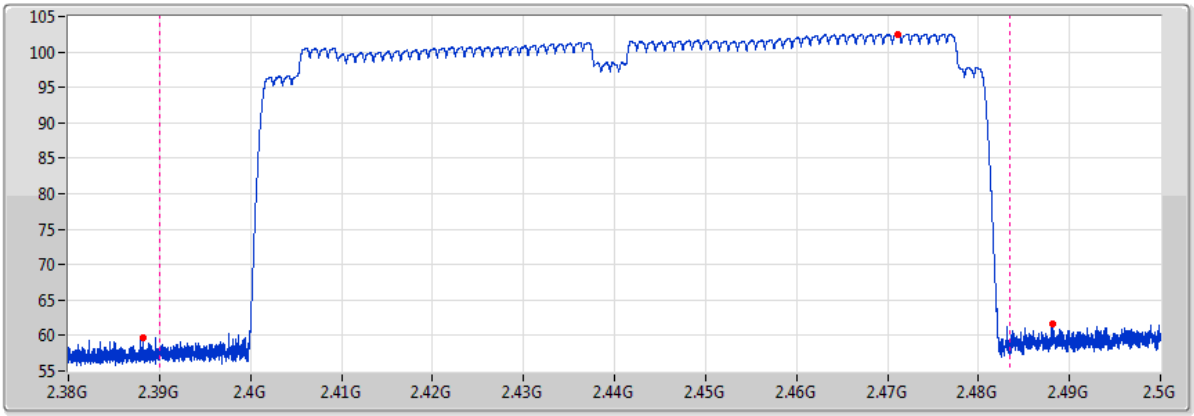
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-13.63	2.469175G	6.37	2.39392G	-42.85	2.497045G	-40.23

BT-BR(1Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)

12/08/2019



Span 120MHz
RBW 1MHz
VBW 3MHz
Sweep 200ms
Detector Peak

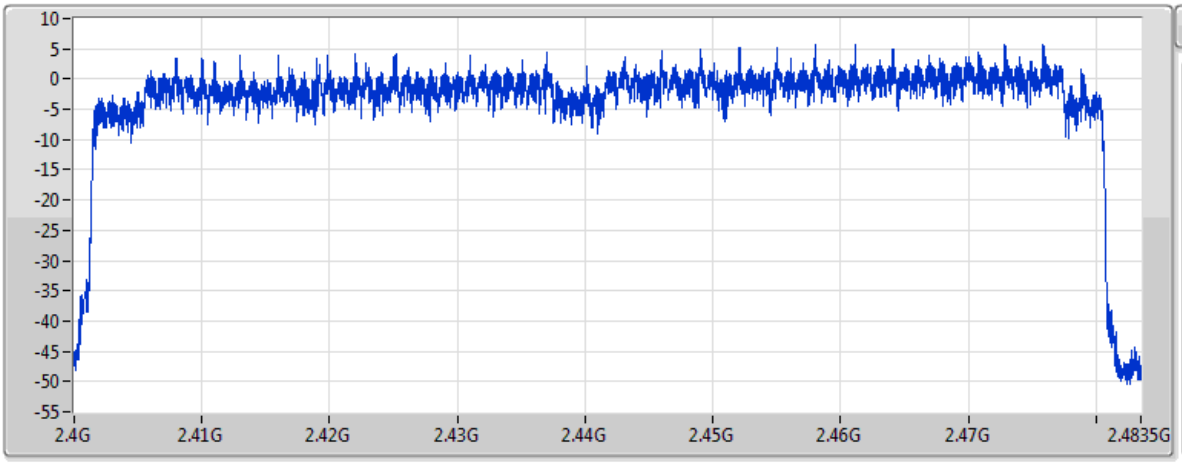
Ref(Hz)	Ref(dBuV/m)	BE-l(Hz)	PK(dBuV/m)	AV(dBuV/m)	BE-h(Hz)	PK(dBuV/m)	AV(dBuV/m)	LimPK(dBuV/	LimAV(dBuV/	Tx On(ms)	DCF(dB)
2.471155G	102.55	2.38825G	59.72	29.62	2.488225G	61.72	31.62	74	54	3.125	-30.1

BT-EDR(2Mbps)

Hopping Ch

2441MHz

12/08/2019



Port 1

Hopping No 79
Span 83.5MHz
RBW 100kHz
VBW 300kHz
Sweep 200ms
Detector Peak

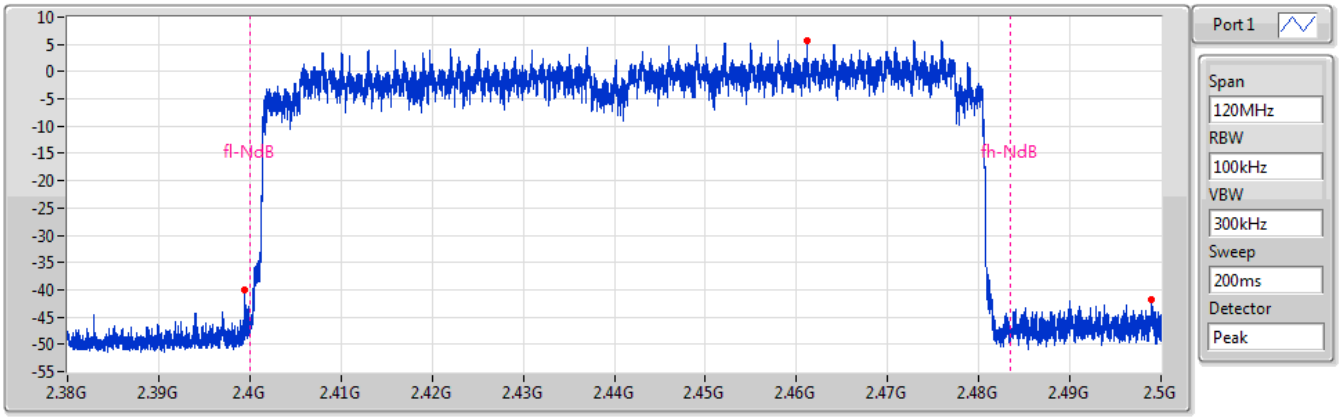
Hopping No	Limit
79	15

BT-EDR(2Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

12/08/2019



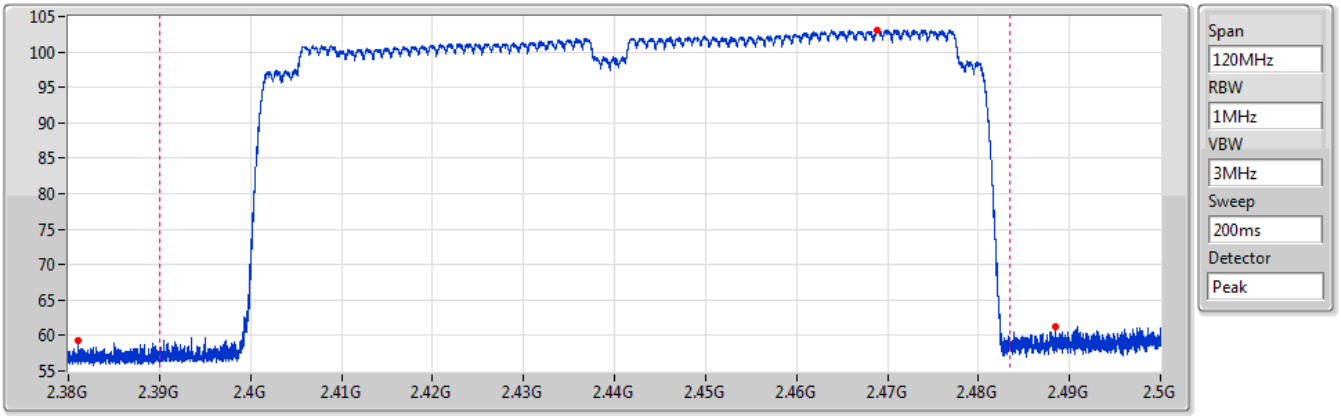
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-14.2	2.461165G	5.8	2.39947G	-40.03	2.498995G	-41.74

BT-EDR(2Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)

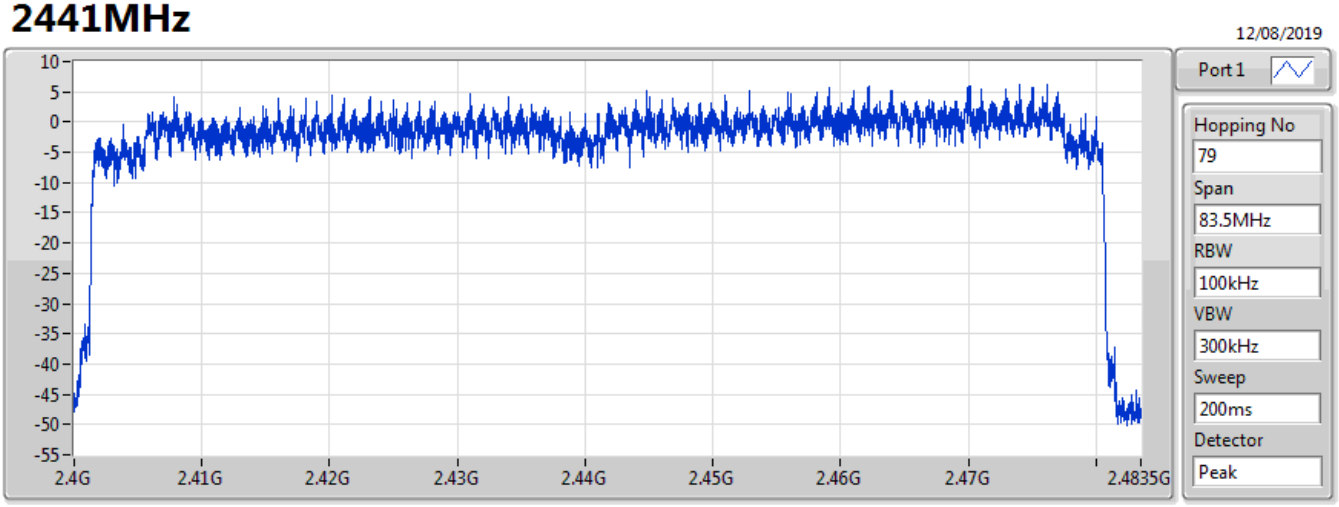
12/08/2019



Ref(Hz)	Ref(dBuV/m)	BE-l(Hz)	PK(dBuV/m)	AV(dBuV/m)	BE-h(Hz)	PK(dBuV/m)	AV(dBuV/m)	LimPK(dBuV/	LimAV(dBuV/	Tx On(ms)	DCF(dB)
2.46889G	103.09	2.38108G	59.34	29.24	2.48839G	61.25	31.15	74	54	3.125	-30.1

BT-EDR(3Mbps) Hopping Ch

2441MHz

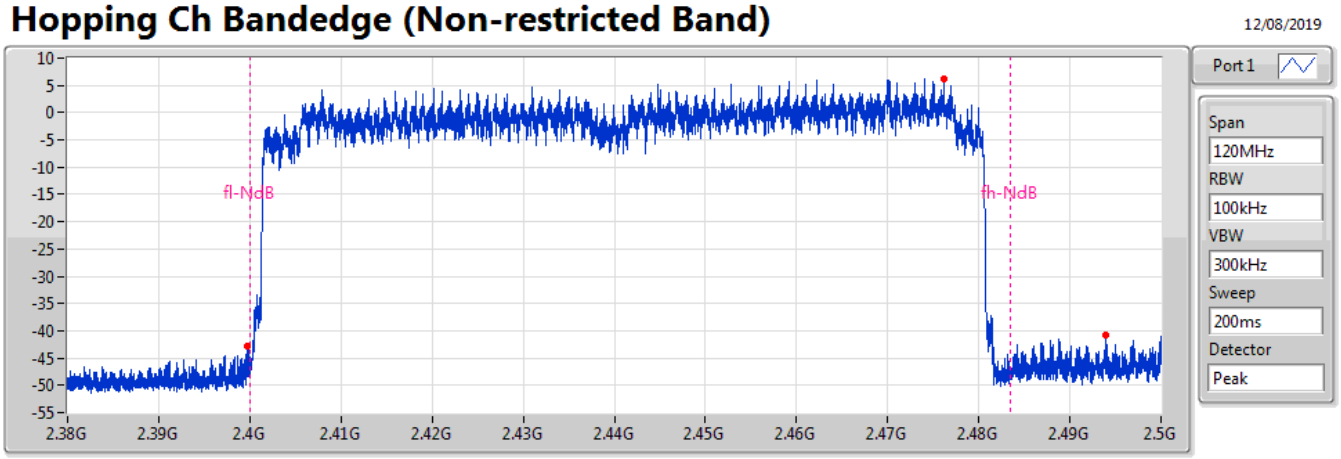


Hopping No	Limit
79	15

BT-EDR(3Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)



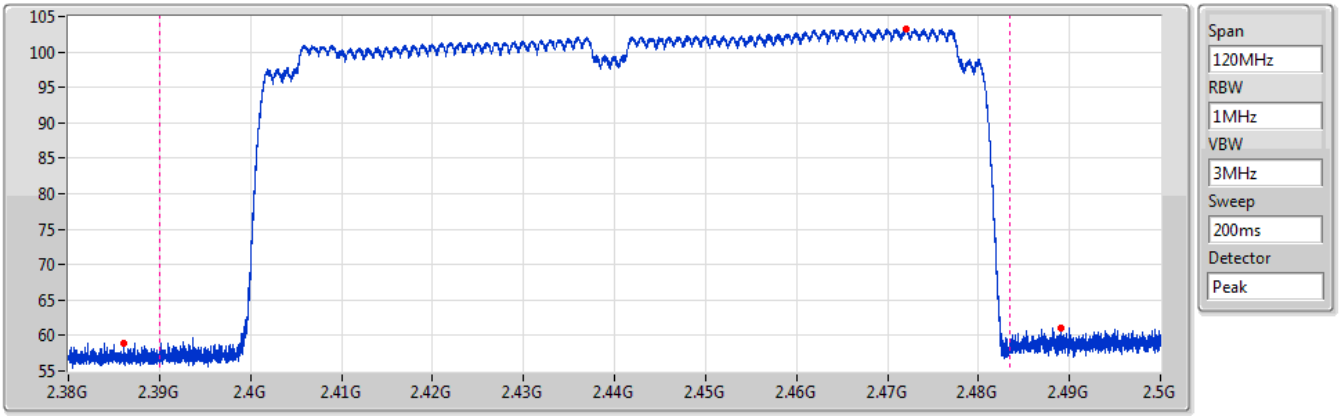
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-13.78	2.476165G	6.22	2.399755G	-42.72	2.493985G	-40.72

BT-EDR(3Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)

12/08/2019



Ref(Hz)	Ref(dBuV/m)	BE-l(Hz)	PK(dBuV/m)	AV(dBuV/m)	BE-h(Hz)	PK(dBuV/m)	AV(dBuV/m)	LimPK(dBuV/	LimAV(dBuV/	Tx On(ms)	DCF(dB)
2.47198G	103.26	2.386135G	58.96	28.86	2.48911G	61	30.9	74	54	3.125	-30.1

Summary

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	309.8862m
BT-EDR(2Mbps)	312.0182m
BT-EDR(3Mbps)	312.2314m

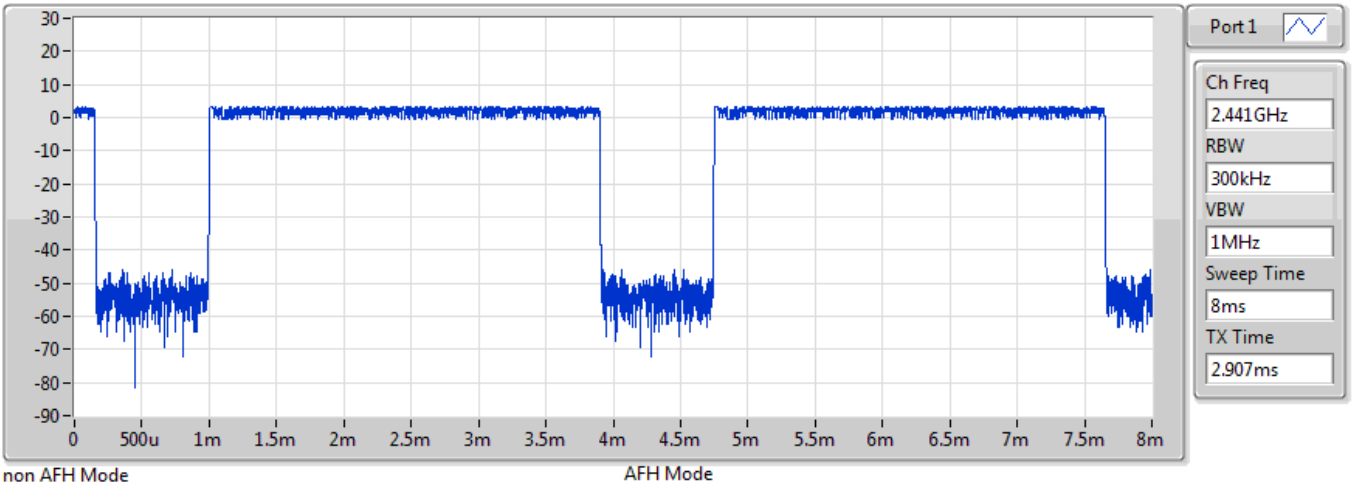
Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	309.8862m	400m	2.907m
BT-EDR(2Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	312.0182m	400m	2.927m
BT-EDR(3Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	312.2314m	400m	2.929m

BT-BR(1Mbps) Dwell

2441MHz

12/08/2019



non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	309.8862m	400m	2.907m

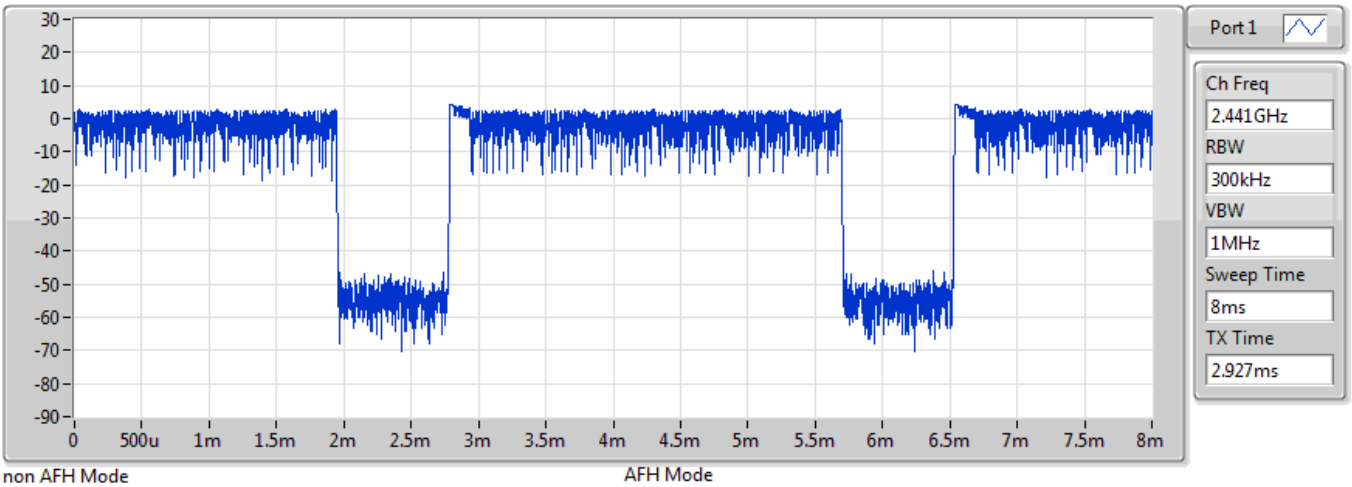
AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	154.9431m	400m	2.907m

BT-EDR(2Mbps) Dwell

2441MHz

26/08/2019



non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	312.0182m	400m	2.927m

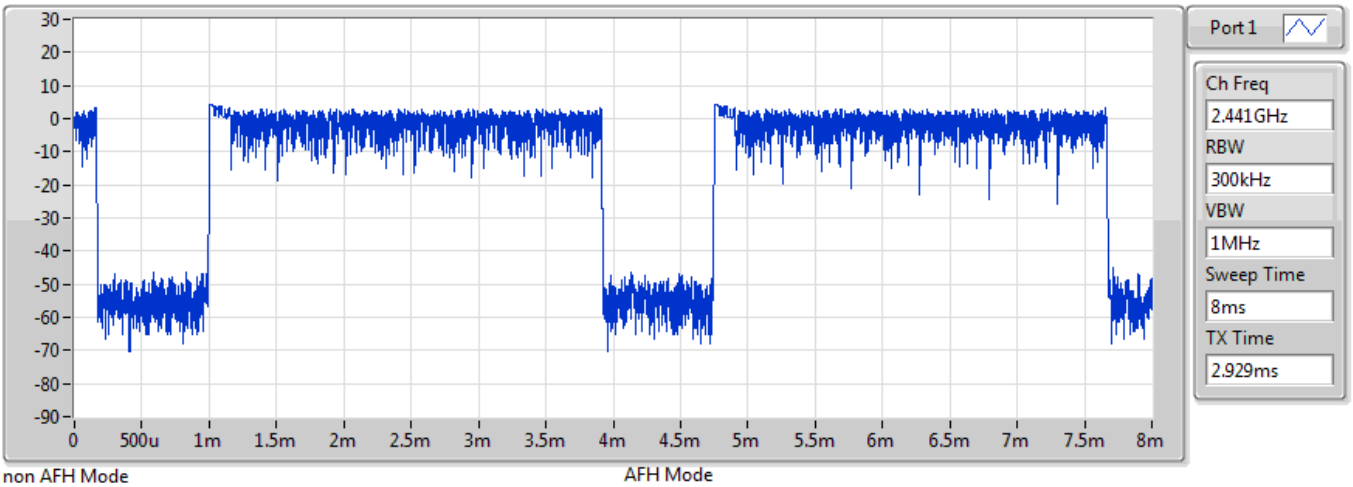
AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	156.0091m	400m	2.927m

BT-EDR(3Mbps) Dwell

2441MHz

26/08/2019



non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	312.2314m	400m	2.929m

AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
8	156.1157m	400m	2.929m

Summary

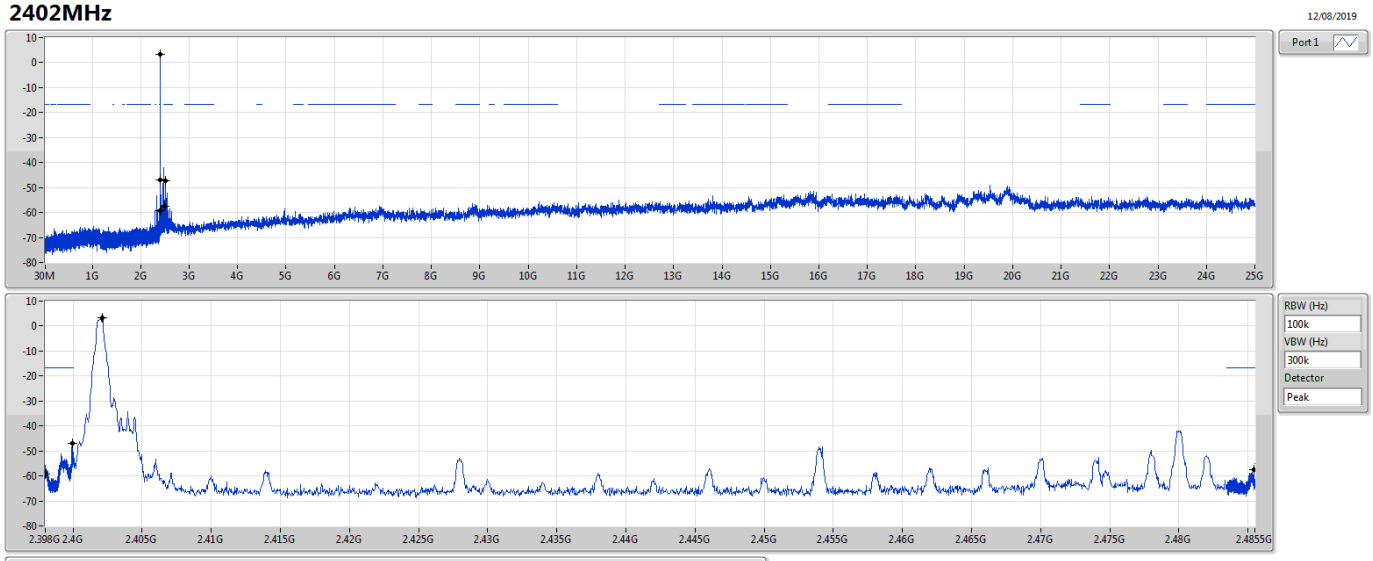
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.44083G	2.96	-17.04	2.39711G	-61.08	2.39915G	-63.43	2.485G	-56.58	2.51646G	-44.47	1
BT-EDR(2Mbps)	Pass	2.40213G	3.50	-16.50	2.398G	-60.91	2.39998G	-37.70	2.4855G	-56.39	2.5052G	-49.33	1
BT-EDR(3Mbps)	Pass	2.4018G	3.79	-16.21	2.398G	-60.88	2.4G	-37.52	2.48549G	-56.67	2.5052G	-48.28	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	Pass	2.40213G	3.37	-16.63	2.398G	-59.38	2.39996G	-47.03	2.48541G	-57.62	2.5052G	-47.24	1
2441MHz	Pass	2.44083G	2.96	-17.04	2.39711G	-61.08	2.39915G	-63.43	2.485G	-56.58	2.51646G	-44.47	1
2480MHz	Pass	2.47987G	3.05	-16.95	2.39208G	-61.67	2.4G	-56.18	2.48401G	-55.43	2.55586G	-46.47	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40213G	3.50	-16.50	2.398G	-60.91	2.39998G	-37.70	2.4855G	-56.39	2.5052G	-49.33	1
2441MHz	Pass	2.441G	4.09	-15.91	2.39711G	-64.21	2.39842G	-63.44	2.485G	-55.96	2.51646G	-47.40	1
2480MHz	Pass	2.47999G	3.51	-16.49	2.39652G	-59.81	2.39986G	-58.26	2.48402G	-54.35	2.55586G	-44.93	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.4018G	3.79	-16.21	2.398G	-60.88	2.4G	-37.52	2.48549G	-56.67	2.5052G	-48.28	1
2441MHz	Pass	2.44117G	4.09	-15.91	2.39741G	-61.54	2.3998G	-63.52	2.48503G	-55.19	2.51646G	-47.97	1
2480MHz	Pass	2.47999G	2.83	-17.17	2.39622G	-59.88	2.39986G	-56.82	2.48403G	-54.10	2.55586G	-48.84	1

BT-BR(1Mbps) **CSE NdB**

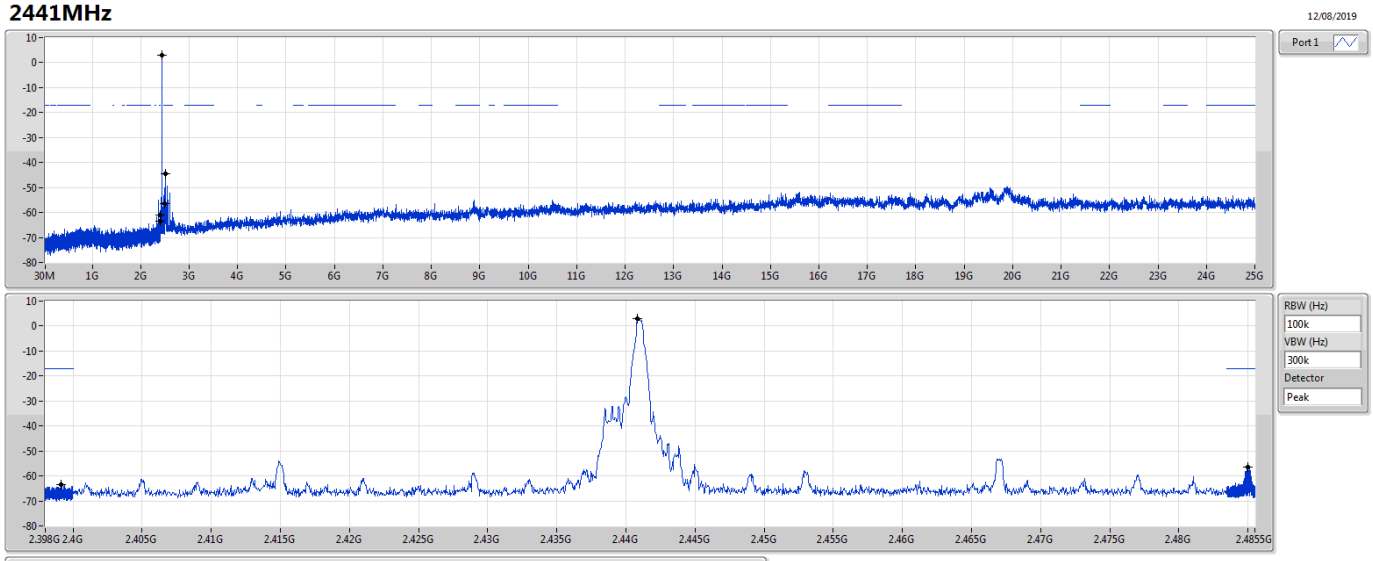
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40213G	3.37	-16.63	2.398G	-59.38	2.39996G	-47.03	2.48541G	-57.62	2.5052G	-47.24	1

BT-BR(1Mbps) **CSE NdB**

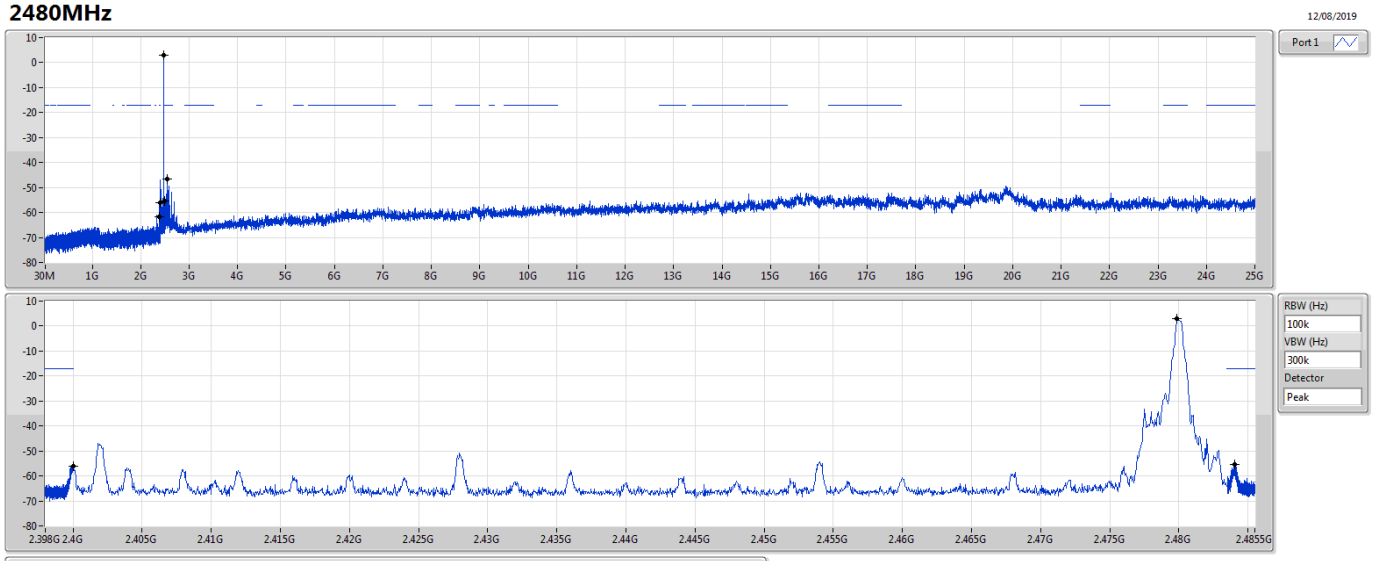
2441MHz



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	2.96	-17.04	2.39711G	-61.08	2.39915G	-63.43	2.485G	-56.58	2.51646G	-44.47	1

BT-BR(1Mbps) **CSE NdB**

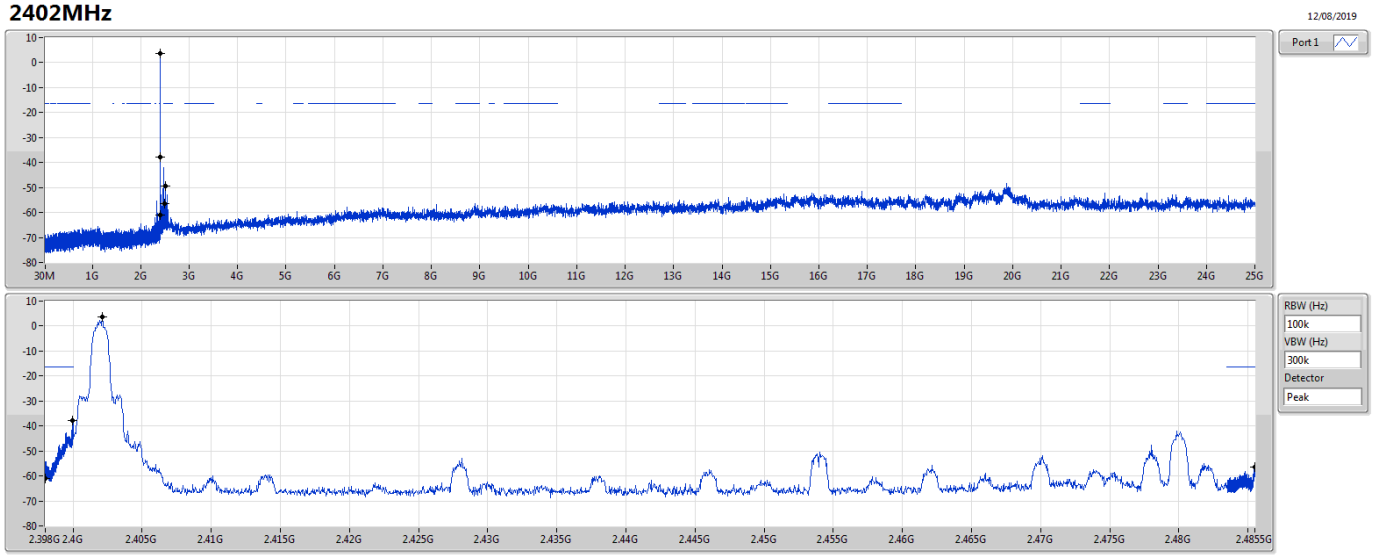
2480MHz



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	3.05	-16.95	2.39208G	-61.67	2.4G	-56.18	2.48401G	-55.43	2.55586G	-46.47	1

BT-EDR(2Mbps) **CSE NdB**

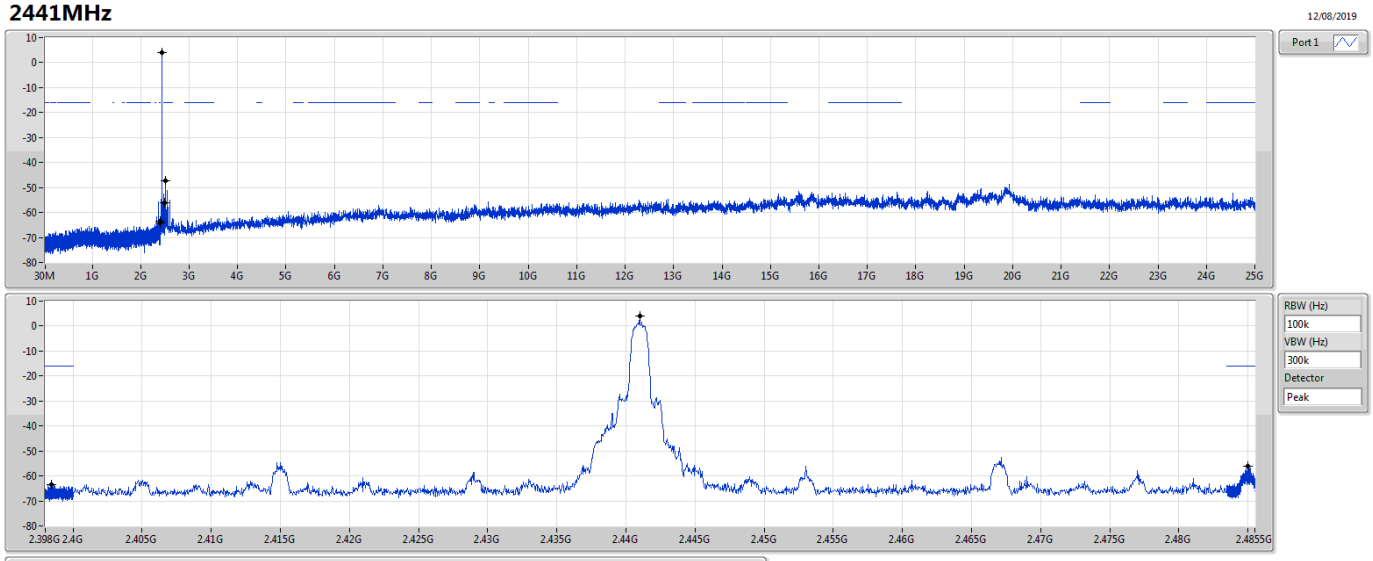
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40213G	3.50	-16.50	2.398G	-60.91	2.39998G	-37.70	2.4855G	-56.39	2.5052G	-49.33	1

BT-EDR(2Mbps) **CSE NdB**

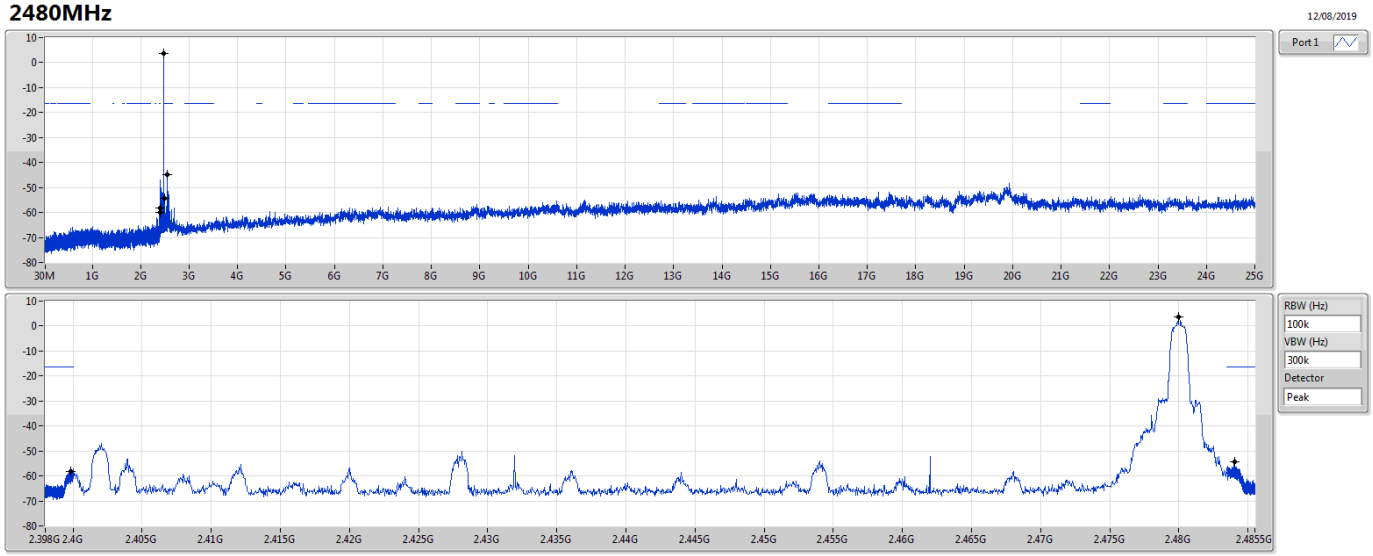
2441MHz



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	4.09	-15.91	2.39711G	-64.21	2.39842G	-63.44	2.485G	-55.96	2.51646G	-47.40	1

BT-EDR(2Mbps) **CSE NdB**

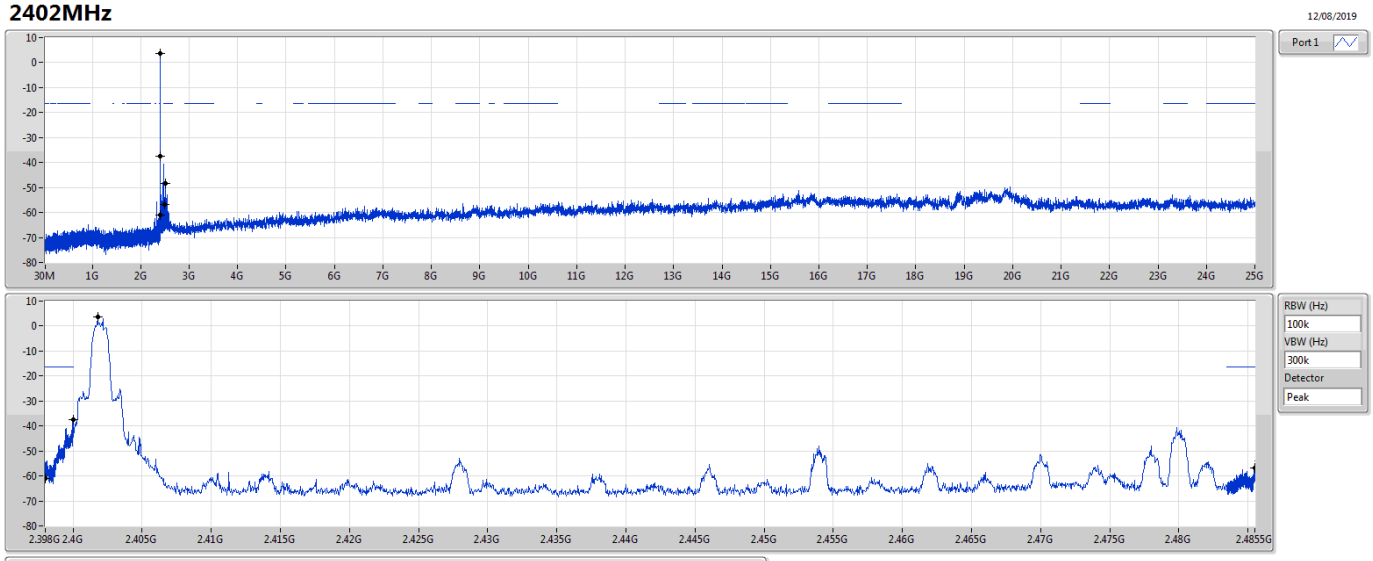
2480MHz



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	3.51	-16.49	2.39652G	-59.81	2.39986G	-58.26	2.48402G	-54.35	2.55586G	-44.93	1

BT-EDR(3Mbps) **CSE NdB**

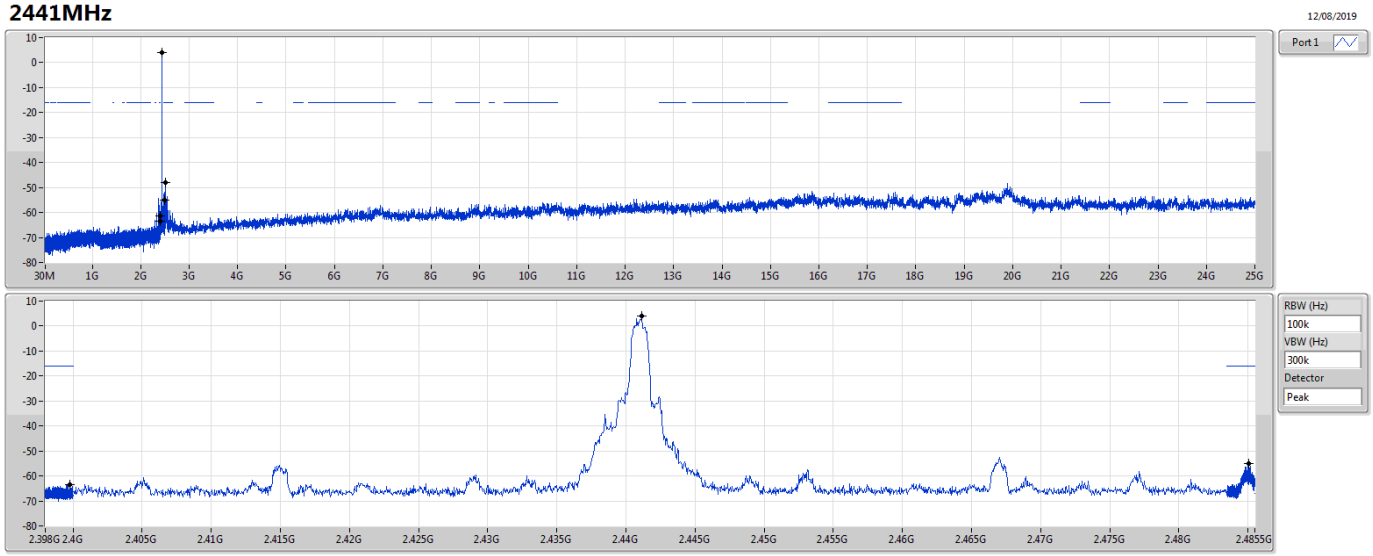
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4018G	3.79	-16.21	2.398G	-60.88	2.4G	-37.52	2.48549G	-56.67	2.5052G	-48.28	1

BT-EDR(3Mbps) **CSE NdB**

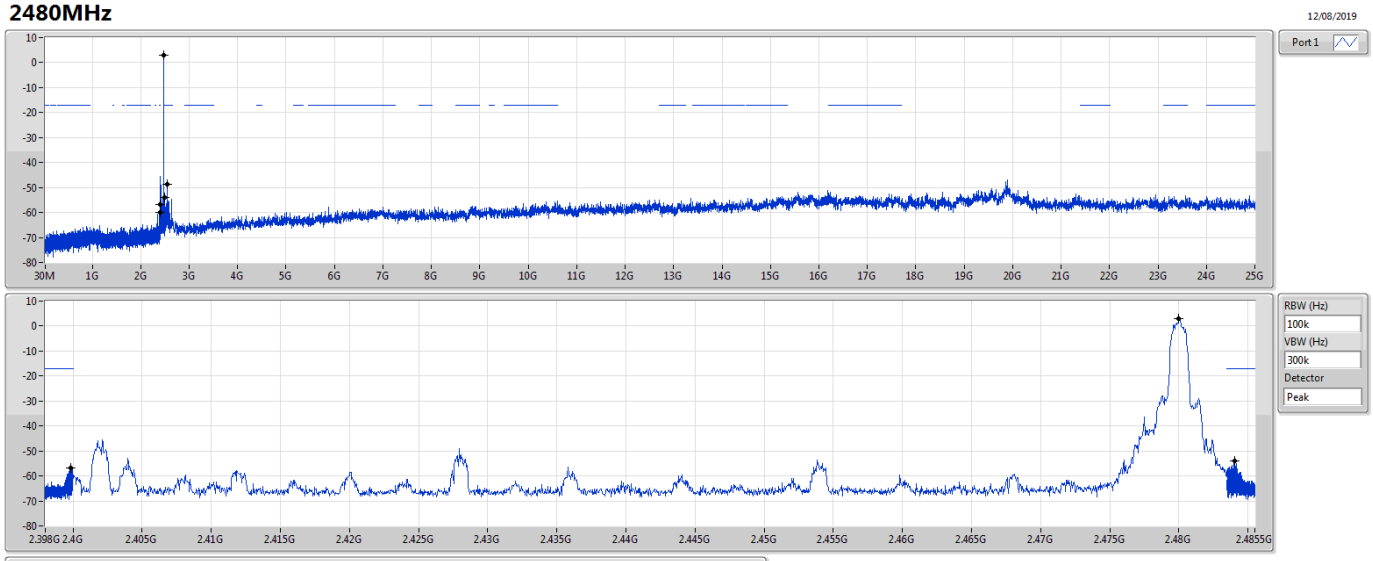
2441MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44117G	4.09	-15.91	2.39741G	-61.54	2.3998G	-63.52	2.48503G	-55.19	2.51646G	-47.97	1

BT-EDR(3Mbps) **CSE NdB**

2480MHz



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	2.83	-17.17	2.39622G	-59.88	2.39986G	-56.82	2.48403G	-54.10	2.55586G	-48.84	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-EDR(3Mbps)	Pass	PK	404.42M	42.34	46.00	-3.66	3	Horizontal	0	1.00	-

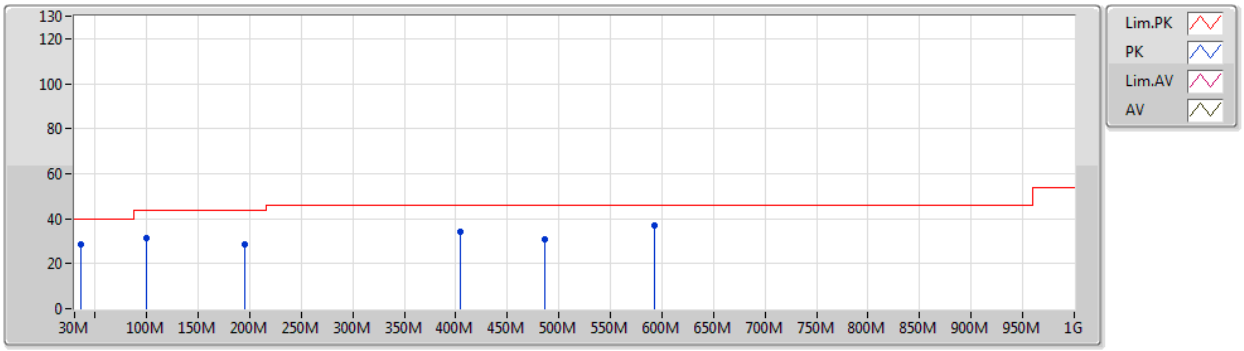
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-
2441MHz_USB	Pass	PK	35.82M	28.70	40.00	-11.30	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	99.84M	31.11	43.50	-12.39	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	194.9M	28.37	43.50	-15.13	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	404.42M	34.16	46.00	-11.84	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	485.9M	31.04	46.00	-14.96	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	592.6M	37.06	46.00	-8.94	3	Vertical	360	1.00	-
2441MHz_USB	Pass	PK	51.34M	27.91	40.00	-12.09	3	Horizontal	0	1.00	-
2441MHz_USB	Pass	PK	119.24M	29.16	43.50	-14.34	3	Horizontal	0	1.00	-
2441MHz_USB	Pass	PK	187.14M	39.40	43.50	-4.10	3	Horizontal	0	1.00	-
2441MHz_USB	Pass	PK	404.42M	42.34	46.00	-3.66	3	Horizontal	0	1.00	-
2441MHz_USB	Pass	PK	485.9M	33.85	46.00	-12.15	3	Horizontal	0	1.00	-
2441MHz_USB	Pass	PK	584.84M	34.78	46.00	-11.22	3	Horizontal	0	1.00	-

BT-EDR(3Mbps)

2441MHz_USB

15/08/2019

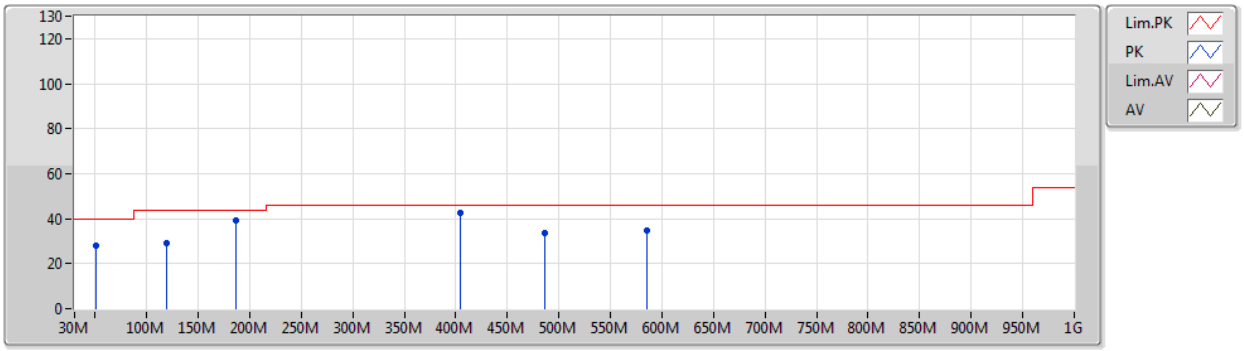


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	35.82M	28.70	40.00	-11.30	-5.25	3	Vertical	360	1.00	-	33.95	21.42	0.89	27.56
PK	99.84M	31.11	43.50	-12.39	-9.97	3	Vertical	360	1.00	-	41.08	15.89	1.52	27.38
PK	194.9M	28.37	43.50	-15.13	-9.89	3	Vertical	360	1.00	-	38.26	14.89	2.18	26.96
PK	404.42M	34.16	46.00	-11.84	-2.14	3	Vertical	360	1.00	-	36.30	21.99	3.20	27.33
PK	485.9M	31.04	46.00	-14.96	-0.49	3	Vertical	360	1.00	-	31.53	23.75	3.55	27.79
PK	592.6M	37.06	46.00	-8.94	1.55	3	Vertical	360	1.00	-	35.51	25.56	4.04	28.05

BT-EDR(3Mbps)

2441MHz_USB

15/08/2019



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)
PK	51.34M	27.91	40.00	-12.09	-12.89	3	Horizontal	0	1.00	-	40.80	13.57	1.06	27.52
PK	119.24M	29.16	43.50	-14.34	-8.16	3	Horizontal	0	1.00	-	37.32	17.48	1.67	27.31
PK	187.14M	39.40	43.50	-4.10	-10.03	3	Horizontal	0	1.00	-	49.43	14.83	2.14	27.00
PK	404.42M	42.34	46.00	-3.66	-2.14	3	Horizontal	0	1.00	-	44.48	21.99	3.20	27.33
PK	485.9M	33.85	46.00	-12.15	-0.49	3	Horizontal	0	1.00	-	34.34	23.75	3.55	27.79
PK	584.84M	34.78	46.00	-11.22	1.44	3	Horizontal	0	1.00	-	33.34	25.50	3.99	28.05

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	4.8823G	62.39	74.00	-11.61	3	Horizontal	317	2.58	-
BT-EDR(3Mbps)	Pass	PK	2.4854G	62.11	74.00	-11.89	3	Vertical	180	1.43	-

Result

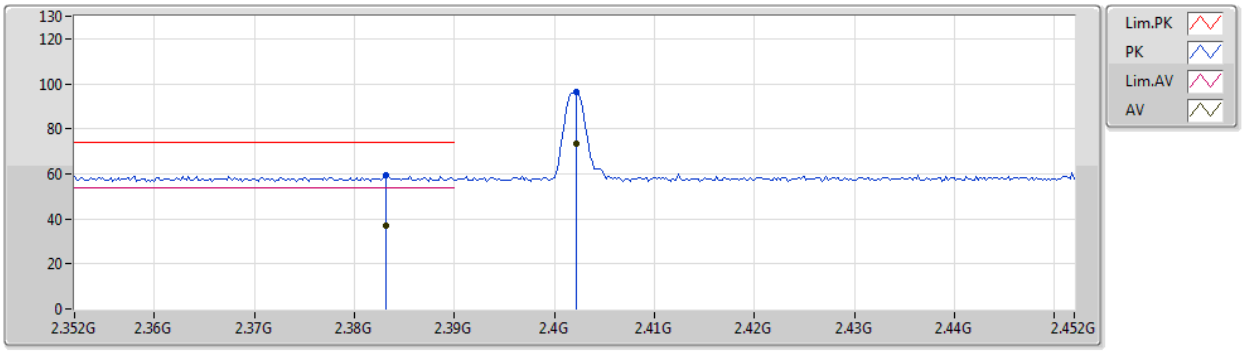
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TX	Pass	AV	2.3832G	37.04	54.00	-16.96	3	Vertical	182	1.36	-
2402MHz_TX	Pass	AV	2.4022G	73.63	Inf	-Inf	3	Vertical	182	1.36	-
2402MHz_TX	Pass	PK	2.3832G	59.54	74.00	-14.46	3	Vertical	182	1.36	-
2402MHz_TX	Pass	PK	2.4022G	96.13	Inf	-Inf	3	Vertical	182	1.36	-
2402MHz_TX	Pass	AV	2.3552G	36.93	54.00	-17.07	3	Horizontal	332	1.25	-
2402MHz_TX	Pass	AV	2.4022G	70.54	Inf	-Inf	3	Horizontal	332	1.25	-
2402MHz_TX	Pass	PK	2.3552G	59.43	74.00	-14.57	3	Horizontal	332	1.25	-
2402MHz_TX	Pass	PK	2.4022G	93.04	Inf	-Inf	3	Horizontal	332	1.25	-
2402MHz_TX	Pass	AV	4.80432G	37.38	54.00	-16.62	3	Vertical	143	2.49	-
2402MHz_TX	Pass	PK	4.80432G	59.88	74.00	-14.12	3	Vertical	143	2.49	-
2402MHz_TX	Pass	AV	4.8043G	39.80	54.00	-14.20	3	Horizontal	126	1.95	-
2402MHz_TX	Pass	PK	4.8043G	62.30	74.00	-11.70	3	Horizontal	126	1.95	-
2441MHz_TX	Pass	AV	2.389G	36.58	54.00	-17.42	3	Vertical	121	1.00	-
2441MHz_TX	Pass	AV	2.441G	77.10	Inf	-Inf	3	Vertical	121	1.00	-
2441MHz_TX	Pass	AV	2.5186G	39.36	54.00	-14.64	3	Vertical	121	1.00	-
2441MHz_TX	Pass	PK	2.389G	59.08	74.00	-14.92	3	Vertical	121	1.00	-
2441MHz_TX	Pass	PK	2.441G	99.60	Inf	-Inf	3	Vertical	121	1.00	-
2441MHz_TX	Pass	PK	2.5186G	61.86	74.00	-12.14	3	Vertical	121	1.00	-
2441MHz_TX	Pass	AV	2.369G	36.14	54.00	-17.86	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	AV	2.441G	75.95	Inf	-Inf	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	AV	2.519G	39.15	54.00	-14.85	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	PK	2.369G	58.64	74.00	-15.36	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	PK	2.441G	98.45	Inf	-Inf	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	PK	2.519G	61.65	74.00	-12.35	3	Horizontal	201	2.84	-
2441MHz_TX	Pass	AV	4.88164G	38.26	54.00	-15.74	3	Vertical	355	1.53	-
2441MHz_TX	Pass	PK	4.88164G	60.76	74.00	-13.24	3	Vertical	202	3.00	-
2441MHz_TX	Pass	AV	4.8823G	39.89	54.00	-14.11	3	Horizontal	317	2.58	-
2441MHz_TX	Pass	PK	4.8823G	62.39	74.00	-11.61	3	Horizontal	317	2.58	-
2480MHz_TX	Pass	AV	2.4798G	76.86	Inf	-Inf	3	Vertical	127	1.08	-
2480MHz_TX	Pass	AV	2.51G	37.05	54.00	-16.95	3	Vertical	127	1.08	-
2480MHz_TX	Pass	PK	2.4798G	99.36	Inf	-Inf	3	Vertical	127	1.08	-
2480MHz_TX	Pass	PK	2.51G	59.55	74.00	-14.45	3	Vertical	127	1.08	-
2480MHz_TX	Pass	AV	2.4798G	74.98	Inf	-Inf	3	Horizontal	199	2.78	-
2480MHz_TX	Pass	AV	2.5058G	37.31	54.00	-16.69	3	Horizontal	199	2.78	-
2480MHz_TX	Pass	PK	2.4798G	97.48	Inf	-Inf	3	Horizontal	199	2.78	-
2480MHz_TX	Pass	PK	2.5058G	59.81	74.00	-14.19	3	Horizontal	199	2.78	-
2480MHz_TX	Pass	AV	4.95963G	36.65	54.00	-17.35	3	Vertical	122	1.50	-
2480MHz_TX	Pass	PK	4.95963G	59.15	74.00	-14.85	3	Vertical	122	1.50	-
2480MHz_TX	Pass	AV	4.95964G	39.11	54.00	-14.89	3	Horizontal	311	2.69	-
2480MHz_TX	Pass	PK	4.95964G	61.61	74.00	-12.39	3	Horizontal	311	2.69	-
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TX	Pass	AV	2.3798G	36.07	54.00	-17.93	3	Vertical	333	1.34	-
2402MHz_TX	Pass	AV	2.4018G	72.04	Inf	-Inf	3	Vertical	333	1.34	-
2402MHz_TX	Pass	PK	2.3798G	58.57	74.00	-15.43	3	Vertical	333	1.34	-
2402MHz_TX	Pass	PK	2.4018G	94.54	Inf	-Inf	3	Vertical	333	1.34	-
2402MHz_TX	Pass	AV	2.3618G	36.95	54.00	-17.05	3	Horizontal	15	1.57	-
2402MHz_TX	Pass	AV	2.4018G	68.56	Inf	-Inf	3	Horizontal	15	1.57	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz_TX	Pass	PK	2.3618G	59.45	74.00	-14.55	3	Horizontal	141	1.57	-
2402MHz_TX	Pass	PK	2.4018G	91.06	Inf	-Inf	3	Horizontal	142	1.57	-
2402MHz_TX	Pass	AV	4.80394G	34.76	54.00	-19.24	3	Vertical	139	2.34	-
2402MHz_TX	Pass	PK	4.80394G	57.26	74.00	-16.74	3	Vertical	139	2.34	-
2402MHz_TX	Pass	AV	4.8037G	32.60	54.00	-21.40	3	Horizontal	0	1.50	-
2402MHz_TX	Pass	PK	4.8037G	55.10	74.00	-18.90	3	Horizontal	0	1.50	-
2441MHz_TX	Pass	AV	2.377G	38.88	54.00	-15.12	3	Vertical	180	1.43	-
2441MHz_TX	Pass	AV	2.441G	80.01	Inf	-Inf	3	Vertical	180	1.43	-
2441MHz_TX	Pass	AV	2.4854G	39.61	54.00	-14.39	3	Vertical	180	1.43	-
2441MHz_TX	Pass	PK	2.377G	61.38	74.00	-12.62	3	Vertical	180	1.43	-
2441MHz_TX	Pass	PK	2.441G	102.51	Inf	-Inf	3	Vertical	180	1.43	-
2441MHz_TX	Pass	PK	2.4854G	62.11	74.00	-11.89	3	Vertical	180	1.43	-
2441MHz_TX	Pass	AV	2.3462G	39.02	54.00	-14.98	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	AV	2.4406G	73.55	Inf	-Inf	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	AV	2.4918G	38.45	54.00	-15.55	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	PK	2.3462G	61.52	74.00	-12.48	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	PK	2.4406G	96.05	Inf	-Inf	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	PK	2.4918G	60.95	74.00	-13.05	3	Horizontal	173	1.00	-
2441MHz_TX	Pass	AV	4.88164G	34.15	54.00	-19.85	3	Vertical	135	2.42	-
2441MHz_TX	Pass	PK	4.88164G	56.65	74.00	-17.35	3	Vertical	135	2.42	-
2441MHz_TX	Pass	AV	4.882G	34.59	54.00	-19.41	3	Horizontal	138	1.80	-
2441MHz_TX	Pass	PK	4.882G	57.09	74.00	-16.91	3	Horizontal	138	1.80	-
2480MHz_TX	Pass	AV	2.48G	79.01	Inf	-Inf	3	Vertical	178	1.52	-
2480MHz_TX	Pass	AV	2.484G	37.12	54.00	-16.88	3	Vertical	178	1.52	-
2480MHz_TX	Pass	PK	2.48G	101.51	Inf	-Inf	3	Vertical	178	1.52	-
2480MHz_TX	Pass	PK	2.484G	59.62	74.00	-14.38	3	Vertical	178	1.52	-
2480MHz_TX	Pass	AV	2.48G	70.33	Inf	-Inf	3	Horizontal	0	1.23	-
2480MHz_TX	Pass	AV	2.4898G	37.02	54.00	-16.98	3	Horizontal	0	1.23	-
2480MHz_TX	Pass	PK	2.48G	92.83	Inf	-Inf	3	Horizontal	0	1.23	-
2480MHz_TX	Pass	PK	2.4898G	59.52	74.00	-14.48	3	Horizontal	0	1.23	-
2480MHz_TX	Pass	AV	4.95982G	32.92	54.00	-21.08	3	Vertical	319	1.73	-
2480MHz_TX	Pass	PK	4.95982G	55.42	74.00	-18.58	3	Vertical	319	1.73	-
2480MHz_TX	Pass	AV	4.96G	33.18	54.00	-20.82	3	Horizontal	6	1.34	-
2480MHz_TX	Pass	PK	4.96G	55.68	74.00	-18.32	3	Horizontal	6	1.34	-

BT-BR(1Mbps)

2402MHz_TX

14/08/2019

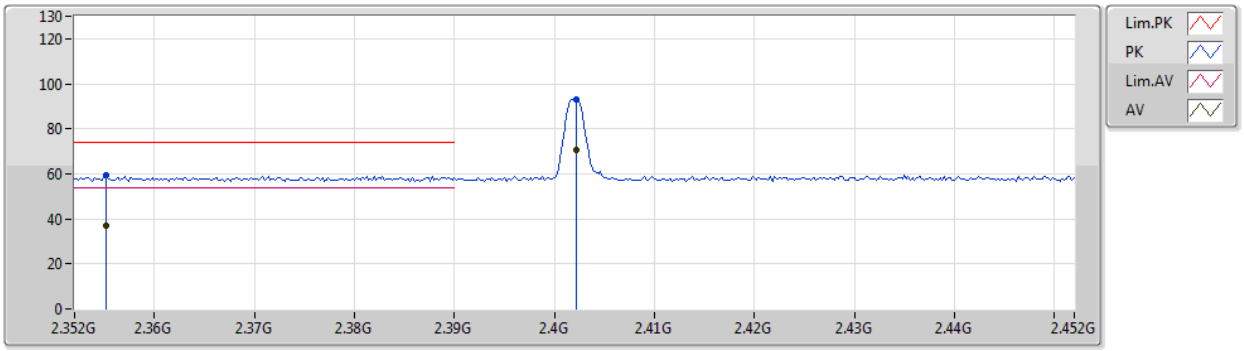


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.3832G	37.04	54.00	-16.96	5.48	3	Vertical	182	1.36	-	27.57	3.99	-
AV	2.4022G	73.63	Inf	-Inf	42.12	3	Vertical	182	1.36	-	27.50	4.01	-
PK	2.3832G	59.54	74.00	-14.46	27.98	3	Vertical	182	1.36	-	27.57	3.99	-
PK	2.4022G	96.13	Inf	-Inf	64.62	3	Vertical	182	1.36	-	27.50	4.01	-

BT-BR(1Mbps)

2402MHz_TX

14/08/2019

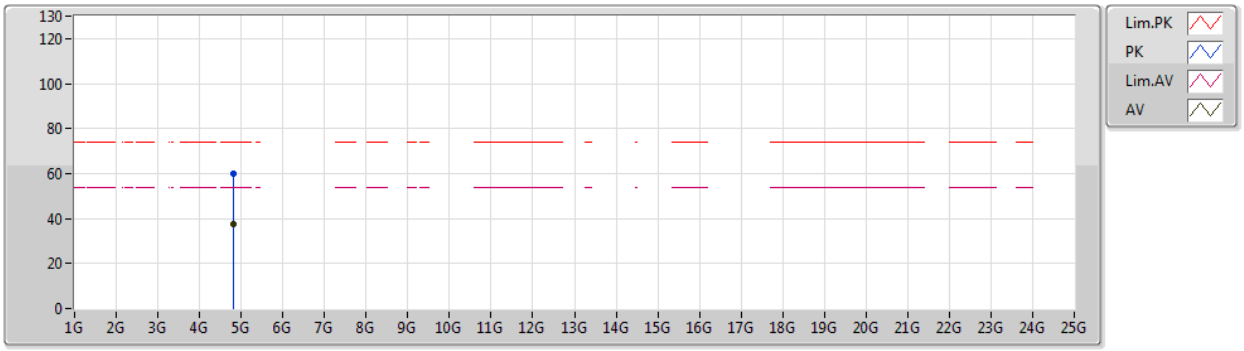


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.3552G	36.93	54.00	-17.07	5.29	3	Horizontal	332	1.25	-	27.68	3.96	-
AV	2.4022G	70.54	Inf	-Inf	39.03	3	Horizontal	332	1.25	-	27.50	4.01	-
PK	2.3552G	59.43	74.00	-14.57	27.79	3	Horizontal	332	1.25	-	27.68	3.96	-
PK	2.4022G	93.04	Inf	-Inf	61.53	3	Horizontal	332	1.25	-	27.50	4.01	-

BT-BR(1Mbps)

2402MHz_TX

14/08/2019

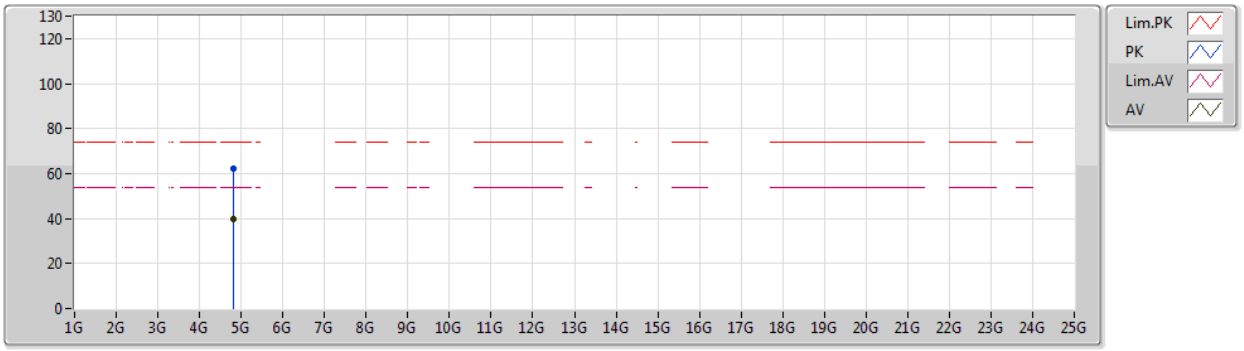


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.80432G	37.38	54.00	-16.62	30.28	3	Vertical	143	2.49	-	31.10	5.78	29.78
PK	4.80432G	59.88	74.00	-14.12	52.78	3	Vertical	143	2.49	-	31.10	5.78	29.78

BT-BR(1Mbps)

2402MHz_TX

14/08/2019

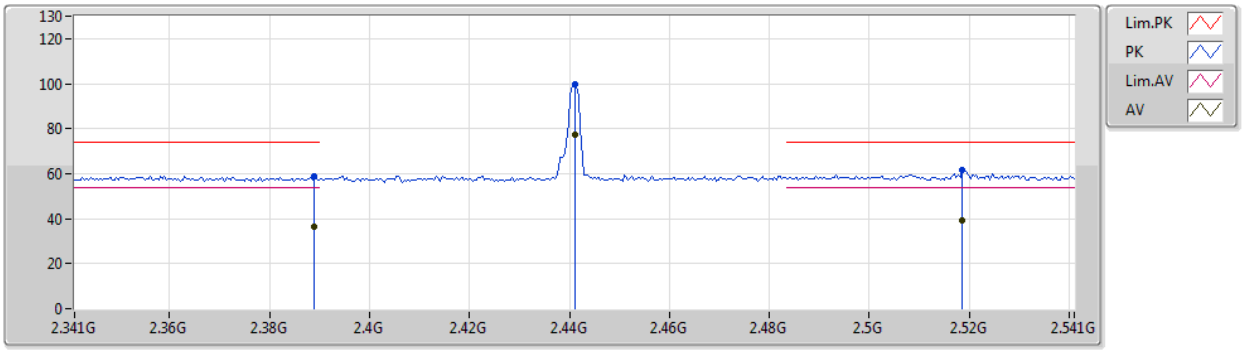


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.8043G	39.80	54.00	-14.20	32.70	3	Horizontal	126	1.95	-	31.10	5.78	29.78
PK	4.8043G	62.30	74.00	-11.70	55.20	3	Horizontal	126	1.95	-	31.10	5.78	29.78

BT-BR(1Mbps)

2441MHz_TX

13/08/2019

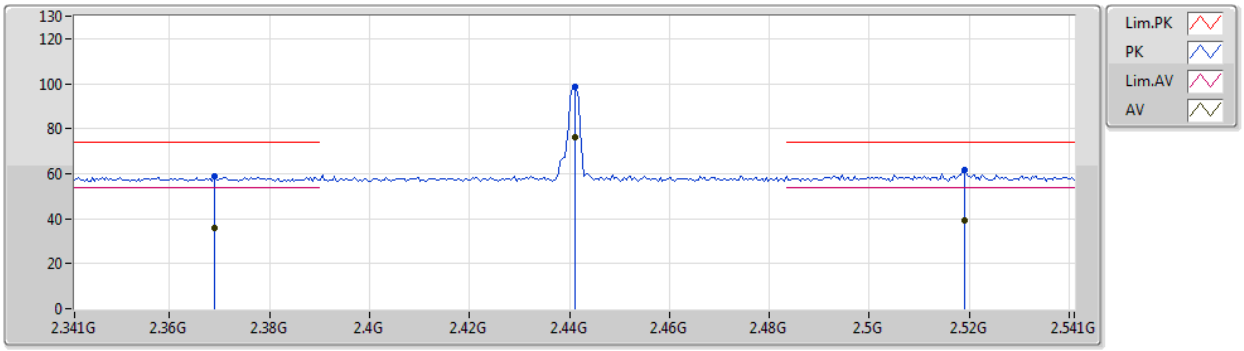


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.389G	36.58	54.00	-17.42	2.83	3	Vertical	121	1.00	-	27.64	6.11	-
AV	2.441G	77.10	Inf	-Inf	43.41	3	Vertical	121	1.00	-	27.56	6.13	-
AV	2.5186G	39.36	54.00	-14.64	5.66	3	Vertical	121	1.00	-	27.54	6.16	-
PK	2.389G	59.08	74.00	-14.92	25.33	3	Vertical	121	1.00	-	27.64	6.11	-
PK	2.441G	99.60	Inf	-Inf	65.91	3	Vertical	121	1.00	-	27.56	6.13	-
PK	2.5186G	61.86	74.00	-12.14	28.16	3	Vertical	121	1.00	-	27.54	6.16	-

BT-BR(1Mbps)

2441MHz_TX

13/08/2019

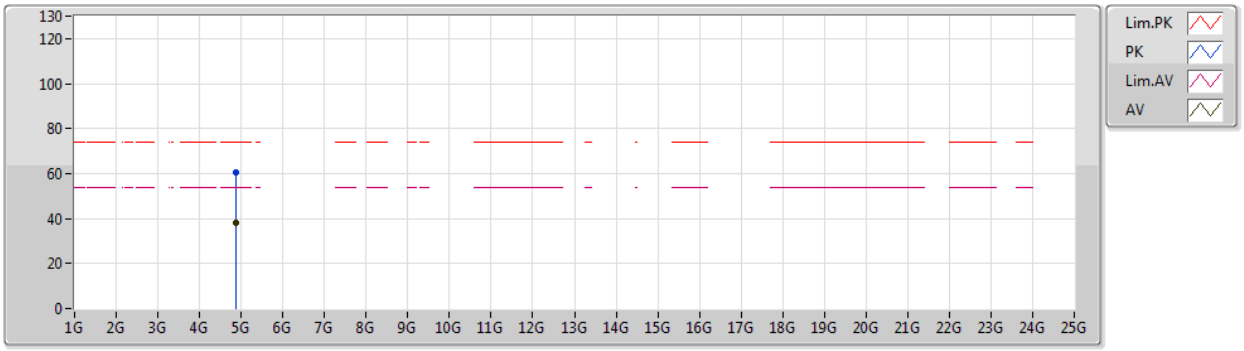


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.369G	36.14	54.00	-17.86	2.30	3	Horizontal	201	2.84	-	27.72	6.12	-
AV	2.441G	75.95	Inf	-Inf	42.26	3	Horizontal	201	2.84	-	27.56	6.13	-
AV	2.519G	39.15	54.00	-14.85	5.45	3	Horizontal	201	2.84	-	27.54	6.16	-
PK	2.369G	58.64	74.00	-15.36	24.80	3	Horizontal	201	2.84	-	27.72	6.12	-
PK	2.441G	98.45	Inf	-Inf	64.76	3	Horizontal	201	2.84	-	27.56	6.13	-
PK	2.519G	61.65	74.00	-12.35	27.95	3	Horizontal	201	2.84	-	27.54	6.16	-

BT-BR(1Mbps)

2441MHz_TX

13/08/2019

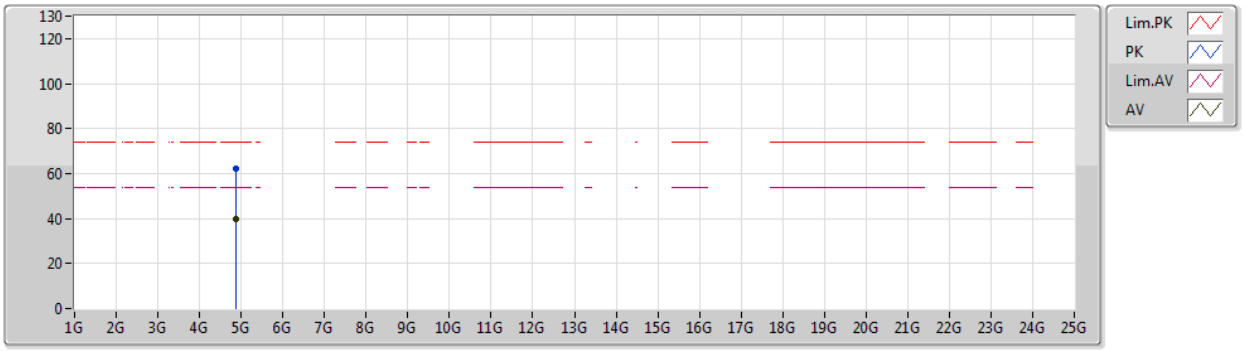


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.88164G	38.26	54.00	-15.74	32.48	3	Vertical	355	1.53	-	31.10	8.96	34.28
PK	4.88164G	60.76	74.00	-13.24	54.98	3	Vertical	202	3.00	-	31.10	8.96	34.28

BT-BR(1Mbps)

2441MHz_TX

13/08/2019

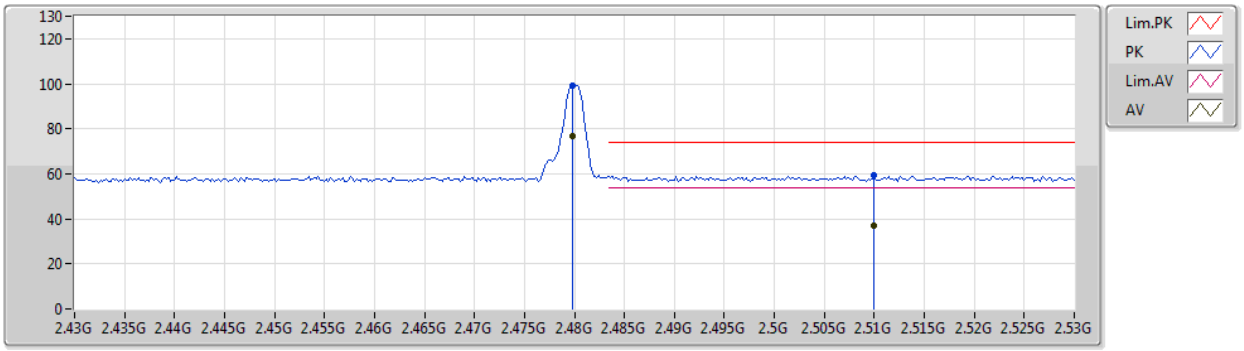


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.8823G	39.89	54.00	-14.11	34.11	3	Horizontal	317	2.58	-	31.10	8.96	34.28
PK	4.8823G	62.39	74.00	-11.61	56.61	3	Horizontal	317	2.58	-	31.10	8.96	34.28

BT-BR(1Mbps)

2480MHz_TX

13/08/2019

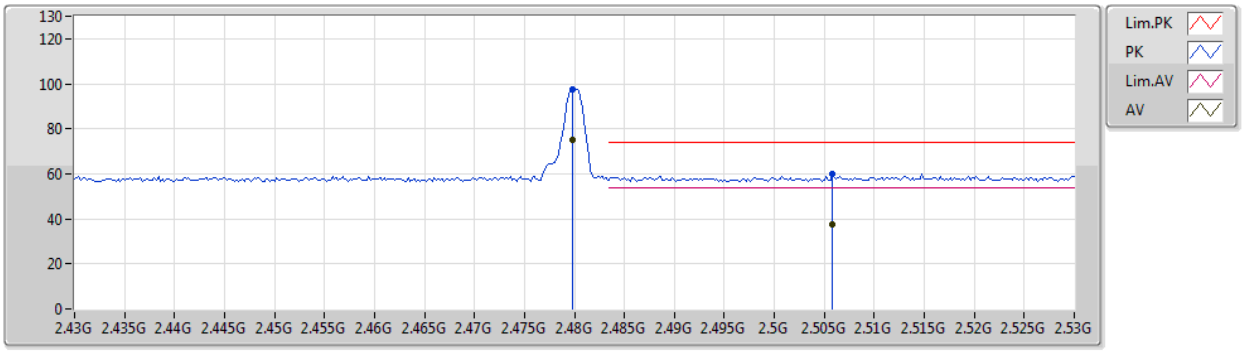


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.4798G	76.86	Inf	-Inf	43.20	3	Vertical	127	1.08	-	27.52	6.14	-
AV	2.51G	37.05	54.00	-16.95	3.37	3	Vertical	127	1.08	-	27.52	6.16	-
PK	2.4798G	99.36	Inf	-Inf	65.70	3	Vertical	127	1.08	-	27.52	6.14	-
PK	2.51G	59.55	74.00	-14.45	25.87	3	Vertical	127	1.08	-	27.52	6.16	-

BT-BR(1Mbps)

2480MHz_TX

13/08/2019

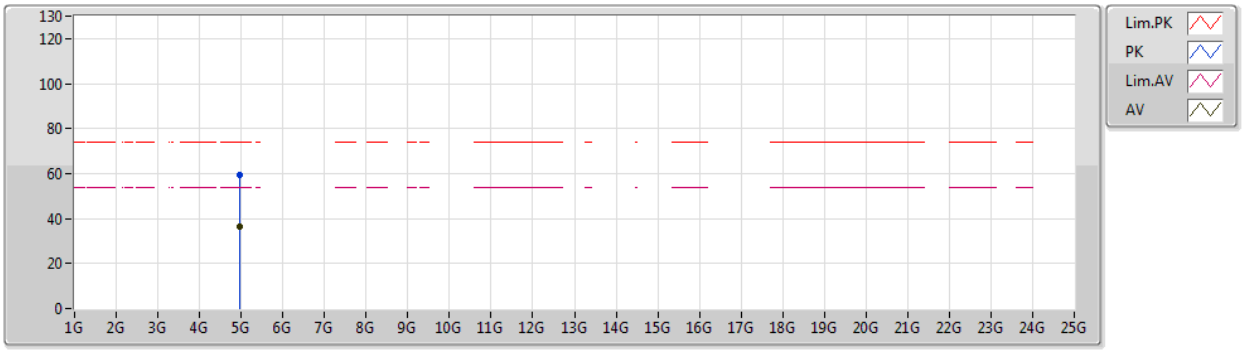


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.4798G	74.98	Inf	-Inf	41.32	3	Horizontal	199	2.78	-	27.52	6.14	-
AV	2.5058G	37.31	54.00	-16.69	3.64	3	Horizontal	199	2.78	-	27.51	6.16	-
PK	2.4798G	97.48	Inf	-Inf	63.82	3	Horizontal	199	2.78	-	27.52	6.14	-
PK	2.5058G	59.81	74.00	-14.19	26.14	3	Horizontal	199	2.78	-	27.51	6.16	-

BT-BR(1Mbps)

2480MHz_TX

13/08/2019

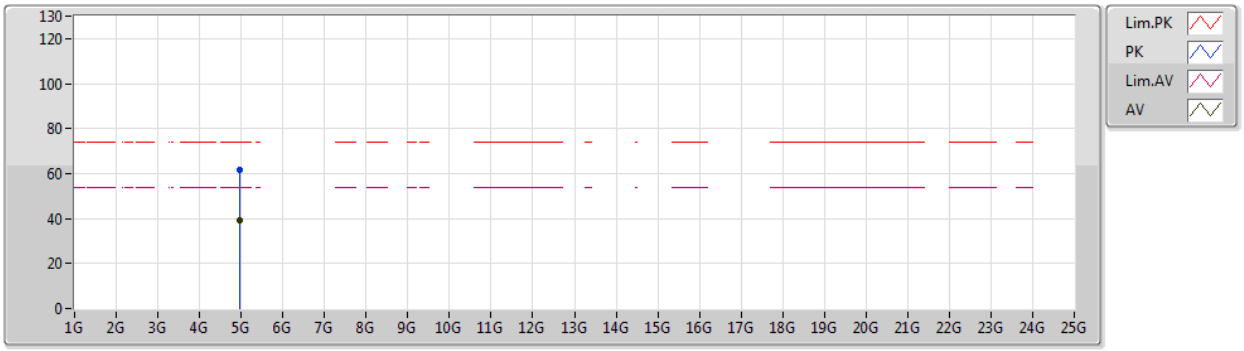


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.95963G	36.65	54.00	-17.35	30.44	3	Vertical	122	1.50	-	31.34	9.03	34.16
PK	4.95963G	59.15	74.00	-14.85	52.94	3	Vertical	122	1.50	-	31.34	9.03	34.16

BT-BR(1Mbps)

2480MHz_TX

13/08/2019

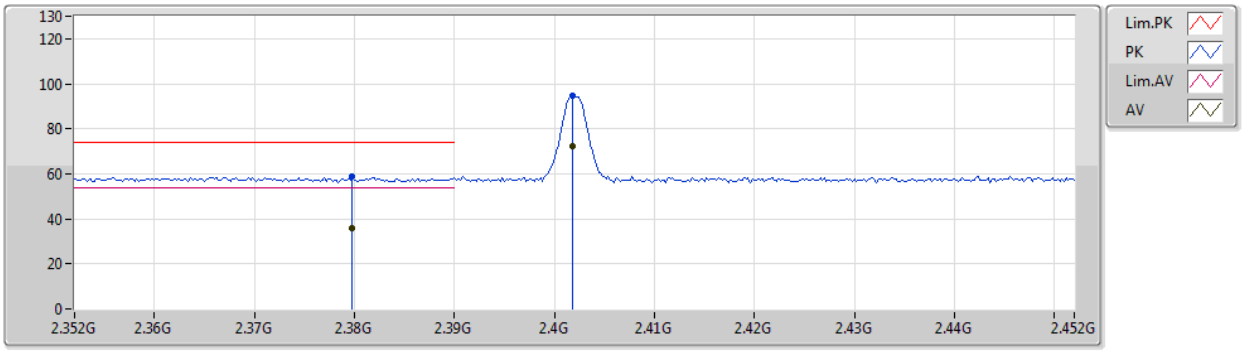


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.95964G	39.11	54.00	-14.89	32.90	3	Horizontal	311	2.69	-	31.34	9.03	34.16
PK	4.95964G	61.61	74.00	-12.39	55.40	3	Horizontal	311	2.69	-	31.34	9.03	34.16

BT-EDR(3Mbps)

2402MHz_TX

14/08/2019

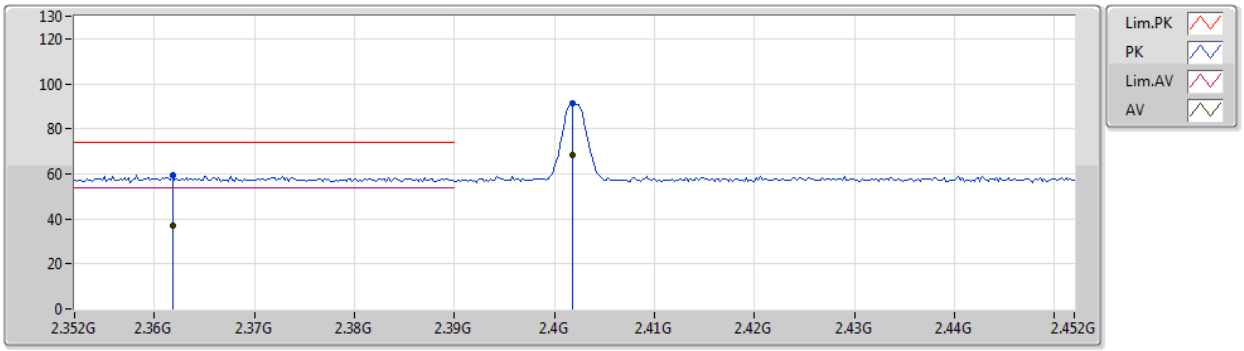


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.3798G	36.07	54.00	-17.93	2.28	3	Vertical	333	1.34	-	27.68	6.11	-
AV	2.4018G	72.04	Inf	-Inf	38.33	3	Vertical	333	1.34	-	27.60	6.11	-
PK	2.3798G	58.57	74.00	-15.43	24.78	3	Vertical	333	1.34	-	27.68	6.11	-
PK	2.4018G	94.54	Inf	-Inf	60.83	3	Vertical	333	1.34	-	27.60	6.11	-

BT-EDR(3Mbps)

2402MHz_TX

14/08/2019

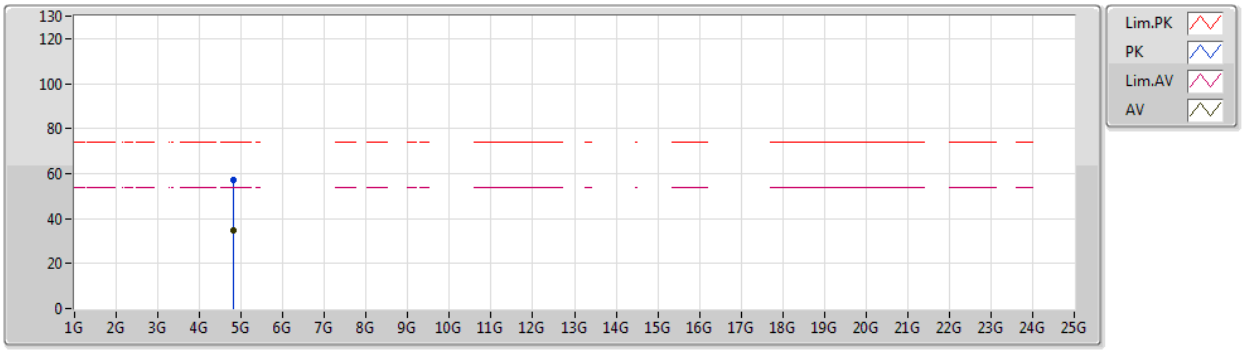


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.3618G	36.95	54.00	-17.05	3.08	3	Horizontal	15	1.57	-	27.75	6.12	-
AV	2.4018G	68.56	Inf	-Inf	34.85	3	Horizontal	15	1.57	-	27.60	6.11	-
PK	2.3618G	59.45	74.00	-14.55	25.58	3	Horizontal	141	1.57	-	27.75	6.12	-
PK	2.4018G	91.06	Inf	-Inf	57.35	3	Horizontal	142	1.57	-	27.60	6.11	-

BT-EDR(3Mbps)

2402MHz_TX

14/08/2019

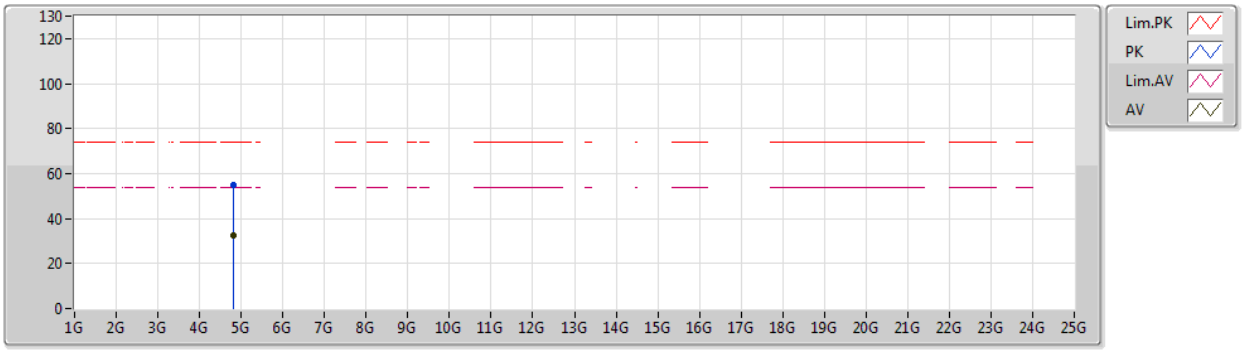


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.80394G	34.76	54.00	-19.24	27.66	3	Vertical	139	2.34	-	31.10	5.78	29.78
PK	4.80394G	57.26	74.00	-16.74	50.16	3	Vertical	139	2.34	-	31.10	5.78	29.78

BT-EDR(3Mbps)

2402MHz_TX

14/08/2019

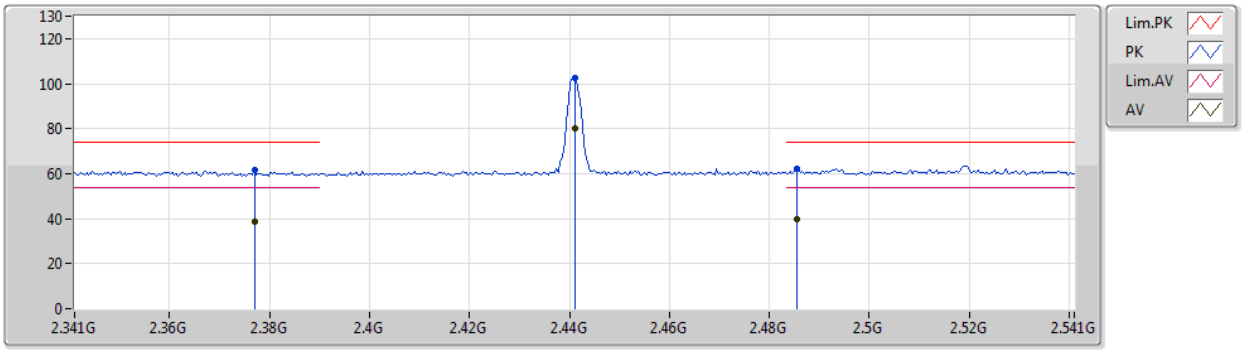


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.8037G	32.60	54.00	-21.40	25.50	3	Horizontal	0	1.50	-	31.10	5.78	29.78
PK	4.8037G	55.10	74.00	-18.90	48.00	3	Horizontal	0	1.50	-	31.10	5.78	29.78

BT-EDR(3Mbps)

2441MHz_TX

14/08/2019

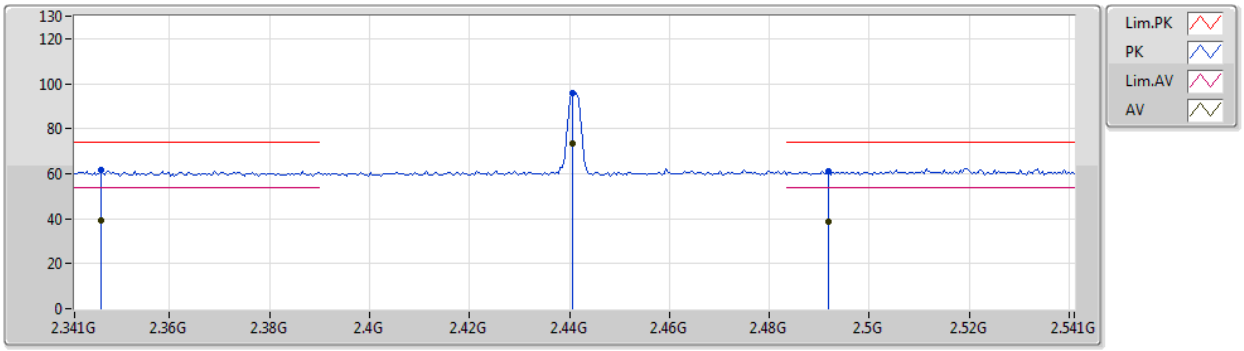


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.377G	38.88	54.00	-15.12	5.07	3	Vertical	180	1.43	-	27.69	6.12	-
AV	2.441G	80.01	Inf	-Inf	46.32	3	Vertical	180	1.43	-	27.56	6.13	-
AV	2.4854G	39.61	54.00	-14.39	5.95	3	Vertical	180	1.43	-	27.51	6.15	-
PK	2.377G	61.38	74.00	-12.62	27.57	3	Vertical	180	1.43	-	27.69	6.12	-
PK	2.441G	102.51	Inf	-Inf	68.82	3	Vertical	180	1.43	-	27.56	6.13	-
PK	2.4854G	62.11	74.00	-11.89	28.45	3	Vertical	180	1.43	-	27.51	6.15	-

BT-EDR(3Mbps)

2441MHz_TX

14/08/2019

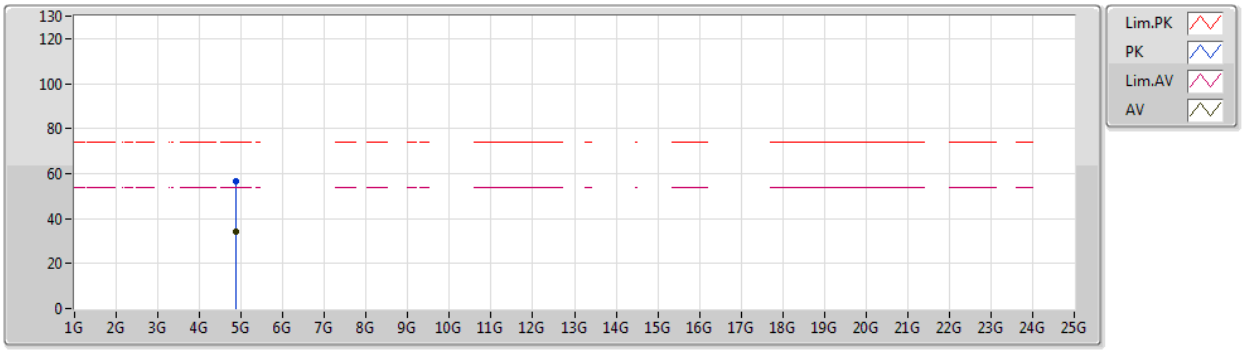


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.3462G	39.02	54.00	-14.98	5.08	3	Horizontal	173	1.00	-	27.82	6.12	-
AV	2.4406G	73.55	Inf	-Inf	39.86	3	Horizontal	173	1.00	-	27.56	6.13	-
AV	2.4918G	38.45	54.00	-15.55	4.79	3	Horizontal	173	1.00	-	27.51	6.15	-
PK	2.3462G	61.52	74.00	-12.48	27.58	3	Horizontal	173	1.00	-	27.82	6.12	-
PK	2.4406G	96.05	Inf	-Inf	62.36	3	Horizontal	173	1.00	-	27.56	6.13	-
PK	2.4918G	60.95	74.00	-13.05	27.29	3	Horizontal	173	1.00	-	27.51	6.15	-

BT-EDR(3Mbps)

2441MHz_TX

14/08/2019

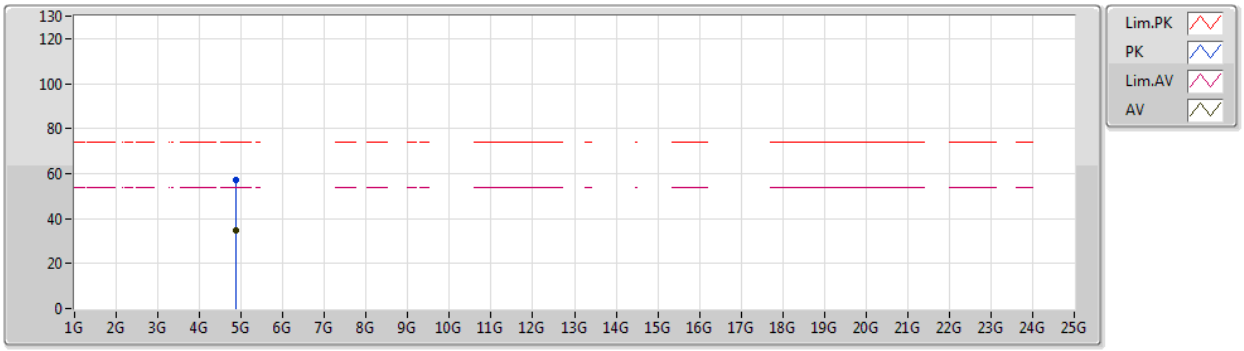


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.88164G	34.15	54.00	-19.85	26.91	3	Vertical	135	2.42	-	31.18	5.83	29.77
PK	4.88164G	56.65	74.00	-17.35	49.41	3	Vertical	135	2.42	-	31.18	5.83	29.77

BT-EDR(3Mbps)

2441MHz_TX

14/08/2019

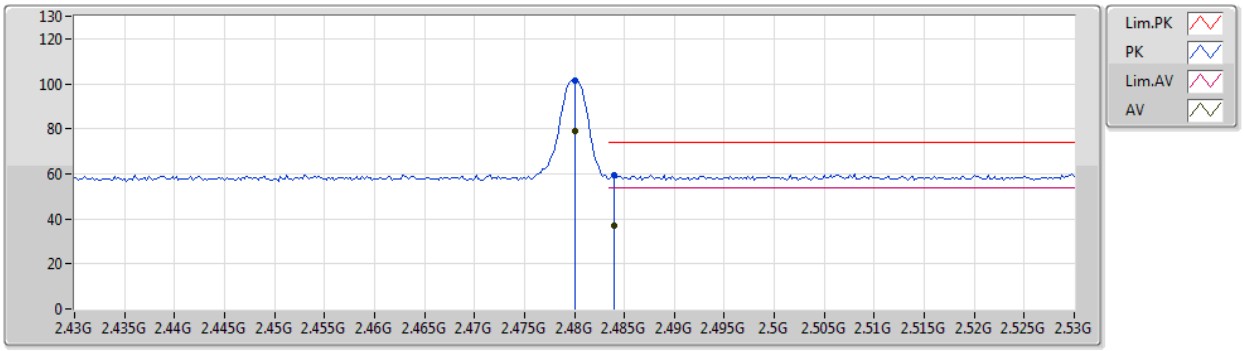


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.882G	34.59	54.00	-19.41	27.34	3	Horizontal	138	1.80	-	31.18	5.84	29.77
PK	4.882G	57.09	74.00	-16.91	49.84	3	Horizontal	138	1.80	-	31.18	5.84	29.77

BT-EDR(3Mbps)

2480MHz_TX

14/08/2019

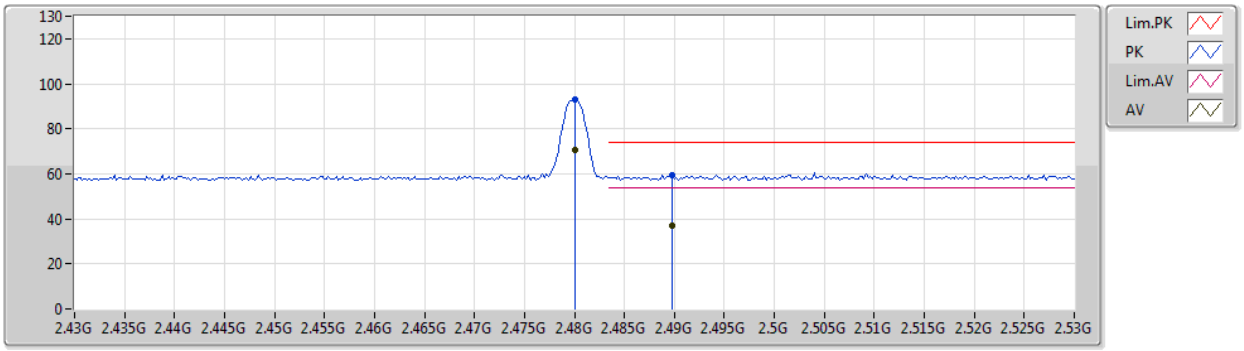


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.48G	79.01	Inf	-Inf	47.59	3	Vertical	178	1.52	-	27.34	4.08	-
AV	2.484G	37.12	54.00	-16.88	5.71	3	Vertical	178	1.52	-	27.33	4.08	-
PK	2.48G	101.51	Inf	-Inf	70.09	3	Vertical	178	1.52	-	27.34	4.08	-
PK	2.484G	59.62	74.00	-14.38	28.21	3	Vertical	178	1.52	-	27.33	4.08	-

BT-EDR(3Mbps)

2480MHz_TX

14/08/2019

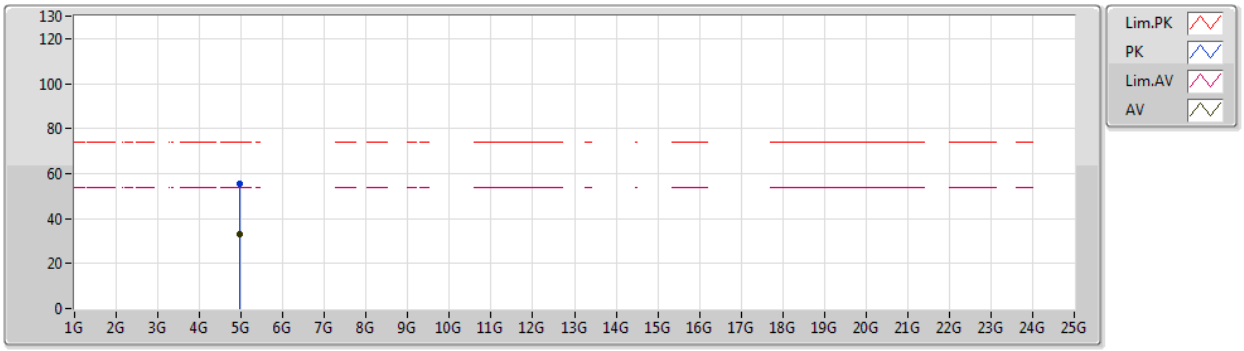


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	2.48G	70.33	Inf	-Inf	38.91	3	Horizontal	0	1.23	-	27.34	4.08	-
AV	2.4898G	37.02	54.00	-16.98	5.61	3	Horizontal	0	1.23	-	27.32	4.09	-
PK	2.48G	92.83	Inf	-Inf	61.41	3	Horizontal	0	1.23	-	27.34	4.08	-
PK	2.4898G	59.52	74.00	-14.48	28.11	3	Horizontal	0	1.23	-	27.32	4.09	-

BT-EDR(3Mbps)

2480MHz_TX

14/08/2019

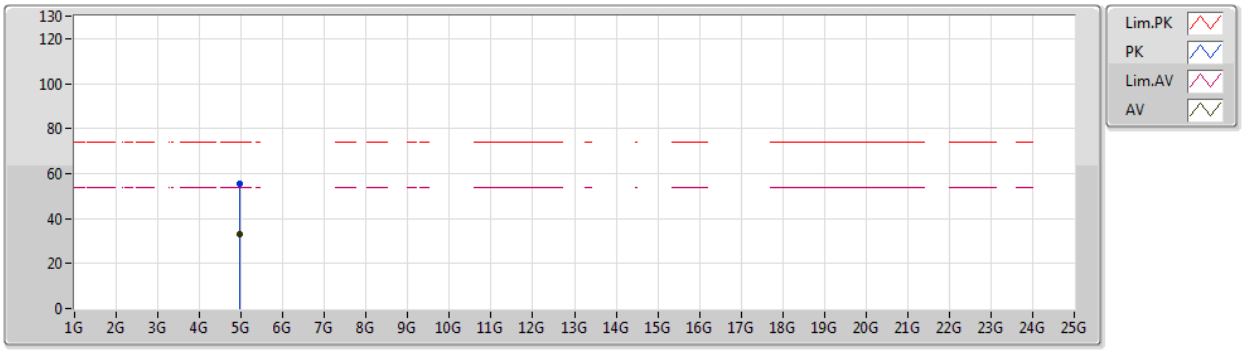


Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.95982G	32.92	54.00	-21.08	25.41	3	Vertical	319	1.73	-	31.38	5.89	29.76
PK	4.95982G	55.42	74.00	-18.58	47.91	3	Vertical	319	1.73	-	31.38	5.89	29.76

BT-EDR(3Mbps)

2480MHz_TX

14/08/2019



Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
AV	4.96G	33.18	54.00	-20.82	25.67	3	Horizontal	6	1.34	-	31.38	5.89	29.76
PK	4.96G	55.68	74.00	-18.32	48.17	3	Horizontal	6	1.34	-	31.38	5.89	29.76