TEST REPORT

Applicant:	Arduino S.r.l.
Address:	Via Andrea Appiani, 25, 20900 MONZA (Italy)
Equipment Type:	Portenta UWB Shield
Model Name:	ASX00074
Brand Name:	Arduino
FCC ID:	2AN9S-ASX00074
Test Standard:	47 CFR Part 15 Subpart F (refer to section 3.1)
Sample Arrival Date:	Oct. 15, 2024
Test Date:	Oct. 23, 2024 - Oct. 26, 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)

Revision History

Version	Issue Date	Revisions
Rev. 01	Dec. 23, 2024	Initial Issue

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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	Portenta UWB Shield
Model Name Under Test	ASX00074
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	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 Patch Antenna
Antenna Gain	5.8 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 2.3 and 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	51% to 68%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+23.7℃ to +25.5℃
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*2.8m	112	2022.02.19	2025.02.18

4.3 Measurement Uncertainty

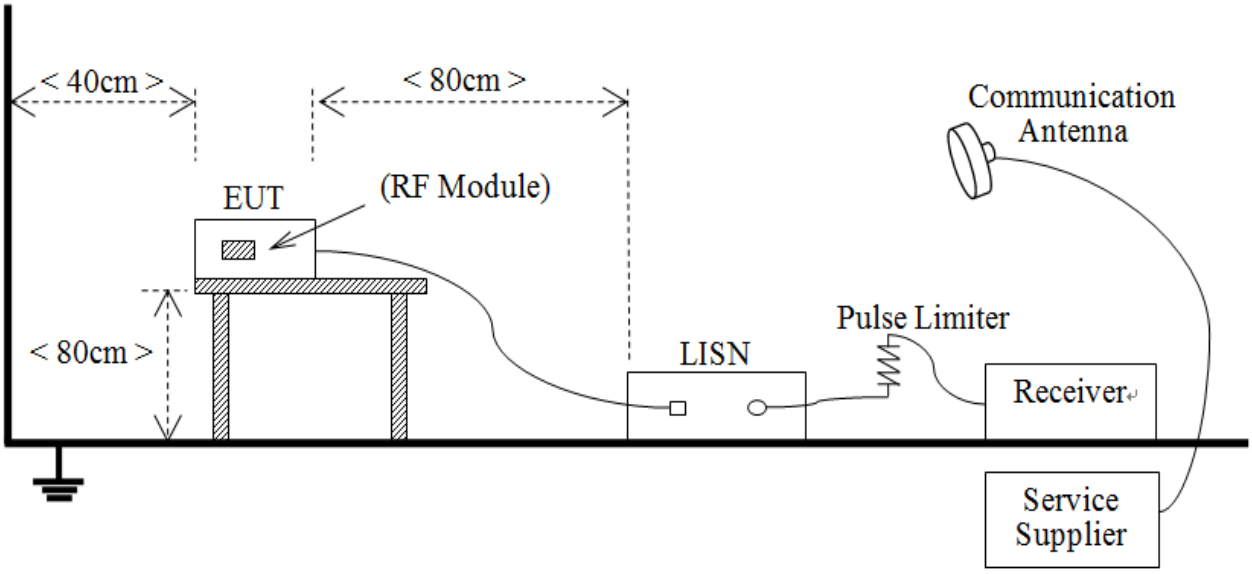
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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%

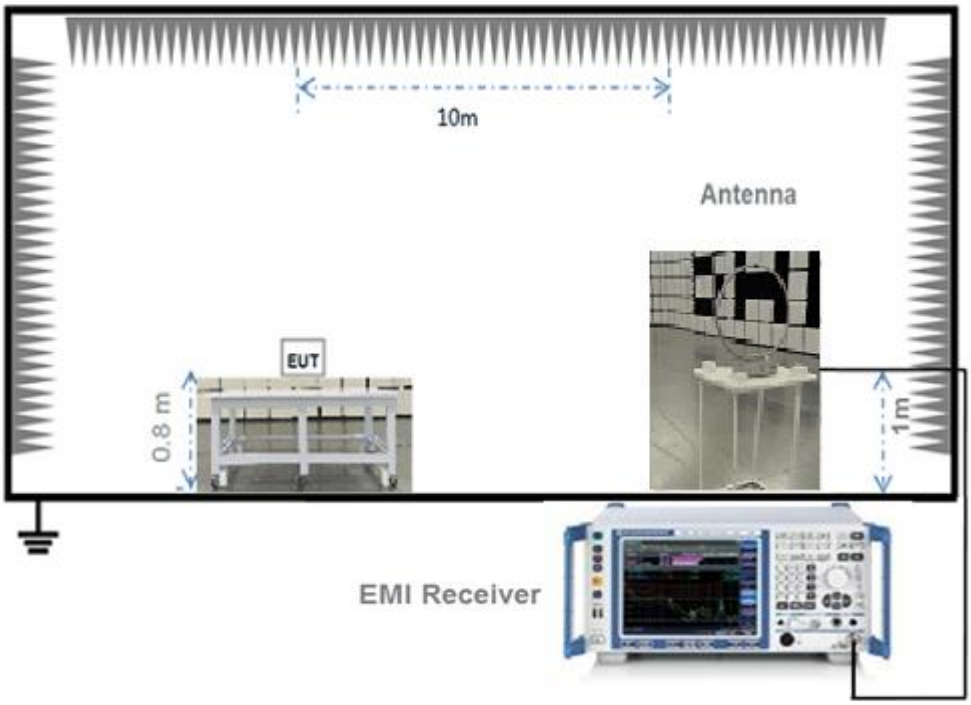
4.4 Description of Test Setup

4.4.1 For AC Power Supply Port Test



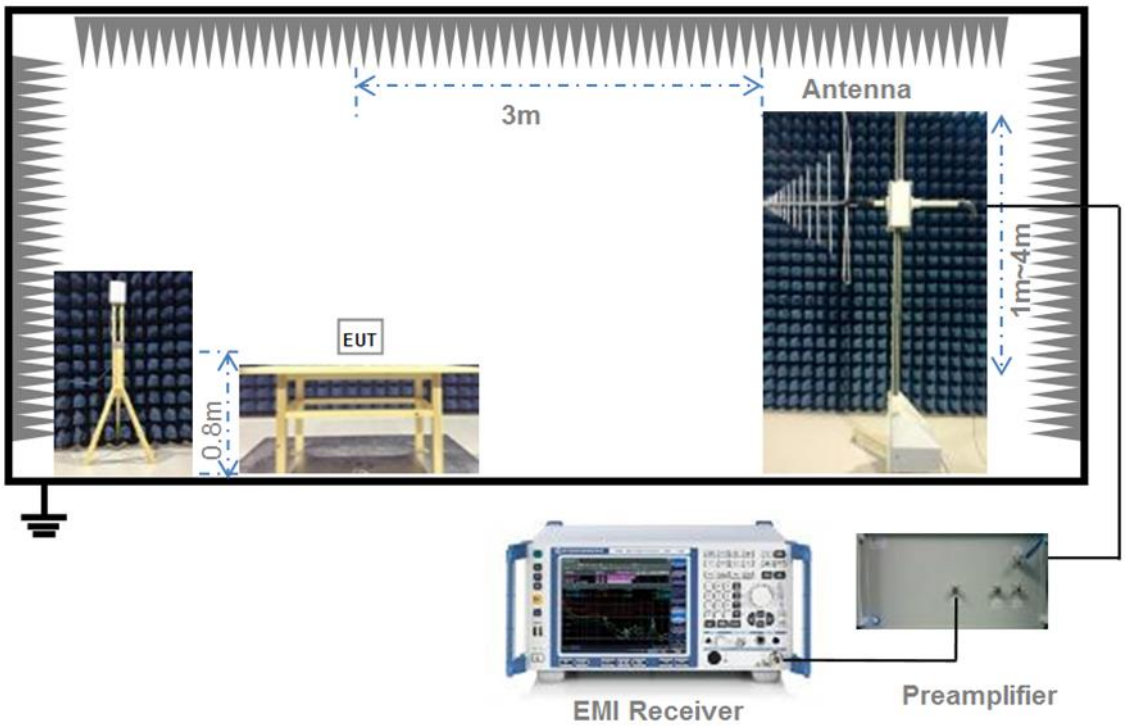
(Diagram 1)

4.4.2 For Radiated Test (Below 30 MHz)



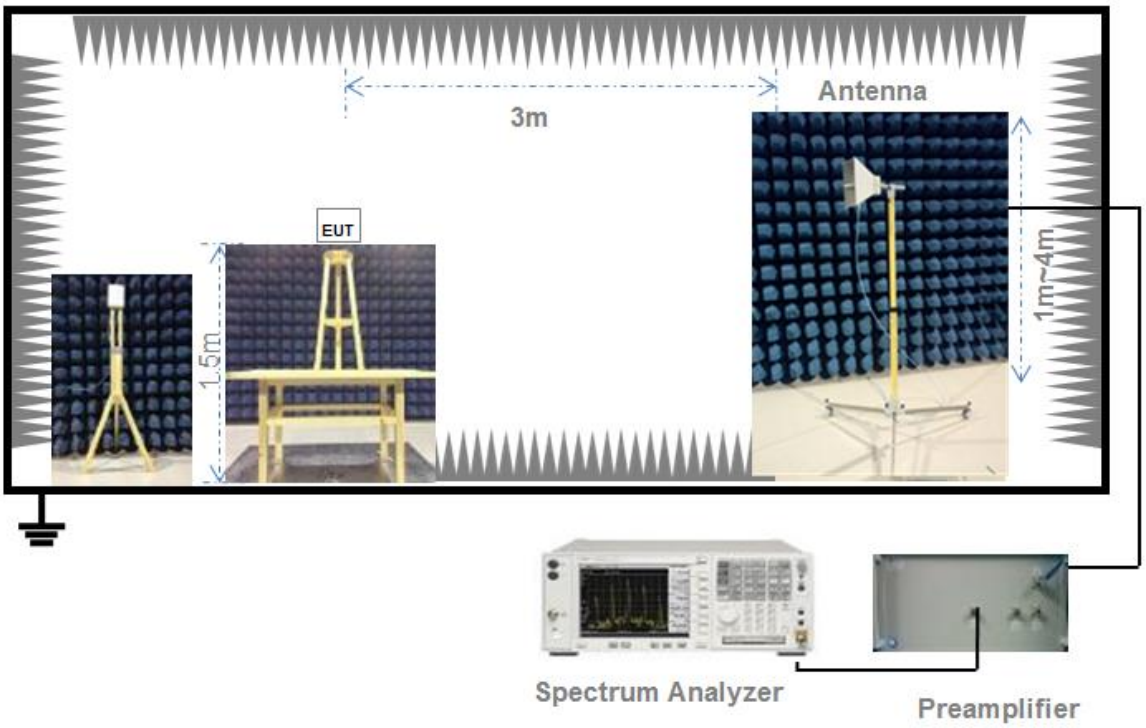
(Diagram 2)

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 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

5.2.2 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 ≥ 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 (μV/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 MHz)] relationship. For example, the peak power limit could be expressed in a 8 MHz bandwidth as follows in Equation :
$EIRP_{8\ MHz} = EIRP_{50\ MHz} + 20\log(8\ MHz / 50\ MHz) = 0\ dBm + (-15.9\ dBm) = -15.9\ dBm$

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

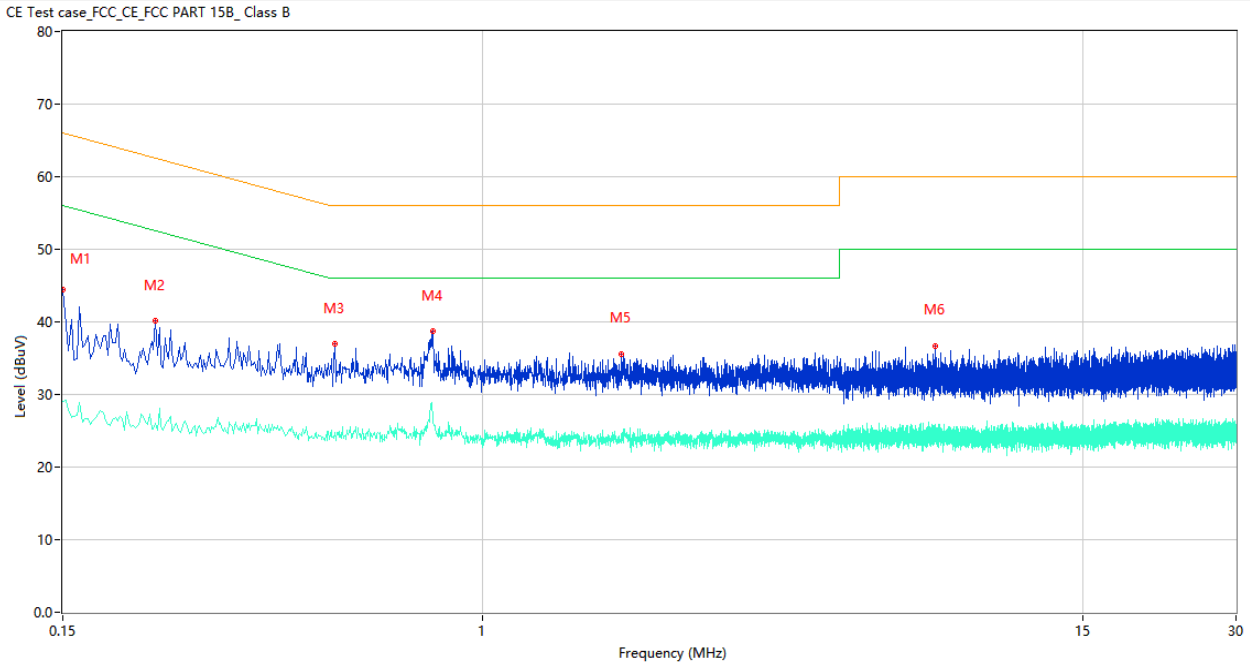
A.1 Conducted Emissions

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.

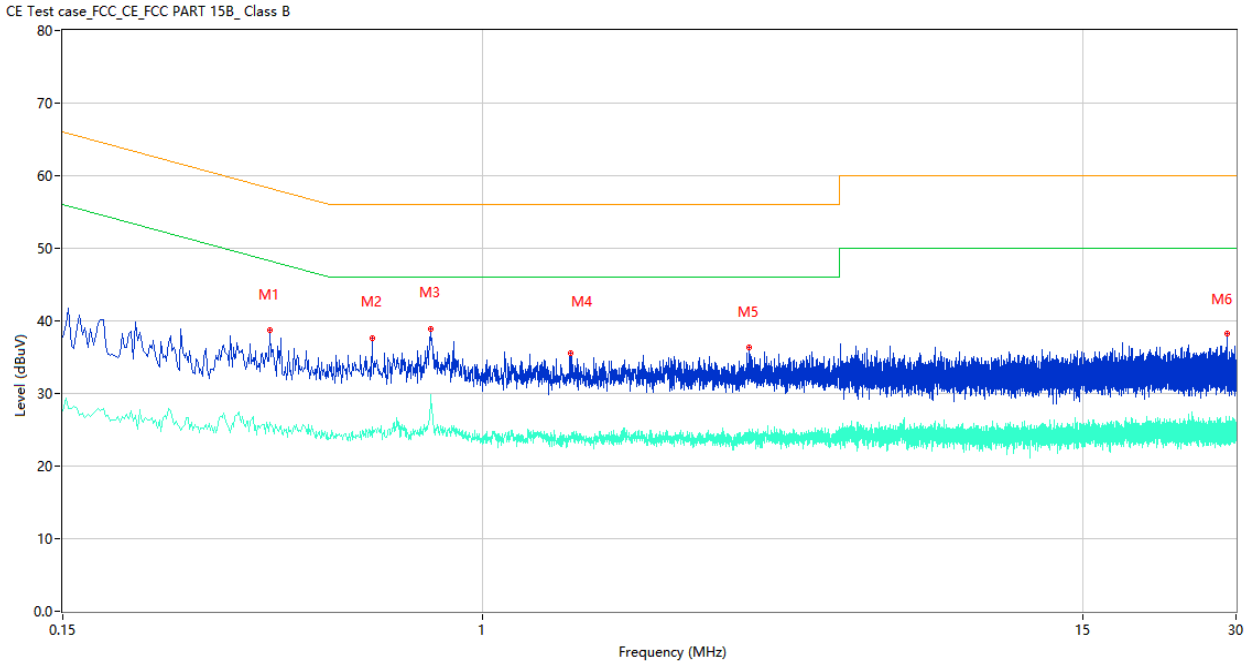
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	44.48	9.78	66.00	21.52	Peak	L	Pass
1**	0.150	29.11	9.78	56.00	26.89	AV	L	Pass
2	0.228	40.16	9.77	62.52	22.36	Peak	L	Pass
2**	0.228	25.96	9.77	52.52	26.56	AV	L	Pass
3	0.512	36.95	9.99	56.00	19.05	Peak	L	Pass
3**	0.512	24.76	9.99	46.00	21.24	AV	L	Pass
4	0.798	38.67	10.52	56.00	17.33	Peak	L	Pass
4**	0.798	27.58	10.52	46.00	18.42	AV	L	Pass
5	1.872	35.58	10.41	56.00	20.42	Peak	L	Pass
5**	1.872	23.41	10.41	46.00	22.59	AV	L	Pass
6	7.718	36.71	10.55	60.00	23.29	Peak	L	Pass
6**	7.718	25.02	10.55	50.00	24.98	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.382	38.67	10.63	58.24	19.57	Peak	N	Pass
1**	0.382	26.07	10.63	48.24	22.17	AV	N	Pass
2	0.606	37.65	10.17	56.00	18.35	Peak	N	Pass
2**	0.606	25.44	10.17	46.00	20.56	AV	N	Pass
3	0.792	38.93	10.47	56.00	17.07	Peak	N	Pass
3**	0.792	29.77	10.47	46.00	16.23	AV	N	Pass
4	1.484	35.48	10.21	56.00	20.52	Peak	N	Pass
4**	1.484	23.93	10.21	46.00	22.07	AV	N	Pass
5	3.332	36.35	10.41	56.00	19.65	Peak	N	Pass
5**	3.332	24.00	10.41	46.00	22.00	AV	N	Pass
6	28.892	38.20	10.87	60.00	21.80	Peak	N	Pass
6**	28.892	26.12	10.87	50.00	23.88	AV	N	Pass

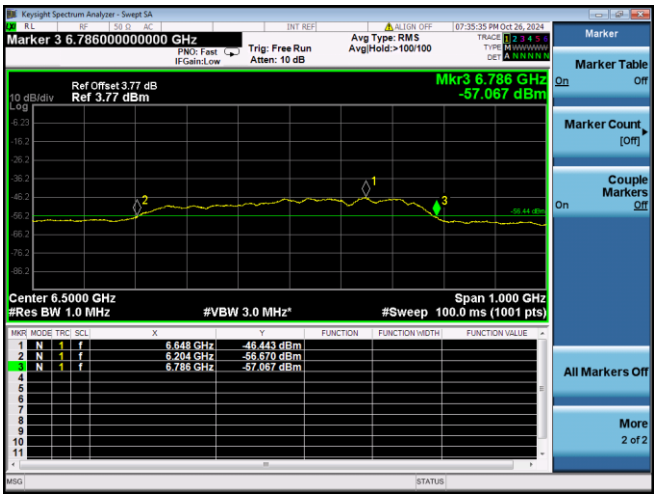
A.2 UWB Bandwidth

Test Data

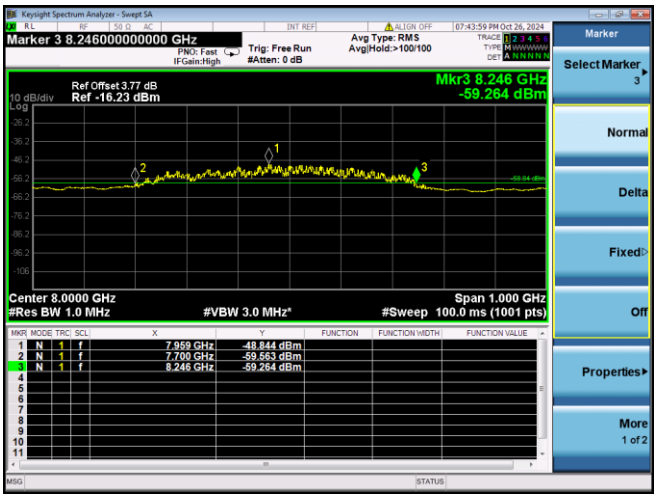
Channel	F_L (MHz)	F_H (MHz)	UWB Bandwidth (MHz)	Limit (MHz)	Verdict
CH5	6204	6786	582	UWB Bandwidth⩾ 500 MHz 10 dB bandwidth contained between 3100 to 10600 MHz	Pass
CH9	7700	8246	546		Pass

Test Pots

CH5



CH9

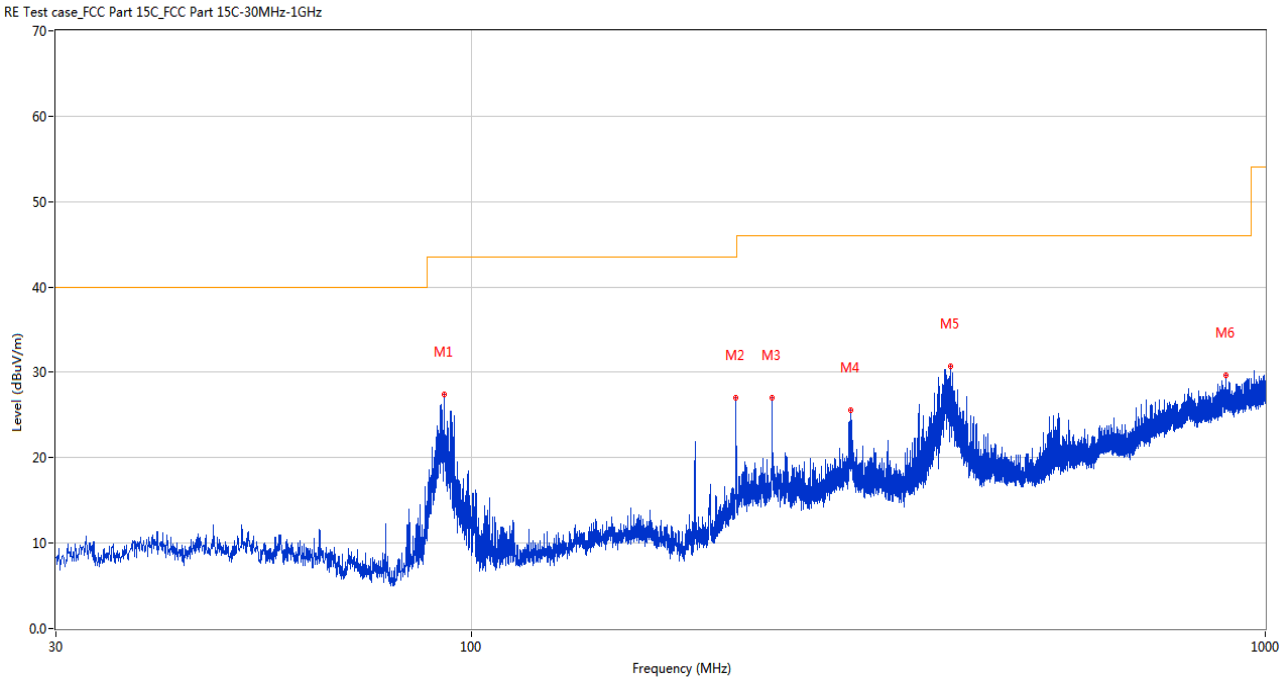


A.3 Radiated Emissions

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.

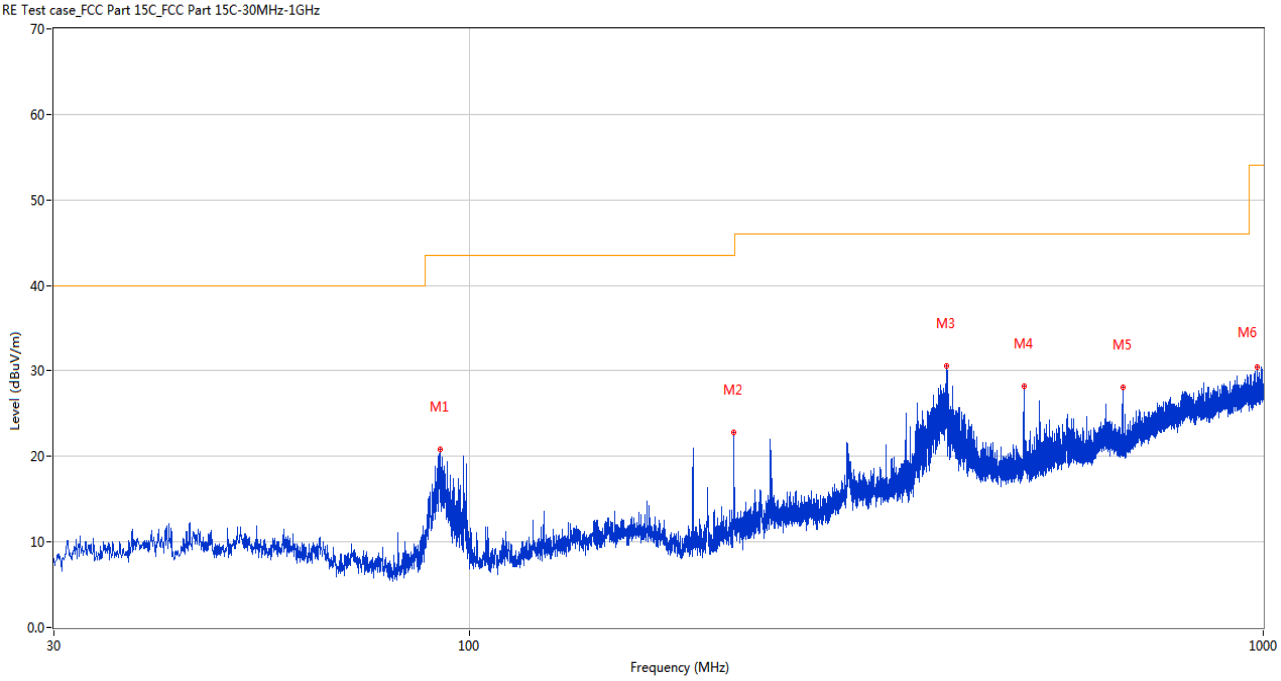
Test Data and Plots

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	92.468	27.45	-30.28	43.5	16.05	Peak	359.00	200	Horizontal	Pass
2	215.416	27.06	-29.23	43.5	16.44	Peak	343.00	100	Horizontal	Pass
3	239.374	27.09	-27.36	46.0	18.91	Peak	331.00	100	Horizontal	Pass
4	300.776	25.59	-24.63	46.0	20.41	Peak	278.00	100	Horizontal	Pass
5	401.558	30.70	-21.67	46.0	15.30	Peak	95.00	100	Horizontal	Pass
6	893.057	29.72	-10.51	46.0	16.28	Peak	59.00	100	Horizontal	Pass

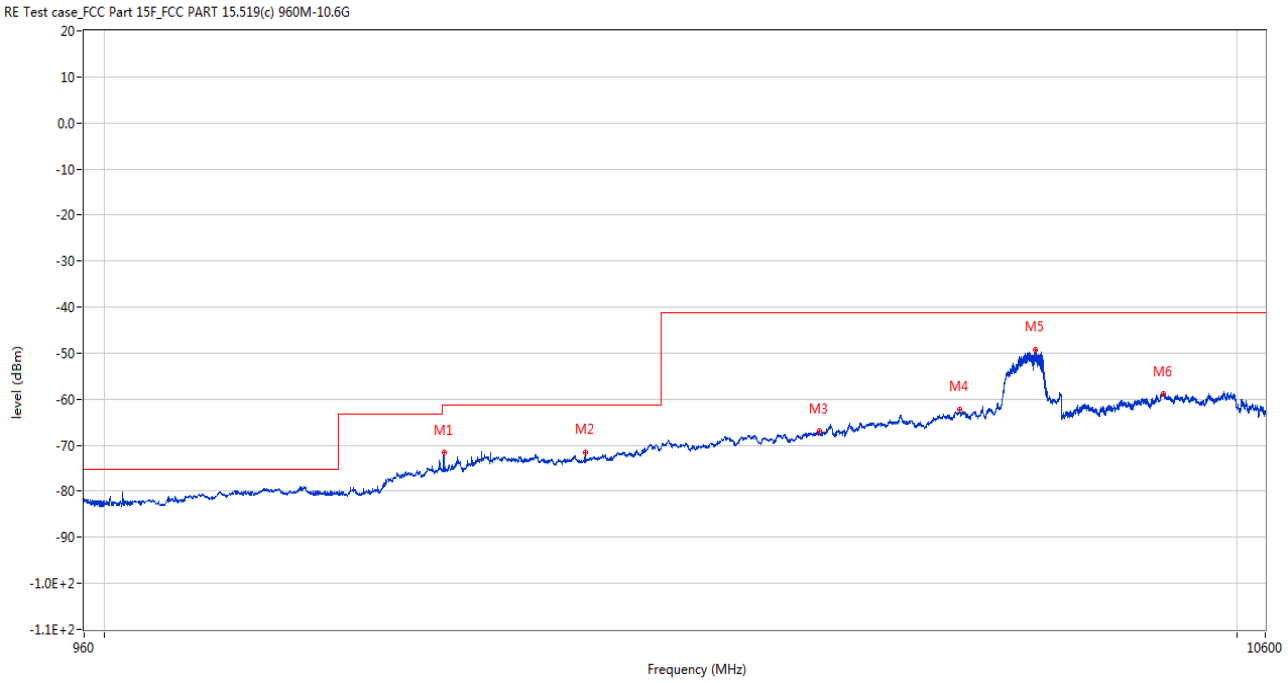
30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	92.032	20.78	-30.01	43.5	22.72	Peak	110.00	200	Vertical	Pass
2	215.464	22.78	-29.22	43.5	20.72	Peak	273.00	100	Vertical	Pass
3	398.649	30.63	-21.28	46.0	15.37	Peak	312.00	200	Vertical	Pass
4	499.868	28.15	-18.76	46.0	17.85	Peak	155.00	200	Vertical	Pass
5	665.302	28.07	-15.51	46.0	17.93	Peak	143.00	200	Vertical	Pass
6	981.667	30.50	-9.84	54.0	23.50	Peak	116.00	100	Vertical	Pass

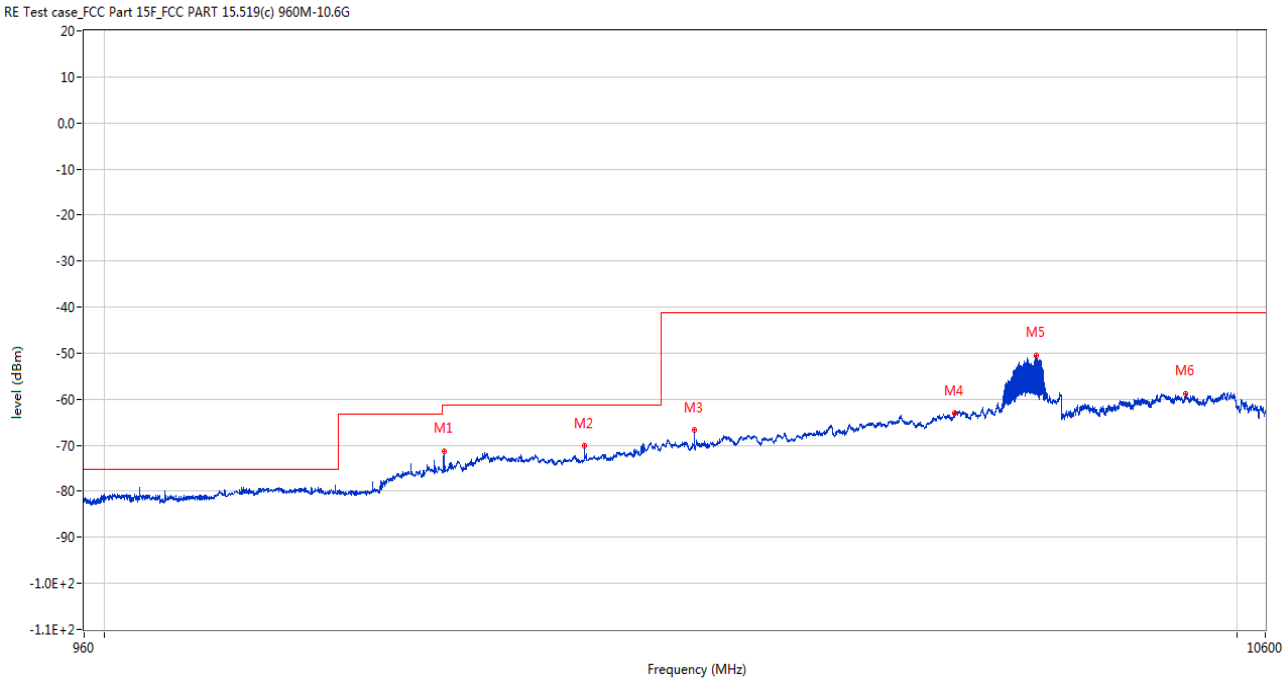
Note: The spurious above 18G is noise only, do not show on the report.

CH5, 960 MHz to 10.6 GHz, ANT H



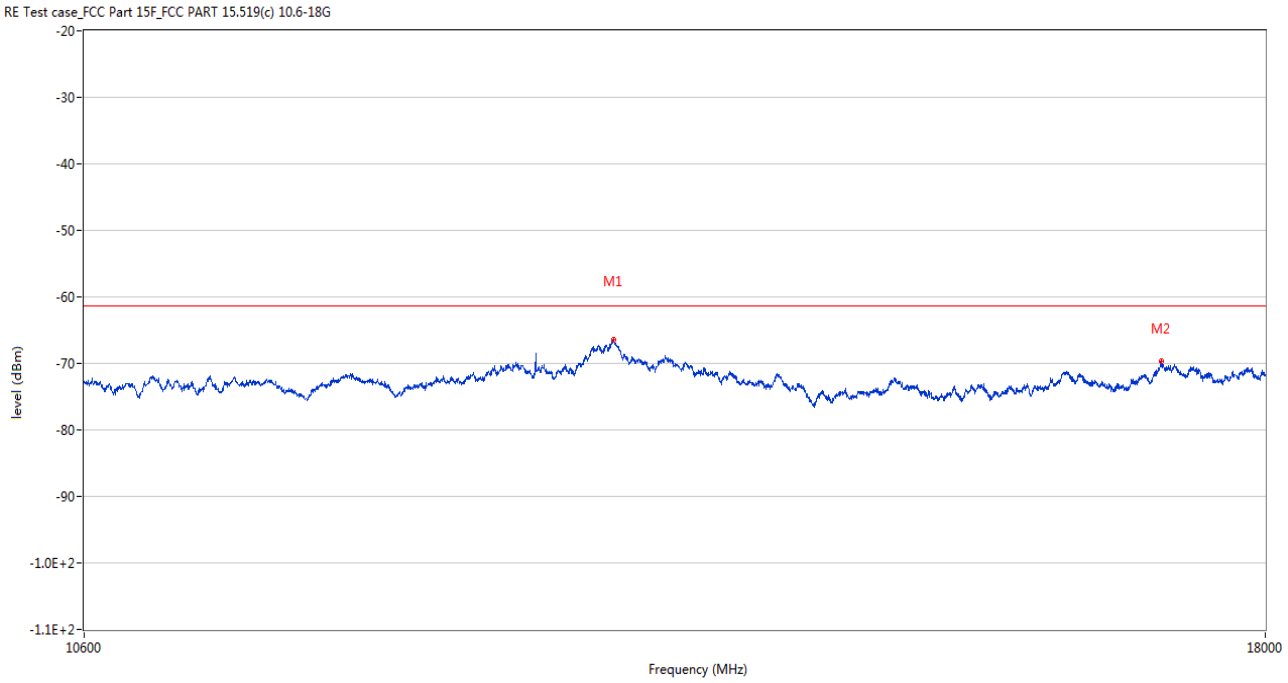
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1996.500	-71.65	-61.3	10.35	343.00	Horizontal	Horizontal	Pass
2658.000	-71.66	-61.3	10.36	145.00	Horizontal	Horizontal	Pass
4285.000	-67.01	-41.3	25.71	264.00	Horizontal	Horizontal	Pass
5691.000	-62.24	-41.3	20.94	207.00	Horizontal	Horizontal	Pass
6645.000	-49.26	-41.3	7.96	226.00	Horizontal	Horizontal	Pass
8608.300	-58.85	-41.3	17.55	308.00	Horizontal	Horizontal	Pass

CH5, 960 MHz to 10.6 GHz, ANT V



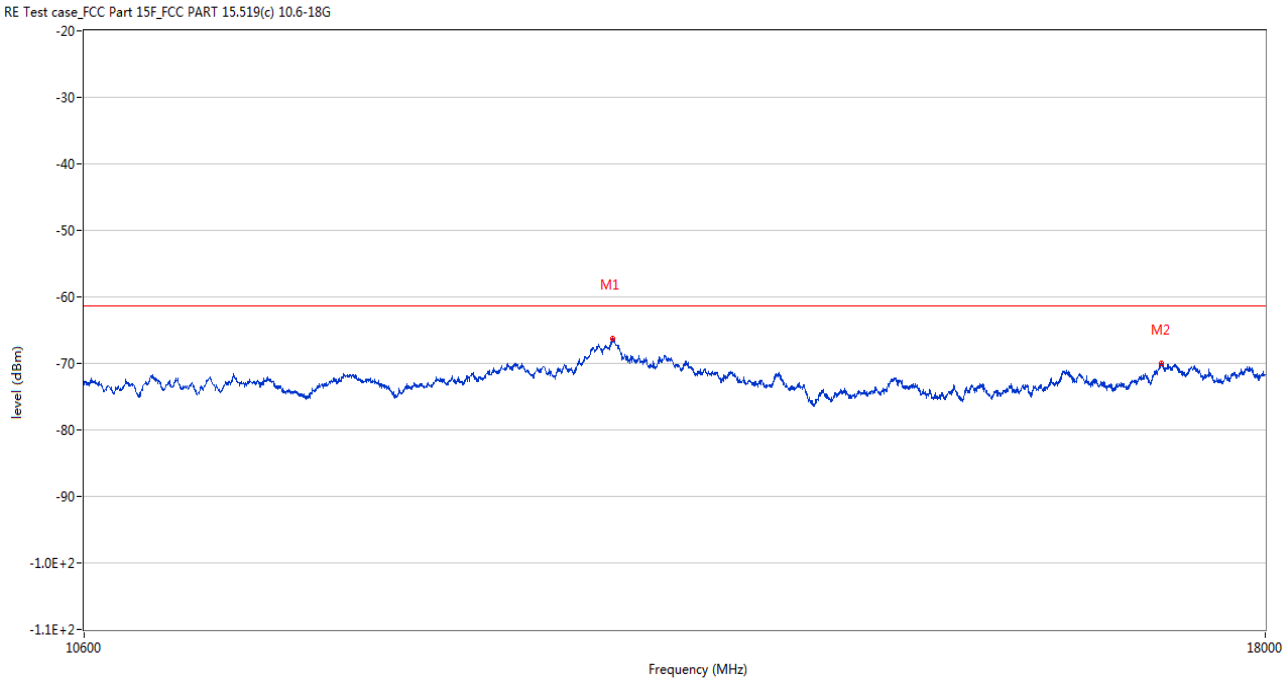
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1997.000	-71.24	-61.3	9.94	255.00	Vertical	Horizontal	Pass
2655.000	-70.14	-61.3	8.84	229.00	Vertical	Horizontal	Pass
3320.000	-66.68	-41.3	25.38	151.00	Vertical	Horizontal	Pass
5641.000	-63.02	-41.3	21.72	119.00	Vertical	Horizontal	Pass
6655.000	-50.42	-41.3	9.12	55.00	Vertical	Horizontal	Pass
9016.901	-58.81	-41.3	17.51	125.00	Vertical	Horizontal	Pass

CH5, 10.6 GHz to 18 GHz, ANT H



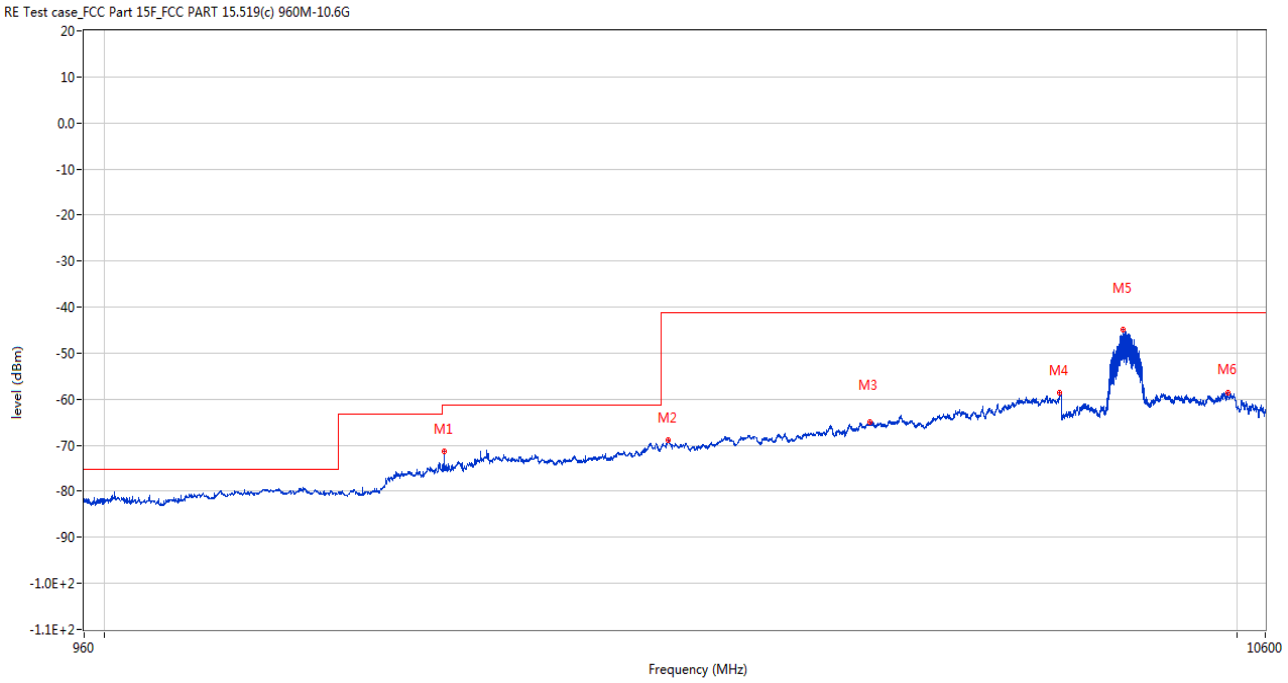
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13439.750	-66.52	-61.3	5.22	76.00	Horizontal	Horizontal	Pass
17184.150	-69.72	-61.3	8.42	146.00	Horizontal	Horizontal	Pass

CH5, 10.6 GHz to 18 GHz, ANT V



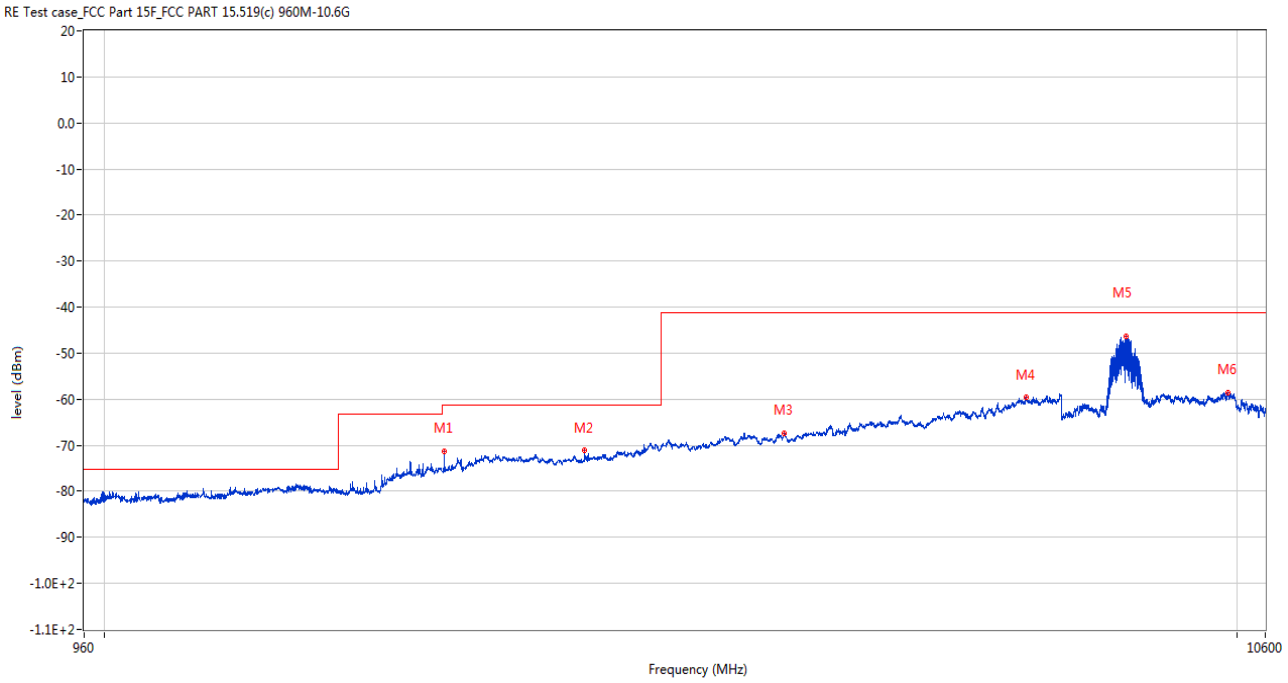
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13436.049	-66.25	-61.3	4.95	102.00	Vertical	Horizontal	Pass
17180.449	-69.98	-61.3	8.68	123.00	Vertical	Horizontal	Pass

CH9, 960 MHz to 10.6 GHz, ANT H



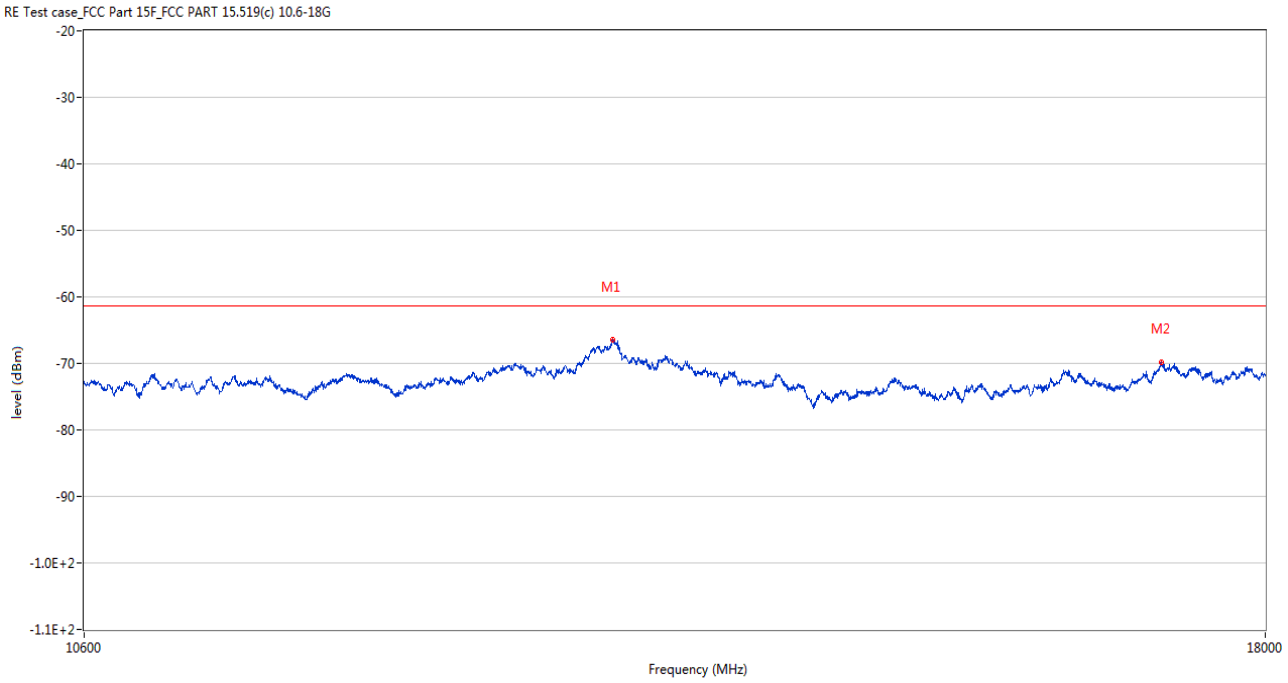
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1997.000	-71.38	-61.3	10.08	341.00	Horizontal	Horizontal	Pass
3146.000	-68.89	-41.3	27.59	360.00	Horizontal	Horizontal	Pass
4745.000	-65.02	-41.3	23.72	17.00	Horizontal	Horizontal	Pass
6979.000	-58.67	-41.3	17.37	234.00	Horizontal	Horizontal	Pass
7944.100	-44.88	-41.3	3.58	334.00	Horizontal	Horizontal	Pass
9818.800	-58.50	-41.3	17.20	179.00	Horizontal	Horizontal	Pass

CH9, 960 MHz to 10.6 GHz, ANT V



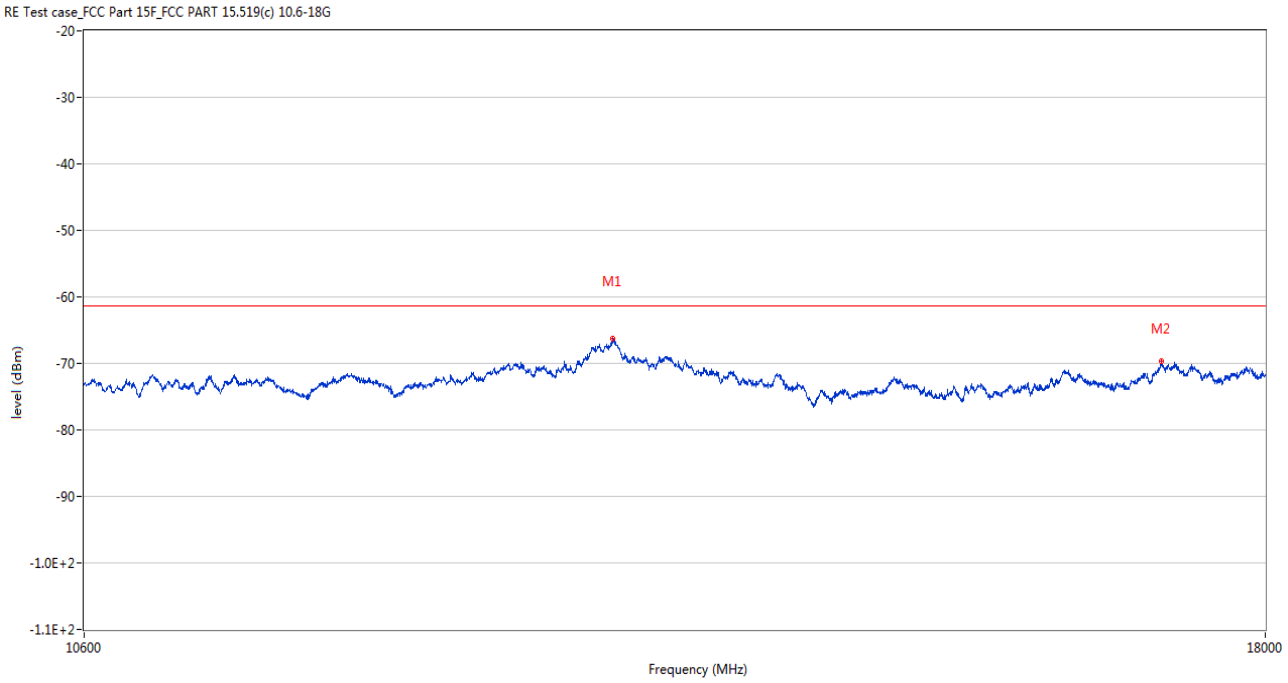
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1997.000	-71.21	-61.3	9.91	261.00	Vertical	Horizontal	Pass
2657.000	-71.14	-61.3	9.84	-1.00	Vertical	Horizontal	Pass
3988.000	-67.31	-41.3	26.01	168.00	Vertical	Horizontal	Pass
6520.000	-59.67	-41.3	18.37	308.00	Vertical	Horizontal	Pass
7989.100	-46.35	-41.3	5.05	248.00	Vertical	Horizontal	Pass
9817.000	-58.50	-41.3	17.20	178.00	Vertical	Horizontal	Pass

CH9, 10.6 GHz to 18 GHz, ANT H



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13436.049	-66.36	-61.3	5.06	259.00	Horizontal	Horizontal	Pass
17182.300	-69.78	-61.3	8.48	98.00	Horizontal	Horizontal	Pass

CH9, 10.6 GHz to 18 GHz, ANT V

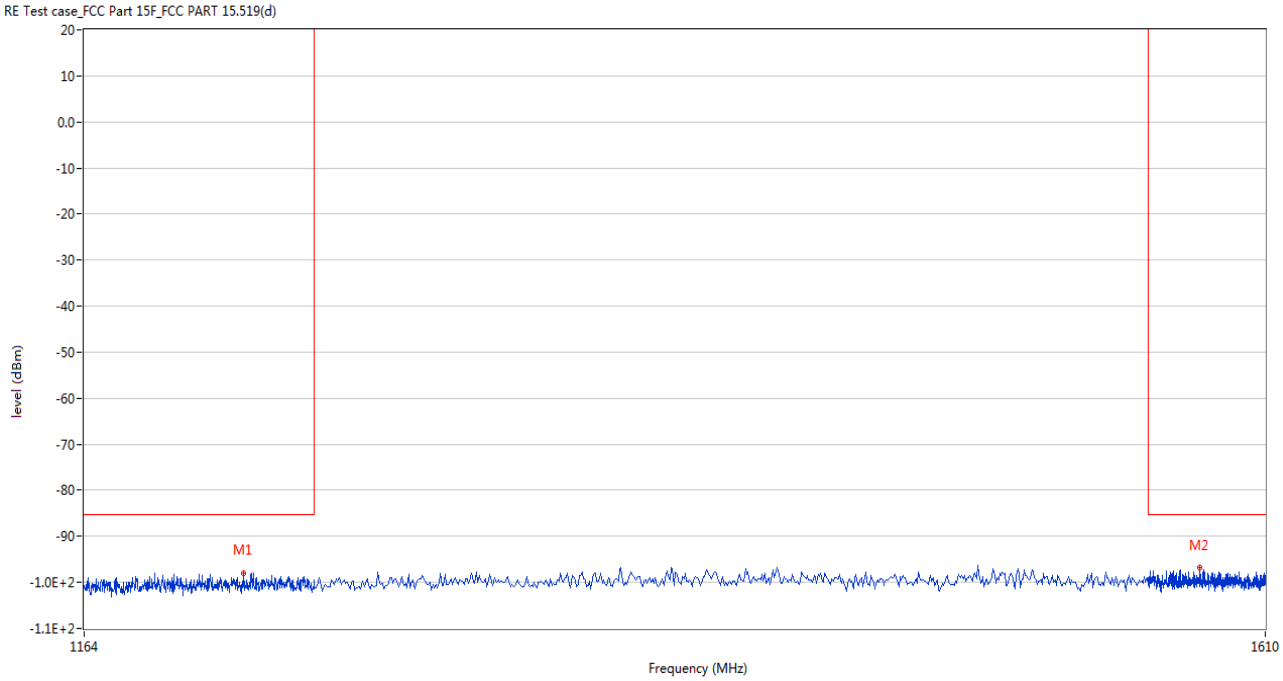


Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
13436.049	-66.31	-61.3	5.01	334.00	Vertical	Horizontal	Pass
17182.300	-69.70	-61.3	8.40	358.00	Vertical	Horizontal	Pass

A.4 Radiated Emissions in GPS Bands

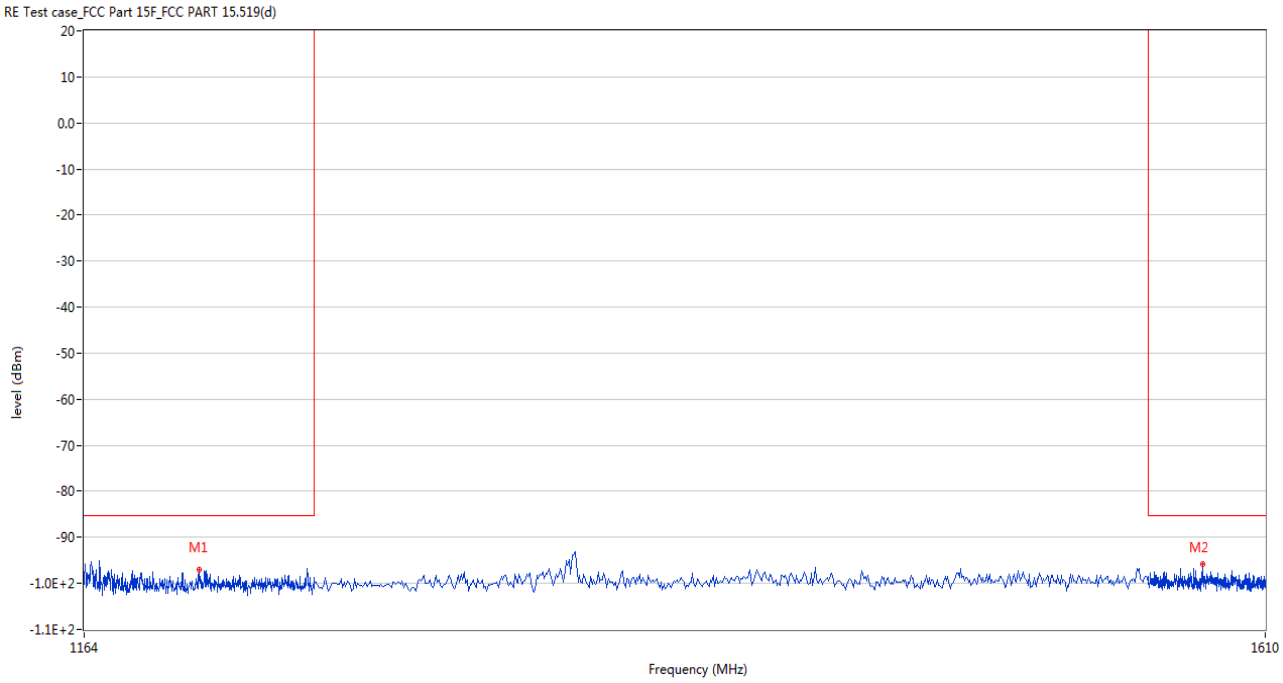
Test Data and Plots

CH5, 1.164 GHz to 1.61 GHz, ANT H



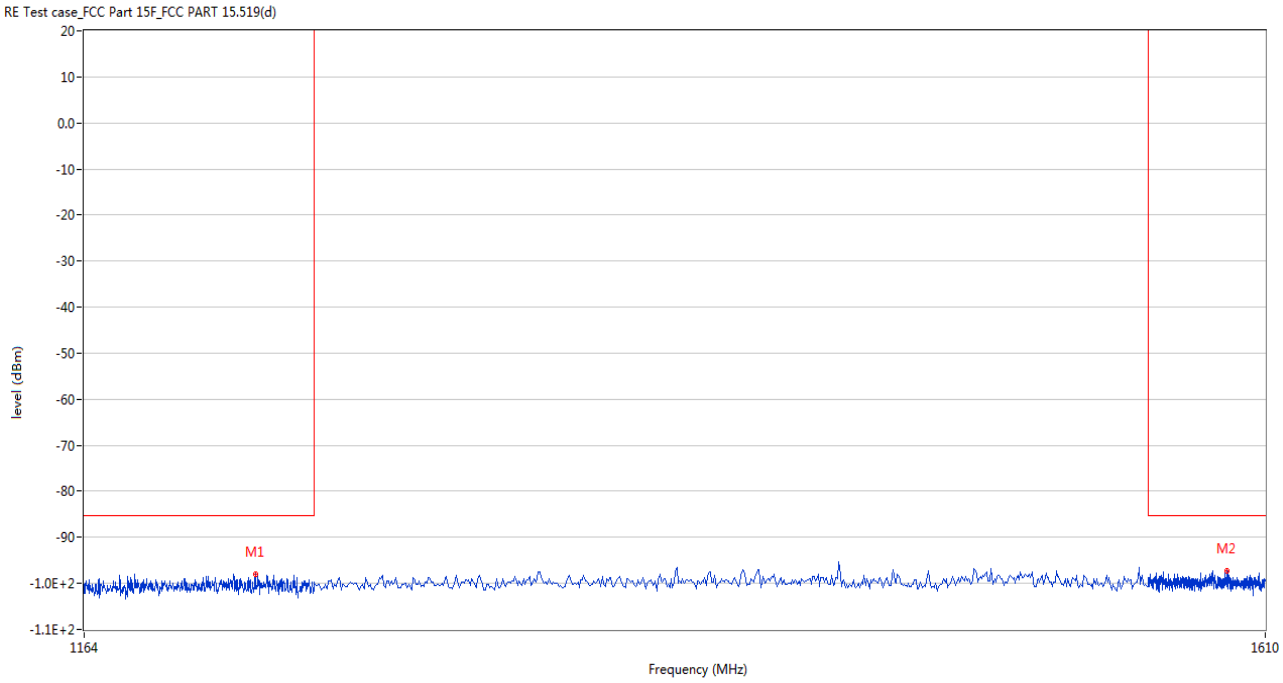
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1216.187	-97.90	-85.3	12.60	48.00	Horizontal	Horizontal	Pass
1581.185	-96.78	-85.3	11.48	73.00	Horizontal	Horizontal	Pass

CH5, 1.164 GHz to 1.61 GHz, ANT V



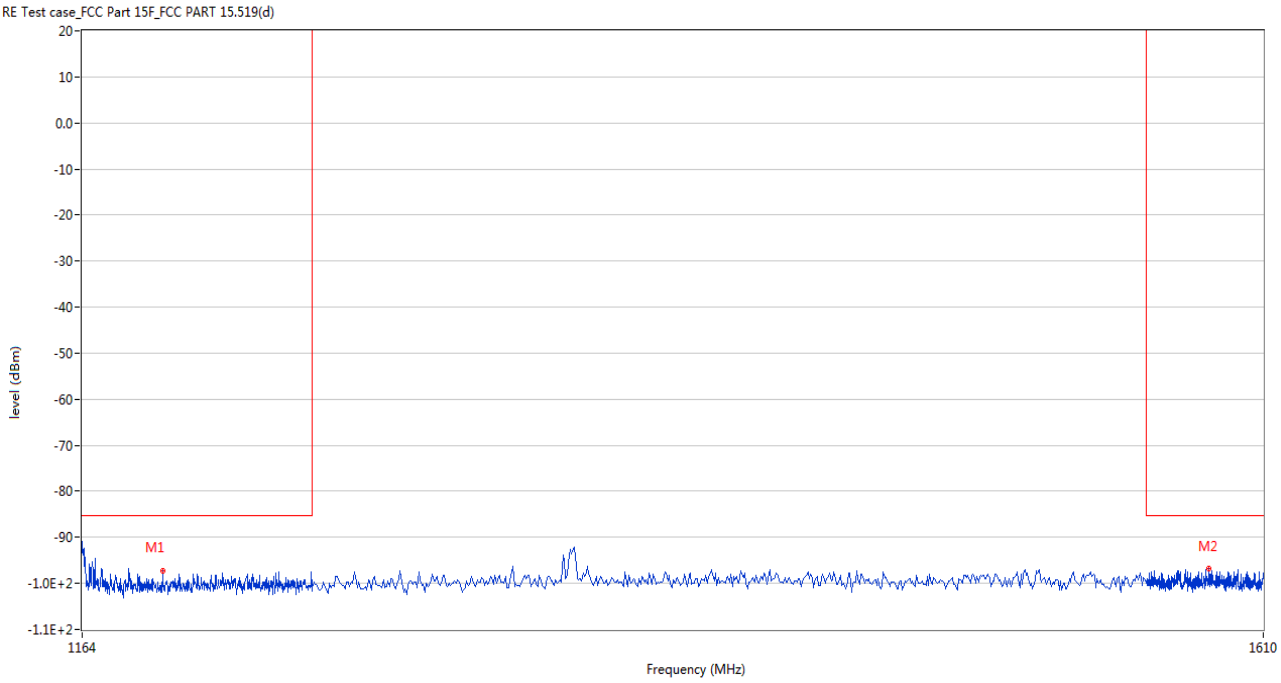
Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1201.240	-96.96	-85.3	11.66	337.00	Vertical	Horizontal	Pass
1582.375	-95.80	-85.3	10.50	184.00	Vertical	Horizontal	Pass

CH9, 1.164 GHz to 1.61 GHz, ANT H



Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1219.987	-98.11	-85.3	12.81	275.00	Horizontal	Horizontal	Pass
1593.255	-97.34	-85.3	12.04	116.00	Horizontal	Horizontal	Pass

CH9, 1.164 GHz to 1.61 GHz, ANT V

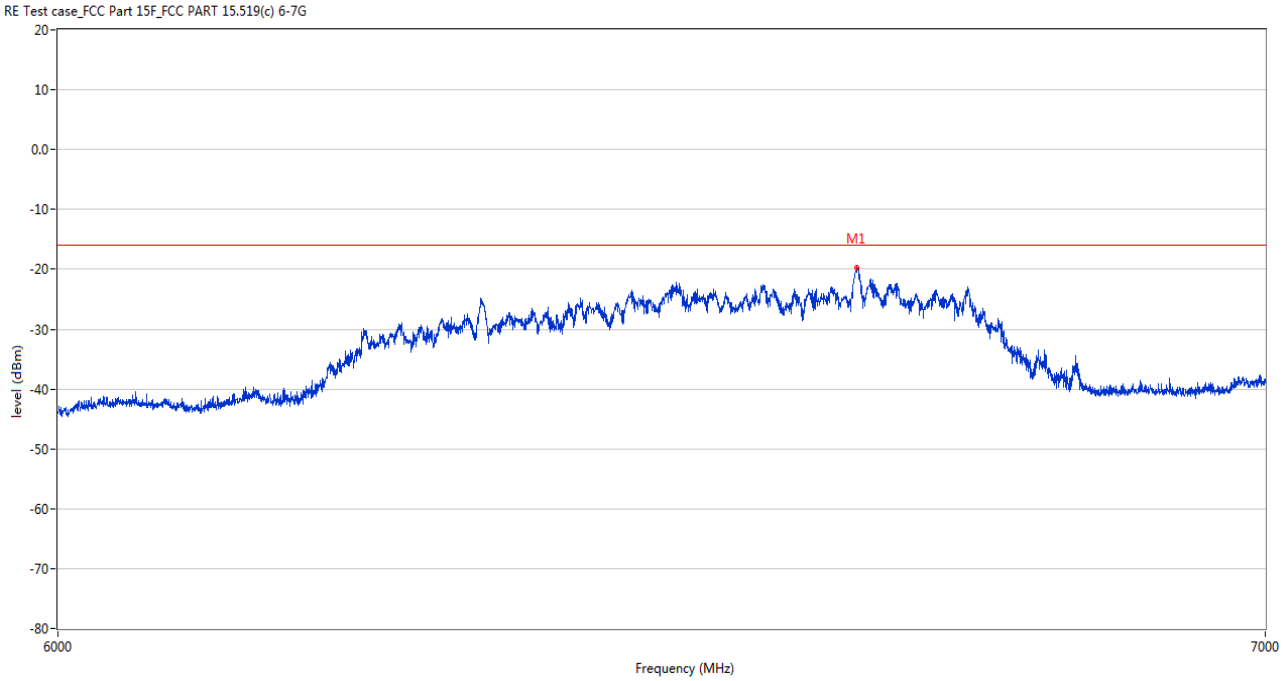


Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Table (o)	ANT	EUT	Verdict
1189.967	-97.38	-85.3	12.08	103.00	Vertical	Horizontal	Pass
1586.285	-96.86	-85.3	11.56	208.00	Vertical	Horizontal	Pass

A.5 Peak Emissions within a 50MHz Bandwidth

Test Data and Plots

CH5, 6 GHz to 7 GHz, ANT H

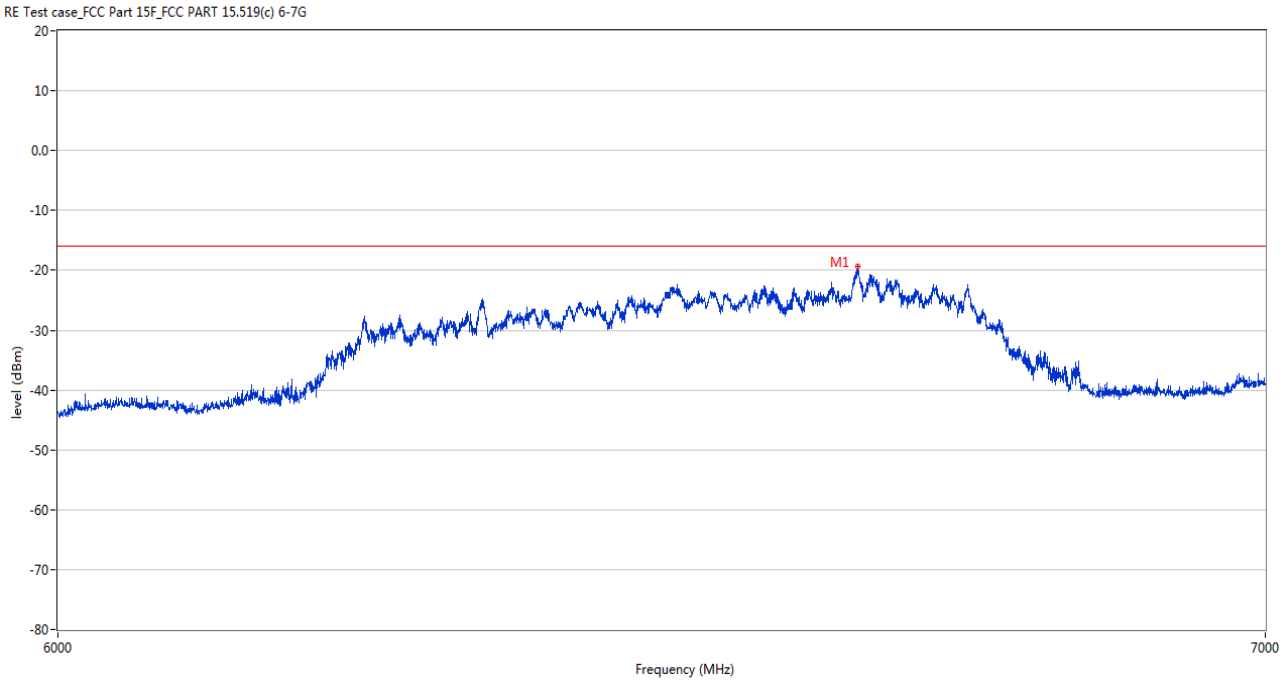


Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.500	-19.77	-15.9	3.87	290.00	Horizontal	Horizontal	Pass

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

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.500	-3.87	0	3.87	290.00	Horizontal	Horizontal	Pass

CH5, 6 GHz to 7 GHz, ANT V

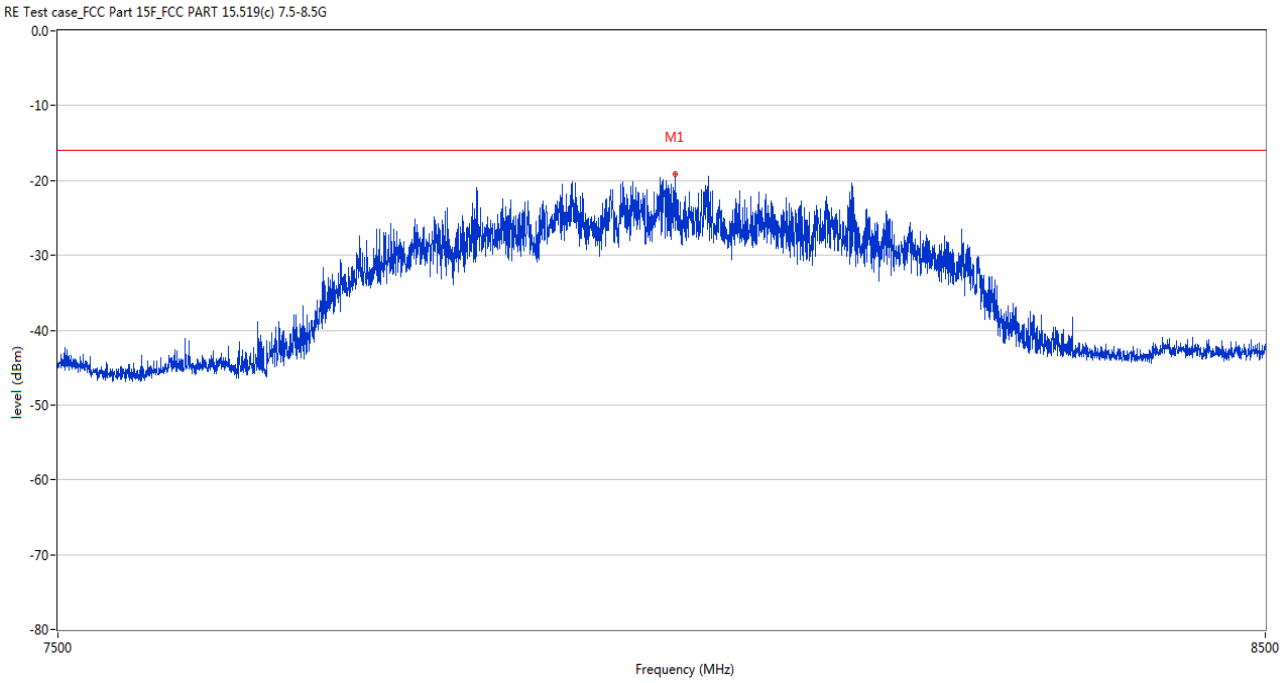


Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.750	-19.29	-15.9	3.39	79.00	Vertical	Horizontal	Pass

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

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.500	-3.39	0	3.39	79.00	Vertical	Horizontal	Pass

CH9, 7.5 GHz to 8.5 GHz, ANT H

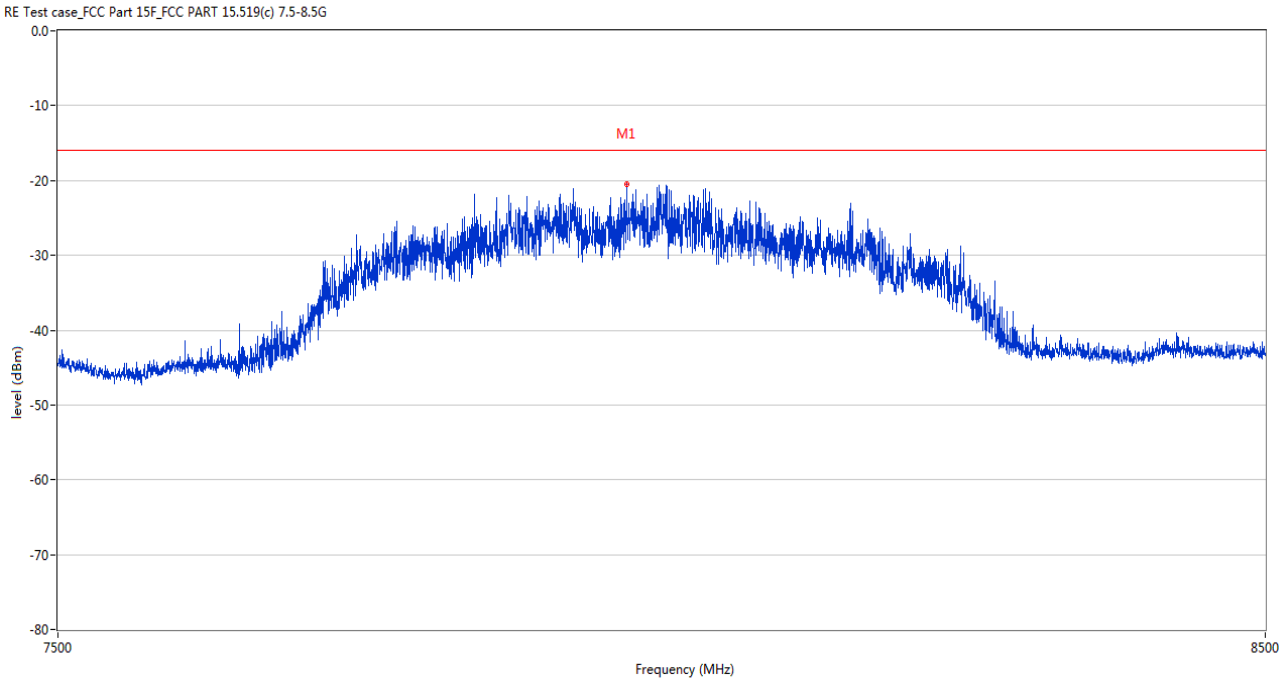


Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7995.500	-19.09	-15.9	3.19	335.00	Horizontal	Horizontal	Pass

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

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.500	-3.19	0	3.19	335.00	Horizontal	Horizontal	Pass

CH9, 7.5 GHz to 8.5 GHz, ANT V



Frequency (MHz)	Result (dBm/8 MHz)	Limit (dBm/8 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
7955.750	-20.47	-15.9	4.57	249.00	Vertical	Horizontal	Pass

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

Frequency (MHz)	Result (dBm/50MHz)	Limit (dBm/50 MHz)	Margin (dB)	Table (o)	ANT	EUT	Verdict
6644.500	-4.57	0	4.57	249.00	Vertical	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ24A0348-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ24A0348-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ24A0348-AI.PDF”.

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--END OF REPORT--