

FCC Test Report

FCC ID : U4FTBII
Equipment : Wireless Equipment
Brand Name : Datalogic
Model Name : TBII
Applicant : Datalogic S.r.l.
Via S.Vitalino, 13 Calderara di Reno 40012 Italy
Manufacturer : SparkLAN Communications, Inc.
8F., No. 257, Sec. 2, Tiding Blvd., Neihu District, Taipei
11493, Taiwan
Standard : 47 CFR FCC Part 15.247

The product was received on Dec. 13, 2018, and testing was started from Jan. 15, 2019 and completed on Jan. 15, 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 variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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



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[illegible]

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
-	15.207	AC Power-line Conducted Emissions	Not Required	FCC 15.207
-	15.247(a)	20dB Bandwidth	Not Required	15.247(a)
-	15.247(a)	Carrier Frequency Separation	Not Required	15.247(a)
-	15.247(b)	Maximum Conducted Output Power	Not Required	15.247(b)
-	15.247(a)	Number of Hopping Frequencies and Hopping Bandedge	Not Required	15.247(a)
-	15.247(a)	Time of Occupancy (Dwell Time)	Not Required	15.247(a)
-	15.247(d)	Emissions in Non-restricted Frequency Bands	Not Required	15.247(d)
3.1	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 $\pi/4$ -DQPSK (2Mbps) and 8DPSK (3Mbps).
- ♦ Bluetooth BR/EDR uses as a system using FHSS modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	HUBER+SUHNER®	1399.99.0149	PCB antenna	Mini i-Pex
2	HUBER+SUHNER®	1399.99.0151	PCB antenna	Mini i-Pex

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	1	1	1	1
2	2	1	1	-

For 2.4GHz function:

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

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

For BT function:

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

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

For 5GHz function:

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

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

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From Host system		
EUT Function	☒ Point-to-multipoint	☒ Point-to-point	
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 Table for Permissive Change

This product is an extension of original one reported under FCC ID : U4FTBII (Grant date: December 28, 2018). Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Antenna 1 and Antenna 2 was added	Radiated Emissions was evaluated

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 v05
- ◆ 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
Radiated	03CH03-HY	Justin	25.3°C / 48%	15/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
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%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

2 Test Configuration of EUT

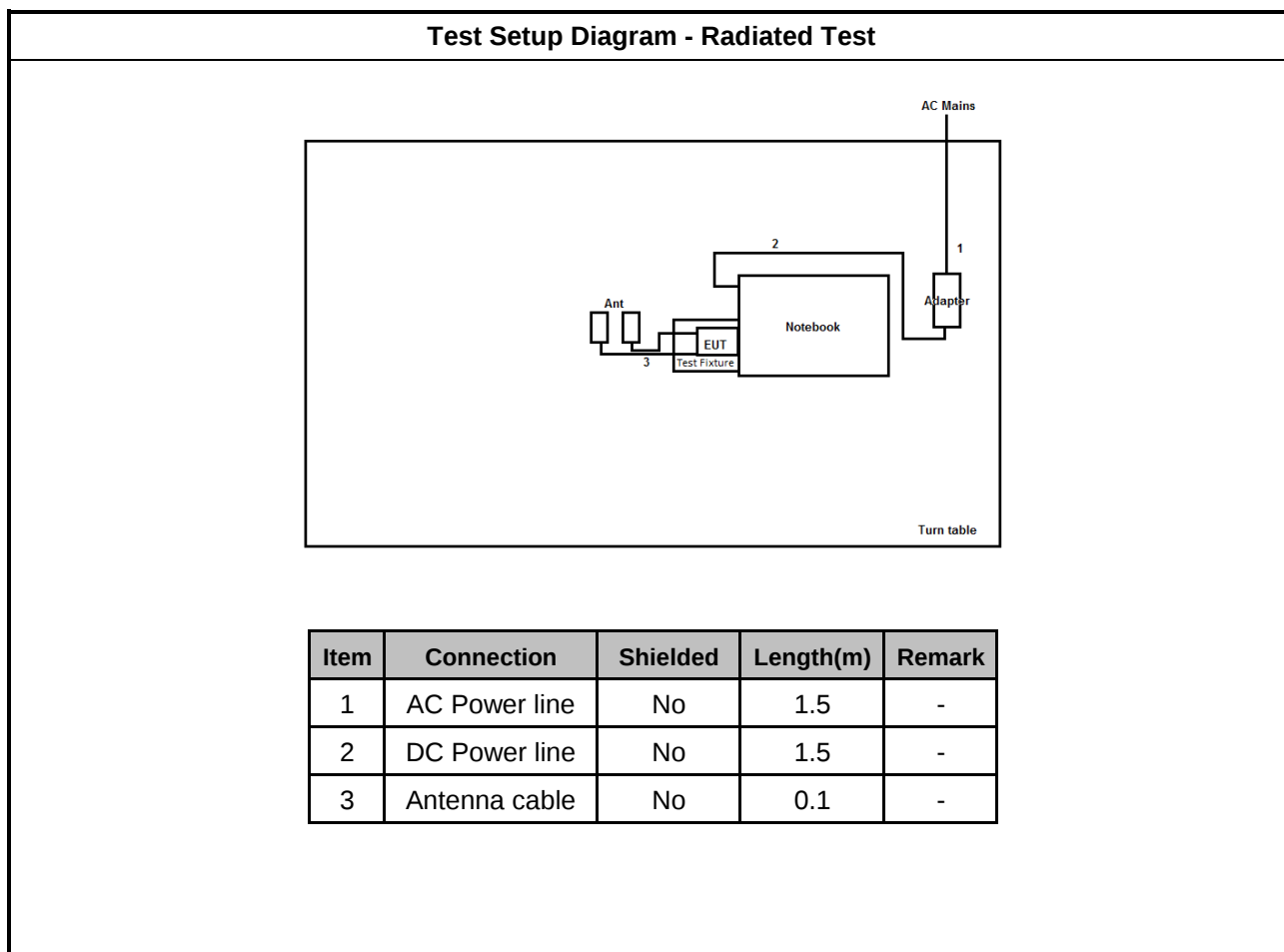
2.1 The Worst Case Measurement Configuration

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	CTX
1	NB Mode
Orthogonal Planes of EUT	Z Plane
	
Worst Planes of EUT	V

2.2 Support Equipment

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	Dell	E4300	DoC
2	AC Adapter for NB	Dell	LA90PS1-00	-
3	Test Fixture	Sporton	-	-

2.3 Test Setup Diagram



3 Transmitter Test Result

3.1 Emissions in Restricted Frequency Bands

3.1.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

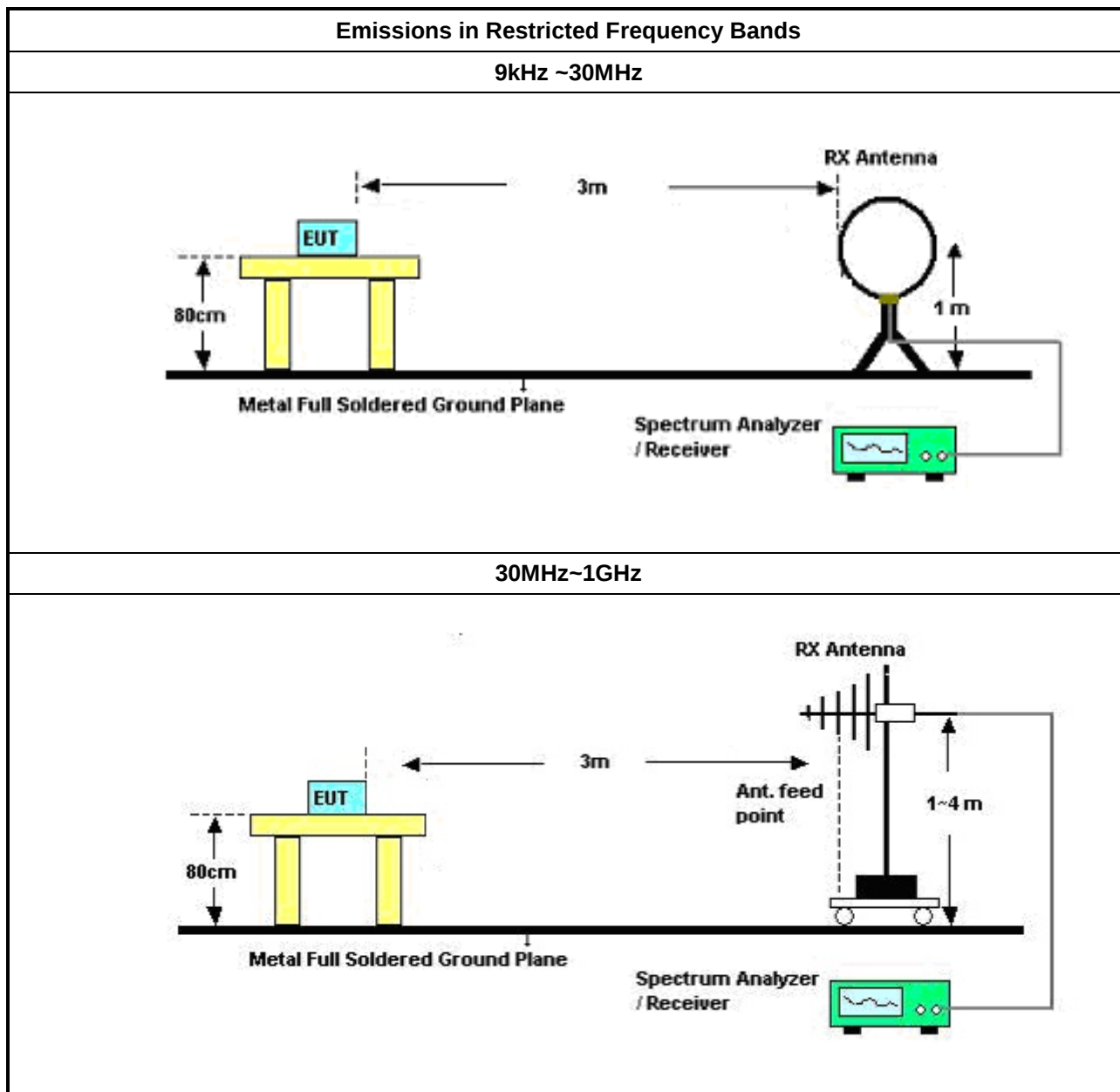
3.1.2 Measuring Instruments

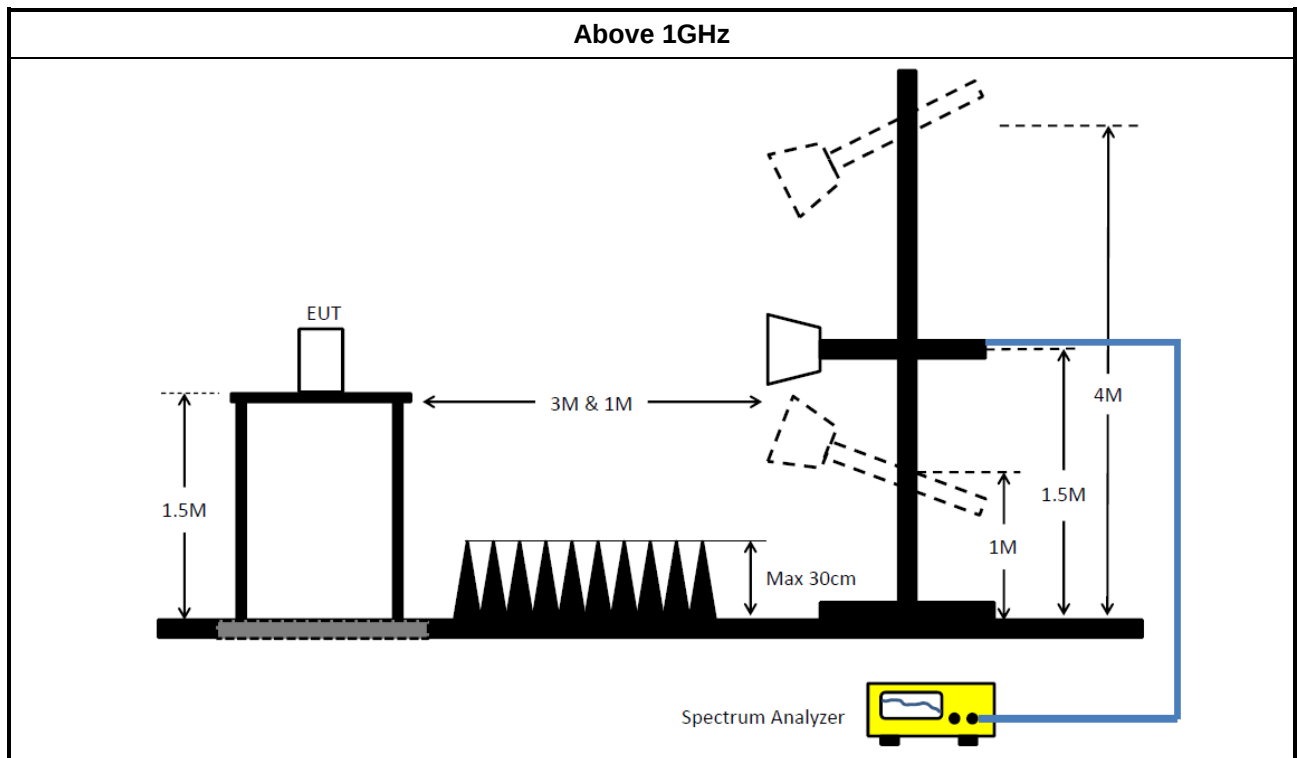
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method	
▪ The average emission levels shall be measured in [hopping duty factor].	
▪ Refer as ANSI C63.10; clause 6.9.2.2 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.

3.1.4 Test Setup





3.1.5 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.

3.1.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix A

4 Test Equipment and Calibration Data

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	23/Apr/2018	19/Apr/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	09/Apr/2019
Bilog Antenna with 5dB Pad	ETS	3142B & MTJ6102-05	00022055	26 MHz - 3 GHz	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	101500	10Hz ~ 40GHz	18/Jul/2018	17/Jul/2019
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	29/Jan/2018	28/Jan/2019
RF Cable-high	SUHNER	SUCOFLEX 106	CB222	1GHz ~ 40GHz	29/Jan/2018	28/Jan/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170154	18GHz ~ 40GHz	06/Feb/ 2018	05/Feb/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz ~ 18GHz	18/Apr/ 2018	17/Apr/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2018	23/Aug/2019

**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	2.4942G	47.56	54.00	-6.44	31.00	3	Horizontal	0	2.40	-
BT-EDR(2Mbps)	Pass	AV	2.4954G	47.56	54.00	-6.44	31.00	3	Horizontal	176	1.52	-
BT-EDR(3Mbps)	Pass	AV	2.4958G	47.56	54.00	-6.44	31.00	3	Vertical	316	2.25	-

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	2.389G	46.49	54.00	-7.51	30.68	3	Vertical	193	1.25	-
2402MHz	Pass	AV	2.402G	92.21	Inf	-Inf	30.72	3	Vertical	193	1.25	-
2402MHz	Pass	PK	2.372G	58.08	74.00	-15.92	30.63	3	Vertical	193	1.25	-
2402MHz	Pass	PK	2.4022G	92.79	Inf	-Inf	30.73	3	Vertical	193	1.25	-
2402MHz	Pass	AV	2.3886G	46.21	54.00	-7.79	30.68	3	Horizontal	29	2.35	-
2402MHz	Pass	AV	2.402G	95.87	Inf	-Inf	30.72	3	Horizontal	29	2.35	-
2402MHz	Pass	PK	2.3872G	57.31	74.00	-16.69	30.68	3	Horizontal	29	2.35	-
2402MHz	Pass	PK	2.4018G	96.45	Inf	-Inf	30.72	3	Horizontal	29	2.35	-
2402MHz	Pass	AV	4.80394G	39.58	54.00	-14.42	6.49	3	Vertical	305	2.89	-
2402MHz	Pass	PK	4.80388G	47.37	74.00	-26.63	6.49	3	Vertical	305	2.89	-
2402MHz	Pass	AV	4.80394G	39.52	54.00	-14.48	6.49	3	Horizontal	3	1.17	-
2402MHz	Pass	PK	4.804G	47.73	74.00	-26.27	6.49	3	Horizontal	3	1.17	-
2441MHz	Pass	AV	2.3894G	46.49	54.00	-7.51	30.68	3	Vertical	325	1.96	-
2441MHz	Pass	AV	2.441G	92.55	Inf	-Inf	30.84	3	Vertical	325	1.96	-
2441MHz	Pass	AV	2.4954G	47.28	54.00	-6.72	31.00	3	Vertical	325	1.96	-
2441MHz	Pass	PK	2.3886G	57.40	74.00	-16.60	30.68	3	Vertical	325	1.96	-
2441MHz	Pass	PK	2.441G	93.19	Inf	-Inf	30.84	3	Vertical	325	1.96	-
2441MHz	Pass	PK	2.499G	59.39	74.00	-14.61	31.01	3	Vertical	325	1.96	-
2441MHz	Pass	AV	2.3694G	46.39	54.00	-7.61	30.63	3	Horizontal	176	1.52	-
2441MHz	Pass	AV	2.441G	95.38	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
2441MHz	Pass	AV	2.4938G	47.28	54.00	-6.72	31.00	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.3842G	57.84	74.00	-16.16	30.67	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.441G	95.94	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.4994G	59.78	74.00	-14.22	31.01	3	Horizontal	176	1.52	-
2441MHz	Pass	AV	4.88188G	37.19	54.00	-16.81	6.67	3	Vertical	0	1.49	-
2441MHz	Pass	AV	7.32846G	39.58	54.00	-14.42	11.37	3	Vertical	195	1.56	-
2441MHz	Pass	PK	4.8817G	46.64	74.00	-27.36	6.67	3	Vertical	0	1.49	-
2441MHz	Pass	PK	7.32192G	51.14	74.00	-22.86	11.36	3	Vertical	195	1.56	-
2441MHz	Pass	AV	4.88194G	39.08	54.00	-14.92	6.67	3	Horizontal	53	1.01	-
2441MHz	Pass	AV	7.31736G	39.57	54.00	-14.43	11.36	3	Horizontal	191	2.05	-
2441MHz	Pass	PK	4.88164G	46.94	74.00	-27.06	6.67	3	Horizontal	53	1.01	-
2441MHz	Pass	PK	7.33284G	51.29	74.00	-22.71	11.38	3	Horizontal	191	2.05	-
2480MHz	Pass	AV	2.48G	92.42	Inf	-Inf	30.95	3	Vertical	308	2.43	-
2480MHz	Pass	AV	2.498G	47.29	54.00	-6.71	31.01	3	Vertical	308	2.43	-
2480MHz	Pass	PK	2.4802G	93.04	Inf	-Inf	30.95	3	Vertical	308	2.43	-
2480MHz	Pass	PK	2.4988G	59.39	74.00	-14.61	31.01	3	Vertical	308	2.43	-
2480MHz	Pass	AV	2.48G	95.58	Inf	-Inf	30.95	3	Horizontal	0	2.40	-
2480MHz	Pass	AV	2.4942G	47.56	54.00	-6.44	31.00	3	Horizontal	0	2.40	-
2480MHz	Pass	PK	2.4798G	96.18	Inf	-Inf	30.95	3	Horizontal	0	2.40	-
2480MHz	Pass	PK	2.496G	58.69	74.00	-15.31	31.00	3	Horizontal	0	2.40	-
2480MHz	Pass	AV	4.95994G	38.13	54.00	-15.87	6.86	3	Vertical	252	2.16	-
2480MHz	Pass	AV	7.4313G	39.32	54.00	-14.68	11.61	3	Vertical	217	2.96	-
2480MHz	Pass	PK	4.9597G	46.34	74.00	-27.66	6.86	3	Vertical	252	2.16	-
2480MHz	Pass	PK	7.43268G	50.83	74.00	-23.17	11.61	3	Vertical	217	2.96	-
2480MHz	Pass	AV	4.96006G	39.49	54.00	-14.51	6.86	3	Horizontal	60	1.08	-
2480MHz	Pass	AV	7.4499G	39.13	54.00	-14.87	11.68	3	Horizontal	201	1.50	-
2480MHz	Pass	PK	4.96G	47.98	74.00	-26.02	6.86	3	Horizontal	60	1.08	-

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	7.4448G	51.53	74.00	-22.47	11.66	3	Horizontal	201	1.50	-
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3872G	46.74	54.00	-7.26	30.68	3	Vertical	193	1.26	-
2402MHz	Pass	AV	2.402G	90.08	Inf	-Inf	30.72	3	Vertical	193	1.26	-
2402MHz	Pass	PK	2.356G	58.06	74.00	-15.94	30.58	3	Vertical	193	1.26	-
2402MHz	Pass	PK	2.4022G	93.78	Inf	-Inf	30.73	3	Vertical	193	1.26	-
2402MHz	Pass	AV	2.3676G	46.38	54.00	-7.62	30.62	3	Horizontal	31	2.36	-
2402MHz	Pass	AV	2.402G	92.92	Inf	-Inf	30.72	3	Horizontal	31	2.36	-
2402MHz	Pass	PK	2.3686G	57.58	74.00	-16.42	30.62	3	Horizontal	31	2.36	-
2402MHz	Pass	PK	2.4022G	96.66	Inf	-Inf	30.73	3	Horizontal	31	2.36	-
2441MHz	Pass	AV	2.3762G	46.40	54.00	-7.60	30.64	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.441G	89.56	Inf	-Inf	30.84	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.4986G	47.29	54.00	-6.71	31.01	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.3882G	57.96	74.00	-16.04	30.68	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.441G	93.34	Inf	-Inf	30.84	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.4938G	58.69	74.00	-15.31	31.00	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.3894G	46.22	54.00	-7.78	30.68	3	Horizontal	176	1.52	-
2441MHz	Pass	AV	2.441G	92.41	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
2441MHz	Pass	AV	2.4954G	47.56	54.00	-6.44	31.00	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.3662G	59.14	74.00	-14.86	30.62	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.441G	96.18	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
2441MHz	Pass	PK	2.4954G	58.90	74.00	-15.10	31.00	3	Horizontal	176	1.52	-
2480MHz	Pass	AV	2.48G	89.56	Inf	-Inf	30.95	3	Vertical	314	2.42	-
2480MHz	Pass	AV	2.4982G	47.29	54.00	-6.71	31.01	3	Vertical	314	2.42	-
2480MHz	Pass	PK	2.4802G	93.27	Inf	-Inf	30.95	3	Vertical	314	2.42	-
2480MHz	Pass	PK	2.4998G	58.55	74.00	-15.45	31.01	3	Vertical	314	2.42	-
2480MHz	Pass	AV	2.48G	92.56	Inf	-Inf	30.95	3	Horizontal	0	2.13	-
2480MHz	Pass	AV	2.5G	47.30	54.00	-6.70	31.02	3	Horizontal	0	2.13	-
2480MHz	Pass	PK	2.48G	96.24	Inf	-Inf	30.95	3	Horizontal	0	2.13	-
2480MHz	Pass	PK	2.4868G	59.49	74.00	-14.51	30.98	3	Horizontal	0	2.13	-
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3772G	46.41	54.00	-7.59	30.65	3	Vertical	193	1.26	-
2402MHz	Pass	AV	2.402G	89.03	Inf	-Inf	30.72	3	Vertical	193	1.26	-
2402MHz	Pass	PK	2.3898G	58.12	74.00	-15.88	30.69	3	Vertical	193	1.26	-
2402MHz	Pass	PK	2.402G	93.20	Inf	-Inf	30.72	3	Vertical	193	1.26	-
2402MHz	Pass	AV	2.39G	46.51	54.00	-7.49	30.69	3	Horizontal	31	2.35	-
2402MHz	Pass	AV	2.402G	91.92	Inf	-Inf	30.72	3	Horizontal	31	2.35	-
2402MHz	Pass	PK	2.3576G	58.32	74.00	-15.68	30.59	3	Horizontal	31	2.35	-
2402MHz	Pass	PK	2.402G	96.07	Inf	-Inf	30.72	3	Horizontal	31	2.35	-
2441MHz	Pass	AV	2.3882G	46.48	54.00	-7.52	30.68	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.441G	88.67	Inf	-Inf	30.84	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.4958G	47.56	54.00	-6.44	31.00	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.3826G	57.63	74.00	-16.37	30.67	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.441G	92.84	Inf	-Inf	30.84	3	Vertical	316	2.25	-
2441MHz	Pass	PK	2.4986G	58.18	74.00	-15.82	31.01	3	Vertical	316	2.25	-
2441MHz	Pass	AV	2.3858G	46.45	54.00	-7.55	30.68	3	Horizontal	3	1.46	-
2441MHz	Pass	AV	2.441G	91.52	Inf	-Inf	30.84	3	Horizontal	3	1.46	-
2441MHz	Pass	AV	2.4902G	47.55	54.00	-6.45	30.99	3	Horizontal	3	1.46	-
2441MHz	Pass	PK	2.3726G	57.87	74.00	-16.13	30.63	3	Horizontal	3	1.46	-



RSE TX above 1GHz Result

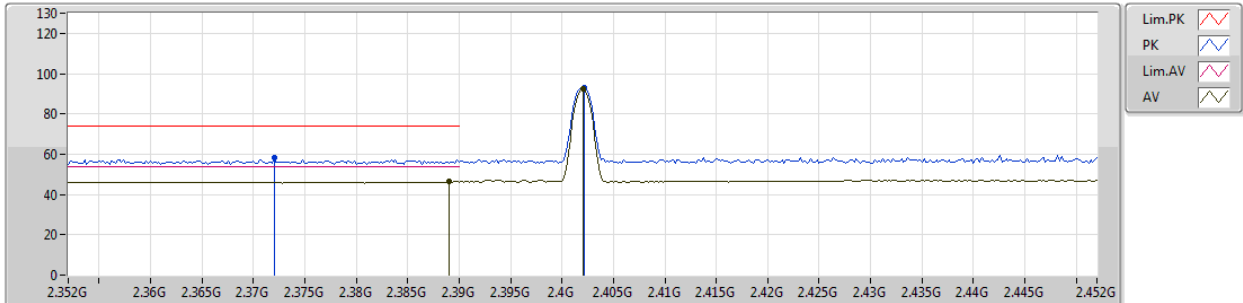
Appendix A

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2441MHz	Pass	PK	2.441G	95.69	Inf	-Inf	30.84	3	Horizontal	3	1.46	-
2441MHz	Pass	PK	2.4874G	58.30	74.00	-15.70	30.98	3	Horizontal	3	1.46	-
2480MHz	Pass	AV	2.48G	88.46	Inf	-Inf	30.95	3	Vertical	313	2.42	-
2480MHz	Pass	AV	2.498G	47.29	54.00	-6.71	31.01	3	Vertical	313	2.42	-
2480MHz	Pass	PK	2.48G	92.68	Inf	-Inf	30.95	3	Vertical	313	2.42	-
2480MHz	Pass	PK	2.4892G	59.35	74.00	-14.65	30.98	3	Vertical	313	2.42	-
2480MHz	Pass	AV	2.48G	91.46	Inf	-Inf	30.95	3	Horizontal	0	2.14	-
2480MHz	Pass	AV	2.4884G	47.54	54.00	-6.46	30.98	3	Horizontal	0	2.14	-
2480MHz	Pass	PK	2.48G	95.63	Inf	-Inf	30.95	3	Horizontal	0	2.14	-
2480MHz	Pass	PK	2.494G	58.97	74.00	-15.03	31.00	3	Horizontal	0	2.14	-

BT-BR(1Mbps)

2402MHz_TX

07/01/2019

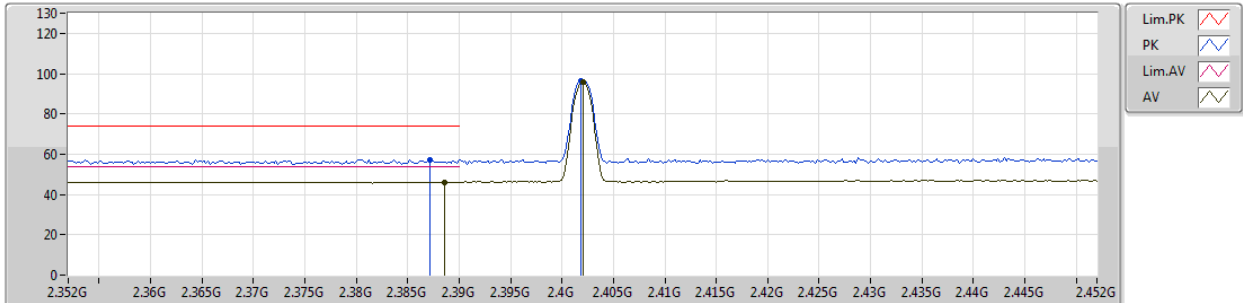


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.389G	46.49	54.00	-7.51	30.68	3	Vertical	193	1.25	-
AV	2.402G	92.21	Inf	-Inf	30.72	3	Vertical	193	1.25	-
PK	2.372G	58.08	74.00	-15.92	30.63	3	Vertical	193	1.25	-
PK	2.402G	92.79	Inf	-Inf	30.73	3	Vertical	193	1.25	-

BT-BR(1Mbps)

2402MHz_TX

07/01/2019

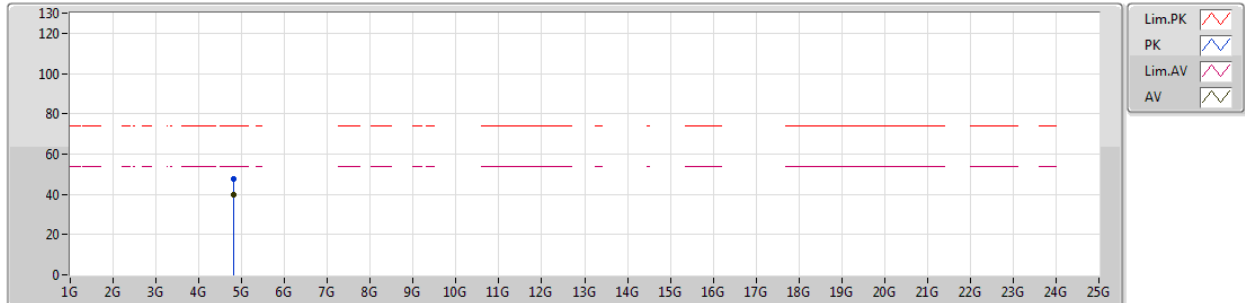


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	2.3886G	46.21	54.00	-7.79	30.68	3	Horizontal	29	2.35	-								
AV	2.402G	95.87	Inf	-Inf	30.72	3	Horizontal	29	2.35	-								
PK	2.3872G	57.31	74.00	-16.69	30.68	3	Horizontal	29	2.35	-								
PK	2.4018G	96.45	Inf	-Inf	30.72	3	Horizontal	29	2.35	-								

BT-BR(1Mbps)

2402MHz_TX

07/01/2019

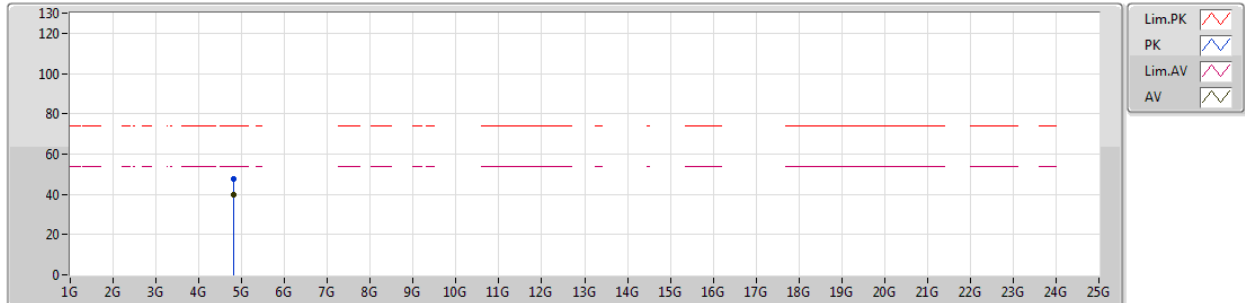


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	4.80394G	39.58	54.00	-14.42	6.49	3	Vertical	305	2.89	-								
PK	4.80388G	47.37	74.00	-26.63	6.49	3	Vertical	305	2.89	-								

BT-BR(1Mbps)

2402MHz_TX

07/01/2019

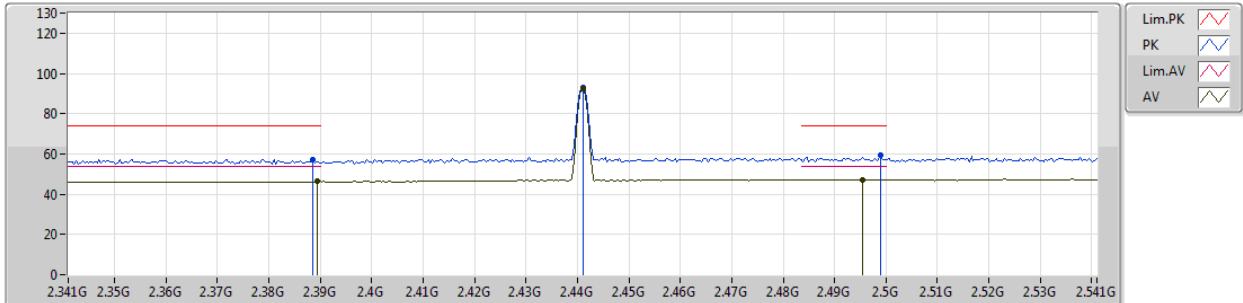


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80394G	39.52	54.00	-14.48	6.49	3	Horizontal	3	1.17	-
PK	4.804G	47.73	74.00	-26.27	6.49	3	Horizontal	3	1.17	-

BT-BR(1Mbps)

2441MHz_TX

07/01/2019

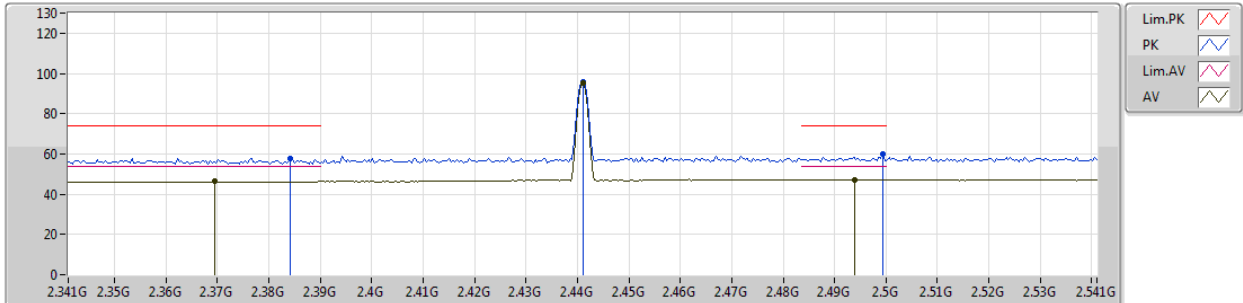


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3894G	46.49	54.00	-7.51	30.68	3	Vertical	325	1.96	-
AV	2.441G	92.55	Inf	-Inf	30.84	3	Vertical	325	1.96	-
AV	2.4954G	47.28	54.00	-6.72	31.00	3	Vertical	325	1.96	-
PK	2.3886G	57.40	74.00	-16.60	30.68	3	Vertical	325	1.96	-
PK	2.441G	93.19	Inf	-Inf	30.84	3	Vertical	325	1.96	-
PK	2.499G	59.39	74.00	-14.61	31.01	3	Vertical	325	1.96	-

BT-BR(1Mbps)

2441MHz_TX

07/01/2019

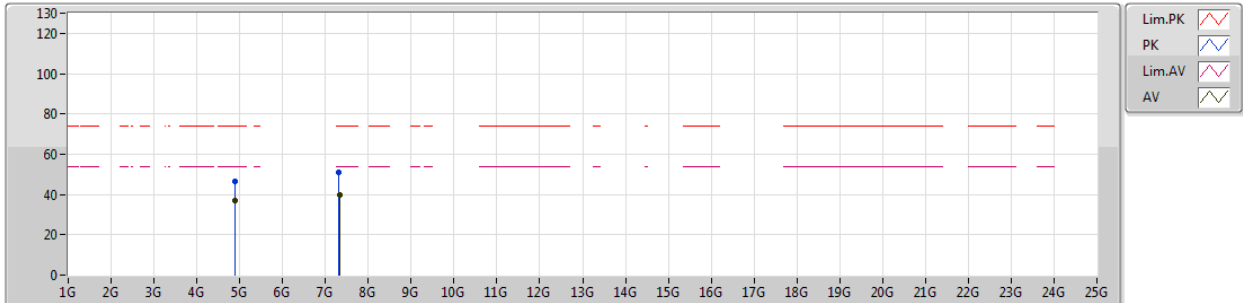


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3694G	46.39	54.00	-7.61	30.63	3	Horizontal	176	1.52	-
AV	2.441G	95.38	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
AV	2.4938G	47.28	54.00	-6.72	31.00	3	Horizontal	176	1.52	-
PK	2.3842G	57.84	74.00	-16.16	30.67	3	Horizontal	176	1.52	-
PK	2.441G	95.94	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
PK	2.4994G	59.78	74.00	-14.22	31.01	3	Horizontal	176	1.52	-

BT-BR(1Mbps)

2441MHz_TX

07/01/2019

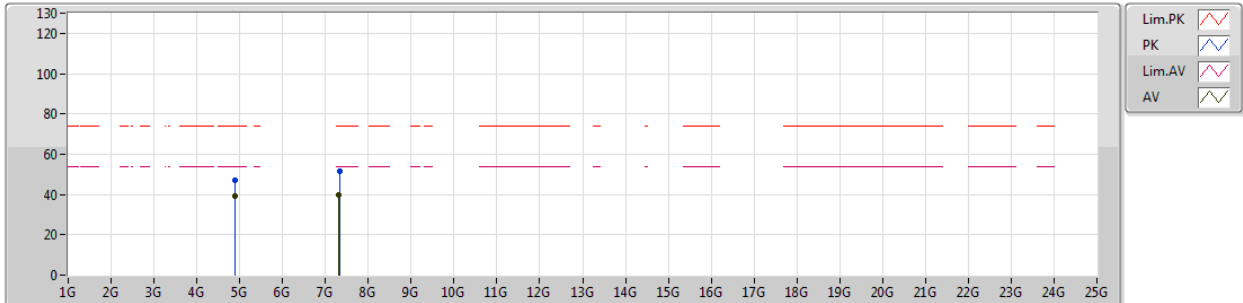


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	4.88188G	37.19	54.00	-16.81	6.67	3	Vertical	0	1.49	-								
AV	7.32846G	39.58	54.00	-14.42	11.37	3	Vertical	195	1.56	-								
PK	4.8817G	46.64	74.00	-27.36	6.67	3	Vertical	0	1.49	-								
PK	7.32192G	51.14	74.00	-22.86	11.36	3	Vertical	195	1.56	-								

BT-BR(1Mbps)

2441MHz_TX

07/01/2019

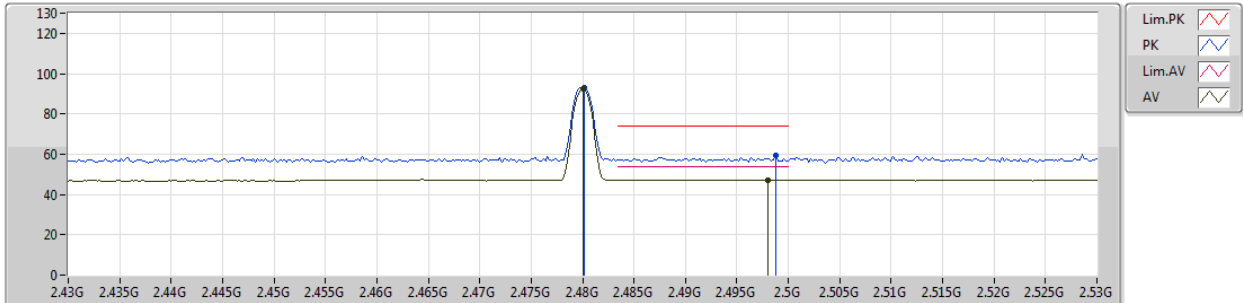


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.88194G	39.08	54.00	-14.92	6.67	3	Horizontal	53	1.01	-
AV	7.31736G	39.57	54.00	-14.43	11.36	3	Horizontal	191	2.05	-
PK	4.88164G	46.94	74.00	-27.06	6.67	3	Horizontal	53	1.01	-
PK	7.33284G	51.29	74.00	-22.71	11.38	3	Horizontal	191	2.05	-

BT-BR(1Mbps)

2480MHz_TX

07/01/2019

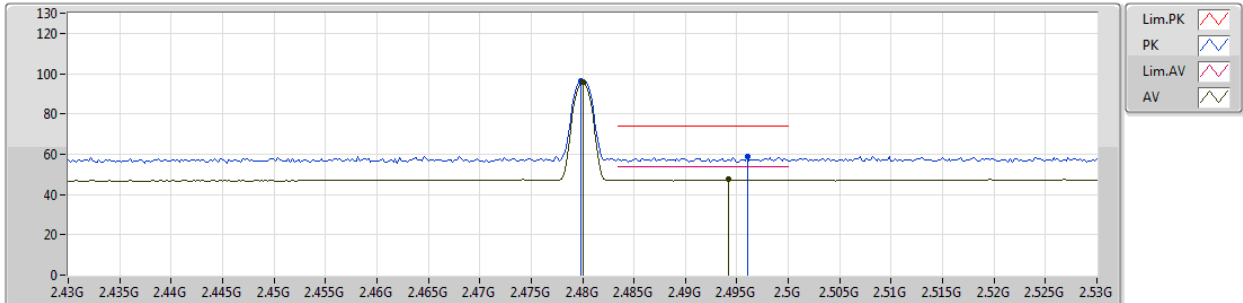


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments							
AV	2.48G	92.42	Inf	-Inf	30.95	3	Vertical	308	2.43	-							
AV	2.498G	47.29	54.00	-6.71	31.01	3	Vertical	308	2.43	-							
PK	2.4802G	93.04	Inf	-Inf	30.95	3	Vertical	308	2.43	-							
PK	2.4988G	59.39	74.00	-14.61	31.01	3	Vertical	308	2.43	-							

BT-BR(1Mbps)

2480MHz_TX

07/01/2019

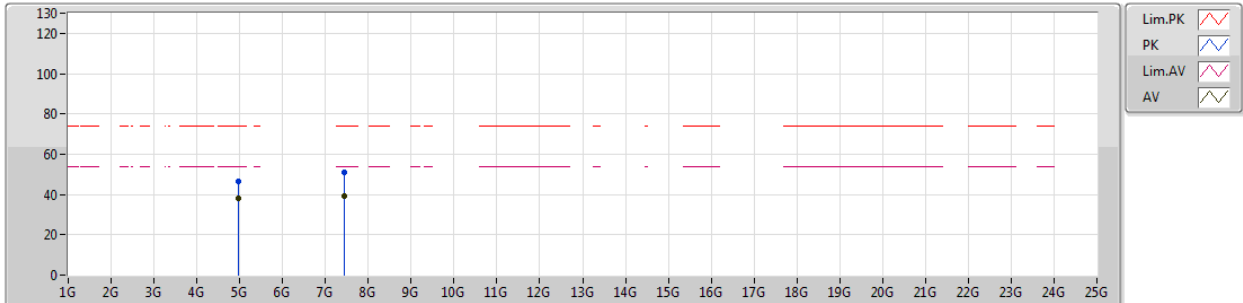


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	95.58	Inf	-Inf	30.95	3	Horizontal	0	2.40	-
AV	2.4942G	47.56	54.00	-6.44	31.00	3	Horizontal	0	2.40	-
PK	2.4798G	96.18	Inf	-Inf	30.95	3	Horizontal	0	2.40	-
PK	2.496G	58.69	74.00	-15.31	31.00	3	Horizontal	0	2.40	-

BT-BR(1Mbps)

2480MHz_TX

07/01/2019

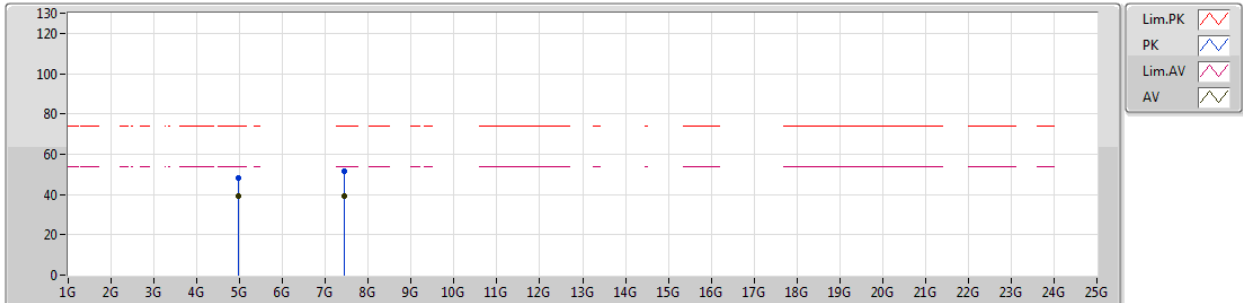


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.95994G	38.13	54.00	-15.87	6.86	3	Vertical	252	2.16	-
AV	7.4313G	39.32	54.00	-14.68	11.61	3	Vertical	217	2.96	-
PK	4.9597G	46.34	74.00	-27.66	6.86	3	Vertical	252	2.16	-
PK	7.43268G	50.83	74.00	-23.17	11.61	3	Vertical	217	2.96	-

BT-BR(1Mbps)

2480MHz_TX

07/01/2019

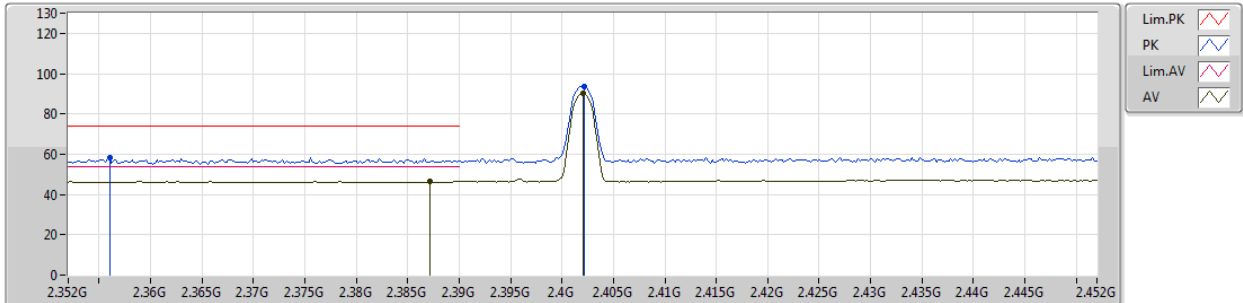


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.96006G	39.49	54.00	-14.51	6.86	3	Horizontal	60	1.08	-
AV	7.4499G	39.13	54.00	-14.87	11.68	3	Horizontal	201	1.50	-
PK	4.96G	47.98	74.00	-26.02	6.86	3	Horizontal	60	1.08	-
PK	7.4448G	51.53	74.00	-22.47	11.66	3	Horizontal	201	1.50	-

BT-EDR(2Mbps)

2402MHz_TX

07/01/2019

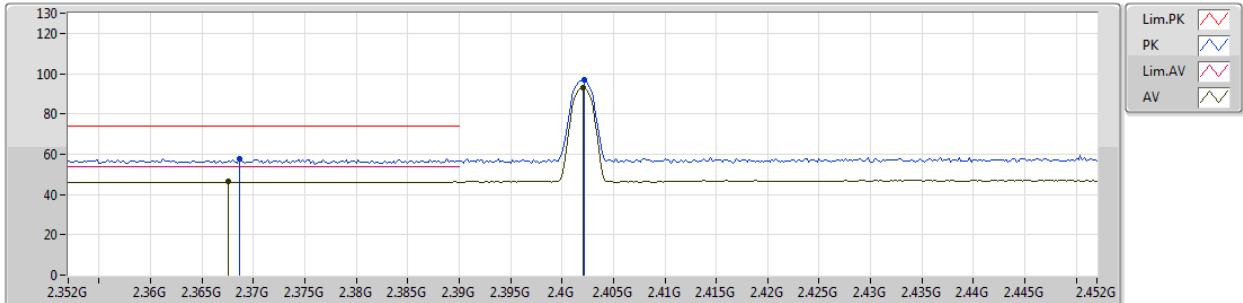


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3872G	46.74	54.00	-7.26	30.68	3	Vertical	193	1.26	-
AV	2.402G	90.08	Inf	-Inf	30.72	3	Vertical	193	1.26	-
PK	2.356G	58.06	74.00	-15.94	30.58	3	Vertical	193	1.26	-
PK	2.402G	93.78	Inf	-Inf	30.73	3	Vertical	193	1.26	-

BT-EDR(2Mbps)

2402MHz_TX

07/01/2019

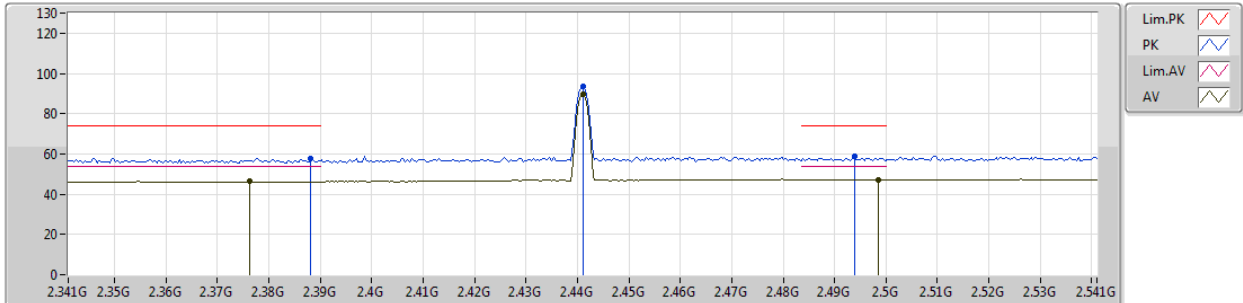


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3676G	46.38	54.00	-7.62	30.62	3	Horizontal	31	2.36	-
AV	2.402G	92.92	Inf	-Inf	30.72	3	Horizontal	31	2.36	-
PK	2.3686G	57.58	74.00	-16.42	30.62	3	Horizontal	31	2.36	-
PK	2.4022G	96.66	Inf	-Inf	30.73	3	Horizontal	31	2.36	-

BT-EDR(2Mbps)

07/01/2019

2441MHz_TX

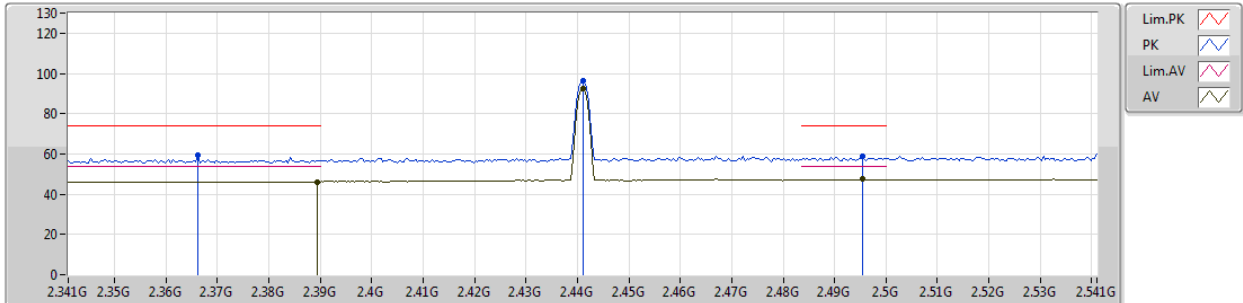


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3762G	46.40	54.00	-7.60	30.64	3	Vertical	316	2.25	-
AV	2.441G	89.56	Inf	-Inf	30.84	3	Vertical	316	2.25	-
AV	2.4986G	47.29	54.00	-6.71	31.01	3	Vertical	316	2.25	-
PK	2.3882G	57.96	74.00	-16.04	30.68	3	Vertical	316	2.25	-
PK	2.441G	93.34	Inf	-Inf	30.84	3	Vertical	316	2.25	-
PK	2.4938G	58.69	74.00	-15.31	31.00	3	Vertical	316	2.25	-

BT-EDR(2Mbps)

07/01/2019

2441MHz_TX

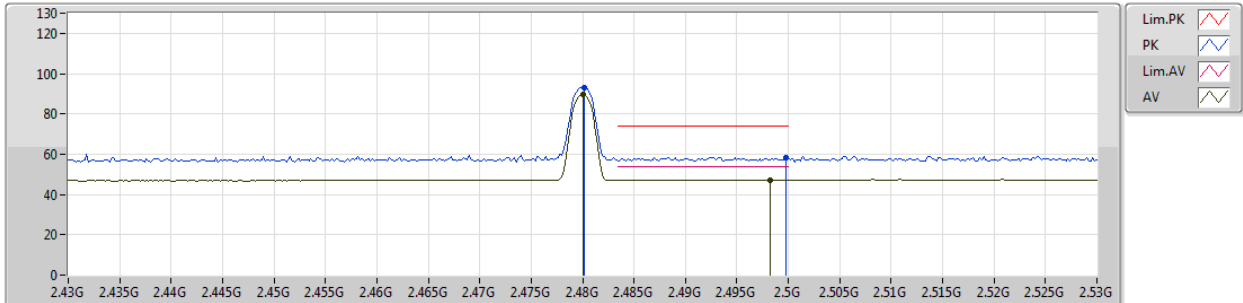


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3894G	46.22	54.00	-7.78	30.68	3	Horizontal	176	1.52	-
AV	2.441G	92.41	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
AV	2.4954G	47.56	54.00	-6.44	31.00	3	Horizontal	176	1.52	-
PK	2.3662G	59.14	74.00	-14.86	30.62	3	Horizontal	176	1.52	-
PK	2.441G	96.18	Inf	-Inf	30.84	3	Horizontal	176	1.52	-
PK	2.4954G	58.90	74.00	-15.10	31.00	3	Horizontal	176	1.52	-

BT-EDR(2Mbps)

2480MHz_TX

07/01/2019

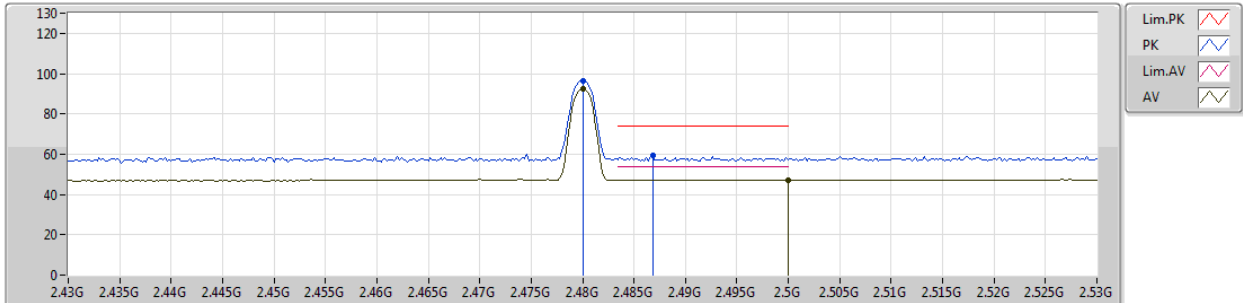


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	89.56	Inf	-Inf	30.95	3	Vertical	314	2.42	-
AV	2.4982G	47.29	54.00	-6.71	31.01	3	Vertical	314	2.42	-
PK	2.4802G	93.27	Inf	-Inf	30.95	3	Vertical	314	2.42	-
PK	2.4998G	58.55	74.00	-15.45	31.01	3	Vertical	314	2.42	-

BT-EDR(2Mbps)

2480MHz_TX

07/01/2019

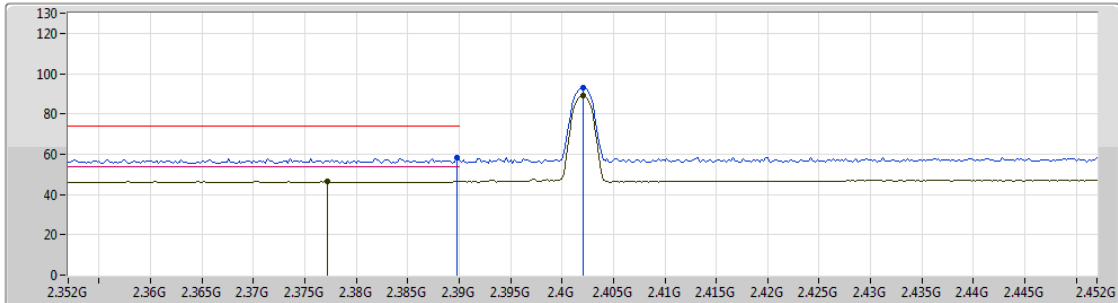


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	92.56	Inf	-Inf	30.95	3	Horizontal	0	2.13	-
AV	2.5G	47.30	54.00	-6.70	31.02	3	Horizontal	0	2.13	-
PK	2.48G	96.24	Inf	-Inf	30.95	3	Horizontal	0	2.13	-
PK	2.4868G	59.49	74.00	-14.51	30.98	3	Horizontal	0	2.13	-

BT-EDR(3Mbps)

2402MHz_TX

07/01/2019



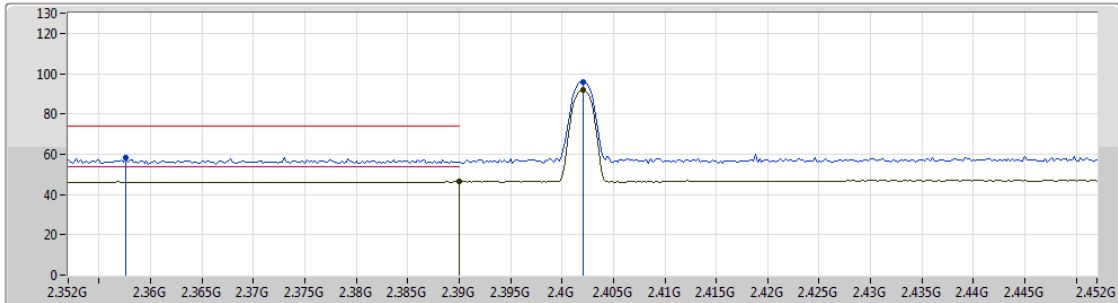
Lim.PK	
PK	
Lim.AV	
AV	

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments							
AV	2.3772G	46.41	54.00	-7.59	30.65	3	Vertical	193	1.26	-							
AV	2.402G	89.03	Inf	-Inf	30.72	3	Vertical	193	1.26	-							
PK	2.3898G	58.12	74.00	-15.88	30.69	3	Vertical	193	1.26	-							
PK	2.402G	93.20	Inf	-Inf	30.72	3	Vertical	193	1.26	-							

BT-EDR(3Mbps)

2402MHz_TX

07/01/2019

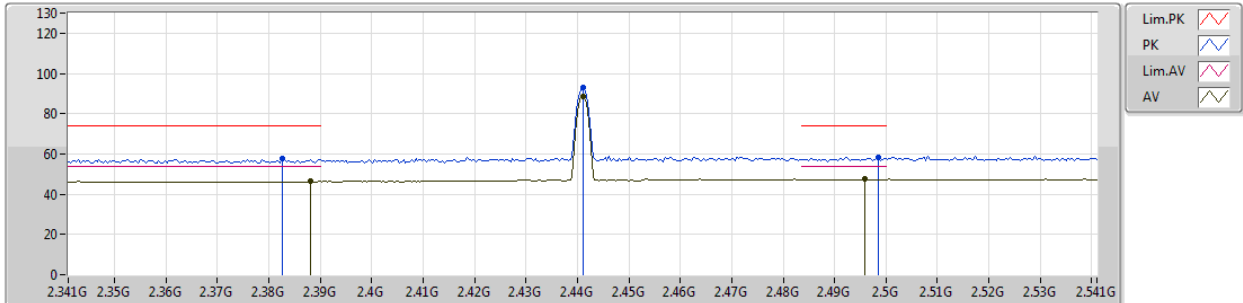


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.39G	46.51	54.00	-7.49	30.69	3	Horizontal	31	2.35	-
AV	2.402G	91.92	Inf	-Inf	30.72	3	Horizontal	31	2.35	-
PK	2.3576G	58.32	74.00	-15.68	30.59	3	Horizontal	31	2.35	-
PK	2.402G	96.07	Inf	-Inf	30.72	3	Horizontal	31	2.35	-

BT-EDR(3Mbps)

07/01/2019

2441MHz_TX

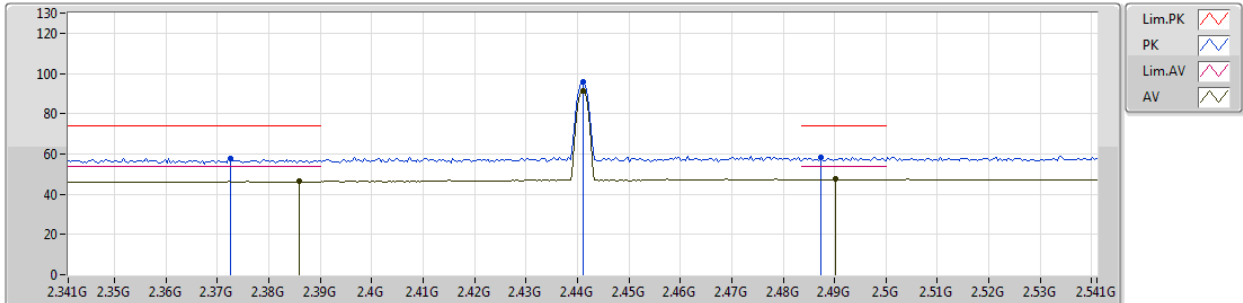


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3882G	46.48	54.00	-7.52	30.68	3	Vertical	316	2.25	-
AV	2.441G	88.67	Inf	-Inf	30.84	3	Vertical	316	2.25	-
AV	2.4958G	47.56	54.00	-6.44	31.00	3	Vertical	316	2.25	-
PK	2.3826G	57.63	74.00	-16.37	30.67	3	Vertical	316	2.25	-
PK	2.441G	92.84	Inf	-Inf	30.84	3	Vertical	316	2.25	-
PK	2.4986G	58.18	74.00	-15.82	31.01	3	Vertical	316	2.25	-

BT-EDR(3Mbps)

07/01/2019

2441MHz_TX

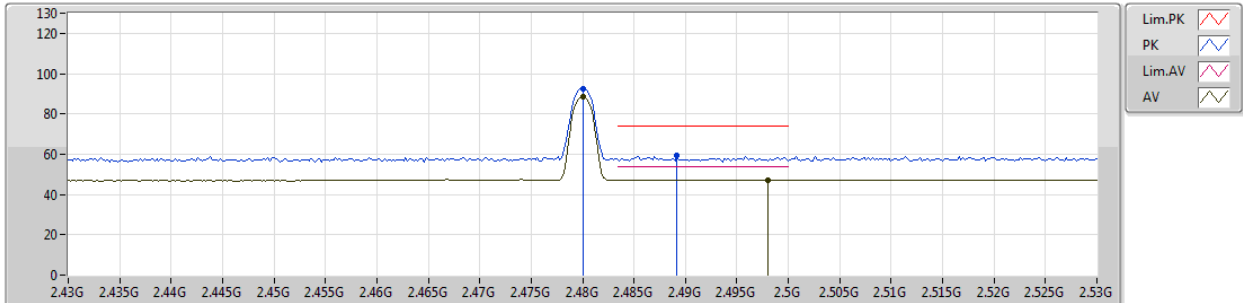


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3858G	46.45	54.00	-7.55	30.68	3	Horizontal	3	1.46	-
AV	2.441G	91.52	Inf	-Inf	30.84	3	Horizontal	3	1.46	-
AV	2.4902G	47.55	54.00	-6.45	30.99	3	Horizontal	3	1.46	-
PK	2.3726G	57.87	74.00	-16.13	30.63	3	Horizontal	3	1.46	-
PK	2.441G	95.69	Inf	-Inf	30.84	3	Horizontal	3	1.46	-
PK	2.4874G	58.30	74.00	-15.70	30.98	3	Horizontal	3	1.46	-

BT-EDR(3Mbps)

2480MHz_TX

07/01/2019

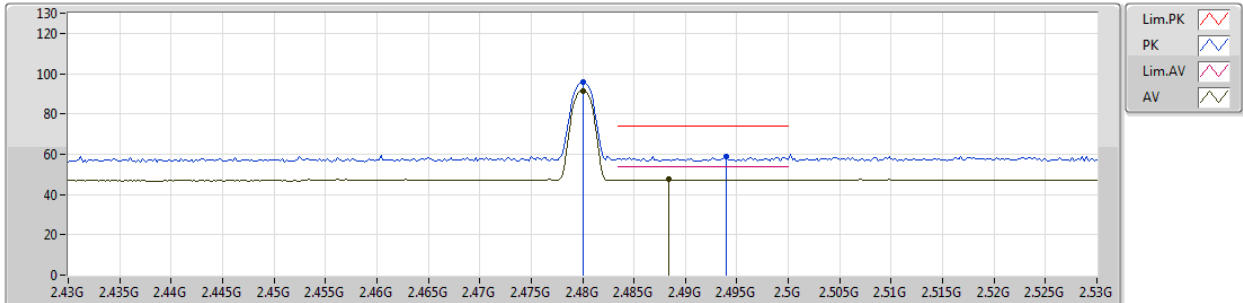


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments							
AV	2.48G	88.46	Inf	-Inf	30.95	3	Vertical	313	2.42	-							
AV	2.498G	47.29	54.00	-6.71	31.01	3	Vertical	313	2.42	-							
PK	2.48G	92.68	Inf	-Inf	30.95	3	Vertical	313	2.42	-							
PK	2.4892G	59.35	74.00	-14.65	30.98	3	Vertical	313	2.42	-							

BT-EDR(3Mbps)

2480MHz_TX

07/01/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	91.46	Inf	-Inf	30.95	3	Horizontal	0	2.14	-
AV	2.4884G	47.54	54.00	-6.46	30.98	3	Horizontal	0	2.14	-
PK	2.48G	95.63	Inf	-Inf	30.95	3	Horizontal	0	2.14	-
PK	2.494G	58.97	74.00	-15.03	31.00	3	Horizontal	0	2.14	-