FCC Test Report

FCC ID	:	**XGBKAIN**
Equipment	:	**Gaming mouse**
Brand Name	:	**ROCCAT**
Model Name	:	**Kain 200 (ROC-11-615-BK-xx), Kain 202 (ROC-11-615-WE-xx)**
Applicant/ Manufacturer	:	**Voyetra Turtle Beach, Inc. 100 Summit Lake Drive, Suite 100, Valhalla, New York, 10595 United States**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Jul. 18, 2019, and testing was started from Aug. 15, 2019 and completed on Aug. 22, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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History of this test report

Report No.	Version	Description	Issued Date
FR971833AC	01	Initial issue of report	Sep. 12, 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)	DTS Bandwidth	PASS	≥500kHz
3.3	15.247(b)	Maximum Conducted Output Power	PASS	Power [dBm]: 30
3.4	15.247(e)	Power Spectral Density	PASS	PSD [dBm/3kHz]: 8
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	Non-Restricted Bands: > 30 dBc
3.6	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: Ben Tseng

Report Producer: Kate Lo

1 General Description

1.1 Information

USB Dongle is sold with the EUT. It only has receiver function and does not intentionally transmit.

1.1.1 RF General Information

Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number
2400-2483.5	GFSK	2403-2480	1-78 [78]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	GFSK	1	1TX

Channel	Freq.(MHz)	Channel	Freq.(MHz)
1	2403	40	2442
2	2404	41	2443
3	2405	42	2444
4	2406	43	2445
5	2407	44	2446
6	2408	45	2447
7	2409	46	2448
8	2410	47	2449
9	2411	48	2450
10	2412	49	2451
11	2413	50	2452
12	2414	51	2453
13	2415	52	2454
14	2416	53	2455
15	2417	54	2456
16	2418	55	2457
17	2419	56	2458
18	2420	57	2459
19	2421	58	2460
20	2422	59	2461
21	2423	60	2462
22	2424	61	2463
23	2425	62	2464
24	2426	63	2465
25	2427	64	2466
26	2428	65	2467
27	2429	66	2468
28	2430	67	2469
29	2431	68	2470
30	2432	69	2471
31	2433	70	2472

32	2434	71	2473
33	2435	72	2474
34	2436	73	2475
35	2437	74	2476
36	2438	75	2477
37	2439	76	2478
38	2440	77	2479
39	2441	78	2480

Note:
- Use a DFSK modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	-	-	PCB	N/A	0.97

For SRD 2.4GHz function:

For SRD 2.4GHz mode (1TX/1RX)

Ant. 1 could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	Battery			
EUT Function	☒	Point-to-multipoint	☐	Point-to-point
Type of EUT				
☒	Stand-alone			
☐	Combined (EUT where the radio part is fully integrated within another device)			
	Combined Equipment - Brand Name / Model No.:	…		
☐	Plug-in radio (EUT intended for a variety of host systems)			
	Host System - Brand Name / Model No.:	…		
☐	Other:			

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
GFSK	0.137	8.63	156.25u	10k

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

1.1.5 Table for Multiple Listing

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

SKU	Model Name	Color	Description
1	Kain 202 (ROC-11-615-WE-xx)	White	All the samples are identical, the difference is appearance color.
2	Kain 200 (ROC-11-615-BK-xx),	Black	

Note:SKU 2 configuration was measured during the test.

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- KDB 558074 D01 v05r02

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	Andy	23.5~25.6°C / 63.5~66.5%	21/Aug/2019~ 22/Aug/2019
Radiated	03CH03-HY	Ryan	23.2~24.6°C / 32~41%	15/Aug/2019~ 19/Aug/2019
AC Conduction	CO04-HY	Edward	22.9~24.5°C / 62.8~68.7%	20/Aug/2019

1.4 Measurement Uncertainty

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

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

Mode	Power Setting
GFSK_Nss1_1TX	-
2403MHz	default
2441MHz	default
2480MHz	default

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	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	USB mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			
Worst Planes of EUT	V		

2.4 Accessories and Support Equipment

Accessories				
Battery	**Brand Name**	Grand-Pro	**Model Name**	PL803040
	Power Rating	3.7Vdc, 1000mAh	**Type**	Li-ion, Y
USB Cable	**Brand Name**	ROCCAT	**Model Name**	Kain 200C
	Signal Line	1.8 meter, shielded cable, w/o ferrite core		
USB type A to type Micro- B	**Brand Name**	ROCCAT	**Model Name**	Kain 200AB
USB Dongle	**Brand Name**	ROCCAT	**Model Name**	Kain 200D

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

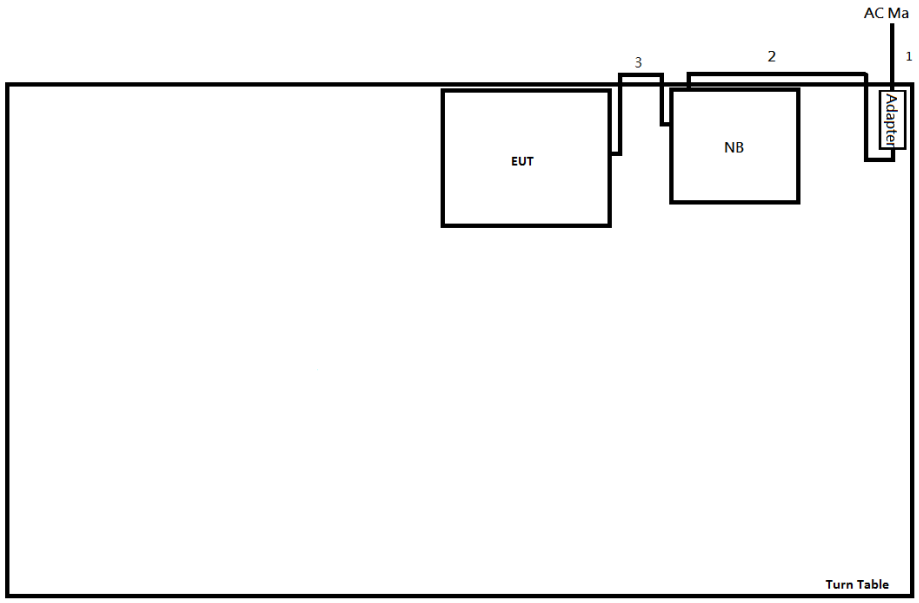
Support Equipment – AC Conduction				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	HP	5220m	-
2	Adapter for NB	HP	PPP012l-E	-
3	IPod	APPLE	YM719D8YVQ5	-
4	Earphone	APPLE	MD827FE/A	-
5	Power Cable	Atake	SCB-3PM01	-

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

Support Equipment – Radiated Emission				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	HP	5220m	-
2	Adapter for NB	HP	PPP012l-E	-
3	IPod	APPLE	YM719D8YVQ5	-
4	Earphone	APPLE	MD827FE/A	-

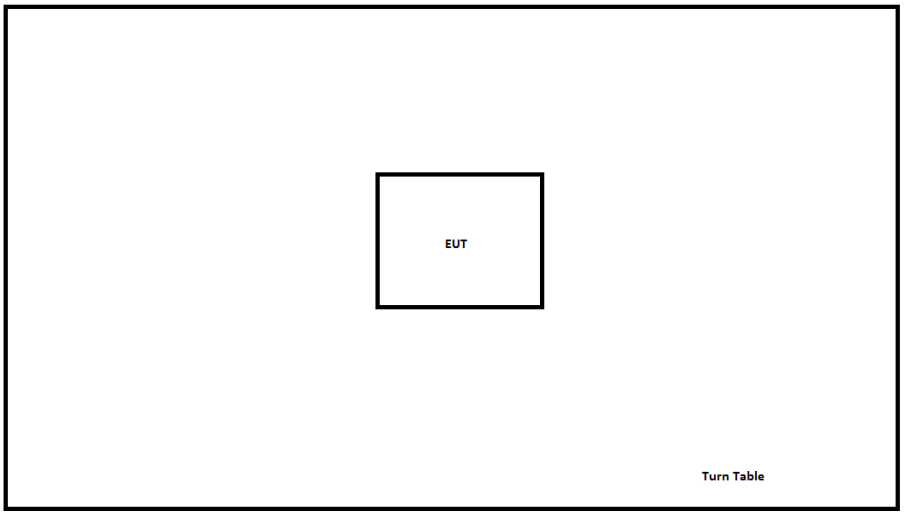
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	Power Cable	No	1.0	-
2	DC Power Cable	No	1.6	-
3	USB Cable	No	1.8	-

Test Setup Diagram - Radiated Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

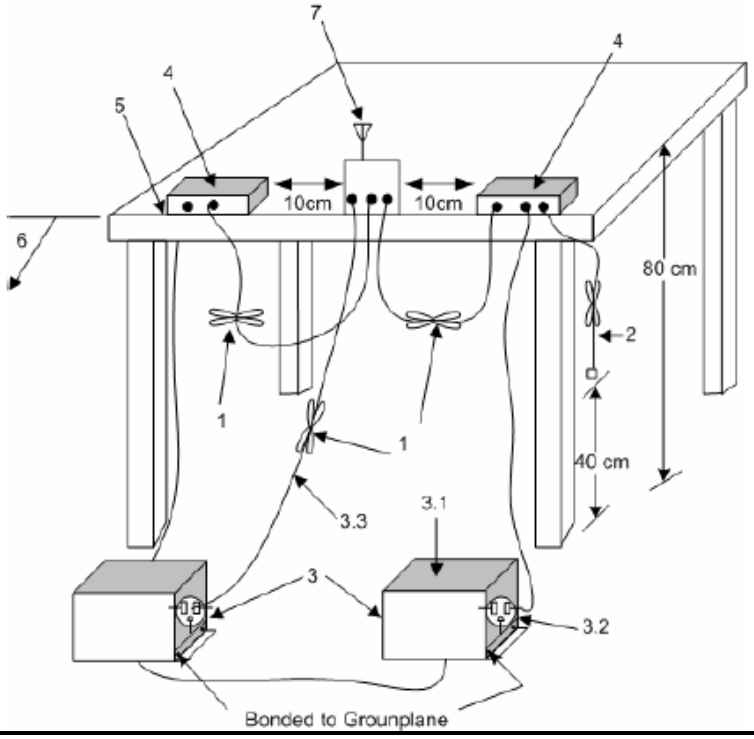
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

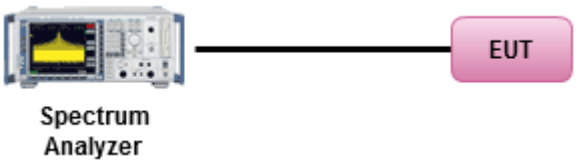
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as KDB 558074. clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
	☐ Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
	☐ Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit			
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)		
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm		
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm		
	▪ Smart antenna system (SAS):		
		- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
		- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
		- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm	
e.i.r.p. Power Limit:			
▪ 2400-2483.5 MHz Band			
	▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)		
	▪ Point-to-point systems (P2P): $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX}])$ dBm		
	▪ Smart antenna system (SAS)		
		- Single beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm	
		- Overlap beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm	
		- Aggregate power on all beams: $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX} + 8])$ dBm	
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.			

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
	☐ Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
	☐ Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
▪ Maximum Average Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
	☒ Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)


3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

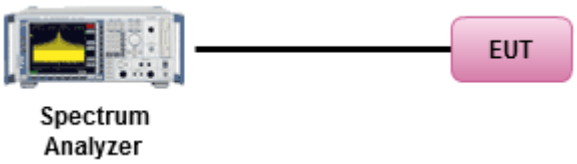
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method		
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).		
	☒ Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Method PKPSD.	
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		▪ Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dB)**
Peak output power procedure	20
Average output power procedure	30
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 level. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average level.	

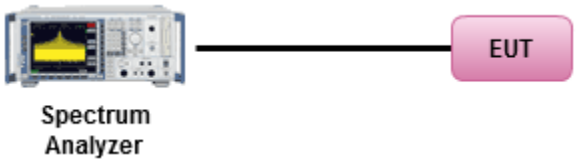
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
▪ Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands


3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 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.

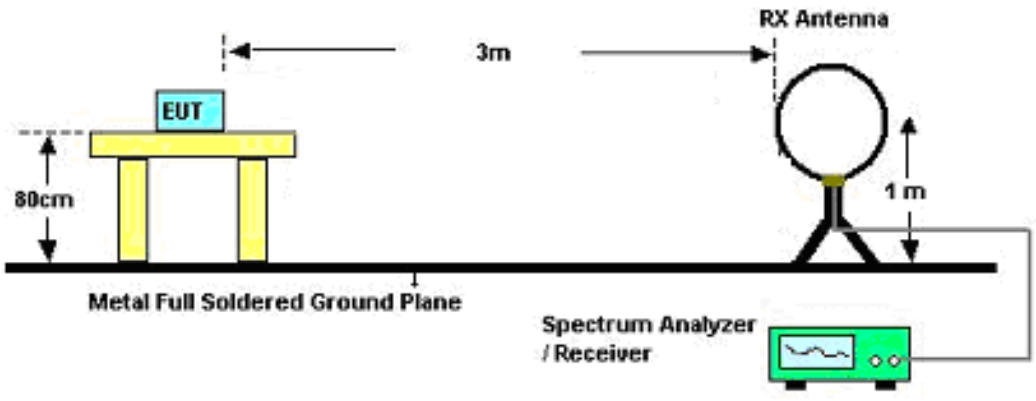
3.6.2 Measuring Instruments

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

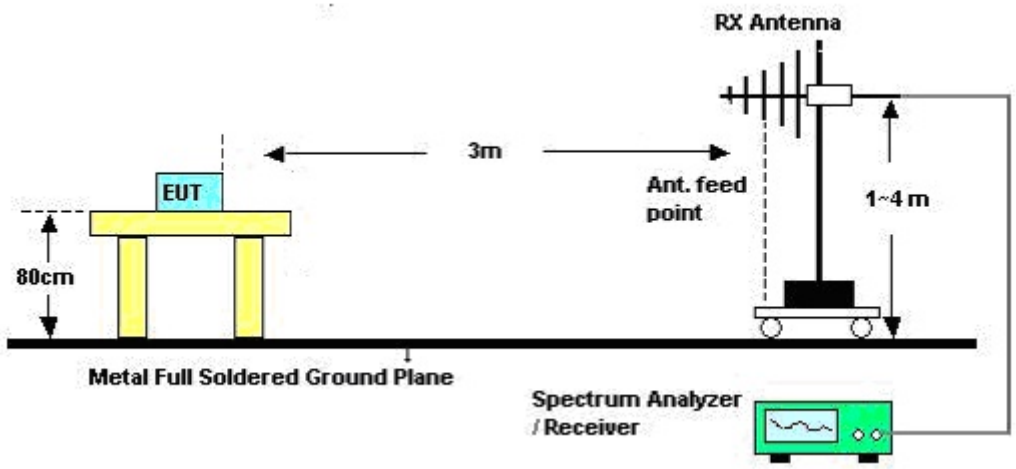
3.6.3 Test Procedures

Test Method	
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or 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 KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
▪ For the transmitter band-edge emissions shall be measured using following options below:	
	▪ Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
▪ Use the following spectrum analyzer settings:	
	▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement. For average measurement, refer as 1.1.4.

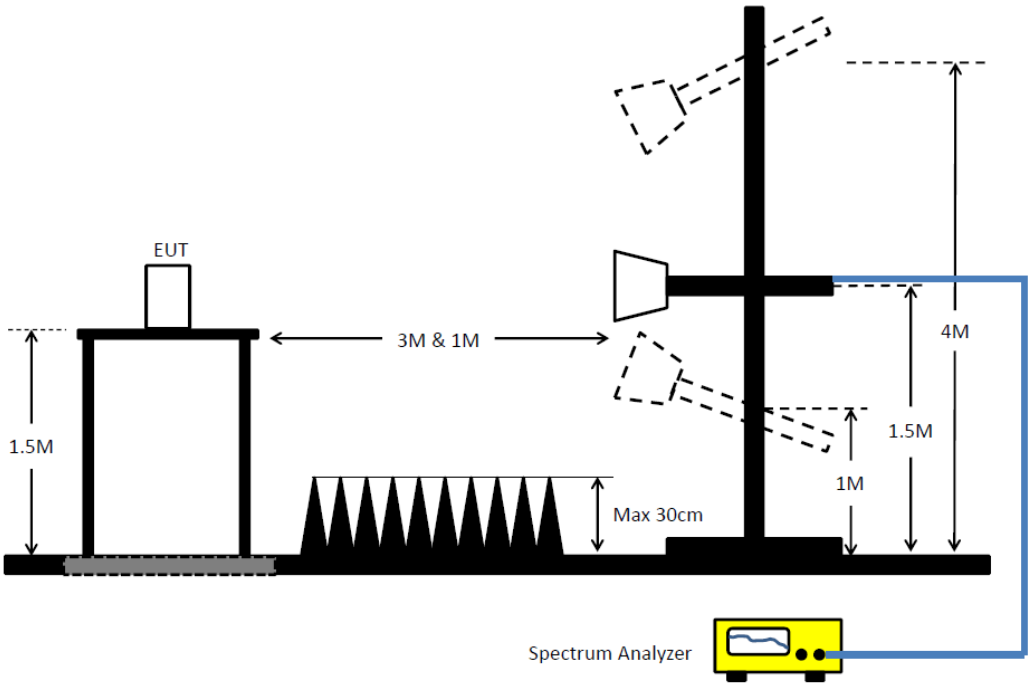
3.6.4 Test Setup

Emissions in Restricted Frequency Bands
9kHz~30MHz


30MHz~1GHz



Above 1GHz



3.6.5 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.

3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

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

NCR : Non-Calibration Require

Instrument for Radiated Test

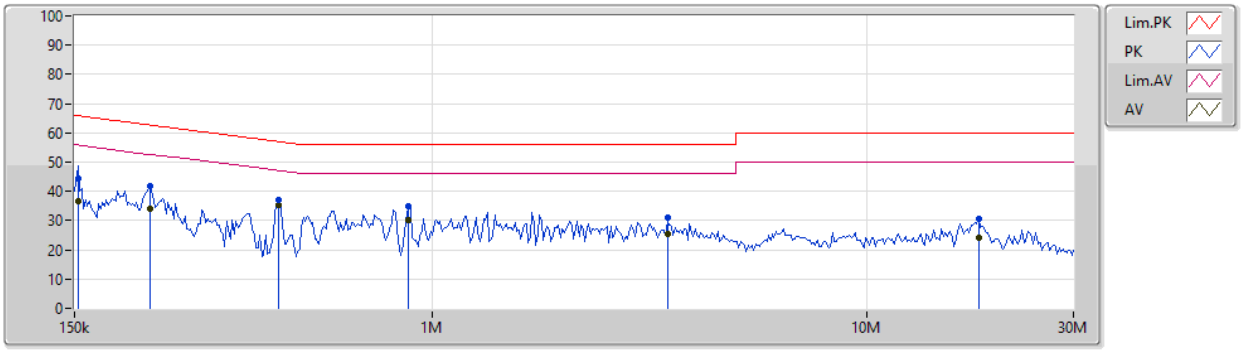
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	30/Oct/2018	29/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz~18GHz 3m	30/Oct/2018	29/Oct/2019
Amplifier	HP	8447D	2944A08033	10kHz~1.3GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	08/Sep/2018	07/ Sep/2019
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz~26.5GHz	05/Sep/2018	04/Sep/2019
Signal Analyzer	R&S	FSP40	100305	9kHz~40GHz; -140-+30dBm	10/Jun/2019	09/Jun/2020
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~1GHz	22/Mar/2019	21/Mar/2020
RF CABLE 6m	HUBER+SUHNER	SUOFLEX 104	SN 805801/4	1GHz~40GHz	21/Mar/2019	20/Mar/2020
RF CABLE	HUBER+SUHNER	SUOFLEX 104	802378/4	1GHz~18GHz	04/Jul/2019	03/Jul/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz~40GHz	22/Mar/ 2019	21/Mar/ 2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	09/Mar/ 2019	08/Mar/2020

Instrument for Conducted Test

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

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

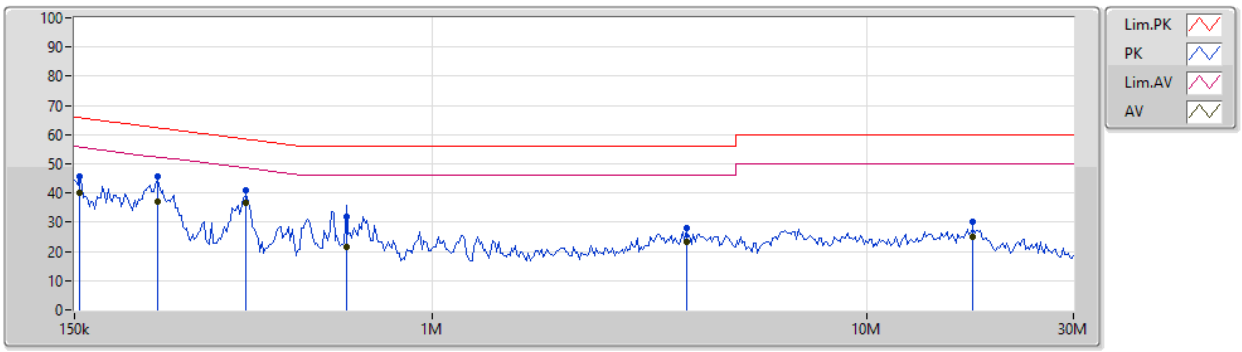
20/08/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	153.015k	44.48	65.83	-21.35	19.48	Neutral	-	25.00	9.60	0.01	9.87
AV	153.015k	36.44	55.83	-19.39	19.48	Neutral	-	16.96	9.60	0.01	9.87
QP	223.33k	41.86	62.69	-20.83	19.47	Neutral	-	22.39	9.59	0.01	9.87
AV	223.33k	34.16	52.69	-18.53	19.47	Neutral	-	14.69	9.59	0.01	9.87
QP	443.732k	37.21	56.99	-19.78	19.48	Neutral	-	17.73	9.59	0.01	9.88
AV	443.732k	35.14	46.99	-11.85	19.48	Neutral	"Worst"	15.66	9.59	0.01	9.88
QP	881.649k	34.75	56.00	-21.25	19.49	Neutral	-	15.26	9.59	0.02	9.88
AV	881.649k	30.18	46.00	-15.82	19.49	Neutral	-	10.69	9.59	0.02	9.88
QP	3.481M	30.86	56.00	-25.14	19.54	Neutral	-	11.32	9.61	0.04	9.89
AV	3.481M	25.23	46.00	-20.77	19.54	Neutral	-	5.69	9.61	0.04	9.89
QP	18.155M	30.48	60.00	-29.52	19.68	Neutral	-	10.80	9.68	0.10	9.90
AV	18.155M	24.11	50.00	-25.89	19.68	Neutral	-	4.43	9.68	0.10	9.90

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

20/08/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	154.545k	45.55	65.75	-20.20	19.48	Line	-	26.07	9.60	0.01	9.87
AV	154.545k	39.92	55.75	-15.83	19.48	Line	-	20.44	9.60	0.01	9.87
QP	232.398k	45.62	62.37	-16.75	19.48	Line	-	26.14	9.60	0.01	9.87
AV	232.398k	37.08	52.37	-15.29	19.48	Line	-	17.60	9.60	0.01	9.87
QP	370.968k	41.02	58.49	-17.47	19.48	Line	-	21.54	9.59	0.01	9.88
AV	370.968k	36.82	48.49	-11.67	19.48	Line	"Worst"	17.34	9.59	0.01	9.88
QP	634.878k	31.79	56.00	-24.21	19.49	Line	-	12.30	9.60	0.01	9.88
AV	634.878k	21.42	46.00	-24.58	19.49	Line	-	1.93	9.60	0.01	9.88
QP	3.845M	27.91	56.00	-28.09	19.57	Line	-	8.34	9.63	0.05	9.89
AV	3.845M	23.12	46.00	-22.88	19.57	Line	-	3.55	9.63	0.05	9.89
QP	17.621M	30.03	60.00	-29.97	19.64	Line	-	10.39	9.64	0.10	9.90
AV	17.621M	24.95	50.00	-25.05	19.64	Line	-	5.31	9.64	0.10	9.90

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
GFSK_Nss1_1TX	711.25k	2.008M	2M01F1D	706.25k	2.008M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

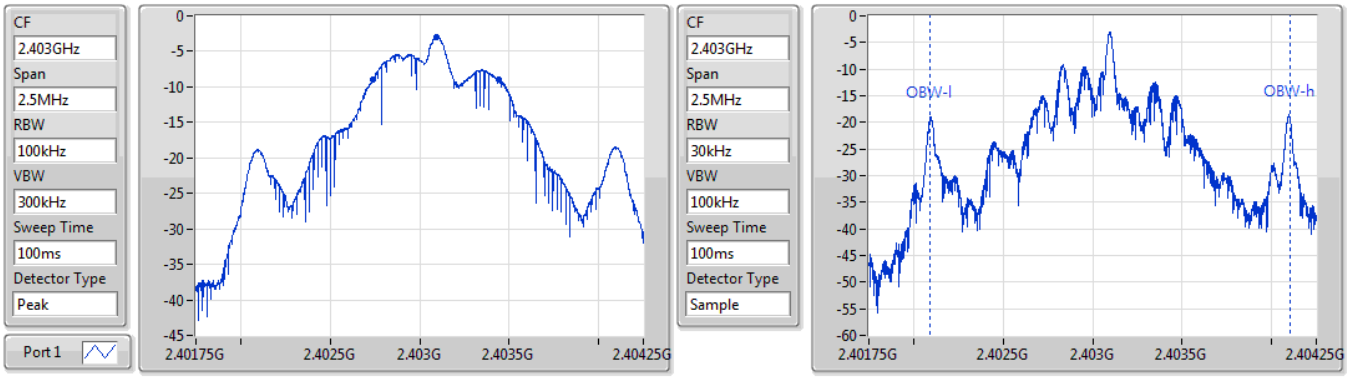
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
GFSK_Nss1_1TX	-	-	-	-
2403MHz_TnomVnom	Pass	500k	706.25k	2.008M
2441MHz_TnomVnom	Pass	500k	707.5k	2.008M
2480MHz_TnomVnom	Pass	500k	711.25k	2.008M

Port X-N dB = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

GFSK_Nss1_1TX **EBW**

2403MHz

21/08/2019

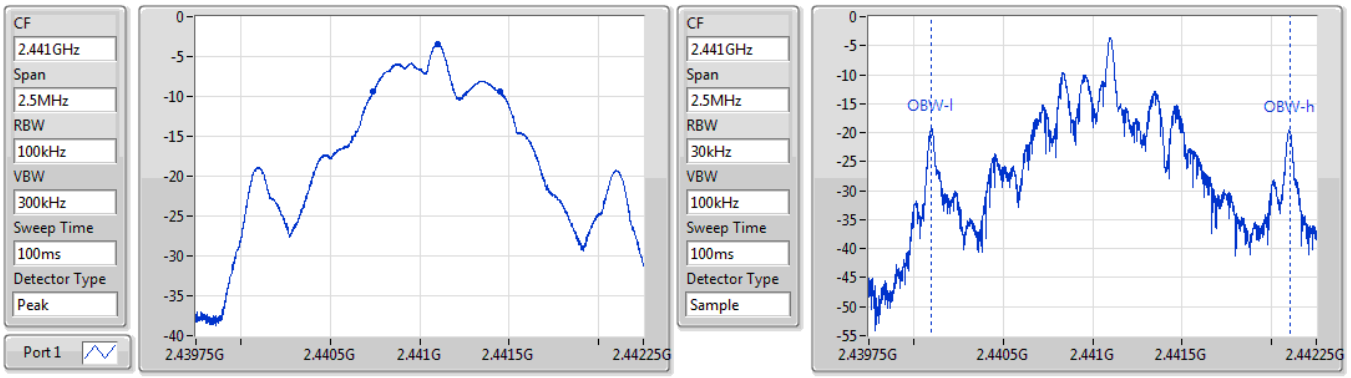


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
706.25k	2.402739G	2.403445G	2.008M	2.402093G	2.404101G	500k	1

GFSK_Nss1_1TX **EBW**

2441MHz

21/08/2019

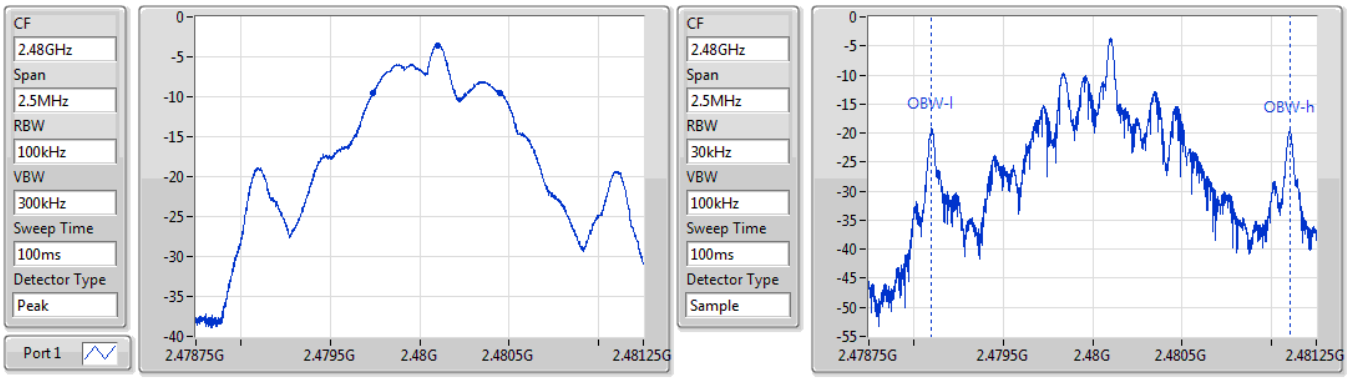


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
707.5k	2.440739G	2.441446G	2.008M	2.440095G	2.442103G	500k	1

GFSK_Nss1_1TX **EBW**

2480MHz

21/08/2019



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
711.25k	2.479736G	2.480448G	2.008M	2.479097G	2.481104G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
GFSK_Nss1_1TX	-3.44	0.00045

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
GFSK_Nss1_1TX	-	-	-	-	-
2403MHz_TnomVnom	Pass	0.97	-3.44	-3.44	30.00
2441MHz_TnomVnom	Pass	0.97	-3.81	-3.81	30.00
2480MHz_TnomVnom	Pass	0.97	-3.78	-3.78	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
GFSK_Nss1_1TX	-14.38

RBW=3 kHz.

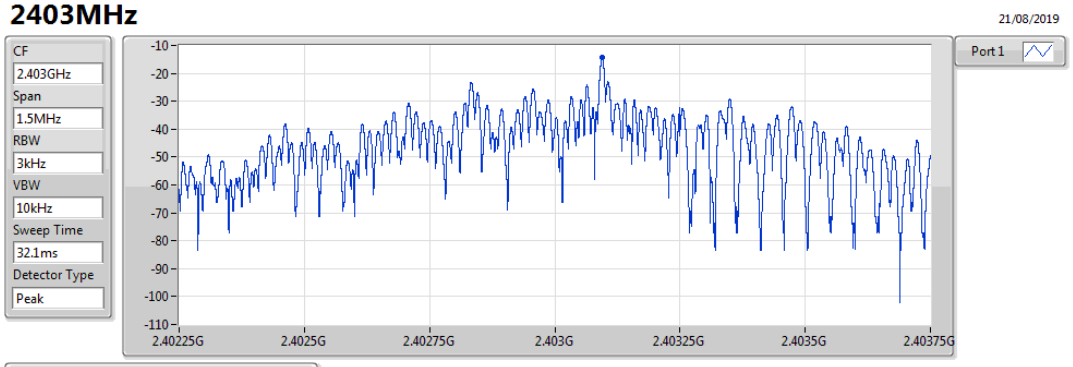
Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
GFSK_Nss1_1TX	-	-	-	-	-
2403MHz_TnomVnom	Pass	0.97	-14.38	-14.38	8.00
2441MHz_TnomVnom	Pass	0.97	-17.69	-17.69	8.00
2480MHz_TnomVnom	Pass	0.97	-23.35	-23.35	8.00

DG = Directional Gain; RBW=3 kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

GFSK_Nss1_1TX **PSD**

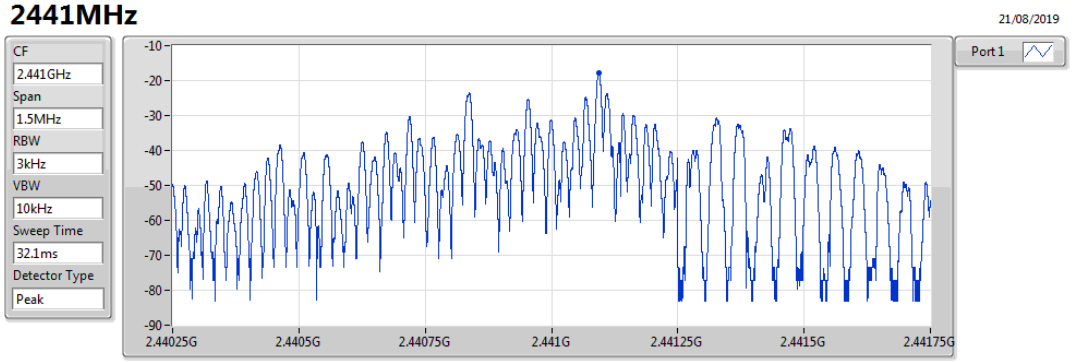
2403MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.38	-14.38	-14.38

GFSK_Nss1_1TX **PSD**

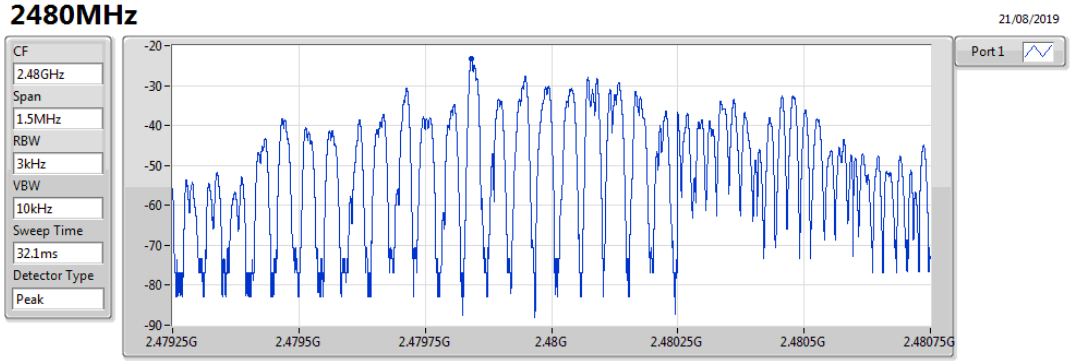
2441MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-17.69	-17.69	-17.69

GFSK_Nss1_1TX **PSD**

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-23.35	-23.35	-23.35

Summary

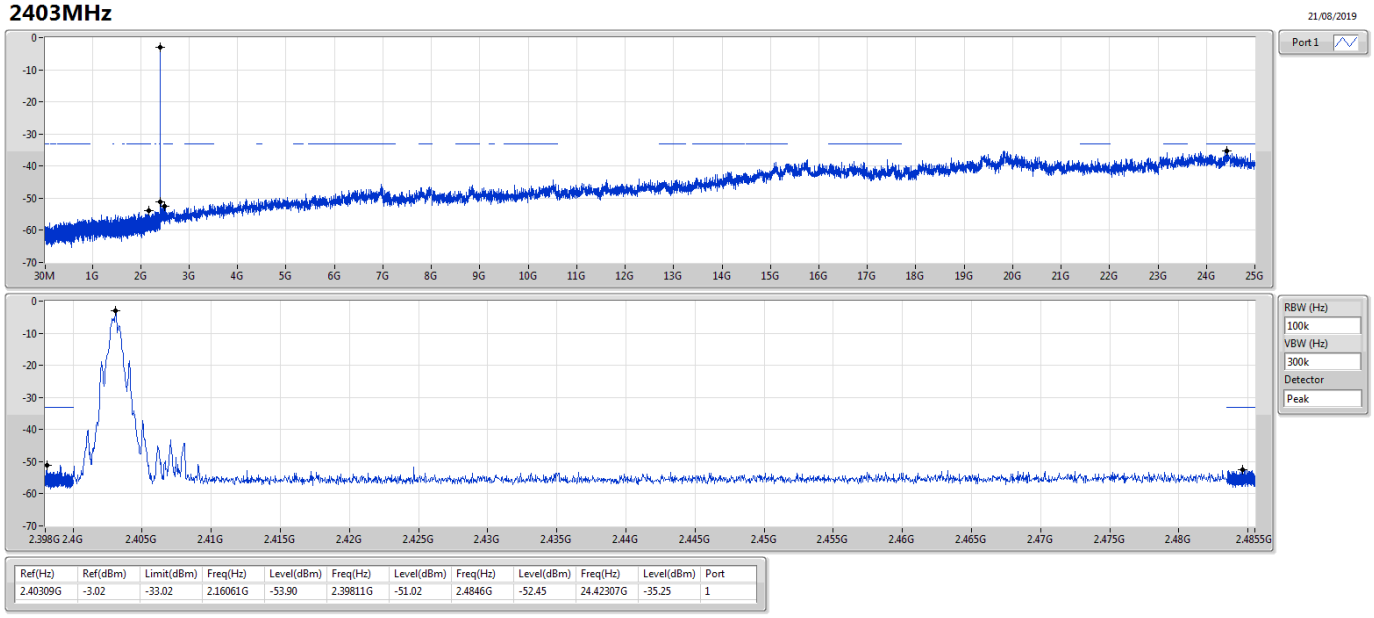
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
GFSK_Nss1_1TX	Pass	2.40309G	-3.02	-33.02	2.13959G	-54.38	2.39995G	-52.80	2.48466G	-52.12	24.80863G	-34.97	1

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
GFSK_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2403MHz_TnomVnom	Pass	2.40309G	-3.02	-33.02	2.16061G	-53.90	2.39811G	-51.02	2.4846G	-52.45	24.42307G	-35.25	1
2441MHz_TnomVnom	Pass	2.40309G	-3.02	-33.02	2.13959G	-54.38	2.39995G	-52.80	2.48466G	-52.12	24.80863G	-34.97	1
2480MHz_TnomVnom	Pass	2.40309G	-3.02	-33.02	2.09105G	-52.56	2.39954G	-52.62	2.48508G	-50.79	24.12193G	-35.94	1

GFSK_Nss1_1TX **CSE NdB**

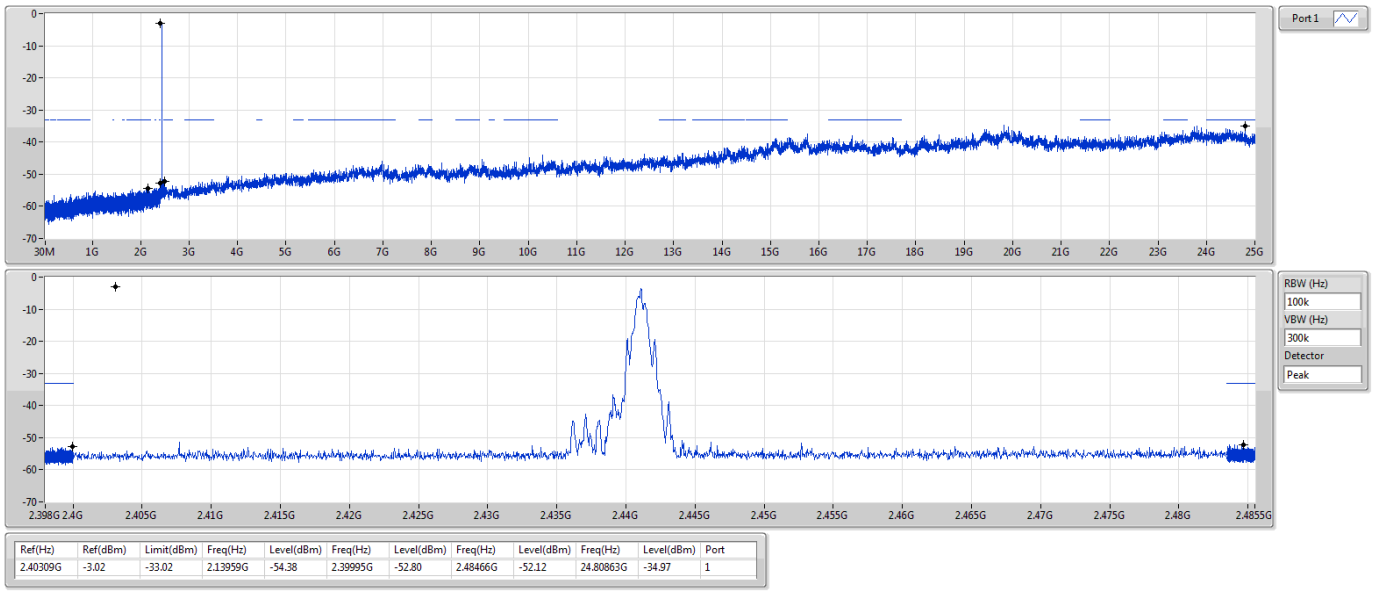
2403MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40309G	-3.02	-33.02	2.16061G	-53.90	2.39811G	-51.02	2.4846G	-52.45	24.42307G	-35.25	1

GFSK_Nss1_1TX **CSE NdB**

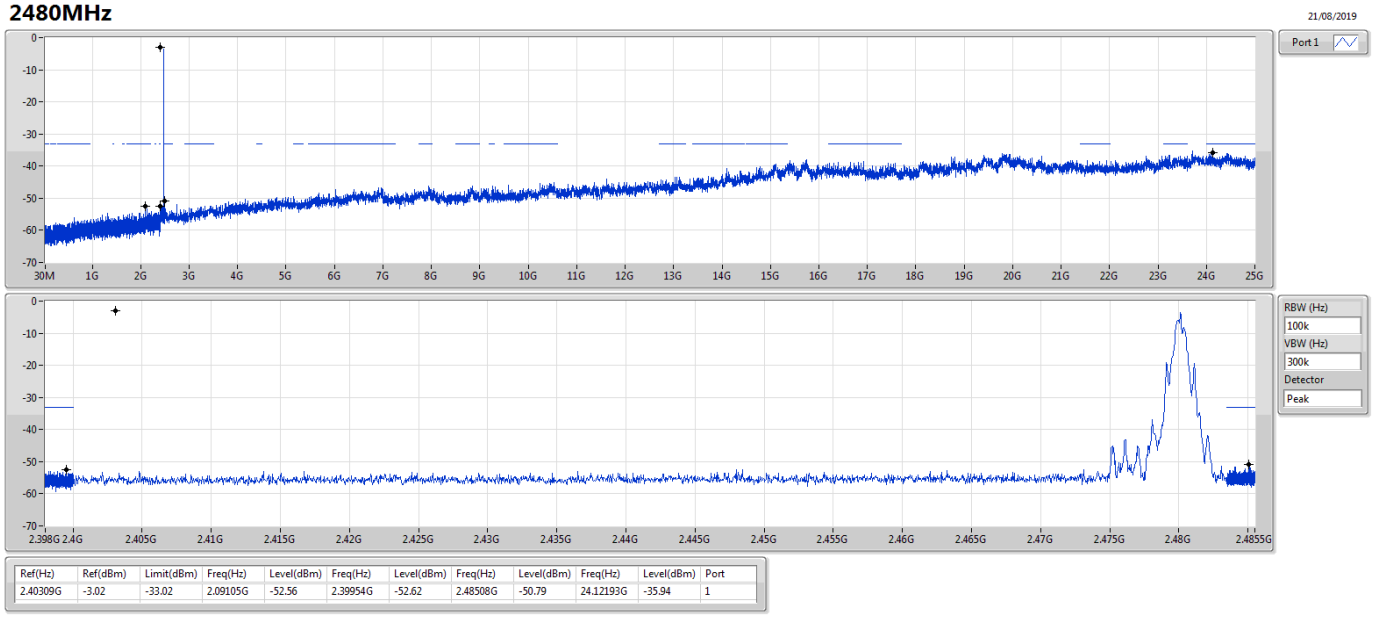
2441MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40309G	-3.02	-33.02	2.13959G	-54.38	2.39995G	-52.80	2.48466G	-52.12	24.80863G	-34.97	1

GFSK_Nss1_1TX **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
2.40309G	-3.02	-33.02	2.09105G	-52.56	2.39954G	-52.62	2.48508G	-50.79	24.12193G	-35.94	1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_Nss1_1TX	Pass	PK	49.4M	26.36	40.00	-13.64	3	Vertical	0	1.00	-

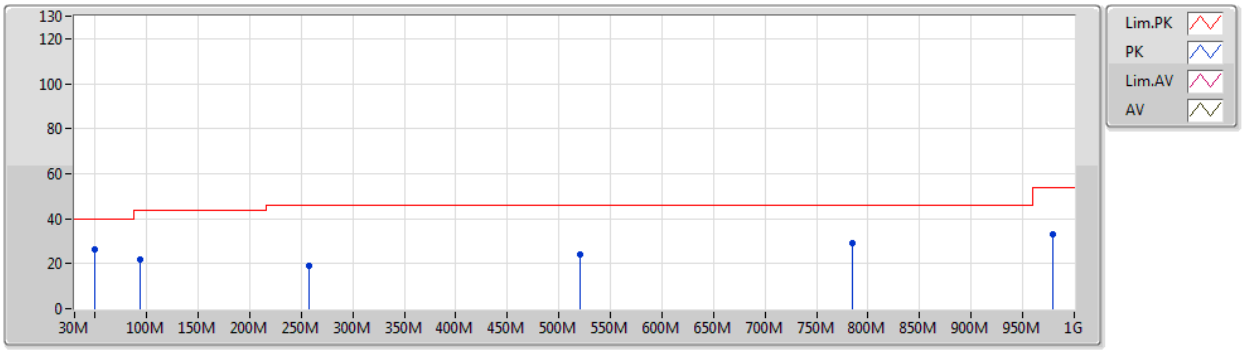
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
GFSK_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-
2441MHz	Pass	PK	49.4M	26.36	40.00	-13.64	3	Vertical	0	1.00	-
2441MHz	Pass	PK	94.02M	22.02	43.50	-21.48	3	Vertical	0	1.00	-
2441MHz	Pass	PK	256.98M	18.96	46.00	-27.04	3	Vertical	0	1.00	-
2441MHz	Pass	PK	520.82M	24.13	46.00	-21.87	3	Vertical	0	1.00	-
2441MHz	Pass	PK	784.66M	29.10	46.00	-16.90	3	Vertical	0	1.00	-
2441MHz	Pass	PK	978.66M	33.13	54.00	-20.87	3	Vertical	0	1.00	-
2441MHz	Pass	PK	49.4M	18.91	40.00	-21.09	3	Horizontal	360	1.00	-
2441MHz	Pass	PK	127M	15.07	43.50	-28.43	3	Horizontal	360	1.00	-
2441MHz	Pass	PK	258.92M	18.54	46.00	-27.46	3	Horizontal	360	1.00	-
2441MHz	Pass	PK	478.14M	23.26	46.00	-22.74	3	Horizontal	360	1.00	-
2441MHz	Pass	PK	666.32M	26.96	46.00	-19.04	3	Horizontal	360	1.00	-
2441MHz	Pass	PK	974.78M	33.11	54.00	-20.89	3	Horizontal	360	1.00	-

GFSK_Nss1_1TX

2441MHz_Bettery

15/08/2019

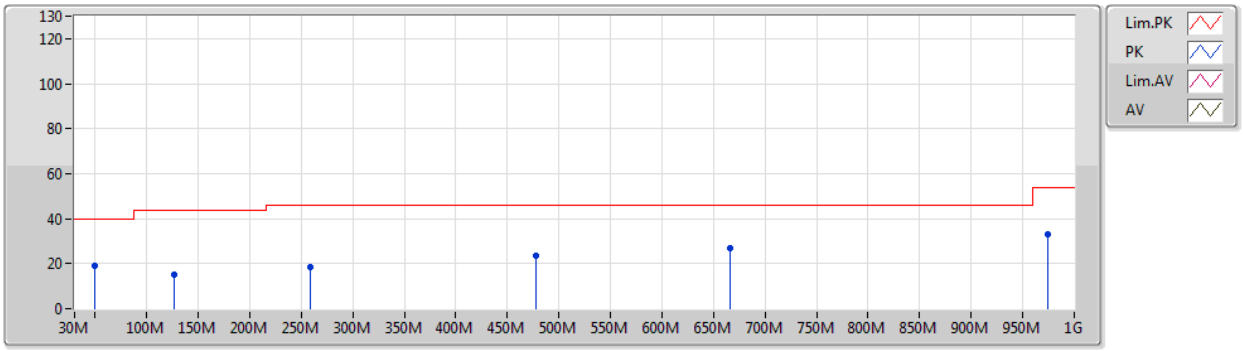


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	49.4M	26.36	40.00	-13.64	-22.53	3	Vertical	0	1.00	-	48.89	13.60	1.04	37.17
PK	94.02M	22.02	43.50	-21.48	-20.98	3	Vertical	0	1.00	-	43.00	14.39	1.46	36.83
PK	256.98M	18.96	46.00	-27.04	-14.87	3	Vertical	0	1.00	-	33.83	19.05	2.51	36.43
PK	520.82M	24.13	46.00	-21.87	-10.06	3	Vertical	0	1.00	-	34.19	23.25	3.67	36.98
PK	784.66M	29.10	46.00	-16.90	-5.45	3	Vertical	0	1.00	-	34.55	27.36	4.67	37.48
PK	978.66M	33.13	54.00	-20.87	-1.76	3	Vertical	0	1.00	-	34.89	30.08	5.33	37.17

GFSK_Nss1_1TX

2441MHz_Bettery

15/08/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
PK	49.4M	18.91	40.00	-21.09	-22.53	3	Horizontal	360	1.00	-	41.44	13.60	1.04	37.17
PK	127M	15.07	43.50	-28.43	-18.16	3	Horizontal	360	1.00	-	33.23	16.77	1.73	36.66
PK	258.92M	18.54	46.00	-27.46	-14.57	3	Horizontal	360	1.00	-	33.11	19.34	2.52	36.43
PK	478.14M	23.26	46.00	-22.74	-10.47	3	Horizontal	360	1.00	-	33.73	22.87	3.51	36.85
PK	666.32M	26.96	46.00	-19.04	-7.54	3	Horizontal	360	1.00	-	34.50	25.53	4.24	37.31
PK	974.78M	33.11	54.00	-20.89	-1.75	3	Horizontal	360	1.00	-	34.86	30.12	5.32	37.19

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_Nss1_1TX	Pass	AV	2.5234G	49.86	54.00	-4.14	3	Vertical	244	1.08	-

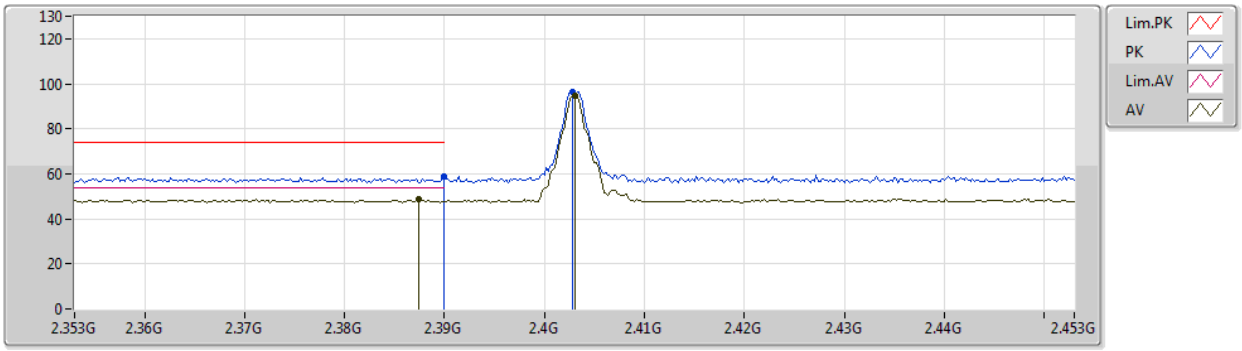
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
GFSK_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-
2403MHz	Pass	AV	2.3874G	48.53	54.00	-5.47	3	Vertical	230	1.20	-
2403MHz	Pass	AV	2.403G	94.79	Inf	-Inf	3	Vertical	230	1.20	-
2403MHz	Pass	PK	2.39G	58.70	74.00	-15.30	3	Vertical	230	1.20	-
2403MHz	Pass	PK	2.4028G	96.18	Inf	-Inf	3	Vertical	230	1.20	-
2403MHz	Pass	AV	2.3612G	48.61	54.00	-5.39	3	Horizontal	233	1.00	-
2403MHz	Pass	AV	2.403G	91.68	Inf	-Inf	3	Horizontal	233	1.00	-
2403MHz	Pass	PK	2.3556G	59.27	74.00	-14.73	3	Horizontal	233	1.00	-
2403MHz	Pass	PK	2.4028G	92.92	Inf	-Inf	3	Horizontal	233	1.00	-
2403MHz	Pass	AV	4.8075G	35.84	54.00	-18.16	3	Vertical	262	2.09	-
2403MHz	Pass	PK	4.8042G	46.87	74.00	-27.13	3	Vertical	262	2.09	-
2403MHz	Pass	AV	4.80797G	38.65	54.00	-15.35	3	Horizontal	59	1.01	-
2403MHz	Pass	PK	4.80731G	48.88	74.00	-25.12	3	Horizontal	59	1.01	-
2441MHz	Pass	AV	2.363G	49.20	54.00	-4.80	3	Vertical	228	1.50	-
2441MHz	Pass	AV	2.441G	93.66	Inf	-Inf	3	Vertical	228	1.50	-
2441MHz	Pass	AV	2.4974G	48.68	54.00	-5.32	3	Vertical	228	1.50	-
2441MHz	Pass	PK	2.3602G	59.45	74.00	-14.55	3	Vertical	228	1.50	-
2441MHz	Pass	PK	2.4406G	95.04	Inf	-Inf	3	Vertical	228	1.50	-
2441MHz	Pass	PK	2.5238G	59.12	74.00	-14.88	3	Vertical	228	1.50	-
2441MHz	Pass	AV	2.3418G	49.23	54.00	-4.77	3	Horizontal	232	1.00	-
2441MHz	Pass	AV	2.441G	91.15	Inf	-Inf	3	Horizontal	232	1.00	-
2441MHz	Pass	AV	2.4954G	49.27	54.00	-4.73	3	Horizontal	232	1.00	-
2441MHz	Pass	PK	2.3606G	58.77	74.00	-15.23	3	Horizontal	232	1.00	-
2441MHz	Pass	PK	2.4414G	92.32	Inf	-Inf	3	Horizontal	232	1.00	-
2441MHz	Pass	PK	2.5218G	59.47	74.00	-14.53	3	Horizontal	232	1.00	-
2441MHz	Pass	AV	4.88002G	36.16	54.00	-17.84	3	Vertical	182	3.00	-
2441MHz	Pass	PK	4.88158G	46.55	74.00	-27.45	3	Vertical	182	3.00	-
2441MHz	Pass	AV	4.87998G	39.59	54.00	-14.41	3	Horizontal	55	1.00	-
2441MHz	Pass	PK	4.88225G	47.35	74.00	-26.65	3	Horizontal	55	1.00	-
2480MHz	Pass	AV	2.48G	93.71	Inf	-Inf	3	Vertical	244	1.08	-
2480MHz	Pass	AV	2.5234G	49.86	54.00	-4.14	3	Vertical	244	1.08	-
2480MHz	Pass	PK	2.4802G	94.89	Inf	-Inf	3	Vertical	244	1.08	-
2480MHz	Pass	PK	2.5116G	60.21	74.00	-13.79	3	Vertical	244	1.08	-
2480MHz	Pass	AV	2.48G	90.22	Inf	-Inf	3	Horizontal	229	1.00	-
2480MHz	Pass	AV	2.5094G	49.19	54.00	-4.81	3	Horizontal	229	1.00	-
2480MHz	Pass	PK	2.4804G	91.31	Inf	-Inf	3	Horizontal	229	1.00	-
2480MHz	Pass	PK	2.5188G	59.97	74.00	-14.03	3	Horizontal	229	1.00	-
2480MHz	Pass	AV	4.95992G	36.96	54.00	-17.04	3	Vertical	1	1.50	-
2480MHz	Pass	PK	4.96196G	46.91	74.00	-27.09	3	Vertical	1	1.50	-
2480MHz	Pass	AV	4.96014G	41.13	54.00	-12.87	3	Horizontal	190	2.76	-
2480MHz	Pass	PK	4.96009G	48.35	74.00	-25.65	3	Horizontal	190	2.76	-

GFSK_Nss1_1TX

2403MHz_TX

15/08/2019

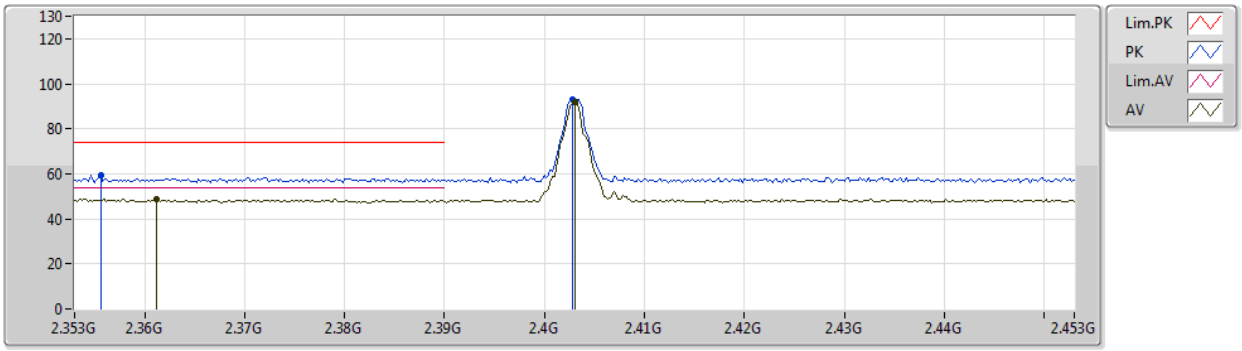


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3874G	48.53	54.00	-5.47	33.76	3	Vertical	230	1.20	-	14.77	27.65	6.11	-
AV	2.403G	94.79	Inf	-Inf	33.71	3	Vertical	230	1.20	-	61.08	27.60	6.11	-
PK	2.39G	58.70	74.00	-15.30	33.75	3	Vertical	230	1.20	-	24.95	27.64	6.11	-
PK	2.4028G	96.18	Inf	-Inf	33.71	3	Vertical	230	1.20	-	62.47	27.60	6.11	-

GFSK_Nss1_1TX

2403MHz_TX

15/08/2019

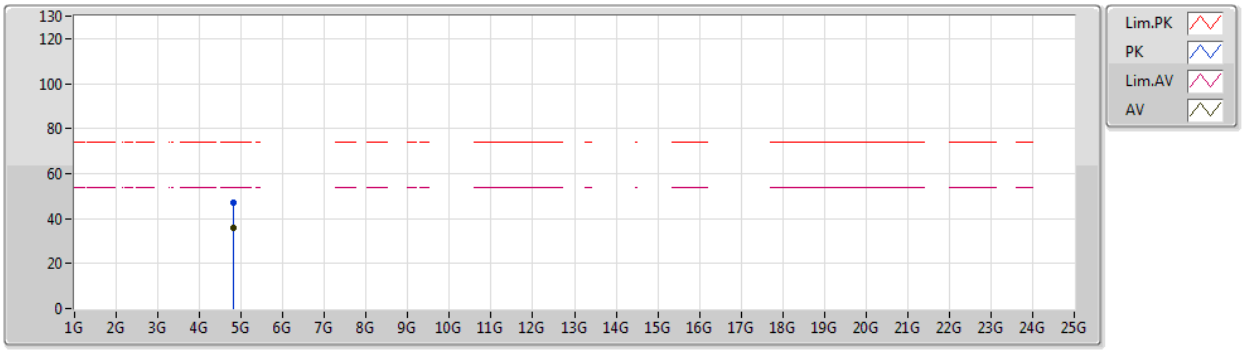


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3612G	48.61	54.00	-5.39	33.88	3	Horizontal	233	1.00	-	14.73	27.76	6.12	-
AV	2.403G	91.68	Inf	-Inf	33.71	3	Horizontal	233	1.00	-	57.97	27.60	6.11	-
PK	2.3556G	59.27	74.00	-14.73	33.90	3	Horizontal	233	1.00	-	25.37	27.78	6.12	-
PK	2.4028G	92.92	Inf	-Inf	33.71	3	Horizontal	233	1.00	-	59.21	27.60	6.11	-

GFSK_Nss1_1TX

2403MHz_TX

15/08/2019

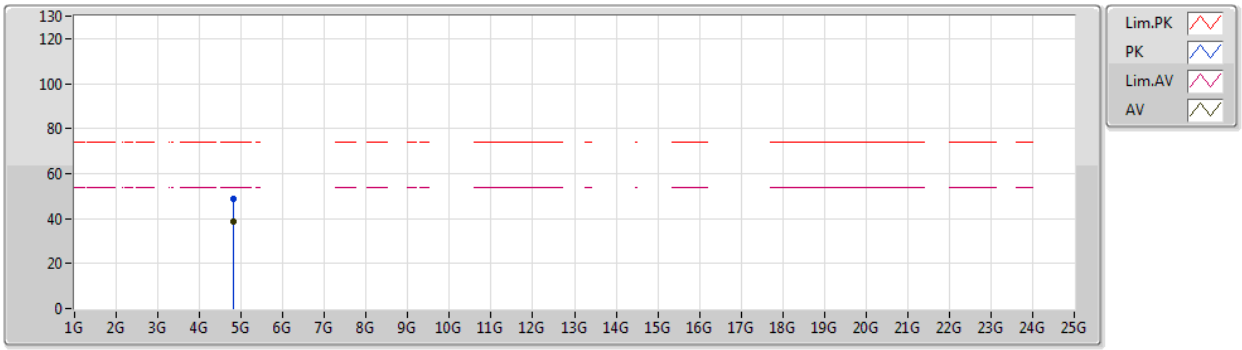


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.8075G	35.84	54.00	-18.16	5.70	3	Vertical	262	2.09	-	30.14	31.10	8.90	34.30
PK	4.8042G	46.87	74.00	-27.13	5.70	3	Vertical	262	2.09	-	41.17	31.10	8.90	34.30

GFSK_Nss1_1TX

2403MHz_TX

15/08/2019

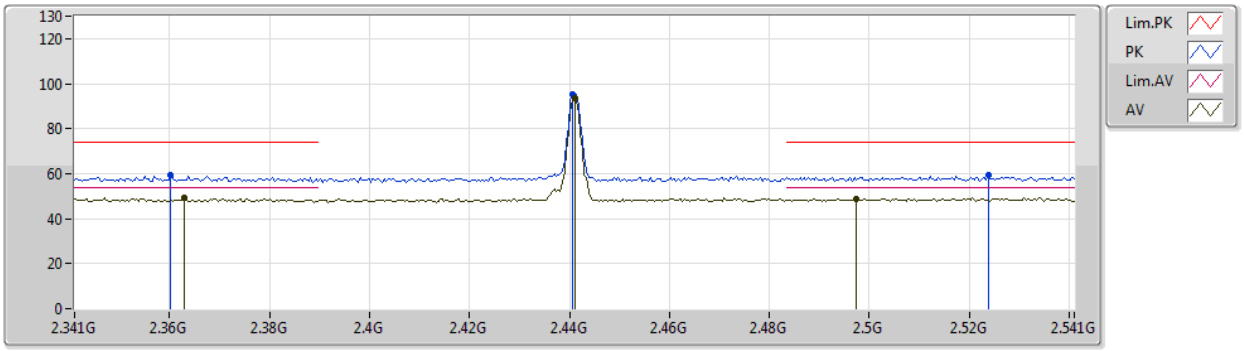


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80797G	38.65	54.00	-15.35	5.70	3	Horizontal	59	1.01	-	32.95	31.10	8.90	34.30
PK	4.80731G	48.88	74.00	-25.12	5.70	3	Horizontal	59	1.01	-	43.18	31.10	8.90	34.30

GFSK_Nss1_1TX

2441MHz_TX

15/08/2019

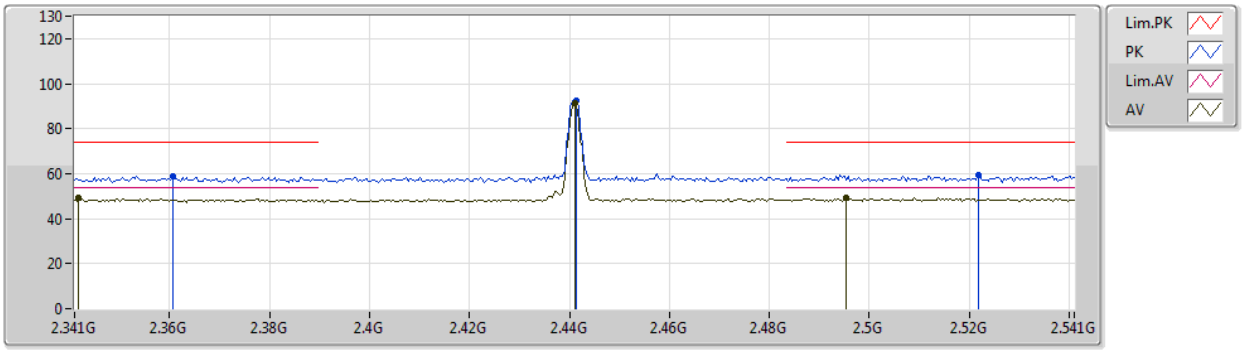


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.363G	49.20	54.00	-4.80	33.87	3	Vertical	228	1.50	-	15.33	27.75	6.12	-
AV	2.441G	93.66	Inf	-Inf	33.69	3	Vertical	228	1.50	-	59.97	27.56	6.13	-
AV	2.4974G	48.68	54.00	-5.32	33.65	3	Vertical	228	1.50	-	15.03	27.50	6.15	-
PK	2.3602G	59.45	74.00	-14.55	33.88	3	Vertical	228	1.50	-	25.57	27.76	6.12	-
PK	2.4406G	95.04	Inf	-Inf	33.69	3	Vertical	228	1.50	-	61.35	27.56	6.13	-
PK	2.5238G	59.12	74.00	-14.88	33.71	3	Vertical	228	1.50	-	25.41	27.55	6.16	-

GFSK_Nss1_1TX

2441MHz_TX

15/08/2019

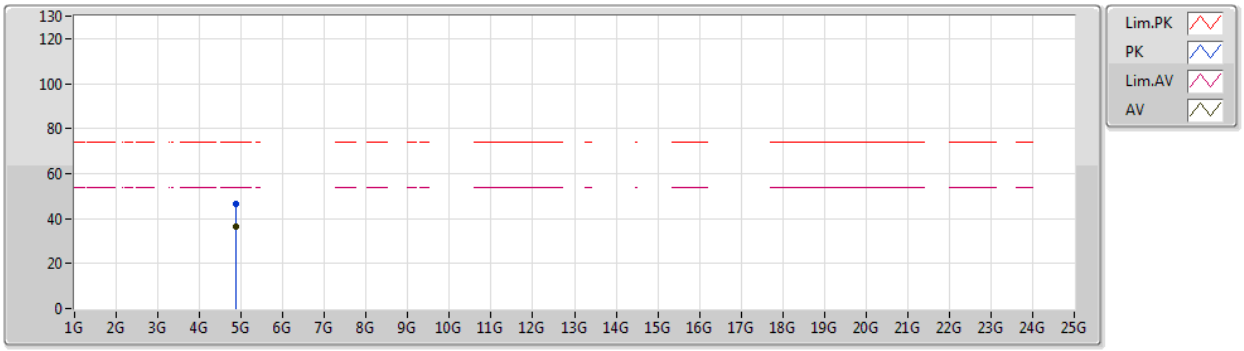


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3418G	49.23	54.00	-4.77	33.95	3	Horizontal	232	1.00	-	15.28	27.83	6.12	-
AV	2.441G	91.15	Inf	-Inf	33.69	3	Horizontal	232	1.00	-	57.46	27.56	6.13	-
AV	2.4954G	49.27	54.00	-4.73	33.65	3	Horizontal	232	1.00	-	15.62	27.50	6.15	-
PK	2.3606G	58.77	74.00	-15.23	33.88	3	Horizontal	232	1.00	-	24.89	27.76	6.12	-
PK	2.4414G	92.32	Inf	-Inf	33.69	3	Horizontal	232	1.00	-	58.63	27.56	6.13	-
PK	2.5218G	59.47	74.00	-14.53	33.70	3	Horizontal	232	1.00	-	25.77	27.54	6.16	-

GFSK_Nss1_1TX

2441MHz_TX

15/08/2019

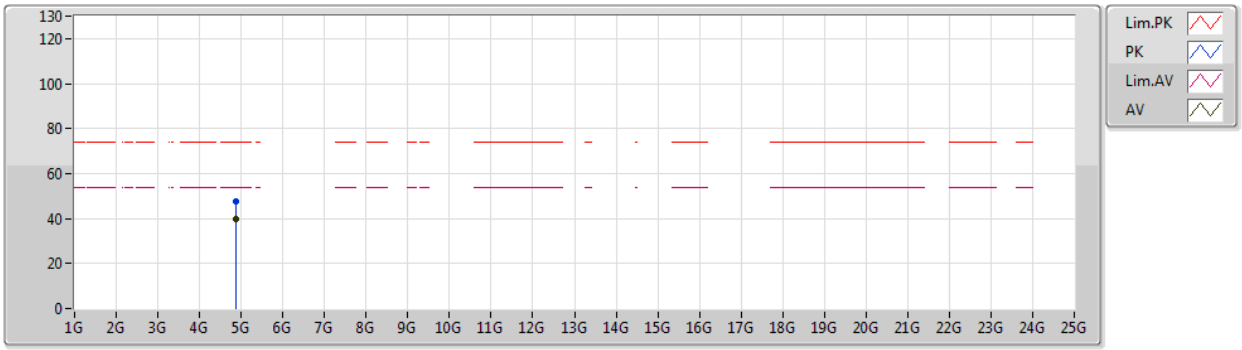


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.88002G	36.16	54.00	-17.84	5.78	3	Vertical	182	3.00	-	30.38	31.10	8.96	34.28
PK	4.88158G	46.55	74.00	-27.45	5.78	3	Vertical	182	3.00	-	40.77	31.10	8.96	34.28

GFSK_Nss1_1TX

2441MHz_TX

15/08/2019

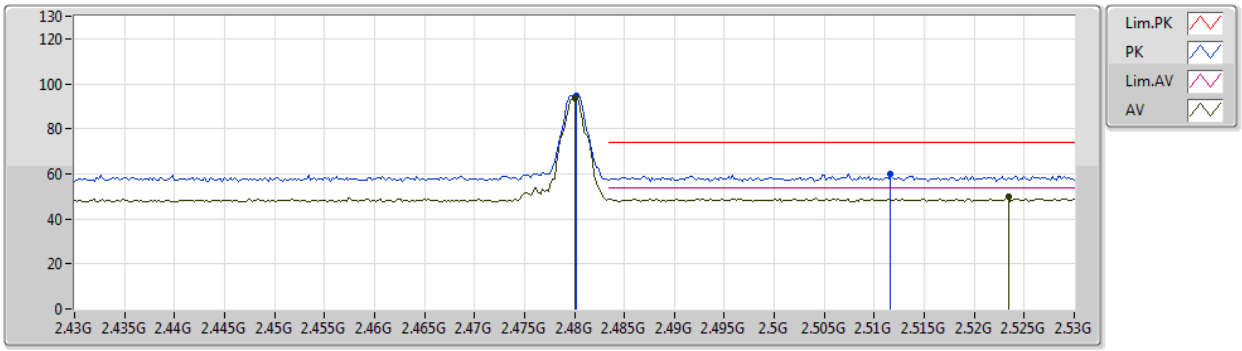


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87998G	39.59	54.00	-14.41	5.78	3	Horizontal	55	1.00	-	33.81	31.10	8.96	34.28
PK	4.88225G	47.35	74.00	-26.65	5.78	3	Horizontal	55	1.00	-	41.57	31.10	8.96	34.28

GFSK_Nss1_1TX

2480MHz_TX

15/08/2019

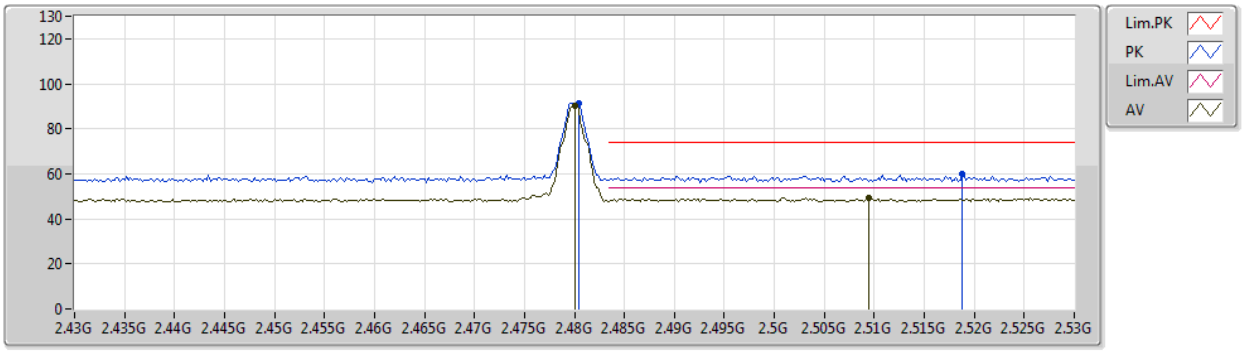


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	93.71	Inf	-Inf	33.67	3	Vertical	244	1.08	-	60.04	27.52	6.15	-
AV	2.5234G	49.86	54.00	-4.14	33.71	3	Vertical	244	1.08	-	16.15	27.55	6.16	-
PK	2.4802G	94.89	Inf	-Inf	33.67	3	Vertical	244	1.08	-	61.22	27.52	6.15	-
PK	2.5116G	60.21	74.00	-13.79	33.68	3	Vertical	244	1.08	-	26.53	27.52	6.16	-

GFSK_Nss1_1TX

2480MHz_TX

15/08/2019

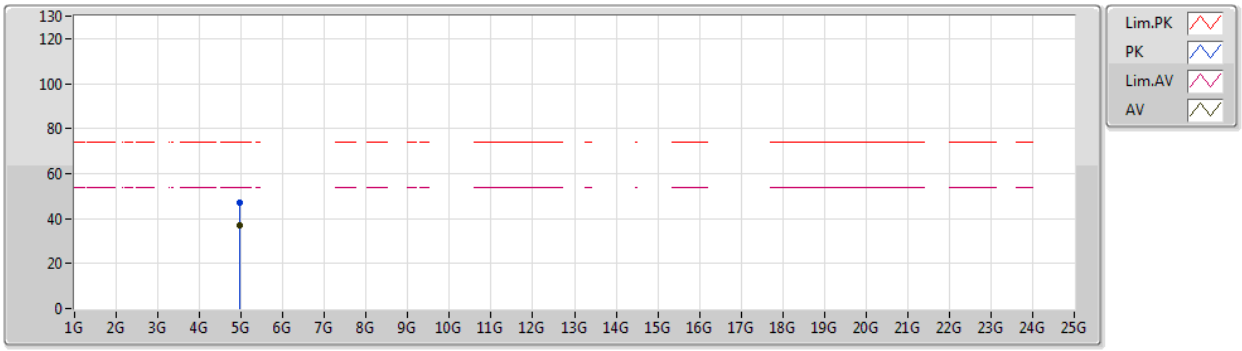


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	90.22	Inf	-Inf	33.67	3	Horizontal	229	1.00	-	56.55	27.52	6.15	-
AV	2.5094G	49.19	54.00	-4.81	33.68	3	Horizontal	229	1.00	-	15.51	27.52	6.16	-
PK	2.4804G	91.31	Inf	-Inf	33.67	3	Horizontal	229	1.00	-	57.64	27.52	6.15	-
PK	2.5188G	59.97	74.00	-14.03	33.70	3	Horizontal	229	1.00	-	26.27	27.54	6.16	-

GFSK_Nss1_1TX

2480MHz_TX

15/08/2019

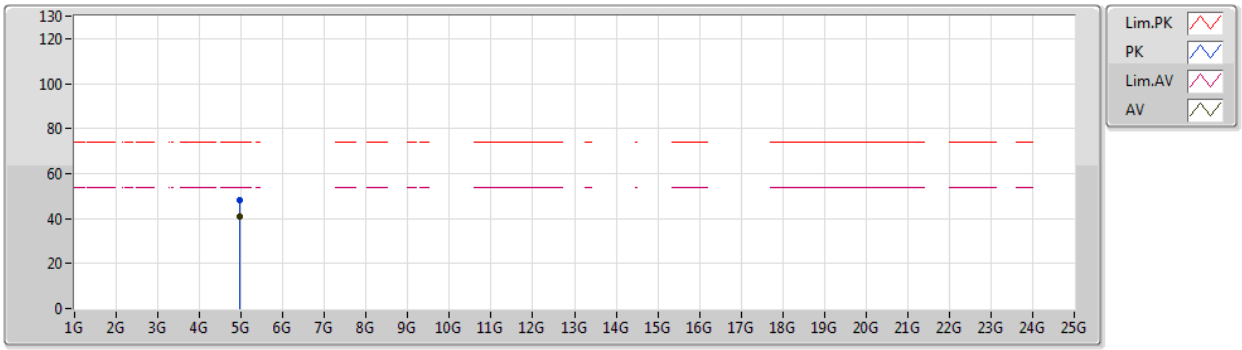


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.95992G	36.96	54.00	-17.04	6.21	3	Vertical	1	1.50	-	30.75	31.34	9.03	34.16
PK	4.96196G	46.91	74.00	-27.09	6.23	3	Vertical	1	1.50	-	40.68	31.35	9.03	34.15

GFSK_Nss1_1TX

2480MHz_TX

15/08/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.96014G	41.13	54.00	-12.87	6.21	3	Horizontal	190	2.76	-	34.92	31.34	9.03	34.16
PK	4.96009G	48.35	74.00	-25.65	6.21	3	Horizontal	190	2.76	-	42.14	31.34	9.03	34.16