

FCC Test Report

Report No.: RFBDTL-WTW-P20110545-3 R2

FCC ID: 2AEUPBHACT001

Test Model: 5AT3T6

Received Date: Nov. 05, 2020

Test Date: Aug. 21 ~ Nov. 10, 2021 (For all tests except Radiated Emissions and Band Edge Measurement)

May 03, 2022 (For Radiated Emissions and Band Edge Measurement)

Issued Date: Sep. 30, 2022

Applicant: Ring LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number(1):** 788550 / TW0003

**FCC Registration /
Designation Number(2):** 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBDTL-WTW-P20110545-3	Original release	Jan. 25, 2022
RFBDTL-WTW-P20110545-3 R1	Revise test result of Radiated Emissions and Band Edge Measurement	May 04, 2022
RFBDTL-WTW-P20110545-3 R2	Revise product name	Sep. 30, 2022

1 Certificate of Conformity

Product: Mobile Connectivity Device

Brand: ring

Test Model: 5AT3T6

Sample Status: Engineering sample

Applicant: Ring LLC

Test Date: Aug. 21 ~ Nov. 10, 2021 (For all tests except Radiated Emissions and Band Edge Measurement)

May 03, 2022 (For Radiated Emissions and Band Edge Measurement)

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by :

Pettie Chen

Date:

Sep. 30, 2022

Pettie Chen / Senior Specialist

Approved by :

Jeremy Lin

Date:

Sep. 30, 2022

Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -16.80dB at 0.41400MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(b)(2)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 & 209	Radiated Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -4.7dB at 1830.00, 1855.60MHz.
15.247(d)	Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -3.80dB at 928.00MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~ 1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Mobile Connectivity Device
Brand	ring
Test Model	5AT3T6
Status of EUT	Engineering sample
Power Supply Rating	12Vdc (Adapter)
Modulation Type	FSK
Operating Frequency	LoRa SF7BW125 FHSS: 902.2 ~ 927.8MHz LoRa SF8BW125 FHSS: 902.2 ~ 927.8MHz LoRa SF9BW125 FHSS: 902.2 ~ 927.8MHz FSK 50kbps FHSS: 902.2 ~ 927.8MHz FSK 150kbps FHSS: 902.4 ~ 927.8MHz FSK 250kbps FHSS: 902.5 ~ 927.5MHz
Number of Channel	LoRa SF7BW125 FHSS: 129 LoRa SF8BW125 FHSS: 129 LoRa SF9BW125 FHSS: 129 FSK 50kbps FHSS: 129 FSK 150kbps FHSS: 65 FSK 250kbps FHSS: 51
Output Power	LoRa SF7BW125 FHSS: 437.522mW LoRa SF8BW125 FHSS: 427.563mW LoRa SF9BW125 FHSS: 451.856mW FSK 50kbps FHSS: 425.598mW FSK 150kbps FHSS: 434.510mW FSK 250kbps FHSS: 420.727mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

1. The EUT was tested with the following adapter. (Support unit only)

Product	Brand	Model	Description
Adapter	PHIHONG	PPA24A-120	Input: 100-240Vac~1.5A , 50/60Hz Output: 12Vdc / 2A, 24W Power Line: 1.5m non-shielded cable without core

2. The Antenna information is listed as below.

Antenna No.	Brand	Gain(dBi)	Frequency range	Antenna Type	Connector Type
LoRa BLE2(Dialog)	HAITONG	LoRa: -3.16 / BLE2: 0.54	LoRa 902~928MHz / BLE2 2400~2500MHz	Monopole	none (like solder)
GPS BLE1(Nordic)	HAITONG	GPS: -1.5 / BLE1: 1.35	GPS 1575MHz / BLE1 2400~2500MHz	PIFA	none (like solder)
Microwave Sensor	PCB Vender VGT/YJ	4.15	5725~5890MHz	PIFA	none (like solder)

*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3. BT LE 1M (Nordic), BT LE 1M (Dialog) and Microwave Sensor and LoRa can transmit at same time.

3.2 Description of Test Modes

LoRa SF7BW125 FHSS:

LoRa SF8BW125 FHSS:

LoRa SF9BW125 FHSS:

FSK 50kbps FHSS:

129 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	902.2	31	908.2	61	914.2	91	920.2	121	926.2
2	902.4	32	908.4	62	914.4	92	920.4	122	926.4
3	902.6	33	908.6	63	914.6	93	920.6	123	926.6
4	902.8	34	908.8	64	914.8	94	920.8	124	926.8
5	903.0	35	909.0	65	915.0	95	921.0	125	927.0
6	903.2	36	909.2	66	915.2	96	921.2	126	927.2
7	903.4	37	909.4	67	915.4	97	921.4	127	927.4
8	903.6	38	909.6	68	915.6	98	921.6	128	927.6
9	903.8	39	909.8	69	915.8	99	921.8	129	927.8
10	904.0	40	910.0	70	916.0	100	922.0		
11	904.2	41	910.2	71	916.2	101	922.2		
12	904.4	42	910.4	72	916.4	102	922.4		
13	904.6	43	910.6	73	916.6	103	922.6		
14	904.8	44	910.8	74	916.8	104	922.8		
15	905.0	45	911.0	75	917.0	105	923.0		
16	905.2	46	911.2	76	917.2	106	923.2		
17	905.4	47	911.4	77	917.4	107	923.4		
18	905.6	48	911.6	78	917.6	108	923.6		
19	905.8	49	911.8	79	917.8	109	923.8		
20	906.0	50	912.0	80	918.0	110	924.0		
21	906.2	51	912.2	81	918.2	111	924.2		
22	906.4	52	912.4	82	918.4	112	924.4		
23	906.6	53	912.6	83	918.6	113	924.6		
24	906.8	54	912.8	84	918.8	114	924.8		
25	907.0	55	913.0	85	919.0	115	925.0		
26	907.2	56	913.2	86	919.2	116	925.2		
27	907.4	57	913.4	87	919.4	117	925.4		
28	907.6	58	913.6	88	919.6	118	925.6		
29	907.8	59	913.8	89	919.8	119	925.8		
30	908.0	60	914.0	90	920.0	120	926.0		

FSK 150kbps FHSS:

65 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	902.4	21	910.4	41	918.2	61	926.2
2	902.8	22	910.8	42	918.6	62	926.6
3	903.2	23	911.2	43	919.0	63	927.0
4	903.6	24	911.6	44	919.4	64	927.4
5	904.0	25	912.0	45	919.8	65	927.8
6	904.4	26	912.4	46	920.2		
7	904.8	27	912.8	47	920.6		
8	905.2	28	913.2	48	921.0		
9	905.6	29	913.6	49	921.4		
10	906.0	30	914.0	50	921.8		
11	906.4	31	914.4	51	922.2		
12	906.8	32	914.8	52	922.6		
13	907.2	33	915.2	53	923.0		
14	907.6	34	915.6	54	923.4		
15	908.0	35	916.0	55	923.8		
16	908.4	36	916.4	56	924.2		
17	908.8	37	916.6	57	924.6		
18	909.2	38	917.0	58	925.0		
19	909.6	39	917.4	59	925.4		
20	910.0	40	917.8	60	925.8		

FSK 250kbps FHSS:

51 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	902.5	16	910.0	31	917.5	46	925.0
2	903.0	17	910.5	32	918.0	47	925.5
3	903.5	18	911.0	33	918.5	48	926.0
4	904.0	19	911.5	34	919.0	49	926.5
5	904.5	20	912.0	35	919.5	50	927.0
6	905.0	21	912.5	36	920.0	51	927.5
7	905.5	22	913.0	37	920.5		
8	906.0	23	913.5	38	921.0		
9	906.5	24	914.0	39	921.5		
10	907.0	25	914.5	40	922.0		
11	907.5	26	915.0	41	922.5		
12	908.0	27	915.5	42	923.0		
13	908.5	28	916.0	43	923.5		
14	909.0	29	916.5	44	924.0		
15	909.5	30	917.0	45	924.5		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE $\geq$ 1G: Radiated Emission above 1GHz & RE<1G: Radiated Emission below 1GHz
 Bandedge Measurement
 PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note:

1. The EUT had been pre-tested on the positioned of X-plane and Z-plane. The worst case was found when positioned on Y-plane for EUT and Z-plane for antenna.

Radiated Emission Test (Above 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Remark
-	1 to 129	1, 65, 129	CSS	LoRa SF7BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF8BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF9BW125 FHSS
-	1 to 129	1, 65, 129	FSK	FSK 50kbps FHSS
-	1 to 65	1, 33, 65	FSK	FSK 150kbps FHSS
-	1 to 51	1, 26, 51	FSK	FSK 250kbps FHSS

Radiated Emission Test (Below 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Remark
-	1 to 129	1, 65, 129	CSS	LoRa SF7BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF8BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF9BW125 FHSS
-	1 to 129	1, 65, 129	FSK	FSK 50kbps FHSS
-	1 to 65	1, 33, 65	FSK	FSK 150kbps FHSS
-	1 to 51	1, 26, 51	FSK	FSK 250kbps FHSS

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Remark
-	1 to 129	129	CSS	LoRa SF9BW125 FHSS

Antenna Port Conducted Measurement:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Remark
-	1 to 129	1, 65, 129	CSS	LoRa SF7BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF8BW125 FHSS
-	1 to 129	1, 65, 129	CSS	LoRa SF9BW125 FHSS
-	1 to 129	1, 65, 129	FSK	FSK 50kbps FHSS
-	1 to 65	1, 33, 65	FSK	FSK 150kbps FHSS
-	1 to 51	1, 26, 51	FSK	FSK 250kbps FHSS

Test Condition:

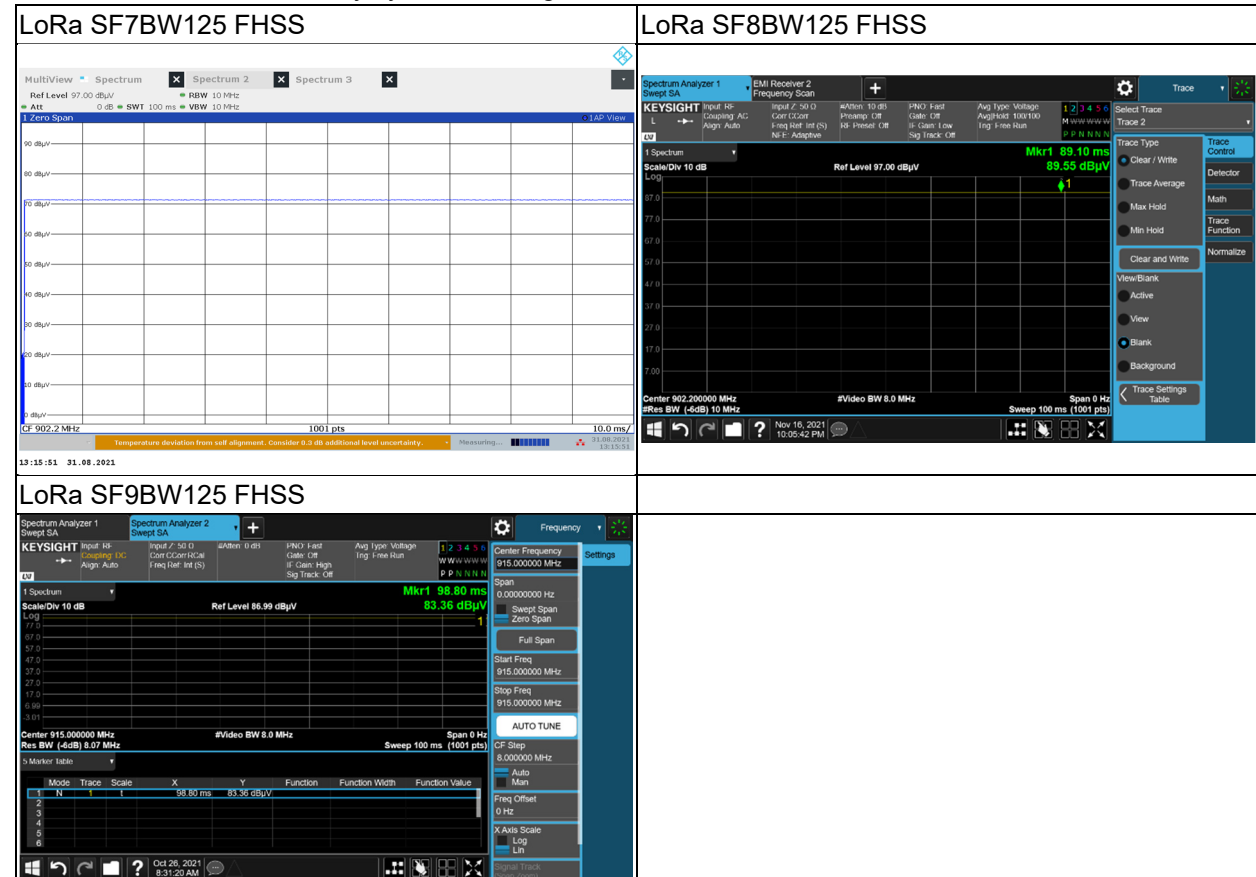
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE $\geq$ 1G	21 deg. C, 68% RH 23 deg. C, 69% RH	120Vac, 60Hz	Rex Wang Edison Lee Greg Lin
RE<1G	22 deg. C, 68% RH 21 deg. C, 68% RH	120Vac, 60Hz	Rex Wang Edison Lee Greg Lin
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Edison Lee
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Chris Lin

3.3 Duty Cycle of Test Signal

LoRa SF7BW125 FHSS: Duty cycle of test signal is 100%.

LoRa SF8BW125 FHSS: Duty cycle of test signal is 100%.

LoRa SF9BW125 FHSS: Duty cycle of test signal is 100%.



Duty cycle of test signal is < 98%.

FSK 50kbps FHSS:

Duty cycle = $10.812 \times 3 / 100 = 0.324$, duty cycle correction factor = $20 \times \log(0.324) = -9.7$

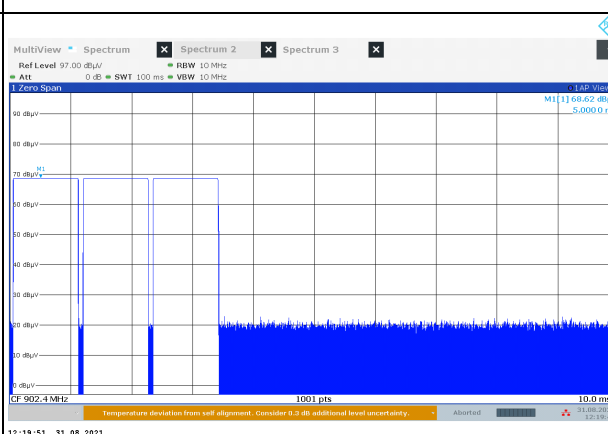
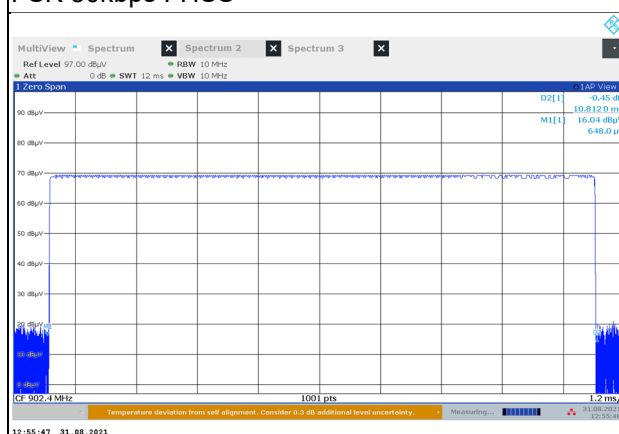
FSK 150kbps FHSS:

Duty cycle = $3.68 \times 11 / 100 = 0.405$, duty cycle correction factor = $20 \times \log(0.405) = -7.8$

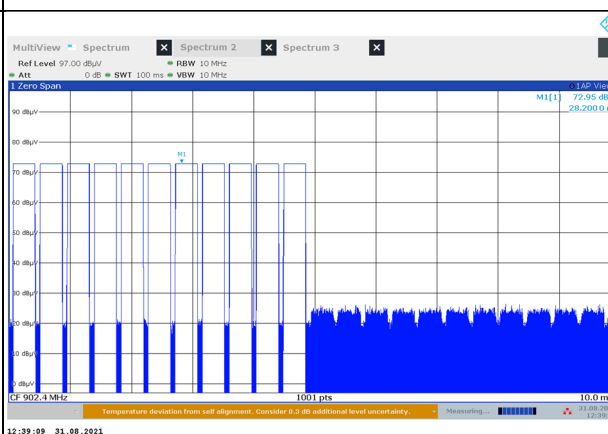
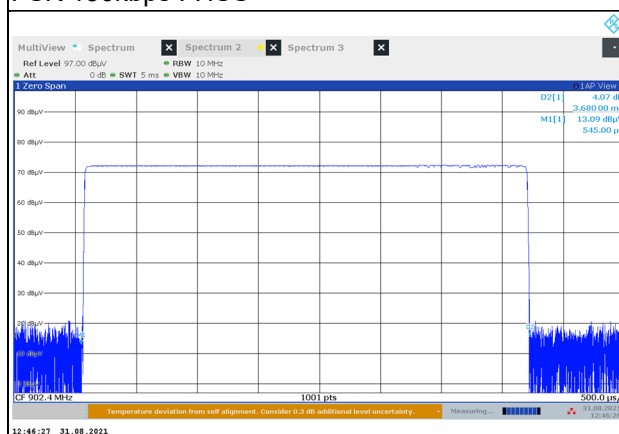
FSK 250kbps FHSS:

Duty cycle = $10.788 \times 3 / 100 = 0.324$, duty cycle correction factor = $20 \times \log(0.324) = -9.7$

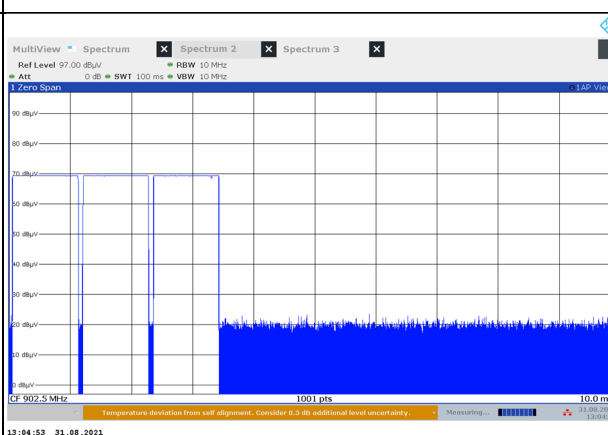
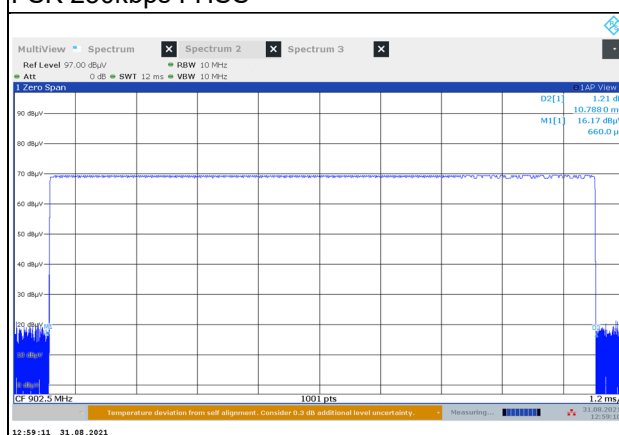
FSK 50kbps FHSS



FSK 150kbps FHSS



FSK 250kbps FHSS



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Adapter	PHIHONG	PPA24A-120	NA	NA	Provided by client

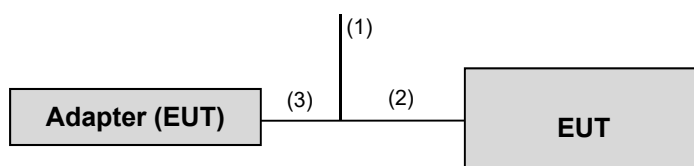
Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Cable	1	1.2	N	0	Provided by client
2.	OBD Cable	1	1.0	N	0	Provided by client
3.	AC Power cable	1	1.5	N	0	Provided by client

Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

Test Date: Aug. 21 ~ Nov. 10, 2021

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Rohde & Schwarz	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 21, 2020	Dec. 20, 2021
BILOG Antenna SCHWARZBECK	VULB9168	1214	Nov. 04, 2020 Nov. 04, 2021	Nov. 03, 2021 Nov. 03, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1170	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	995	Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980798	Jan. 12, 2021	Jan. 11, 2022
Preamplifier EMCI	EMC118A45SE	980809	Jan. 12, 2021	Jan. 11, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC104-SM-SM- (9000+2000+1000)	201244+ 201232+ 210103	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMCCFD400-NM- NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 12, 2021	Jan. 11, 2022
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+20124 9	Jan. 12, 2021	Jan. 11, 2022
Software BV ADT	ADT_Radiated_V7.6. 15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004 /MY55190007/MY5521000 5	Jul. 12, 2021	Jul. 11, 2022

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in WM Chamber 9.

Test Date: May 03, 2022

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Rohde & Schwarz	ESR3	102783	Dec. 21, 2021	Dec. 20, 2022
Spectrum Analyzer KEYSIGHT	N9020B	MY60110513	Dec. 24, 2021	Dec. 23, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 27, 2021	Oct. 26, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1170	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna EMCI	EM-6879	269	Sep. 16, 2021	Sep. 15, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980798	Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980809	Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM- (9000+2000+1000)	201244+ 201232+ 210103	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM- NM- (9000+300+500)	201251+ 201249+ 201248	Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+20 1249	Jan. 17, 2022	Jan. 16, 2023
Software BV ADT	ADT_Radiated_V7. 6.15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/M Y55210005	Jul. 12, 2021	Jul. 11, 2022

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in WM Chamber 9.

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

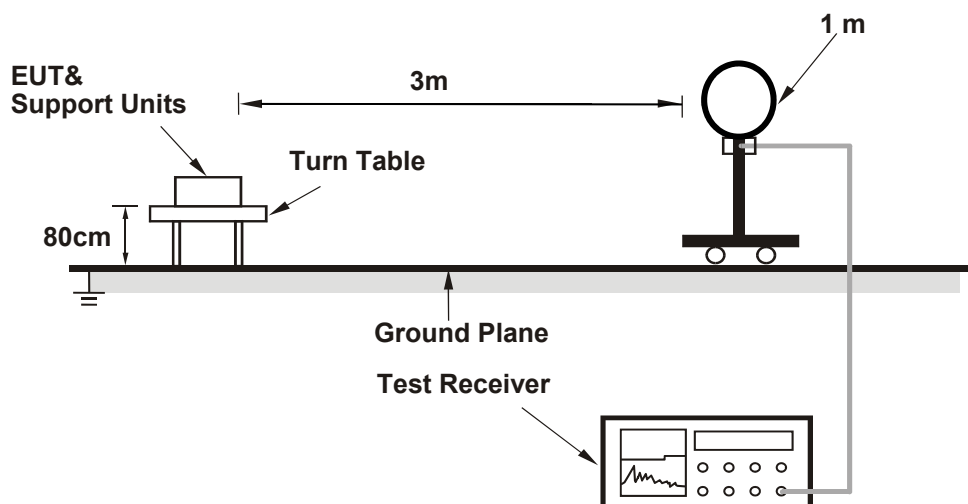
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

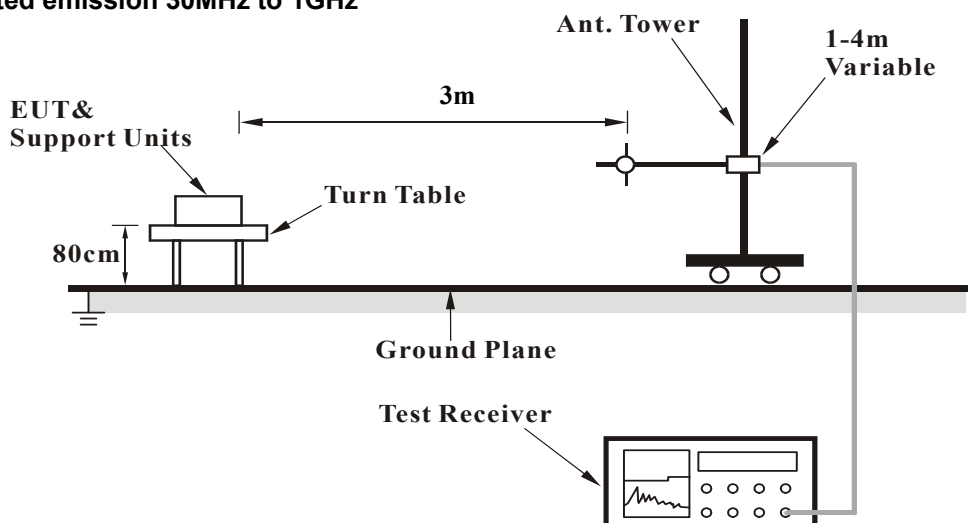
No deviation.

4.1.5 Test Setup

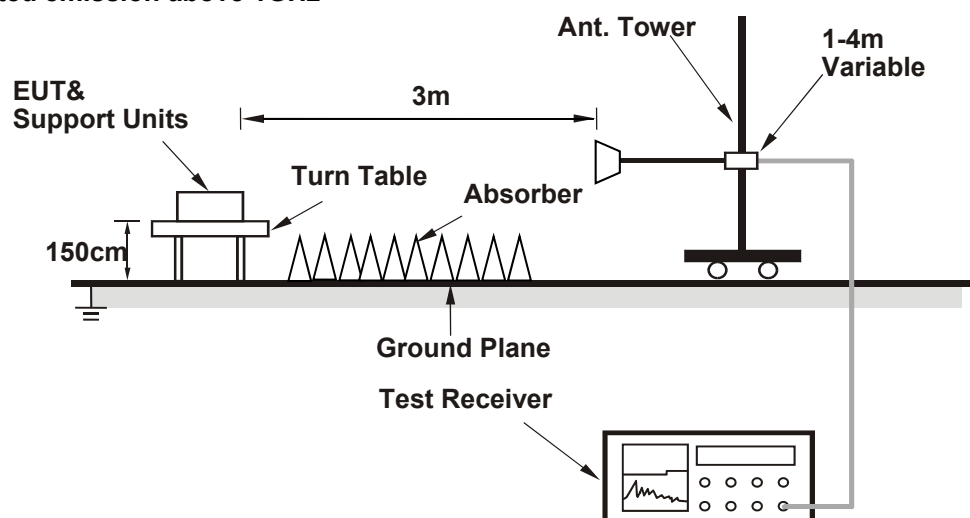
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

LoRa SF7BW125 FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	1GHz ~ 25GHz		Peak (PK) Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	92.2 QP	98.5	-6.3	1.00 H	306	62.2	30.0
2	*902.20	118.5 QP			1.00 H	306	88.5	30.0
3	#1804.40	50.2 PK	74.0	-23.8	1.66 H	351	56.6	-6.4
4	#1804.40	46.7 AV	54.0	-7.3	1.66 H	351	53.1	-6.4
5	2706.60	45.6 PK	74.0	-28.4	1.25 H	1	48.7	-3.1
6	2706.60	39.5 AV	54.0	-14.5	1.25 H	1	42.6	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	89.6 QP	96.1	-6.5	1.16 V	173	59.6	30.0
2	*902.20	116.1 QP			1.16 V	173	86.1	30.0
3	#1804.40	51.9 PK	74.0	-22.1	1.95 V	316	58.3	-6.4
4	#1804.40	48.8 AV	54.0	-5.2	1.95 V	316	55.2	-6.4
5	2706.60	47.5 PK	74.0	-26.5	1.70 V	278	50.6	-3.1
6	2706.60	41.2 AV	54.0	-12.8	1.70 V	278	44.3	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	120.5 QP			1.00 H	304	90.2	30.3
2	#1830.00	50.3 PK	74.0	-23.7	1.59 H	358	56.6	-6.3
3	#1830.00	46.7 AV	54.0	-7.3	1.59 H	358	53.0	-6.3
4	2745.00	45.5 PK	74.0	-28.5	1.27 H	1	48.5	-3.0
5	2745.00	39.3 AV	54.0	-14.7	1.27 H	1	42.3	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	118.4 QP			1.14 V	174	88.1	30.3
2	#1830.00	52.3 PK	74.0	-21.7	1.98 V	323	58.6	-6.3
3	#1830.00	49.2 AV	54.0	-4.8	1.98 V	323	55.5	-6.3
4	2745.00	48.1 PK	74.0	-25.9	1.74 V	280	51.1	-3.0
5	2745.00	41.6 AV	54.0	-12.4	1.74 V	280	44.6	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	123.1 QP			1.00 H	305	92.5	30.6
2	#928.00	99.3 QP	103.1	-3.8	1.00 H	305	68.7	30.6
3	#1855.60	50.4 PK	74.0	-23.6	1.66 H	356	56.4	-6.0
4	#1855.60	46.9 AV	54.0	-7.1	1.66 H	356	52.9	-6.0
5	2783.40	45.8 PK	74.0	-28.2	1.22 H	179	48.5	-2.7
6	2783.40	39.5 AV	54.0	-14.5	1.22 H	179	42.2	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	118.9 QP			1.12 V	175	88.3	30.6
2	#928.00	94.7 QP	98.9	-4.2	1.12 V	175	64.1	30.6
3	#1855.60	52.2 PK	74.0	-21.8	1.77 V	299	58.2	-6.0
4	#1855.60	48.6 AV	54.0	-5.4	1.77 V	299	54.6	-6.0
5	2783.40	47.4 PK	74.0	-26.6	1.41 V	33	50.1	-2.7
6	2783.40	41.2 AV	54.0	-12.8	1.41 V	33	43.9	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

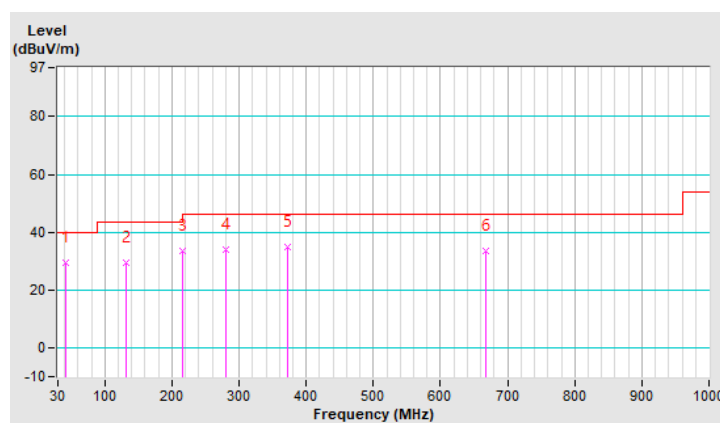
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.64	29.4 QP	40.0	-10.6	2.00 H	95	42.8	-13.4
2	130.88	29.6 QP	43.5	-13.9	1.00 H	102	43.8	-14.2
3	216.24	33.7 QP	46.0	-12.3	1.49 H	267	50.1	-16.4
4	281.23	34.1 QP	46.0	-11.9	1.00 H	76	46.9	-12.8
5	371.44	34.8 QP	46.0	-11.2	1.00 H	250	45.4	-10.6
6	668.26	33.7 QP	46.0	-12.3	1.00 H	86	38.2	-4.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

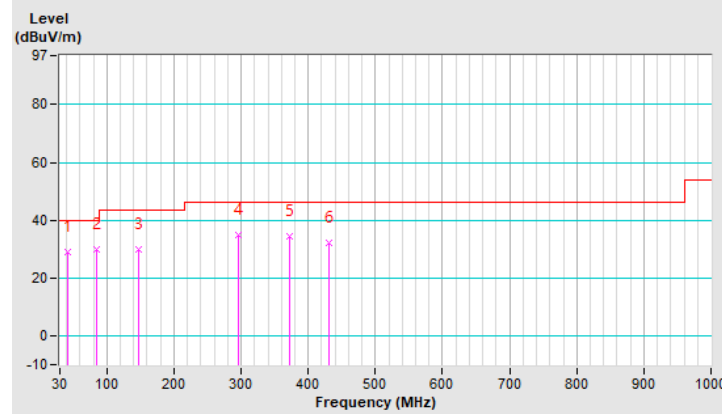


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.64	28.9 QP	40.0	-11.1	2.00 V	310	42.3	-13.4
2	85.29	29.7 QP	40.0	-10.3	1.50 V	206	48.4	-18.7
3	148.24	29.9 QP	43.5	-13.6	1.01 V	153	43.1	-13.2
4	296.75	35.0 QP	46.0	-11.0	1.50 V	204	47.5	-12.5
5	371.44	34.3 QP	46.0	-11.7	2.00 V	75	44.9	-10.6
6	431.59	32.2 QP	46.0	-13.8	1.01 V	136	41.4	-9.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

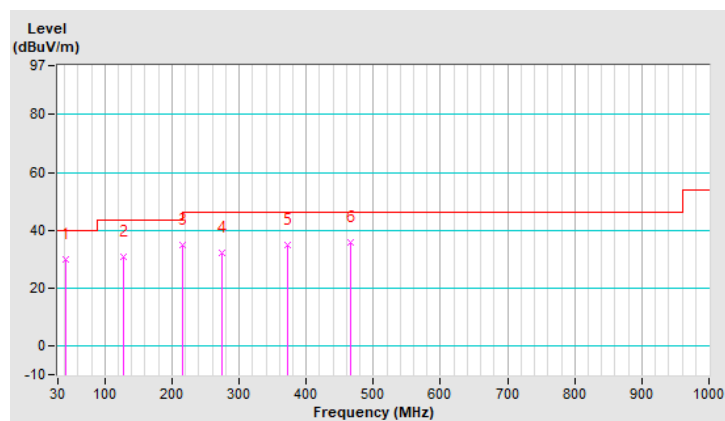


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.64	29.8 QP	40.0	-10.2	2.00 H	329	43.2	-13.4
2	127.10	30.9 QP	43.5	-12.6	1.50 H	80	45.6	-14.7
3	216.24	34.8 QP	46.0	-11.2	1.50 H	204	51.2	-16.4
4	275.41	32.1 QP	46.0	-13.9	1.00 H	78	45.1	-13.0
5	371.44	35.0 QP	46.0	-11.0	1.00 H	75	45.6	-10.6
6	465.53	35.6 QP	46.0	-10.4	1.50 H	118	43.9	-8.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

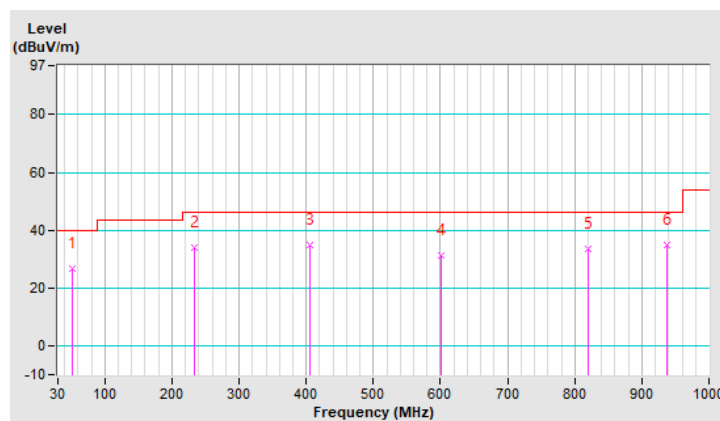


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	52.31	26.6 QP	40.0	-13.4	1.00 V	75	39.9	-13.3
2	232.73	33.8 QP	46.0	-12.2	1.00 V	75	48.9	-15.1
3	406.36	34.8 QP	46.0	-11.2	1.50 V	55	44.7	-9.9
4	600.36	31.1 QP	46.0	-14.9	1.00 V	89	36.5	-5.4
5	820.55	33.6 QP	46.0	-12.4	1.00 V	343	36.0	-2.4
6	936.95	34.8 QP	46.0	-11.2	1.50 V	152	35.4	-0.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

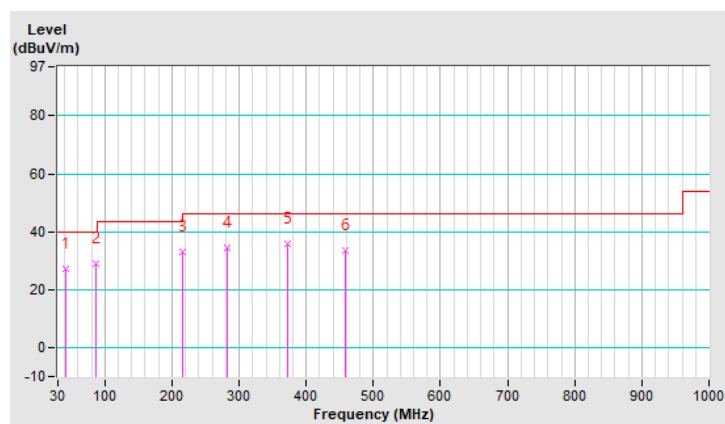


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.64	27.1 QP	40.0	-12.9	2.00 H	27	40.5	-13.4
2	87.33	29.1 QP	40.0	-10.9	1.49 H	249	48.0	-18.9
3	216.24	33.2 QP	46.0	-12.8	1.49 H	216	49.6	-16.4
4	283.17	34.5 QP	46.0	-11.5	1.00 H	92	47.2	-12.7
5	371.43	35.8 QP	46.0	-10.2	1.00 H	18	46.4	-10.6
6	458.74	33.7 QP	46.0	-12.3	1.49 H	120	42.1	-8.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

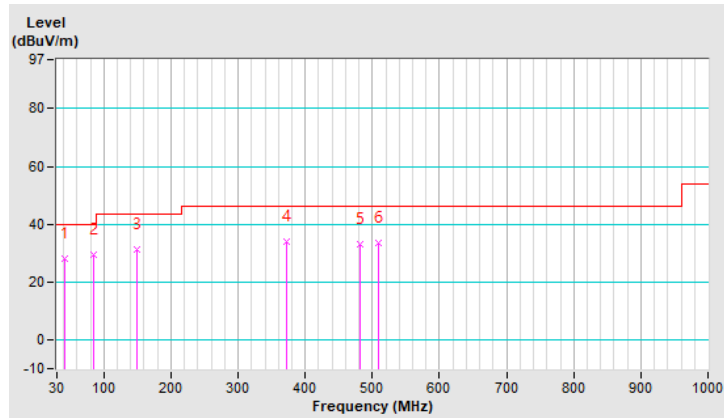


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	41.64	28.3 QP	40.0	-11.7	1.50 V	112	41.7	-13.4
2	85.28	29.3 QP	40.0	-10.7	2.00 V	58	48.0	-18.7
3	148.34	31.1 QP	43.5	-12.4	1.01 V	121	44.3	-13.2
4	371.44	33.8 QP	46.0	-12.2	1.01 V	49	44.4	-10.6
5	482.22	33.0 QP	46.0	-13.0	1.01 V	113	41.1	-8.1
6	509.18	33.3 QP	46.0	-12.7	1.01 V	132	40.9	-7.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



LoRa SF8BW125 FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	84.8 QP	97.4	-12.6	1.66 H	319	54.8	30.0
2	*902.20	117.4 QP			1.66 H	319	87.4	30.0
3	#1804.40	50.5 PK	74.0	-23.5	1.62 H	357	56.9	-6.4
4	#1804.40	46.5 AV	54.0	-7.5	1.62 H	357	52.9	-6.4
5	2706.60	45.7 PK	74.0	-28.3	2.12 H	46	48.8	-3.1
6	2706.60	39.2 AV	54.0	-14.8	2.12 H	46	42.3	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	85.7 QP	98.3	-12.6	2.70 V	290	55.7	30.0
2	*902.20	118.3 QP			2.70 V	290	88.3	30.0
3	#1804.40	52.4 PK	74.0	-21.6	2.44 V	273	58.8	-6.4
4	#1804.40	48.9 AV	54.0	-5.1	2.44 V	273	55.3	-6.4
5	2706.60	47.7 PK	74.0	-26.3	1.33 V	350	50.8	-3.1
6	2706.60	40.8 AV	54.0	-13.2	1.33 V	350	43.9	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	119.0 QP			1.56 H	317	88.7	30.3
2	#1830.00	50.0 PK	74.0	-24.0	1.19 H	334	56.3	-6.3
3	#1830.00	46.3 AV	54.0	-7.7	1.19 H	334	52.6	-6.3
4	2745.00	45.2 PK	74.0	-28.8	1.95 H	40	48.2	-3.0
5	2745.00	38.7 AV	54.0	-15.3	1.95 H	40	41.7	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	119.7 QP			2.86 V	292	89.4	30.3
2	#1830.00	52.2 PK	74.0	-21.8	2.80 V	252	58.5	-6.3
3	#1830.00	48.5 AV	54.0	-5.5	2.80 V	252	54.8	-6.3
4	2745.00	47.2 PK	74.0	-26.8	1.36 V	333	50.2	-3.0
5	2745.00	41.5 AV	54.0	-12.5	1.36 V	333	44.5	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	119.1 QP			1.65 H	312	88.5	30.6
2	#928.00	87.7 QP	99.1	-11.4	1.65 H	312	57.1	30.6
3	#1855.60	50.3 PK	74.0	-23.7	1.30 H	346	56.3	-6.0
4	#1855.60	46.1 AV	54.0	-7.9	1.30 H	346	52.1	-6.0
5	2783.40	46.0 PK	74.0	-28.0	2.26 H	25	48.7	-2.7
6	2783.40	38.7 AV	54.0	-15.3	2.26 H	25	41.4	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	121.2 QP			2.65 V	287	90.6	30.6
2	#928.00	90.0 QP	101.2	-11.2	2.65 V	287	59.4	30.6
3	#1855.60	52.5 PK	74.0	-21.5	2.55 V	270	58.5	-6.0
4	#1855.60	48.6 AV	54.0	-5.4	2.55 V	270	54.6	-6.0
5	2783.40	47.3 PK	74.0	-26.7	1.29 V	334	50.0	-2.7
6	2783.40	41.8 AV	54.0	-12.2	1.29 V	334	44.5	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

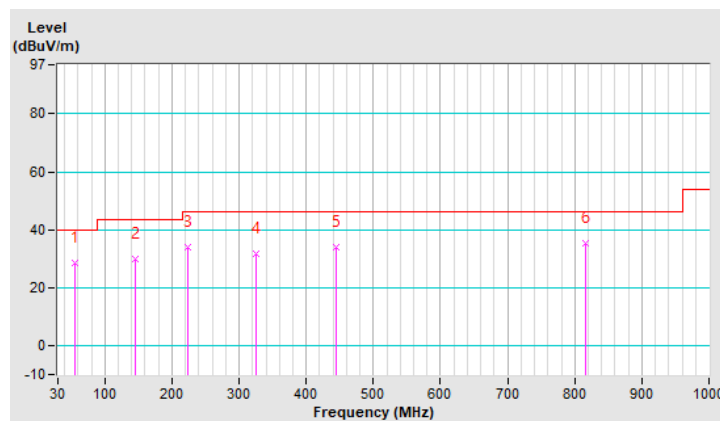
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	56.19	28.5 QP	40.0	-11.5	1.00 H	27	41.9	-13.4
2	144.46	30.1 QP	43.5	-13.4	1.25 H	2	43.3	-13.2
3	223.03	33.8 QP	46.0	-12.2	1.50 H	131	50.2	-16.4
4	325.85	31.9 QP	46.0	-14.1	1.00 H	44	43.6	-11.7
5	445.16	33.9 QP	46.0	-12.1	1.25 H	179	42.6	-8.7
6	816.67	35.2 QP	46.0	-10.8	1.00 H	263	37.7	-2.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

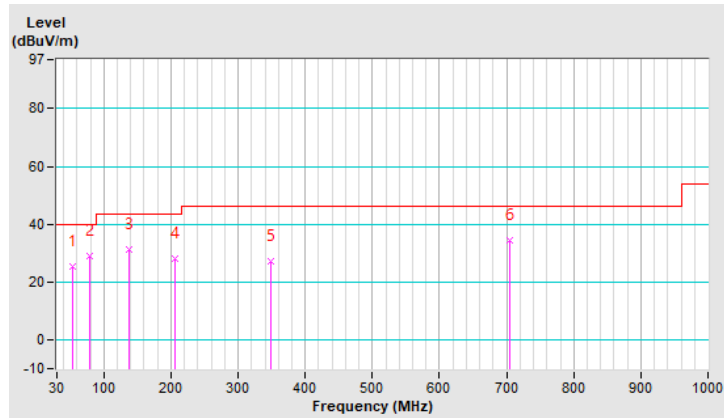


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	54.25	25.2 QP	40.0	-14.8	1.50 V	48	38.6	-13.4
2	78.50	28.9 QP	40.0	-11.1	1.00 V	243	46.5	-17.6
3	137.67	31.4 QP	43.5	-12.1	1.00 V	120	45.0	-13.6
4	206.54	28.2 QP	43.5	-15.3	1.00 V	189	44.6	-16.4
5	349.13	27.1 QP	46.0	-18.9	1.25 V	106	38.5	-11.4
6	705.12	34.4 QP	46.0	-11.6	1.00 V	256	38.3	-3.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

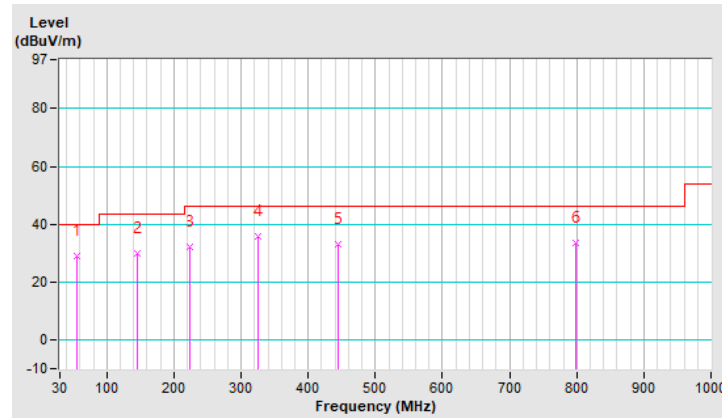


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	56.19	28.8 QP	40.0	-11.2	1.25 H	271	42.2	-13.4
2	144.46	30.0 QP	43.5	-13.5	1.00 H	17	43.2	-13.2
3	224.00	32.3 QP	46.0	-13.7	1.50 H	153	48.7	-16.4
4	325.85	35.7 QP	46.0	-10.3	1.25 H	66	47.4	-11.7
5	445.16	32.9 QP	46.0	-13.1	1.00 H	179	41.6	-8.7
6	799.21	33.7 QP	46.0	-12.3	1.50 H	306	36.5	-2.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

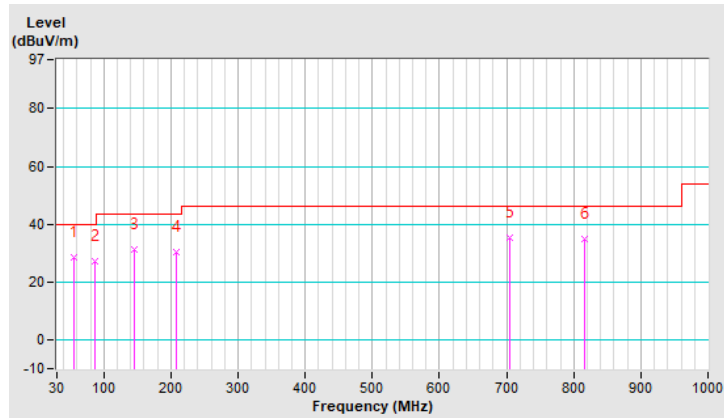


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	56.19	28.6 QP	40.0	-11.4	1.50 V	43	42.0	-13.4
2	86.26	27.1 QP	40.0	-12.9	1.00 V	190	46.0	-18.9
3	145.43	31.3 QP	43.5	-12.2	1.25 V	134	44.5	-13.2
4	207.51	30.5 QP	43.5	-13.0	1.25 V	208	46.9	-16.4
5	705.12	35.2 QP	46.0	-10.8	1.00 V	225	39.1	-3.9
6	816.67	35.0 QP	46.0	-11.0	1.50 V	25	37.5	-2.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

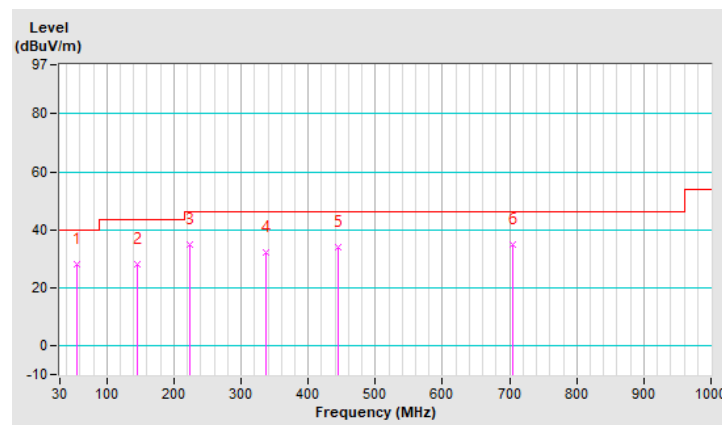


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	56.19	27.9 QP	40.0	-12.1	1.25 H	184	41.3	-13.4
2	145.43	28.3 QP	43.5	-15.2	1.00 H	2	41.5	-13.2
3	223.03	35.0 QP	46.0	-11.0	1.25 H	145	51.4	-16.4
4	337.49	32.3 QP	46.0	-13.7	1.50 H	70	43.6	-11.3
5	445.16	33.9 QP	46.0	-12.1	1.00 H	186	42.6	-8.7
6	704.15	34.7 QP	46.0	-11.3	1.25 H	142	38.6	-3.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

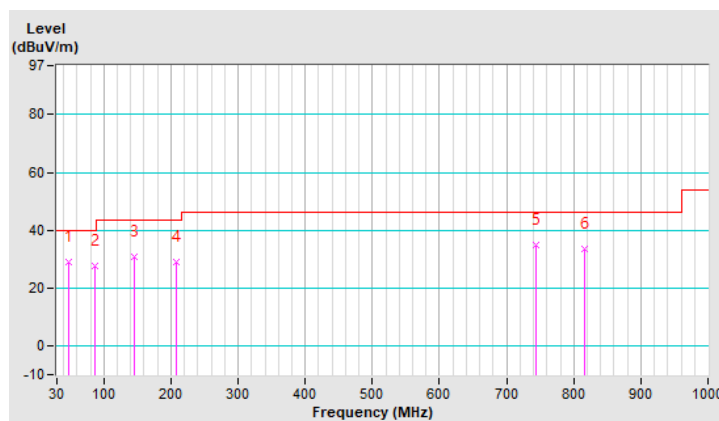


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.43	28.9 QP	40.0	-11.1	1.00 V	318	41.9	-13.0
2	86.26	27.7 QP	40.0	-12.3	1.25 V	184	46.6	-18.9
3	145.43	30.8 QP	43.5	-12.7	1.00 V	199	44.0	-13.2
4	207.51	29.2 QP	43.5	-14.3	1.50 V	193	45.6	-16.4
5	742.95	34.7 QP	46.0	-11.3	1.00 V	73	38.0	-3.3
6	816.67	33.3 QP	46.0	-12.7	1.25 V	342	35.8	-2.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



LoRa SF9BW125 FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR	Quasi-Peak (QP)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Peak (PK) Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	83.9 QP	96.1	-12.2	1.68 H	184	53.9	30.0
2	*902.20	116.1 QP			1.68 H	184	86.1	30.0
3	#1804.40	50.6 PK	74.0	-23.4	1.92 H	160	57.0	-6.4
4	#1804.40	46.9 AV	54.0	-7.1	1.92 H	160	53.3	-6.4
5	2706.60	45.9 PK	74.0	-28.1	1.70 H	13	49.0	-3.1
6	2706.60	39.4 AV	54.0	-14.6	1.70 H	13	42.5	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	84.3 QP	96.7	-12.4	1.12 V	206	54.3	30.0
2	*902.20	116.7 QP			1.12 V	206	86.7	30.0
3	#1804.40	52.1 PK	74.0	-21.9	2.20 V	226	58.5	-6.4
4	#1804.40	49.1 AV	54.0	-4.9	2.20 V	226	55.5	-6.4
5	2706.60	47.5 PK	74.0	-26.5	1.29 V	337	50.6	-3.1
6	2706.60	40.9 AV	54.0	-13.1	1.29 V	337	44.0	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	118.4 QP			1.54 H	181	88.1	30.3
2	#1830.00	50.0 PK	74.0	-24.0	2.13 H	166	56.3	-6.3
3	#1830.00	46.4 AV	54.0	-7.6	2.13 H	166	52.7	-6.3
4	2745.00	45.6 PK	74.0	-28.4	1.87 H	11	48.6	-3.0
5	2745.00	39.4 AV	54.0	-14.6	1.87 H	11	42.4	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	119.3 QP			1.14 V	205	89.0	30.3
2	#1830.00	52.3 PK	74.0	-21.7	2.33 V	253	58.6	-6.3
3	#1830.00	49.3 AV	54.0	-4.7	2.33 V	253	55.6	-6.3
4	2745.00	47.5 PK	74.0	-26.5	1.22 V	332	50.5	-3.0
5	2745.00	41.3 AV	54.0	-12.7	1.22 V	332	44.3	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	118.4 QP			1.57 H	181	87.8	30.6
2	#928.00	87.1 QP	98.4	-11.3	1.57 H	181	56.5	30.6
3	#1855.60	50.2 PK	74.0	-23.8	2.00 H	145	56.2	-6.0
4	#1855.60	46.6 AV	54.0	-7.4	2.00 H	145	52.6	-6.0
5	2783.40	45.5 PK	74.0	-28.5	1.77 H	20	48.2	-2.7
6	2783.40	39.0 AV	54.0	-15.0	1.77 H	20	41.7	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	120.8 QP			1.12 V	204	90.2	30.6
2	#928.00	88.5 QP	100.8	-12.3	1.12 V	204	57.9	30.6
3	#1855.60	51.8 PK	74.0	-22.2	2.39 V	250	57.8	-6.0
4	#1855.60	49.3 AV	54.0	-4.7	2.39 V	250	55.3	-6.0
5	2783.40	47.8 PK	74.0	-26.2	1.26 V	335	50.5	-2.7
6	2783.40	41.5 AV	54.0	-12.5	1.26 V	335	44.2	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

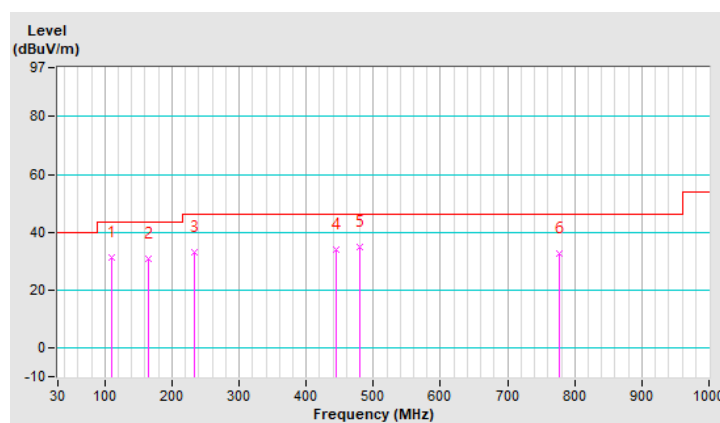
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	110.51	31.3 QP	43.5	-12.2	2.00 H	53	47.6	-16.3
2	165.80	30.7 QP	43.5	-12.8	1.49 H	136	44.0	-13.3
3	232.73	32.9 QP	46.0	-13.1	1.00 H	249	48.0	-15.1
4	445.16	33.8 QP	46.0	-12.2	1.49 H	254	42.5	-8.7
5	480.08	34.9 QP	46.0	-11.1	1.49 H	195	43.0	-8.1
6	777.87	32.6 QP	46.0	-13.4	1.49 H	93	35.5	-2.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

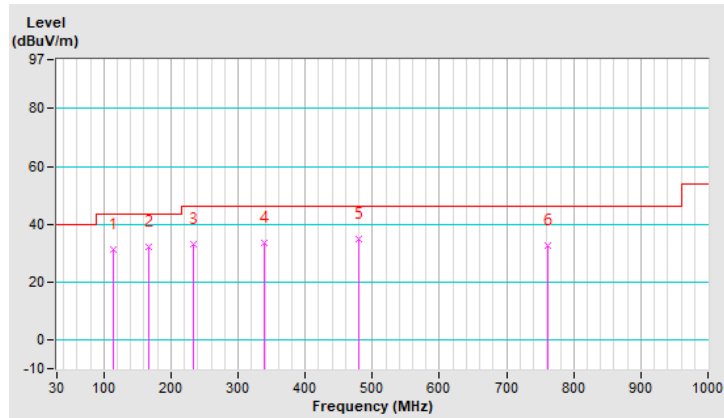


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	113.42	31.1 QP	43.5	-12.4	1.50 V	51	47.1	-16.0
2	166.77	32.2 QP	43.5	-11.3	1.50 V	121	45.6	-13.4
3	232.73	33.2 QP	46.0	-12.8	1.01 V	257	48.3	-15.1
4	338.46	33.3 QP	46.0	-12.7	1.01 V	151	44.6	-11.3
5	480.08	34.9 QP	46.0	-11.1	1.50 V	197	43.0	-8.1
6	762.35	32.6 QP	46.0	-13.4	1.50 V	322	35.6	-3.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

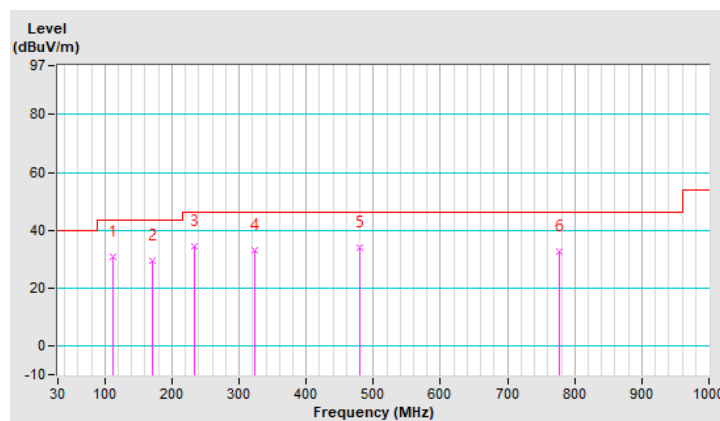


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	111.48	30.9 QP	43.5	-12.6	1.50 H	37	47.1	-16.2
2	170.65	29.5 QP	43.5	-14.0	1.50 H	272	43.0	-13.5
3	233.70	34.5 QP	46.0	-11.5	1.01 H	189	49.5	-15.0
4	322.94	33.2 QP	46.0	-12.8	1.01 H	276	45.0	-11.8
5	480.08	34.2 QP	46.0	-11.8	2.00 H	190	42.3	-8.1
6	777.87	32.4 QP	46.0	-13.6	1.50 H	297	35.3	-2.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

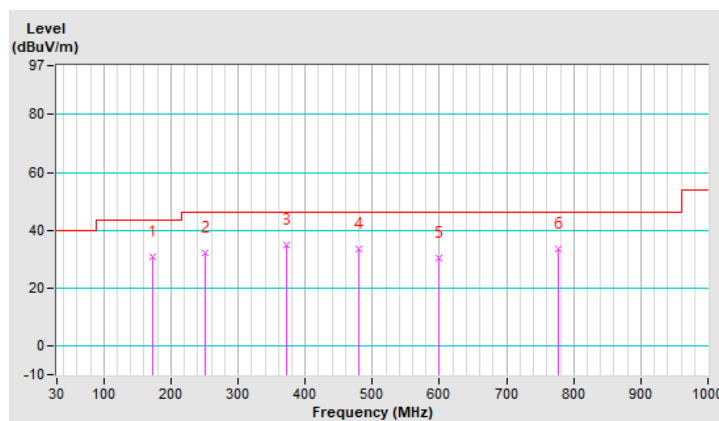


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	172.59	30.6 QP	43.5	-12.9	2.00 V	241	44.4	-13.8
2	251.16	32.3 QP	46.0	-13.7	1.00 V	133	46.5	-14.2
3	371.44	35.0 QP	46.0	-11.0	1.00 V	207	45.6	-10.6
4	480.08	33.4 QP	46.0	-12.6	1.49 V	222	41.5	-8.1
5	598.42	30.3 QP	46.0	-15.7	1.00 V	273	35.6	-5.3
6	777.87	33.6 QP	46.0	-12.4	1.49 V	229	36.5	-2.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

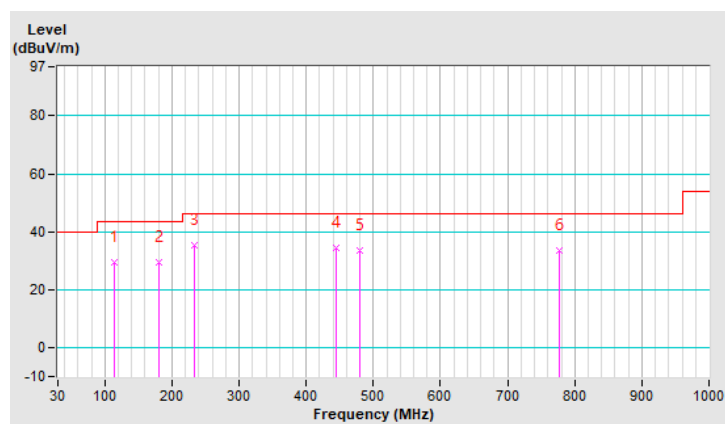


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	114.39	29.6 QP	43.5	-13.9	2.00 H	42	45.5	-15.9
2	181.32	29.6 QP	43.5	-13.9	1.49 H	248	44.3	-14.7
3	233.70	35.2 QP	46.0	-10.8	1.00 H	266	50.2	-15.0
4	445.16	34.3 QP	46.0	-11.7	1.00 H	271	43.0	-8.7
5	480.08	33.7 QP	46.0	-12.3	1.49 H	206	41.8	-8.1
6	777.87	33.4 QP	46.0	-12.6	1.00 H	133	36.3	-2.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

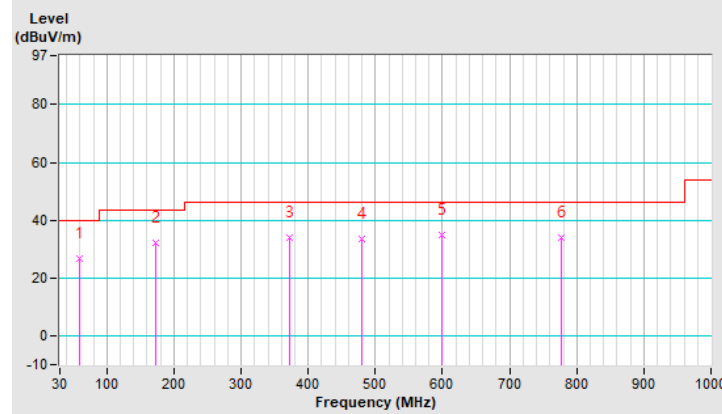


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.10	26.5 QP	40.0	-13.5	1.01 V	320	40.0	-13.5
2	173.56	32.3 QP	43.5	-11.2	1.01 V	331	46.1	-13.8
3	371.44	34.0 QP	46.0	-12.0	2.00 V	224	44.6	-10.6
4	480.08	33.4 QP	46.0	-12.6	1.01 V	175	41.5	-8.1
5	599.39	34.7 QP	46.0	-11.3	1.01 V	2	40.0	-5.3
6	777.87	34.2 QP	46.0	-11.8	1.49 V	67	37.1	-2.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



FSK 50kbps FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	79.8 QP	98.6	-18.8	1.45 H	183	49.8	30.0
2	*902.20	118.6 QP			1.46 H	181	88.6	30.0
3	#1804.40	50.8 PK	74.0	-23.2	1.63 H	355	57.2	-6.4
4	#1804.40	41.1 AV	54.0	-12.9	1.63 H	355	47.5	-6.4
5	2706.60	46.4 PK	74.0	-27.6	1.30 H	8	49.5	-3.1
6	2706.60	36.7 AV	54.0	-17.3	1.30 H	8	39.8	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	80.6 QP	99.5	-18.9	1.27 V	253	50.6	30.0
2	*902.20	119.5 QP			1.27 V	253	89.5	30.0
3	#1804.40	52.5 PK	74.0	-21.5	1.93 V	327	58.9	-6.4
4	#1804.40	42.8 AV	54.0	-11.2	1.93 V	327	49.2	-6.4
5	2706.00	48.0 PK	74.0	-26.0	1.93 V	327	51.1	-3.1
6	2706.00	38.3 AV	54.0	-15.7	1.93 V	327	41.4	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	119.8 QP			1.48 H	183	89.5	30.3
2	#1830.00	50.7 PK	74.0	-23.3	1.53 H	358	57.0	-6.3
3	#1830.00	41.0 AV	54.0	-13.0	1.53 H	358	47.3	-6.3
4	2745.00	45.9 PK	74.0	-28.1	1.33 H	12	48.9	-3.0
5	2745.00	36.2 AV	54.0	-17.8	1.33 H	12	39.2	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	121.9 QP			1.19 V	240	91.6	30.3
2	#1830.00	52.3 PK	74.0	-21.7	1.94 V	322	58.6	-6.3
3	#1830.00	42.6 AV	54.0	-11.4	1.94 V	322	48.9	-6.3
4	2745.00	47.7 PK	74.0	-26.3	1.05 V	285	50.7	-3.0
5	2745.00	38.0 AV	54.0	-16.0	1.05 V	285	41.0	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	121.1 QP			1.43 H	188	90.5	30.6
2	#928.00	82.9 QP	101.1	-18.2	1.43 H	188	52.3	30.6
3	#1855.60	50.5 PK	74.0	-23.5	1.63 H	344	56.5	-6.0
4	#1855.60	40.8 AV	54.0	-13.2	1.63 H	344	46.8	-6.0
5	2783.40	46.3 PK	74.0	-27.7	1.35 H	159	49.0	-2.7
6	2783.40	36.6 AV	54.0	-17.4	1.35 H	159	39.3	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	123.4 QP			1.18 V	236	92.8	30.6
2	#928.00	84.9 QP	103.4	-18.5	1.18 V	236	54.3	30.6
3	#1855.60	52.6 PK	74.0	-21.4	2.06 V	323	58.6	-6.0
4	#1855.60	42.9 AV	54.0	-11.1	2.06 V	323	48.9	-6.0
5	2783.40	48.4 PK	74.0	-25.6	1.40 V	85	51.1	-2.7
6	2783.40	38.7 AV	54.0	-15.3	1.40 V	85	41.4	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

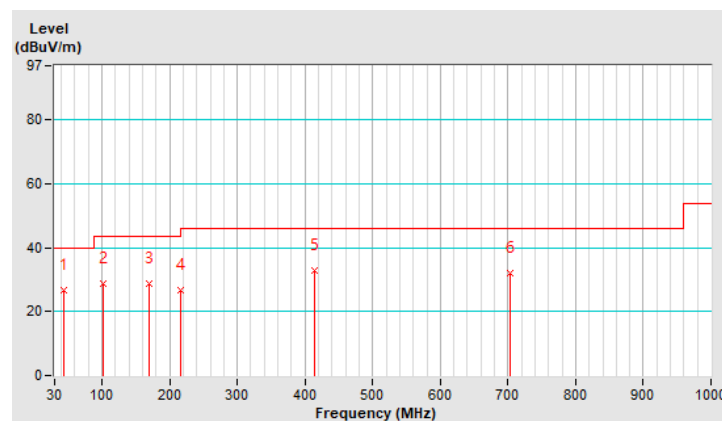
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.34	26.8 QP	40.0	-13.2	1.02 H	123	40.1	-13.3
2	101.15	28.8 QP	43.5	-14.7	1.86 H	70	46.2	-17.4
3	169.63	28.7 QP	43.5	-14.8	1.68 H	324	42.2	-13.5
4	215.65	26.9 QP	43.5	-16.6	1.55 H	204	43.2	-16.3
5	413.26	33.0 QP	46.0	-13.0	1.86 H	255	42.8	-9.8
6	703.05	32.2 QP	46.0	-13.8	1.00 H	154	36.1	-3.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

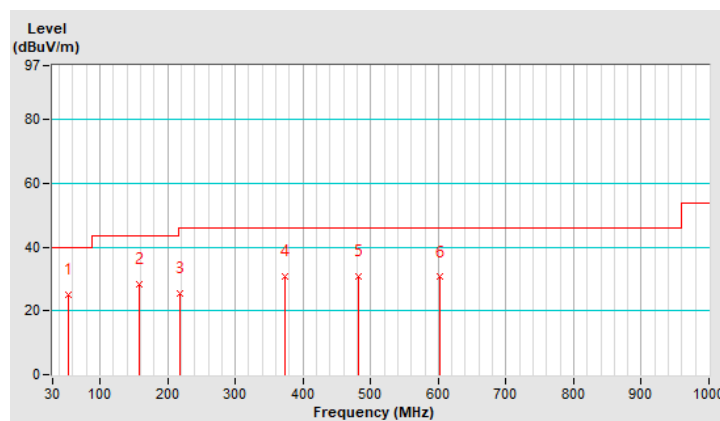


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.68	25.1 QP	40.0	-14.9	1.05 V	241	38.4	-13.3
2	158.26	28.4 QP	43.5	-15.1	1.06 V	302	41.4	-13.0
3	219.00	25.4 QP	46.0	-20.6	1.78 V	15	41.8	-16.4
4	373.05	30.8 QP	46.0	-15.2	1.56 V	48	41.4	-10.6
5	482.63	30.9 QP	46.0	-15.1	1.39 V	166	39.0	-8.1
6	602.99	30.6 QP	46.0	-15.4	1.24 V	119	36.0	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

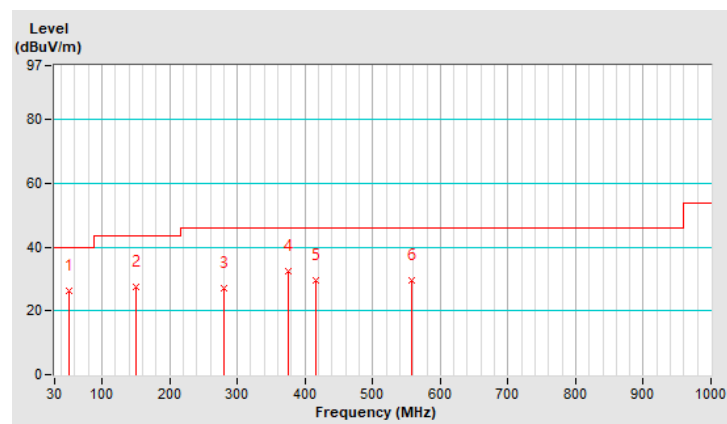


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.29	26.5 QP	40.0	-13.5	1.02 H	48	39.7	-13.2
2	149.56	27.6 QP	43.5	-15.9	1.56 H	217	40.7	-13.1
3	279.68	27.3 QP	46.0	-18.7	1.01 H	121	40.1	-12.8
4	375.96	32.6 QP	46.0	-13.4	1.22 H	154	43.1	-10.5
5	416.68	29.4 QP	46.0	-16.6	1.68 H	305	39.1	-9.7
6	558.12	29.7 QP	46.0	-16.3	1.74 H	21	36.5	-6.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

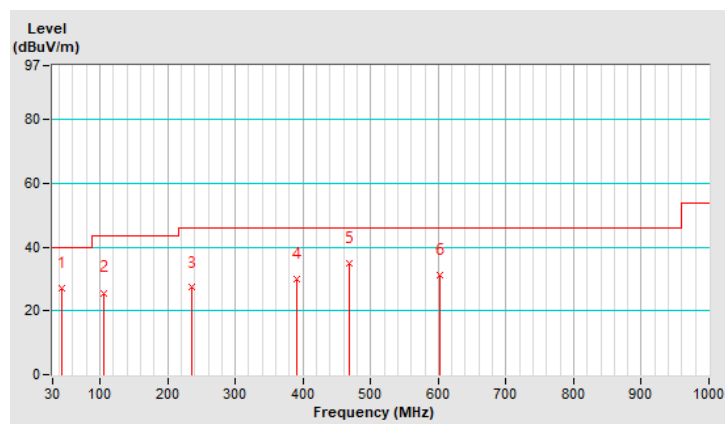


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.22	27.3 QP	40.0	-12.7	1.02 V	14	40.6	-13.3
2	106.35	25.7 QP	43.5	-17.8	1.55 V	217	42.4	-16.7
3	235.19	27.3 QP	46.0	-18.7	1.66 V	305	42.2	-14.9
4	391.56	29.9 QP	46.0	-16.1	1.00 V	25	40.1	-10.2
5	468.32	34.8 QP	46.0	-11.2	1.57 V	158	43.0	-8.2
6	603.25	31.2 QP	46.0	-14.8	1.00 V	207	36.6	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

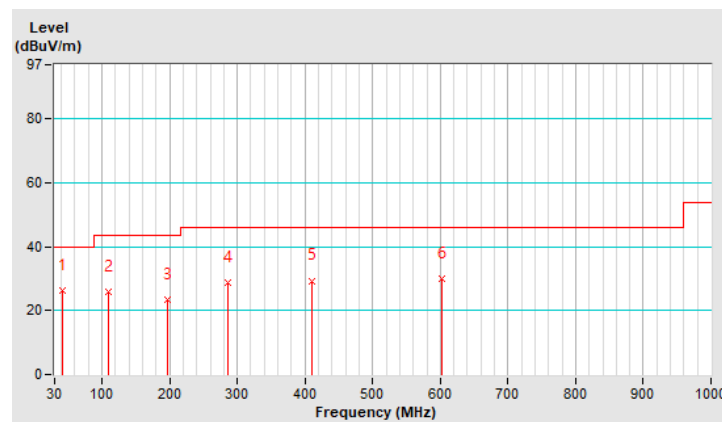


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	42.35	26.3 QP	40.0	-13.7	1.21 H	104	39.7	-13.4
2	109.35	25.9 QP	43.5	-17.6	1.23 H	218	42.2	-16.3
3	196.23	23.4 QP	43.5	-20.1	1.00 H	145	39.7	-16.3
4	286.34	28.9 QP	46.0	-17.1	1.00 H	230	41.6	-12.7
5	410.68	29.4 QP	46.0	-16.6	1.22 H	151	39.3	-9.9
6	602.31	29.8 QP	46.0	-16.2	1.00 H	254	35.2	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

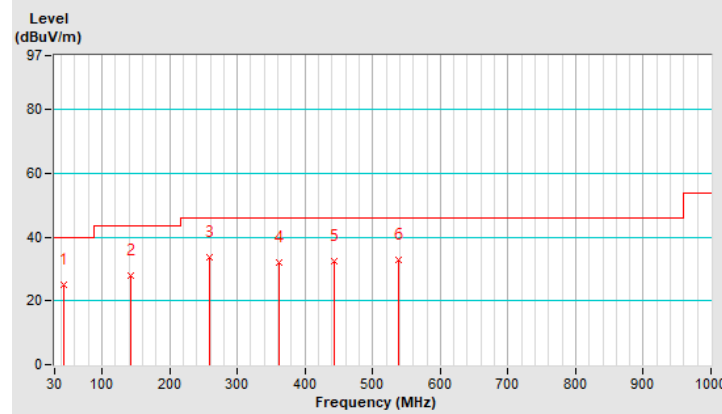


CHANNEL	TX Channel 129	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	44.32	25.1 QP	40.0	-14.9	1.27 V	128	38.4	-13.3
2	143.26	28.1 QP	43.5	-15.4	1.39 V	227	41.4	-13.3
3	258.40	33.6 QP	46.0	-12.4	1.22 V	135	47.6	-14.0
4	361.34	32.1 QP	46.0	-13.9	1.52 V	166	43.2	-11.1
5	443.26	32.4 QP	46.0	-13.6	1.05 V	89	41.2	-8.8
6	538.26	32.9 QP	46.0	-13.1	1.22 V	104	40.0	-7.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



FSK 150kbps FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	66.9 QP	98.3	-31.4	1.48 H	181	36.9	30.0
2	*902.40	118.3 QP			1.48 H	181	88.3	30.0
3	#1804.80	50.6 PK	74.0	-23.4	1.59 H	3	57.0	-6.4
4	#1804.80	42.8 AV	54.0	-11.2	1.59 H	3	49.2	-6.4
5	2707.20	46.3 PK	74.0	-27.7	1.60 H	1	49.4	-3.1
6	2707.20	38.5 AV	54.0	-15.5	1.60 H	1	41.6	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	70.1 QP	99.7	-29.6	1.23 V	251	40.1	30.0
2	*902.40	119.7 QP			1.23 V	251	89.7	30.0
3	#1804.80	52.5 PK	74.0	-21.5	1.93 V	329	58.9	-6.4
4	#1804.80	44.7 AV	54.0	-9.3	1.93 V	329	51.1	-6.4
5	2707.20	48.1 PK	74.0	-25.9	1.79 V	280	51.2	-3.1
6	2707.20	40.3 AV	54.0	-13.7	1.79 V	280	43.4	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(40.5ms / 100ms) = -7.8dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 33	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.20	119.4 QP			1.29 H	190	89.1	30.3
2	#1830.40	50.6 PK	74.0	-23.4	1.63 H	351	56.9	-6.3
3	#1830.40	42.8 AV	54.0	-11.2	1.63 H	351	49.1	-6.3
4	2745.60	46.1 PK	74.0	-27.9	1.28 H	23	49.1	-3.0
5	2745.60	38.3 AV	54.0	-15.7	1.28 H	23	41.3	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.20	120.4 QP			1.18 V	241	90.1	30.3
2	#1830.40	52.3 PK	74.0	-21.7	1.99 V	321	58.6	-6.3
3	#1830.40	44.5 AV	54.0	-9.5	1.99 V	321	50.8	-6.3
4	2745.60	47.9 PK	74.0	-26.1	1.73 V	292	50.9	-3.0
5	2745.60	40.1 AV	54.0	-13.9	1.73 V	292	43.1	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20
log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(40.5ms / 100ms) = -7.8dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	121.3 QP			1.44 H	184	90.7	30.6
2	#928.00	91.6 QP	101.3	-9.7	1.44 H	184	61.0	30.6
3	#1855.60	50.7 PK	74.0	-23.3	1.54 H	333	56.7	-6.0
4	#1855.60	42.9 AV	54.0	-11.1	1.54 H	333	48.9	-6.0
5	2783.40	46.3 PK	74.0	-27.7	1.27 H	160	49.0	-2.7
6	2783.40	38.5 AV	54.0	-15.5	1.27 H	160	41.2	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.80	122.7 QP			1.16 V	233	92.1	30.6
2	#928.00	93.3 QP	102.7	-9.4	1.16 V	241	62.7	30.6
3	#1855.60	52.4 PK	74.0	-21.6	1.90 V	327	58.4	-6.0
4	#1855.60	44.6 AV	54.0	-9.4	1.90 V	327	50.6	-6.0
5	2783.40	47.9 PK	74.0	-26.1	1.42 V	90	50.6	-2.7
6	2783.40	40.1 AV	54.0	-13.9	1.42 V	90	42.8	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(40.5ms / 100ms) = -7.8dB. (Please see item 3.3 for plotted duty)

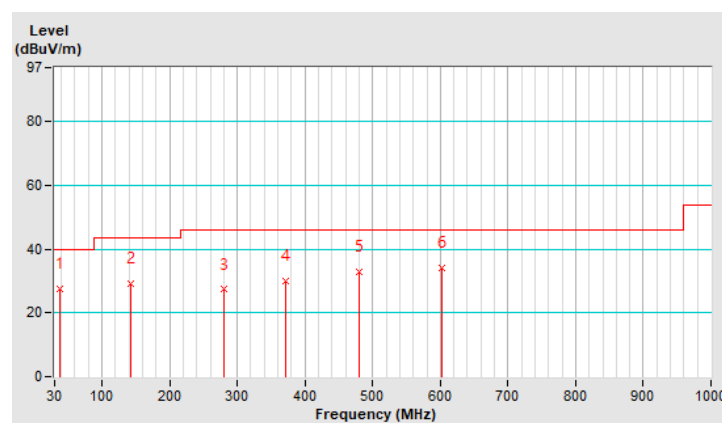
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	38.44	27.5 QP	40.0	-12.5	1.53 H	36	41.2	-13.7
2	143.29	29.3 QP	43.5	-14.2	1.02 H	155	42.6	-13.3
3	280.69	27.3 QP	46.0	-18.7	1.96 H	324	40.1	-12.8
4	370.69	30.1 QP	46.0	-15.9	1.64 H	218	40.8	-10.7
5	480.69	32.8 QP	46.0	-13.2	1.65 H	217	40.9	-8.1
6	603.27	34.3 QP	46.0	-11.7	2.11 H	100	39.7	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

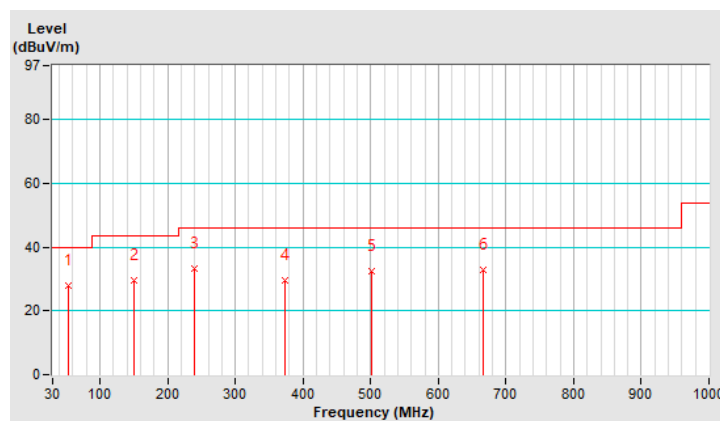


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	52.44	27.9 QP	40.0	-12.1	1.82 V	217	41.2	-13.3
2	149.37	29.4 QP	43.5	-14.1	1.01 V	122	42.5	-13.1
3	239.59	33.1 QP	46.0	-12.9	1.21 V	147	47.7	-14.6
4	373.69	29.4 QP	46.0	-16.6	1.66 V	218	40.0	-10.6
5	501.78	32.6 QP	46.0	-13.4	1.96 V	241	40.4	-7.8
6	666.89	32.9 QP	46.0	-13.1	1.00 V	13	37.4	-4.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

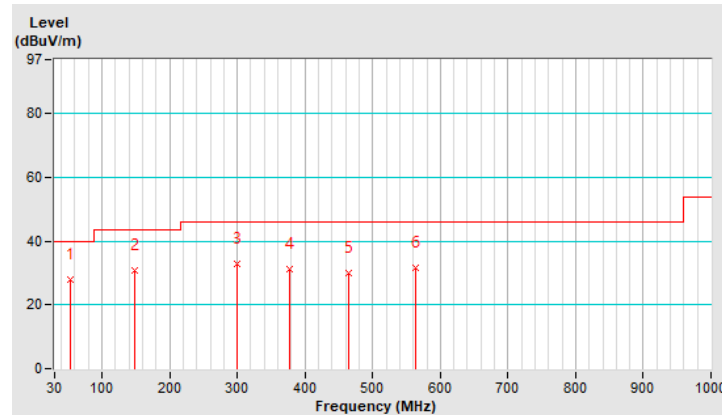


CHANNEL	TX Channel 33	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.26	27.9 QP	40.0	-12.1	1.78 H	224	41.2	-13.3
2	148.32	30.9 QP	43.5	-12.6	1.02 H	167	44.1	-13.2
3	299.06	32.8 QP	46.0	-13.2	1.50 H	18	45.3	-12.5
4	377.96	31.3 QP	46.0	-14.7	1.38 H	247	41.8	-10.5
5	464.39	29.9 QP	46.0	-16.1	1.52 H	147	38.3	-8.4
6	564.23	31.6 QP	46.0	-14.4	1.04 H	151	38.3	-6.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

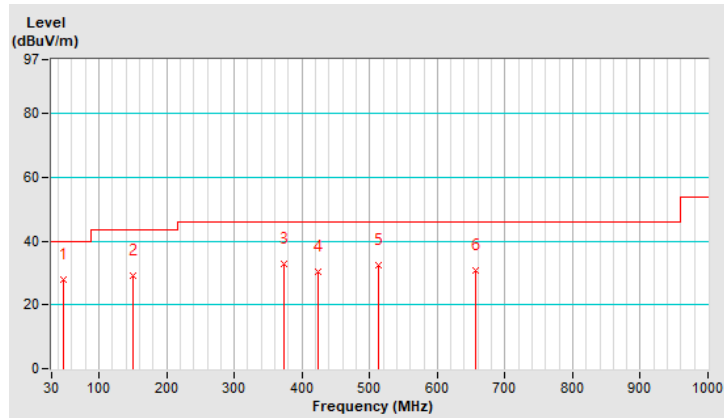


CHANNEL	TX Channel 33	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.23	28.0 QP	40.0	-12.0	1.05 V	244	41.0	-13.0
2	149.37	29.3 QP	43.5	-14.2	1.66 V	27	42.4	-13.1
3	373.86	32.8 QP	46.0	-13.2	1.01 V	199	43.4	-10.6
4	423.48	30.6 QP	46.0	-15.4	1.02 V	169	40.1	-9.5
5	513.78	32.5 QP	46.0	-13.5	1.55 V	208	40.0	-7.5
6	656.30	30.9 QP	46.0	-15.1	1.04 V	15	35.6	-4.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

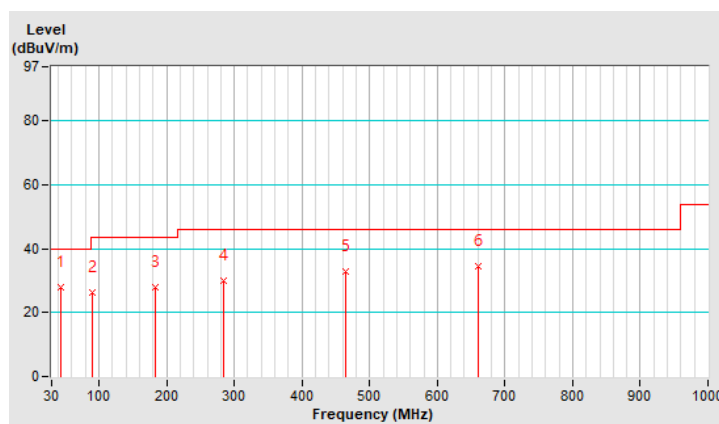


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	42.76	28.1 QP	40.0	-11.9	1.05 H	168	41.4	-13.3
2	90.63	26.2 QP	43.5	-17.3	1.00 H	147	45.1	-18.9
3	183.96	28.1 QP	43.5	-15.4	1.00 H	157	43.1	-15.0
4	284.78	30.0 QP	46.0	-16.0	1.78 H	306	42.7	-12.7
5	464.52	32.8 QP	46.0	-13.2	1.05 H	247	41.2	-8.4
6	661.03	34.4 QP	46.0	-11.6	1.55 H	217	39.0	-4.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

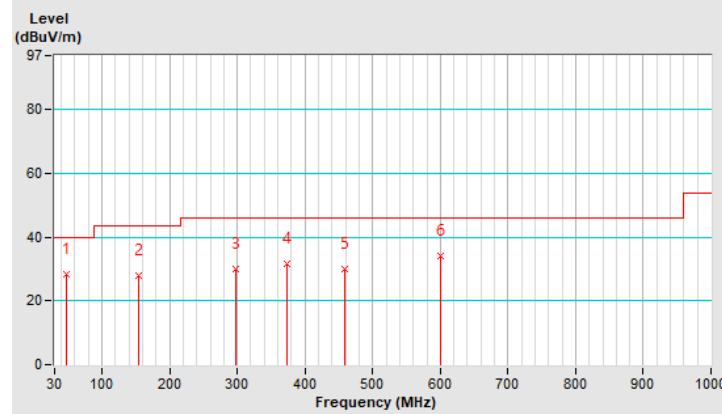


CHANNEL	TX Channel 65	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.23	28.4 QP	40.0	-11.6	1.00 V	266	41.5	-13.1
2	153.34	28.1 QP	43.5	-15.4	1.21 V	168	41.1	-13.0
3	297.63	30.0 QP	46.0	-16.0	2.31 V	155	42.5	-12.5
4	373.65	31.5 QP	46.0	-14.5	1.55 V	24	42.1	-10.6
5	458.53	30.0 QP	46.0	-16.0	1.00 V	111	38.4	-8.4
6	601.13	34.3 QP	46.0	-11.7	1.22 V	313	39.7	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



FSK 250kbps FHSS

Above 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	65.9 QP	98.3	-32.4	1.38 H	190	35.9	30.0
2	*902.50	118.3 QP			1.38 H	190	88.3	30.0
3	#1805.00	53.2 PK	74.0	-20.8	1.57 H	358	59.6	-6.4
4	#1805.00	43.5 AV	54.0	-10.5	1.57 H	358	49.9	-6.4
5	2707.50	46.1 PK	74.0	-27.9	1.54 H	1	49.2	-3.1
6	2707.50	36.4 AV	54.0	-17.6	1.54 H	1	39.5	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#902.00	67.6 QP	99.9	-32.3	1.22 V	249	37.6	30.0
2	*902.50	119.9 QP			1.22 V	249	89.9	30.0
3	#1805.00	52.5 PK	74.0	-21.5	1.92 V	332	58.9	-6.4
4	#1805.00	42.8 AV	54.0	-11.2	1.92 V	332	49.2	-6.4
5	2707.50	47.9 PK	74.0	-26.1	1.75 V	281	51.0	-3.1
6	2707.50	38.2 AV	54.0	-15.8	1.75 V	281	41.3	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 26	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	121.2 QP			1.34 H	186	90.9	30.3
2	#1830.00	50.8 PK	74.0	-23.2	1.64 H	356	57.1	-6.3
3	#1830.00	41.1 AV	54.0	-12.9	1.64 H	356	47.4	-6.3
4	2745.00	46.3 PK	74.0	-27.7	1.16 H	1	49.3	-3.0
5	2745.00	36.6 AV	54.0	-17.4	1.16 H	1	39.6	-3.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*915.00	122.5 QP			1.19 V	245	92.2	30.3
2	#1830.00	52.4 PK	74.0	-21.6	1.99 V	320	58.7	-6.3
3	#1830.00	42.7 AV	54.0	-11.3	1.99 V	320	49.0	-6.3
4	2745.00	47.8 PK	74.0	-26.2	1.78 V	290	50.8	-3.0
5	2745.00	38.1 AV	54.0	-15.9	1.78 V	290	41.1	-3.0

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20
log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

CHANNEL	TX Channel 51	DETECTOR FUNCTION	Quasi-Peak (QP) Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.50	121.8 QP			1.41 H	188	91.2	30.6
2	#928.00	70.9 QP	101.8	-30.9	1.41 H	188	40.3	30.6
3	#1855.60	50.7 PK	74.0	-23.3	1.54 H	345	56.7	-6.0
4	#1855.60	41.0 AV	54.0	-13.0	1.54 H	345	47.0	-6.0
5	2782.50	46.2 PK	74.0	-27.8	1.11 H	159	48.9	-2.7
6	2782.50	36.5 AV	54.0	-17.5	1.11 H	159	39.2	-2.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*927.50	123.8 QP			1.19 V	244	93.2	30.6
2	#928.00	73.1 QP	103.8	-30.7	1.19 V	244	42.5	30.6
3	#1855.60	52.7 PK	74.0	-21.3	1.92 V	312	58.7	-6.0
4	#1855.60	43.0 AV	54.0	-11.0	1.92 V	312	49.0	-6.0
5	2782.50	47.9 PK	74.0	-26.1	1.31 V	85	50.6	-2.7
6	2782.50	38.2 AV	54.0	-15.8	1.31 V	85	40.9	-2.7

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.
7. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
20 log(Duty cycle) = 20 log(32.4ms / 100ms) = -9.7dB. (Please see item 3.3 for plotted duty)

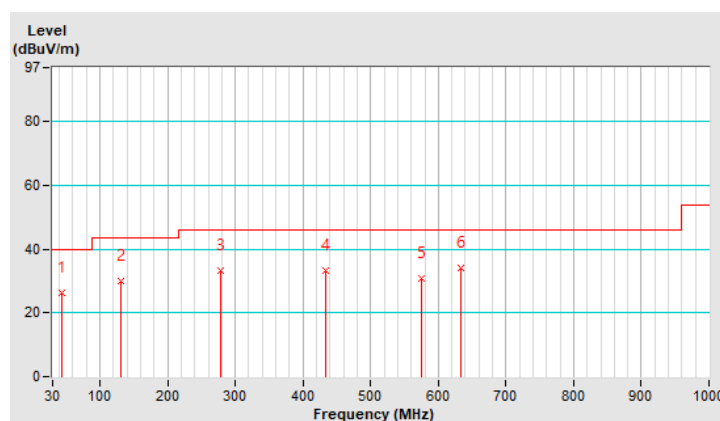
Below 1GHz data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.24	26.1 QP	40.0	-13.9	1.02 H	296	39.4	-13.3
2	131.42	30.2 QP	43.5	-13.3	1.22 H	89	44.4	-14.2
3	278.41	33.3 QP	46.0	-12.7	1.00 H	29	46.2	-12.9
4	432.69	33.4 QP	46.0	-12.6	1.52 H	122	42.5	-9.1
5	574.69	31.0 QP	46.0	-15.0	1.24 H	104	37.3	-6.3
6	632.52	34.3 QP	46.0	-11.7	1.00 H	191	39.2	-4.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

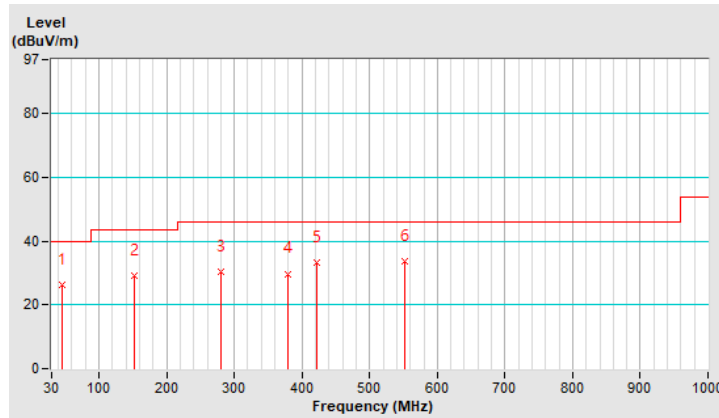


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	45.24	26.4 QP	40.0	-13.6	1.68 V	3	39.6	-13.2
2	152.41	29.0 QP	43.5	-14.5	1.14 V	133	42.0	-13.0
3	279.34	30.3 QP	46.0	-15.7	1.22 V	47	43.1	-12.8
4	378.23	29.8 QP	46.0	-16.2	1.06 V	14	40.3	-10.5
5	422.39	33.1 QP	46.0	-12.9	1.05 V	107	42.6	-9.5
6	552.09	33.5 QP	46.0	-12.5	1.66 V	309	40.5	-7.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

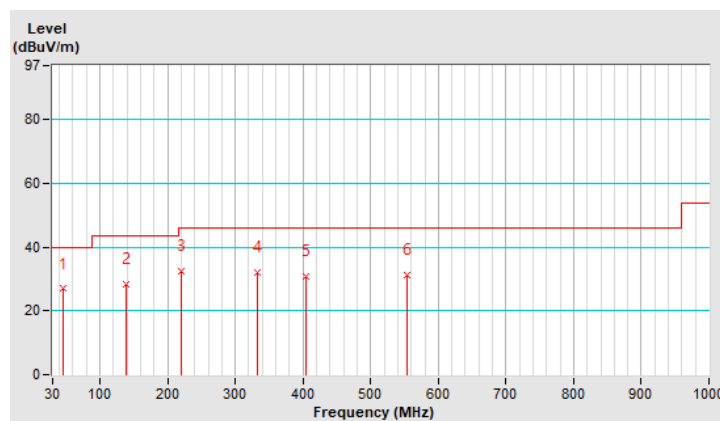


CHANNEL	TX Channel 26	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	46.25	26.9 QP	40.0	-13.1	1.59 H	166	40.0	-13.1
2	138.26	28.5 QP	43.5	-15.0	1.05 H	18	42.1	-13.6
3	219.63	32.6 QP	46.0	-13.4	1.01 H	93	49.0	-16.4
4	332.41	32.0 QP	46.0	-14.0	1.27 H	234	43.5	-11.5
5	404.33	30.7 QP	46.0	-15.3	1.13 H	108	40.7	-10.0
6	554.28	31.2 QP	46.0	-14.8	1.52 H	342	38.1	-6.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

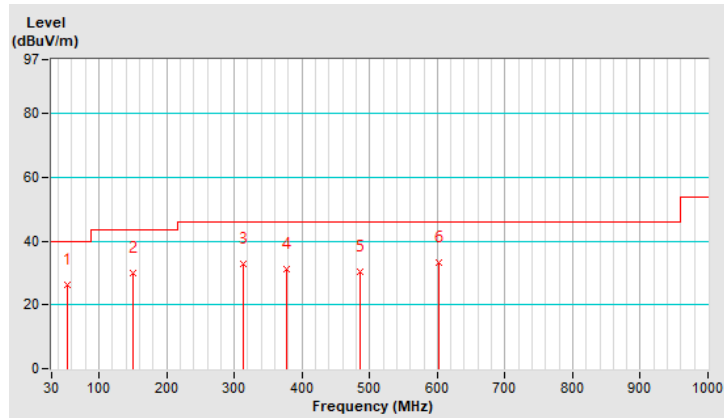


CHANNEL	TX Channel 26	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.24	26.2 QP	40.0	-13.8	1.68 V	127	39.5	-13.3
2	149.50	30.1 QP	43.5	-13.4	1.02 V	114	43.2	-13.1
3	313.62	32.9 QP	46.0	-13.1	1.24 V	139	45.0	-12.1
4	377.88	31.2 QP	46.0	-14.8	1.69 V	69	41.7	-10.5
5	484.96	30.4 QP	46.0	-15.6	1.02 V	158	38.5	-8.1
6	602.25	33.2 QP	46.0	-12.8	1.55 V	224	38.6	-5.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

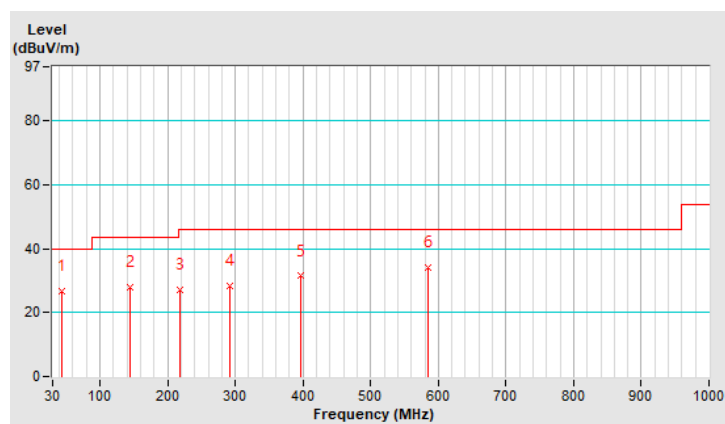


CHANNEL	TX Channel 51	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.56	26.7 QP	40.0	-13.3	1.52 H	212	40.0	-13.3
2	144.26	28.0 QP	43.5	-15.5	1.01 H	85	41.2	-13.2
3	218.52	27.2 QP	46.0	-18.8	1.55 H	246	43.6	-16.4
4	291.63	28.4 QP	46.0	-17.6	1.28 H	164	41.0	-12.6
5	396.05	31.4 QP	46.0	-14.6	1.00 H	30	41.5	-10.1
6	584.43	34.2 QP	46.0	-11.8	1.00 H	144	40.0	-5.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

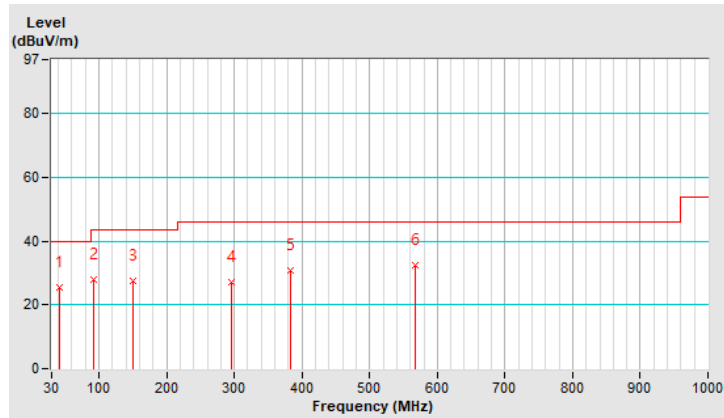


CHANNEL	TX Channel 51	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	42.16	25.6 QP	40.0	-14.4	1.25 V	147	39.0	-13.4
2	91.88	27.9 QP	43.5	-15.6	1.21 V	44	46.6	-18.7
3	149.68	27.7 QP	43.5	-15.8	1.76 V	355	40.8	-13.1
4	296.48	27.2 QP	46.0	-18.8	1.28 V	55	39.7	-12.5
5	383.52	30.9 QP	46.0	-15.1	1.22 V	316	41.2	-10.3
6	568.14	32.4 QP	46.0	-13.6	1.25 V	294	39.0	-6.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Test Date: Aug. 23, 2021

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 04, 2020	Dec. 03, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Jan. 16, 2021	Jan. 15, 2022
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 25, 2021	Feb. 24, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 28, 2020	Aug. 27, 2021
Software ADT	BV ADT_Conc_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1 (Conduction 1).
 3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

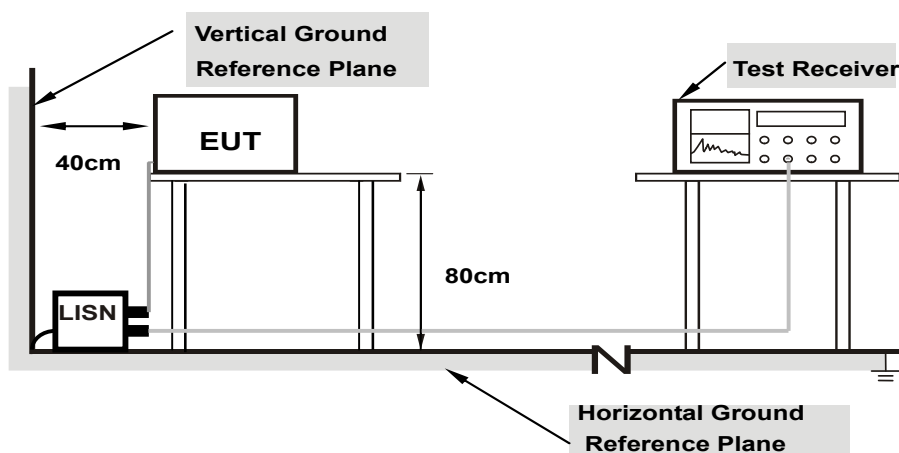
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation From Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Condition

Same as item 4.1.6.

4.2.7 Test Results

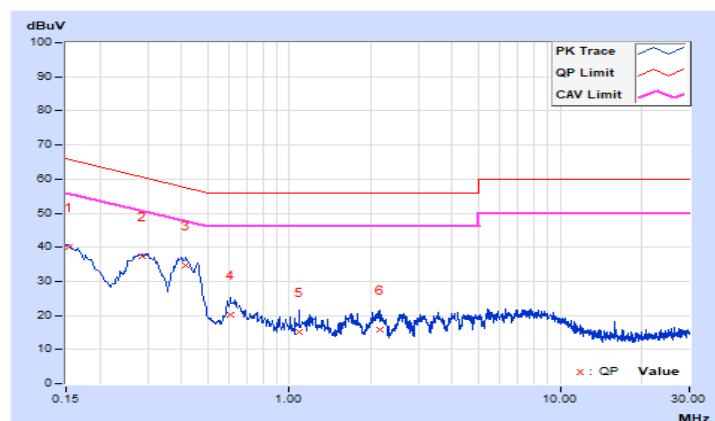
LoRa SF9BW125 FHSS

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 129		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.76	30.44	24.88	40.20	34.64	65.78	55.78	-25.58	-21.14
2	0.28527	9.80	27.49	22.21	37.29	32.01	60.66	50.66	-23.37	-18.65
3	0.41400	9.83	24.74	20.94	34.57	30.77	57.57	47.57	-23.00	-16.80
4	0.60600	9.86	10.18	6.75	20.04	16.61	56.00	46.00	-35.96	-29.39
5	1.08600	9.91	5.13	0.45	15.04	10.36	56.00	46.00	-40.96	-35.64
6	2.15771	9.94	5.95	1.60	15.89	11.54	56.00	46.00	-40.11	-34.46

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

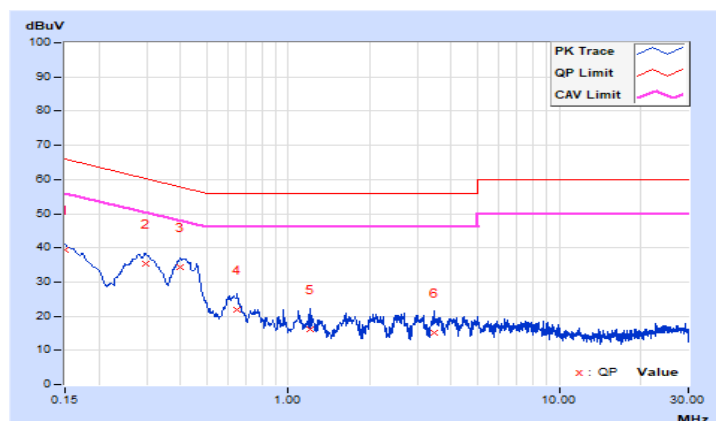


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 129		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.80	29.61	25.28	39.41	35.08	66.00	56.00	-26.59	-20.92
2	0.29677	9.86	25.54	21.75	35.40	31.61	60.33	50.33	-24.93	-18.72
3	0.39800	9.90	24.36	20.66	34.26	30.56	57.90	47.90	-23.64	-17.34
4	0.65000	9.93	11.91	8.44	21.84	18.37	56.00	46.00	-34.16	-27.63
5	1.20200	9.97	6.17	1.97	16.14	11.94	56.00	46.00	-39.86	-34.06
6	3.46200	10.03	5.07	0.70	15.10	10.73	56.00	46.00	-40.90	-35.27

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

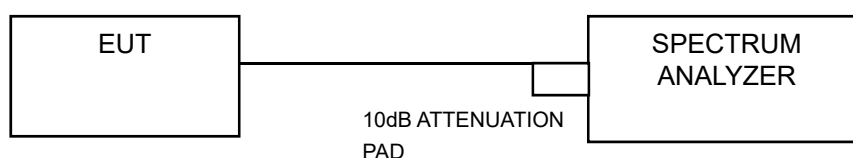


4.3 Number of Hopping Frequency Used

4.3.1 Limits of Hopping Frequency Used Measurement

At least 50 channels frequencies, and should be equally spaced.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- Set the SA on View mode and then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

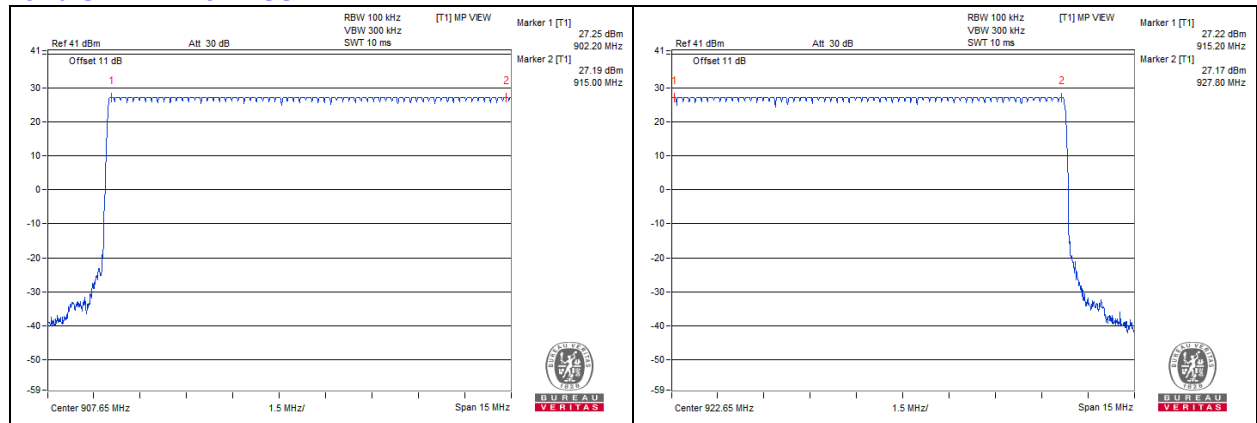
4.3.5 Deviation from Test Standard

No deviation.

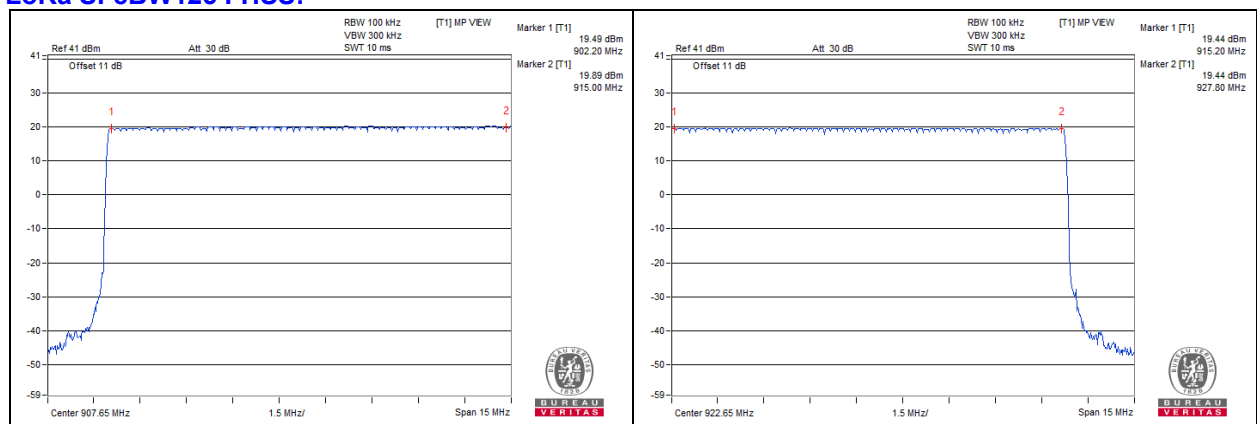
4.3.6 Test Results

There are 129 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

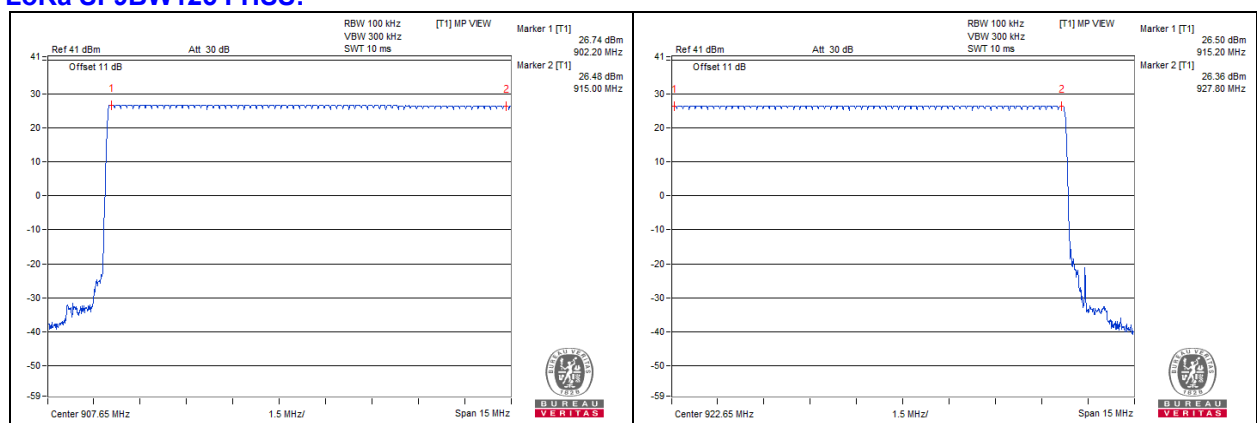
LoRa SF7BW125 FHSS:



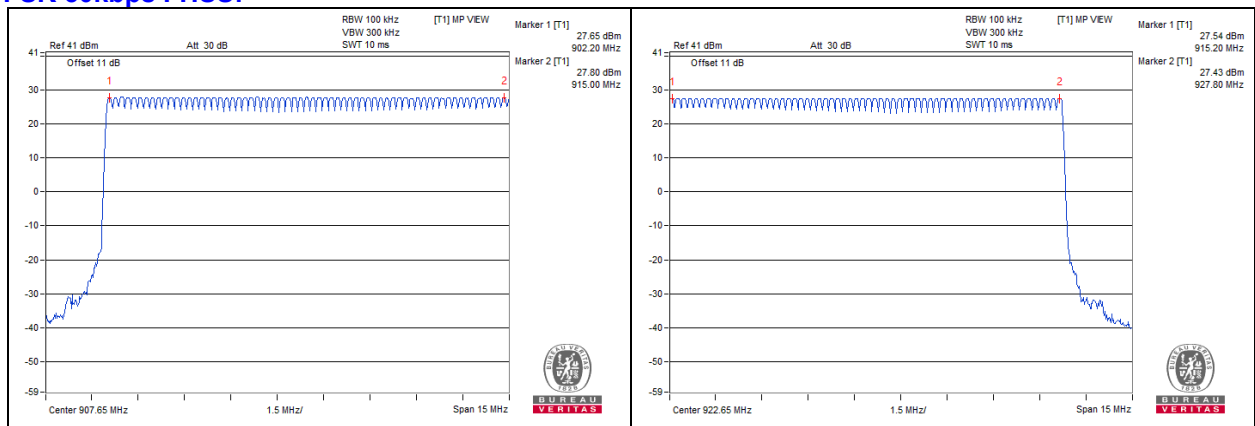
LoRa SF8BW125 FHSS:



LoRa SF9BW125 FHSS:

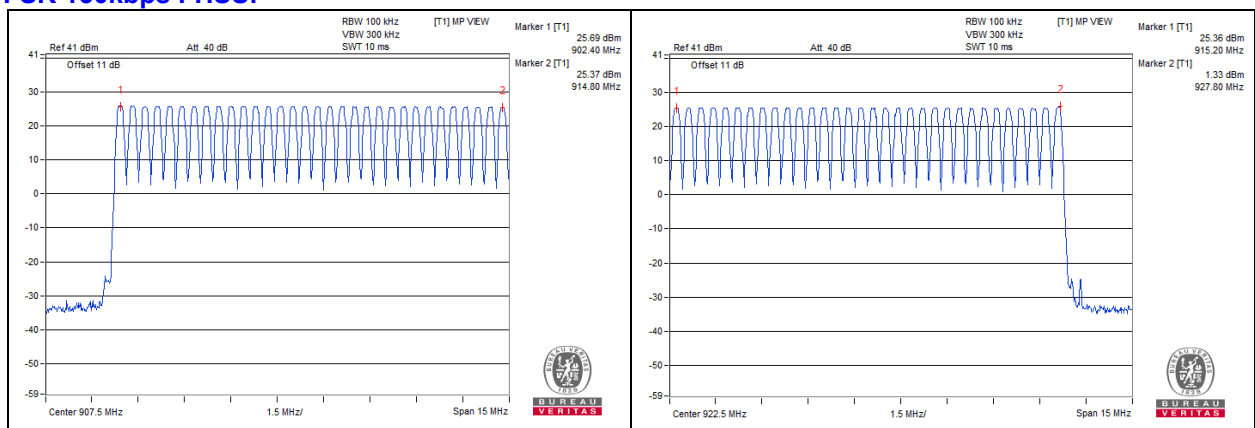


FSK 50kbps FHSS:



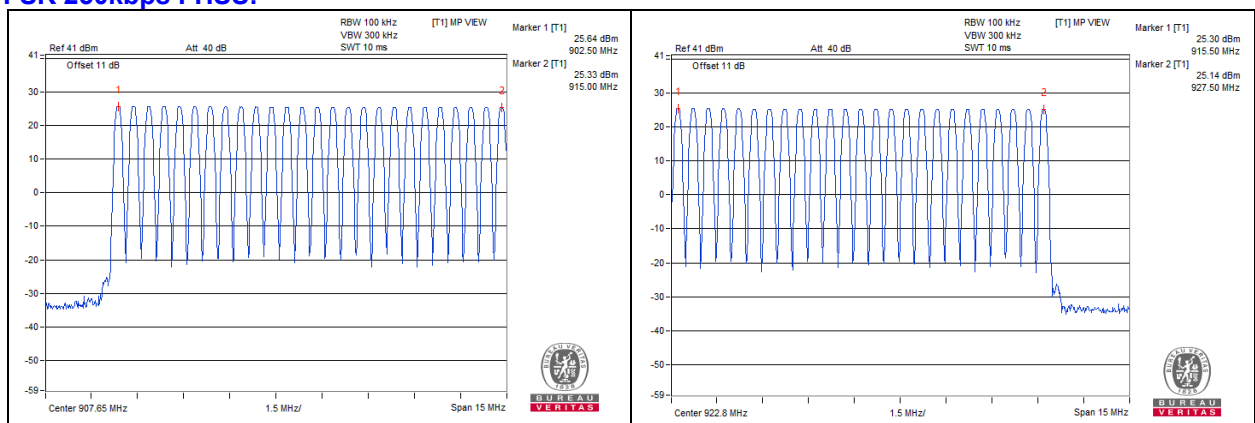
There are 65 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

FSK 150kbps FHSS:



There are 51 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

FSK 250kbps FHSS:

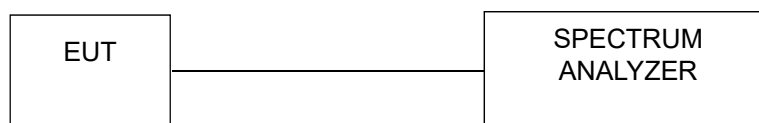


4.4 Dwell Time on Each Channel

4.4.1 Limits of Dwell Time on Each Channel Measurement

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.

4.4.5 Deviation from Test Standard

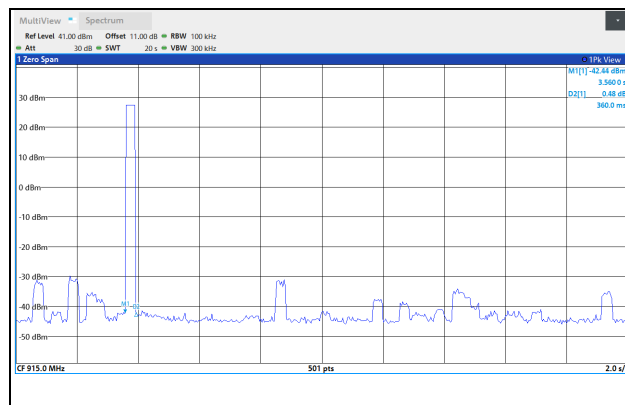
No deviation.

4.4.6 Test Results

LoRa SF7BW125 FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	360	360	400

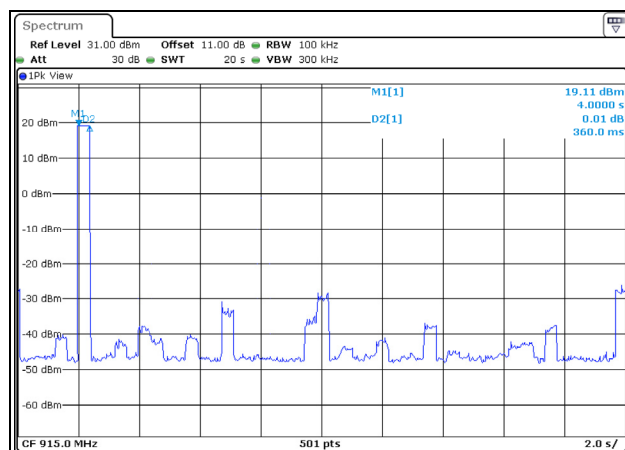
Note: Test plots of the transmitting time slot are shown as below.



LoRa SF8BW125 FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	360	360	400

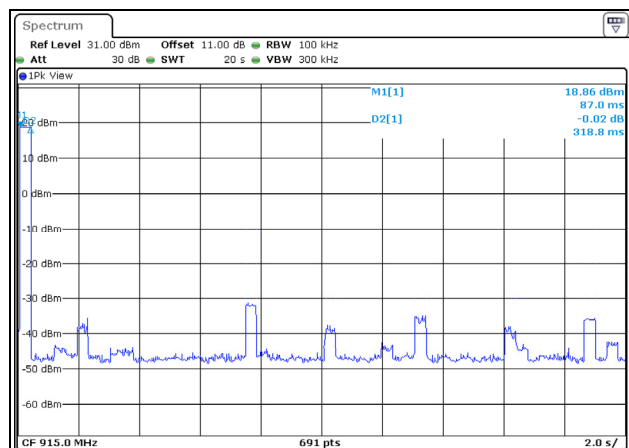
Note: Test plots of the transmitting time slot are shown as below.



LoRa SF9BW125 FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	318.8	318.8	400

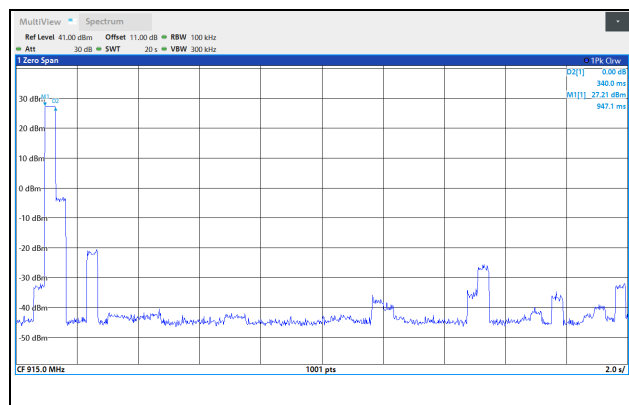
Note: Test plots of the transmitting time slot are shown as below.



FSK 50kbps FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	340	340	400

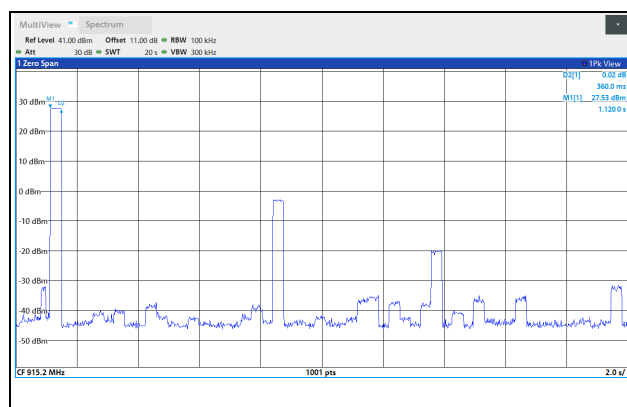
Note: Test plots of the transmitting time slot are shown as below.



FSK 150kbps FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	360	360	400

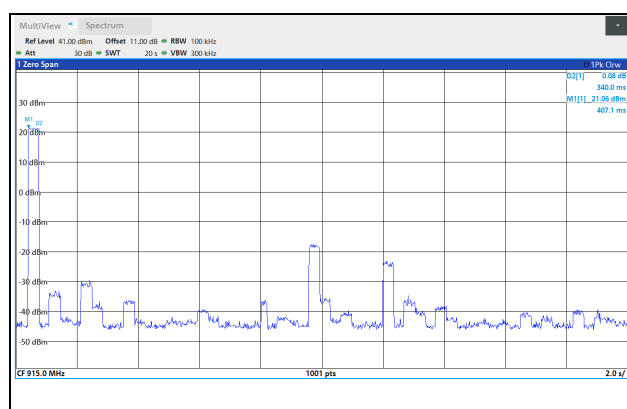
Note: Test plots of the transmitting time slot are shown as below.



FSK 250kbps FHSS:

Number of transmission in 20 Sec.	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 times	340	340	400

Note: Test plots of the transmitting time slot are shown as below.

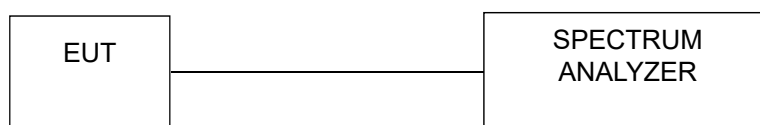


4.5 Channel Bandwidth

4.5.1 Limits of Channel Bandwidth Measurement

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- Repeat above procedures until all frequencies measured were complete.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

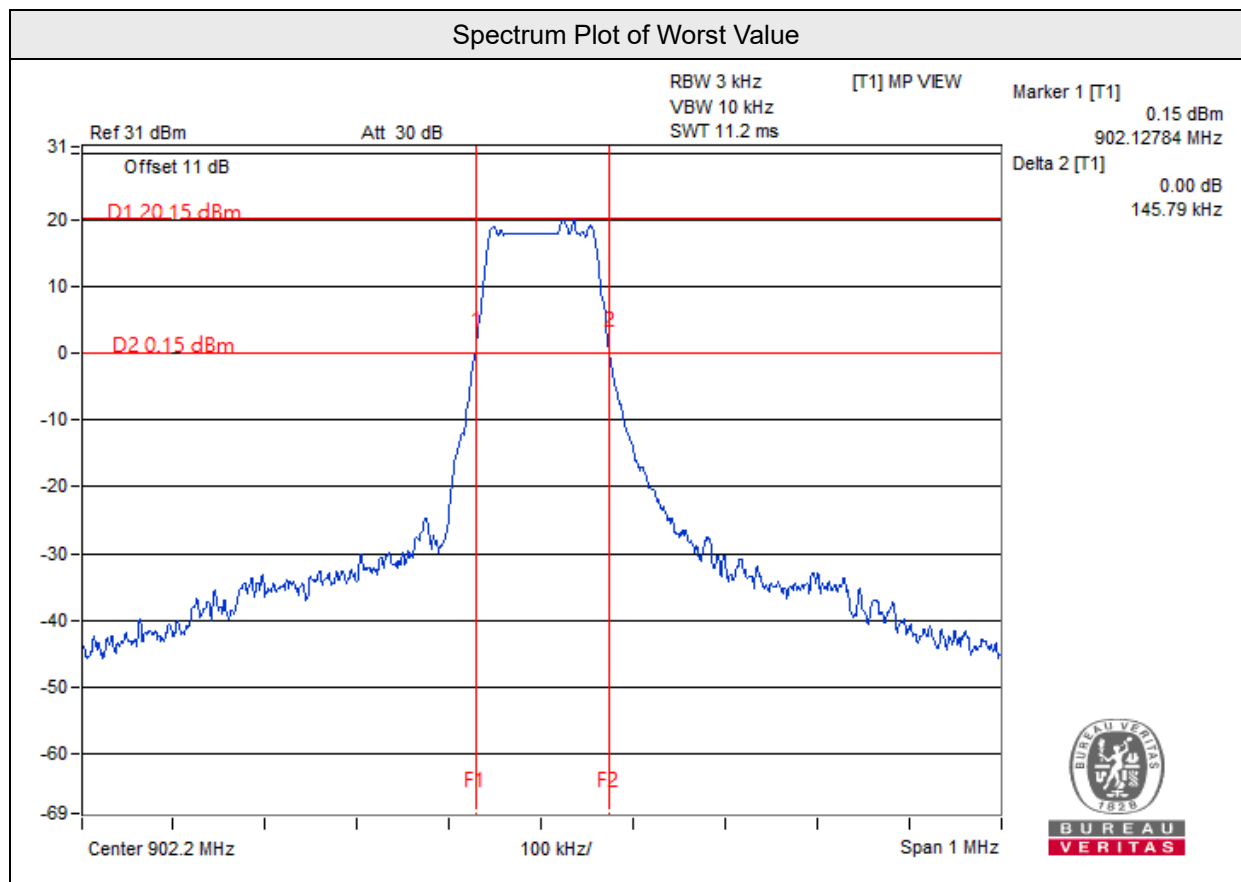
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

LoRa SF7BW125 FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.2	0.14579	0.5
65	915	0.14159	0.5
129	927.8	0.14107	0.5

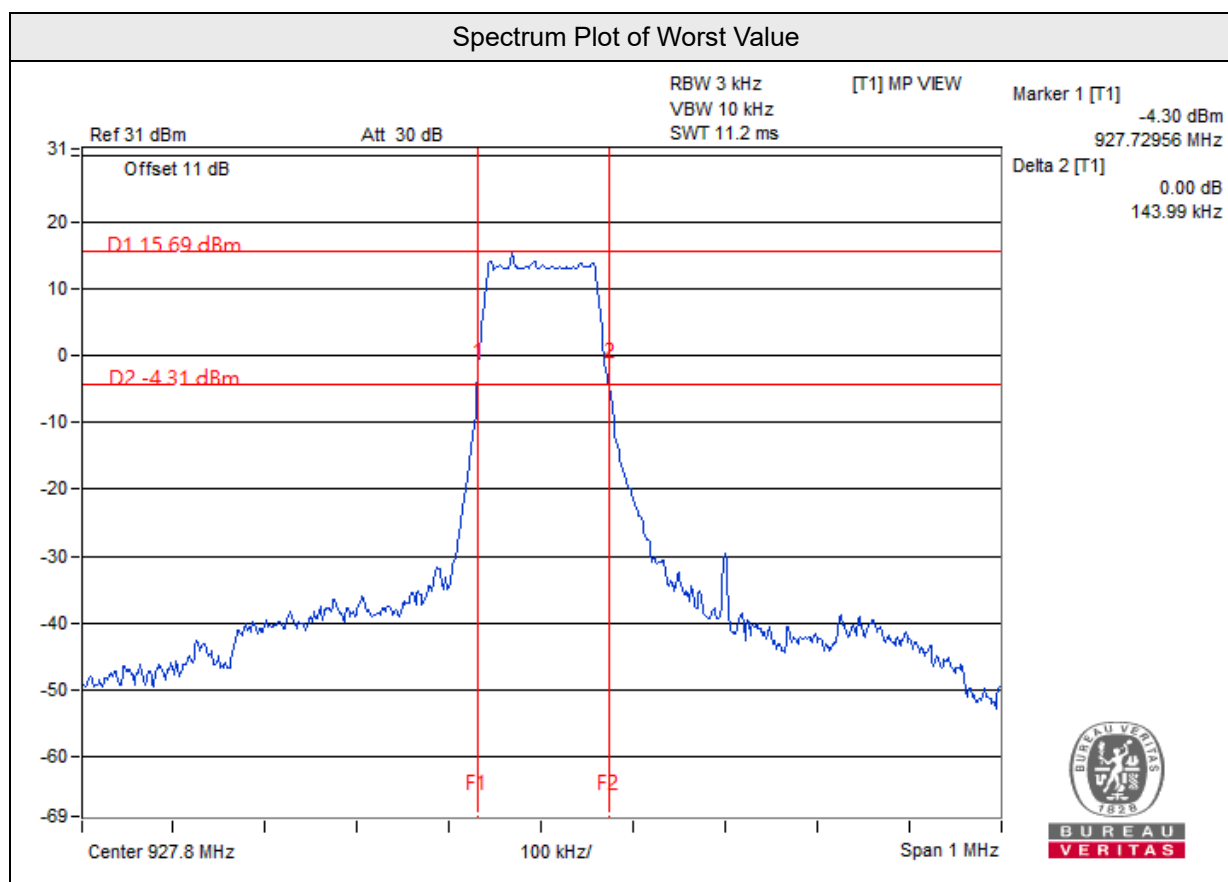
Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.



LoRa SF8BW125 FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.2	0.13928	0.5
65	915	0.14348	0.5
129	927.8	0.14399	0.5

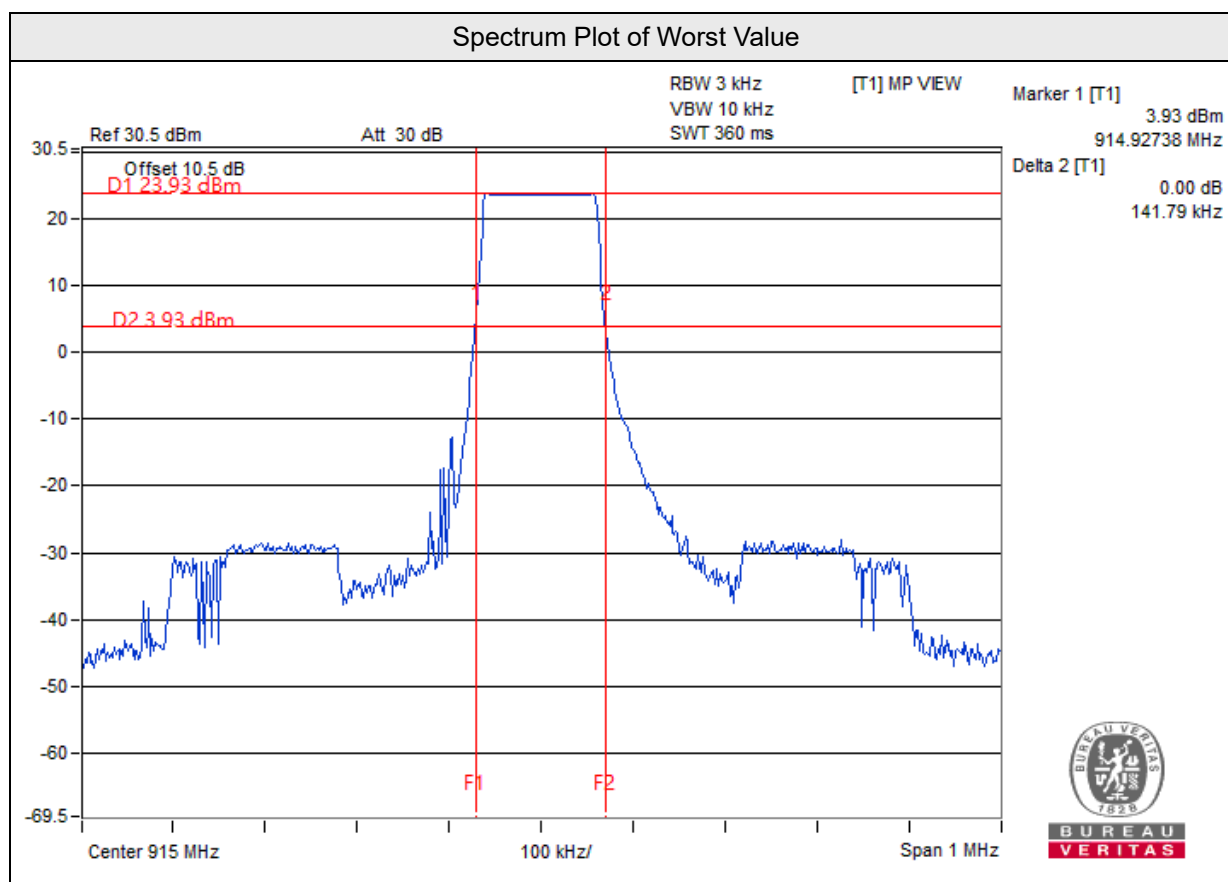
Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.



LoRa SF9BW125 FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.2	0.14075	0.5
65	915	0.14179	0.5
129	927.8	0.14133	0.5

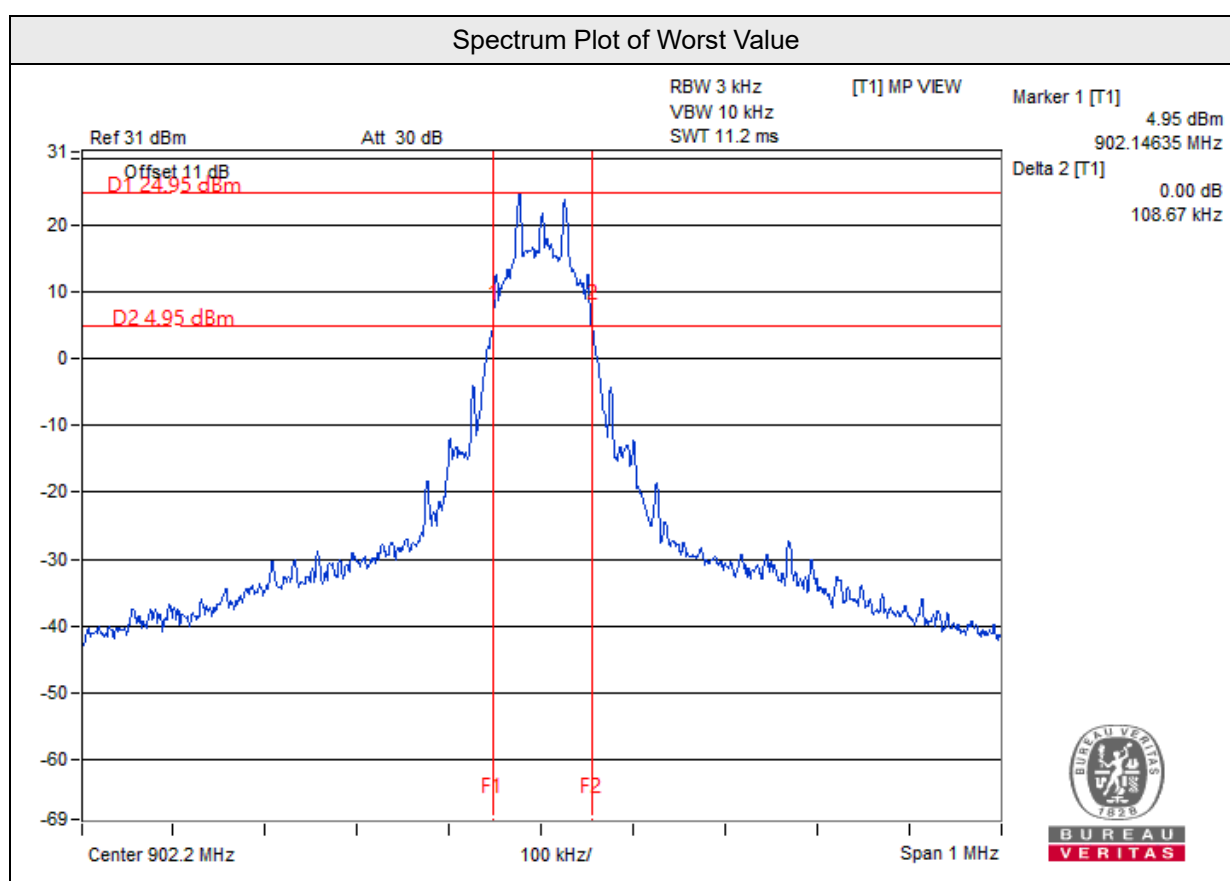
Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.



FSK 50kbps FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.2	0.10867	0.5
65	915	0.10835	0.5
129	927.8	0.10741	0.5

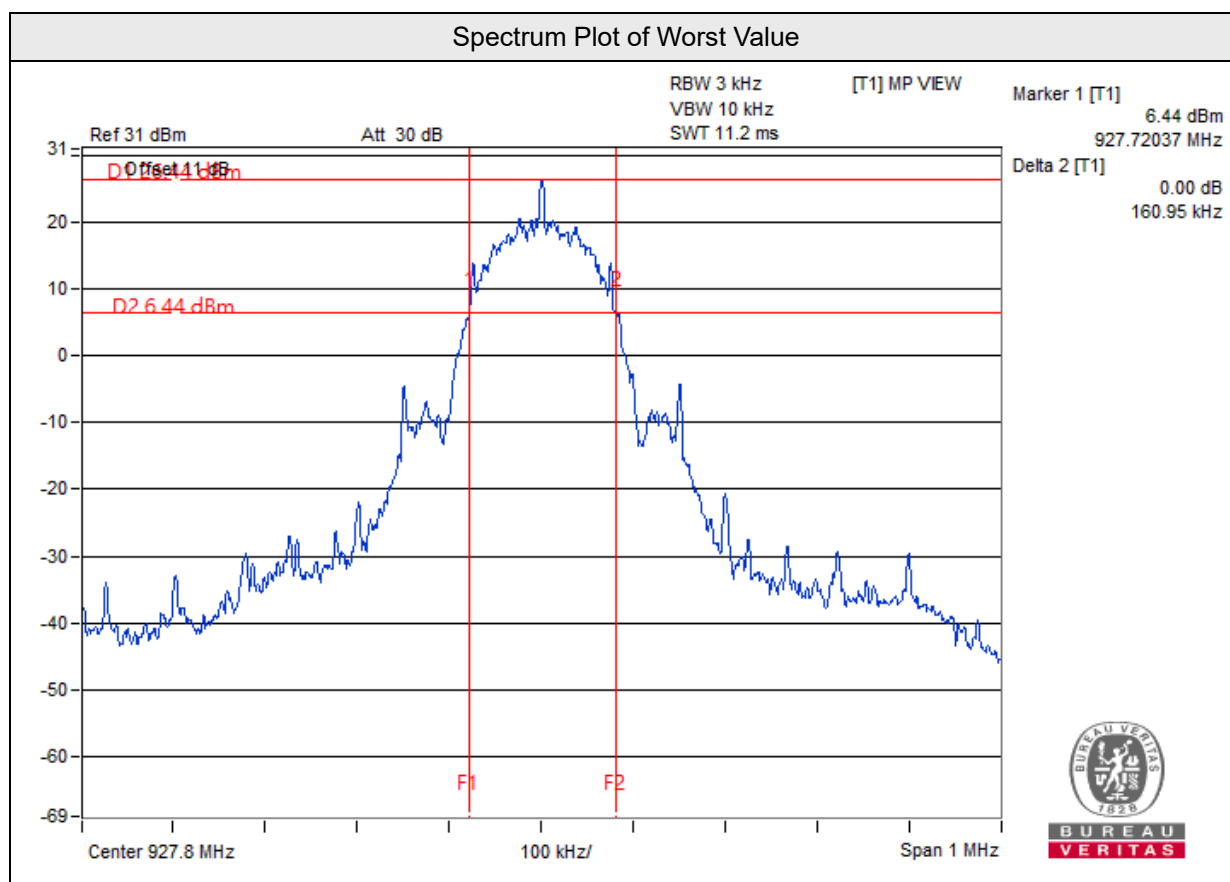
Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.



FSK 150kbps FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.4	0.15720	0.5
33	915.2	0.15923	0.5
65	927.8	0.16095	0.5

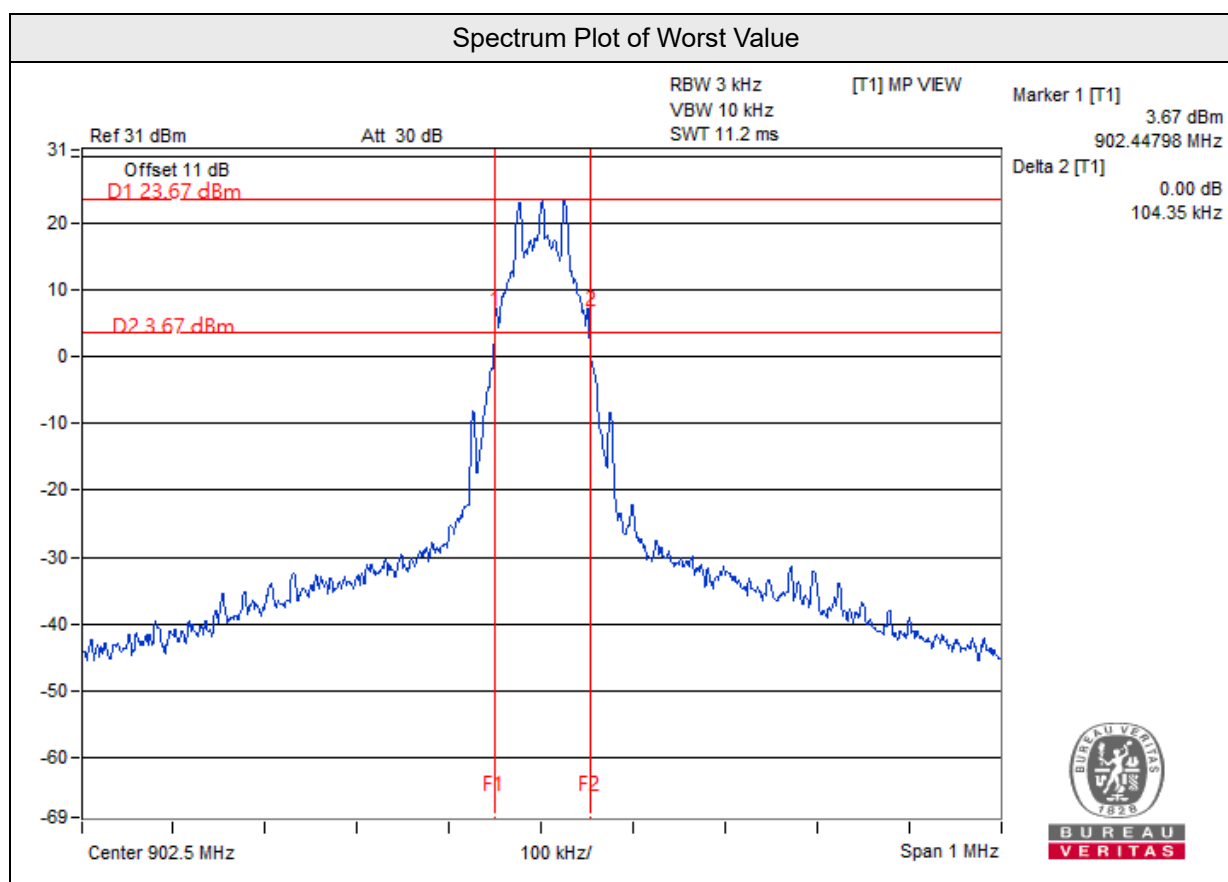
Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.



FSK 250kbps FHSS:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
1	902.5	0.10435	0.5
26	915	0.10426	0.5
51	927.5	0.10382	0.5

Note: 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

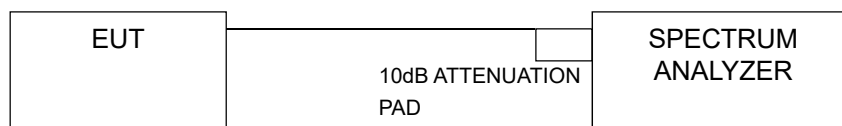


4.6 Hopping Channel Separation

4.6.1 Limits of Hopping Channel Separation Measurement

At least of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
- By using the MaxHold function record the separation of two adjacent channels.
- Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

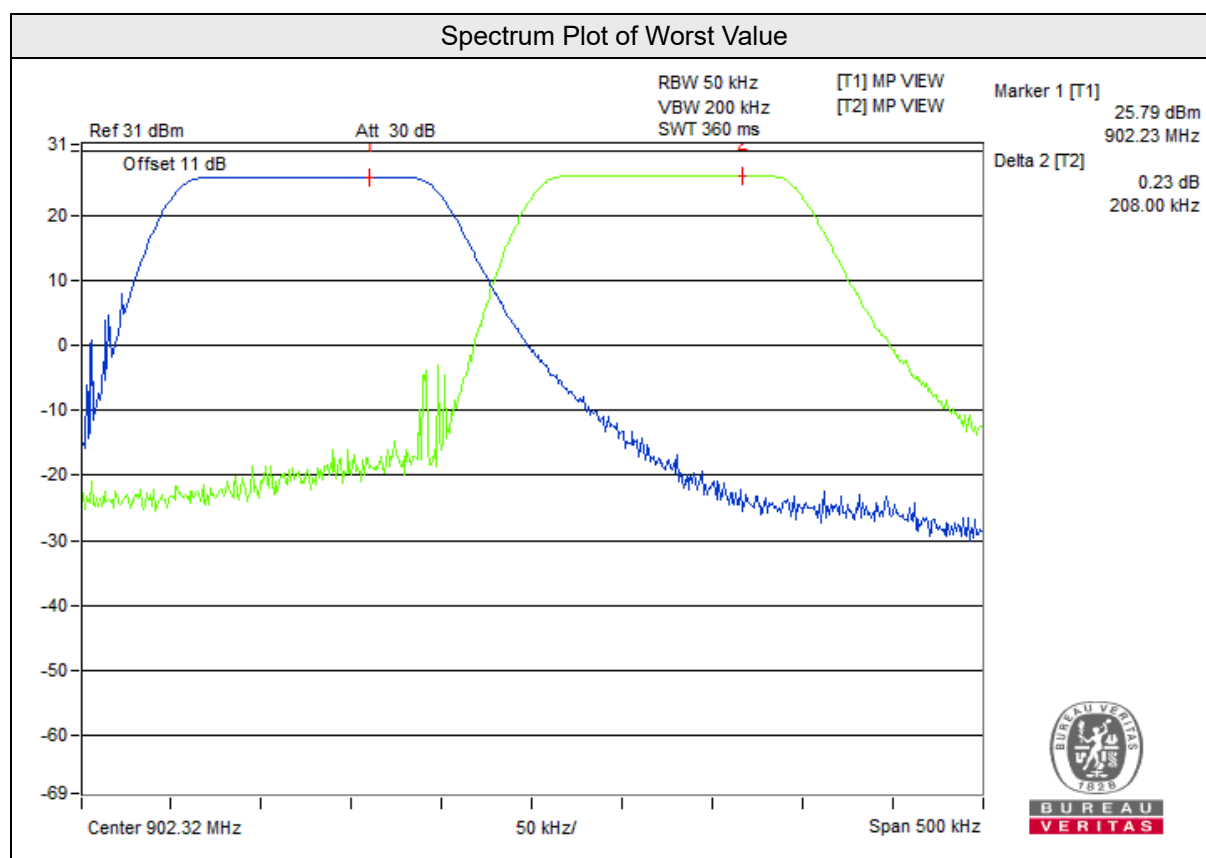
4.6.5 Deviation from Test Standard

No deviation.

4.6.6 Test Results

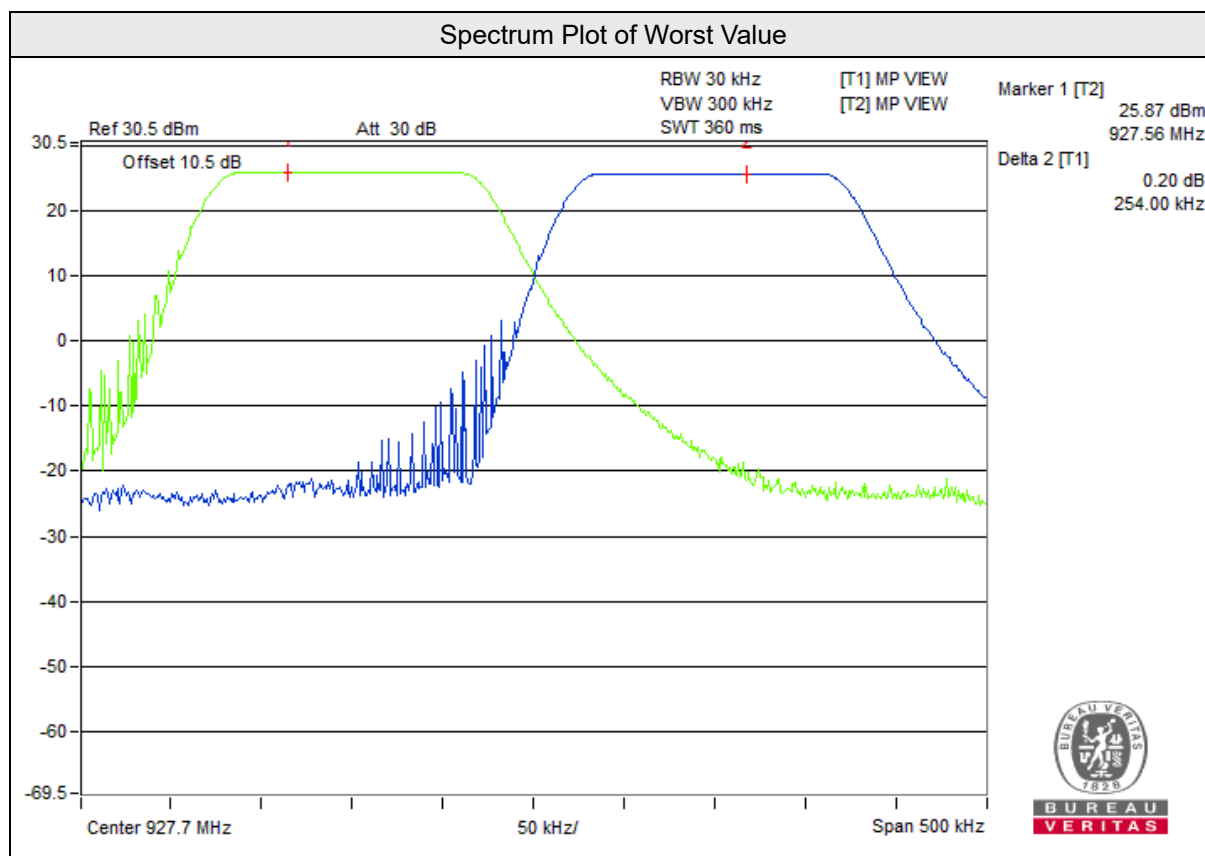
LoRa SF7BW125 FHSS:

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
1	902.2	0.208	0.15	PASS
65	915	0.204	0.14	PASS
129	927.8	0.207	0.14	PASS



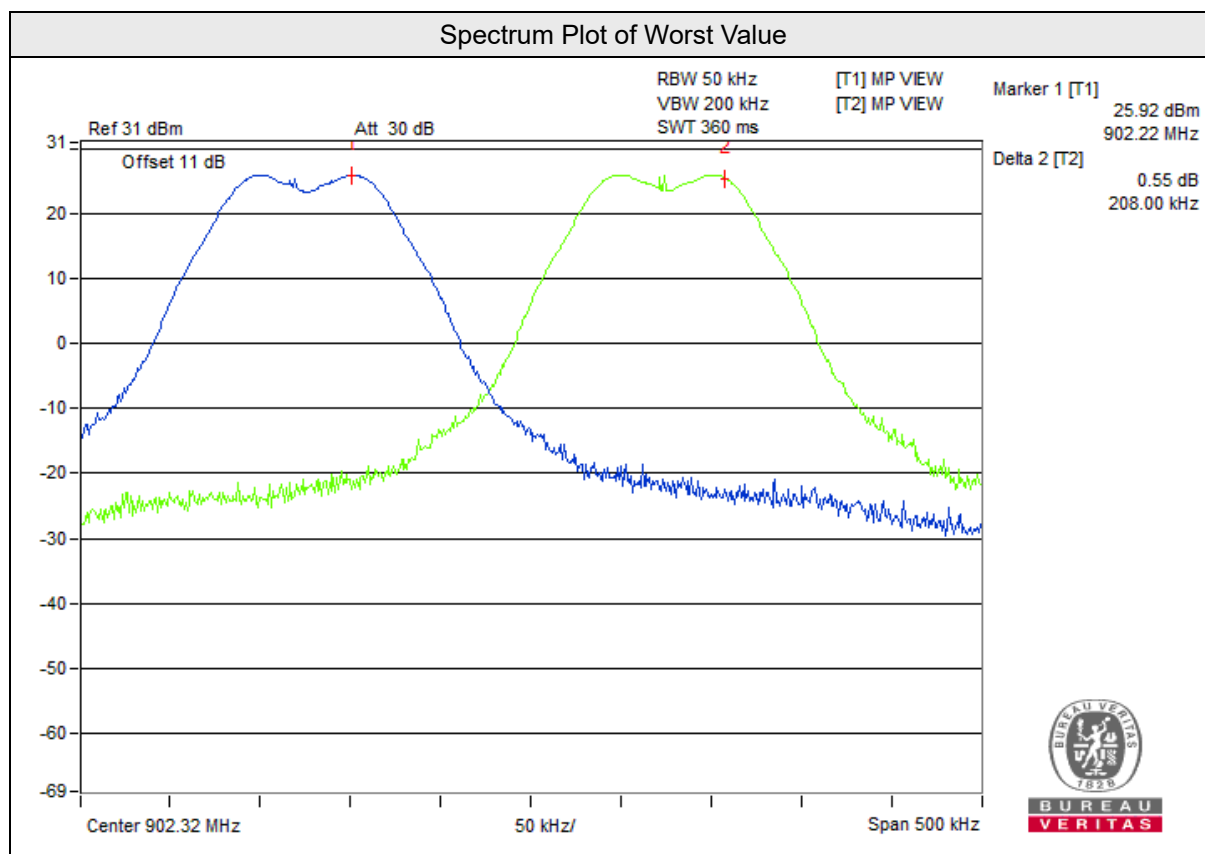
LoRa SF9BW125 FHSS:

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
1	902.2	0.230	0.14	PASS
65	915	0.236	0.14	PASS
129	927.8	0.254	0.14	PASS



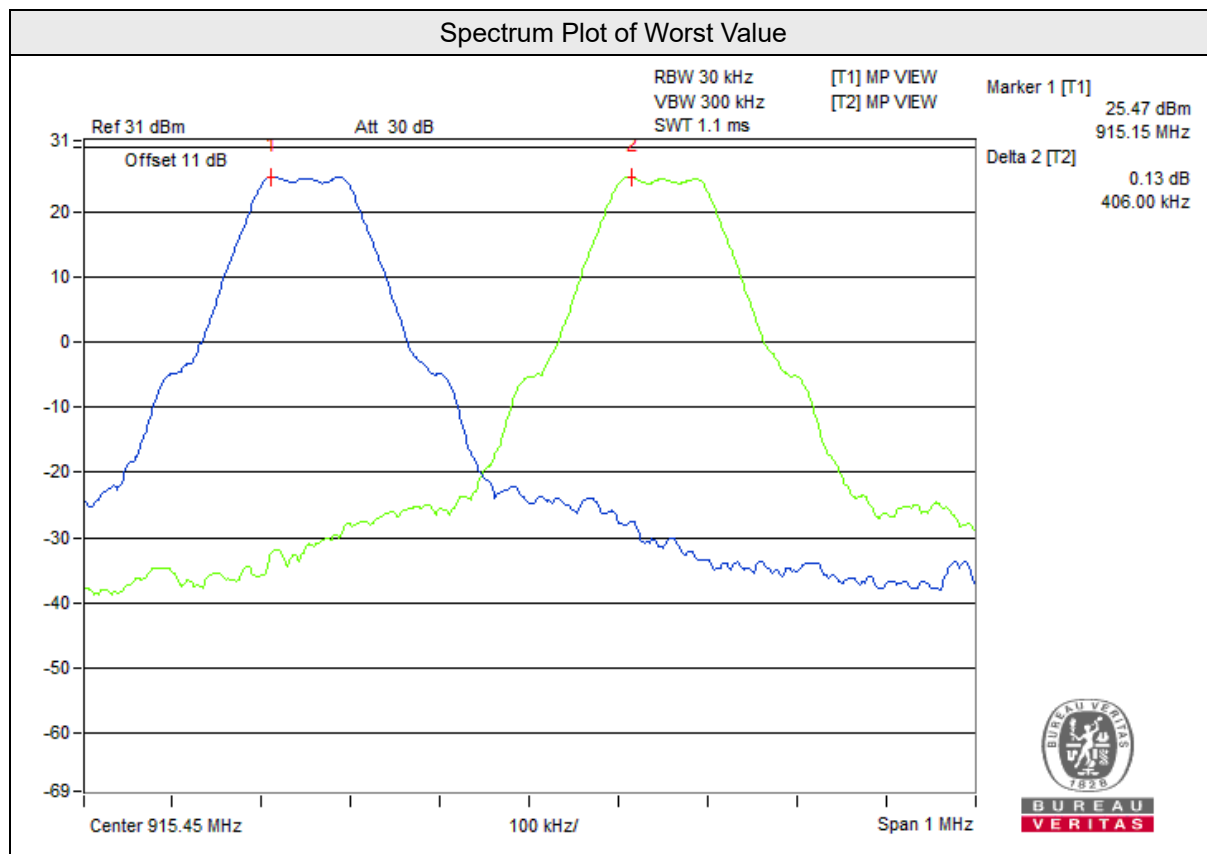
FSK 50kbps FHSS:

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
1	902.2	0.208	0.11	PASS
65	915	0.206	0.11	PASS
129	927.8	0.202	0.11	PASS



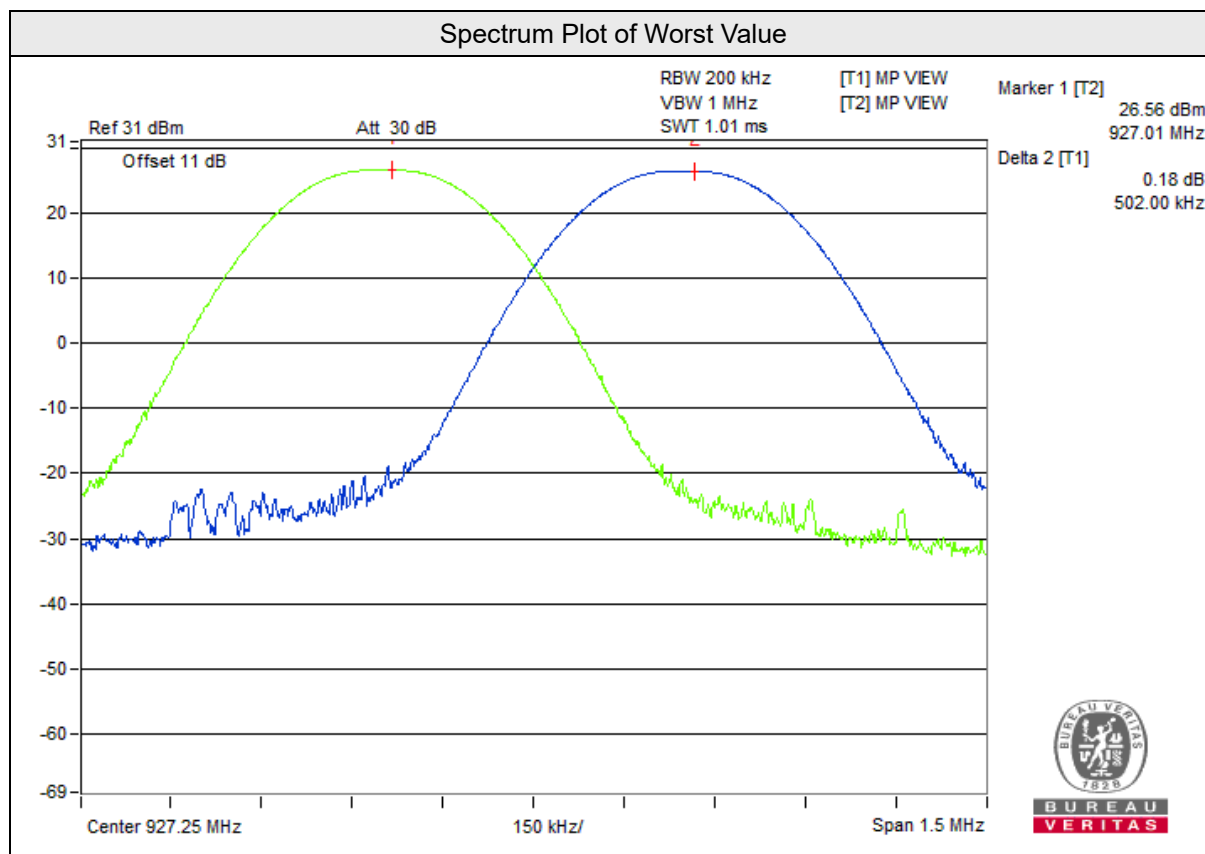
FSK 150kbps FHSS:

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
1	902.4	0.405	0.16	PASS
33	915.2	0.406	0.16	PASS
65	927.8	0.400	0.16	PASS



FSK 250kbps FHSS:

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
1	902.5	0.501	0.10	PASS
26	915	0.502	0.10	PASS
51	927.5	0.502	0.10	PASS

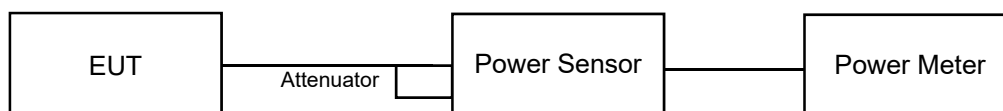


4.7 Maximum Output Power

4.7.1 Limits of Maximum Output Power Measurement

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

LoRa SF7BW125 FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.2	428.549	26.32	30	PASS
65	915	437.522	26.41	30	PASS
129	927.8	425.598	26.29	30	PASS

LoRa SF8BW125 FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.2	415.911	26.19	30	PASS
65	915	427.563	26.31	30	PASS
129	927.8	420.727	26.24	30	PASS

LoRa SF9BW125 FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.2	434.510	26.38	30	PASS
65	915	438.531	26.42	30	PASS
129	927.8	451.856	26.55	30	PASS

FSK 50kbps FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.2	423.643	26.27	30	PASS
65	915	425.598	26.29	30	PASS
129	927.8	421.697	26.25	30	PASS

FSK 150kbps FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.4	427.563	26.31	30	PASS
33	915.2	431.519	26.35	30	PASS
65	927.8	434.510	26.38	30	PASS

FSK 250kbps FHSS:

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (dBm)	Pass / Fail
1	902.5	420.727	26.24	30	PASS
26	915	417.830	26.21	30	PASS
51	927.5	414.954	26.18	30	PASS

4.8 Conducted Out of Band Emission Measurement

4.8.1 Limits Of Conducted Out of Band Emission Measurement

Below –20dB of the highest emission level of operating band (in 100kHz RBW).\

4.8.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.8.3 Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz and 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.8.4 Deviation from Test Standard

No deviation.

4.8.5 EUT Operating Condition

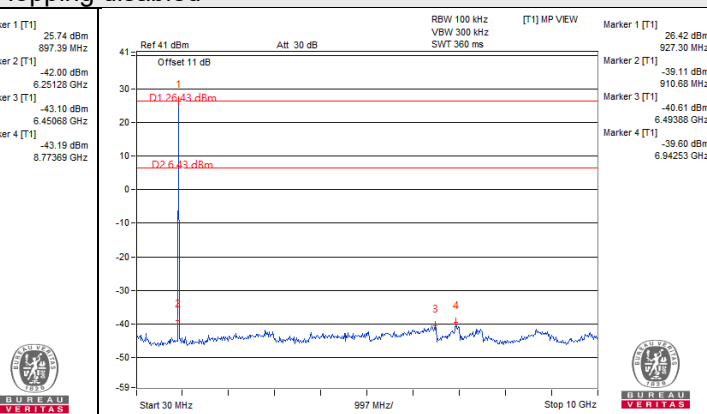
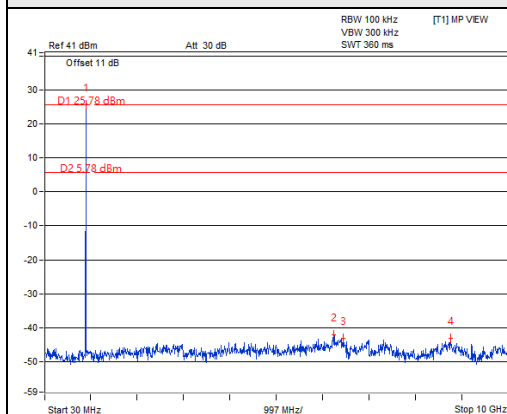
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.6 Test Results

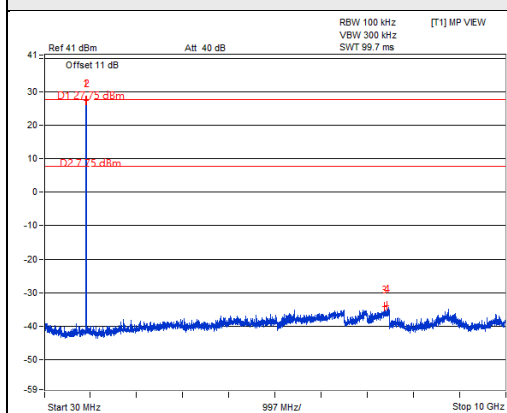
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

LoRa SF7BW125 FHSS:

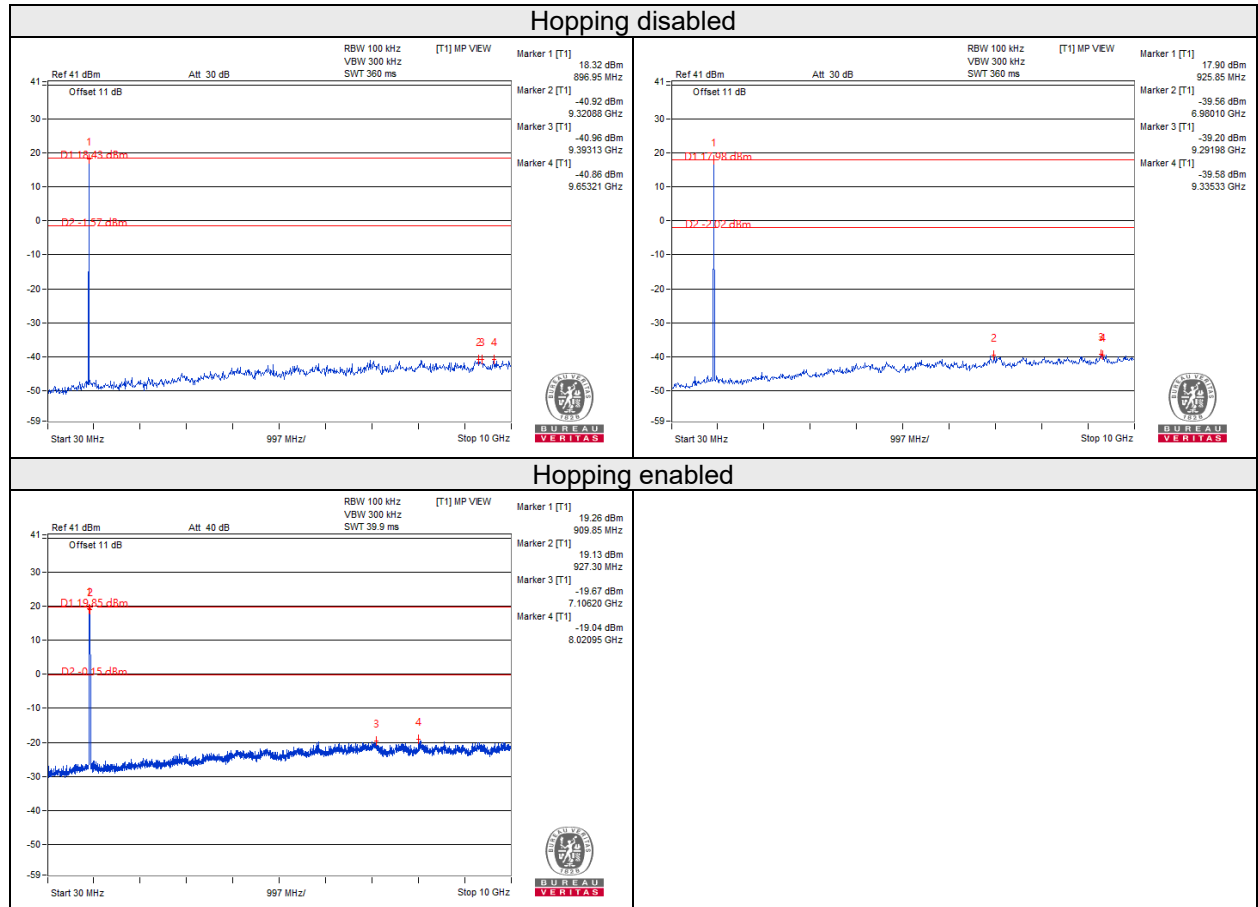
Hopping disabled



Hopping enabled

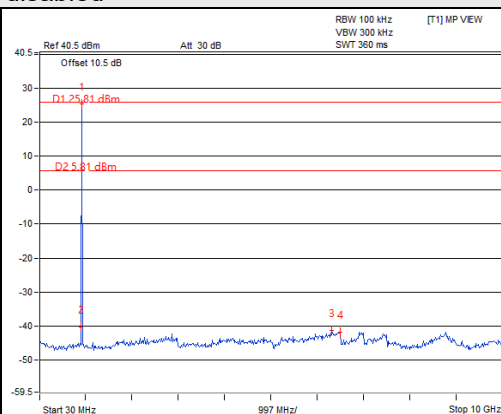
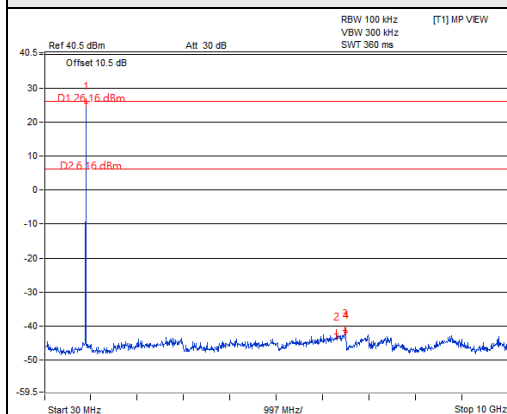


LoRa SF8BW125 FHSS:

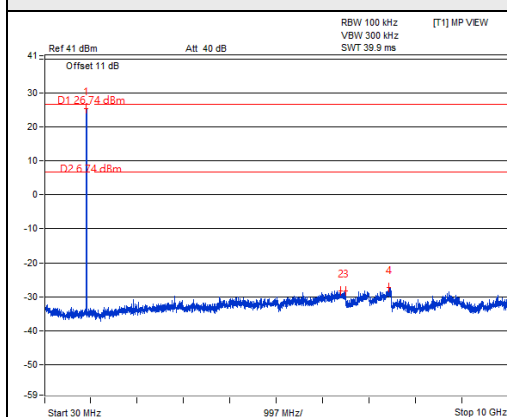


LoRa SF9BW125 FHSS:

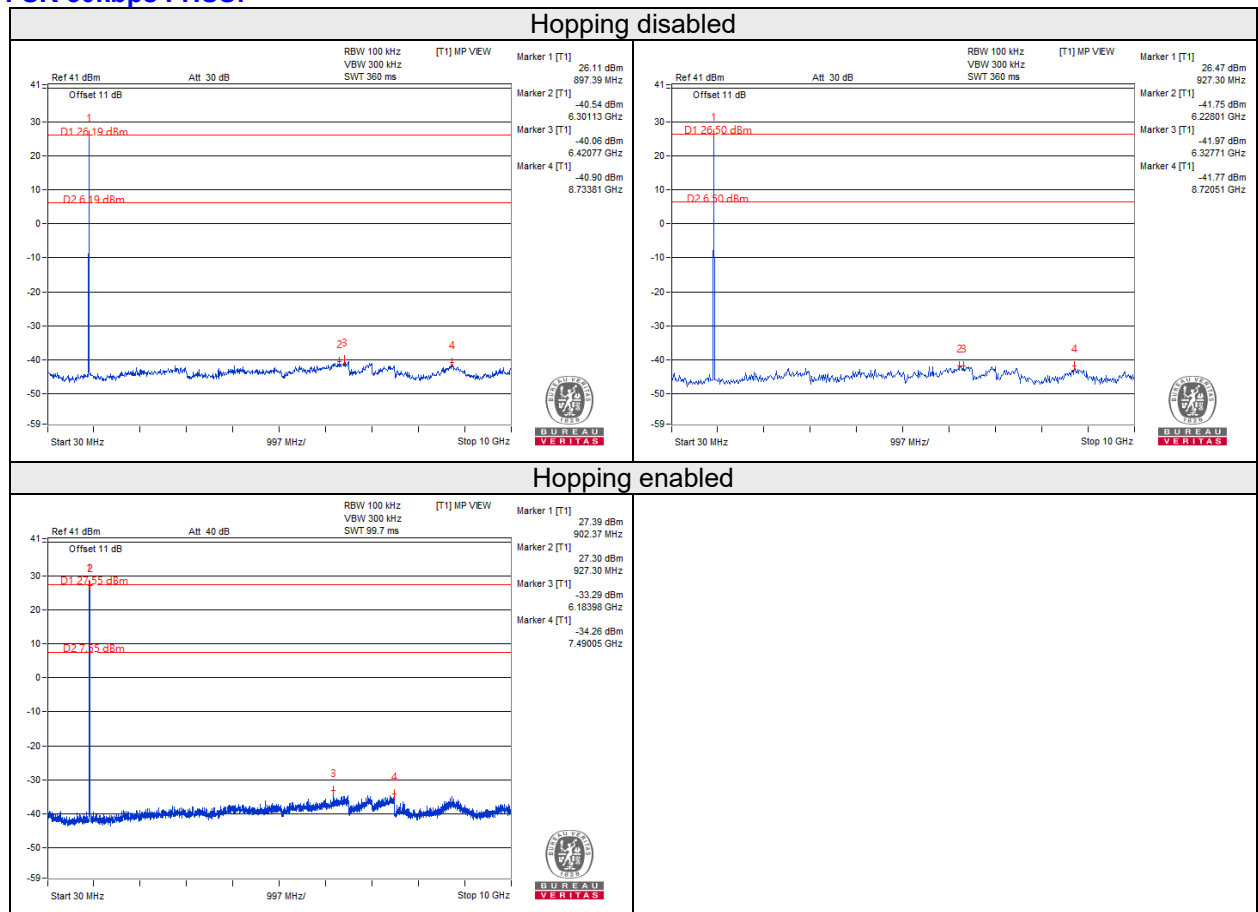
Hopping disabled



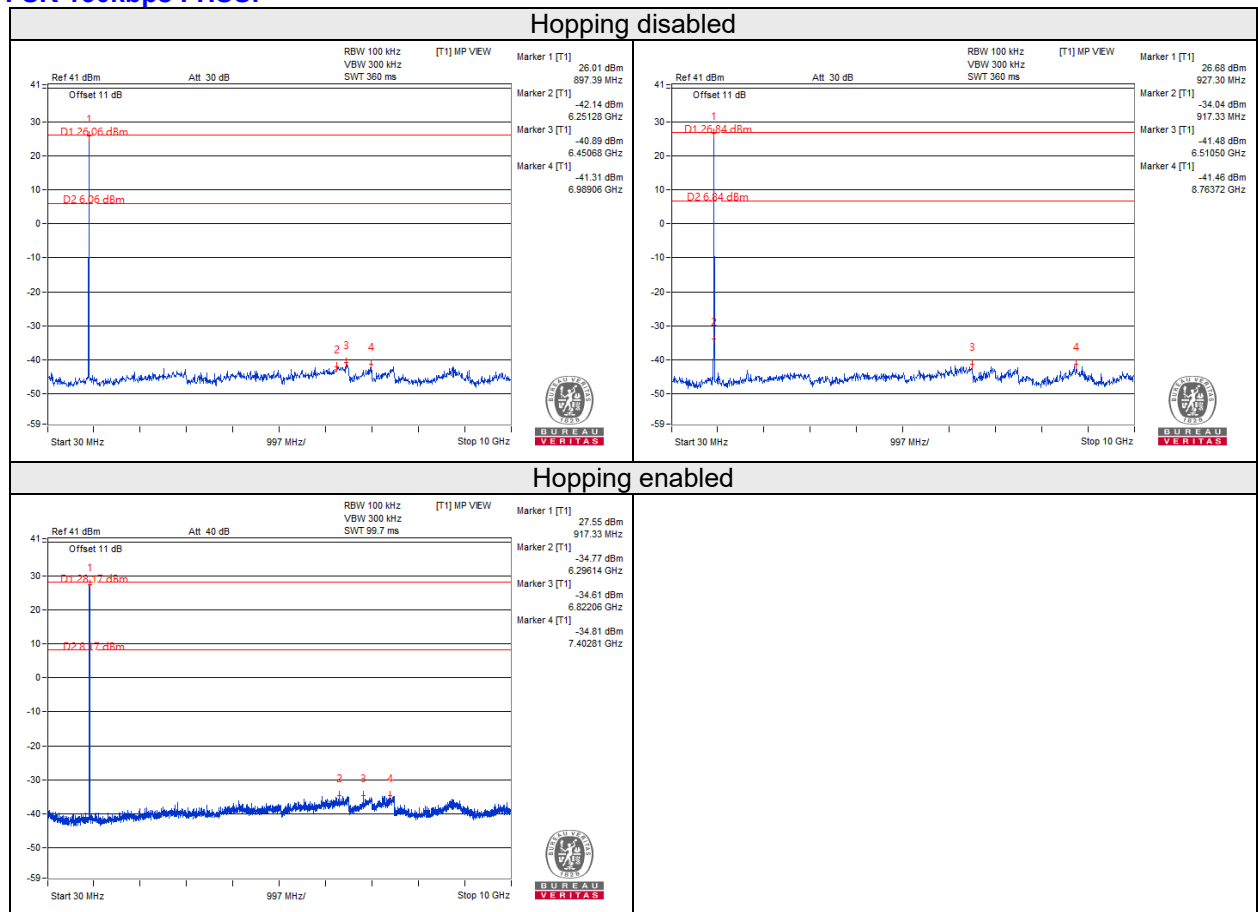
Hopping enabled



FSK 50kbps FHSS:

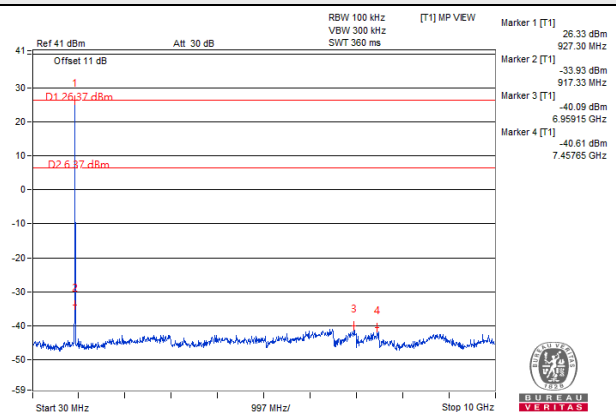
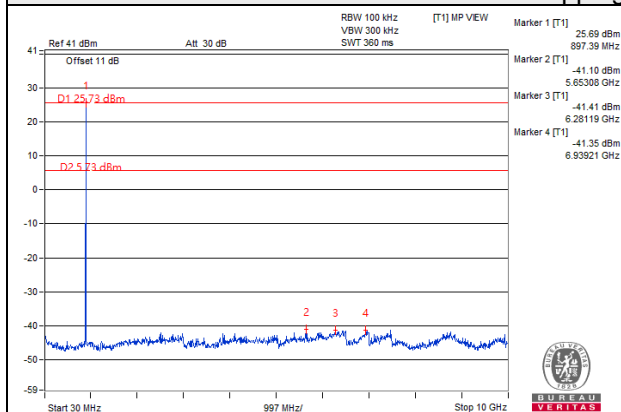


FSK 150kbps FHSS:

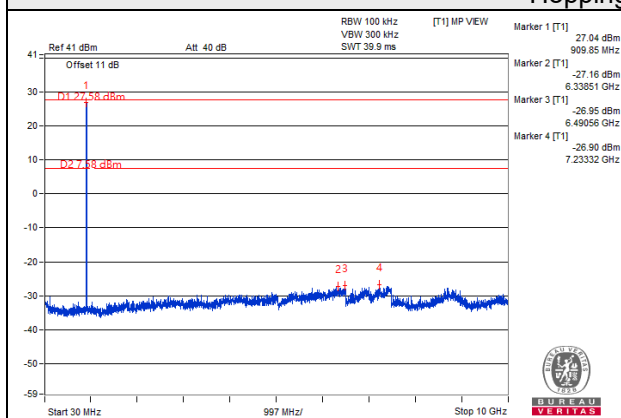


FSK 250kbps FHSS:

Hopping disabled



Hopping enabled



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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