

FCC RADIO TEST REPORT

Equipment : Cold Chain Temperature/Humidity Sensor
Brand Name : Advantech
Model Name : TREK-120
Applicant : Advantech Co.,Ltd
No.1, Alley 20, Lane 26, Rueiguang Rd., Neihu
District,Taipei City, Taiwan, R.O.C.
Manufacturer : Advantech Co.,Ltd
No.1, Alley 20, Lane 26, Rueiguang Rd., Neihu
District,Taipei City, Taiwan, R.O.C.
Standard : 47 CFR FCC Part 15.249

The product was received on Sep. 21, 2018, and testing was started from Jan. 07, 2019 and completed on Jan. 08, 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.)



Table of Contents

1	GENERAL DESCRIPTION.....	5
1.1	Information.....	5
1.2	Testing Applied Standards	6
1.3	Testing Location Information	6
1.4	Measurement Uncertainty	6
2	TEST CONFIGURATION OF EUT	7
2.1	Test Condition	7
2.2	The Worst Case Modulation Configuration	7
2.3	Test Channel Frequencies Configuration.....	7
2.4	The Worst Case Measurement Configuration	7
2.5	Accessories	8
2.6	Test Setup Diagram	8
3	TRANSMITTER TEST RESULT.....	9
3.1	AC Power-line Conducted Emissions	9
3.2	Emission Bandwidth	11
3.3	Fundamental Emissions	13
3.4	Transmitter Radiated Unwanted Emissions	14
3.5	Test Equipment and Calibration Data	17

APPENDIX A. TEST RESULTS OF FUNDAMENTAL EMISSIONS AND UNWANTED EMISSIONS

APPENDIX B. TEST PHOTOS

PHOTOGRAPHS OF EUT V01

HISTORY OF THIS TEST REPORT

Report No.	Version	Description	Issued Date
FR892129ZW	01	Initial issue of report	Mar. 19, 2019

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	Not Required	-
3.2	N/A	Emission Bandwidth	PASS	-
3.3	15.249(a)	Fundamental Emissions	PASS	-
3.4	15.249(a)/(d)	Transmitter Radiated Unwanted Emissions	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: Debby Hung

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number	Fundamental Field Strength (dBuV/m)
902-928	GFSK	922.1	1	85.82

Note 1: Field strength performed quasi peak level at 3m.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	Jogtek Corp	241009-D020	RHCP antenna	-	0

1.1.3 EUT Information

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

1.1.4 Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
LoRa	1	0	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)

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 15.249
- ♦ ANSI C63.10-2013

1.3 Testing Location Information

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH09-HY	Kevin	21°C / 51%	07/Jan/2019
RF Conducted	TH01-HY	Barry	23.3°C / 63%	08/Jan/2019

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	110V

2.2 The Worst Case Modulation Configuration

Modulation Used for Conformance Testing	
Test Mode	Field Strength (dBuV/m at 3 m)
Lora	85.82

2.3 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Test Mode	Test Channel Frequencies (MHz)
Lora	922.1

2.4 The Worst Case Measurement Configuration

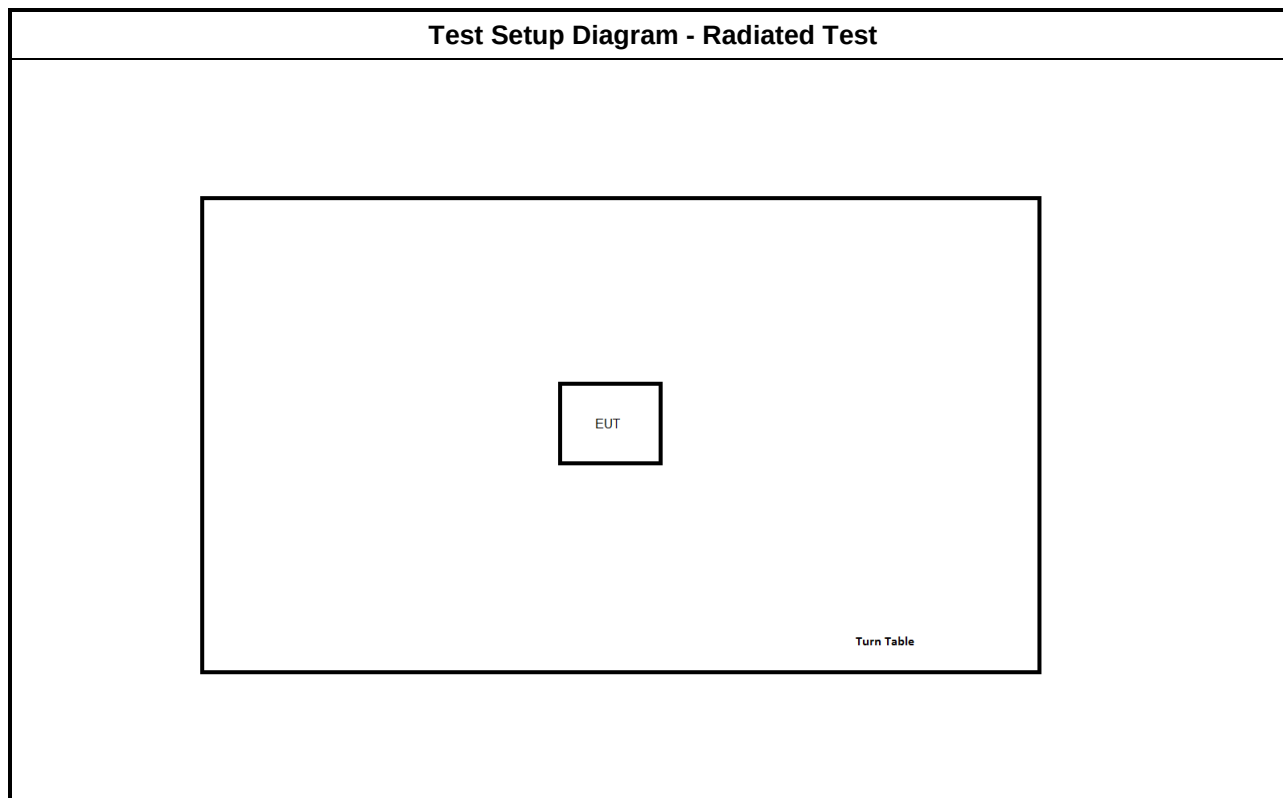
The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Fundamental Emissions, Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	☒ EUT will be placed in fixed position.		
	☐ EUT will be placed in mobile position and operating multiple positions.		
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.		
Operating Mode	☒ Battery Mode		
Operating Mode	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

2.5 Accessories

Accessories Information				
Battery	Brand Name	ABLE	Model Name	ER14505M
	Power Rating	3.6Vdc, 2000mAh	Type	Li-ion, <u>Y</u>

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

2.6 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

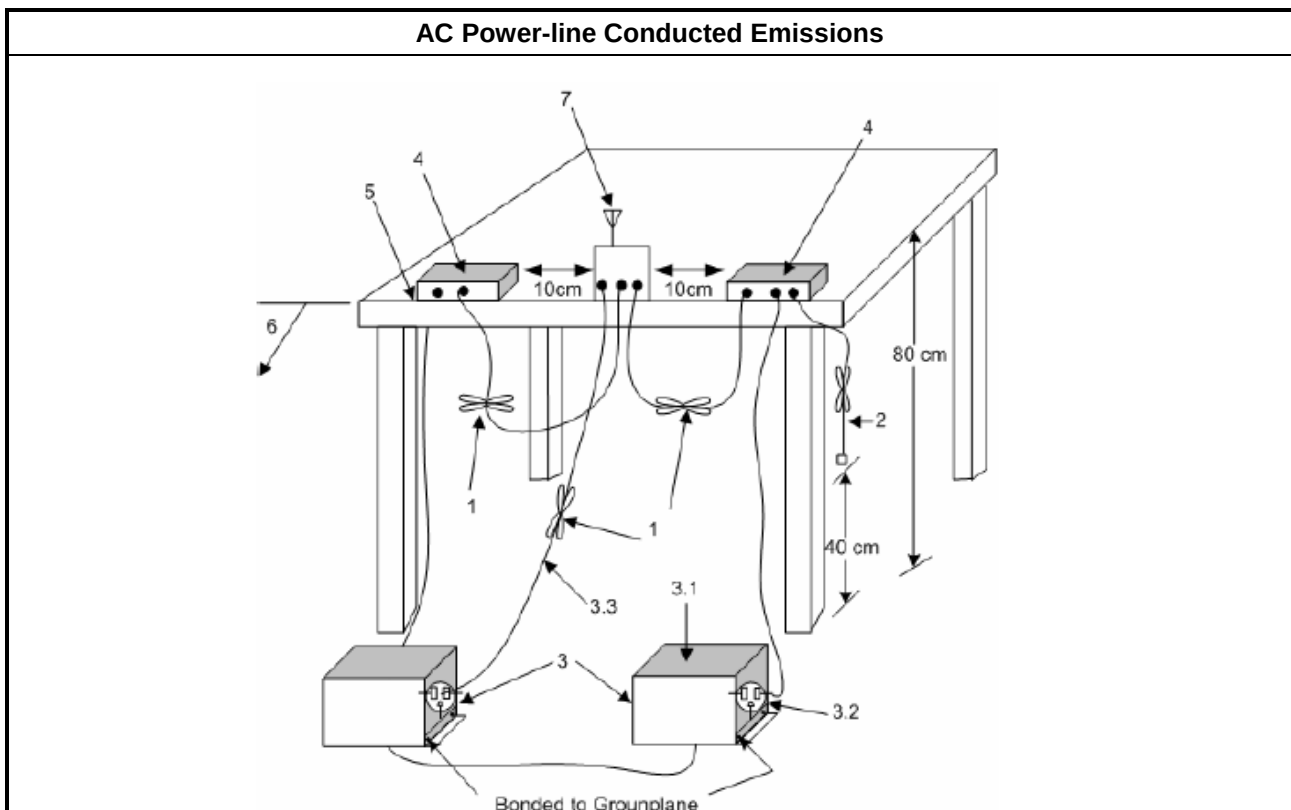
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup





3.1.5 Test Result of AC Power-line Conducted Emissions

Please refer to Part 15.207 which states, "Measurements to demonstrate compliance with the conducted limits are not required for devices employ Battery for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines".

Therefore, for this device, AC Power Line Conducted Emissions investigation is not required.

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
☒	Emission bandwidth falls completely within authorized band.

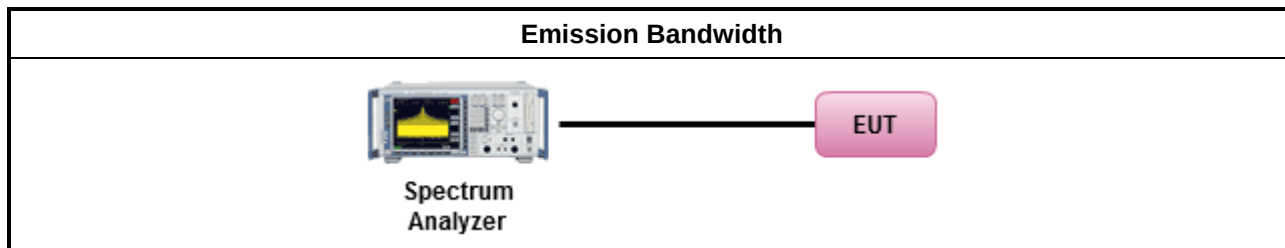
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
☒	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.
☐	Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.

3.2.4 Test Setup



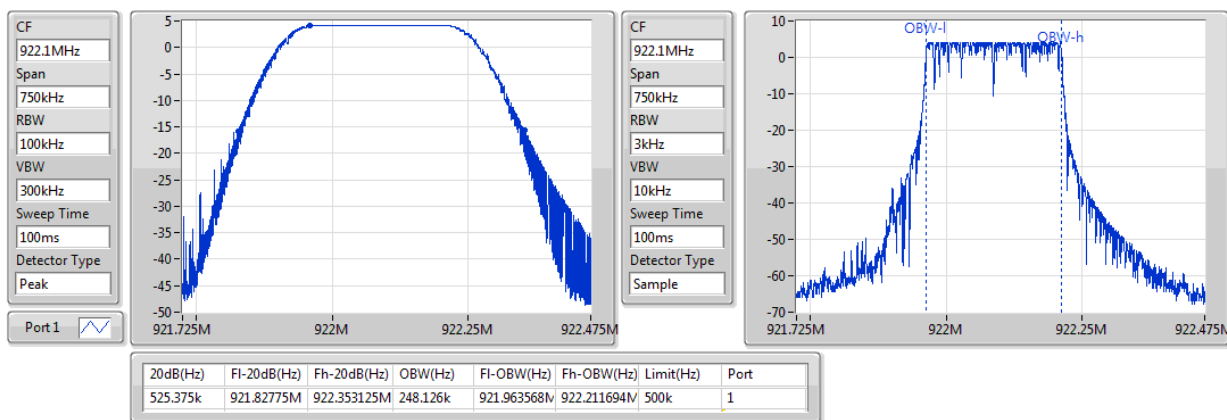
3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Modulation Mode	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)	F _L at 20dB BW (MHz)	F _H at 20dB BW (MHz)
Lora	922.1	0.5254	0.2481	921.8278	922.3531
Limit		N/A	N/A	902	928
Result		Complied			

Worst Emission Bandwidth Plots

LoRa-300
EBW
922.1MHz

08/01/2019



3.3 Fundamental Emissions

3.3.1 Fundamental Emissions Limit

Fundamental Emissions E-Field Strength Limit (3m)	
☒	902-928 MHz Band: 94 dBuV/m (quasi peak)
☐	2400-2483.5 MHz Band: 94 dBuV/m (average)
☐	5725-5875 MHz Band: 94 dBuV/m (average)

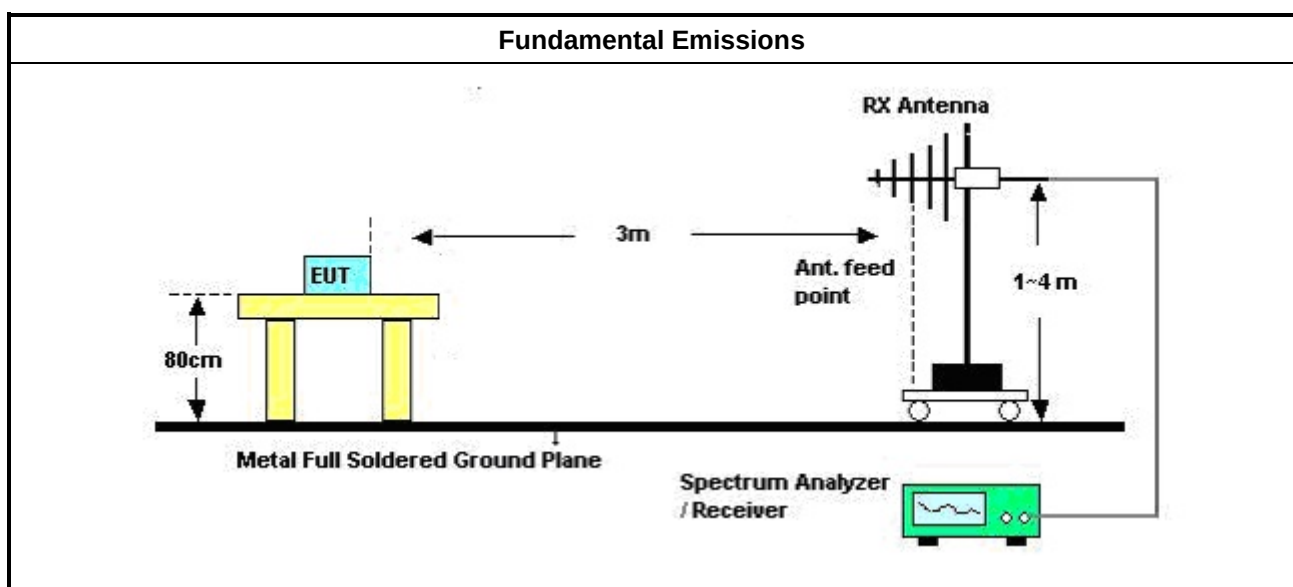
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

☒	The average emission levels shall be measured in [duty cycle ≥ 100 or by duty cycle correction factor].
☒	For the transmitter emissions shall be measured using following options below:
☒	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW) – Duty cycle $\geq 100\%$.
☐	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$. Average emission = peak emission + $20 \log(\text{duty cycle})$.
☒	Refer as ANSI C63.10, clause 4.1.4.2.1 measurement procedure quasi-peak limit.
☐	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.

3.3.4 Test Setup



3.3.5 Test Result of Fundamental Emissions

Refer as Appendix A



3.4 Transmitter Radiated Unwanted Emissions

3.4.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit	
Harmonics:	
☒	54 dBuV/m (average)
Other Unwanted Emissions:	
☒	50 dB below the level of the fundamental or Part 15.209, whichever is the lesser attenuation.

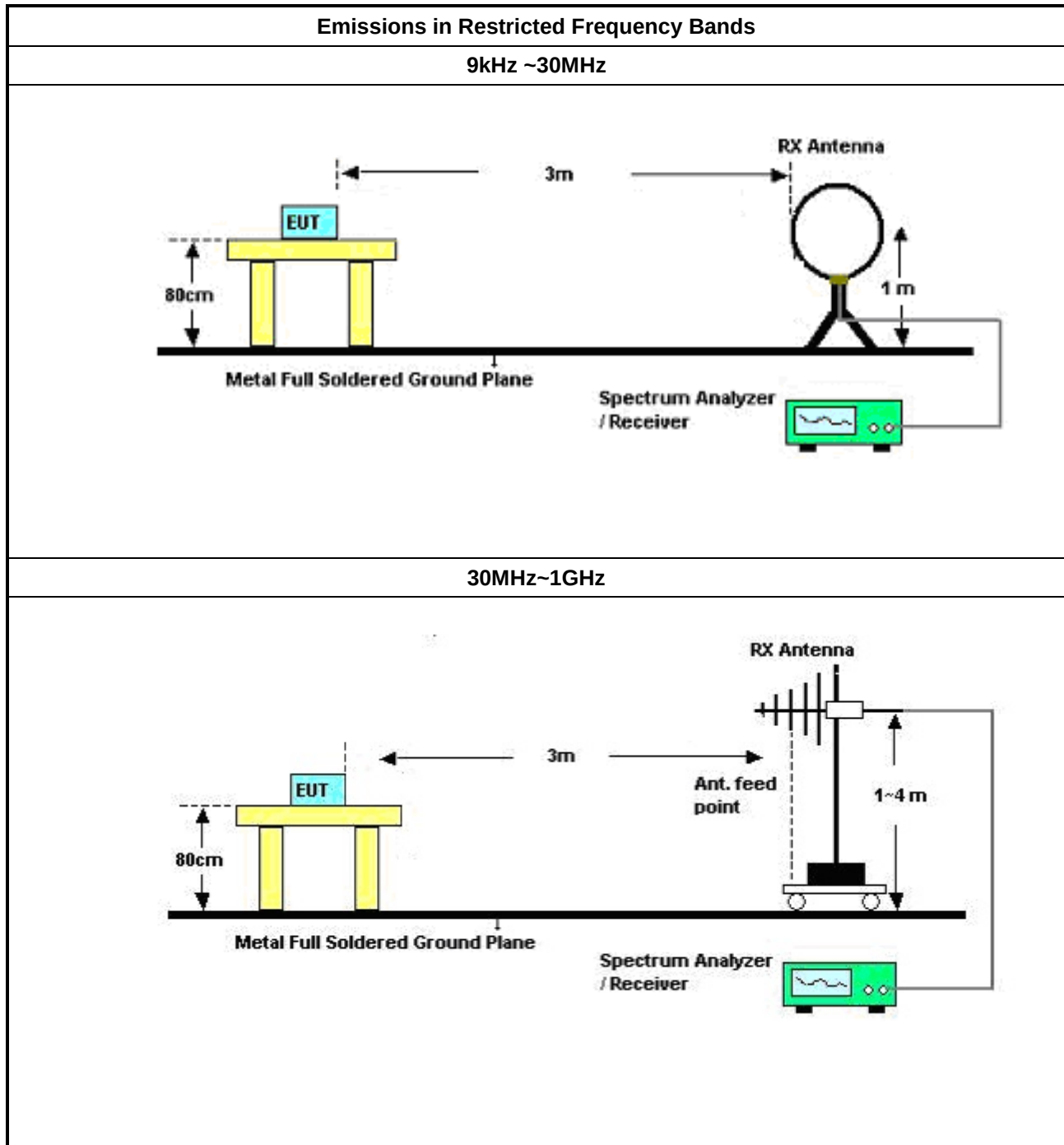
3.4.2 Measuring Instruments

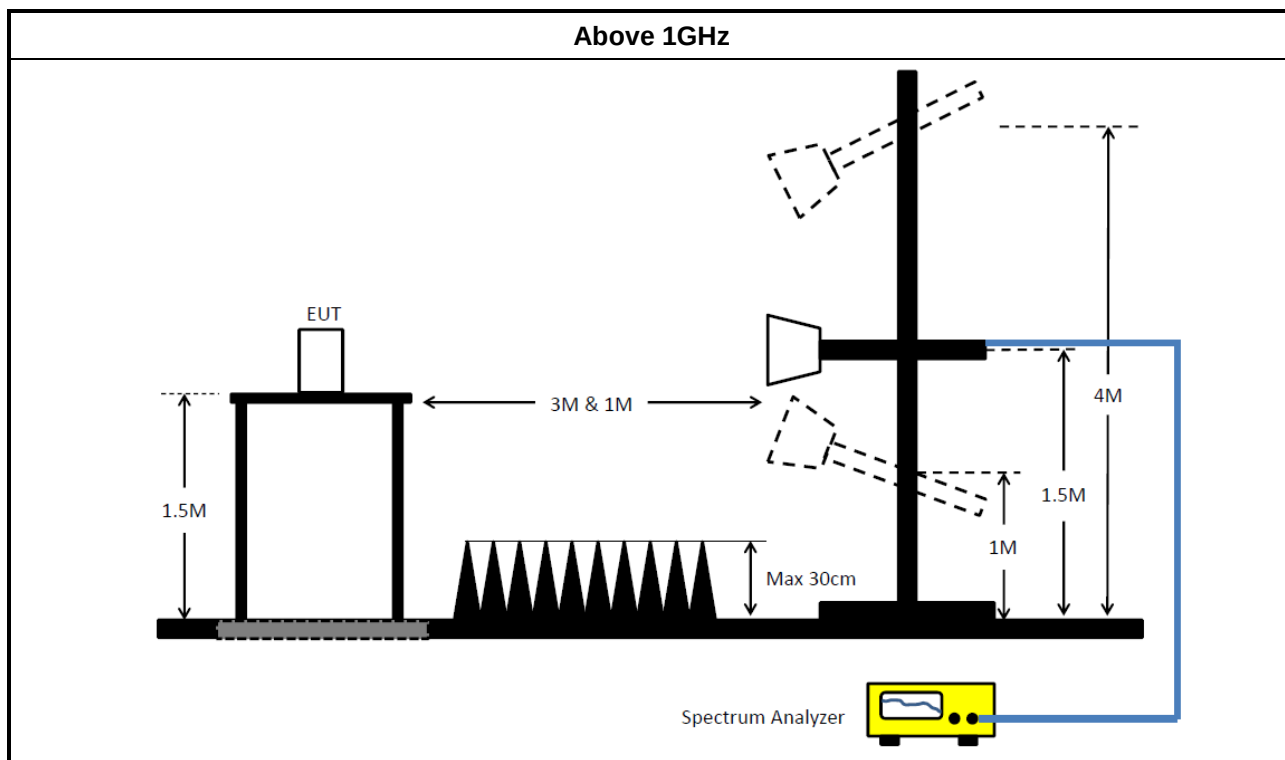
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method – General Information	
☒	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).
☒	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
☒	Refer as ANSI C63.10, clause 6.10.3 bandedge 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 4.1.4.2.3 (Reduced VBW) – Duty cycle $\geq$ 100%.
☐	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100\text{ ms})$. Average emission = peak emission + 20 log (duty cycle).
☒	Refer as ANSI C63.10, clause 4.1.4.2.1 measurement procedure quasi-peak limit.
☒	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
☒	For the transmitter bandedge emissions shall be measured using following options below:
☒	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
☐	Refer as ANSI C63.10, clause 6.10.6 for marker-delta method for band-edge measurements.
☒	For radiated measurement.
☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.
☒	The any unwanted emissions level shall not exceed the fundamental emission level.
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.4.4 Test Setup





3.4.5 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.

3.4.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix A

3.5 Test Equipment and Calibration Data

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	10/May/2018	09/May/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	31/Jul/2018	30/Jul/2019
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	02/Oct/2018	03/Oct/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	30/Apr/2018	29/Apr/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
RF Cable-R03m	Jye Bao	RG142	CB031	9kHz ~ 1GHz	01/Feb/2018	31/Jan/2019
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	14/Mar/2018	13/Mar/2019
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	02/Feb/2018	01/Feb/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	09/Apr/2019

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	05/Feb/2018	04/Feb/2019
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz~1G	11/Jan/2018	10/Jan/2019
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020



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_Nss1_1TX	Pass	PK	922.1M	85.82	94.00	-8.18	-6.16	3	Horizontal	85	2.53	-

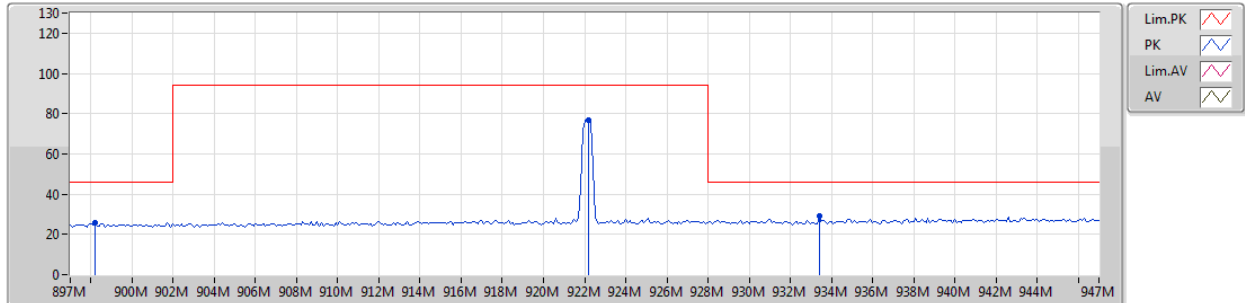
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
LoRa_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
922.1MHz	Pass	PK	898.2M	25.52	46.00	-20.48	-6.92	3	Vertical	40	1.00	-
922.1MHz	Pass	PK	922.2M	76.90	94.00	-17.10	-6.16	3	Vertical	40	1.00	-
922.1MHz	Pass	PK	933.4M	28.90	46.00	-17.10	-5.51	3	Vertical	40	1.00	-
922.1MHz	Pass	PK	901.5M	25.52	46.00	-20.48	-6.86	3	Horizontal	85	2.53	-
922.1MHz	Pass	PK	922.1M	85.82	94.00	-8.18	-6.16	3	Horizontal	85	2.53	-
922.1MHz	Pass	PK	933.7M	26.93	46.00	-19.07	-5.49	3	Horizontal	85	2.53	-
922.1MHz	Pass	PK	33.88M	25.02	40.00	-14.98	-15.32	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	51.34M	26.24	40.00	-13.76	-23.90	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	97.9M	22.48	43.50	-21.02	-21.37	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	503.36M	21.55	46.00	-24.45	-12.10	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	621.7M	23.14	46.00	-22.86	-10.27	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	773.02M	28.80	46.00	-17.20	-8.16	3	Vertical	0	3.00	-
922.1MHz	Pass	PK	30M	19.48	40.00	-20.52	-13.40	3	Horizontal	360	3.00	-
922.1MHz	Pass	PK	51.34M	19.96	40.00	-20.04	-23.90	3	Horizontal	360	3.00	-
922.1MHz	Pass	PK	97.9M	22.71	43.50	-20.79	-21.37	3	Horizontal	360	3.00	-
922.1MHz	Pass	PK	383.08M	22.65	46.00	-23.35	-14.63	3	Horizontal	360	3.00	-
922.1MHz	Pass	PK	571.26M	22.86	46.00	-23.14	-10.68	3	Horizontal	360	3.00	-
922.1MHz	Pass	PK	703.18M	25.69	46.00	-20.31	-9.65	3	Horizontal	360	3.00	-

LoRa_Nss1_1TX

922.1MHz_Battery

07/01/2019

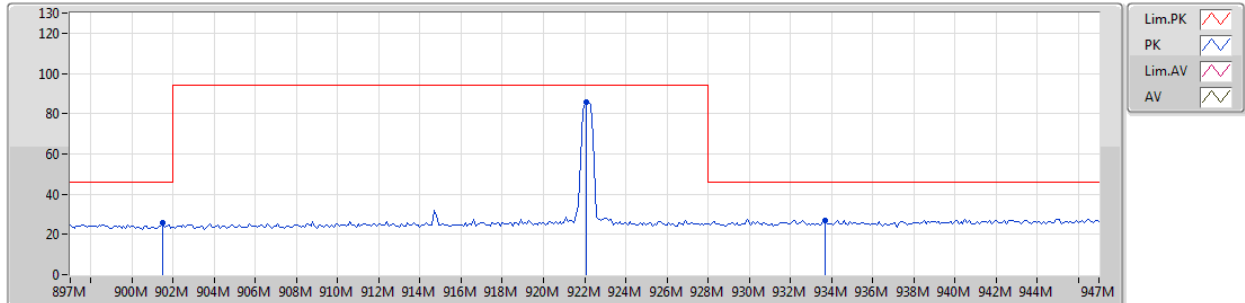


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
PK	898.2M	25.52	46.00	-20.48	-6.92	3	Vertical	40	1.00	-								
PK	922.2M	76.90	94.00	-17.10	-6.16	3	Vertical	40	1.00	-								
PK	933.4M	28.90	46.00	-17.10	-5.51	3	Vertical	40	1.00	-								

LoRa_Nss1_1TX

922.1MHz_Battery

07/01/2019

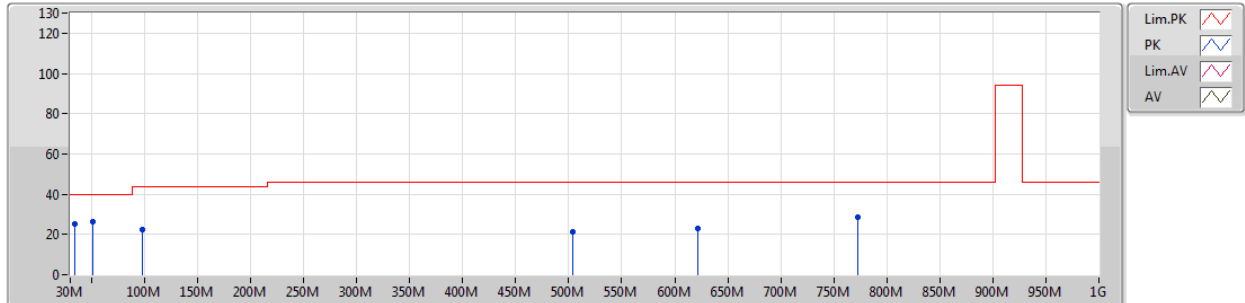


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments								
	[Hz]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	[m]		[°]	[m]									
PK	901.5M	25.52	46.00	-20.48	-6.86	3	Horizontal	85	2.53	-								
PK	922.1M	85.82	94.00	-8.18	-6.16	3	Horizontal	85	2.53	-								
PK	933.7M	26.93	46.00	-19.07	-5.49	3	Horizontal	85	2.53	-								

LoRa_Nss1_1TX

922.1MHz_Battery

07/01/2019

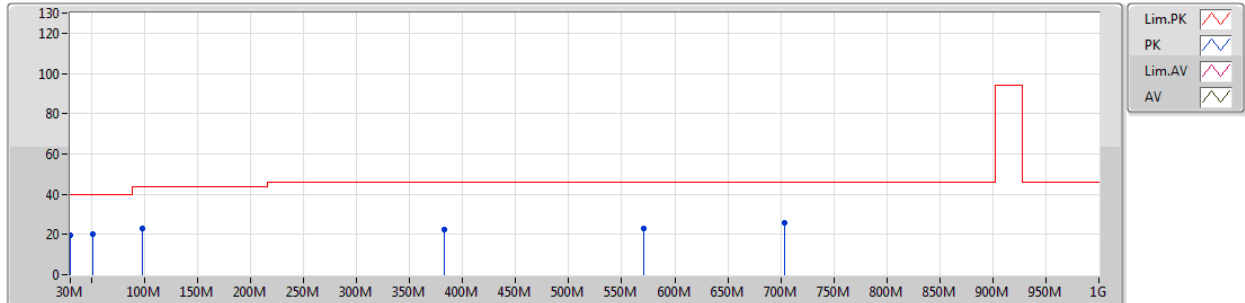


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	33.88M	25.02	40.00	-14.98	-15.32	3	Vertical	0	3.00	-
PK	51.34M	26.24	40.00	-13.76	-23.90	3	Vertical	0	3.00	-
PK	97.9M	22.48	43.50	-21.02	-21.37	3	Vertical	0	3.00	-
PK	503.36M	21.55	46.00	-24.45	-12.10	3	Vertical	0	3.00	-
PK	621.7M	23.14	46.00	-22.86	-10.27	3	Vertical	0	3.00	-
PK	773.02M	28.80	46.00	-17.20	-8.16	3	Vertical	0	3.00	-

LoRa_Nss1_1TX

922.1MHz_Battery

07/01/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	30M	19.48	40.00	-20.52	-13.40	3	Horizontal	360	3.00	-
PK	51.34M	19.96	40.00	-20.04	-23.90	3	Horizontal	360	3.00	-
PK	97.9M	22.71	43.50	-20.79	-21.37	3	Horizontal	360	3.00	-
PK	383.08M	22.65	46.00	-23.35	-14.63	3	Horizontal	360	3.00	-
PK	571.26M	22.86	46.00	-23.14	-10.68	3	Horizontal	360	3.00	-
PK	703.18M	25.69	46.00	-20.31	-9.65	3	Horizontal	360	3.00	-



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
902-928MHz	-	-	-	-	-	-	-	-	-	-	-	-
LoRa_Nss1_1TX	Pass	AV	5.53289G	53.64	54.00	-0.36	3.21	3	Horizontal	47	1.01	-

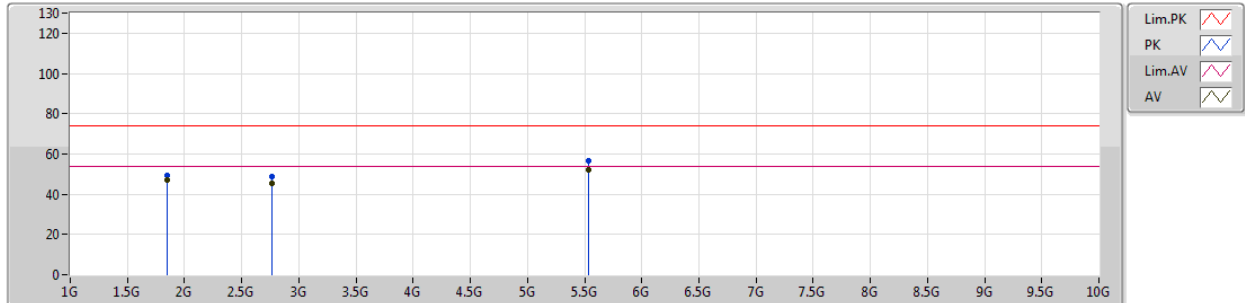
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
LoRa_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-
922.1MHz	Pass	AV	1.84423G	47.05	54.00	-6.95	-5.21	3	Vertical	169	2.99	-
922.1MHz	Pass	AV	2.76639G	45.15	54.00	-8.85	-2.62	3	Vertical	188	2.84	-
922.1MHz	Pass	AV	5.53273G	52.27	54.00	-1.73	3.21	3	Vertical	196	2.64	-
922.1MHz	Pass	PK	1.84427G	49.40	74.00	-24.60	-5.21	3	Vertical	169	2.99	-
922.1MHz	Pass	PK	2.76611G	48.63	74.00	-25.37	-2.62	3	Vertical	188	2.84	-
922.1MHz	Pass	PK	5.5328G	56.46	74.00	-17.54	3.21	3	Vertical	196	2.64	-
922.1MHz	Pass	AV	1.84429G	45.42	54.00	-8.58	-5.21	3	Horizontal	308	2.81	-
922.1MHz	Pass	AV	2.76646G	46.67	54.00	-7.33	-2.62	3	Horizontal	138	1.50	-
922.1MHz	Pass	AV	5.53289G	53.64	54.00	-0.36	3.21	3	Horizontal	47	1.01	-
922.1MHz	Pass	PK	1.84429G	48.16	74.00	-25.84	-5.21	3	Horizontal	308	2.81	-
922.1MHz	Pass	PK	2.76644G	49.67	74.00	-24.33	-2.62	3	Horizontal	138	1.50	-
922.1MHz	Pass	PK	5.53299G	58.08	74.00	-15.92	3.21	3	Horizontal	47	1.01	-

LoRa_Nss1_1TX

07/01/2019

922.1MHz_TX

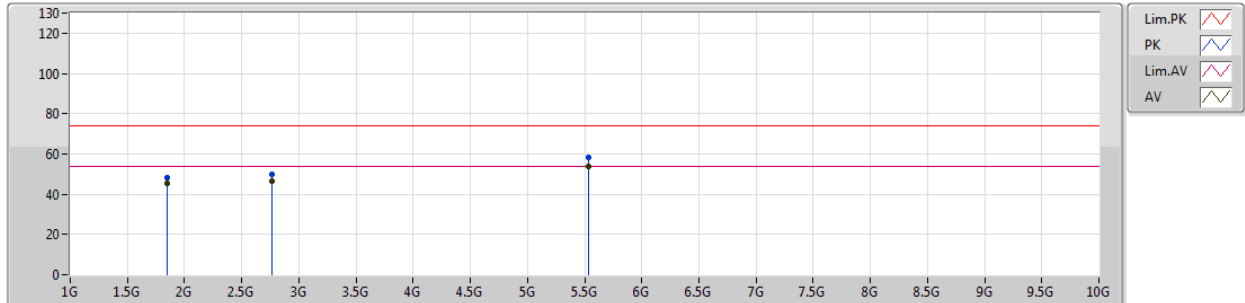


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	1.84423G	47.05	54.00	-6.95	-5.21	3	Vertical	169	2.99	-
AV	2.76639G	45.15	54.00	-8.85	-2.62	3	Vertical	188	2.84	-
AV	5.53273G	52.27	54.00	-1.73	3.21	3	Vertical	196	2.64	-
PK	1.84427G	49.40	74.00	-24.60	-5.21	3	Vertical	169	2.99	-
PK	2.76611G	48.63	74.00	-25.37	-2.62	3	Vertical	188	2.84	-
PK	5.5328G	56.46	74.00	-17.54	3.21	3	Vertical	196	2.64	-

LoRa_Nss1_1TX

07/01/2019

922.1MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	1.84429G	45.42	54.00	-8.58	-5.21	3	Horizontal	308	2.81	-
AV	2.76646G	46.67	54.00	-7.33	-2.62	3	Horizontal	138	1.50	-
AV	5.53289G	53.64	54.00	-0.36	3.21	3	Horizontal	47	1.01	-
PK	1.84429G	48.16	74.00	-25.84	-5.21	3	Horizontal	308	2.81	-
PK	2.76644G	49.67	74.00	-24.33	-2.62	3	Horizontal	138	1.50	-
PK	5.53299G	58.08	74.00	-15.92	3.21	3	Horizontal	47	1.01	-