TEST REPORT

Applicant:	RuixingHengfang Network (Shenzhen) Co., Ltd.
Address:	Room 201, building 6 Software Park(Phase 1), Gaoxin Mid 3rd Road, Science and Technology Park, NanShan District, Shenzhen, Guangdong, China 518017
Equipment Type:	IoT gateway base on LoRaWAN
Model Name:	RHF2S027
Brand Name:	RisingHF
FCC ID:	2AJUZ-2S027
Test Standard:	47 CFR Part 15 Subpart C (refer section 3.1)
Test Date:	May 16, 2022 - May 25, 2022
Date of Issue:	May 31, 2022

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Julie zhu **Checked by:** Ye Hongji **Approved by:** Liao Jianming (Technical Director)

Revision History

Version	Issue Date	Revisions
Rev. 01	May 31, 2022	Initial Issue

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.
Description	All measurement facilities used to collect the measurement data are located at Block B, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	RuixingHengfang Network (Shenzhen) Co., Ltd.
Address	Room 201, building 6 Software Park(Phase 1), Gaoxin Mid 3rd Road, Science and Technology Park, NanShan District, Shenzhen, Guangdong, China 518017

2.2 Manufacturer Information

Manufacturer	RuixingHengfang Network (Shenzhen) Co., Ltd.
Address	Room 201, building 6 Software Park(Phase 1), Gaoxin Mid 3rd Road, Science and Technology Park, NanShan District, Shenzhen, Guangdong, China 518017

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	IoT gateway base on LoRaWAN
Model Name Under Test	RHF2S027
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	RHF2S027_MF_V4 RHF2S027_MC_V4
Software Version	V1.0.0
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity	WIFI 802.11b, 802.11g, 802.11n LoRa, GPS

The requirement for the following technical information of the EUT was tested in this report:

Modulation Technology	Frequency hopping system
Modulation Type	LoRa
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Frequency Range	The frequency range used is 902 MHz to 928 MHz.
Number of channel	64
Tested Channel	0 (902.3 MHz), 32 (908.7 MHz), 63 (914.9 MHz)
Antenna Type	PIFA Antenna
Antenna Gain	1.63 dBi (In test items related to antenna gain, the final results reflect this figure. This value is provided by the applicant.)
Antenna System(MIMO Smart Antenna)	N/A
About the Product	The EUT is supply the DTS, Frequency hopping system, only the frequency hopping system and were tested in this report.

All channel was listed on the following table:

Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
1	**902.3**	17	905.5	**33**	**908.7**	49	911.9
2	902.5	18	905.7	34	908.9	50	912.1
3	902.7	19	905.9	35	909.1	51	912.3
4	902.9	20	906.1	36	909.3	52	912.5
5	903.1	21	906.3	37	909.5	53	912.7
6	903.3	22	906.5	38	909.7	54	912.9
7	903.5	23	906.7	39	909.9	55	913.1
8	903.7	24	906.9	40	910.1	56	913.3
9	903.9	25	907.1	41	910.3	57	913.5
10	904.1	26	907.3	42	910.5	58	913.7
11	904.3	27	907.5	43	910.7	59	913.9
12	904.5	28	907.7	44	910.9	60	914.1
13	904.7	29	907.9	45	911.1	61	914.3
14	904.9	30	908.1	46	911.3	62	914.5
15	905.1	31	908.3	47	911.5	63	914.7
16	905.3	32	908.5	48	911.7	**64**	**914.9**

2.6 Additional Instructions

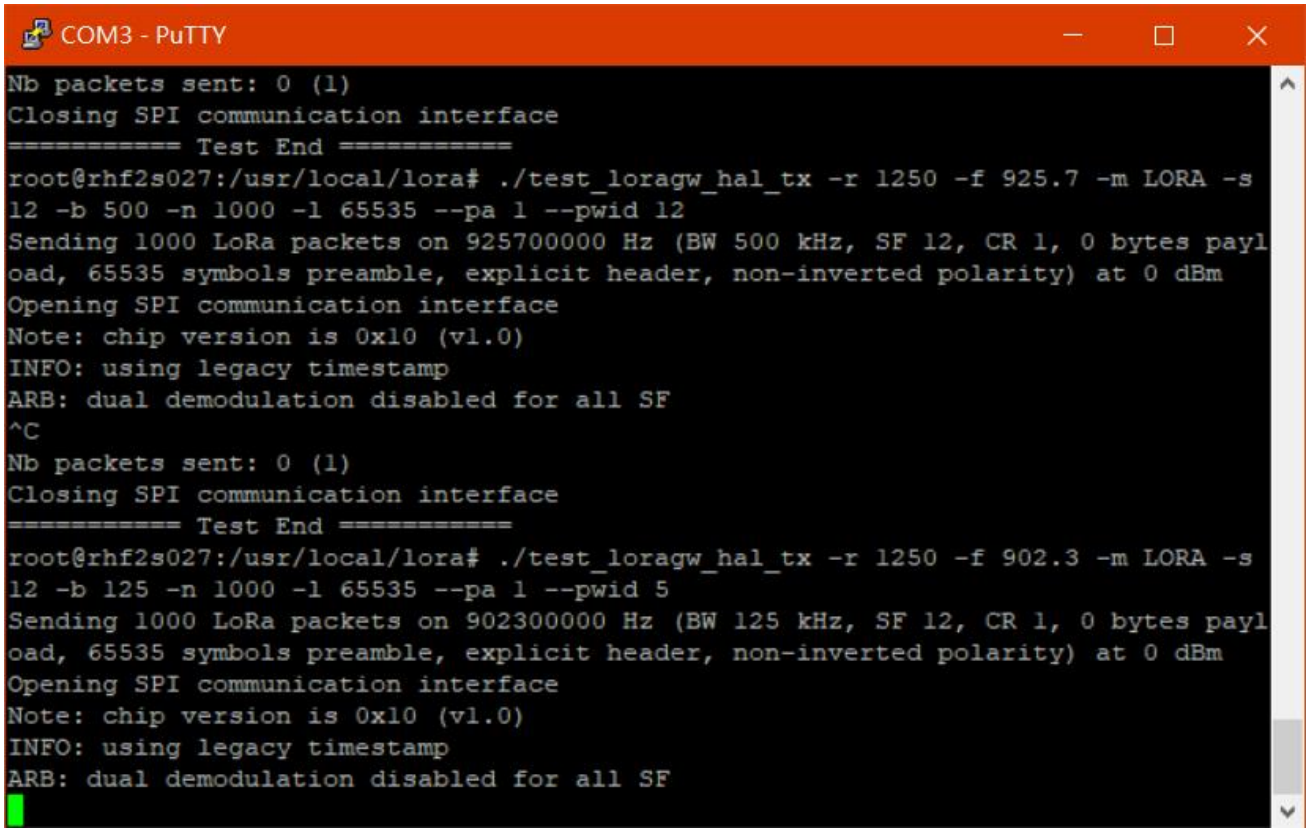
EUT Software Settings:

Mode	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power level setup in software			
Test Software Version	Putty		
Support Units (Software installation media)	Description	Manufacturer	Model
	Notebook	HP	N/A
Mode	Channel	Frequency (MHz)	Soft Set
LoRa	1	902.3	5
	33	908.7	2
	64	914.9	6

Run Software:



3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Miscellaneous Wireless Communications Services
2	KDB Publication 558074 D01v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Test Verdict

No.	Description	FCC Part No.	Modulation Technology	Channel	Test Result	Verdict
1	Antenna Requirement	15.203	N/A	N/A	--	Pass[Note]
2	Number of Hopping Frequencies	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.1	Pass
3	Peak Output Power	15.247(b)	Frequency hopping system	Low/Middle/High	ANNEX A.2	Pass
4	Occupied Bandwidth	15.247(a)	Frequency hopping system	Low/Middle/High	ANNEX A.3	Pass
5	Carrier Frequency Separation	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.4	Pass
6	Time of Occupancy (Dwell time)	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.5	Pass
7	Conducted Spurious Emission & Authorized-band band-edge	15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.6	Pass
8	Conducted Emission	15.207	Frequency hopping system	Low/Middle/High	ANNEX A.7	Pass
9	Radiated Spurious Emission	15.209 15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.8	Pass
10	Band Edge(Restricted-band band-edge)	15.209 15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.9	Pass
Note: Please refer to section 5.1						

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
Working Voltage of the EUT	NV (Normal Voltage)	5 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-40	101544	2022.01.04	2023.01.03
Spectrum Analyzer	KEYSIGHT	N9020A	MY50330200	2021.06.01	2022.05.31
Signaling Unit	ROHDE&SCHWARZ	CMW500	142028	2021.06.01	2022.05.31
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2021.09.13	2022.09.12
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2021.10.10	2022.10.09
LISN	SCHWARZBECK	NSLK 8127	8127-687	2021.06.08	2022.06.07
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2021.04.16	2024.04.15
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2021.08.20	2024.08.19
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1917	2019.07.02	2022.07.01
Test Antenna-Horn (18-40 GHz)	A-INFO	LB-180400KF	J211060273	2021.07.02	2024.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2021.09.04	2024.09.09
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2021.08.15	2024.08.14
Shielded Enclosure	ChangNing	CN-130701	130703	--	--

4.3 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

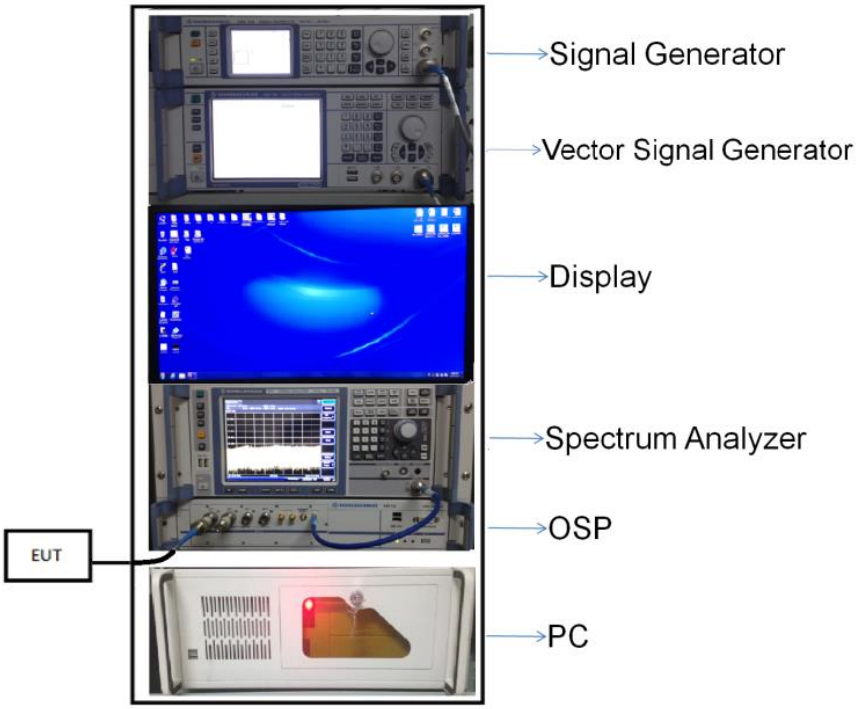
Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.82°C
Humidity	4.1%

4.4 Description of Test Setup

4.4.1 For Antenna Port Test

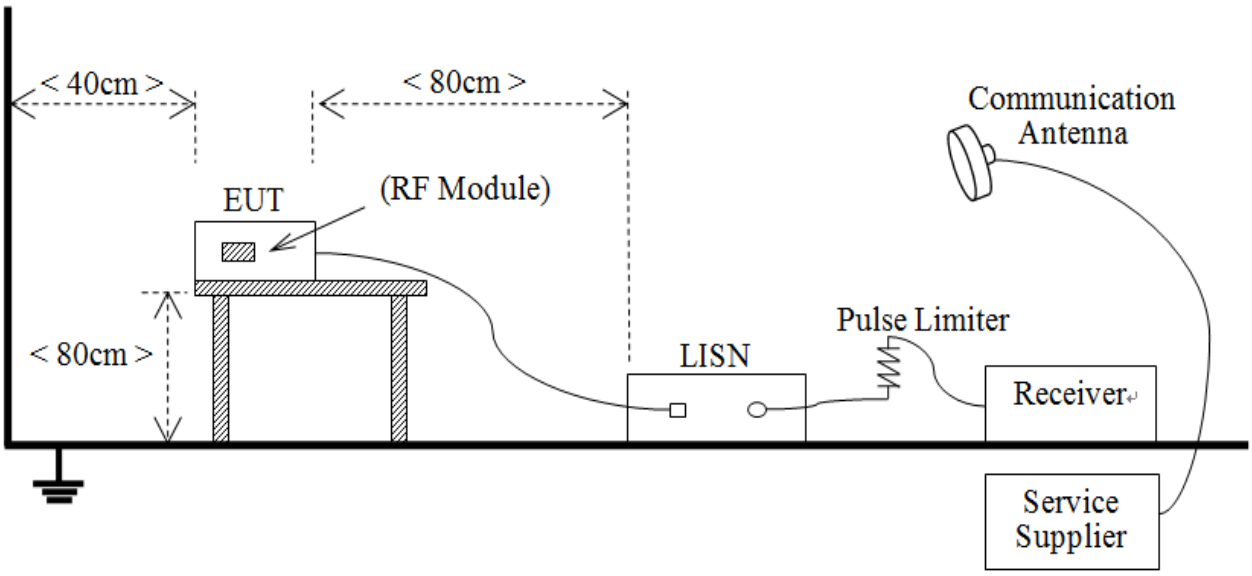
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:
Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



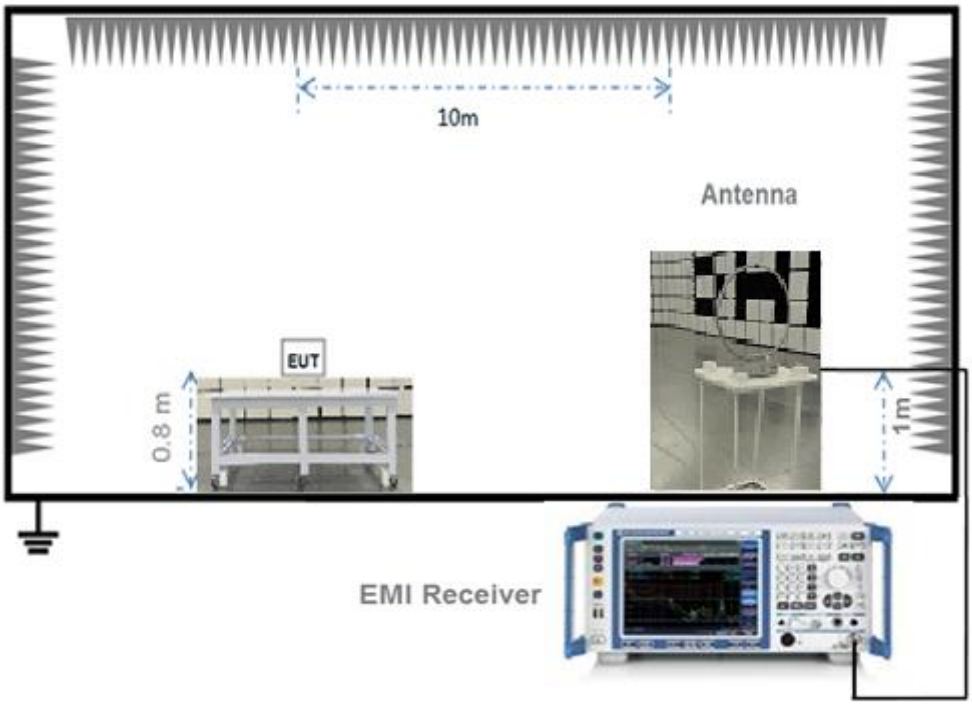
(Diagram 1)

4.4.2 For AC Power Supply Port Test



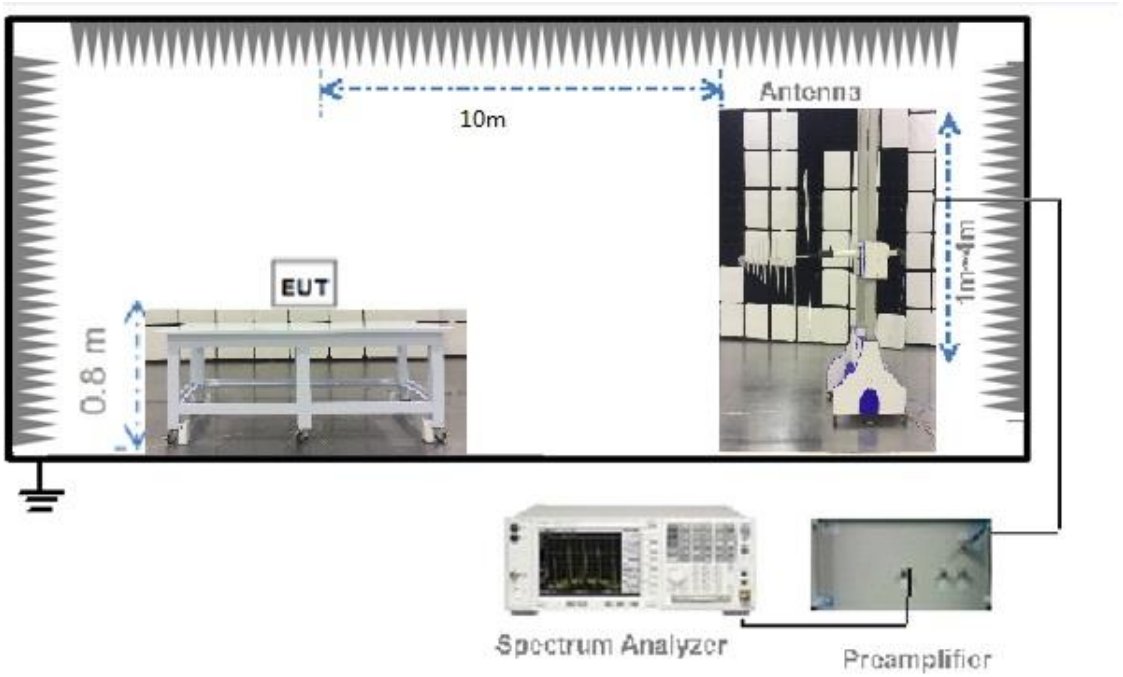
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



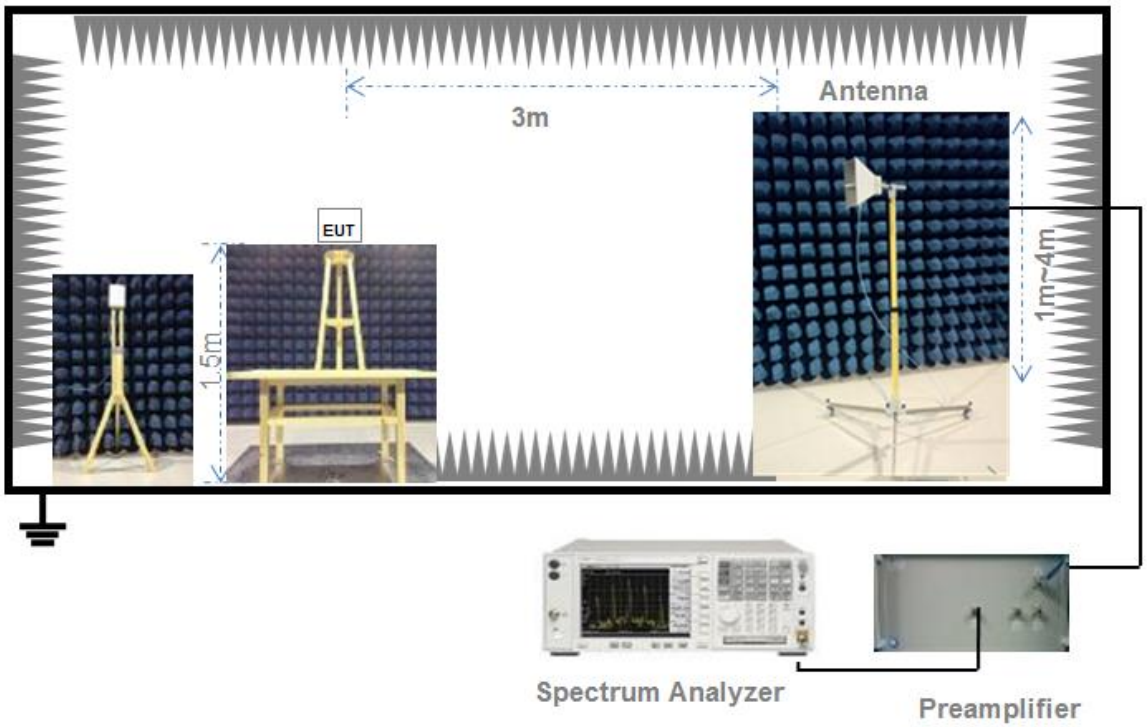
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.5 Measurement Results Explanation Example

4.5.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product	The antenna is welded on the mainboard, can’t be replaced by the consumer

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Number of Hopping Frequencies

5.2.1 Limit

FCC §15.247(a)

For FHSs in the band 902-928 MHz: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20-second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10-second period. The maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.

5.2.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 Peak Output Power and E.I.R.P

5.3.1 Test Limit

FCC § 15.247(b)

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

5.3.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Occupied Bandwidth

5.4.1 Limit

FCC §15.247(a)

5.4.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW = in the range of 1% to 5% of the OBW

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate, Allow the trace to stabilize.

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Carrier Frequency Separation

5.5.1 Limit

FCC §15.247(a)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.5.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span

Video (or Average) Bandwidth (VBW) ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Time of Occupancy (Dwell time)

5.6.1 Limit

FCC §15.247(a)

For frequency hopping systems operating in the 902-928 MHz band: if the 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; if the 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.

5.6.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

5.6.4 Test Result

Please refer to ANNEX A.5

5.7 Conducted Spurious Emission & Authorized-band band-edge

5.7.1 Limit

FCC §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.7.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

5.7.4 Test Result

Please refer to ANNEX A.6 and A.7

5.8 Conducted Emission

5.8.1 Limit

FCC §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.8.2 Test Setup

See section 4.4.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.8.4 Test Result

Please refer to ANNEX A.7.

5.9 Radiated Spurious Emission

5.9.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	902/F(kHz)	300
0.490 - 1.705	9020/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. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.
3. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
4. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.9.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.9.4 Test Result

Please refer to ANNEX A.8.

5.10 Band Edge (Restricted-band band-edge)

5.10.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.10.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.10.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.10.4 Test Result

Please refer to ANNEX A.9.

ANNEX A TEST RESULT

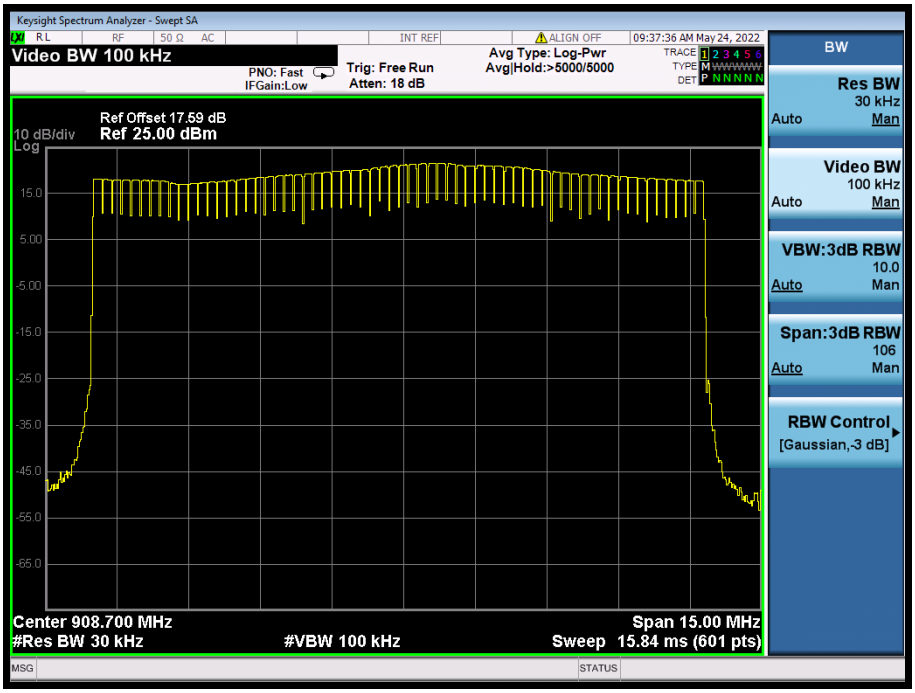
A.1 Number of Hopping Frequency

Test Data

Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Verdict
LoRa	902-928	64	50	Pass

Test Plots

LoRa



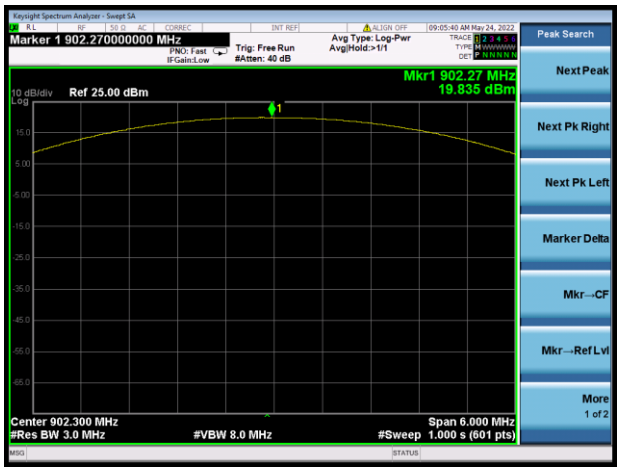
A.2 Peak Output Power

Test Data

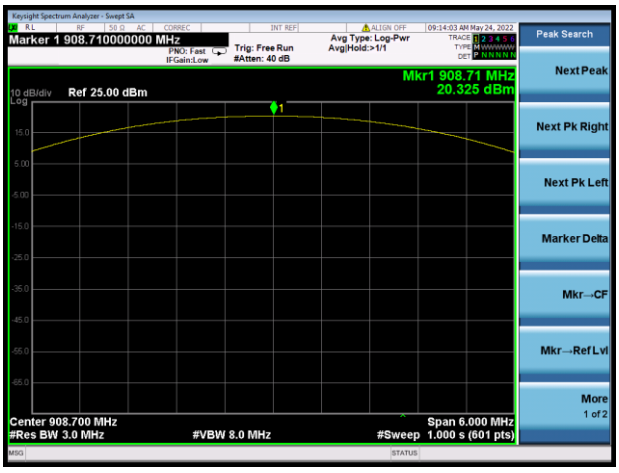
Channel	Measured Output Peak Power		Limit		Verdict
	LoRa		dBm	mW	
	dBm	mW			
Low	19.84	96.27	30	1000	Pass
Middle	20.33	107.77			Pass
High	20.57	114.10			Pass

Test Plots

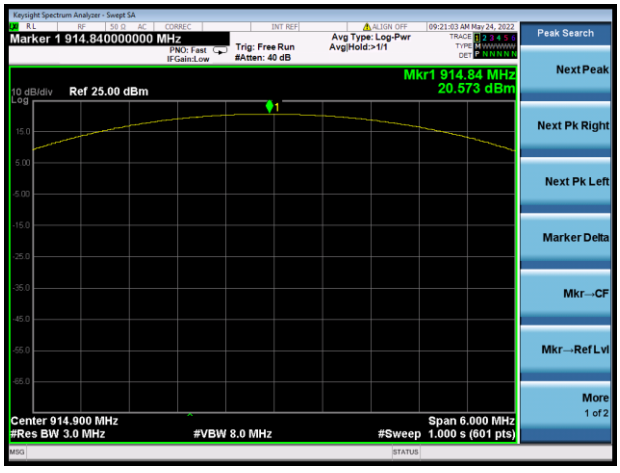
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



A.3 20 dB and 99% bandwidth

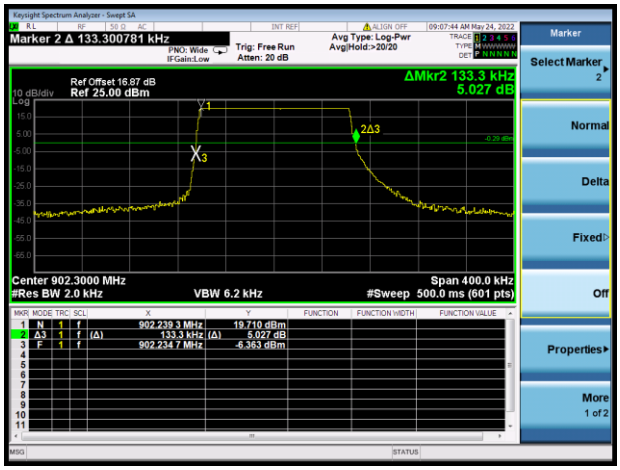
Test Data

LoRa			
Channel	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Verdict
Low	0.133300	0.124640	Pass
Middle	0.133400	0.124430	Pass
High	0.132000	0.124600	Pass

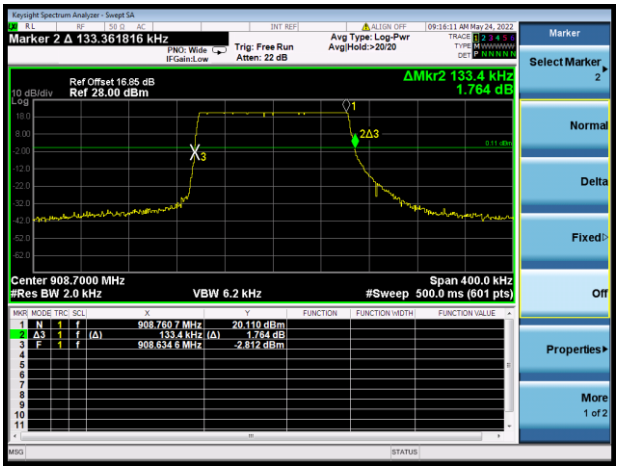
Test Plots

20 dB Bandwidth

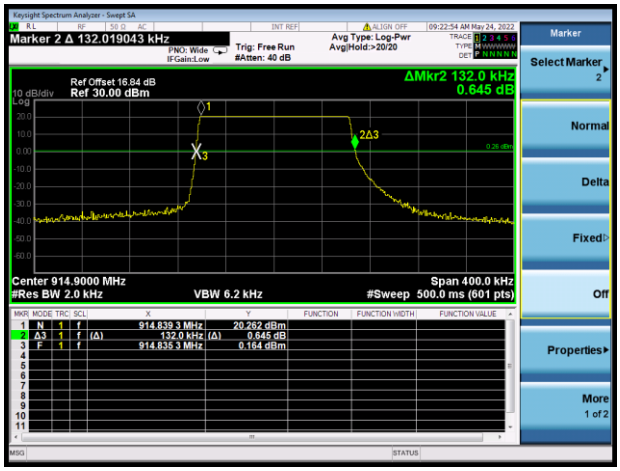
LOW CHANNEL



MIDDLE CHANNEL

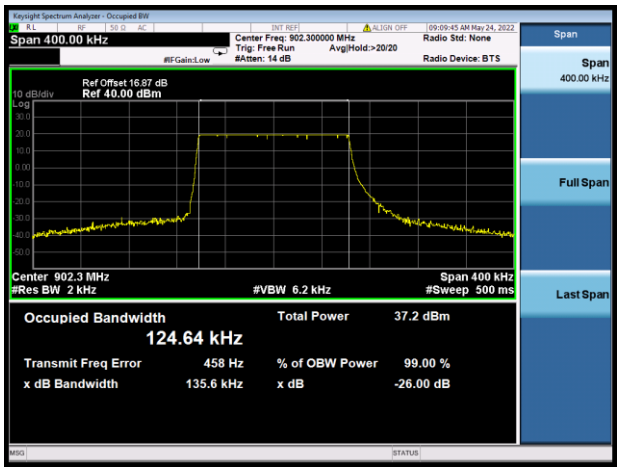


HIGH CHANNEL

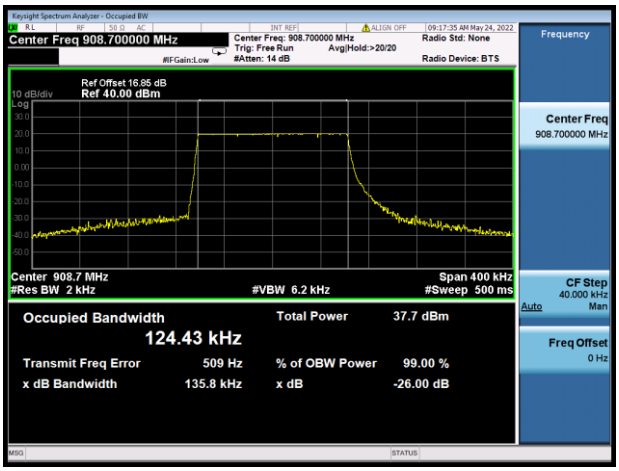


99% Bandwidth

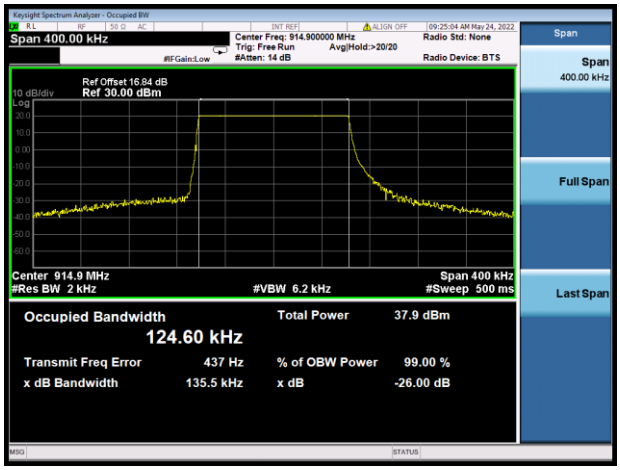
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



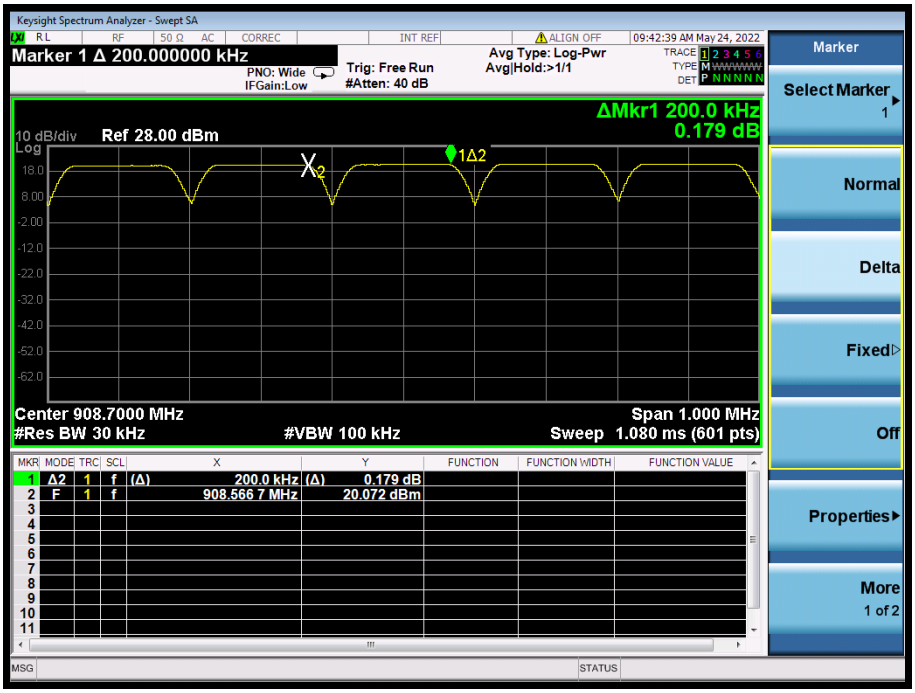
A.4 Hopping Frequency Separation

Test Data

Mode	Frequency separation (MHz)	Max 20 dB Bandwidth (MHz)	Verdict
LoRa	0.200	0.133	Pass

Test Plots

LoRa

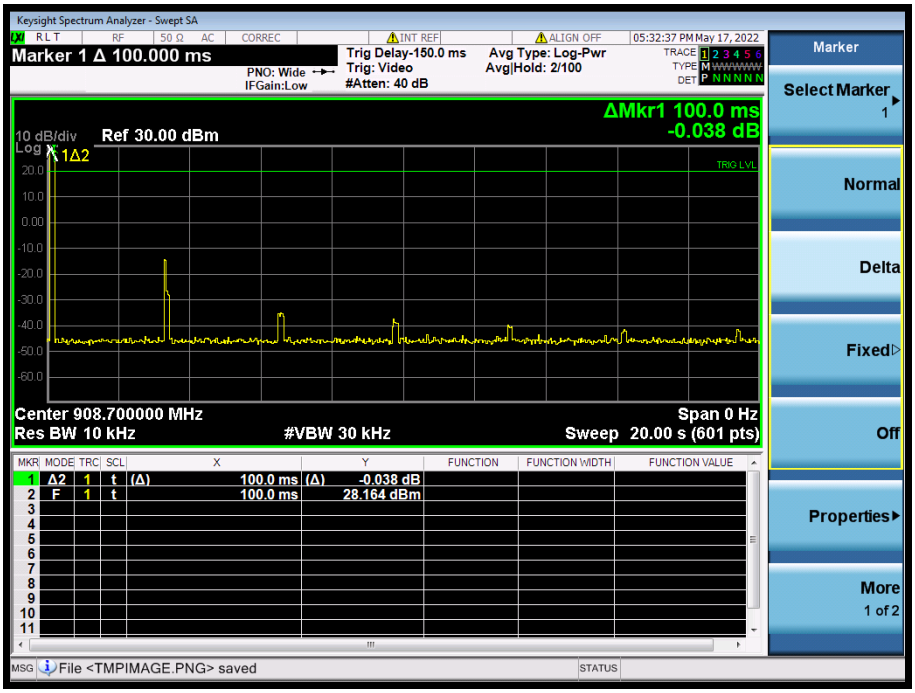


A.5 Average Time of Occupancy

Test Data

Total of Dwell (ms)	Limit (sec)	Verdict
100.000	0.4	Pass

LoRa



A.6 Conducted Spurious Emissions & Authorized-band band-edge

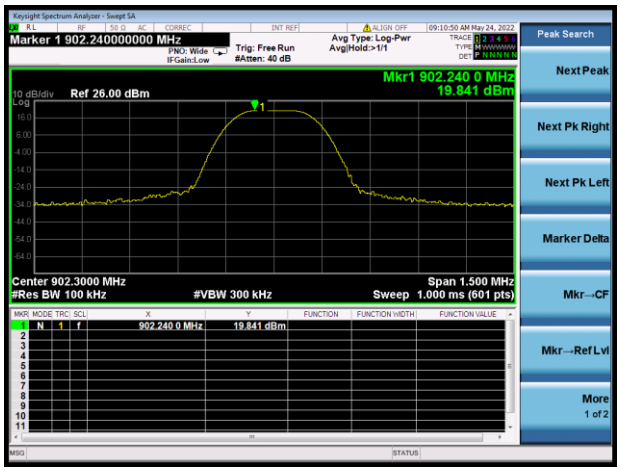
Test Data

LoRa				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-17.03	19.84	-0.16	Pass
Middle	-17.10	20.29	0.29	Pass
High	-16.95	20.54	0.54	Pass

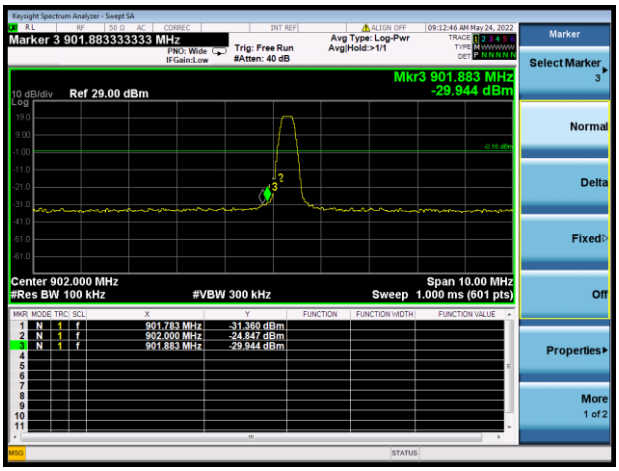
LoRa				
Mode	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Hopping	-16.96	20.81	0.81	Pass

Test Plots

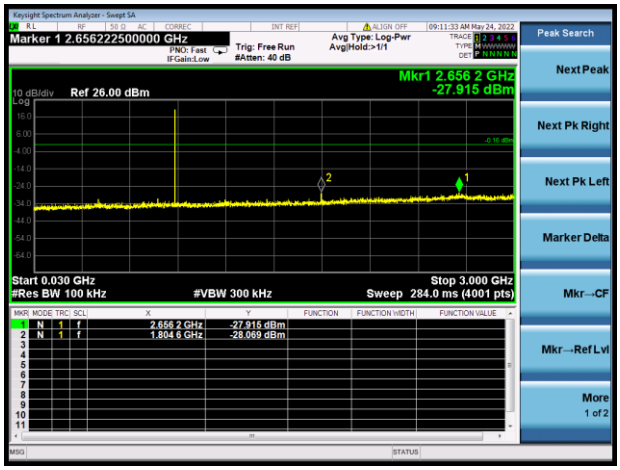
LOW CHANNEL, CARRIER LEVEL



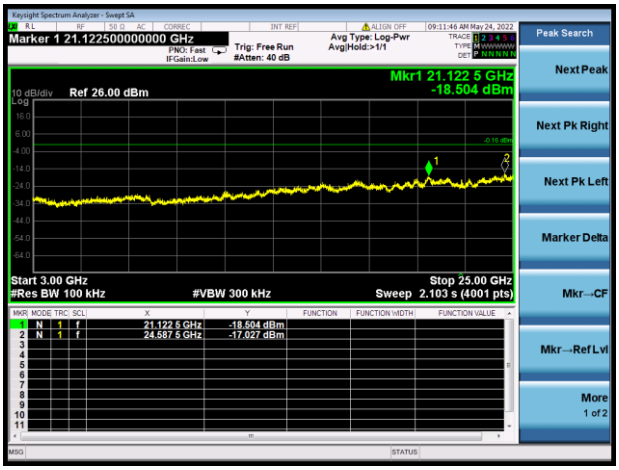
LOW CHANNEL, Band Edge



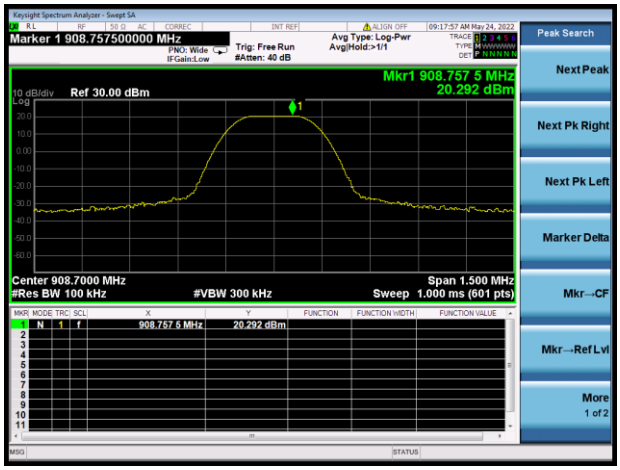
LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



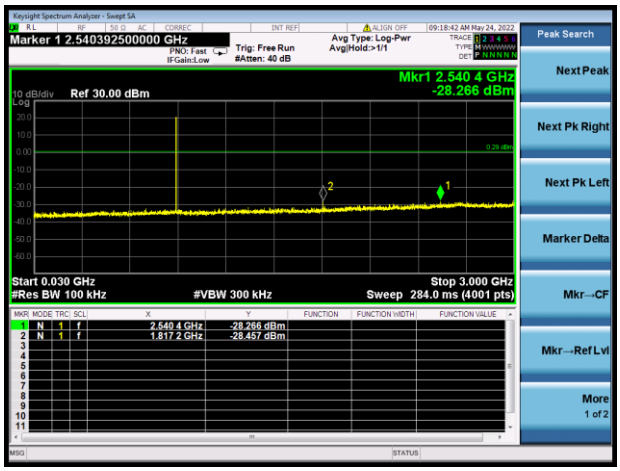
LOW CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



MIDDLE CHANNEL, CARRIER LEVEL

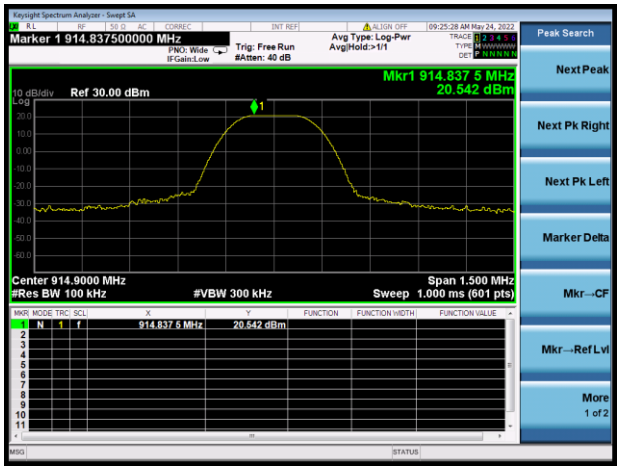


MIDDLE CHANNEL , SPURIOUS 30 MHz ~ 3 GHz

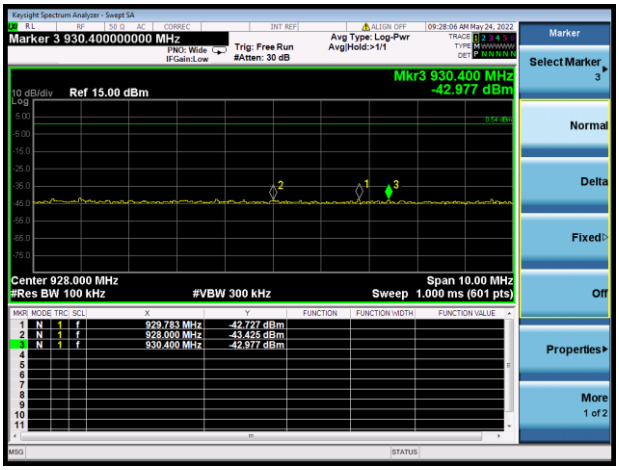


MIDDLE CHANNEL , SPURIOUS 3 GHz ~ 25 GHz

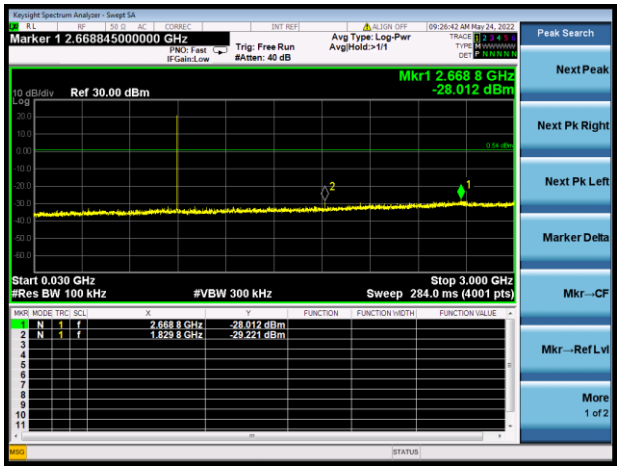
HIGH CHANNEL, CARRIER LEVEL



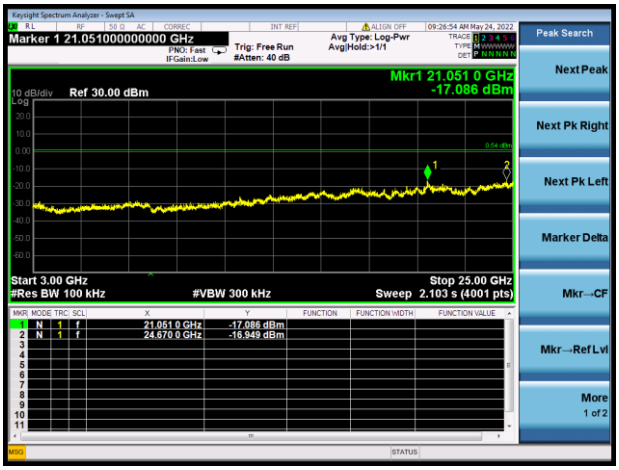
HIGH CHANNEL , BAND EDGE



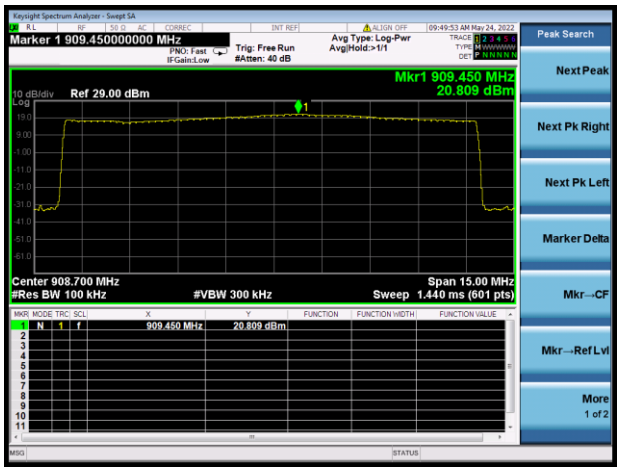
HIGH CHANNEL , SPURIOUS 30 MHz ~ 3 GHz



HIGH CHANNEL , SPURIOUS 3 GHz ~ 25 GHz

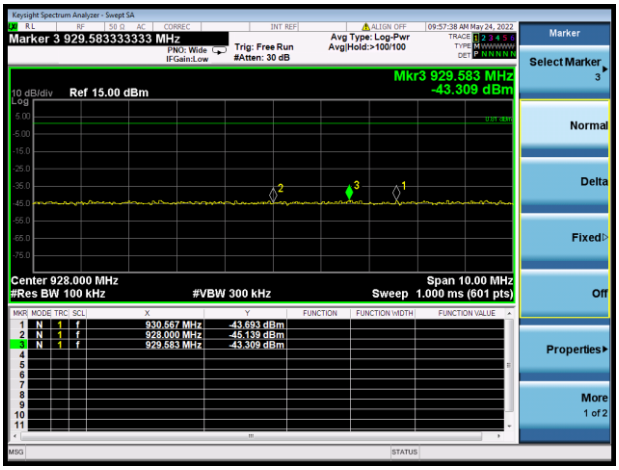


HOPPING, CARRIER LEVEL

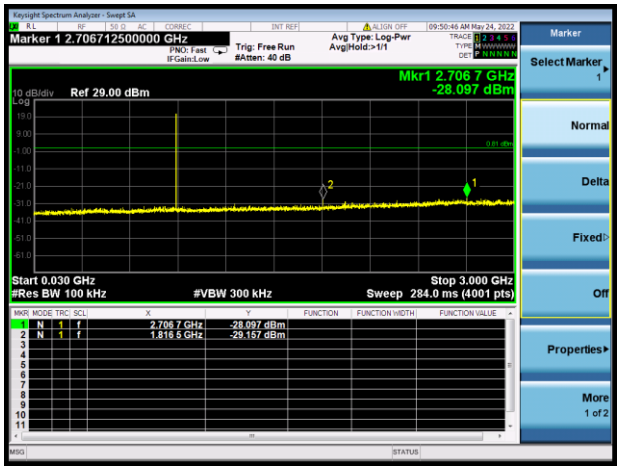


HOPPING BAND EDGE (LOW)

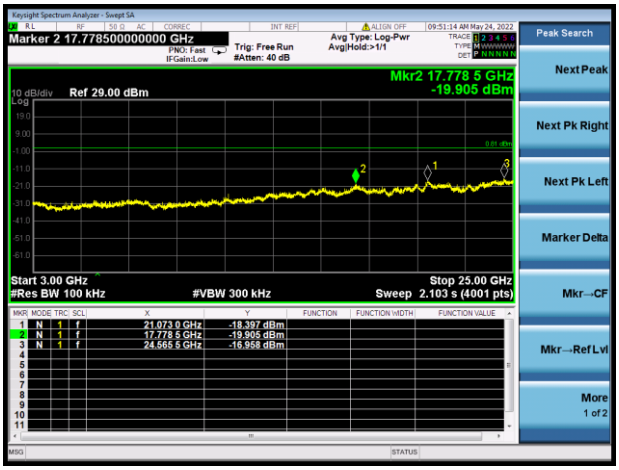
HOPPING BAND EDGE (HIGH)



HOPPING Mode, SPURIOUS 30 MHz ~ 3 GHz



Hopping Mode, SPURIOUS 3 GHz ~ 25 GHz

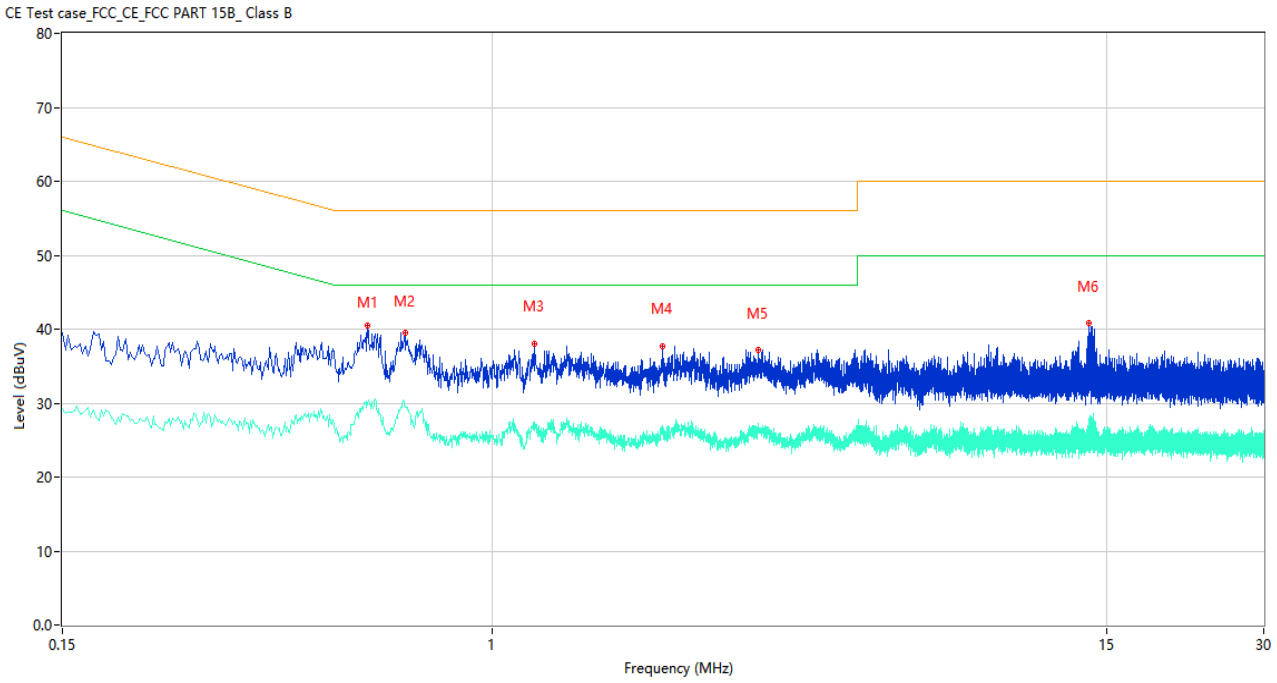


A.7 Conducted Emissions

Note [1]: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.
Note [2]: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.
Note [3]: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

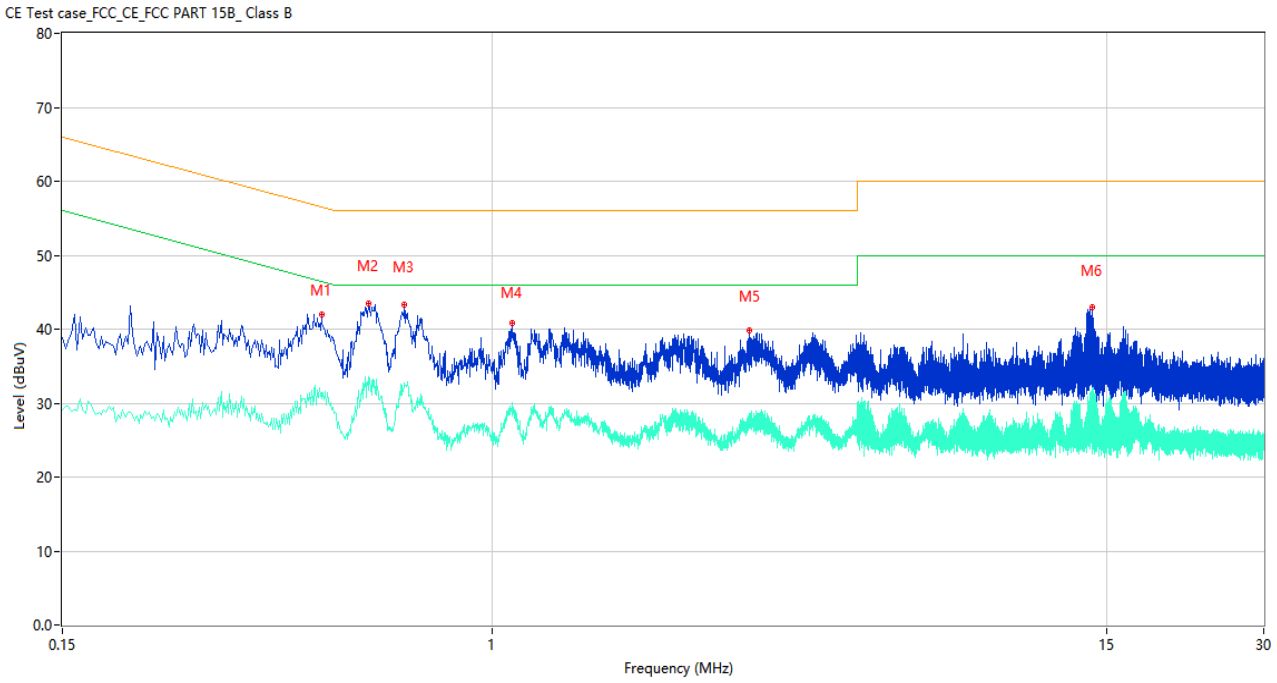
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.576	40.55	10.89	56.00	-15.45	Peak	L	Pass
1**	0.576	29.68	10.89	46.00	-16.32	AV	L	Pass
2	0.680	39.54	10.84	56.00	-16.46	Peak	L	Pass
2**	0.680	29.39	10.84	46.00	-16.61	AV	L	Pass
3	1.204	37.99	10.71	56.00	-18.01	Peak	L	Pass
3**	1.204	27.50	10.71	46.00	-18.50	AV	L	Pass
4	2.114	37.68	10.74	56.00	-18.32	Peak	L	Pass
4**	2.114	26.99	10.74	46.00	-19.01	AV	L	Pass
5	3.230	37.20	10.70	56.00	-18.80	Peak	L	Pass
5**	3.230	27.20	10.70	46.00	-18.80	AV	L	Pass
6	13.856	40.80	10.68	60.00	-19.20	Peak	L	Pass
6**	13.856	24.48	10.68	50.00	-25.52	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.470	41.93	10.92	56.51	-14.58	Peak	N	Pass
1**	0.470	31.32	10.92	46.51	-15.19	AV	N	Pass
2	0.580	43.54	10.89	56.00	-12.46	Peak	N	Pass
2**	0.580	31.70	10.89	46.00	-14.30	AV	N	Pass
3	0.678	43.37	10.84	56.00	-12.63	Peak	N	Pass
3**	0.678	32.71	10.84	46.00	-13.29	AV	N	Pass
4	1.088	40.77	10.70	56.00	-15.23	Peak	N	Pass
4**	1.088	29.62	10.70	46.00	-16.38	AV	N	Pass
5	3.108	39.80	10.70	56.00	-16.20	Peak	N	Pass
5**	3.108	28.52	10.70	46.00	-17.48	AV	N	Pass
6	14.060	42.94	10.67	60.00	-17.06	Peak	N	Pass
6**	14.060	29.79	10.67	50.00	-20.21	AV	N	Pass

A.8 Radiated Spurious Emission

Note [1]: The symbol of "--" in the table which means not application.

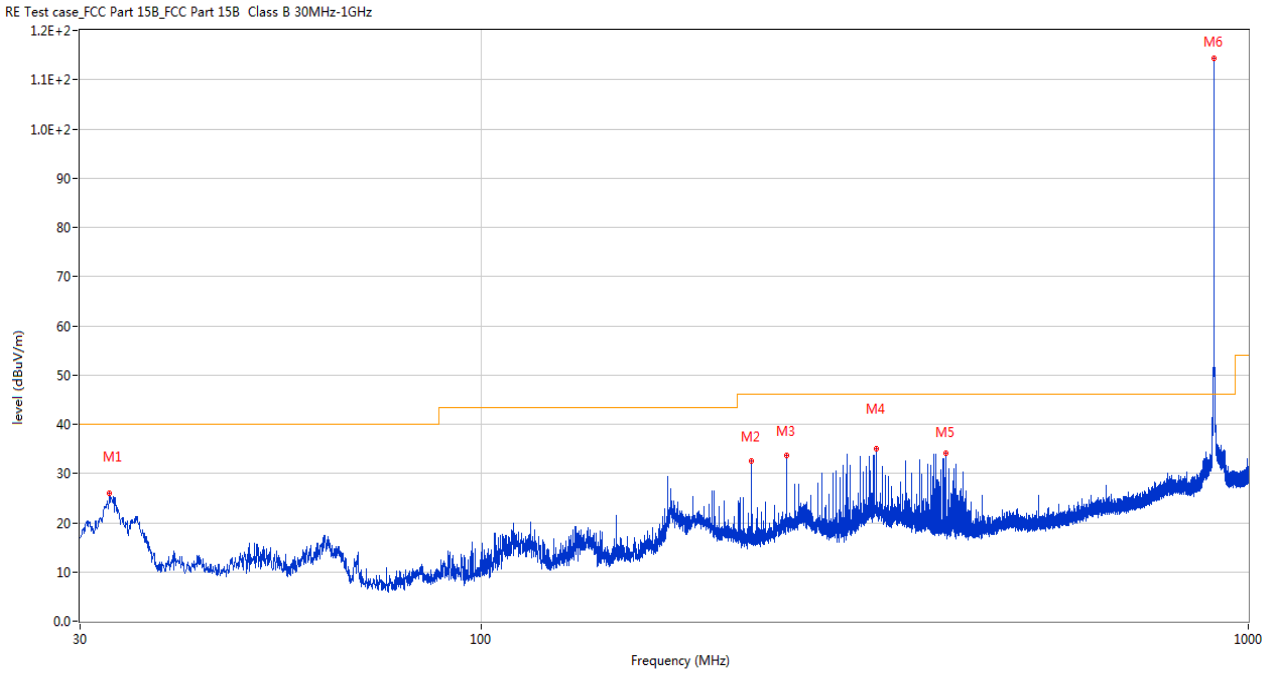
Note [2]: For the test data above 1 GHz, according the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note [3]: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note [4]: The marked spikes near 900 MHz with circle should be ignored because they are Fundamental signal.

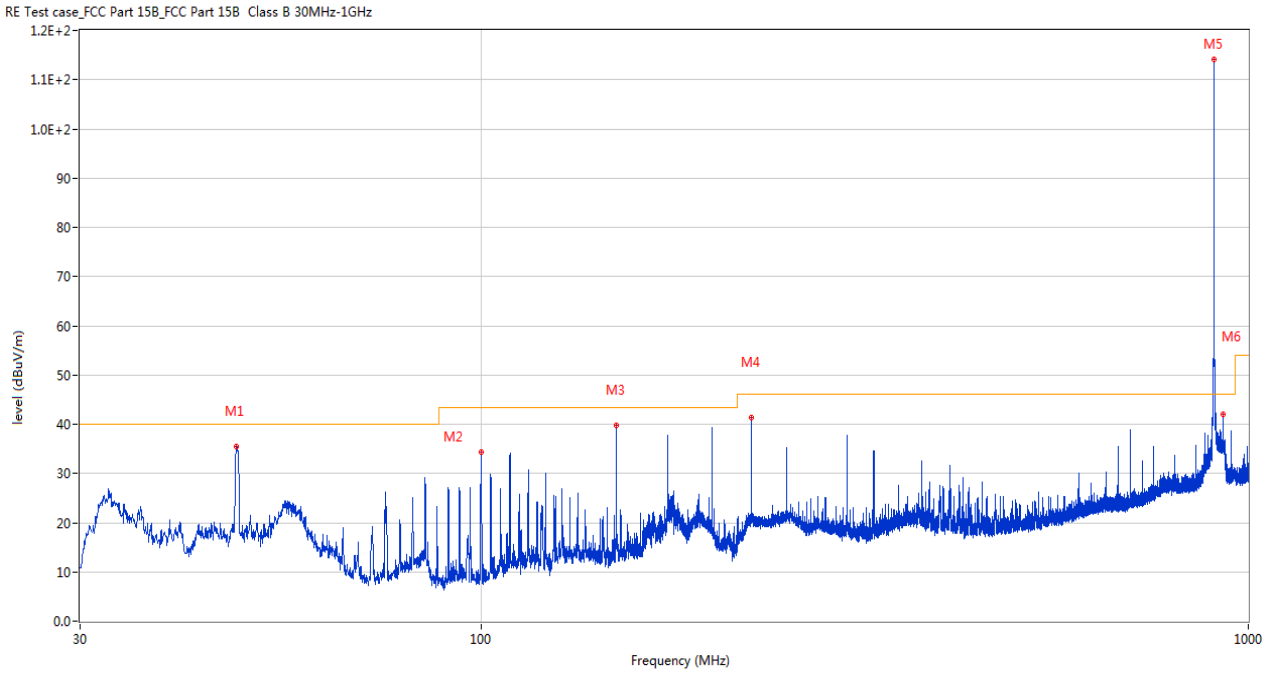
Test Data and Plots

LOW CHANNEL, 30 MHz to 1 GHz, ANT H



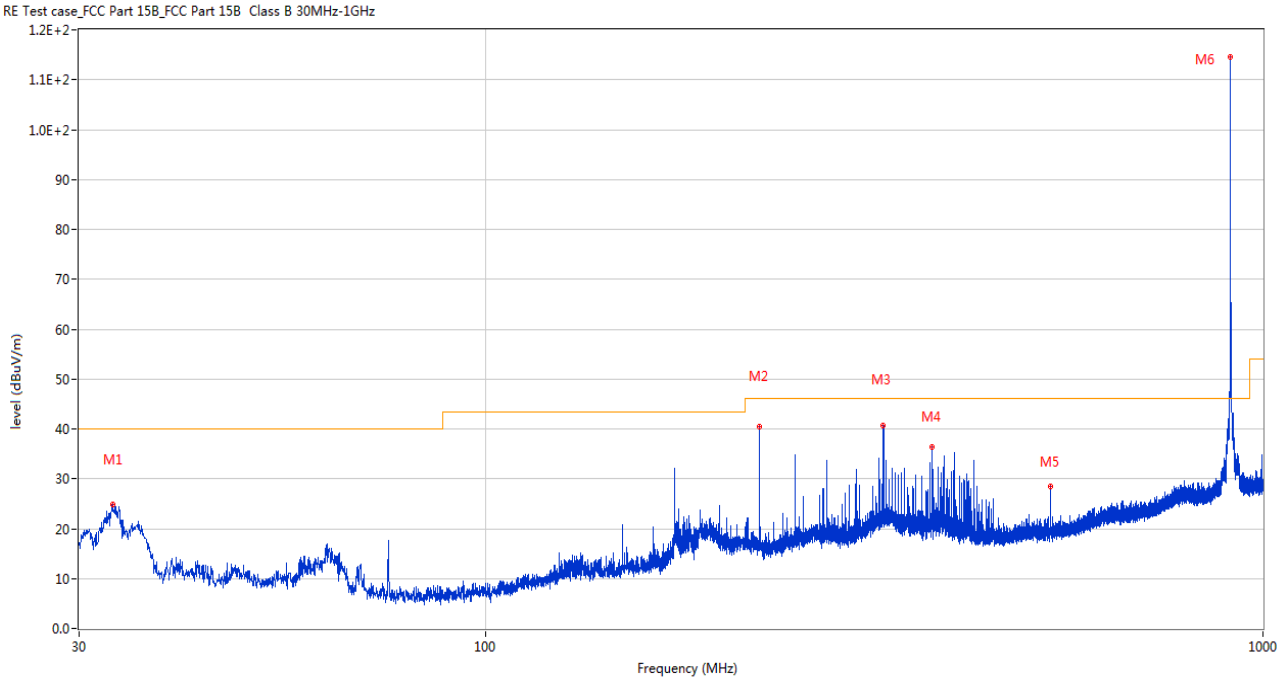
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	32.764	25.94	-26.83	40.0	-14.06	Peak	220.00	100	Horizontal	Pass
2	225.018	32.54	-26.67	46.0	-13.46	Peak	120.00	100	Horizontal	Pass
3	249.996	33.66	-25.63	46.0	-12.34	Peak	261.00	100	Horizontal	Pass
4	327.111	34.93	-22.80	46.0	-11.07	Peak	42.00	200	Horizontal	Pass
5	403.935	34.10	-20.83	46.0	-11.90	Peak	330.00	100	Horizontal	Pass
6	902.321	114.40	-7.75	46.0	68.40	Peak	187.00	100	Horizontal	N/A

LOW CHANNEL, 30 MHz to 1 GHz, ANT V



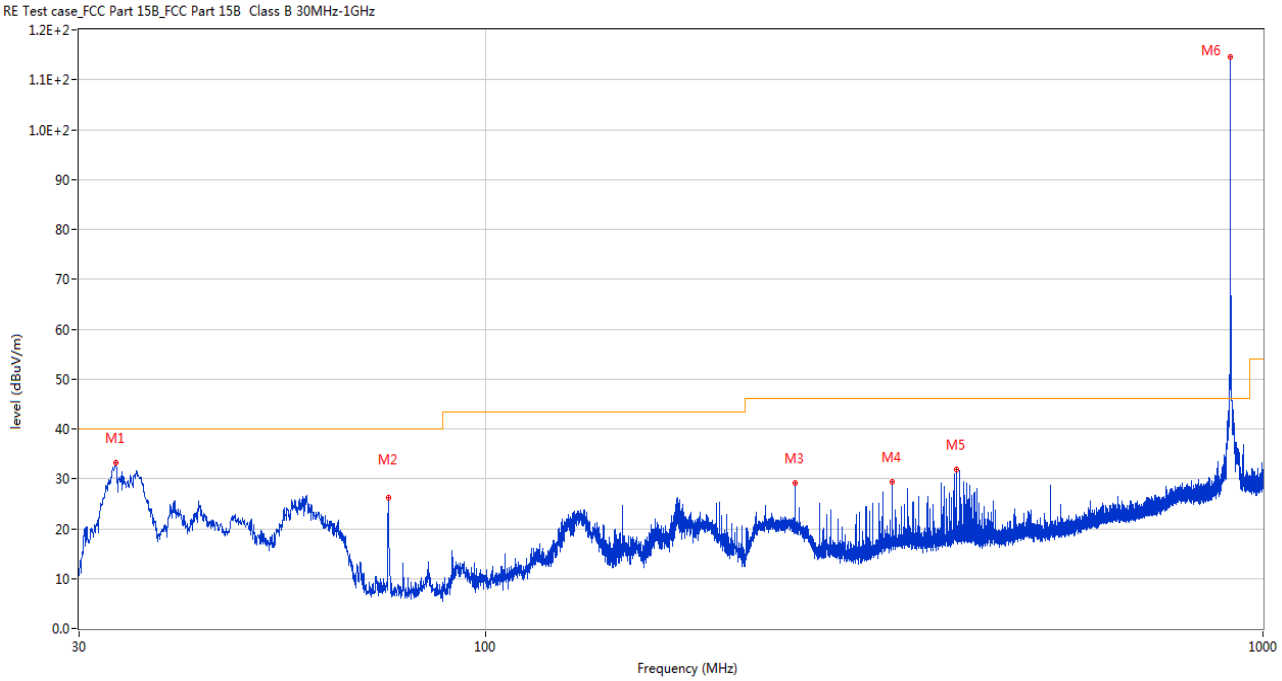
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	47.993	35.42	-26.10	40.0	-4.58	Peak	282.00	100	Vertical	Pass
2	100.034	34.30	-28.77	43.5	-9.20	Peak	245.00	200	Vertical	Pass
3	149.989	39.69	-24.28	43.5	-3.81	Peak	244.00	100	Vertical	Pass
4	225.018	41.25	-26.67	46.0	-4.75	Peak	245.00	200	Vertical	Pass
5	902.273	114.18	-7.75	46.0	68.18	Peak	144.00	100	Vertical	N/A
6	926.280	42.03	-7.82	46.0	-3.97	Peak	11.00	100	Vertical	Pass

MIDDLE CHANNEL, 30 MHz to 1 GHz, ANT H



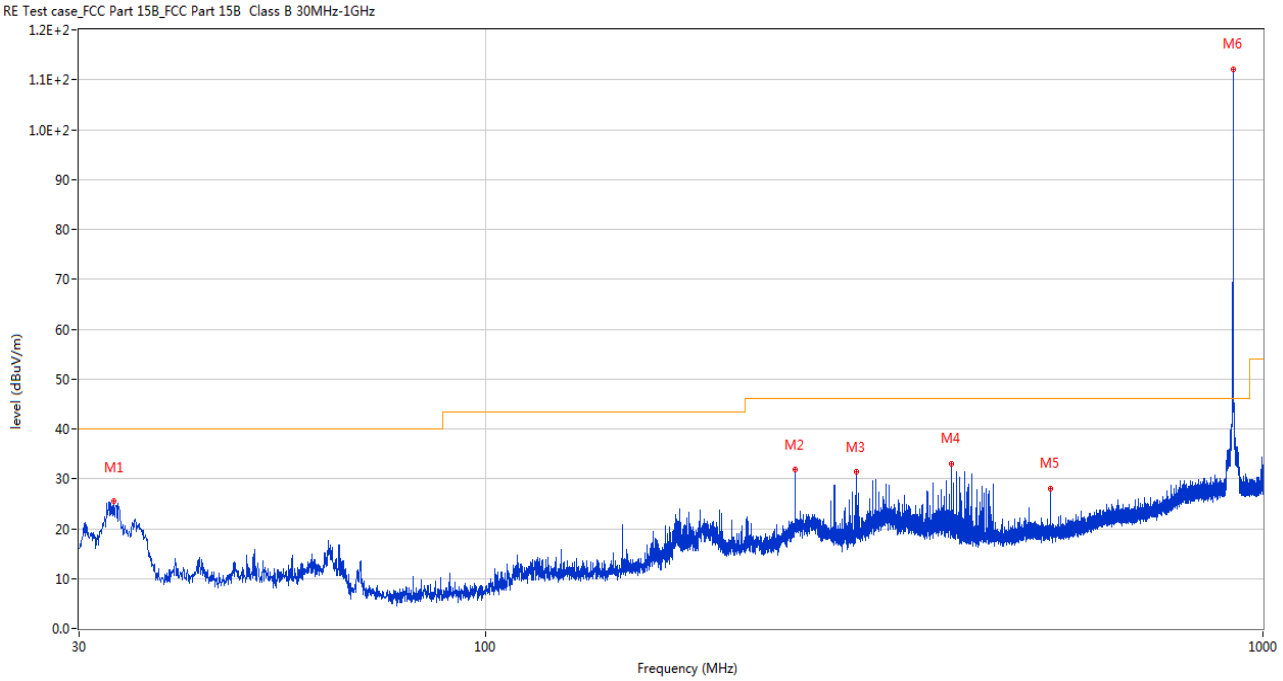
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.104	24.79	-26.78	40.0	-15.21	Peak	151.00	100	Horizontal	Pass
2	225.018	40.34	-26.67	46.0	-5.66	Peak	309.00	200	Horizontal	Pass
3	324.977	40.62	-22.89	46.0	-5.38	Peak	246.00	200	Horizontal	Pass
4	374.981	36.33	-21.75	46.0	-9.67	Peak	309.00	100	Horizontal	Pass
5	532.945	28.39	-17.32	46.0	-17.61	Peak	31.00	100	Horizontal	Pass
6	908.674	114.47	-7.70	46.0	68.47	Peak	212.00	100	Horizontal	N/A

MIDDLE CHANNEL, 30 MHz to 1 GHz, ANT V



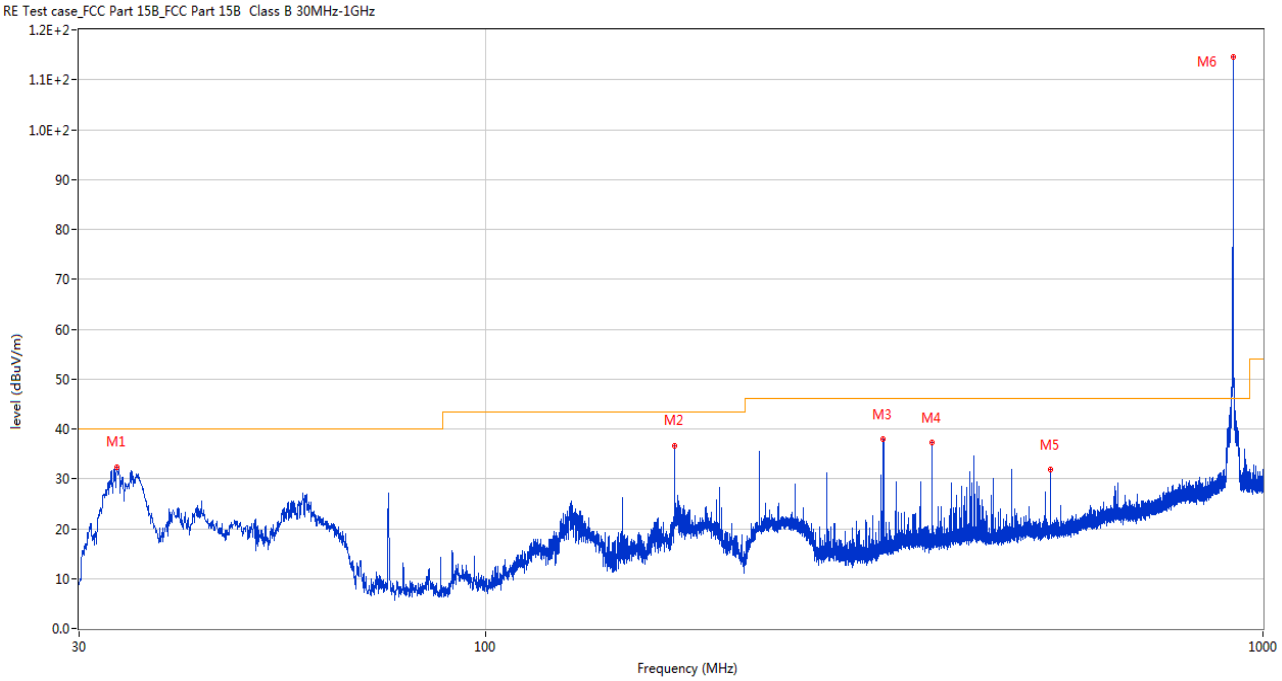
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.444	33.26	-26.74	40.0	-6.74	Peak	244.00	100	Vertical	Pass
2	75.008	26.16	-29.27	40.0	-13.84	Peak	313.00	100	Vertical	Pass
3	249.996	29.18	-25.63	46.0	-16.82	Peak	279.00	200	Vertical	Pass
4	333.270	29.38	-22.81	46.0	-16.62	Peak	258.00	200	Vertical	Pass
5	403.935	31.91	-20.83	46.0	-14.09	Peak	190.00	100	Vertical	Pass
6	908.674	114.51	-7.70	46.0	68.51	Peak	360.00	100	Vertical	N/A

HIGH CHANNEL, 30 MHz to 1 GHz, ANT H



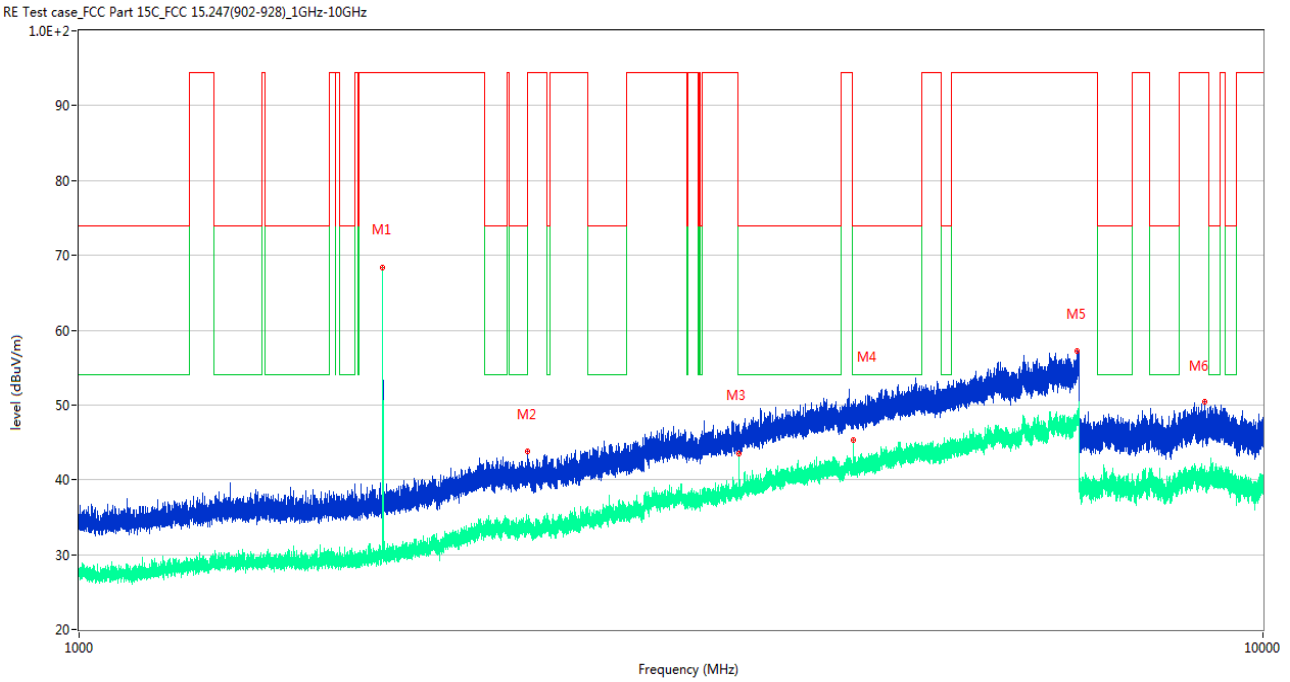
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.249	25.62	-26.76	40.0	-14.38	Peak	245.00	100	Horizontal	Pass
2	249.996	31.93	-25.63	46.0	-14.07	Peak	259.00	100	Horizontal	Pass
3	300.000	31.41	-23.96	46.0	-14.59	Peak	235.00	200	Horizontal	Pass
4	397.824	33.10	-21.15	46.0	-12.90	Peak	289.00	200	Horizontal	Pass
5	532.994	28.03	-17.32	46.0	-17.97	Peak	35.00	100	Horizontal	Pass
6	914.931	112.10	-7.70	46.0	66.10	Peak	212.00	100	Horizontal	N/A

HIGH CHANNEL, 30 MHz to 1 GHz, ANT V



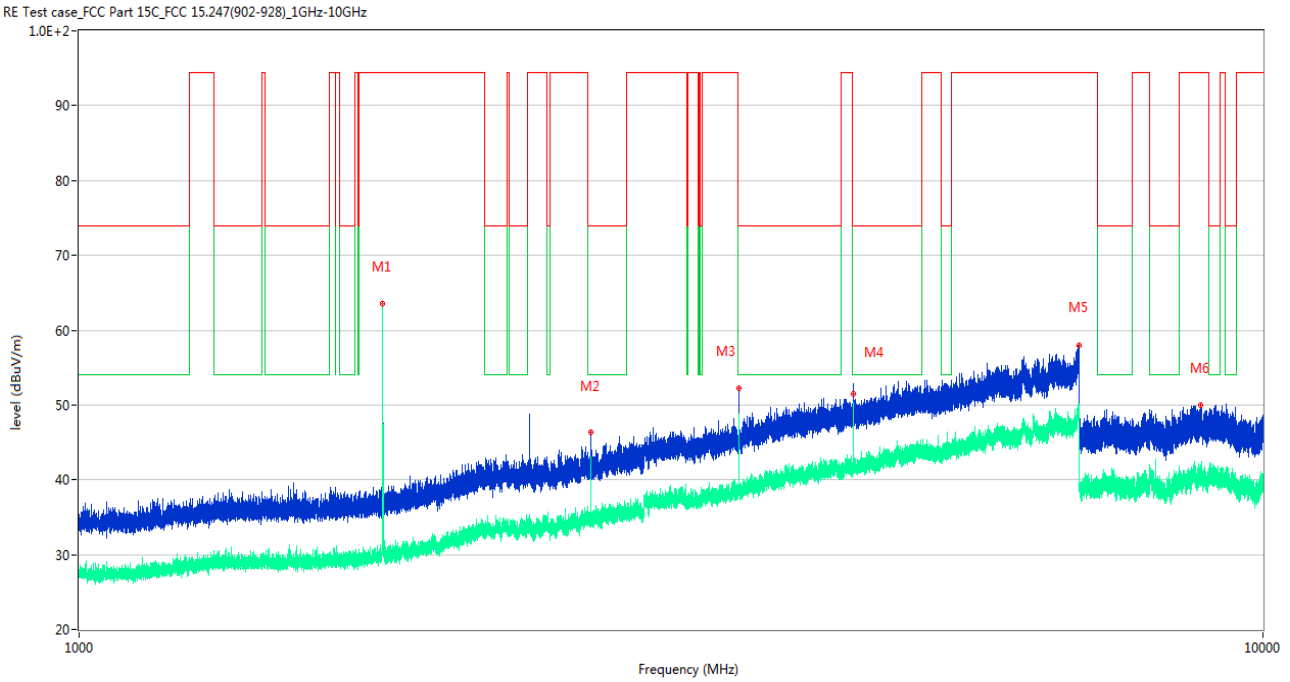
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.589	32.40	-26.72	40.0	-7.60	Peak	295.00	200	Vertical	Pass
2	175.015	36.62	-25.68	43.5	-6.88	Peak	222.00	100	Vertical	Pass
3	324.977	37.96	-22.89	46.0	-8.04	Peak	222.00	100	Vertical	Pass
4	374.981	37.18	-21.75	46.0	-8.82	Peak	222.00	200	Vertical	Pass
5	532.994	31.81	-17.32	46.0	-14.19	Peak	251.00	100	Vertical	Pass
6	914.834	114.55	-7.71	46.0	68.55	Peak	20.00	100	Vertical	N/A

LOW CHANNEL 1 GHz to 12.75 GHz, ANT H



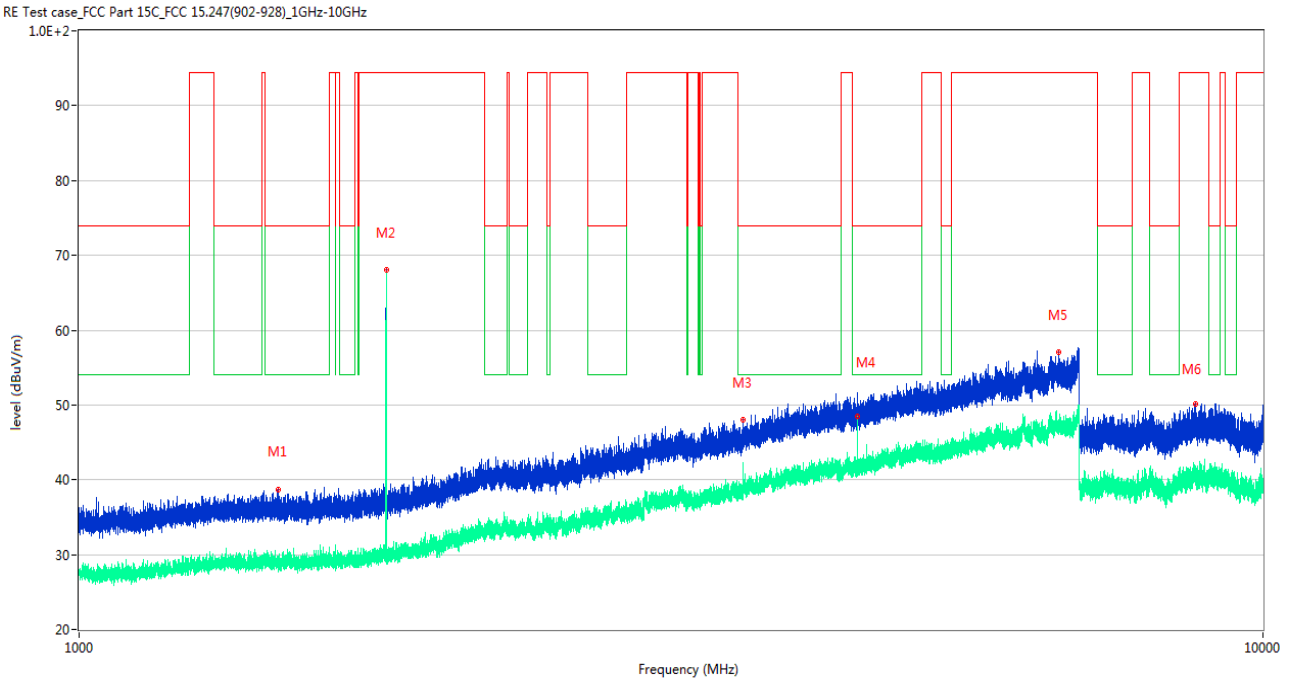
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1804.500	68.13	-16.92	94.55	-26.42	Peak	254.00	150	Horizontal	Pass
1**	1804.500	68.30	-16.92	94.55	-26.25	AV	254.00	150	Horizontal	Pass
2	2393.100	43.79	-12.23	94.55	-50.76	Peak	272.00	150	Horizontal	Pass
2**	2393.100	34.05	-12.23	94.55	-60.5	AV	272.00	150	Horizontal	Pass
3	3609.000	45.52	-7.17	74.0	-28.48	Peak	219.00	150	Horizontal	Pass
3**	3609.000	43.55	-7.17	54.0	-10.45	AV	219.00	150	Horizontal	Pass
4	4511.200	49.66	-4.13	74.0	-24.34	Peak	232.00	150	Horizontal	Pass
4**	4511.200	45.35	-4.13	54.0	-8.65	AV	232.00	150	Horizontal	Pass
5	6966.200	57.20	0.41	94.55	-37.35	Peak	168.00	150	Horizontal	Pass
5**	6966.200	48.19	0.41	94.55	-46.36	AV	168.00	150	Horizontal	Pass
6	8925.850	50.43	-0.38	94.55	-44.12	Peak	34.00	150	Horizontal	Pass
6**	8925.850	40.64	-0.38	94.55	-53.91	AV	34.00	150	Horizontal	Pass

LOW CHANNEL 1 GHz to 12.75 GHz, ANT V



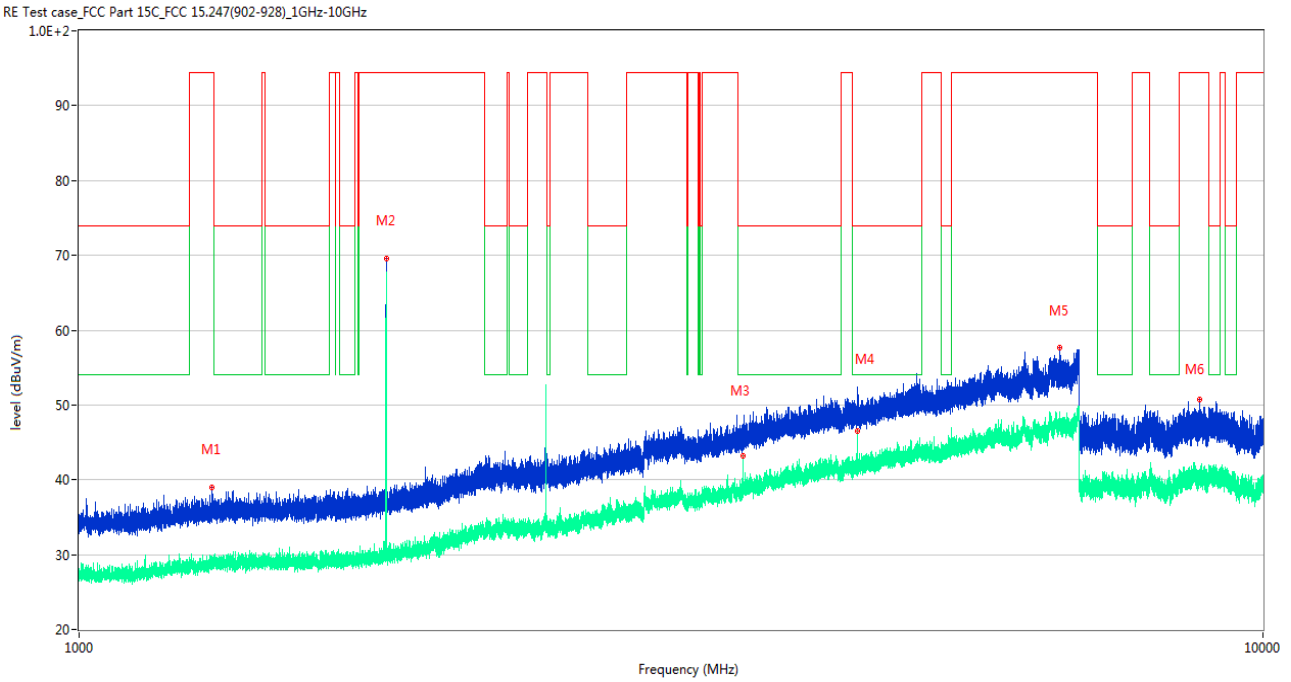
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1804.700	61.97	-16.89	94.55	-32.58	Peak	115.00	150	Vertical	Pass
1**	1804.700	63.48	-16.89	94.55	-31.07	AV	115.00	150	Vertical	Pass
2	2706.700	46.42	-11.68	74.0	-27.58	Peak	21.00	150	Vertical	Pass
2**	2706.700	41.84	-11.68	54.0	-12.16	AV	21.00	150	Vertical	Pass
3	3609.000	52.18	-7.17	74.0	-21.82	Peak	294.00	150	Vertical	Pass
3**	3609.000	48.72	-7.17	54.0	-5.28	AV	294.00	150	Vertical	Pass
4	4511.200	51.53	-4.13	74.0	-22.47	Peak	1.00	150	Vertical	Pass
4**	4511.200	50.23	-4.13	54.0	-3.77	AV	1.00	150	Vertical	Pass
5	6994.200	58.00	0.25	94.55	-36.55	Peak	357.00	150	Vertical	Pass
5**	6994.200	48.33	0.25	94.55	-46.22	AV	357.00	150	Vertical	Pass
6	8852.050	49.94	-0.91	94.55	-44.61	Peak	55.00	150	Vertical	Pass
6**	8852.050	40.34	-0.91	94.55	-54.21	AV	55.00	150	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 12.75 GHz, ANT H



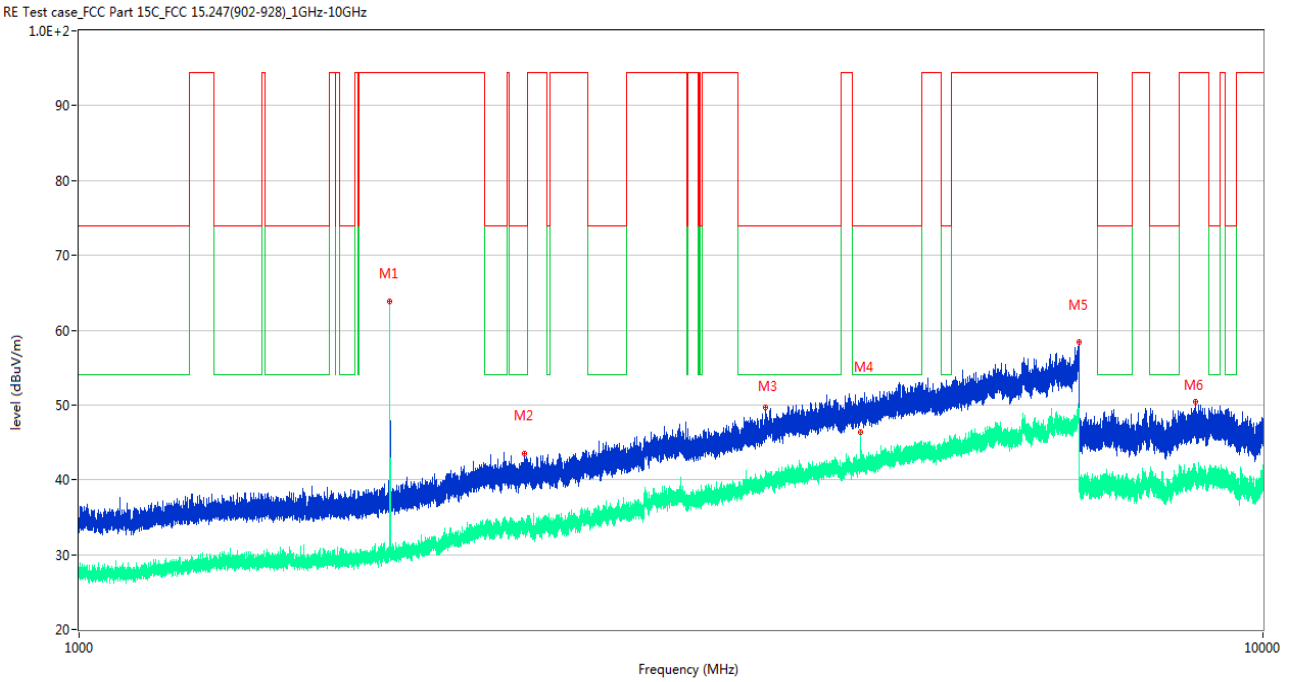
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1473.800	38.62	-17.69	74.0	-35.38	Peak	31.00	150	Horizontal	Pass
1**	1473.800	29.06	-17.69	54.0	-24.94	AV	31.00	150	Horizontal	Pass
2	1817.500	68.05	-17.10	94.55	-15.85	Peak	250.00	150	Horizontal	Pass
2**	1817.500	67.73	-17.10	94.55	-16.17	AV	250.00	150	Horizontal	Pass
3	3634.800	47.99	-6.84	74.0	-26.01	Peak	227.00	150	Horizontal	Pass
3**	3634.800	42.11	-6.84	54.0	-11.89	AV	227.00	150	Horizontal	Pass
4	4543.400	50.72	-4.20	74.0	-23.28	Peak	227.00	150	Horizontal	Pass
4**	4543.400	48.46	-4.20	54.0	-5.54	AV	227.00	150	Horizontal	Pass
5	6720.200	57.05	-1.06	94.55	-26.85	Peak	163.00	150	Horizontal	Pass
5**	6720.200	47.19	-1.06	94.55	-36.71	AV	163.00	150	Horizontal	Pass
6	8771.350	50.15	-1.52	94.55	-33.75	Peak	0.00	150	Horizontal	Pass
6**	8771.350	39.86	-1.52	94.55	-44.04	AV	0.00	150	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 12.75 GHz, ANT V



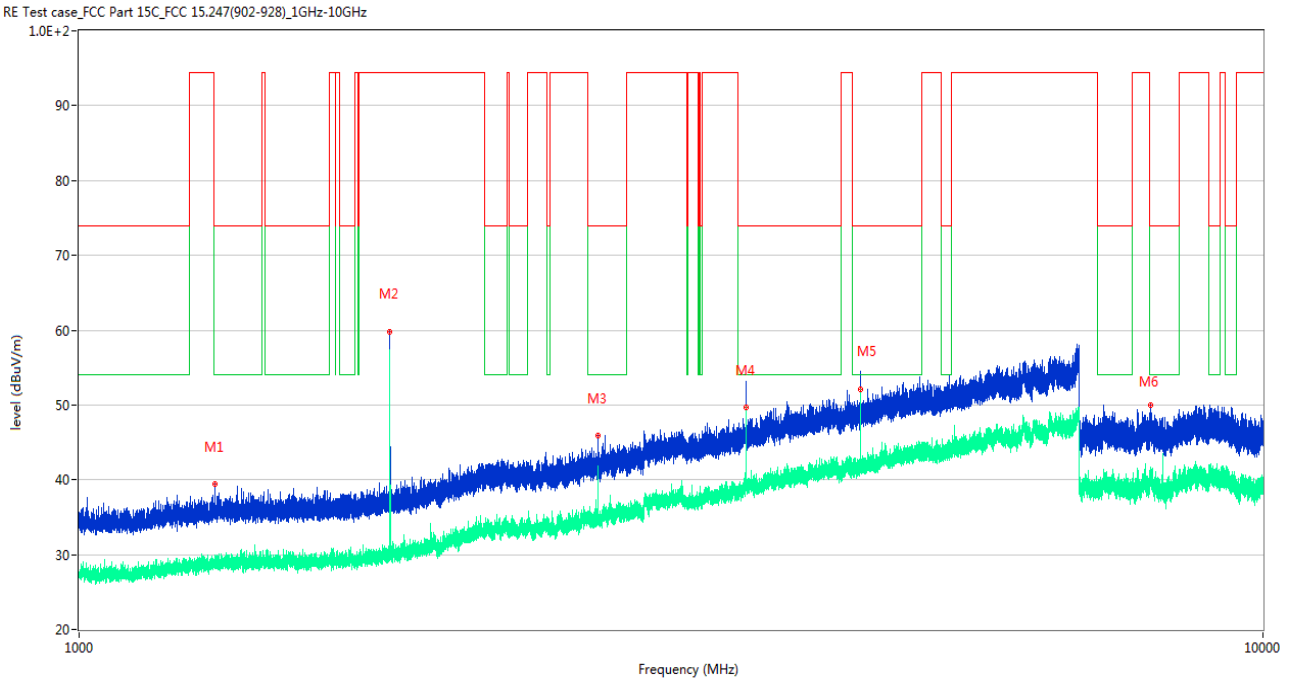
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1295.900	39.05	-17.27	94.55	-55.5	Peak	313.00	150	Vertical	Pass
1**	1295.900	29.08	-17.27	94.55	-65.47	AV	313.00	150	Vertical	Pass
2	1817.400	69.59	-17.10	94.55	-24.96	Peak	313.00	150	Vertical	Pass
2**	1817.400	67.79	-17.10	94.55	-26.76	AV	313.00	150	Vertical	Pass
3	3634.800	47.08	-6.84	74.0	-26.92	Peak	35.00	150	Vertical	Pass
3**	3634.800	43.18	-6.84	54.0	-10.82	AV	35.00	150	Vertical	Pass
4	4543.800	49.53	-4.21	74.0	-24.47	Peak	229.00	150	Vertical	Pass
4**	4543.800	46.55	-4.21	54.0	-7.45	AV	229.00	150	Vertical	Pass
5	6737.800	57.69	-0.23	94.55	-36.86	Peak	178.00	150	Vertical	Pass
5**	6737.800	47.86	-0.23	94.55	-46.69	AV	178.00	150	Vertical	Pass
6	8836.750	50.75	-0.93	94.55	-43.8	Peak	65.00	150	Vertical	Pass
6**	8836.750	40.75	-0.93	94.55	-53.8	AV	65.00	150	Vertical	Pass

HIGH CHANNEL 1 GHz to 12.75 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1829.700	63.80	-16.66	94.55	-30.75	Peak	235.00	150	Horizontal	Pass
1**	1829.700	63.56	-16.66	94.55	-30.99	AV	235.00	150	Horizontal	Pass
2	2376.700	43.48	-12.22	74.0	-30.52	Peak	91.00	150	Horizontal	Pass
2**	2376.700	33.74	-12.22	54.0	-20.26	AV	91.00	150	Horizontal	Pass
3	3800.200	49.73	-5.73	74.0	-24.27	Peak	347.00	150	Horizontal	Pass
3**	3800.200	39.59	-5.73	54.0	-14.41	AV	347.00	150	Horizontal	Pass
4	4574.200	50.89	-3.89	74.0	-23.11	Peak	240.00	150	Horizontal	Pass
4**	4574.200	46.33	-3.89	54.0	-7.67	AV	240.00	150	Horizontal	Pass
5	6998.400	58.43	0.23	94.55	-36.12	Peak	251.00	150	Horizontal	Pass
5**	6998.400	49.04	0.23	94.55	-45.51	AV	251.00	150	Horizontal	Pass
6	8766.401	50.48	-1.52	94.55	-44.07	Peak	43.00	150	Horizontal	Pass
6**	8766.401	39.74	-1.52	94.55	-54.81	AV	43.00	150	Horizontal	Pass

HIGH CHANNEL 1 GHz to 12.75 GHz, ANT V



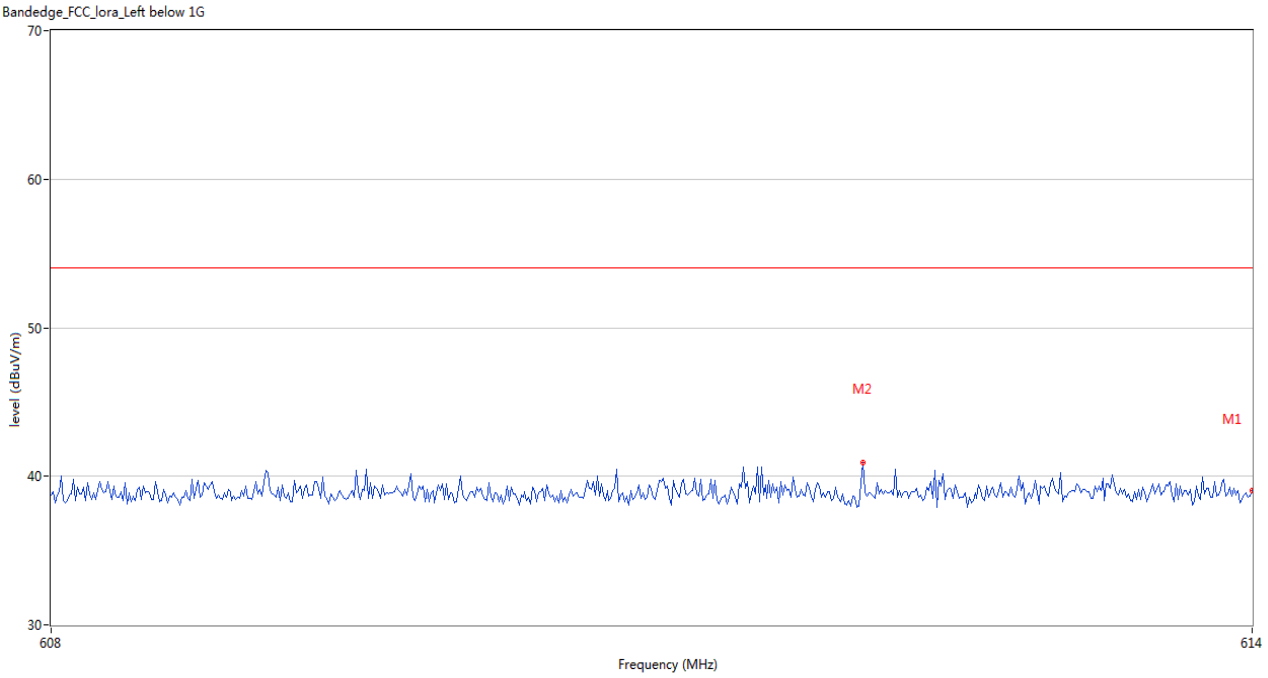
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1302.100	39.48	-17.15	74.0	-34.52	Peak	312.00	150	Vertical	Pass
1**	1302.100	28.16	-17.15	54.0	-25.84	AV	312.00	150	Vertical	Pass
2	1829.900	59.75	-16.66	94.55	-34.8	Peak	86.00	150	Vertical	Pass
2**	1829.900	57.42	-16.66	94.55	-37.13	AV	86.00	150	Vertical	Pass
3	2745.000	45.92	-11.24	74.0	-28.08	Peak	193.00	150	Vertical	Pass
3**	2745.000	40.18	-11.24	54.0	-13.82	AV	193.00	150	Vertical	Pass
4	3659.400	53.21	-6.80	74.0	-20.79	Peak	24.00	150	Vertical	Pass
4**	3659.400	49.65	-6.80	54.0	-4.35	AV	24.00	150	Vertical	Pass
5	4574.600	54.32	-3.89	74.0	-19.68	Peak	36.00	150	Vertical	Pass
5**	4574.600	52.06	-3.89	54.0	-1.94	AV	36.00	150	Vertical	Pass
6	8043.700	49.94	-3.11	74.0	-24.06	Peak	223.00	150	Vertical	Pass
6**	8043.700	41.11	-3.11	54.0	-12.89	AV	223.00	150	Vertical	Pass

A.9 Band Edge (Restricted-band band-edge)

Note [1]: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.
Note [2]: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.
Note [3]: According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
Note [4]: The Level (dBuV/m) has been corrected by factor.

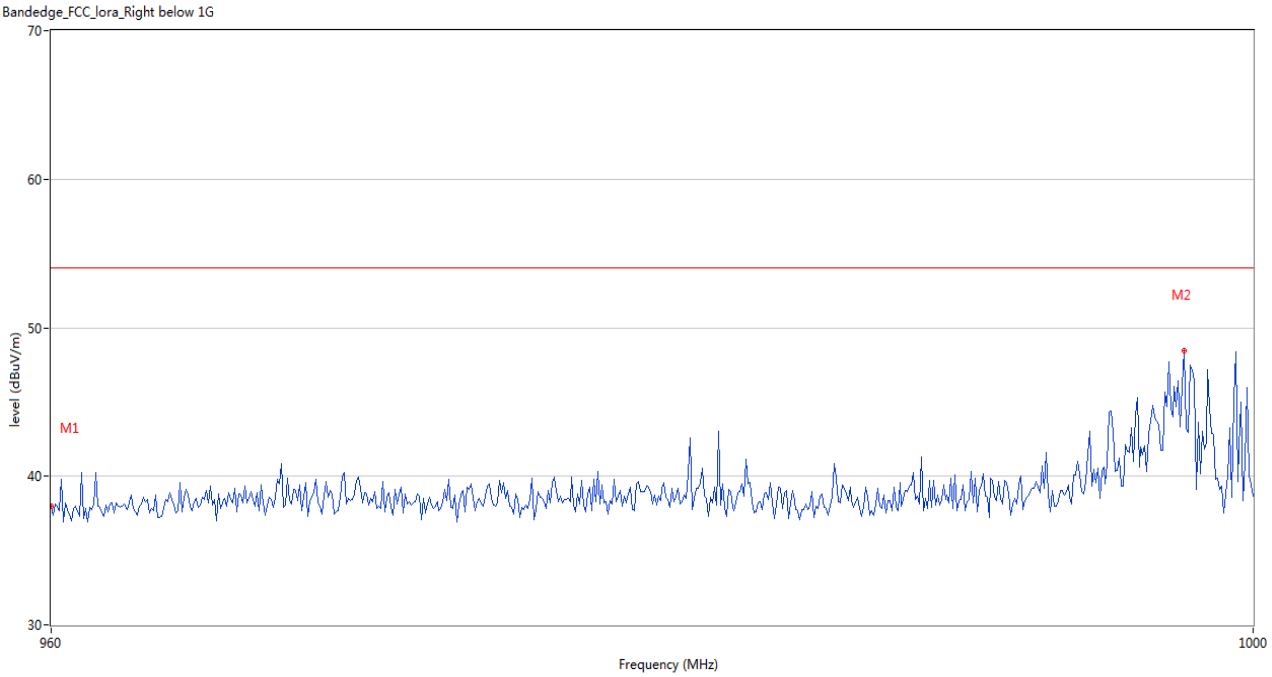
Test Data and Plots

LOW CHANNEL



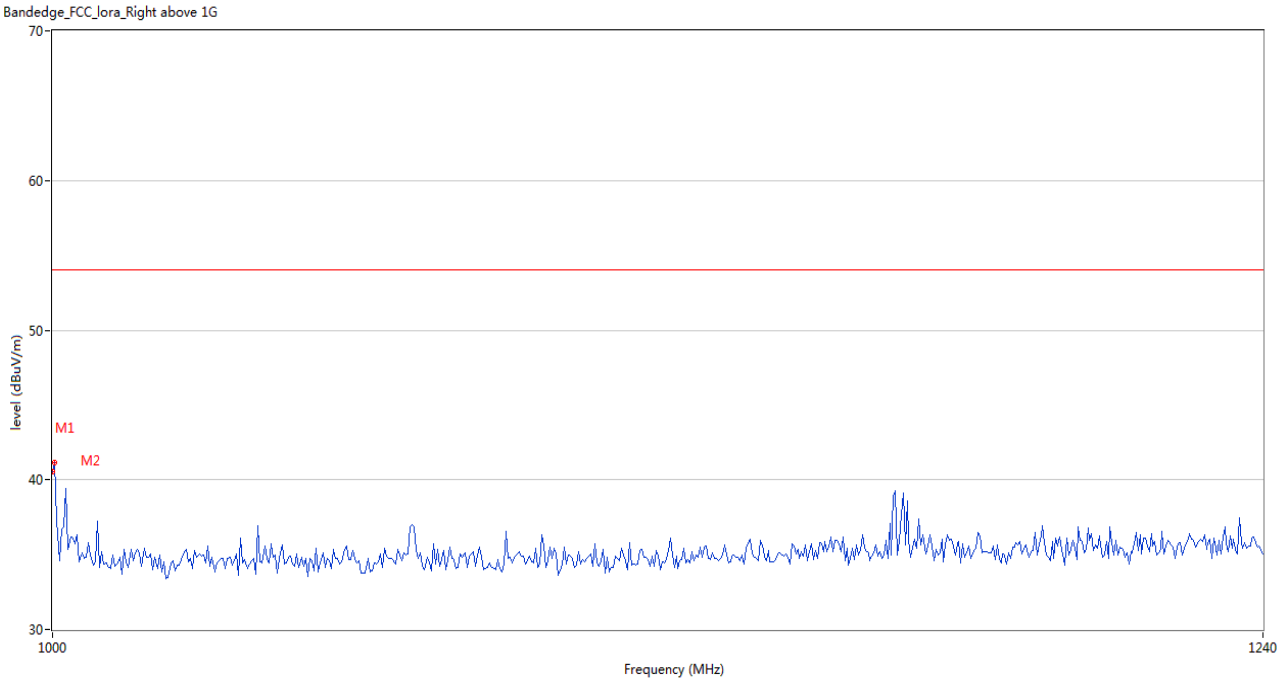
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	614.000	39.01	3.31	54.0	-14.99	Peak	222.00	100	Vertical	Pass
2	612.050	40.93	3.29	54.0	-13.07	Peak	95.00	100	Vertical	Pass

HIGH CHANNEL



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	960.000	38.01	-3.60	54.0	-15.99	Peak	311.00	100	Vertical	Pass
2	997.667	48.47	-3.44	54.0	-5.53	Peak	74.00	100	Vertical	Pass

HIGH CHANNEL



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1000.000	40.56	-18.22	54.0	-13.44	Peak	69.00	100	Vertical	Pass
2	1000.400	41.17	-18.21	54.0	-12.83	Peak	79.00	100	Vertical	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2250274-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2250274-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2250274-AI.PDF”.

Statement

1. The laboratory guarantees the scientificity, accuracy and impartiality of the test, and is responsible for all the information in the report, except the information provided by the customer. The customer is responsible for the impact of the information provided on the validity of the results.
2. The report without China inspection body and laboratory Mandatory Approval (CMA) mark has no effect of proving to the society.
3. For the report with CNAS mark or A2LA mark, the items marked with "☆" are not within the accredited scope.
4. This report is invalid if it is altered, without the signature of the testing and approval personnel, or without the “inspection and testing dedicated stamp” or test report stamp.
5. The test data and results are only valid for the tested samples provided by the customer.
6. This report shall not be partially reproduced without the written permission of the laboratory.
7. Any objection shall be raised to the laboratory within 30 days after receiving the report.

--END OF REPORT--