



# FCC RADIO TEST REPORT

**FCC ID** : ZMY-MIO6706  
**Equipment** : Wi-SUN Module  
**Brand Name** : MitraStar  
**Model Name** : MIO-6706  
**Applicant** : MitraStar Technology Corporation  
No. 6, Innovation Rd II, Science-Based Industrial,  
Hsin-Chu, Taiwan  
**Manufacturer** : Wuxi MitraStar Technology Co. Ltd  
60#-E, Minshan Road, Wuxi New district Jangsu, P.R.C.  
**Standard** : 47 CFR FCC Part 15.247

The product was received on Sep. 30, 2020, and testing was started from Nov. 09, 2020 and completed on Nov. 30, 2020. 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 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: Sam Chen

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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**Photographs of EUT v01**



### History of this test report

Report No.	Version	Description	Issued Date
FR091526	01	Initial issue of report	Feb. 26, 2021



## Summary of Test Result

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

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Sam Chen**

**Report Producer: Vicky Huang**



# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Frequency Range (MHz)	Ch. Frequency (MHz)	Ch. Spacing (MHz)	Channel Number	Modulation	Data Rate (Kbps)
902-928	902.2-927.8	0.2	1-129 [129]	GFSK	50,100
902-928	902.4-927.6	0.4	1-64 [64]	GFSK	150
902-928	902.6-927.2	0.6	1-42 [42]	GFSK	300

### 1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	HongBo	290-10540	PCB Antenna	I-PEX	-0.43
2	1	HongBo	56-001-000023Z	PCB Antenna	I-PEX	-0.85

Note1: The above information was declared by manufacturer.

Note2: Ant. 1~2 are the same type antenna. Only the highest gain Ant. 1 antenna was selected to test and record in this report.

**For Wi-SUN function (1TX, 1RX):**

Only Port 1 can be used as transmitting/receiving antenna.

### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
GFSK (100Kbps)	1	0	n/a (DC≥0.98)	n/a (DC≥0.98)
GFSK (150Kbps)	1	0	n/a (DC≥0.98)	n/a (DC≥0.98)
GFSK (300Kbps)	1	0	n/a (DC≥0.98)	n/a (DC≥0.98)
GFSK (50Kbps)	1	0	n/a (DC≥0.98)	n/a (DC≥0.98)

Note:

- ◆ DC is Duty Cycle.
- ◆ DCF is Duty Cycle Factor.

### 1.1.4 EUT Operational Condition

EUT Power Type	From host system
Test Software Version	Tera Term Version 4.75



## 1.2 Applicable Standards

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

- ♦ 47 CFR FCC Part 15

The following reference test guidance is not within the scope of accreditation of TAF.

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC KDB 414788 D01 v01r01

## 1.3 Testing Location Information

Testing Location		
<input type="checkbox"/>	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
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.) TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Brian Sun	23.3-25.2 / 56-59	Nov. 10, 2020~ Nov. 12, 2020
Radiated	03CH04-CB	Brian Sun	24.4-24.9 / 55-57	Nov. 09, 2020~ Nov. 11, 2020
AC Conduction	CO01-CB	Max Lin	21-22 / 59-60	Nov. 30, 2020

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

## 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)	2.0 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.9 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.4%	Confidence levels of 95%



## 2 Test Configuration of EUT

### 2.1 Test Channel Mode

Mode	Power Setting
GFSK (50Kbps)	-
902.2MHz	19
915MHz	20
927.8MHz	20
GFSK (100Kbps)	-
902.2MHz	19
915MHz	20
927.8MHz	20
GFSK (150Kbps)	-
902.4MHz	20
914.8MHz	20
927.6MHz	20
GFSK (300Kbps)	-
902.6MHz	20
914.6MHz	20
927.2MHz	20





### 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	AC power-line conducted emissions
<b>Condition</b>	AC power-line conducted measurement for line and neutral
<b>Operating Mode</b>	CTX
1	CTX

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	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
<b>Test Condition</b>	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Emissions in Restricted Frequency Bands
<b>Test Condition</b>	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.
<b>Operating Mode &lt; 1GHz</b>	CTX
The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.	
1	EUT at Z-axis
<b>Operating Mode &gt; 1GHz</b>	CTX
The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at Z axis. So the measurement will follow this same test configuration.	
1	EUT at Z-axis (50Kbps)
	EUT at Z-axis (100Kbps)
	EUT at Z-axis (150Kbps)
	EUT at Z-axis (300Kbps)

### 2.3 Test Voltage

120 V / 60 Hz



## 2.4 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.5 Accessories

N/A

## 2.6 Support Equipment

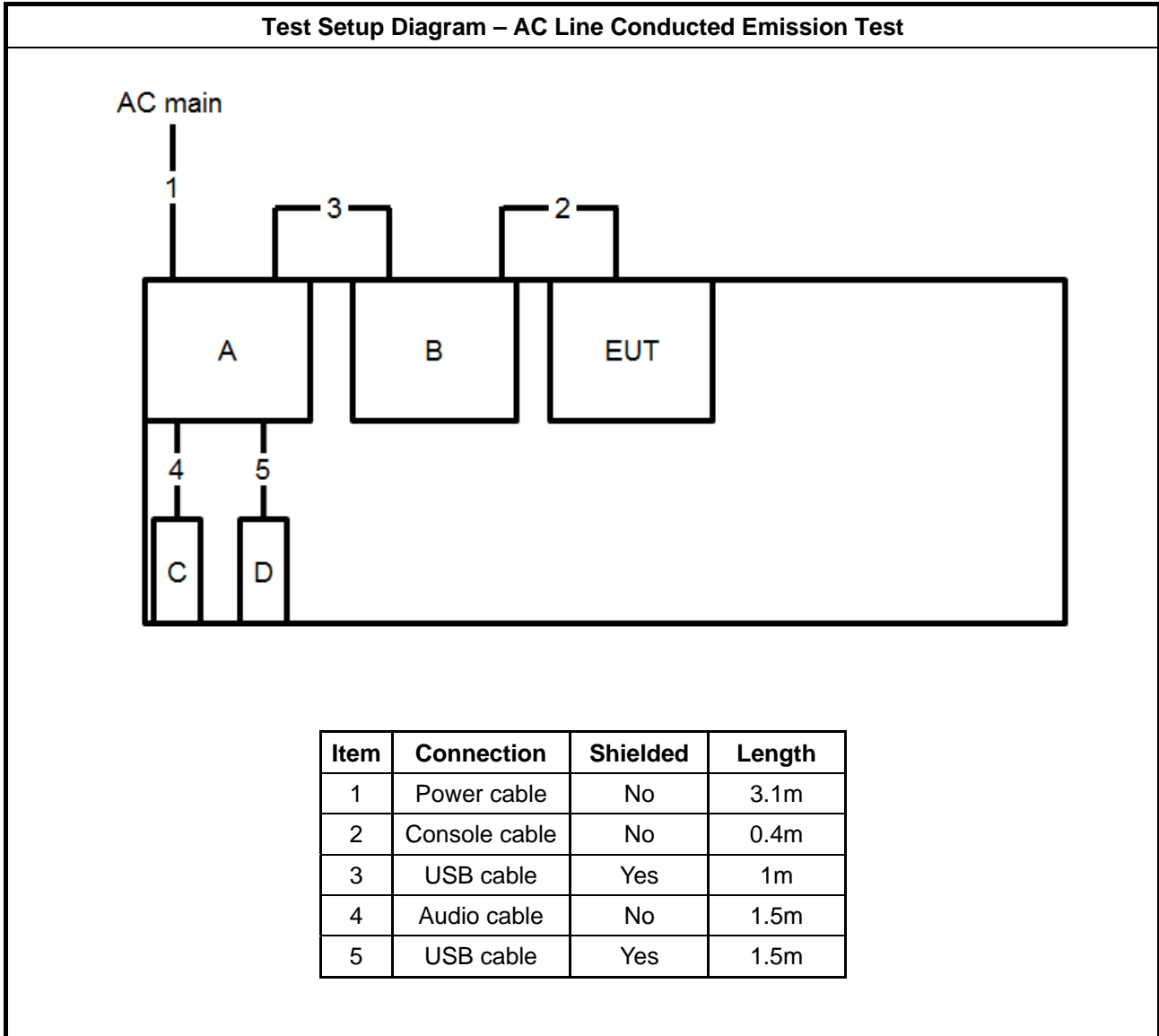
For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E6430	N/A
B	Fixture	Brodcom	BCM9SERIAL_ADPT	N/A
C	Earphone	e-Power	S90W	N/A
D	Mouse	HP	FM100	N/A

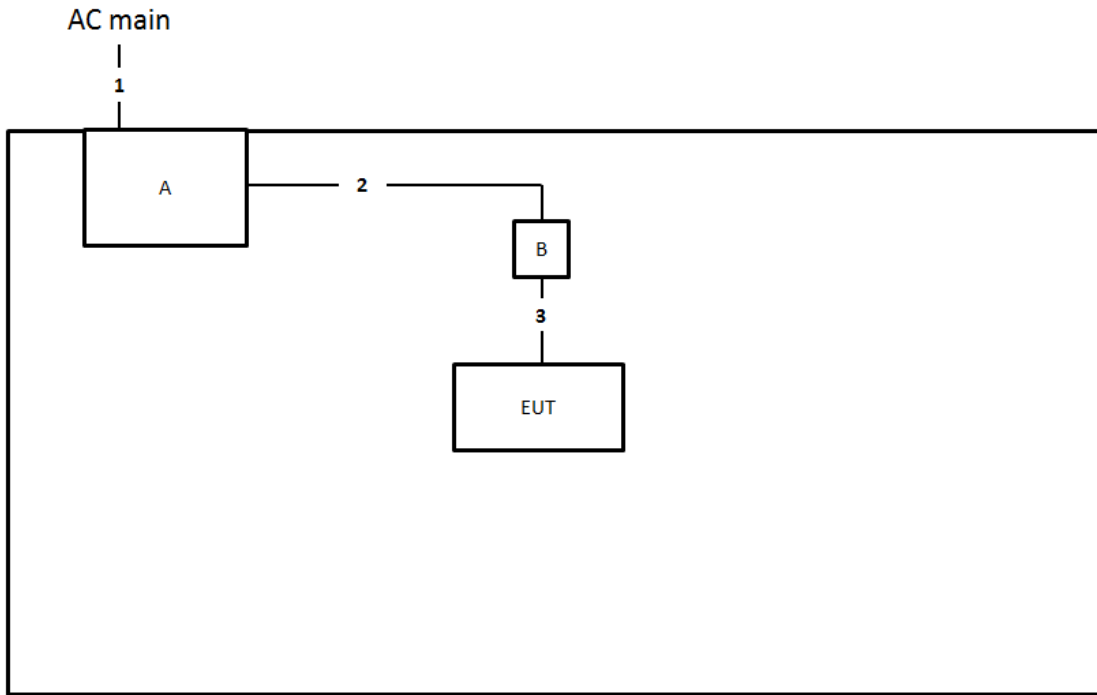
For Radiated and RF Conducted:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	Fixture	Brodcom	BCM9SERIAL_ADPT	N/A

## 2.7 Test Setup Diagram



**Test Setup Diagram - Radiated Test**



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	1m
3	Console cable	No	0.4m



### 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.

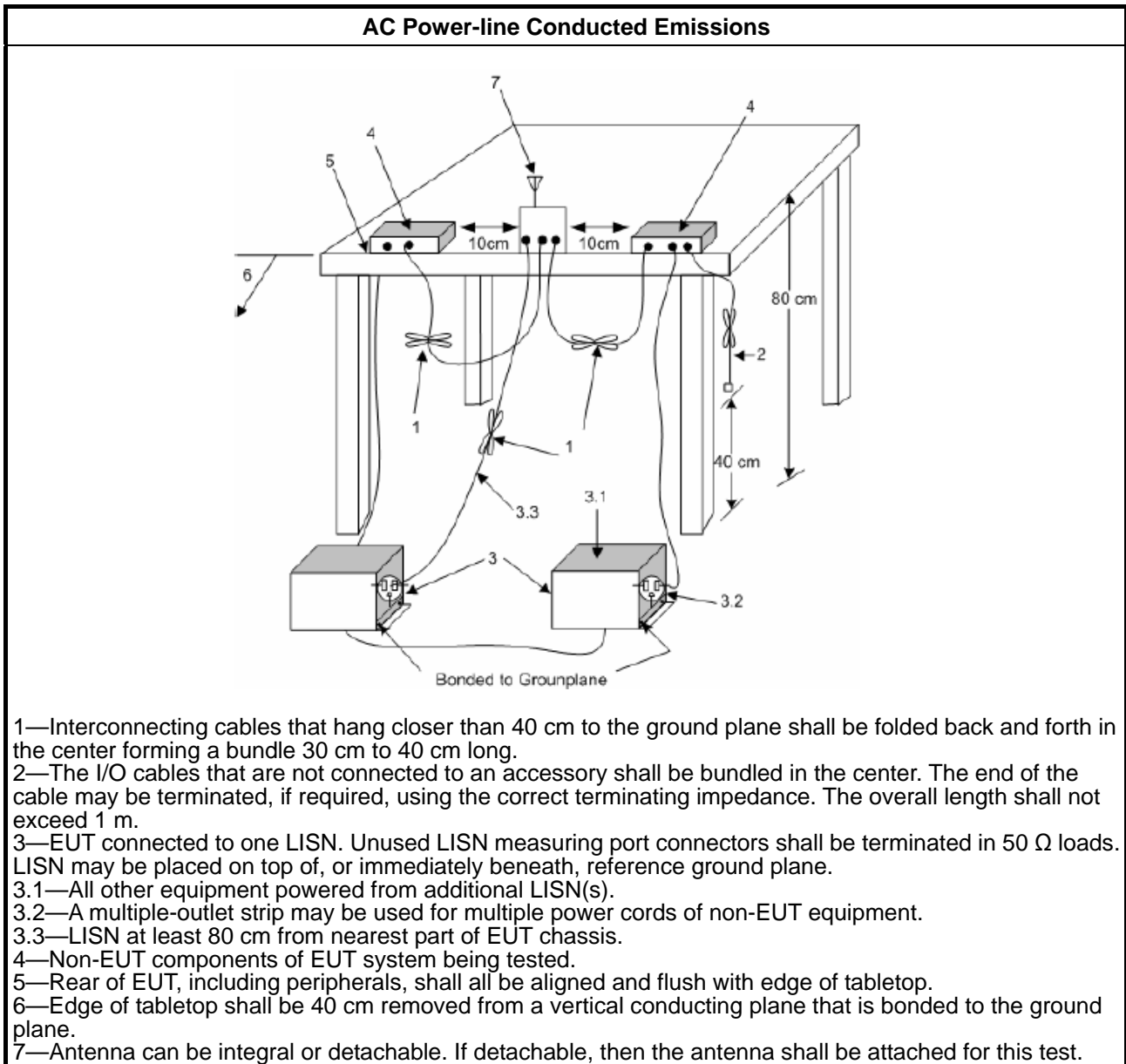
##### 3.1.2 Measuring Instruments

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



#### 1.1.1. Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

### 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	
▪ 902-928 MHz Band:	
	▪ $N \geq 50$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 250 kHz.
	▪ $50 > N \geq 25$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $>$ 250 kHz.
▪ 2400-2483.5 MHz Band:	
	▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz).
	▪ $75 > N \geq 15$ and $ChS \geq MAX$ (20 dB bandwidth 2/3, 25 kHz).
▪ 5725-5850 MHz Band:	
	▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 1 MHz.
N: Number of Hopping Frequencies; ChS: Hopping Channel Separation	

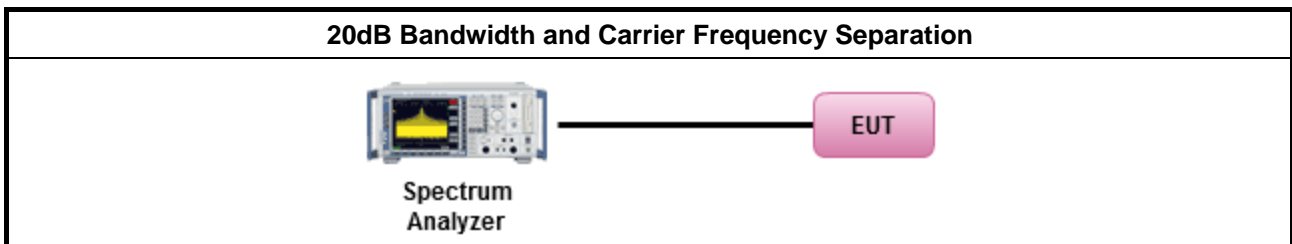
#### 3.2.2 Measuring Instruments

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 6.9.1 for 20 dB bandwidth measurement.
▪ Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

#### 3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
<ul style="list-style-type: none"> <li>▪ 902-928 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ <math>N \geq 50</math>; Power 30dBm; EIRP 36dBm</li> </ul>
	<ul style="list-style-type: none"> <li>▪ <math>50 &gt; N \geq 25</math>; Power 23.98dBm; EIRP 29.98dBm</li> </ul>
<ul style="list-style-type: none"> <li>▪ 2400-2483.5 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ <math>N \geq 75</math>; Power 30dBm; EIRP 36dBm</li> </ul>
	<ul style="list-style-type: none"> <li>▪ <math>75 &gt; N \geq 15</math>; Power 21dBm; EIRP 27dBm</li> </ul>
<ul style="list-style-type: none"> <li>▪ 5725-5850 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ <math>N \geq 75</math>; Power 30dBm; EIRP 36dBm</li> </ul>
N: Number of Hopping Frequencies	

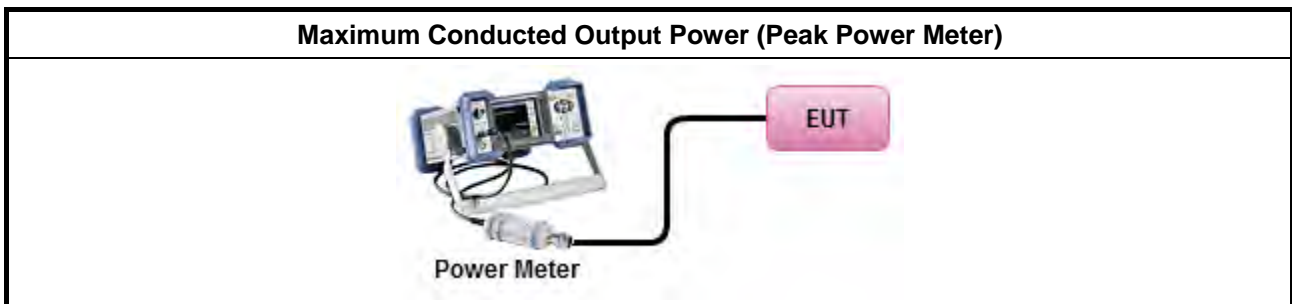
#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>▪ Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.</li> </ul>

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



### 3.4 Number of Hopping Frequencies and Hopping Bandedge

#### 3.4.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit	
▪	902-928 MHz Band:
	▪ $N \geq 50$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 250 kHz.
	▪ $50 > N \geq 25$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $>$ 250 kHz.
▪	2400-2483.5 MHz Band:
	▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz).
	▪ $75 > N \geq 15$ and $ChS \geq MAX$ (20 dB bandwidth 2/3, 25 kHz).
▪	5725-5850 MHz Band:
	▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 1 MHz.
N: Number of Hopping Frequencies; ChS : Hopping Channel Separation	

#### 3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

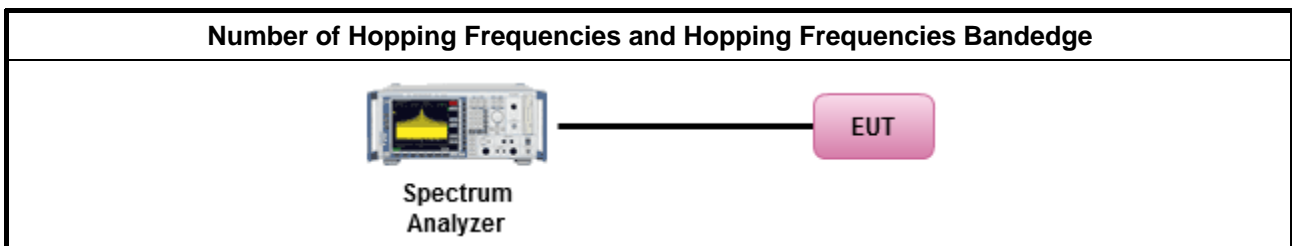
#### 3.4.3 Measuring Instruments

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

#### 3.4.4 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement.
▪ Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.

#### 3.4.5 Test Setup



#### 3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

#### 3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

### 3.5 Time of Occupancy (Dwell Time)

#### 3.5.1 Time of Occupancy (Dwell Time) Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
<ul style="list-style-type: none"> <li>902-928 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>N ≥ 50; 0.4s in 20s period</li> </ul>
	<ul style="list-style-type: none"> <li>50 &gt; N ≥ 25; 0.4s in 10s period</li> </ul>
<ul style="list-style-type: none"> <li>2400-2483.5 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>N ≥ 75; 0.4s in N x 0.4 period</li> </ul>
	<ul style="list-style-type: none"> <li>75 &gt; N ≥ 15; 0.4s in N x 0.4 period</li> </ul>
<ul style="list-style-type: none"> <li>5725-5850 MHz Band:</li> </ul>	
	<ul style="list-style-type: none"> <li>N ≥ 75; 0.4s in 30s period</li> </ul>
N: Number of Hopping Frequencies	

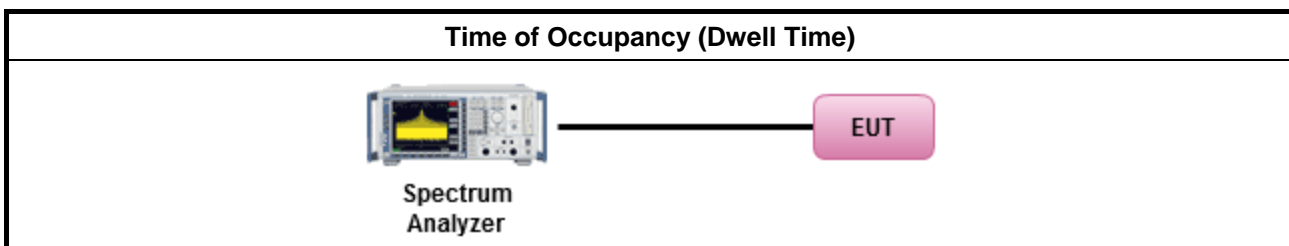
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>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.</li> </ul>	
	<ul style="list-style-type: none"> <li>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.</li> </ul>

#### 3.5.4 Test Setup



#### 3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

### 3.6 Emissions in Non-restricted Frequency Bands

#### 3.6.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dBc)
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.	

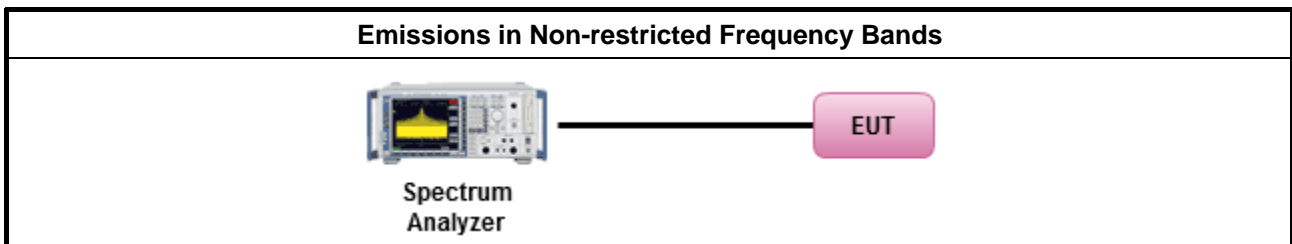
#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.</li> </ul>

#### 3.6.4 Test Setup



#### 3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix F



### 3.7 Emissions in Restricted Frequency Bands

#### 3.7.1 Emissions in Restricted Frequency Bands Limit

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

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

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

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

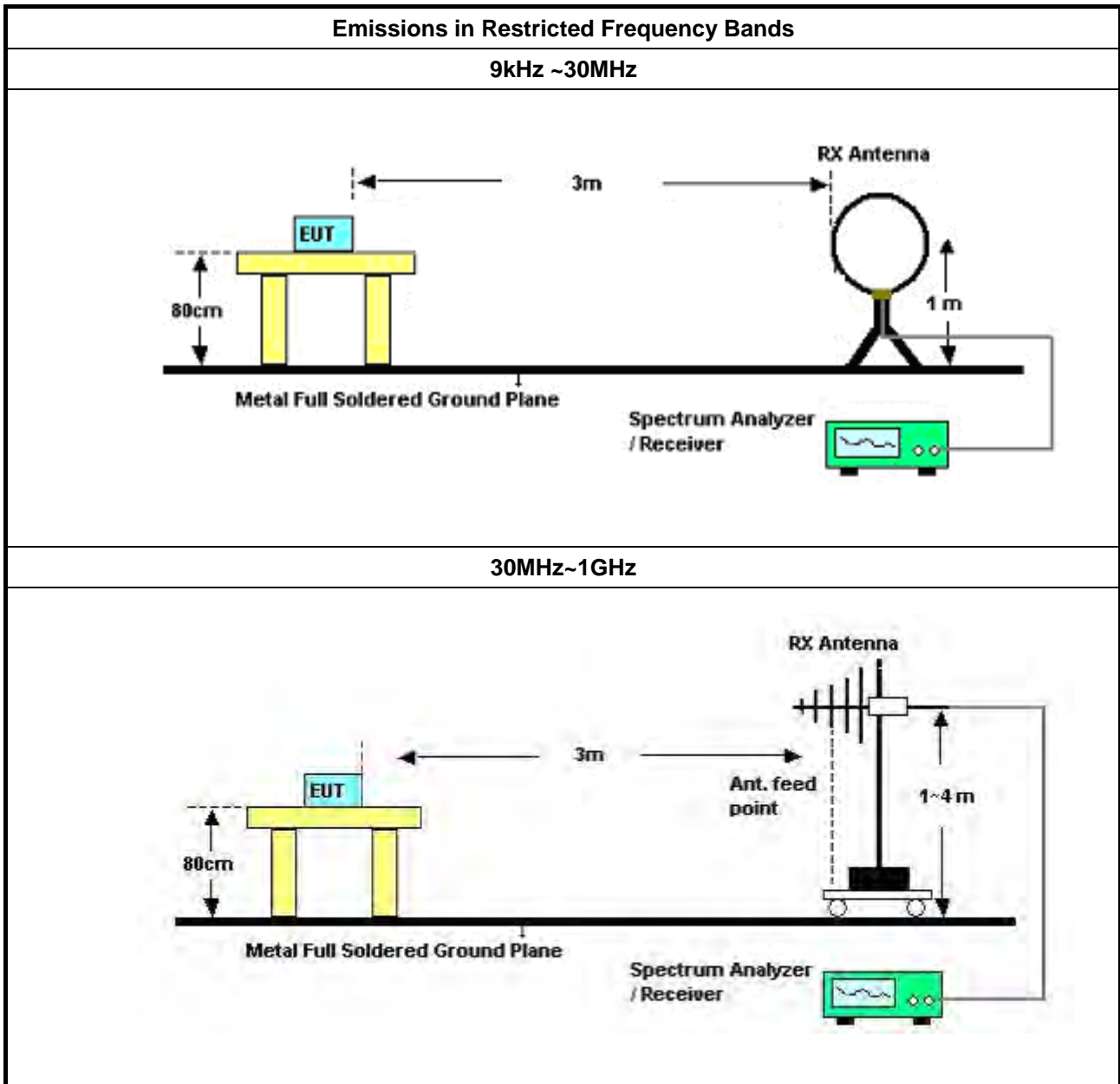
#### 3.7.2 Measuring Instruments

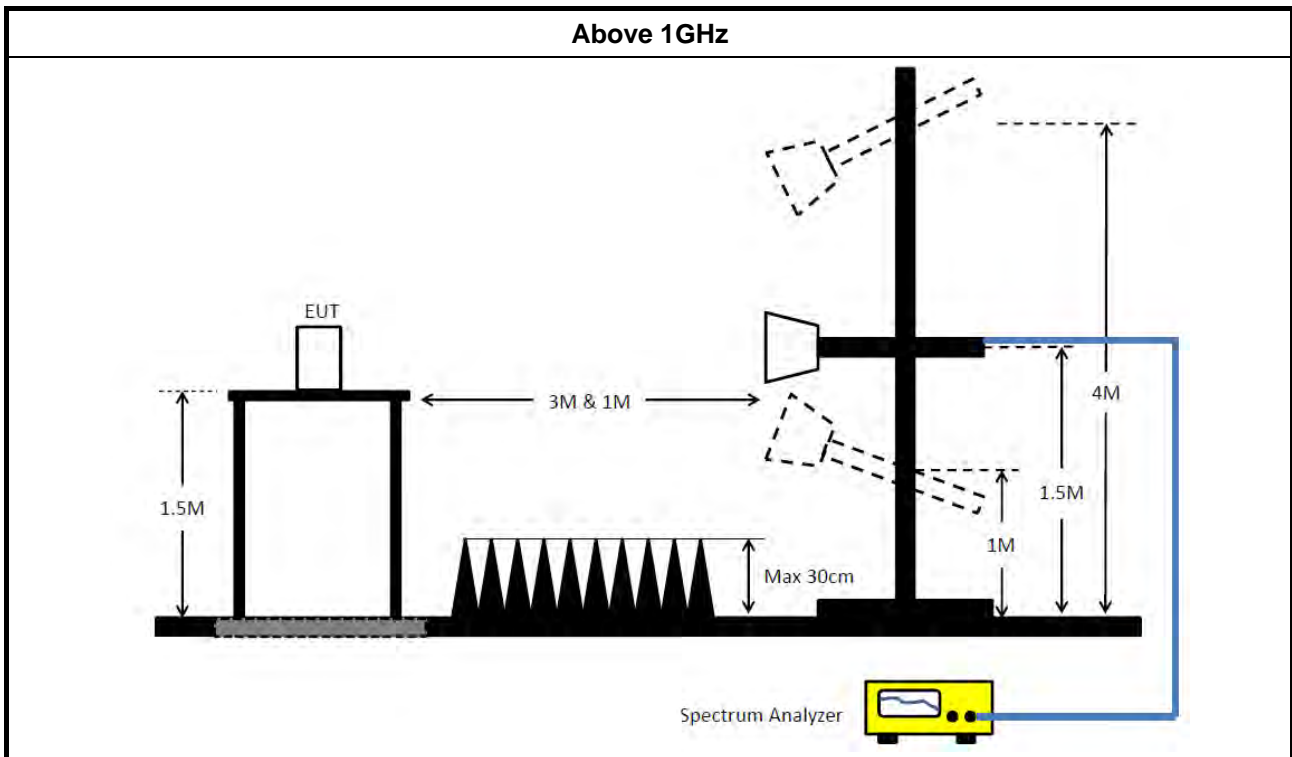
Refer a test equipment and calibration data table in this test report.

#### 3.7.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>The average emission levels shall be measured in [hopping duty factor].</li> </ul>	
<ul style="list-style-type: none"> <li>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.</li> </ul>	
<ul style="list-style-type: none"> <li>For the transmitter unwanted emissions shall be measured using following options below:               <ul style="list-style-type: none"> <li>Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.</li> <li>Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.</li> <li>Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.</li> </ul> </li> </ul>	

### 3.7.4 Test Setup





### 3.7.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

### 3.7.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

### 3.7.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G



## 4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 08, 2020	Aug. 07, 2021	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH04-CB	1GHz ~18GHz 3m	Feb. 26, 2020	Feb. 25, 2021	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N06 07	30MHz ~ 1GHz	Oct. 11, 2020	Oct. 10, 2021	Radiation (03CH04-CB)
Horn Antenna	ETS · Lindgren	3115	00143147	750MHz~18GHz	Oct. 23, 2020	Oct. 22, 2021	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187291	0.1MHz ~ 1GHz	Mar. 19, 2020	Mar. 18, 2021	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ 26.5GHz	Jul. 14, 2020	Jul. 13, 2021	Radiation (03CH04-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Dec. 18, 2019	Dec. 17, 2020	Radiation (03CH04-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz ~ 1GHz	Nov. 05, 2020	Nov. 04, 2021	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	1GHz - 18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH04-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-21+67	1GHz - 18GHz	Nov. 05, 2020	Nov. 04, 2021	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.  
NCR means Non-Calibration required.





## AC Power-line Conducted Emissions Result

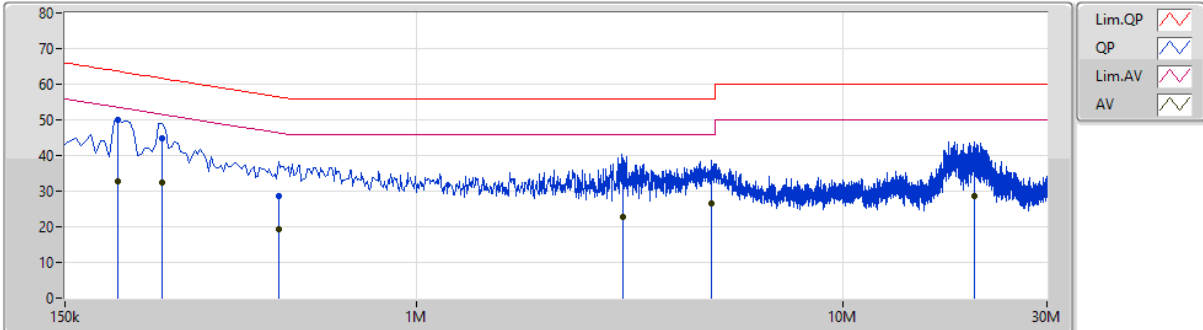
Appendix A

### Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	199.5k	49.86	63.63	-13.77	Line

Mode 1

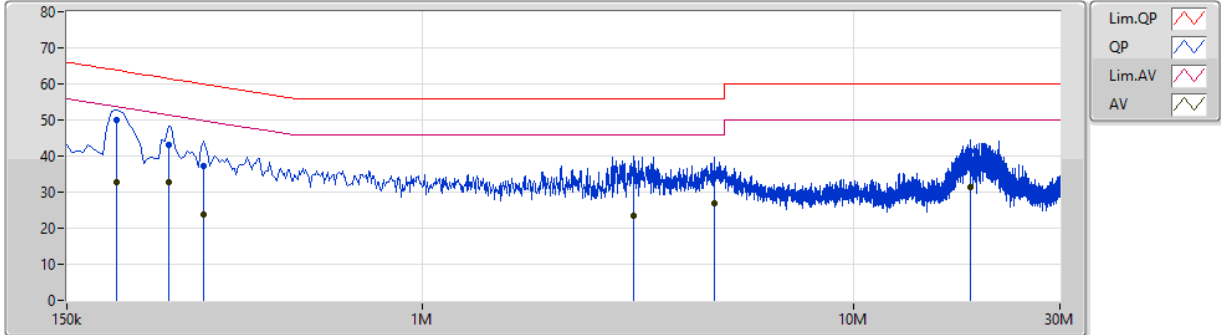
30/11/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	199.5k	49.86	63.63	-13.77	9.89	Line	"Worst"	39.97	0.04	0.03	9.82
AV	199.5k	32.67	53.63	-20.96	9.89	Line	-	22.78	0.04	0.03	9.82
QP	253.5k	44.72	61.64	-16.92	9.89	Line	-	34.83	0.04	0.03	9.82
AV	253.5k	32.56	51.64	-19.08	9.89	Line	-	22.67	0.04	0.03	9.82
QP	474k	28.74	56.44	-27.70	9.90	Line	-	18.84	0.04	0.03	9.83
AV	474k	19.22	46.44	-27.22	9.90	Line	-	9.32	0.04	0.03	9.83
QP	3.035M	34.67	56.00	-21.33	10.04	Line	-	24.63	0.08	0.11	9.85
AV	3.035M	22.76	46.00	-23.24	10.04	Line	-	12.72	0.08	0.11	9.85
QP	4.916M	33.80	56.00	-22.20	10.10	Line	-	23.70	0.11	0.13	9.86
AV	4.916M	26.39	46.00	-19.61	10.10	Line	-	16.29	0.11	0.13	9.86
QP	20.342M	38.92	60.00	-21.08	10.57	Line	-	28.35	0.24	0.33	10.00
AV	20.342M	28.64	50.00	-21.36	10.57	Line	-	18.07	0.24	0.33	10.00

## Mode 1

30/11/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	195k	50.03	63.82	-13.79	9.89	Neutral	"Worst"	40.14	0.04	0.03	9.82
AV	195k	32.77	53.82	-21.05	9.89	Neutral	-	22.88	0.04	0.03	9.82
QP	258k	43.03	61.49	-18.46	9.89	Neutral	-	33.14	0.04	0.03	9.82
AV	258k	32.69	51.49	-18.80	9.89	Neutral	-	22.80	0.04	0.03	9.82
QP	312k	37.24	59.92	-22.68	9.90	Neutral	-	27.34	0.04	0.03	9.83
AV	312k	23.82	49.92	-26.10	9.90	Neutral	-	13.92	0.04	0.03	9.83
QP	3.093M	35.41	56.00	-20.59	10.04	Neutral	-	25.37	0.08	0.11	9.85
AV	3.093M	23.60	46.00	-22.40	10.04	Neutral	-	13.56	0.08	0.11	9.85
QP	4.749M	34.67	56.00	-21.33	10.09	Neutral	-	24.58	0.11	0.13	9.85
AV	4.749M	26.80	46.00	-19.20	10.09	Neutral	-	16.71	0.11	0.13	9.85
QP	18.645M	41.29	60.00	-18.71	10.50	Neutral	-	30.79	0.21	0.31	9.98
AV	18.645M	31.42	50.00	-18.58	10.50	Neutral	-	20.92	0.21	0.31	9.98



**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
GFSK (50Kbps)	87k	91.579k	91K6F1D	85.125k	89.705k
GFSK (100Kbps)	124.875k	108.821k	109KF1D	117k	108.321k
GFSK (150Kbps)	180.75k	160.92k	161KF1D	179.25k	159.92k
GFSK (300Kbps)	370.125k	333.208k	333KF1D	364.125k	331.709k

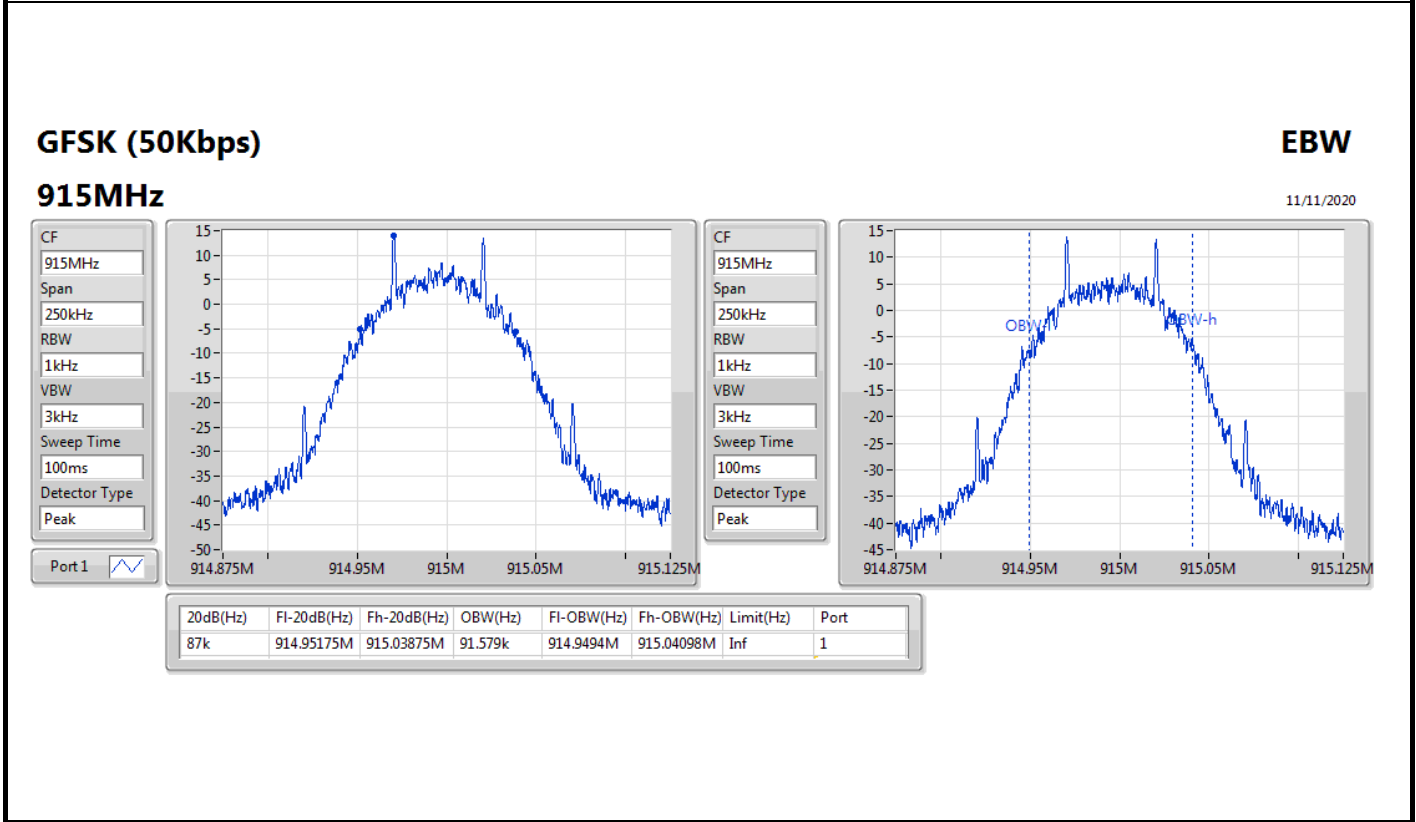
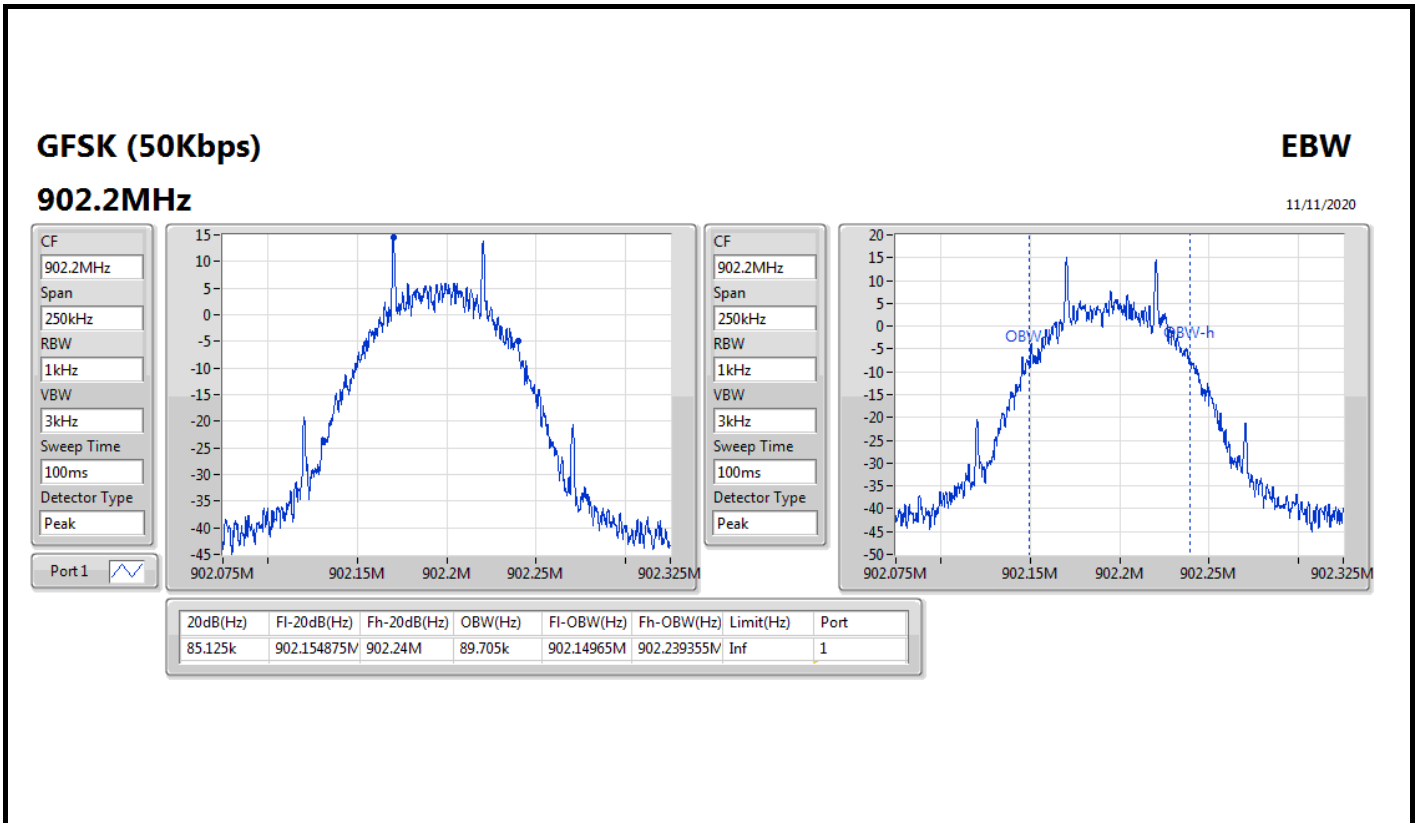
**Max-N dB** = Maximum 20dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;  
**Min-N dB** = Minimum 20dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

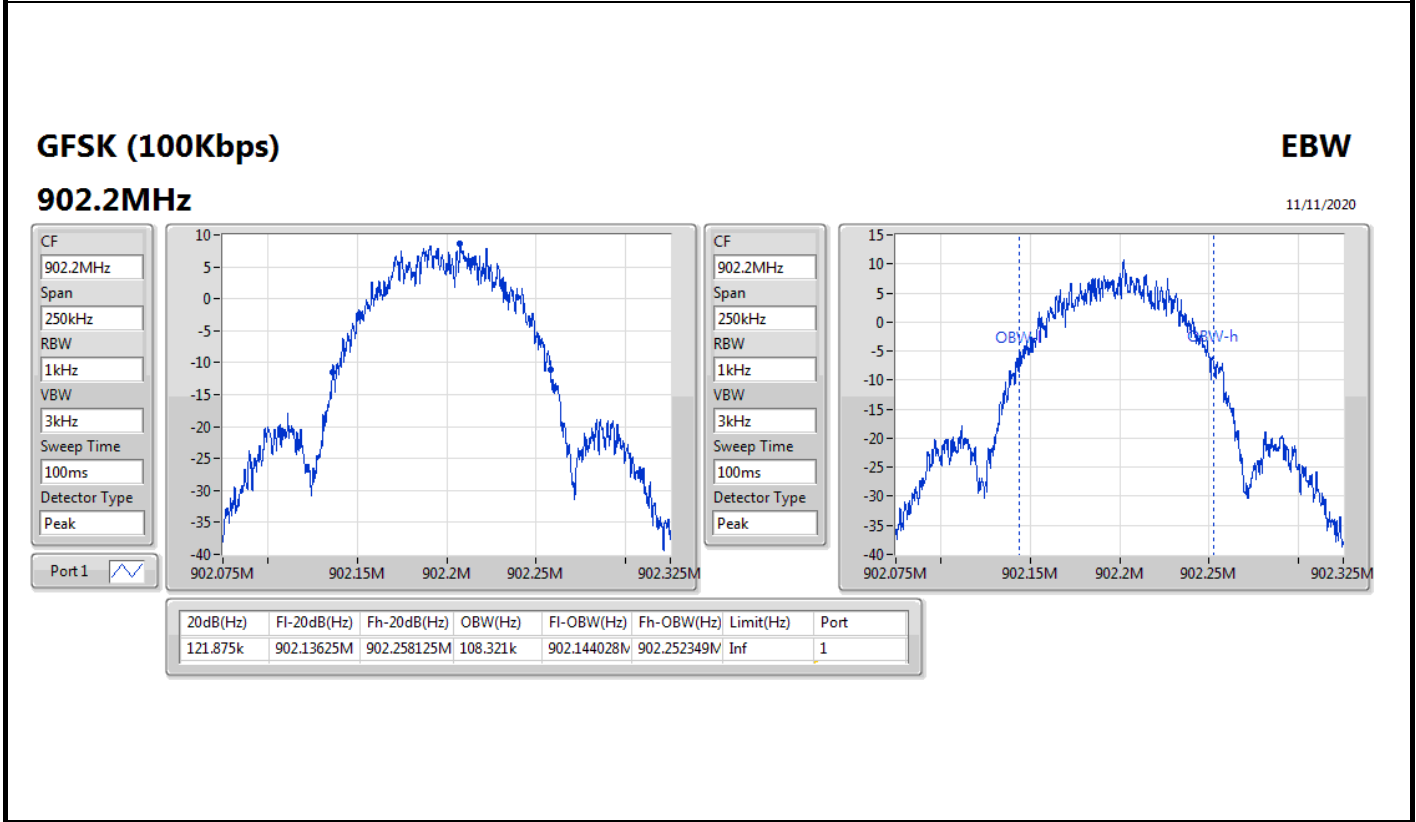
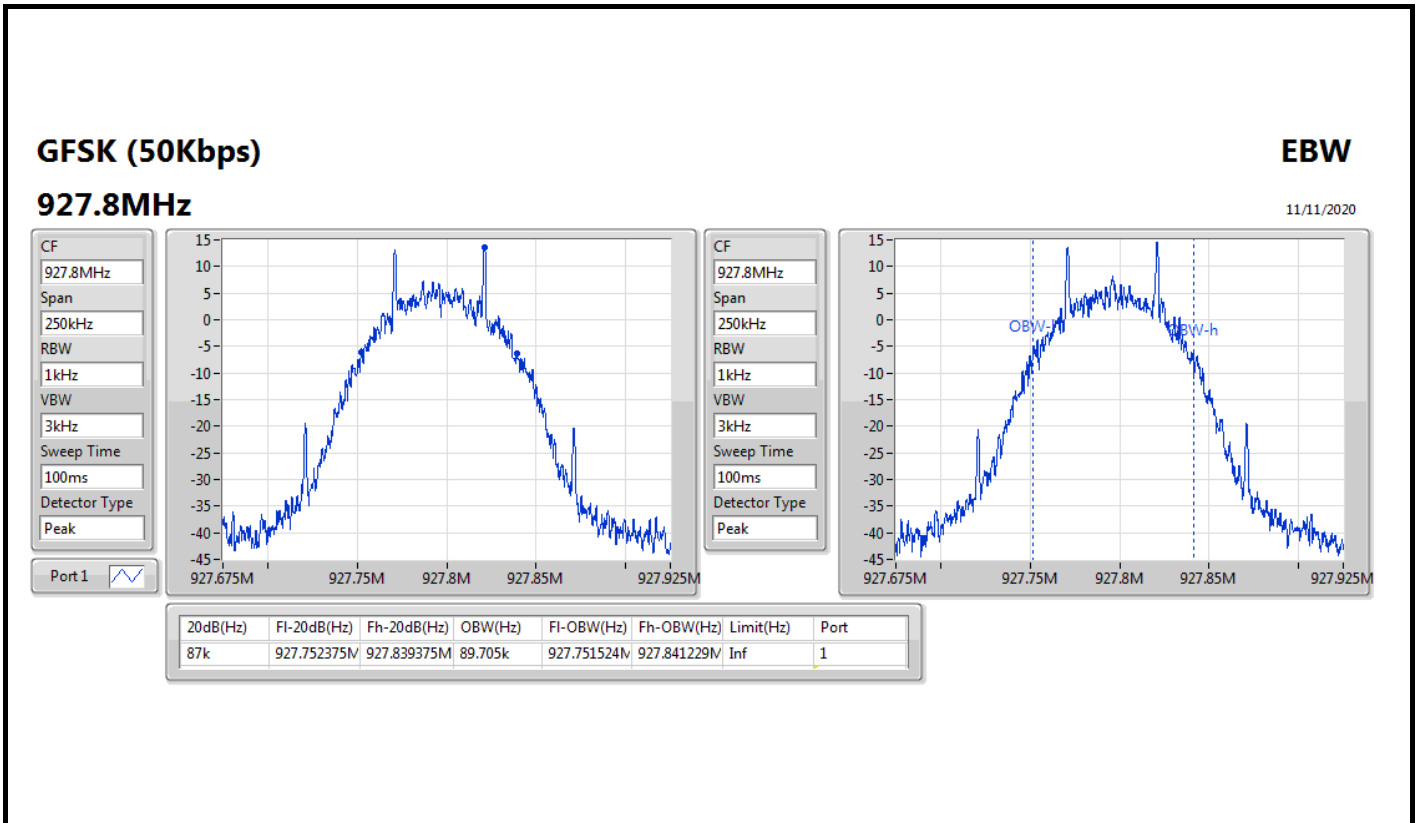


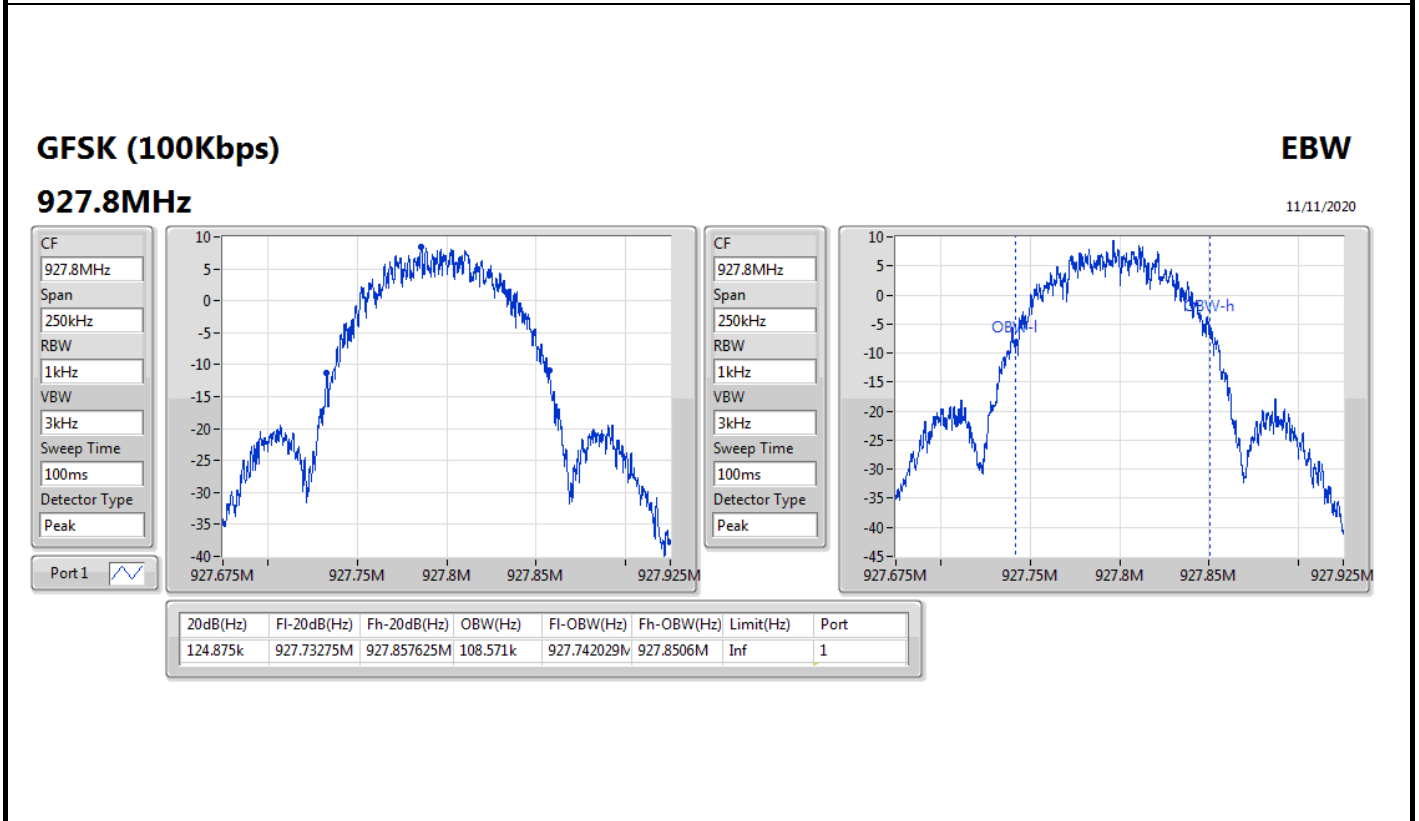
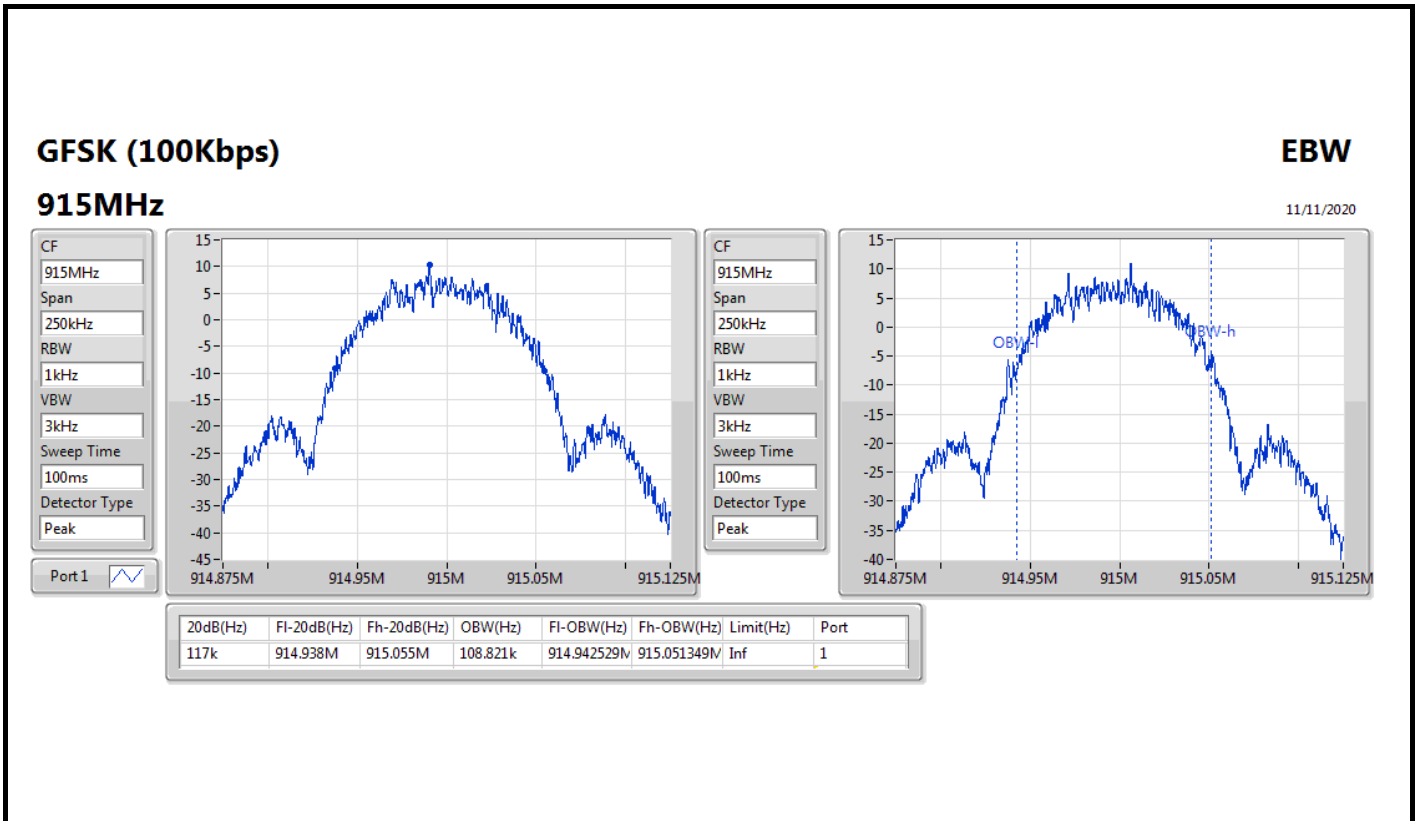
**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
GFSK (50Kbps)	-	-	-	-
902.2MHz	Pass	Inf	85.125k	89.705k
915MHz	Pass	Inf	87k	91.579k
927.8MHz	Pass	Inf	87k	89.705k
GFSK (100Kbps)	-	-	-	-
902.2MHz	Pass	Inf	121.875k	108.321k
915MHz	Pass	Inf	117k	108.821k
927.8MHz	Pass	Inf	124.875k	108.571k
GFSK (150Kbps)	-	-	-	-
902.4MHz	Pass	Inf	180.25k	160.92k
914.8MHz	Pass	Inf	179.25k	159.92k
927.6MHz	Pass	Inf	180.75k	159.92k
GFSK (300Kbps)	-	-	-	-
902.6MHz	Pass	Inf	370.125k	331.709k
914.6MHz	Pass	Inf	364.125k	333.208k
927.2MHz	Pass	Inf	368.25k	333.208k

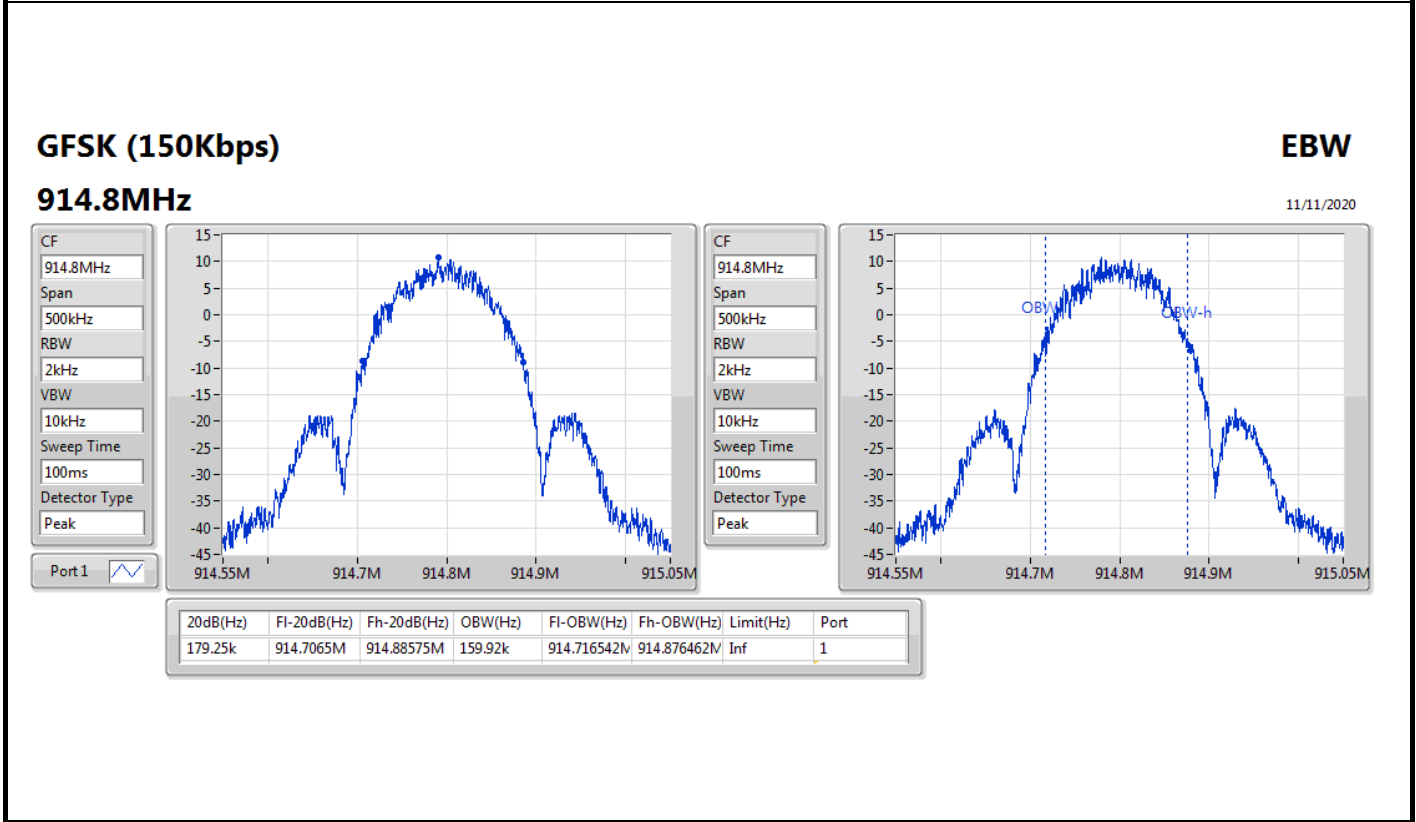
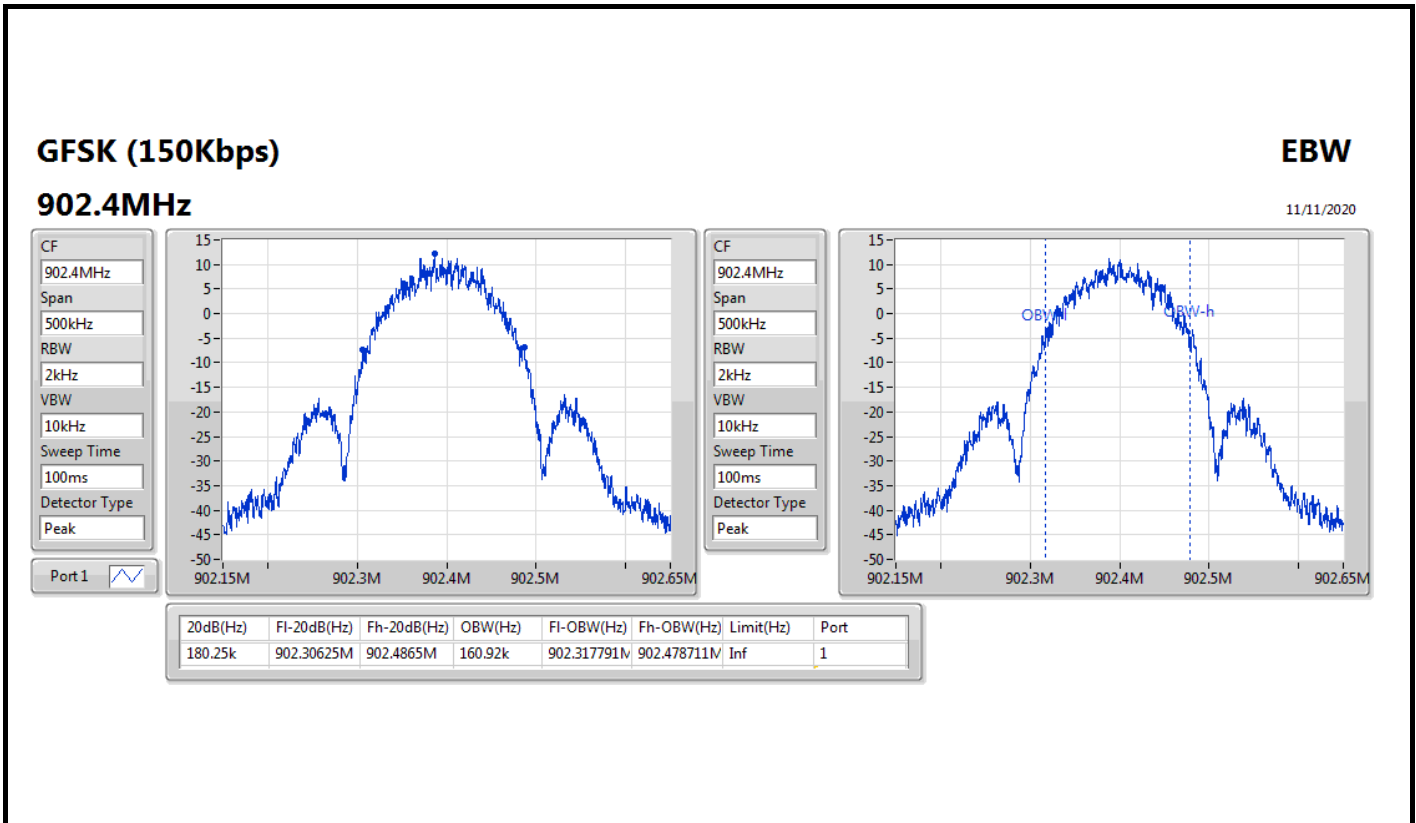
**Port X-N dB = Port X 20dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;**

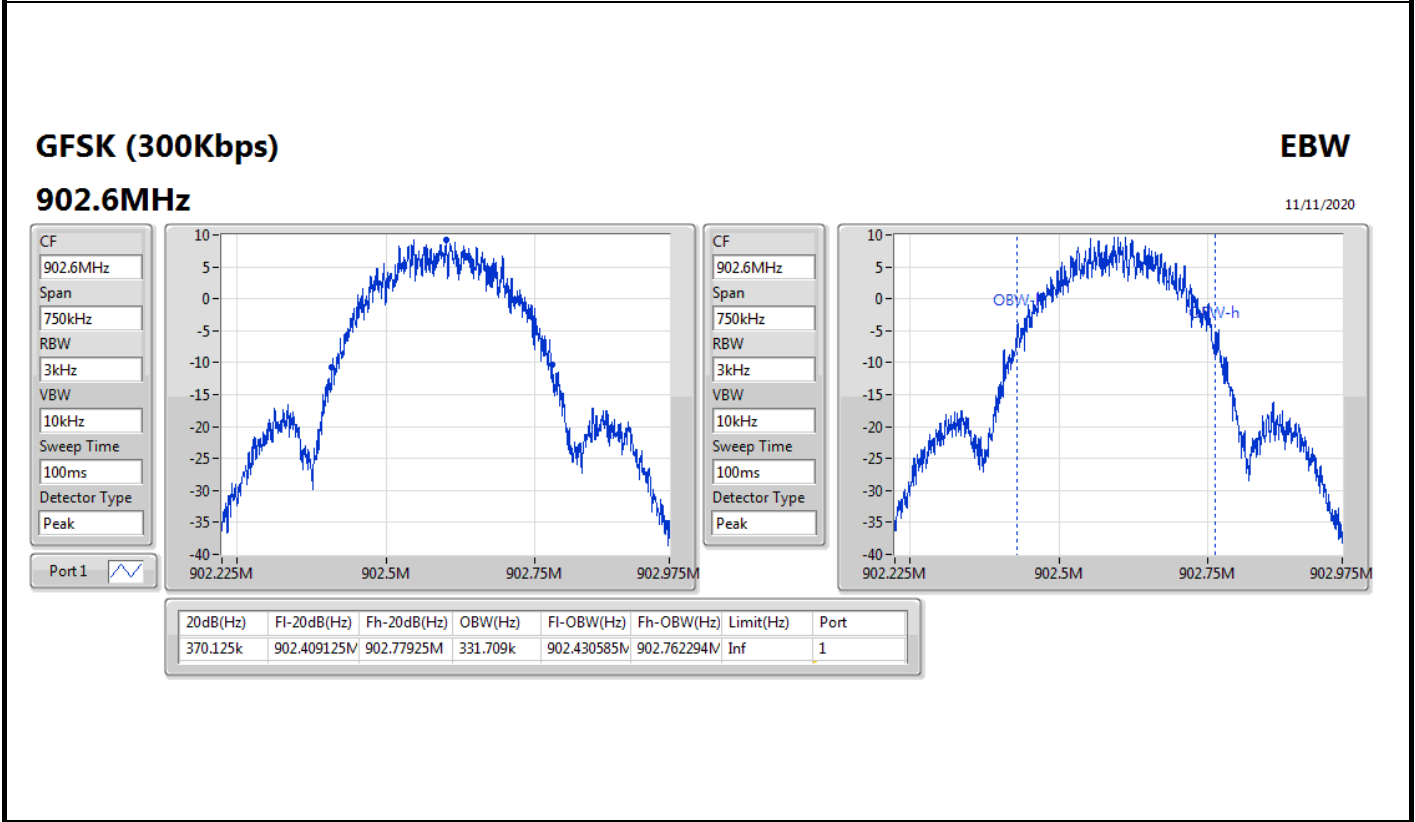
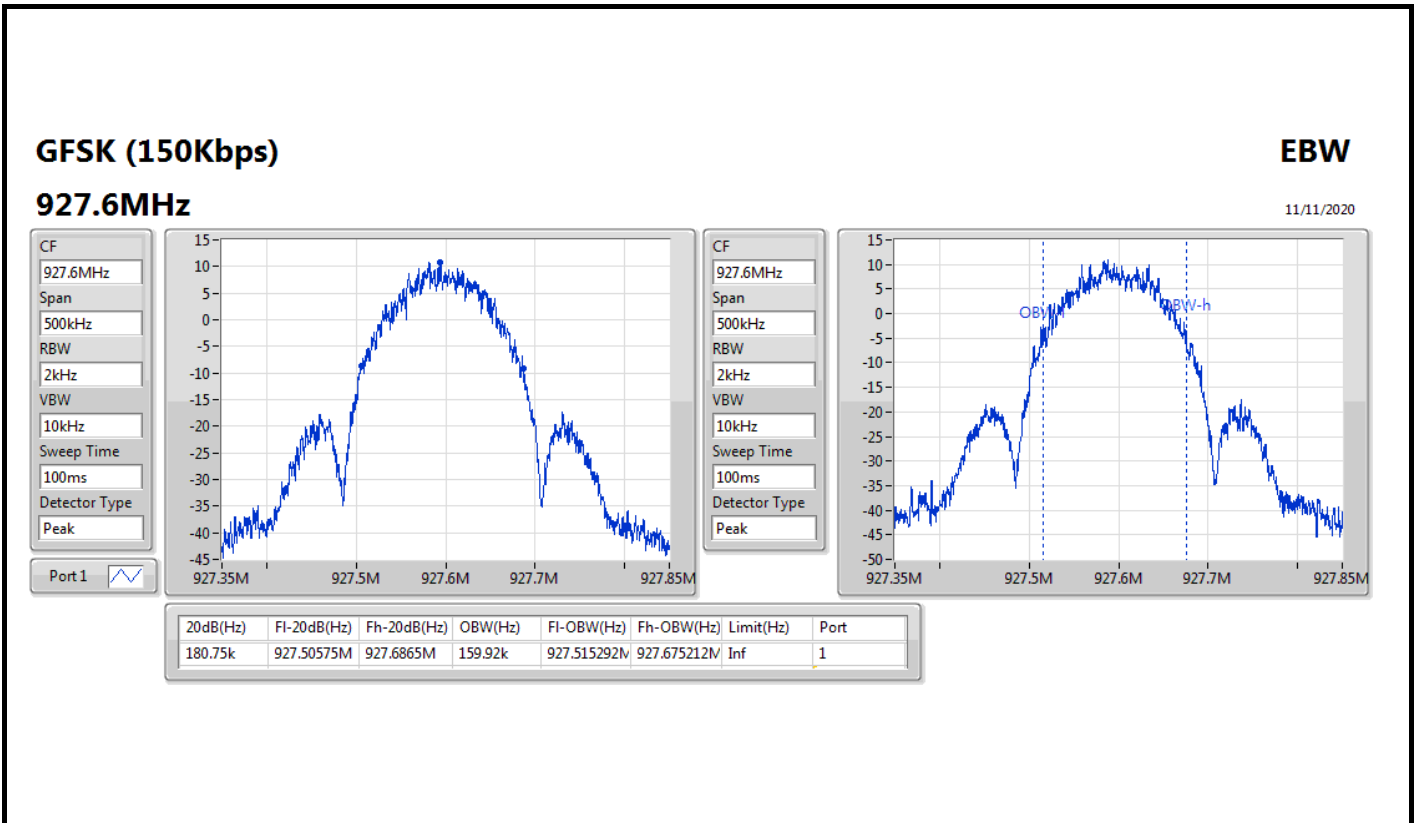


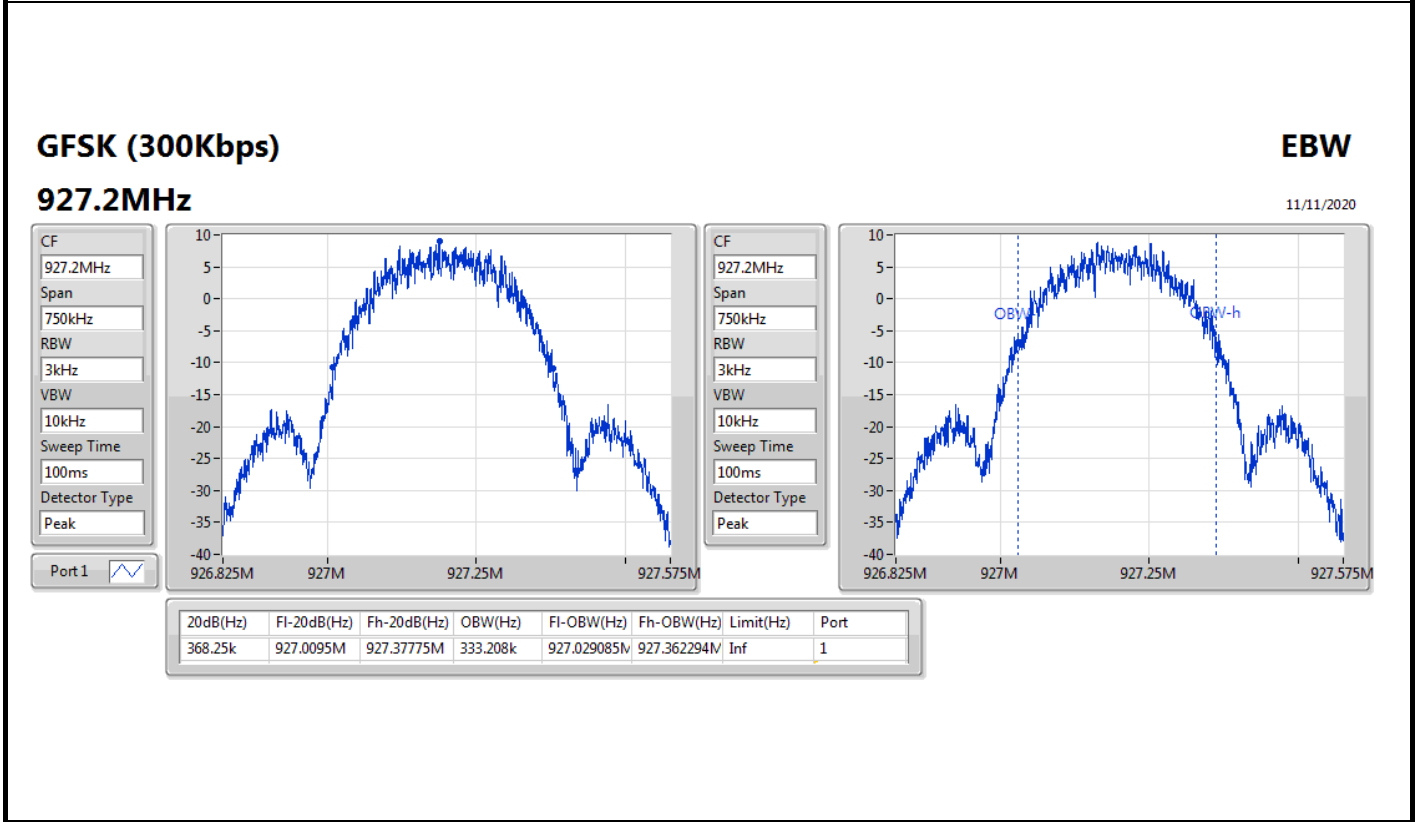
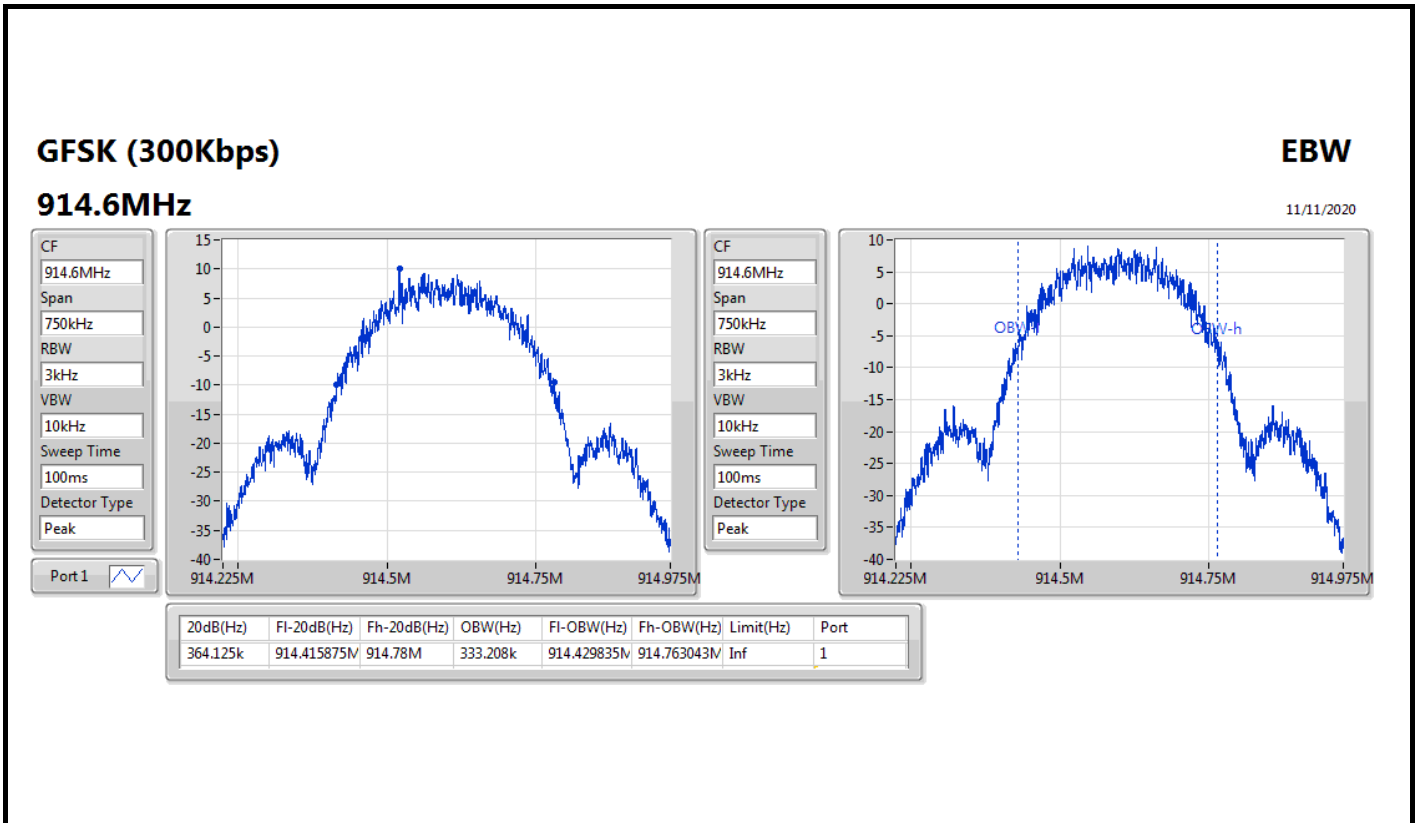














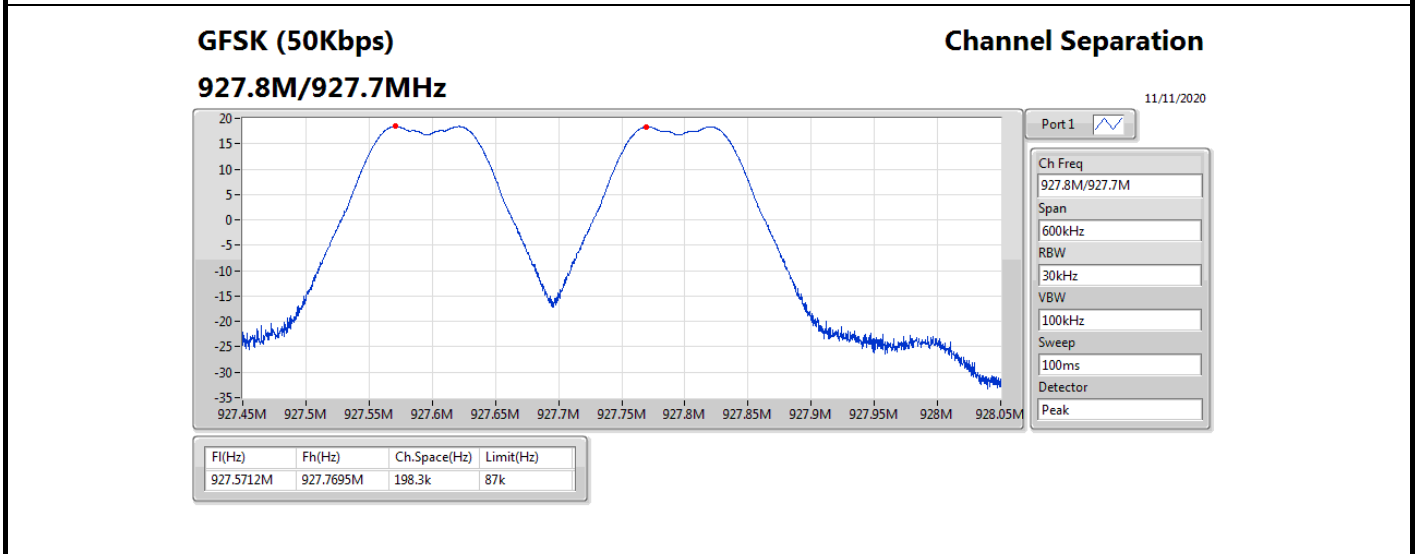
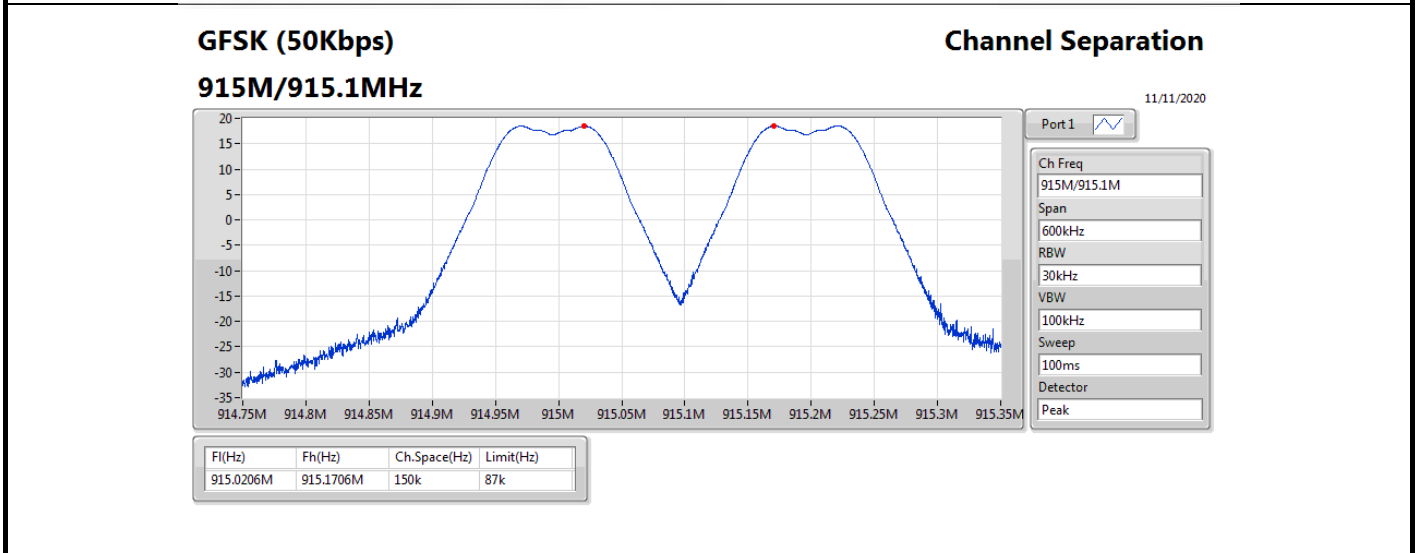
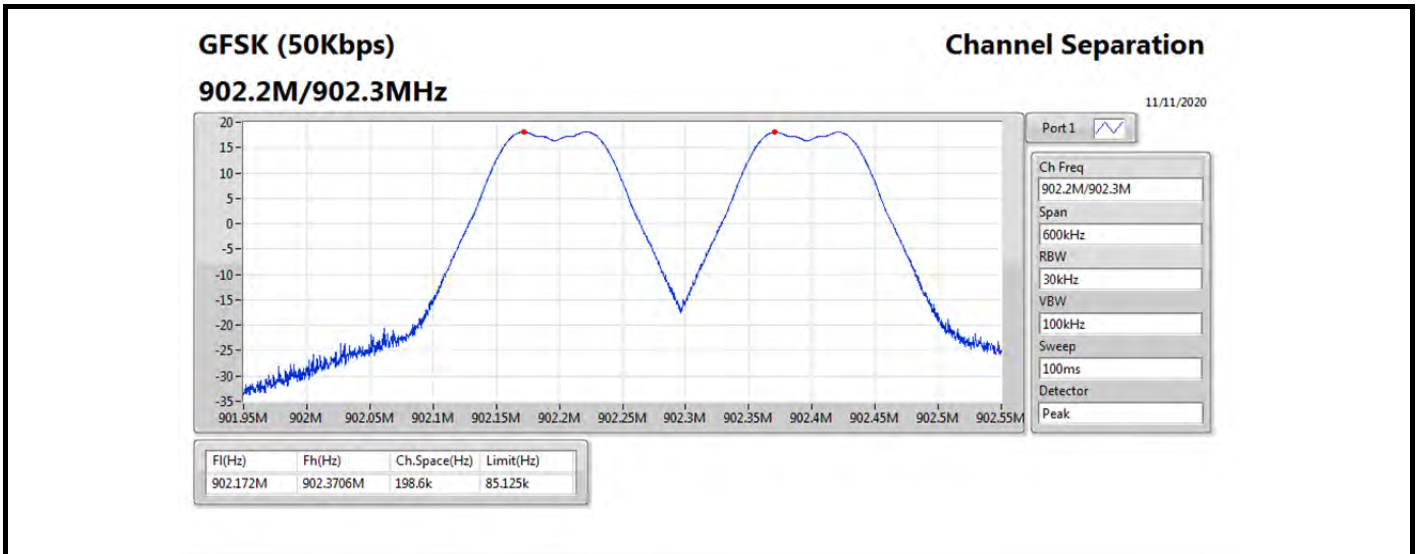
**Summary**

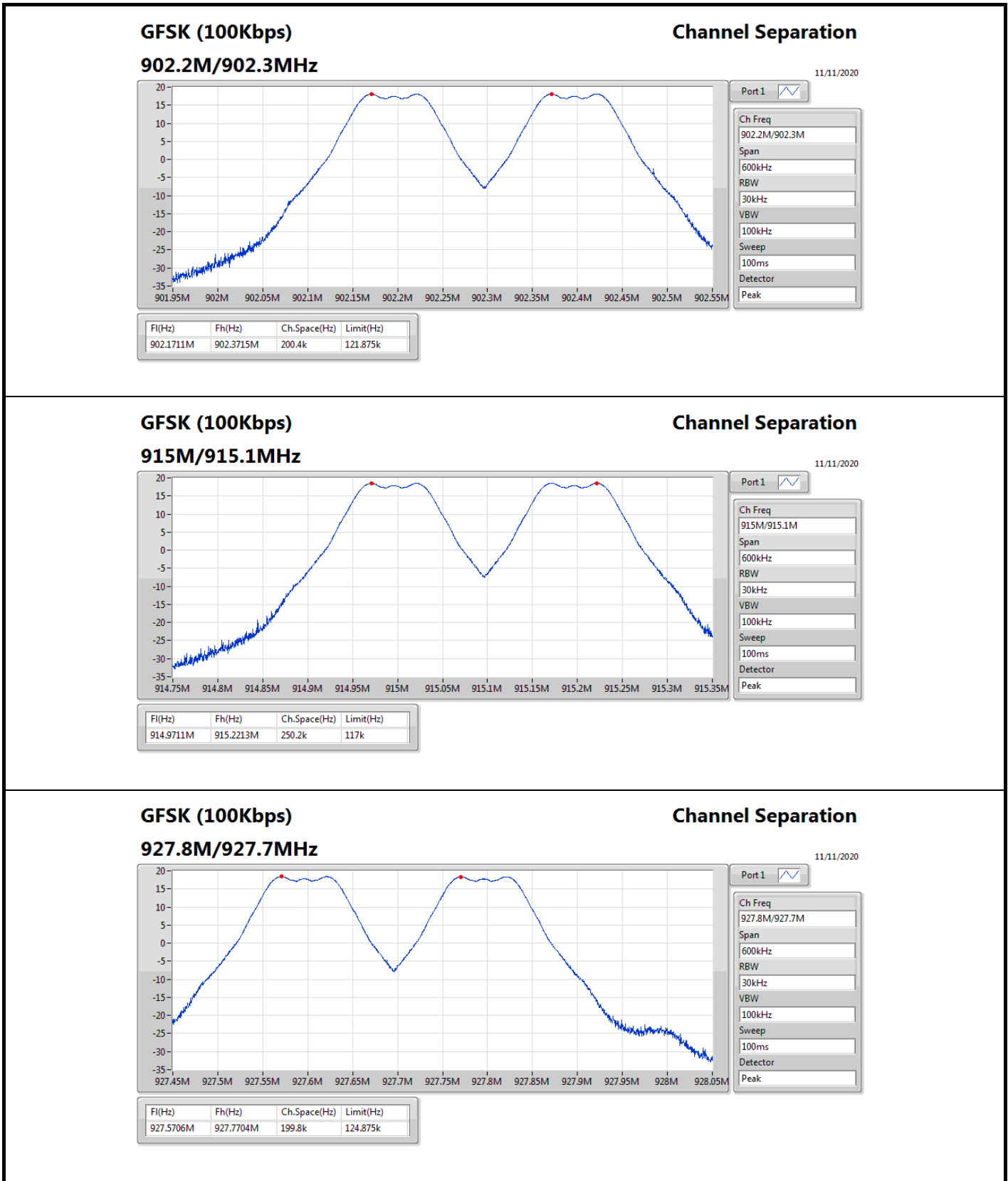
Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
GFSK (50Kbps)	198.6k	150k
GFSK (100Kbps)	250.2k	199.8k
GFSK (150Kbps)	475.2k	400.2k
GFSK (300Kbps)	599.4k	450k

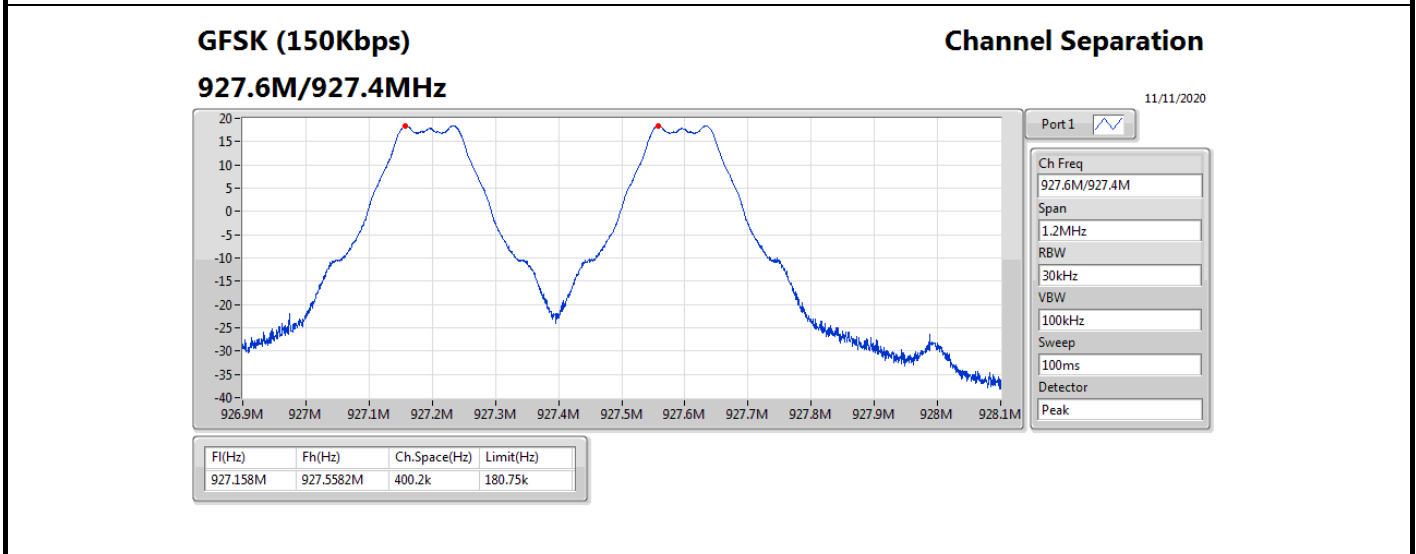
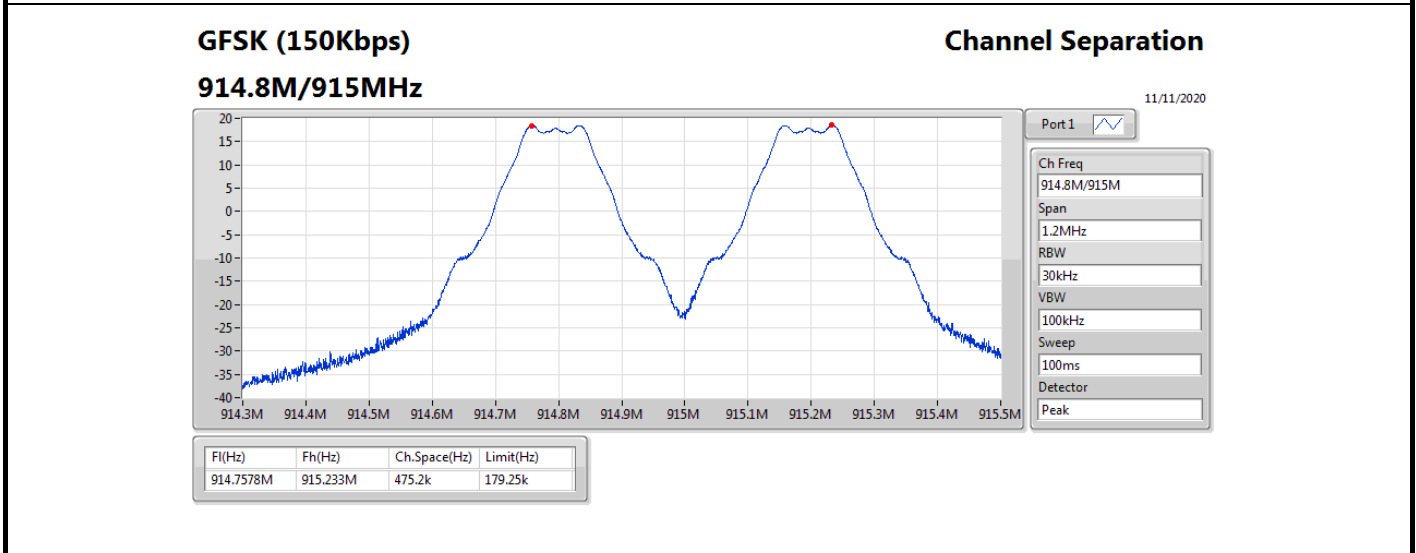
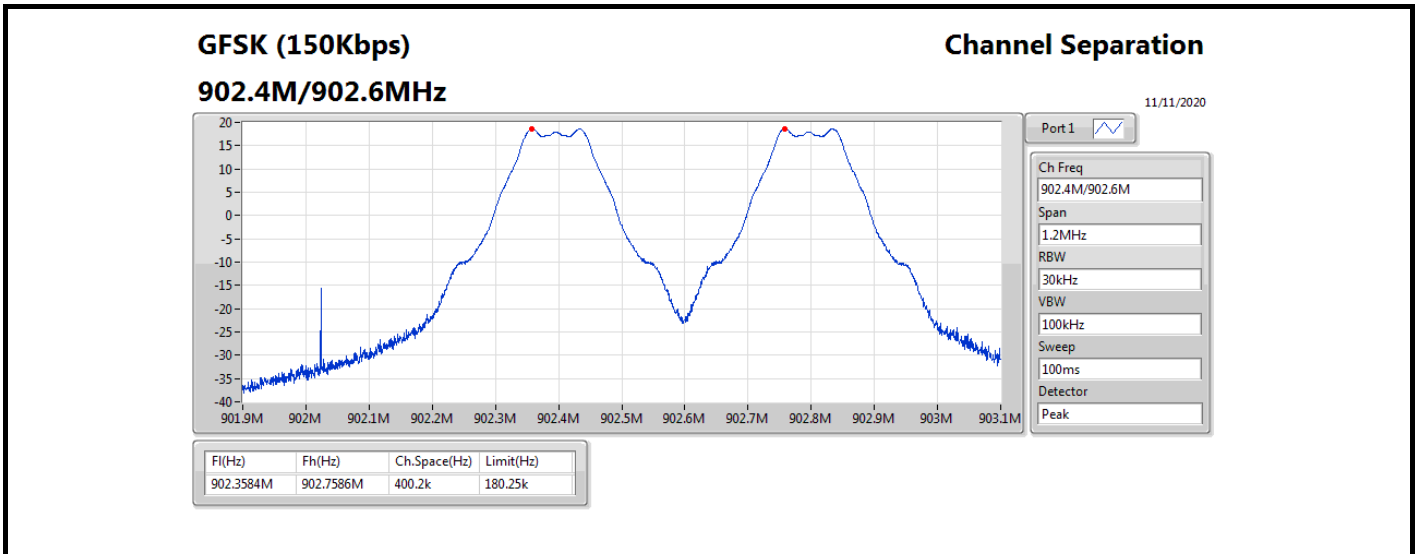


Result

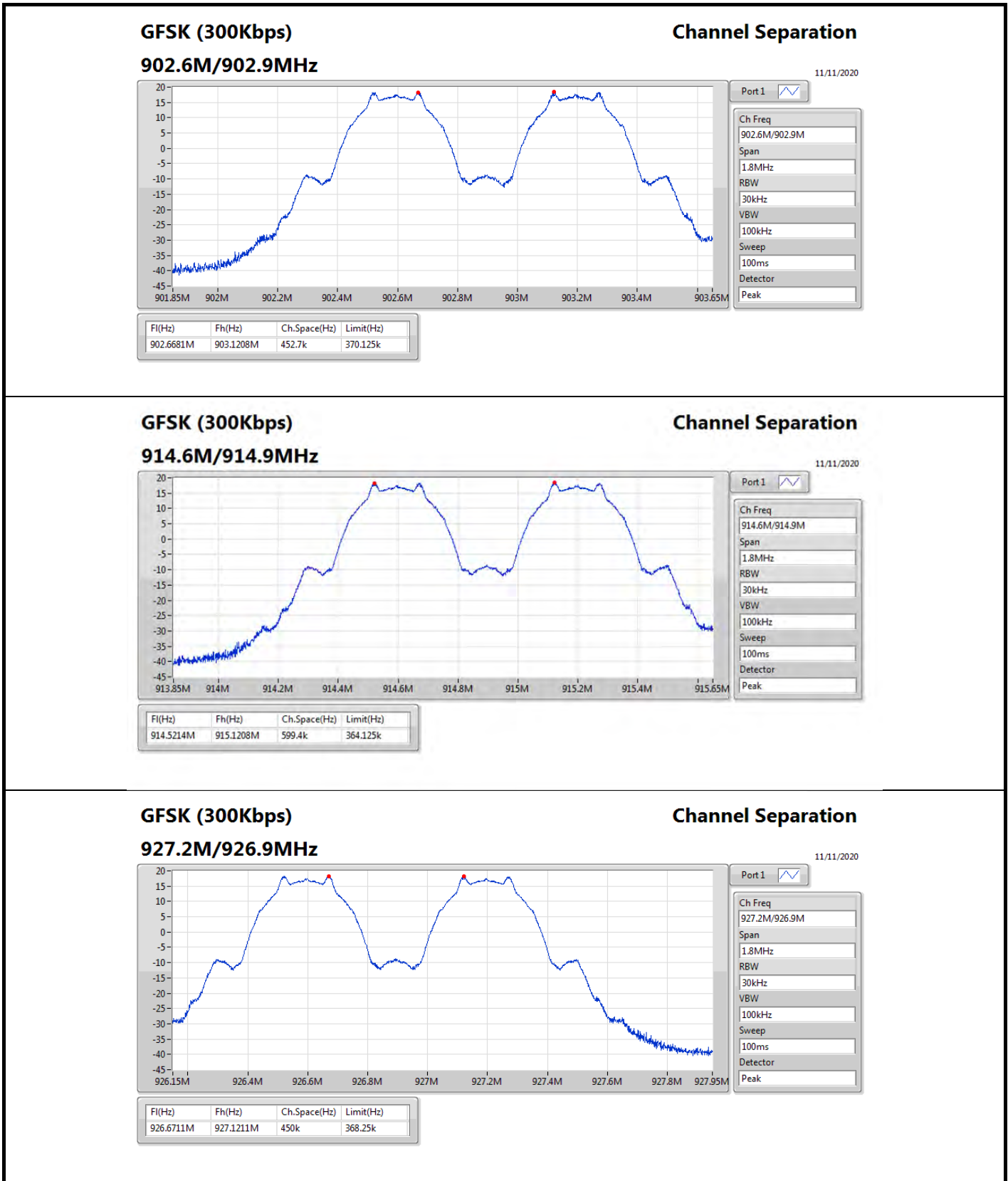
Mode	Result	F <sub>I</sub> (Hz)	F <sub>h</sub> (Hz)	Ch.Space (Hz)	Limit (Hz)
GFSK (50Kbps)	-	-	-	-	-
902.2MHz	Pass	902.172M	902.3706M	198.6k	85.125k
915MHz	Pass	915.0206M	915.1706M	150k	87k
927.8MHz	Pass	927.5712M	927.7695M	198.3k	87k
GFSK (100Kbps)	-	-	-	-	-
902.2MHz	Pass	902.1711M	902.3715M	200.4k	121.875k
915MHz	Pass	914.9711M	915.2213M	250.2k	117k
927.8MHz	Pass	927.5706M	927.7704M	199.8k	124.875k
GFSK (150Kbps)	-	-	-	-	-
902.4MHz	Pass	902.3584M	902.7586M	400.2k	180.25k
914.8MHz	Pass	914.7578M	915.233M	475.2k	179.25k
927.6MHz	Pass	927.158M	927.5582M	400.2k	180.75k
GFSK (300Kbps)	-	-	-	-	-
902.6MHz	Pass	902.6681M	903.1208M	452.7k	370.125k
914.6MHz	Pass	914.5214M	915.1208M	599.4k	364.125k
927.2MHz	Pass	926.6711M	927.1211M	450k	368.25k













**Summary**

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
GFSK (50Kbps)	18.90	0.07762
GFSK (100Kbps)	18.91	0.07780
GFSK (150Kbps)	18.97	0.07889
GFSK (300Kbps)	18.94	0.07834



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
GFSK (50Kbps)	-	-	-	-
902.2MHz	Pass	-0.43	18.39	23.98
915MHz	Pass	-0.43	18.90	23.98
927.8MHz	Pass	-0.43	18.78	23.98
GFSK (100Kbps)	-	-	-	-
902.2MHz	Pass	-0.43	18.46	23.98
915MHz	Pass	-0.43	18.91	23.98
927.8MHz	Pass	-0.43	18.81	23.98
GFSK (150Kbps)	-	-	-	-
902.4MHz	Pass	-0.43	18.97	23.98
914.8MHz	Pass	-0.43	18.88	23.98
927.6MHz	Pass	-0.43	18.81	23.98
GFSK (300Kbps)	-	-	-	-
902.6MHz	Pass	-0.43	18.92	23.98
914.6MHz	Pass	-0.43	18.94	23.98
927.2MHz	Pass	-0.43	18.82	23.98

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



**Summary**

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
GFSK (50Kbps)	18.95	0.07852
GFSK (100Kbps)	18.96	0.07870
GFSK (150Kbps)	19.02	0.07980
GFSK (300Kbps)	18.99	0.07925



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
GFSK (50Kbps)	-	-	-	-
902.2MHz	Pass	-0.43	18.45	23.98
915MHz	Pass	-0.43	18.95	23.98
927.8MHz	Pass	-0.43	18.83	23.98
GFSK (100Kbps)	-	-	-	-
902.2MHz	Pass	-0.43	18.51	23.98
915MHz	Pass	-0.43	18.96	23.98
927.8MHz	Pass	-0.43	18.86	23.98
GFSK (150Kbps)	-	-	-	-
902.4MHz	Pass	-0.43	19.02	23.98
914.8MHz	Pass	-0.43	18.93	23.98
927.6MHz	Pass	-0.43	18.86	23.98
GFSK (300Kbps)	-	-	-	-
902.6MHz	Pass	-0.43	18.97	23.98
914.6MHz	Pass	-0.43	18.99	23.98
927.2MHz	Pass	-0.43	18.87	23.98

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



**Summary**

Mode	Max-Hop No
902-928MHz	-
GFSK (50Kbps)	129
GFSK (100Kbps)	129
GFSK (150Kbps)	64
GFSK (300Kbps)	42



**Result**

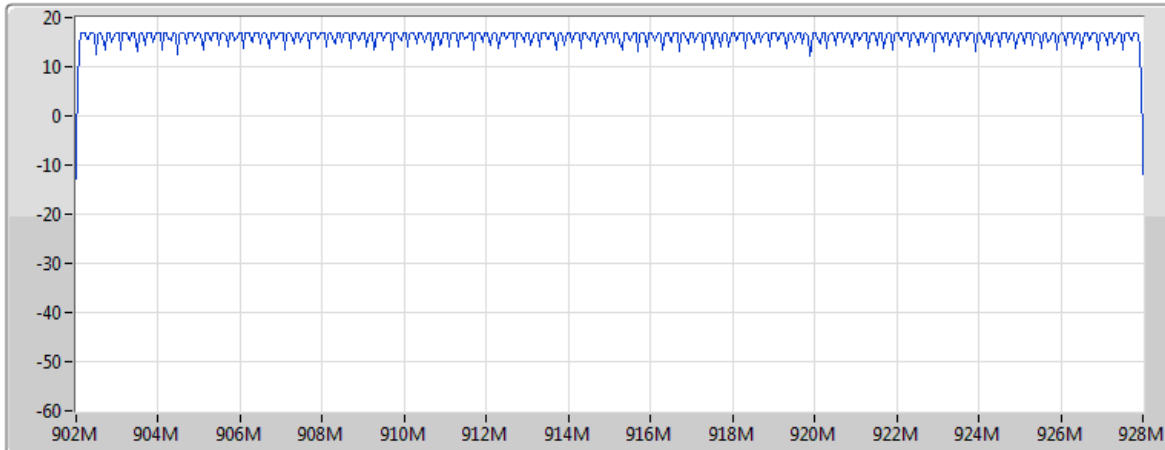
Mode	Result	Hopping No	Limit
GFSK (50Kbps)	-	-	-
915MHz	Pass	129	25
GFSK (100Kbps)	-	-	-
915MHz	Pass	129	25
GFSK (150Kbps)	-	-	-
914.8MHz	Pass	64	25
GFSK (300Kbps)	-	-	-
914.6MHz	Pass	42	25


**GFSK (50Kbps)**

**Hopping Ch**

915MHz

12/11/2020



Port 1 

Hopping No  
129

Span  
26MHz

RBW  
100kHz

VBW  
300kHz

Sweep  
2ms

Detector  
Peak

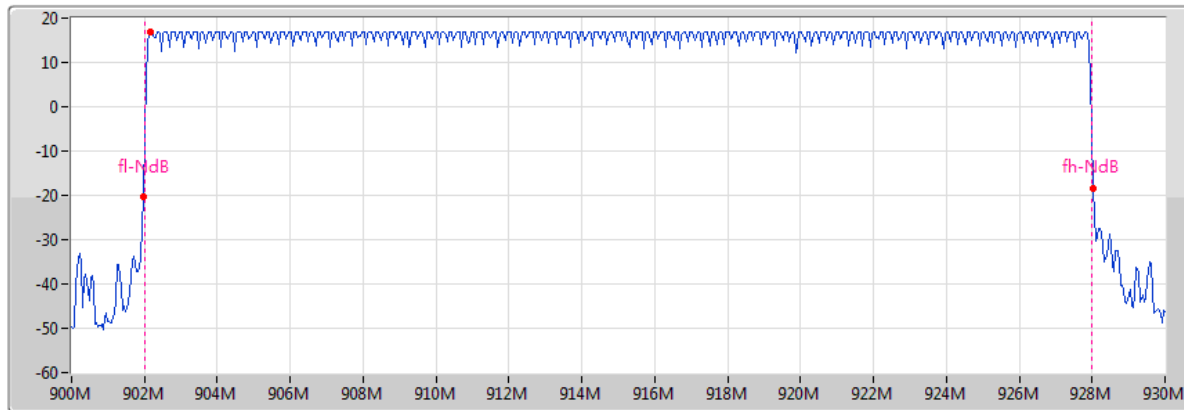
Hopping No	Limit
129	15


**GFSK (50Kbps)**

915MHz

**Hopping Ch Bandedge (Non-restricted Band)**

12/11/2020



Port 1 

Span  
30MHz

RBW  
100kHz

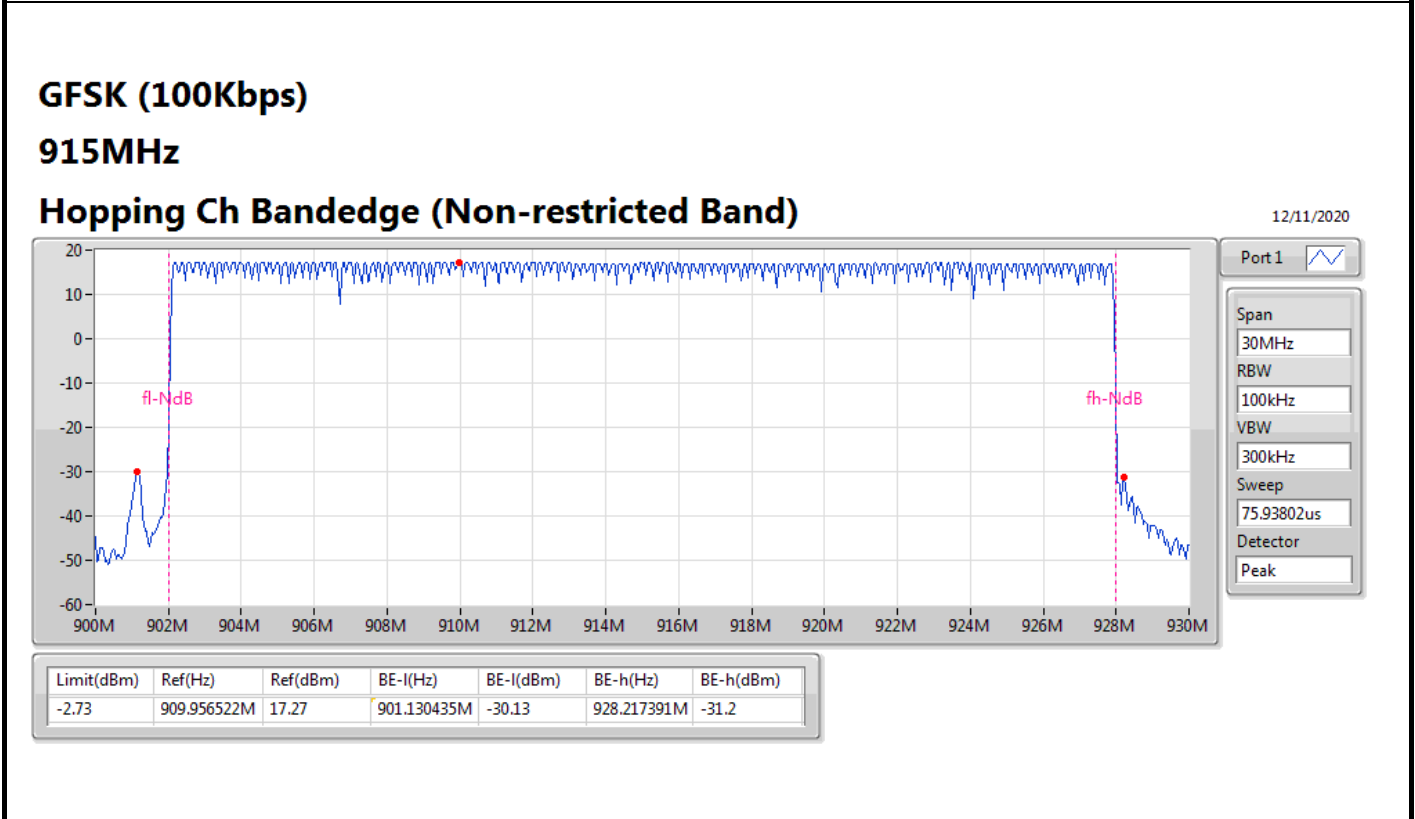
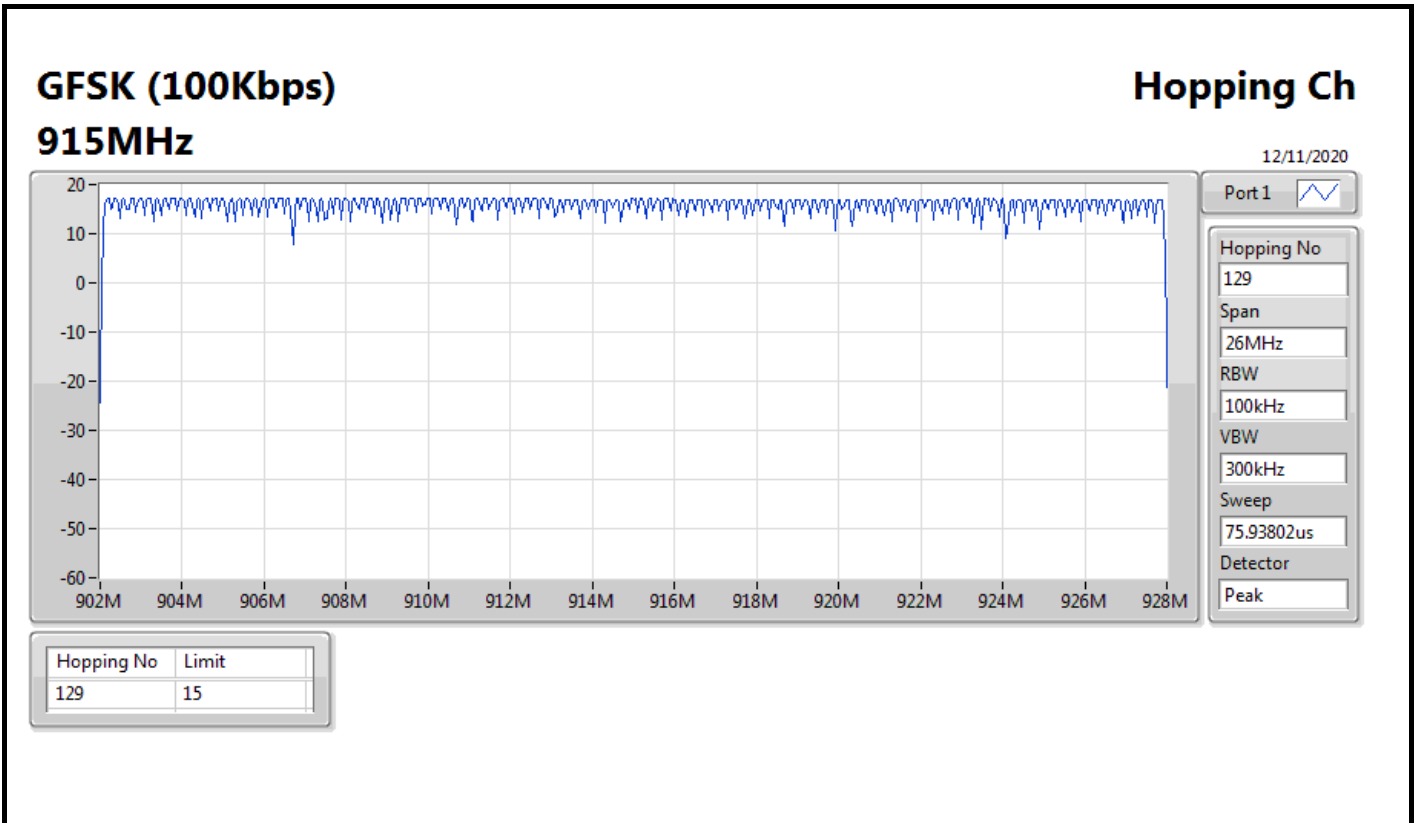
VBW  
300kHz

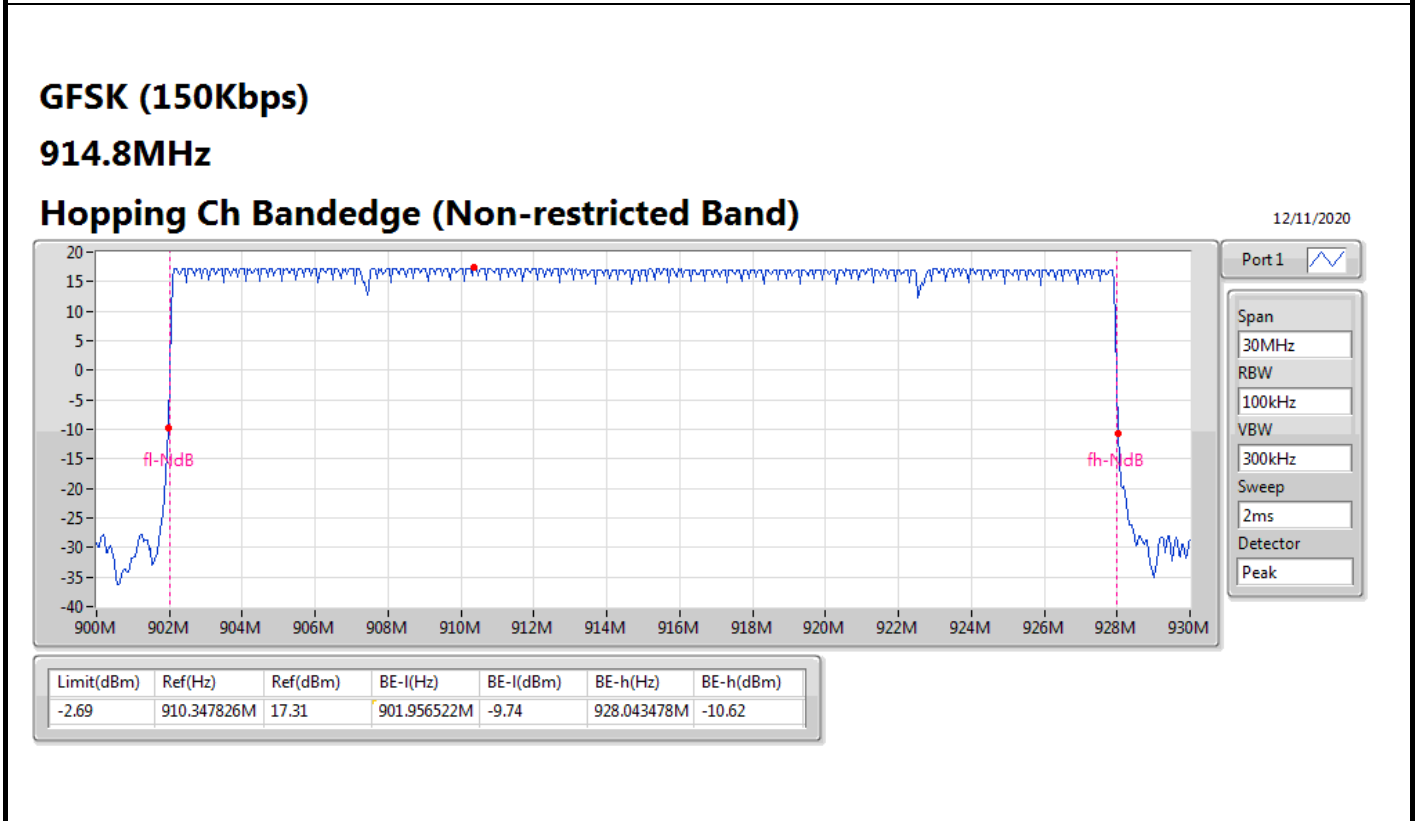
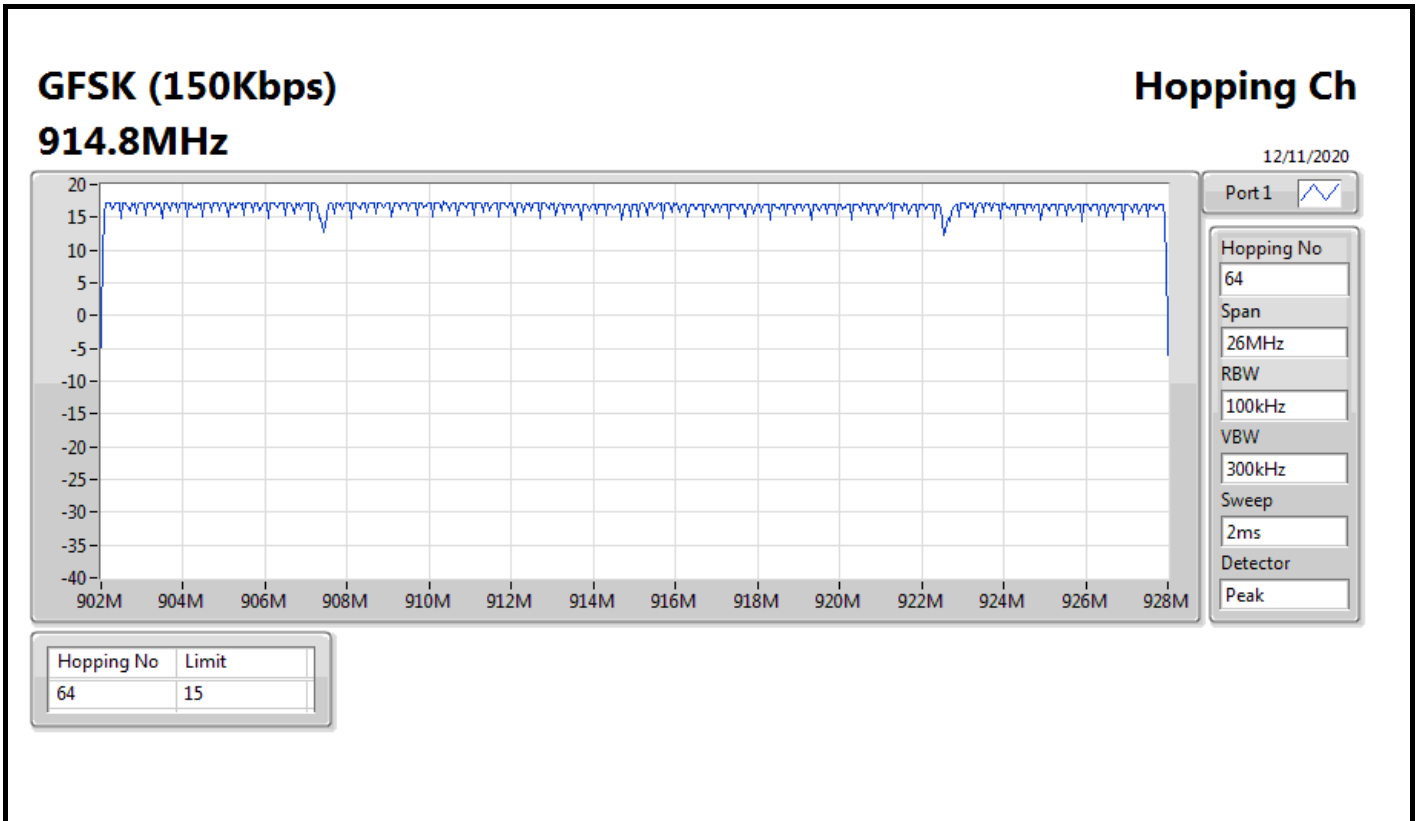
Sweep  
2ms

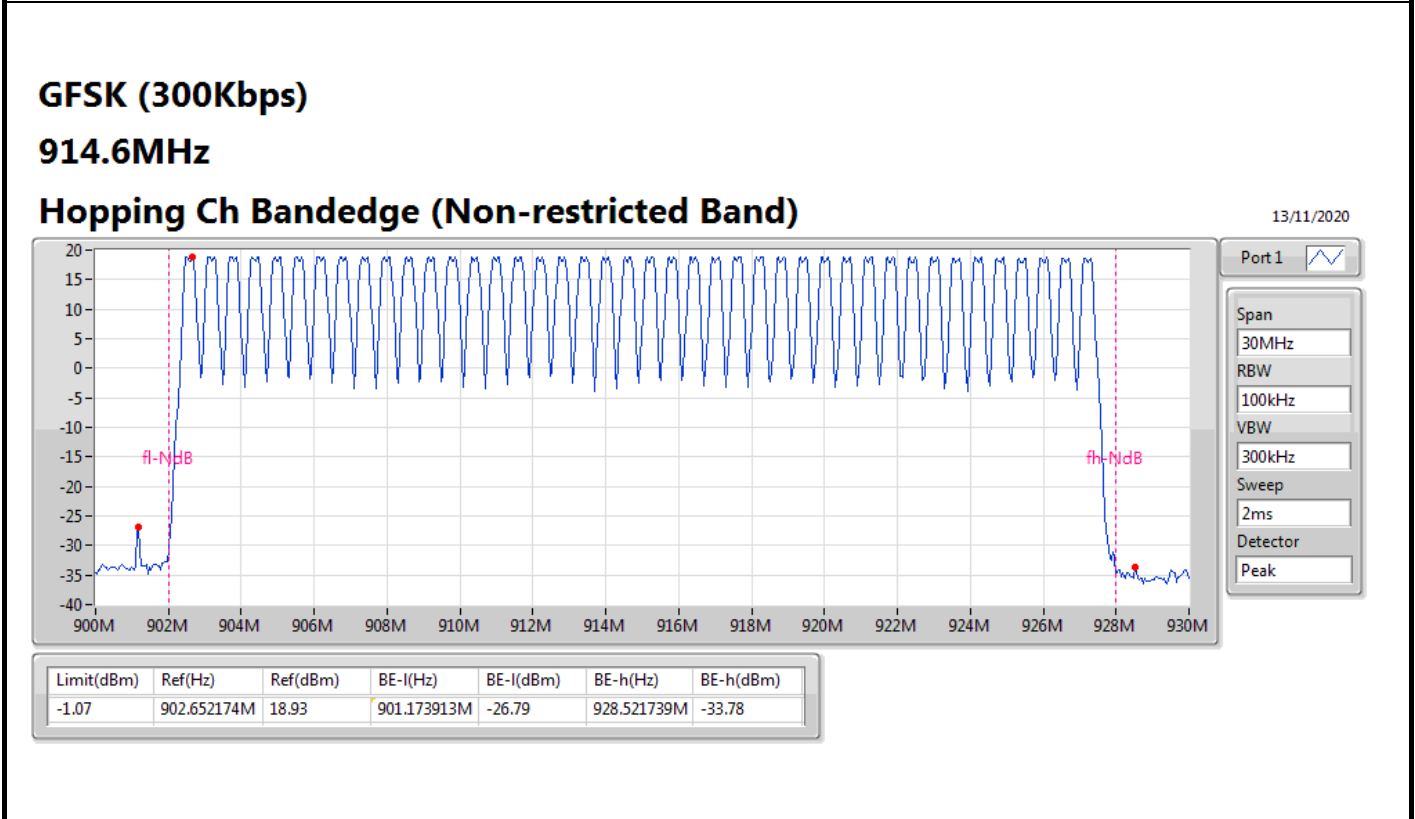
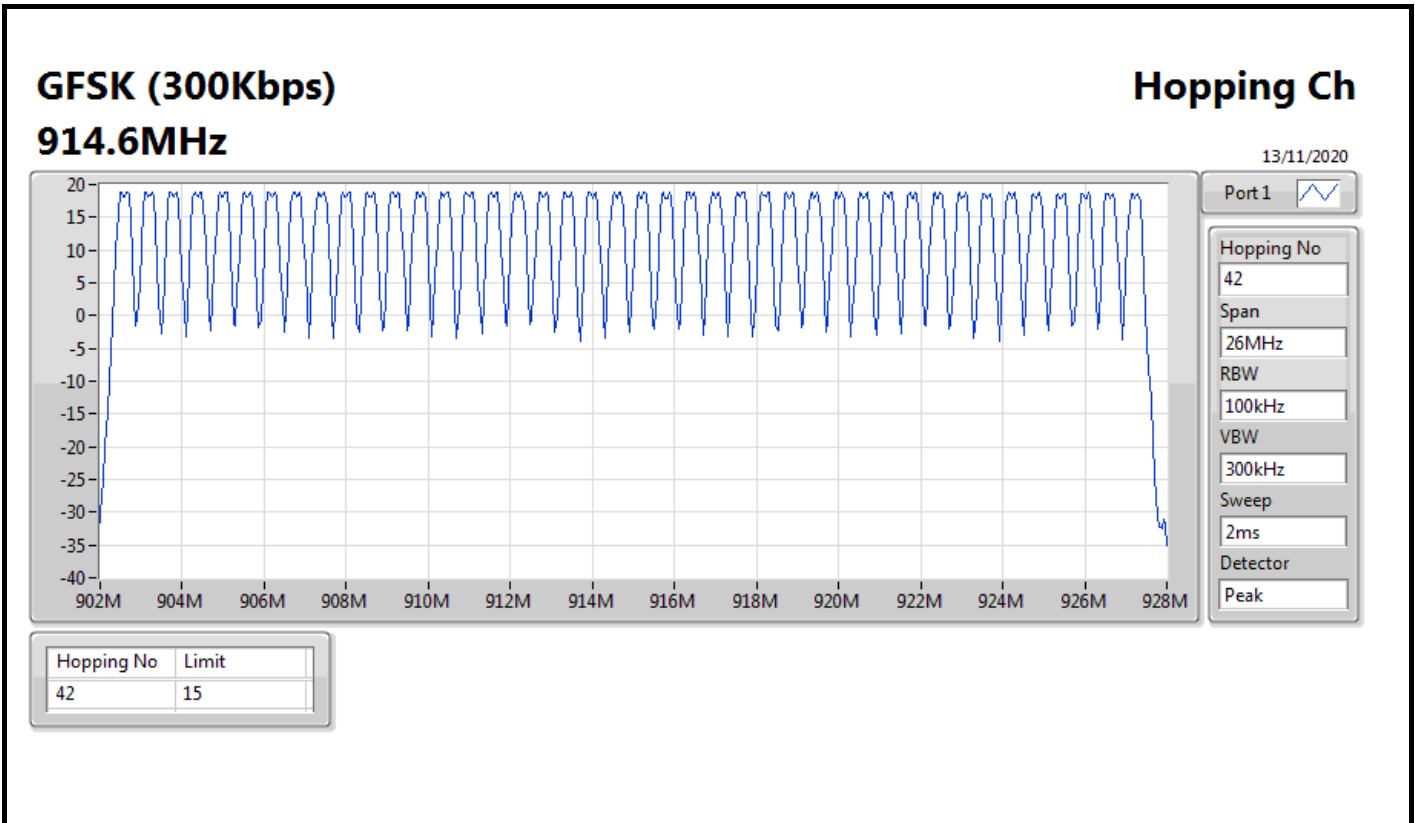
Detector  
Peak

Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-2.99	902.173913M	17.01	901.956522M	-20.38	928.043478M	-18.58











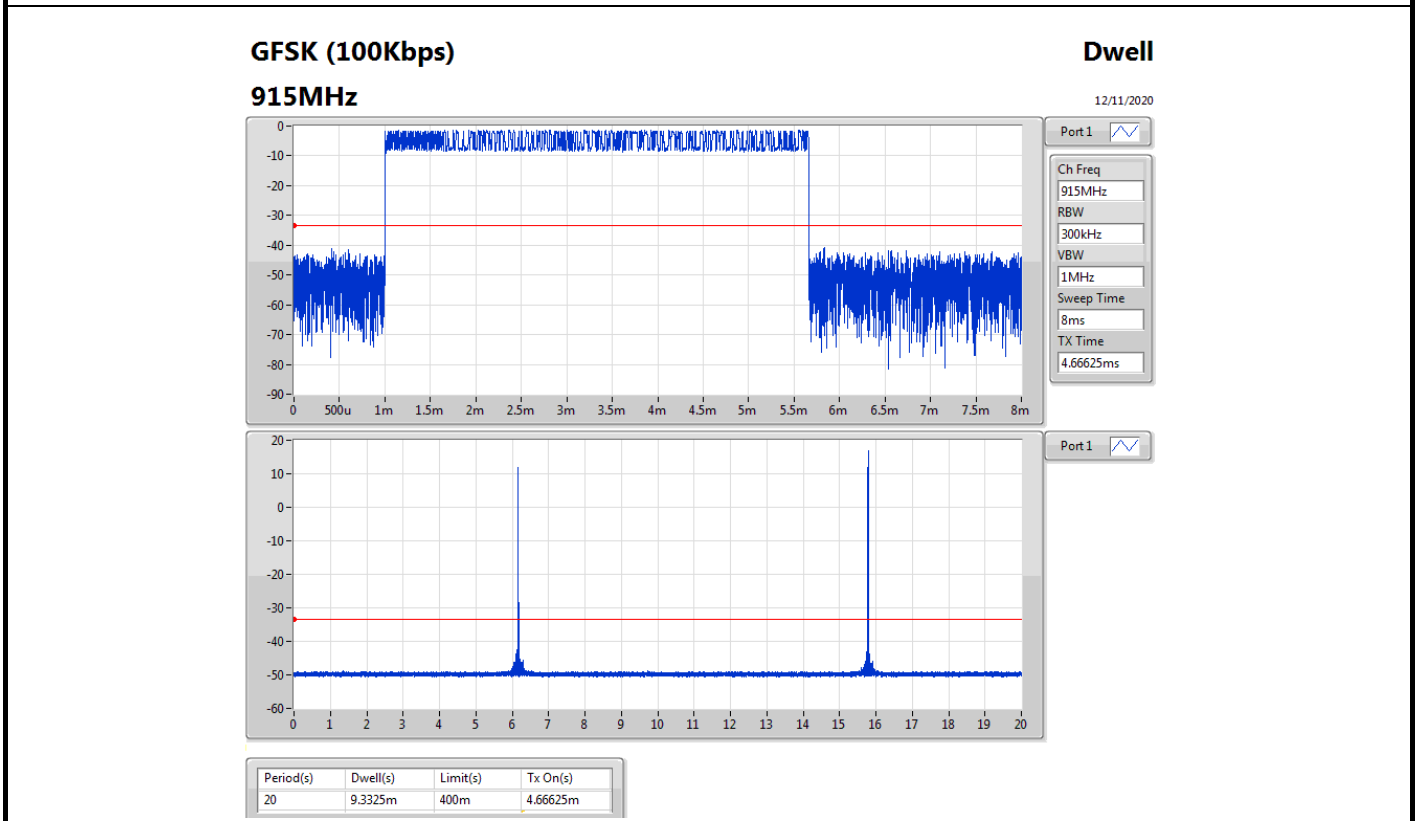
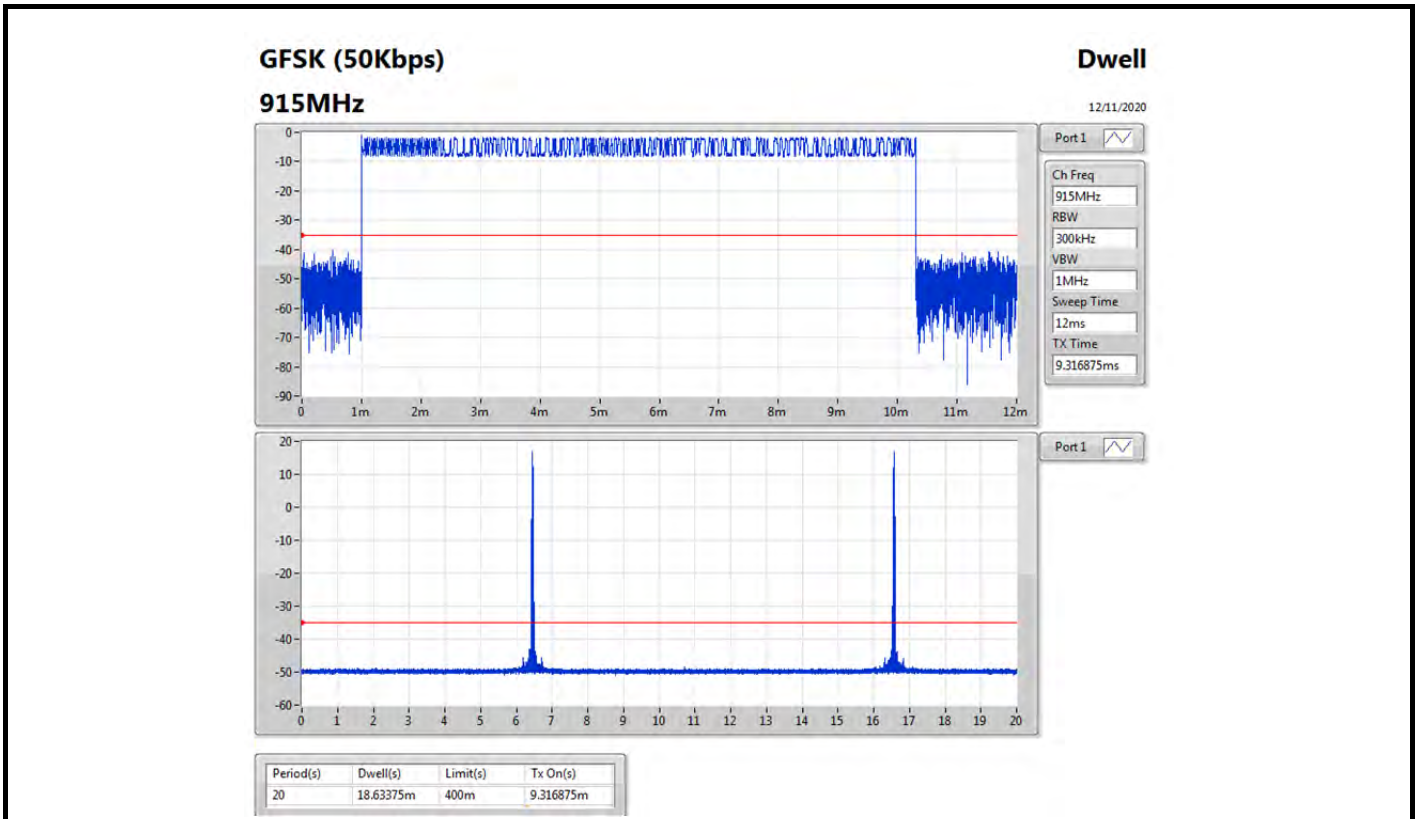
**Summary**

<b>Mode</b>	<b>Max-Dwell (s)</b>
902-928MHz	-
GFSK (50Kbps)	18.63375m
GFSK (100Kbps)	9.3325m
GFSK (150Kbps)	6.667125m
GFSK (300Kbps)	907.375u



Result

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
GFSK (50Kbps)	-	-	-	-	-
915MHz	Pass	20	18.63375m	400m	9.316875m
GFSK (100Kbps)	-	-	-	-	-
915MHz	Pass	20	9.3325m	400m	4.66625m
GFSK (150Kbps)	-	-	-	-	-
914.8MHz	Pass	20	6.667125m	400m	3.333563m
GFSK (300Kbps)	-	-	-	-	-
914.6MHz	Pass	10	907.375u	400m	907.375u

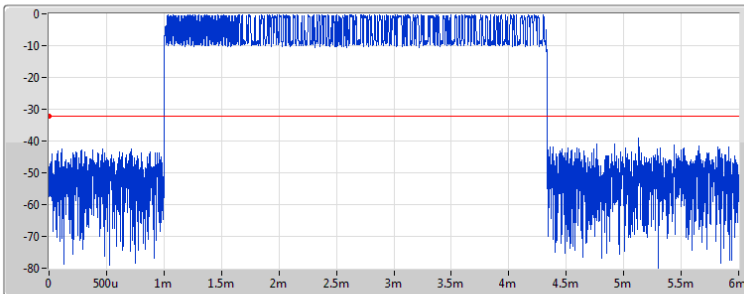


**GFSK (150Kbps)**

**Dwell**

914.8MHz

12/11/2020



Port 1

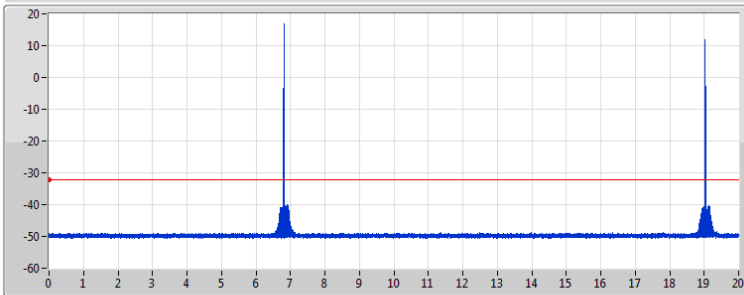
Ch Freq  
914.8MHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
6ms

TX Time  
3.333563ms



Port 1

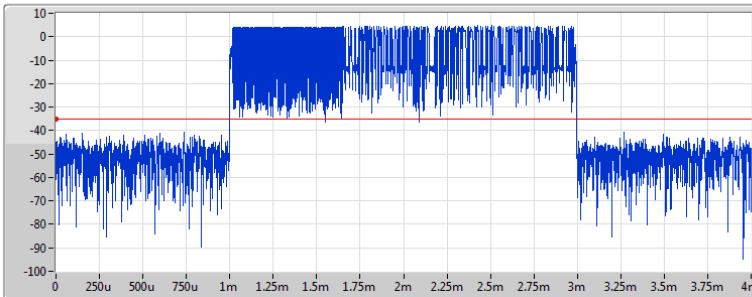
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
20	6.667125m	400m	3.333563m

**GFSK (300Kbps)**

**Dwell**

914.6MHz

12/11/2020



Port 1

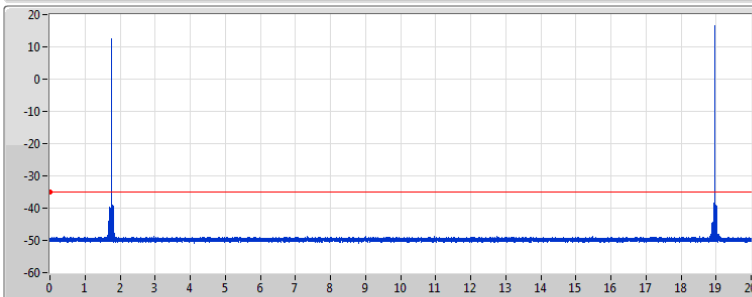
Ch Freq  
914.6MHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
4ms

TX Time  
907.375us



Port 1

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
10	907.375u	400m	907.375u



Summary

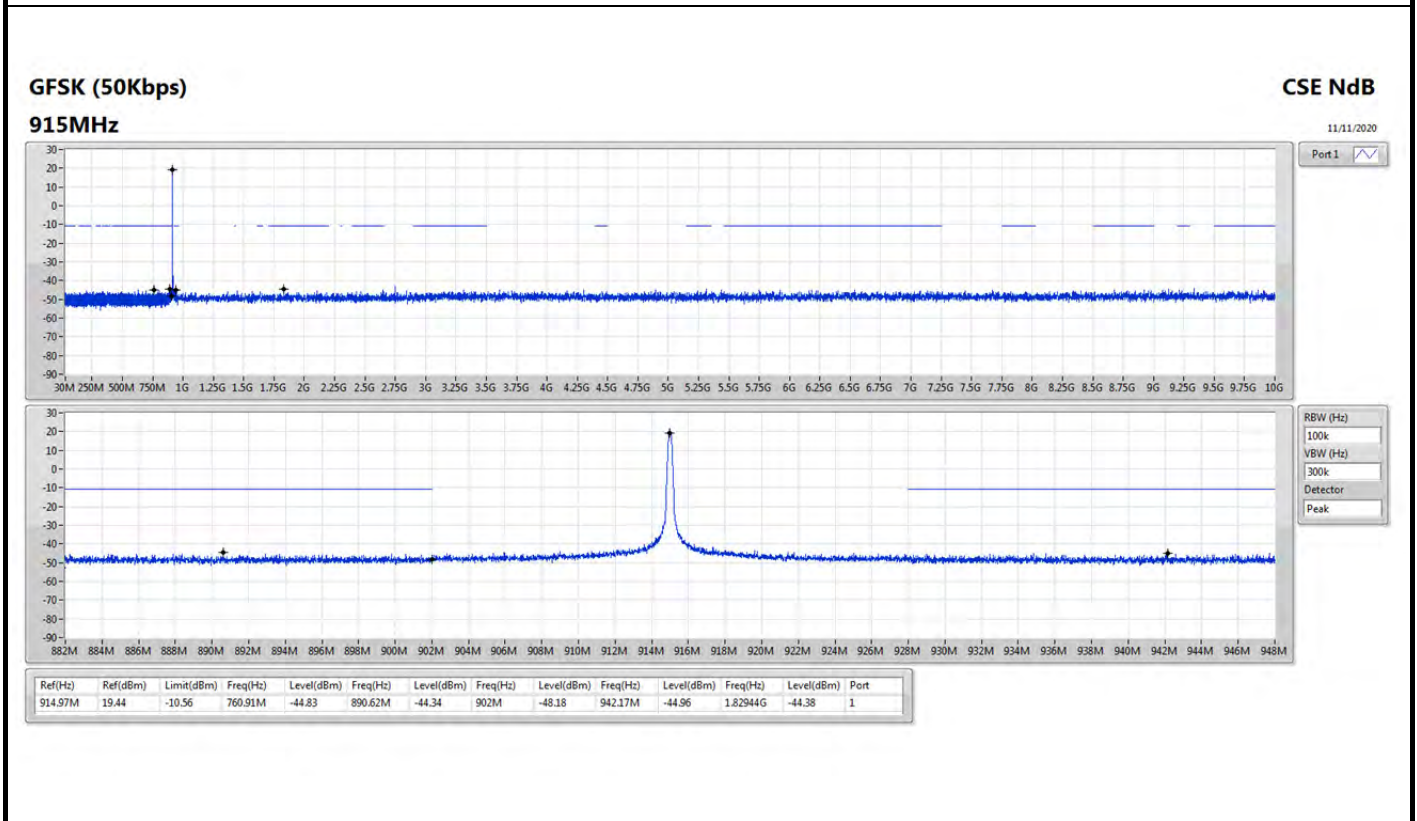
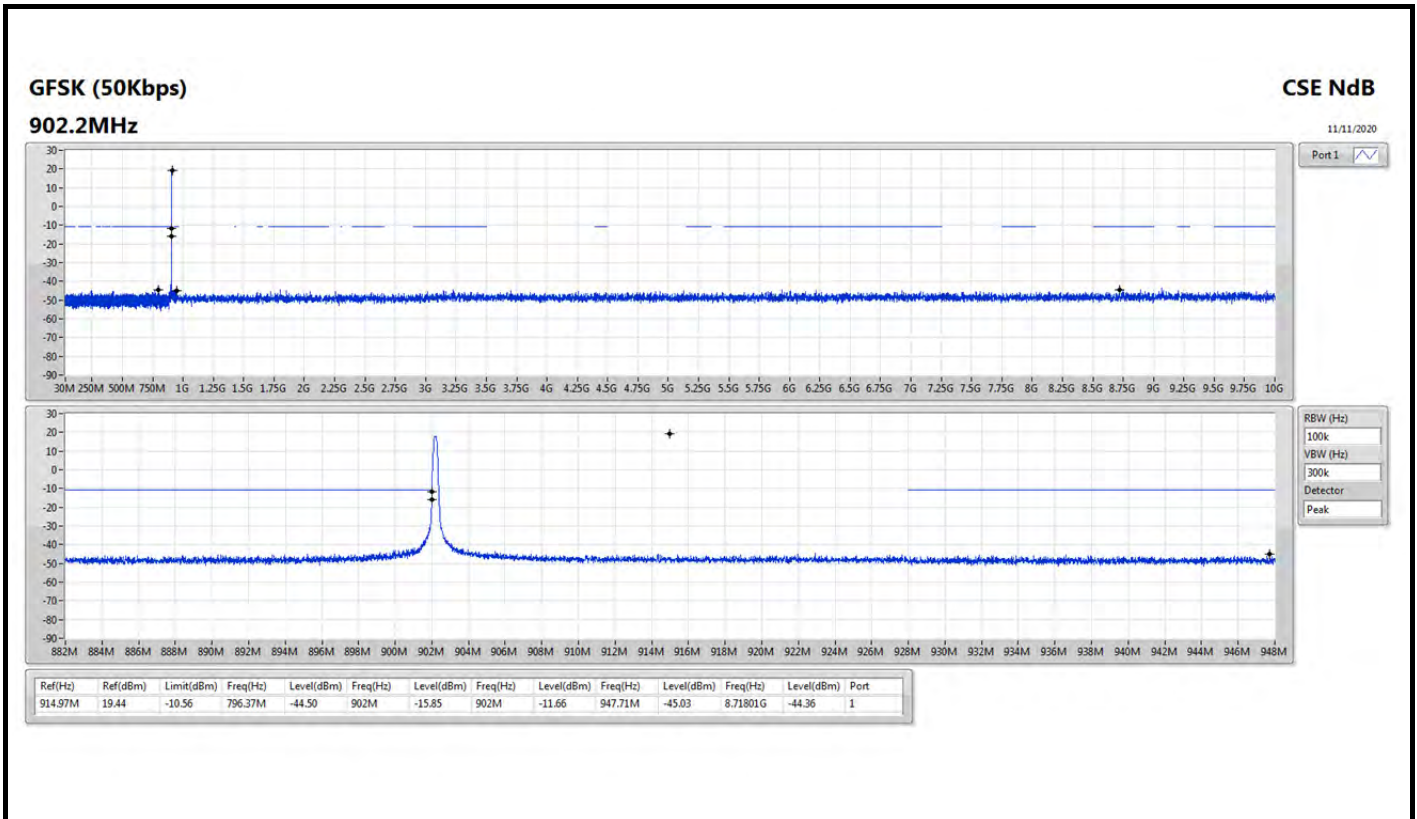
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GFSK (50Kbps)	Pass	914.97M	19.44	-10.56	449.82M	-45.39	885.81M	-44.81	928M	-11.26	928M	-15.05	9.28829G	-44.16	1
GFSK (100Kbps)	Pass	914.97M	19.89	-10.11	650.36M	-44.51	882.9M	-45.39	928M	-10.16	928M	-13.13	9.83254G	-44.08	1
GFSK (150Kbps)	Pass	902.35M	19.99	-10.01	735.03M	-44.77	895.57M	-43.35	928M	-24.13	928M	-25.29	959.32M	-44.51	1
GFSK (300Kbps)	Pass	914.52M	19.98	-10.02	870.71M	-43.32	901.99M	-31.63	902M	-31.77	934.59M	-41.76	1.80455G	-43.67	1

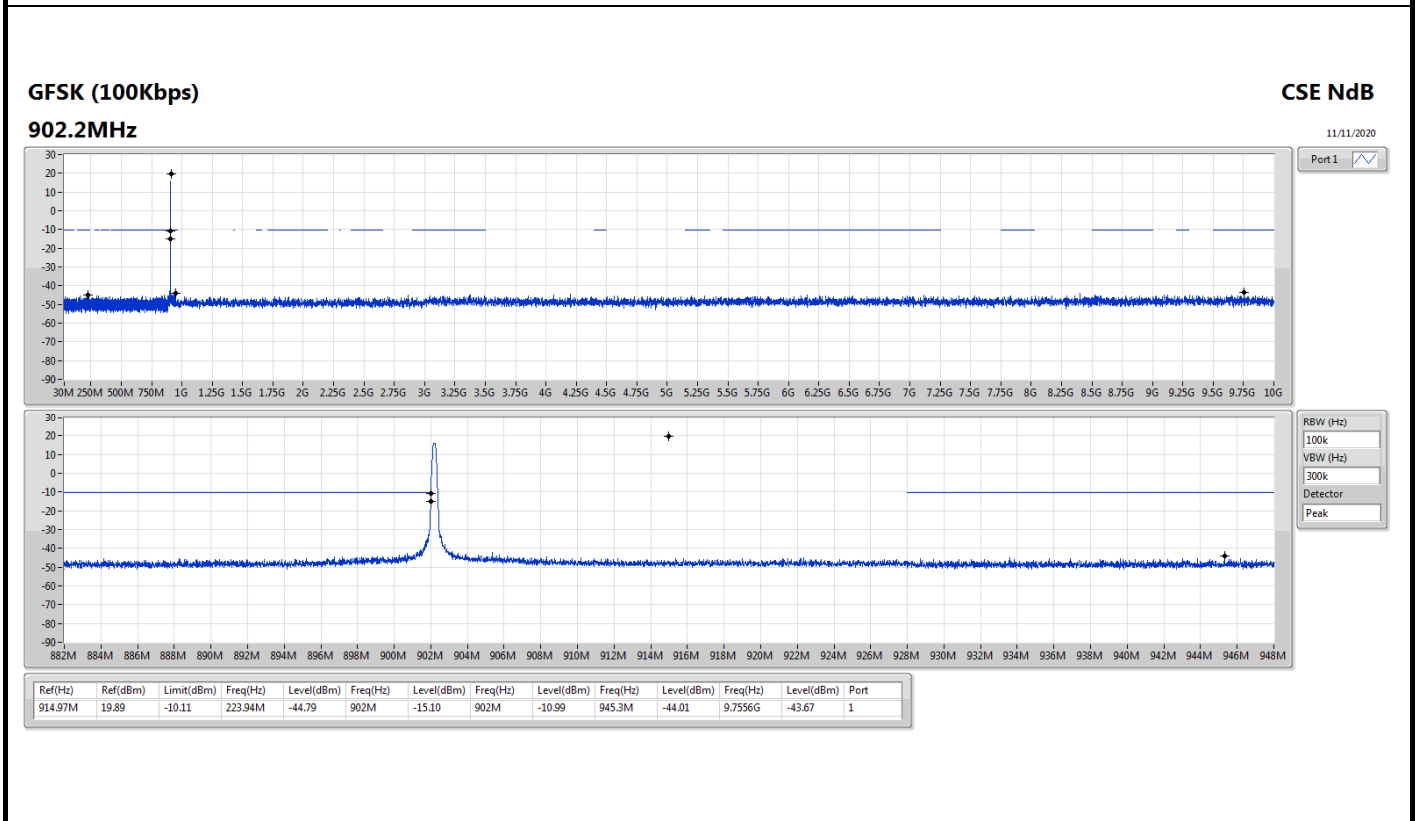
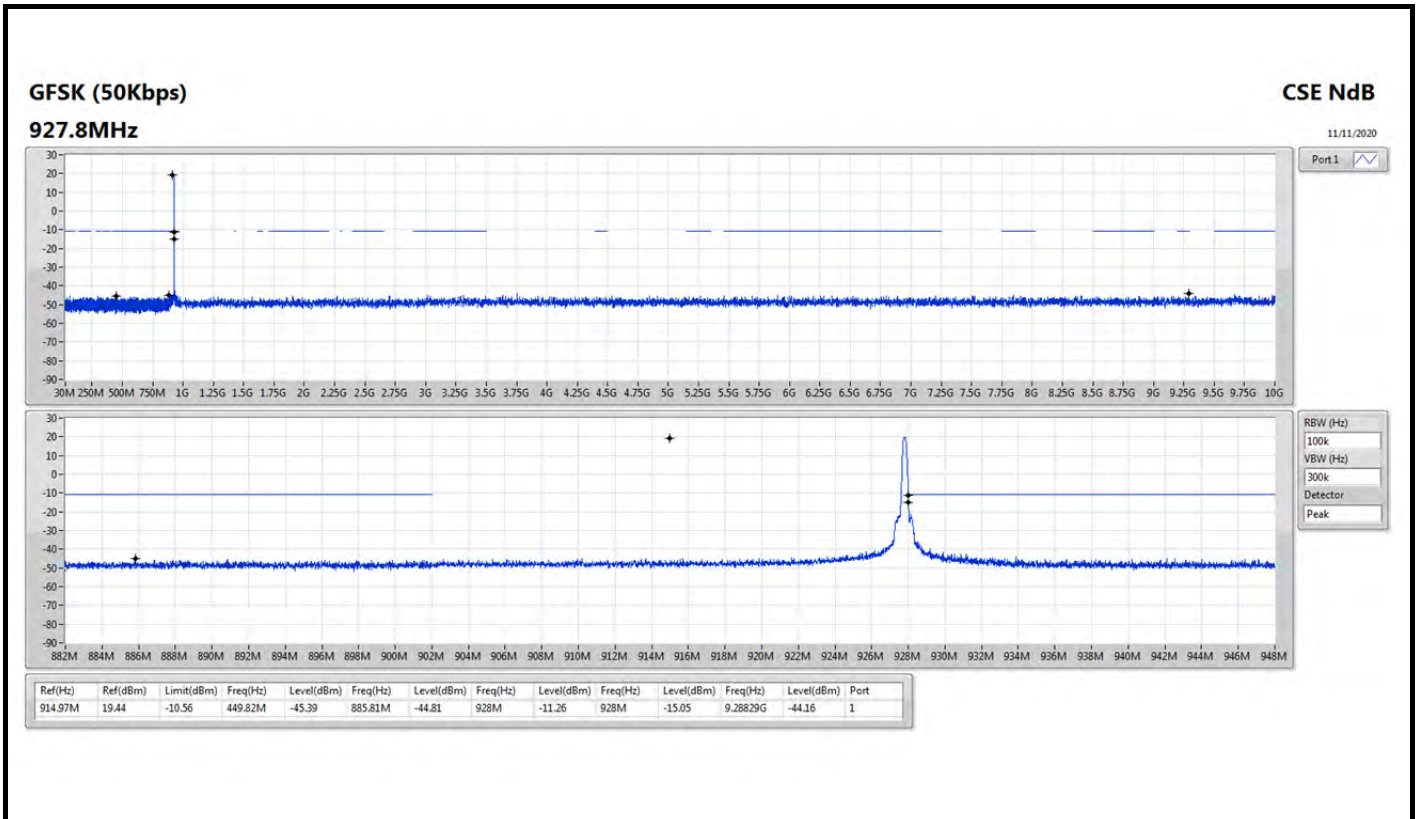


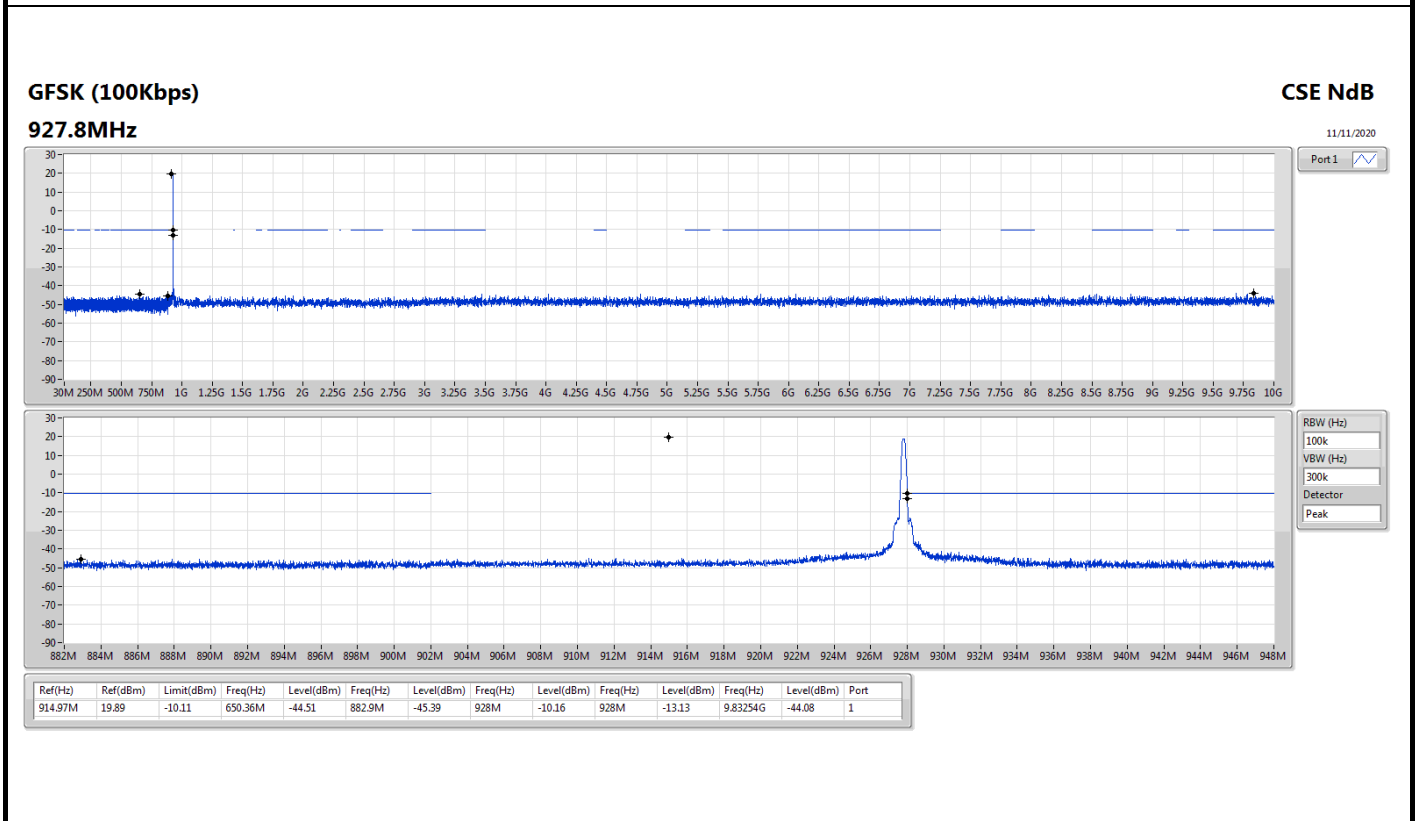
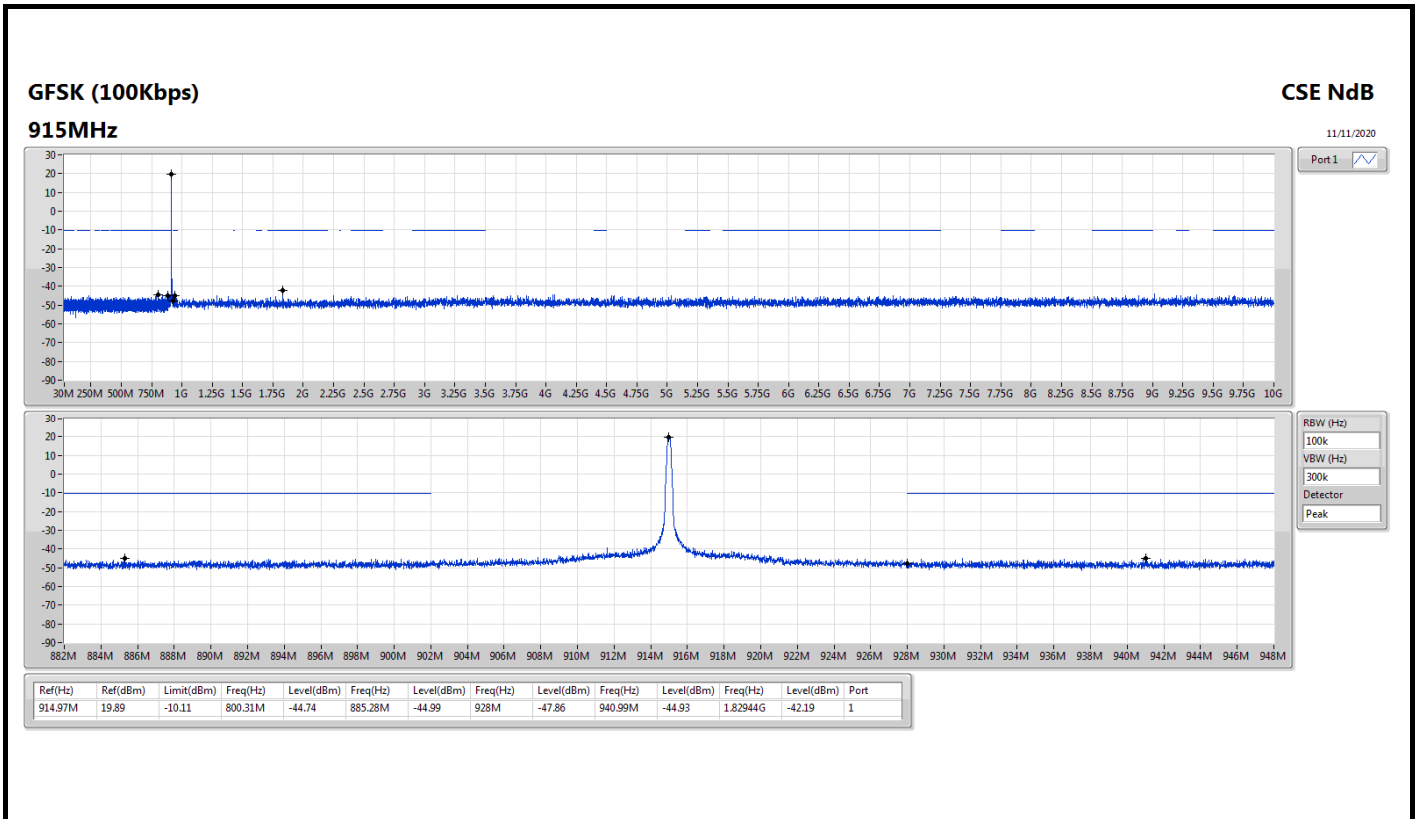


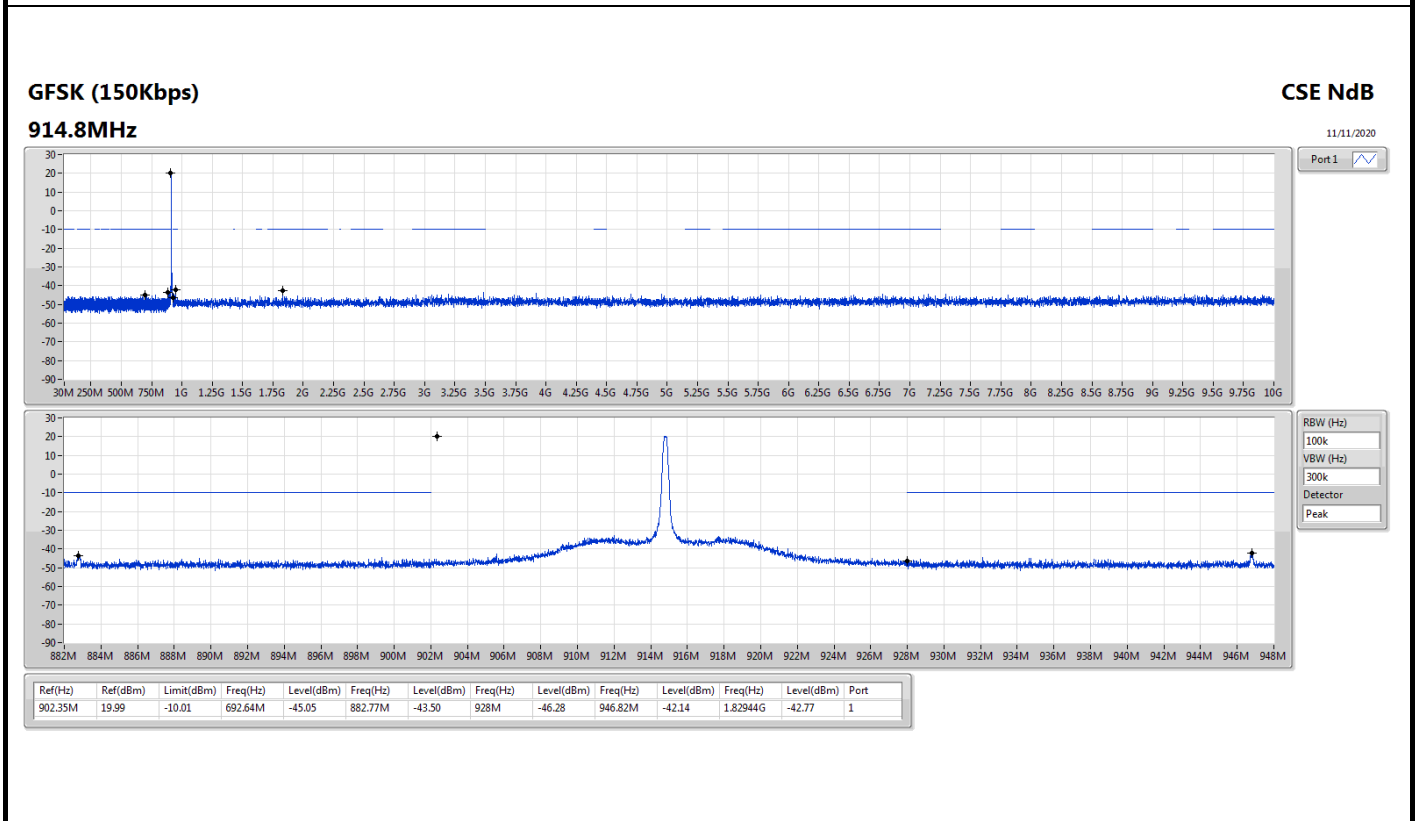
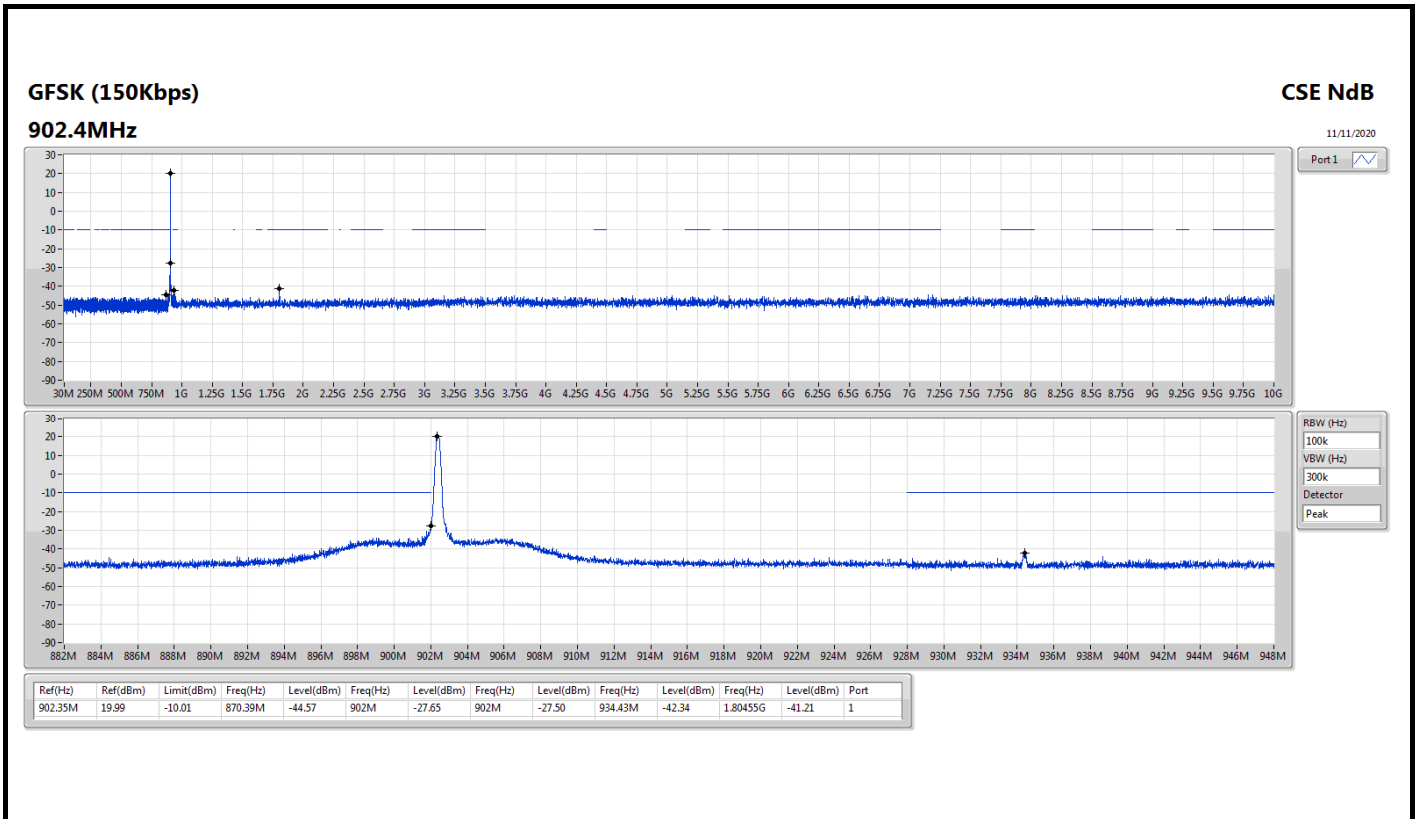
Result

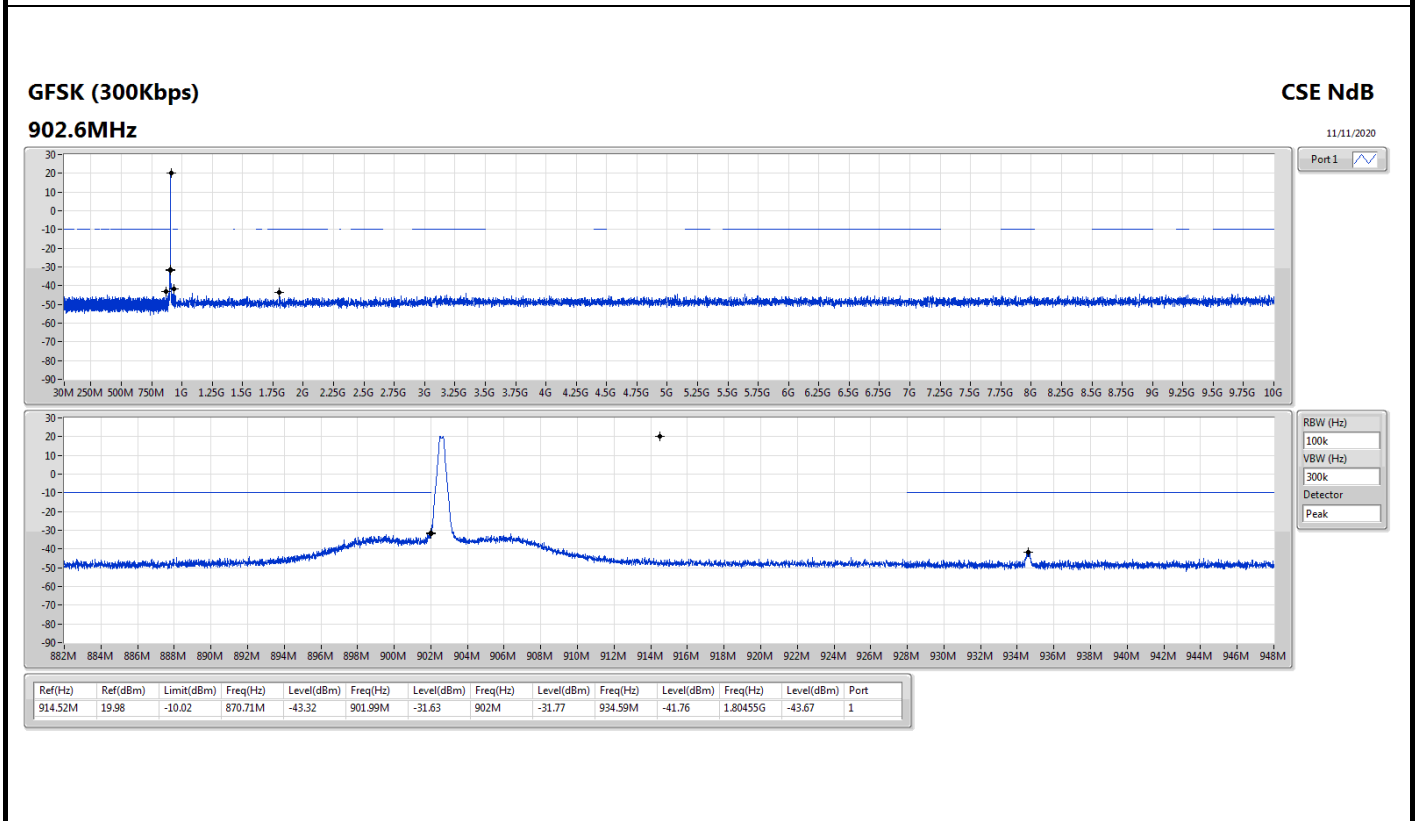
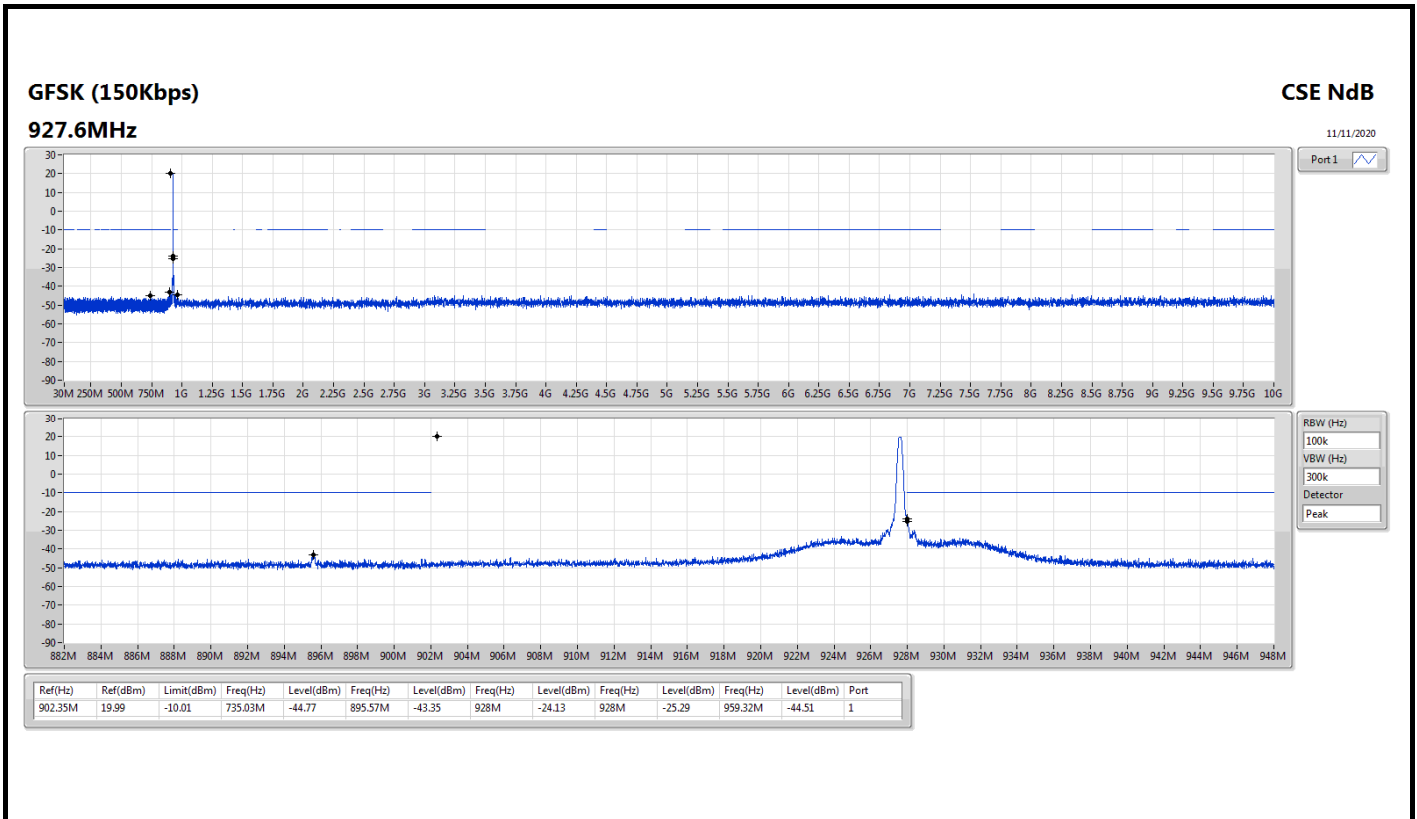
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
GFSK (50Kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	914.97M	19.44	-10.56	796.37M	-44.50	902M	-15.85	902M	-11.66	947.71M	-45.03	8.71801G	-44.36	1
915MHz	Pass	914.97M	19.44	-10.56	760.91M	-44.83	890.62M	-44.34	902M	-48.18	942.17M	-44.96	1.82944G	-44.38	1
927.8MHz	Pass	914.97M	19.44	-10.56	449.82M	-45.39	885.81M	-44.81	928M	-11.26	928M	-15.05	9.28829G	-44.16	1
GFSK (100Kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	914.97M	19.89	-10.11	223.94M	-44.79	902M	-15.10	902M	-10.99	945.3M	-44.01	9.7556G	-43.67	1
915MHz	Pass	914.97M	19.89	-10.11	800.31M	-44.74	885.28M	-44.99	928M	-47.86	940.99M	-44.93	1.82944G	-42.19	1
927.8MHz	Pass	914.97M	19.89	-10.11	650.36M	-44.51	882.9M	-45.39	928M	-10.16	928M	-13.13	9.83254G	-44.08	1
GFSK (150Kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
902.4MHz	Pass	902.35M	19.99	-10.01	870.39M	-44.57	902M	-27.65	902M	-27.50	934.43M	-42.34	1.80455G	-41.21	1
914.8MHz	Pass	902.35M	19.99	-10.01	692.64M	-45.05	882.77M	-43.50	928M	-46.28	946.82M	-42.14	1.82944G	-42.77	1
927.6MHz	Pass	902.35M	19.99	-10.01	735.03M	-44.77	895.57M	-43.35	928M	-24.13	928M	-25.29	959.32M	-44.51	1
GFSK (300Kbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
902.6MHz	Pass	914.52M	19.98	-10.02	870.71M	-43.32	901.99M	-31.63	902M	-31.77	934.59M	-41.76	1.80455G	-43.67	1
914.6MHz	Pass	914.52M	19.98	-10.02	571.02M	-44.35	882.66M	-42.94	928M	-46.44	946.64M	-42.12	1.82831G	-42.74	1
927.2MHz	Pass	914.52M	19.98	-10.02	493.38M	-45.20	895.15M	-41.45	928M	-33.47	928.67M	-32.57	959.32M	-44.07	1

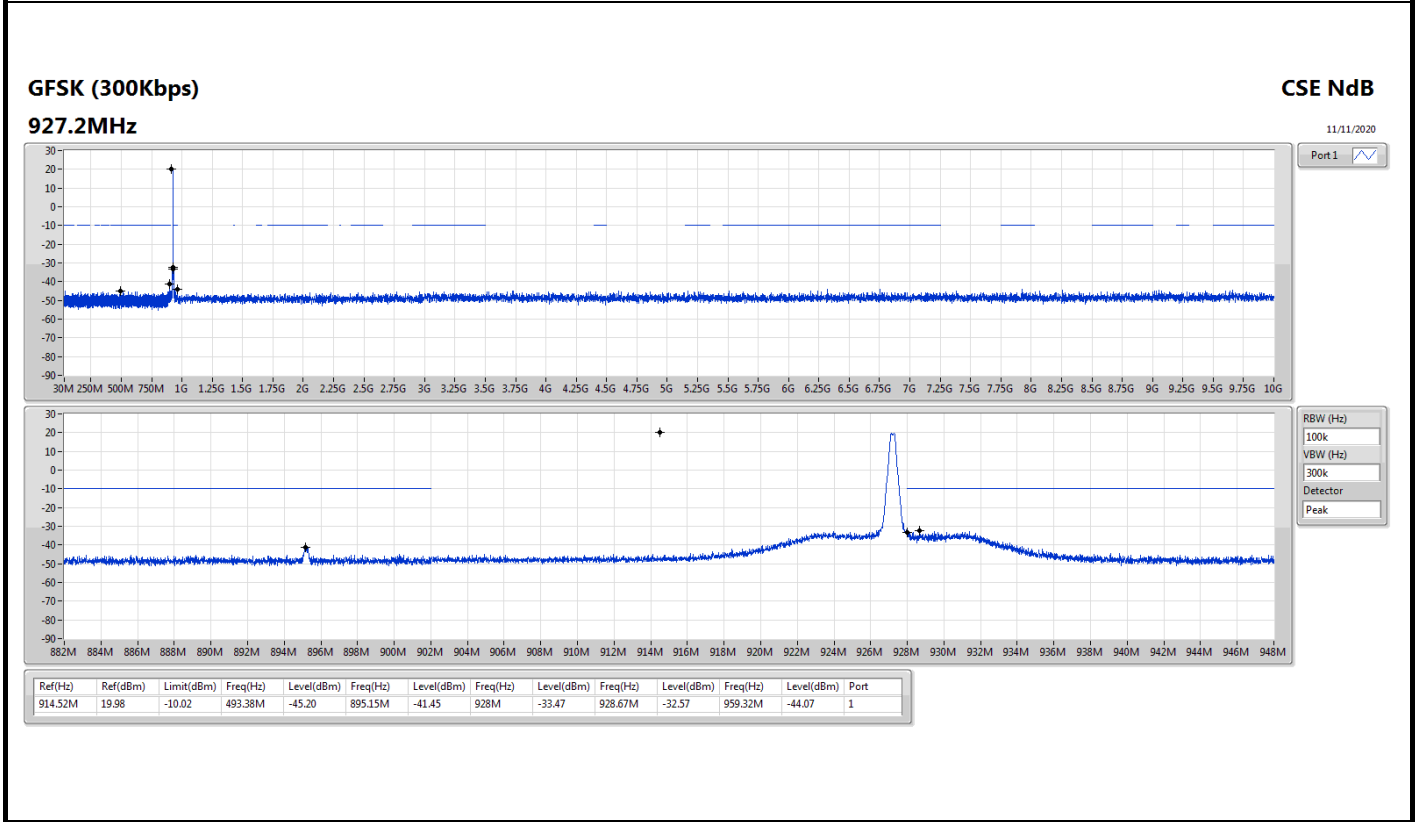
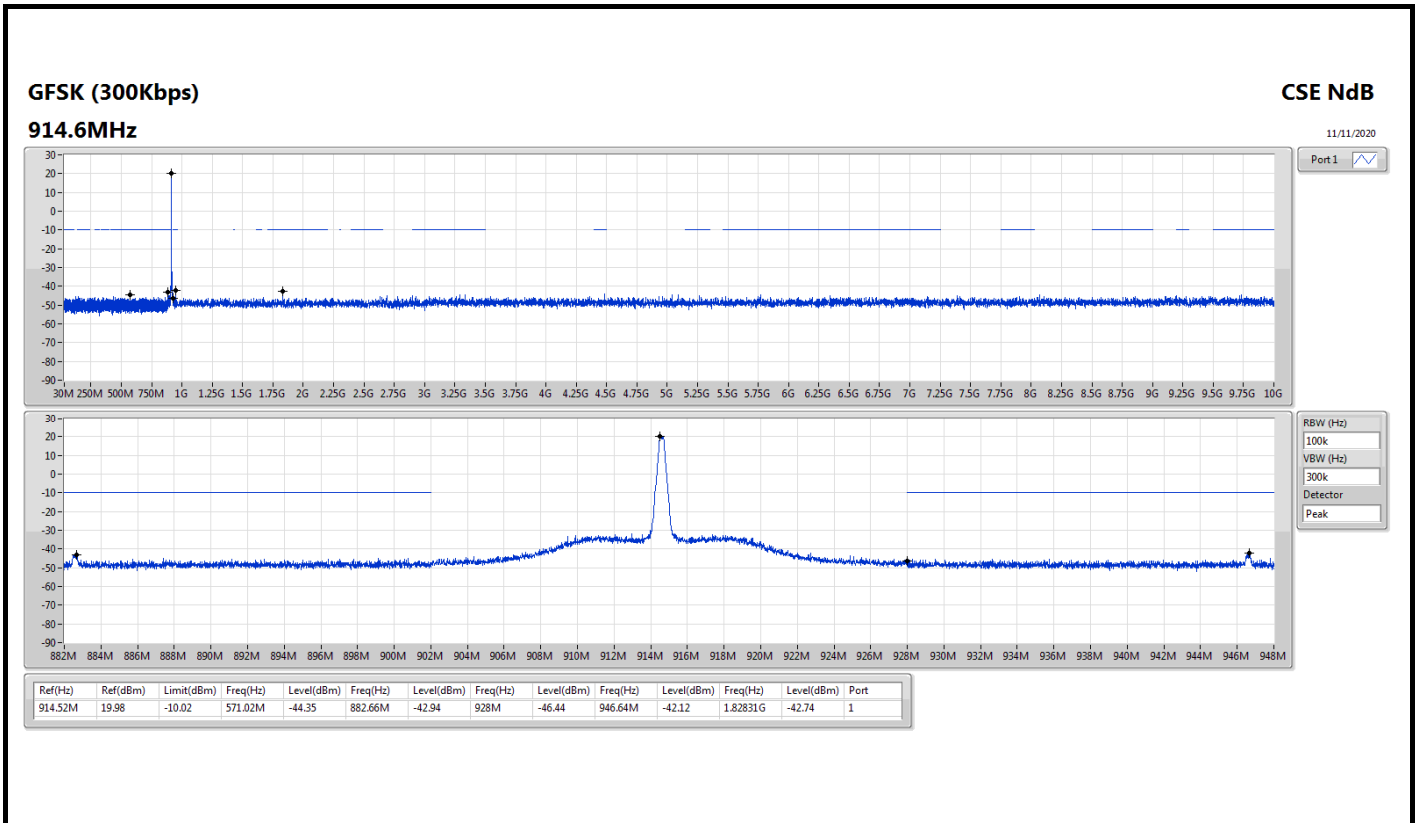












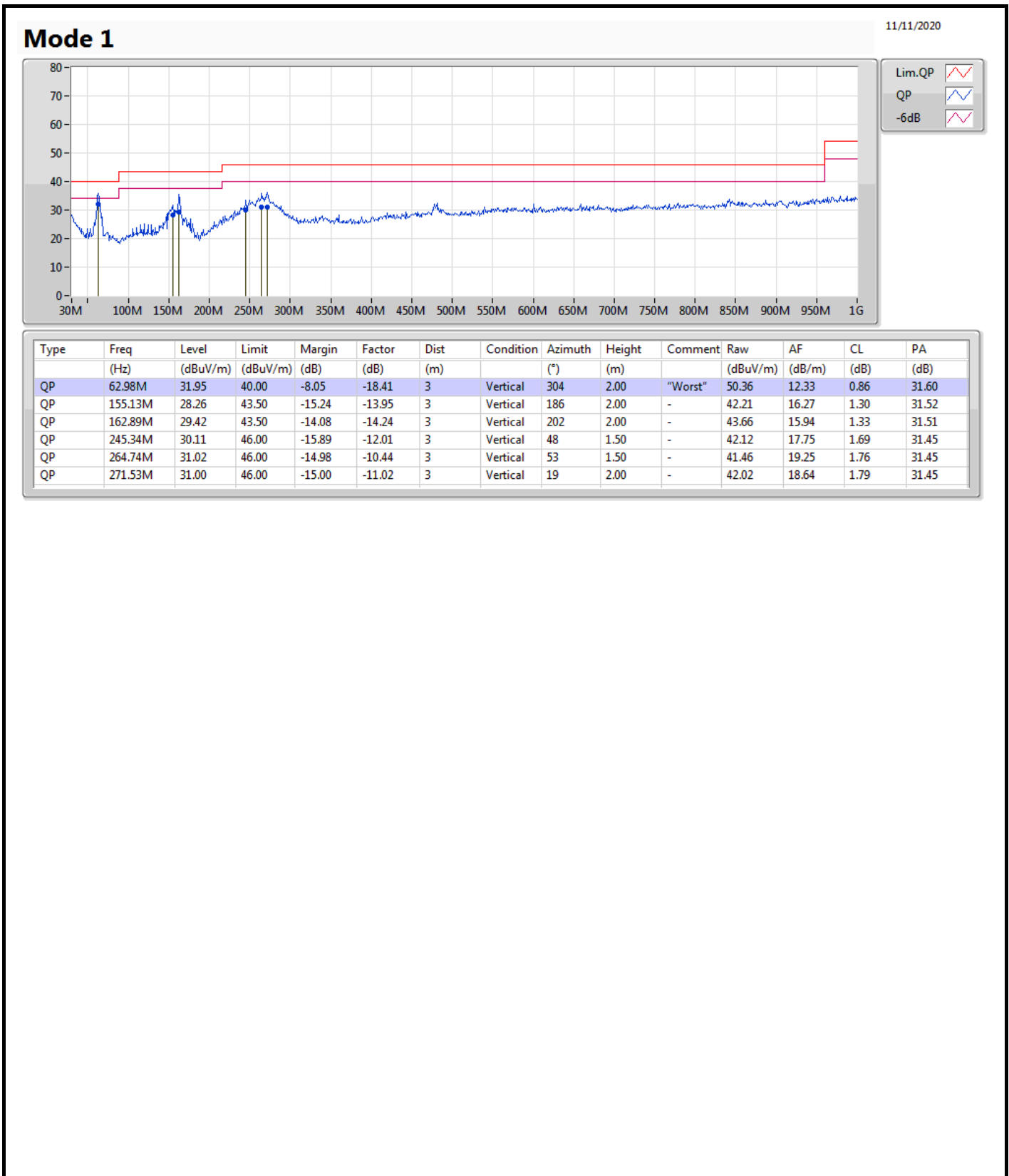


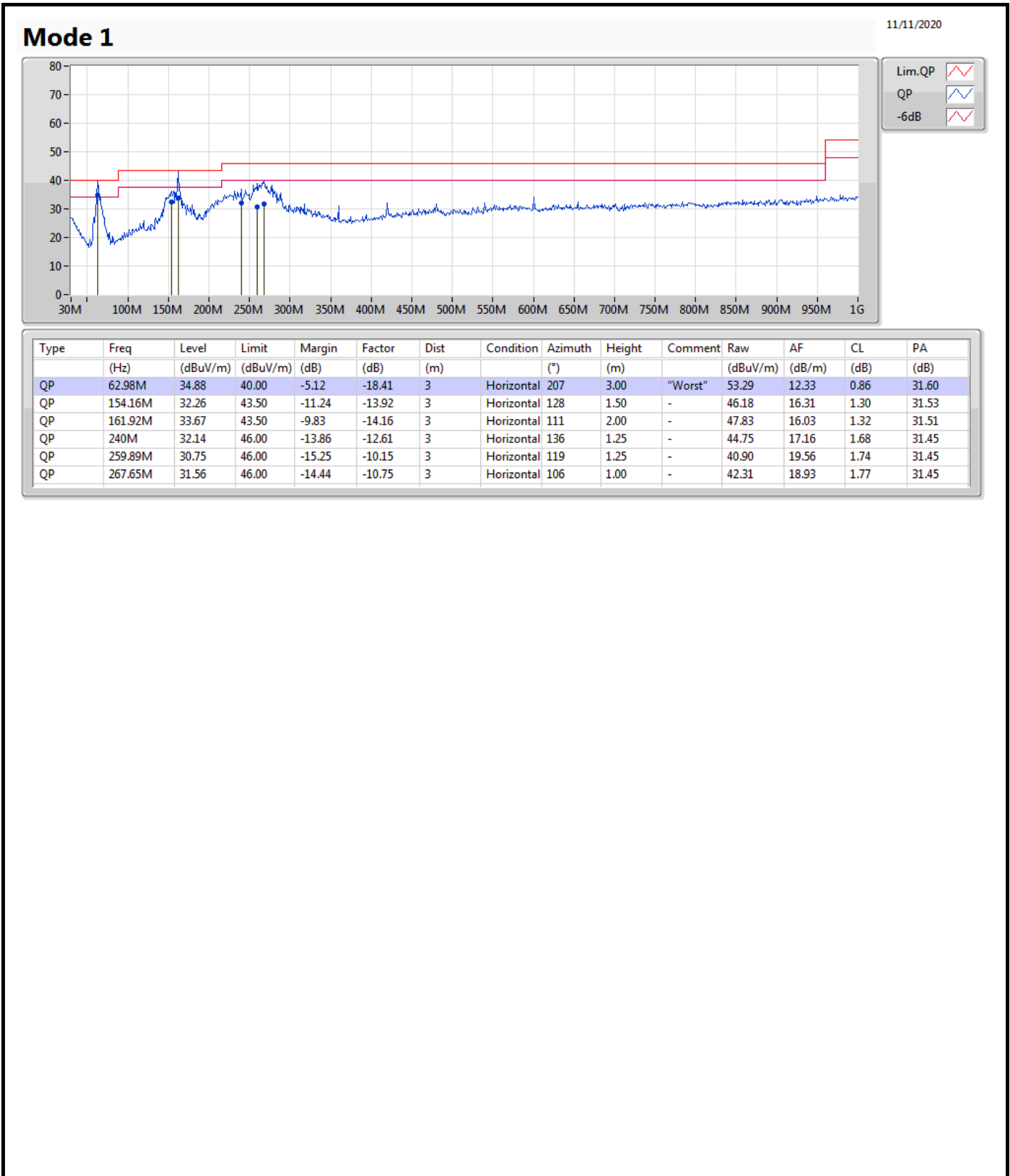


**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	62.98M	34.88	40.00	-5.12	Horizontal









Summary

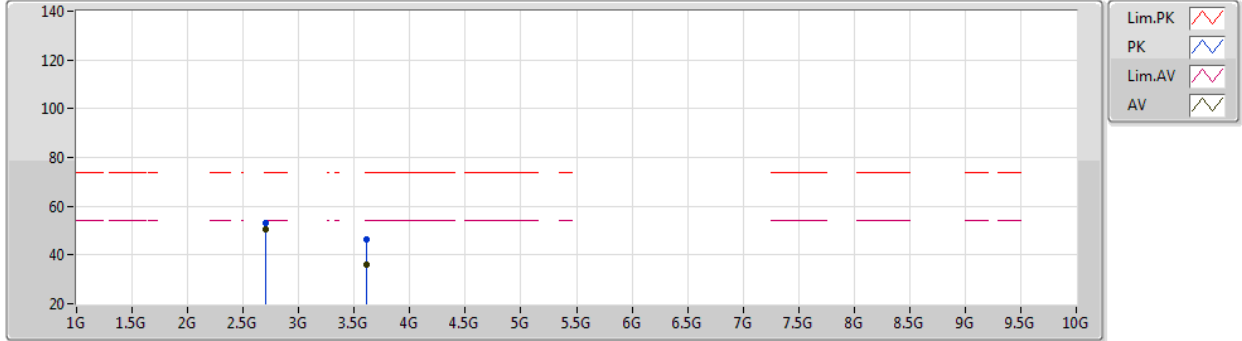
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_1TX	Pass	AV	2.70657G	53.45	54.00	-0.55	3	Horizontal	18	1.00	-



GFSK\_1TX

09/11/2020

902.2MHz\_TX



EUT\_Z\_1TX  
Setting 19  
04-F-J-7

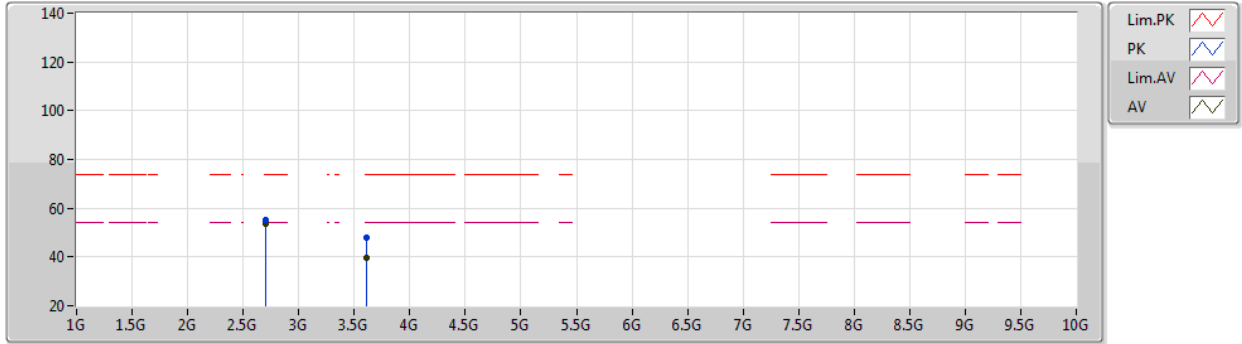
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70644G	53.10	74.00	-20.90	54.72	3	Vertical	68	2.53	-	28.67	4.11	34.40
AV	2.70657G	50.64	54.00	-3.36	52.26	3	Vertical	68	2.53	-	28.67	4.11	34.40
PK	3.6087G	46.54	74.00	-27.46	44.95	3	Vertical	47	2.23	-	30.50	4.80	33.71
AV	3.60878G	35.98	54.00	-18.02	34.39	3	Vertical	47	2.23	-	30.50	4.80	33.71



GFSK\_1TX

09/11/2020

902.2MHz\_TX



EUT Z\_1TX  
Setting 19  
04-F-J-7

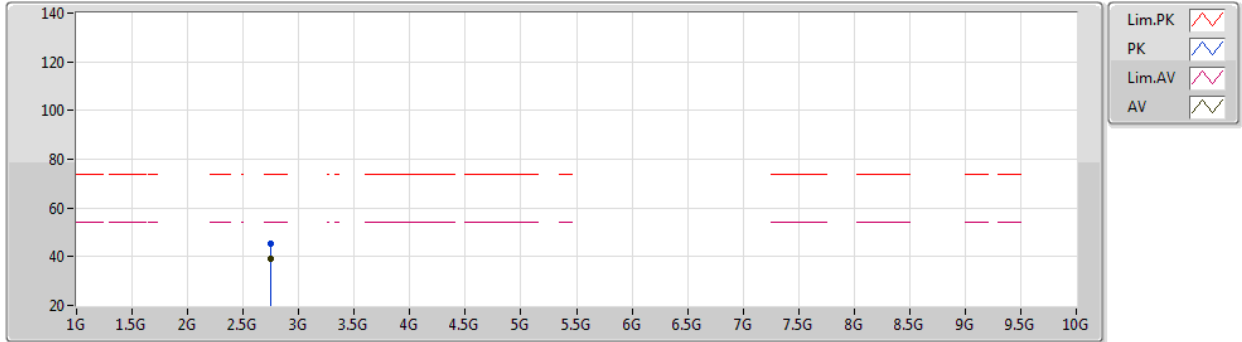
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70658G	55.17	74.00	-18.83	56.79	3	Horizontal	18	1.00	-	28.67	4.11	34.40
AV	2.70657G	53.45	54.00	-0.55	55.07	3	Horizontal	18	1.00	-	28.67	4.11	34.40
PK	3.60876G	47.85	74.00	-26.15	46.26	3	Horizontal	72	2.40	-	30.50	4.80	33.71
AV	3.60877G	39.85	54.00	-14.15	38.26	3	Horizontal	72	2.40	-	30.50	4.80	33.71



GFSK\_1TX

09/11/2020

915MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

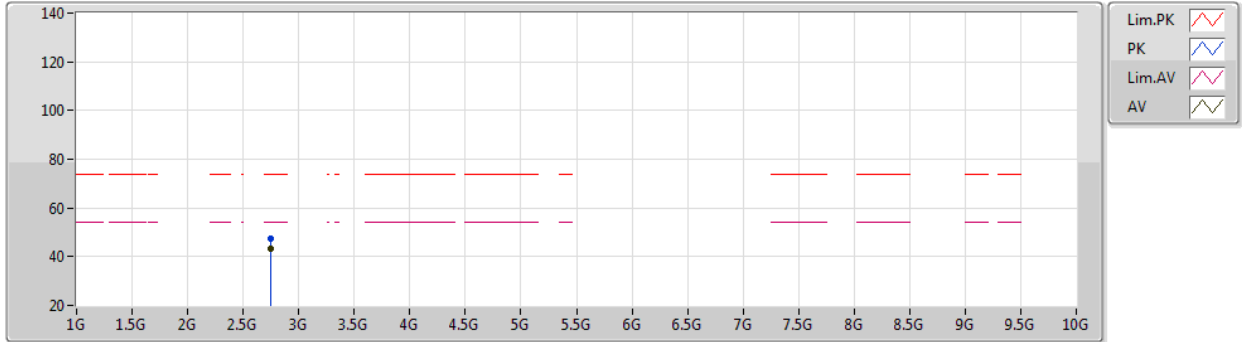
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74476G	45.20	74.00	-28.80	46.91	3	Vertical	18	2.42	-	28.52	4.14	34.37
AV	2.74496G	39.30	54.00	-14.70	41.01	3	Vertical	18	2.42	-	28.52	4.14	34.37



GFSK\_1TX

09/11/2020

915MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

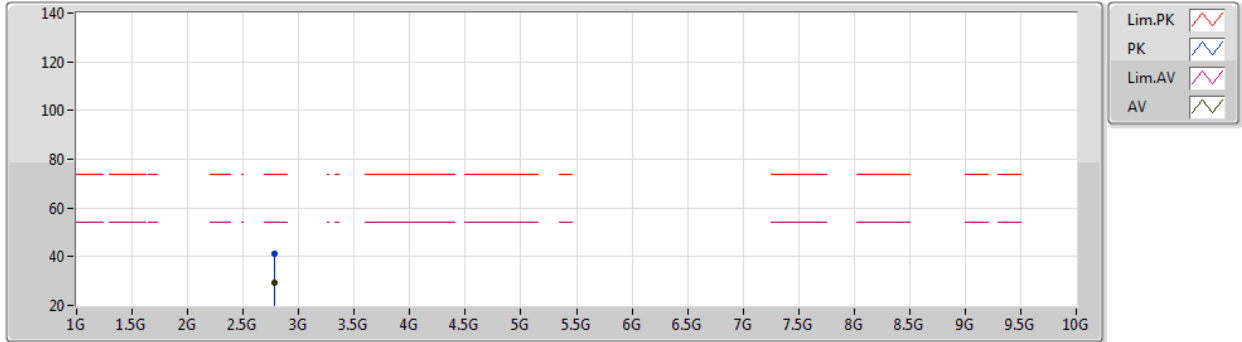
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74504G	47.50	74.00	-26.50	49.20	3	Horizontal	19	1.18	-	28.52	4.15	34.37
AV	2.745G	43.04	54.00	-10.96	44.74	3	Horizontal	19	1.18	-	28.52	4.15	34.37



GFSK\_1TX

09/11/2020

927.8MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

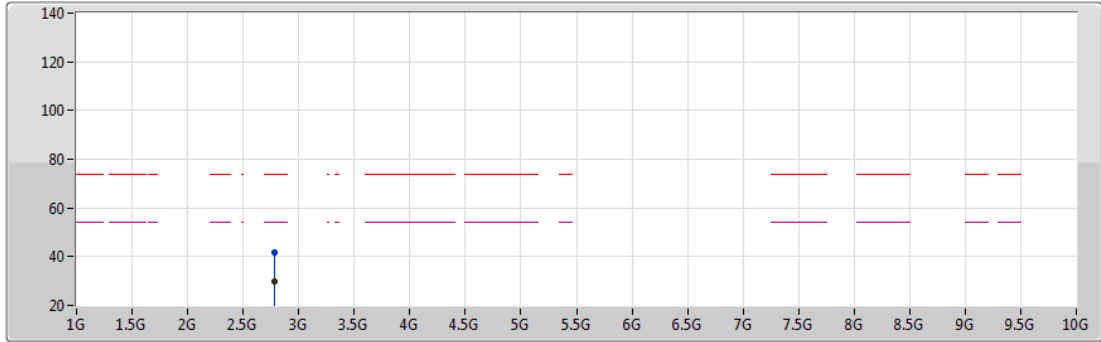
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78318G	41.36	74.00	-32.64	42.95	3	Vertical	27	1.46	-	28.57	4.18	34.34
AV	2.78337G	29.42	54.00	-24.58	31.01	3	Vertical	27	1.46	-	28.57	4.18	34.34





**GFSK\_1TX**  
**927.8MHz\_TX**

09/11/2020



EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78317G	41.81	74.00	-32.19	43.40	3	Horizontal	109	3.00	-	28.57	4.18	34.34
AV	2.78336G	30.06	54.00	-23.94	31.65	3	Horizontal	109	3.00	-	28.57	4.18	34.34



Summary

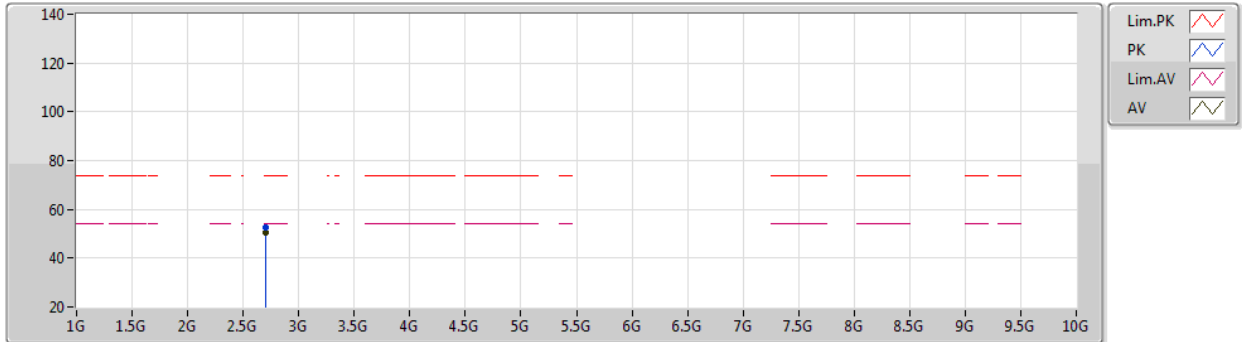
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_1TX	Pass	AV	2.70657G	53.28	54.00	-0.72	3	Horizontal	17	1.00	-



GFSK\_1TX

09/11/2020

902.2MHz\_TX



EUT Z\_1TX  
Setting 19  
04-F-J-7

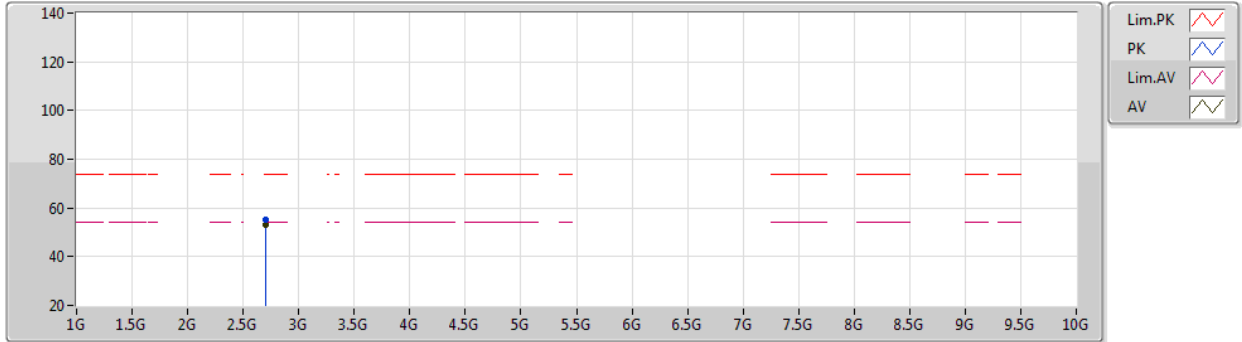
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.7066G	52.83	74.00	-21.17	54.45	3	Vertical	69	2.53	-	28.67	4.11	34.40
AV	2.70657G	50.47	54.00	-3.53	52.09	3	Vertical	69	2.53	-	28.67	4.11	34.40



GFSK\_1TX

09/11/2020

902.2MHz\_TX



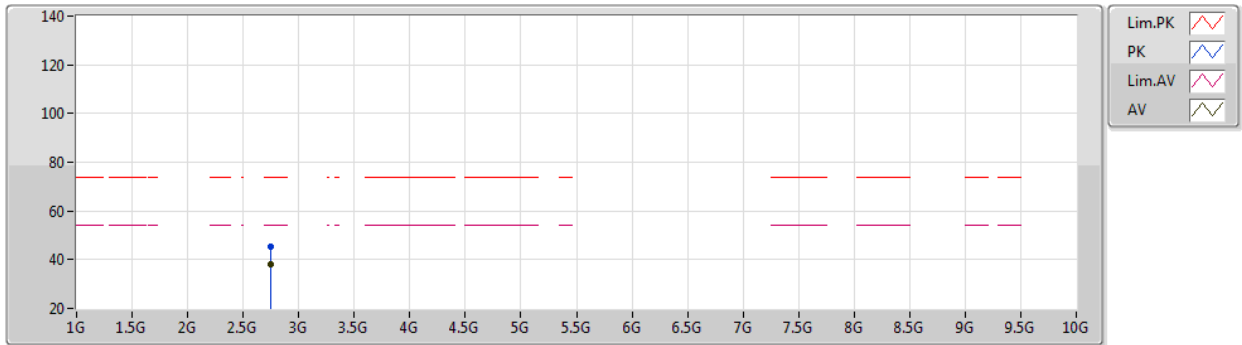
EUT Z\_1TX  
Setting 19  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70644G	55.15	74.00	-18.85	56.77	3	Horizontal	17	1.00	-	28.67	4.11	34.40
AV	2.70657G	53.28	54.00	-0.72	54.90	3	Horizontal	17	1.00	-	28.67	4.11	34.40

GFSK\_1TX

09/11/2020

915MHz\_TX



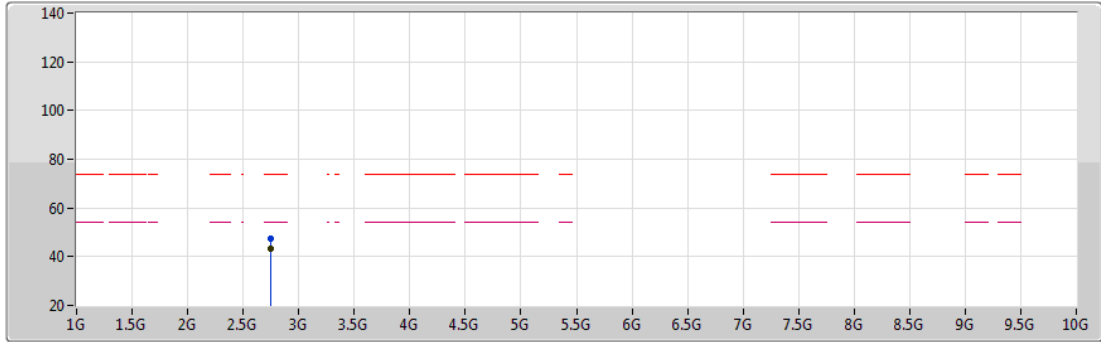
EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74507G	45.12	74.00	-28.88	46.82	3	Vertical	67	2.21	-	28.52	4.15	34.37
AV	2.745G	38.35	54.00	-15.65	40.05	3	Vertical	67	2.21	-	28.52	4.15	34.37



GFSK\_1TX  
915MHz\_TX

09/11/2020



EUT Z\_1TX  
Setting 20  
04-F-J-7

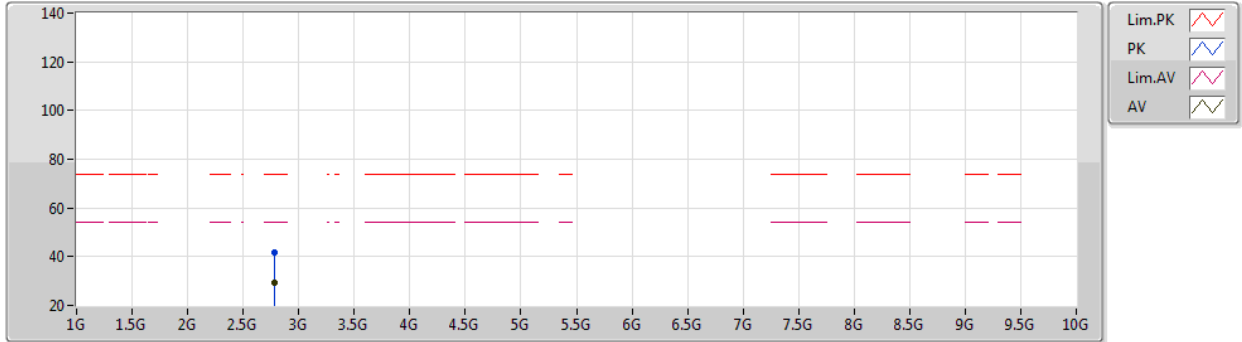
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.745G	47.52	74.00	-26.48	49.22	3	Horizontal	58	2.86	-	28.52	4.15	34.37
AV	2.745G	43.09	54.00	-10.91	44.79	3	Horizontal	58	2.86	-	28.52	4.15	34.37



GFSK\_1TX

09/11/2020

927.8MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

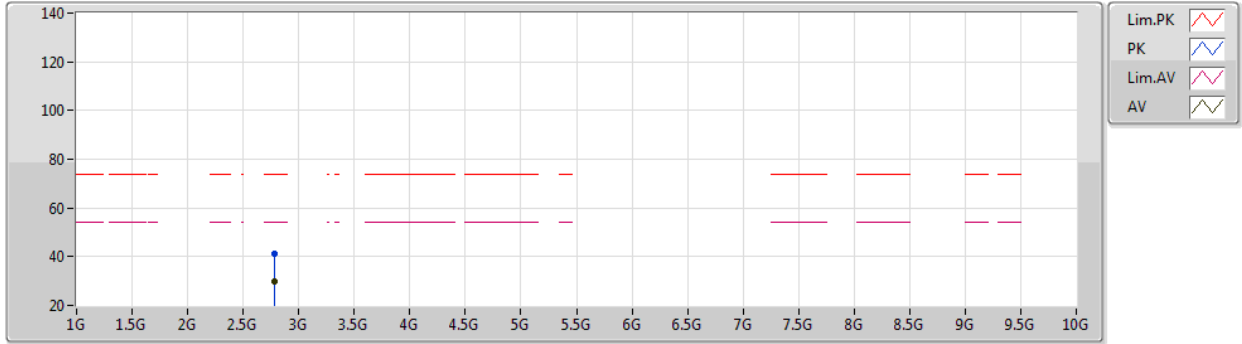
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78329G	41.49	74.00	-32.51	43.08	3	Vertical	28	1.12	-	28.57	4.18	34.34
AV	2.78337G	29.39	54.00	-24.61	30.98	3	Vertical	28	1.12	-	28.57	4.18	34.34



GFSK\_1TX

09/11/2020

927.8MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78334G	41.40	74.00	-32.60	42.99	3	Horizontal	116	3.00	-	28.57	4.18	34.34
AV	2.78338G	29.73	54.00	-24.27	31.32	3	Horizontal	116	3.00	-	28.57	4.18	34.34





Summary

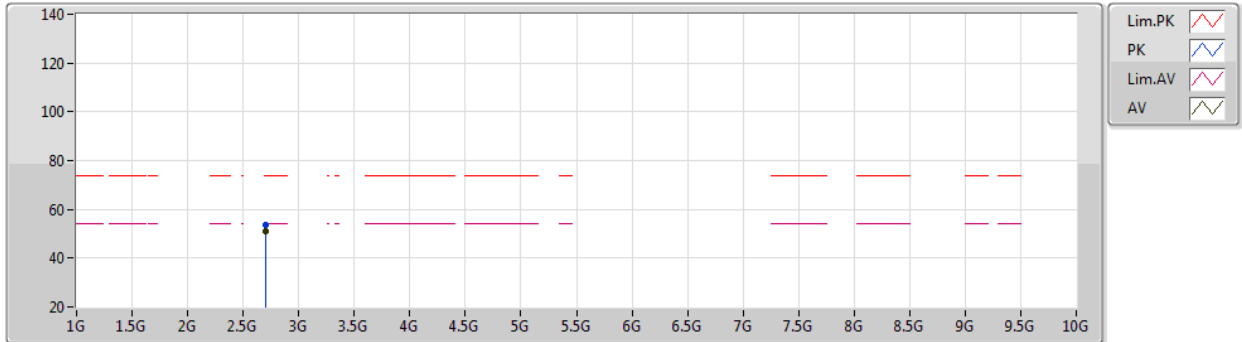
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_1TX	Pass	AV	2.70716G	53.89	54.00	-0.11	3	Horizontal	18	1.00	-



GFSK\_1TX

09/11/2020

902.4MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

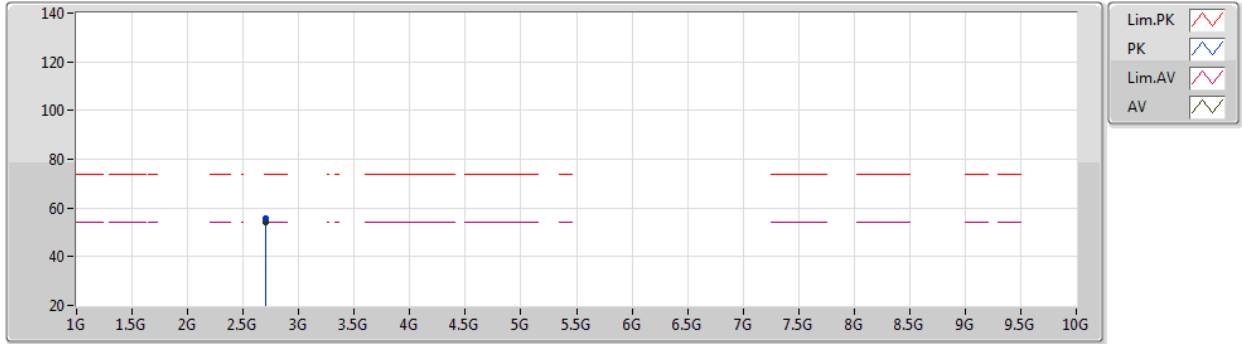
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70709G	53.50	74.00	-20.50	55.12	3	Vertical	68	2.53	-	28.67	4.11	34.40
AV	2.70717G	50.96	54.00	-3.04	52.57	3	Vertical	68	2.53	-	28.67	4.11	34.39



GFSK\_1TX

09/11/2020

902.4MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

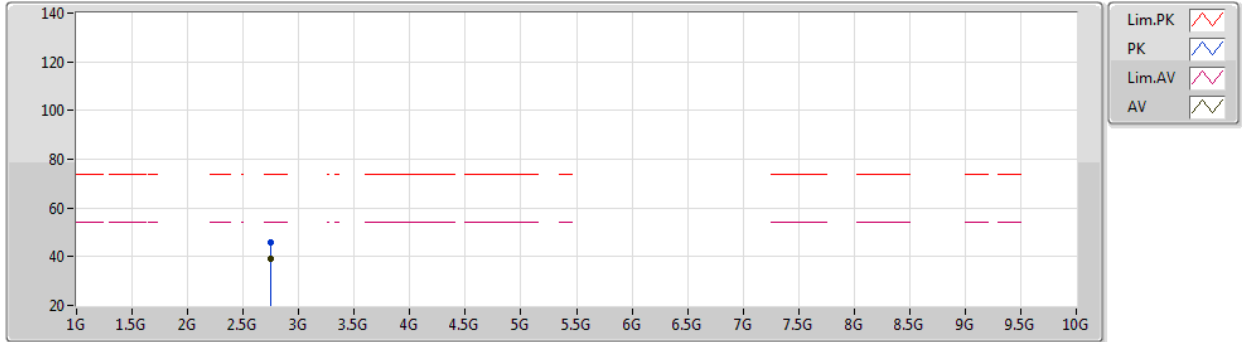
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70713G	55.75	74.00	-18.25	57.37	3	Horizontal	18	1.00	-	28.67	4.11	34.40
AV	2.70716G	53.89	54.00	-0.11	55.50	3	Horizontal	18	1.00	-	28.67	4.11	34.39



GFSK\_1TX

09/11/2020

914.8MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

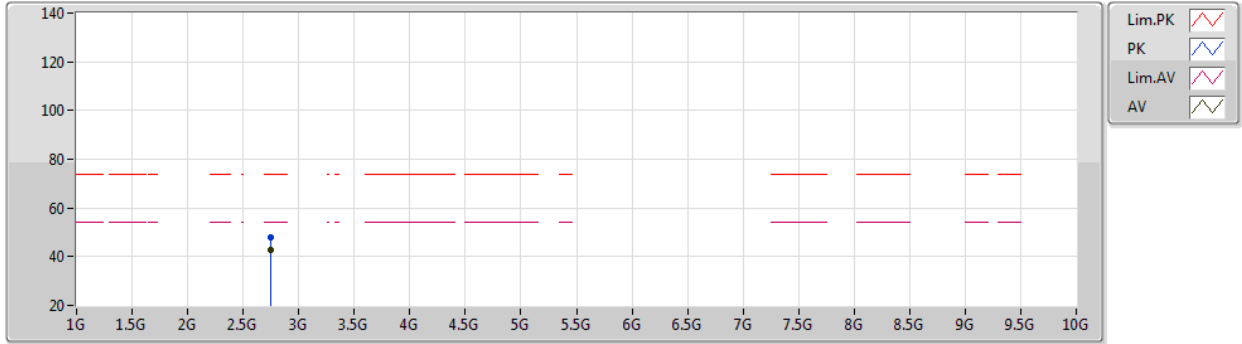
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.744466G	45.66	74.00	-28.34	47.37	3	Vertical	72	2.89	-	28.52	4.14	34.37
AV	2.74437G	39.07	54.00	-14.93	40.78	3	Vertical	72	2.89	-	28.52	4.14	34.37



GFSK\_1TX

09/11/2020

914.8MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

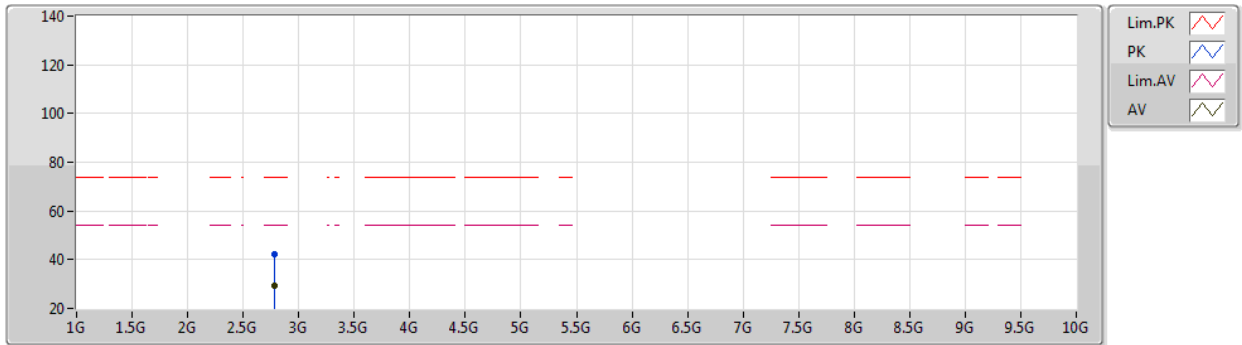
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74447G	47.68	74.00	-26.32	49.39	3	Horizontal	58	2.86	-	28.52	4.14	34.37
AV	2.74438G	42.95	54.00	-11.05	44.66	3	Horizontal	58	2.86	-	28.52	4.14	34.37



GFSK\_1TX

09/11/2020

927.6MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

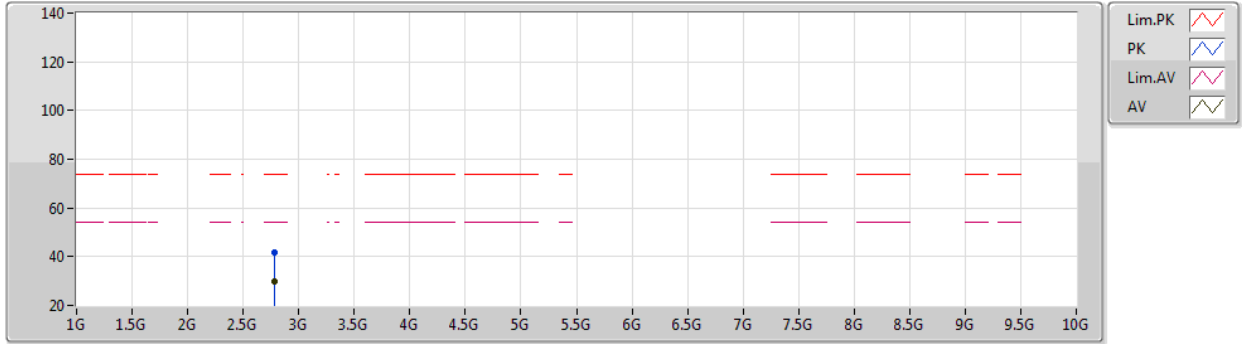
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78268G	42.07	74.00	-31.93	43.66	3	Vertical	22	1.14	-	28.57	4.18	34.34
AV	2.78277G	29.34	54.00	-24.66	30.93	3	Vertical	22	1.14	-	28.57	4.18	34.34



GFSK\_1TX

09/11/2020

927.6MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78243G	41.73	74.00	-32.27	43.33	3	Horizontal	115	2.99	-	28.56	4.18	34.34
AV	2.78276G	29.72	54.00	-24.28	31.31	3	Horizontal	115	2.99	-	28.57	4.18	34.34



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-
GFSK_1TX	Pass	AV	2.70776G	52.66	54.00	-1.34	3	Horizontal	18	1.03	-

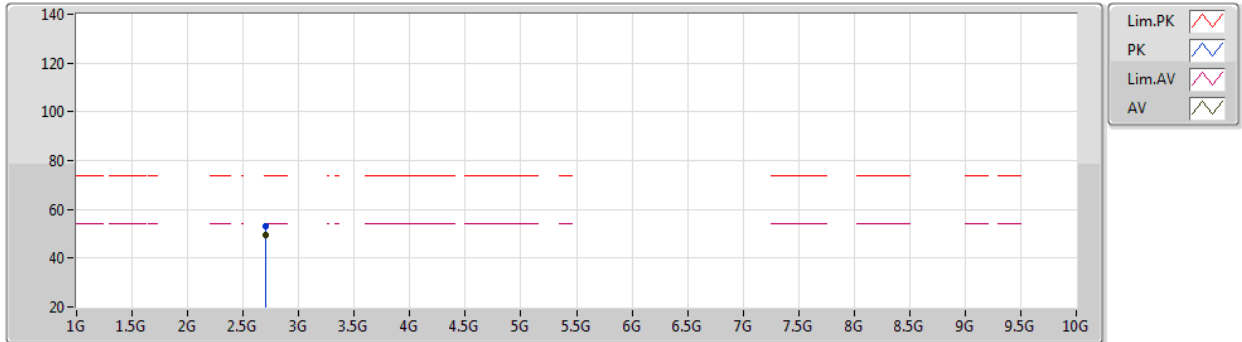




GFSK\_1TX

09/11/2020

902.6MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

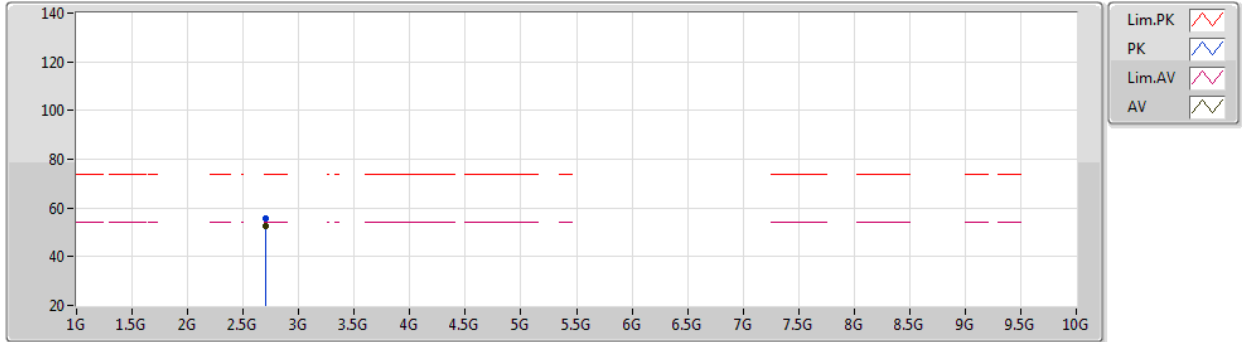
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70756G	52.96	74.00	-21.04	54.57	3	Vertical	67	2.46	-	28.67	4.11	34.39
AV	2.70776G	49.39	54.00	-4.61	51.00	3	Vertical	67	2.46	-	28.67	4.11	34.39



GFSK\_1TX

09/11/2020

902.6MHz\_TX



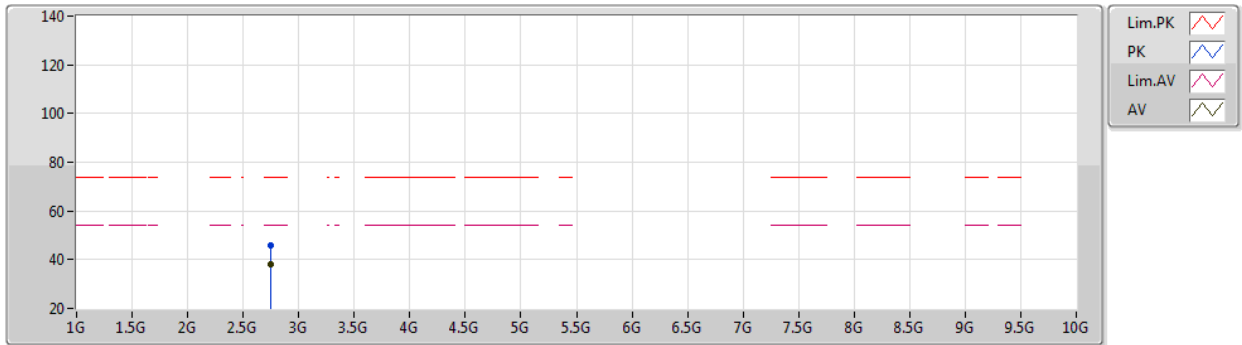
EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.70762G	55.76	74.00	-18.24	57.37	3	Horizontal	18	1.03	-	28.67	4.11	34.39
AV	2.70776G	52.66	54.00	-1.34	54.27	3	Horizontal	18	1.03	-	28.67	4.11	34.39

GFSK\_1TX

09/11/2020

914.6MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

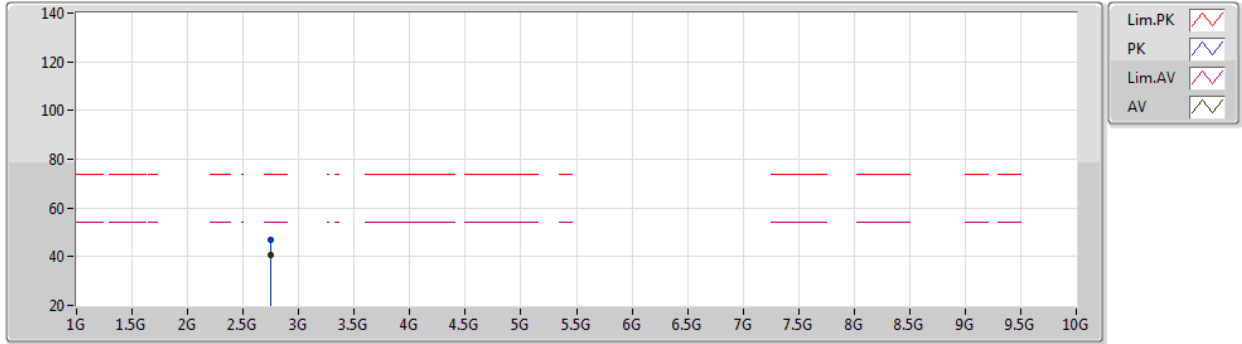
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74362G	45.91	74.00	-28.09	47.61	3	Vertical	72	2.87	-	28.53	4.14	34.37
AV	2.74378G	38.13	54.00	-15.87	39.84	3	Vertical	72	2.87	-	28.52	4.14	34.37



GFSK\_1TX

09/11/2020

914.6MHz\_TX



EUT Z\_1TX  
 Setting 20  
 04-F-J-7

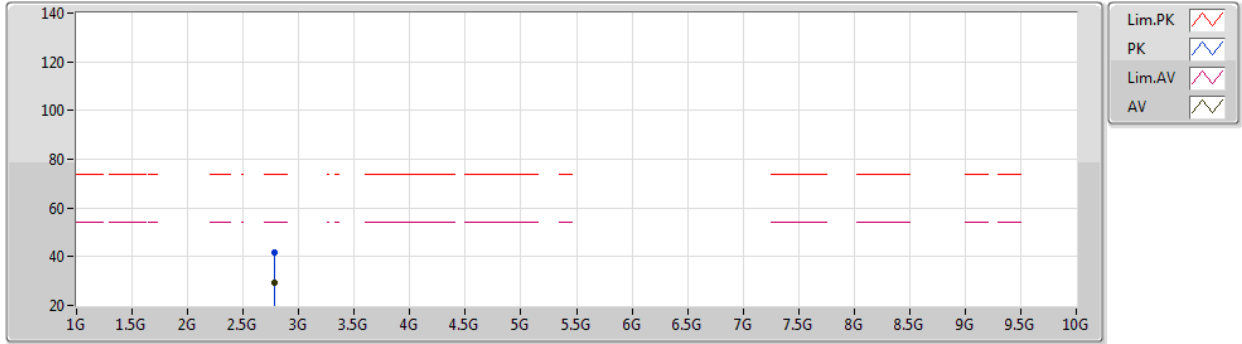
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.74361G	46.79	74.00	-27.21	48.49	3	Horizontal	22	1.07	-	28.53	4.14	34.37
AV	2.74374G	40.78	54.00	-13.22	42.48	3	Horizontal	22	1.07	-	28.53	4.14	34.37



GFSK\_1TX

09/11/2020

927.2MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

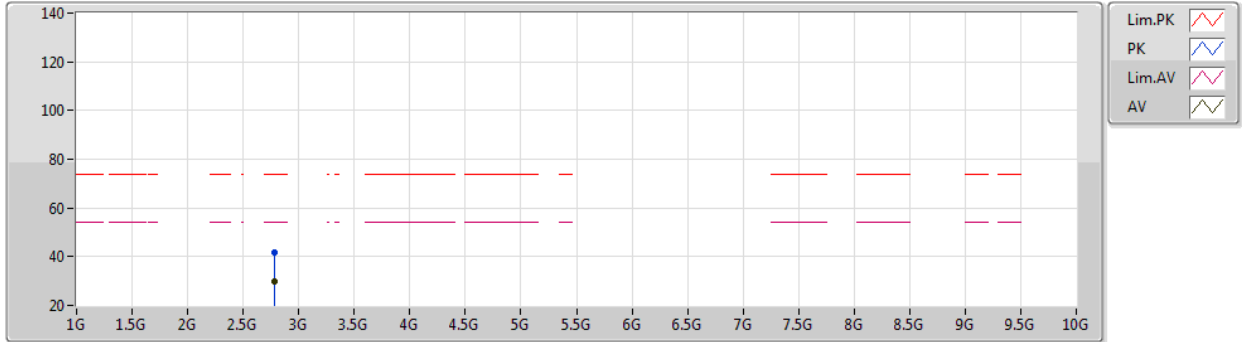
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78147G	41.88	74.00	-32.12	43.48	3	Vertical	28	2.98	-	28.56	4.18	34.34
AV	2.7815G	29.07	54.00	-24.93	30.67	3	Vertical	28	2.98	-	28.56	4.18	34.34



GFSK\_1TX

09/11/2020

927.2MHz\_TX



EUT Z\_1TX  
Setting 20  
04-F-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.78129G	41.89	74.00	-32.11	43.49	3	Horizontal	109	3.00	-	28.56	4.18	34.34
AV	2.78157G	29.57	54.00	-24.43	31.17	3	Horizontal	109	3.00	-	28.56	4.18	34.34