FCC Test Report

FCC ID	:	**BKMAE-WLU5630**
Equipment	:	**WLAN / BT Module**
Brand Name	:	**EPSON**
Model Name	:	**WLU5630B-D101(RoHS)**
Applicant	:	**SEIKO EPSON CORPORATION** **3-3-5 Owa Suwa-shi, Nagano-ken 392-8502 Japan**
Manufacturer	:	**SEIKO EPSON CORPORATION** **3-3-5 Owa Suwa-shi, Nagano-ken 392-8502 Japan**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Jan. 16, 2019, and testing was started from Jan. 24, 2019 and completed on Feb. 13, 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.)

Table of Contents

PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR8D2146AD	01	Initial issue of report	Mar. 04, 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: Jackson Tsai

Report Producer: Debby Hung

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.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	EPSON	WLU5630B-D101(RoHS)	Printed Antenna	I-PEX

Ant.	Port	Gain (dBi)			
		2.4G	U-NII-1	U-NII-3	BT
1	1	1.92	1.42	2.21	-
2	2	2.22	2.11	2.00	2.22

For 2.4GHz function:

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

Support diversity function and pre-tested on each single chain, the worst case was Ant. 2(port 2) and it was record in this test report.

For BT function:

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

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

For 5GHz function:

For IEEE 802.11 a/an mode (1TX/1RX)

Support diversity function and pre-tested on each single chain, the worst case was Ant. 1(port 1) and it was record in this test report.

1.1.3 EUT Information

Operational Condition					
EUT Power Type	From Host System				
EUT Function	☒	Point-to-multipoint	☐	Point-to-point	
Beamforming Function	☐	With beamforming	☒	Without beamforming	
Software / Firmware Version			MP EPSON 01		
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)	0.785	1.051	2.888m	1k
BT-EDR(2Mbps)	0.785	1.051	2.89m	1k
BT-EDR(3Mbps)	0.786	1.046	2.893m	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 v05r01
- 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
RF Conducted	TH01-HY	Gary	23.1~23.8°C / 61~61.8%	28/Jan/2019~31/Jan/2019
Radiated	03CH09-HY	Kevin	21~23°C / 45~49%	24/Jan/2019~13/Feb/2019
AC Conduction	CO04-HY	Daniel	23.1~23.8°C / 61~61.8%	28/Jan/2019~31/Jan/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	5V

2.2 Test Channel Mode

Test Software Version	BlueTool_MI_1.9.4.5

Mode	PowerSetting
BT-BR(1Mbps)	-
2402MHz	3
2441MHz	3
2480MHz	2
BT-EDR(2Mbps)	-
2402MHz	1
2441MHz	1
2480MHz	0
BT-EDR(3Mbps)	-
2402MHz	1
2441MHz	1
2480MHz	0

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

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	CTX
1	WLAN 2.4G + BT BR/EDR
2	WLAN 2.4G + BT LE
3	WLAN 5G + BT BR/EDR
4	WLAN 5G + BT LE
Refer to Appendix G for Radiated Emission Co-location.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	WLAN 2.4G + Bluetooth
2	WLAN 5G + Bluetooth
Refer to Sporton Test Report No.: FA8D2146 for Co-location RF Exposure Evaluation.	

2.4 Support Equipment

Support Equipment – AC Conduction				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	P40F	-
2	Adapter	DELL	LA65NS2-01	-
3	Test fixture	-	-	-

Note.Support equipment No.1,2,3 was provided by customer.

Support Equipment – RF Conducted				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	ASUS	ASUSPRO	-
2	Adapter for NB	ASUS	ADP-90YD B	-
3	Test Fixture	-	-	-

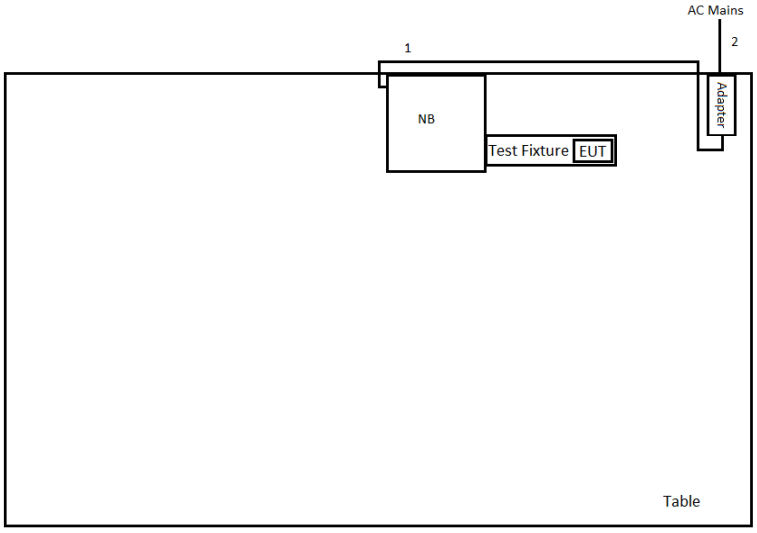
Note.Support equipment No.1,2,3 was provided by customer.

Support Equipment – Radiated Emission				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	ASUS	ASUSPRO	-
2	Adapter	ASUS	ADP-90YD	-
3	Test fixture	-	-	-

Note.Support equipment No.1,2,3 was provided by customer.

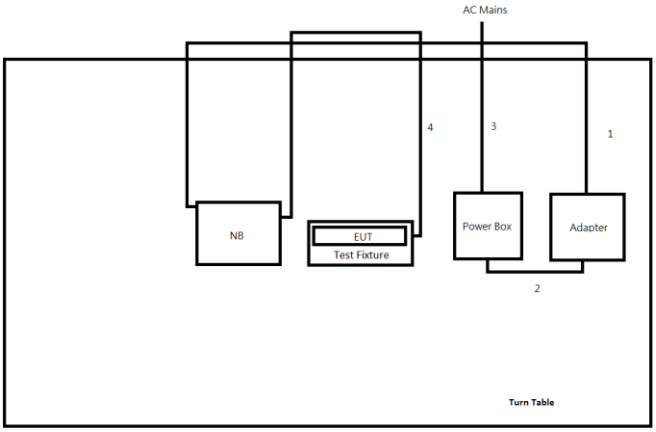
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	DC Power line	No	1.8	-
2	AC Power line	No	1.8	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	DC Power line	No	1.8	-
2	AC Power line	No	0.75	-
3	AC Power line	No	1.8	-
4	USB cable	No	1.8	-

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

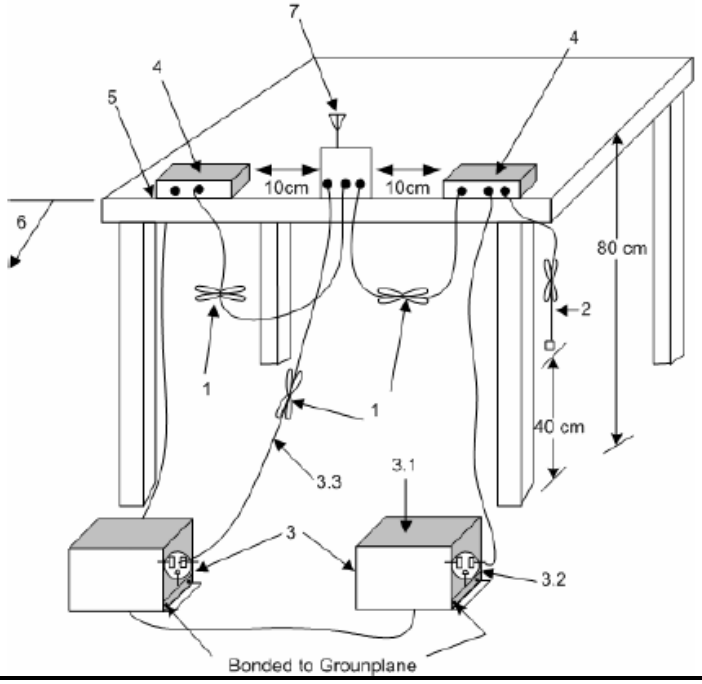
Refer a test equipment and calibration data table in this test report.

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	

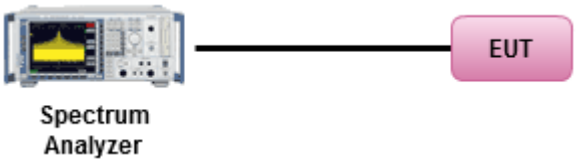
3.2.2 Measuring Instruments

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

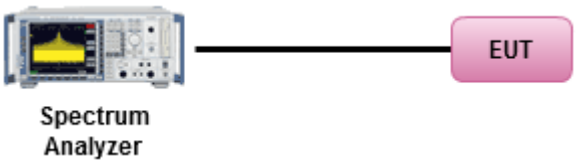
3.4.3 Measuring Instruments

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	

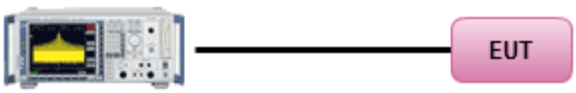
3.5.2 Measuring Instruments

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)
 Spectrum Analyzer

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.	

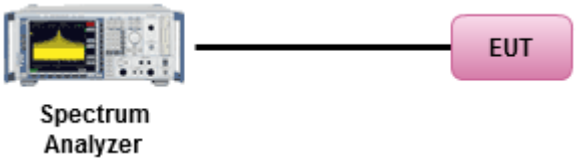
3.6.2 Measuring Instruments

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.

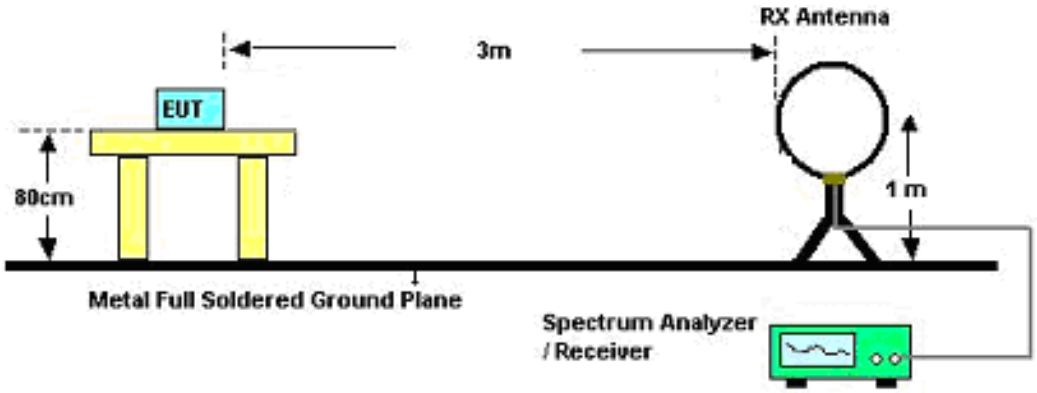
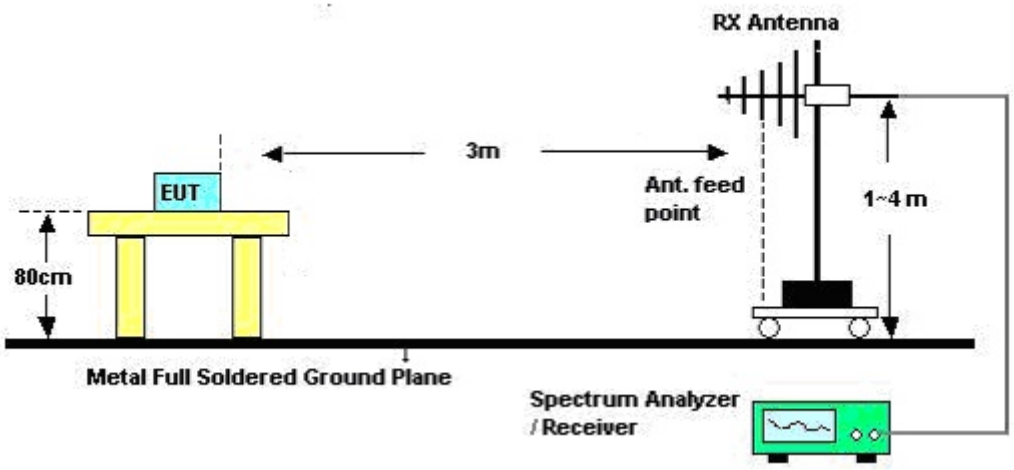
3.7.2 Measuring Instruments

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

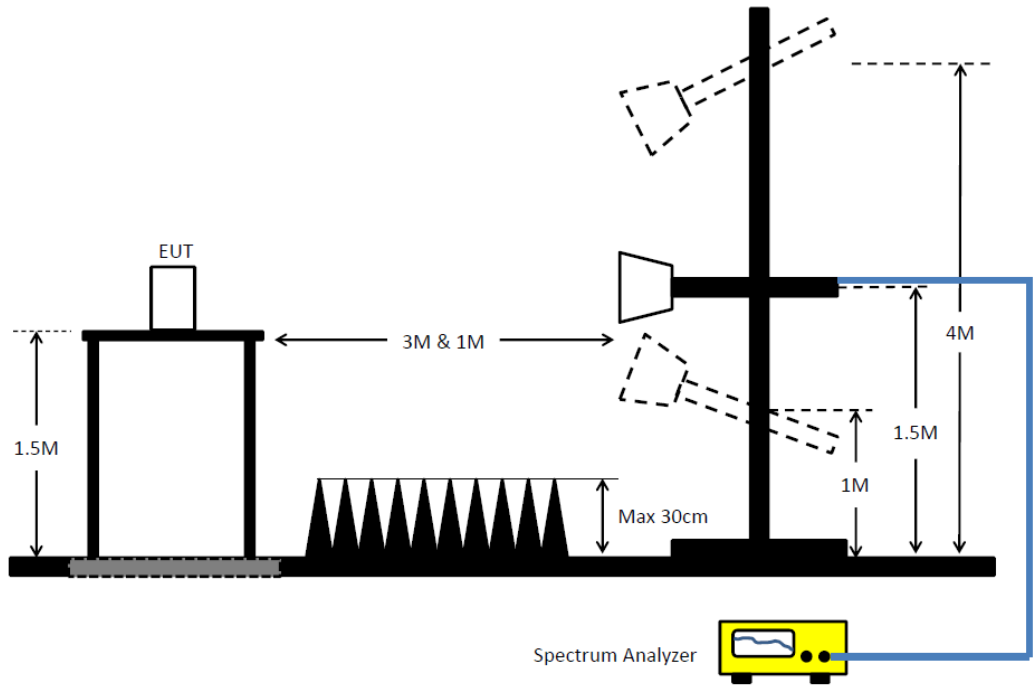
3.7.3 Test Procedures

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	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
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	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	10/May/2018	09/May/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	09/Apr/2019
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	31/Jul/2018	30/Jul/2019
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	30/Apr/2018	29/Apr/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170614	18GHz~40GHz	09/Feb/2018	08/Feb/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2018	23/Aug/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
RF Cable-R03m	Jye Bao	RG142	CB031	9kHz ~ 1GHz	1/Feb/2018	31/Jan/2019
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	14/Mar/2018	13/Mar/2019

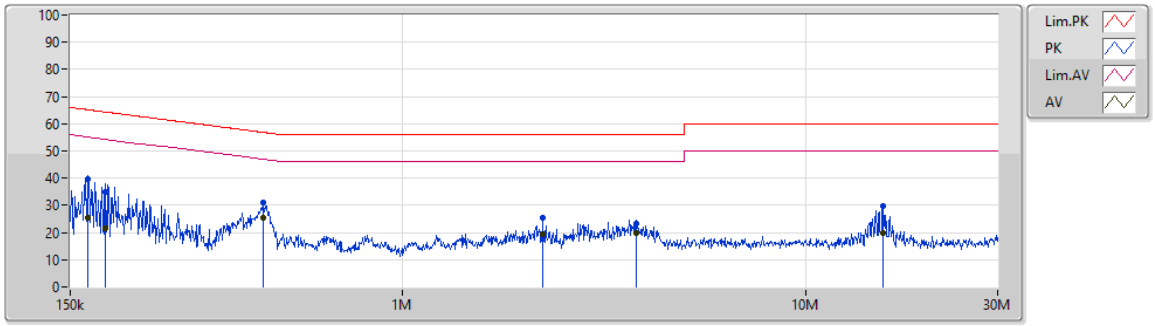
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	05/Feb/2018	04/Feb/2019
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	05/Feb/2018	04/Feb/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		

AC Conduction

13/02/2019

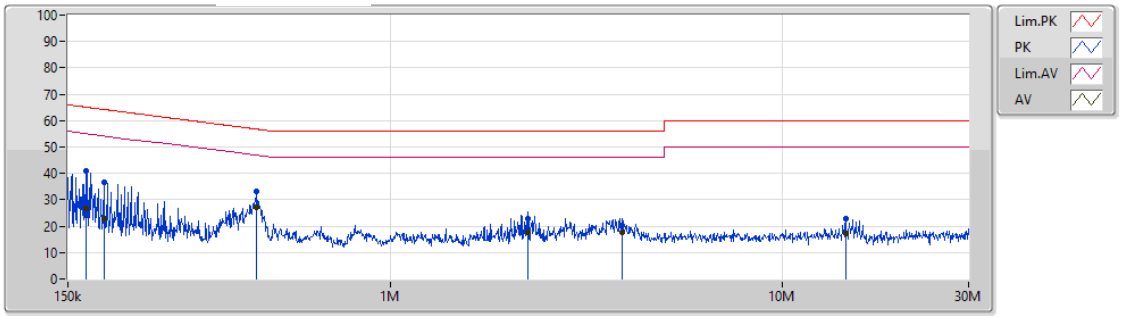


Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	165.743k	39.80	65.18	-25.38	19.48	Neutral	-	20.32	9.60	0.01	9.87
AV	165.743k	25.34	55.18	-29.84	19.48	Neutral	-	5.86	9.60	0.01	9.87
QP	183.137k	34.70	64.34	-29.64	19.47	Neutral	-	15.23	9.59	0.01	9.87
AV	183.137k	21.76	54.34	-32.58	19.47	Neutral	-	2.29	9.59	0.01	9.87
QP	451.436k	31.04	56.84	-25.80	19.48	Neutral	-	11.56	9.59	0.01	9.88
AV	451.436k	25.57	46.84	-21.27	19.48	Neutral	"Worst"	6.09	9.59	0.01	9.88
QP	2.229M	25.51	56.00	-30.49	19.53	Neutral	-	5.98	9.61	0.03	9.89
AV	2.229M	19.19	46.00	-26.81	19.53	Neutral	-	-0.34	9.61	0.03	9.89
QP	3.805M	23.35	56.00	-32.65	19.54	Neutral	-	3.81	9.61	0.04	9.89
AV	3.805M	19.88	46.00	-26.12	19.54	Neutral	-	0.34	9.61	0.04	9.89
QP	15.636M	29.62	60.00	-30.38	19.67	Neutral	-	9.95	9.68	0.09	9.90
AV	15.636M	19.70	50.00	-30.30	19.67	Neutral	-	0.03	9.68	0.09	9.90

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

AC Conduction

13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	166.406k	40.89	65.14	-24.25	19.48	Line	-	21.41	9.60	0.01	9.87
AV	166.406k	26.56	55.14	-28.58	19.48	Line	-	7.08	9.60	0.01	9.87
QP	185.344k	36.49	64.24	-27.75	19.48	Line	-	17.01	9.60	0.01	9.87
AV	185.344k	23.02	54.24	-31.22	19.48	Line	-	3.54	9.60	0.01	9.87
QP	453.242k	33.07	56.82	-23.75	19.48	Line	-	13.59	9.59	0.01	9.88
AV	453.242k	27.26	46.82	-19.56	19.48	Line	"Worst"	7.78	9.59	0.01	9.88
QP	2.247M	22.92	56.00	-33.08	19.55	Line	-	3.37	9.62	0.04	9.89
AV	2.247M	17.86	46.00	-28.14	19.55	Line	-	-1.69	9.62	0.04	9.89
QP	3.913M	20.40	56.00	-35.60	19.57	Line	-	0.83	9.63	0.05	9.89
AV	3.913M	17.66	46.00	-28.34	19.57	Line	-	-1.91	9.63	0.05	9.89
QP	14.552M	22.64	60.00	-37.36	19.64	Line	-	3.00	9.65	0.09	9.90
AV	14.552M	17.19	50.00	-32.81	19.64	Line	-	-2.45	9.65	0.09	9.90

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	948.75k	890.805k	891KF1D	947.5k	888.306k
BT-EDR(2Mbps)	1.335M	1.216M	1M22G1D	1.333M	1.212M
BT-EDR(3Mbps)	1.296M	1.216M	1M22G1D	1.281M	1.214M

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;

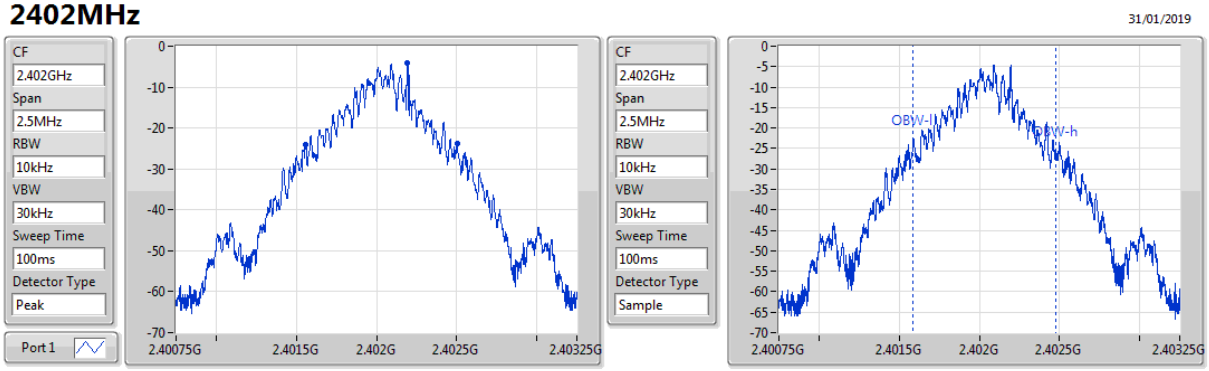
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	948.75k	888.306k
2441MHz	Pass	Inf	948.75k	890.805k
2480MHz	Pass	Inf	947.5k	890.805k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.335M	1.216M
2441MHz	Pass	Inf	1.335M	1.212M
2480MHz	Pass	Inf	1.333M	1.213M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.283M	1.214M
2441MHz	Pass	Inf	1.281M	1.216M
2480MHz	Pass	Inf	1.296M	1.214M

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

BT-BR(1Mbps) **EBW**

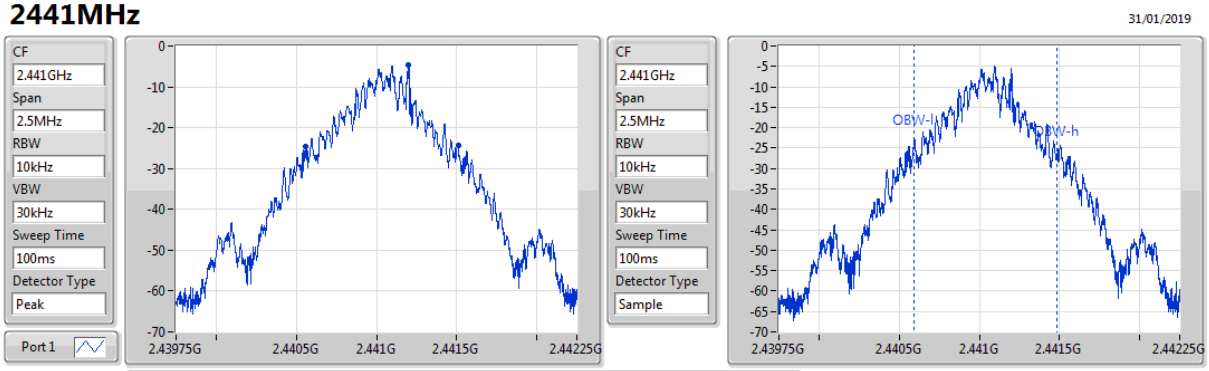
2402MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
948.75k	2.401555G	2.402504G	888.306k	2.401589G	2.402477G	Inf	1

BT-BR(1Mbps) **EBW**

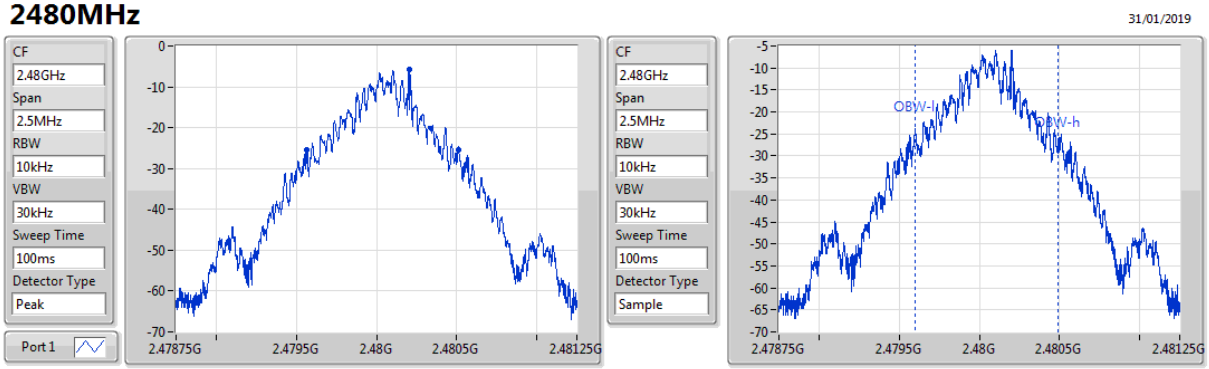
2441MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
948.75k	2.44056G	2.441509G	890.805k	2.440594G	2.441485G	Inf	1

BT-BR(1Mbps) **EBW**

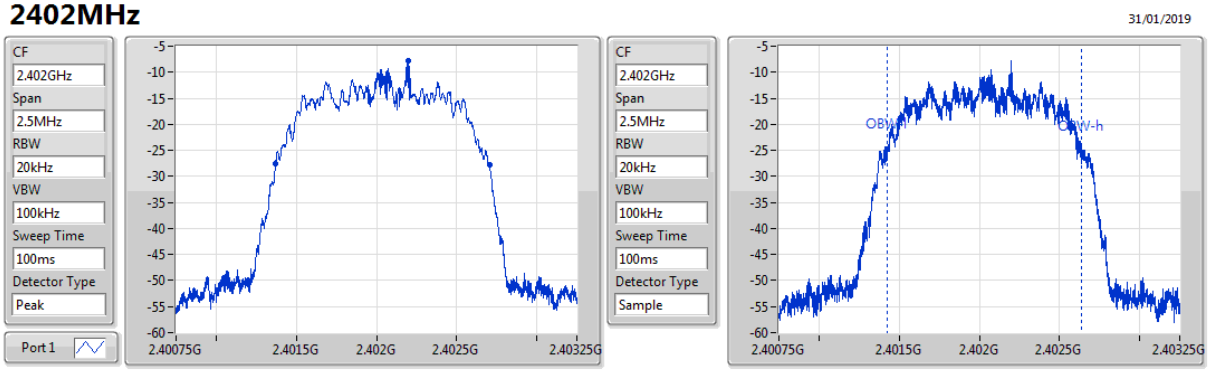
2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
947.5k	2.479566G	2.480514G	890.805k	2.479598G	2.480489G	Inf	1

BT-EDR(2Mbps) **EBW**

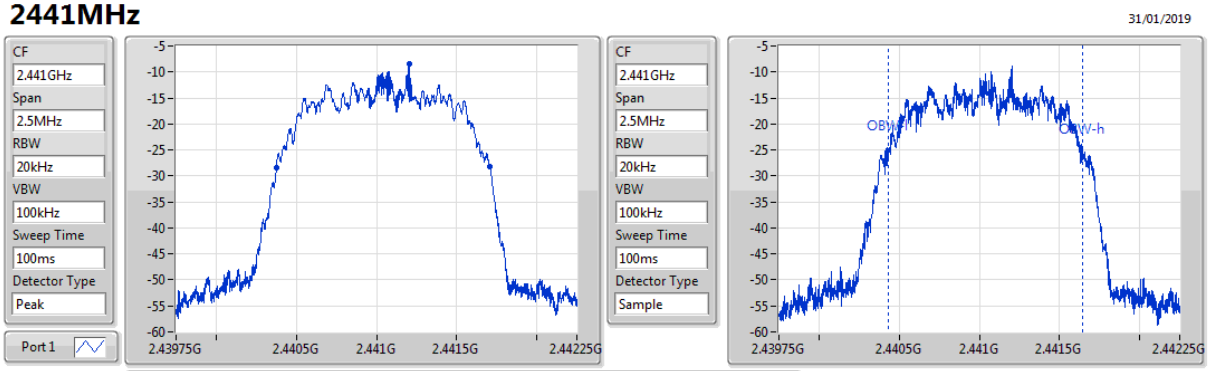
2402MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.335M	2.401371G	2.402706G	1.216M	2.401424G	2.40264G	Inf	1

BT-EDR(2Mbps) **EBW**

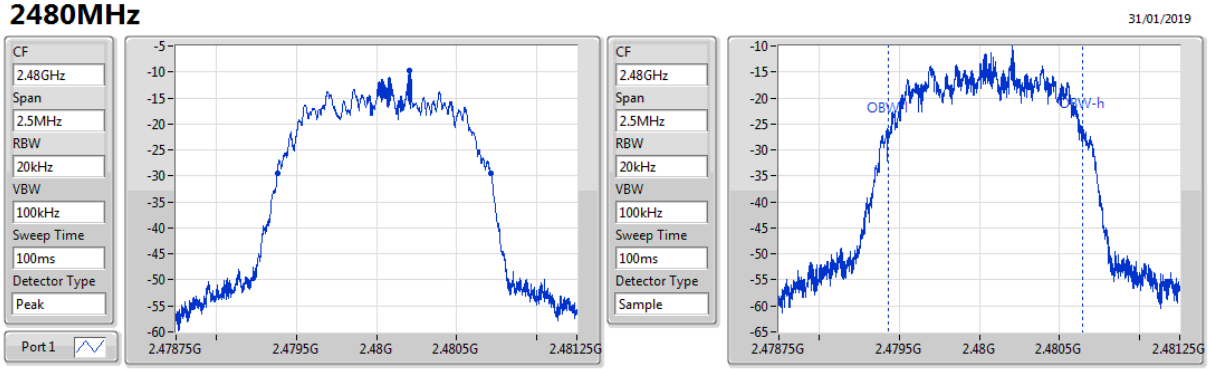
2441MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.335M	2.440375G	2.44171G	1.212M	2.44043G	2.441642G	Inf	1

BT-EDR(2Mbps) **EBW**

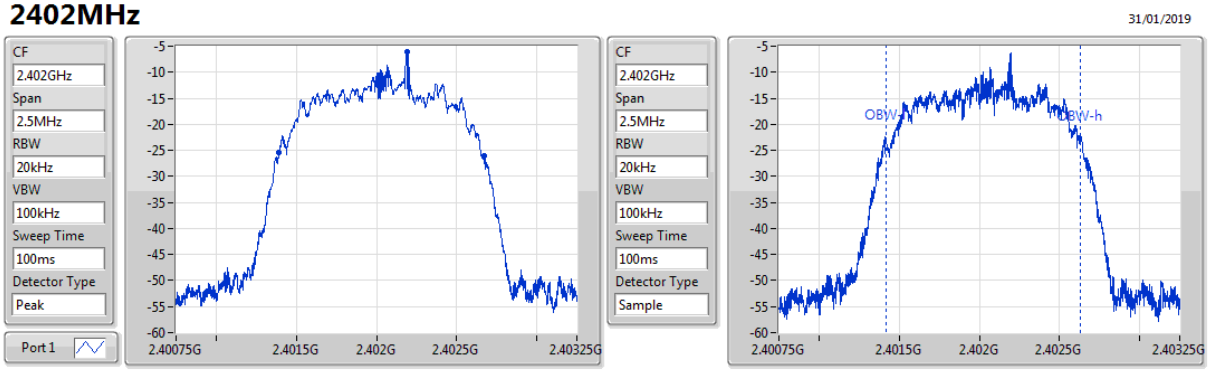
2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.333M	2.479381G	2.480714G	1.213M	2.479434G	2.480647G	Inf	1

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

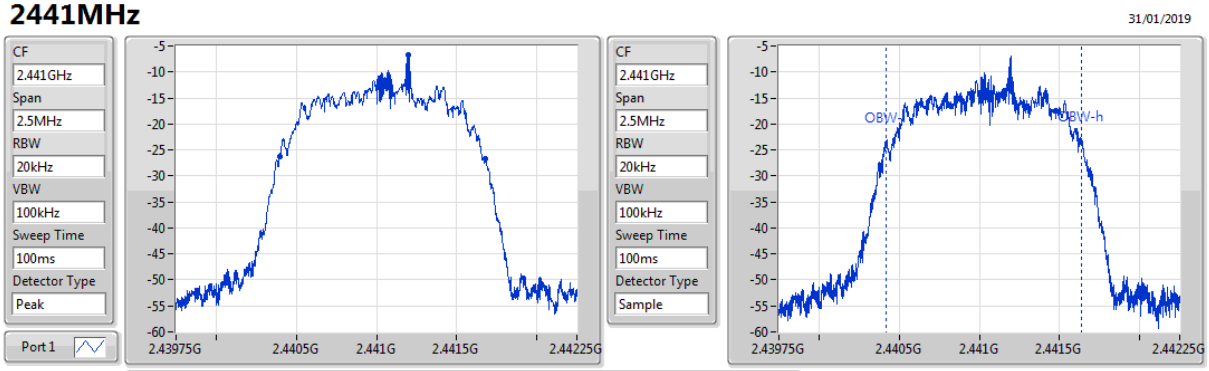
2402MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.283M	2.40139G	2.402673G	1.214M	2.401418G	2.402632G	Inf	1

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

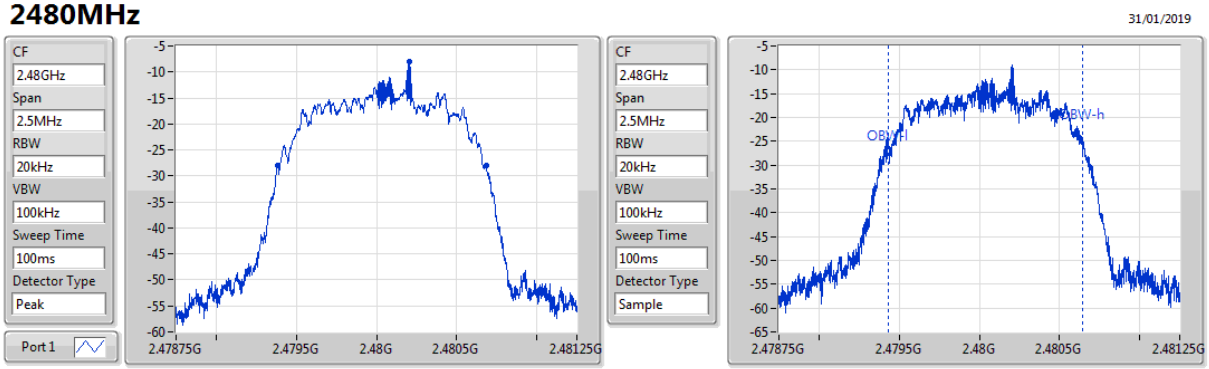
2441MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.281M	2.440395G	2.441676G	1.216M	2.440422G	2.441637G	Inf	1

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

2480MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.296M	2.479386G	2.480683G	1.214M	2.479429G	2.480643G	Inf	1

Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.0005M	1.0005M
BT-EDR(2Mbps)	1.0005M	1.0005M
BT-EDR(3Mbps)	1.0035M	997.5k

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.402191G	2.403192G	1.0005M	631.8675k
2441MHz	Pass	2.441196G	2.442196G	1.0005M	631.8675k
2480MHz	Pass	2.479202G	2.480202G	1.0005M	631.035k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402194G	2.403195G	1.0005M	889.11k
2441MHz	Pass	2.4412G	2.442201G	1.0005M	889.11k
2480MHz	Pass	2.479205G	2.480205G	1.0005M	887.778k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.40219G	2.403193G	1.0035M	854.478k
2441MHz	Pass	2.441199G	2.442196G	997.5k	853.146k
2480MHz	Pass	2.479202G	2.480201G	999k	863.136k

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

2.402G/2.403GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.402191G	2.403192G	1.0005M	631.8675k

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

2.441G/2.442GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.441196G	2.442196G	1.0005M	631.8675k

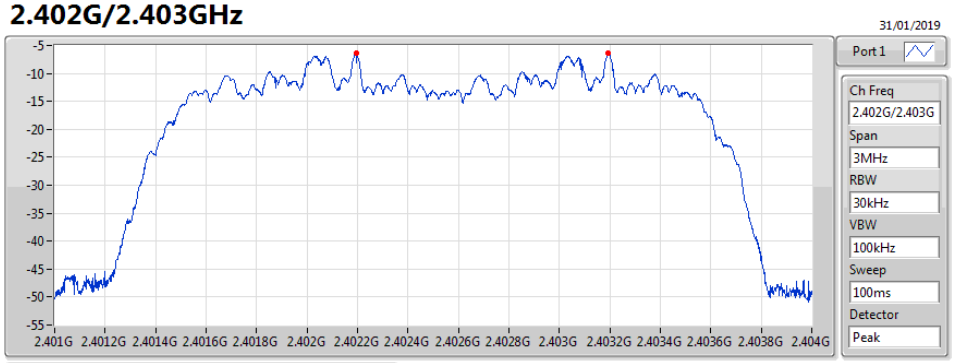
BT-BR(1Mbps) **Channel Separation**

2.48G/2.479GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479202G	2.480202G	1.0005M	631.035k

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

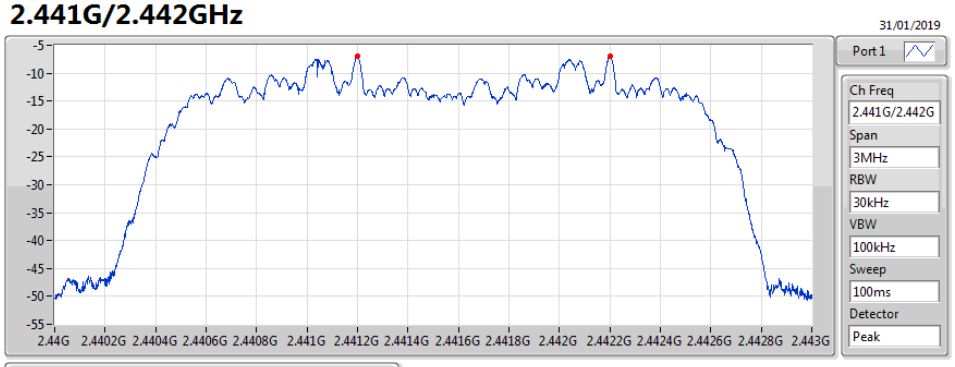
2.402G/2.403GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.402194G	2.403195G	1.0005M	889.11k

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

2.441G/2.442GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.4412G	2.442201G	1.0005M	889.11k

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

2.48G/2.479GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479205G	2.480205G	1.0005M	887.778k

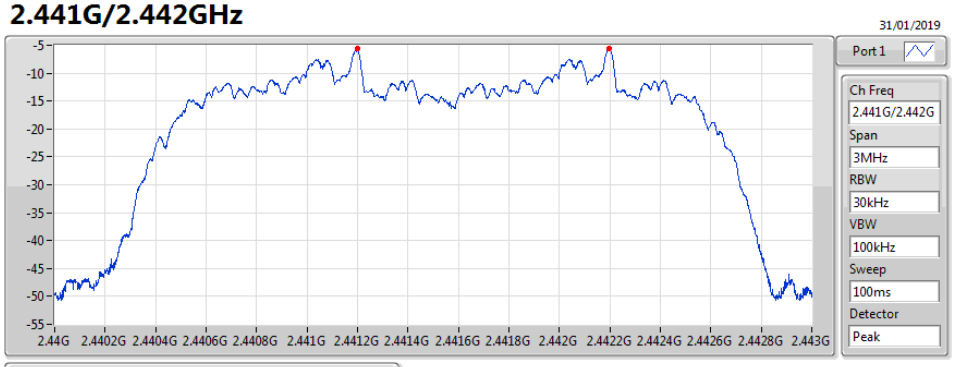
BT-EDR(3Mbps) **Channel Separation**

2.402G/2.403GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.40219G	2.403193G	1.0035M	854.478k

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

2.441G/2.442GHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.441199G	2.442196G	997.5k	853.146k

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

2.48G/2.479GHz

Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479202G	2.480201G	999k	863.136k

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	3.81	0.00240
BT-EDR(2Mbps)	6.56	0.00453
BT-EDR(3Mbps)	6.94	0.00494

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	2.22	1.38	21.00
2441MHz	Pass	2.22	1.09	21.00
2480MHz	Pass	2.22	3.81	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	2.22	4.73	21.00
2441MHz	Pass	2.22	4.35	21.00
2480MHz	Pass	2.22	6.56	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	2.22	5.08	21.00
2441MHz	Pass	2.22	4.70	21.00
2480MHz	Pass	2.22	6.94	21.00

Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	3.28	0.00213
BT-EDR(2Mbps)	3.95	0.00248
BT-EDR(3Mbps)	3.94	0.00248

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	2.22	0.56	21.00
2441MHz	Pass	2.22	0.27	21.00
2480MHz	Pass	2.22	3.28	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	2.22	1.95	21.00
2441MHz	Pass	2.22	1.64	21.00
2480MHz	Pass	2.22	3.95	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	2.22	1.96	21.00
2441MHz	Pass	2.22	1.66	21.00
2480MHz	Pass	2.22	3.94	21.00

Summary

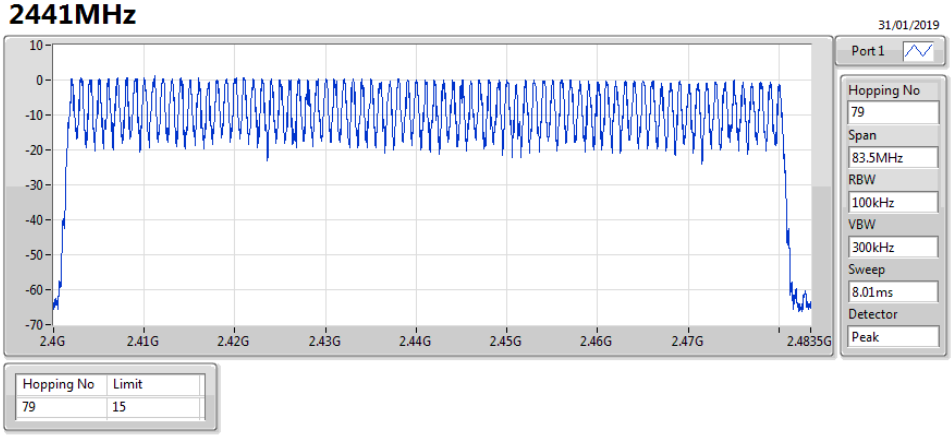
Mode	Max-Hop No
2.4-2.4835GHz	-
BT-BR(1Mbps)	79
BT-EDR(2Mbps)	79
BT-EDR(3Mbps)	79

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

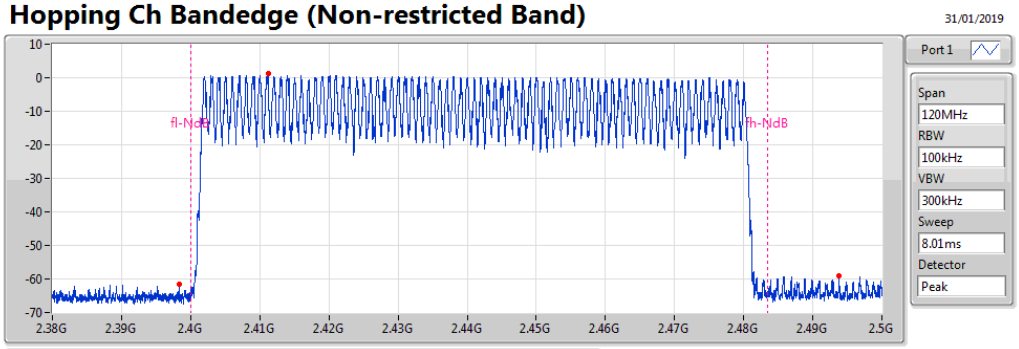


Hopping No	Limit
79	15

BT-BR(1Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

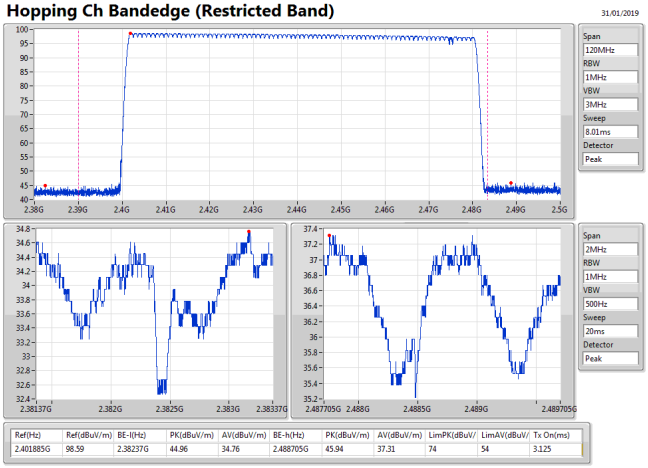


Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-18.81	2.411185G	1.19	2.398315G	-61.65	2.493805G	-58.97

BT-BR(1Mbps)

2441MHz

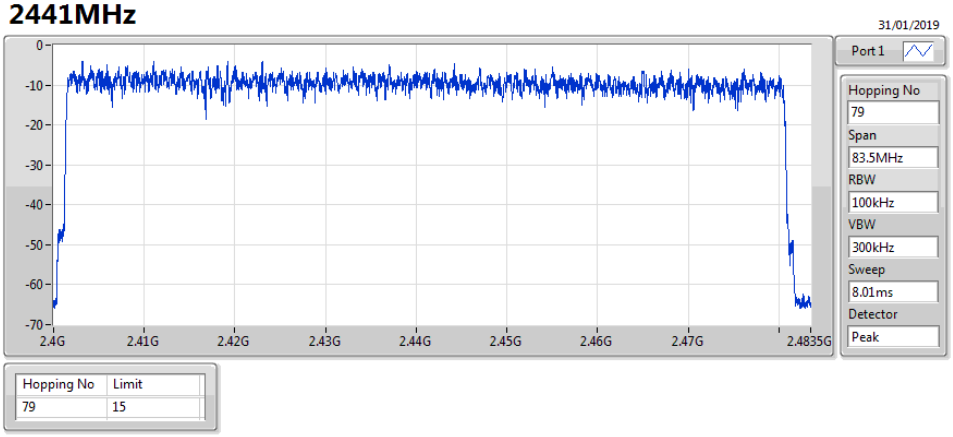
Hopping Ch Bandedge (Restricted Band)



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)
2.401885G	98.59	2.38237G	44.96	34.76	2.488705G	45.94	37.31	74	54	3.125

BT-EDR(2Mbps) **Hopping Ch**

2441MHz

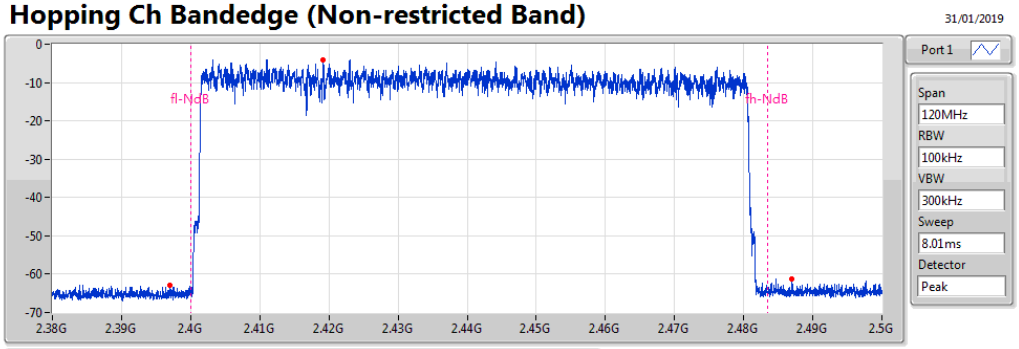


Hopping No	Limit
79	15

BT-EDR(2Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

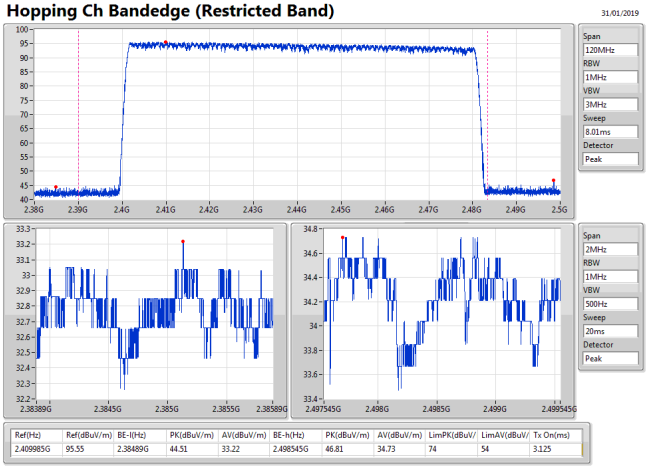


Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-24.06	2.419195G	-4.06	2.397025G	-62.81	2.48701G	-61.19

BT-EDR(2Mbps)

2441MHz

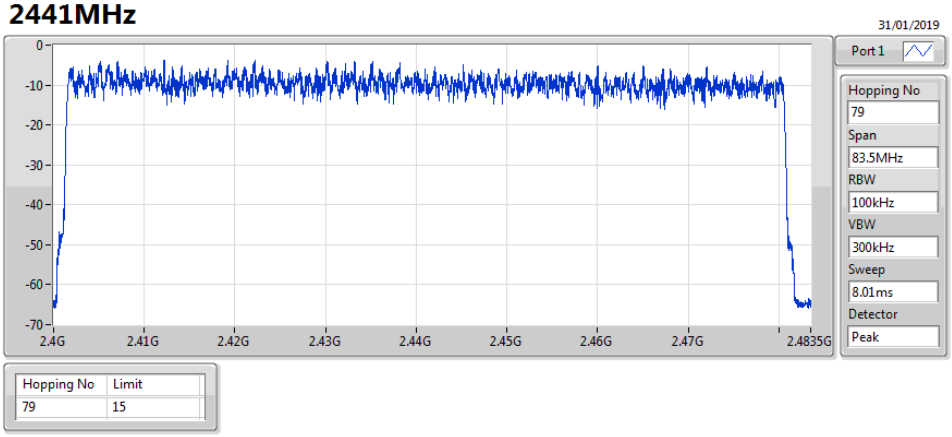
Hopping Ch Bandedge (Restricted Band)



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)
2.409985G	95.55	2.38489G	44.51	33.22	2.498545G	46.81	34.73	74	54	3.125

BT-EDR(3Mbps) **Hopping Ch**

2441MHz

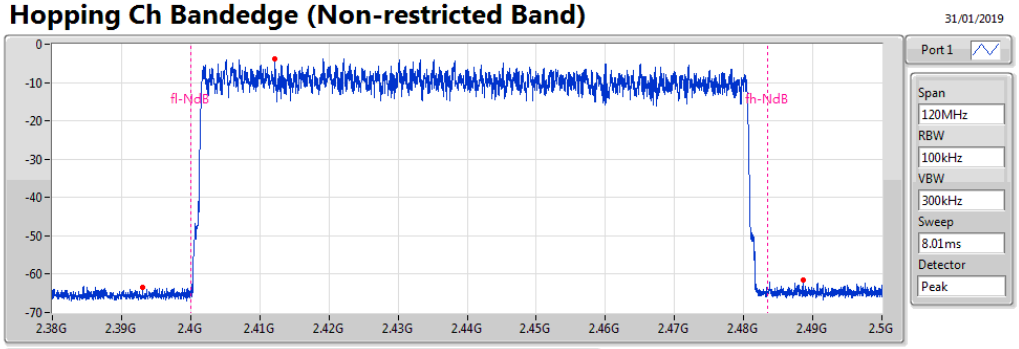


Hopping No	Limit
79	15

BT-EDR(3Mbps)

2441MHz

Hopping Ch Bandedge (Non-restricted Band)

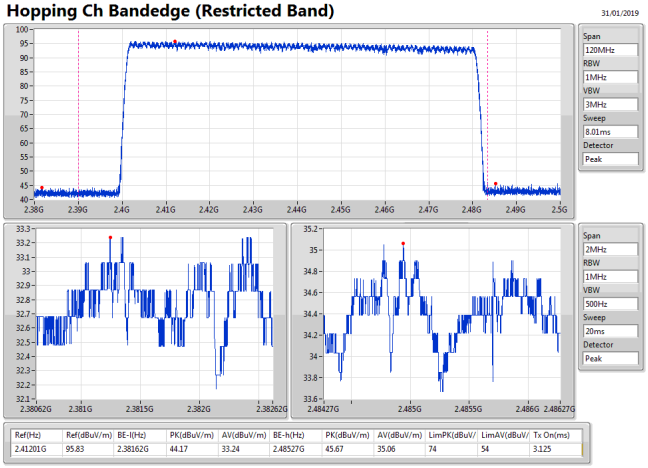


Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-23.84	2.41219G	-3.84	2.39308G	-63.36	2.488585G	-61.51

BT-EDR(3Mbps)

2441MHz

Hopping Ch Bandedge (Restricted Band)



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)
2.41201G	95.83	2.38162G	44.17	33.24	2.48527G	45.67	35.06	74	54	3.125

Summary

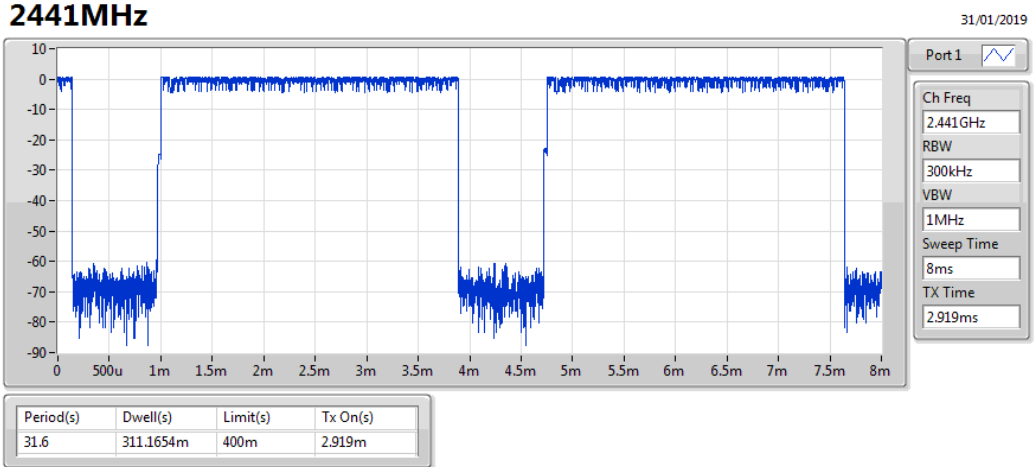
Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	311.1654m
BT-EDR(2Mbps)	311.5918m
BT-EDR(3Mbps)	311.805m

Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	311.1654m	400m	2.919m
BT-EDR(2Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	311.5918m	400m	2.923m
BT-EDR(3Mbps)	-	-	-	-	-
2441MHz	Pass	31.6	311.805m	400m	2.925m

BT-BR(1Mbps) **Dwell**

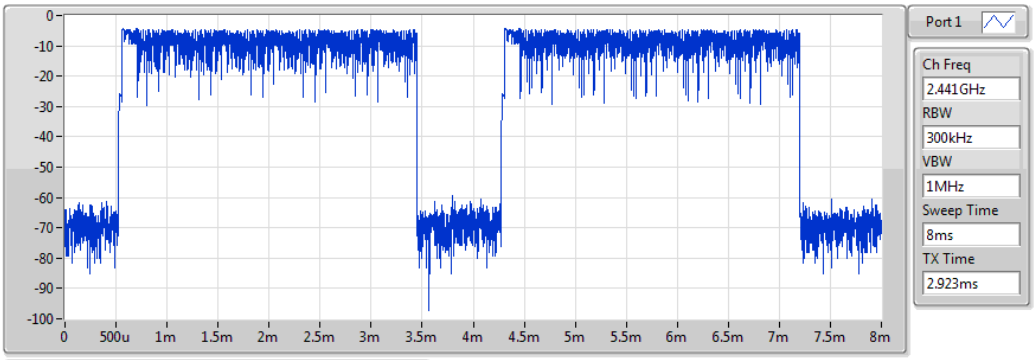
2441MHz



Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	311.1654m	400m	2.919m

BT-EDR(2Mbps) **Dwell**

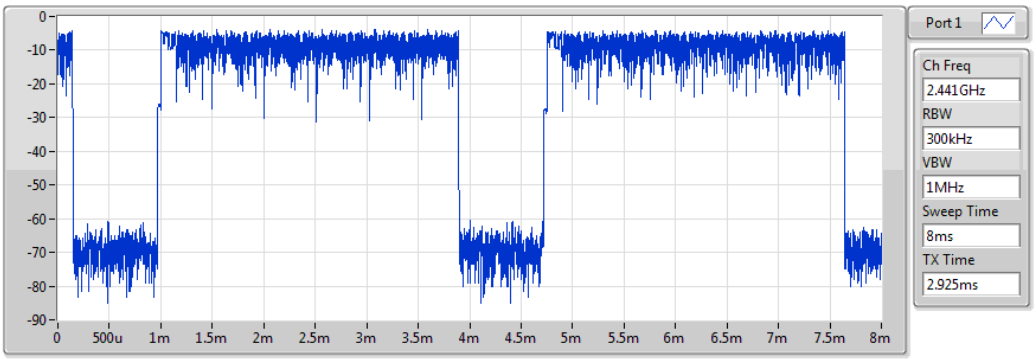
2441MHz



Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	311.5918m	400m	2.923m

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

2441MHz



Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	311.805m	400m	2.925m

Summary

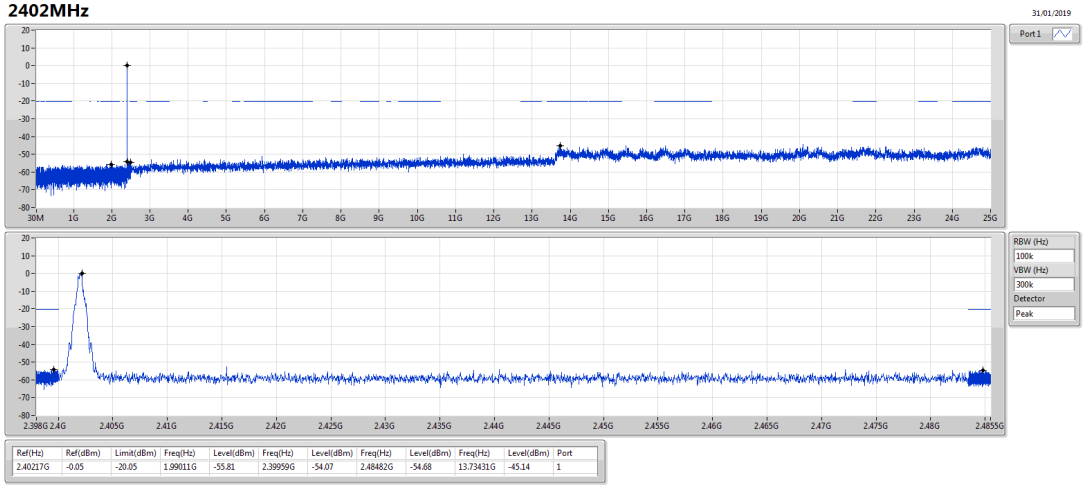
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.44079G	-7.24	-27.24	1.87082G	-54.48	2.39922G	-55.10	2.48463G	-54.54	24.78893G	-43.91	1
BT-EDR(2Mbps)	Pass	2.40217G	-1.18	-21.18	825.35M	-54.76	2.39972G	-53.48	2.48421G	-54.95	24.6454G	-44.90	1
BT-EDR(3Mbps)	Pass	2.44112G	-0.10	-20.10	2.19287G	-55.80	2.39943G	-54.07	2.48493G	-53.77	24.70168G	-45.12	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	2.40217G	-0.05	-20.05	1.99011G	-55.81	2.39959G	-54.07	2.48482G	-54.68	13.73431G	-45.14	1
2441MHz	Pass	2.44079G	-7.24	-27.24	1.87082G	-54.48	2.39922G	-55.10	2.48463G	-54.54	24.78893G	-43.91	1
2480MHz	Pass	2.47991G	2.61	-17.39	1.92381G	-54.76	2.39844G	-53.77	2.48366G	-53.58	21.82827G	-44.63	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40217G	-1.18	-21.18	825.35M	-54.76	2.39972G	-53.48	2.48421G	-54.95	24.6454G	-44.90	1
2441MHz	Pass	2.44104G	-0.56	-20.56	1.82613G	-55.02	2.39995G	-53.55	2.48431G	-53.83	21.97461G	-44.97	1
2480MHz	Pass	2.47991G	1.17	-18.83	2.14285G	-54.58	2.39978G	-54.54	2.48456G	-53.37	21.67911G	-45.15	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40188G	0.99	-19.01	1.9318G	-55.27	2.39988G	-52.91	2.48546G	-54.56	16.49796G	-45.12	1
2441MHz	Pass	2.44112G	-0.10	-20.10	2.19287G	-55.80	2.39943G	-54.07	2.48493G	-53.77	24.70168G	-45.12	1
2480MHz	Pass	2.47991G	3.04	-16.96	843.11M	-55.16	2.3988G	-54.57	2.48354G	-54.02	21.77198G	-44.47	1

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

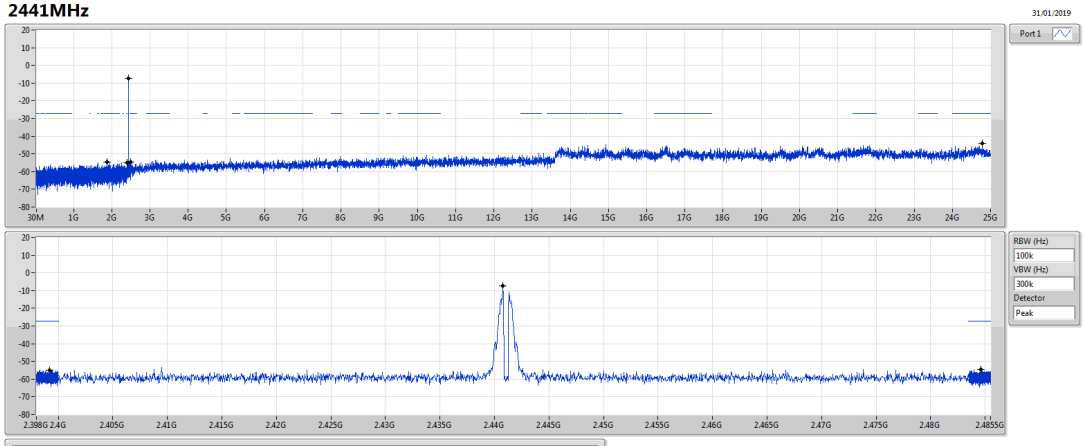
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40217G	-0.05	-20.05	1.99011G	-55.81	2.39959G	-54.07	2.48482G	-54.68	13.73431G	-45.14	1

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

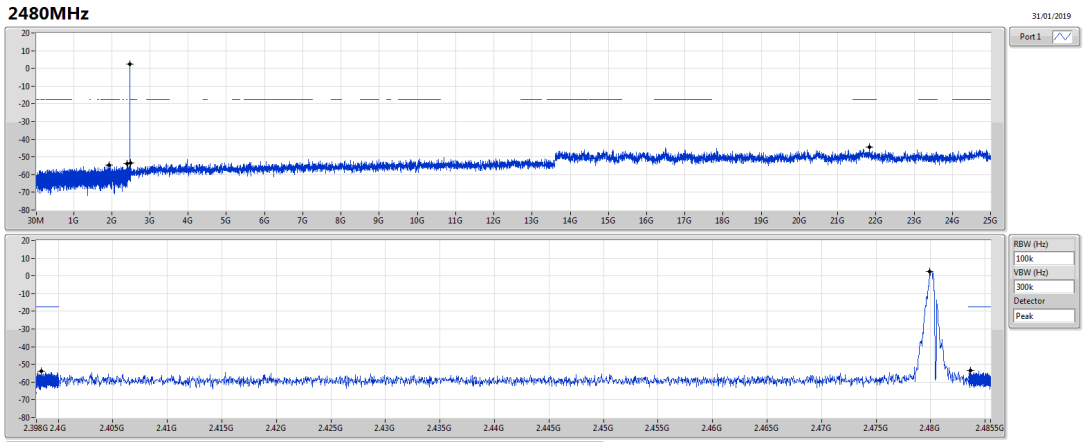
2441MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44079G	-7.24	-27.24	1.87082G	-54.48	2.39922G	-55.10	2.48463G	-54.54	24.78893G	-43.91	1

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

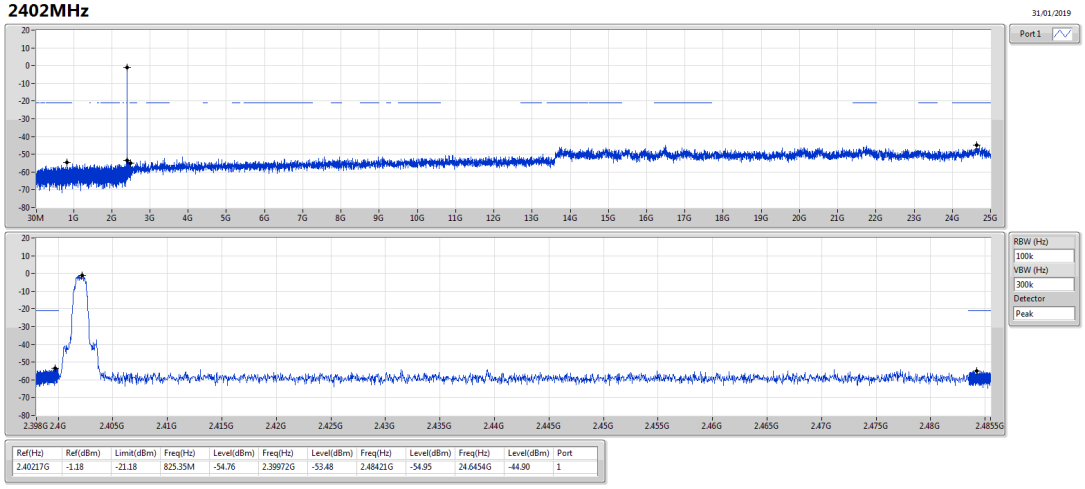
2480MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47991G	2.61	-17.39	1.92381G	-54.76	2.39844G	-53.77	2.48366G	-53.58	21.82827G	-44.63	1

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

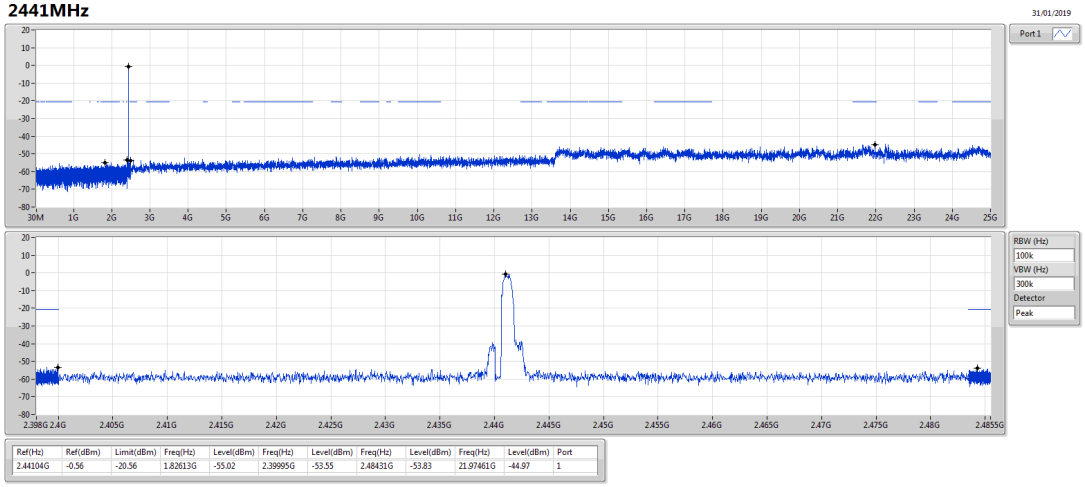
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40217G	-1.18	-21.18	825.35M	-54.76	2.39972G	-53.48	2.48421G	-54.95	24.6454G	-44.90	1

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

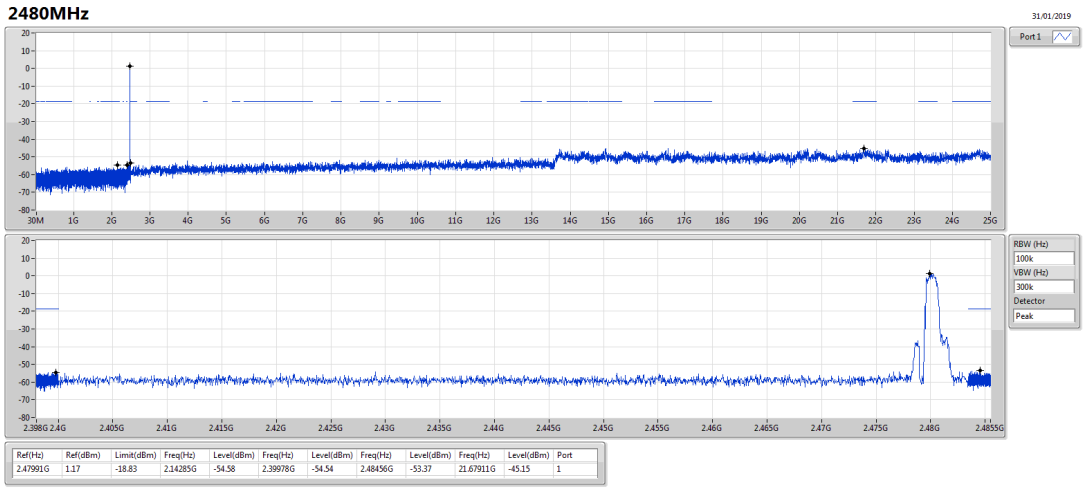
2441MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44104G	-0.56	-20.56	1.82613G	-55.02	2.39995G	-53.55	2.48431G	-53.83	21.97461G	-44.97	1

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

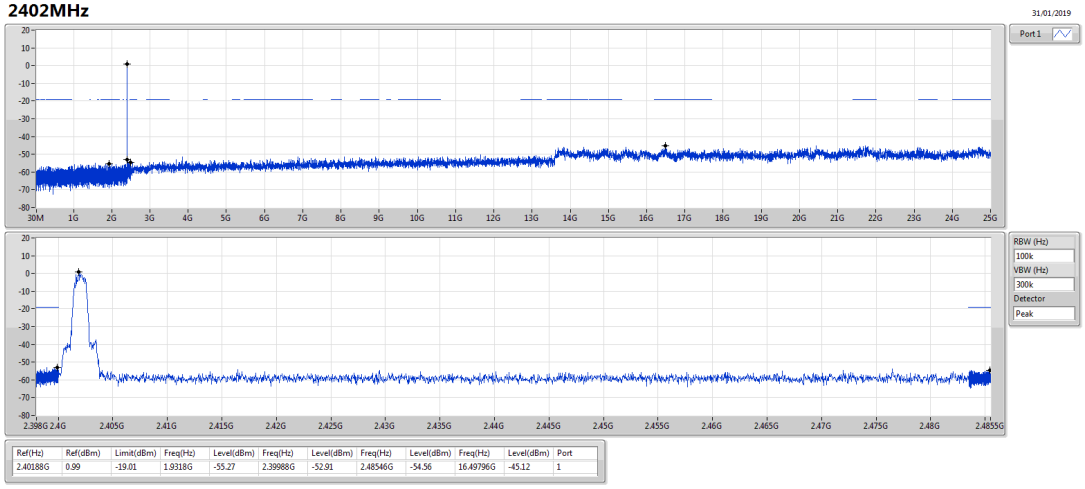
2480MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47991G	1.17	-18.83	2.14285G	-54.58	2.39978G	-54.54	2.48456G	-53.37	21.67911G	-45.15	1

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

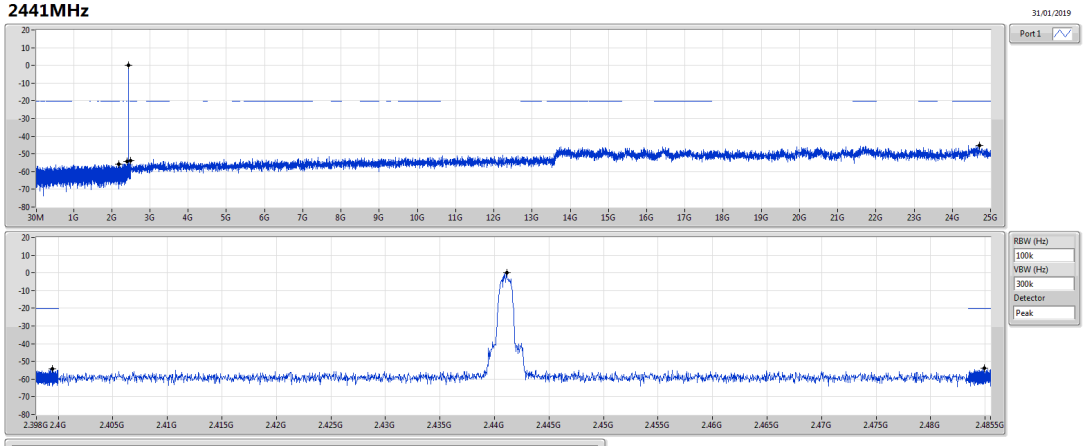
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40188G	0.99	-19.01	1.9318G	-55.27	2.39988G	-52.91	2.48546G	-54.56	16.49796G	-45.12	1

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

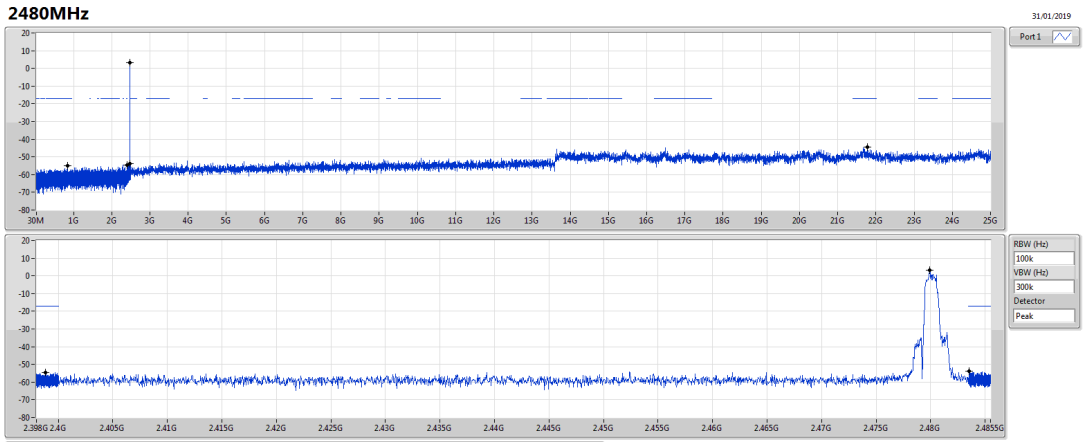
2441MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44112G	-0.10	-20.10	2.19287G	-55.80	2.39943G	-54.07	2.48493G	-53.77	24.70168G	-45.12	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
2.47991G	3.04	-16.96	843.11M	-55.16	2.3988G	-54.57	2.48354G	-54.02	21.77198G	-44.47	1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	PK	807.29M	41.56	46.00	-4.44	-8.07	3	Horizontal	360	3.00	-

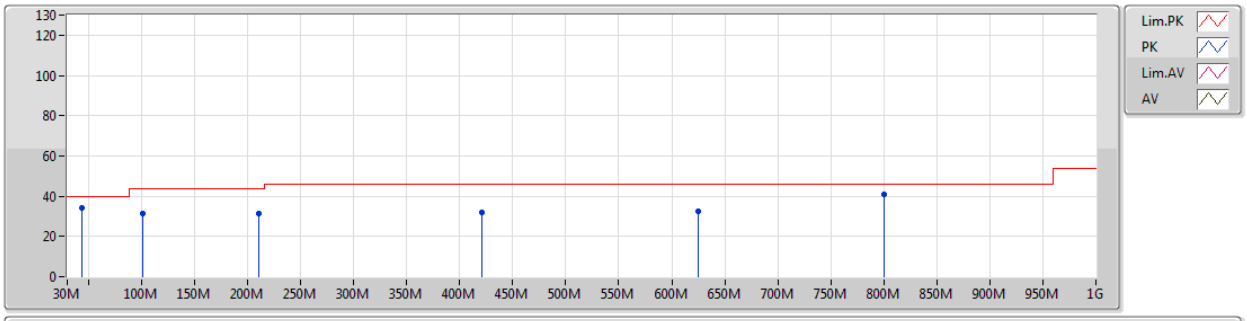
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2441MHz	Pass	PK	43.32M	34.26	40.00	-5.74	-20.12	3	Vertical	0	3.00	-
2441MHz	Pass	PK	100.75M	31.32	43.50	-12.18	-20.99	3	Vertical	0	3.00	-
2441MHz	Pass	PK	210.34M	31.48	43.50	-12.02	-20.96	3	Vertical	0	3.00	-
2441MHz	Pass	PK	420.74M	32.19	46.00	-13.81	-13.21	3	Vertical	0	3.00	-
2441MHz	Pass	PK	624.96M	32.78	46.00	-13.22	-10.20	3	Vertical	0	3.00	-
2441MHz	Pass	PK	800.18M	41.09	46.00	-4.91	-8.13	3	Vertical	0	3.00	-
2441MHz	Pass	PK	39.21M	27.69	40.00	-12.31	-17.95	3	Horizontal	360	3.00	-
2441MHz	Pass	PK	101.24M	37.12	43.50	-6.38	-20.95	3	Horizontal	360	3.00	-
2441MHz	Pass	PK	258.16M	36.94	46.00	-9.06	-15.92	3	Horizontal	360	3.00	-
2441MHz	Pass	PK	445.69M	33.18	46.00	-12.82	-12.94	3	Horizontal	360	3.00	-
2441MHz	Pass	PK	598.33M	33.99	46.00	-12.01	-10.90	3	Horizontal	360	3.00	-
2441MHz	Pass	PK	807.29M	41.56	46.00	-4.44	-8.07	3	Horizontal	360	3.00	-

BT-BR(1Mbps)

2441MHz_USB

01/02/2019

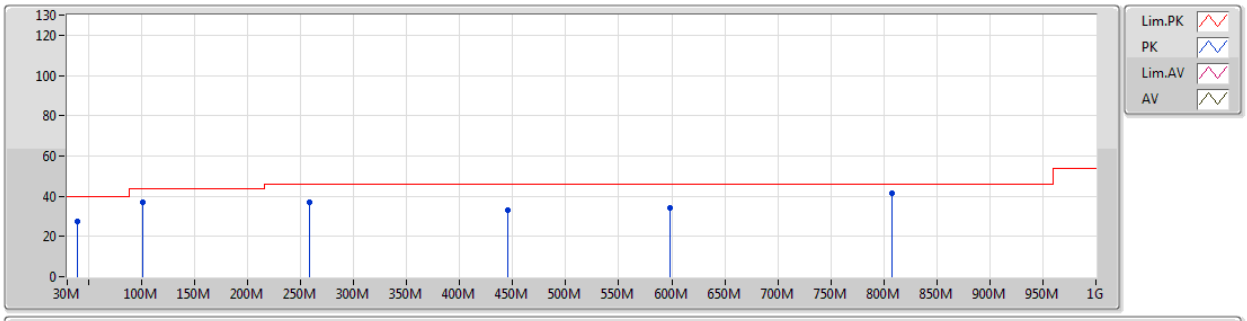


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	43.32M	34.26	40.00	-5.74	-20.12	3	Vertical	0	3.00	-
PK	100.75M	31.32	43.50	-12.18	-20.99	3	Vertical	0	3.00	-
PK	210.34M	31.48	43.50	-12.02	-20.96	3	Vertical	0	3.00	-
PK	420.74M	32.19	46.00	-13.81	-13.21	3	Vertical	0	3.00	-
PK	624.96M	32.78	46.00	-13.22	-10.20	3	Vertical	0	3.00	-
PK	800.18M	41.09	46.00	-4.91	-8.13	3	Vertical	0	3.00	-

BT-BR(1Mbps)

2441MHz_USB

01/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	39.21M	27.69	40.00	-12.31	-17.95	3	Horizontal	360	3.00	-
PK	101.24M	37.12	43.50	-6.38	-20.95	3	Horizontal	360	3.00	-
PK	258.16M	36.94	46.00	-9.06	-15.92	3	Horizontal	360	3.00	-
PK	445.69M	33.18	46.00	-12.82	-12.94	3	Horizontal	360	3.00	-
PK	598.33M	33.99	46.00	-12.01	-10.90	3	Horizontal	360	3.00	-
PK	807.29M	41.56	46.00	-4.44	-8.07	3	Horizontal	360	3.00	-

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	AV	2.4938G	44.12	54.00	-9.88	31.15	3	Vertical	170	2.88	-
BT-EDR(2Mbps)	Pass	AV	2.4986G	43.87	54.00	-10.13	31.17	3	Vertical	165	2.88	-
BT-EDR(3Mbps)	Pass	AV	2.4858G	43.85	54.00	-10.15	31.12	3	Vertical	168	2.89	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3886G	43.06	54.00	-10.94	30.77	3	Vertical	148	2.64	-
2402MHz	Pass	AV	2.402G	94.06	Inf	-Inf	30.82	3	Vertical	148	2.64	-
2402MHz	Pass	PK	2.3884G	55.84	74.00	-18.16	30.77	3	Vertical	148	2.64	-
2402MHz	Pass	PK	2.4018G	94.50	Inf	-Inf	30.82	3	Vertical	148	2.64	-
2402MHz	Pass	AV	2.39G	43.03	54.00	-10.97	30.77	3	Horizontal	180	1.61	-
2402MHz	Pass	AV	2.402G	102.38	Inf	-Inf	30.82	3	Horizontal	180	1.61	-
2402MHz	Pass	PK	2.39G	55.70	74.00	-18.30	30.77	3	Horizontal	180	1.61	-
2402MHz	Pass	PK	2.4018G	102.78	Inf	-Inf	30.82	3	Horizontal	180	1.61	-
2402MHz	Pass	AV	4.804G	36.24	54.00	-17.76	2.08	3	Vertical	205	1.26	-
2402MHz	Pass	PK	4.80388G	44.71	74.00	-29.29	2.08	3	Vertical	205	1.26	-
2402MHz	Pass	AV	4.80406G	39.10	54.00	-14.90	2.08	3	Horizontal	96	1.36	-
2402MHz	Pass	PK	4.80436G	46.82	74.00	-27.18	2.08	3	Horizontal	96	1.36	-
2441MHz	Pass	AV	2.3862G	43.29	54.00	-10.71	30.76	3	Vertical	170	2.88	-
2441MHz	Pass	AV	2.441G	97.02	Inf	-Inf	30.95	3	Vertical	170	2.88	-
2441MHz	Pass	AV	2.4938G	44.12	54.00	-9.88	31.15	3	Vertical	170	2.88	-
2441MHz	Pass	PK	2.3486G	56.05	74.00	-17.95	30.63	3	Vertical	170	2.88	-
2441MHz	Pass	PK	2.441G	97.42	Inf	-Inf	30.95	3	Vertical	170	2.88	-
2441MHz	Pass	PK	2.4978G	56.48	74.00	-17.52	31.16	3	Vertical	170	2.88	-
2441MHz	Pass	AV	2.3658G	43.15	54.00	-10.85	30.69	3	Horizontal	182	1.28	-
2441MHz	Pass	AV	2.441G	102.15	Inf	-Inf	30.95	3	Horizontal	182	1.28	-
2441MHz	Pass	AV	2.4922G	43.87	54.00	-10.13	31.14	3	Horizontal	182	1.28	-
2441MHz	Pass	PK	2.3558G	55.76	74.00	-18.24	30.66	3	Horizontal	182	1.28	-
2441MHz	Pass	PK	2.441G	102.56	Inf	-Inf	30.95	3	Horizontal	182	1.28	-
2441MHz	Pass	PK	2.4942G	56.72	74.00	-17.28	31.15	3	Horizontal	182	1.28	-
2441MHz	Pass	AV	4.88836G	36.65	54.00	-17.35	2.29	3	Vertical	244	1.26	-
2441MHz	Pass	PK	4.87294G	44.82	74.00	-29.18	2.25	3	Vertical	244	1.26	-
2441MHz	Pass	AV	4.8901G	39.51	54.00	-14.49	2.29	3	Horizontal	105	1.44	-
2441MHz	Pass	PK	4.87846G	46.67	74.00	-27.33	2.27	3	Horizontal	105	1.44	-
2480MHz	Pass	AV	2.48G	93.75	Inf	-Inf	31.09	3	Vertical	134	2.89	-
2480MHz	Pass	AV	2.4878G	43.89	54.00	-10.11	31.13	3	Vertical	134	2.89	-
2480MHz	Pass	PK	2.4798G	94.22	Inf	-Inf	31.09	3	Vertical	134	2.89	-
2480MHz	Pass	PK	2.491G	56.62	74.00	-17.38	31.13	3	Vertical	134	2.89	-
2480MHz	Pass	AV	2.48G	102.53	Inf	-Inf	31.09	3	Horizontal	183	1.28	-
2480MHz	Pass	AV	2.4928G	43.94	54.00	-10.06	31.14	3	Horizontal	183	1.28	-
2480MHz	Pass	PK	2.4798G	102.94	Inf	-Inf	31.09	3	Horizontal	183	1.28	-
2480MHz	Pass	PK	2.4848G	56.42	74.00	-17.58	31.12	3	Horizontal	183	1.28	-
2480MHz	Pass	AV	4.97488G	37.05	54.00	-16.95	2.50	3	Vertical	189	1.70	-
2480MHz	Pass	PK	4.96276G	45.52	74.00	-28.48	2.47	3	Vertical	189	1.70	-
2480MHz	Pass	AV	4.96876G	39.25	54.00	-14.75	2.49	3	Horizontal	82	1.37	-
2480MHz	Pass	PK	4.97488G	46.88	74.00	-27.12	2.50	3	Horizontal	82	1.37	-
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3822G	43.17	54.00	-10.83	30.75	3	Vertical	44	1.01	-
2402MHz	Pass	AV	2.402G	85.04	Inf	-Inf	30.82	3	Vertical	44	1.01	-
2402MHz	Pass	PK	2.3882G	55.42	74.00	-18.58	30.77	3	Vertical	44	1.01	-
2402MHz	Pass	PK	2.4018G	88.75	Inf	-Inf	30.82	3	Vertical	44	1.01	-
2402MHz	Pass	AV	2.389G	43.09	54.00	-10.91	30.77	3	Horizontal	179	1.61	-
2402MHz	Pass	AV	2.402G	95.16	Inf	-Inf	30.82	3	Horizontal	179	1.61	-

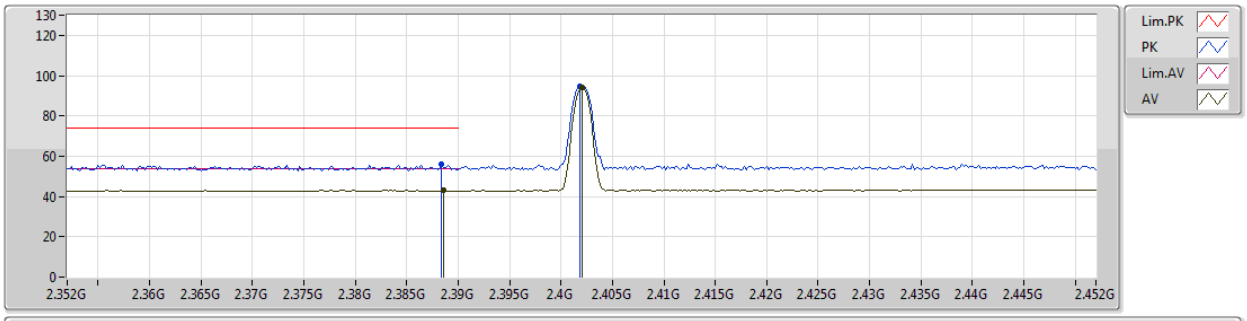
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz	Pass	PK	2.3782G	55.95	74.00	-18.05	30.73	3	Horizontal	179	1.61	-
2402MHz	Pass	PK	2.4022G	98.77	Inf	-Inf	30.82	3	Horizontal	179	1.61	-
2441MHz	Pass	AV	2.3498G	43.11	54.00	-10.89	30.63	3	Vertical	165	2.88	-
2441MHz	Pass	AV	2.441G	90.17	Inf	-Inf	30.95	3	Vertical	165	2.88	-
2441MHz	Pass	AV	2.4986G	43.87	54.00	-10.13	31.17	3	Vertical	165	2.88	-
2441MHz	Pass	PK	2.3602G	55.87	74.00	-18.13	30.67	3	Vertical	165	2.88	-
2441MHz	Pass	PK	2.4414G	93.71	Inf	-Inf	30.96	3	Vertical	165	2.88	-
2441MHz	Pass	PK	2.4854G	56.84	74.00	-17.16	31.12	3	Vertical	165	2.88	-
2441MHz	Pass	AV	2.3614G	43.05	54.00	-10.95	30.67	3	Horizontal	180	1.31	-
2441MHz	Pass	AV	2.441G	95.58	Inf	-Inf	30.95	3	Horizontal	180	1.31	-
2441MHz	Pass	AV	2.4854G	43.74	54.00	-10.26	31.12	3	Horizontal	180	1.31	-
2441MHz	Pass	PK	2.371G	55.25	74.00	-18.75	30.71	3	Horizontal	180	1.31	-
2441MHz	Pass	PK	2.441G	99.21	Inf	-Inf	30.95	3	Horizontal	180	1.31	-
2441MHz	Pass	PK	2.4914G	55.29	74.00	-18.71	31.14	3	Horizontal	180	1.31	-
2480MHz	Pass	AV	2.48G	85.37	Inf	-Inf	31.09	3	Vertical	219	2.90	-
2480MHz	Pass	AV	2.4876G	43.84	54.00	-10.16	31.13	3	Vertical	219	2.90	-
2480MHz	Pass	PK	2.4798G	88.94	Inf	-Inf	31.09	3	Vertical	219	2.90	-
2480MHz	Pass	PK	2.4894G	56.40	74.00	-17.60	31.13	3	Vertical	219	2.90	-
2480MHz	Pass	AV	2.48G	95.33	Inf	-Inf	31.09	3	Horizontal	179	1.27	-
2480MHz	Pass	AV	2.4936G	43.83	54.00	-10.17	31.14	3	Horizontal	179	1.27	-
2480MHz	Pass	PK	2.4798G	98.92	Inf	-Inf	31.09	3	Horizontal	179	1.27	-
2480MHz	Pass	PK	2.4938G	56.46	74.00	-17.54	31.15	3	Horizontal	179	1.27	-
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3894G	43.05	54.00	-10.95	30.77	3	Vertical	48	1.01	-
2402MHz	Pass	AV	2.4022G	85.36	Inf	-Inf	30.82	3	Vertical	48	1.01	-
2402MHz	Pass	PK	2.388G	55.73	74.00	-18.27	30.77	3	Vertical	48	1.01	-
2402MHz	Pass	PK	2.402G	89.21	Inf	-Inf	30.82	3	Vertical	48	1.01	-
2402MHz	Pass	AV	2.3746G	42.95	54.00	-11.05	30.72	3	Horizontal	183	1.60	-
2402MHz	Pass	AV	2.402G	95.04	Inf	-Inf	30.82	3	Horizontal	183	1.60	-
2402MHz	Pass	PK	2.3888G	55.38	74.00	-18.62	30.77	3	Horizontal	183	1.60	-
2402MHz	Pass	PK	2.402G	98.88	Inf	-Inf	30.82	3	Horizontal	183	1.60	-
2441MHz	Pass	AV	2.3882G	43.10	54.00	-10.90	30.77	3	Vertical	168	2.89	-
2441MHz	Pass	AV	2.441G	90.13	Inf	-Inf	30.95	3	Vertical	168	2.89	-
2441MHz	Pass	AV	2.4858G	43.85	54.00	-10.15	31.12	3	Vertical	168	2.89	-
2441MHz	Pass	PK	2.3666G	55.64	74.00	-18.36	30.70	3	Vertical	168	2.89	-
2441MHz	Pass	PK	2.441G	94.11	Inf	-Inf	30.95	3	Vertical	168	2.89	-
2441MHz	Pass	PK	2.491G	55.96	74.00	-18.04	31.13	3	Vertical	168	2.89	-
2441MHz	Pass	AV	2.3846G	43.16	54.00	-10.84	30.76	3	Horizontal	181	1.27	-
2441MHz	Pass	AV	2.441G	95.21	Inf	-Inf	30.95	3	Horizontal	181	1.27	-
2441MHz	Pass	AV	2.4986G	43.78	54.00	-10.22	31.17	3	Horizontal	181	1.27	-
2441MHz	Pass	PK	2.3618G	55.51	74.00	-18.49	30.67	3	Horizontal	181	1.27	-
2441MHz	Pass	PK	2.441G	99.01	Inf	-Inf	30.95	3	Horizontal	181	1.27	-
2441MHz	Pass	PK	2.485G	56.77	74.00	-17.23	31.12	3	Horizontal	181	1.27	-
2480MHz	Pass	AV	2.48G	85.34	Inf	-Inf	31.09	3	Vertical	220	2.89	-
2480MHz	Pass	AV	2.4928G	43.81	54.00	-10.19	31.14	3	Vertical	220	2.89	-
2480MHz	Pass	PK	2.48G	89.17	Inf	-Inf	31.09	3	Vertical	220	2.89	-
2480MHz	Pass	PK	2.4882G	56.09	74.00	-17.91	31.13	3	Vertical	220	2.89	-
2480MHz	Pass	AV	2.48G	95.40	Inf	-Inf	31.09	3	Horizontal	180	1.26	-
2480MHz	Pass	AV	2.486G	43.81	54.00	-10.19	31.12	3	Horizontal	180	1.26	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz	Pass	PK	2.48G	99.30	Inf	-Inf	31.09	3	Horizontal	180	1.26	-
2480MHz	Pass	PK	2.4912G	56.58	74.00	-17.42	31.14	3	Horizontal	180	1.26	-

BT-BR(1Mbps)

2402MHz_TX

01/02/2019

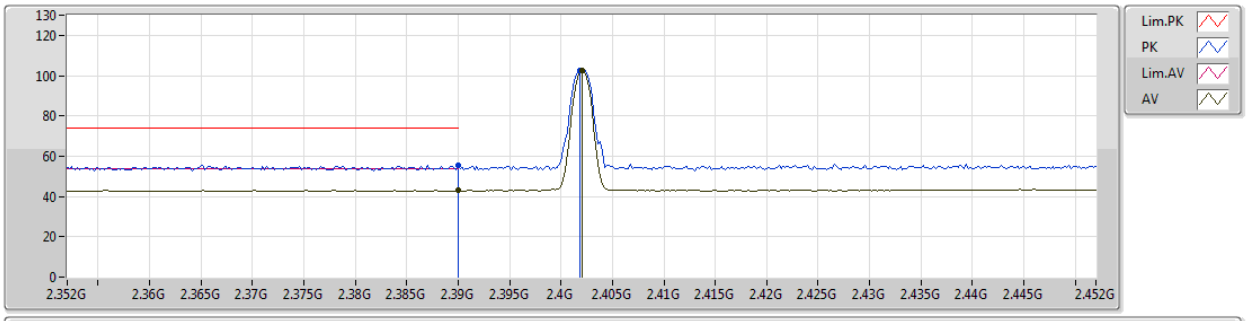


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3886G	43.06	54.00	-10.94	30.77	3	Vertical	148	2.64	-
AV	2.402G	94.06	Inf	-Inf	30.82	3	Vertical	148	2.64	-
PK	2.3884G	55.84	74.00	-18.16	30.77	3	Vertical	148	2.64	-
PK	2.4018G	94.50	Inf	-Inf	30.82	3	Vertical	148	2.64	-

BT-BR(1Mbps)

2402MHz_TX

01/02/2019

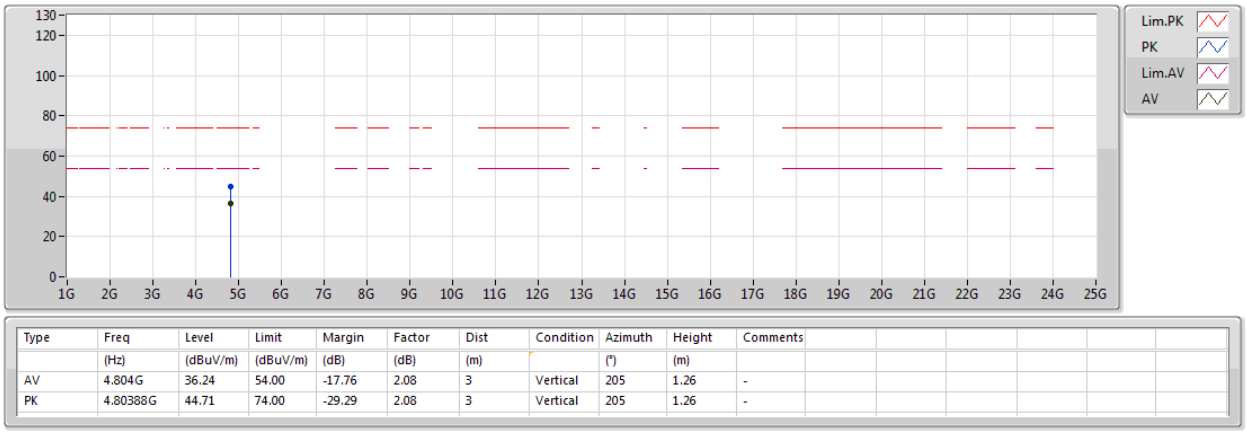


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.39G	43.03	54.00	-10.97	30.77	3	Horizontal	180	1.61	-
AV	2.402G	102.38	Inf	-Inf	30.82	3	Horizontal	180	1.61	-
PK	2.39G	55.70	74.00	-18.30	30.77	3	Horizontal	180	1.61	-
PK	2.4018G	102.78	Inf	-Inf	30.82	3	Horizontal	180	1.61	-

BT-BR(1Mbps)

2402MHz_TX

01/02/2019

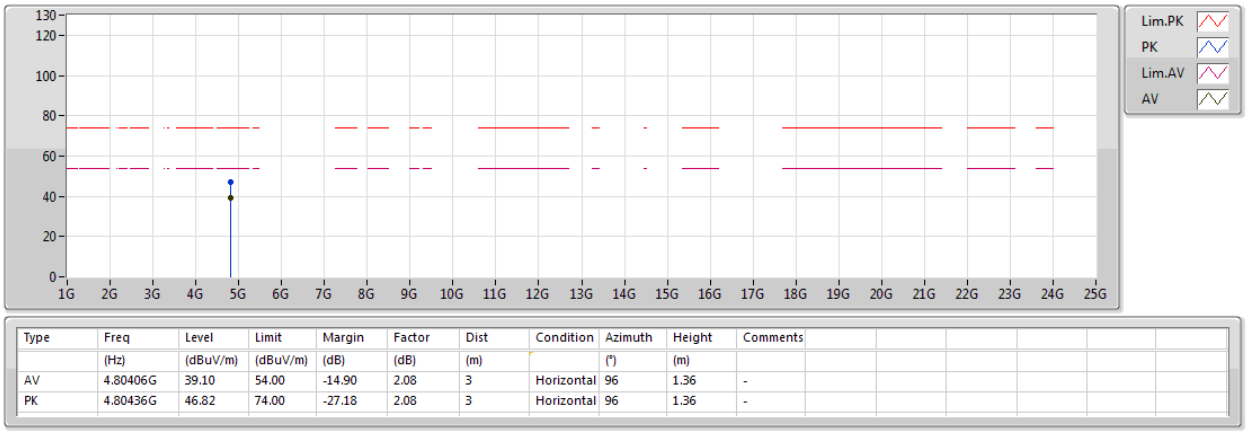


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.804G	36.24	54.00	-17.76	2.08	3	Vertical	205	1.26	-
PK	4.80388G	44.71	74.00	-29.29	2.08	3	Vertical	205	1.26	-

BT-BR(1Mbps)

2402MHz_TX

01/02/2019

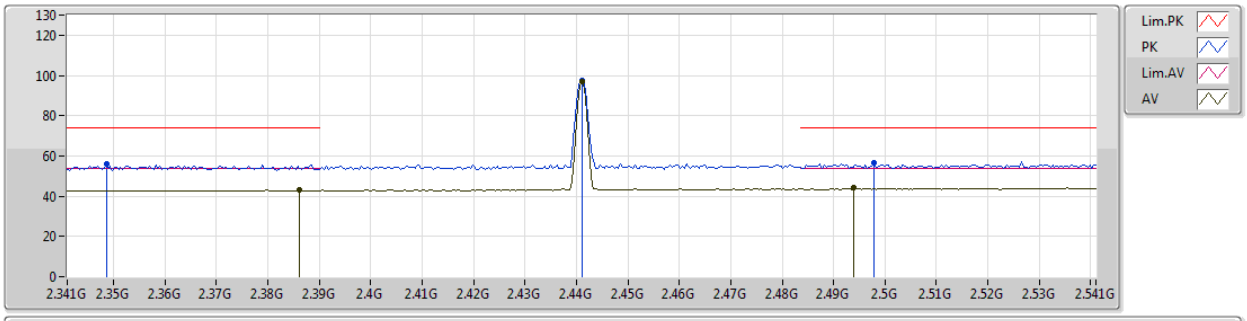


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80406G	39.10	54.00	-14.90	2.08	3	Horizontal	96	1.36	-
PK	4.80436G	46.82	74.00	-27.18	2.08	3	Horizontal	96	1.36	-

BT-BR(1Mbps)

2441MHz_TX

01/02/2019

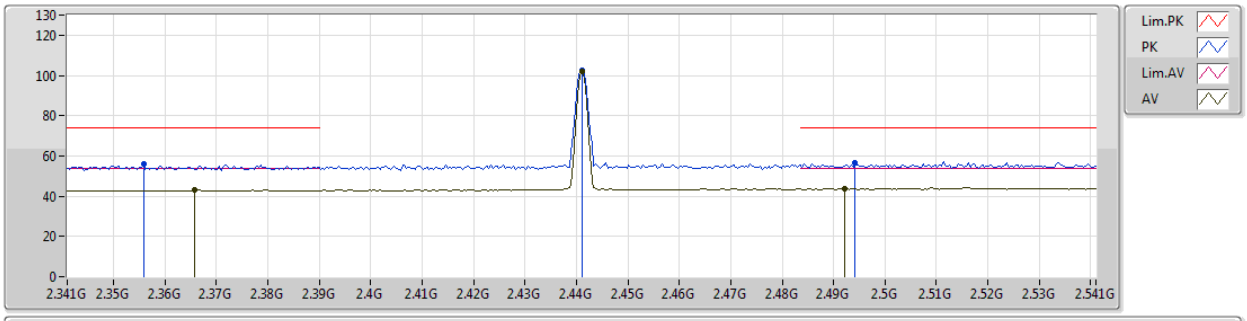


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3862G	43.29	54.00	-10.71	30.76	3	Vertical	170	2.88	-
AV	2.441G	97.02	Inf	-Inf	30.95	3	Vertical	170	2.88	-
AV	2.4938G	44.12	54.00	-9.88	31.15	3	Vertical	170	2.88	-
PK	2.3486G	56.05	74.00	-17.95	30.63	3	Vertical	170	2.88	-
PK	2.441G	97.42	Inf	-Inf	30.95	3	Vertical	170	2.88	-
PK	2.4978G	56.48	74.00	-17.52	31.16	3	Vertical	170	2.88	-

BT-BR(1Mbps)

2441MHz_TX

01/02/2019

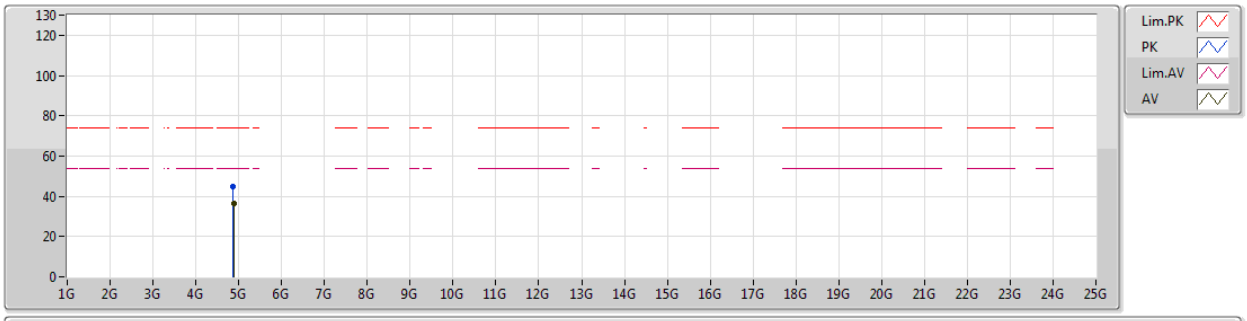


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3658G	43.15	54.00	-10.85	30.69	3	Horizontal	182	1.28	-
AV	2.441G	102.15	Inf	-Inf	30.95	3	Horizontal	182	1.28	-
AV	2.4922G	43.87	54.00	-10.13	31.14	3	Horizontal	182	1.28	-
PK	2.3558G	55.76	74.00	-18.24	30.66	3	Horizontal	182	1.28	-
PK	2.441G	102.56	Inf	-Inf	30.95	3	Horizontal	182	1.28	-
PK	2.4942G	56.72	74.00	-17.28	31.15	3	Horizontal	182	1.28	-

BT-BR(1Mbps)

2441MHz_TX

01/02/2019

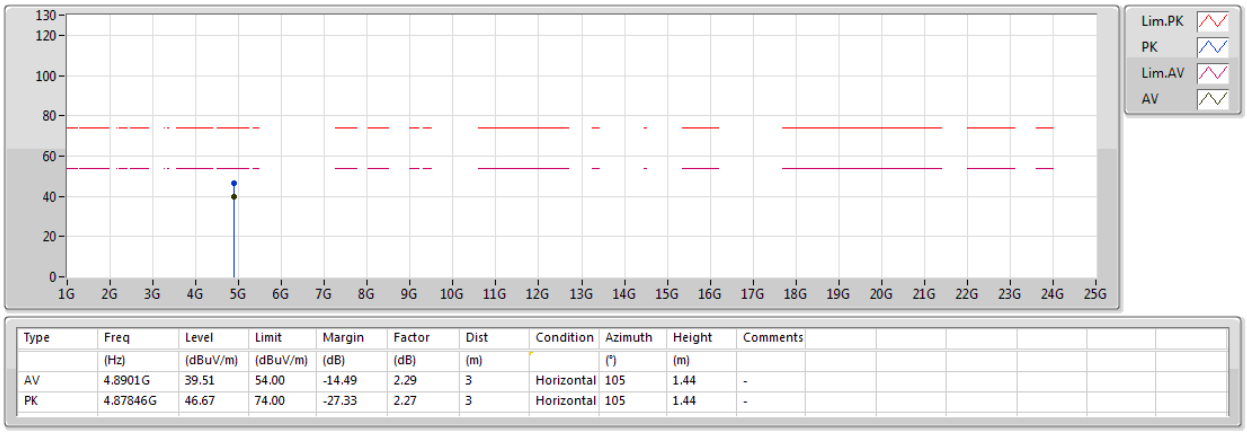


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.88836G	36.65	54.00	-17.35	2.29	3	Vertical	244	1.26	-
PK	4.87294G	44.82	74.00	-29.18	2.25	3	Vertical	244	1.26	-

BT-BR(1Mbps)

2441MHz_TX

01/02/2019

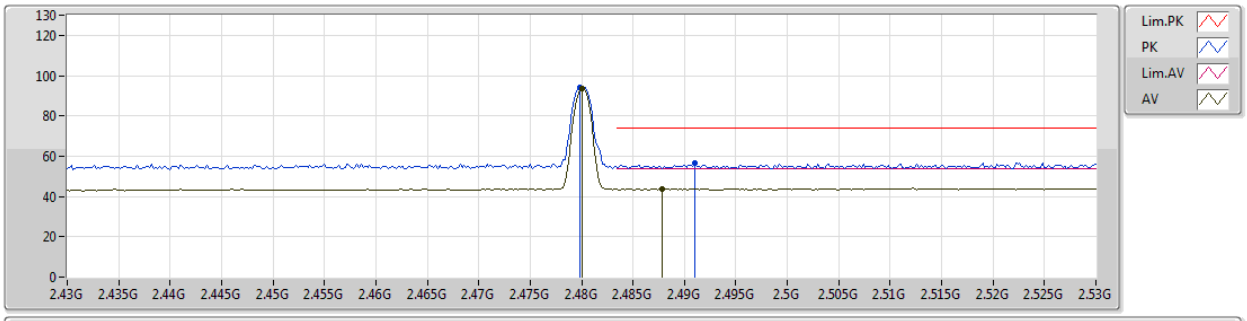


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.8901G	39.51	54.00	-14.49	2.29	3	Horizontal	105	1.44	-
PK	4.87846G	46.67	74.00	-27.33	2.27	3	Horizontal	105	1.44	-

BT-BR(1Mbps)

2480MHz_TX

01/02/2019

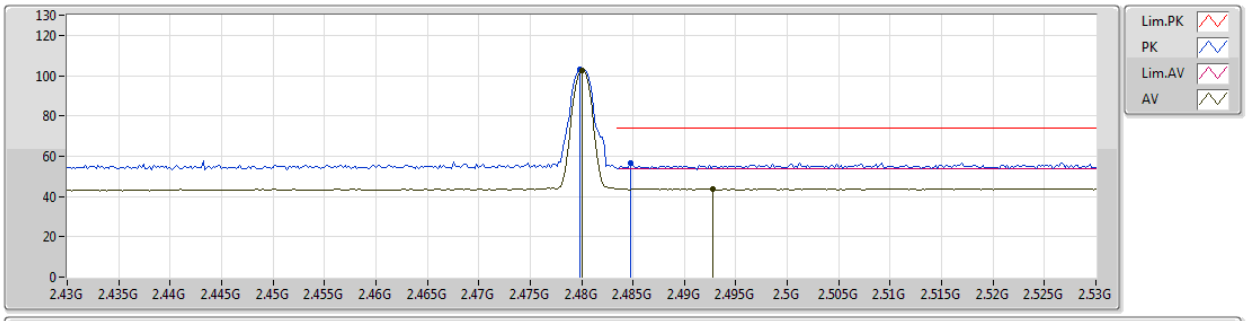


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	93.75	Inf	-Inf	31.09	3	Vertical	134	2.89	-
AV	2.4878G	43.89	54.00	-10.11	31.13	3	Vertical	134	2.89	-
PK	2.4798G	94.22	Inf	-Inf	31.09	3	Vertical	134	2.89	-
PK	2.491G	56.62	74.00	-17.38	31.13	3	Vertical	134	2.89	-

BT-BR(1Mbps)

2480MHz_TX

01/02/2019

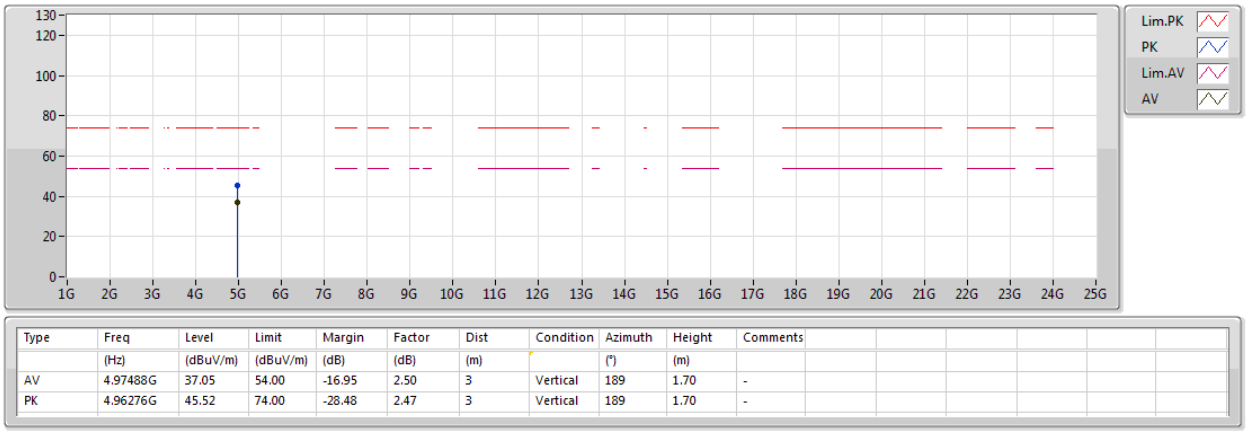


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	102.53	Inf	-Inf	31.09	3	Horizontal	183	1.28	-
AV	2.4928G	43.94	54.00	-10.06	31.14	3	Horizontal	183	1.28	-
PK	2.4798G	102.94	Inf	-Inf	31.09	3	Horizontal	183	1.28	-
PK	2.4848G	56.42	74.00	-17.58	31.12	3	Horizontal	183	1.28	-

BT-BR(1Mbps)

2480MHz_TX

01/02/2019

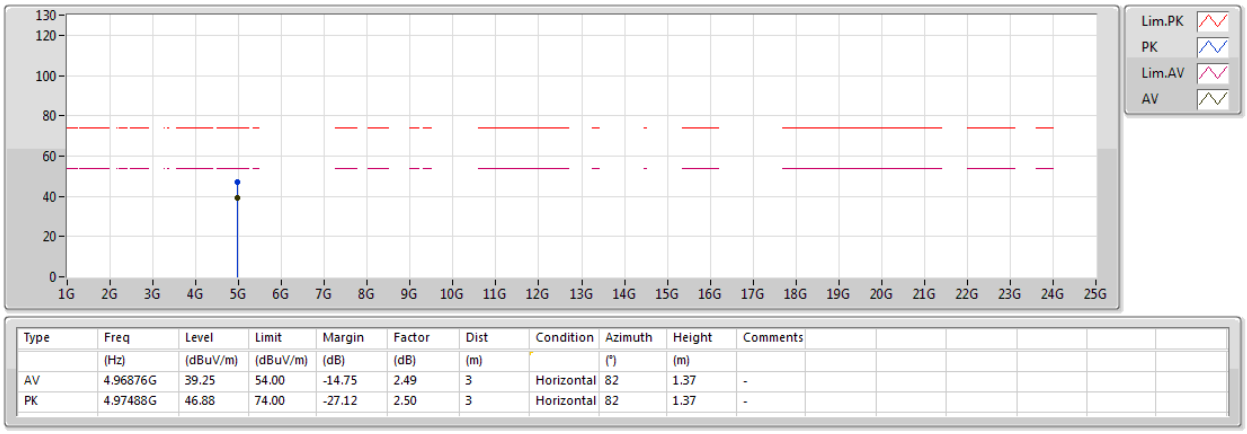


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.97488G	37.05	54.00	-16.95	2.50	3	Vertical	189	1.70	-
PK	4.96276G	45.52	74.00	-28.48	2.47	3	Vertical	189	1.70	-

BT-BR(1Mbps)

2480MHz_TX

01/02/2019

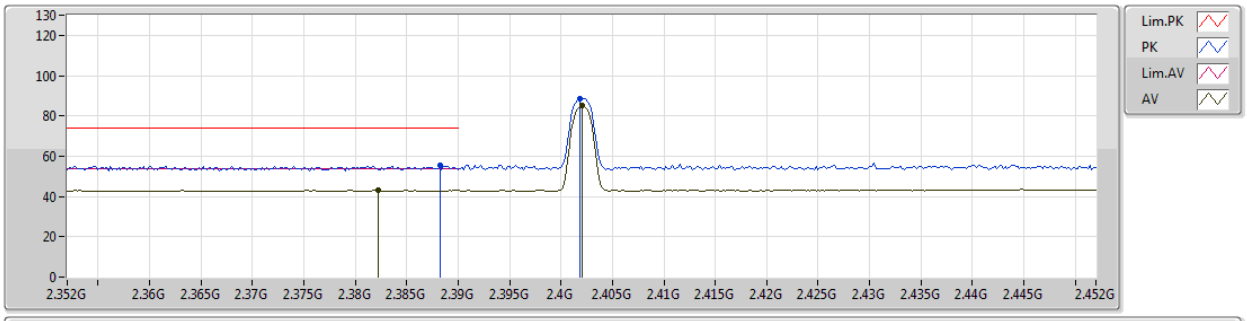


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.96876G	39.25	54.00	-14.75	2.49	3	Horizontal	82	1.37	-
PK	4.97488G	46.88	74.00	-27.12	2.50	3	Horizontal	82	1.37	-

BT-EDR(2Mbps)

2402MHz_TX

01/02/2019

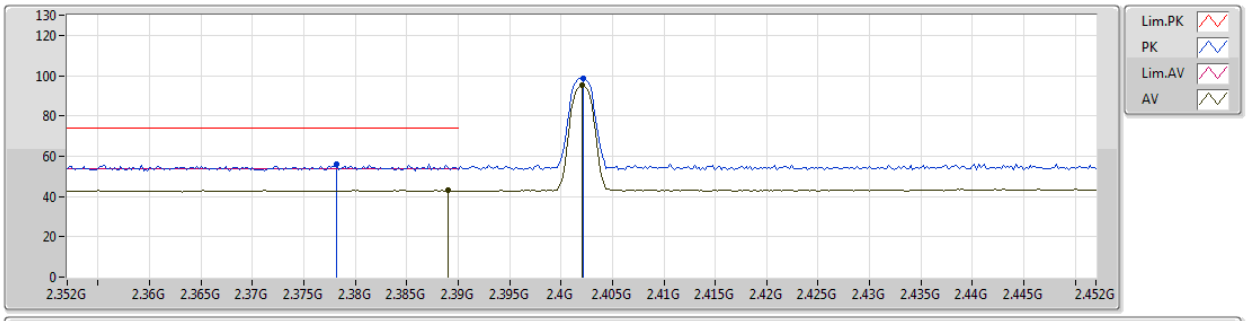


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3822G	43.17	54.00	-10.83	30.75	3	Vertical	44	1.01	-
AV	2.402G	85.04	Inf	-Inf	30.82	3	Vertical	44	1.01	-
PK	2.3882G	55.42	74.00	-18.58	30.77	3	Vertical	44	1.01	-
PK	2.4018G	88.75	Inf	-Inf	30.82	3	Vertical	44	1.01	-

BT-EDR(2Mbps)

2402MHz_TX

01/02/2019

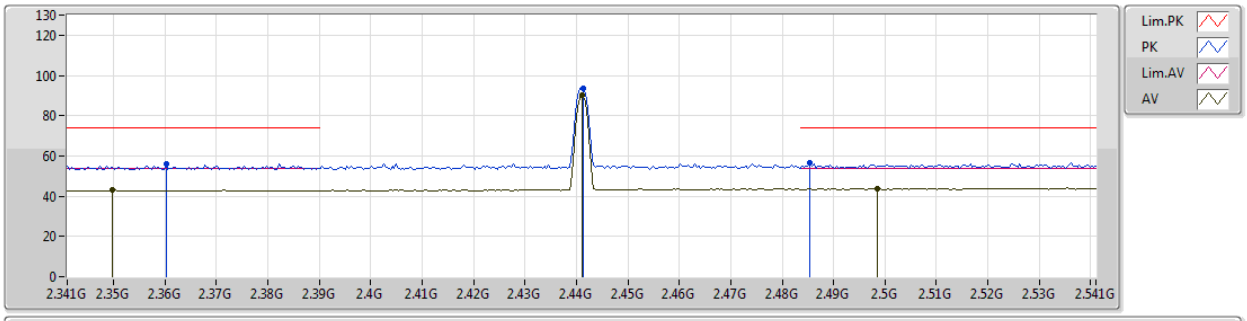


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.389G	43.09	54.00	-10.91	30.77	3	Horizontal	179	1.61	-
AV	2.402G	95.16	Inf	-Inf	30.82	3	Horizontal	179	1.61	-
PK	2.3782G	55.95	74.00	-18.05	30.73	3	Horizontal	179	1.61	-
PK	2.4022G	98.77	Inf	-Inf	30.82	3	Horizontal	179	1.61	-

BT-EDR(2Mbps)

2441MHz_TX

01/02/2019

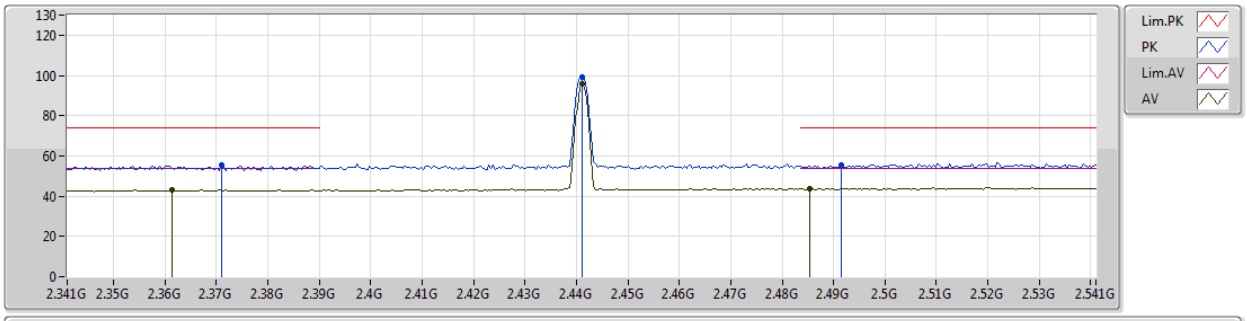


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3498G	43.11	54.00	-10.89	30.63	3	Vertical	165	2.88	-
AV	2.441G	90.17	Inf	-Inf	30.95	3	Vertical	165	2.88	-
AV	2.4986G	43.87	54.00	-10.13	31.17	3	Vertical	165	2.88	-
PK	2.3602G	55.87	74.00	-18.13	30.67	3	Vertical	165	2.88	-
PK	2.4414G	93.71	Inf	-Inf	30.96	3	Vertical	165	2.88	-
PK	2.4854G	56.84	74.00	-17.16	31.12	3	Vertical	165	2.88	-

BT-EDR(2Mbps)

2441MHz_TX

01/02/2019

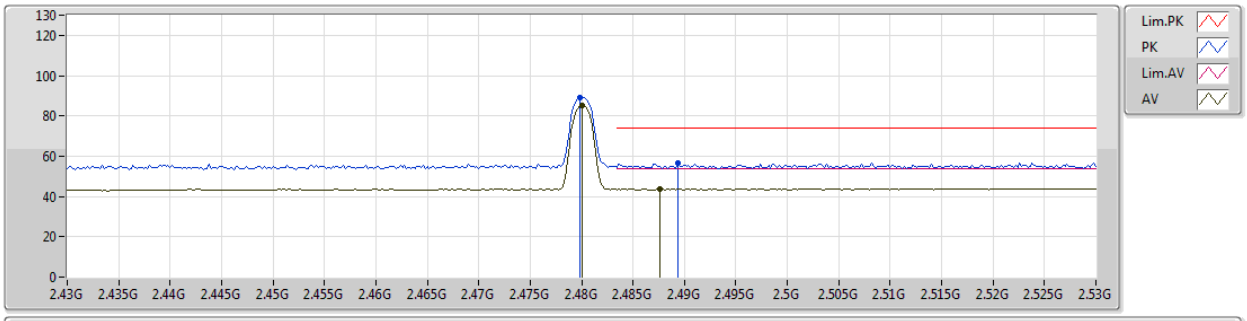


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3614G	43.05	54.00	-10.95	30.67	3	Horizontal	180	1.31	-
AV	2.441G	95.58	Inf	-Inf	30.95	3	Horizontal	180	1.31	-
AV	2.4854G	43.74	54.00	-10.26	31.12	3	Horizontal	180	1.31	-
PK	2.371G	55.25	74.00	-18.75	30.71	3	Horizontal	180	1.31	-
PK	2.441G	99.21	Inf	-Inf	30.95	3	Horizontal	180	1.31	-
PK	2.4914G	55.29	74.00	-18.71	31.14	3	Horizontal	180	1.31	-

BT-EDR(2Mbps)

2480MHz_TX

01/02/2019

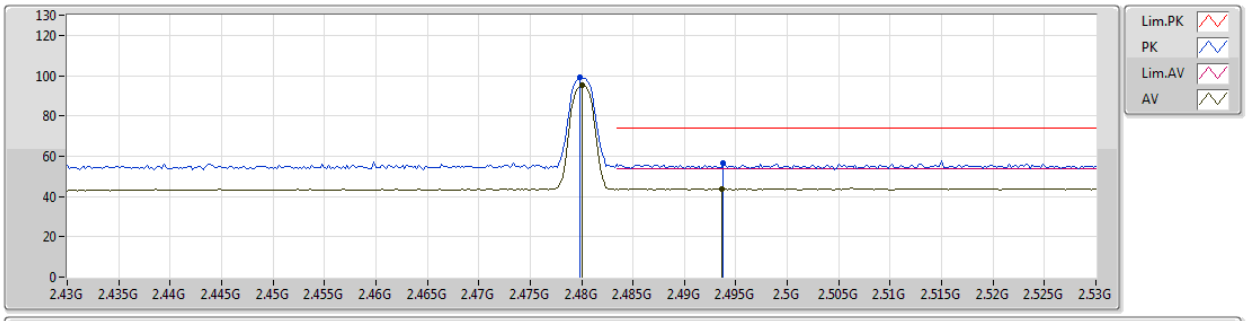


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	85.37	Inf	-Inf	31.09	3	Vertical	219	2.90	-
AV	2.4876G	43.84	54.00	-10.16	31.13	3	Vertical	219	2.90	-
PK	2.4798G	88.94	Inf	-Inf	31.09	3	Vertical	219	2.90	-
PK	2.4894G	56.40	74.00	-17.60	31.13	3	Vertical	219	2.90	-

BT-EDR(2Mbps)

2480MHz_TX

01/02/2019

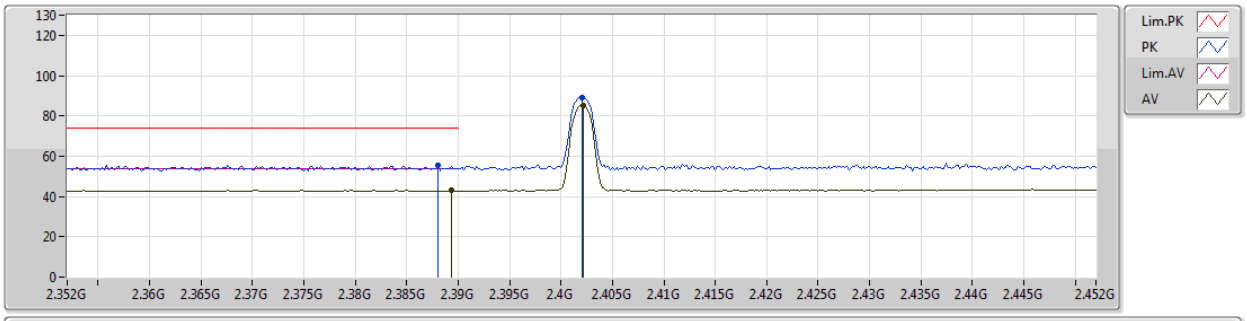


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	95.33	Inf	-Inf	31.09	3	Horizontal	179	1.27	-
AV	2.4936G	43.83	54.00	-10.17	31.14	3	Horizontal	179	1.27	-
PK	2.4798G	98.92	Inf	-Inf	31.09	3	Horizontal	179	1.27	-
PK	2.4938G	56.46	74.00	-17.54	31.15	3	Horizontal	179	1.27	-

BT-EDR(3Mbps)

2402MHz_TX

01/02/2019

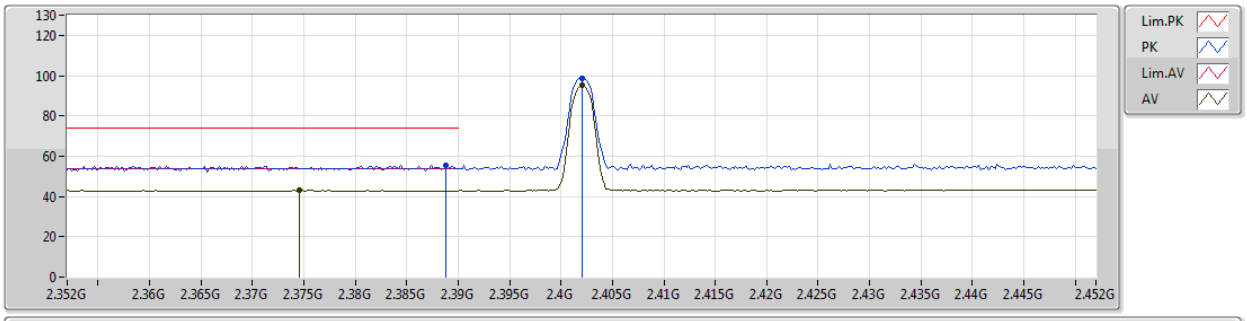


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3894G	43.05	54.00	-10.95	30.77	3	Vertical	48	1.01	-
AV	2.4022G	85.36	Inf	-Inf	30.82	3	Vertical	48	1.01	-
PK	2.388G	55.73	74.00	-18.27	30.77	3	Vertical	48	1.01	-
PK	2.402G	89.21	Inf	-Inf	30.82	3	Vertical	48	1.01	-

BT-EDR(3Mbps)

2402MHz_TX

01/02/2019

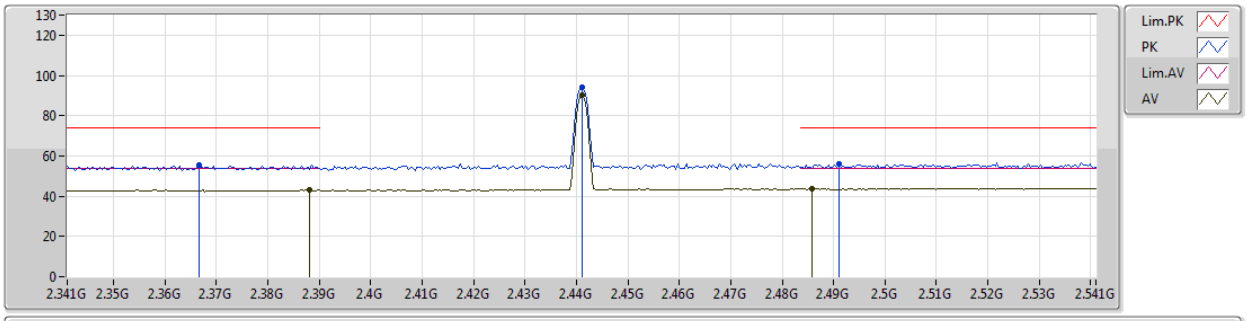


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3746G	42.95	54.00	-11.05	30.72	3	Horizontal	183	1.60	-
AV	2.402G	95.04	Inf	-Inf	30.82	3	Horizontal	183	1.60	-
PK	2.3888G	55.38	74.00	-18.62	30.77	3	Horizontal	183	1.60	-
PK	2.402G	98.88	Inf	-Inf	30.82	3	Horizontal	183	1.60	-

BT-EDR(3Mbps)

2441MHz_TX

01/02/2019

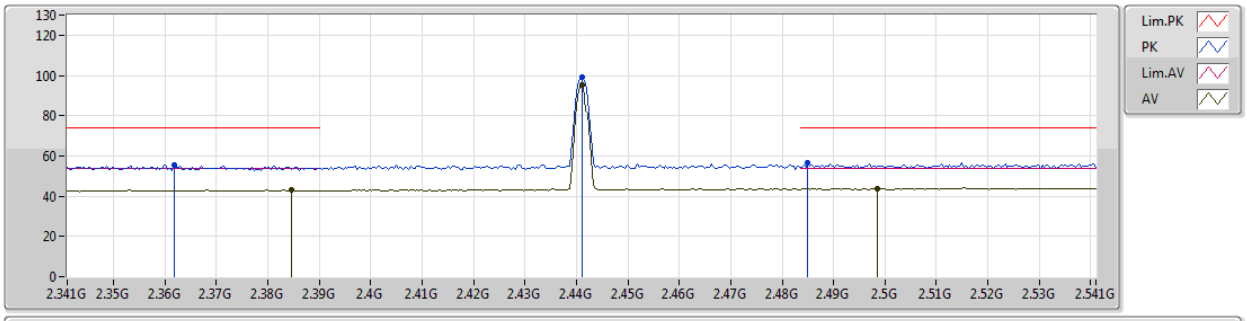


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3882G	43.10	54.00	-10.90	30.77	3	Vertical	168	2.89	-
AV	2.441G	90.13	Inf	-Inf	30.95	3	Vertical	168	2.89	-
AV	2.4858G	43.85	54.00	-10.15	31.12	3	Vertical	168	2.89	-
PK	2.3666G	55.64	74.00	-18.36	30.70	3	Vertical	168	2.89	-
PK	2.441G	94.11	Inf	-Inf	30.95	3	Vertical	168	2.89	-
PK	2.491G	55.96	74.00	-18.04	31.13	3	Vertical	168	2.89	-

BT-EDR(3Mbps)

2441MHz_TX

01/02/2019

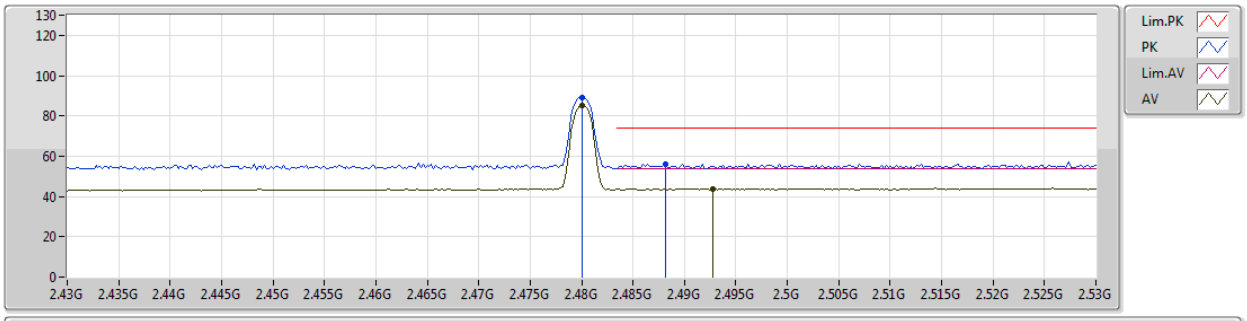


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3846G	43.16	54.00	-10.84	30.76	3	Horizontal	181	1.27	-
AV	2.441G	95.21	Inf	-Inf	30.95	3	Horizontal	181	1.27	-
AV	2.4986G	43.78	54.00	-10.22	31.17	3	Horizontal	181	1.27	-
PK	2.3618G	55.51	74.00	-18.49	30.67	3	Horizontal	181	1.27	-
PK	2.441G	99.01	Inf	-Inf	30.95	3	Horizontal	181	1.27	-
PK	2.485G	56.77	74.00	-17.23	31.12	3	Horizontal	181	1.27	-

BT-EDR(3Mbps)

2480MHz_TX

01/02/2019

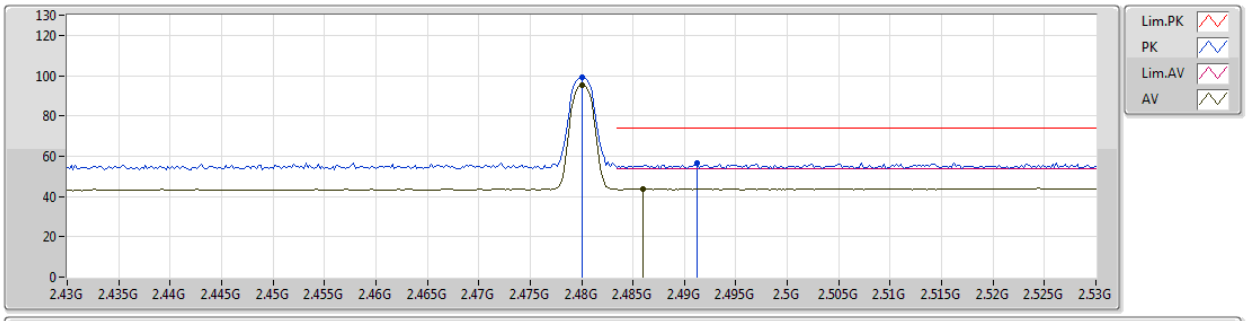


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	85.34	Inf	-Inf	31.09	3	Vertical	220	2.89	-
AV	2.4928G	43.81	54.00	-10.19	31.14	3	Vertical	220	2.89	-
PK	2.48G	89.17	Inf	-Inf	31.09	3	Vertical	220	2.89	-
PK	2.4882G	56.09	74.00	-17.91	31.13	3	Vertical	220	2.89	-

BT-EDR(3Mbps)

2480MHz_TX

01/02/2019

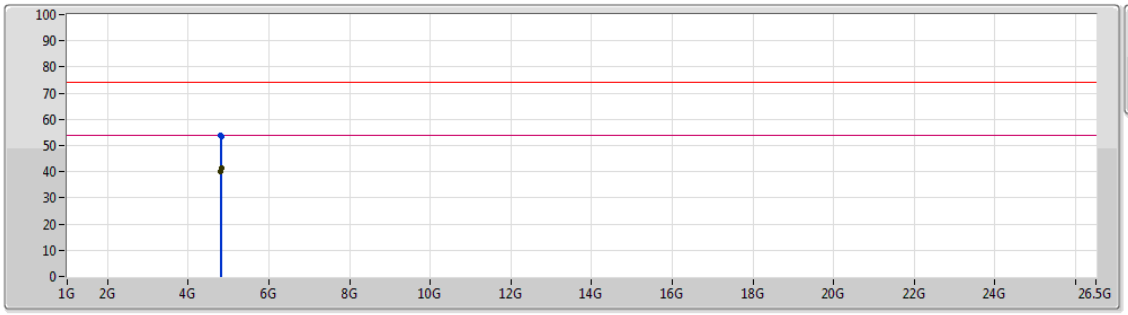


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	95.40	Inf	-Inf	31.09	3	Horizontal	180	1.26	-
AV	2.486G	43.81	54.00	-10.19	31.12	3	Horizontal	180	1.26	-
PK	2.48G	99.30	Inf	-Inf	31.09	3	Horizontal	180	1.26	-
PK	2.4912G	56.58	74.00	-17.42	31.14	3	Horizontal	180	1.26	-

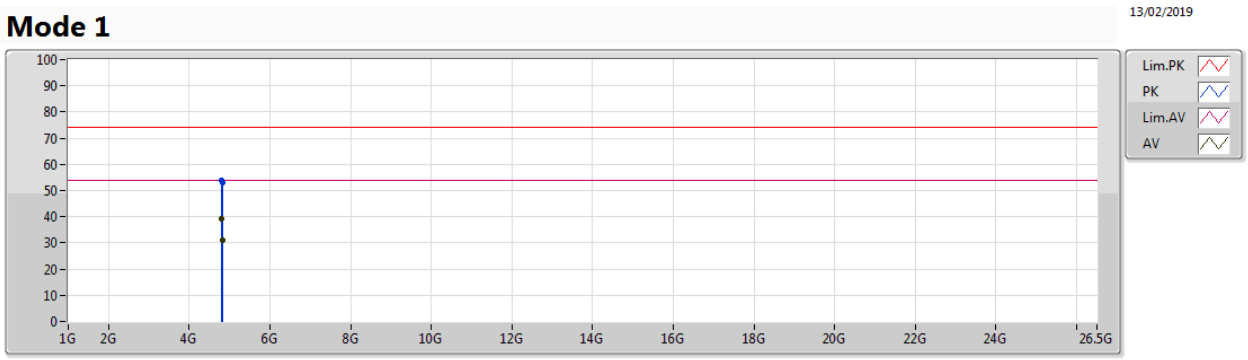
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	4.8241G	41.42	54.00	-12.58	12.66	3	Vertical	189	1.44	-
Mode 2	Pass	AV	4.82457G	41.97	54.00	-12.03	2.13	3	Vertical	224	1.44	-
Mode 3	Pass	AV	10.36G	43.17	54.00	-10.83	12.63	3	Horizontal	154	1.96	-
Mode 4	Pass	AV	10.36G	43.62	54.00	-10.38	12.63	3	Horizontal	258	2.54	-

Mode 1 13/02/2019



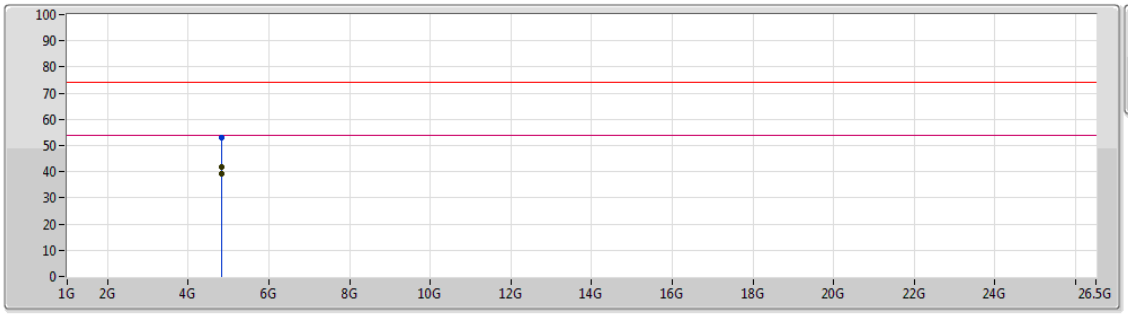
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80871G	39.92	54.00	-14.08	2.08	3	Vertical	212	1.55	-	37.84	31.19	5.19	34.30
AV	4.8241G	41.42	54.00	-12.58	12.66	3	Vertical	189	1.44	-	28.76	39.42	8.00	34.76
PK	4.80876G	53.95	74.00	-20.05	2.08	3	Vertical	212	1.55	-	51.87	31.19	5.19	34.30
PK	4.82011G	53.62	74.00	-20.38	12.66	3	Vertical	189	1.44	-	40.96	39.42	8.00	34.76



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80871G	39.30	54.00	-14.70	2.09	3	Horizontal	85	1.71	-	37.21	31.19	5.20	34.30
AV	4.8241G	31.14	54.00	-22.86	2.13	3	Horizontal	162	1.50	-	29.01	31.22	5.20	34.29
PK	4.8088G	53.90	74.00	-20.10	2.09	3	Horizontal	85	1.71	-	51.81	31.19	5.20	34.30
PK	4.82425G	53.04	74.00	-20.96	2.13	3	Horizontal	162	1.50	-	50.91	31.22	5.20	34.29

Mode 2

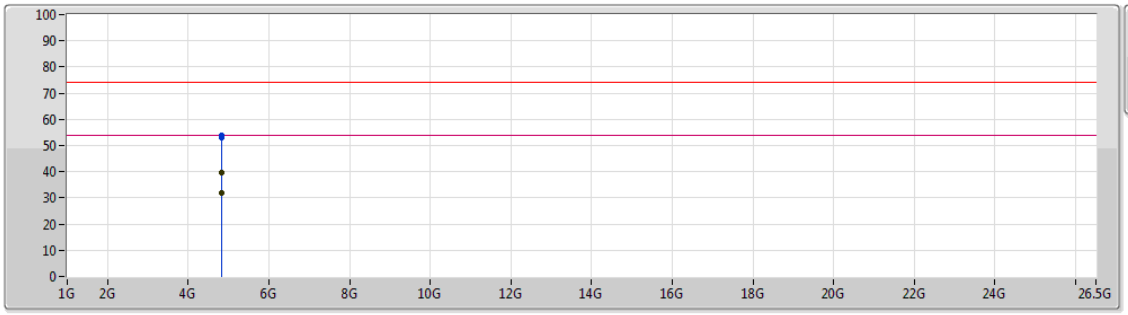
13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.826717G	39.12	54.00	-14.88	2.14	3	Vertical	159	1.55	-	36.98	31.22	5.21	34.29
AV	4.82457G	41.97	54.00	-12.03	2.13	3	Vertical	224	1.44	-	39.84	31.22	5.20	34.29
PK	4.82655G	53.16	74.00	-20.84	2.14	3	Vertical	159	1.55	-	51.02	31.22	5.21	34.29
PK	4.82321G	53.22	74.00	-20.78	2.13	3	Vertical	224	1.44	-	51.09	31.22	5.20	34.29

Mode 2

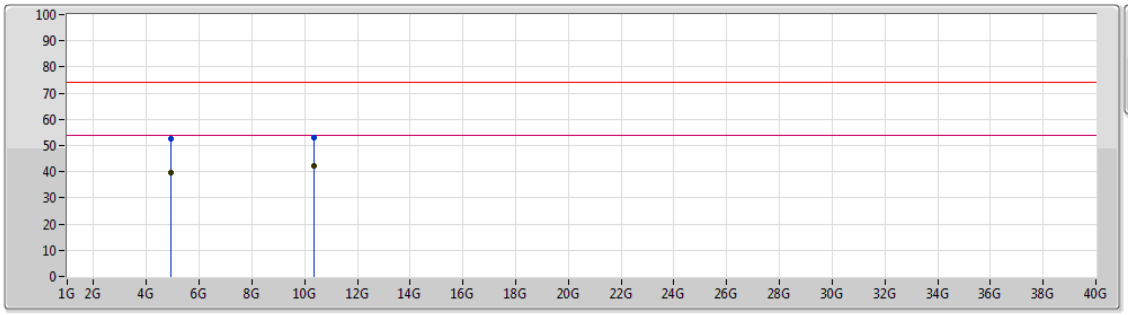
13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.82671G	39.58	54.00	-14.42	2.14	3	Horizontal	196	2.02	-	37.44	31.22	5.21	34.29
AV	4.824G	31.71	54.00	-22.29	2.13	3	Horizontal	311	1.91	-	29.58	31.22	5.20	34.29
PK	4.82596G	54.02	74.00	-19.98	2.14	3	Horizontal	196	2.02	-	51.88	31.22	5.21	34.29
PK	4.8252G	52.91	74.00	-21.09	2.14	3	Horizontal	311	1.91	-	50.77	31.22	5.21	34.29

Mode 3

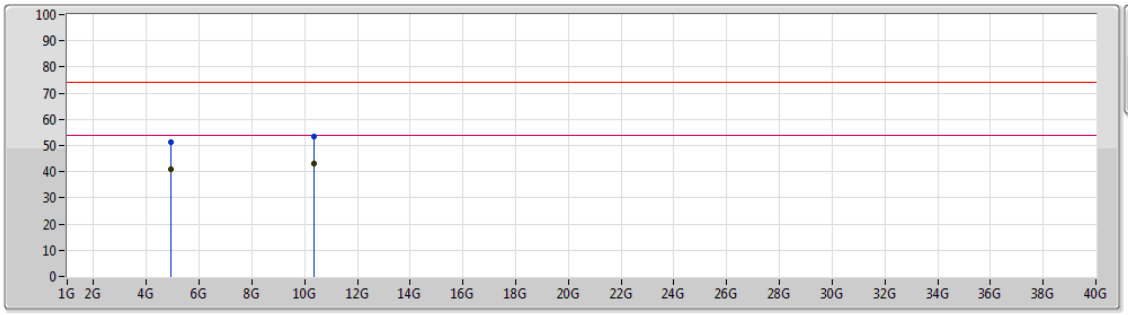
13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.948G	39.55	54.00	-14.45	2.44	3	Vertical	265	2.16	-	37.11	31.42	5.28	34.26
AV	10.36G	42.45	54.00	-11.55	12.63	3	Vertical	111	1.32	-	29.82	39.40	8.00	34.77
PK	4.94817G	52.69	74.00	-21.31	2.44	3	Vertical	265	2.16	-	50.25	31.42	5.28	34.26
PK	10.3654G	53.11	74.00	-20.89	12.64	3	Vertical	111	1.32	-	40.47	39.41	8.00	34.77

Mode 3

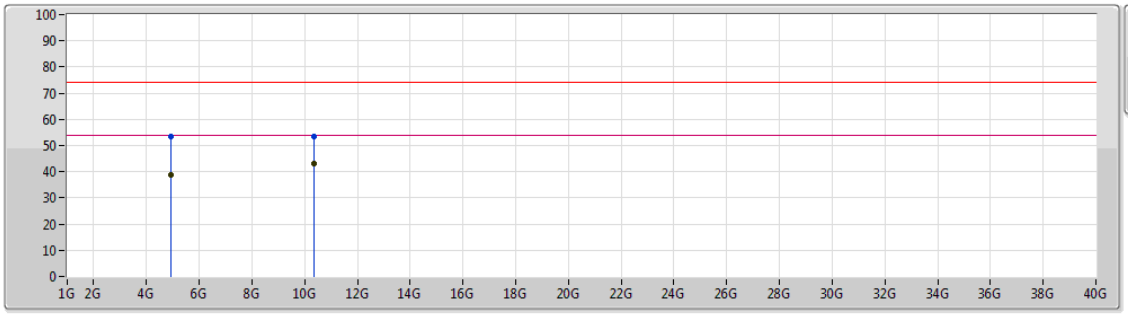
13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.948G	41.15	54.00	-12.85	2.44	3	Horizontal	332	1.50	-	38.71	31.42	5.28	34.26
AV	10.36G	43.17	54.00	-10.83	12.63	3	Horizontal	154	1.96	-	30.54	39.40	8.00	34.77
PK	4.94852G	51.15	74.00	-22.85	2.44	3	Horizontal	332	1.50	-	48.71	31.42	5.28	34.26
PK	10.3656G	53.58	74.00	-20.42	12.64	3	Horizontal	154	1.96	-	40.94	39.41	8.00	34.77

Mode 4

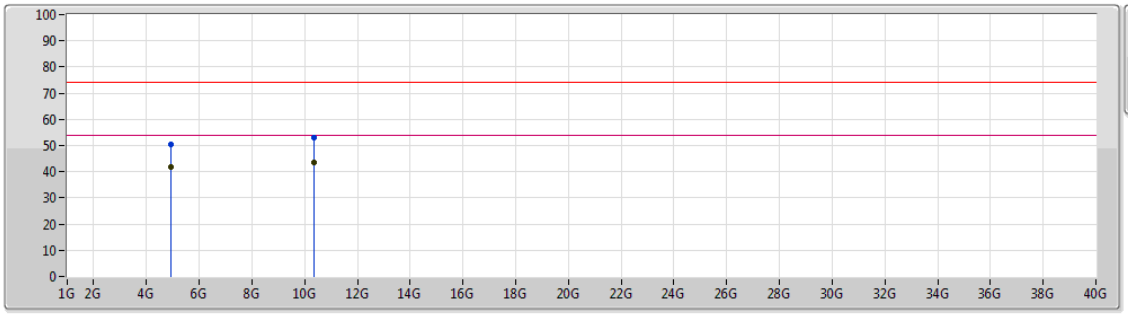
13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.920G	38.71	54.00	-15.29	2.36	3	Vertical	117	2.16	-	36.35	31.37	5.26	34.27
AV	10.36G	43.16	54.00	-10.84	12.63	3	Vertical	292	1.32	-	30.53	39.40	8.00	34.77
PK	4.92006G	53.29	74.00	-20.71	2.36	3	Vertical	117	2.16	-	50.93	31.37	5.26	34.27
PK	10.3602G	53.41	74.00	-20.59	12.63	3	Vertical	292	1.32	-	40.78	39.40	8.00	34.77

Mode 4

13/02/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.920G	41.81	54.00	-12.19	2.36	3	Horizontal	51	1.99	-	39.45	31.37	5.26	34.27
AV	10.36G	43.62	54.00	-10.38	12.63	3	Horizontal	258	2.54	-	30.99	39.40	8.00	34.77
PK	4.92034G	50.52	74.00	-23.48	2.36	3	Horizontal	51	1.99	-	48.16	31.37	5.26	34.27
PK	10.3622G	52.87	74.00	-21.13	12.64	3	Horizontal	258	2.54	-	40.23	39.41	8.00	34.77