



FCC RADIO TEST REPORT

FCC ID : 2AEUPBHAFL011
Equipment : Floodlight Cam
Brand Name : RING
Model Name : 5L4C4T
Applicant : Ring LLC
1523 26th St, Santa Monica, CA 90404, USA
Manufacturer : Chicony Electronics (Dong Guan) Co.,Ltd.
San Zhong Guan Li Qu, Qingxi Town,
Dongguan City Guangdong 523651 China
Standard : 47 CFR FCC Part 15.247

The product was received on Apr. 03, 2019, and testing was started from Apr. 16, 2019 and completed on Jun. 17, 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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Appendix A. Test Results of AC Power-line Conducted Emissions

Appendix B. Test Results of DTS Bandwidt_DTS



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Appendix K. Test Results of Emissions in Non-restricted Frequency Bands_FHSS

Appendix L. Test Photos

Photographs of EUT v01



History of this test report



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	-
DTS Test Method Performed				
4.1	15.247(a)	DTS Bandwidth	PASS	-
4.2	15.247(b)	Maximum Conducted Output Power	PASS	-
4.3	15.247(e)	Power Spectral Density	PASS	-
4.4	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
4.5	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-
FHSS Test Method Performed				
5.1	15.247(a)	20dB Bandwidth	PASS	-
5.1	15.247(a)	Carrier Frequency Separation	PASS	-
5.2	15.247(b)	Maximum Conducted Output Power	PASS	-
5.3	15.247(a)	Number of Hopping Frequencies and Hopping Band edge	PASS	-
5.4	15.247(a)	Time of Occupancy (Dwell Time)	PASS	-
5.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
5.6	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:

None

Reviewed by: Sam Tsai

Report Producer: Ann Hou



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range	Lora Mode	Ch. Frequency (MHz)	Channel Number
902 MHz – 928 MHz	LoRa_DTS-500kHz	902.5-927.3	1-32 [32]
		903-914.2	1-8 [8]
		923.3-927.5	1-8 [8]
	LoRa_FHSS-250kHz	902.3-927.5	1-64 [64]
		902.2-927.8	1-129 [129]
	LoRa_FHSS-125kHz	902.3-914.9	1-64 [64]
		902.2-927.8	1-129 [129]
	FSK-5kbps	902.2-927.8	1-129 [129]
	FSK-50kbps	902.4-927.6	1-64 [64]

Band	Mode	BWch (MHz)	Nant
902-928MHz	LoRa_DTS	0.5	1TX
902-928MHz	LoRa_FHSS-125k	0.125	1TX
902-928MHz	LoRa_FHSS-250k	0.25	1TX
902-928MHz	FSK-5k	0.1	1TX
902-928MHz	FSK-50k	0.1	1TX
902-928MHz	FSK-150k	0.15	1TX

Note:

- LoRa-500kHz uses as a DTS
- LoRa-500kHz uses Chirp Spread Spectrum (CSS) modulation
- BWch is the nominal channel bandwidth.
- The EUT has three transmission modes for data transmissions as described below:
 1. LoRa-500kHz(DTS)
 2. LoRa-125k/250kHz(FHSS)
 3. FSK-5k/50k/150k(FHSS)
- Testing was performed in accordance with the applicable FCC requirement for each of three transmission modes.



1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	WGT	Ant 1	PIFA	I-PEX
2	WGT	Ant 2	PIFA	I-PEX
3	Aristotle	Lora Ant	PIFA	I-PEX

Ant.	Port	Gain (dBi)		
		2.4G	BT	LoRa
1	1	0.89	-0.19	-
2	2	0.89	-	-
3	3	-	-	-1.19

Note 1: The EUT has three antennas.

For 2.4GHz function:

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

Support diversity function and tested on each single chain.

For IEEE 802.11 n (HT20) mode (2TX/2RX)

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

For BT function:

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

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

For LoRa function:

For LoRa mode (1TX/1RX)

Ant. 3 (port 3) could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
LoRa_DTS	0.991	0.04	n/a (DC>=0.98)	n/a (DC>=0.98)
LoRa_FHSS-125k	0.998	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
LoRa_FHSS-250k	0.996	0.02	n/a (DC>=0.98)	n/a (DC>=0.98)
FSK-150k	0.792	1.01	2.5m	1k
FSK-50k	0.985	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
FSK-5k	0.999	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)

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

1.1.4 EUT Operational Condition

EUT Power Type	From AC mains		
Function	<input type="checkbox"/>	Point-to-multipoint	<input checked="" type="checkbox"/> Point-to-point

Note: The above information was declared by manufacturer.



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				
<input checked="" 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		
Test site Designation No. TW1190 with FCC.				
<input type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085		
Test site Designation No. TW0006 with FCC.				

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO01-HY	Jeff	24.2~24.9°C / 53.2~55.1%	01/May/2019
RF Conducted	TH06-HY	Clara	22.6~27°C / 61~63%	09/May/2019~17/Jun/2019
Radiated	03CH09-HY	Lego	22.3~24.2°C / 58~65%	16/Apr/2019~15/May/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)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 ⁻⁸	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
TnomVnom	Tnom	20°C
	Vnom	120V

2.2 Test Channel Mode

Test Software	DoS
---------------	-----

Mode	Power Setting
LoRa_DTS_Nss1_1TX	-
902.5MHz	20
903MHz	20
907.8MHz	20
914.2MHz	20
914.5MHz	20
923.3MHz	19
925.1MHz	20
927.3MHz	19
927.5MHz	18
LoRa_FHSS-125k_Nss1_1TX	-
902.2MHz	20
902.3MHz	20
908.5MHz	19
915MHz	19
914.9MHz	19
927.8MHz	19
LoRa_FHSS-250k_Nss1_1TX	-
902.3MHz	20
914.3MHz	19
927.5MHz	19

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FSK-5k_Nss1_1TX	-
902.2MHz	19
915MHz	19
927.8MHz	19
FSK-50k_Nss1_1TX	-
902.2MHz	20
915MHz	19
927.8MHz	19
FSK-150k_Nss1_1TX	-
902.4MHz	19
914.8MHz	19
927.6MHz	20



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	AC mains mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density 20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies and Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

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

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	LoRa + WLAN 2.4GHz
2	LoRa + Bluetooth

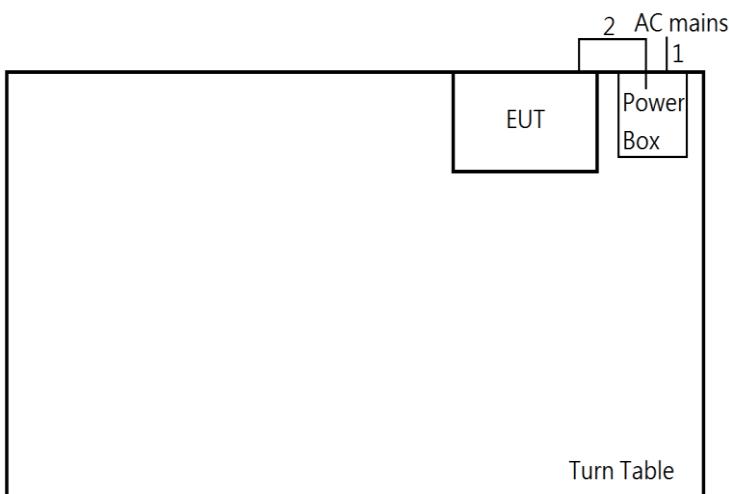
Refer to Sporton Test Report No.: FA940231 for Co-location RF Exposure Evaluation.

2.4 Support Equipment

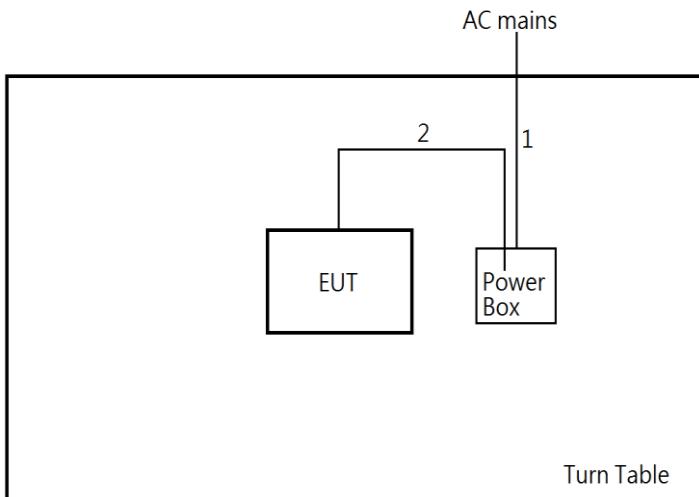
Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for Notebook	DELL	HA65NM130	DoC



2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test

Item	Connection	Shielded	Length
1	AC Power line	No	1.5 m
2	AC Power line	No	1.0 m

Test Setup Diagram - Radiated Test

Item	Connection	Shielded	Length
1	AC Power line	No	2.0 m
2	AC Power line	No	1.0 m



3 Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Measuring Instruments

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

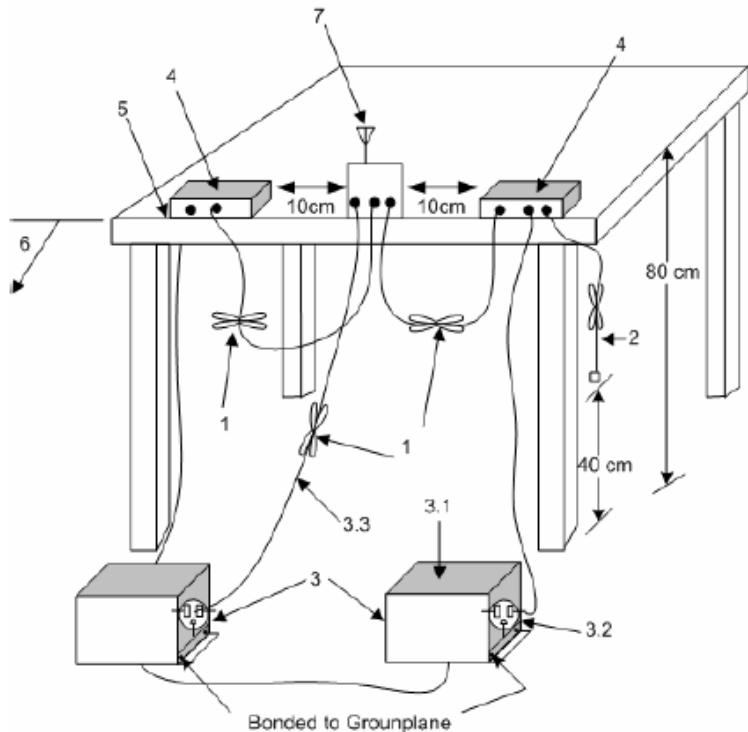
3.1.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.



3.1.4 Test Setup

AC Power-line Conducted Emissions



- 1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non-EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A



4 Transmitter Test Result – DTS

4.1 DTS Bandwidth

4.1.1 6dB Bandwidth Limit

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

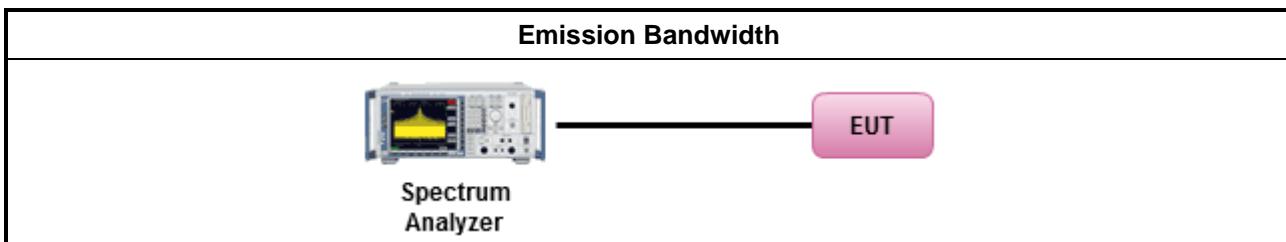
4.1.2 Measuring Instruments

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

4.1.3 Test Procedures

Test Method
▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

4.1.4 Test Setup



4.1.5 Test Result of Emission Bandwidth

Refer as Appendix B



4.2 Maximum Conducted Output Power

4.2.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none">▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none">▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none">▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none">▪ Smart antenna system (SAS):<ul style="list-style-type: none">- 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 $P_{Out} = 30 - (G_{TX} - 6)/3 + 8dB$ 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.

4.2.2 Measuring Instruments

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



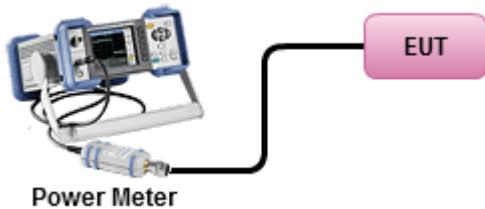
4.2.3 Test Procedures

Test Method
▪ Maximum Peak Conducted Output Power
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW \geq EBW method).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
▪ Maximum Conducted Output Power
[duty cycle \geq 98% or external video / power trigger]
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
▪ For conducted measurement.
<ul style="list-style-type: none">▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC 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: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$



4.2.4 Test Setup

Maximum Conducted Output Power (Power Meter)



4.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



4.3 Power Spectral Density

4.3.1 Power Spectral Density Limit

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

4.3.2 Measuring Instruments

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

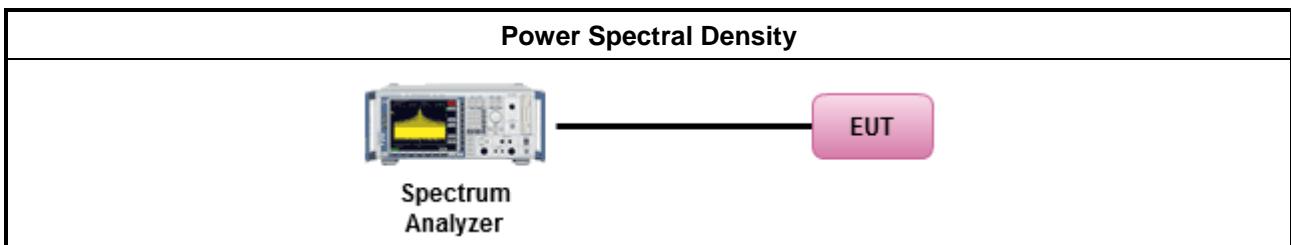
4.3.3 Test Procedures

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).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.2 Method PKPSD. [duty cycle ≥ 98% or external video / power trigger]
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.3 Method AVGPSD-1.
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.5 Method AVGPSD-2.
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.7 Method AVGPSD-3.
duty cycle < 98% and average over on/off periods with duty factor
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.4 Method AVGPSD-1A. (alternative).
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.6 Method AVGPSD-2A. (alternative)
<input type="checkbox"/> Refer as KDB 558074, clause 8.4 & C63.10 clause 11.10.8 Method AVGPSD-3A. (alternative)



<ul style="list-style-type: none">▪ For conducted measurement.	
	<ul style="list-style-type: none">▪ If The EUT supports multiple transmit chains using options given below:
	<ul style="list-style-type: none"><input checked="" type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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.
	<ul style="list-style-type: none"><input type="checkbox"/> Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
	<ul style="list-style-type: none"><input type="checkbox"/> Option 3: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$. Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.

4.3.4 Test Setup



4.3.5 Test Result of Power Spectral Density

Refer as Appendix D



4.4 Emissions in Non-restricted Frequency Bands

4.4.1 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 PSD 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 PSD level.

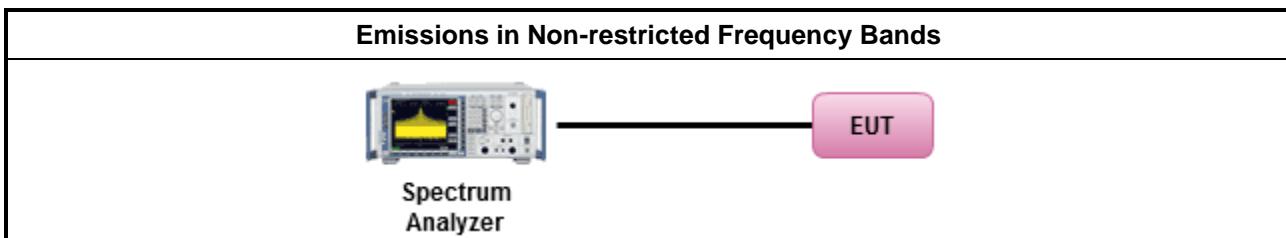
4.4.2 Measuring Instruments

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

4.4.3 Test Procedures

Test Method
▪ Refer as KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

4.4.4 Test Setup



4.4.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E



4.5 Emissions in Restricted Frequency Bands

4.5.1 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.

4.5.2 Measuring Instruments

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

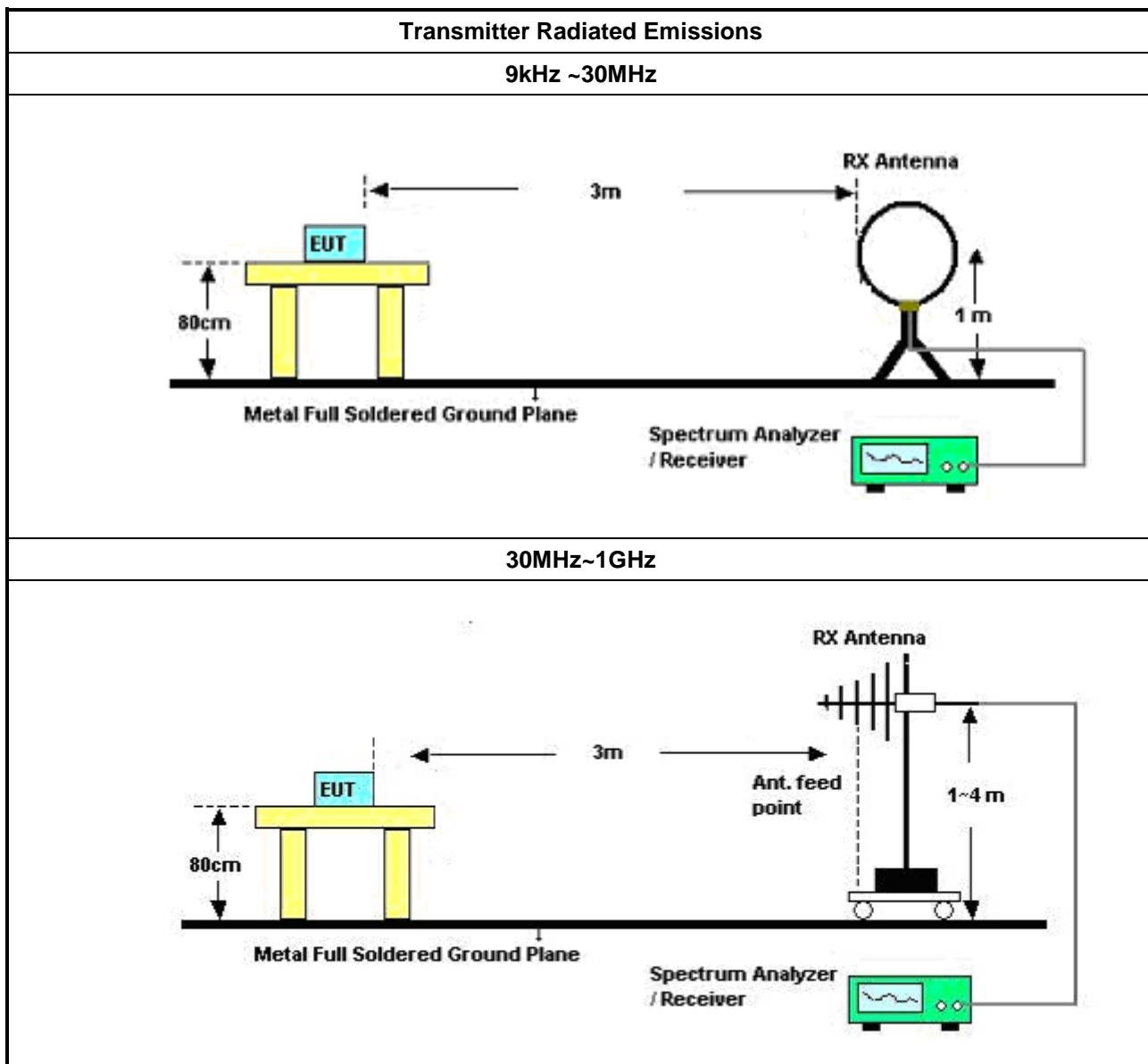


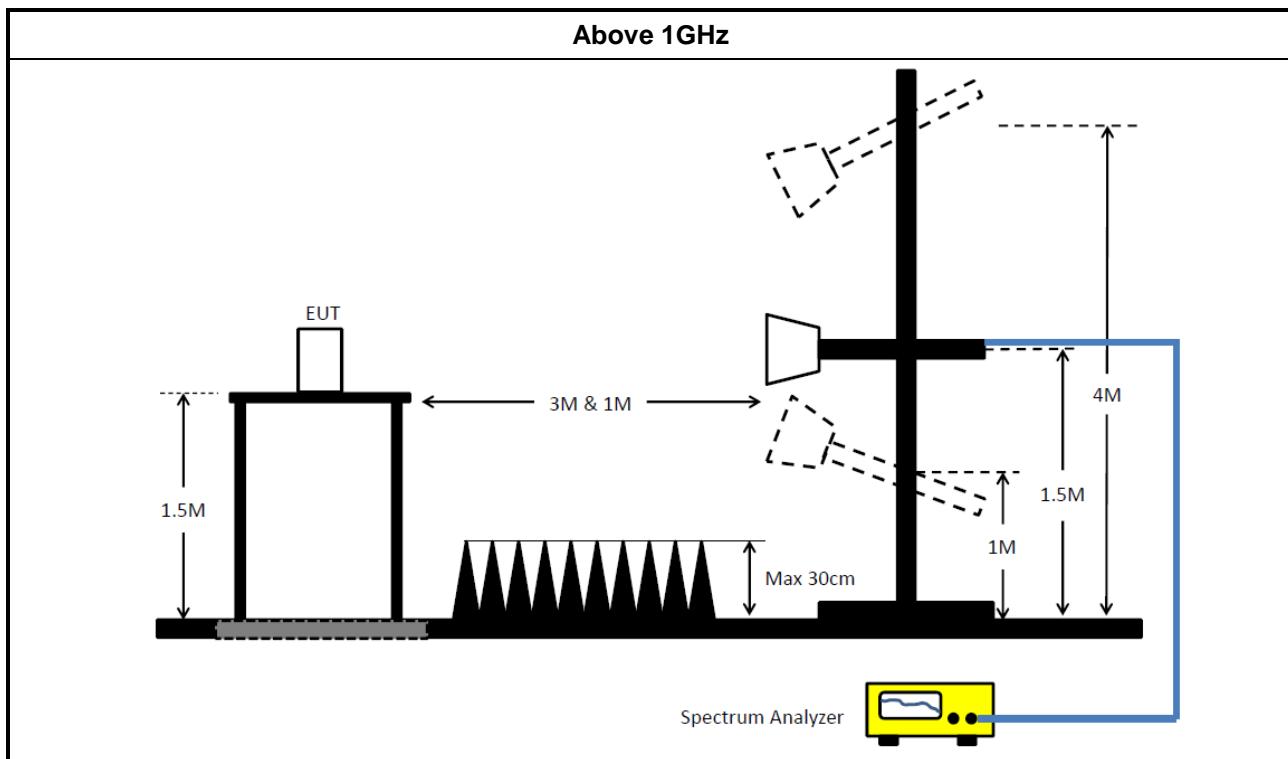
4.5.3 Test Procedures

Test Method	
<ul style="list-style-type: none">▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].	
<ul style="list-style-type: none">▪ 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.	
<ul style="list-style-type: none">▪ For the transmitter unwanted emissions shall be measured using following options below:	
<ul style="list-style-type: none">▪ Refer as KDB 558074, clause 8.6 for unwanted emissions into restricted bands.	<ul style="list-style-type: none"><input type="checkbox"/> Refer as KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle $\geq 98\%$).<input type="checkbox"/> Refer as KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW $\geq 1/T$).<input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.<input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
	<ul style="list-style-type: none">▪ For the transmitter band-edge emissions shall be measured using following options below:
	<ul style="list-style-type: none">▪ Refer as KDB 558074 clause 8.7 & C63.10 clause 11.13.1, 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.
	<ul style="list-style-type: none">▪ Refer as KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none">▪ Refer as KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	<ul style="list-style-type: none">▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add $10 \log(N)$ dB
	<ul style="list-style-type: none">▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.



4.5.4 Test Setup





4.5.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

4.5.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix F



5 Transmitter Test Result – FHSS

5.1 20dB Bandwidth and Carrier Frequency Separation

5.1.1 20dB Bandwidth and Carrier Frequency Separation Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
▪ 902-928 MHz Band:	<ul style="list-style-type: none">▪ $N \geq 50$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth ≤ 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:	<ul style="list-style-type: none">▪ $N \geq 75$ 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:	<ul style="list-style-type: none">▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth ≤ 1 MHz.

N: Number of Hopping Frequencies; ChS: Hopping Channel Separation

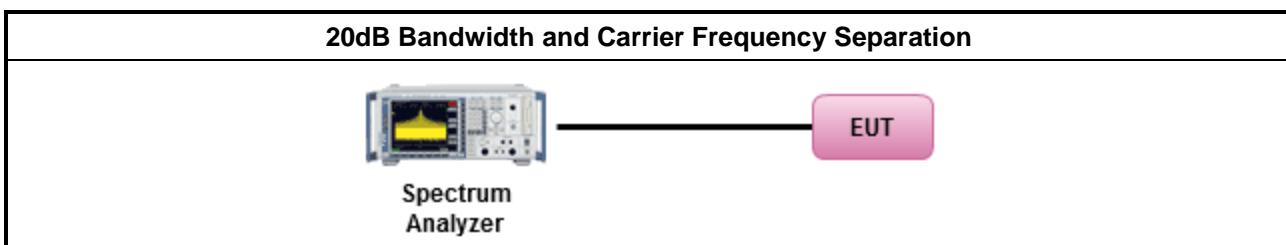
5.1.2 Measuring Instruments

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

5.1.3 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.

5.1.4 Test Setup



5.1.5 Test Result of 20dB Bandwidth

Refer as Appendix G

5.1.6 Test Result of Carrier Frequency Separation

Refer as Appendix G



5.2 Maximum Conducted Output Power

5.2.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none">▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none">▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none">▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none">▪ Smart antenna system (SAS):<ul style="list-style-type: none">- 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 $P_{Out} = 30 - (G_{TX} - 6)/3 + 8dB$ 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.

5.2.2 Measuring Instruments

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



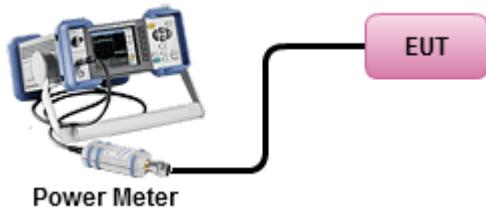
5.2.3 Test Procedures

Test Method
▪ Maximum Peak Conducted Output Power
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW \geq EBW method).
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
▪ Maximum Conducted Output Power
[duty cycle \geq 98% or external video / power trigger]
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
<input type="checkbox"/> Refer as KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
▪ For conducted measurement.
<ul style="list-style-type: none">▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC 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: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$



5.2.4 Test Setup

Maximum Conducted Output Power (Power Meter)



5.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix H



5.3 Number of Hopping Frequencies and Hopping Bandedge

5.3.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit	
▪ 902-928 MHz Band:	
	▪ ChS ≥ MAX (20 dB bandwidth, 25 kHz); 20 dB bandwidth≤ 250 kHz.
	▪ ChS ≥ MAX (20 dB bandwidth, 25 kHz); 20 dB bandwidth>250 kHz.
▪ 2400-2483.5 MHz Band:	
	▪ ChS ≥ MAX (20 dB bandwidth, 25 kHz).
	▪ ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz).
▪ 5725-5850 MHz Band:	
	▪ ChS ≥ MAX (20 dB bandwidth, 25 kHz); 20 dB bandwidth≤ 1 MHz.

ChS : Hopping Channel Separation

5.3.2 Hopping Bandedge Limit

Refer clause 5.5.1 and clause 5.6.1

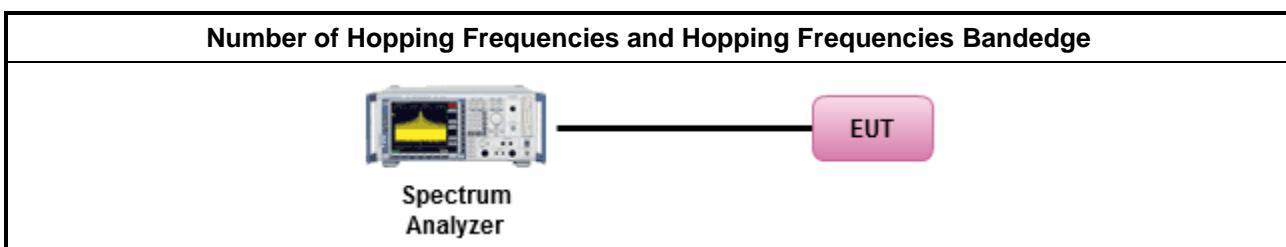
5.3.3 Measuring Instruments

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

5.3.4 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.

5.3.5 Test Setup



5.3.6 Test Result of Number of Hopping Frequencies

Refer as Appendix I

5.3.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix I



5.4 Time of Occupancy (Dwell Time)

5.4.1 Time of Occupancy (Dwell Time) Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
▪ 902-928 MHz Band:	▪ 0.4s in N x 0.4 period
▪ 2400-2483.5 MHz Band:	▪ 0.4s in N x 0.4 period
▪ 5725-5850 MHz Band:	▪ 0.4s in N x 0.4 period
N: Number of Hopping Frequencies	

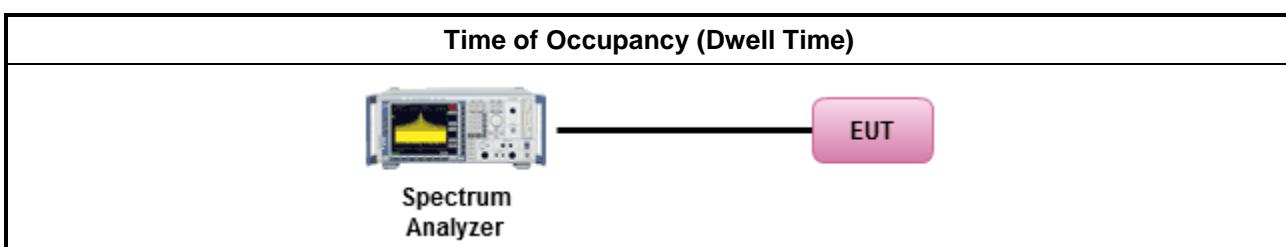
5.4.2 Measuring Instruments

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

5.4.3 Test Procedures

Test Method	
▪ Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.	
▪ Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.	
	▪ The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel.

5.4.4 Test Setup



5.4.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix J



5.5 Emissions in Non-restricted Frequency Bands

5.5.1 Emissions in Non-restricted Frequency Bands Limit

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

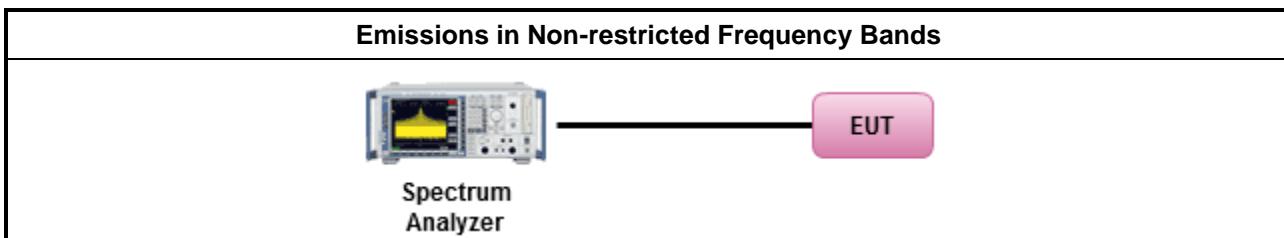
5.5.2 Measuring Instruments

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

5.5.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.

5.5.4 Test Setup



5.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix K



5.6 Emissions in Restricted Frequency Bands

5.6.1 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.

5.6.2 Measuring Instruments

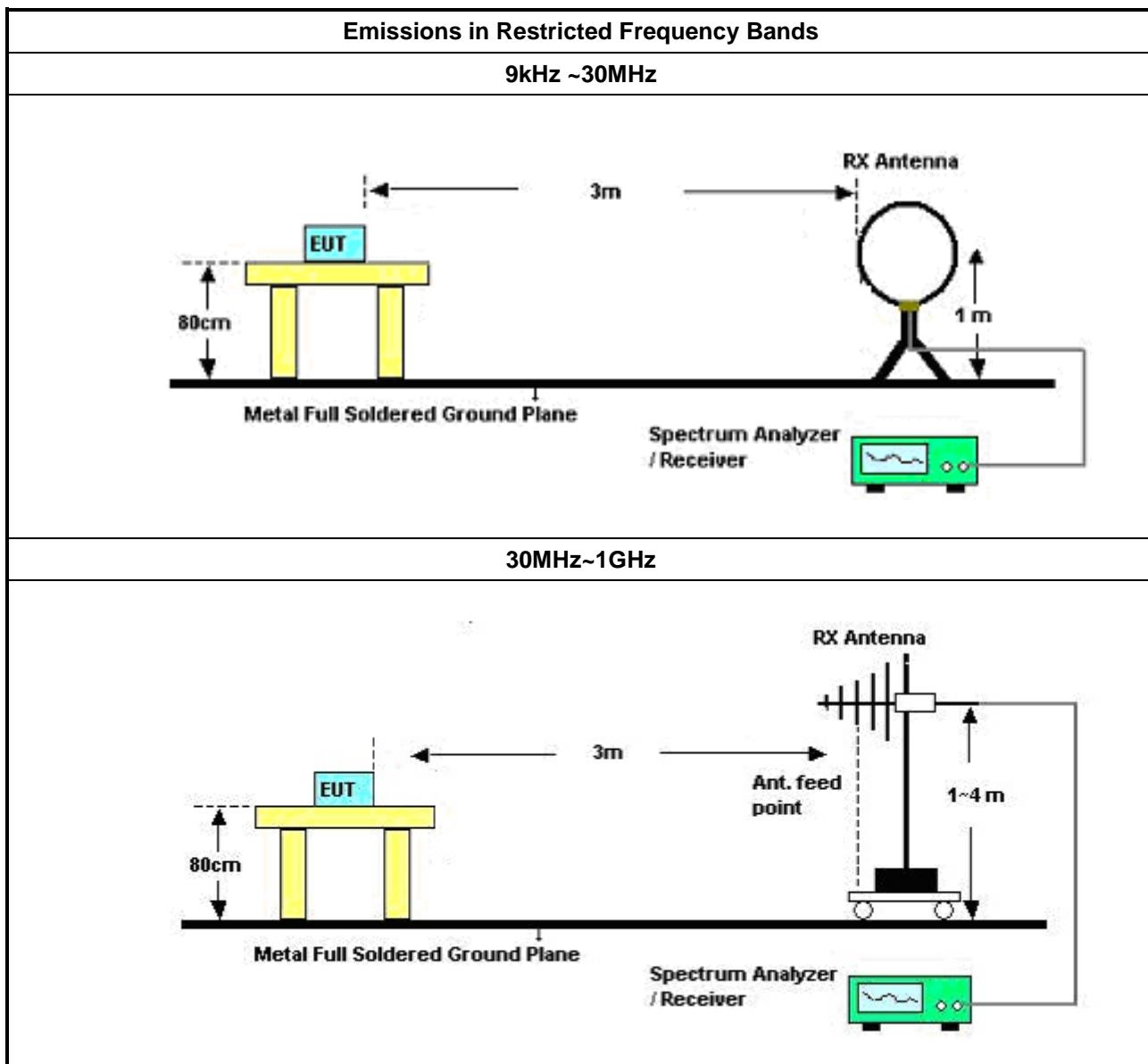
Refer a test equipment and calibration data table in this test report.

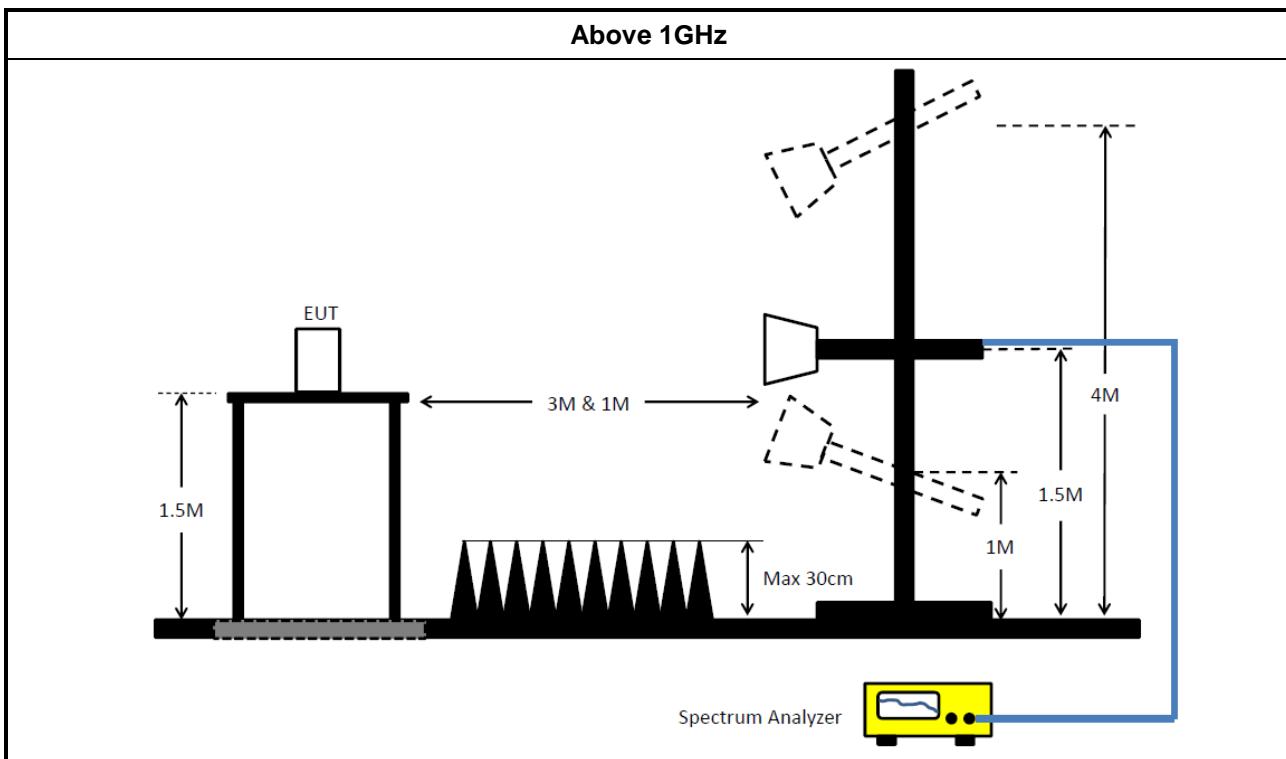
5.6.3 Test Procedures

Test Method	
▪ The average emission levels shall be measured in [hopping duty factor].	
▪ Refer as ANSI C63.10; clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
▪ For the transmitter unwanted emissions shall be measured using following options below:	
▪ Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.	
▪ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.	
▪ Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.	



5.6.4 Test Setup





5.6.5 Emissions in Restricted Frequency Bands (Below 30MHz)

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 10 harmonic or 40 GHz, whichever is appropriate.

5.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



6 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	ENV 216	101274	9kHz ~ 30MHz	12/Jun/2018	11/Jun/2019
RF Cable-CON	MTJ	RG142	CB001-CO	9kHz ~ 30MHz	17/Sep/2018	16/Sep/2019
AC POWER	APC	AFC-11003G	F308010045	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561F	9495	9kHz ~ 30MHz	11/Oct/2018	10/Oct/2019

NCR : Non-Calibration Require

Instrument for Conducted Test

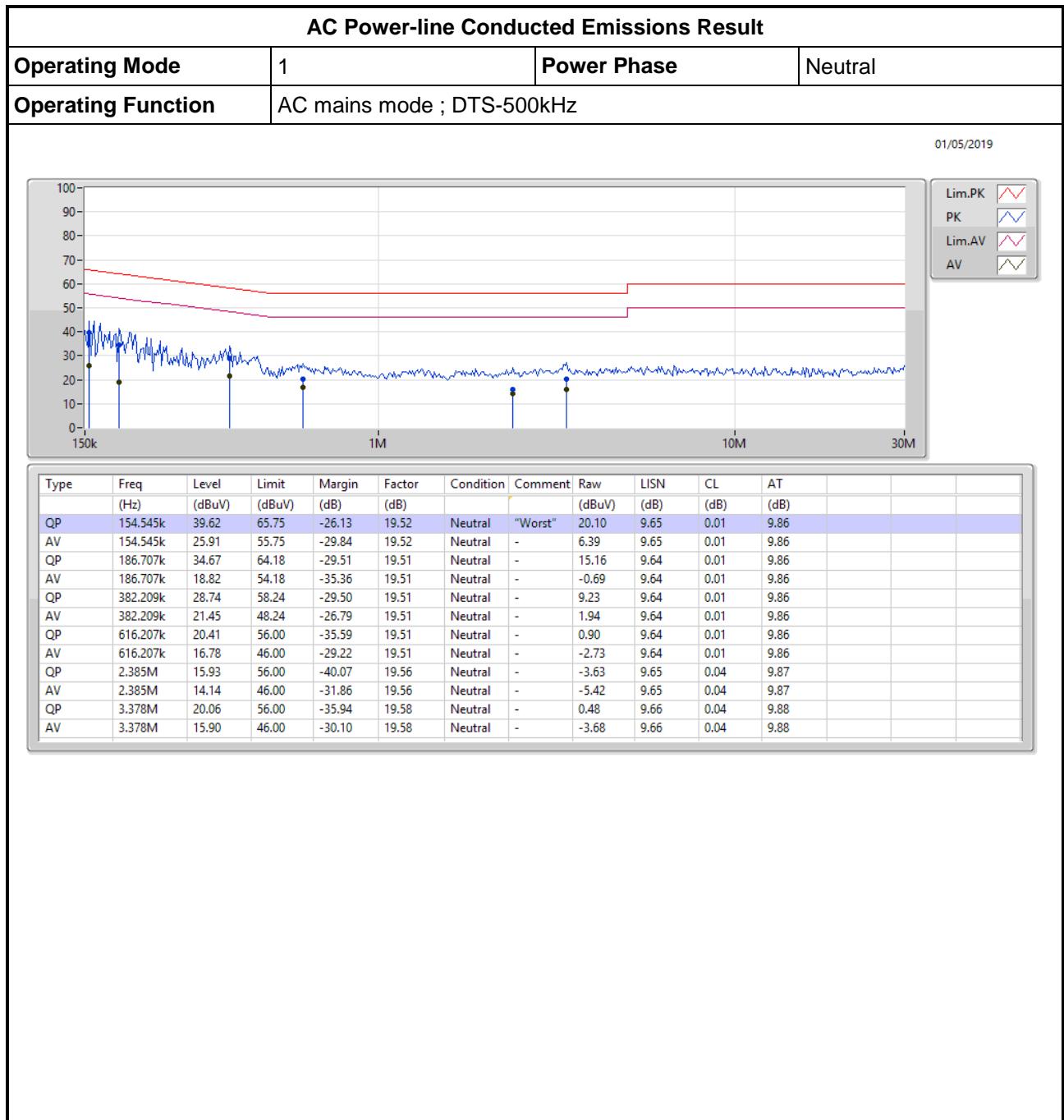
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	21/Mar/2019	20/Mar/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	21/Mar/2019	20/Mar/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	21/Mar/2019	20/Mar/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

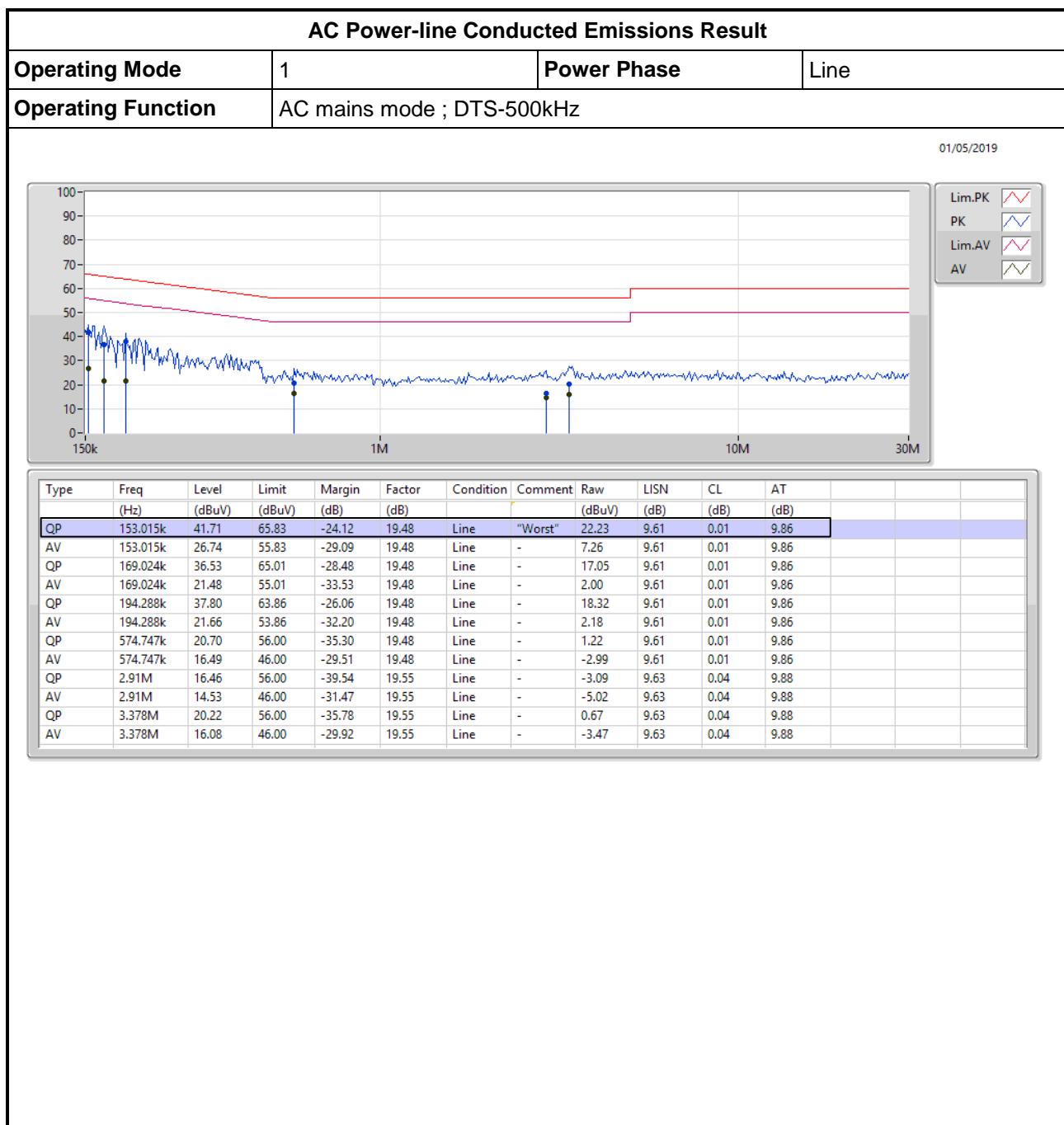


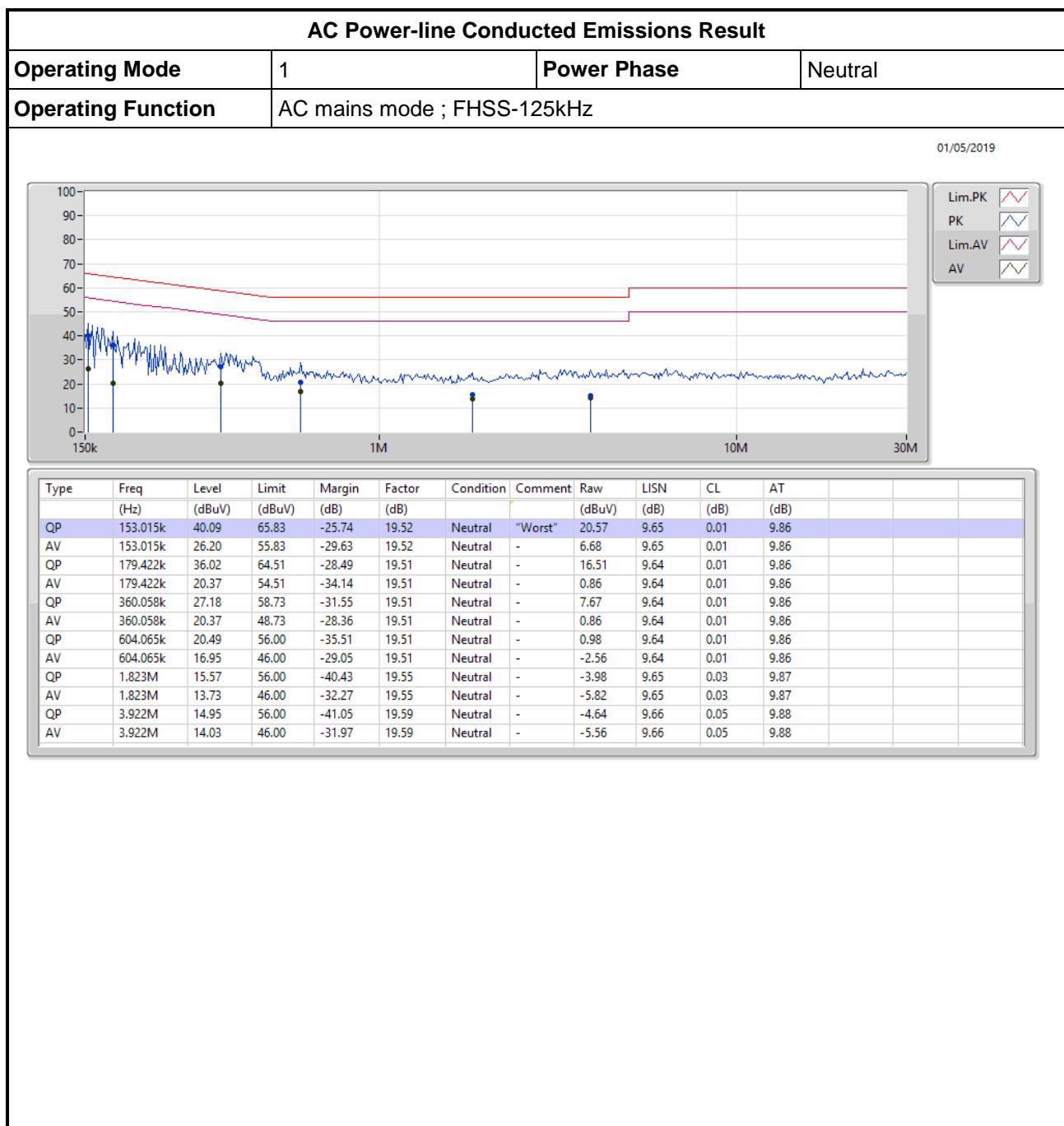
Instrument for Radiated Test

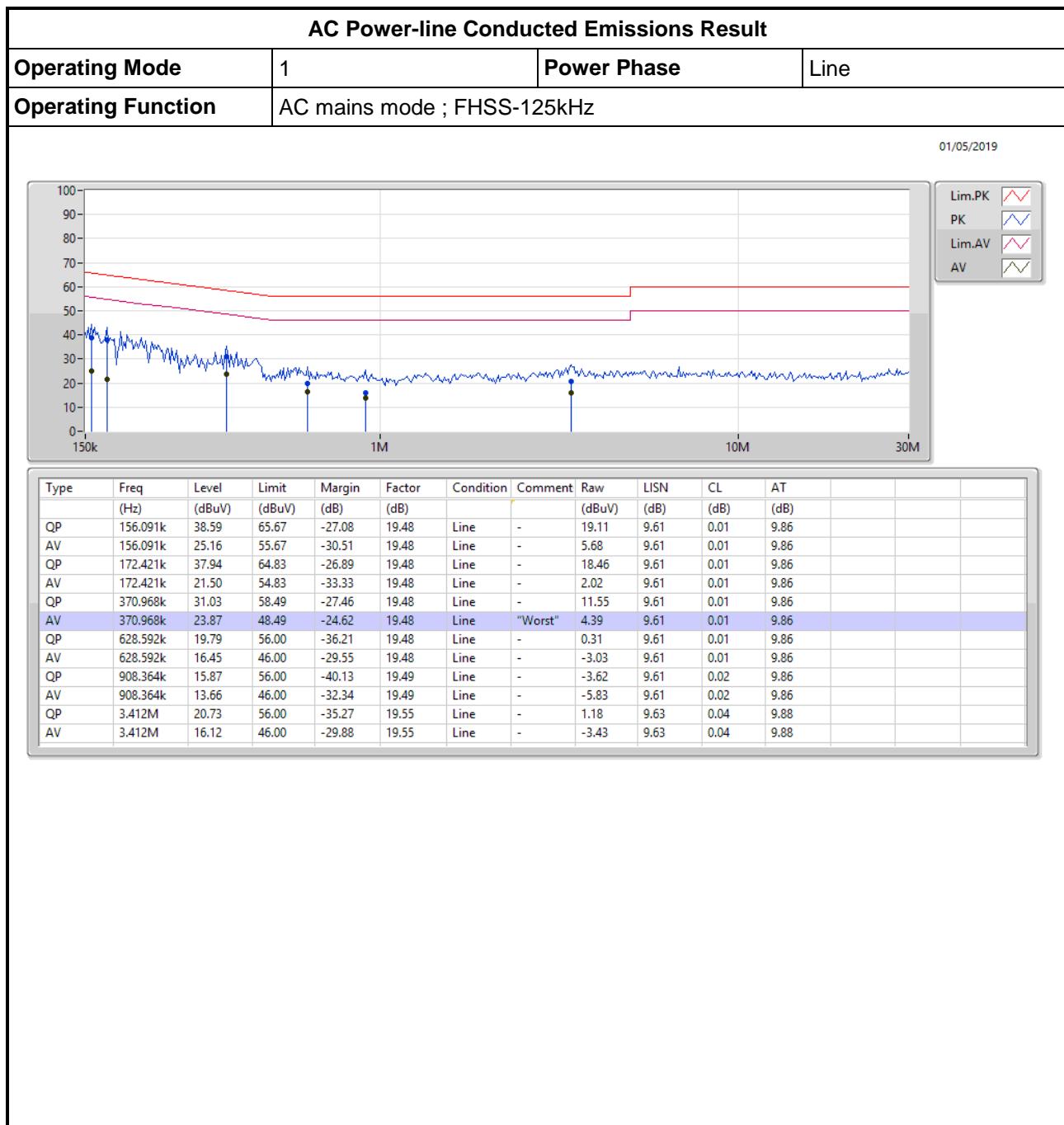
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	30/Mar/2019	29/Mar/2020
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	03/Jul/2018	02/Jul/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	31/Jul/2018	30/Jul/2019
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	02/Oct/2018	03/Oct/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	09/Mar/2019	08/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
LF-CABLE-20190218	Jye Bao	RG142	CB028	9kHz ~ 1GHz	18/Febr/2019	17/Febr/2020
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	03/Mar/2019	02/Mar/2020

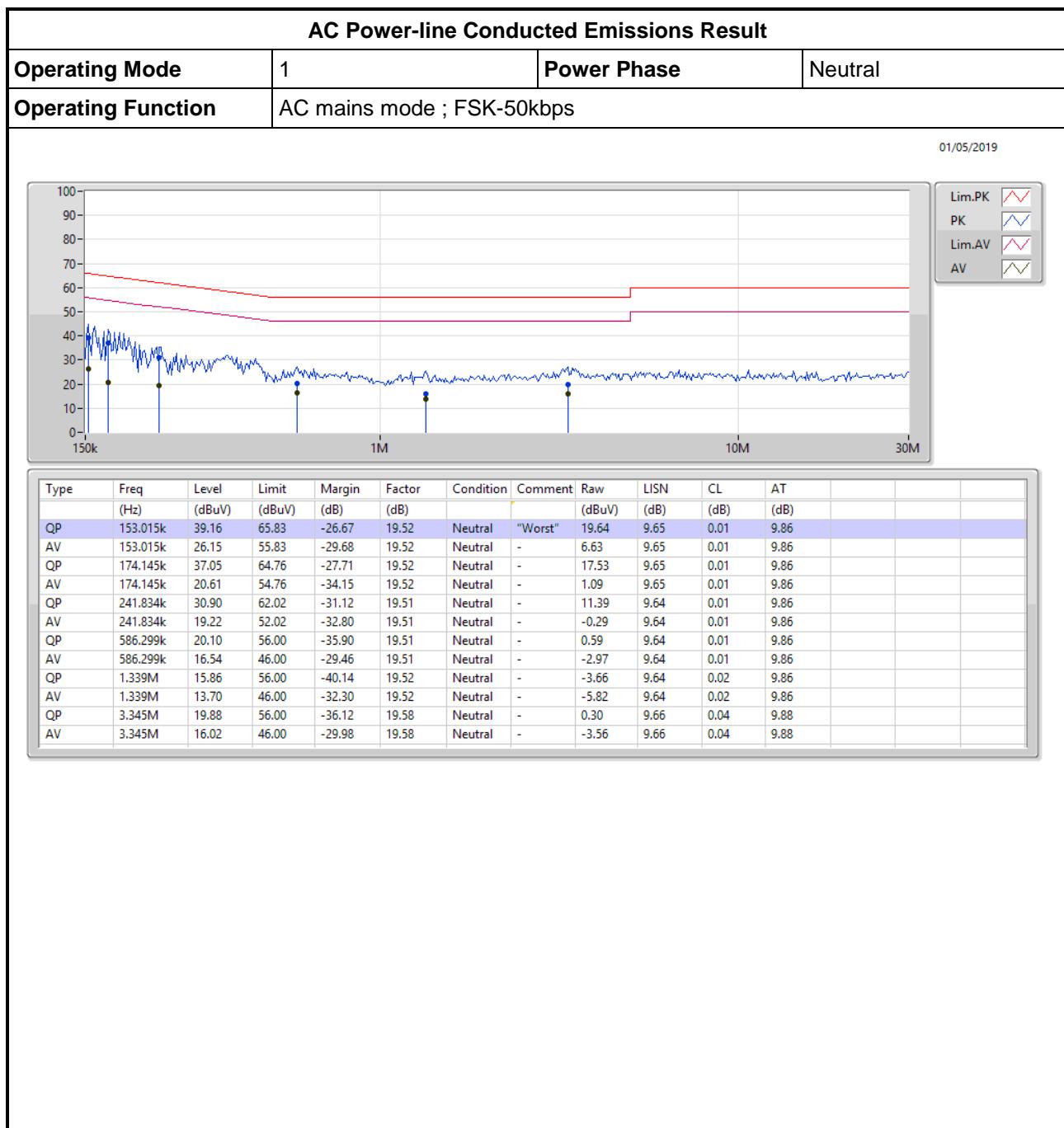
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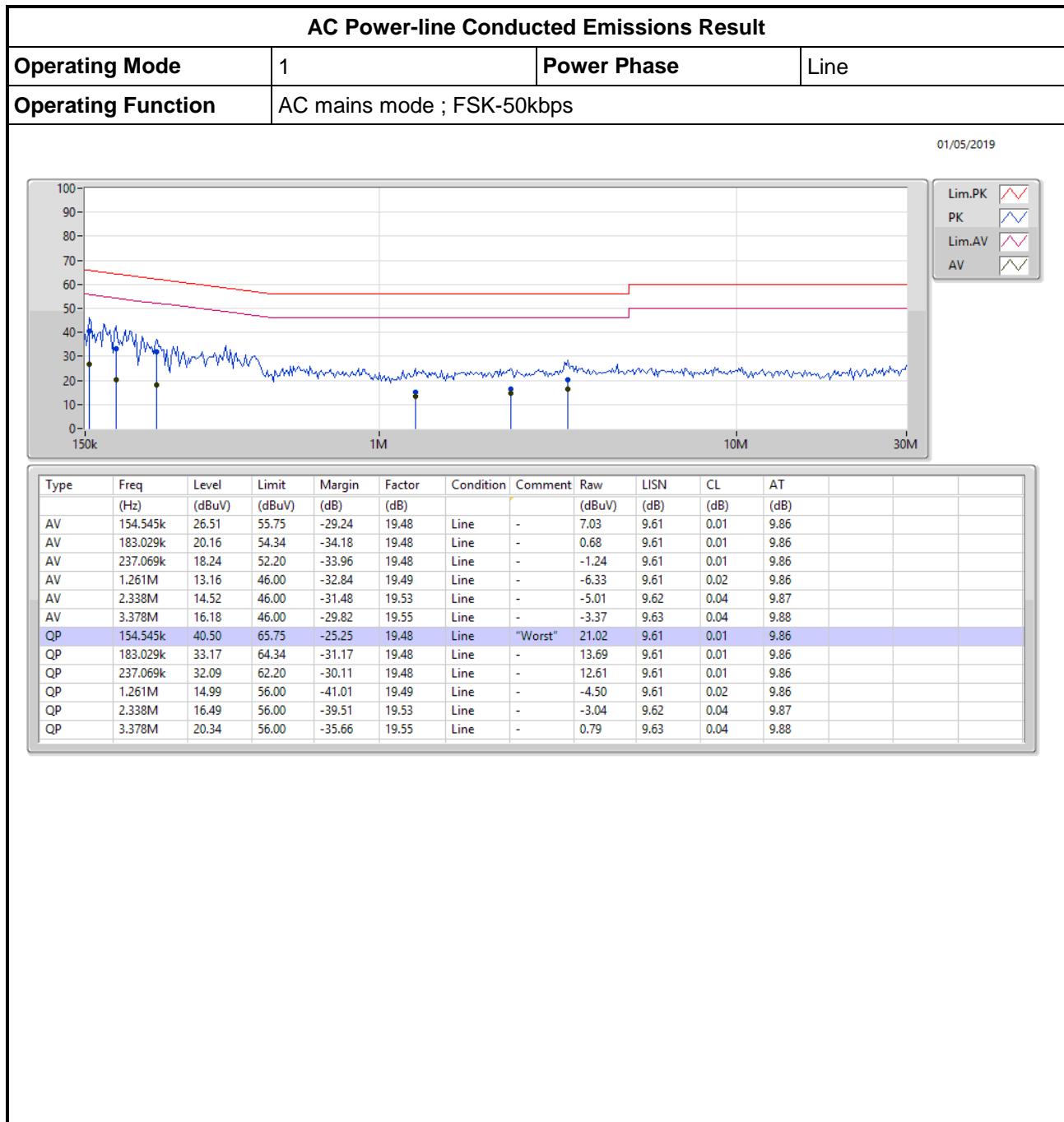












**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
LoRa_DTS_Nss1_1TX	592.5k	514.118k	514KF1D	560k	503.498k

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;



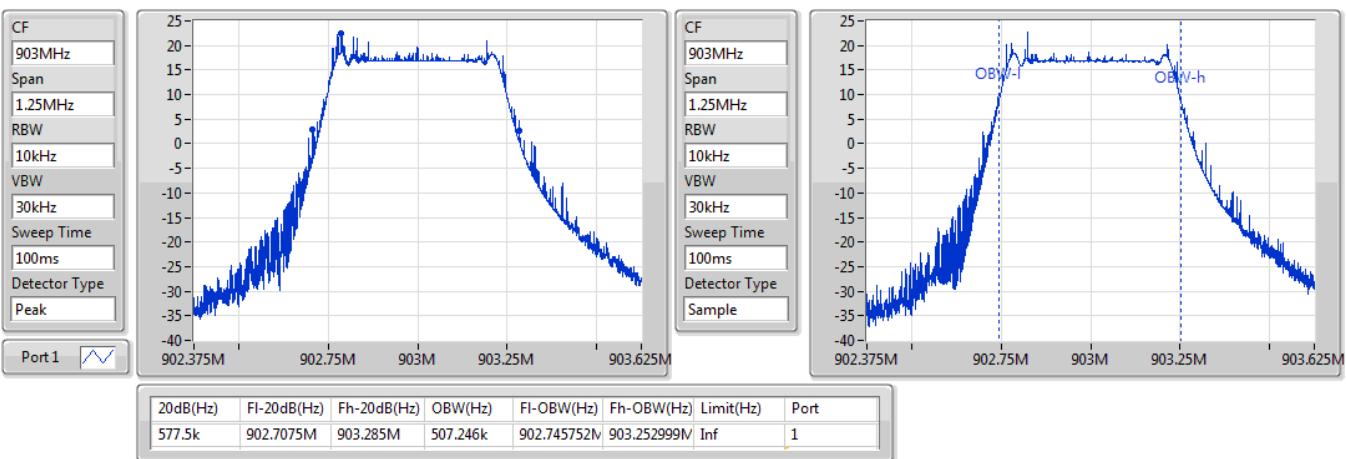
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
LoRa_DTS_Nss1_1TX	-	-	-	-
903MHz	Pass	Inf	577.5k	507.246k
907.8MHz	Pass	Inf	575.625k	506.622k
914.2MHz	Pass	Inf	560k	503.498k
902.5MHz	Pass	Inf	583.75k	507.246k
914.5MHz	Pass	Inf	562.5k	505.372k
927.3MHz	Pass	Inf	581.875k	507.246k
923.3MHz	Pass	Inf	591.25k	514.118k
925.1MHz	Pass	Inf	580k	507.871k
927.5MHz	Pass	Inf	592.5k	514.118k

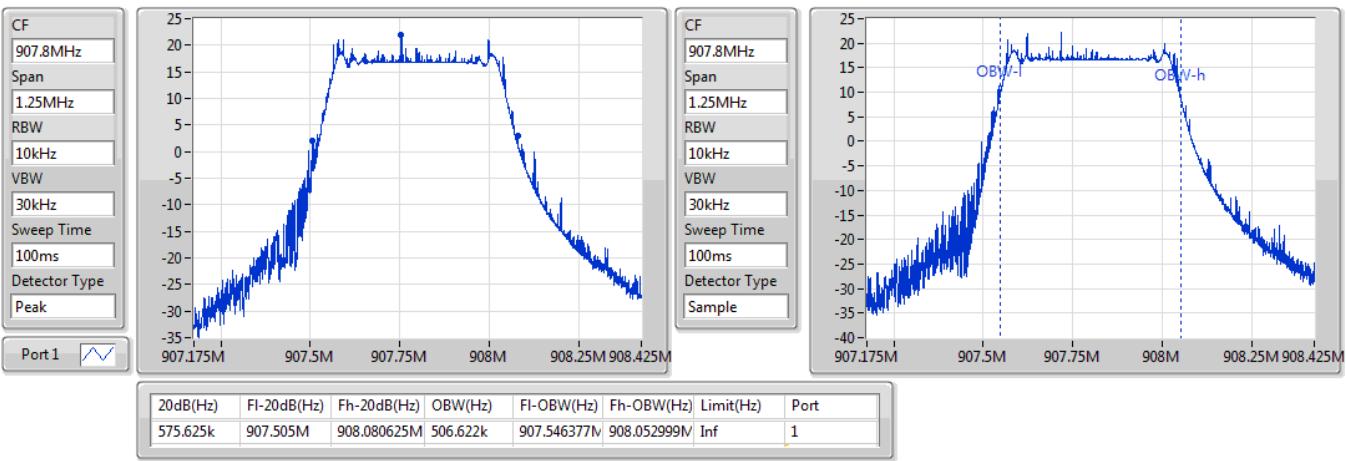
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

LoRa_DTS_Nss1_1TX
EBW
903MHz

17/05/2019

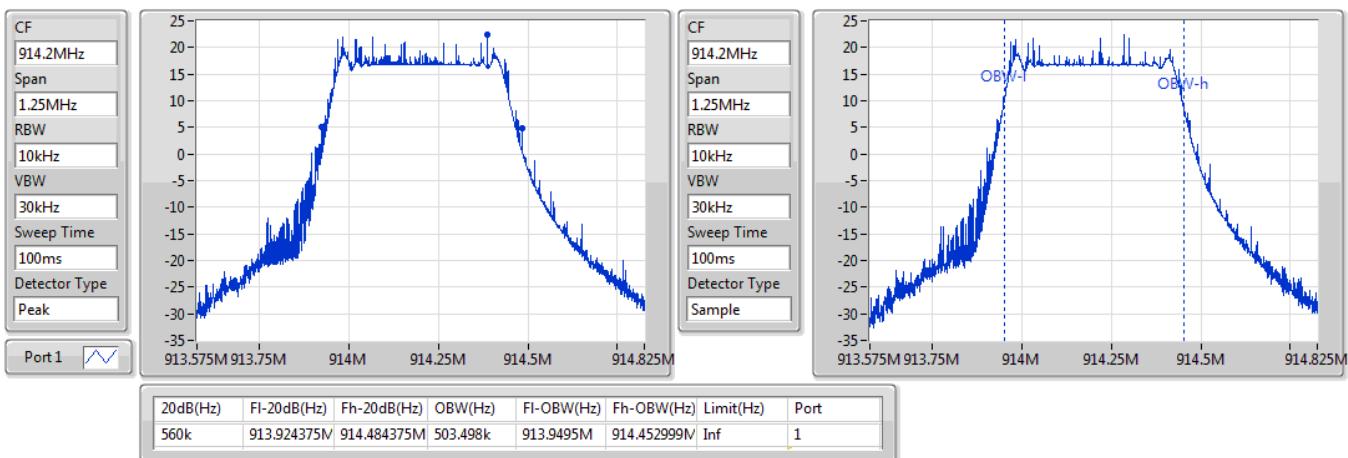

LoRa_DTS_Nss1_1TX
EBW
907.8MHz

17/05/2019

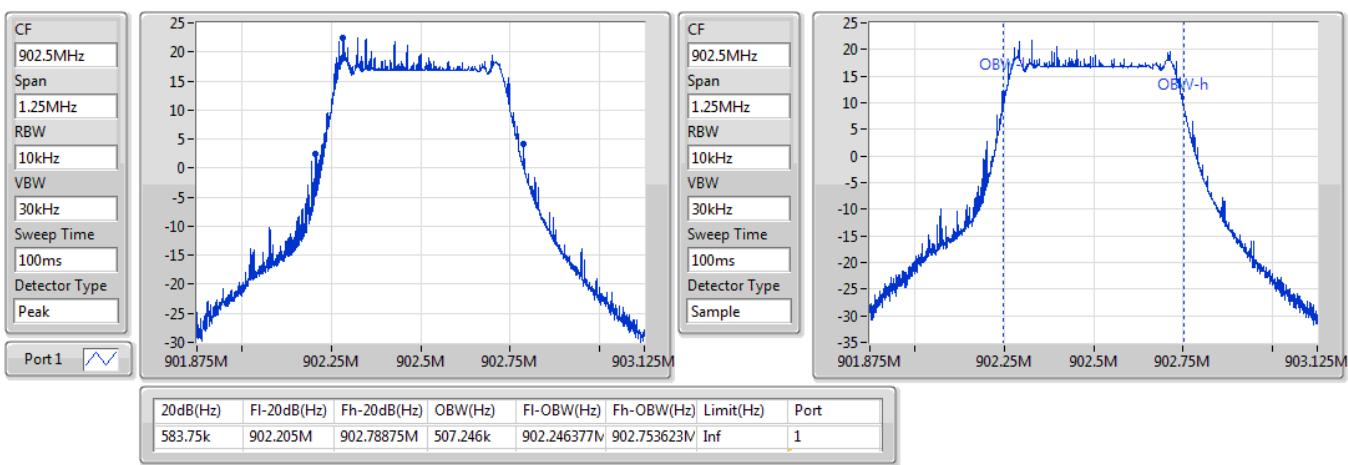


LoRa_DTS_Nss1_1TX
EBW
914.2MHz

17/05/2019

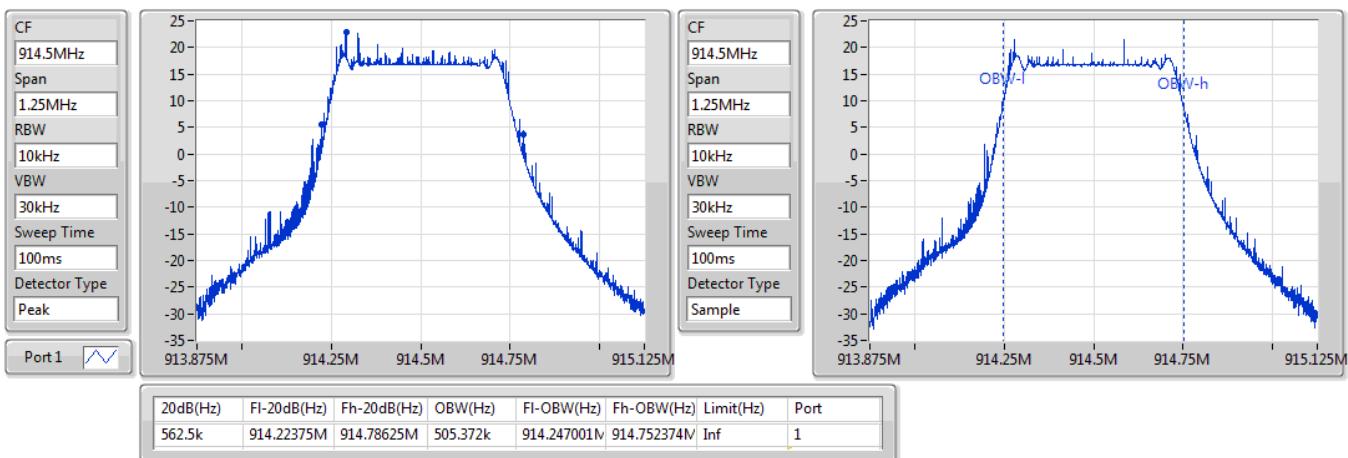

LoRa_DTS_Nss1_1TX
EBW
902.5MHz

17/05/2019

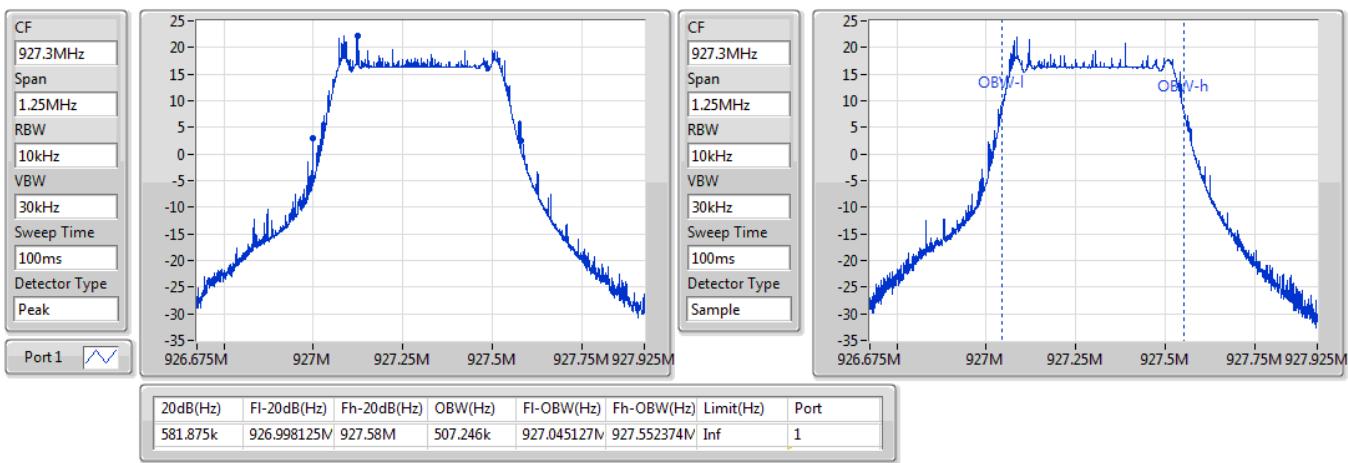


LoRa_DTS_Nss1_1TX
EBW
914.5MHz

17/05/2019

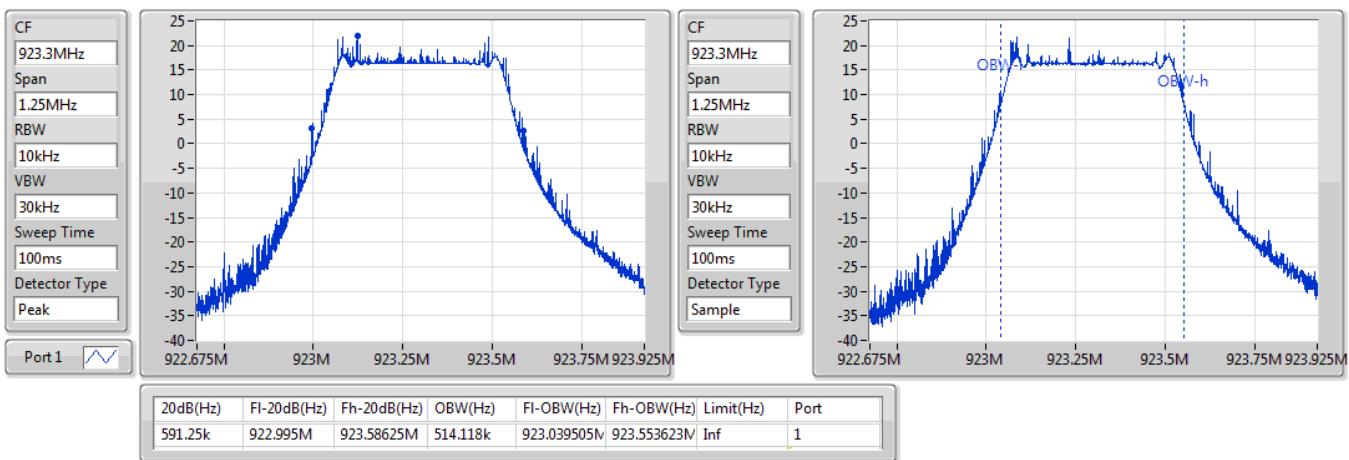

LoRa_DTS_Nss1_1TX
EBW
927.3MHz

17/05/2019

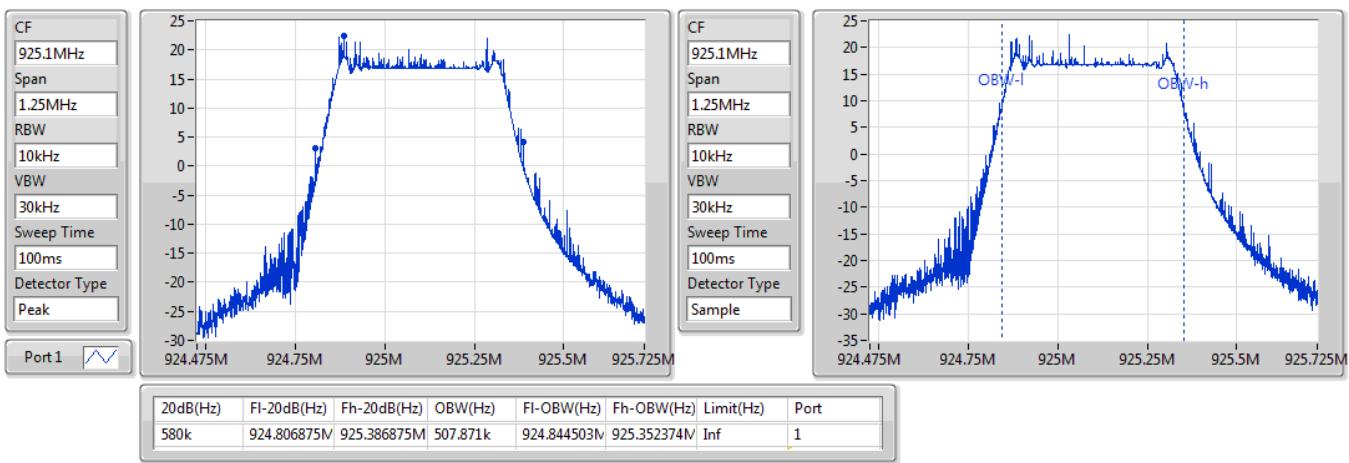


LoRa_DTS_Nss1_1TX
EBW
923.3MHz

17/05/2019


LoRa_DTS_Nss1_1TX
EBW
925.1MHz

17/05/2019



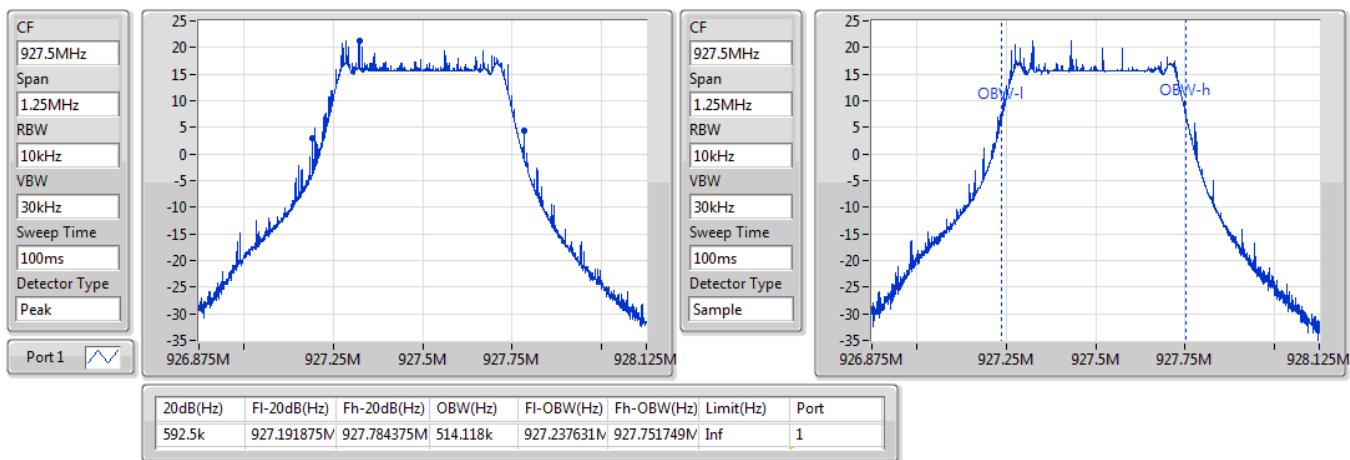


LoRa_DTS_Nss1_1TX

EBW

927.5MHz

17/05/2019



**Summary**

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
LoRa_DTS_Nss1_1TX	26.70	0.46774



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
LoRa_DTS_Nss1_1TX	-	-	-	-
903MHz	Pass	-1.19	26.65	30.00
907.8MHz	Pass	-1.19	26.57	30.00
914.2MHz	Pass	-1.19	26.55	30.00
902.5MHz	Pass	-1.19	26.70	30.00
914.5MHz	Pass	-1.19	26.54	30.00
927.3MHz	Pass	-1.19	26.10	30.00
923.3MHz	Pass	-1.19	26.10	30.00
925.1MHz	Pass	-1.19	26.59	30.00
927.5MHz	Pass	-1.19	25.45	30.00

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



Average Power-DTS

Appendix C.2

Summary

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
LoRa_DTS_Nss1_1TX	26.60	0.45709



Average Power-DTS

Appendix C.2

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
LoRa_DTS_Nss1_1TX	-	-	-	-
903MHz	Pass	-1.19	26.60	30.00
907.8MHz	Pass	-1.19	26.52	30.00
914.2MHz	Pass	-1.19	26.50	30.00
902.5MHz	Pass	-1.19	26.60	30.00
914.5MHz	Pass	-1.19	26.49	30.00
927.3MHz	Pass	-1.19	26.04	30.00
923.3MHz	Pass	-1.19	26.05	30.00
925.1MHz	Pass	-1.19	26.53	30.00
927.5MHz	Pass	-1.19	25.40	30.00

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

**Summary**

Mode	PD (dBm/RBW)
902-928MHz	-
LoRa_DTS_Nss1_1TX	7.58

RBW=3 kHz.



Result

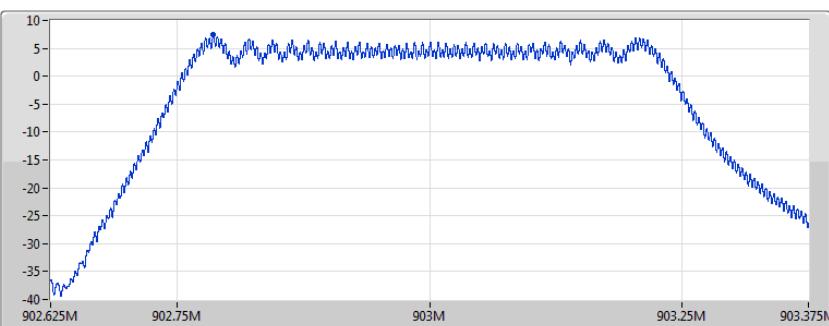
Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
LoRa_DTS_Nss1_1TX	-	-	-	-
903MHz	Pass	-1.19	7.42	8.00
907.8MHz	Pass	-1.19	7.48	8.00
914.2MHz	Pass	-1.19	7.56	8.00
902.5MHz	Pass	-1.19	7.50	8.00
914.5MHz	Pass	-1.19	7.49	8.00
927.3MHz	Pass	-1.19	6.83	8.00
923.3MHz	Pass	-1.19	6.34	8.00
925.1MHz	Pass	-1.19	7.58	8.00
927.5MHz	Pass	-1.19	5.80	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;

LoRa_DTS_Nss1_1TX
PSD
903MHz

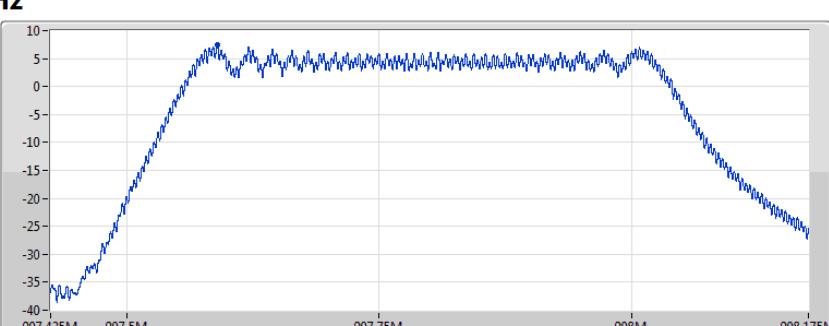
CF
903MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS



17/05/2019

Port 1
LoRa_DTS_Nss1_1TX
PSD
907.8MHz

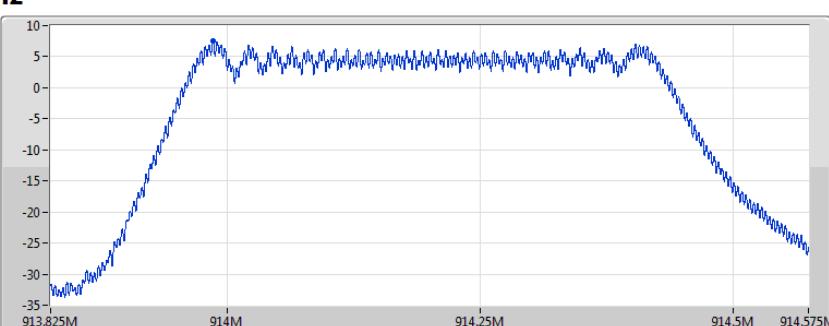
CF
907.8MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS



17/05/2019

Port 1
LoRa_DTS_Nss1_1TX
PSD
914.2MHz

CF
914.2MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS



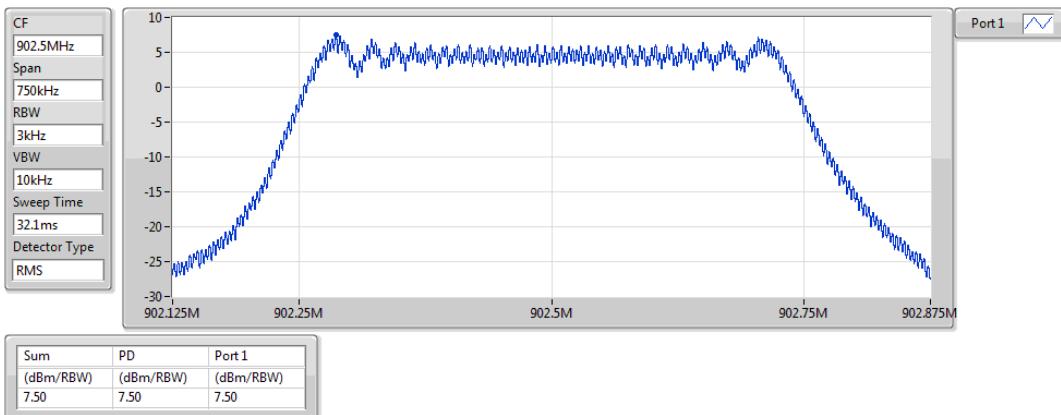
17/05/2019

Port 1

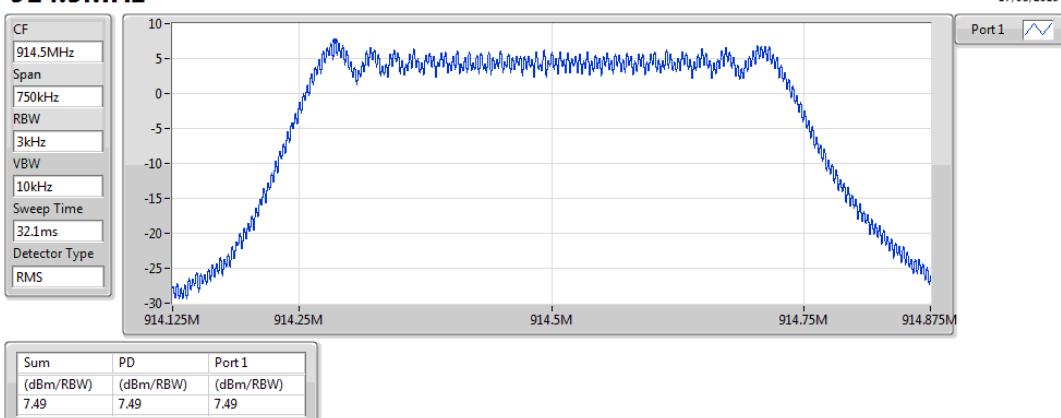
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
7.48	7.48	7.48

LoRa_DTS_Nss1_1TX
PSD
902.5MHz

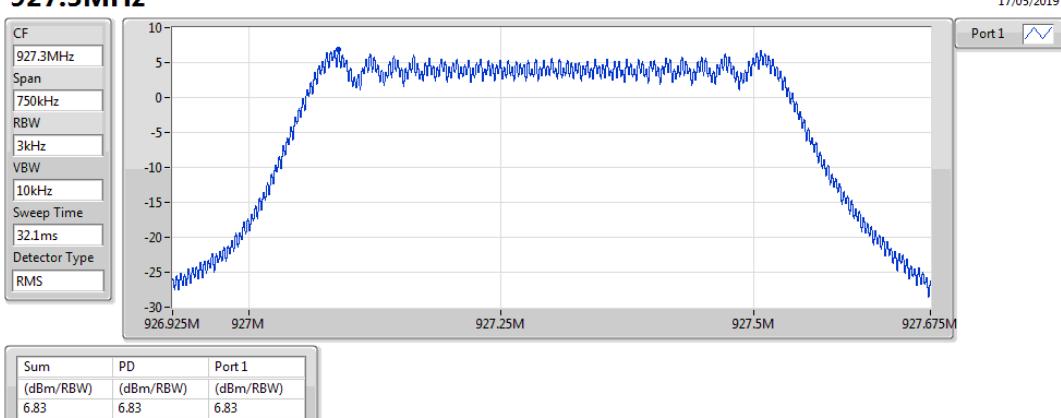
17/05/2019


LoRa_DTS_Nss1_1TX
PSD
914.5MHz

17/05/2019

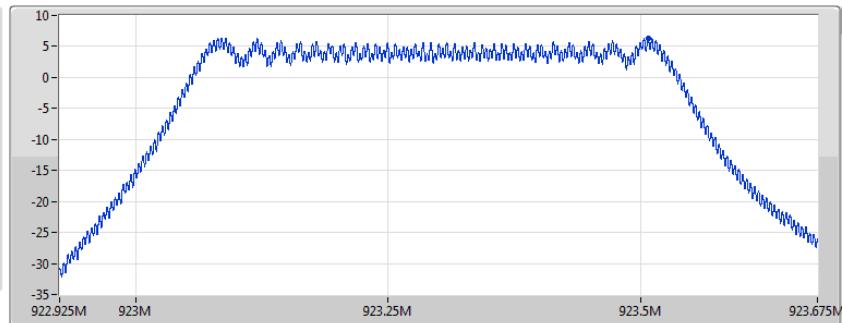

LoRa_DTS_Nss1_1TX
PSD
927.3MHz

17/05/2019

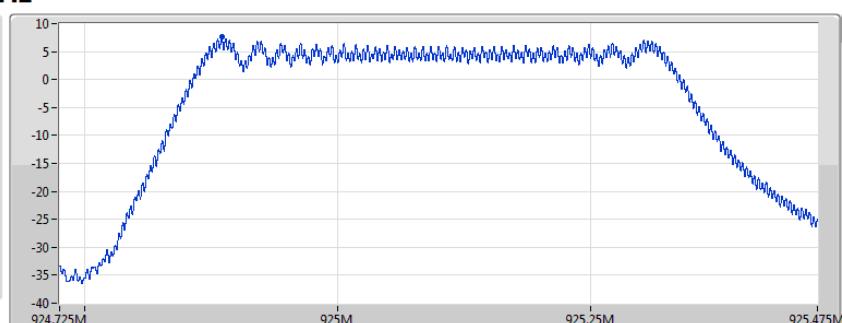


LoRa_DTS_Nss1_1TX
923.3MHz

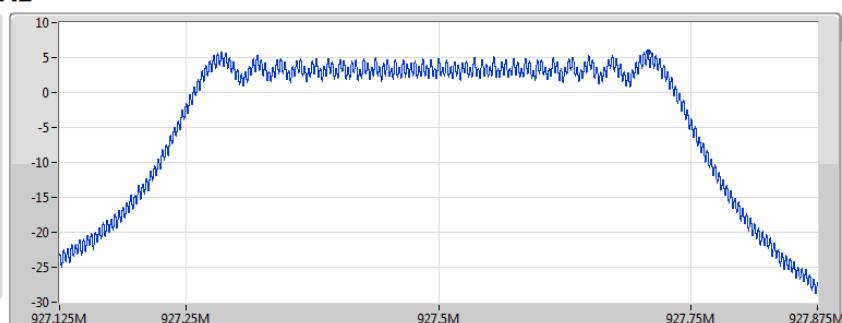
CF
923.3MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS


LoRa_DTS_Nss1_1TX
925.1MHz

CF
925.1MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS


LoRa_DTS_Nss1_1TX
927.5MHz

CF
927.5MHz
Span
750kHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
RMS

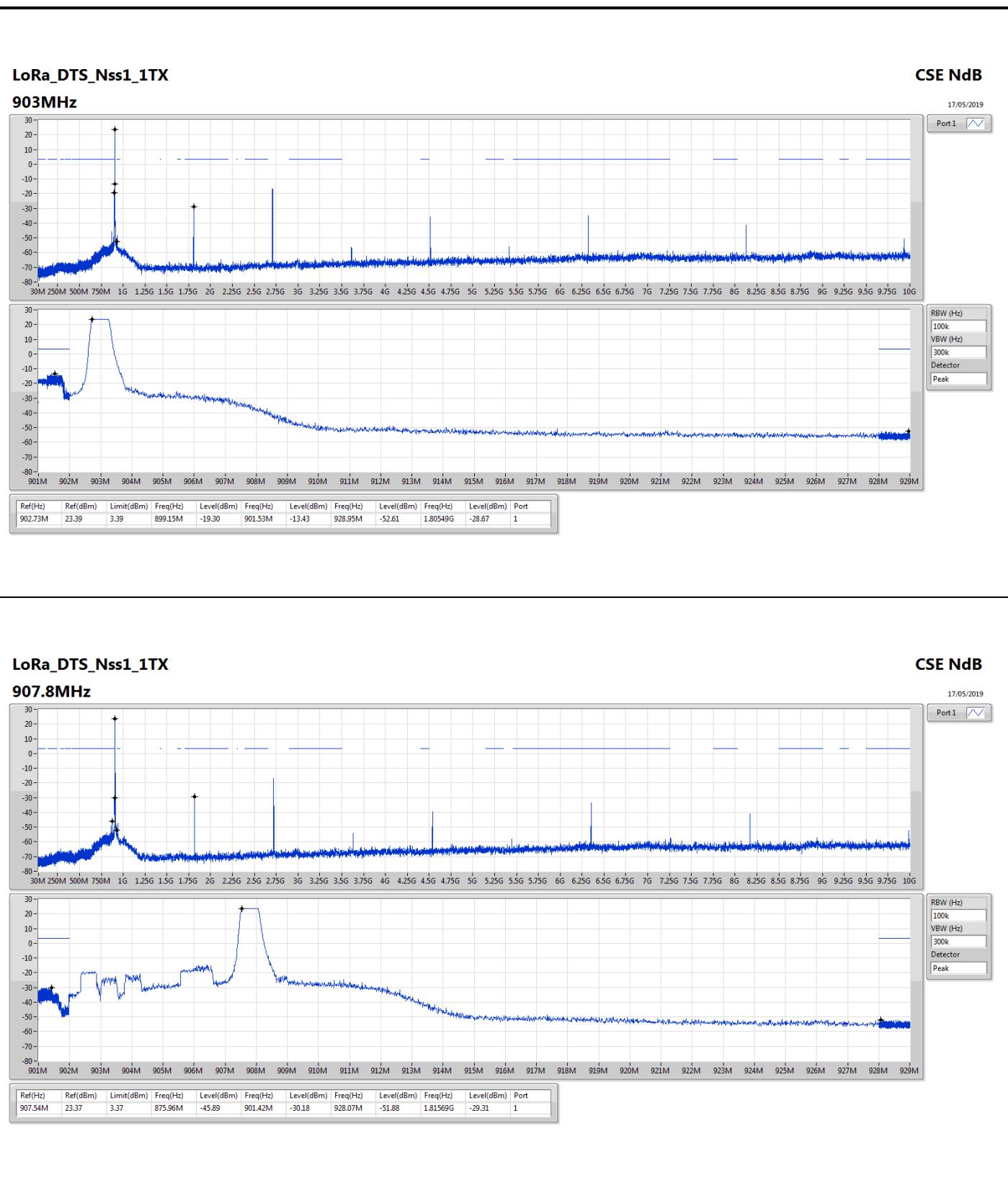


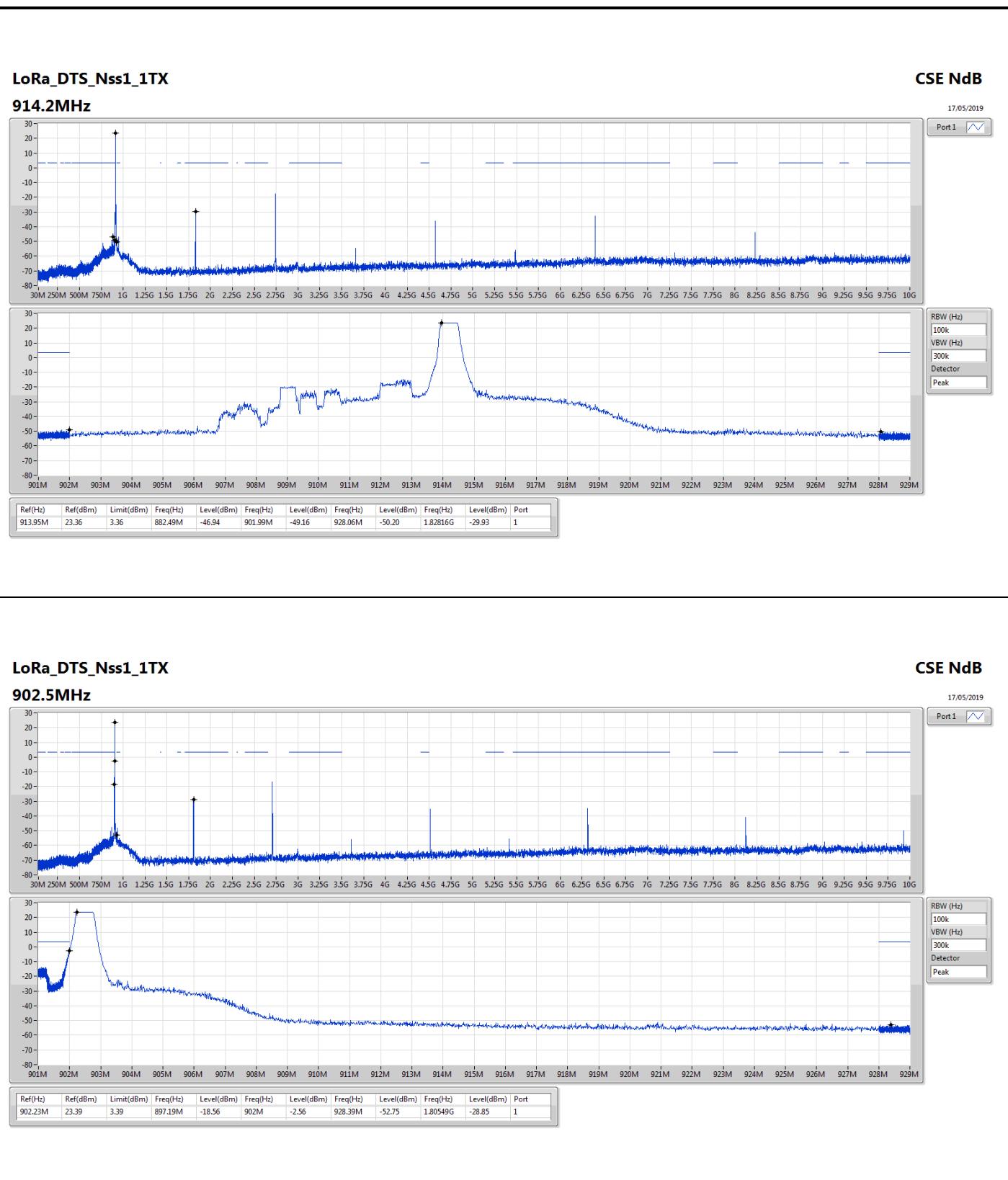
**Summary**

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
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-	-
LoRa_DTS_Nss1_1TX	Pass	902.23M	23.39	3.39	897.19M	-18.56	902M	-2.56	928.39M	-52.75	1.80549G	-28.85	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
LoRa_DTS_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
903MHz	Pass	902.73M	23.39	3.39	899.15M	-19.30	901.53M	-13.43	928.95M	-52.61	1.80549G	-28.67	1
907.8MHz	Pass	907.54M	23.37	3.37	875.96M	-45.89	901.42M	-30.18	928.07M	-51.88	1.81569G	-29.31	1
914.2MHz	Pass	913.95M	23.36	3.36	882.49M	-46.94	901.99M	-49.16	928.06M	-50.20	1.82816G	-29.93	1
902.5MHz	Pass	902.23M	23.39	3.39	897.19M	-18.56	902M	-2.56	928.39M	-52.75	1.80549G	-28.85	1
914.5MHz	Pass	914.25M	23.35	3.35	882.38M	-44.93	901.87M	-48.81	928.11M	-49.99	1.82816G	-29.99	1
927.3MHz	Pass	927.05M	23.32	3.32	895.12M	-46.39	901.29M	-50.25	928.01M	-18.04	929M	-29.73	1
923.3MHz	Pass	923.05M	23.34	3.34	891.31M	-44.27	901.77M	-50.95	928.01M	-33.99	1.8463G	-32.59	1
925.1MHz	Pass	924.84M	23.33	3.33	893.27M	-45.03	901.03M	-50.77	928.01M	-23.88	929M	-30.12	1
927.5MHz	Pass	927.26M	23.33	3.33	895.77M	-45.75	901.33M	-50.63	928M	-5.98	929M	-30.16	1



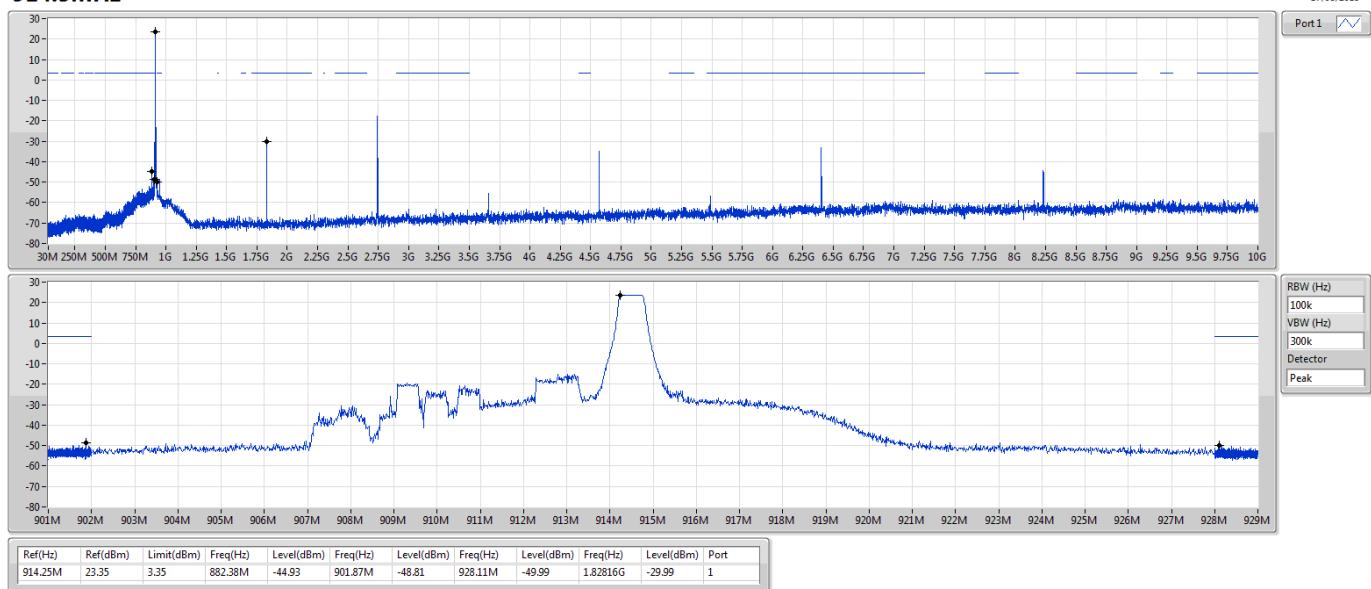




LoRa_DTS_Nss1_1TX

CSE NdB

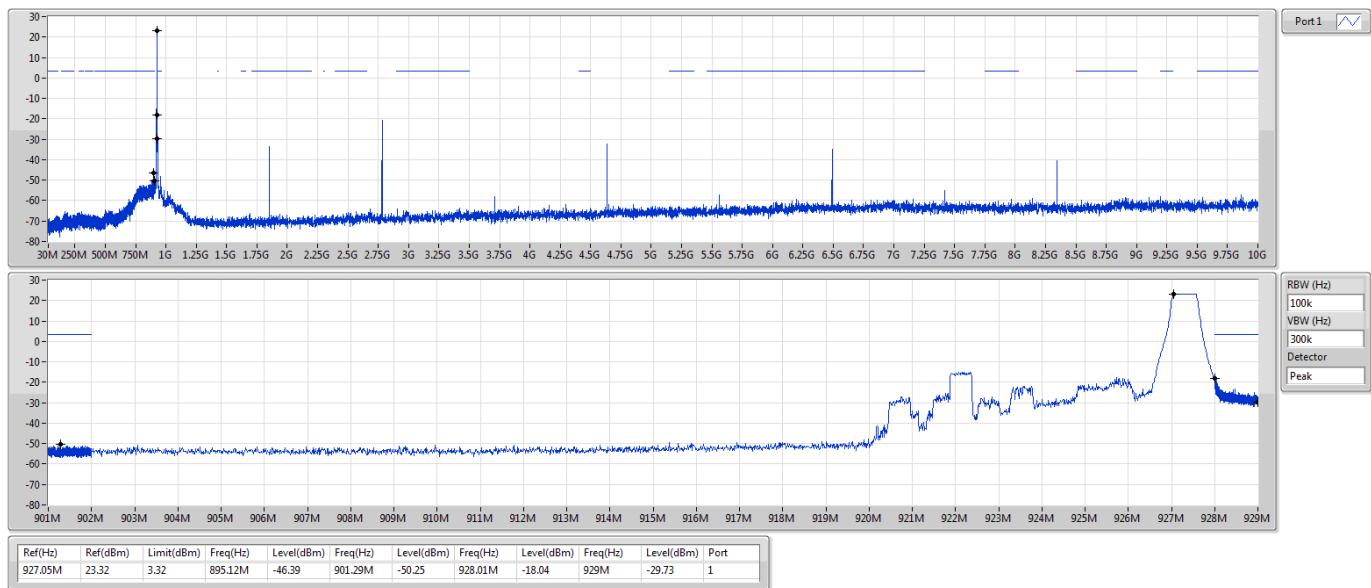
914.5MHz

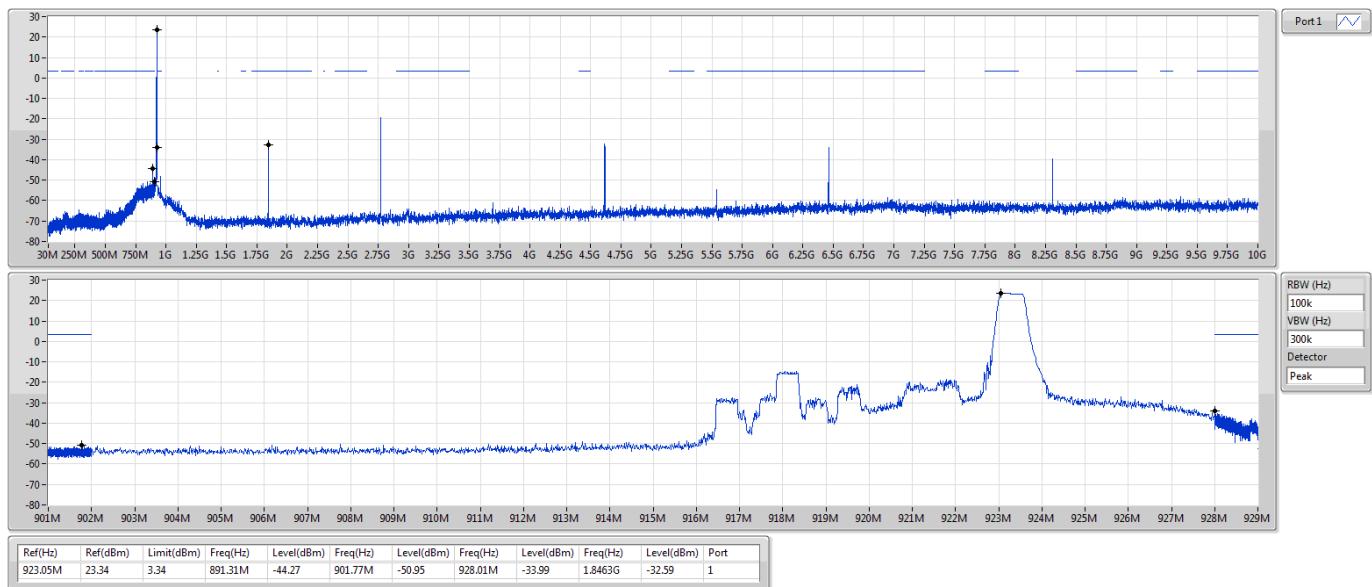
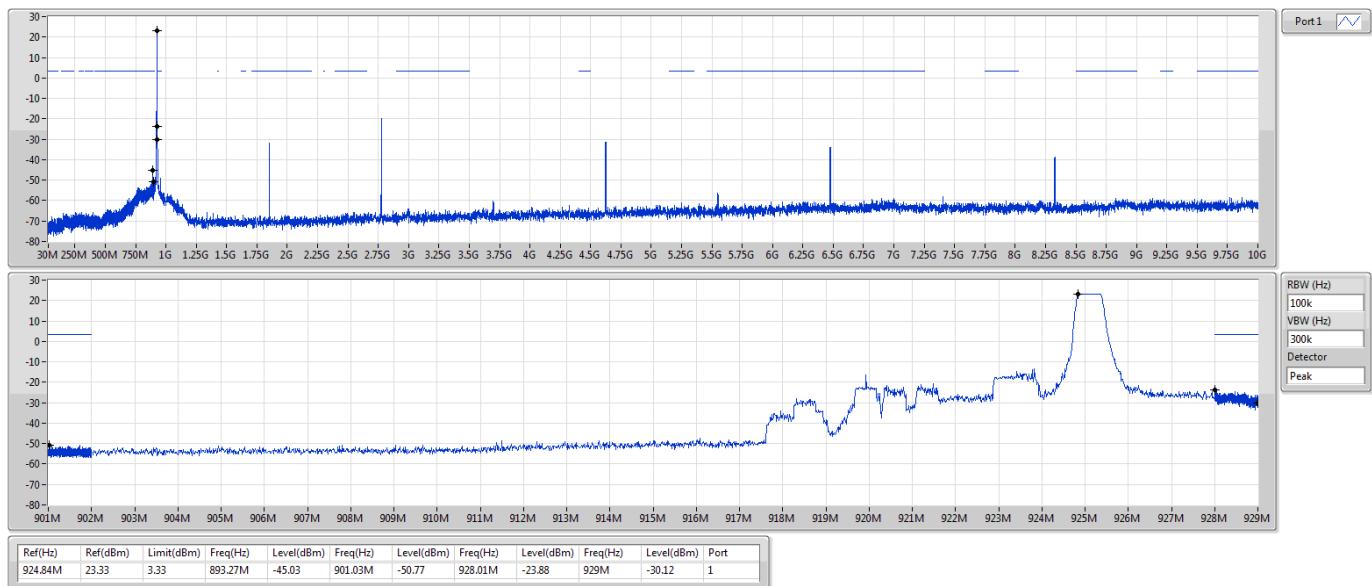


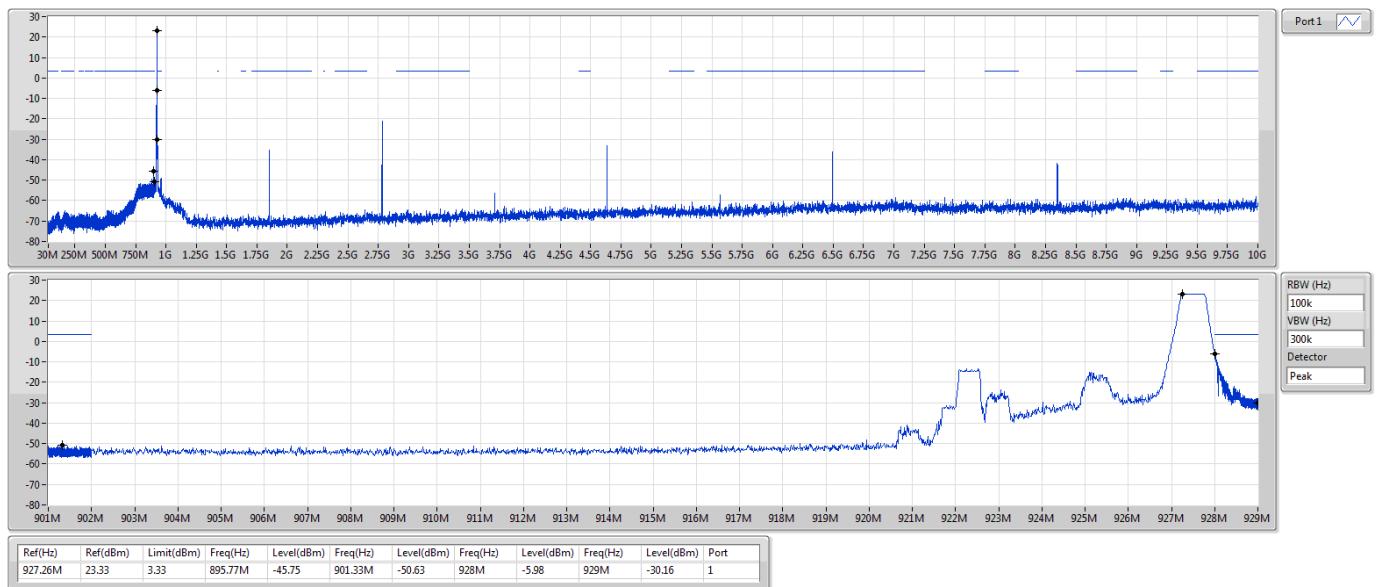
LoRa_DTS_Nss1_1TX

CSE NdB

927.3MHz



LoRa_DTS_Nss1_1TX
923.3MHz

LoRa_DTS_Nss1_1TX
925.1MHz


LoRa_DTS_Nss1_1TX
927.5MHz


**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-
LoRa_DTS_Nss1_1TX	Pass	PK	247.52M	37.19	46.00	-8.81	-17.48	3	Horizontal	360	1.00	-
FSK-5K_Nss1_1TX	Pass	PK	249.51M	37.05	46.00	-8.95	-17.18	3	Horizontal	0	1.00	-
FSK-50K_Nss1_1TX	Pass	PK	249.22M	36.92	46.00	-9.08	-17.23	3	Horizontal	0	1.00	-
FSK-150K_Nss1_1TX	Pass	PK	248.55M	35.96	46.00	-10.04	-17.32	3	Horizontal	0	1.00	-
LoRa_FHSS-125k_Nss1_1TX	Pass	PK	235.64M	38.71	46.00	-7.29	-19.10	3	Vertical	360	1.00	-
LoRa_FHSS-250k_Nss1_1TX	Pass	PK	249.88M	40.04	46.00	-5.96	-17.13	3	Vertical	360	1.00	-



Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
LoRa_DTS_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
907.8MHz	Pass	PK	53.28M	23.63	40.00	-16.37	-24.39	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	249.22M	32.86	46.00	-13.14	-17.23	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	332.64M	25.37	46.00	-20.63	-15.93	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	350.1M	27.14	46.00	-18.86	-15.39	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	449.04M	34.46	46.00	-11.54	-12.61	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	660.5M	33.24	46.00	-12.76	-9.56	3	Vertical	0	1.00	-
907.8MHz	Pass	PK	150.28M	24.51	43.50	-18.99	-19.30	3	Horizontal	360	1.00	-
907.8MHz	Pass	PK	249.22M	36.88	46.00	-9.12	-17.23	3	Horizontal	360	1.00	-
907.8MHz	Pass	PK	291.9M	35.10	46.00	-10.90	-16.82	3	Horizontal	360	1.00	-
907.8MHz	Pass	PK	332.64M	31.45	46.00	-14.55	-15.93	3	Horizontal	360	1.00	-
907.8MHz	Pass	PK	449.04M	31.28	46.00	-14.72	-12.61	3	Horizontal	360	1.00	-
907.8MHz	Pass	PK	749.74M	31.96	46.00	-14.04	-7.93	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	52.41M	24.92	40.00	-15.08	-24.09	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	231.55M	29.52	46.00	-16.48	-19.56	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	320.55M	25.67	46.00	-20.33	-16.35	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	350.25M	27.73	46.00	-18.27	-15.38	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	450.2M	34.92	46.00	-11.08	-12.59	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	662.7M	33.58	46.00	-12.42	-9.57	3	Vertical	0	1.00	-
914.5MHz	Pass	PK	151.31M	24.18	43.50	-19.32	-19.34	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	247.21M	36.68	46.00	-9.32	-17.53	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	293.8M	34.99	46.00	-11.01	-16.78	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	333.65M	31.69	46.00	-14.31	-15.89	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	449.04M	31.10	46.00	-14.90	-12.61	3	Horizontal	360	1.00	-
914.5MHz	Pass	PK	750.71M	32.25	46.00	-13.75	-7.92	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	53.15M	24.68	40.00	-15.32	-24.34	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	231.65M	29.60	46.00	-16.40	-19.55	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	321.15M	26.02	46.00	-19.98	-16.33	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	351.75M	27.74	46.00	-18.26	-15.34	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	450.7M	34.90	46.00	-11.10	-12.58	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	661.8M	33.66	46.00	-12.34	-9.56	3	Vertical	0	1.00	-
925.1MHz	Pass	PK	150.84M	23.89	43.50	-19.61	-19.33	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	247.52M	37.19	46.00	-8.81	-17.48	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	293.62M	35.03	46.00	-10.97	-16.78	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	333.64M	31.54	46.00	-14.46	-15.89	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	448.55M	31.29	46.00	-14.71	-12.62	3	Horizontal	360	1.00	-
925.1MHz	Pass	PK	751.21M	32.46	46.00	-13.54	-7.92	3	Horizontal	360	1.00	-
FSK-5K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
915MHz	Pass	PK	249.33M	32.30	46.00	-13.70	-17.21	3	Vertical	360	1.00	-
915MHz	Pass	PK	349.98M	26.19	46.00	-19.81	-15.39	3	Vertical	360	1.00	-
915MHz	Pass	PK	449.88M	34.61	46.00	-11.39	-12.59	3	Vertical	360	1.00	-
915MHz	Pass	PK	549.72M	28.44	46.00	-17.56	-10.79	3	Vertical	360	1.00	-
915MHz	Pass	PK	661.48M	33.71	46.00	-12.29	-9.56	3	Vertical	360	1.00	-
915MHz	Pass	PK	850.13M	30.10	46.00	-15.90	-6.67	3	Vertical	360	1.00	-
915MHz	Pass	PK	249.51M	37.05	46.00	-8.95	-17.18	3	Horizontal	0	1.00	-
915MHz	Pass	PK	287.21M	34.63	46.00	-11.37	-16.92	3	Horizontal	0	1.00	-
915MHz	Pass	PK	332.75M	33.62	46.00	-12.38	-15.92	3	Horizontal	0	1.00	-
915MHz	Pass	PK	350.14M	30.38	46.00	-15.62	-15.39	3	Horizontal	0	1.00	-



RSE TX below 1GHz

Appendix F.1

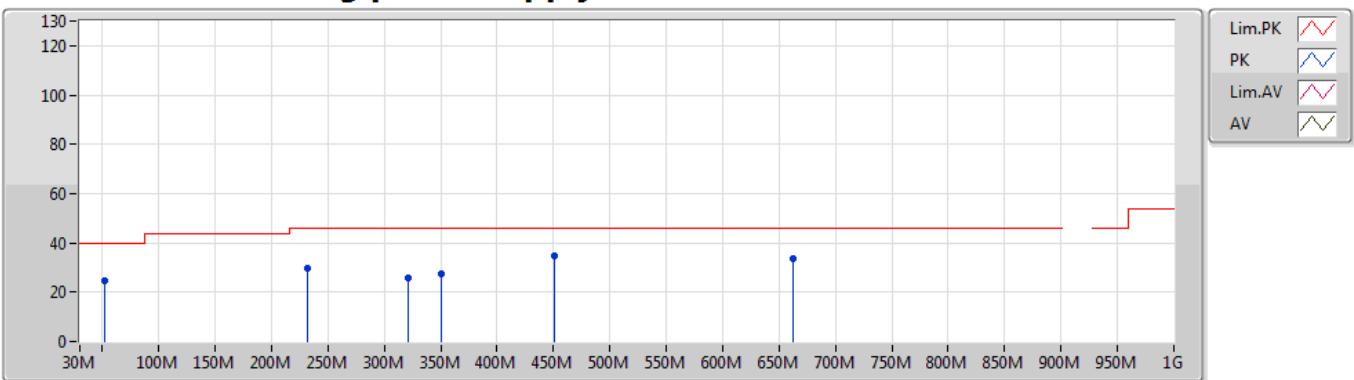
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
915MHz	Pass	PK	449.91M	31.02	46.00	-14.98	-12.59	3	Horizontal	0	1.00	-
915MHz	Pass	PK	748.98M	32.39	46.00	-13.61	-7.94	3	Horizontal	0	1.00	-
FSK-50K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
915MHz	Pass	PK	249.22M	32.72	46.00	-13.28	-17.23	3	Vertical	360	1.00	-
915MHz	Pass	PK	350.1M	26.40	46.00	-19.60	-15.39	3	Vertical	360	1.00	-
915MHz	Pass	PK	449.04M	34.53	46.00	-11.47	-12.61	3	Vertical	360	1.00	-
915MHz	Pass	PK	549.92M	27.94	46.00	-18.06	-10.77	3	Vertical	360	1.00	-
915MHz	Pass	PK	660.5M	33.53	46.00	-12.47	-9.56	3	Vertical	360	1.00	-
915MHz	Pass	PK	850.62M	29.71	46.00	-16.29	-6.67	3	Vertical	360	1.00	-
915MHz	Pass	PK	249.22M	36.92	46.00	-9.08	-17.23	3	Horizontal	0	1.00	-
915MHz	Pass	PK	286.08M	34.09	46.00	-11.91	-16.94	3	Horizontal	0	1.00	-
915MHz	Pass	PK	332.64M	31.04	46.00	-14.96	-15.93	3	Horizontal	0	1.00	-
915MHz	Pass	PK	350.1M	30.46	46.00	-15.54	-15.39	3	Horizontal	0	1.00	-
915MHz	Pass	PK	450.98M	31.17	46.00	-14.83	-12.57	3	Horizontal	0	1.00	-
915MHz	Pass	PK	749.74M	32.47	46.00	-13.53	-7.93	3	Horizontal	0	1.00	-
FSK-150K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
914.8MHz	Pass	PK	248.51M	31.79	46.00	-14.21	-17.33	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	350.12M	26.49	46.00	-19.51	-15.39	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	449.23M	34.65	46.00	-11.35	-12.60	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	549.92M	27.48	46.00	-18.52	-10.77	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	660.41M	34.95	46.00	-11.05	-9.56	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	848.29M	30.09	46.00	-15.91	-6.68	3	Vertical	360	1.00	-
914.8MHz	Pass	PK	248.55M	35.96	46.00	-10.04	-17.32	3	Horizontal	0	1.00	-
914.8MHz	Pass	PK	287.78M	35.14	46.00	-10.86	-16.91	3	Horizontal	0	1.00	-
914.8MHz	Pass	PK	333.84M	31.13	46.00	-14.87	-15.89	3	Horizontal	0	1.00	-
914.8MHz	Pass	PK	349.51M	30.02	46.00	-15.98	-15.40	3	Horizontal	0	1.00	-
914.8MHz	Pass	PK	448.52M	31.26	46.00	-14.74	-12.62	3	Horizontal	0	1.00	-
914.8MHz	Pass	PK	750.24M	32.45	46.00	-13.55	-7.93	3	Horizontal	0	1.00	-
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
915MHz	Pass	PK	55.22M	25.11	40.00	-14.89	-25.00	3	Vertical	360	1.00	-
915MHz	Pass	PK	224M	28.07	46.00	-17.93	-20.43	3	Vertical	360	1.00	-
915MHz	Pass	PK	235.64M	38.71	46.00	-7.29	-19.10	3	Vertical	360	1.00	-
915MHz	Pass	PK	249.22M	32.79	46.00	-13.21	-17.23	3	Vertical	360	1.00	-
915MHz	Pass	PK	450.98M	34.31	46.00	-11.69	-12.57	3	Vertical	360	1.00	-
915MHz	Pass	PK	660.5M	33.67	46.00	-12.33	-9.56	3	Vertical	360	1.00	-
915MHz	Pass	PK	64.92M	28.07	40.00	-11.93	-25.36	3	Horizontal	0	1.00	-
915MHz	Pass	PK	249.22M	37.04	46.00	-8.96	-17.23	3	Horizontal	0	1.00	-
915MHz	Pass	PK	291.9M	34.27	46.00	-11.73	-16.82	3	Horizontal	0	1.00	-
915MHz	Pass	PK	334.58M	31.26	46.00	-14.74	-15.86	3	Horizontal	0	1.00	-
915MHz	Pass	PK	449.04M	31.09	46.00	-14.91	-12.61	3	Horizontal	0	1.00	-
915MHz	Pass	PK	749.74M	32.59	46.00	-13.41	-7.93	3	Horizontal	0	1.00	-
908.5MHz	Pass	PK	54.21M	25.62	40.00	-14.38	-24.70	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	223.88M	28.04	46.00	-17.96	-20.44	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	234.51M	38.01	46.00	-7.99	-19.22	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	248.12M	32.59	46.00	-13.41	-17.39	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	451.52M	34.16	46.00	-11.84	-12.56	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	661.05M	33.71	46.00	-12.29	-9.56	3	Vertical	360	1.00	-
908.5MHz	Pass	PK	65.78M	27.49	40.00	-12.51	-25.29	3	Horizontal	0	1.00	-
908.5MHz	Pass	PK	250.12M	37.26	46.00	-8.74	-17.09	3	Horizontal	0	1.00	-



Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
908.5MHz	Pass	PK	292.75M	34.48	46.00	-11.52	-16.80	3	Horizontal	0	1.00	-
908.5MHz	Pass	PK	334.01M	31.47	46.00	-14.53	-15.88	3	Horizontal	0	1.00	-
908.5MHz	Pass	PK	451.88M	31.31	46.00	-14.69	-12.57	3	Horizontal	0	1.00	-
908.5MHz	Pass	PK	752.35M	32.21	46.00	-13.79	-7.91	3	Horizontal	0	1.00	-
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
914.3MHz	Pass	PK	53.22M	18.90	40.00	-21.10	-24.37	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	223.12M	27.46	46.00	-18.54	-20.53	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	235.84M	38.53	46.00	-7.47	-19.08	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	249.88M	40.04	46.00	-5.96	-17.13	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	451.72M	33.58	46.00	-12.42	-12.57	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	661.8M	33.32	46.00	-12.68	-9.56	3	Vertical	360	1.00	-
914.3MHz	Pass	PK	43.75M	32.76	40.00	-7.24	-20.18	3	Horizontal	0	1.00	-
914.3MHz	Pass	PK	252.12M	37.76	46.00	-8.24	-16.79	3	Horizontal	0	1.00	-
914.3MHz	Pass	PK	293.15M	34.19	46.00	-11.81	-16.79	3	Horizontal	0	1.00	-
914.3MHz	Pass	PK	334.79M	32.17	46.00	-13.83	-15.85	3	Horizontal	0	1.00	-
914.3MHz	Pass	PK	450.61M	30.63	46.00	-15.37	-12.58	3	Horizontal	0	1.00	-
914.3MHz	Pass	PK	757.62M	32.74	46.00	-13.26	-7.84	3	Horizontal	0	1.00	-

**LoRa_DTS_Nss1_1TX****914.5MHz_Switching power supply**

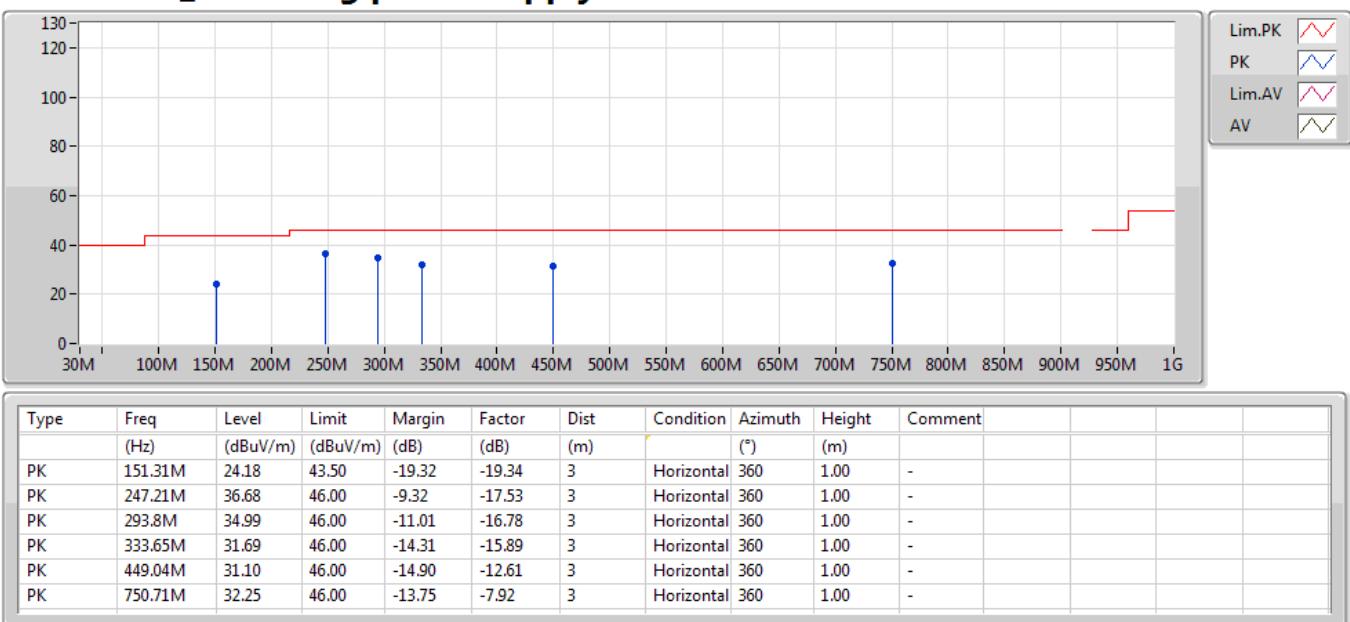
30/04/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	52.41M	24.92	40.00	-15.08	-24.09	3	Vertical	0	1.00	-			
PK	231.55M	29.52	46.00	-16.48	-19.56	3	Vertical	0	1.00	-			
PK	320.55M	25.67	46.00	-20.33	-16.35	3	Vertical	0	1.00	-			
PK	350.25M	27.73	46.00	-18.27	-15.38	3	Vertical	0	1.00	-			
PK	450.2M	34.92	46.00	-11.08	-12.59	3	Vertical	0	1.00	-			
PK	662.7M	33.58	46.00	-12.42	-9.57	3	Vertical	0	1.00	-			

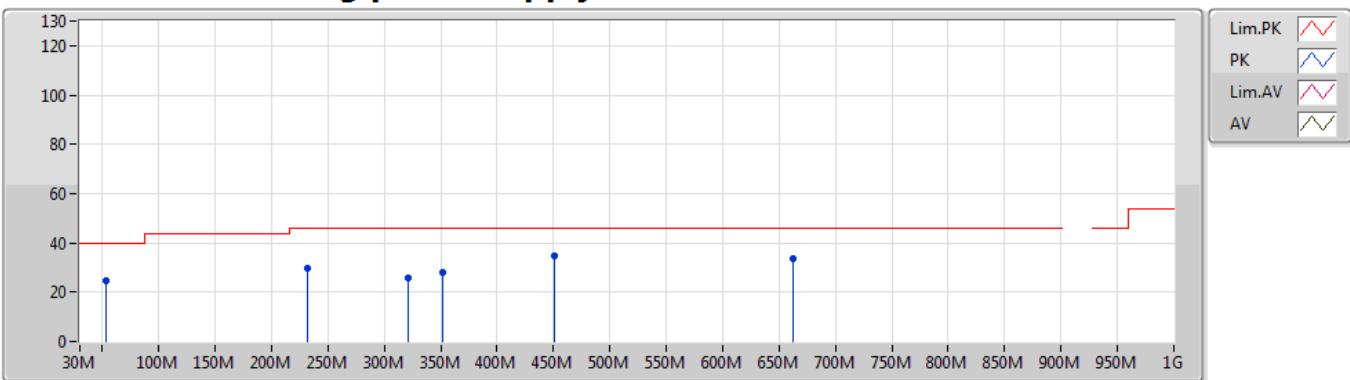
**LoRa_DTS_Nss1_1TX****914.5MHz_Switching power supply**

30/04/2019



**LoRa_DTS_Nss1_1TX****925.1MHz_Switching power supply**

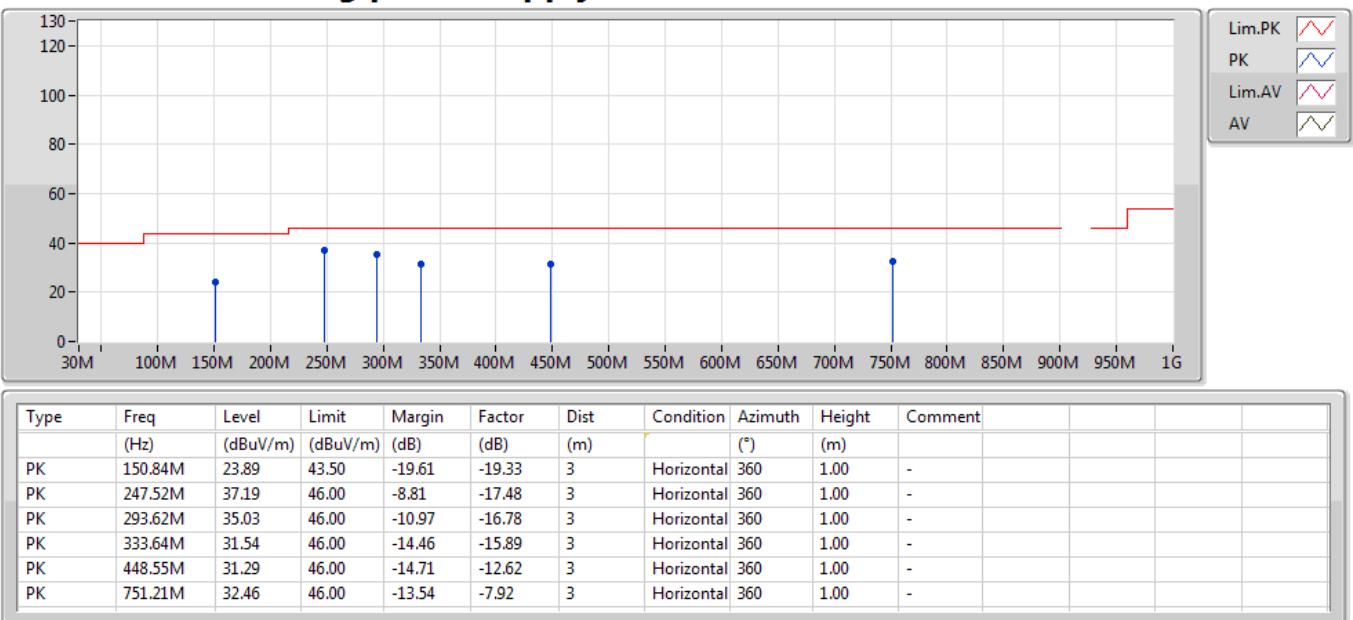
30/04/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment		
PK	53.15M	24.68	40.00	-15.32	-24.34	3	Vertical	0	1.00	-		
PK	231.65M	29.60	46.00	-16.40	-19.55	3	Vertical	0	1.00	-		
PK	321.15M	26.02	46.00	-19.98	-16.33	3	Vertical	0	1.00	-		
PK	351.75M	27.74	46.00	-18.26	-15.34	3	Vertical	0	1.00	-		
PK	450.7M	34.90	46.00	-11.10	-12.58	3	Vertical	0	1.00	-		
PK	661.8M	33.66	46.00	-12.34	-9.56	3	Vertical	0	1.00	-		

**LoRa_DTS_Nss1_1TX****925.1MHz_Switching power supply**

30/04/2019

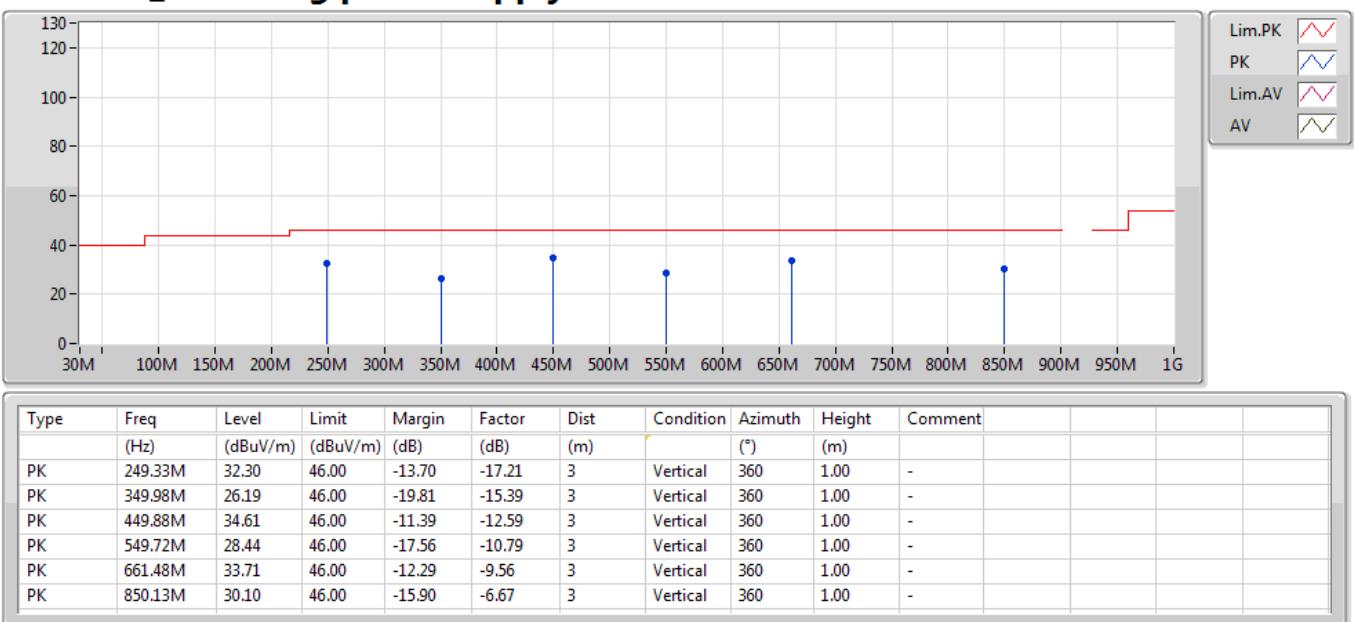




FSK-5K_Nss1_1TX

915MHz_Switching power supply

30/04/2019

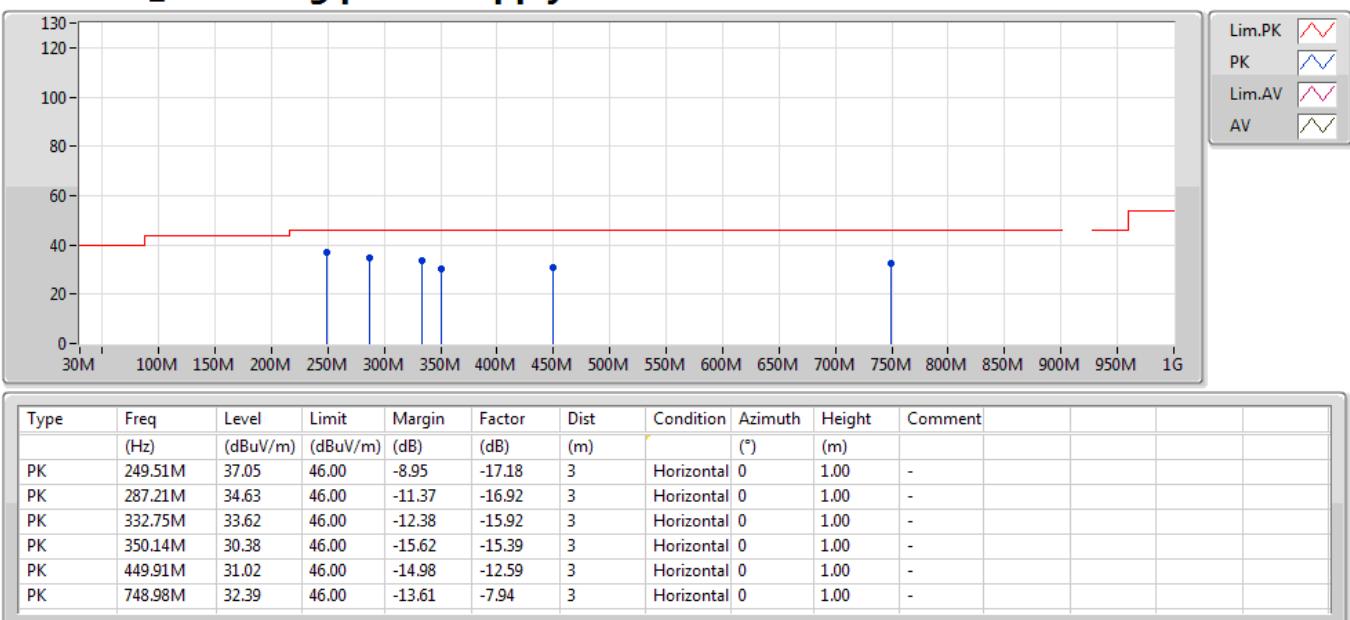




FSK-5K_Nss1_1TX

915MHz_Switching power supply

30/04/2019

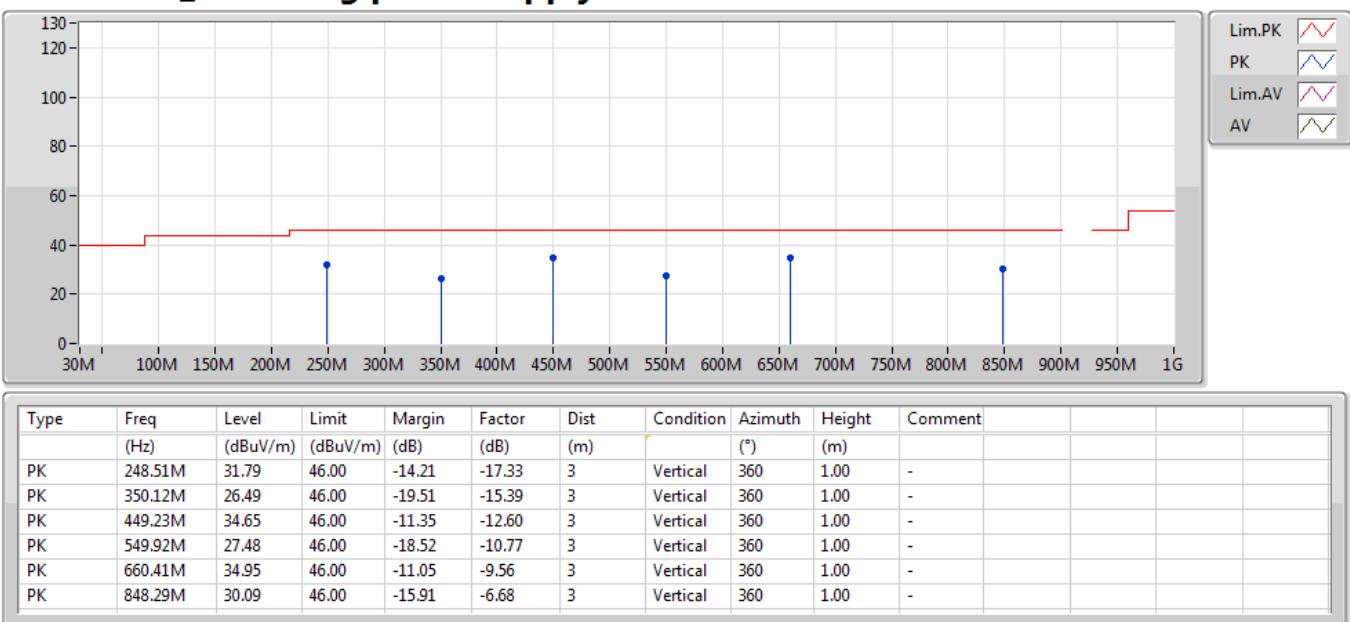




FSK-150K_Nss1_1TX

914.8MHz_Switching power supply

30/04/2019

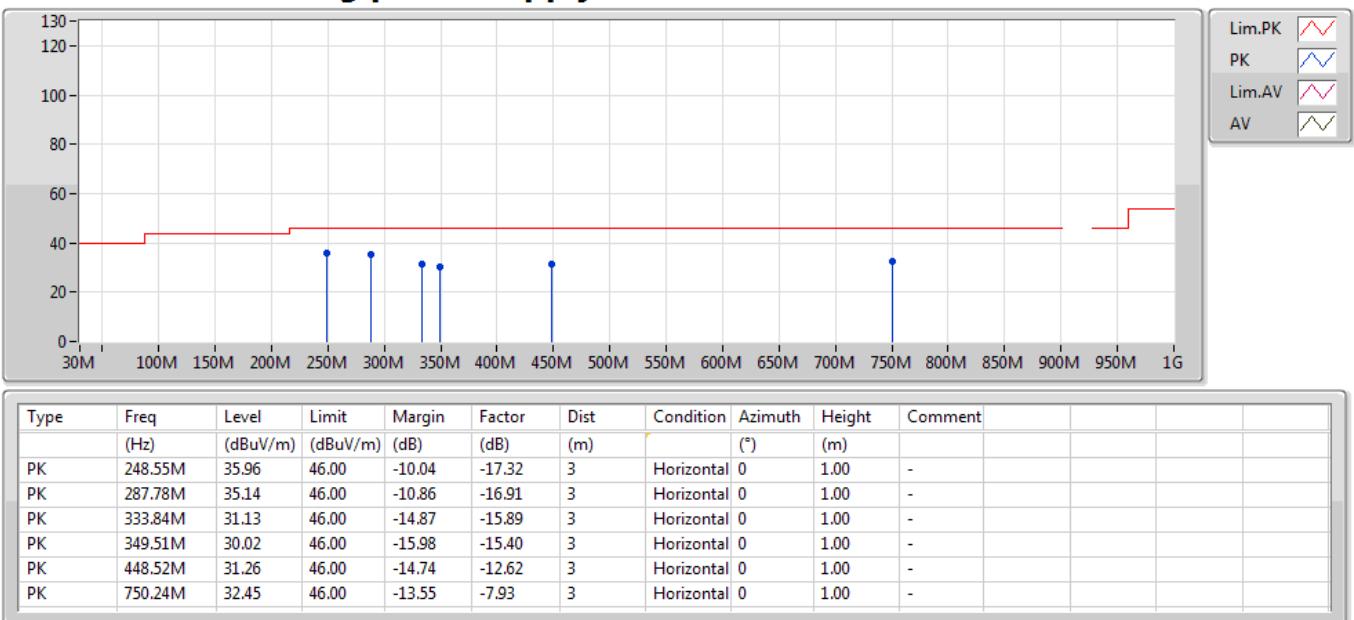




FSK-150K_Nss1_1TX

914.8MHz_Switching power supply

30/04/2019

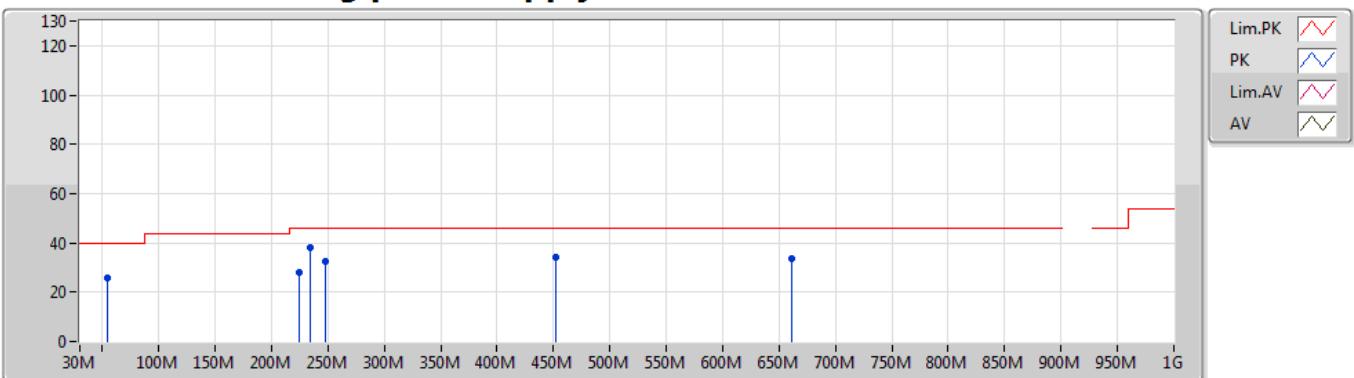




LoRa_FHSS-125k_Nss1_1TX

908.5MHz_Switching power supply

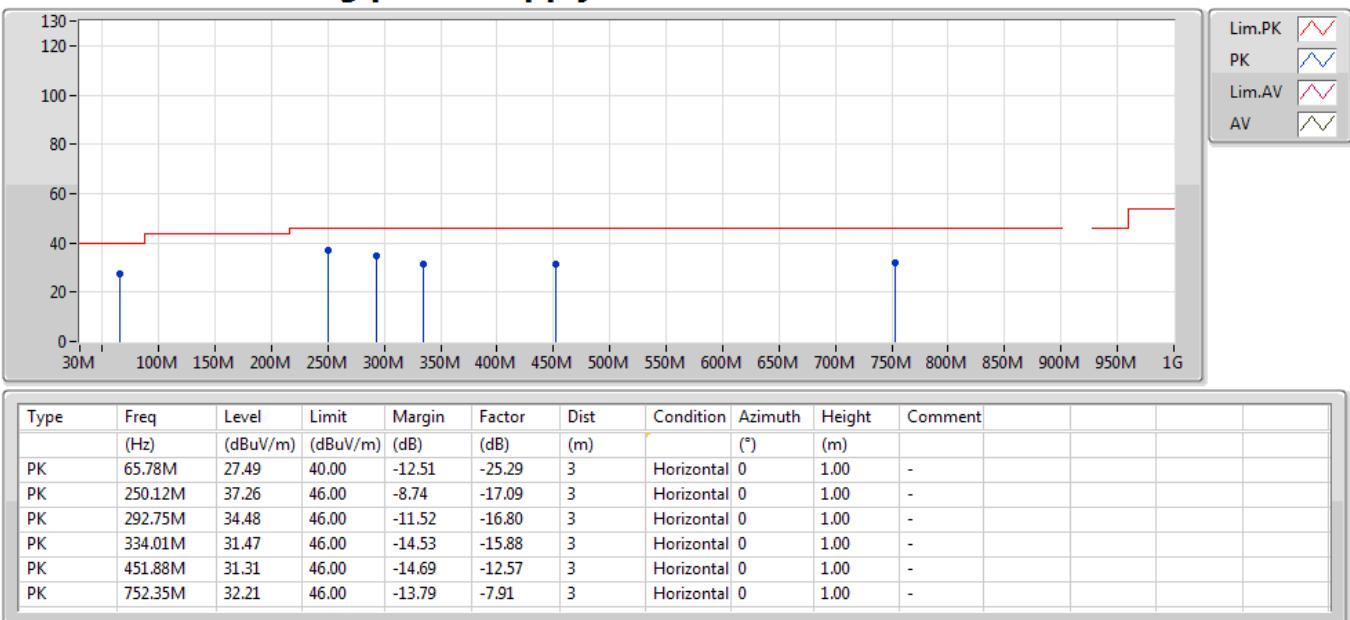
30/04/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	54.21M	25.62	40.00	-14.38	-24.70	3	Vertical	360	1.00	-			
PK	223.88M	28.04	46.00	-17.96	-20.44	3	Vertical	360	1.00	-			
PK	234.51M	38.01	46.00	-7.99	-19.22	3	Vertical	360	1.00	-			
PK	248.12M	32.59	46.00	-13.41	-17.39	3	Vertical	360	1.00	-			
PK	451.52M	34.16	46.00	-11.84	-12.56	3	Vertical	360	1.00	-			
PK	661.05M	33.71	46.00	-12.29	-9.56	3	Vertical	360	1.00	-			

LoRa_FHSS-125k_Nss1_1TX
908.5MHz_Switching power supply

30/04/2019

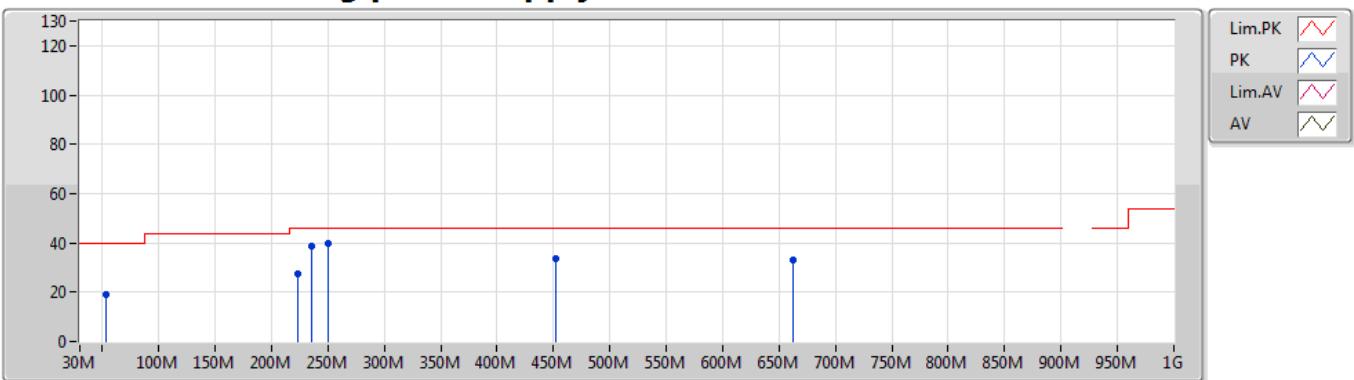




LoRa_FHSS-250k_Nss1_1TX

914.3MHz_Switching power supply

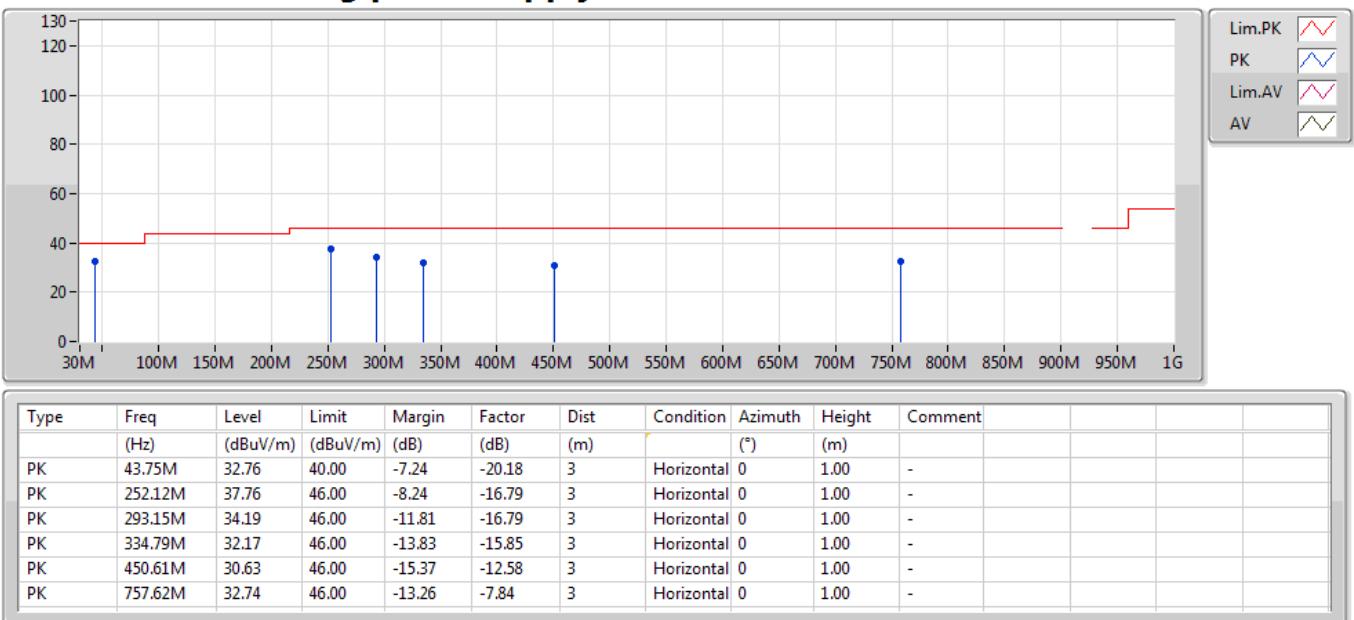
30/04/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	53.22M	18.90	40.00	-21.10	-24.37	3	Vertical	360	1.00	-			
PK	223.12M	27.46	46.00	-18.54	-20.53	3	Vertical	360	1.00	-			
PK	235.84M	38.53	46.00	-7.47	-19.08	3	Vertical	360	1.00	-			
PK	249.88M	40.04	46.00	-5.96	-17.13	3	Vertical	360	1.00	-			
PK	451.72M	33.58	46.00	-12.42	-12.57	3	Vertical	360	1.00	-			
PK	661.8M	33.32	46.00	-12.68	-9.56	3	Vertical	360	1.00	-			

LoRa_FHSS-250k_Nss1_1TX
914.3MHz_Switching power supply

30/04/2019



**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-
LoRa_DTS_Nss1_1TX	Pass	AV	1.80604G	50.89	54.00	-3.11	-5.38	3	Horizontal	234	2.38	-
FSK-5K_Nss1_1TX	Pass	AV	2.70667G	50.64	54.00	-3.36	-2.23	3	Horizontal	68	1.02	-
FSK-50K_Nss1_1TX	Pass	AV	3.60883G	50.24	54.00	-3.76	-0.08	3	Horizontal	307	2.23	-
FSK-150K_Nss1_1TX	Pass	AV	2.78284G	50.79	54.00	-3.21	-1.99	3	Vertical	192	2.17	-
LoRa_FHSS-125k_Nss1_1TX	Pass	AV	4.51104G	50.60	54.00	-3.40	2.64	3	Vertical	309	1.05	-
LoRa_FHSS-250k_Nss1_1TX	Pass	AV	1.82862G	50.01	54.00	-3.99	-5.33	3	Vertical	313	2.86	-



Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
LoRa_DTS_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
903MHz	Pass	AV	1.80605G	48.22	54.00	-5.78	-5.38	3	Vertical	216	1.50	-
903MHz	Pass	AV	2.70898G	43.27	54.00	-10.73	-2.22	3	Vertical	289	2.20	-
903MHz	Pass	AV	3.61215G	39.24	54.00	-14.76	-0.06	3	Vertical	288	1.15	-
903MHz	Pass	AV	4.51514G	40.18	54.00	-13.82	2.64	3	Vertical	217	1.97	-
903MHz	Pass	PK	1.80586G	51.77	74.00	-22.23	-5.39	3	Vertical	216	1.50	-
903MHz	Pass	PK	2.70845G	50.58	74.00	-23.42	-2.22	3	Vertical	289	2.20	-
903MHz	Pass	PK	3.61138G	50.04	74.00	-23.96	-0.06	3	Vertical	288	1.15	-
903MHz	Pass	PK	4.51403G	53.21	74.00	-20.79	2.64	3	Vertical	217	1.97	-
903MHz	Pass	AV	1.80604G	50.89	54.00	-3.11	-5.38	3	Horizontal	234	2.38	-
903MHz	Pass	AV	2.70902G	44.87	54.00	-9.13	-2.22	3	Horizontal	300	1.02	-
903MHz	Pass	AV	3.61198G	42.31	54.00	-11.69	-0.06	3	Horizontal	153	1.27	-
903MHz	Pass	AV	4.51523G	40.15	54.00	-13.85	2.64	3	Horizontal	74	2.90	-
903MHz	Pass	PK	1.806G	54.04	74.00	-19.96	-5.39	3	Horizontal	234	2.38	-
903MHz	Pass	PK	2.70862G	51.62	74.00	-22.38	-2.22	3	Horizontal	300	1.02	-
903MHz	Pass	PK	3.61294G	52.67	74.00	-21.33	-0.06	3	Horizontal	153	1.27	-
903MHz	Pass	PK	4.51438G	53.46	74.00	-20.54	2.64	3	Horizontal	74	2.90	-
907.8MHz	Pass	AV	1.81561G	49.61	54.00	-4.39	-5.36	3	Vertical	280	2.86	-
907.8MHz	Pass	AV	2.72343G	45.56	54.00	-8.44	-2.17	3	Vertical	176	2.10	-
907.8MHz	Pass	AV	3.63128G	41.49	54.00	-12.51	0.00	3	Vertical	212	2.31	-
907.8MHz	Pass	AV	4.53924G	38.25	54.00	-15.75	2.71	3	Vertical	343	1.64	-
907.8MHz	Pass	PK	1.81529G	52.88	74.00	-21.12	-5.36	3	Vertical	280	2.86	-
907.8MHz	Pass	PK	2.72285G	52.16	74.00	-21.84	-2.17	3	Vertical	176	2.10	-
907.8MHz	Pass	PK	3.63191G	51.92	74.00	-22.08	0.00	3	Vertical	212	2.31	-
907.8MHz	Pass	PK	4.53891G	51.36	74.00	-22.64	2.71	3	Vertical	343	1.64	-
907.8MHz	Pass	AV	1.81563G	50.00	54.00	-4.00	-5.36	3	Horizontal	234	2.05	-
907.8MHz	Pass	AV	2.72342G	45.57	54.00	-8.43	-2.17	3	Horizontal	301	1.57	-
907.8MHz	Pass	AV	3.63124G	43.61	54.00	-10.39	0.00	3	Horizontal	289	1.05	-
907.8MHz	Pass	AV	4.53934G	38.26	54.00	-15.74	2.71	3	Horizontal	26	1.01	-
907.8MHz	Pass	PK	1.81531G	53.31	74.00	-20.69	-5.36	3	Horizontal	234	2.05	-
907.8MHz	Pass	PK	2.7231G	52.25	74.00	-21.75	-2.17	3	Horizontal	301	1.57	-
907.8MHz	Pass	PK	3.63048G	53.70	74.00	-20.30	0.00	3	Horizontal	289	1.05	-
907.8MHz	Pass	PK	4.53948G	51.16	74.00	-22.84	2.71	3	Horizontal	26	1.01	-
914.2MHz	Pass	AV	1.82842G	48.72	54.00	-5.28	-5.33	3	Vertical	292	2.87	-
914.2MHz	Pass	AV	2.74264G	43.82	54.00	-10.18	-2.11	3	Vertical	178	2.32	-
914.2MHz	Pass	AV	3.65679G	41.37	54.00	-12.63	0.06	3	Vertical	189	2.96	-
914.2MHz	Pass	AV	4.57134G	36.62	54.00	-17.38	2.78	3	Vertical	257	1.50	-
914.2MHz	Pass	PK	1.82881G	52.09	74.00	-21.91	-5.33	3	Vertical	292	2.87	-
914.2MHz	Pass	PK	2.74324G	50.76	74.00	-23.24	-2.11	3	Vertical	178	2.32	-
914.2MHz	Pass	PK	3.65689G	51.71	74.00	-22.29	0.06	3	Vertical	189	2.96	-
914.2MHz	Pass	PK	4.57149G	49.80	74.00	-24.20	2.78	3	Vertical	257	1.50	-
914.2MHz	Pass	AV	1.82842G	50.41	54.00	-3.59	-5.33	3	Horizontal	151	2.68	-
914.2MHz	Pass	AV	2.74261G	45.62	54.00	-8.38	-2.11	3	Horizontal	119	2.23	-
914.2MHz	Pass	AV	3.65684G	42.10	54.00	-11.90	0.06	3	Horizontal	308	2.16	-
914.2MHz	Pass	AV	4.57148G	37.10	54.00	-16.90	2.78	3	Horizontal	159	1.47	-
914.2MHz	Pass	PK	1.82827G	53.63	74.00	-20.37	-5.33	3	Horizontal	151	2.68	-
914.2MHz	Pass	PK	2.74293G	52.36	74.00	-21.64	-2.11	3	Horizontal	119	2.23	-
914.2MHz	Pass	PK	3.65693G	52.45	74.00	-21.55	0.06	3	Horizontal	308	2.16	-

**RSE TX above 1GHz****Appendix F.2**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
914.2MHz	Pass	PK	4.57136G	50.35	74.00	-23.65	2.78	3	Horizontal	159	1.47	-
902.5MHz	Pass	AV	1.80502G	49.44	54.00	-4.56	-5.39	3	Vertical	288	2.95	-
902.5MHz	Pass	AV	2.70753G	44.78	54.00	-9.22	-2.22	3	Vertical	189	1.11	-
902.5MHz	Pass	AV	3.61002G	42.93	54.00	-11.07	-0.07	3	Vertical	203	2.99	-
902.5MHz	Pass	AV	4.5127G	39.33	54.00	-14.67	2.64	3	Vertical	162	1.75	-
902.5MHz	Pass	PK	1.80545G	52.82	74.00	-21.18	-5.39	3	Vertical	288	2.95	-
902.5MHz	Pass	PK	2.70744G	51.53	74.00	-22.47	-2.23	3	Vertical	189	1.11	-
902.5MHz	Pass	PK	3.60903G	53.24	74.00	-20.76	-0.08	3	Vertical	203	2.99	-
902.5MHz	Pass	PK	4.51336G	51.74	74.00	-22.26	2.64	3	Vertical	162	1.75	-
902.5MHz	Pass	AV	1.80506G	48.35	54.00	-5.65	-5.39	3	Horizontal	160	2.33	-
902.5MHz	Pass	AV	2.70752G	45.18	54.00	-8.82	-2.22	3	Horizontal	308	1.14	-
902.5MHz	Pass	AV	3.61005G	42.35	54.00	-11.65	-0.07	3	Horizontal	166	1.47	-
902.5MHz	Pass	AV	4.51279G	40.06	54.00	-13.94	2.64	3	Horizontal	79	2.89	-
902.5MHz	Pass	PK	1.80507G	51.34	74.00	-22.66	-5.39	3	Horizontal	160	2.33	-
902.5MHz	Pass	PK	2.70709G	52.40	74.00	-21.60	-2.23	3	Horizontal	308	1.14	-
902.5MHz	Pass	PK	3.61065G	52.73	74.00	-21.27	-0.06	3	Horizontal	166	1.47	-
902.5MHz	Pass	PK	4.51261G	52.91	74.00	-21.09	2.64	3	Horizontal	79	2.89	-
914.5MHz	Pass	AV	1.82902G	49.49	54.00	-4.51	-5.33	3	Vertical	288	2.86	-
914.5MHz	Pass	AV	2.74351G	42.48	54.00	-11.52	-2.11	3	Vertical	210	1.50	-
914.5MHz	Pass	AV	3.65805G	40.69	54.00	-13.31	0.06	3	Vertical	203	2.41	-
914.5MHz	Pass	AV	4.57283G	37.62	54.00	-16.38	2.80	3	Vertical	253	1.34	-
914.5MHz	Pass	PK	1.82856G	52.77	74.00	-21.23	-5.33	3	Vertical	288	2.86	-
914.5MHz	Pass	PK	2.74413G	49.87	74.00	-24.13	-2.11	3	Vertical	210	1.50	-
914.5MHz	Pass	PK	3.65815G	51.25	74.00	-22.75	0.06	3	Vertical	203	2.41	-
914.5MHz	Pass	PK	4.57289G	50.36	74.00	-23.64	2.80	3	Vertical	253	1.34	-
914.5MHz	Pass	AV	1.82905G	50.17	54.00	-3.83	-5.33	3	Horizontal	184	1.91	-
914.5MHz	Pass	AV	2.74349G	44.80	54.00	-9.20	-2.11	3	Horizontal	294	2.69	-
914.5MHz	Pass	AV	3.65803G	41.23	54.00	-12.77	0.06	3	Horizontal	333	2.16	-
914.5MHz	Pass	AV	4.57281G	37.22	54.00	-16.78	2.80	3	Horizontal	167	1.46	-
914.5MHz	Pass	PK	1.82905G	53.30	74.00	-20.70	-5.33	3	Horizontal	184	1.91	-
914.5MHz	Pass	PK	2.74395G	51.64	74.00	-22.36	-2.11	3	Horizontal	294	2.69	-
914.5MHz	Pass	PK	3.65852G	51.83	74.00	-22.17	0.06	3	Horizontal	333	2.16	-
914.5MHz	Pass	PK	4.57305G	50.00	74.00	-24.00	2.80	3	Horizontal	167	1.46	-
927.3MHz	Pass	AV	1.8546G	48.62	54.00	-5.38	-5.25	3	Vertical	285	2.87	-
927.3MHz	Pass	AV	2.78192G	47.48	54.00	-6.52	-2.00	3	Vertical	213	2.48	-
927.3MHz	Pass	AV	3.70922G	38.81	54.00	-15.19	0.21	3	Vertical	300	1.24	-
927.3MHz	Pass	AV	4.63687G	36.98	54.00	-17.02	2.96	3	Vertical	285	1.01	-
927.3MHz	Pass	PK	1.8546G	51.97	74.00	-22.03	-5.25	3	Vertical	285	2.87	-
927.3MHz	Pass	PK	2.78129G	53.98	74.00	-20.02	-2.00	3	Vertical	213	2.48	-
927.3MHz	Pass	PK	3.70912G	49.72	74.00	-24.28	0.21	3	Vertical	300	1.24	-
927.3MHz	Pass	PK	4.63703G	50.04	74.00	-23.96	2.96	3	Vertical	285	1.01	-
927.3MHz	Pass	AV	1.85462G	46.49	54.00	-7.51	-5.25	3	Horizontal	316	1.49	-
927.3MHz	Pass	AV	2.78191G	44.43	54.00	-9.57	-2.00	3	Horizontal	234	1.92	-
927.3MHz	Pass	AV	3.70924G	44.78	54.00	-9.22	0.21	3	Horizontal	321	1.04	-
927.3MHz	Pass	AV	4.63682G	36.92	54.00	-17.08	2.96	3	Horizontal	78	1.13	-
927.3MHz	Pass	PK	1.855G	50.04	74.00	-23.96	-5.25	3	Horizontal	316	1.49	-
927.3MHz	Pass	PK	2.78159G	51.42	74.00	-22.58	-2.00	3	Horizontal	234	1.92	-
927.3MHz	Pass	PK	3.70965G	54.94	74.00	-19.06	0.22	3	Horizontal	321	1.04	-
927.3MHz	Pass	PK	4.63708G	49.78	74.00	-24.22	2.96	3	Horizontal	78	1.13	-



RSE TX above 1GHz

Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
923.3MHz	Pass	AV	1.84661G	47.74	54.00	-6.26	-5.28	3	Vertical	332	2.93	-
923.3MHz	Pass	AV	2.76977G	46.14	54.00	-7.86	-2.02	3	Vertical	276	1.66	-
923.3MHz	Pass	AV	3.69305G	45.85	54.00	-8.15	0.17	3	Vertical	323	1.00	-
923.3MHz	Pass	AV	4.61602G	42.43	54.00	-11.57	2.91	3	Vertical	310	1.00	-
923.3MHz	Pass	PK	1.84686G	55.11	74.00	-18.89	-5.28	3	Vertical	332	2.93	-
923.3MHz	Pass	PK	2.77031G	53.08	74.00	-20.92	-2.02	3	Vertical	276	1.66	-
923.3MHz	Pass	PK	3.69407G	52.22	74.00	-21.78	0.17	3	Vertical	323	1.00	-
923.3MHz	Pass	PK	4.61574G	50.68	74.00	-23.32	2.91	3	Vertical	310	1.00	-
923.3MHz	Pass	AV	1.84662G	43.86	54.00	-10.14	-5.28	3	Horizontal	57	1.40	-
923.3MHz	Pass	AV	2.76983G	45.28	54.00	-8.72	-2.02	3	Horizontal	93	1.42	-
923.3MHz	Pass	AV	3.69324G	45.48	54.00	-8.52	0.17	3	Horizontal	55	1.00	-
923.3MHz	Pass	AV	4.61681G	42.18	54.00	-11.82	2.92	3	Horizontal	98	1.38	-
923.3MHz	Pass	PK	1.84617G	48.02	74.00	-25.98	-5.28	3	Horizontal	57	1.40	-
923.3MHz	Pass	PK	2.76963G	52.21	74.00	-21.79	-2.02	3	Horizontal	93	1.42	-
923.3MHz	Pass	PK	3.69298G	55.45	74.00	-18.55	0.17	3	Horizontal	55	1.00	-
923.3MHz	Pass	PK	4.61736G	50.94	74.00	-23.06	2.92	3	Horizontal	98	1.38	-
925.1MHz	Pass	AV	1.85026G	45.61	54.00	-8.39	-5.26	3	Vertical	132	1.37	-
925.1MHz	Pass	AV	2.77542G	45.48	54.00	-8.52	-2.02	3	Vertical	323	2.36	-
925.1MHz	Pass	AV	3.70067G	45.30	54.00	-8.70	0.19	3	Vertical	313	1.08	-
925.1MHz	Pass	AV	4.62585G	41.47	54.00	-12.53	2.94	3	Vertical	107	1.18	-
925.1MHz	Pass	PK	1.85041G	50.98	74.00	-23.02	-5.26	3	Vertical	132	1.37	-
925.1MHz	Pass	PK	2.77502G	51.90	74.00	-22.10	-2.02	3	Vertical	323	2.36	-
925.1MHz	Pass	PK	3.70049G	51.71	74.00	-22.29	0.19	3	Vertical	313	1.08	-
925.1MHz	Pass	PK	4.62576G	49.92	74.00	-24.08	2.94	3	Vertical	107	1.18	-
925.1MHz	Pass	AV	1.85013G	45.84	54.00	-8.16	-5.26	3	Horizontal	170	2.20	-
925.1MHz	Pass	AV	2.77531G	41.85	54.00	-12.15	-2.02	3	Horizontal	345	1.40	-
925.1MHz	Pass	AV	3.70052G	50.62	54.00	-3.38	0.19	3	Horizontal	326	1.01	-
925.1MHz	Pass	AV	4.62563G	42.76	54.00	-11.24	2.94	3	Horizontal	98	1.87	-
925.1MHz	Pass	PK	1.84998G	53.84	74.00	-20.16	-5.27	3	Horizontal	170	2.20	-
925.1MHz	Pass	PK	2.77524G	49.32	74.00	-24.68	-2.02	3	Horizontal	345	1.40	-
925.1MHz	Pass	PK	3.70108G	55.96	74.00	-18.04	0.19	3	Horizontal	326	1.01	-
925.1MHz	Pass	PK	4.62654G	51.04	74.00	-22.96	2.94	3	Horizontal	98	1.87	-
927.5MHz	Pass	AV	1.85505G	45.62	54.00	-8.38	-5.25	3	Vertical	134	1.66	-
927.5MHz	Pass	AV	2.7825G	45.28	54.00	-8.72	-1.99	3	Vertical	319	2.34	-
927.5MHz	Pass	AV	3.7101G	46.05	54.00	-7.95	0.22	3	Vertical	323	1.10	-
927.5MHz	Pass	AV	4.63792G	41.27	54.00	-12.73	2.96	3	Vertical	104	1.10	-
927.5MHz	Pass	PK	1.8547G	51.15	74.00	-22.85	-5.25	3	Vertical	134	1.66	-
927.5MHz	Pass	PK	2.78255G	51.25	74.00	-22.75	-1.99	3	Vertical	319	2.34	-
927.5MHz	Pass	PK	3.71009G	52.38	74.00	-21.62	0.22	3	Vertical	323	1.10	-
927.5MHz	Pass	PK	4.63834G	49.79	74.00	-24.21	2.97	3	Vertical	104	1.10	-
927.5MHz	Pass	AV	1.85502G	47.82	54.00	-6.18	-5.25	3	Horizontal	319	1.72	-
927.5MHz	Pass	AV	2.78247G	41.79	54.00	-12.21	-2.00	3	Horizontal	344	2.99	-
927.5MHz	Pass	AV	3.71022G	50.82	54.00	-3.18	0.22	3	Horizontal	319	1.03	-
927.5MHz	Pass	AV	4.63796G	41.58	54.00	-12.42	2.96	3	Horizontal	91	1.73	-
927.5MHz	Pass	PK	1.85455G	51.17	74.00	-22.83	-5.25	3	Horizontal	319	1.72	-
927.5MHz	Pass	PK	2.78249G	49.14	74.00	-24.86	-2.00	3	Horizontal	344	2.99	-
927.5MHz	Pass	PK	3.70924G	56.41	74.00	-17.59	0.21	3	Horizontal	319	1.03	-
927.5MHz	Pass	PK	4.6379G	50.27	74.00	-23.73	2.96	3	Horizontal	91	1.73	-
FSK-5K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-



RSE TX above 1GHz

Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902.2MHz	Pass	AV	2.70661G	48.50	54.00	-5.50	-2.23	3	Vertical	315	2.17	-
902.2MHz	Pass	AV	3.60882G	45.65	54.00	-8.35	-0.08	3	Vertical	315	1.01	-
902.2MHz	Pass	AV	4.51105G	46.85	54.00	-7.15	2.64	3	Vertical	340	1.51	-
902.2MHz	Pass	PK	2.7067G	54.99	74.00	-19.01	-2.23	3	Vertical	315	2.17	-
902.2MHz	Pass	PK	3.60884G	50.18	74.00	-23.82	-0.08	3	Vertical	315	1.01	-
902.2MHz	Pass	PK	4.51103G	51.24	74.00	-22.76	2.64	3	Vertical	340	1.51	-
902.2MHz	Pass	AV	2.70667G	50.64	54.00	-3.36	-2.23	3	Horizontal	68	1.02	-
902.2MHz	Pass	AV	3.60886G	50.09	54.00	-3.91	-0.08	3	Horizontal	314	2.35	-
902.2MHz	Pass	AV	4.51104G	48.11	54.00	-5.89	2.64	3	Horizontal	319	1.48	-
902.2MHz	Pass	PK	2.70658G	56.30	74.00	-17.70	-2.23	3	Horizontal	68	1.02	-
902.2MHz	Pass	PK	3.60865G	55.02	74.00	-18.98	-0.08	3	Horizontal	314	2.35	-
902.2MHz	Pass	PK	4.51108G	51.87	74.00	-22.13	2.64	3	Horizontal	319	1.48	-
915MHz	Pass	AV	1.83004G	44.41	54.00	-9.59	-5.32	3	Vertical	125	1.03	-
915MHz	Pass	AV	2.74498G	48.50	54.00	-5.50	-2.11	3	Vertical	314	2.66	-
915MHz	Pass	AV	3.66003G	47.69	54.00	-6.31	0.08	3	Vertical	314	1.02	-
915MHz	Pass	AV	4.575G	45.33	54.00	-8.67	2.81	3	Vertical	351	1.38	-
915MHz	Pass	PK	1.83001G	49.65	74.00	-24.35	-5.32	3	Vertical	125	1.03	-
915MHz	Pass	PK	2.7451G	52.79	74.00	-21.21	-2.11	3	Vertical	314	2.66	-
915MHz	Pass	PK	3.65999G	50.86	74.00	-23.14	0.08	3	Vertical	314	1.02	-
915MHz	Pass	PK	4.57516G	50.37	74.00	-23.63	2.81	3	Vertical	351	1.38	-
915MHz	Pass	AV	1.83013G	46.67	54.00	-7.33	-5.32	3	Horizontal	7	1.95	-
915MHz	Pass	AV	2.74498G	45.45	54.00	-8.55	-2.11	3	Horizontal	63	1.01	-
915MHz	Pass	AV	3.66002G	46.21	54.00	-7.79	0.08	3	Horizontal	192	1.06	-
915MHz	Pass	AV	4.575G	46.60	54.00	-7.40	2.81	3	Horizontal	87	1.95	-
915MHz	Pass	PK	1.82998G	52.55	74.00	-21.45	-5.32	3	Horizontal	7	1.95	-
915MHz	Pass	PK	2.74517G	51.97	74.00	-22.03	-2.11	3	Horizontal	63	1.01	-
915MHz	Pass	PK	3.66009G	49.59	74.00	-24.41	0.08	3	Horizontal	192	1.06	-
915MHz	Pass	PK	4.57512G	51.11	74.00	-22.89	2.81	3	Horizontal	87	1.95	-
927.8MHz	Pass	AV	1.85561G	46.25	54.00	-7.75	-5.25	3	Vertical	117	1.37	-
927.8MHz	Pass	AV	2.78342G	47.14	54.00	-6.86	-1.98	3	Vertical	308	2.35	-
927.8MHz	Pass	AV	3.71123G	50.07	54.00	-3.93	0.22	3	Vertical	309	1.08	-
927.8MHz	Pass	AV	4.63903G	45.45	54.00	-8.55	2.97	3	Vertical	94	1.18	-
927.8MHz	Pass	PK	1.85563G	50.57	74.00	-23.43	-5.25	3	Vertical	117	1.37	-
927.8MHz	Pass	PK	2.78339G	50.96	74.00	-23.04	-1.98	3	Vertical	308	2.35	-
927.8MHz	Pass	PK	3.71135G	52.84	74.00	-21.16	0.22	3	Vertical	309	1.08	-
927.8MHz	Pass	PK	4.63884G	49.98	74.00	-24.02	2.97	3	Vertical	94	1.18	-
927.8MHz	Pass	AV	1.8556G	50.32	54.00	-3.68	-5.25	3	Horizontal	341	1.17	-
927.8MHz	Pass	AV	2.78342G	45.36	54.00	-8.64	-1.98	3	Horizontal	40	1.00	-
927.8MHz	Pass	AV	3.71123G	47.05	54.00	-6.95	0.22	3	Horizontal	169	1.03	-
927.8MHz	Pass	AV	4.63903G	46.23	54.00	-7.77	2.97	3	Horizontal	88	1.77	-
927.8MHz	Pass	PK	1.85559G	51.66	74.00	-22.34	-5.25	3	Horizontal	341	1.17	-
927.8MHz	Pass	PK	2.78334G	49.24	74.00	-24.76	-1.98	3	Horizontal	40	1.00	-
927.8MHz	Pass	PK	3.71126G	54.09	74.00	-19.91	0.22	3	Horizontal	169	1.03	-
927.8MHz	Pass	PK	4.639G	50.51	74.00	-23.49	2.97	3	Horizontal	88	1.77	-
FSK-50K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	AV	2.70659G	49.58	54.00	-4.42	-2.23	3	Vertical	326	1.55	-
902.2MHz	Pass	AV	3.60882G	42.84	54.00	-11.16	-0.08	3	Vertical	309	1.14	-
902.2MHz	Pass	AV	4.51105G	46.57	54.00	-7.43	2.64	3	Vertical	347	1.50	-
902.2MHz	Pass	PK	2.70674G	51.84	74.00	-22.16	-2.23	3	Vertical	326	1.55	-



RSE TX above 1GHz

Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902.2MHz	Pass	PK	3.60888G	47.81	74.00	-26.19	-0.08	3	Vertical	309	1.14	-
902.2MHz	Pass	PK	4.51116G	51.15	74.00	-22.85	2.64	3	Vertical	347	1.50	-
902.2MHz	Pass	AV	2.7066G	47.78	54.00	-6.22	-2.23	3	Horizontal	75	2.52	-
902.2MHz	Pass	AV	3.60883G	50.24	54.00	-3.76	-0.08	3	Horizontal	307	2.23	-
902.2MHz	Pass	AV	4.51104G	48.10	54.00	-5.90	2.64	3	Horizontal	317	1.68	-
902.2MHz	Pass	PK	2.70653G	50.80	74.00	-23.20	-2.23	3	Horizontal	75	2.52	-
902.2MHz	Pass	PK	3.60869G	52.64	74.00	-21.36	-0.08	3	Horizontal	307	2.23	-
902.2MHz	Pass	PK	4.51083G	51.93	74.00	-22.07	2.64	3	Horizontal	317	1.68	-
915MHz	Pass	AV	1.83003G	45.78	54.00	-8.22	-5.32	3	Vertical	286	1.27	-
915MHz	Pass	AV	2.74502G	47.63	54.00	-6.37	-2.11	3	Vertical	293	1.28	-
915MHz	Pass	AV	3.66001G	45.54	54.00	-8.46	0.08	3	Vertical	226	1.88	-
915MHz	Pass	AV	4.57503G	47.19	54.00	-6.81	2.81	3	Vertical	225	1.77	-
915MHz	Pass	PK	1.82998G	48.30	74.00	-25.70	-5.32	3	Vertical	286	1.27	-
915MHz	Pass	PK	2.74517G	50.39	74.00	-23.61	-2.11	3	Vertical	293	1.28	-
915MHz	Pass	PK	3.65982G	49.24	74.00	-24.76	0.08	3	Vertical	226	1.88	-
915MHz	Pass	PK	4.575G	51.52	74.00	-22.48	2.80	3	Vertical	225	1.77	-
915MHz	Pass	AV	1.83003G	49.40	54.00	-4.60	-5.32	3	Horizontal	328	1.01	-
915MHz	Pass	AV	2.74499G	47.65	54.00	-6.35	-2.11	3	Horizontal	83	2.45	-
915MHz	Pass	AV	3.65998G	47.66	54.00	-6.34	0.08	3	Horizontal	172	1.07	-
915MHz	Pass	AV	4.57505G	44.16	54.00	-9.84	2.81	3	Horizontal	316	1.50	-
915MHz	Pass	PK	1.83G	52.96	74.00	-21.04	-5.32	3	Horizontal	328	1.01	-
915MHz	Pass	PK	2.74493G	50.75	74.00	-23.25	-2.11	3	Horizontal	83	2.45	-
915MHz	Pass	PK	3.66017G	50.00	74.00	-24.00	0.08	3	Horizontal	172	1.07	-
915MHz	Pass	PK	4.57525G	49.70	74.00	-24.30	2.81	3	Horizontal	316	1.50	-
927.8MHz	Pass	AV	1.85564G	45.85	54.00	-8.15	-5.25	3	Vertical	240	1.45	-
927.8MHz	Pass	AV	2.78341G	46.02	54.00	-7.98	-1.98	3	Vertical	288	1.15	-
927.8MHz	Pass	AV	3.71125G	47.95	54.00	-6.05	0.22	3	Vertical	301	1.07	-
927.8MHz	Pass	AV	4.63905G	42.58	54.00	-11.42	2.97	3	Vertical	69	1.50	-
927.8MHz	Pass	PK	1.85566G	48.69	74.00	-25.31	-5.25	3	Vertical	240	1.45	-
927.8MHz	Pass	PK	2.78355G	49.59	74.00	-24.41	-1.98	3	Vertical	288	1.15	-
927.8MHz	Pass	PK	3.71121G	51.36	74.00	-22.64	0.22	3	Vertical	301	1.07	-
927.8MHz	Pass	PK	4.63906G	48.49	74.00	-25.51	2.97	3	Vertical	69	1.50	-
927.8MHz	Pass	AV	1.85563G	49.68	54.00	-4.32	-5.25	3	Horizontal	86	1.21	-
927.8MHz	Pass	AV	2.78342G	44.72	54.00	-9.28	-1.98	3	Horizontal	291	2.38	-
927.8MHz	Pass	AV	3.71121G	48.68	54.00	-5.32	0.22	3	Horizontal	55	1.00	-
927.8MHz	Pass	AV	4.63904G	43.61	54.00	-10.39	2.97	3	Horizontal	328	1.50	-
927.8MHz	Pass	PK	1.8557G	53.07	74.00	-20.93	-5.25	3	Horizontal	86	1.21	-
927.8MHz	Pass	PK	2.78343G	48.70	74.00	-25.30	-1.98	3	Horizontal	291	2.38	-
927.8MHz	Pass	PK	3.71106G	54.29	74.00	-19.71	0.22	3	Horizontal	55	1.00	-
927.8MHz	Pass	PK	4.63881G	48.88	74.00	-25.12	2.97	3	Horizontal	328	1.50	-
FSK-150K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
902.4MHz	Pass	AV	2.70723G	46.32	54.00	-7.68	-2.23	3	Vertical	134	1.43	-
902.4MHz	Pass	AV	3.60965G	43.40	54.00	-10.60	-0.07	3	Vertical	308	1.53	-
902.4MHz	Pass	AV	4.51202G	49.11	54.00	-4.89	2.64	3	Vertical	214	1.76	-
902.4MHz	Pass	PK	2.70726G	50.04	74.00	-23.96	-2.23	3	Vertical	134	1.43	-
902.4MHz	Pass	PK	3.60984G	48.13	74.00	-25.87	-0.07	3	Vertical	308	1.53	-
902.4MHz	Pass	PK	4.51206G	52.94	74.00	-21.06	2.64	3	Vertical	214	1.76	-
902.4MHz	Pass	AV	2.7072G	47.77	54.00	-6.23	-2.23	3	Horizontal	292	1.00	-
902.4MHz	Pass	AV	3.6096G	47.80	54.00	-6.20	-0.07	3	Horizontal	301	1.98	-

**RSE TX above 1GHz****Appendix F.2**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902.4MHz	Pass	AV	4.51206G	46.68	54.00	-7.32	2.64	3	Horizontal	75	2.16	-
902.4MHz	Pass	PK	2.70718G	53.28	74.00	-20.72	-2.23	3	Horizontal	292	1.00	-
902.4MHz	Pass	PK	3.60948G	51.26	74.00	-22.74	-0.07	3	Horizontal	301	1.98	-
902.4MHz	Pass	PK	4.51169G	51.45	74.00	-22.55	2.64	3	Horizontal	75	2.16	-
914.8MHz	Pass	AV	1.82961G	45.81	54.00	-8.19	-5.32	3	Vertical	284	2.45	-
914.8MHz	Pass	AV	2.74444G	46.87	54.00	-7.13	-2.11	3	Vertical	202	2.03	-
914.8MHz	Pass	AV	3.65922G	45.97	54.00	-8.03	0.07	3	Vertical	276	1.01	-
914.8MHz	Pass	AV	4.57404G	43.40	54.00	-10.60	2.80	3	Vertical	340	1.50	-
914.8MHz	Pass	PK	1.82952G	48.84	74.00	-25.16	-5.32	3	Vertical	284	2.45	-
914.8MHz	Pass	PK	2.74437G	50.37	74.00	-23.63	-2.11	3	Vertical	202	2.03	-
914.8MHz	Pass	PK	3.65932G	50.01	74.00	-23.99	0.07	3	Vertical	276	1.01	-
914.8MHz	Pass	PK	4.57384G	49.14	74.00	-24.86	2.80	3	Vertical	340	1.50	-
914.8MHz	Pass	AV	1.8296G	46.79	54.00	-7.21	-5.32	3	Horizontal	157	2.17	-
914.8MHz	Pass	AV	2.74436G	39.80	54.00	-14.20	-2.11	3	Horizontal	102	1.61	-
914.8MHz	Pass	AV	3.65924G	49.41	54.00	-4.59	0.07	3	Horizontal	163	1.50	-
914.8MHz	Pass	AV	4.57403G	44.83	54.00	-9.17	2.80	3	Horizontal	303	1.50	-
914.8MHz	Pass	PK	1.82973G	49.41	74.00	-24.59	-5.32	3	Horizontal	157	2.17	-
914.8MHz	Pass	PK	2.74436G	43.78	74.00	-30.22	-2.11	3	Horizontal	102	1.61	-
914.8MHz	Pass	PK	3.65913G	52.59	74.00	-21.41	0.07	3	Horizontal	163	1.50	-
914.8MHz	Pass	PK	4.57406G	49.95	74.00	-24.05	2.80	3	Horizontal	303	1.50	-
927.6MHz	Pass	AV	1.8552G	46.94	54.00	-7.06	-5.25	3	Vertical	108	1.89	-
927.6MHz	Pass	AV	2.78284G	50.79	54.00	-3.21	-1.99	3	Vertical	192	2.17	-
927.6MHz	Pass	AV	3.71042G	45.11	54.00	-8.89	0.22	3	Vertical	250	1.09	-
927.6MHz	Pass	AV	4.63804G	43.05	54.00	-10.95	2.96	3	Vertical	70	1.56	-
927.6MHz	Pass	PK	1.85528G	49.68	74.00	-24.32	-5.25	3	Vertical	108	1.89	-
927.6MHz	Pass	PK	2.78276G	53.48	74.00	-20.52	-1.99	3	Vertical	192	2.17	-
927.6MHz	Pass	PK	3.7105G	49.45	74.00	-24.55	0.22	3	Vertical	250	1.09	-
927.6MHz	Pass	PK	4.63803G	48.86	74.00	-25.14	2.96	3	Vertical	70	1.56	-
927.6MHz	Pass	AV	1.85527G	46.96	54.00	-7.04	-5.25	3	Horizontal	166	2.68	-
927.6MHz	Pass	AV	2.7828G	46.86	54.00	-7.14	-1.99	3	Horizontal	275	2.32	-
927.6MHz	Pass	AV	3.71046G	50.61	54.00	-3.39	0.22	3	Horizontal	320	2.63	-
927.6MHz	Pass	AV	4.63804G	43.73	54.00	-10.27	2.96	3	Horizontal	68	1.50	-
927.6MHz	Pass	PK	1.85517G	51.13	74.00	-22.87	-5.25	3	Horizontal	166	2.68	-
927.6MHz	Pass	PK	2.78276G	50.26	74.00	-23.74	-1.99	3	Horizontal	275	2.32	-
927.6MHz	Pass	PK	3.71031G	53.51	74.00	-20.49	0.22	3	Horizontal	320	2.63	-
927.6MHz	Pass	PK	4.63783G	49.12	74.00	-24.88	2.96	3	Horizontal	68	1.50	-
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	AV	2.7066G	41.44	54.00	-12.56	-2.23	3	Vertical	88	1.49	-
902.2MHz	Pass	AV	3.6088G	45.86	54.00	-8.14	-0.08	3	Vertical	32	1.08	-
902.2MHz	Pass	AV	4.51104G	50.60	54.00	-3.40	2.64	3	Vertical	309	1.05	-
902.2MHz	Pass	PK	2.70662G	48.65	74.00	-25.35	-2.23	3	Vertical	40	1.73	-
902.2MHz	Pass	PK	3.60862G	49.33	74.00	-24.67	-0.08	3	Vertical	32	1.08	-
902.2MHz	Pass	PK	4.51121G	54.22	74.00	-19.78	2.64	3	Vertical	309	1.05	-
902.2MHz	Pass	AV	2.70662G	47.44	54.00	-6.56	-2.23	3	Horizontal	46	1.01	-
902.2MHz	Pass	AV	3.60882G	48.11	54.00	-5.89	-0.08	3	Horizontal	186	1.20	-
902.2MHz	Pass	AV	4.51106G	50.55	54.00	-3.45	2.64	3	Horizontal	188	1.17	-
902.2MHz	Pass	PK	2.70656G	50.13	74.00	-23.87	-2.23	3	Horizontal	46	1.01	-
902.2MHz	Pass	PK	3.6089G	51.19	74.00	-22.81	-0.08	3	Horizontal	186	1.20	-
902.2MHz	Pass	PK	4.51073G	54.00	74.00	-20.00	2.64	3	Horizontal	188	1.17	-



RSE TX above 1GHz

Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
915MHz	Pass	AV	1.83002G	49.68	54.00	-4.32	-5.32	3	Vertical	2	2.84	-
915MHz	Pass	AV	2.74502G	47.20	54.00	-6.80	-2.11	3	Vertical	47	2.53	-
915MHz	Pass	AV	3.66003G	47.37	54.00	-6.63	0.08	3	Vertical	223	2.73	-
915MHz	Pass	AV	4.57503G	44.55	54.00	-9.45	2.81	3	Vertical	2	1.59	-
915MHz	Pass	PK	1.82996G	51.03	74.00	-22.97	-5.32	3	Vertical	2	2.84	-
915MHz	Pass	PK	2.74516G	50.14	74.00	-23.86	-2.11	3	Vertical	47	2.53	-
915MHz	Pass	PK	3.65979G	50.91	74.00	-23.09	0.08	3	Vertical	223	2.73	-
915MHz	Pass	PK	4.57562G	49.97	74.00	-24.03	2.81	3	Vertical	2	1.59	-
915MHz	Pass	AV	1.83002G	50.10	54.00	-3.90	-5.32	3	Horizontal	344	1.97	-
915MHz	Pass	AV	2.74502G	43.69	54.00	-10.31	-2.11	3	Horizontal	185	1.33	-
915MHz	Pass	AV	3.66003G	49.82	54.00	-4.18	0.08	3	Horizontal	166	1.89	-
915MHz	Pass	AV	4.57503G	46.83	54.00	-7.17	2.81	3	Horizontal	97	1.07	-
915MHz	Pass	PK	1.83007G	52.35	74.00	-21.65	-5.32	3	Horizontal	344	1.97	-
915MHz	Pass	PK	2.74504G	47.51	74.00	-26.49	-2.11	3	Horizontal	185	1.33	-
915MHz	Pass	PK	3.66019G	52.53	74.00	-21.47	0.08	3	Horizontal	166	1.89	-
915MHz	Pass	PK	4.57509G	51.53	74.00	-22.47	2.81	3	Horizontal	97	1.07	-
927.8MHz	Pass	AV	1.85562G	50.55	54.00	-3.45	-5.25	3	Vertical	97	1.01	-
927.8MHz	Pass	AV	2.7834G	47.80	54.00	-6.20	-1.98	3	Vertical	301	2.90	-
927.8MHz	Pass	AV	3.7112G	50.33	54.00	-3.67	0.22	3	Vertical	274	2.99	-
927.8MHz	Pass	AV	4.63906G	45.31	54.00	-8.69	2.97	3	Vertical	347	1.13	-
927.8MHz	Pass	PK	1.85565G	51.67	74.00	-22.33	-5.25	3	Vertical	97	1.01	-
927.8MHz	Pass	PK	2.7834G	50.20	74.00	-23.80	-1.98	3	Vertical	301	2.90	-
927.8MHz	Pass	PK	3.71114G	52.82	74.00	-21.18	0.22	3	Vertical	274	2.99	-
927.8MHz	Pass	PK	4.63936G	49.93	74.00	-24.07	2.97	3	Vertical	347	1.13	-
927.8MHz	Pass	AV	1.85563G	49.36	54.00	-4.64	-5.25	3	Horizontal	81	1.01	-
927.8MHz	Pass	AV	2.78346G	49.73	54.00	-4.27	-1.98	3	Horizontal	226	1.13	-
927.8MHz	Pass	AV	3.71124G	49.50	54.00	-4.50	0.22	3	Horizontal	85	1.02	-
927.8MHz	Pass	AV	4.63906G	47.08	54.00	-6.92	2.97	3	Horizontal	245	1.99	-
927.8MHz	Pass	PK	1.85555G	51.57	74.00	-22.43	-5.25	3	Horizontal	81	1.01	-
927.8MHz	Pass	PK	2.78334G	51.89	74.00	-22.11	-1.98	3	Horizontal	226	1.13	-
927.8MHz	Pass	PK	3.71162G	54.99	74.00	-19.01	0.22	3	Horizontal	85	1.02	-
927.8MHz	Pass	PK	4.63888G	51.05	74.00	-22.95	2.97	3	Horizontal	245	1.99	-
902.3MHz	Pass	AV	2.70691G	45.39	54.00	-8.61	-2.23	3	Vertical	358	2.88	-
902.3MHz	Pass	AV	3.60922G	44.10	54.00	-9.90	-0.08	3	Vertical	360	2.71	-
902.3MHz	Pass	AV	4.51152G	48.00	54.00	-6.00	2.64	3	Vertical	359	1.51	-
902.3MHz	Pass	PK	2.70694G	48.56	74.00	-25.44	-2.23	3	Vertical	358	2.88	-
902.3MHz	Pass	PK	3.60913G	48.28	74.00	-25.72	-0.08	3	Vertical	360	2.71	-
902.3MHz	Pass	PK	4.51114G	52.08	74.00	-21.92	2.64	3	Vertical	359	1.51	-
902.3MHz	Pass	AV	2.70693G	48.67	54.00	-5.33	-2.23	3	Horizontal	328	1.11	-
902.3MHz	Pass	AV	3.60921G	49.65	54.00	-4.35	-0.08	3	Horizontal	168	1.74	-
902.3MHz	Pass	AV	4.51152G	49.54	54.00	-4.46	2.64	3	Horizontal	95	1.93	-
902.3MHz	Pass	PK	2.70695G	51.09	74.00	-22.91	-2.23	3	Horizontal	328	1.11	-
902.3MHz	Pass	PK	3.6093G	52.18	74.00	-21.82	-0.08	3	Horizontal	168	1.74	-
902.3MHz	Pass	PK	4.51129G	53.14	74.00	-20.86	2.64	3	Horizontal	95	1.93	-
908.5MHz	Pass	AV	1.81701G	50.60	54.00	-3.40	-5.35	3	Vertical	334	2.85	-
908.5MHz	Pass	AV	2.7255G	44.48	54.00	-9.52	-2.17	3	Vertical	2	1.03	-
908.5MHz	Pass	AV	3.63401G	44.30	54.00	-9.70	0.00	3	Vertical	234	1.65	-
908.5MHz	Pass	AV	4.5425G	47.36	54.00	-6.64	2.72	3	Vertical	2	1.50	-
908.5MHz	Pass	PK	1.8171G	51.81	74.00	-22.19	-5.35	3	Vertical	334	2.85	-



RSE TX above 1GHz

Appendix F.2

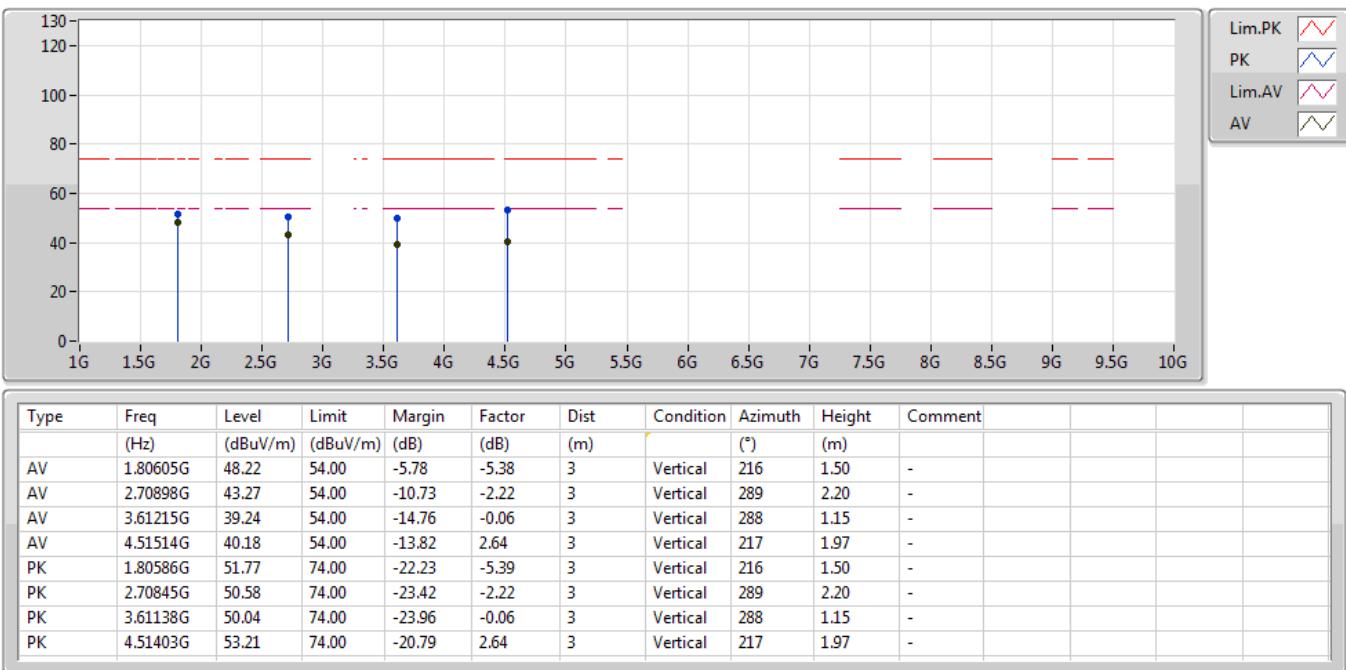
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
908.5MHz	Pass	PK	2.72529G	48.06	74.00	-25.94	-2.17	3	Vertical	2	1.03	-
908.5MHz	Pass	PK	3.63433G	48.67	74.00	-25.33	0.00	3	Vertical	234	1.65	-
908.5MHz	Pass	PK	4.54262G	51.60	74.00	-22.40	2.72	3	Vertical	2	1.50	-
908.5MHz	Pass	AV	1.81702G	49.42	54.00	-4.58	-5.35	3	Horizontal	154	2.99	-
908.5MHz	Pass	AV	2.7255G	45.57	54.00	-8.43	-2.17	3	Horizontal	328	1.01	-
908.5MHz	Pass	AV	3.63401G	50.10	54.00	-3.90	0.00	3	Horizontal	179	2.22	-
908.5MHz	Pass	AV	4.54252G	49.07	54.00	-4.93	2.72	3	Horizontal	96	1.01	-
908.5MHz	Pass	PK	1.81707G	54.62	74.00	-19.38	-5.35	3	Horizontal	154	2.99	-
908.5MHz	Pass	PK	2.72556G	48.67	74.00	-25.33	-2.17	3	Horizontal	328	1.01	-
908.5MHz	Pass	PK	3.63375G	52.62	74.00	-21.38	0.00	3	Horizontal	179	2.22	-
908.5MHz	Pass	PK	4.54239G	52.89	74.00	-21.11	2.72	3	Horizontal	96	1.01	-
914.9MHz	Pass	AV	1.8298G	49.64	54.00	-4.36	-5.32	3	Vertical	331	2.88	-
914.9MHz	Pass	AV	2.74472G	45.46	54.00	-8.54	-2.11	3	Vertical	13	1.09	-
914.9MHz	Pass	AV	3.6596G	43.39	54.00	-10.61	0.08	3	Vertical	223	2.31	-
914.9MHz	Pass	AV	4.57452G	44.02	54.00	-9.98	2.80	3	Vertical	0	1.61	-
914.9MHz	Pass	PK	1.82995G	54.54	74.00	-19.46	-5.32	3	Vertical	331	2.88	-
914.9MHz	Pass	PK	2.74463G	48.81	74.00	-25.19	-2.11	3	Vertical	13	1.09	-
914.9MHz	Pass	PK	3.65945G	47.96	74.00	-26.04	0.08	3	Vertical	223	2.31	-
914.9MHz	Pass	PK	4.57447G	49.25	74.00	-24.75	2.80	3	Vertical	0	1.61	-
914.9MHz	Pass	AV	1.8298G	49.62	54.00	-4.38	-5.32	3	Horizontal	174	2.64	-
914.9MHz	Pass	AV	2.74472G	44.68	54.00	-9.32	-2.11	3	Horizontal	91	1.16	-
914.9MHz	Pass	AV	3.65962G	49.36	54.00	-4.64	0.08	3	Horizontal	164	1.88	-
914.9MHz	Pass	AV	4.5745G	45.37	54.00	-8.63	2.80	3	Horizontal	97	1.07	-
914.9MHz	Pass	PK	1.8297G	54.49	74.00	-19.51	-5.32	3	Horizontal	174	2.64	-
914.9MHz	Pass	PK	2.74469G	48.25	74.00	-25.75	-2.11	3	Horizontal	91	1.16	-
914.9MHz	Pass	PK	3.65977G	52.23	74.00	-21.77	0.08	3	Horizontal	164	1.88	-
914.9MHz	Pass	PK	4.57454G	50.48	74.00	-23.52	2.80	3	Horizontal	97	1.07	-
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
902.3MHz	Pass	AV	2.70693G	48.39	54.00	-5.61	-2.23	3	Vertical	218	1.58	-
902.3MHz	Pass	AV	3.60921G	42.78	54.00	-11.22	-0.08	3	Vertical	164	1.12	-
902.3MHz	Pass	AV	4.51153G	46.60	54.00	-7.40	2.64	3	Vertical	171	1.77	-
902.3MHz	Pass	PK	2.70701G	51.81	74.00	-22.19	-2.23	3	Vertical	218	1.58	-
902.3MHz	Pass	PK	3.60975G	48.66	74.00	-25.34	-0.07	3	Vertical	164	1.12	-
902.3MHz	Pass	PK	4.51145G	52.95	74.00	-21.05	2.64	3	Vertical	171	1.77	-
902.3MHz	Pass	AV	2.70694G	48.95	54.00	-5.05	-2.23	3	Horizontal	324	1.32	-
902.3MHz	Pass	AV	3.60924G	46.45	54.00	-7.55	-0.08	3	Horizontal	174	1.50	-
902.3MHz	Pass	AV	4.51154G	46.20	54.00	-7.80	2.64	3	Horizontal	321	1.02	-
902.3MHz	Pass	PK	2.70687G	52.09	74.00	-21.91	-2.23	3	Horizontal	324	1.32	-
902.3MHz	Pass	PK	3.6096G	51.21	74.00	-22.79	-0.07	3	Horizontal	174	1.50	-
902.3MHz	Pass	PK	4.51144G	52.63	74.00	-21.37	2.64	3	Horizontal	321	1.02	-
914.3MHz	Pass	AV	1.82862G	50.01	54.00	-3.99	-5.33	3	Vertical	313	2.86	-
914.3MHz	Pass	AV	2.74292G	45.29	54.00	-8.71	-2.11	3	Vertical	315	1.53	-
914.3MHz	Pass	AV	3.65723G	44.86	54.00	-9.14	0.06	3	Vertical	215	1.87	-
914.3MHz	Pass	AV	4.57153G	43.83	54.00	-10.17	2.78	3	Vertical	261	1.36	-
914.3MHz	Pass	PK	1.82844G	51.76	74.00	-22.24	-5.33	3	Vertical	313	2.86	-
914.3MHz	Pass	PK	2.74284G	49.42	74.00	-24.58	-2.11	3	Vertical	315	1.53	-
914.3MHz	Pass	PK	3.65762G	50.14	74.00	-23.86	0.06	3	Vertical	215	1.87	-
914.3MHz	Pass	PK	4.57189G	50.95	74.00	-23.05	2.79	3	Vertical	261	1.36	-
914.3MHz	Pass	AV	1.82863G	48.57	54.00	-5.43	-5.33	3	Horizontal	359	1.02	-

**RSE TX above 1GHz****Appendix F.2**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
914.3MHz	Pass	AV	2.74293G	49.01	54.00	-4.99	-2.11	3	Horizontal	193	1.15	-
914.3MHz	Pass	AV	3.65722G	49.30	54.00	-4.70	0.06	3	Horizontal	330	1.98	-
914.3MHz	Pass	AV	4.57154G	42.26	54.00	-11.74	2.78	3	Horizontal	85	1.44	-
914.3MHz	Pass	PK	1.82861G	50.64	74.00	-23.36	-5.33	3	Horizontal	359	1.02	-
914.3MHz	Pass	PK	2.74299G	52.20	74.00	-21.80	-2.11	3	Horizontal	193	1.15	-
914.3MHz	Pass	PK	3.6568G	53.55	74.00	-20.45	0.06	3	Horizontal	330	1.98	-
914.3MHz	Pass	PK	4.57119G	50.26	74.00	-23.74	2.78	3	Horizontal	85	1.44	-
927.5MHz	Pass	AV	1.85503G	47.36	54.00	-6.64	-5.25	3	Vertical	108	1.01	-
927.5MHz	Pass	AV	2.78254G	49.97	54.00	-4.03	-1.99	3	Vertical	228	1.30	-
927.5MHz	Pass	AV	3.71001G	44.87	54.00	-9.13	0.22	3	Vertical	213	2.06	-
927.5MHz	Pass	AV	4.63752G	42.49	54.00	-11.51	2.96	3	Vertical	274	1.10	-
927.5MHz	Pass	PK	1.85506G	49.42	74.00	-24.58	-5.25	3	Vertical	108	1.01	-
927.5MHz	Pass	PK	2.78228G	52.91	74.00	-21.09	-2.00	3	Vertical	228	1.30	-
927.5MHz	Pass	PK	3.71037G	50.23	74.00	-23.77	0.22	3	Vertical	213	2.06	-
927.5MHz	Pass	PK	4.63805G	49.89	74.00	-24.11	2.96	3	Vertical	274	1.10	-
927.5MHz	Pass	AV	1.85502G	49.55	54.00	-4.45	-5.25	3	Horizontal	359	1.50	-
927.5MHz	Pass	AV	2.78253G	48.84	54.00	-5.16	-1.99	3	Horizontal	257	1.50	-
927.5MHz	Pass	AV	3.71002G	49.46	54.00	-4.54	0.22	3	Horizontal	318	2.10	-
927.5MHz	Pass	AV	4.63752G	41.05	54.00	-12.95	2.96	3	Horizontal	331	1.64	-
927.5MHz	Pass	PK	1.85512G	51.77	74.00	-22.23	-5.25	3	Horizontal	359	1.50	-
927.5MHz	Pass	PK	2.7827G	52.12	74.00	-21.88	-1.99	3	Horizontal	257	1.50	-
927.5MHz	Pass	PK	3.70994G	53.71	74.00	-20.29	0.22	3	Horizontal	318	2.10	-
927.5MHz	Pass	PK	4.63793G	49.80	74.00	-24.20	2.96	3	Horizontal	331	1.64	-

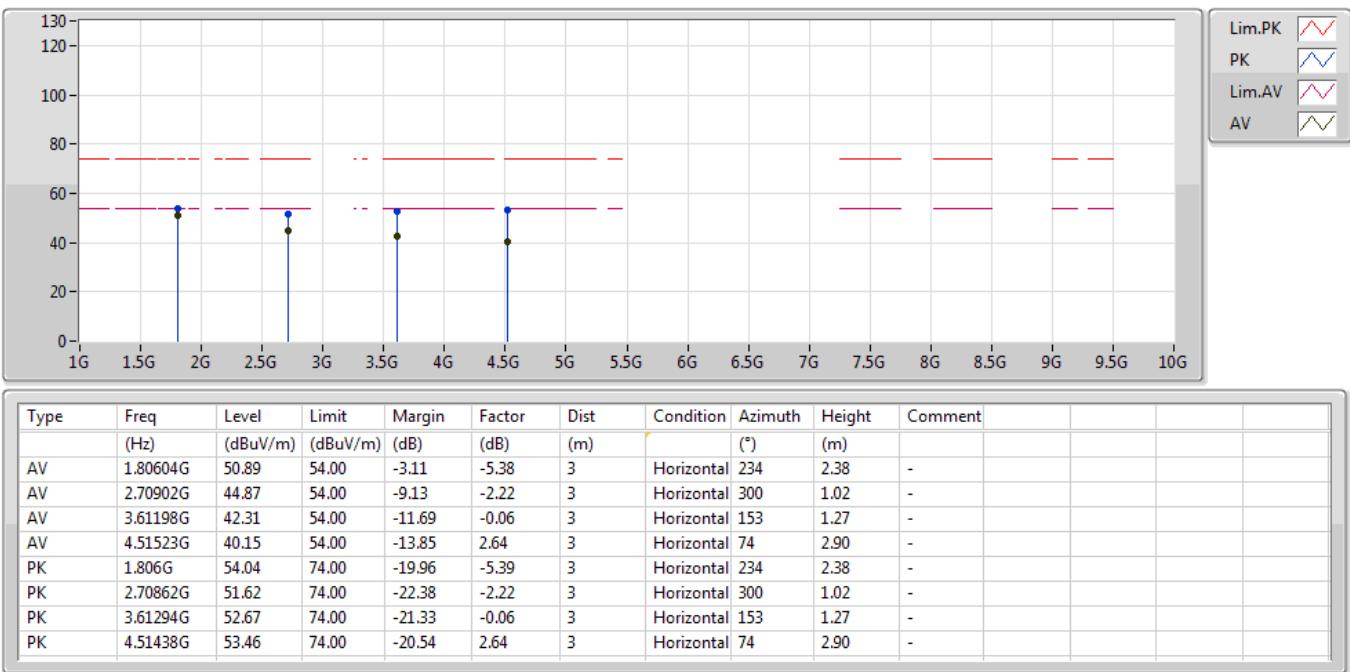
LoRa_DTS_Nss1_1TX
903MHz_TX

27/04/2019



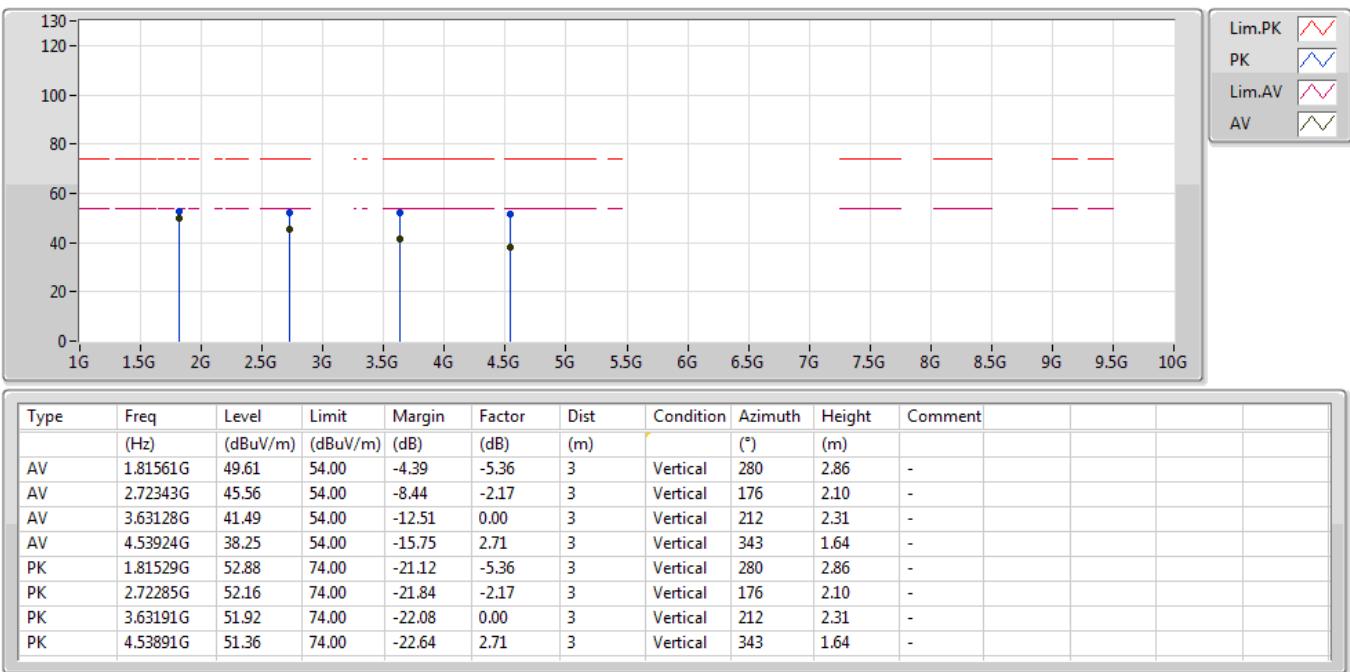
LoRa_DTS_Nss1_1TX
903MHz_TX

27/04/2019



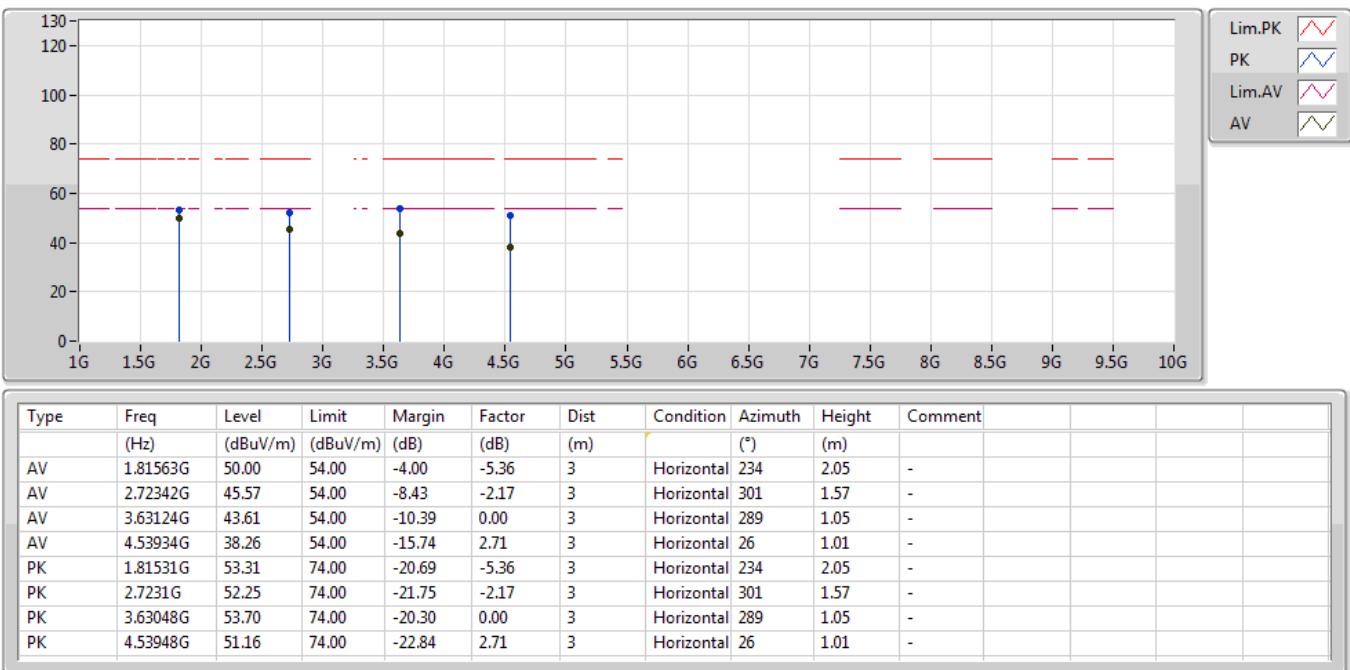
LoRa_DTS_Nss1_1TX
907.8MHz_TX

27/04/2019



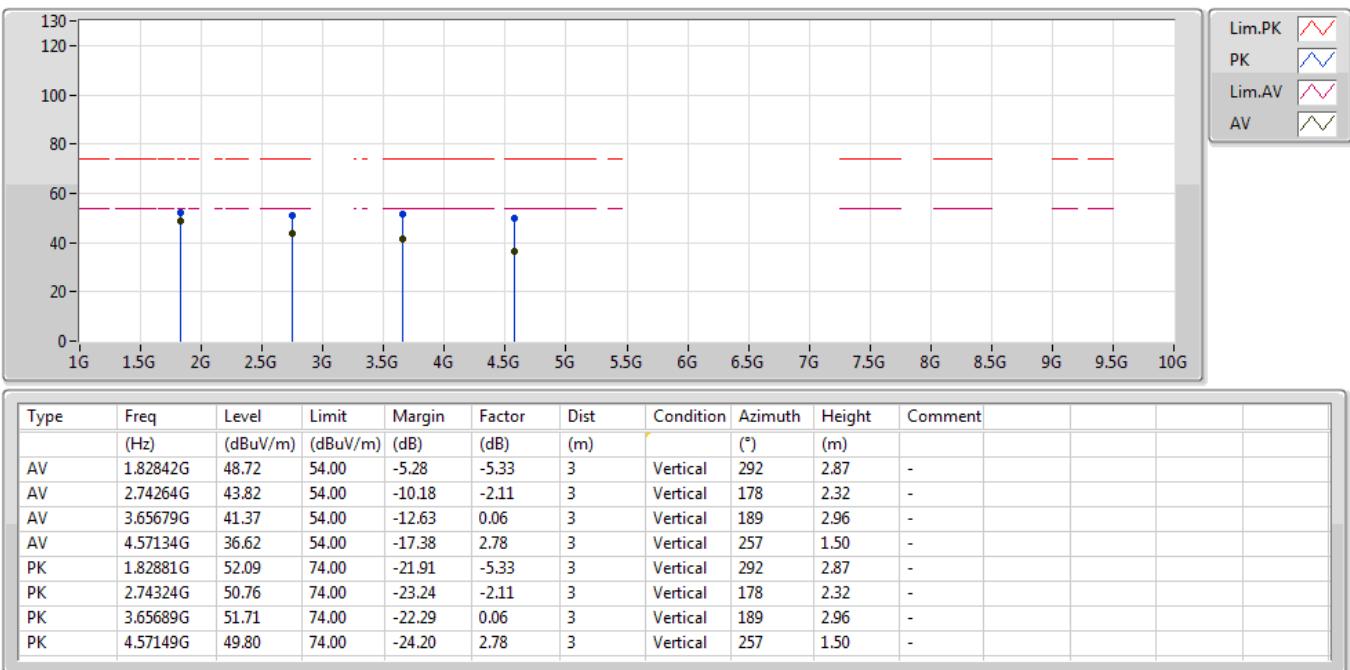
LoRa_DTS_Nss1_1TX
907.8MHz_TX

27/04/2019



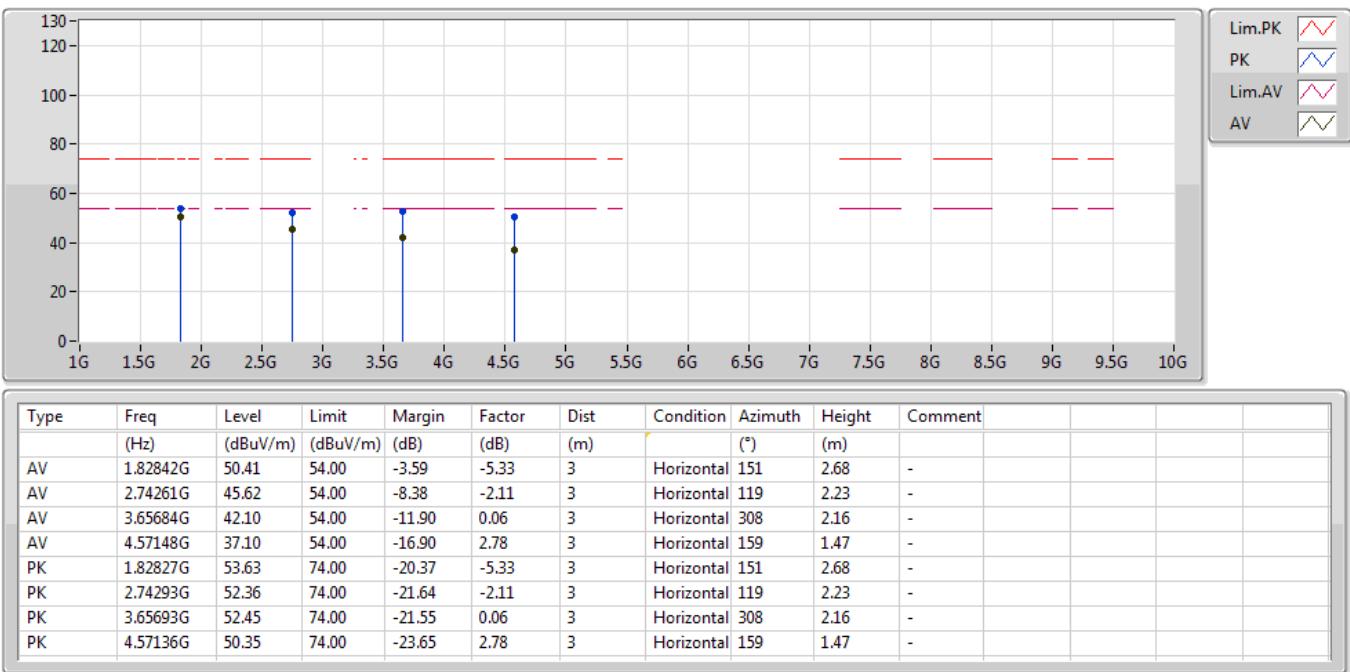
LoRa_DTS_Nss1_1TX
914.2MHz_TX

27/04/2019



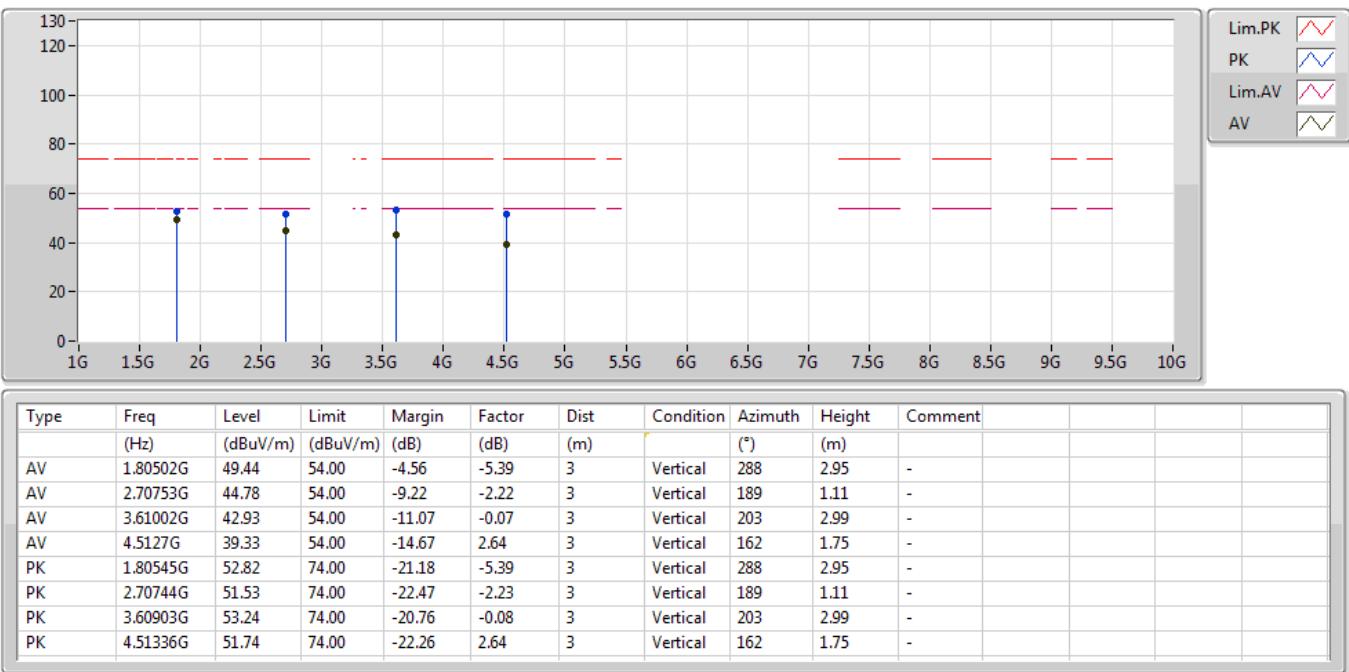
LoRa_DTS_Nss1_1TX
914.2MHz_TX

27/04/2019



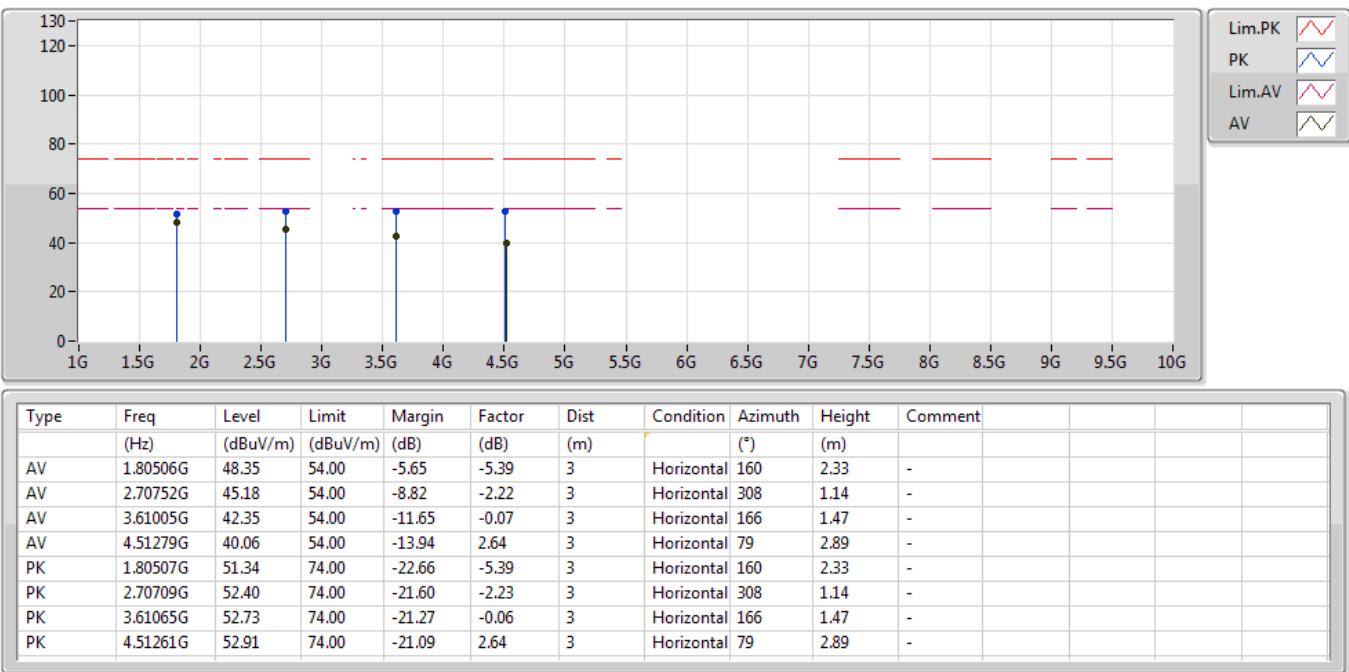
LoRa_DTS_Nss1_1TX
902.5MHz_TX

27/04/2019



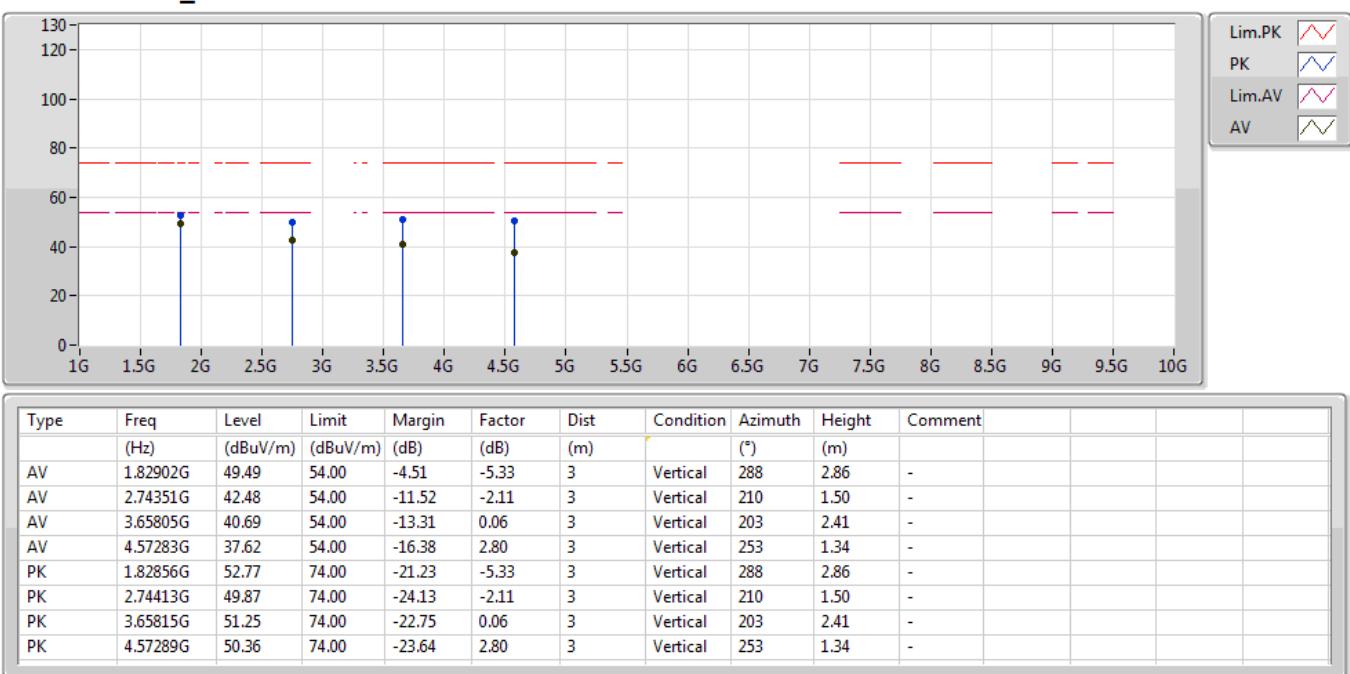
LoRa_DTS_Nss1_1TX
902.5MHz_TX

27/04/2019



LoRa_DTS_Nss1_1TX
914.5MHz_TX

27/04/2019



LoRa_DTS_Nss1_1TX
914.5MHz_TX

27/04/2019

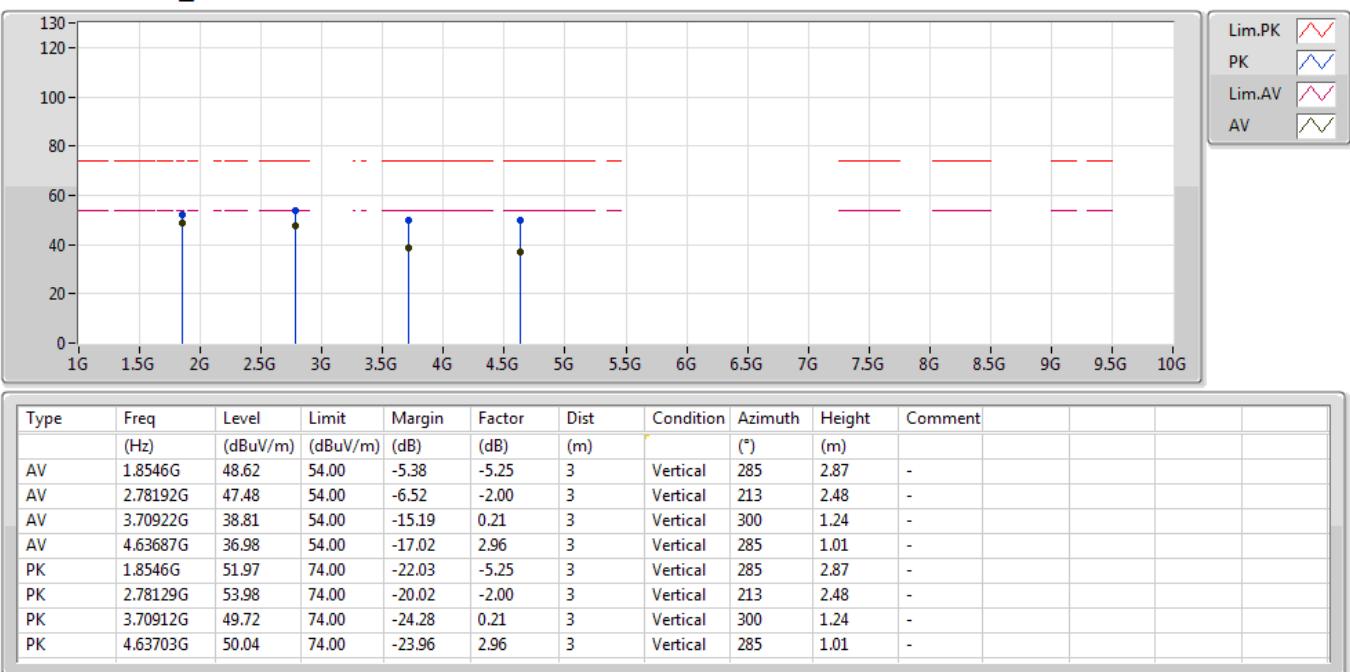




LoRa_DTS_Nss1_1TX

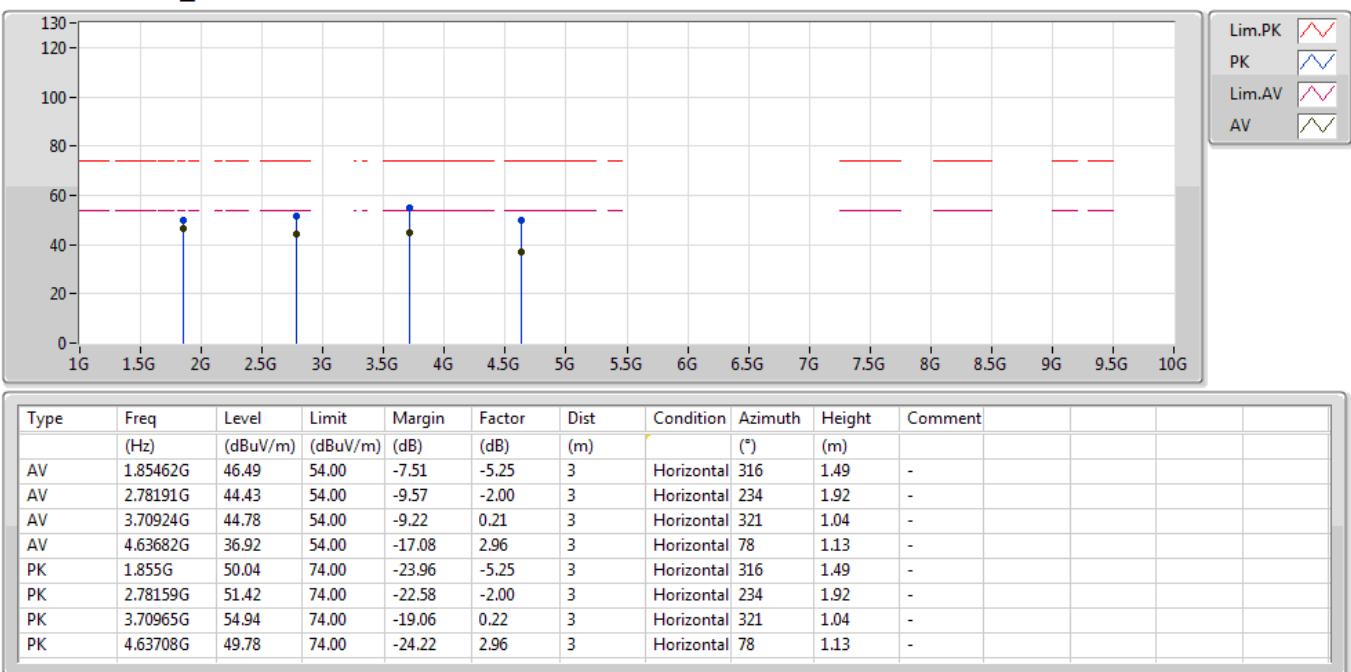
927.3MHz_TX

13/05/2019



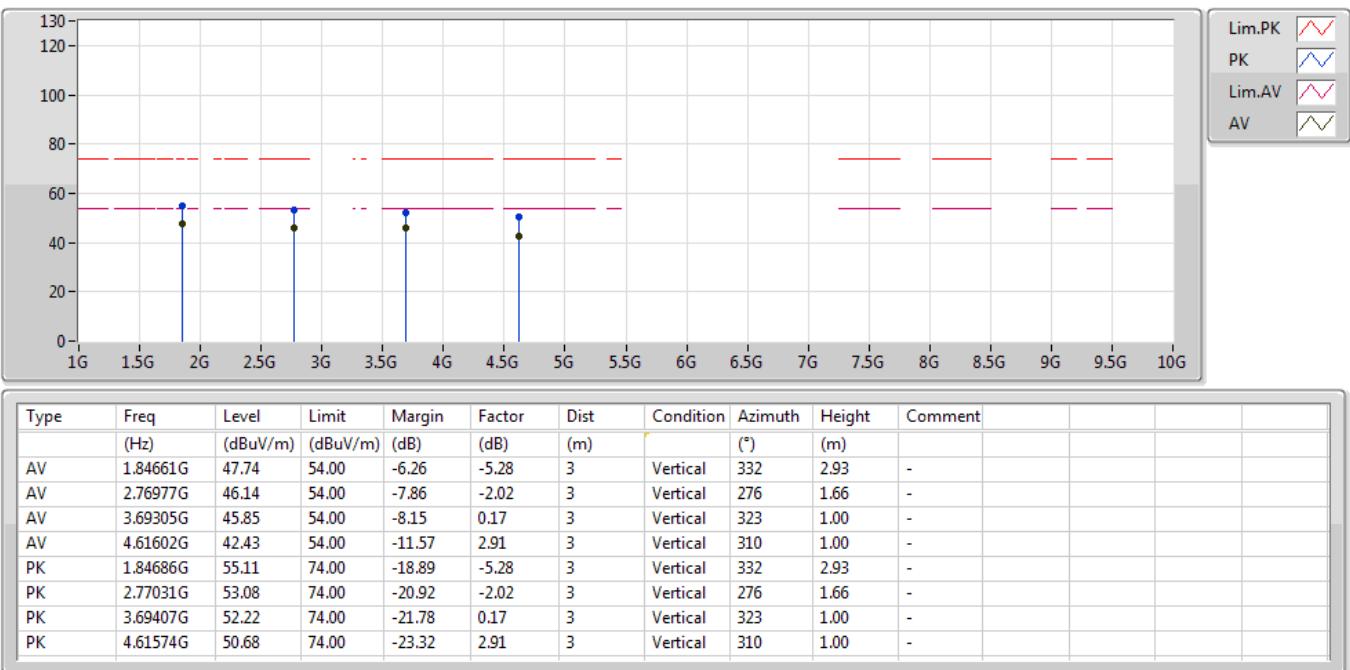
LoRa_DTS_Nss1_1TX
927.3MHz_TX

13/05/2019



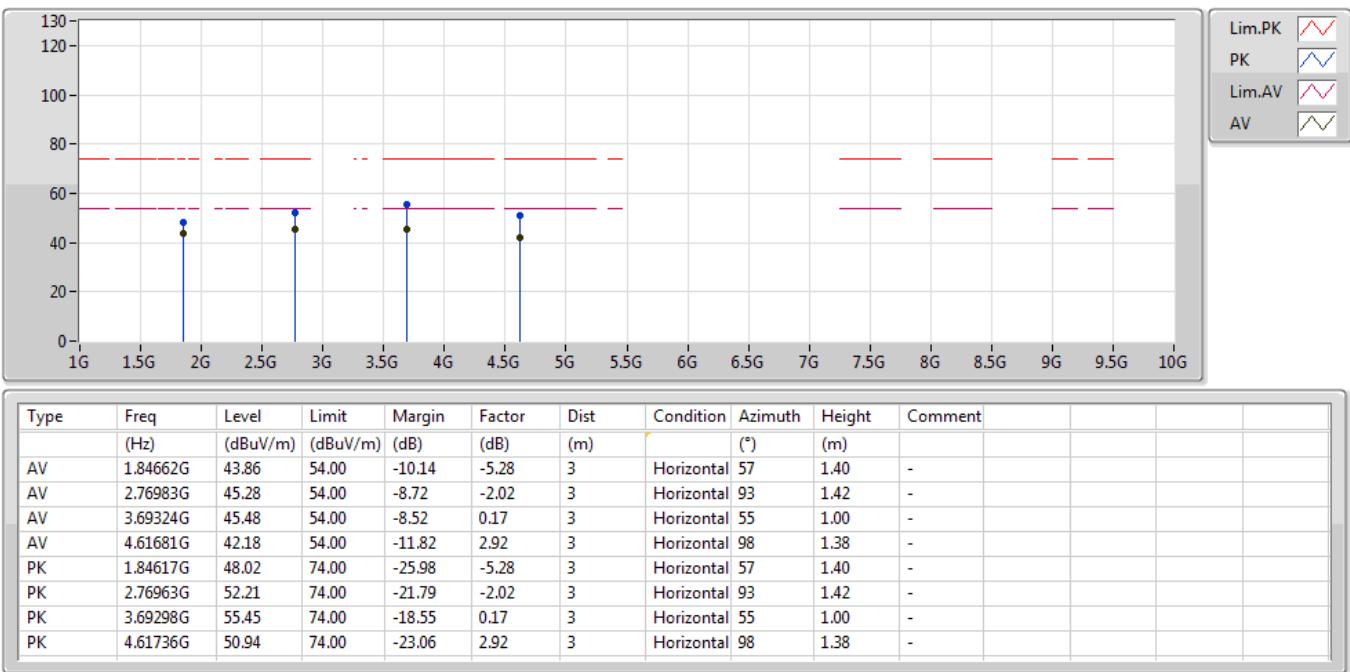
LoRa_DTS_Nss1_1TX
923.3MHz_TX

13/05/2019



LoRa_DTS_Nss1_1TX
923.3MHz_TX

13/05/2019

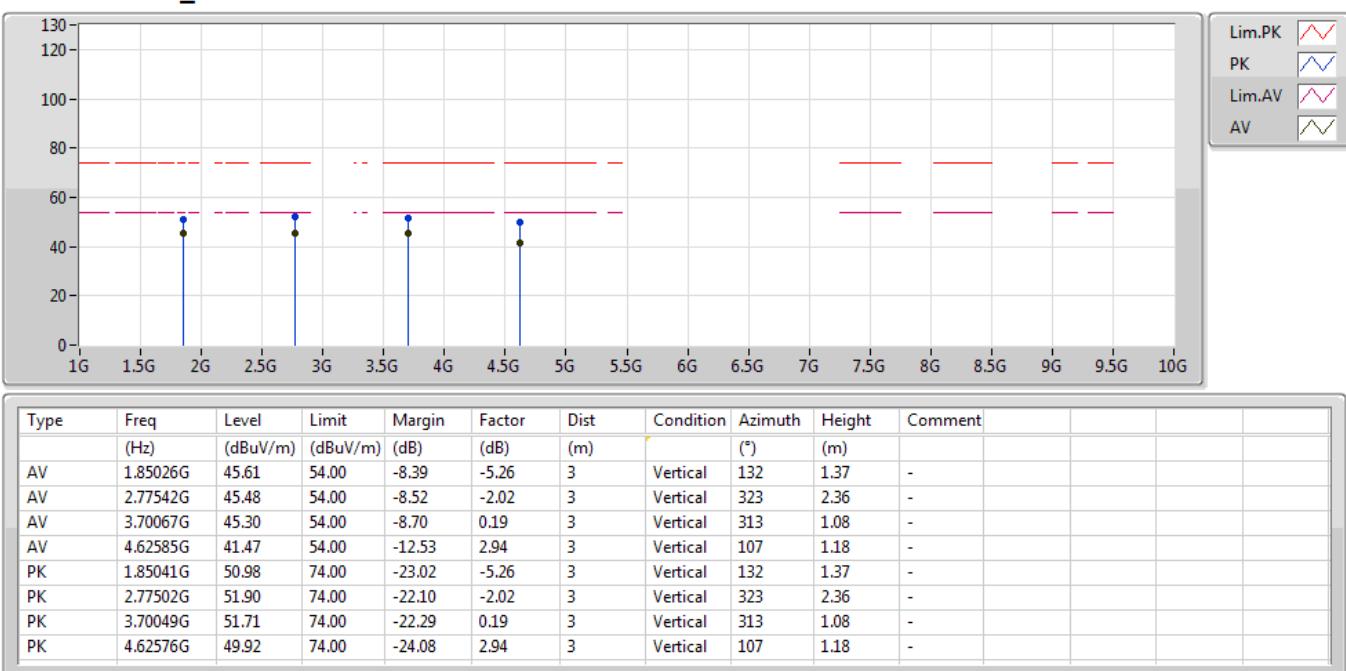




LoRa_DTS_Nss1_1TX

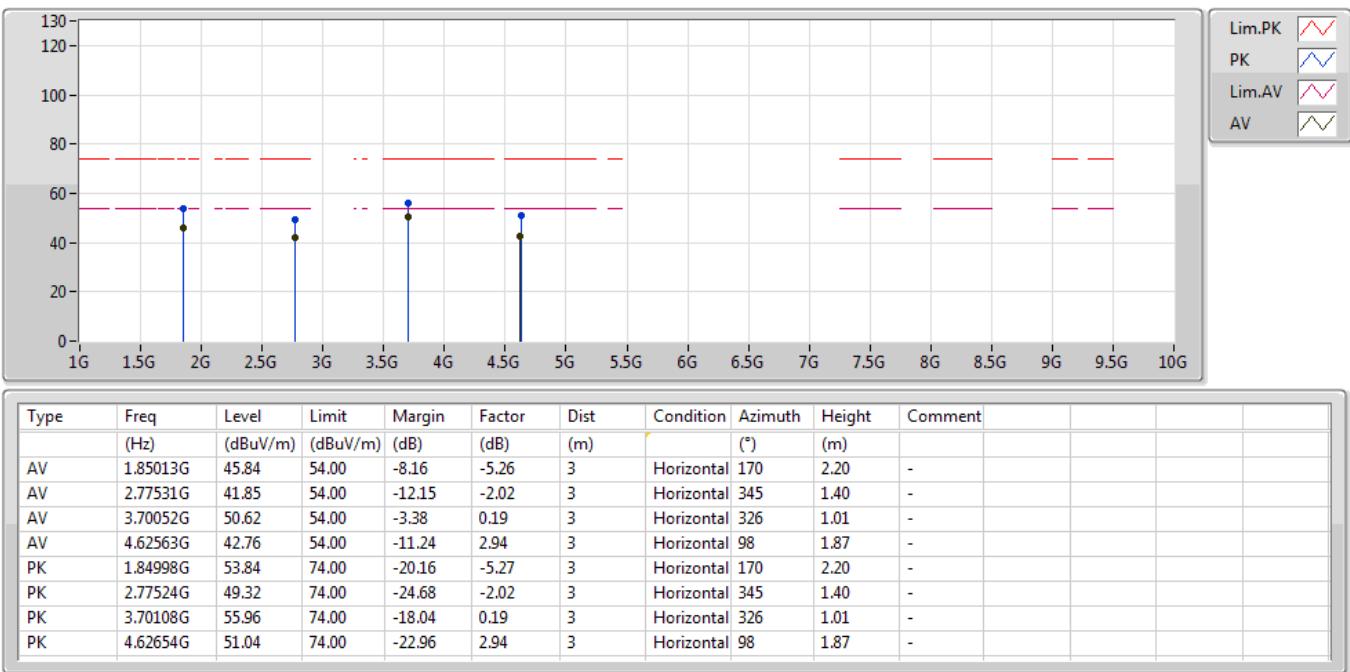
925.1MHz_TX

28/04/2019



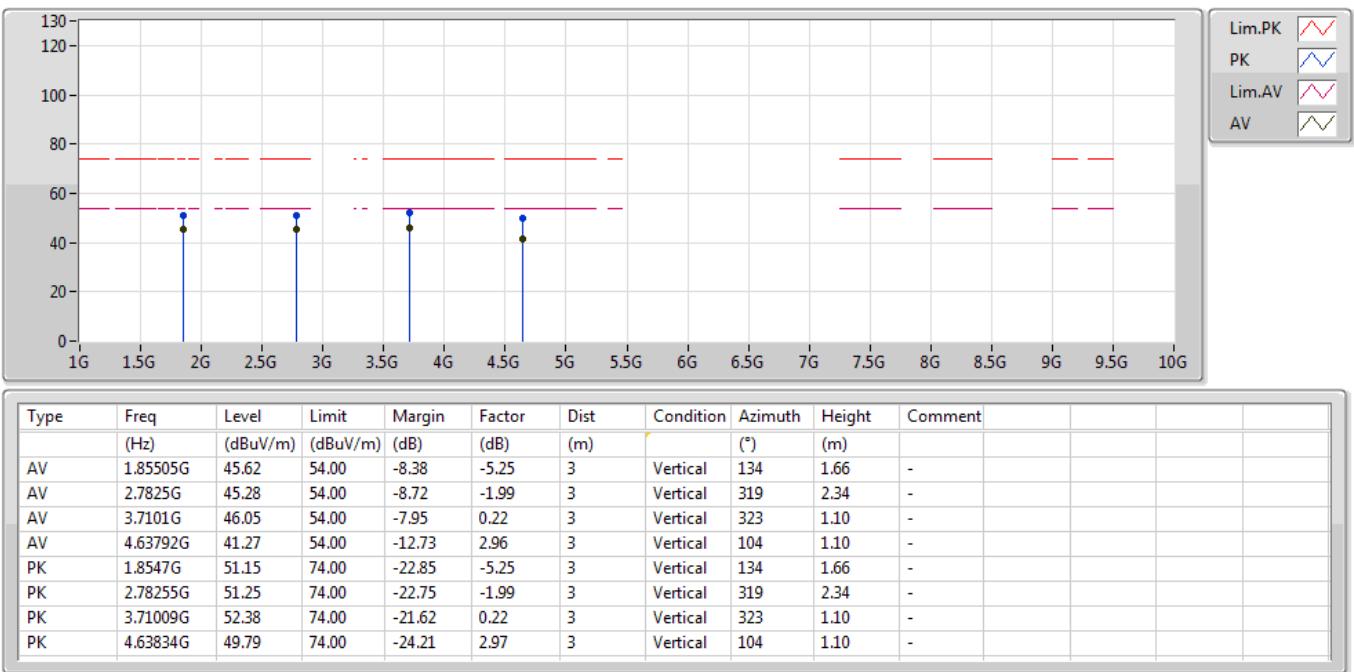
LoRa_DTS_Nss1_1TX
925.1MHz_TX

28/04/2019



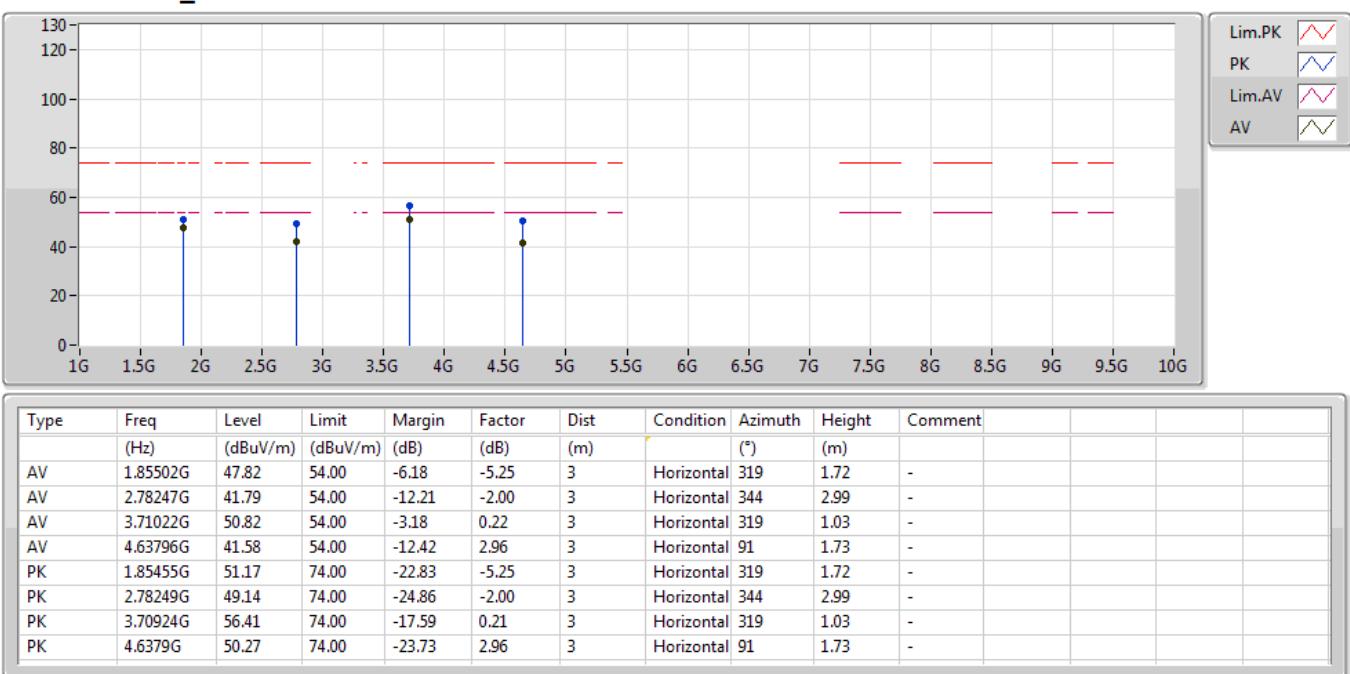
LoRa_DTS_Nss1_1TX
927.5MHz_TX

13/05/2019



LoRa_DTS_Nss1_1TX
927.5MHz_TX

13/05/2019

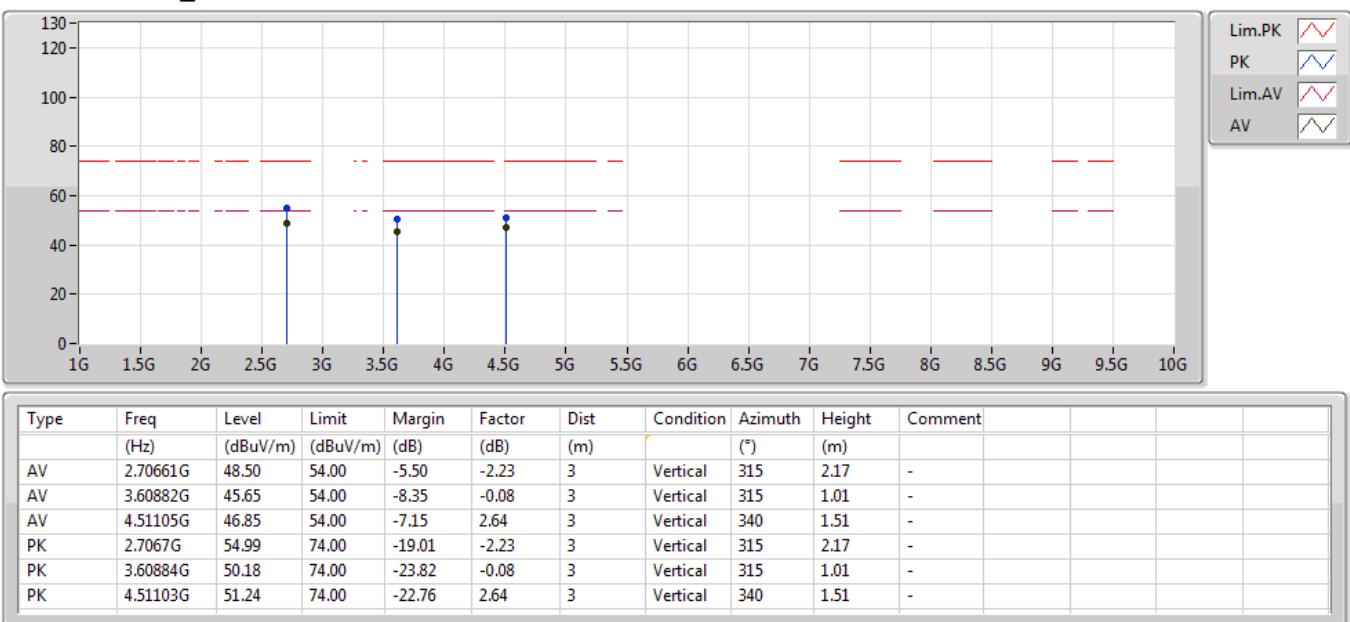




FSK-5K_Nss1_1TX

902.2MHz_TX

13/05/2019

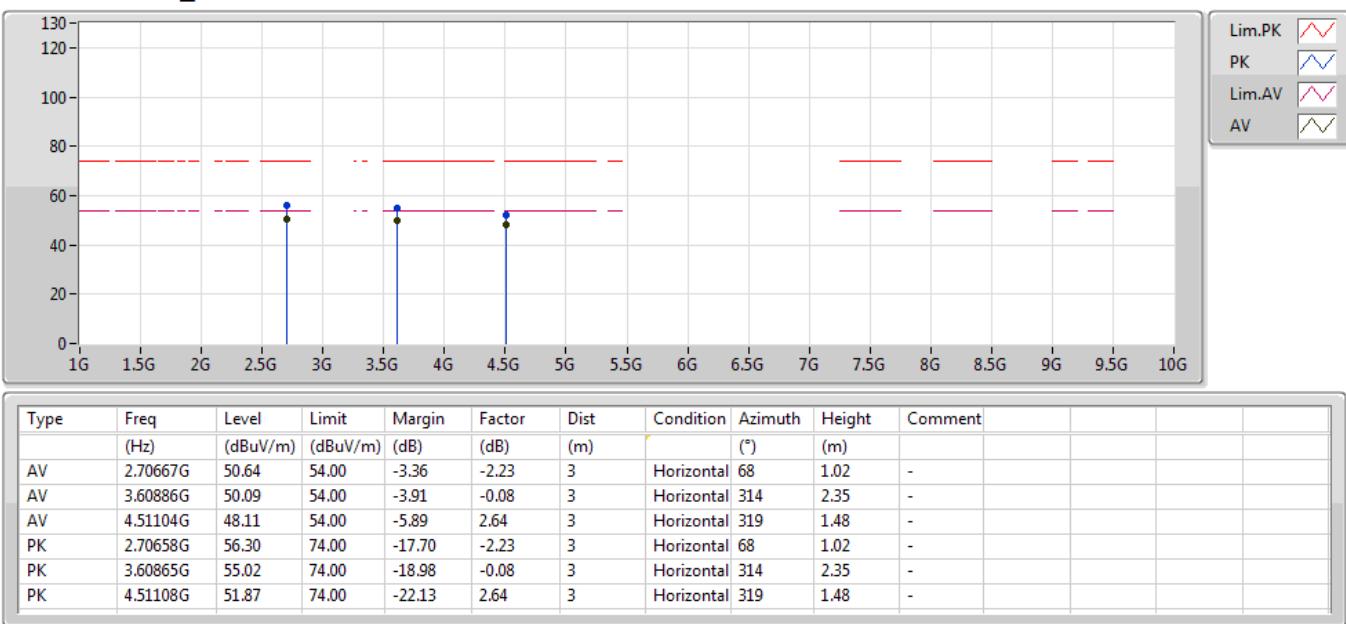




FSK-5K_Nss1_1TX

902.2MHz_TX

13/05/2019

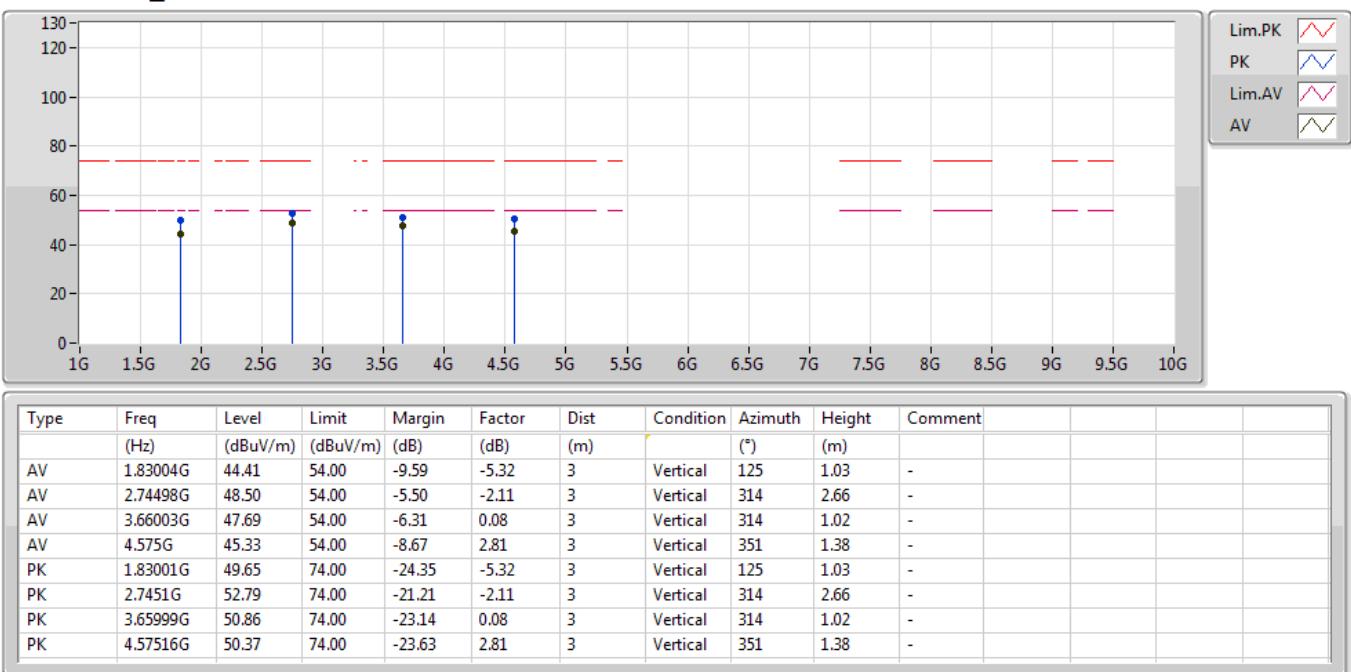




FSK-5K_Nss1_1TX

915MHz_TX

13/05/2019

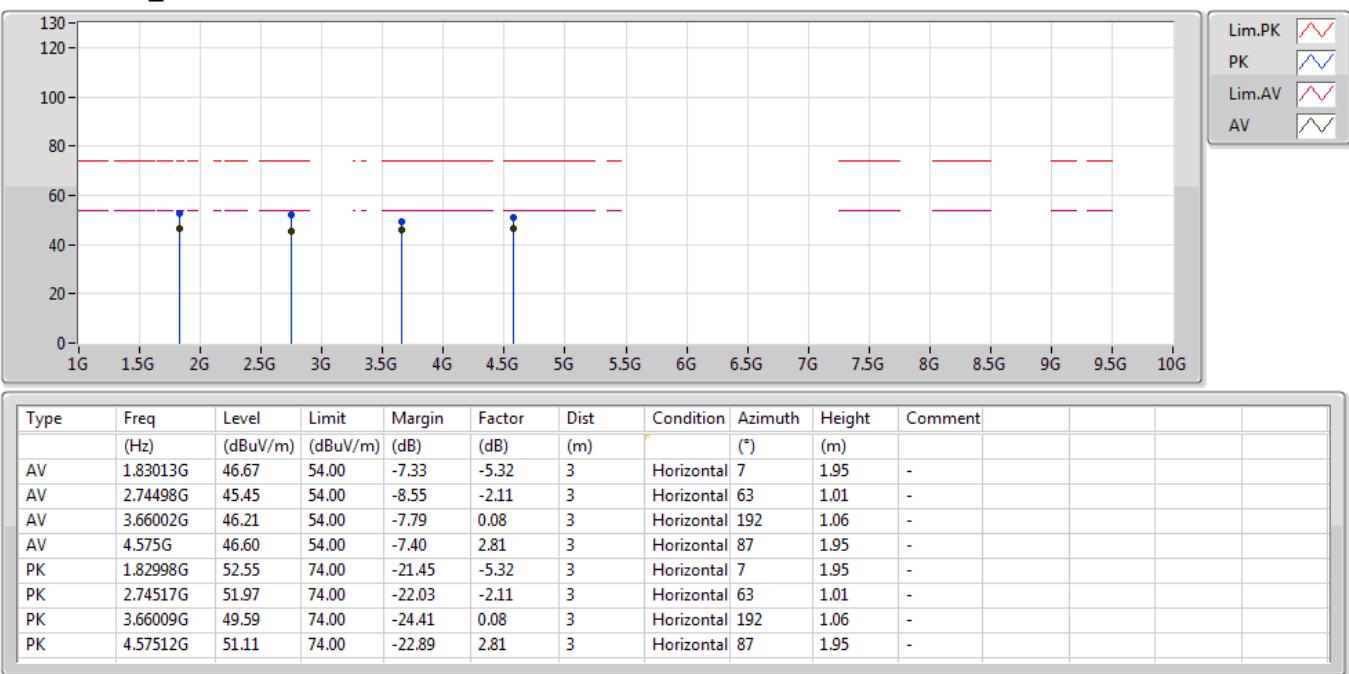




FSK-5K_Nss1_1TX

915MHz_TX

13/05/2019

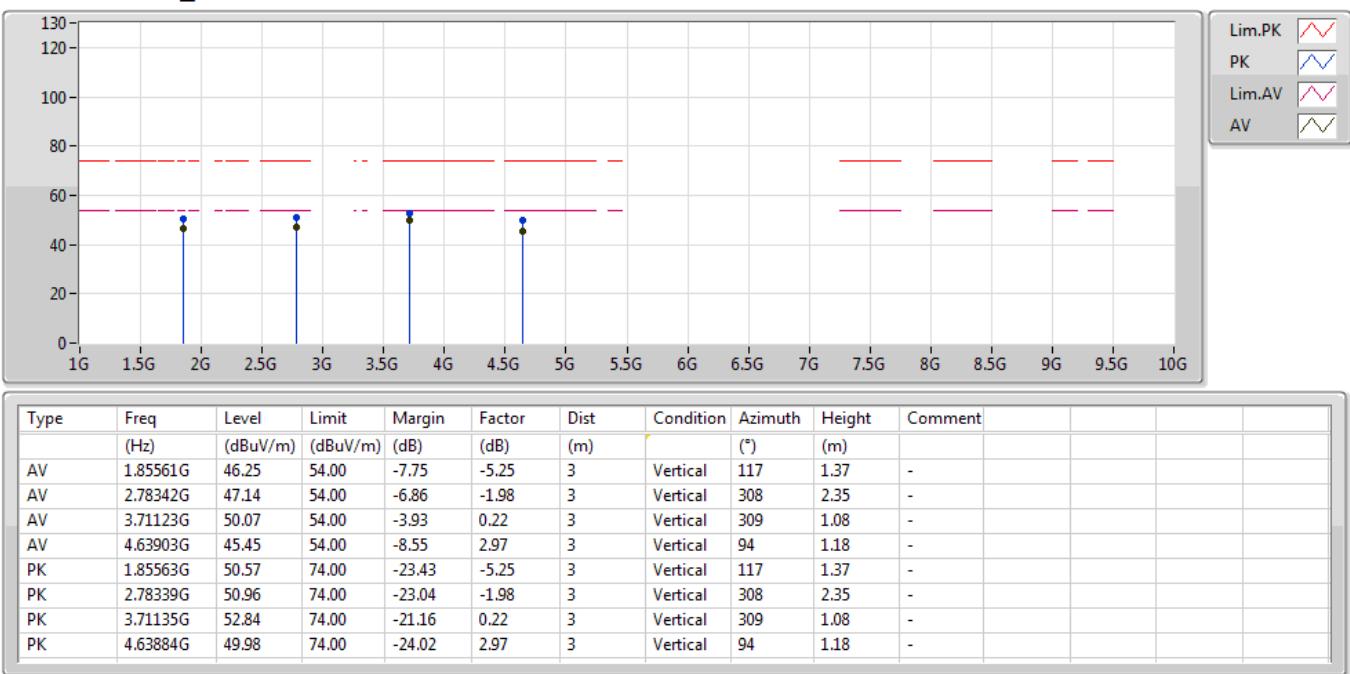




FSK-5K_Nss1_1TX

927.8MHz_TX

13/05/2019

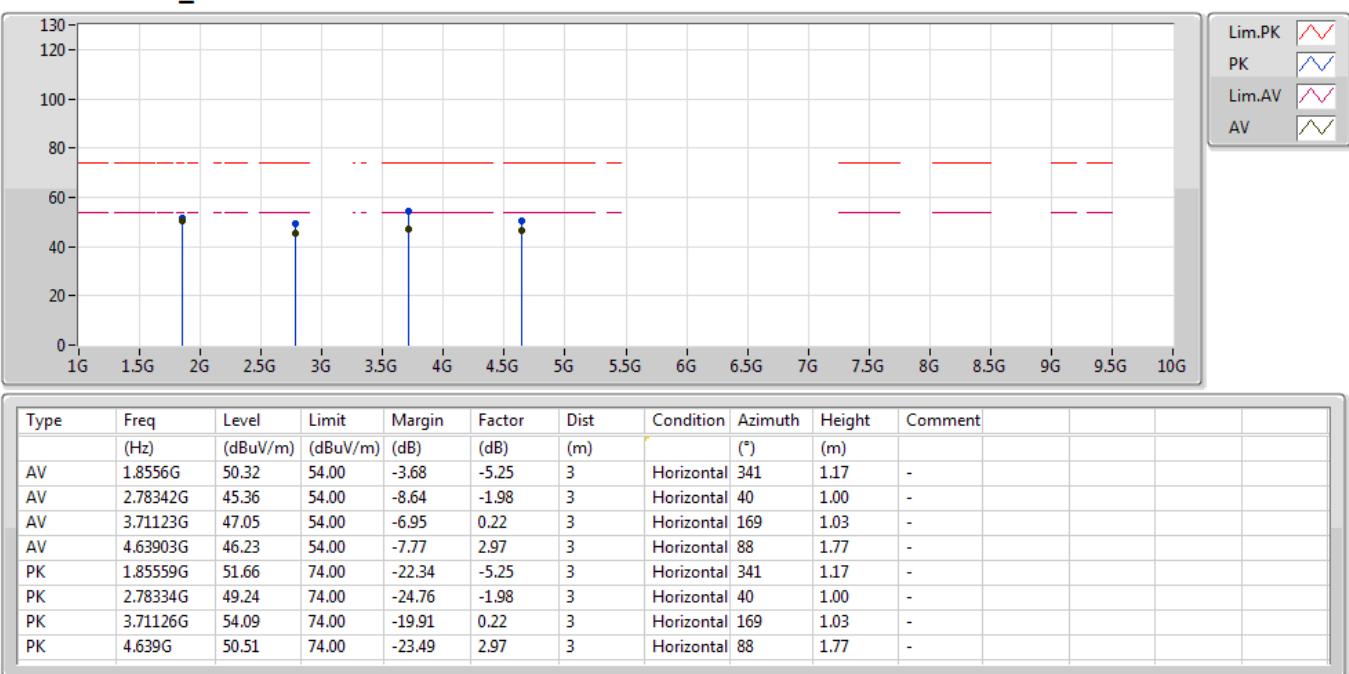




FSK-5K_Nss1_1TX

927.8MHz_TX

13/05/2019

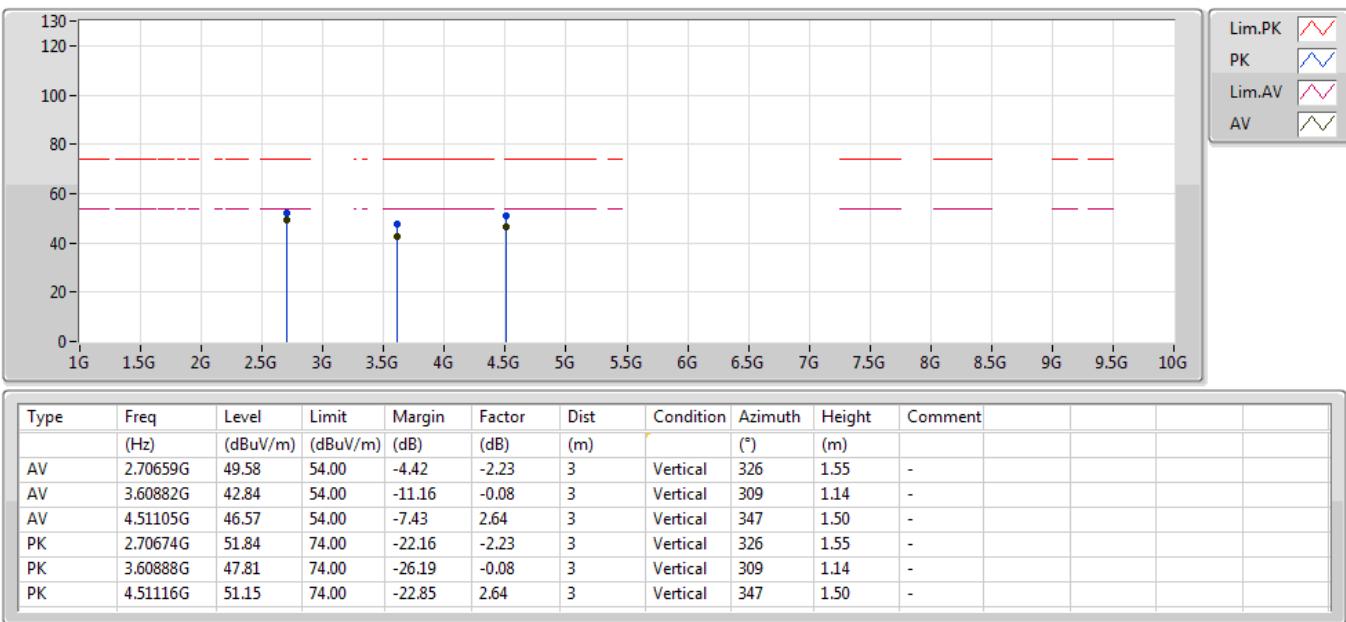




FSK-50K_Nss1_1TX

902.2MHz_TX

28/04/2019

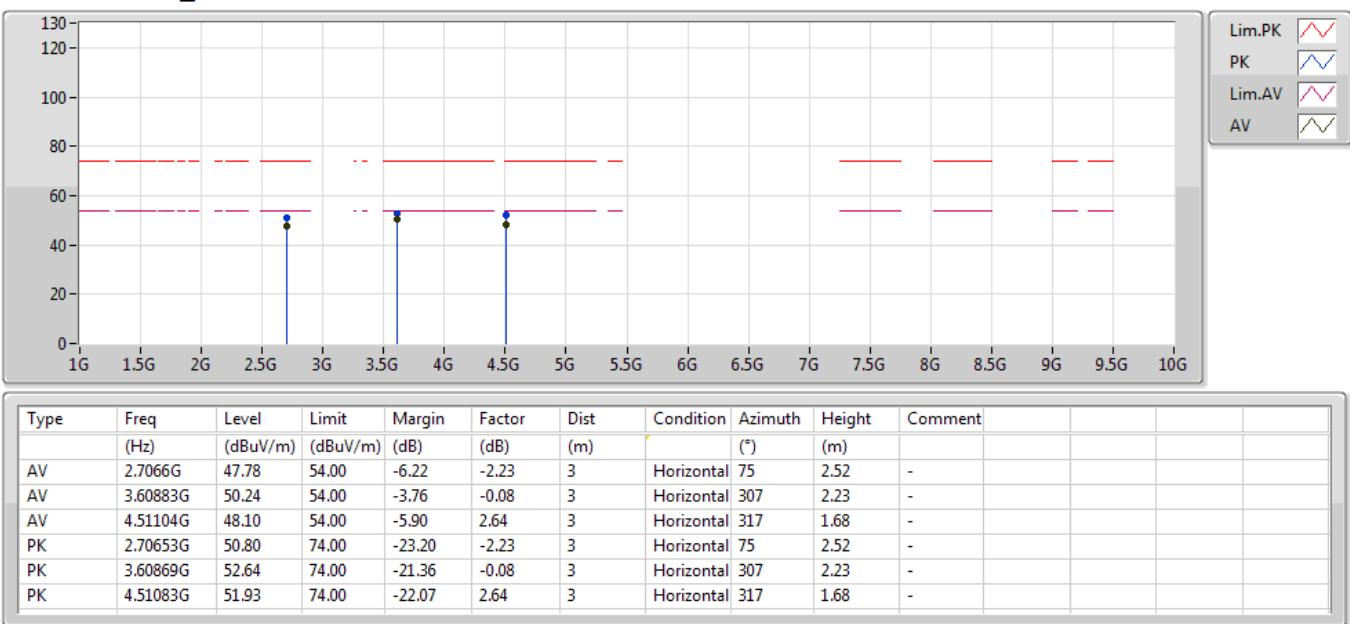




FSK-50K_Nss1_1TX

902.2MHz_TX

28/04/2019

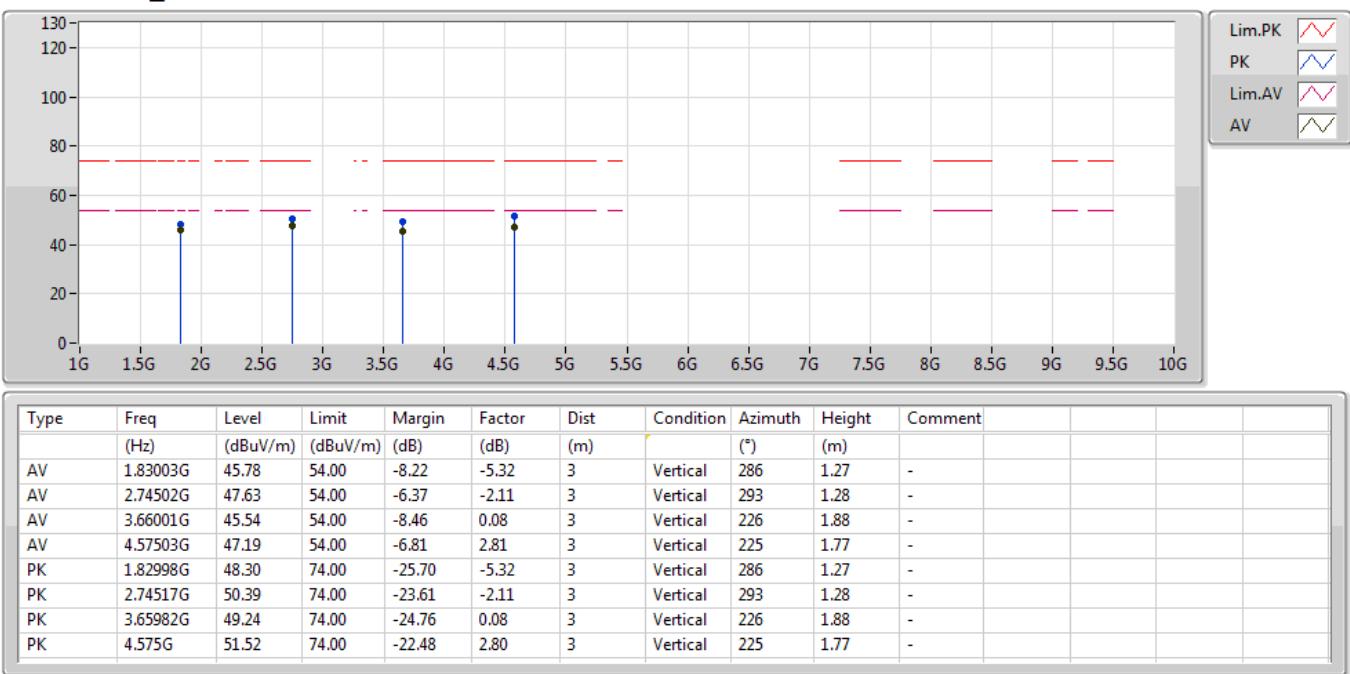




FSK-50K_Nss1_1TX

915MHz_TX

13/05/2019

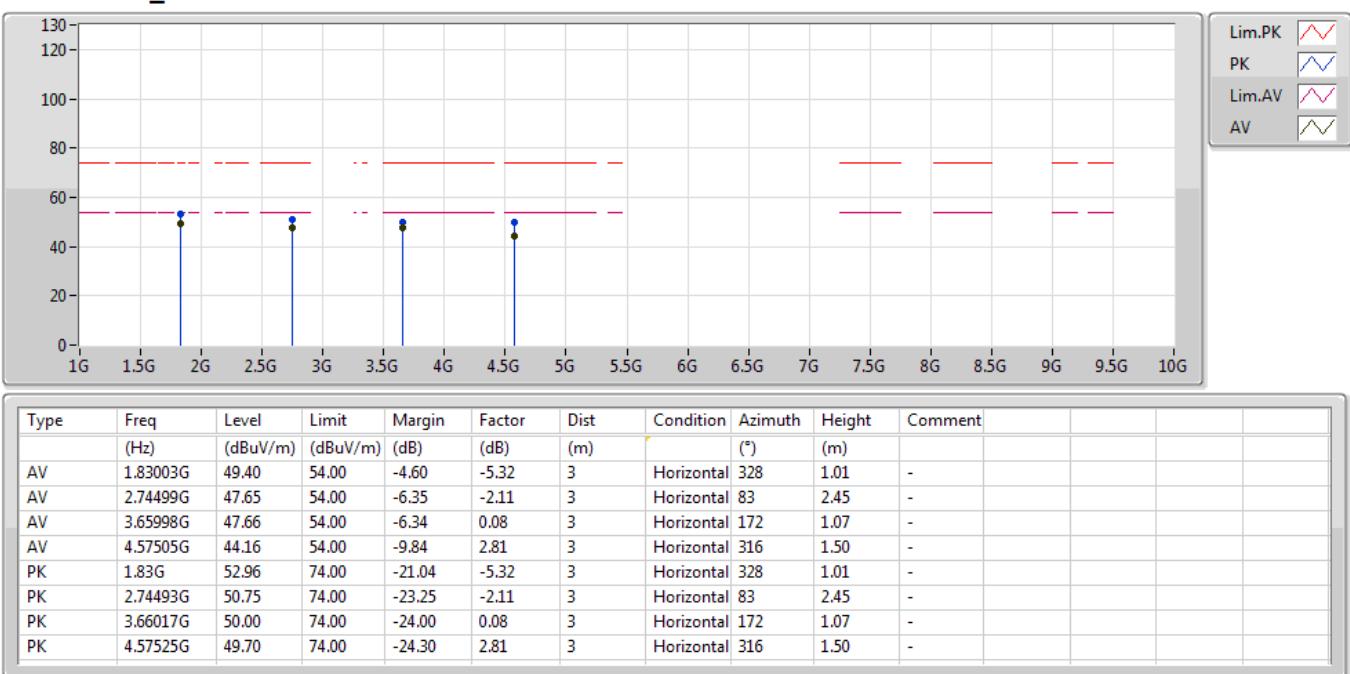




FSK-50K_Nss1_1TX

915MHz_TX

13/05/2019

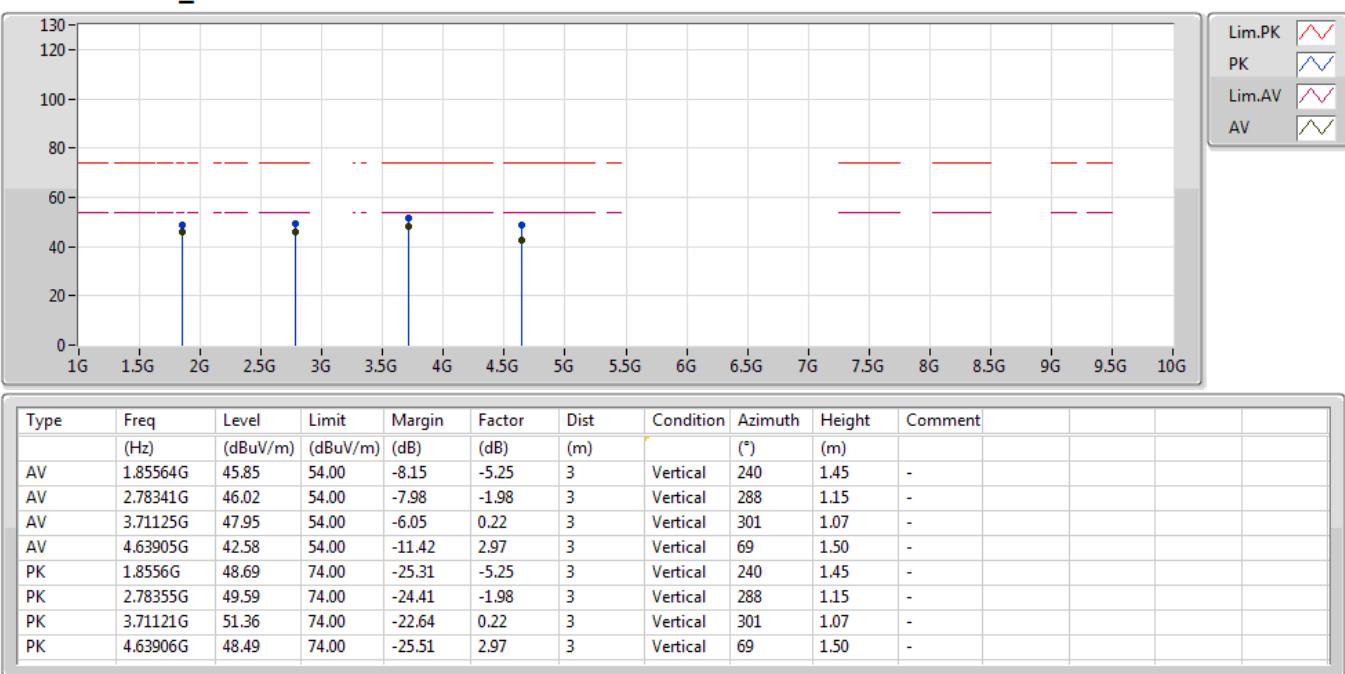




FSK-50K_Nss1_1TX

927.8MHz_TX

13/05/2019

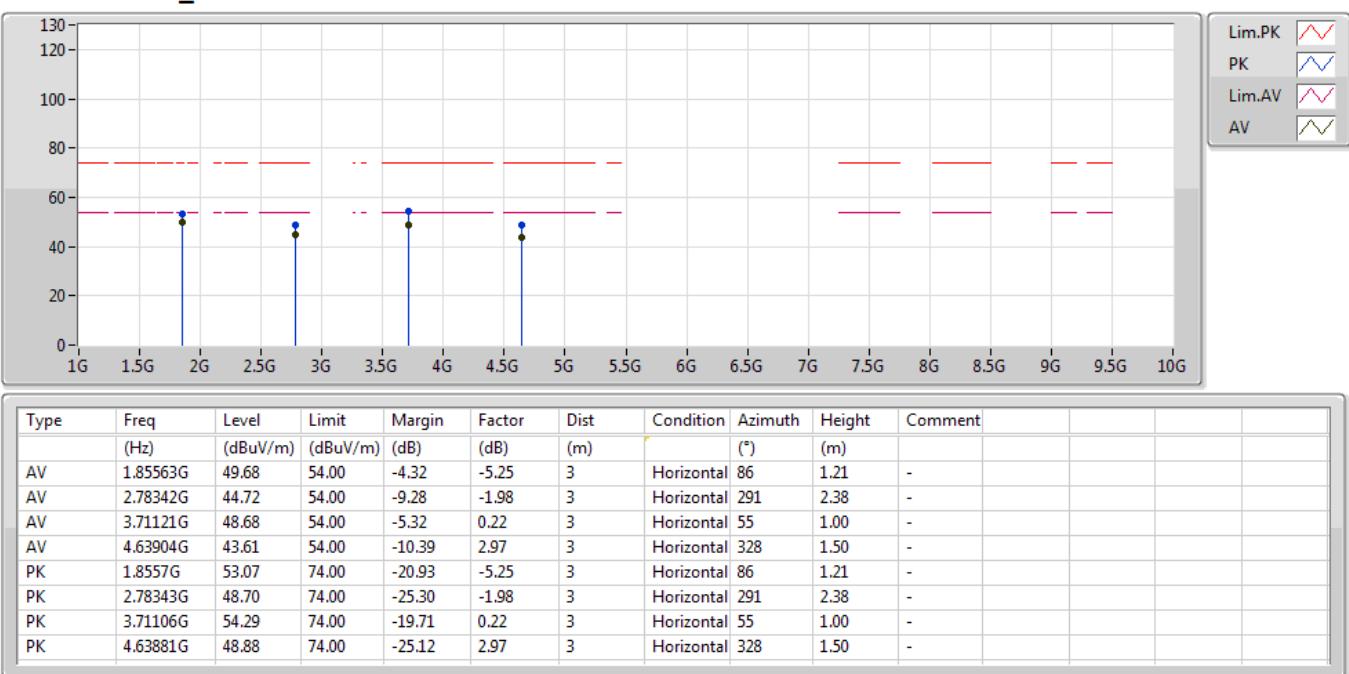




FSK-50K_Nss1_1TX

927.8MHz_TX

13/05/2019

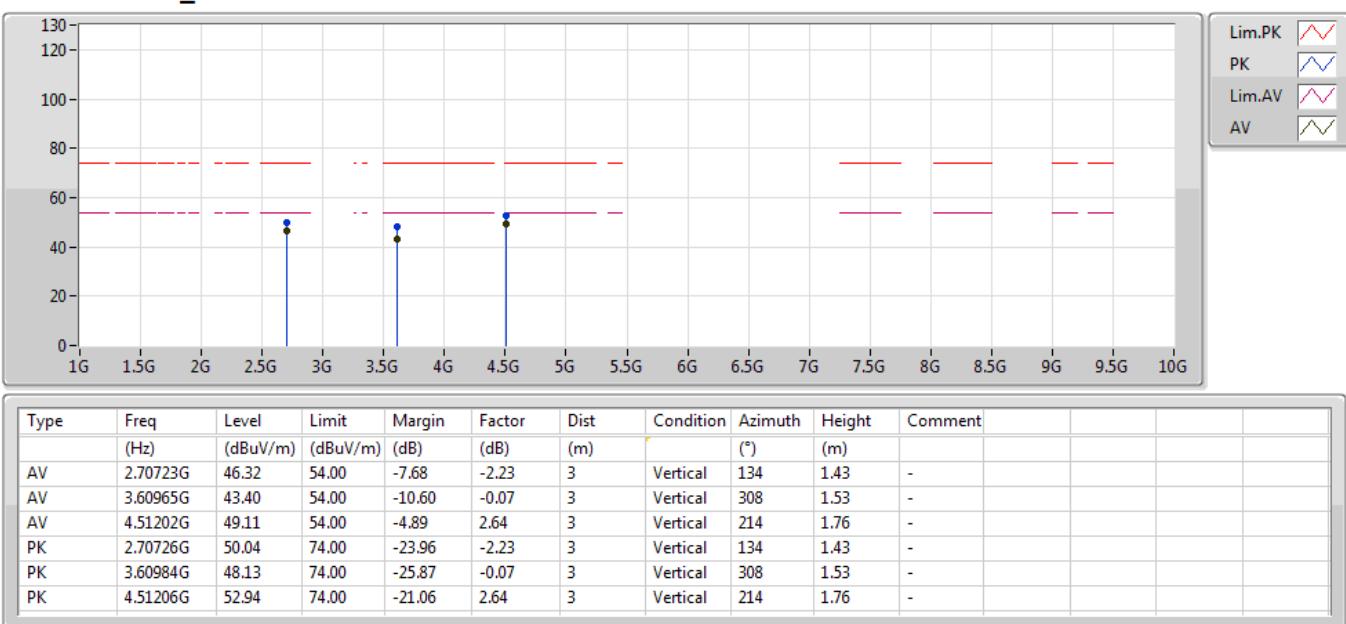




FSK-150K_Nss1_1TX

902.4MHz_TX

13/05/2019

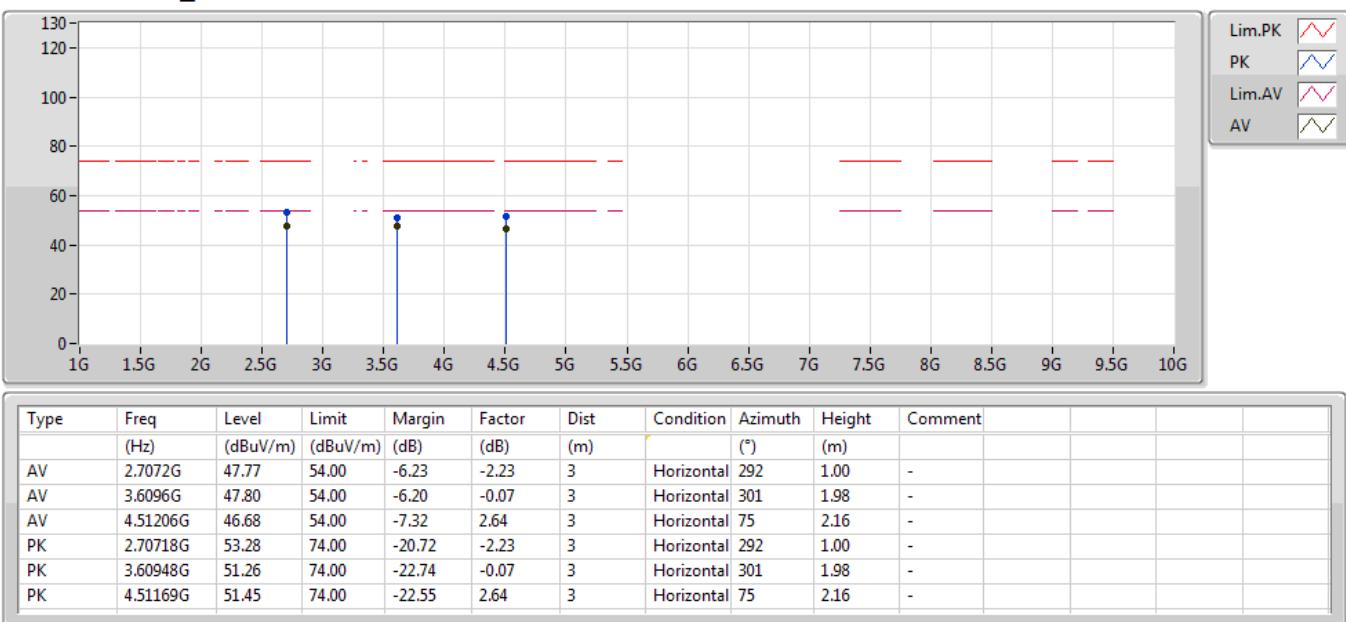




FSK-150K_Nss1_1TX

902.4MHz_TX

13/05/2019

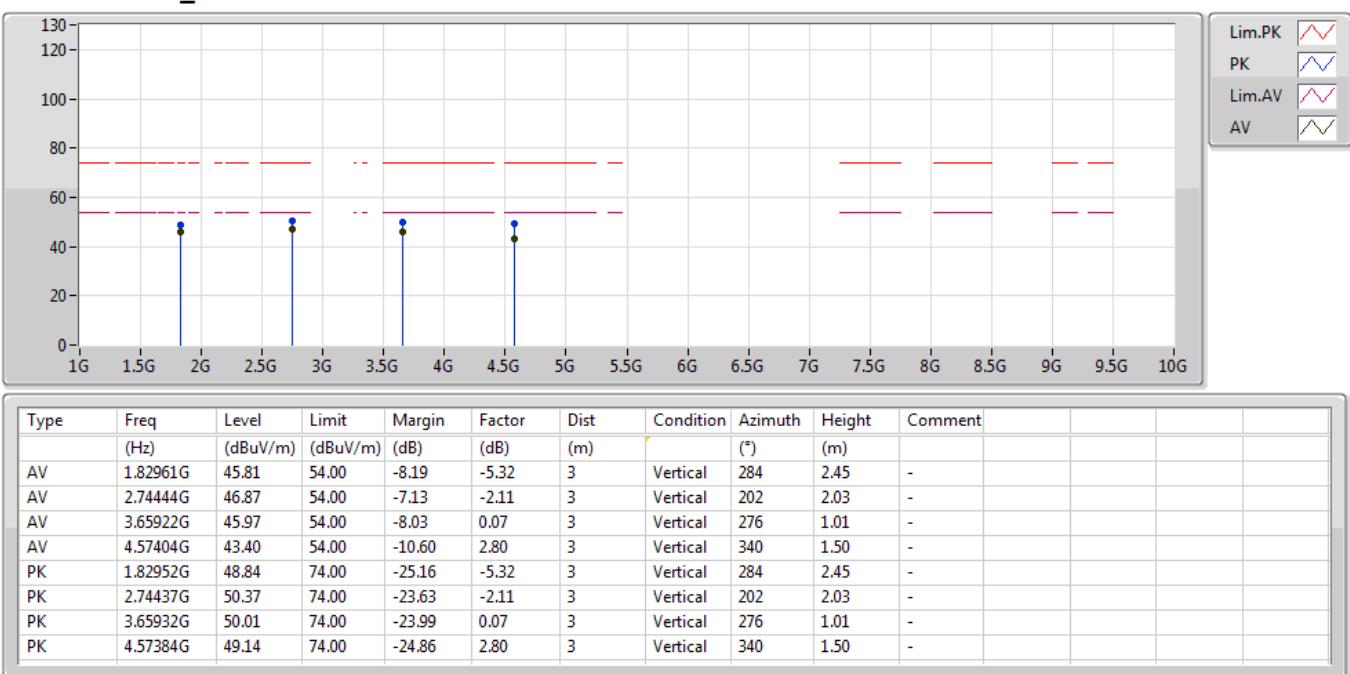




FSK-150K_Nss1_1TX

914.8MHz_TX

13/05/2019

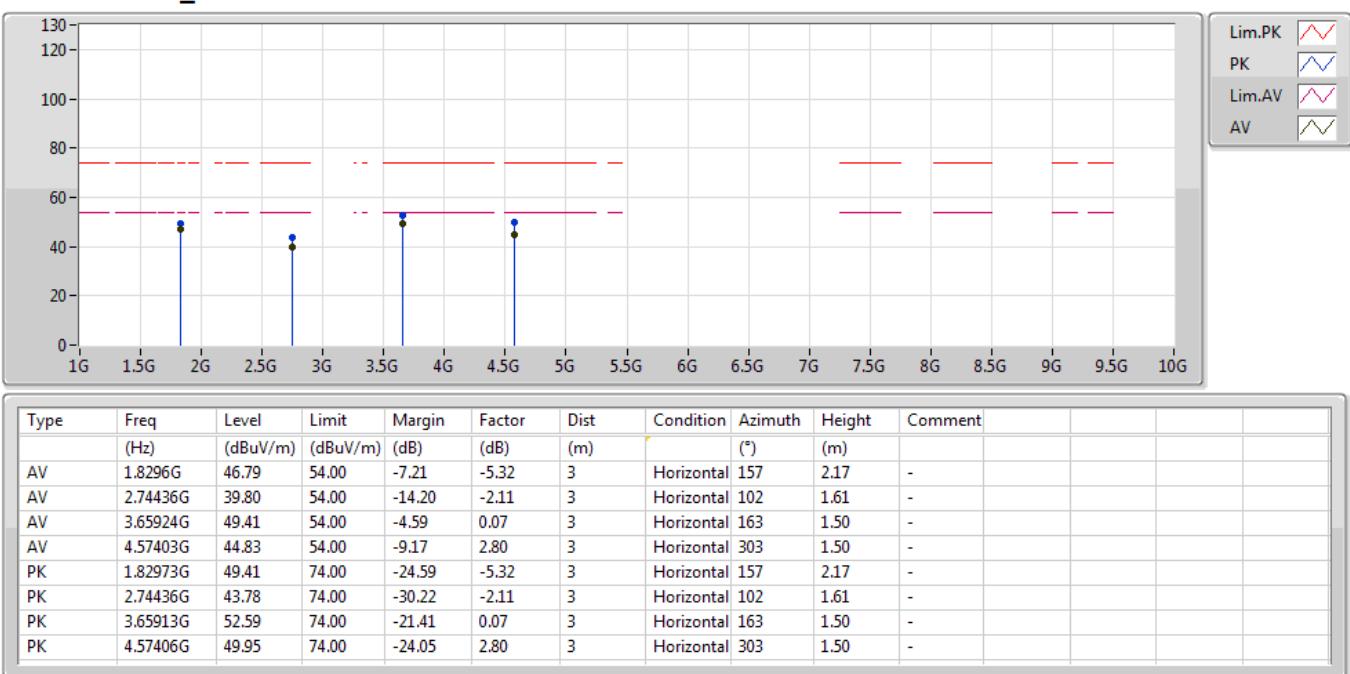




FSK-150K_Nss1_1TX

914.8MHz_TX

13/05/2019

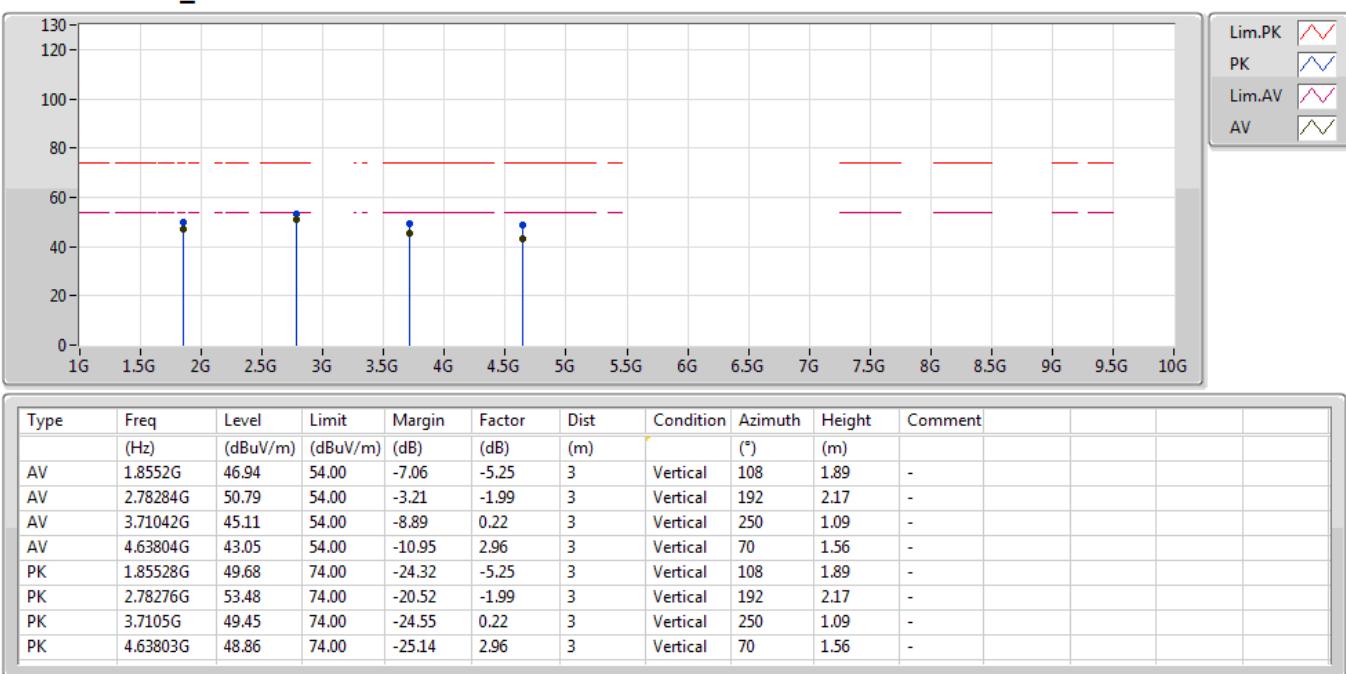




FSK-150K_Nss1_1TX

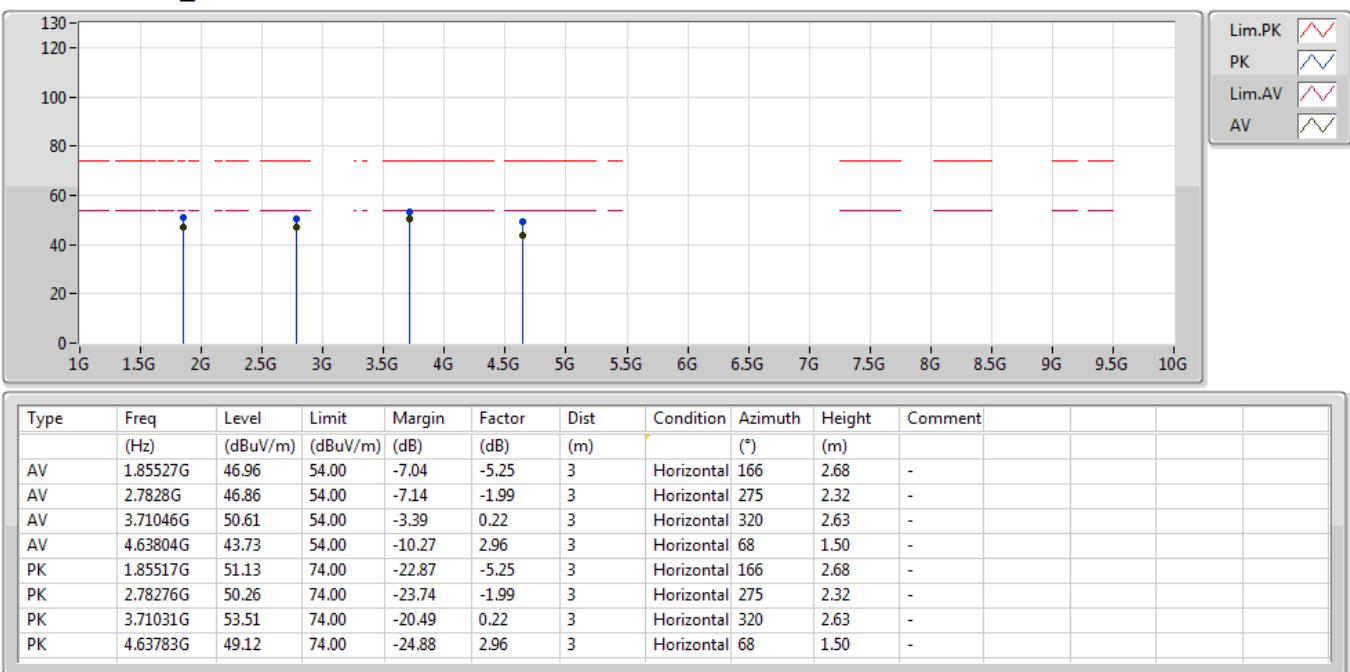
927.6MHz_TX

28/04/2019



FSK-150K_Nss1_1TX
927.6MHz_TX

28/04/2019

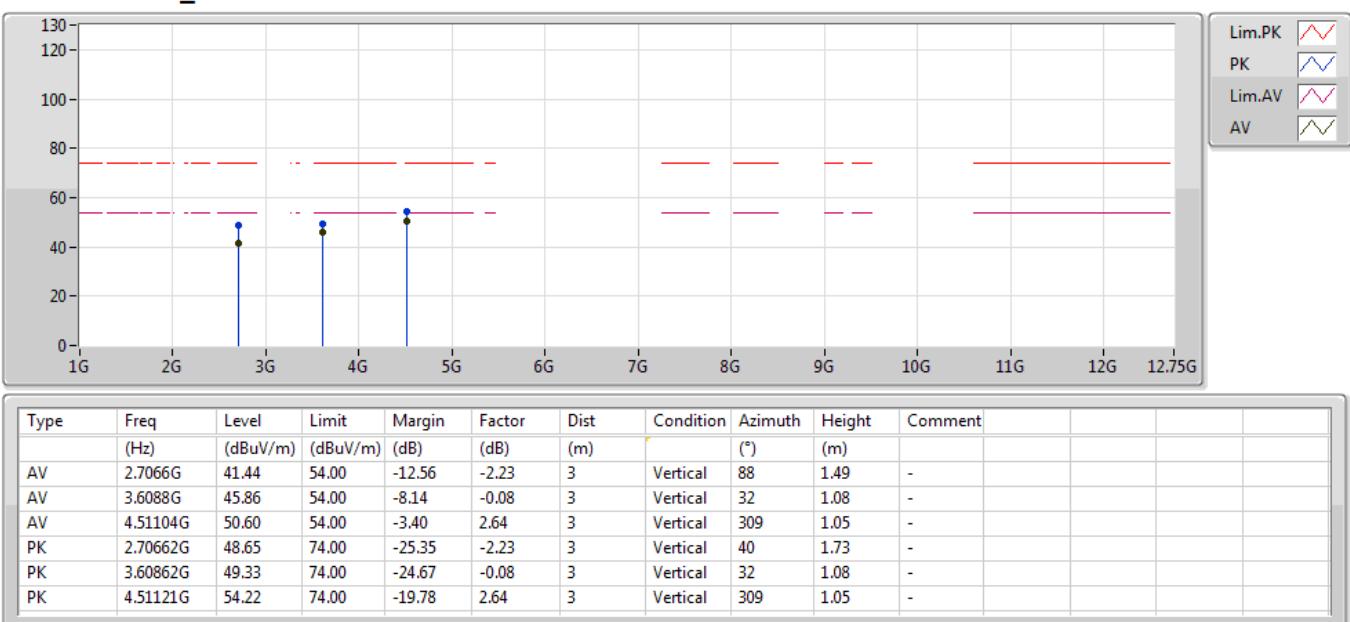




LoRa_FHSS-125k_Nss1_1TX

902.2MHz_TX

26/04/2019

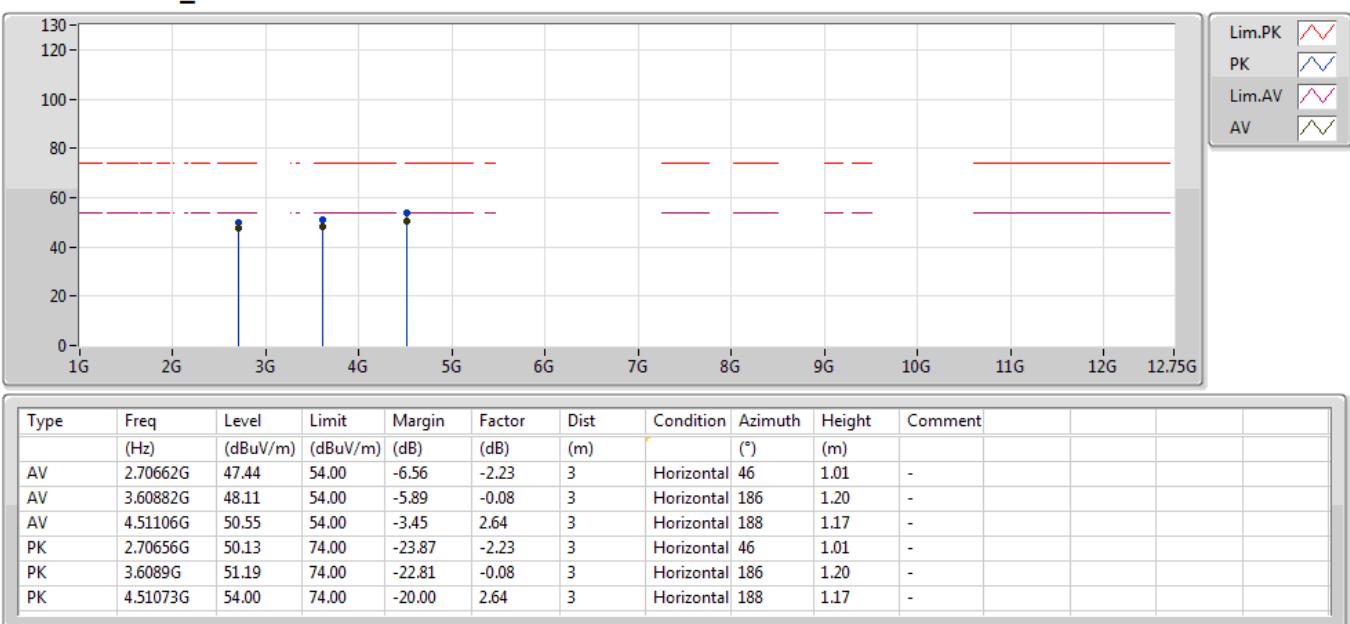




LoRa_FHSS-125k_Nss1_1TX

902.2MHz_TX

26/04/2019

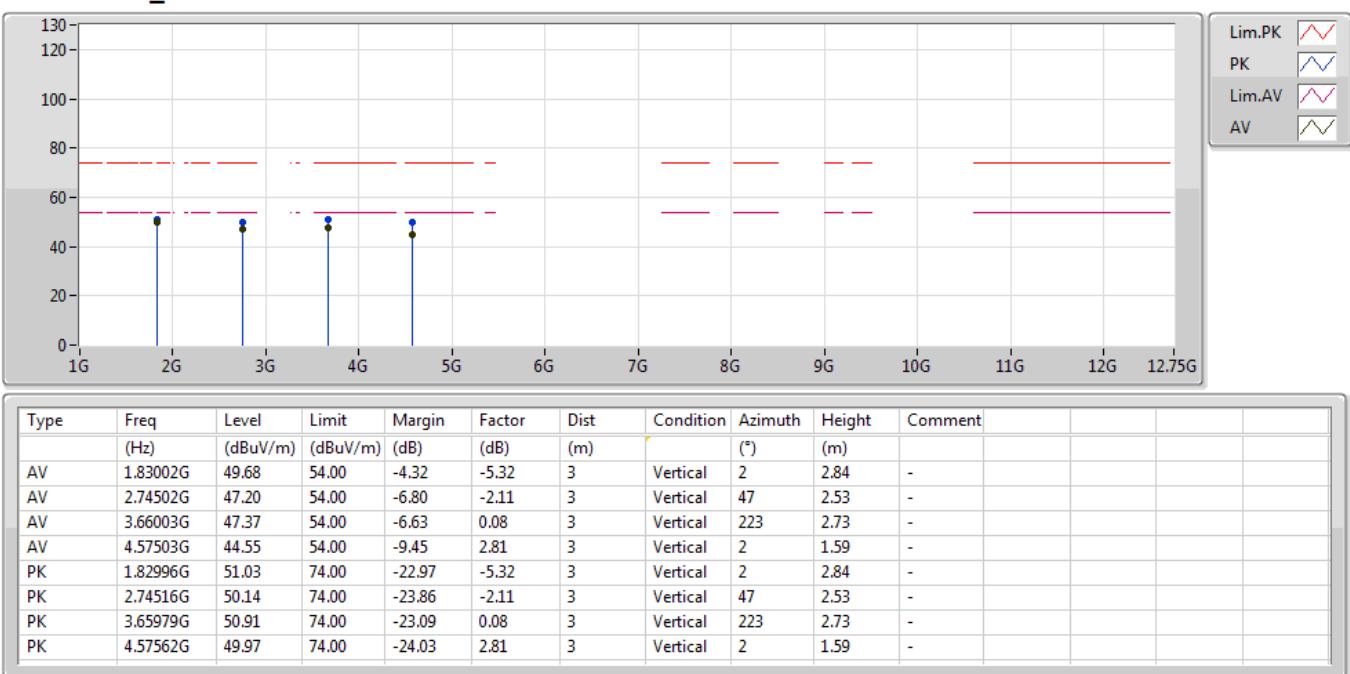




LoRa_FHSS-125k_Nss1_1TX

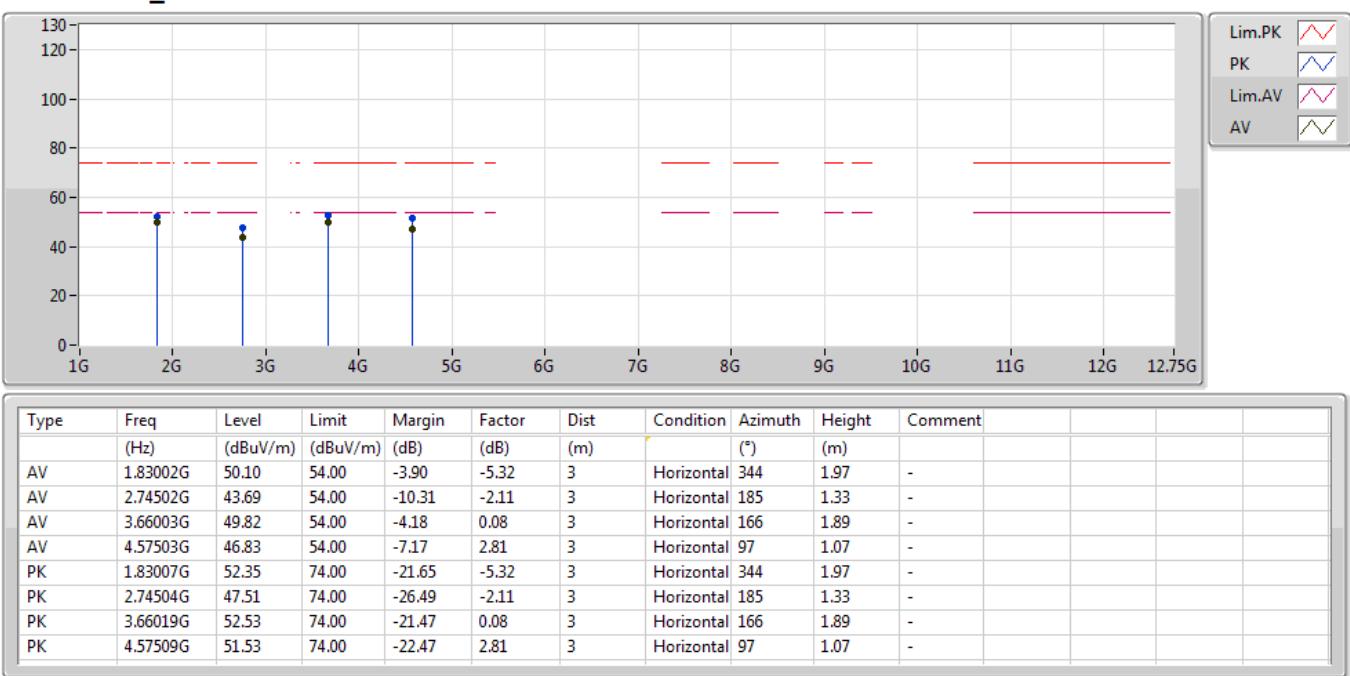
915MHz_TX

13/05/2019



LoRa_FHSS-125k_Nss1_1TX
915MHz_TX

13/05/2019

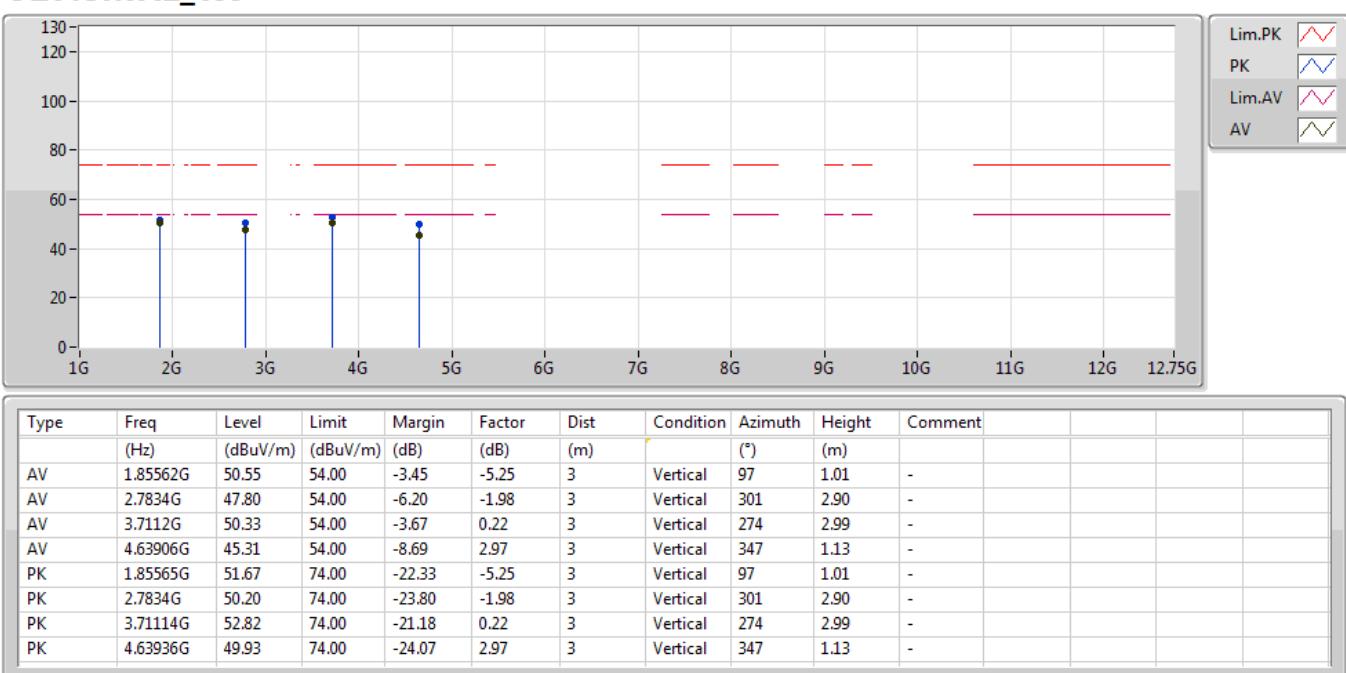




LoRa_FHSS-125k_Nss1_1TX

927.8MHz_TX

13/05/2019

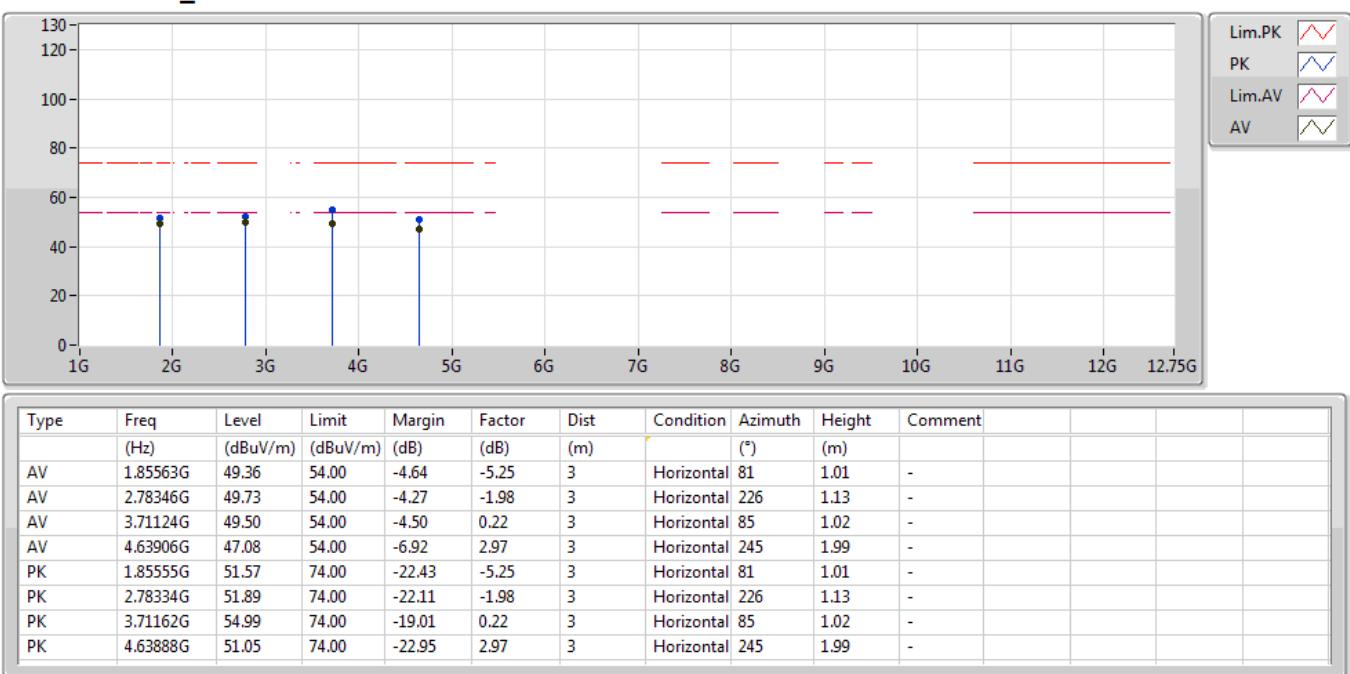




LoRa_FHSS-125k_Nss1_1TX

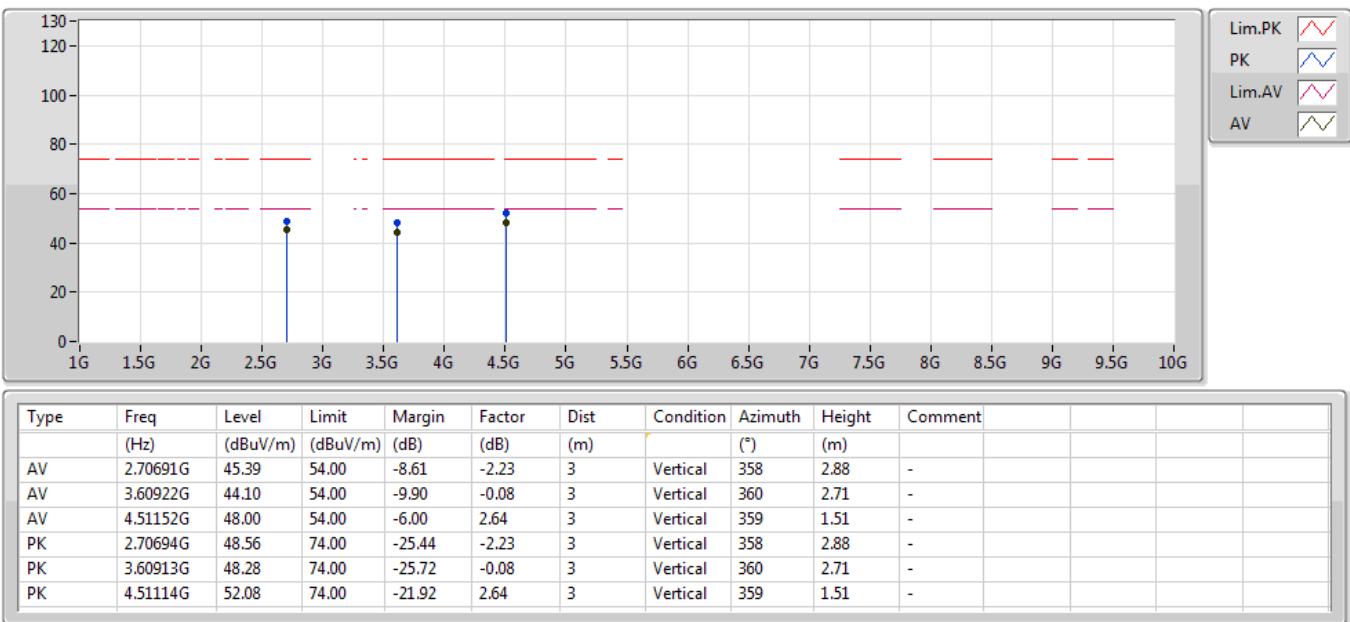
927.8MHz_TX

13/05/2019



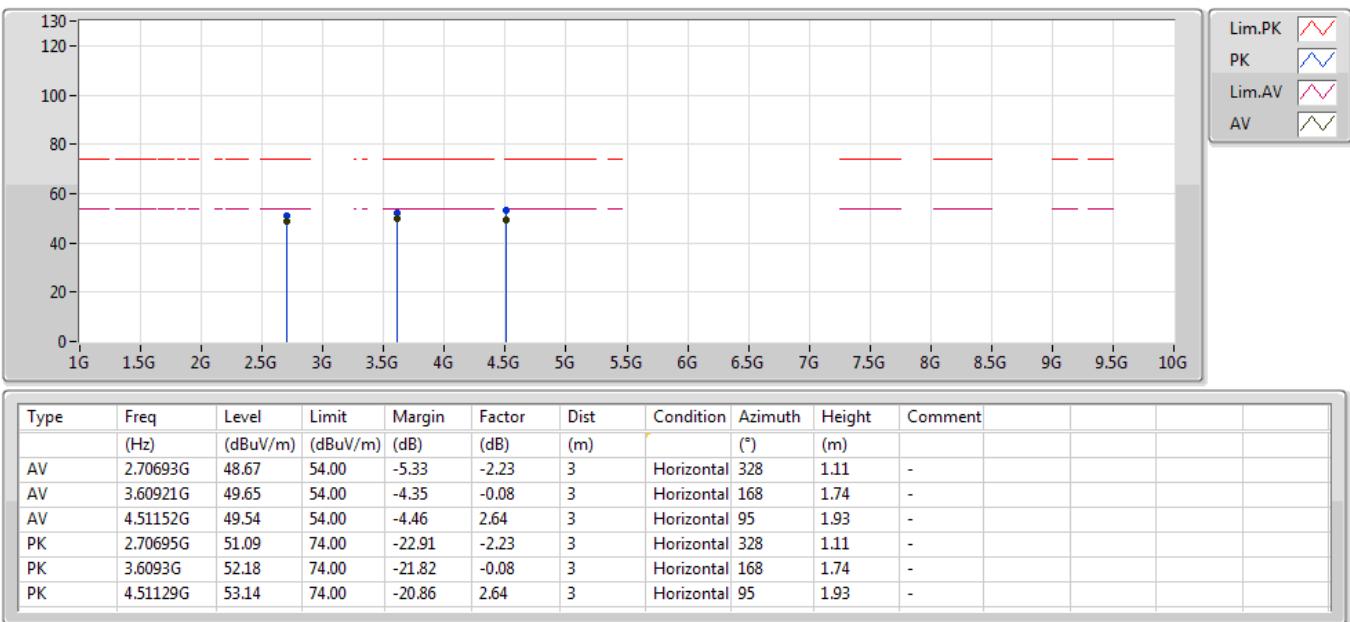
LoRa_FHSS-125k_Nss1_1TX

27/04/2019

902.3MHz_TX


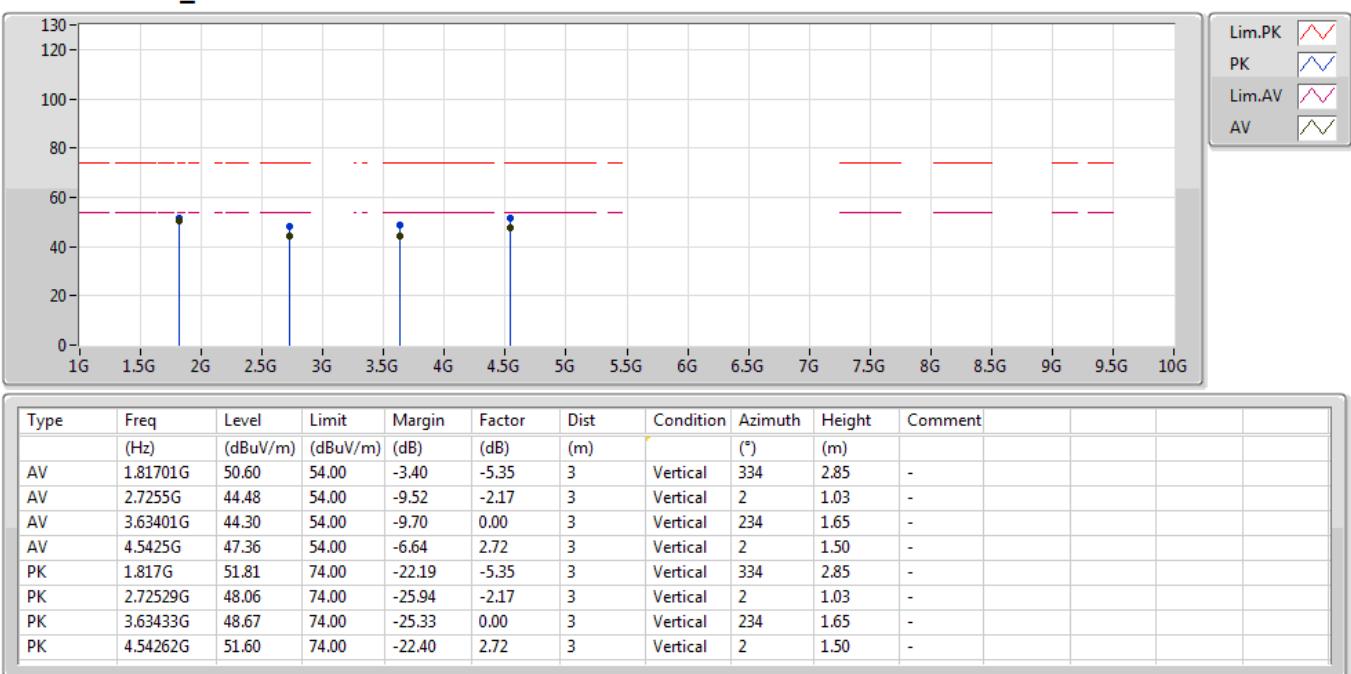
LoRa_FHSS-125k_Nss1_1TX

27/04/2019

902.3MHz_TX


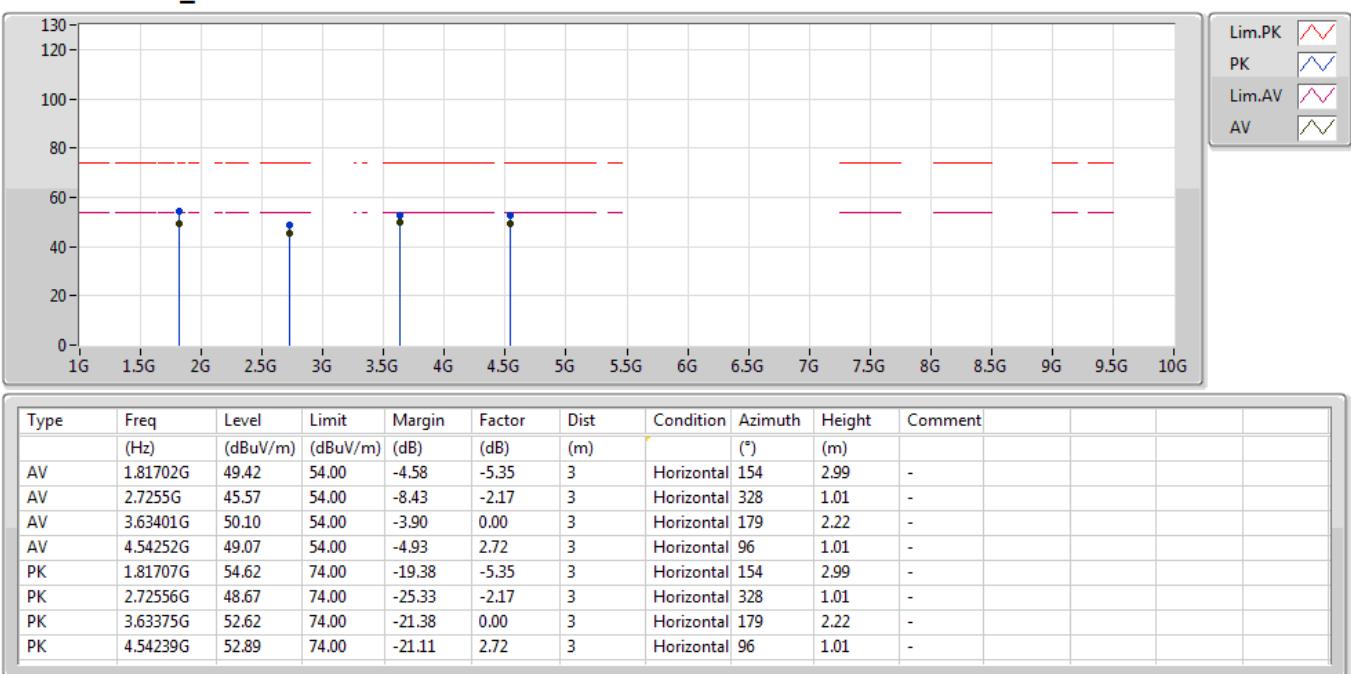
LoRa_FHSS-125k_Nss1_1TX
908.5MHz_TX

13/05/2019



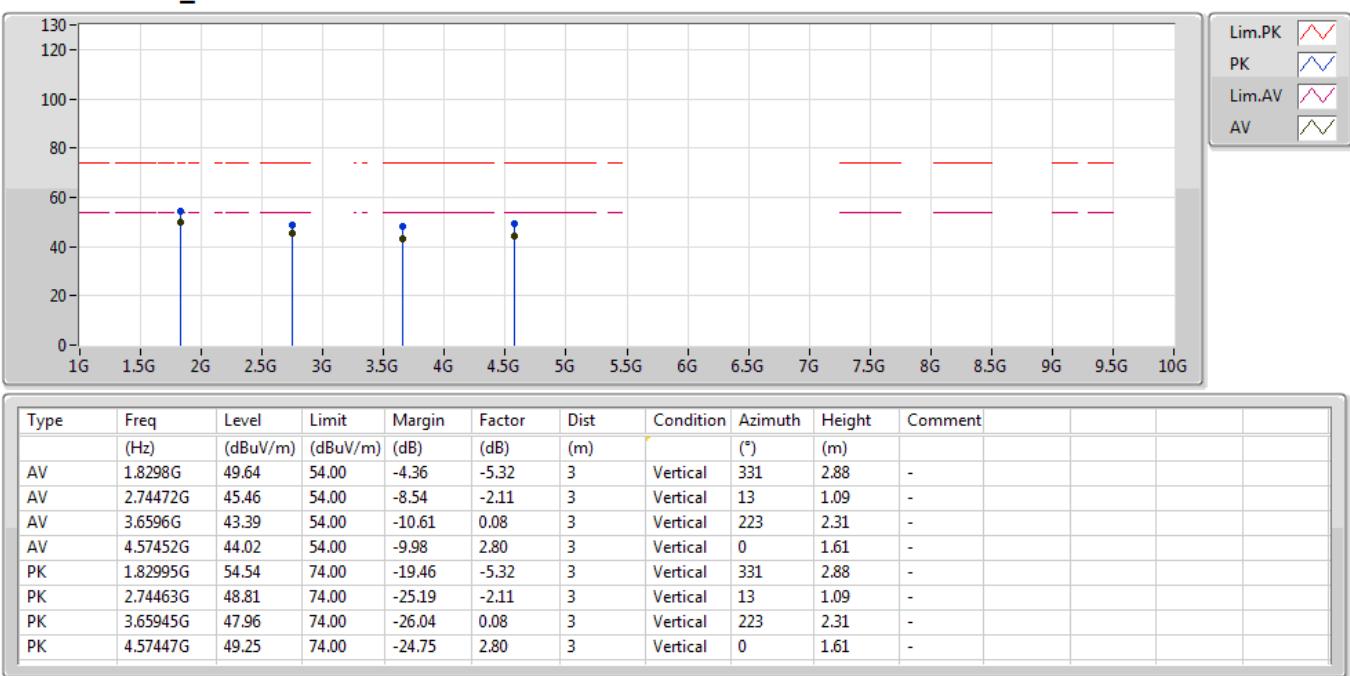
LoRa_FHSS-125k_Nss1_1TX
908.5MHz_TX

13/05/2019



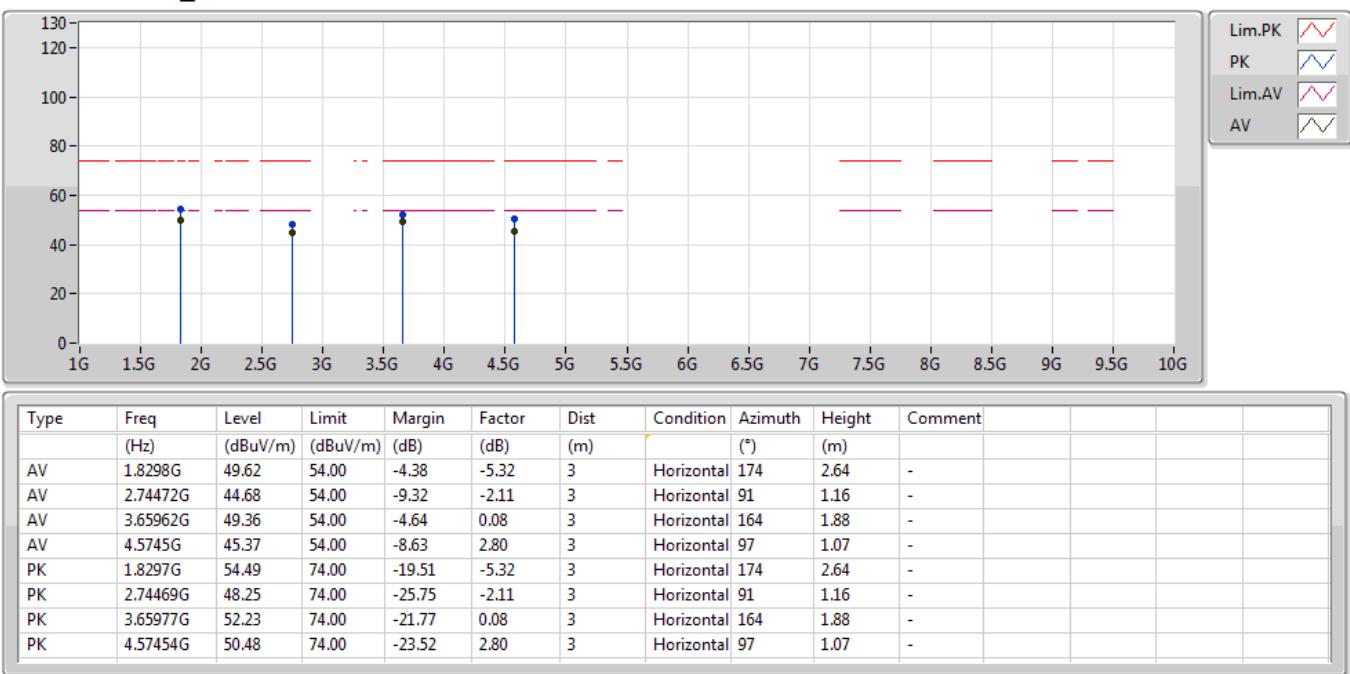
LoRa_FHSS-125k_Nss1_1TX
914.9MHz_TX

13/05/2019



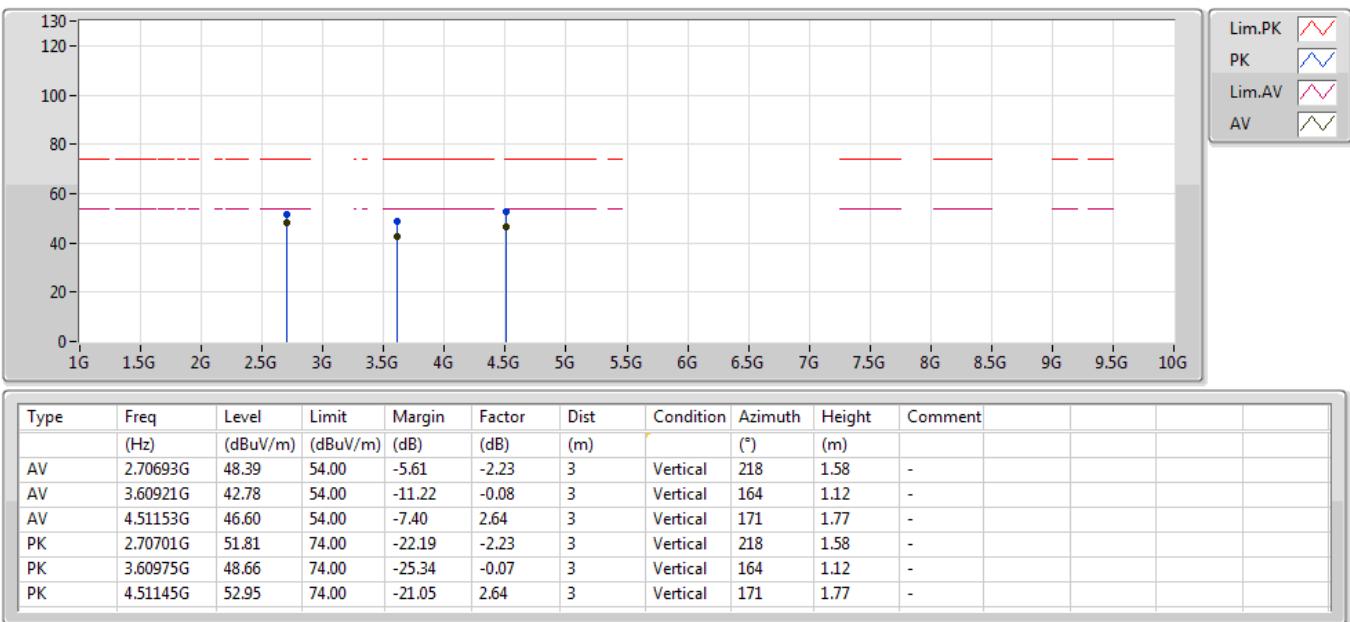
LoRa_FHSS-125k_Nss1_1TX
914.9MHz_TX

13/05/2019



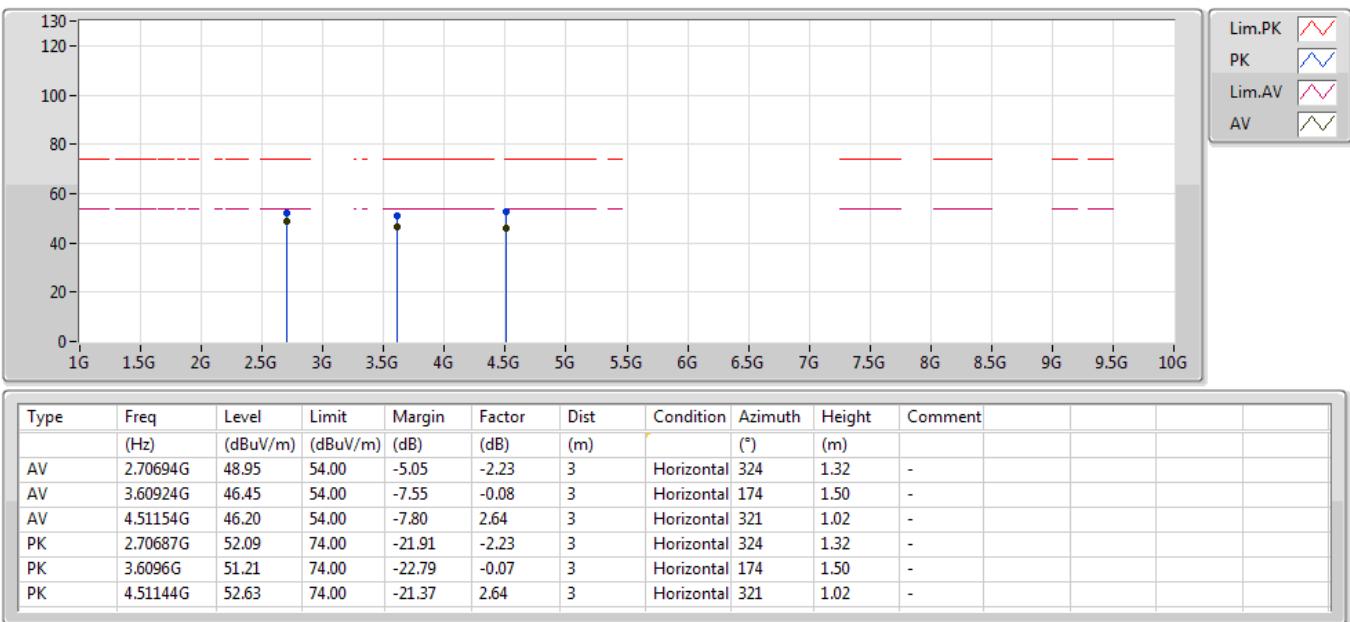
LoRa_FHSS-250k_Nss1_1TX

27/04/2019

902.3MHz_TX


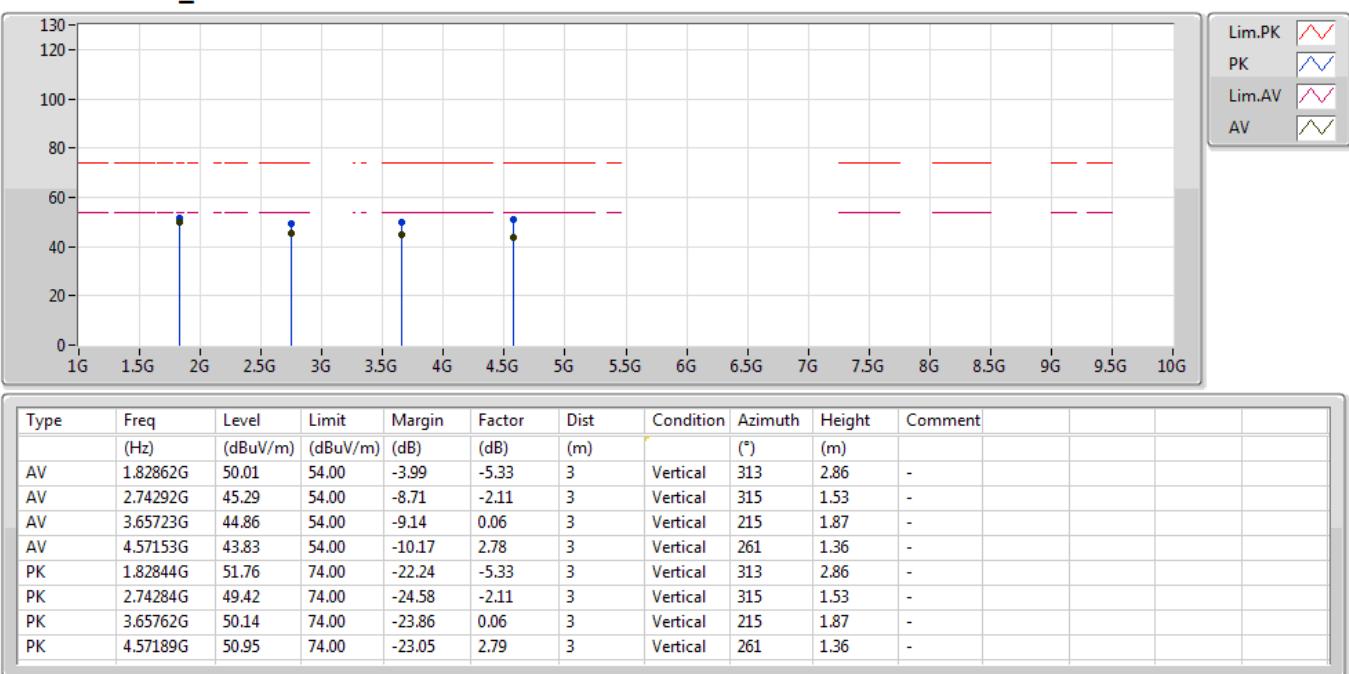
LoRa_FHSS-250k_Nss1_1TX

27/04/2019

902.3MHz_TX


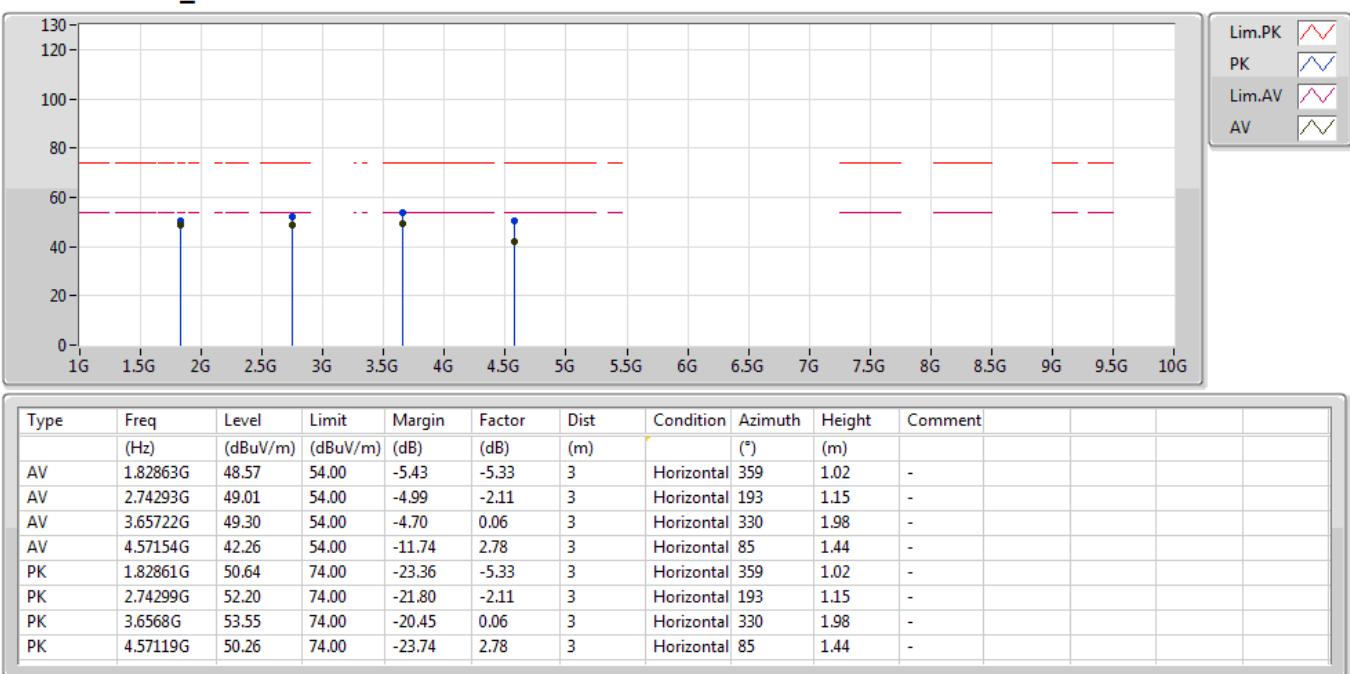
LoRa_FHSS-250k_Nss1_1TX
914.3MHz_TX

13/05/2019



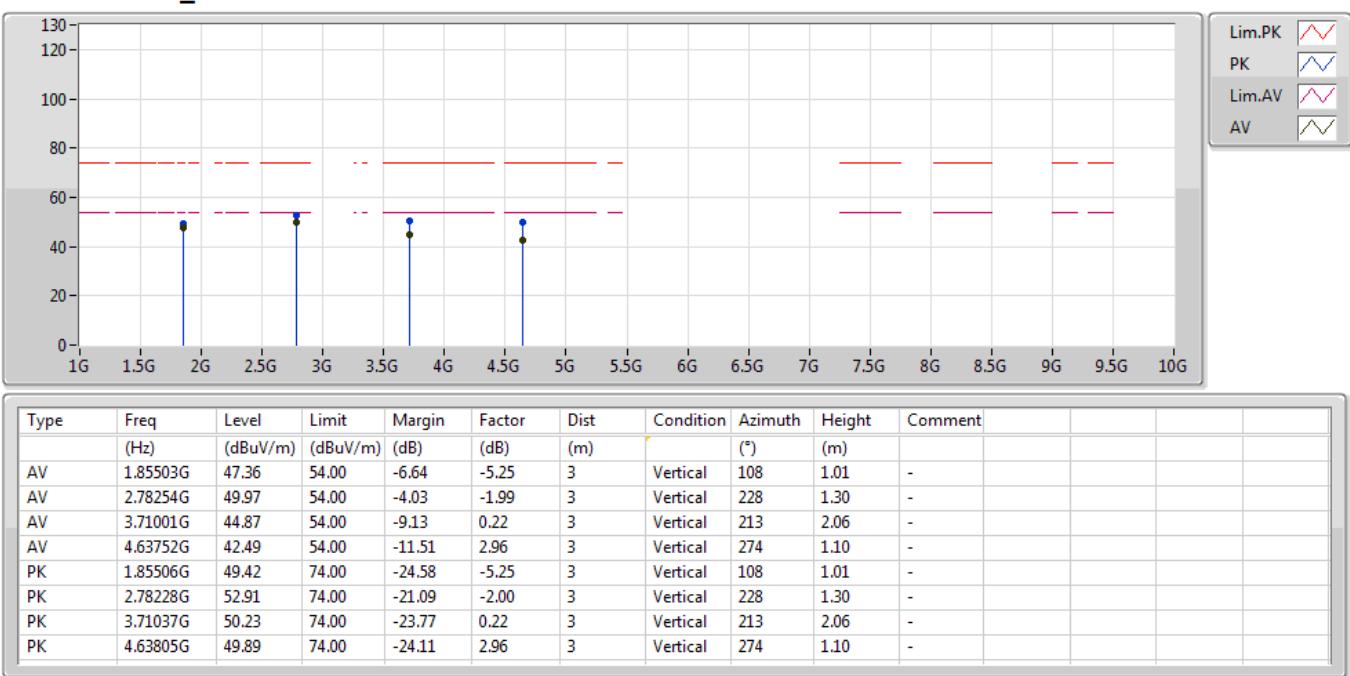
LoRa_FHSS-250k_Nss1_1TX
914.3MHz_TX

13/05/2019



LoRa_FHSS-250k_Nss1_1TX
927.5MHz_TX

13/05/2019



LoRa_FHSS-250k_Nss1_1TX
927.5MHz_TX

13/05/2019



**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
FSK-5K_Nss1_1TX	63.5k	59.595k	59K6F1D	61.875k	59.095k
FSK-50K_Nss1_1TX	107.875k	104.073k	104KF1D	105.125k	102.199k
FSK-150K_Nss1_1TX	154.688k	152.549k	153KF1D	154.312k	151.612k
LoRa_FHSS-125k_Nss1_1TX	145.625k	128.061k	128KF1D	142.969k	125.718k
LoRa_FHSS-250k_Nss1_1TX	302.5k	265.18k	265KF1D	295k	258.933k

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)
FSK-5K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	Inf	61.875k	59.095k
915MHz	Pass	Inf	62.125k	59.345k
927.8MHz	Pass	Inf	63.5k	59.595k
FSK-50K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	Inf	105.625k	102.199k
915MHz	Pass	Inf	105.125k	104.073k
927.8MHz	Pass	Inf	107.875k	103.698k
FSK-150K_Nss1_1TX	-	-	-	-
902.4MHz	Pass	Inf	154.688k	152.549k
914.8MHz	Pass	Inf	154.688k	151.612k
927.6MHz	Pass	Inf	154.312k	151.987k
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-
902.2MHz	Pass	Inf	143.281k	126.812k
915MHz	Pass	Inf	142.969k	126.655k
927.8MHz	Pass	Inf	145.625k	127.28k
902.3MHz	Pass	Inf	145.625k	128.061k
908.5MHz	Pass	Inf	144.531k	125.718k
914.9MHz	Pass	Inf	145.469k	127.28k
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-
902.3MHz	Pass	Inf	302.5k	265.18k
914.3MHz	Pass	Inf	295k	263.618k
927.5MHz	Pass	Inf	297.188k	258.933k

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

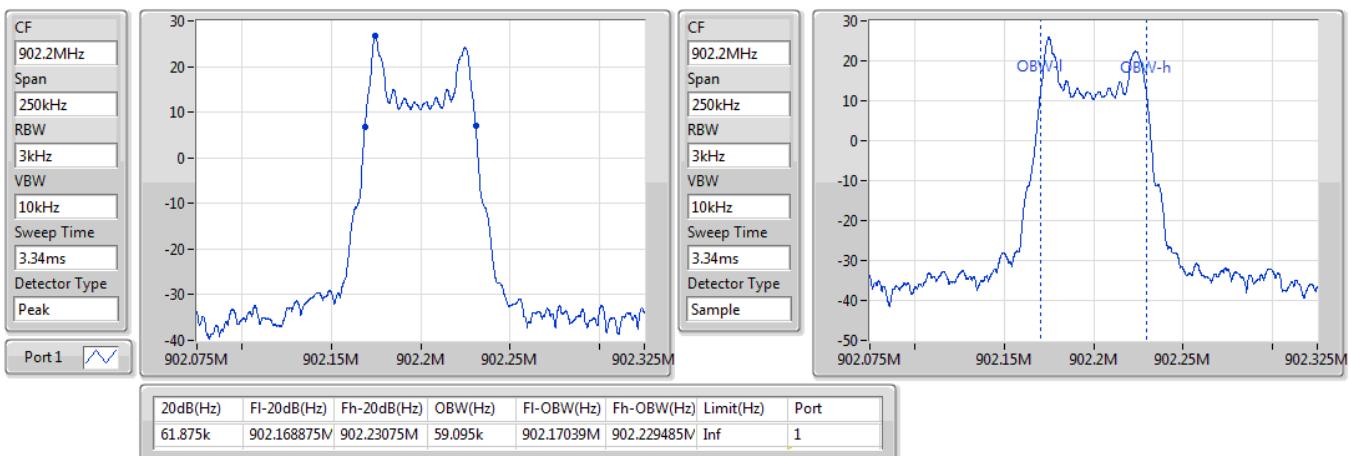


FSK-5K_Nss1_1TX

EBW

902.2MHz

14/05/2019

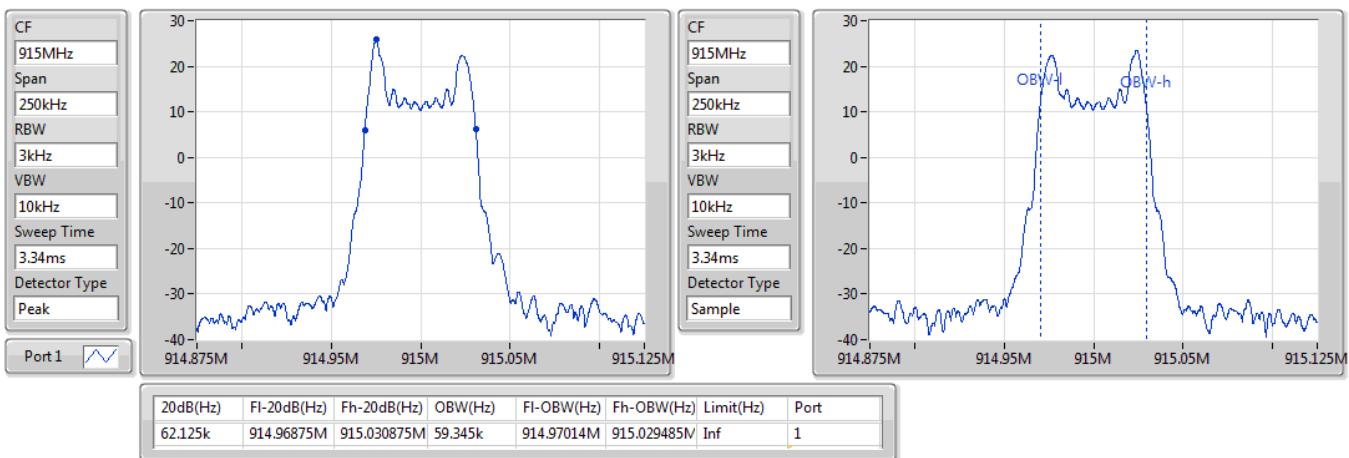


FSK-5K_Nss1_1TX

EBW

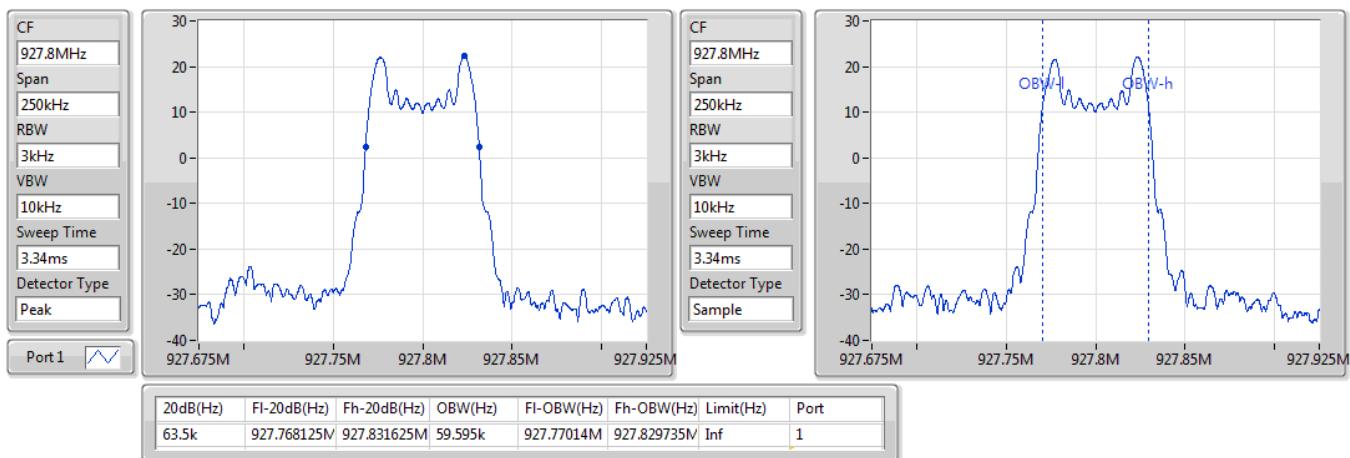
915MHz

14/05/2019

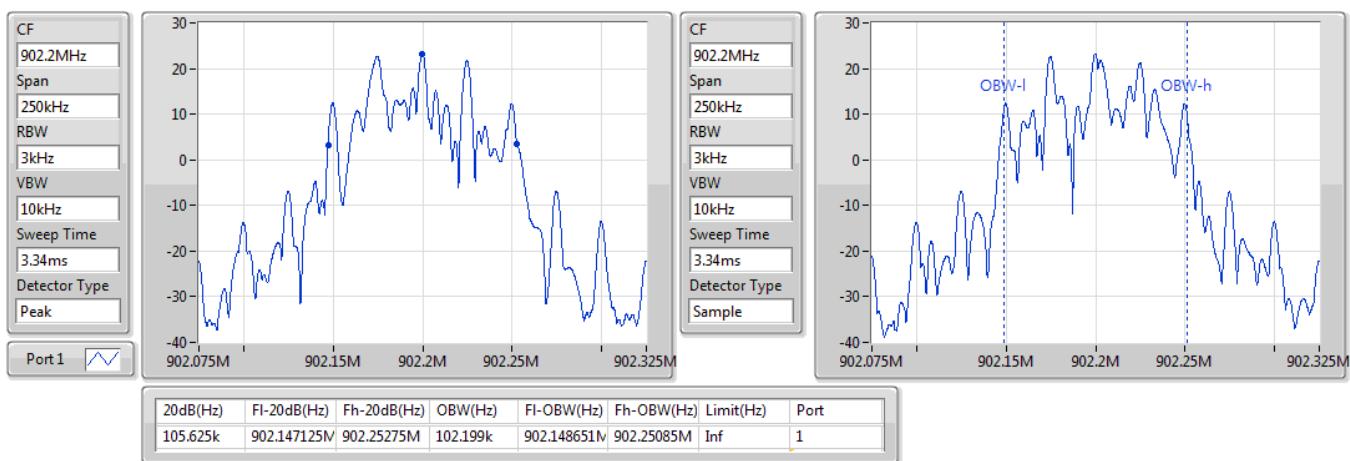


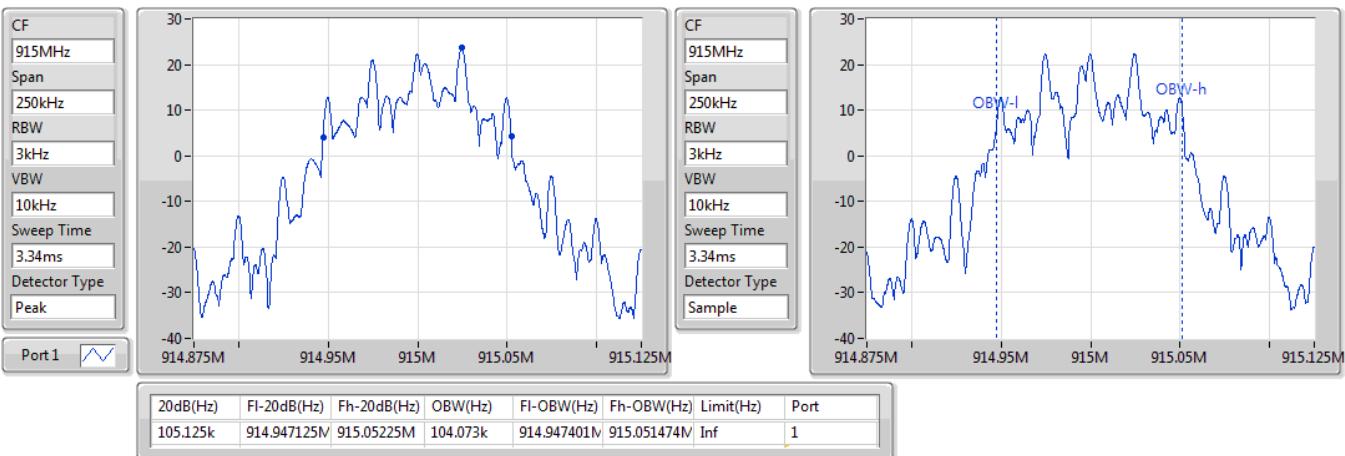
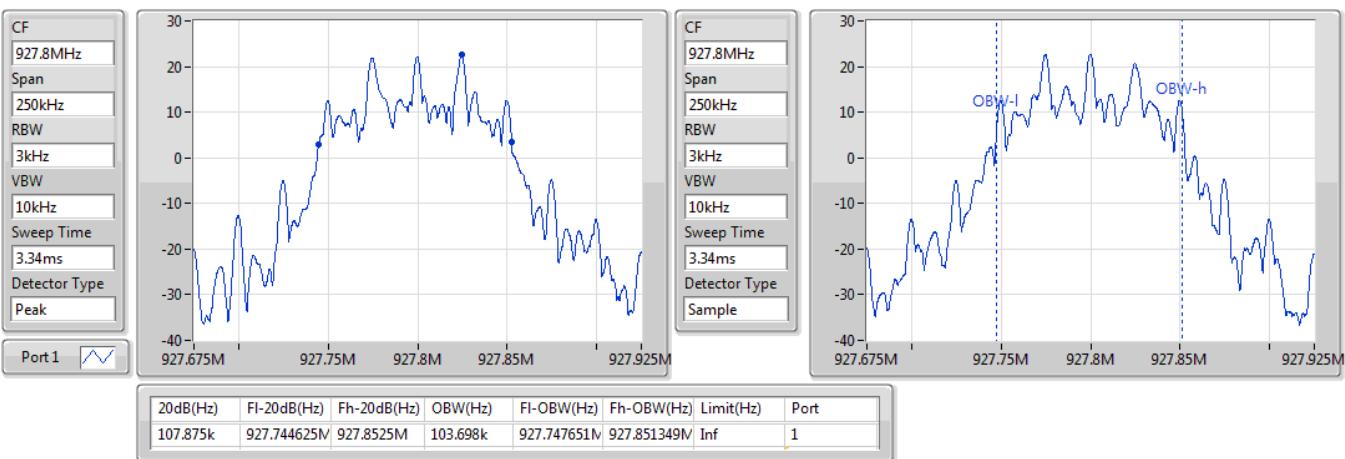
**FSK-5K_Nss1_1TX****EBW****927.8MHz**

14/05/2019

**FSK-50K_Nss1_1TX****EBW****902.2MHz**

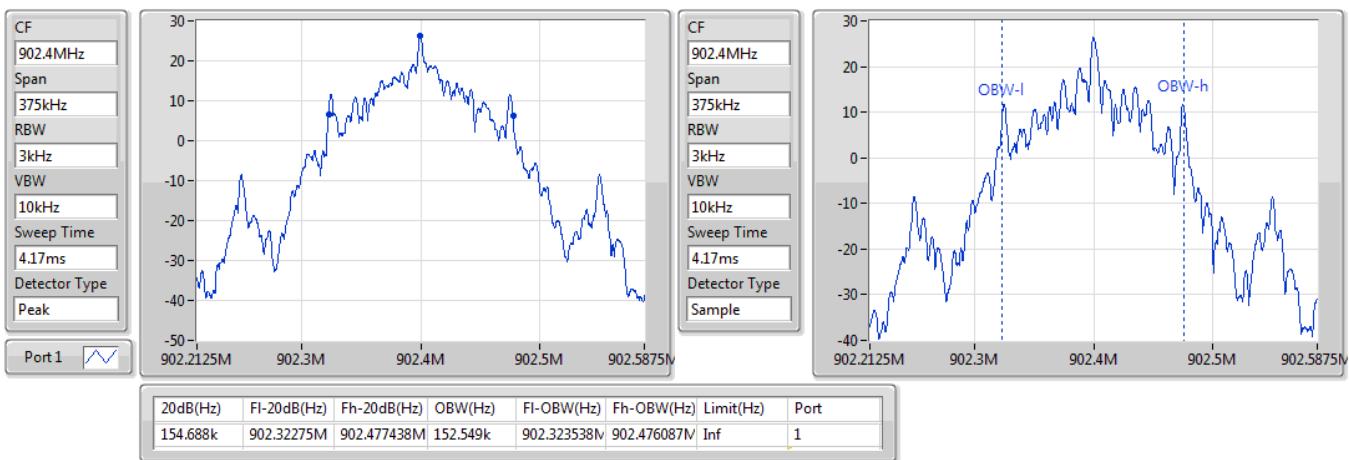
14/05/2019



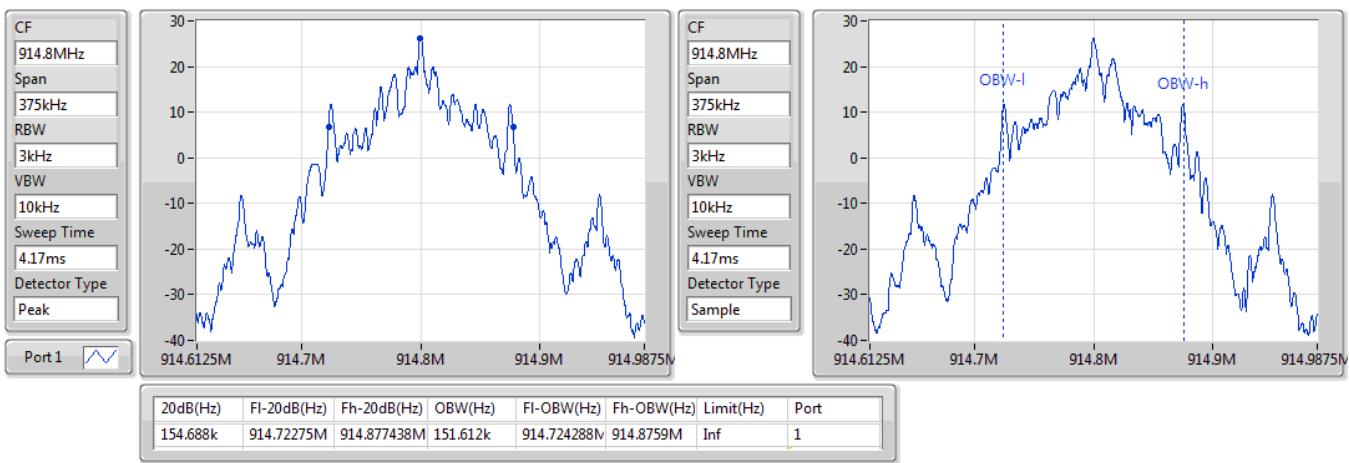
**FSK-50K_Nss1_1TX****EBW****915MHz****FSK-50K_Nss1_1TX****EBW****927.8MHz**

**FSK-150K_Nss1_1TX****EBW****902.4MHz**

14/05/2019

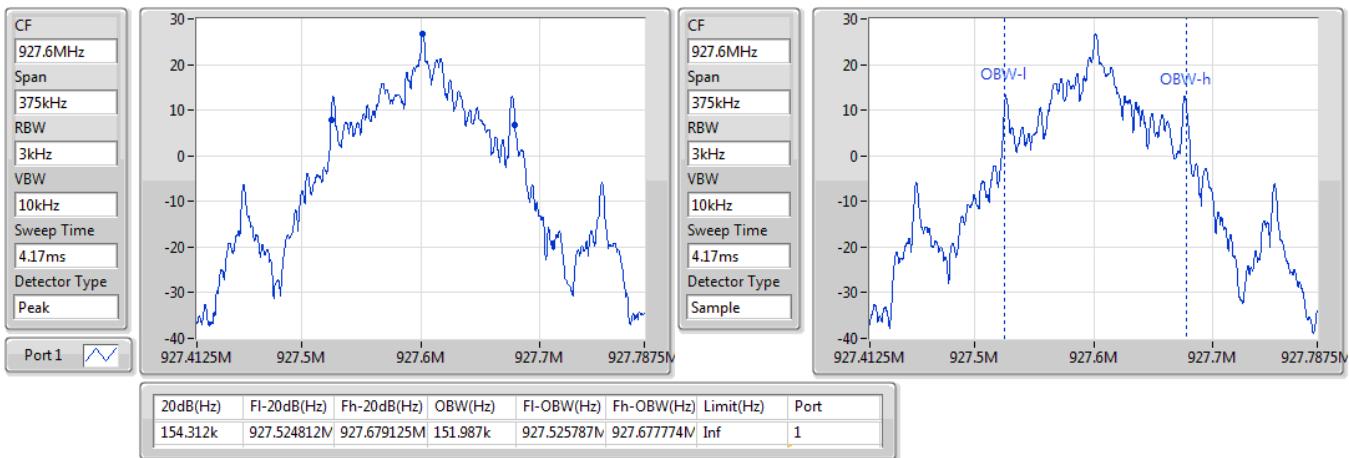
**FSK-150K_Nss1_1TX****EBW****914.8MHz**

14/05/2019

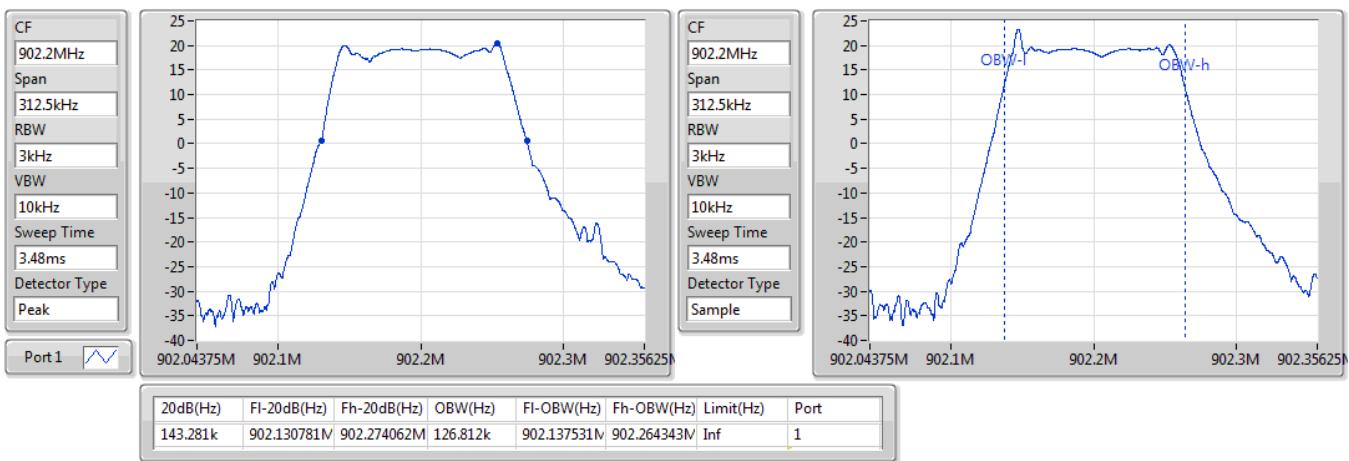


**FSK-150K_Nss1_1TX****EBW****927.6MHz**

14/05/2019

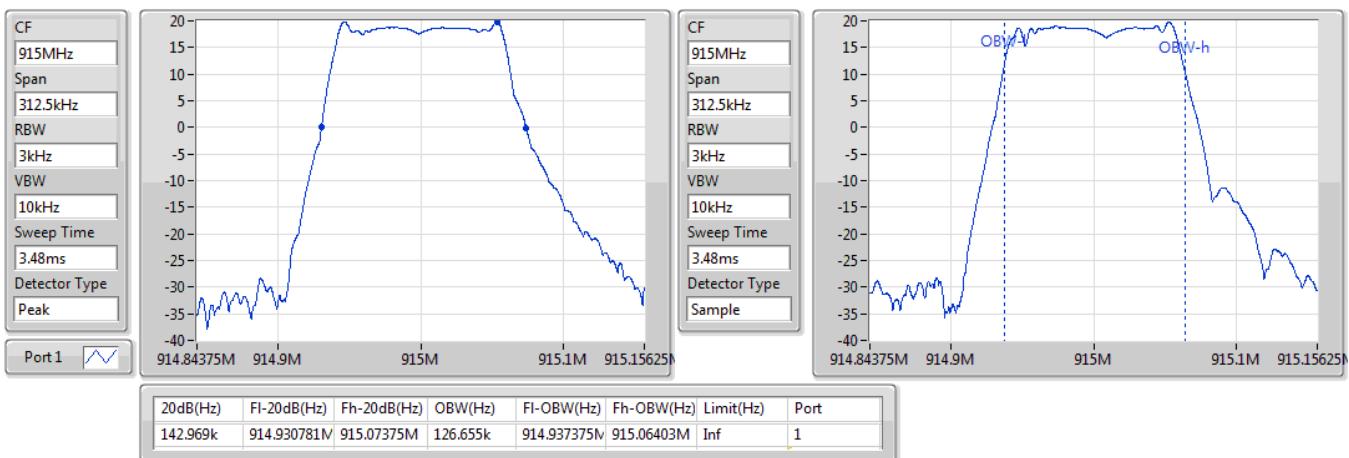
**LoRa_FHSS-125k_Nss1_1TX****EBW****902.2MHz**

14/05/2019

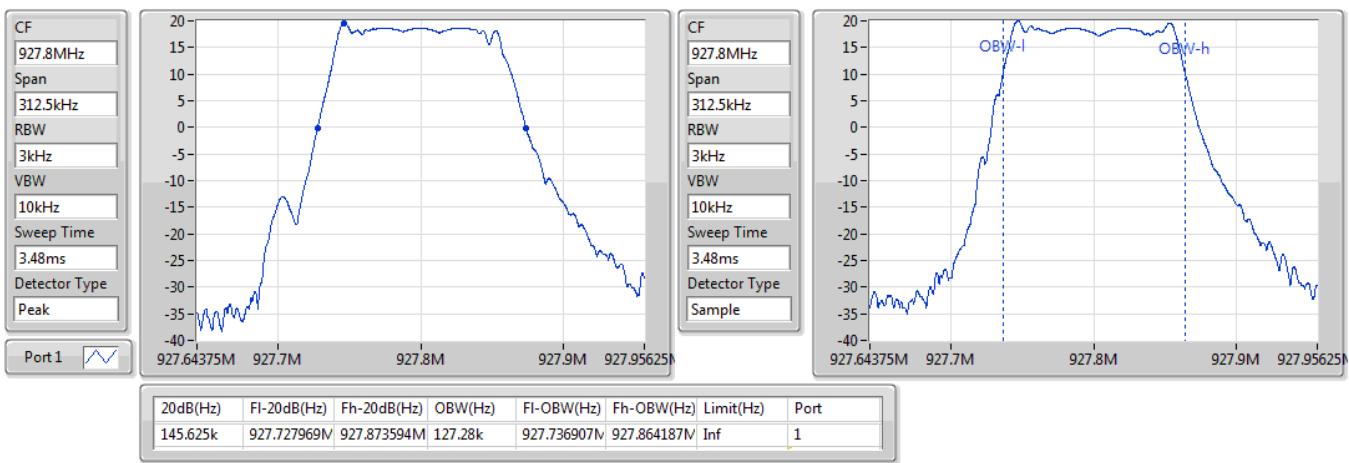


**LoRa_FHSS-125k_Nss1_1TX****EBW****915MHz**

14/05/2019

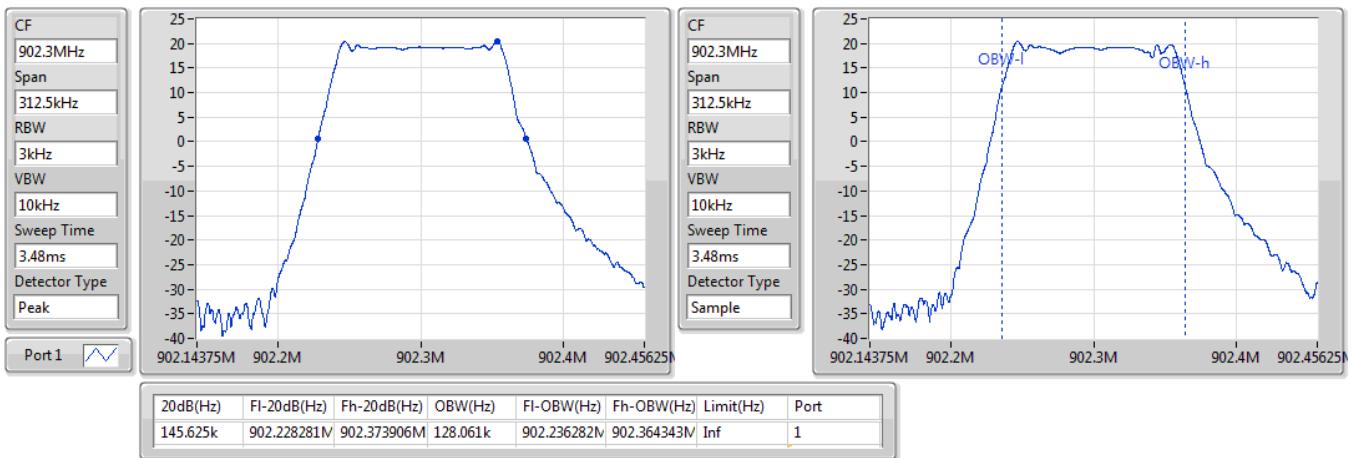
**LoRa_FHSS-125k_Nss1_1TX****EBW****927.8MHz**

14/05/2019

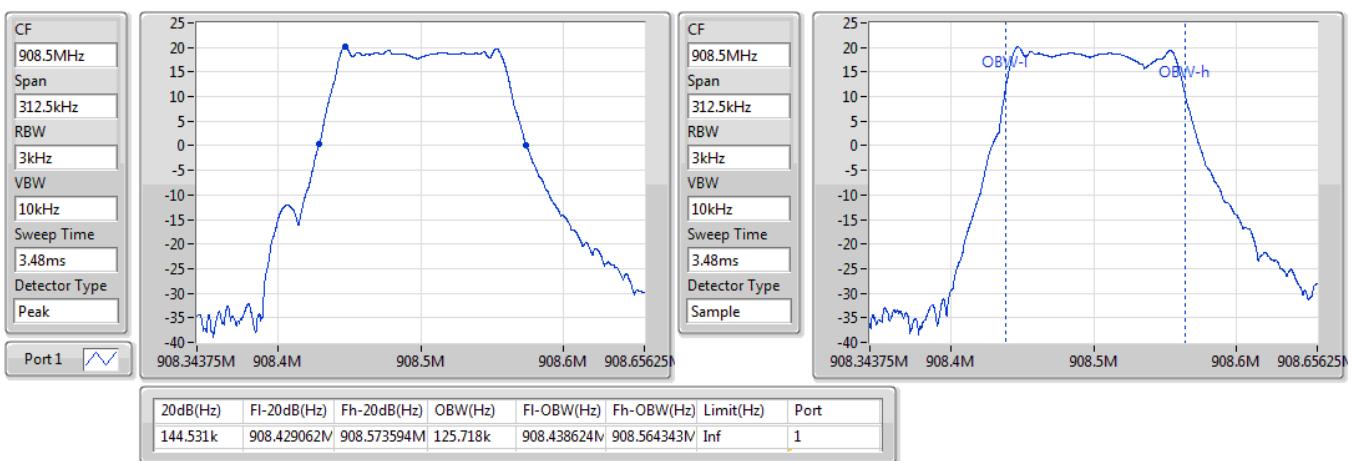


**LoRa_FHSS-125k_Nss1_1TX****EBW****902.3MHz**

14/05/2019

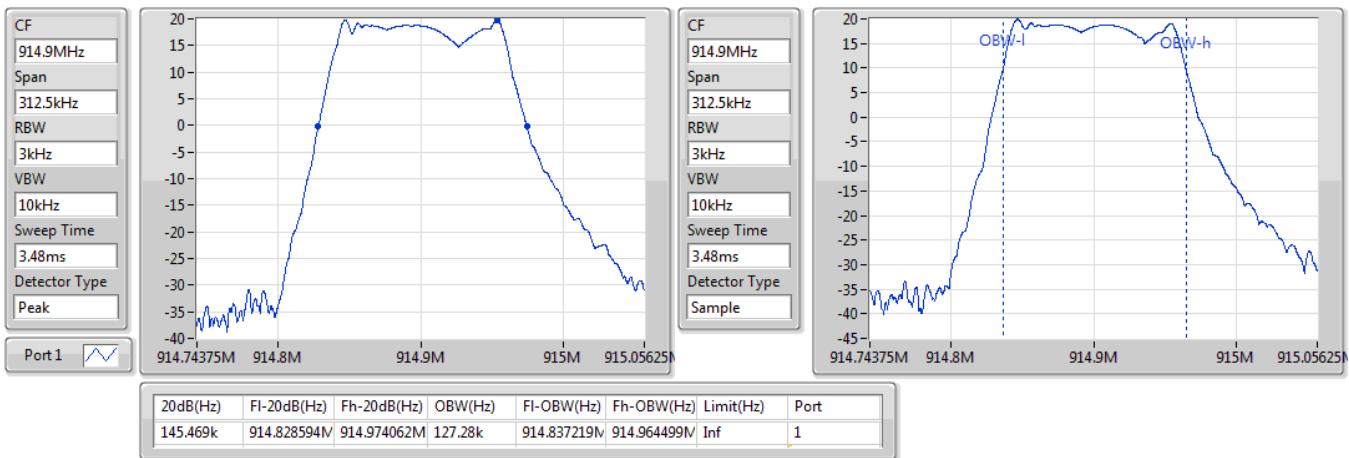
**LoRa_FHSS-125k_Nss1_1TX****EBW****908.5MHz**

14/05/2019

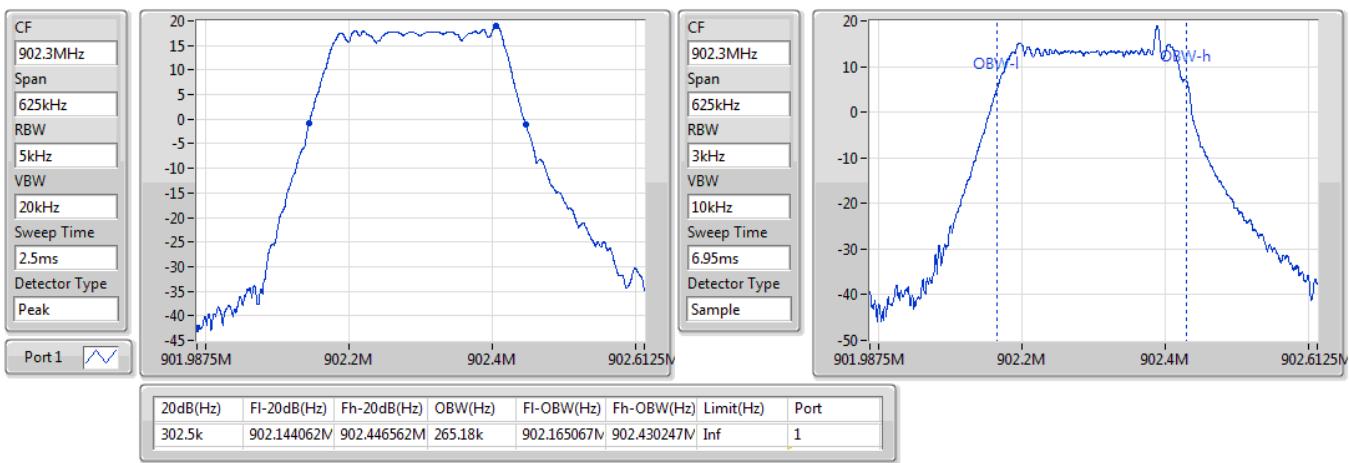


**LoRa_FHSS-125k_Nss1_1TX****EBW****914.9MHz**

14/05/2019

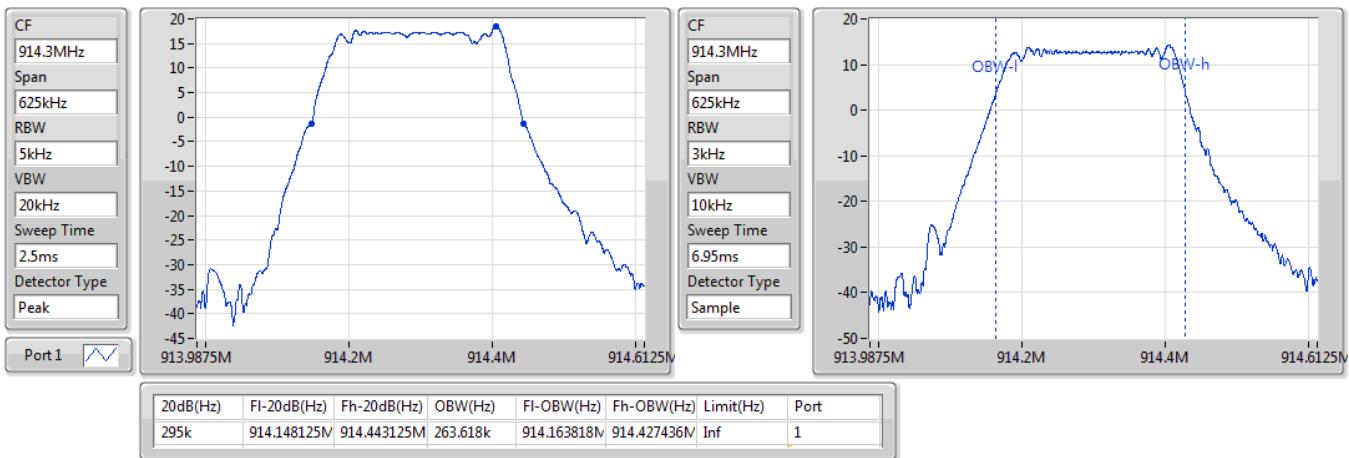
**LoRa_FHSS-250k_Nss1_1TX****EBW****902.3MHz**

14/05/2019

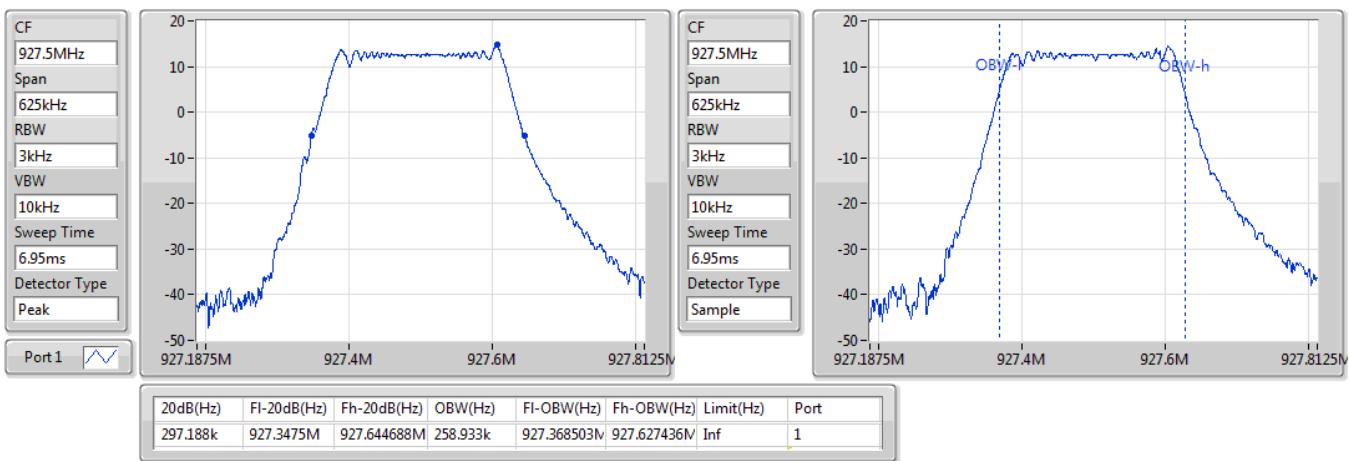


**LoRa_FHSS-250k_Nss1_1TX****EBW****914.3MHz**

14/05/2019

**LoRa_FHSS-250k_Nss1_1TX****EBW****927.5MHz**

14/05/2019



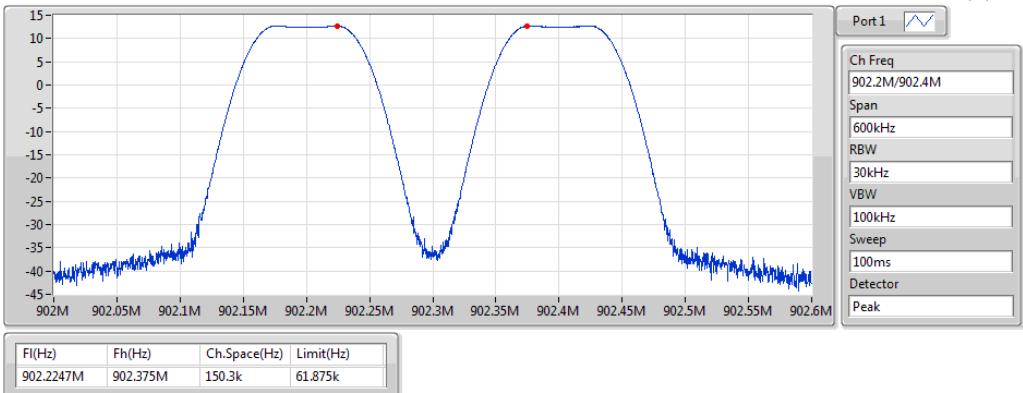
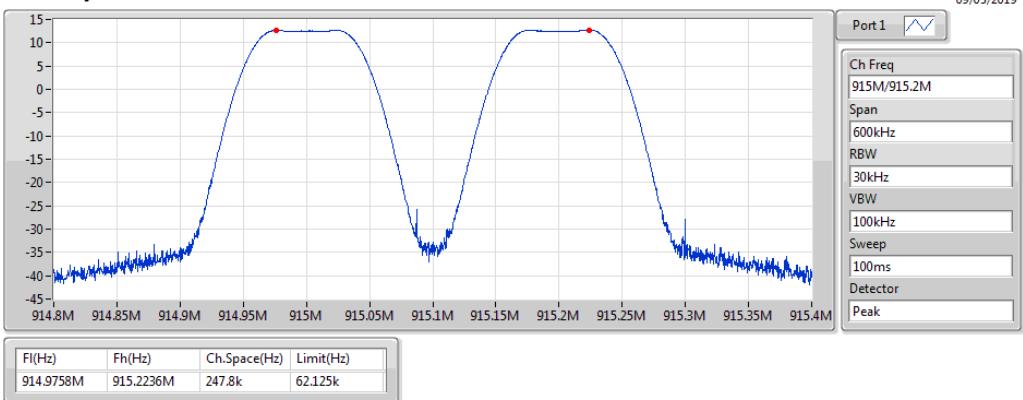
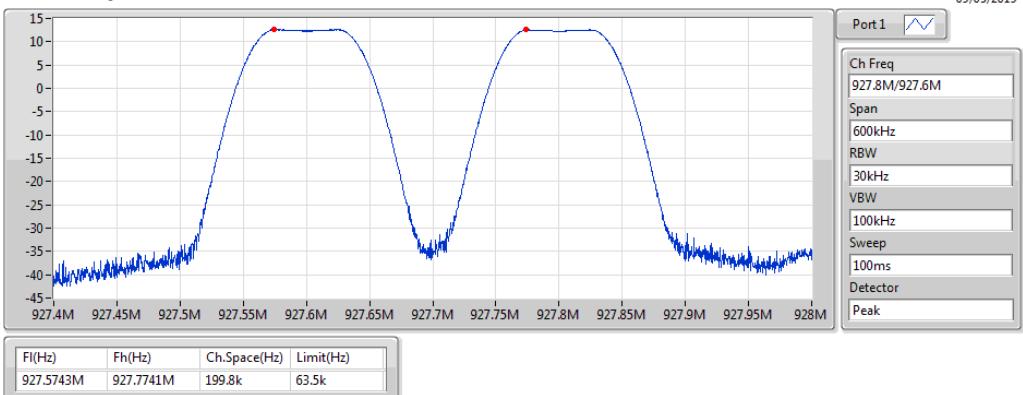
**Summary**

Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
FSK-5K_Nss1_1TX	247.8k	150.3k
FSK-50K_Nss1_1TX	252.6k	227.7k
FSK-150K_Nss1_1TX	377.4k	346.2k
LoRa_FHSS-125k_Nss1_1TX	315k	186.9k
LoRa_FHSS-250k_Nss1_1TX	536.4k	353.4k



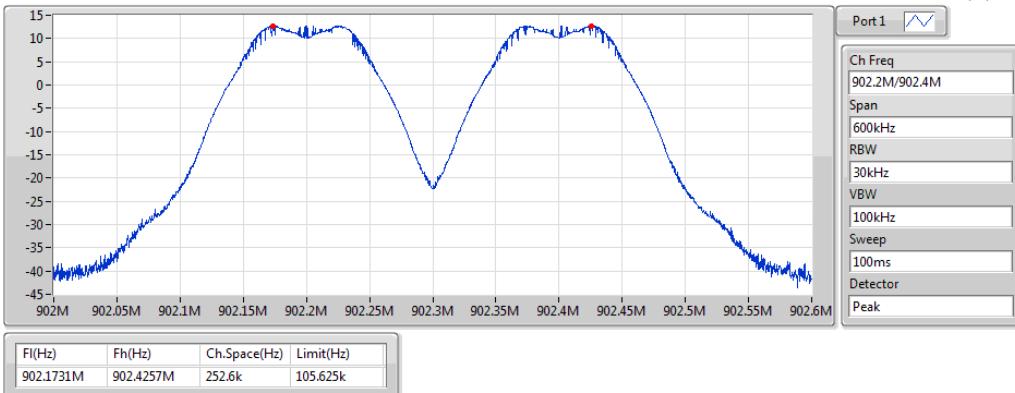
Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
FSK-5K_Nss1_1TX	-	-	-	-	-
902.2MHz	Pass	902.2247M	902.375M	150.3k	61.875k
915MHz	Pass	914.9758M	915.2236M	247.8k	62.125k
927.8MHz	Pass	927.5743M	927.7741M	199.8k	63.5k
FSK-50K_Nss1_1TX	-	-	-	-	-
902.2MHz	Pass	902.1731M	902.4257M	252.6k	105.625k
915MHz	Pass	914.974M	915.2017M	227.7k	105.125k
927.8MHz	Pass	927.5752M	927.805M	229.8k	107.875k
FSK-150K_Nss1_1TX	-	-	-	-	-
902.4MHz	Pass	902.4272M	902.7734M	346.2k	154.688k
914.8MHz	Pass	914.8266M	915.204M	377.4k	154.688k
927.6MHz	Pass	927.2254M	927.574M	348.6k	154.312k
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-	-
902.2MHz	Pass	902.141M	902.3624M	221.4k	143.281k
915MHz	Pass	914.9419M	915.1441M	202.2k	142.969k
927.8MHz	Pass	927.5455M	927.7795M	234k	145.625k
902.3MHz	Pass	902.2572M	902.4441M	186.9k	145.625k
908.5MHz	Pass	908.4407M	908.6684M	227.7k	144.531k
914.9MHz	Pass	914.644M	914.959M	315k	145.469k
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-	-
902.3MHz	Pass	902.2618M	902.6152M	353.4k	302.5k
914.3MHz	Pass	914.2318M	914.701M	469.2k	295k
927.5MHz	Pass	927.0054M	927.5418M	536.4k	297.188k

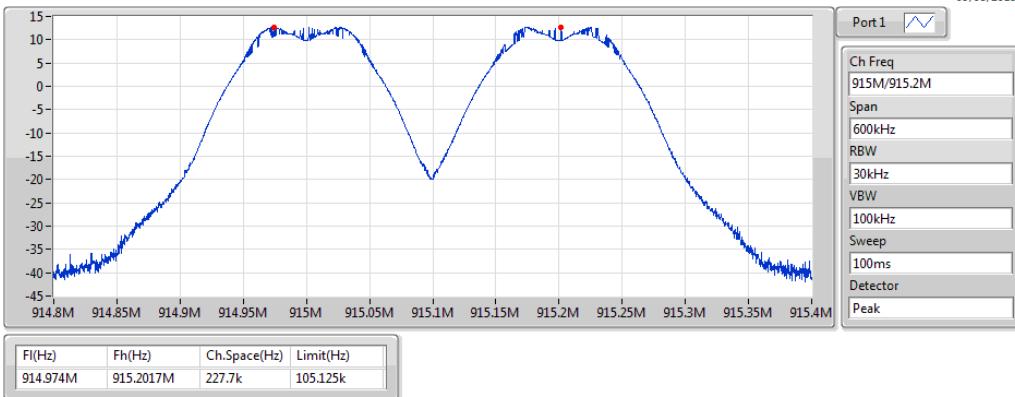
FSK-5K_Nss1_1TX
902.2M/902.4MHz

FSK-5K_Nss1_1TX
915M/915.2MHz

FSK-5K_Nss1_1TX
927.8M/927.6MHz


FSK-50K_Nss1_1TX
902.2M/902.4MHz
Channel Separation

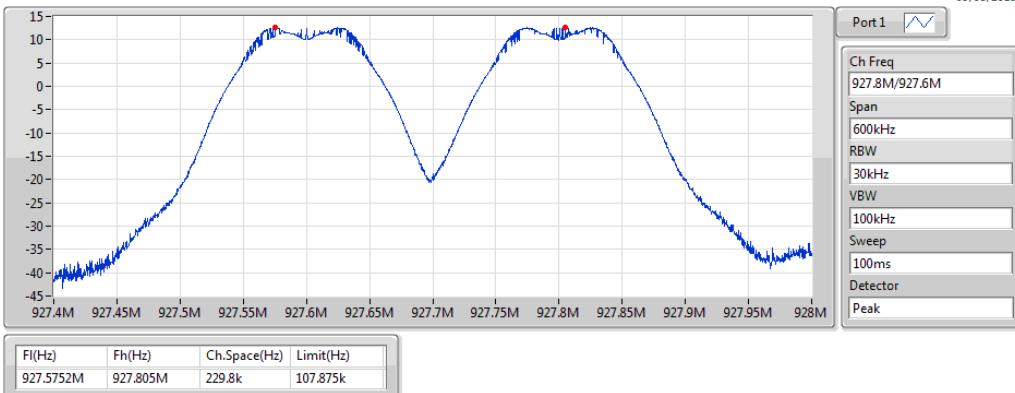
09/05/2019


FSK-50K_Nss1_1TX
915M/915.2MHz
Channel Separation

09/05/2019

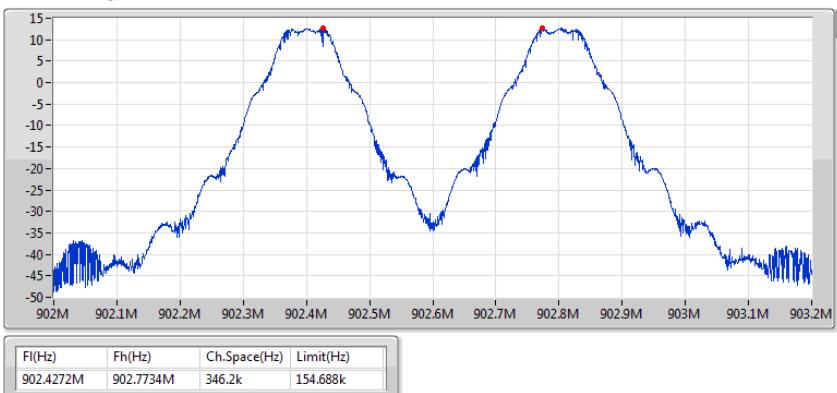

FSK-50K_Nss1_1TX
927.8M/927.6MHz
Channel Separation

09/05/2019



FSK-150K_Nss1_1TX
902.4M/902.8MHz
Channel Separation

09/05/2019

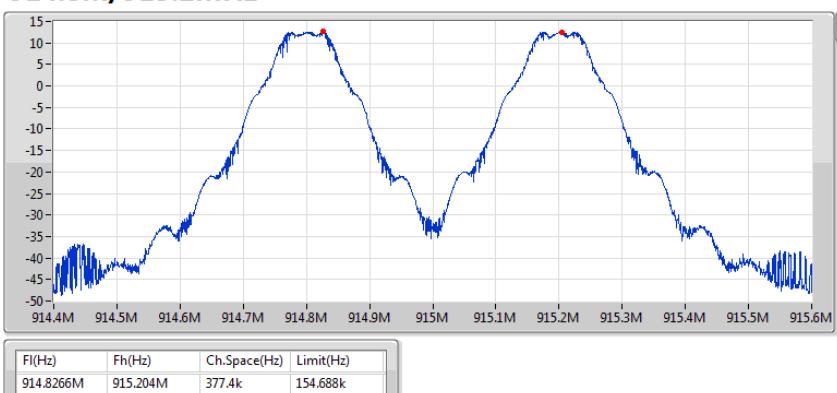


Port 1 

Ch Freq	902.4M/902.8M
Span	1.2MHz
RBW	30kHz
VBW	100kHz
Sweep	100ms
Detector	Peak

FSK-150K_Nss1_1TX
914.8M/915.2MHz
Channel Separation

09/05/2019

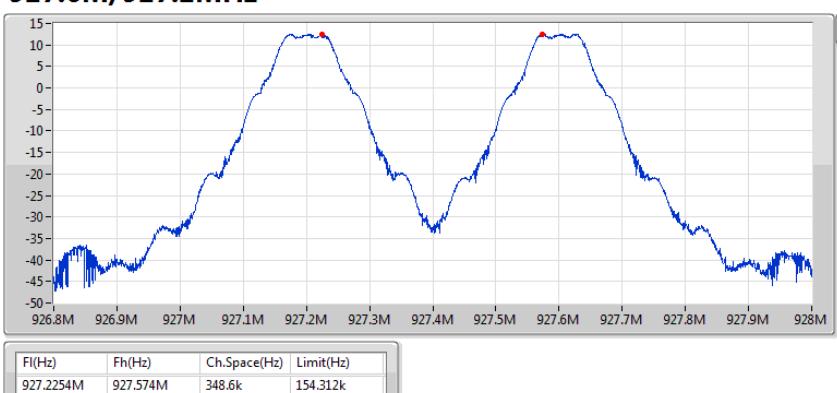


Port 1 

Ch Freq	914.8M/915.2M
Span	1.2MHz
RBW	30kHz
VBW	100kHz
Sweep	100ms
Detector	Peak

FSK-150K_Nss1_1TX
927.6M/927.2MHz
Channel Separation

09/05/2019

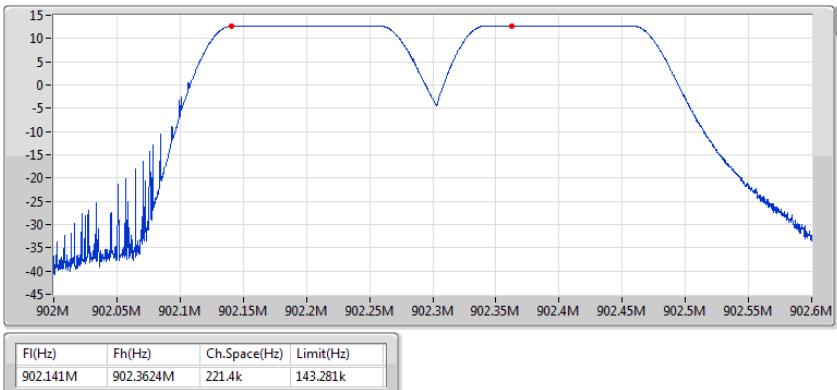


Port 1 

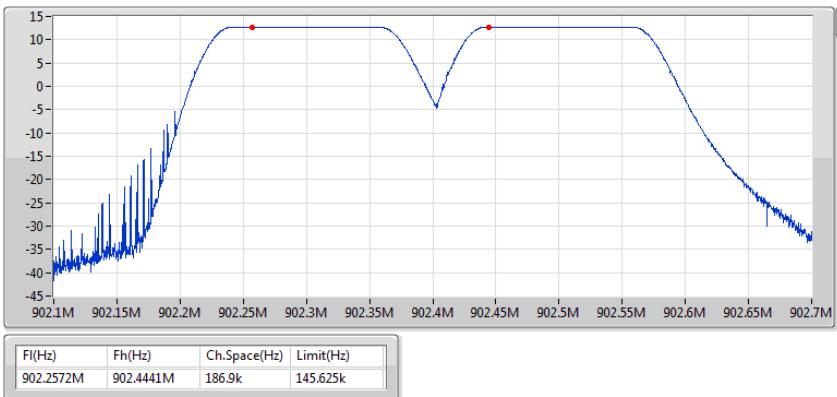
Ch Freq	927.6M/927.2M
Span	1.2MHz
RBW	30kHz
VBW	100kHz
Sweep	100ms
Detector	Peak

LoRa_FHSS-125k_Nss1_1TX
902.2M/902.4MHz
Channel Separation

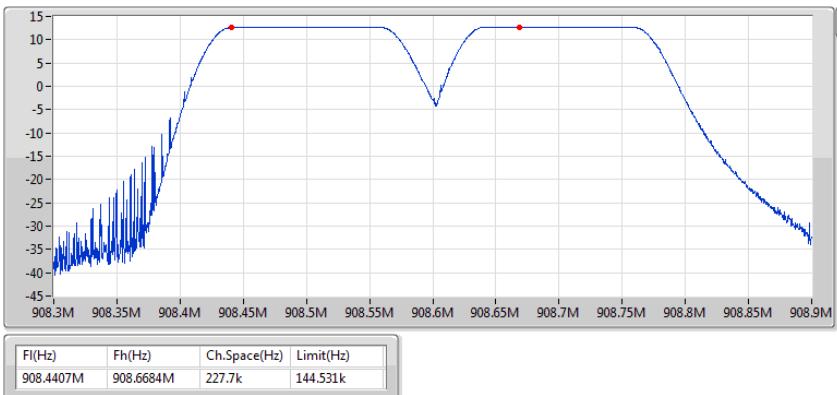
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LoRa_FHSS-125k_Nss1_1TX
902.3M/902.5MHz
Channel Separation

09/05/2019

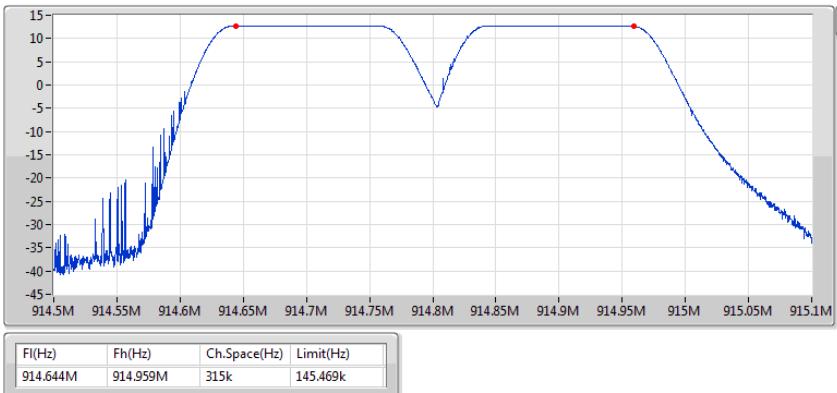

LoRa_FHSS-125k_Nss1_1TX
908.5M/908.7MHz
Channel Separation

09/05/2019



LoRa_FHSS-125k_Nss1_1TX
914.9M/914.7MHz
Channel Separation

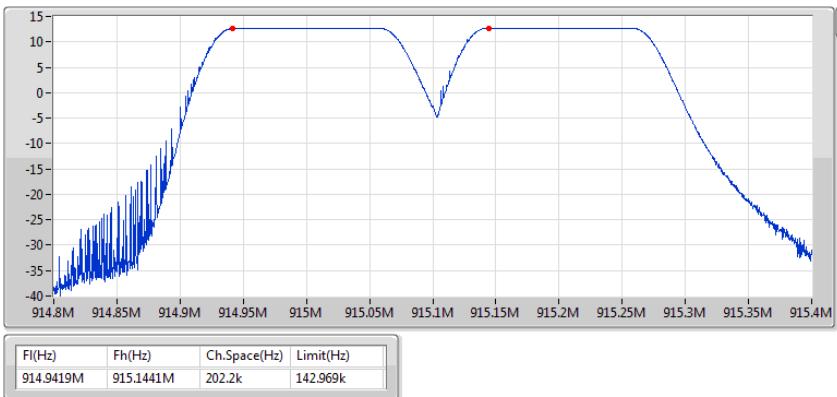
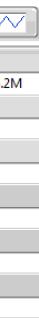
09/05/2019


Port 1 

Ch Freq
914.9M/914.7M
Span
600kHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

LoRa_FHSS-125k_Nss1_1TX
915M/915.2MHz
Channel Separation

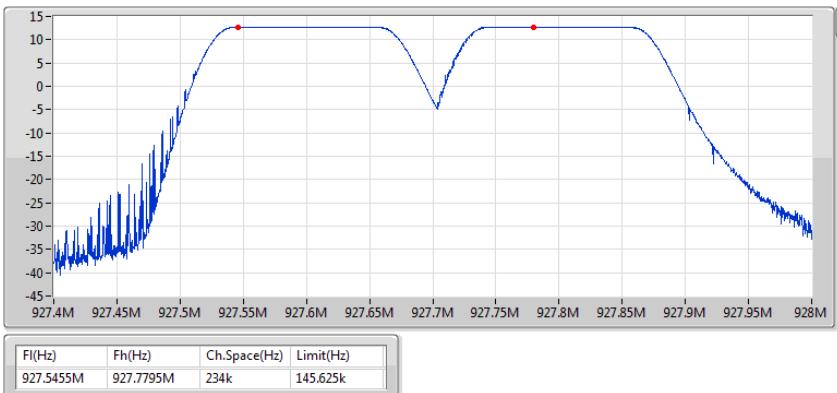
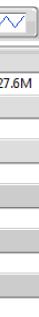
09/05/2019


Port 1 

Ch Freq
915M/915.2M
Span
600kHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

LoRa_FHSS-125k_Nss1_1TX
927.8M/927.6MHz
Channel Separation

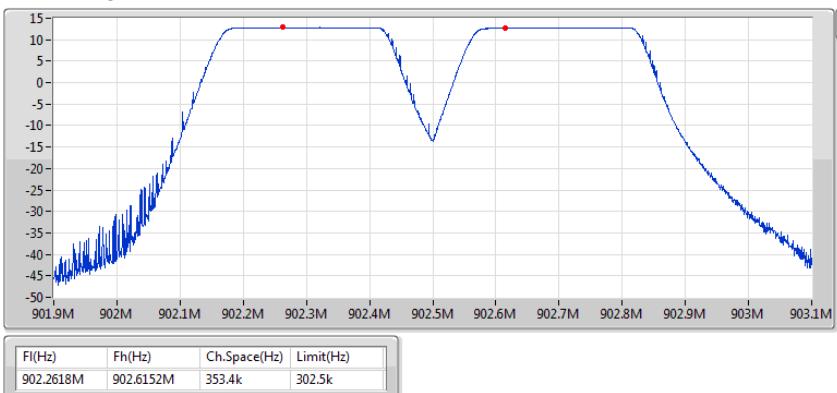
09/05/2019


Port 1 

Ch Freq
927.8M/927.6M
Span
600kHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

LoRa_FHSS-250k_Nss1_1TX
902.3M/902.7MHz
Channel Separation

09/05/2019

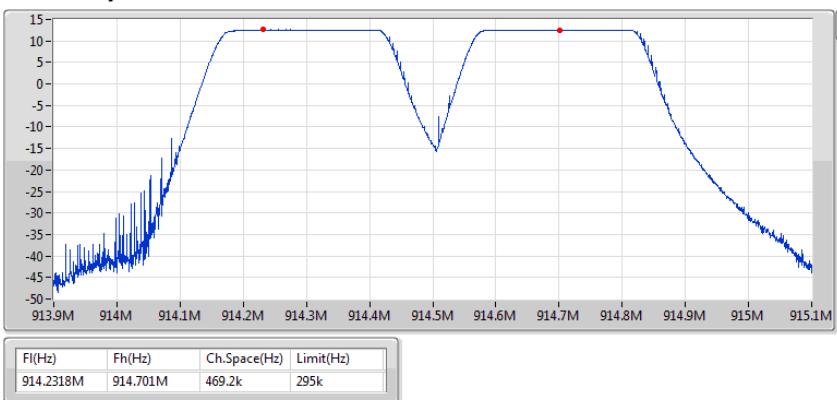


Port 1 

Ch Freq
902.3M/902.7M
Span
1.2MHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

LoRa_FHSS-250k_Nss1_1TX
914.3M/914.7MHz
Channel Separation

09/05/2019

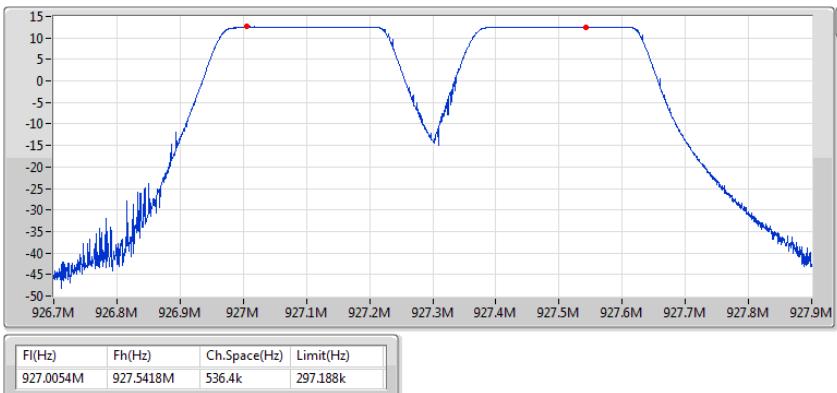


Port 1 

Ch Freq
914.3M/914.7M
Span
1.2MHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

LoRa_FHSS-250k_Nss1_1TX
927.5M/927.1MHz
Channel Separation

09/05/2019



Port 1 

Ch Freq
927.5M/927.1M
Span
1.2MHz
RBW
30kHz
VBW
100kHz
Sweep
100ms
Detector
Peak

**Summary**

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
FSK-5K_Nss1_1TX	26.92	0.49204
FSK-50K_Nss1_1TX	27.35	0.54325
FSK-150K_Nss1_1TX	27.42	0.55208
LoRa_FHSS-125k_Nss1_1TX	27.43	0.55335
LoRa_FHSS-250k_Nss1_1TX	27.39	0.54828



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
FSK-5K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	26.92	30.00
915MHz	Pass	-1.19	26.84	30.00
927.8MHz	Pass	-1.19	26.71	30.00
FSK-50K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	27.35	30.00
915MHz	Pass	-1.19	26.83	30.00
927.8MHz	Pass	-1.19	26.70	30.00
FSK-150K_Nss1_1TX	-	-	-	-
902.4MHz	Pass	-1.19	26.92	30.00
914.8MHz	Pass	-1.19	26.86	30.00
927.6MHz	Pass	-1.19	27.42	30.00
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	27.43	30.00
915MHz	Pass	-1.19	26.87	30.00
927.8MHz	Pass	-1.19	26.76	30.00
902.3MHz	Pass	-1.19	27.43	30.00
908.5MHz	Pass	-1.19	26.94	30.00
914.9MHz	Pass	-1.19	26.89	30.00
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-
902.3MHz	Pass	-1.19	27.39	30.00
914.3MHz	Pass	-1.19	26.87	30.00
927.5MHz	Pass	-1.19	26.73	30.00

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

**Summary**

Mode	Power (dBm)	Power (W)
902-928MHz	-	-
FSK-5K_Nss1_1TX	26.87	0.48641
FSK-50K_Nss1_1TX	27.31	0.53827
FSK-150K_Nss1_1TX	27.37	0.54576
LoRa_FHSS-125k_Nss1_1TX	27.39	0.54828
LoRa_FHSS-250k_Nss1_1TX	27.34	0.54200



Average Power-FHSS

Appendix H.2

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
FSK-5K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	26.87	30.00
915MHz	Pass	-1.19	26.79	30.00
927.8MHz	Pass	-1.19	26.66	30.00
FSK-50K_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	27.31	30.00
915MHz	Pass	-1.19	26.78	30.00
927.8MHz	Pass	-1.19	26.64	30.00
FSK-150K_Nss1_1TX	-	-	-	-
902.4MHz	Pass	-1.19	26.87	30.00
914.8MHz	Pass	-1.19	26.79	30.00
927.6MHz	Pass	-1.19	27.37	30.00
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-
902.2MHz	Pass	-1.19	27.39	30.00
915MHz	Pass	-1.19	26.82	30.00
927.8MHz	Pass	-1.19	26.70	30.00
902.3MHz	Pass	-1.19	27.38	30.00
908.5MHz	Pass	-1.19	26.89	30.00
914.9MHz	Pass	-1.19	26.84	30.00
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-
902.3MHz	Pass	-1.19	27.34	30.00
914.3MHz	Pass	-1.19	26.81	30.00
927.5MHz	Pass	-1.19	26.68	30.00

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



Summary

Mode	Max-Hop No
902-928MHz	-
FSK-5K_Nss1_1TX	129
FSK-50K_Nss1_1TX	129
FSK-150K_Nss1_1TX	64
LoRa_FHSS-125k_Nss1_1TX	129
LoRa_FHSS-250k_Nss1_1TX	64

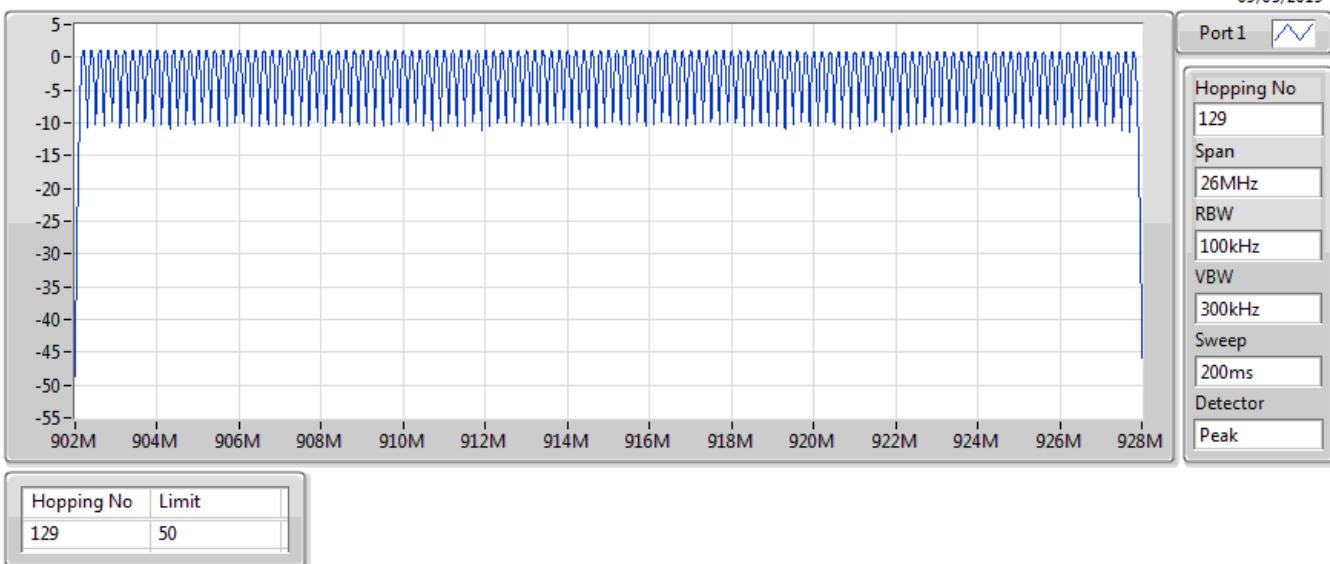
**Result**

Mode	Result	Hopping No	Limit
FSK-5K_Nss1_1TX	-	-	-
915MHz	Pass	129	50
FSK-50K_Nss1_1TX	-	-	-
915MHz	Pass	129	50
FSK-150K_Nss1_1TX	-	-	-
914.8MHz	Pass	64	50
LoRa_FHSS-125k_Nss1_1TX	-	-	-
915MHz	Pass	129	50
908.5MHz	Pass	64	50
LoRa_FHSS-250k_Nss1_1TX	-	-	-
914.3MHz	Pass	64	25

FSK-5K_Nss1_1TX 915MHz

Hopping Ch

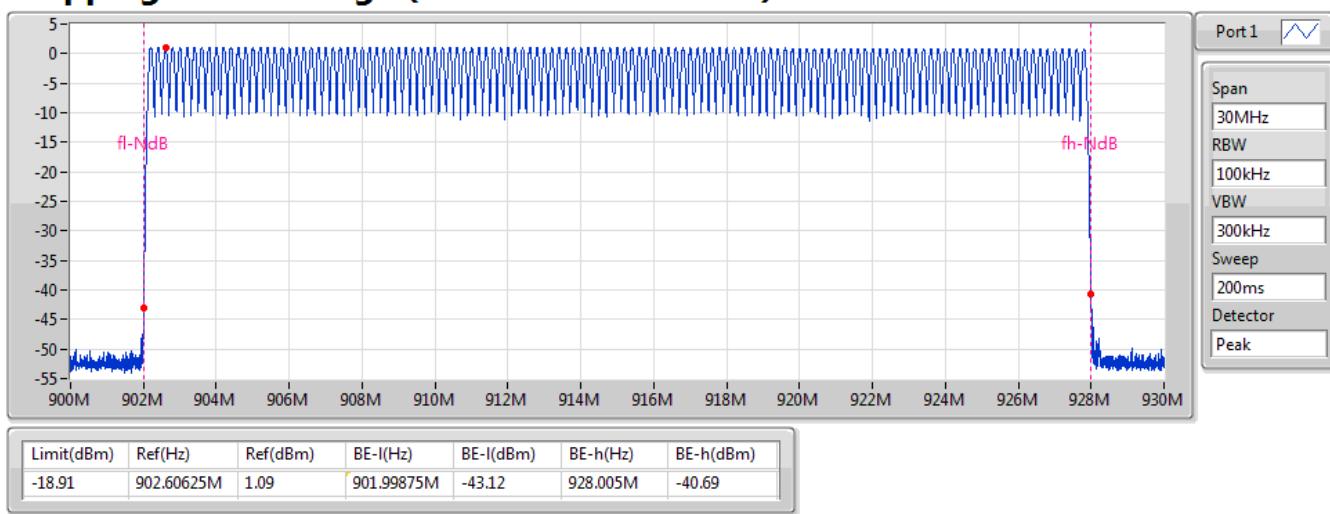
09/05/2019



FSK-5K_Nss1_1TX 915MHz

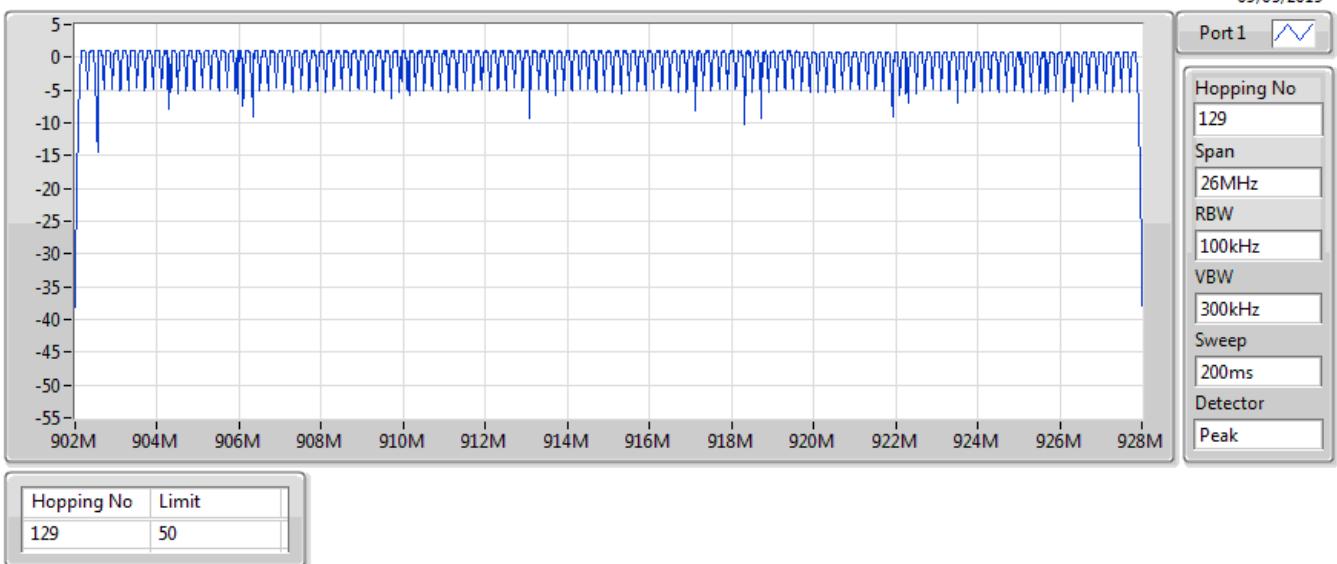
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019

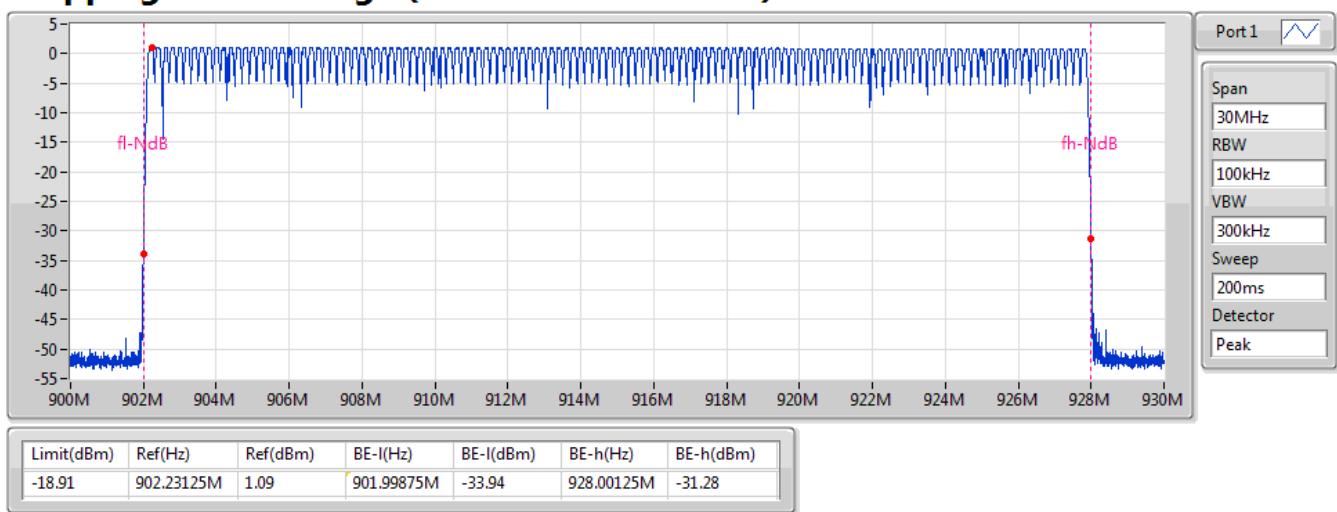


FSK-50K_Nss1_1TX
915MHz
Hopping Ch

09/05/2019

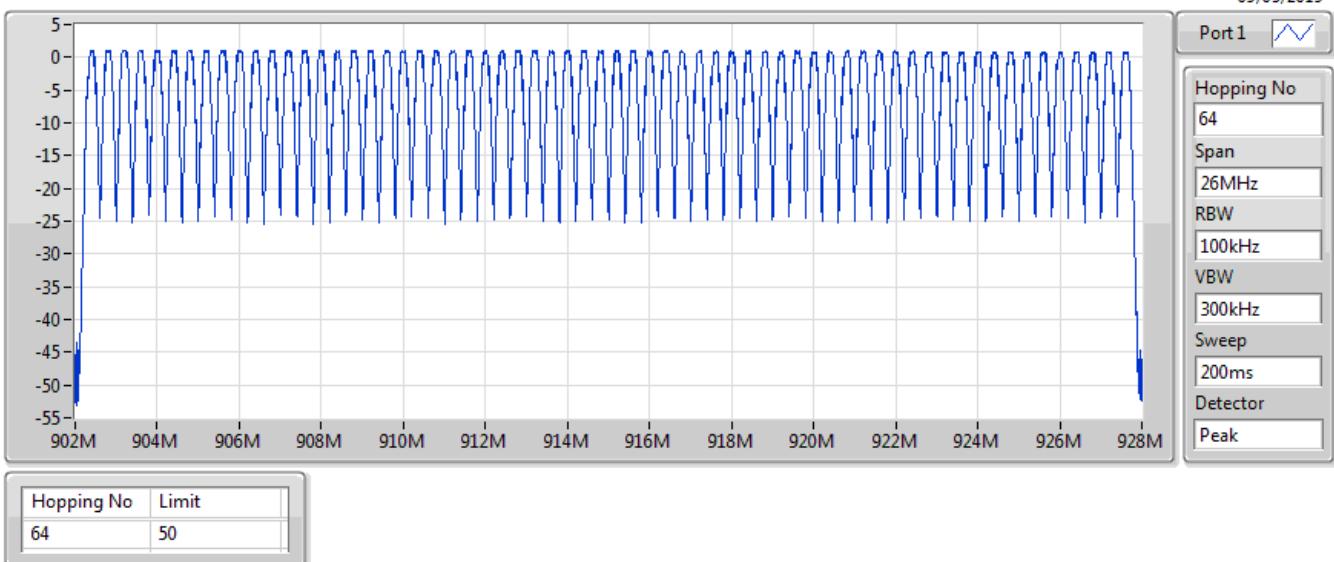

FSK-50K_Nss1_1TX
915MHz
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019

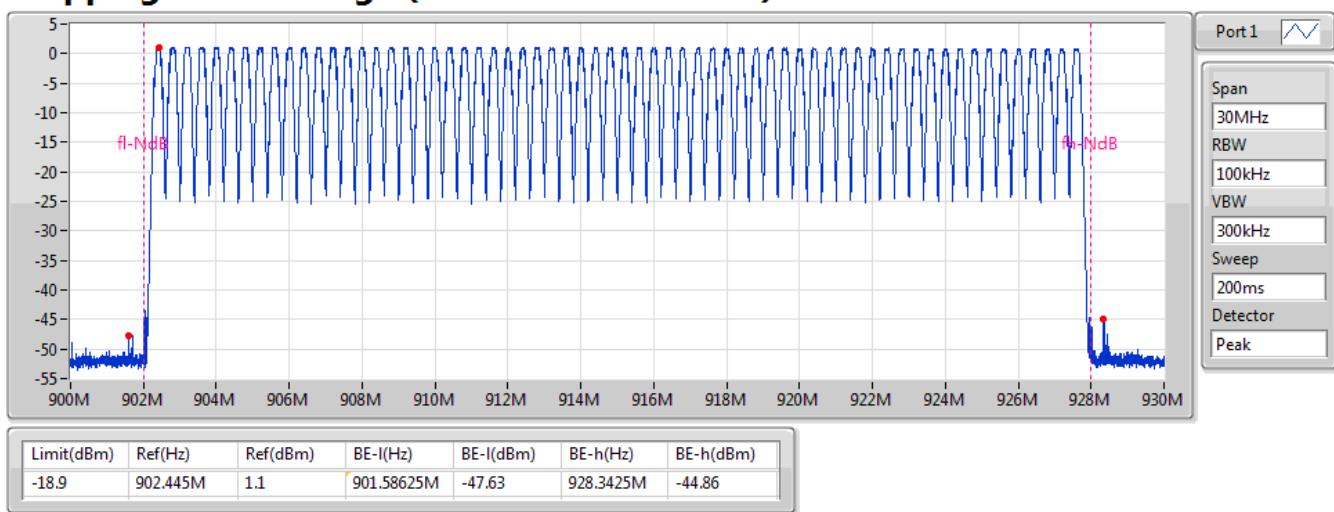


FSK-150K_Nss1_1TX
914.8MHz
Hopping Ch

09/05/2019


FSK-150K_Nss1_1TX
914.8MHz
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019



**LoRa_FHSS-125k_Nss1_1TX
915MHz**
Hopping Ch

09/05/2019

Port 1

Hopping No	129
Span	26MHz
RBW	100kHz
VBW	300kHz
Sweep	200ms
Detector	Peak

Hopping No	Limit
129	50

**LoRa_FHSS-125k_Nss1_1TX
915MHz**
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019

Port 1

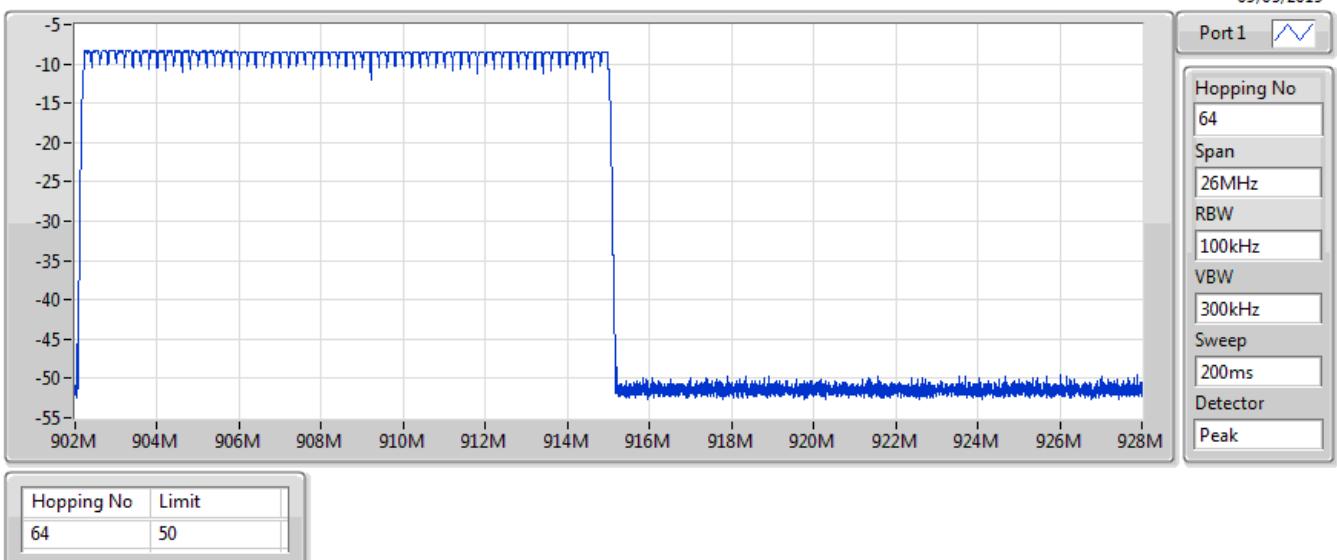
Span	30MHz
RBW	100kHz
VBW	300kHz
Sweep	200ms
Detector	Peak

Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-I(Hz)	BE-I(dBm)	BE-h(Hz)	BE-h(dBm)
-7.48	902.14125M	12.52	901.99875M	-10.13	928.0725M	-25.9

LoRa_FHSS-125k_Nss1_1TX 908.5MHz

Hopping Ch

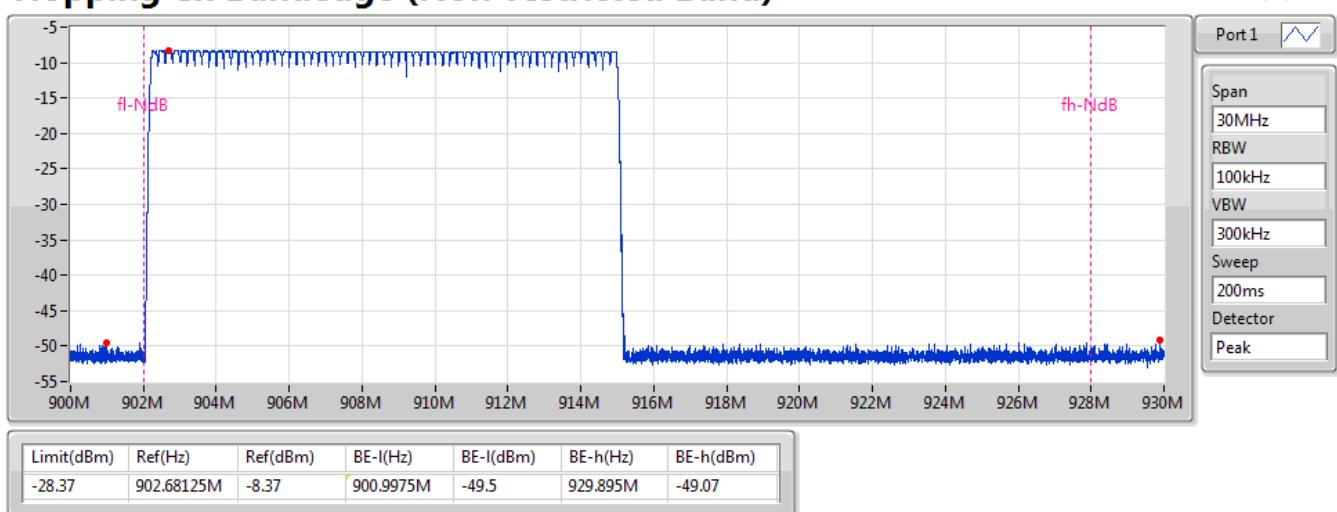
09/05/2019



LoRa_FHSS-125k_Nss1_1TX 908.5MHz

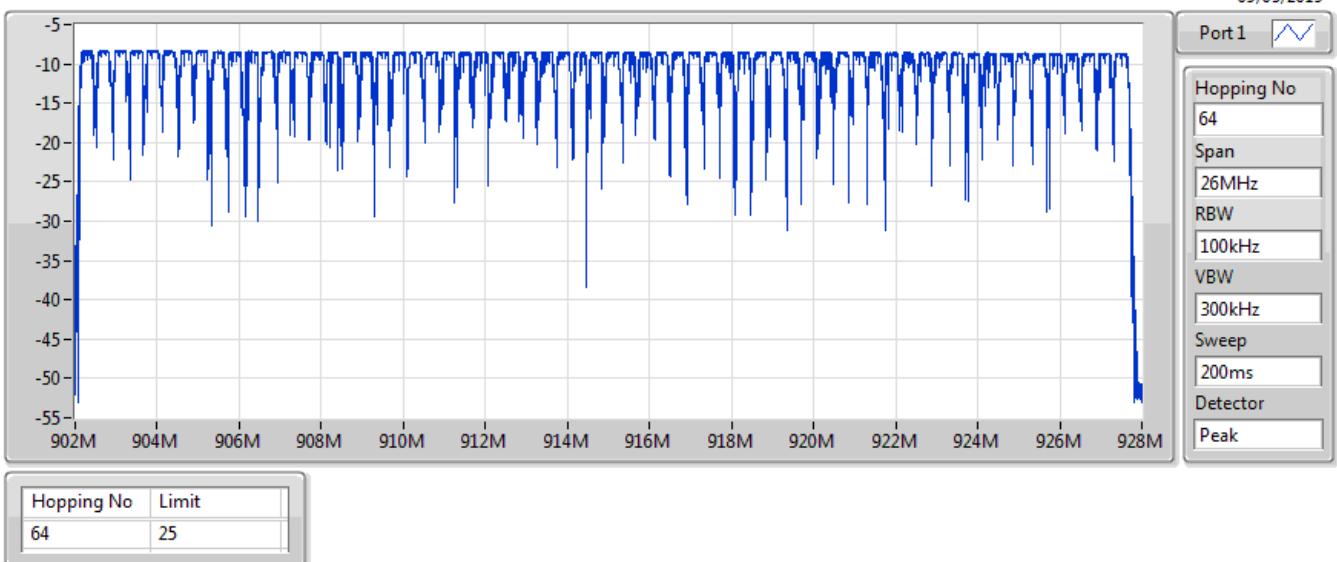
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019

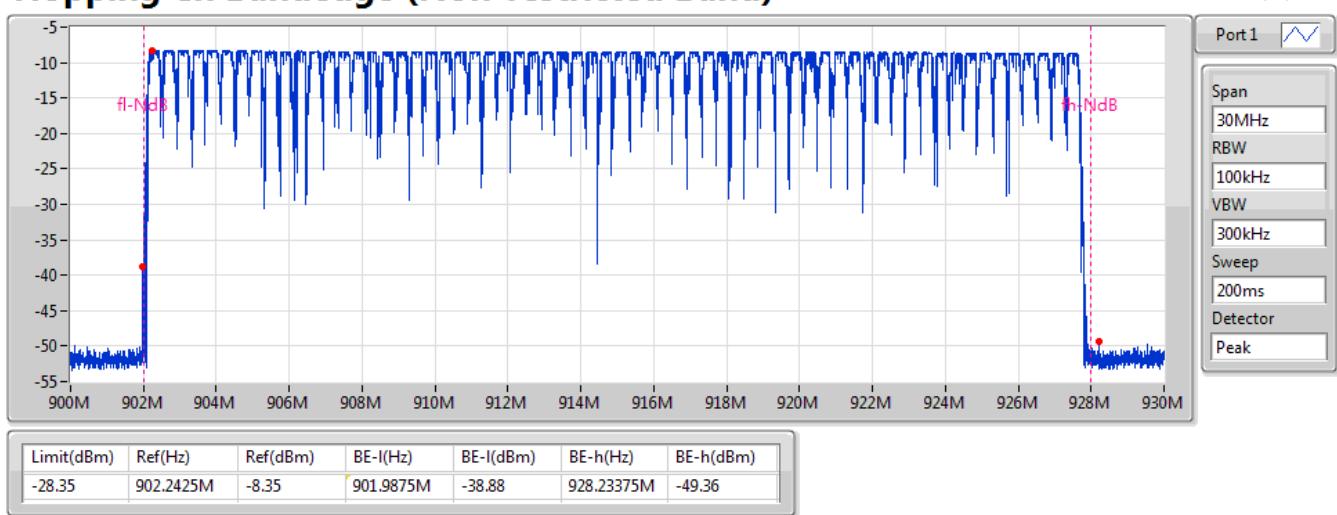


LoRa_FHSS-250k_Nss1_1TX
914.3MHz
Hopping Ch

09/05/2019


LoRa_FHSS-250k_Nss1_1TX
914.3MHz
Hopping Ch Bandedge (Non-restricted Band)

09/05/2019

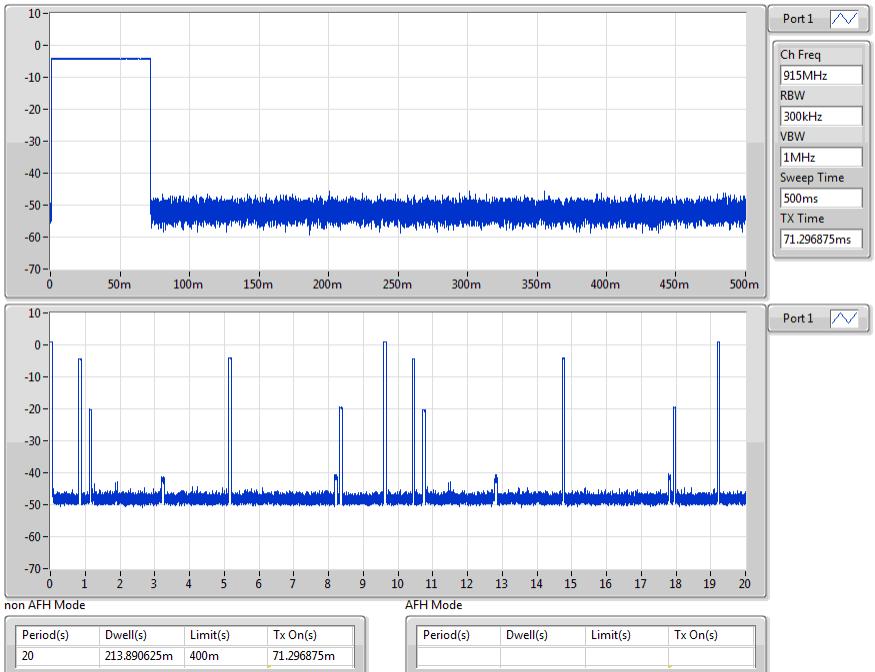
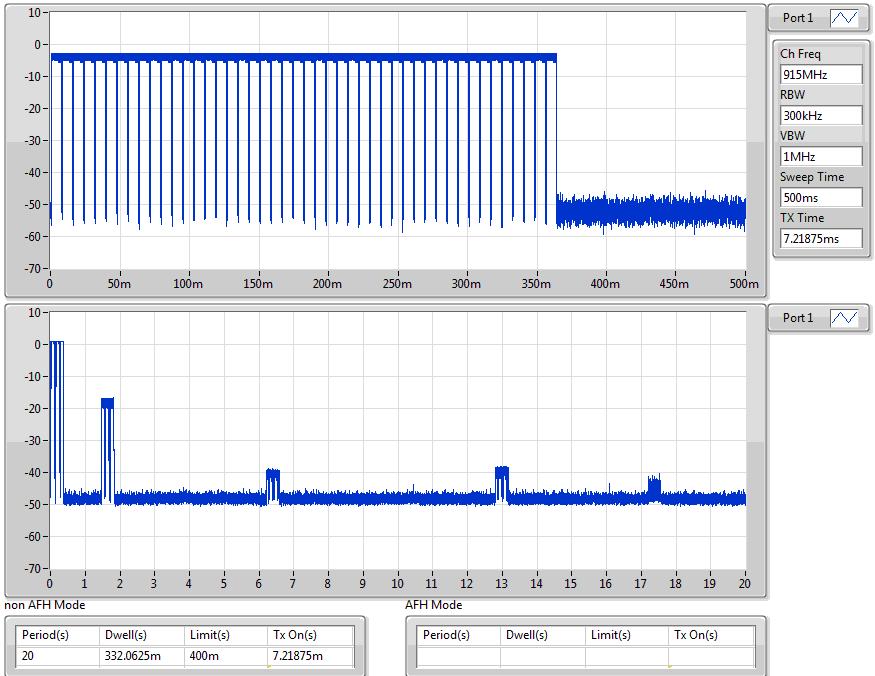


**Summary**

Mode	Max-Dwell (s)
902-928MHz	-
FSK-5K_Nss1_1TX	213.890625m
FSK-50K_Nss1_1TX	332.0625m
FSK-150K_Nss1_1TX	304.425m
LoRa_FHSS-125k_Nss1_1TX	387.8m
LoRa_FHSS-250k_Nss1_1TX	364.453125m

**Result**

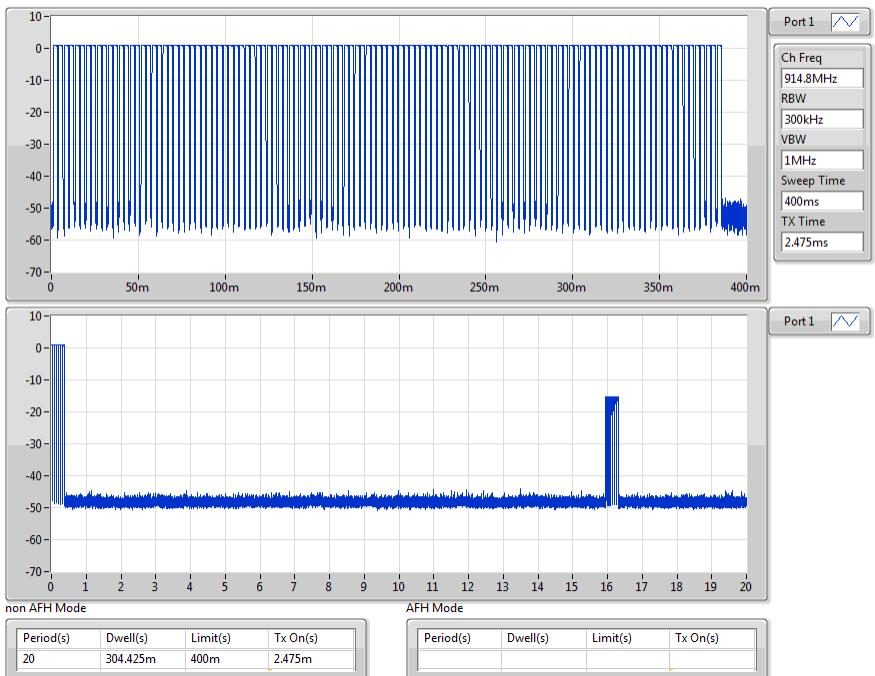
Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
FSK-5K_Nss1_1TX	-	-	-	-	-
915MHz	Pass	20	213.890625m	400m	71.296875m
FSK-50K_Nss1_1TX	-	-	-	-	-
915MHz	Pass	20	332.0625m	400m	7.21875m
FSK-150K_Nss1_1TX	-	-	-	-	-
914.8MHz	Pass	20	304.425m	400m	2.475m
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-	-
915MHz	Pass	20	387.8m	400m	48.475m
908.5MHz	Pass	20	387.8m	400m	48.475m
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-	-
914.3MHz	Pass	10	364.453125m	400m	24.296875m

FSK-5K_Nss1_1TX
915MHz

FSK-50K_Nss1_1TX
915MHz




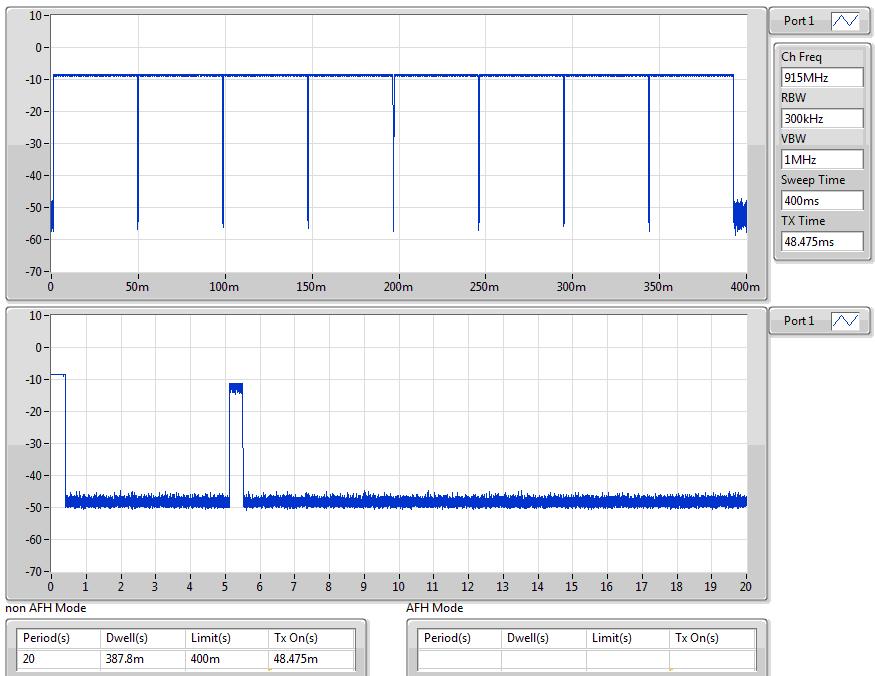
FSK-150K_Nss1_1TX

914.8MHz



LoRa_FHSS-125k_Nss1_1TX

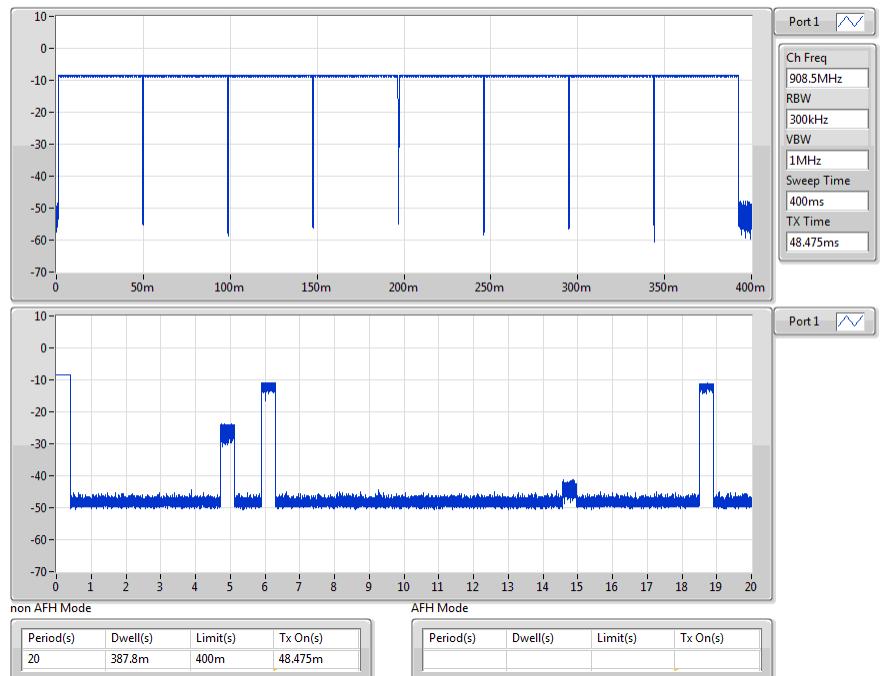
915MHz





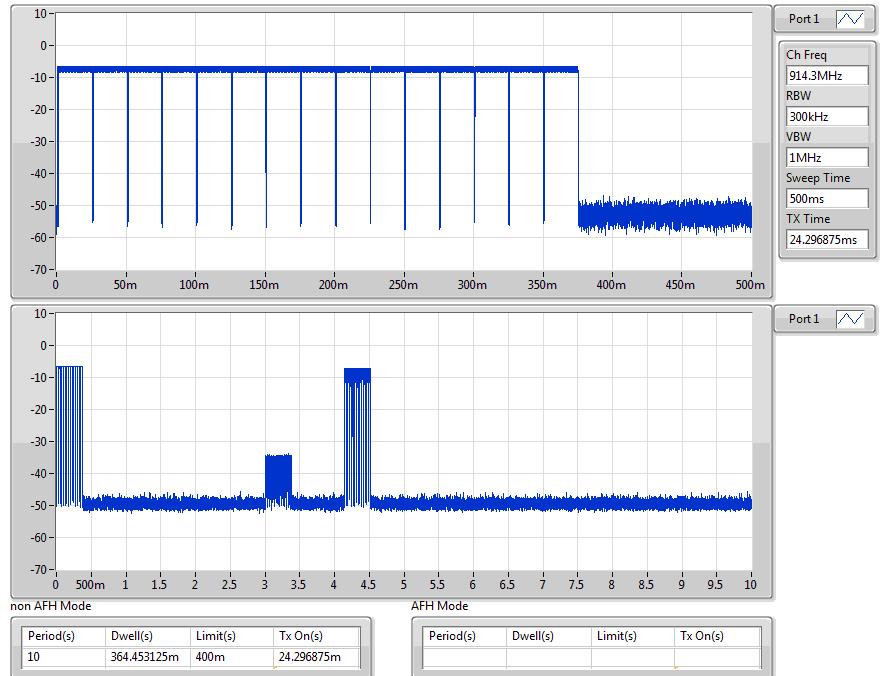
LoRa_FHSS-125k_Nss1_1TX

908.5MHz



LoRa_FHSS-250k_Nss1_1TX

914.3MHz



**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
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-	-
FSK-5K_Nss1_1TX	Pass	927.78M	26.49	6.49	895.92M	-46.34	901.82M	-48.72	928M	-8.16	928.2M	-24.40	1
FSK-50K_Nss1_1TX	Pass	927.78M	26.51	6.51	895.81M	-44.84	901.86M	-49.09	928M	-5.84	928.2M	-28.45	1
FSK-150K_Nss1_1TX	Pass	902.39M	26.59	6.59	901.59M	-36.70	901.71M	-21.81	928.03M	-49.93	6.31689G	-38.61	1
LoRa_FHSS-125k_Nss1_1TX	Pass	927.77M	26.37	6.37	895.87M	-46.93	901.95M	-49.44	928M	4.99	928.25M	-28.09	1
LoRa_FHSS-250k_Nss1_1TX	Pass	902.18M	26.82	6.82	901.5M	-34.21	902M	-2.34	928.12M	-50.27	6.31697G	-36.85	1



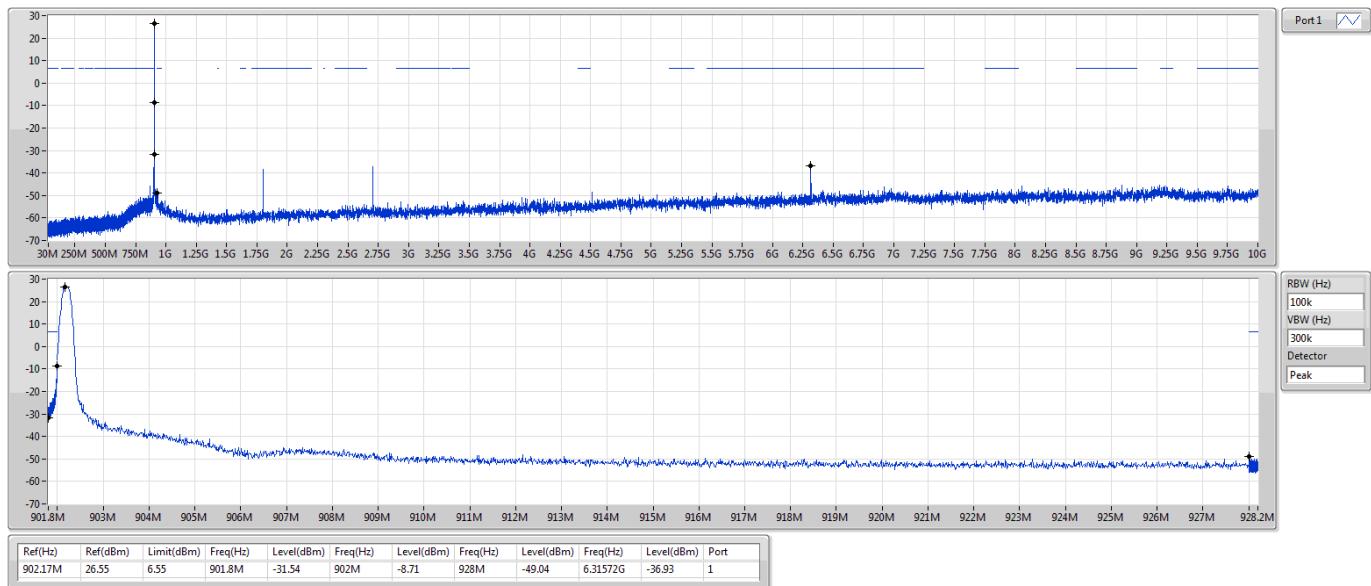
Result

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
FSK-5K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	902.17M	26.55	6.55	901.8M	-31.54	902M	-8.71	928M	-49.04	6.31572G	-36.93	1
915MHz	Pass	914.97M	26.55	6.55	882.95M	-46.67	901.82M	-48.65	928.01M	-49.18	6.4053G	-35.06	1
927.8MHz	Pass	927.78M	26.49	6.49	895.92M	-46.34	901.82M	-48.72	928M	-8.16	928.2M	-24.40	1
FSK-50K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	902.17M	26.57	6.57	901.8M	-34.36	902M	-7.20	928.04M	-49.71	6.31572G	-37.20	1
915MHz	Pass	914.97M	26.57	6.57	883.06M	-45.59	901.9M	-48.14	928.01M	-48.98	6.4053G	-35.60	1
927.8MHz	Pass	927.78M	26.51	6.51	895.81M	-44.84	901.86M	-49.09	928M	-5.84	928.2M	-28.45	1
FSK-150K_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
902.4MHz	Pass	902.39M	26.59	6.59	901.59M	-36.70	901.71M	-21.81	928.03M	-49.93	6.31689G	-38.61	1
914.8MHz	Pass	914.77M	26.59	6.59	882.85M	-44.83	901.93M	-48.67	928.27M	-48.70	6.40307G	-36.57	1
927.6MHz	Pass	927.6M	26.45	6.45	895.71M	-45.86	901.81M	-49.27	928.3M	-23.68	928.3M	-34.40	1
LoRa_FHSS-125k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
902.2MHz	Pass	902.17M	26.46	6.46	901.75M	-29.16	902M	3.03	928.04M	-49.33	6.31574G	-37.19	1
915MHz	Pass	914.97M	26.44	6.44	883.12M	-46.00	901.81M	-48.73	928.23M	-47.99	6.40532G	-35.73	1
927.8MHz	Pass	927.77M	26.37	6.37	895.87M	-46.93	901.95M	-49.44	928M	4.99	928.25M	-28.09	1
902.3MHz	Pass	902.25M	26.46	6.46	901.75M	-29.50	901.99M	-14.77	928.01M	-49.59	6.31687G	-37.01	1
908.5MHz	Pass	908.45M	26.45	6.45	876.58M	-46.24	901.79M	-45.93	928.23M	-49.72	6.35996G	-38.11	1
914.9MHz	Pass	914.86M	26.44	6.44	883.01M	-45.94	901.93M	-49.02	928.08M	-49.11	6.40419G	-35.81	1
LoRa_FHSS-250k_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
902.3MHz	Pass	902.18M	26.82	6.82	901.5M	-34.21	902M	-2.34	928.12M	-50.27	6.31697G	-36.85	1
914.3MHz	Pass	914.19M	26.64	6.64	882.33M	-45.13	901.51M	-47.78	928.38M	-48.68	6.39975G	-35.89	1
927.5MHz	Pass	927.38M	20.41	0.41	895.51M	-50.20	901.63M	-52.08	928.01M	-28.97	928.5M	-43.83	1



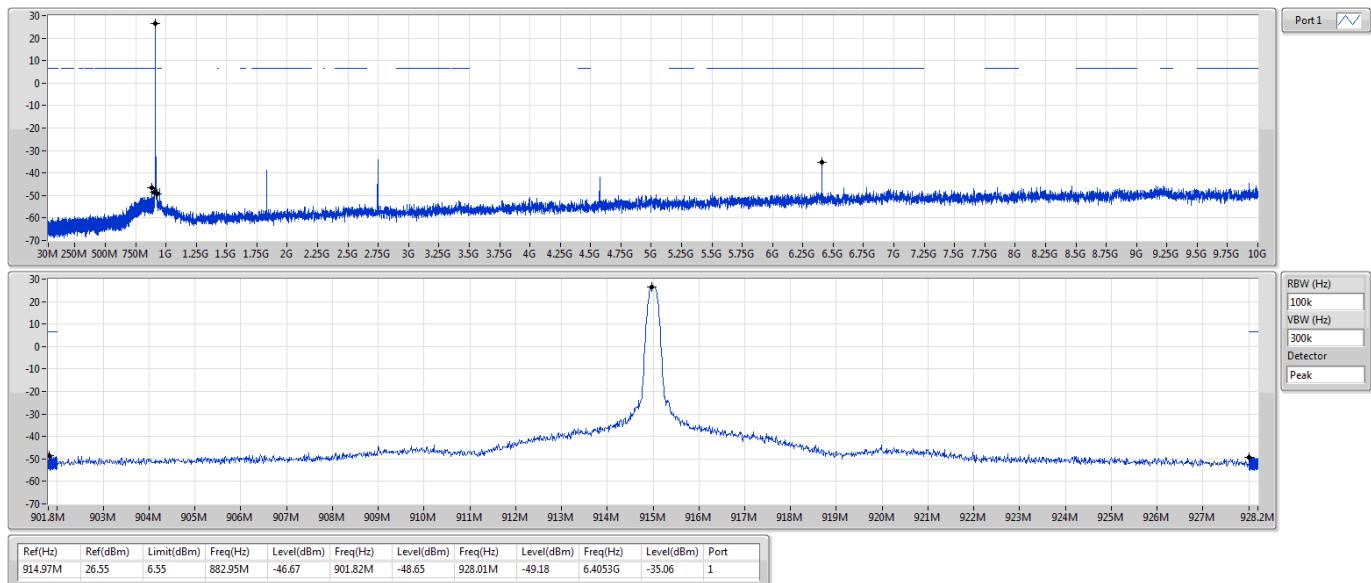
FSK-5K_Nss1_1TX

902.2MHz



FSK-5K_Nss1_1TX

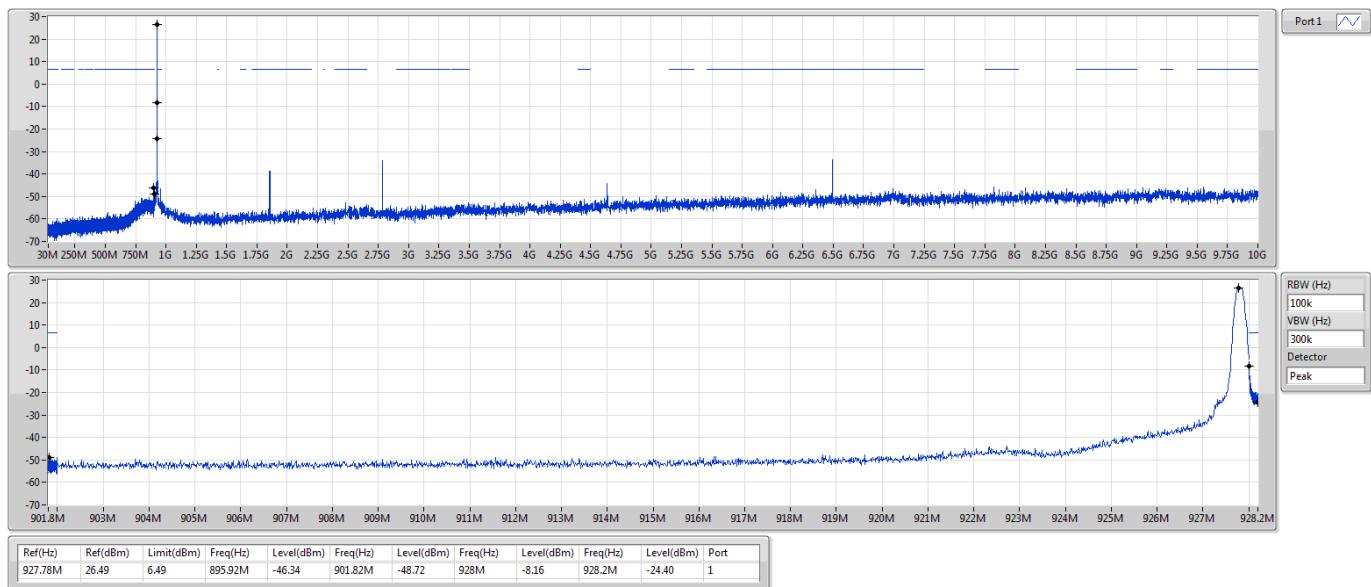
915MHz





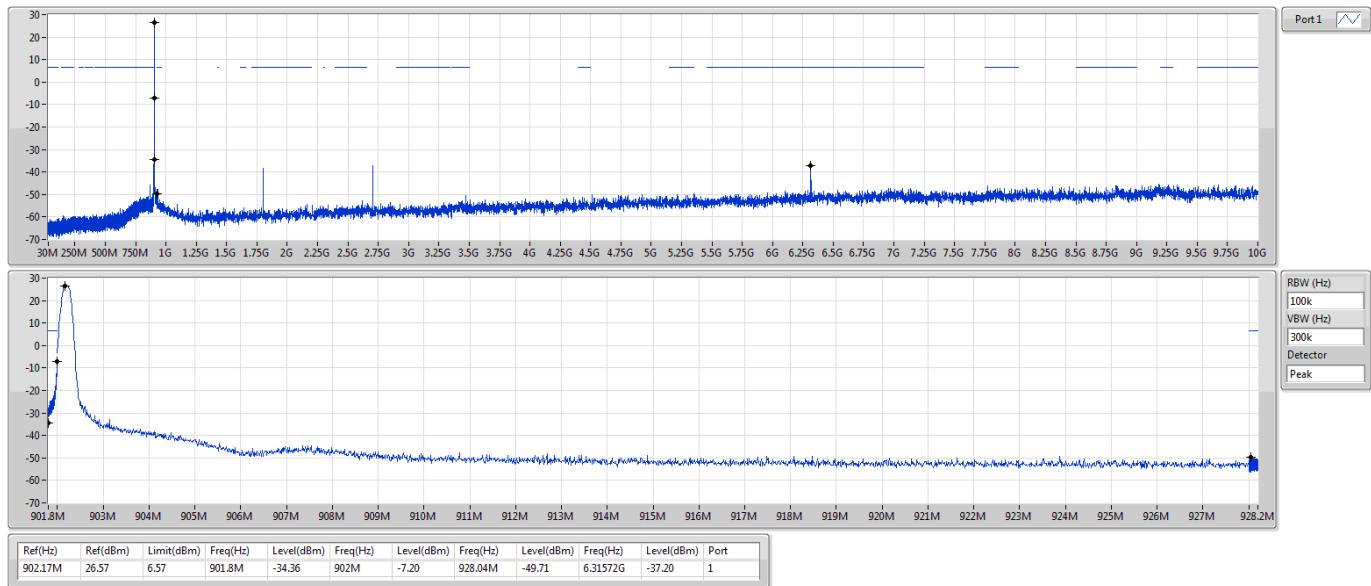
FSK-5K_Nss1_1TX

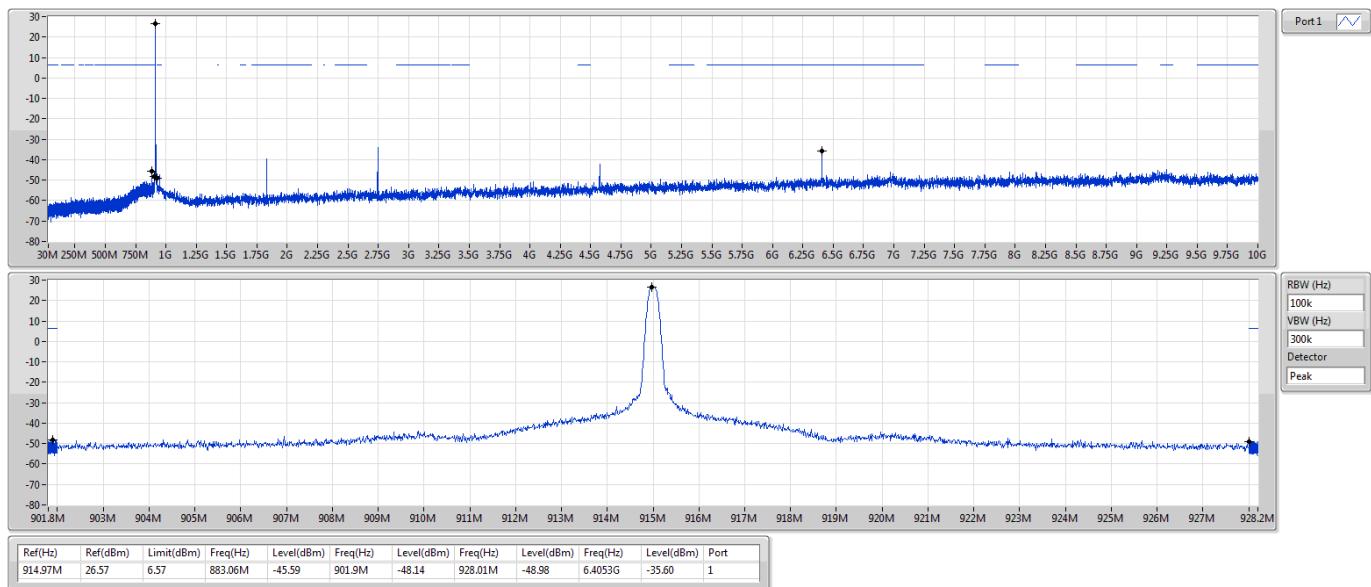
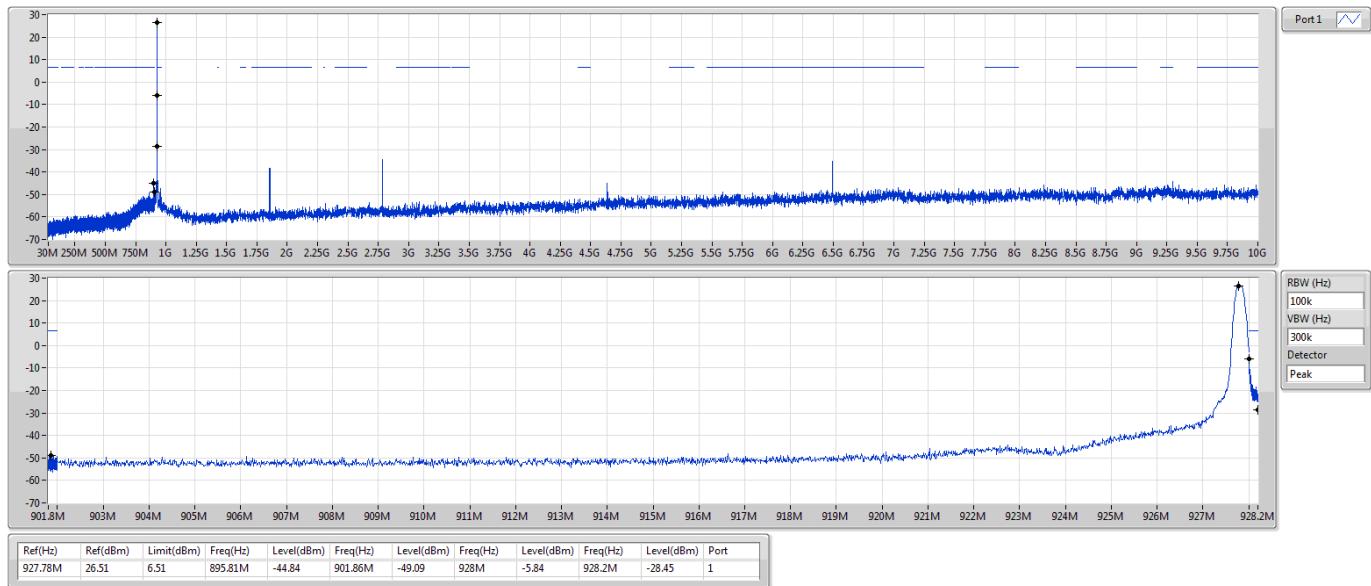
927.8MHz



FSK-50K_Nss1_1TX

902.2MHz

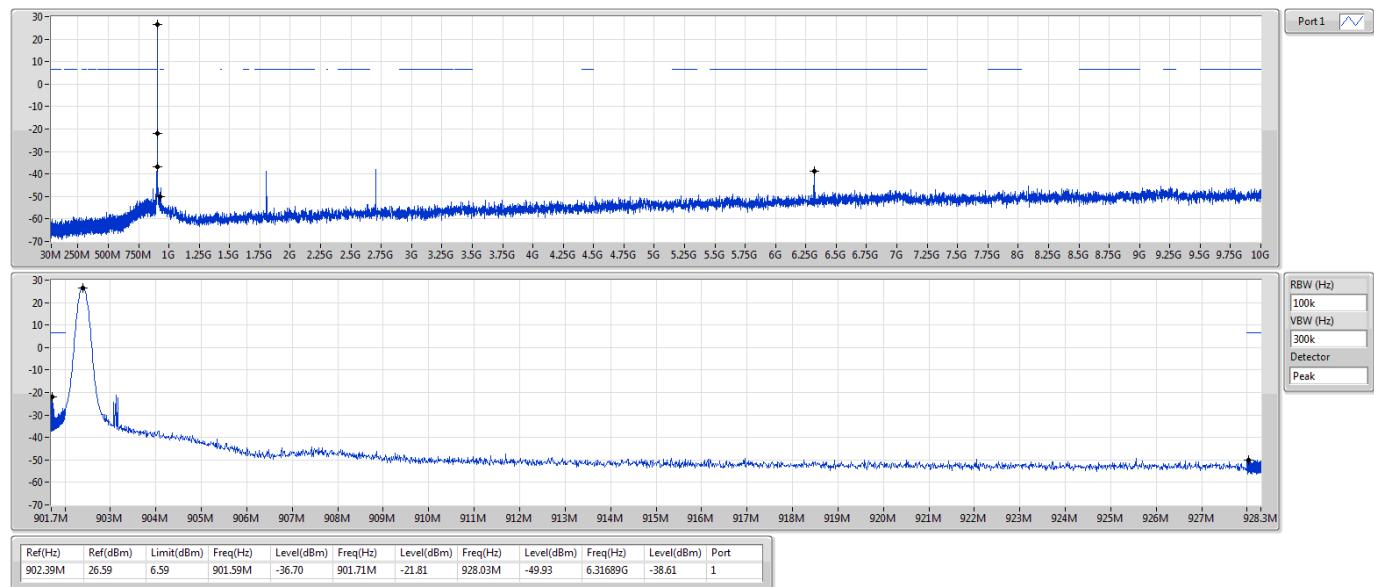


FSK-50K_Nss1_1TX
CSE NdB
915MHz

FSK-50K_Nss1_1TX
CSE NdB
927.8MHz




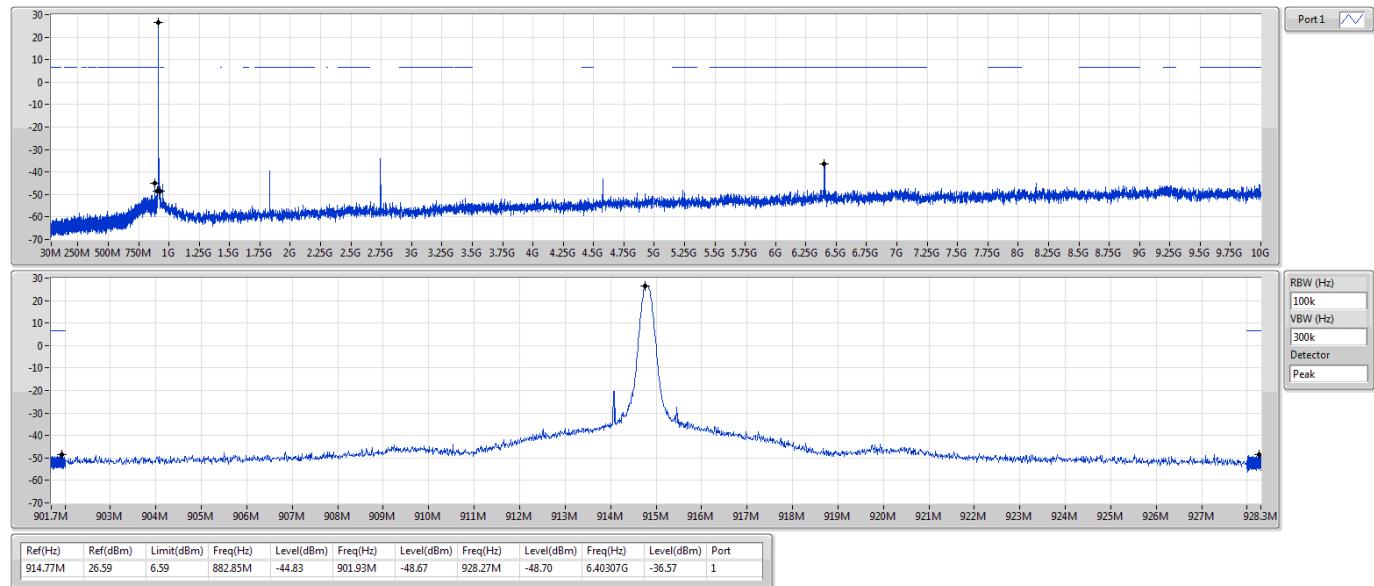
FSK-150K_Nss1_1TX

902.4MHz



FSK-150K_Nss1_1TX

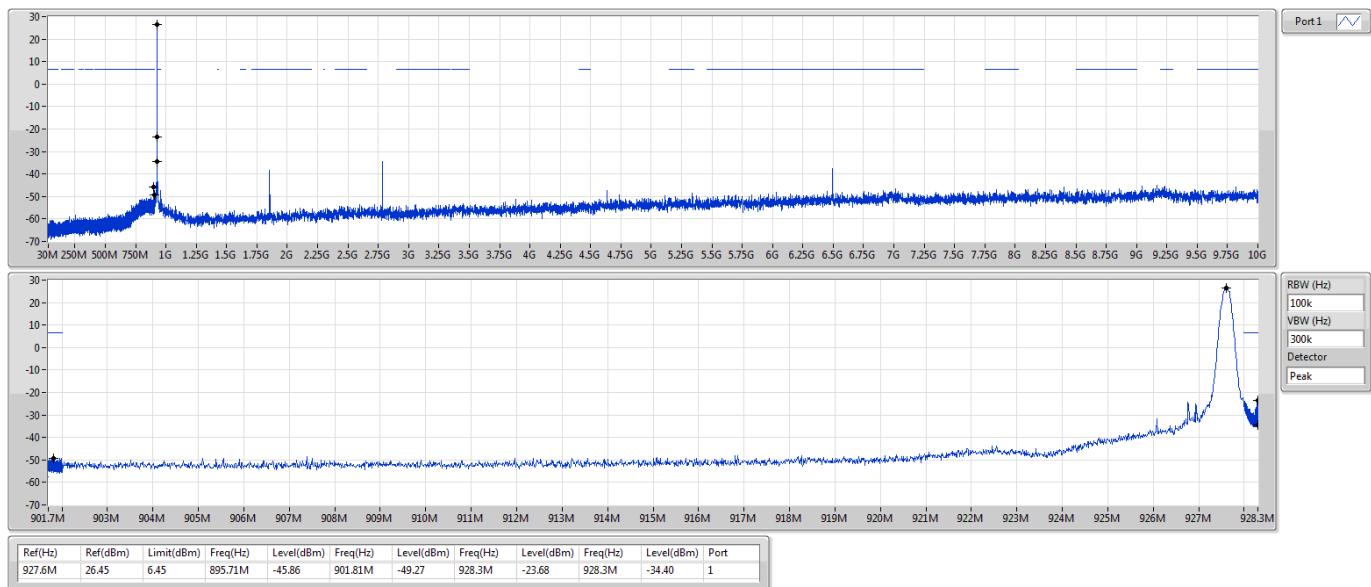
914.8MHz





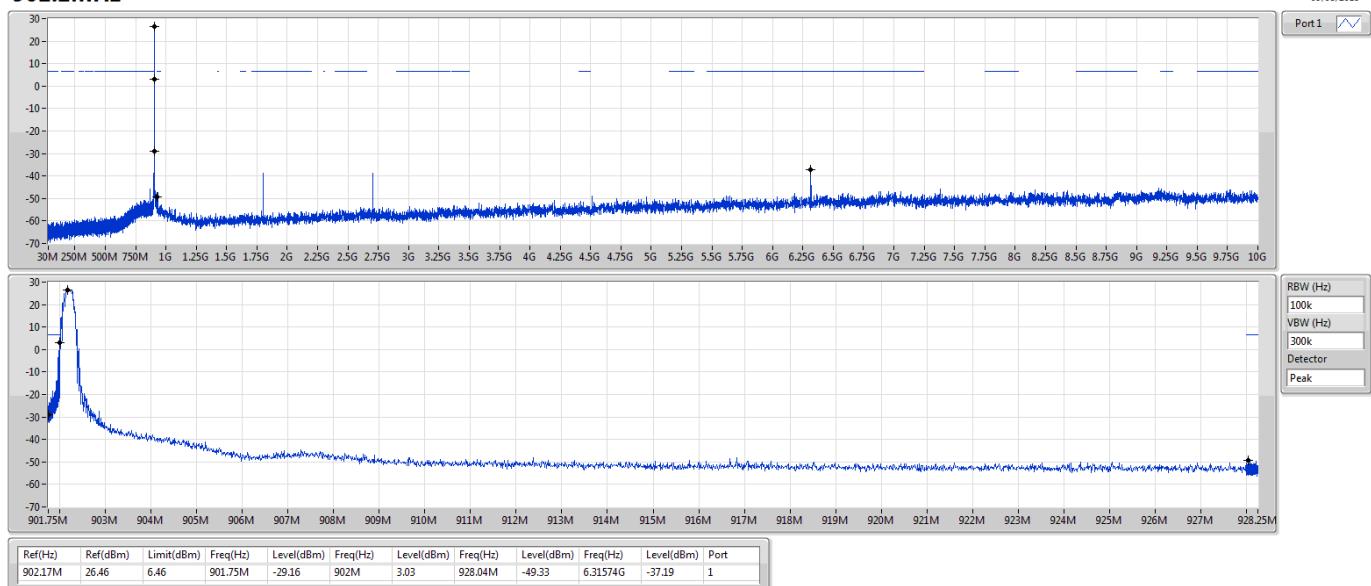
FSK-150K_Nss1_1TX

927.6MHz



LoRa_FHSS-125k_Nss1_1TX

902.2MHz

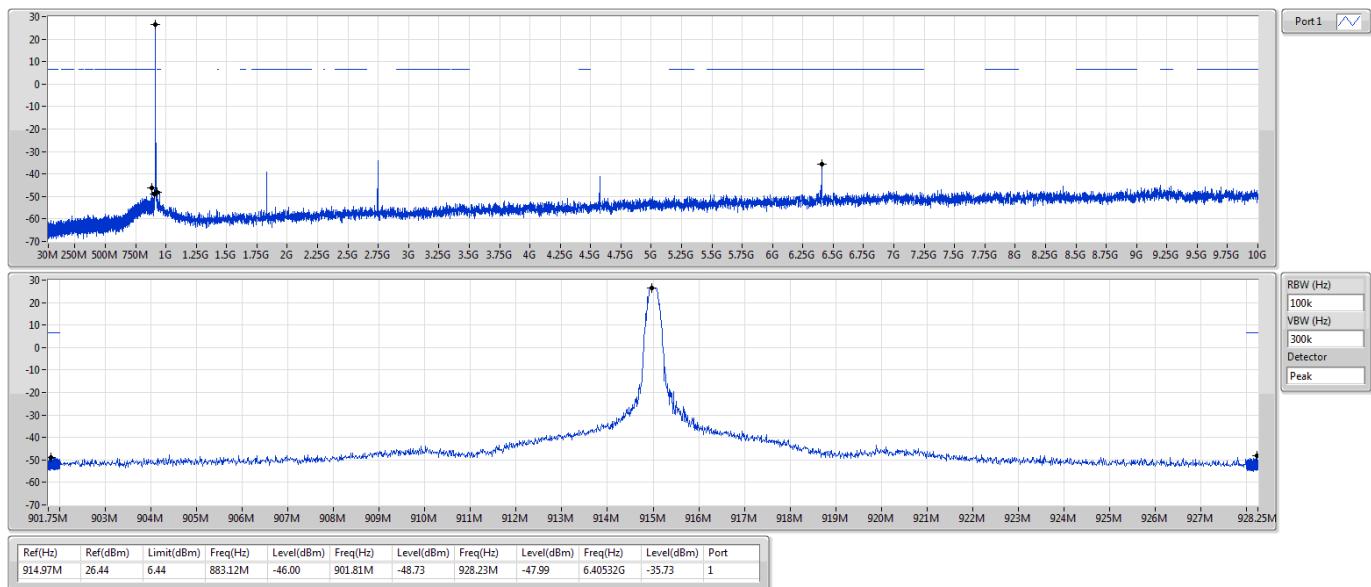




LoRa_FHSS-125k_Nss1_1TX

CSE NdB

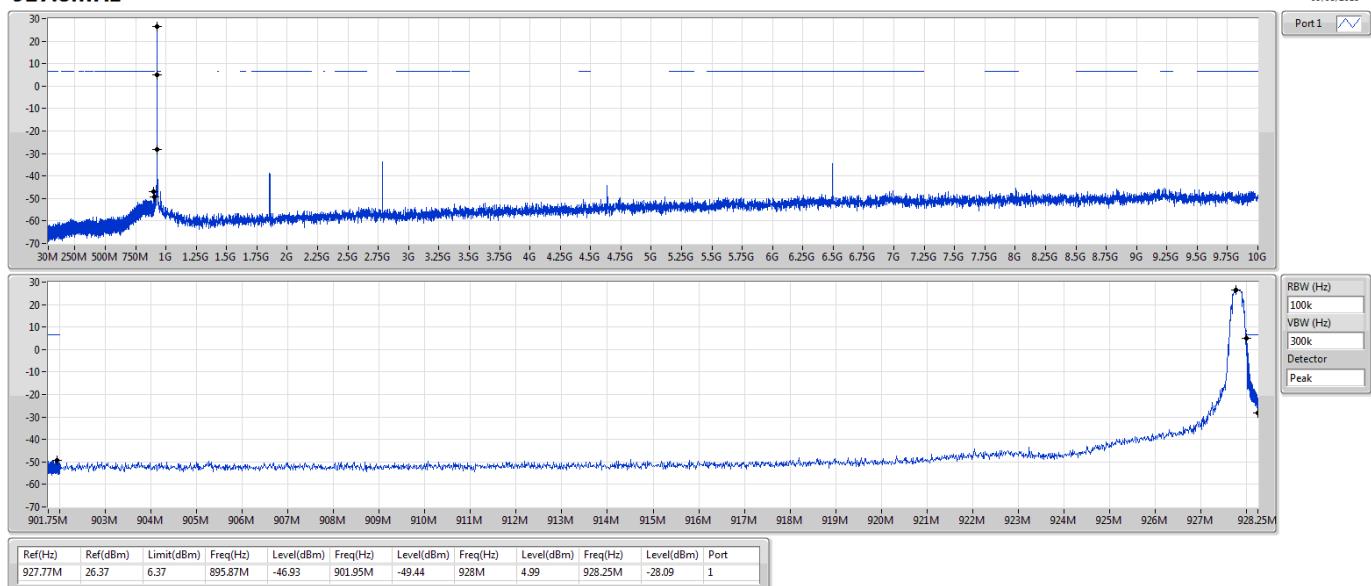
915MHz



LoRa_FHSS-125k_Nss1_1TX

CSE NdB

927.8MHz

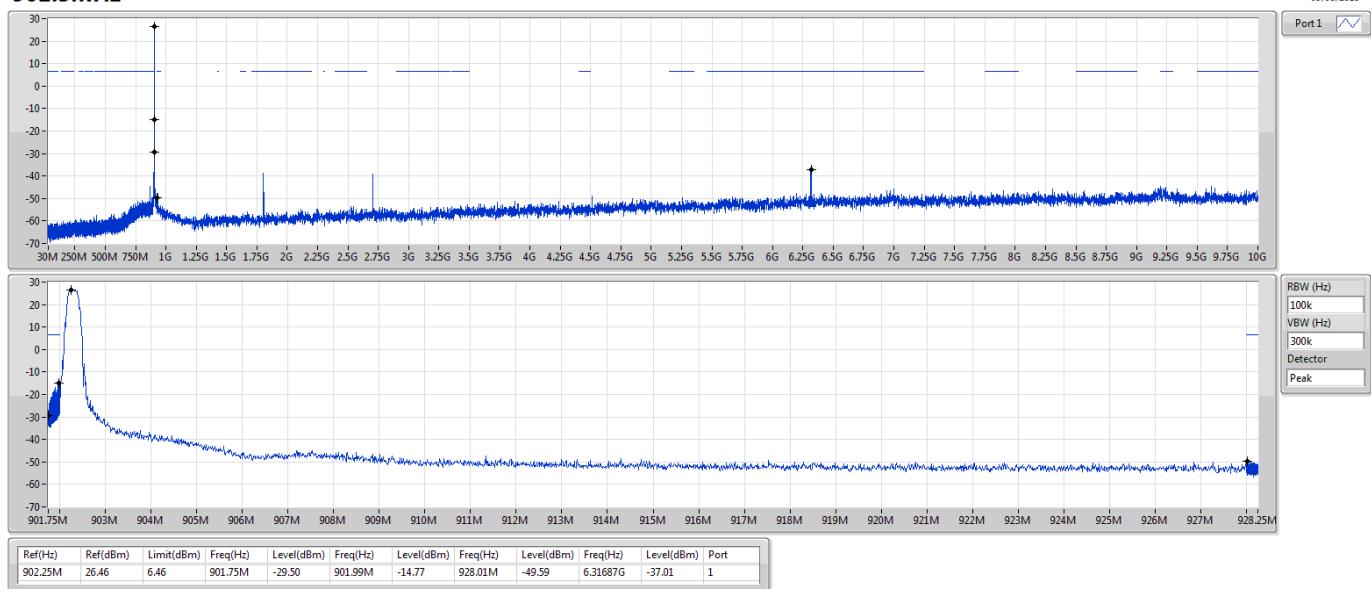




LoRa_FHSS-125k_Nss1_1TX

CSE NdB

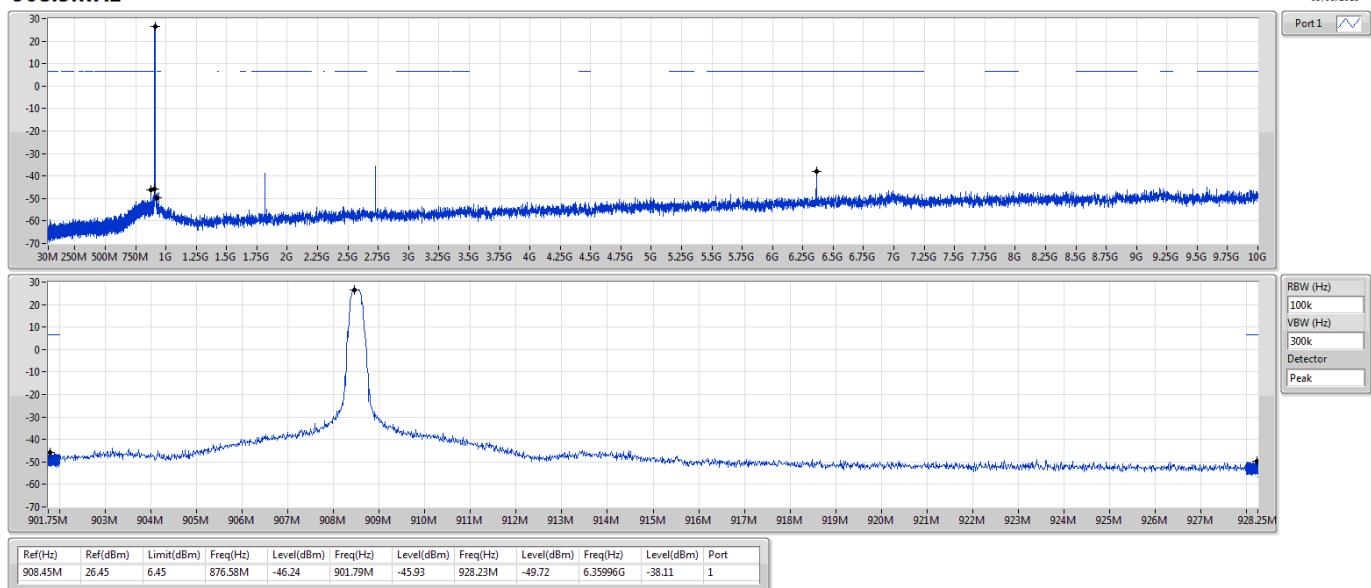
902.3MHz



LoRa_FHSS-125k_Nss1_1TX

CSE NdB

908.5MHz

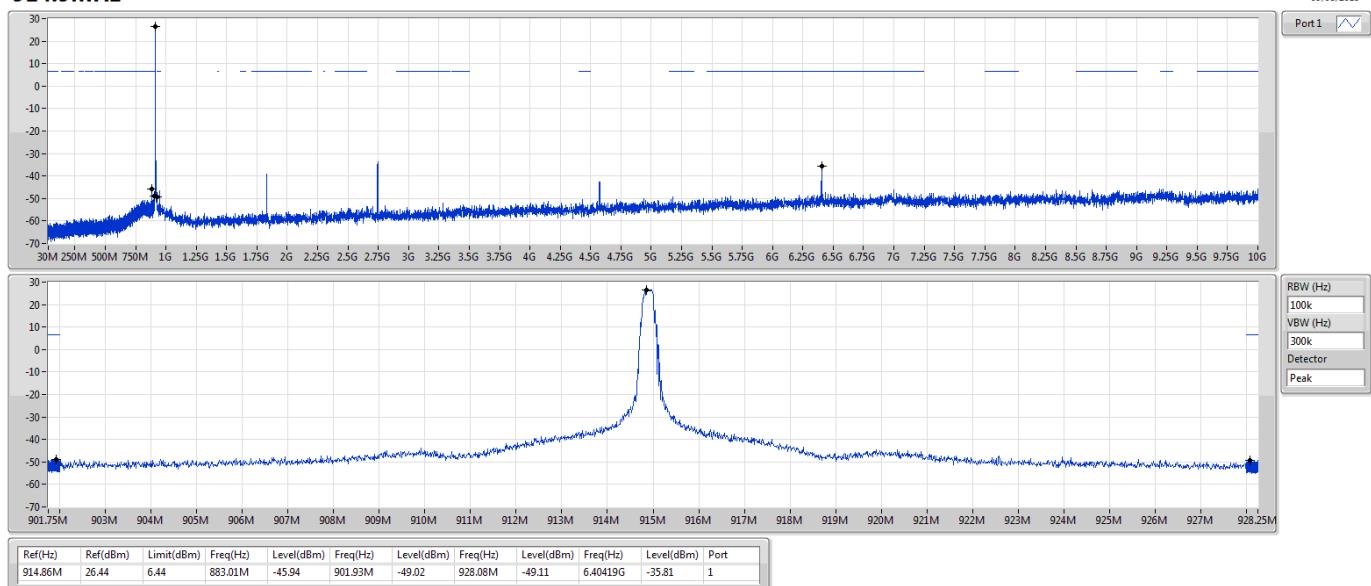




LoRa_FHSS-125k_Nss1_1TX

CSE NdB

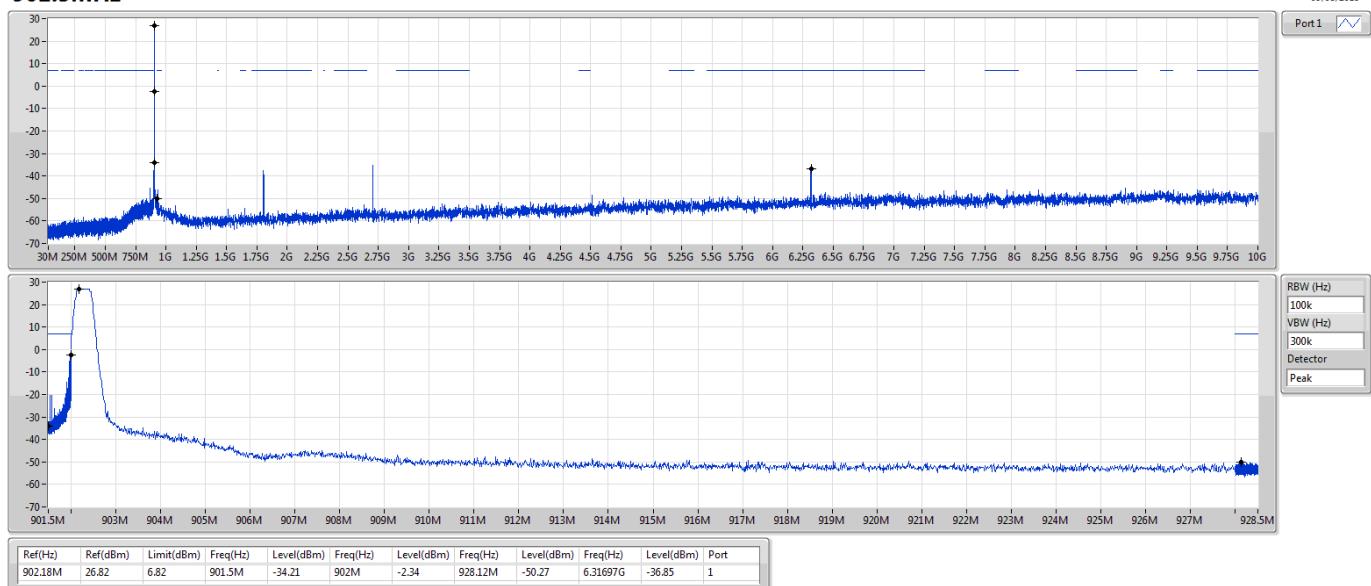
914.9MHz

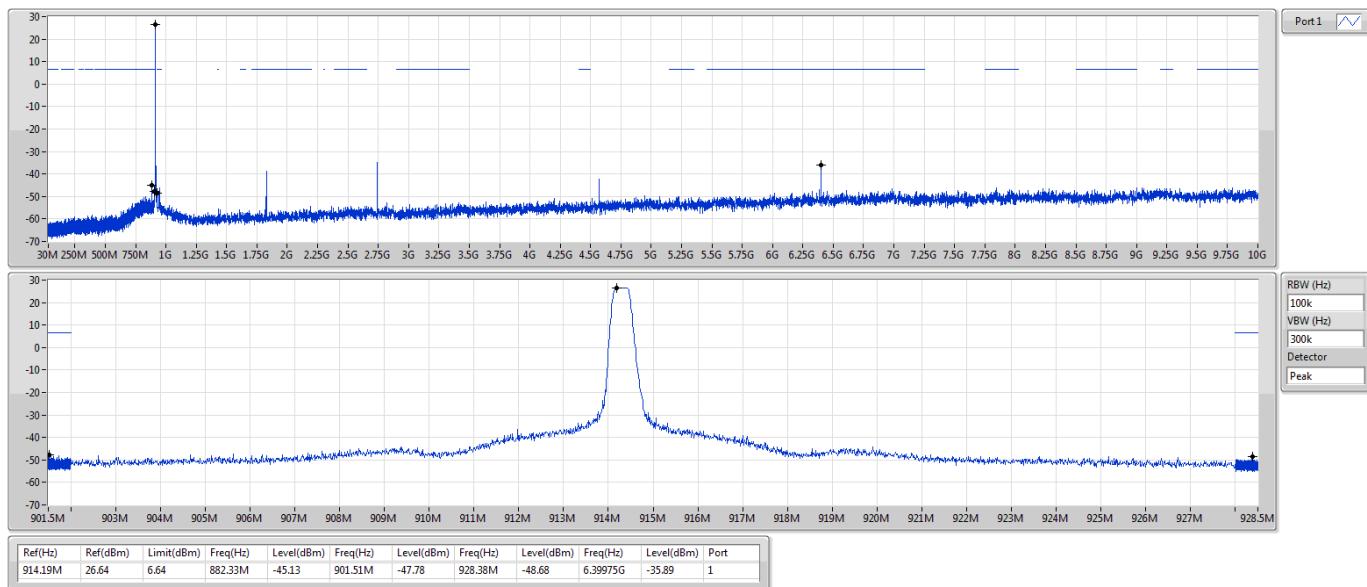


LoRa_FHSS-250k_Nss1_1TX

CSE NdB

902.3MHz



LoRa_FHSS-250k_Nss1_1TX
914.3MHz

LoRa_FHSS-250k_Nss1_1TX
927.5MHz
