

TEST REPORT

Applicant: Arduino S.r.l.
Address: Via Andrea Appiani, 25, 20900 MONZA (Italy)
Equipment Type: Arduino Stella
Model Name: ABX00131
Brand Name: Arduino
FCC ID: 2AN9S-ABX00131
Test Standard: 47 CFR Part 15 Subpart F
(refer to section 3.1)
Sample Arrival Date: Oct. 15, 2024
Test Date: Oct. 18, 2024 - Nov. 08, 2024
Date of Issue: Dec. 23, 2024

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Yu Yingyuan

Checked by: Ye Hongji

Approved by: Sunny Zou
(Technical Director)

Yu Ying Yuan

Ye Hongji

Sunny Zou

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Dec. 23, 2024</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1	GENERAL INFORMATION.....	4
1.1	Test Laboratory	4
1.2	Test Location	4
2	PRODUCT INFORMATION	5
2.1	Applicant Information	5
2.2	Manufacturer Information.....	5
2.3	General Description for Equipment under Test (EUT).....	5
2.4	Technical Information	5
3	SUMMARY OF TEST RESULTS	6
3.1	Test Standards	6
3.2	Test Verdict	6
4	GENERAL TEST CONFIGURATIONS	7
4.1	Test Environments.....	7
4.2	Test Equipment List.....	7
4.3	Measurement Uncertainty.....	8
4.4	Description of Test Setup	8
5	TEST ITEMS	11
5.1	Antenna Requirements	11
5.2	Conducted Emission.....	12
5.3	Operational Limitations	13
5.4	UWB Bandwidth	14
5.5	Radiated Emissions	15
5.6	Radiated Emissions in GPS Bands.....	17
5.7	Peak Emissions within a 50MHz Bandwidth	18

ANNEX A	TEST RESULT	19
A.1	Conducted Emissions	19
A.2	UWB Bandwidth	21
A.3	Radiated Emissions	22
A.4	Radiated Emissions in GPS Bands	32
A.5	Peak Emissions within a 50MHz Bandwidth	36
ANNEX B	TEST SETUP PHOTOS	40
ANNEX C	EUT EXTERNAL PHOTOS	40
ANNEX D	EUT INTERNAL PHOTOS	40

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☒ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Arduino S.r.l.
Address	Via Andrea Appiani, 25, 20900 MONZA (Italy)

2.2 Manufacturer Information

Manufacturer	Arduino S.r.l.
Address	Via Andrea Appiani, 25, 20900 MONZA (Italy)

2.3 General Description for Equipment under Test (EUT)

EUT Name	Arduino Stella
Model Name Under Test	ABX00131
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	Bluetooth (BLE), UWB
-----------------------------------	----------------------

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

Modulation Type	UWB
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Operating Frequency	6.0GHz-8.0GHz
Antenna Type	PCB Antenna
Antenna Gain	CH5: 4.5 dBi CH9: 3.8 dBi

All channel was listed on the following table:

Channel Number	Frequency (GHz)
5	6.5
9	8.0

Note: The above EUT information in section 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart F	Ultra - Wideband Operation
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Test Verdict

No.	Description	FCC Part No.	Test Result	Verdict	Remark
1	Antenna Requirement	15.203	--	Pass	Note ¹
3	Conducted Emission	15.207	ANNEX A.1	Pass	--
2	Operational Limitations	15.519(a)	--	Pass	Note ²
4	UWB Bandwidth	15.519(b)	ANNEX A.3	Pass	--
5	Radiated Emissions	15.519(c)/15.209	ANNEX A.3	Pass	--
6	Radiated Emissions in GPS Bands	15.519(d)	ANNEX A.4	Pass	--
7	Peak Emissions within a 50 MHz Bandwidth	15.519(e)	ANNEX A.5	Pass	--

Note ¹: Please refer to section 5.1.

Note ²: Please refer to section 5.3.

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity	45% to 59%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+23.3°C to +26.8°C
Working Voltage of the EUT	NV (Normal Voltage)	3.6 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY52510065	2024.08.01	2025.07.31
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2024.05.22	2025.05.21
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	01631	2022.02.23	2025.02.22
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Anechoic Chamber	RAINFORD	9m*6m*6m	144	2022.02.19	2025.09.03
Amplifier	COM-MV	LSCX_LNA1-12G-01	180602	2024.08.01	2025.07.31
Amplifier	COM-MV	XKu_LNA7-18G-01	180601	2024.08.01	2025.07.31
Amplifier	COM-MV	KA LNA18 40G-01	18050001	2023.12.06	2024.12.05
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2024.08.01	2025.07.31
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2024.01.23	2025.01.22
Amplifier	COM-MV	ZT30-1000M	B2018054558	2023.12.05	2024.12.04
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	130	2024.07.13	2027.07.12
EMI Receiver	Agilent	N9038A	MY55330120	2024.08.01	2025.07.31
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-00867	2022.04.12	2025.04.11
Amplifier	COM-MV	ZT30-1000M	B2017119081	2023.12.05	2024.12.04
Anechoic Chamber	YiHeng	9m*6m*6m	142	2024.07.21	2027.07.20
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2024.08.01	2025.07.31
LISN	SCHWARZBECK	NSLK 8127	8127-687	2024.05.09	2025.05.08
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2.8 m	112	2022.02.19	2025.02.18

4.3 Measurement Uncertainty

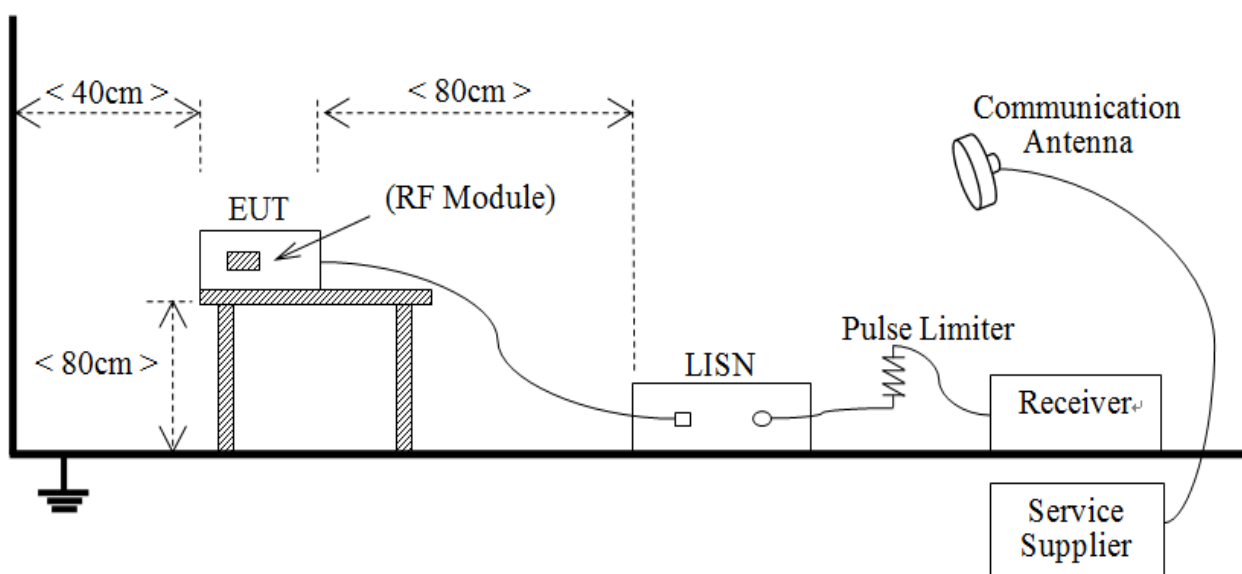
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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	0.8°C
Humidity	4%

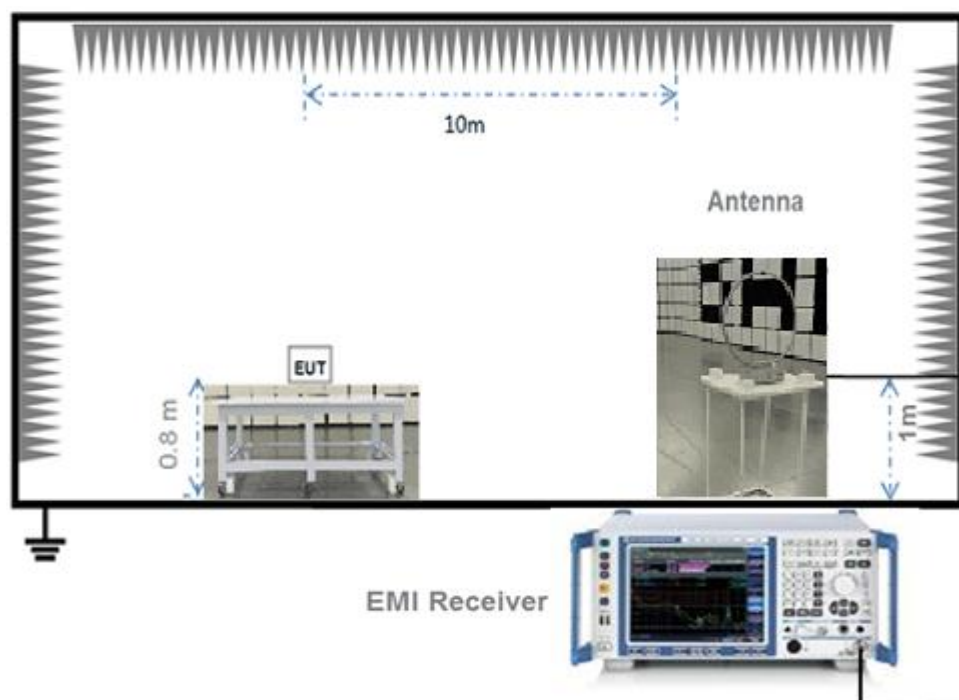
4.4 Description of Test Setup

4.4.1 For AC Power Supply Port Test



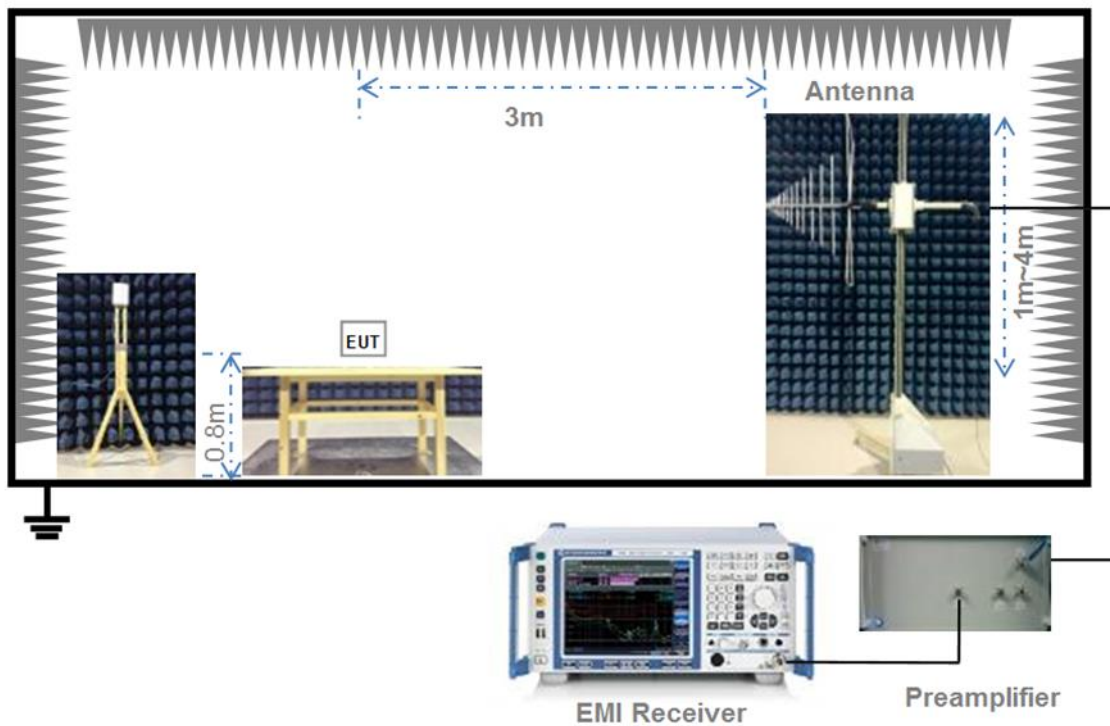
(Diagram 1)

4.4.2 For Radiated Test (Below 30 MHz)



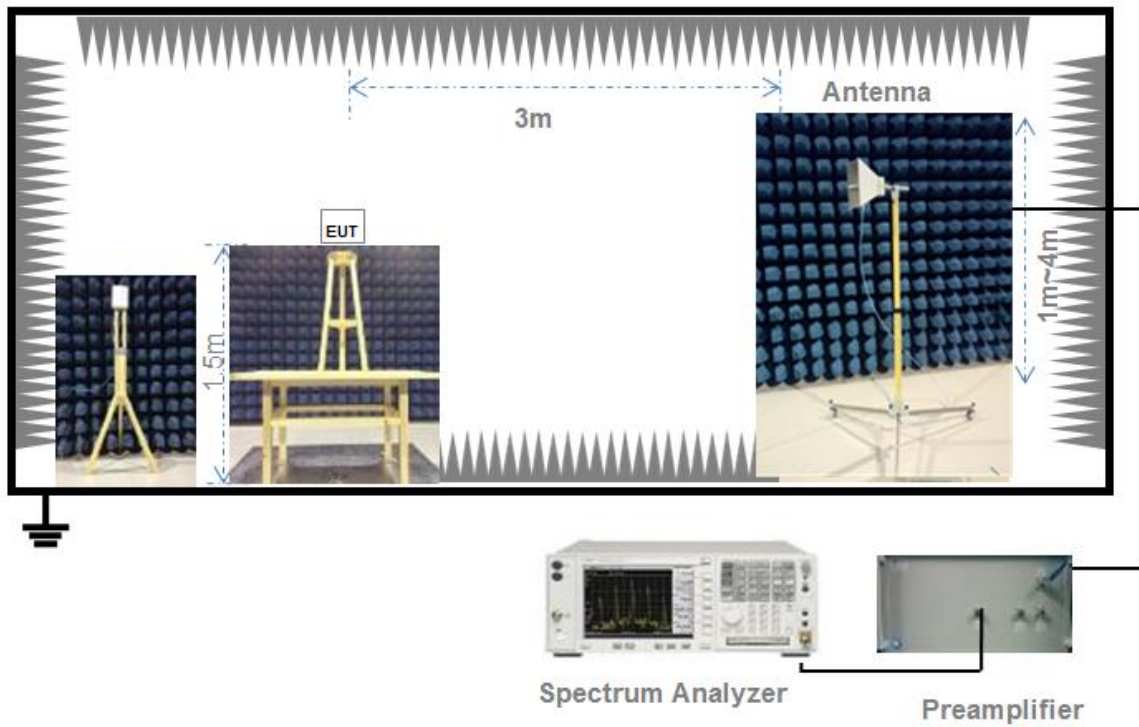
(Diagram 2)

4.4.3 For Radiated Test (30 MHz-1 GHz)



(Diagram 3)

4.4.4 For Radiated Test (Above 1 GHz)



(Diagram 4)

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.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

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

5.2 Conducted Emission

5.2.1 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 50 μ H/50 Ω line impedance stabilization network (LISN).

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

5.2.2 Test Setup

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

5.2.3 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.

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 Operational Limitations

5.3.1 Relevant Standards

FCC §15.519(a)(1)

A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

The client has been informed of this requirement.

FCC §15.519(a)(2)

The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited. Antennas may be mounted only on the hand held UWB device.

The client has been informed of this requirement.

FCC §15.519(a)(3)

UWB devices operating under the provisions of this section may operate indoors or outdoors.

The client has been informed of this requirement.

5.4 UWB Bandwidth

5.4.1 Limit

FCC §15.503(d)

Ultra-wideband (UWB) transmitter. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

FCC §15.519(b)

The UWB bandwidth of a UWB system operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

5.4.2 Test Setups

See section 4.4.4 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:

RBW = 1 MHz

VBW $\geq$ 3 MHz

Sweep = auto

Detector function = RMS

Trace = max hold

5.4.4 Test Result

Please refer to ANNEX A.2.

5.5 Radiated Emissions

5.5.1 Limit

FCC §15.519(c)

The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall not exceed the emission levels in §15.209. The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

Frequency in MHz	EIPR in dBm
960–1610	-75.3
1610–1990	-63.3
1990–3100	-61.3
3100–10600	-41.3
Above 10600	-61.3

FCC §15.209

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 ($\mu\text{V/m}$)	Measurement Distance(m)
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

5.5.2 Test Setups

See section 4.4.2 to 4.4.4 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

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. The height of the antenna was varied from 1 to 4 meters. For each suspected emissions, the antenna tower was scan (from 1m to 4m) and the the turntables was turned (from 0° to 360°) to find the maximum reading.

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:

9 kHz to 960 MHz:

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz

VBW = 300 kHz

Sweep time = auto

Detector function = peak(Margin which is less than 3 dB will be repeated one by one using the quasi-peak)

Trace = max hold

960 MHz to 40 GHz:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW = 3 MHz

Sweep time = 1s

Detector function = RMS

Trace = max hold

5.5.4 Test Result

Please refer to ANNEX A.3.

5.6 Radiated Emissions in GPS Bands

5.6.1 Limit

FCC §15.519(d)

In addition to the radiated emission limits specified in the table in paragraph (c) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency in MHz	EIPR in dBm
1164–1240	-85.3
1559–1610	-85.3

5.6.2 Test Setups

See section 4.4.4 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

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. The height of the antenna was varied from 1 to 4 meters. For each suspected emissions, the antenna tower was scan (from 1m to 4m) and the the turntables was turned (from 0° to 360°) to find the maximum reading.

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 kHz

VBW = 3 kHz

Sweep time = 1s

Detector function = RMS

Trace = max hold

5.6.4 Test Result

Please refer to ANNEX A.4.

5.7 Peak Emissions within a 50MHz Bandwidth

5.7.1 Limit

FCC §15.519(e)

There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, fM. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

It is acceptable to employ an RBW of less than 50 MHz (but no less than 1 MHz) when performing the required peak power measurements. When this approach is employed, the peak emissions EIRP limit (0 dBm / 50 MHz) is converted to a limit commensurate with the RBW by employing a $[20 \log (RBW/50 \text{ MHz})]$ relationship. For example, the peak power limit could be expressed in a 8 MHz bandwidth as follows in Equation :

$$\text{EIRP}_{8 \text{ MHz}} = \text{EIRP}_{50 \text{ MHz}} + 20 \log (8 \text{ MHz} / 50 \text{ MHz}) = 0 \text{ dBm} + (- 15.9 \text{ dBm}) = -15.9 \text{ dBm}$$

5.7.2 Test Setups

See section 4.4.4 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

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. The height of the antenna was varied from 1 to 4 meters. For each suspected emissions, the antenna tower was scan (from 1m to 4m) and the the turntables was turned (from 0° to 360°) to find the maximum reading.

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:

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW = 3 MHz

Sweep = auto

Detector function = peak

Trace = max hold

5.7.4 Test Result

Please refer to ANNEX A.5.

ANNEX A TEST RESULT

A.1 Conducted Emissions

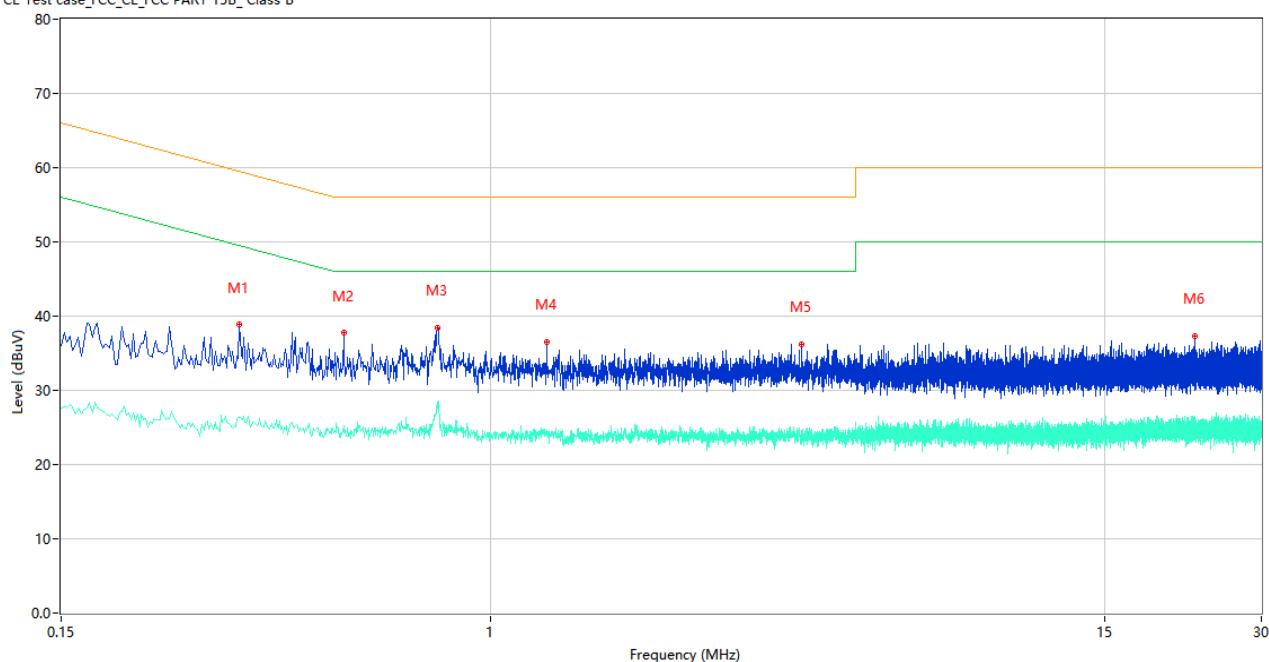
Note ¹: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

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.

Test Data and Plots

PHASE L

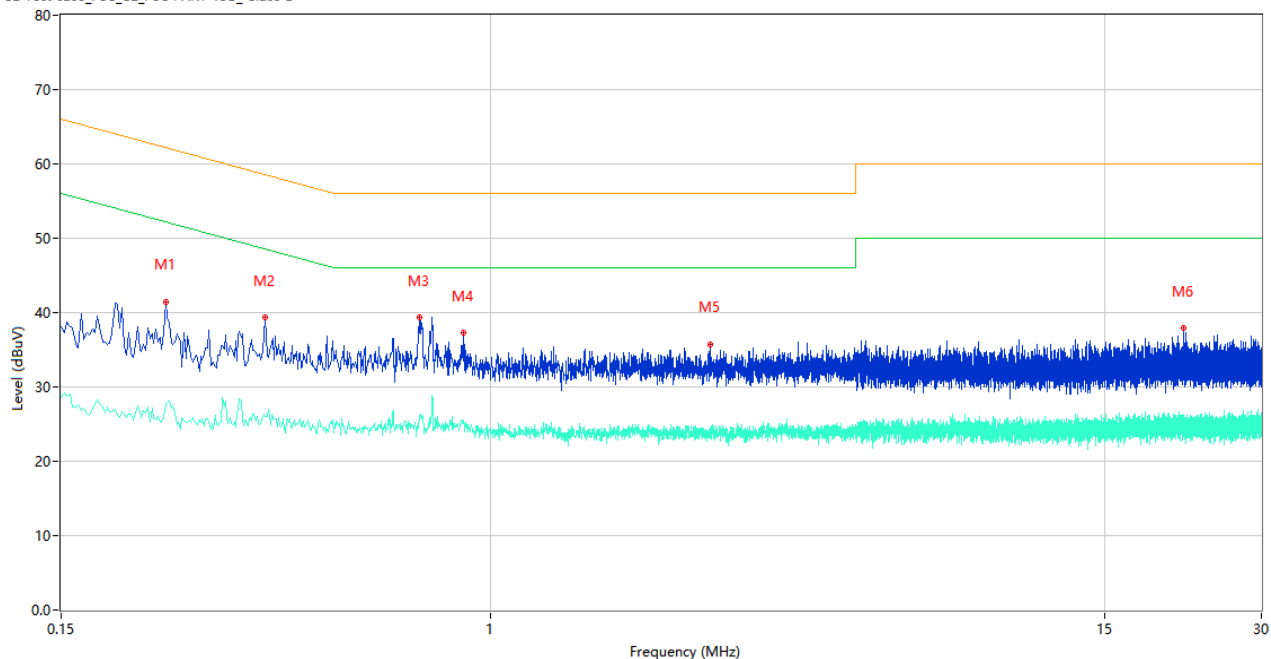
CE Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.330	38.82	10.36	59.45	20.63	Peak	L	Pass
1**	0.330	26.40	10.36	49.45	23.05	AV	L	Pass
2	0.522	37.77	10.00	56.00	18.23	Peak	L	Pass
2**	0.522	25.26	10.00	46.00	20.74	AV	L	Pass
3	0.792	38.48	10.47	56.00	17.52	Peak	L	Pass
3**	0.792	28.18	10.47	46.00	17.82	AV	L	Pass
4	1.278	36.53	10.49	56.00	19.47	Peak	L	Pass
4**	1.278	24.18	10.49	46.00	21.82	AV	L	Pass
5	3.944	36.24	10.10	56.00	19.76	Peak	L	Pass
5**	3.944	24.16	10.10	46.00	21.84	AV	L	Pass
6	22.328	37.31	11.20	60.00	22.69	Peak	L	Pass
6**	22.328	26.05	11.20	50.00	23.95	AV	L	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15B_Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.238	41.45	9.77	62.17	20.72	Peak	N	Pass
1**	0.238	27.69	9.77	52.17	24.48	AV	N	Pass
2	0.370	39.32	10.68	58.50	19.18	Peak	N	Pass
2**	0.370	25.96	10.68	48.50	22.54	AV	N	Pass
3	0.728	39.31	10.38	56.00	16.69	Peak	N	Pass
3**	0.728	26.19	10.38	46.00	19.81	AV	N	Pass
4	0.884	37.27	10.31	56.00	18.73	Peak	N	Pass
4**	0.884	25.03	10.31	46.00	20.97	AV	N	Pass
5	2.636	35.79	10.10	56.00	20.21	Peak	N	Pass
5**	2.636	24.37	10.10	46.00	21.63	AV	N	Pass
6	21.268	37.89	11.15	60.00	22.11	Peak	N	Pass
6**	21.268	26.20	11.15	50.00	23.80	AV	N	Pass

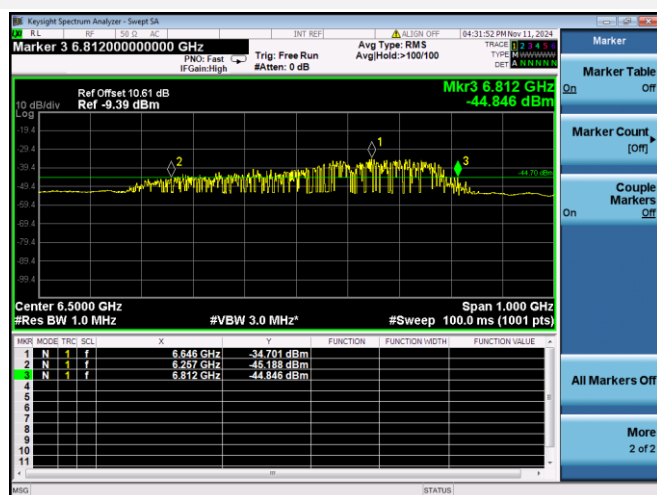
A.2 UWB Bandwidth

Test Data

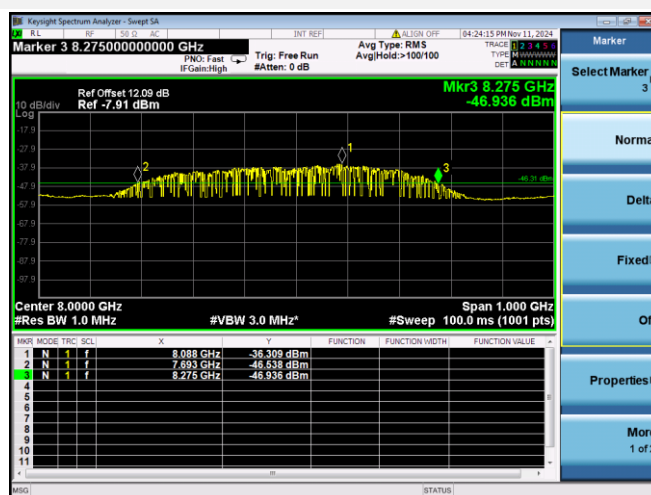
Channel	F _L (MHz)	F _H (MHz)	UWB Bandwidth (MHz)	Limit (MHz)	Verdict
CH5	6257	6812	555	UWB Bandwidth $\geq$ 500 MHz 10 dB bandwidth contained between 3100 to 10600 MHz	Pass
CH9	7693	8275	582		Pass

Test Pots

CH5



CH9



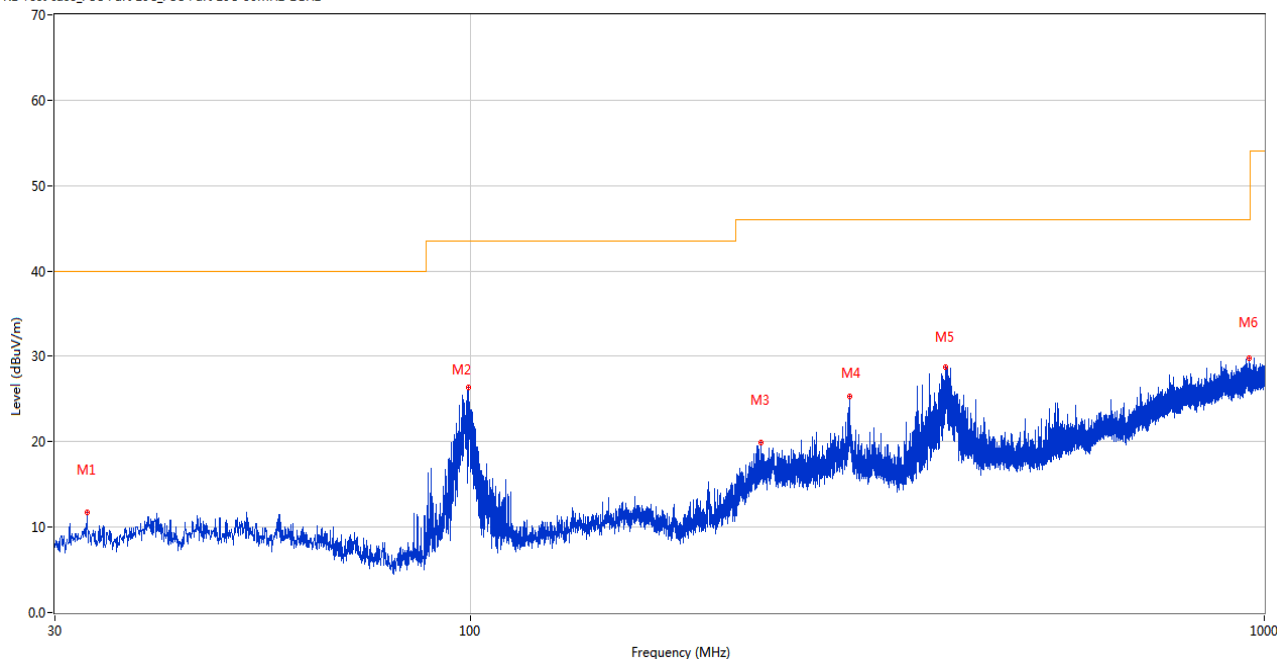
A.3 Radiated Emissions

Note: 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 15.209 was not reported.

Test Data and Plots

30 MHz to 1 GHz, ANT H

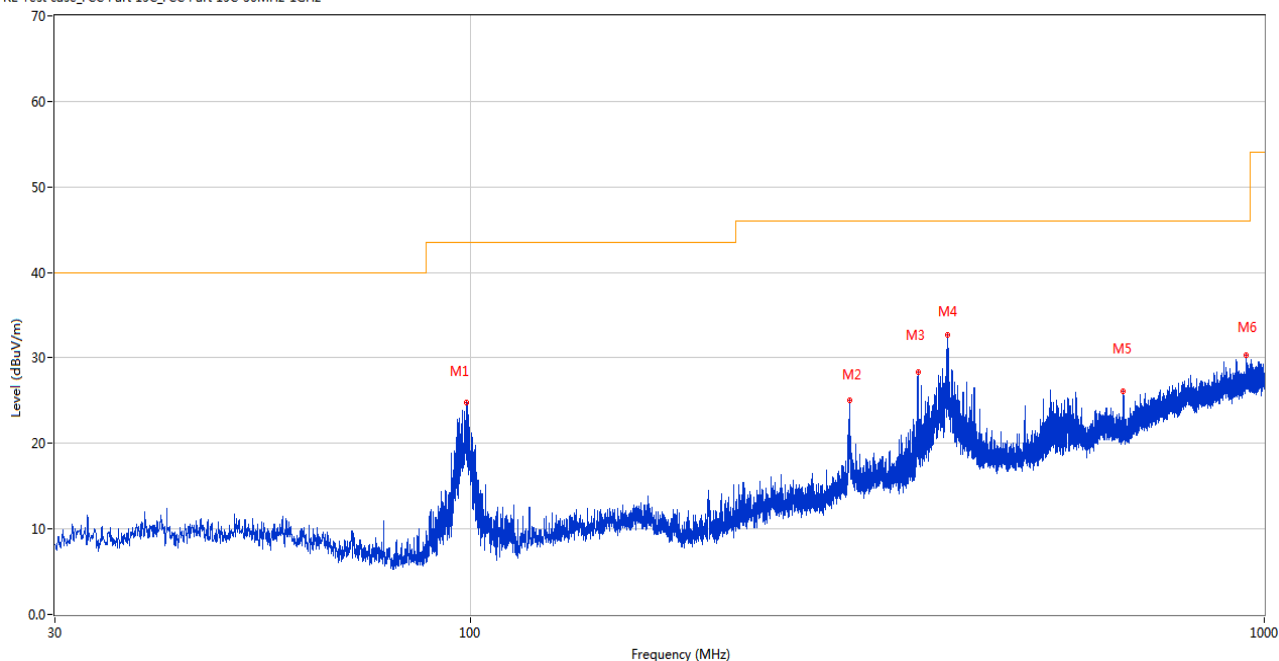
RE Test case_FCC Part 15C_FCC Part 15C-30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	32.910	11.69	-27.30	40.0	28.31	Peak	189.00	200	Horizontal	Pass
2	99.646	26.33	-30.11	43.5	17.17	Peak	329.00	200	Horizontal	Pass
3	232.584	19.88	-27.88	46.0	26.12	Peak	296.00	100	Horizontal	Pass
4	300.727	25.26	-24.62	46.0	20.74	Peak	266.00	100	Horizontal	Pass
5	397.194	28.68	-21.30	46.0	17.32	Peak	104.00	100	Horizontal	Pass
6	958.290	29.75	-10.19	46.0	16.25	Peak	277.00	100	Horizontal	Pass

30 MHz to 1 GHz, ANT V

RE Test case_FCC Part 15C_FCC Part 15C-30MHz-1GHz

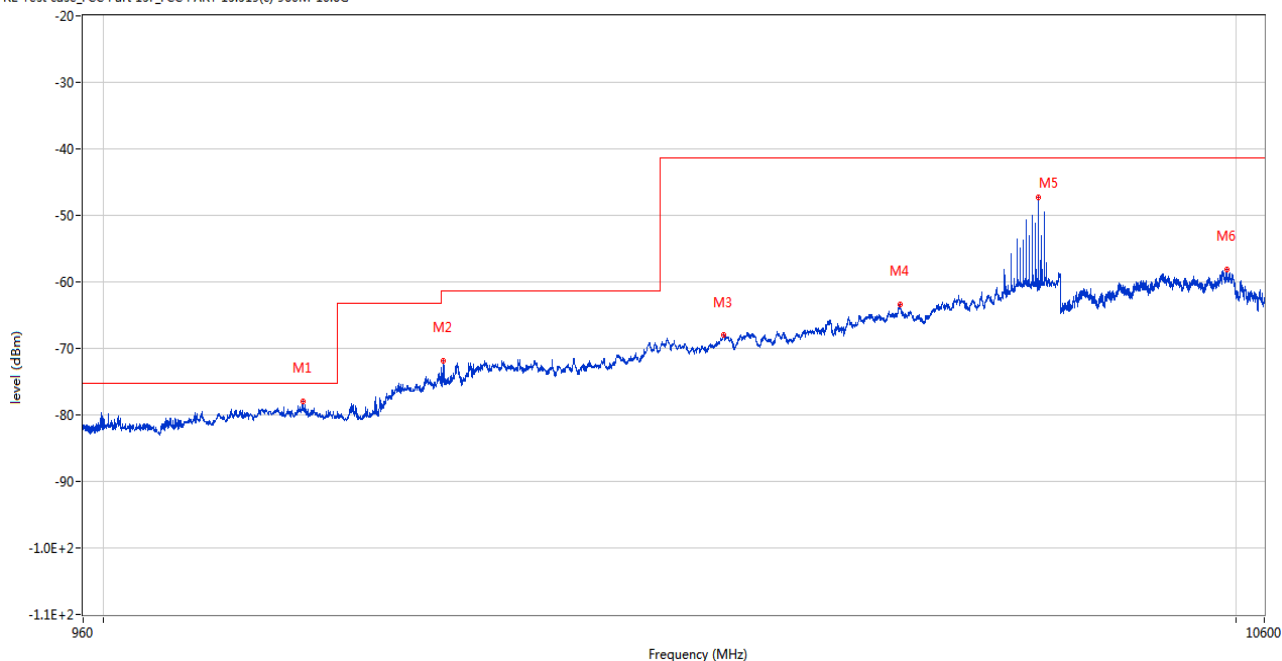


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	98.919	24.84	-30.12	43.5	18.66	Peak	228.00	100	Vertical	Pass
2	300.824	24.98	-24.63	46.0	21.02	Peak	135.00	200	Vertical	Pass
3	366.202	28.39	-22.55	46.0	17.61	Peak	263.00	200	Vertical	Pass
4	398.649	32.69	-21.28	46.0	13.31	Peak	192.00	100	Vertical	Pass
5	664.380	26.07	-15.60	46.0	19.93	Peak	322.00	100	Vertical	Pass
6	948.153	30.36	-9.95	46.0	15.64	Peak	131.00	100	Vertical	Pass

Note: The spurious above 18G is noise only, do not show on the report.

CH5, 960 MHz to 10.6 GHz, ANT H

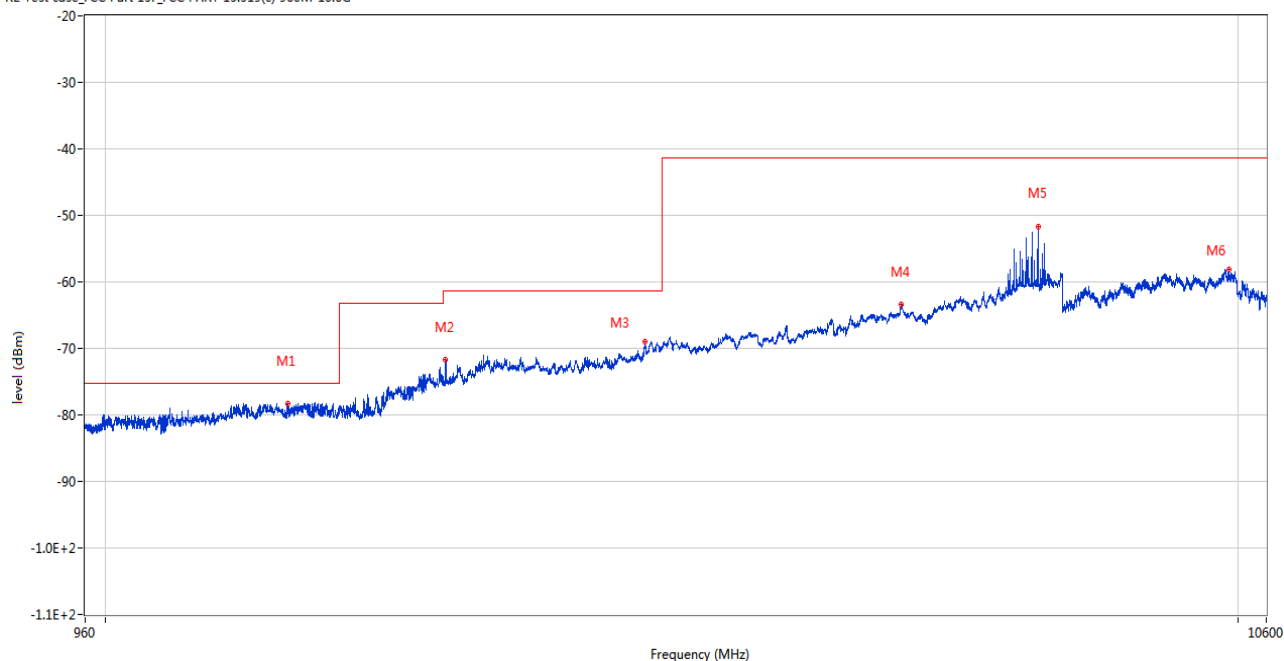
RE Test case_FCC Part 15F_FCC PART 15.519(c) 960M-10.6G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1500.500	-77.95	-75.3	2.65	168.00	Horizontal	Horizontal	Pass
1998.000	-71.81	-61.3	10.51	105.00	Horizontal	Horizontal	Pass
3529.000	-68.00	-41.3	26.70	116.00	Horizontal	Horizontal	Pass
5053.000	-63.35	-41.3	22.05	86.00	Horizontal	Horizontal	Pass
6695.000	-47.32	-41.3	6.02	135.00	Horizontal	Horizontal	Pass
9820.599	-58.09	-41.3	16.79	26.00	Horizontal	Horizontal	Pass

CH5, 960 MHz to 10.6 GHz, ANT V

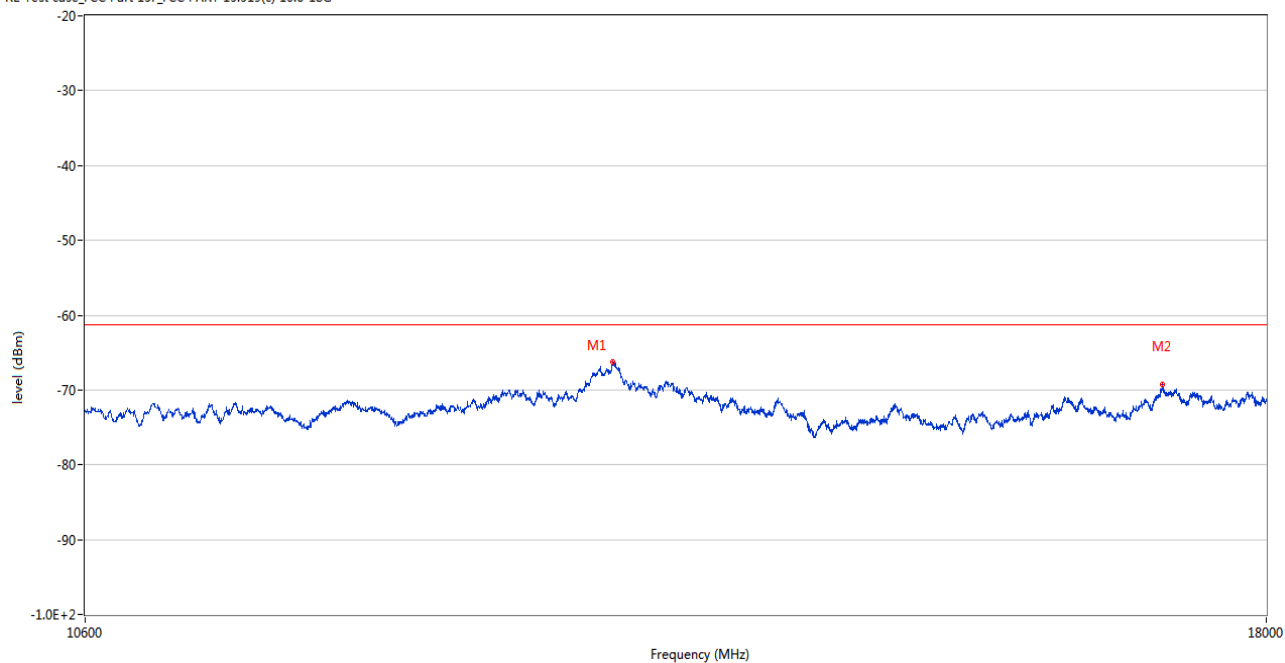
RE Test case_FCC Part 15F_FCC PART 15.519(c) 960M-10.6G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1451.000	-78.34	-75.3	3.04	162.00	Vertical	Horizontal	Pass
1998.000	-71.73	-61.3	10.43	184.00	Vertical	Horizontal	Pass
2995.000	-68.93	-61.3	7.63	227.00	Vertical	Horizontal	Pass
5050.000	-63.42	-41.3	22.12	221.00	Vertical	Horizontal	Pass
6672.000	-51.67	-41.3	10.37	142.00	Vertical	Horizontal	Pass
9817.000	-58.06	-41.3	16.76	92.00	Vertical	Horizontal	Pass

CH5, 10.6 GHz to 18 GHz, ANT H

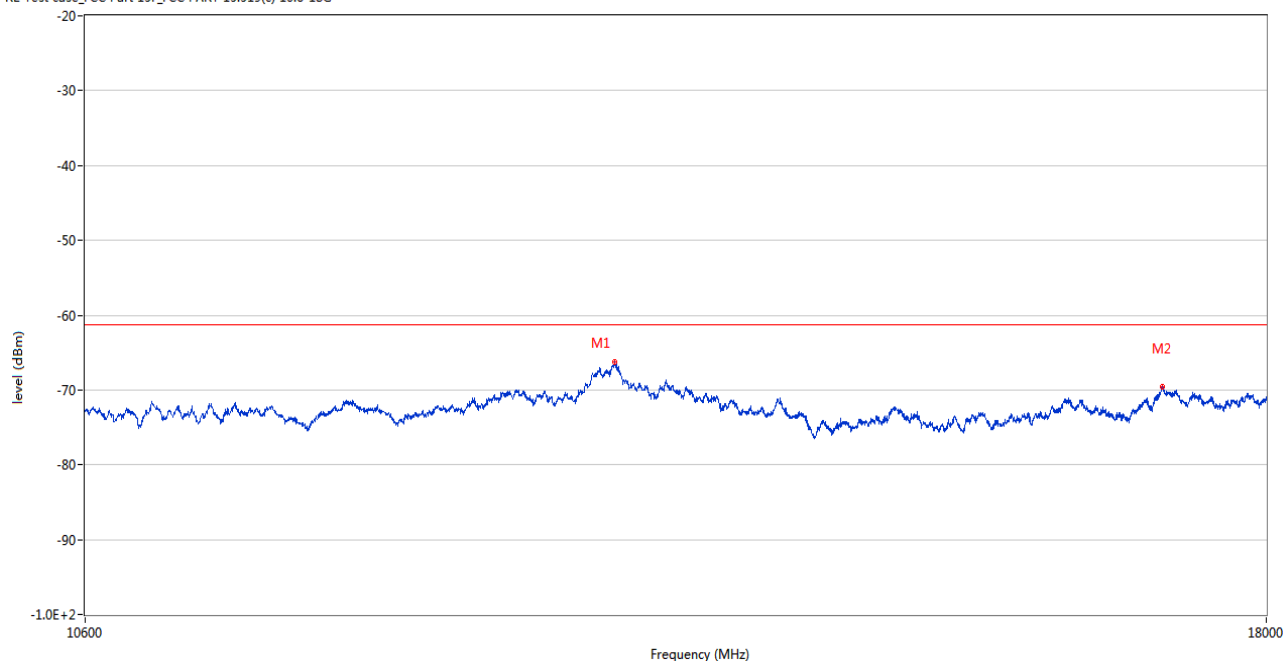
RE Test case_FCC Part 15F_FCC PART 15.519(c) 10.6-18G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13430.500	-66.28	-61.3	4.98	77.00	Horizontal	Horizontal	Pass
17182.300	-69.21	-61.3	7.91	7.00	Horizontal	Horizontal	Pass

CH5, 10.6 GHz to 18 GHz, ANT V

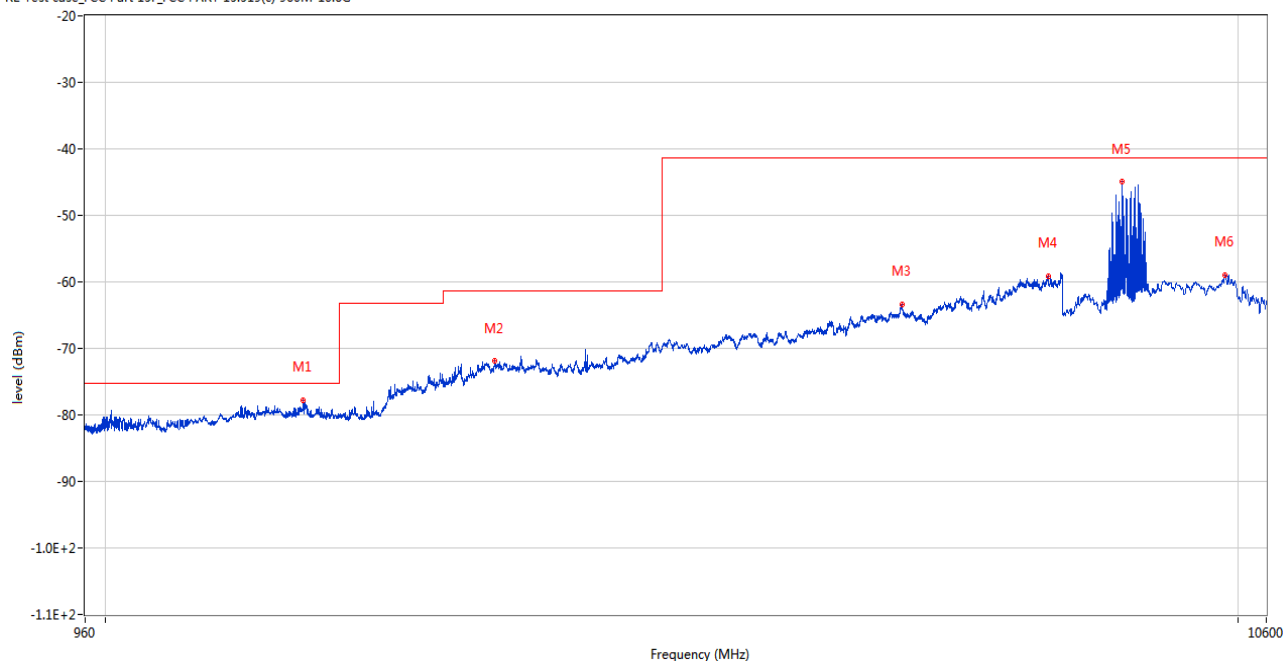
RE Test case_FCC Part 15F_FCC PART 15.519(c) 10.6-18G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13437.901	-66.29	-61.3	4.99	52.00	Vertical	Horizontal	Pass
17178.599	-69.49	-61.3	8.19	122.00	Vertical	Horizontal	Pass

CH9, 960 MHz to 10.6 GHz, ANT H

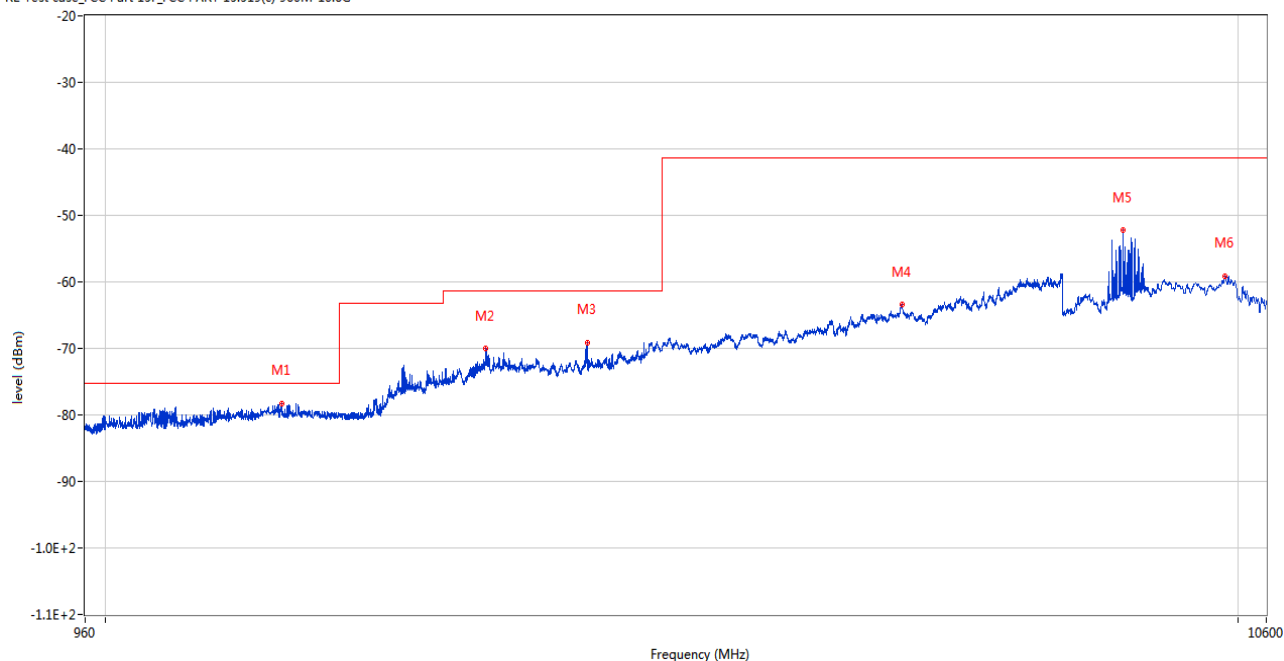
RE Test case_FCC Part 15F_FCC PART 15.519(c) 960M-10.6G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1495.500	-77.73	-75.3	2.43	82.00	Horizontal	Horizontal	Pass
2207.000	-71.92	-61.3	10.62	195.00	Horizontal	Horizontal	Pass
5052.000	-63.39	-41.3	22.09	253.00	Horizontal	Horizontal	Pass
6807.000	-59.15	-41.3	17.85	43.00	Horizontal	Horizontal	Pass
7907.200	-44.97	-41.3	3.67	294.00	Horizontal	Horizontal	Pass
9743.200	-58.97	-41.3	17.67	64.00	Horizontal	Horizontal	Pass

CH9, 960 MHz to 10.6 GHz, ANT V

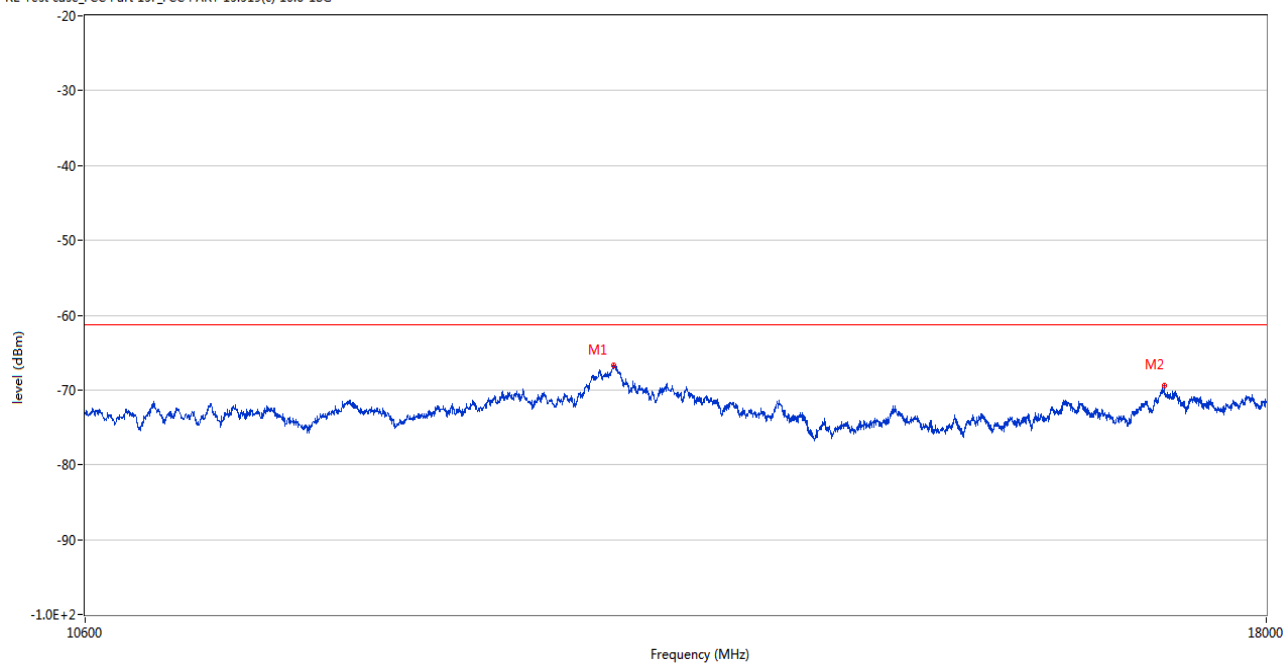
RE Test case_FCC Part 15F_FCC PART 15.519(c) 960M-10.6G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1433.000	-78.35	-75.3	3.05	165.00	Vertical	Horizontal	Pass
2166.000	-70.02	-61.3	8.72	109.00	Vertical	Horizontal	Pass
2664.500	-69.12	-61.3	7.82	131.00	Vertical	Horizontal	Pass
5051.000	-63.43	-41.3	22.13	11.00	Vertical	Horizontal	Pass
7918.000	-52.24	-41.3	10.94	218.00	Vertical	Horizontal	Pass
9743.200	-59.14	-41.3	17.84	190.00	Vertical	Horizontal	Pass

CH9, 10.6 GHz to 18 GHz, ANT H

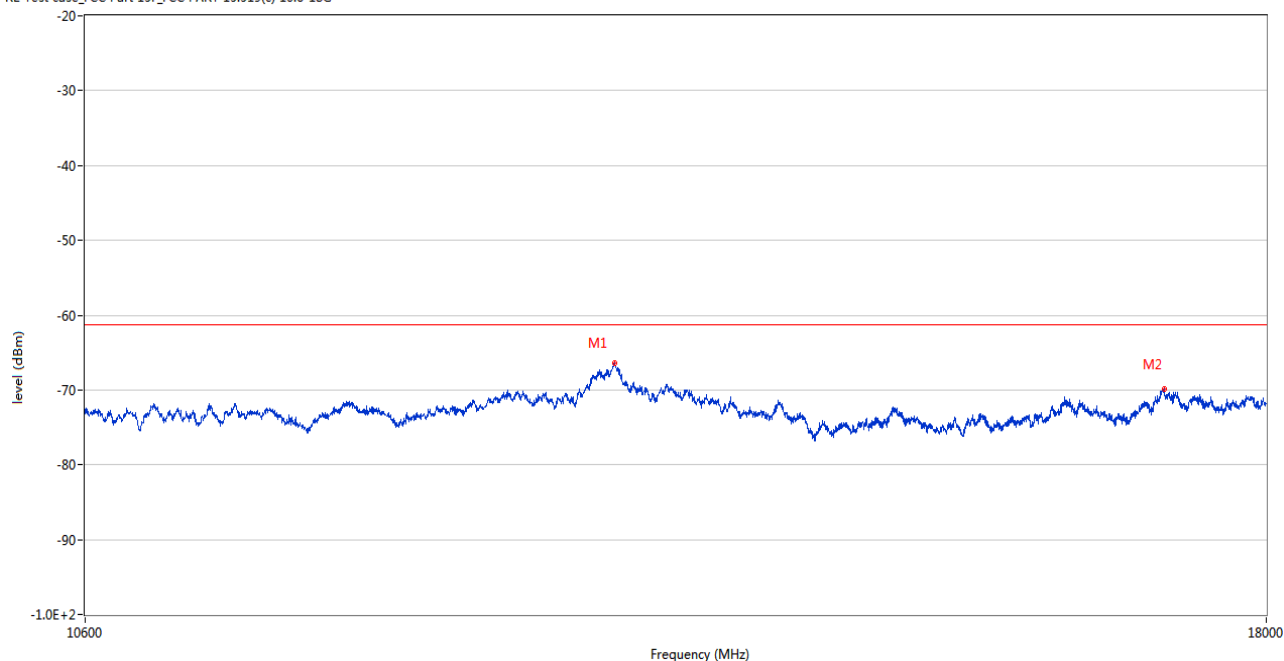
RE Test case_FCC Part 15F_FCC PART 15.519(c) 10.6-18G



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13436.049	-66.73	-61.3	5.43	7.00	Horizontal	Horizontal	Pass
17195.250	-69.41	-61.3	8.11	32.00	Horizontal	Horizontal	Pass

CH9, 10.6 GHz to 18 GHz, ANT V

RE Test case_FCC Part 15F_FCC PART 15.519(c) 10.6-18G



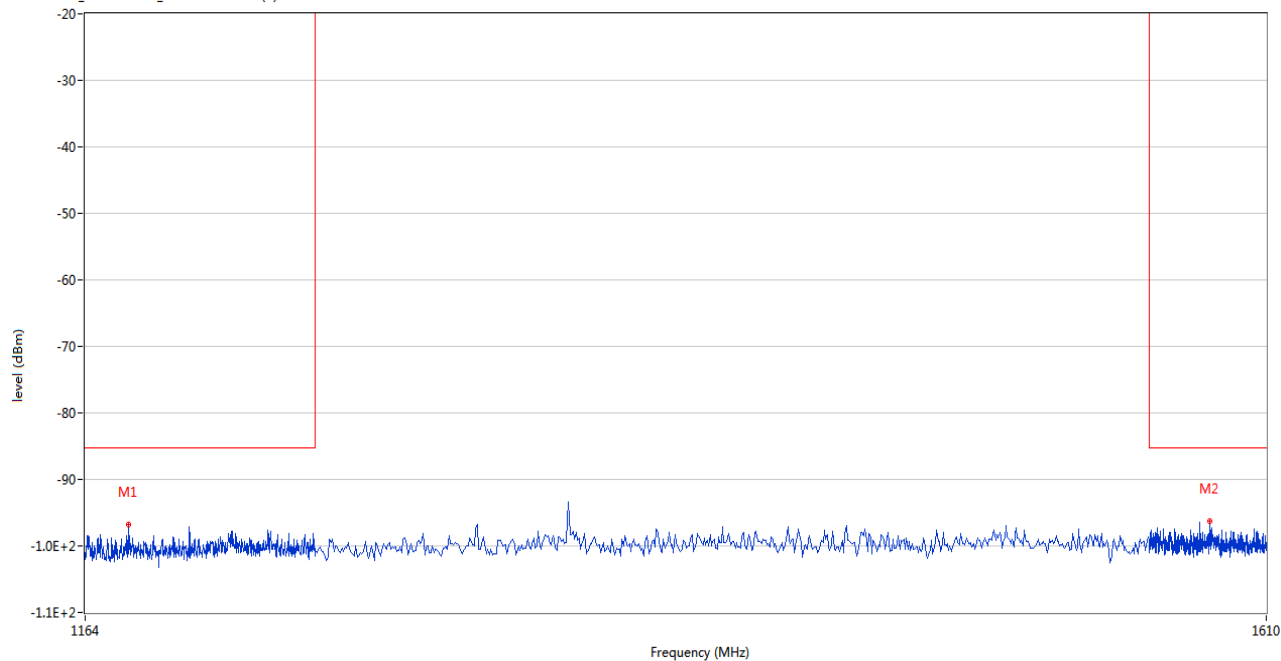
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13441.599	-66.44	-61.3	5.14	262.00	Vertical	Horizontal	Pass
17195.250	-69.84	-61.3	8.54	285.00	Vertical	Horizontal	Pass

A.4 Radiated Emissions in GPS Bands

Test Data and Plots

CH5, 1.164 GHz to 1.61 GHz, ANT H

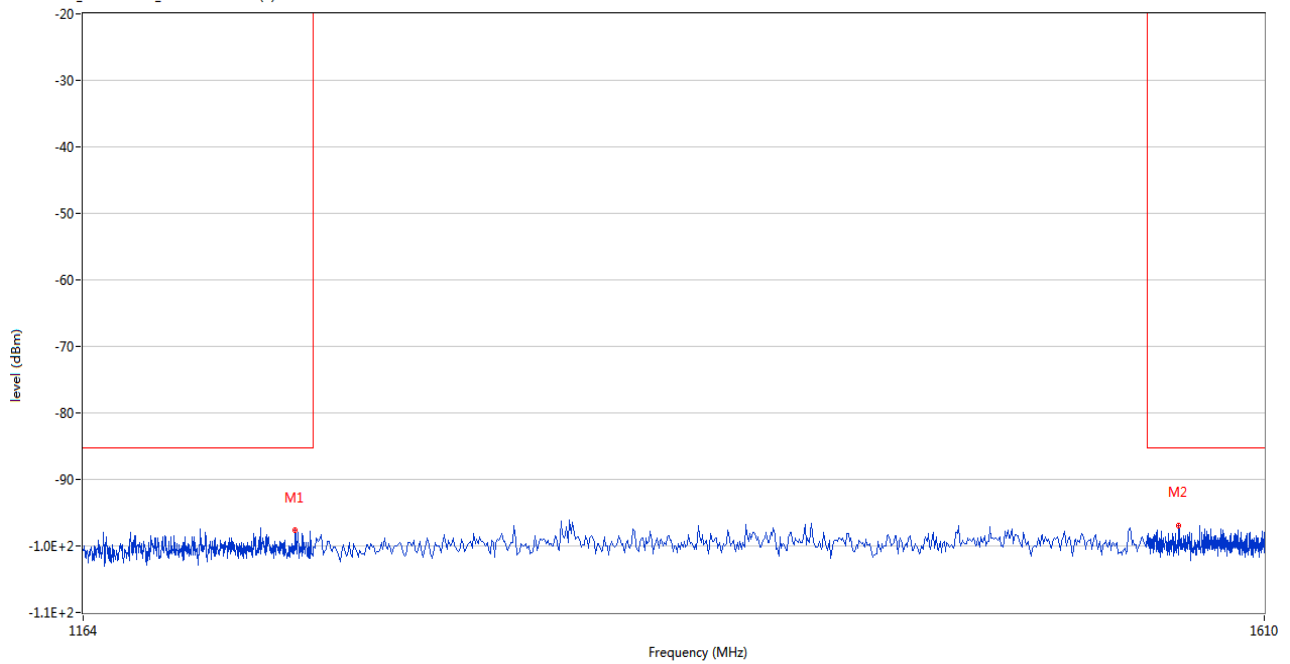
RE Test case_FCC Part 15F_FCC PART 15.519(d)



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1178.060	-96.79	-85.3	11.49	82.00	Horizontal	Horizontal	Pass
1585.265	-96.30	-85.3	11.00	197.00	Horizontal	Horizontal	Pass

CH5, 1.164 GHz to 1.61 GHz, ANT V

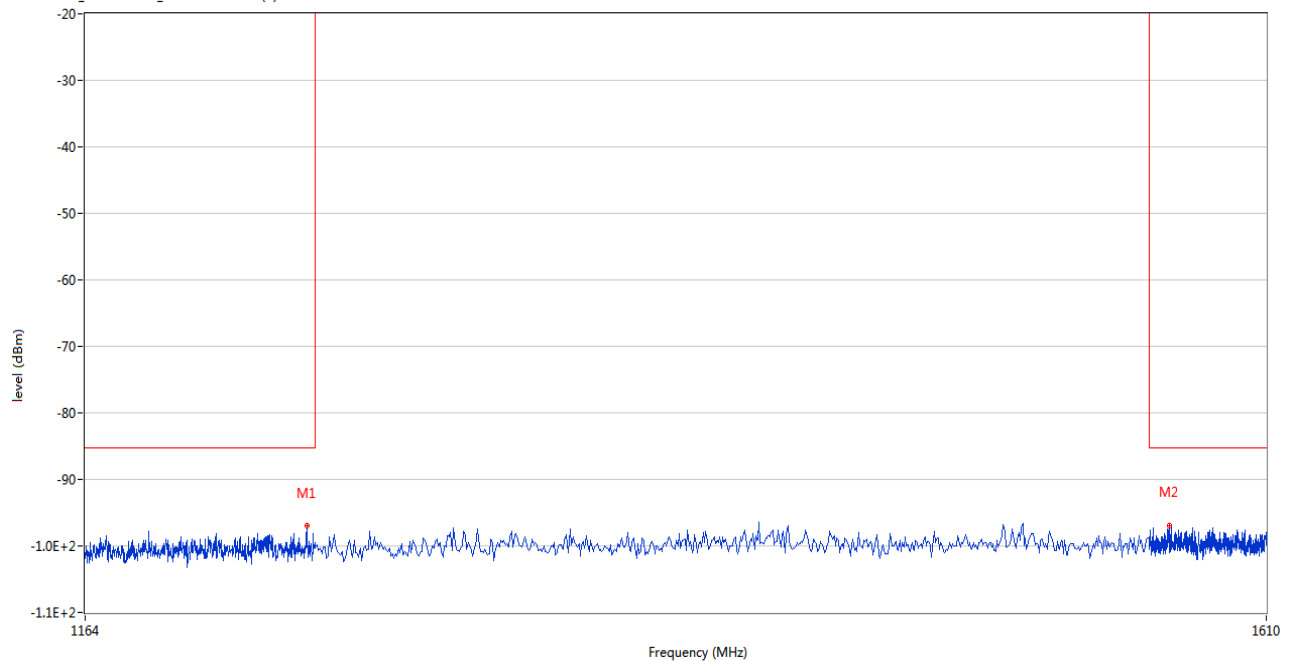
RE Test case_FCC Part 15F_FCC PART 15.519(d)



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1233.793	-97.66	-85.3	12.36	291.00	Vertical	Horizontal	Pass
1572.515	-96.92	-85.3	11.62	51.00	Vertical	Horizontal	Pass

CH9, 1.164 GHz to 1.61 GHz, ANT H

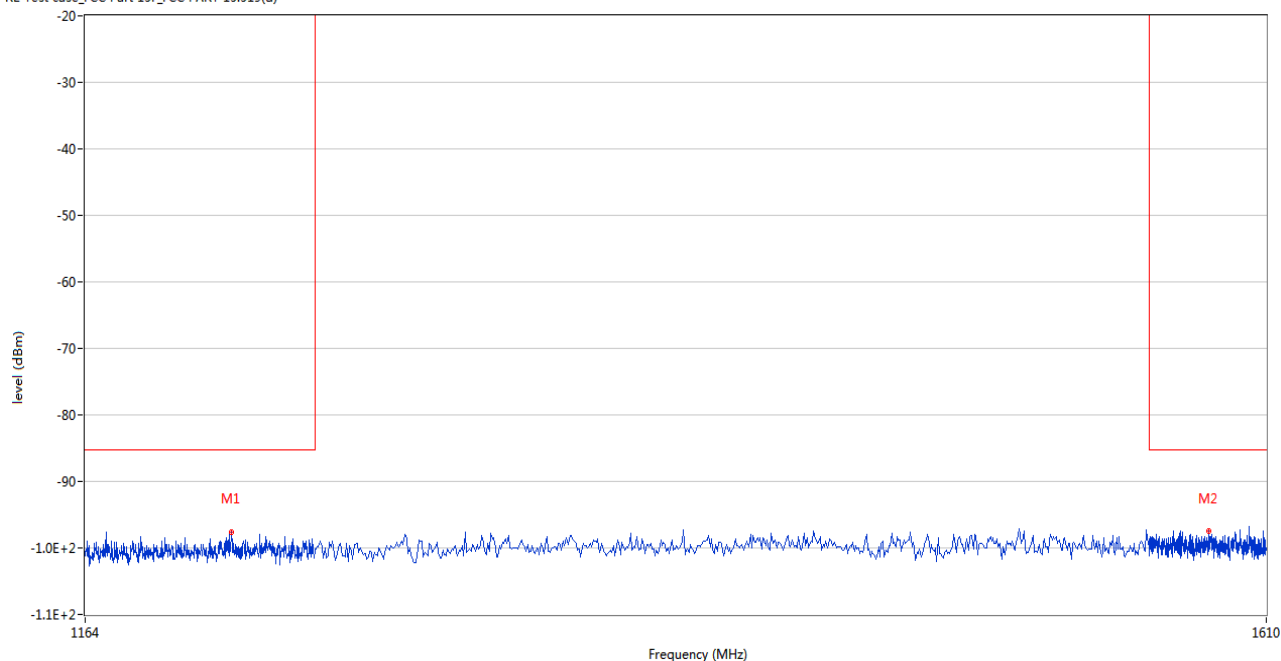
RE Test case_FCC Part 15F_FCC PART 15.519(d)



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1237.087	-96.96	-85.3	11.66	38.00	Horizontal	Horizontal	Pass
1567.585	-97.01	-85.3	11.71	350.00	Horizontal	Horizontal	Pass

CH9, 1.164 GHz to 1.61 GHz, ANT V

RE Test case_FCC Part 15F_FCC PART 15.519(d)



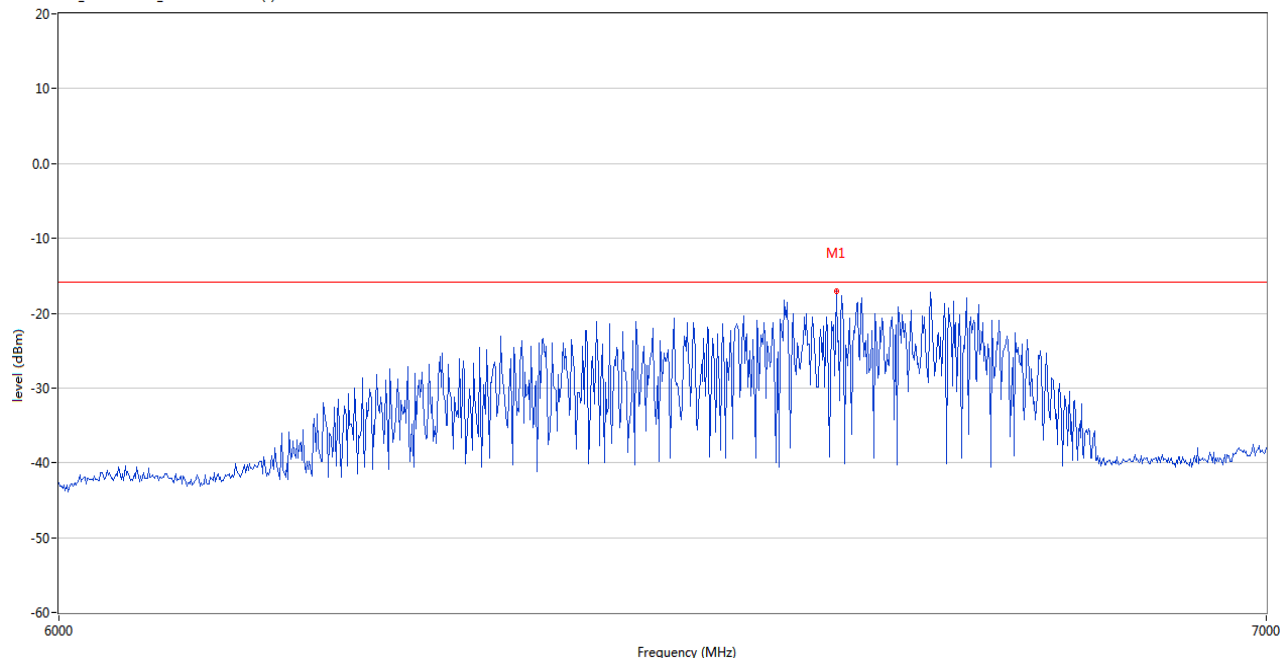
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1211.753	-97.68	-85.3	12.38	250.00	Vertical	Horizontal	Pass
1584.925	-97.41	-85.3	12.11	270.00	Vertical	Horizontal	Pass

A.5 Peak Emissions within a 50MHz Bandwidth

Test Data and Plots

CH5, 6 GHz to 7 GHz, ANT H

RE Test case_FCC Part 15F_FCC PART 15.519(c) 6-7G



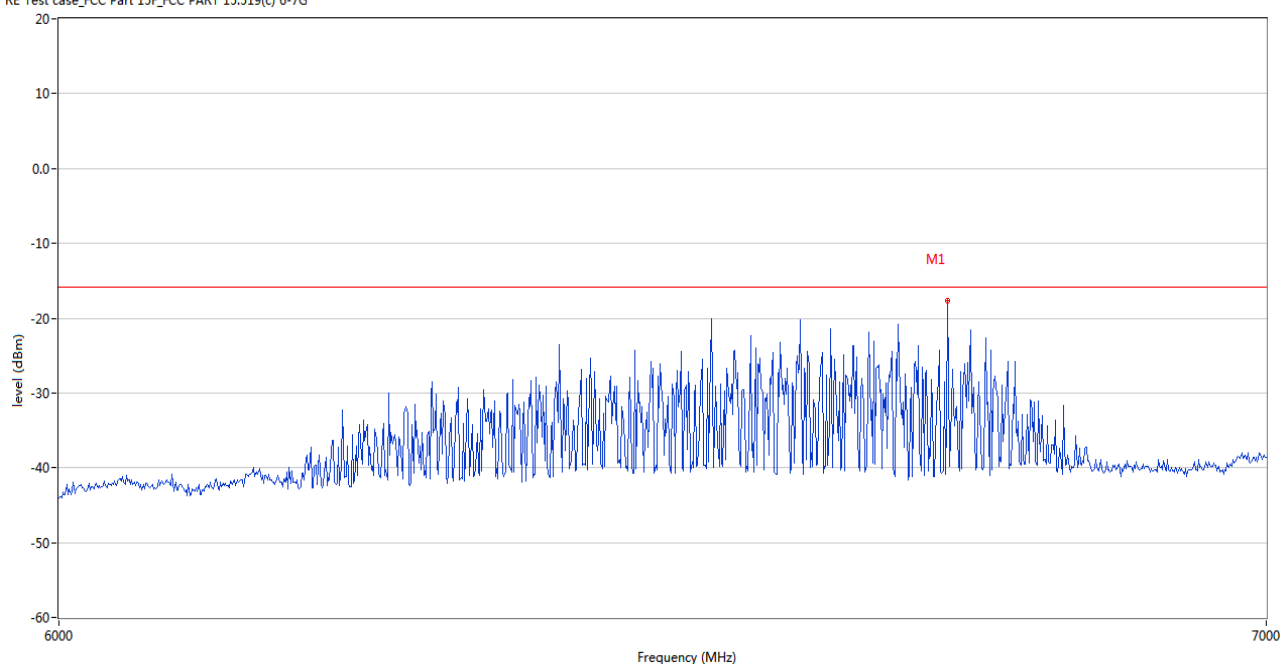
Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6626.000	-17.00	-15.9	1.10	267.00	Horizontal	Horizontal	Pass

Note: $EIRP_{50\text{ MHz}} = EIRP_{8\text{ MHz}} + 20\log(8\text{ MHz}/50\text{ MHz})$

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6626.000	-1.10	0	1.10	267.00	Horizontal	Horizontal	Pass

CH5, 6 GHz to 7 GHz, ANT V

RE Test case_FCC Part 15F_FCC PART 15.519(c) 6-7G



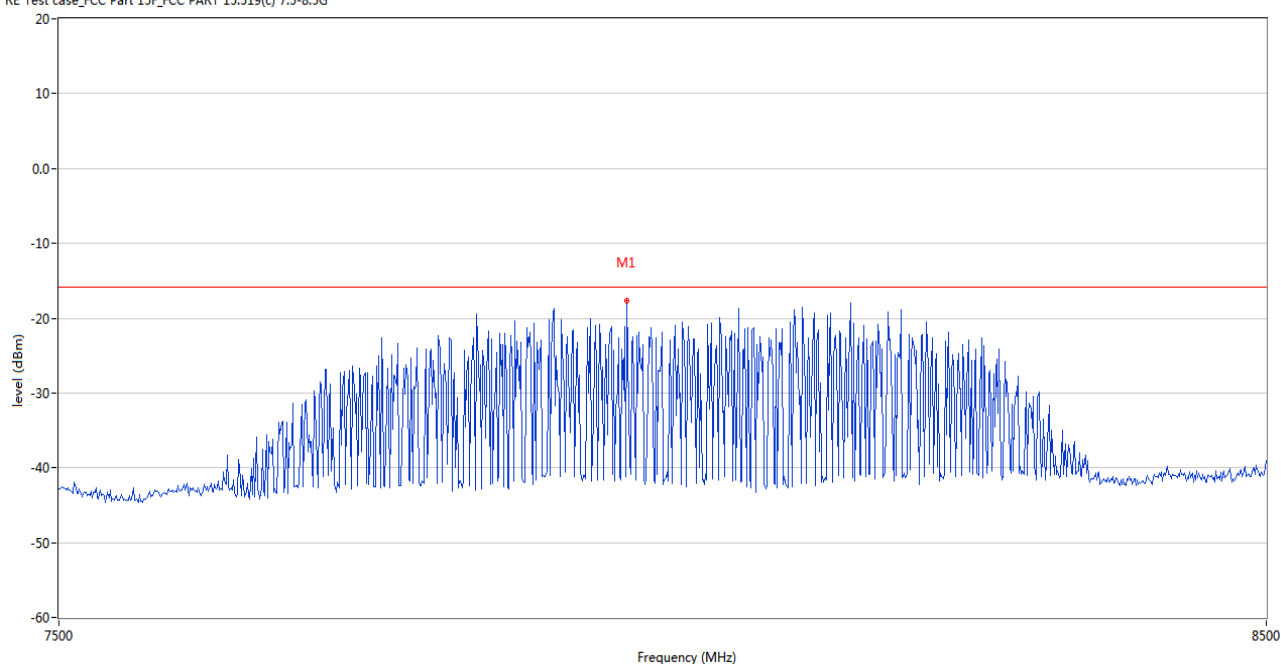
Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6721.000	-17.66	-15.9	1.76	182.00	Vertical	Horizontal	Pass

Note: $EIRP_{50\text{ MHz}} = EIRP_{8\text{ MHz}} + 20\log(8\text{ MHz}/50\text{ MHz})$

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6721.000	-1.76	0	1.76	182.00	Vertical	Horizontal	Pass

CH9, 7.5 GHz to 8.5 GHz, ANT H

RE Test case_FCC Part 15F_FCC PART 15.519(c) 7.5-8.5G



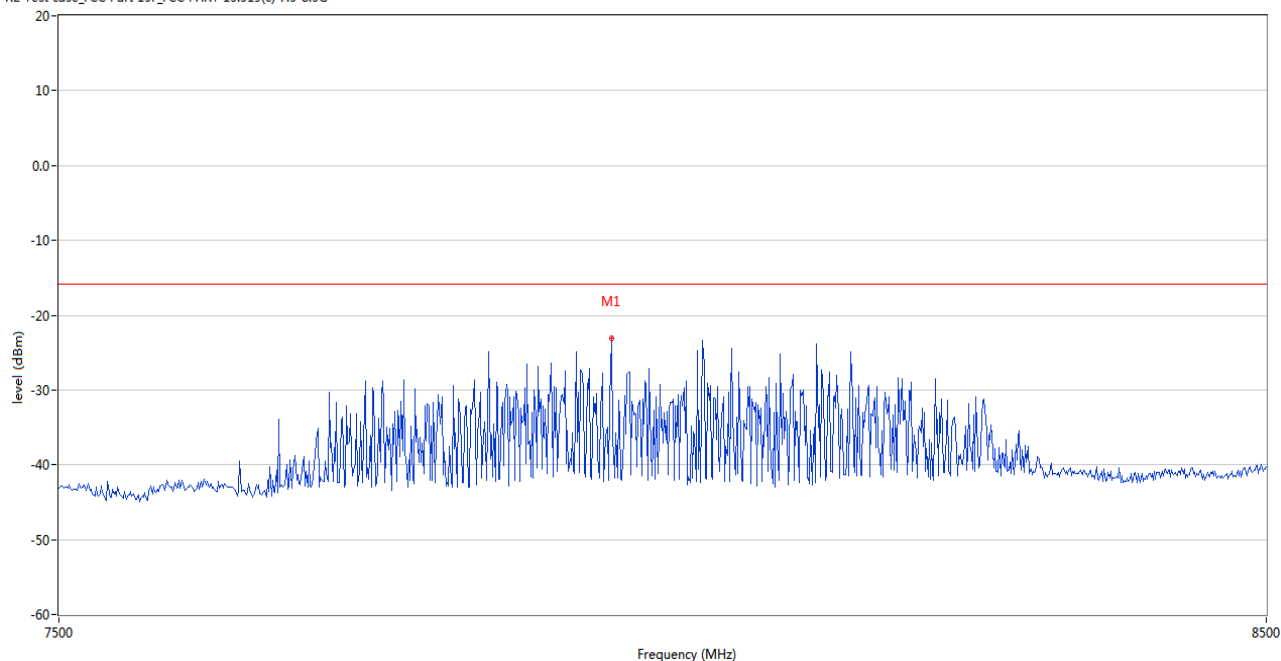
Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7955.000	-17.60	-15.9	1.70	294.00	Horizontal	Horizontal	Pass

Note: $EIRP_{50\text{ MHz}} = EIRP_{8\text{ MHz}} + 20\log(8\text{ MHz}/50\text{ MHz})$

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7955.000	-1.70	0	1.70	294.00	Horizontal	Horizontal	Pass

CH9, 7.5 GHz to 8.5 GHz, ANT V

RE Test case_FCC Part 15F_FCC PART 15.519(c) 7.5-8.5G



Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7942.000	-23.06	-15.9	7.16	179.00	Vertical	Horizontal	Pass

Note: $EIRP_{50\text{ MHz}} = EIRP_{8\text{ MHz}} + 20\log(8\text{ MHz}/50\text{ MHz})$

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7942.000	-7.16	0	7.16	179.00	Vertical	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ24A0346-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ24A0346-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ24A0346-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--