

TEST REPORT

Applicant: Truesense S.R.L.
Address: Viale Lombardia, 217 - 20900, Monza, Italy
Equipment Type: TS Mini 250 UWB module
Model Name: TS Mini 250
Brand Name: Truesense
FCC ID: 2BFZA-TSMINI250
Test Standard: 47 CFR Part 15 Subpart F
(refer section 3.1)
Sample Arrival Date: Oct. 11, 2025
Test Date: Oct. 14, 2025 - Dec. 05, 2025
Date of Issue: Dec. 12, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Julie Zhu**Checked by:** Ye Hongji**Approved by:** Tolan Tu
(Technical Director)

Revision History

Version	Issue Date	Revisions
<u>Rev. 01</u>	<u>Dec. 12, 2025</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	UWB Bandwidth	13
5.4	Radiated Emissions	14
5.5	Radiated Emissions in GPS Bands	16
5.6	Peak Emissions within a 50MHz Bandwidth	17
ANNEX A	TEST RESULT	18

A.1	Conducted Emissions	18
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	35
ANNEX B	TEST SETUP PHOTOS	36
ANNEX C	EUT EXTERNAL PHOTOS.....	36
ANNEX D	EUT INTERNAL PHOTOS.....	36

1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Contact Address	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
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
	☐ Building 2, Intelligent Connected Vehicle Industrial Park, No. 55, Xiangshan Road, Luotian Community, Yanluo Sub-district, Bao'an District, Shenzhen
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	Truesense S.R.L.
Address	Viale Lombardia, 217 - 20900, Monza, Italy

2.2 Manufacturer Information

Manufacturer	Truesense S.R.L.
Address	Viale Lombardia, 217 - 20900, Monza, Italy

2.3 General Description for Equipment under Test (EUT)

EUT Name	TS Mini 250 UWB module
Model Name Under Test	TS Mini 250
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	V0200
Software Version	5.6.0
Dimensions (Approx.)	27mmx27mmx3.4mm
Weight (Approx.)	3g

2.4 Technical Information

Network and Wireless connectivity	UWB
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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		6.24 GHz-8.24 GHz
Antenna Type		PCB Patch Antenna and External Antenna
Antenna Gain	CH5	PCB Patch Antenna: 3.63 dBi
	CH9	PCB Patch Antenna: 2.71 dBi
	CH5	External Antenna: 3.3 dBi
	CH9	External Antenna: 4.4 dBi

All channel was listed on the following table:

Channel Number	Frequency (MHz)
CH5	6489.6
CH9	7987.2

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 C63.10-2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

3.2 Test Verdict

No.	Description	FCC Part No.	Test Result	Verdict	Remark
1	Antenna Requirement	15.203	--	Pass	Note ^{1&2}
2	Conducted Emission	15.207	ANNEX A.1	Pass	Note ²
3	UWB Bandwidth	15.517(b)/ 15.503(d)	ANNEX A.2	Pass	Note ²
4	Radiated Emissions	15.517(c)/15.209	ANNEX A.3	Pass	Note ³
5	Radiated Emissions in GPS Bands	15.517(d)	ANNEX A.4	Pass	Note ³
6	Peak Emissions within a 50 MHz Bandwidth	15.517(e)	ANNEX A.5	Pass	Note ²
Note ¹ : 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	49% to 65%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22.4°C to +24.8°C
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	KEYSIGHT	N9020A	MY54420186	2025.05.21	2026.05.20
Power meter	R&S	NRP8S	101498	2025.07.07	2026.07.06
Spectrum Analyzer	R&S	FSV40	101544	2024.12.16	2025.12.15
Spectrum Analyzer	KEYSIGHT	N9020A	MY56060127	2025.02.27	2026.02.26
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Test Antenna-Bi-Log	Schwarzbeck	VULB 9163	01414	2023.11.03	2026.11.02
Test Antenna-Horn	Schwarzbeck	BBHA 9120D	02459	2023.10.26	2026.10.25
Test Antenna-Loop	Schwarzbeck	FMZB 1513-60	00015	2024.05.07	2026.05.06
Anechoic Chamber	YIHENG	C8-966	N/A	2024.05.15	2027.05.11
EMI Receiver	Keysight	N9038A	MY55330121	2025.04.16	2026.04.15
Filtering unit	balun	SU319F	LW-SZ19D0001F01	N/A	N/A
Switching unit	BALUN	SU319	LW-SZ19D0001S01	N/A	N/A
EMI Receiver	keysight	N9038B	MY61380132	2025.04.01	2026.03.31
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK8127	01009	2025.07.15	2026.07.14
Shielded Enclosure	YiHeng Electronic Co., Ltd	4.3m*2.9m*2.4 m	235	2024.11.05	2027.11.04

4.3 Measurement Uncertainty

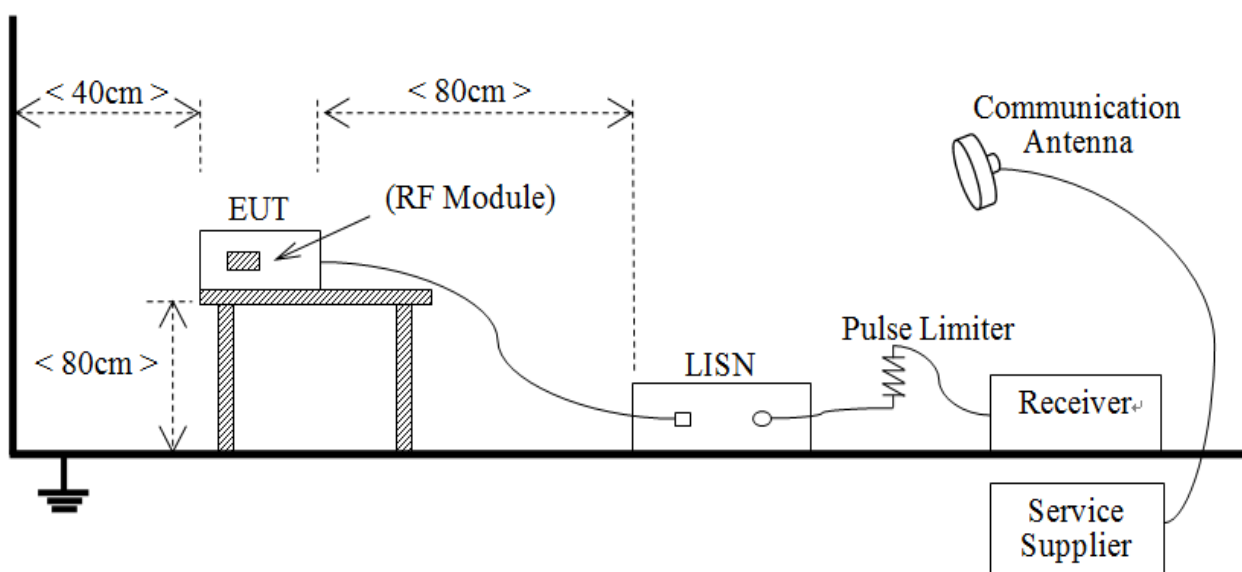
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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%

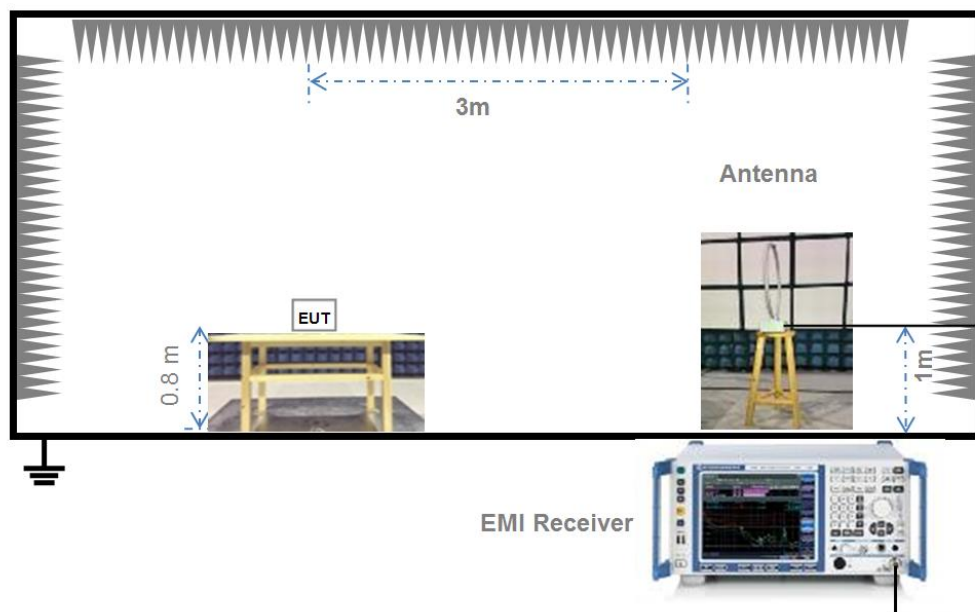
4.4 Description of Test Setup

4.4.1 For AC Power Supply Port Test



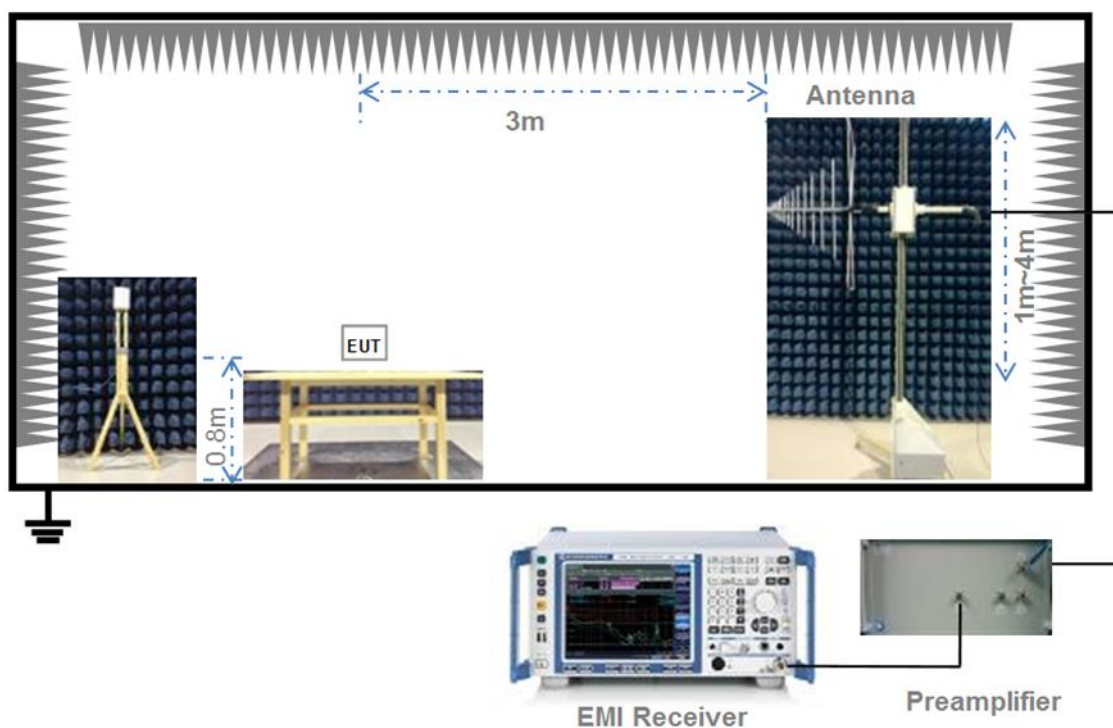
(Diagram 1)

4.4.2 For Radiated Test (Below 30 MHz)



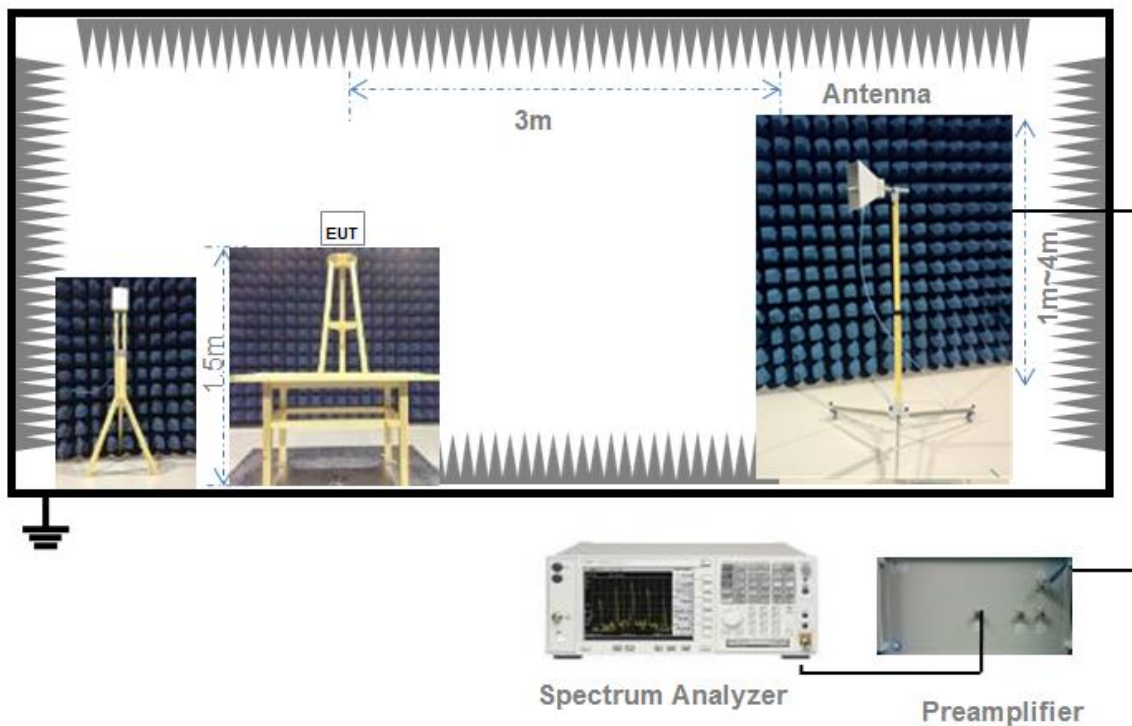
(Diagram 2)

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 UWB Bandwidth

5.3.1 Limit

FCC §15.503(a)

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 §15.517(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.

5.3.2 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.

5.3.3 Test Procedure

Use the following spectrum analyzer settings:

RBW = 1 MHz

VBW $\geq$ 3 MHz

Sweep = auto

Detector function = RMS

Trace = max hold

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Radiated Emissions

5.4.1 Limit

FCC §15.517(c) & 15.209

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	-53.3
1990–3100	-51.3
3100–10600	-41.3
Above 10600	-51.3

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

5.4.2 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.

5.4.3 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

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Radiated Emissions in GPS Bands

5.5.1 Limit

FCC §15.517(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

5.5.2 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.

5.5.3 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:

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

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Peak Emissions within a 50MHz Bandwidth

5.6.1 Limit

FCC §15.517(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 1 MHz bandwidth as follows in Equation :

$$\text{EIRP}_{1 \text{ MHz}} = \text{EIRP}_{50 \text{ MHz}} + 20 \log (1 \text{ MHz} / 50 \text{ MHz}) = 0 \text{ dBm} + (- 34 \text{ dBm}) = -34 \text{ dBm}$$

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:

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

5.6.4 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.

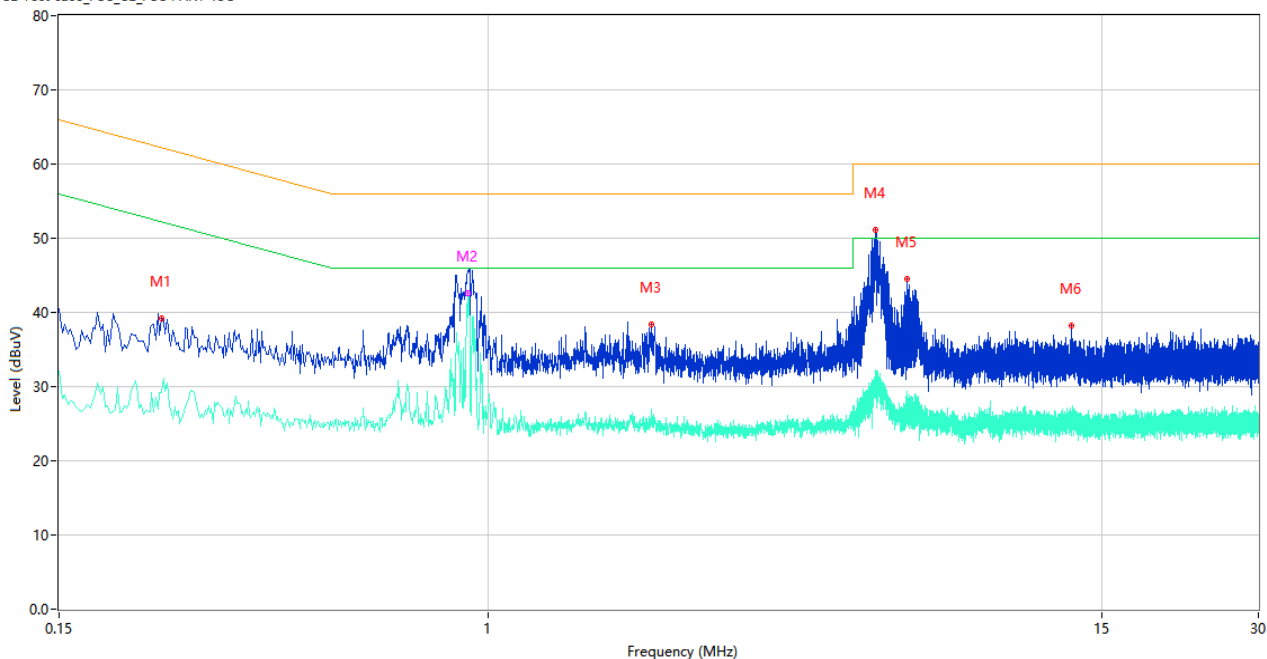
Note ²: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (240 VAC, 50 Hz) shown here.

Note ³: Results (dBUV) = Original reading level of Spectrum Analyzer (dBUV) + Factor (dB)

Test Data and Plots

PHASE L

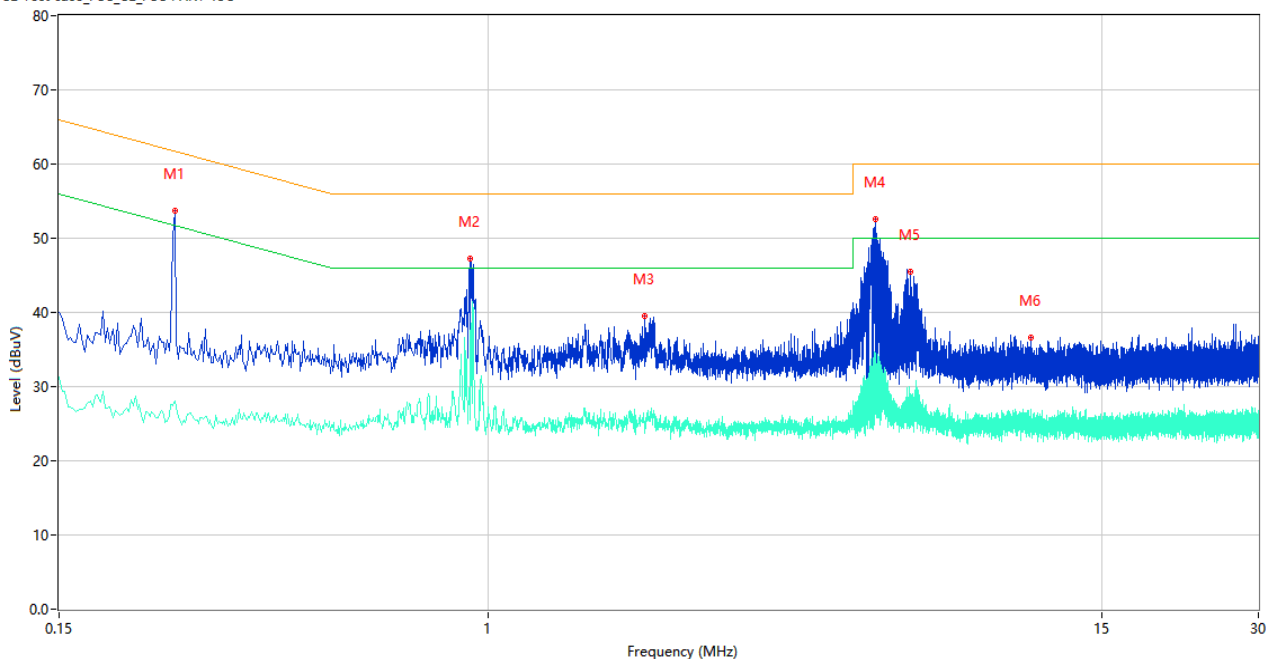
CE Test case_FCC_CE_FCC PART 15C



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.236	39.24	9.83	62.24	23.00	Peak	L	Pass
1**	0.236	29.25	9.83	52.24	22.99	AV	L	Pass
2	0.912	45.33	10.22	56.00	10.67	Peak	L	Pass
2**	0.912	42.54	10.22	46.00	3.46	AV	L	Pass
3	2.054	38.43	10.47	56.00	17.57	Peak	L	Pass
3**	2.054	26.87	10.47	46.00	19.13	AV	L	Pass
4	5.538	51.14	10.56	60.00	8.86	Peak	L	Pass
4**	5.538	28.37	10.56	50.00	21.63	AV	L	Pass
5	6.354	44.57	10.17	60.00	15.43	Peak	L	Pass
5**	6.354	29.29	10.17	50.00	20.71	AV	L	Pass
6	13.160	38.16	10.76	60.00	21.84	Peak	L	Pass
6**	13.160	25.82	10.76	50.00	24.18	AV	L	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15C



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.250	53.71	9.82	61.76	8.05	Peak	N	Pass
1**	0.250	28.07	9.82	51.76	23.69	AV	N	Pass
2	0.922	47.19	10.19	56.00	8.81	Peak	N	Pass
2**	0.922	33.98	10.19	46.00	12.02	AV	N	Pass
3	1.994	39.44	10.26	56.00	16.56	Peak	N	Pass
3**	1.994	25.39	10.26	46.00	20.61	AV	N	Pass
4	5.540	52.57	10.56	60.00	7.43	Peak	N	Pass
4**	5.540	34.53	10.56	50.00	15.47	AV	N	Pass
5	6.444	45.55	10.46	60.00	14.45	Peak	N	Pass
5**	6.444	28.36	10.46	50.00	21.64	AV	N	Pass
6	10.992	36.66	10.77	60.00	23.34	Peak	N	Pass
6**	10.992	23.81	10.77	50.00	26.19	AV	N	Pass

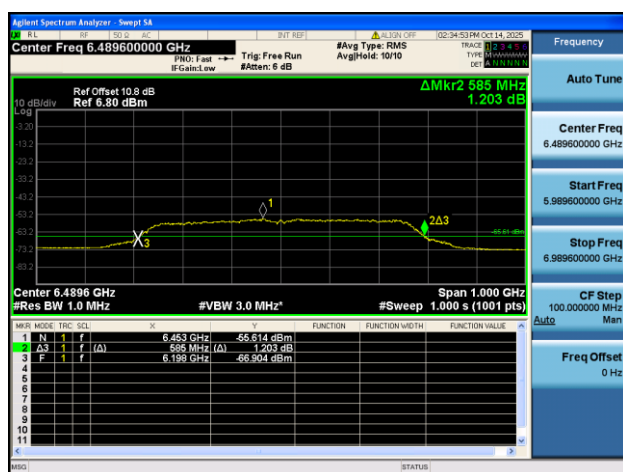
A.2 UWB Bandwidth

Test Data

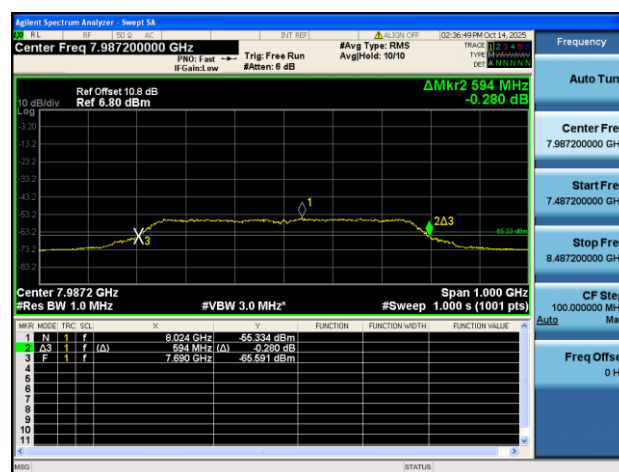
Channel	F _M (MHz)	F _L (MHz)	F _H (MHz)	UWB Bandwidth (MHz)	Limit (MHz)	Verdict
CH5	6489	6198	6783	585	Fractional bandwidth ≥ 0.2 or UWB Bandwidth ≥ 500 MHz 10 dB bandwidth contained between 3100 to 10600 MHz	Pass
CH9	7987	7690	8284	594		Pass

Test Plots

6489.6 MHz



7987.2 MHz



A.3 Radiated Emissions

Note ¹: The symbol of “--” in the table which means not application.

Note ²: 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.

Note ³: Results (dBuV/m) = Original reading level of Spectrum Analyzer (dBuV/m) + Factor (dB)

Test Data and Plots

PCB Patch Antenna

CH5 30 MHz to 960 MHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	71.115	36.38	40.0	3.62	Peak	334.00	200	Pass
2	97.890	40.00	43.5	3.50	Peak	334.00	200	Pass
3	144.233	38.13	43.5	5.37	Peak	318.00	100	Pass
4	195.006	35.79	43.5	7.71	Peak	318.00	100	Pass
5	304.235	42.41	46.0	3.59	Peak	225.00	200	Pass
6	588.050	42.82	46.0	3.18	Peak	225.00	200	Pass

CH5 30 MHz to 960 MHz, ANT V

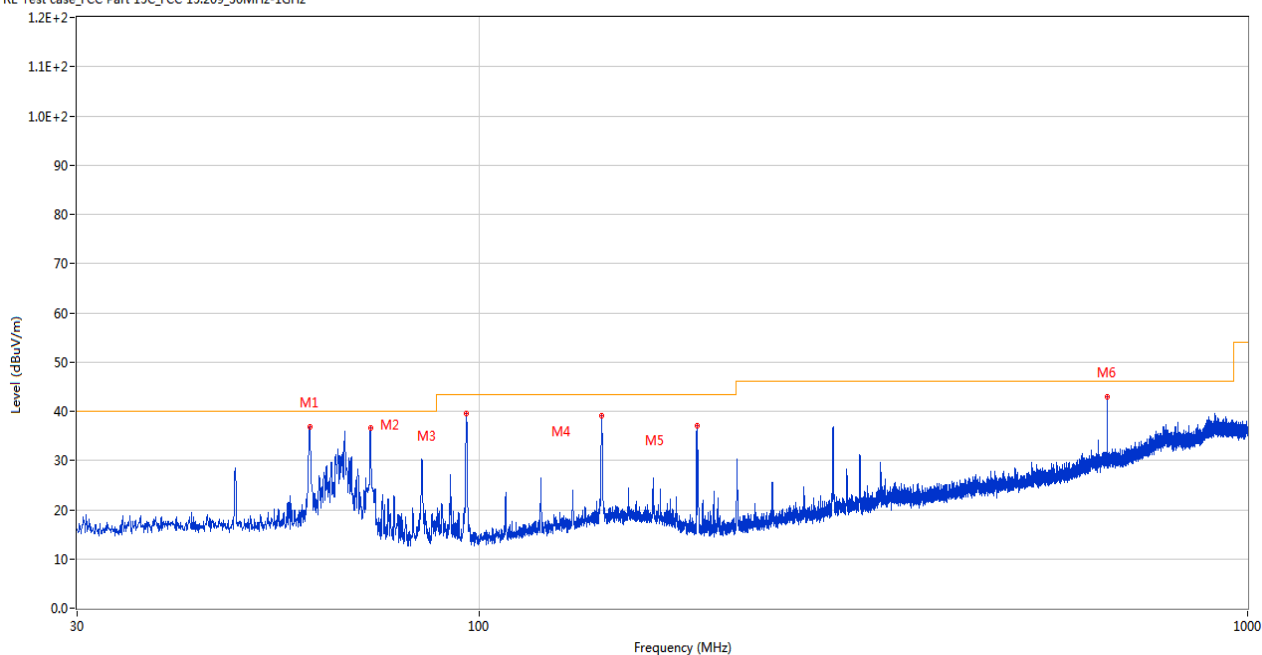
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	61.807	36.61	40.0	3.39	Peak	243.00	300	Pass
2	68.827	36.48	40.0	3.52	Peak	243.00	300	Pass
3	98.723	39.16	43.5	4.34	Peak	25.00	300	Pass
4	143.511	38.97	43.5	4.53	Peak	25.00	300	Pass
5	285.328	36.99	46.0	9.02	Peak	159.00	200	Pass
6	435.949	39.64	46.0	6.36	Peak	159.00	200	Pass

CH9 30 MHz to 960 MHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	75.695	36.12	40.0	3.88	Peak	180.00	300	Pass
2	97.876	40.08	43.5	3.42	Peak	180.00	300	Pass
3	145.100	38.19	43.5	5.31	Peak	92.00	100	Pass
4	194.307	35.89	43.5	7.61	Peak	92.00	100	Pass
5	306.524	42.56	46.0	3.44	Peak	196.00	200	Pass
6	588.178	42.65	46.0	3.35	Peak	196.00	200	Pass

CH9 30 MHz to 960 MHz, ANT V

RE Test case_FCC Part 15C_FCC 15.209_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	60.215	36.87	40.0	3.13	Peak	113.00	100	Pass
2	72.243	36.66	40.0	3.34	Peak	144.00	100	Pass
3	96.299	39.52	43.5	3.98	Peak	153.00	300	Pass
4	144.363	39.05	43.5	4.45	Peak	139.00	300	Pass
5	192.038	36.97	43.5	6.53	Peak	72.00	200	Pass
6	655.990	42.91	46.0	3.09	Peak	30.00	200	Pass

External Antenna**CH5 30 MHz to 960 MHz, ANT H**

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	69.034	36.44	40.0	3.56	Peak	301.00	400	Pass
2	92.914	40.36	43.5	3.14	Peak	301.00	400	Pass
3	141.384	38.55	43.5	4.95	Peak	131.00	200	Pass
4	189.690	36.04	43.5	7.46	Peak	131.00	200	Pass
5	304.616	42.60	46.0	3.40	Peak	286.00	200	Pass
6	592.292	42.68	46.0	3.32	Peak	286.00	200	Pass

CH5 30 MHz to 960 MHz, ANT V

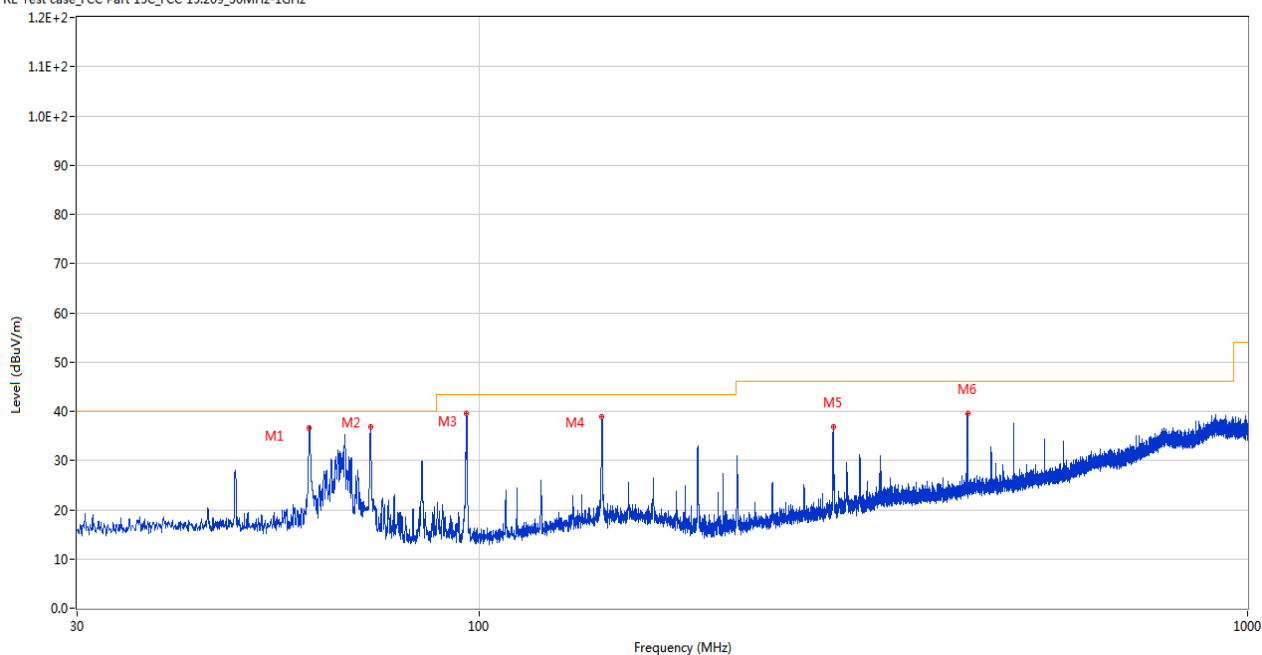
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	60.493	36.90	40.0	3.11	Peak	237.00	400	Pass
2	69.389	36.64	40.0	3.36	Peak	237.00	400	Pass
3	94.154	39.55	43.5	3.95	Peak	274.00	100	Pass
4	140.671	38.89	43.5	4.61	Peak	274.00	100	Pass
5	286.655	36.70	46.0	9.30	Peak	74.00	200	Pass
6	433.973	39.73	46.0	6.27	Peak	74.00	200	Pass

CH9 30 MHz to 960 MHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	73.480	36.35	40.0	3.65	Peak	105.00	300	Pass
2	94.701	39.89	43.5	3.61	Peak	105.00	300	Pass
3	145.427	38.47	43.5	5.03	Peak	103.00	100	Pass
4	191.437	36.07	43.5	7.43	Peak	103.00	100	Pass
5	301.575	42.86	46.0	3.14	Peak	79.00	200	Pass
6	593.342	42.93	46.0	3.08	Peak	79.00	200	Pass

CH9 30 MHz to 960 MHz, ANT V

RE Test case_FCC Part 15C_FCC 15.209_30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Verdict
1	60.167	36.71	40.0	3.29	Peak	289.00	150	Pass
2	72.292	36.74	40.0	3.26	Peak	141.00	150	Pass
3	96.299	39.45	43.5	4.05	Peak	139.00	150	Pass
4	144.508	38.86	43.5	4.64	Peak	154.00	150	Pass
5	288.942	36.81	46.0	9.19	Peak	103.00	150	Pass
6	432.017	39.61	46.0	6.39	Peak	160.00	150	Pass

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

PCB Patch Antenna

UWB CH5, 960 MHz to 10.6 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1043.217	-79.72	-75.3	4.42	Peak	288.00	Horizontal	Horizontal	Pass
2	1949.070	-76.35	-53.3	23.05	Peak	288.00	Horizontal	Horizontal	Pass
3	3041.982	-72.58	-51.3	21.28	Peak	337.00	Horizontal	Horizontal	Pass
4	4343.810	-69.93	-41.3	28.63	Peak	337.00	Horizontal	Horizontal	Pass
5	6984.251	-61.15	-41.3	19.85	Peak	86.00	Horizontal	Horizontal	Pass
6	9377.315	-63.64	-41.3	22.34	Peak	86.00	Horizontal	Horizontal	Pass

UWB CH5, 10.6 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	12481.963	-66.90	-51.3	15.60	Peak	298.00	Horizontal	Horizontal	Pass
2	13791.424	-65.27	-51.3	13.97	Peak	298.00	Horizontal	Horizontal	Pass
3	14429.375	-63.57	-51.3	12.27	Peak	114.00	Horizontal	Horizontal	Pass
4	16451.384	-61.59	-51.3	10.29	Peak	114.00	Horizontal	Horizontal	Pass
5	16961.589	-59.52	-51.3	8.22	Peak	118.00	Horizontal	Horizontal	Pass
6	17046.201	-62.41	-51.3	11.11	Peak	118.00	Horizontal	Horizontal	Pass

UWB CH5, 960 MHz to 10.6 GHz, ANT V

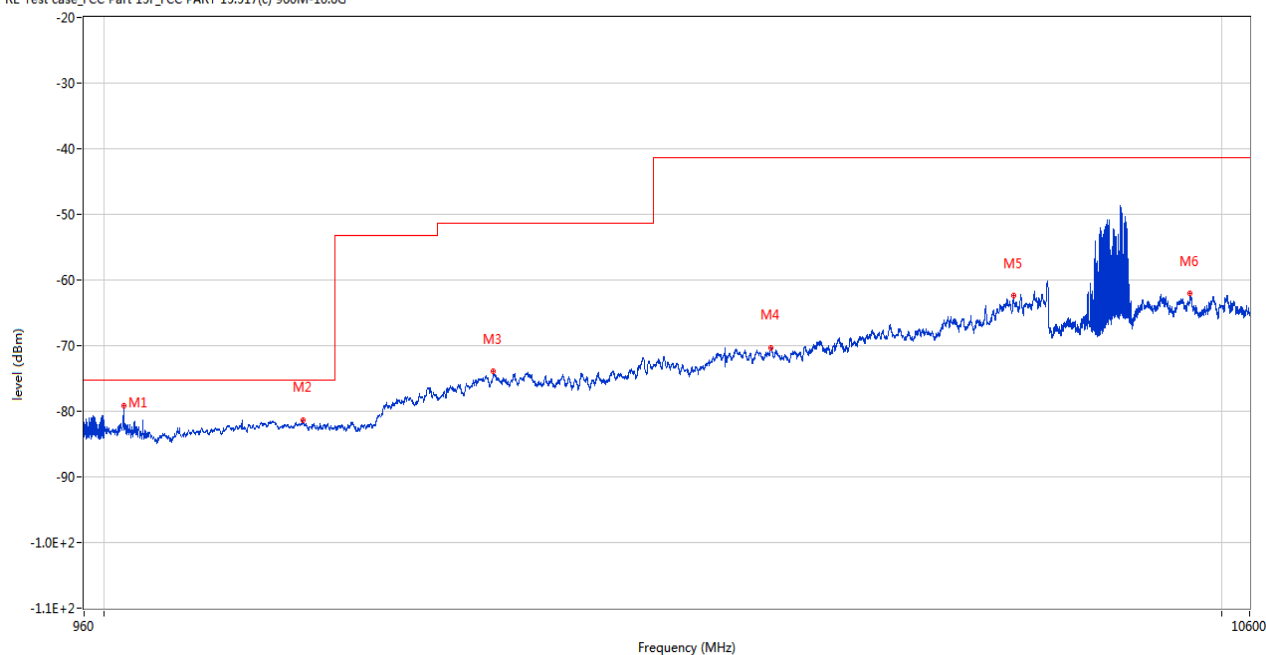
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1042.460	-81.01	-75.3	5.71	Peak	126.00	Vertical	Horizontal	Pass
2	1945.101	-79.21	-53.3	25.91	Peak	126.00	Vertical	Horizontal	Pass
3	3171.156	-70.08	-41.3	28.78	Peak	65.00	Vertical	Horizontal	Pass
4	4341.583	-67.74	-41.3	26.44	Peak	65.00	Vertical	Horizontal	Pass
5	6989.831	-61.89	-41.3	20.59	Peak	121.00	Vertical	Horizontal	Pass
6	8829.137	-63.61	-41.3	22.31	Peak	121.00	Vertical	Horizontal	Pass

UWB CH5, 10.6 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11907.731	-67.67	-51.3	16.37	Peak	211.00	Vertical	Horizontal	Pass
2	13043.828	-65.16	-51.3	13.86	Peak	211.00	Vertical	Horizontal	Pass
3	13775.501	-65.71	-51.3	14.41	Peak	134.00	Vertical	Horizontal	Pass
4	14451.373	-63.88	-51.3	12.58	Peak	134.00	Vertical	Horizontal	Pass
5	17053.209	-60.22	-51.3	8.92	Peak	140.00	Vertical	Horizontal	Pass
6	17564.129	-59.23	-51.3	7.93	Peak	140.00	Vertical	Horizontal	Pass

UWB CH9, 960 MHz to 10.6 GHz, ANT H

RE Test case_FCC Part 15F_FCC PART 15.517(c) 960M-10.6G



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1042.000	-79.18	-75.3	3.88	Peak	0.00	Horizontal	Horizontal	Pass
2	1506.000	-81.32	-75.3	6.02	Peak	337.00	Horizontal	Horizontal	Pass
3	2231.500	-73.97	-51.3	22.67	Peak	282.00	Horizontal	Horizontal	Pass
4	3954.000	-70.30	-41.3	29.00	Peak	360.00	Horizontal	Horizontal	Pass
5	6520.000	-62.42	-41.3	21.12	Peak	222.00	Horizontal	Horizontal	Pass
6	9376.900	-62.04	-41.3	20.74	Peak	47.00	Horizontal	Horizontal	Pass

UWB CH9, 10.6 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11302.225	-69.92	-51.3	18.62	Peak	49.00	Horizontal	Horizontal	Pass
2	11902.234	-68.26	-51.3	16.96	Peak	49.00	Horizontal	Horizontal	Pass
3	12723.375	-65.62	-51.3	14.32	Peak	1.00	Horizontal	Horizontal	Pass
4	13764.897	-60.78	-51.3	9.48	Peak	1.00	Horizontal	Horizontal	Pass
5	14422.507	-65.31	-51.3	14.01	Peak	176.00	Horizontal	Horizontal	Pass
6	17035.947	-59.35	-51.3	8.05	Peak	176.00	Horizontal	Horizontal	Pass

UWB CH9, 960 MHz to 10.6 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1180.044	-82.40	-75.3	7.10	Peak	211.00	Vertical	Horizontal	Pass
2	2175.040	-73.03	-51.3	21.73	Peak	211.00	Vertical	Horizontal	Pass
3	3600.356	-69.36	-41.3	28.06	Peak	102.00	Vertical	Horizontal	Pass
4	5051.394	-68.73	-41.3	27.43	Peak	102.00	Vertical	Horizontal	Pass
5	6805.895	-64.09	-41.3	22.79	Peak	109.00	Vertical	Horizontal	Pass
6	9405.433	-63.58	-41.3	22.28	Peak	109.00	Vertical	Horizontal	Pass

UWB CH9, 10.6 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11300.837	-64.81	-51.3	13.51	Peak	66.00	Vertical	Horizontal	Pass
2	11871.109	-67.48	-51.3	16.18	Peak	66.00	Vertical	Horizontal	Pass
3	13035.179	-65.04	-51.3	13.74	Peak	276.00	Vertical	Horizontal	Pass
4	13779.812	-62.70	-51.3	11.40	Peak	276.00	Vertical	Horizontal	Pass
5	15832.129	-65.20	-51.3	13.90	Peak	118.00	Vertical	Horizontal	Pass
6	17047.883	-58.63	-51.3	7.33	Peak	118.00	Vertical	Horizontal	Pass

External Antenna**UWB CH5, 960 MHz to 10.6 GHz, ANT H**

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1045.091	-81.49	-75.3	6.19	Peak	148.00	Horizontal	Horizontal	Pass
2	1946.227	-74.13	-53.3	20.83	Peak	148.00	Horizontal	Horizontal	Pass
3	3037.412	-72.20	-51.3	20.90	Peak	98.00	Horizontal	Horizontal	Pass
4	4345.349	-69.51	-41.3	28.21	Peak	98.00	Horizontal	Horizontal	Pass
5	6985.022	-59.10	-41.3	17.80	Peak	174.00	Horizontal	Horizontal	Pass
6	9370.878	-64.81	-41.3	23.51	Peak	174.00	Horizontal	Horizontal	Pass

UWB CH5, 10.6 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	12480.682	-66.00	-51.3	14.70	Peak	321.00	Horizontal	Horizontal	Pass
2	13791.051	-63.14	-51.3	11.84	Peak	321.00	Horizontal	Horizontal	Pass
3	14425.925	-66.17	-51.3	14.87	Peak	97.00	Horizontal	Horizontal	Pass
4	16451.802	-64.78	-51.3	13.48	Peak	97.00	Horizontal	Horizontal	Pass
5	16955.418	-59.71	-51.3	8.41	Peak	127.00	Horizontal	Horizontal	Pass
6	17047.865	-63.62	-51.3	12.32	Peak	127.00	Horizontal	Horizontal	Pass

UWB CH5, 960 MHz to 10.6 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1043.819	-80.43	-75.3	5.13	Peak	56.00	Vertical	Horizontal	Pass
2	1947.523	-78.71	-53.3	25.41	Peak	56.00	Vertical	Horizontal	Pass
3	3171.618	-68.91	-41.3	27.61	Peak	305.00	Vertical	Horizontal	Pass
4	4342.659	-67.90	-41.3	26.60	Peak	305.00	Vertical	Horizontal	Pass
5	6992.894	-58.15	-41.3	16.85	Peak	32.00	Vertical	Horizontal	Pass
6	8831.151	-61.90	-41.3	20.60	Peak	32.00	Vertical	Horizontal	Pass

UWB CH5, 10.6 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11908.779	-65.24	-51.3	13.94	Peak	312.00	Vertical	Horizontal	Pass
2	13038.805	-65.92	-51.3	14.62	Peak	312.00	Vertical	Horizontal	Pass
3	13777.210	-61.09	-51.3	9.79	Peak	315.00	Vertical	Horizontal	Pass
4	14447.944	-66.30	-51.3	15.00	Peak	315.00	Vertical	Horizontal	Pass
5	17053.140	-58.56	-51.3	7.26	Peak	112.00	Vertical	Horizontal	Pass
6	17564.909	-64.22	-51.3	12.92	Peak	112.00	Vertical	Horizontal	Pass

UWB CH9, 960 MHz to 10.6 GHz, ANT H

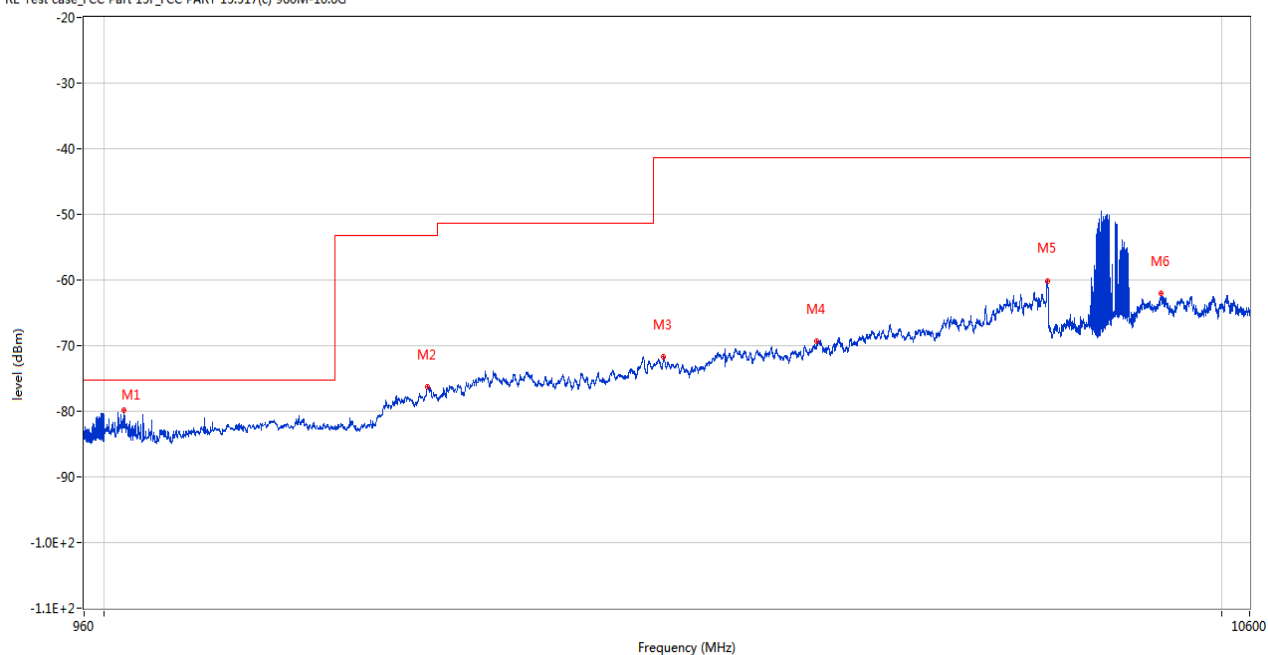
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1182.825	-80.10	-75.3	4.80	Peak	302.00	Horizontal	Horizontal	Pass
2	2171.116	-72.32	-51.3	21.02	Peak	302.00	Horizontal	Horizontal	Pass
3	3597.169	-72.38	-41.3	31.08	Peak	257.00	Horizontal	Horizontal	Pass
4	5055.976	-64.76	-41.3	23.46	Peak	257.00	Horizontal	Horizontal	Pass
5	6803.253	-59.73	-41.3	18.43	Peak	52.00	Horizontal	Horizontal	Pass
6	9401.851	-61.62	-41.3	20.32	Peak	52.00	Horizontal	Horizontal	Pass

UWB CH9, 10.6 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11301.963	-67.38	-51.3	16.08	Peak	350.00	Horizontal	Horizontal	Pass
2	11900.752	-67.43	-51.3	16.13	Peak	350.00	Horizontal	Horizontal	Pass
3	12724.803	-63.45	-51.3	12.15	Peak	69.00	Horizontal	Horizontal	Pass
4	13762.590	-64.93	-51.3	13.63	Peak	69.00	Horizontal	Horizontal	Pass
5	14417.962	-66.21	-51.3	14.91	Peak	11.00	Horizontal	Horizontal	Pass
6	17041.699	-59.10	-51.3	7.80	Peak	11.00	Horizontal	Horizontal	Pass

UWB CH9, 960 MHz to 10.6 GHz, ANT V

RE Test case_FCC Part 15F_FCC PART 15.517(c) 960M-10.6G



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	1043.000	-79.85	-75.3	4.55	Peak	361.00	Vertical	Horizontal	Pass
2	1949.000	-76.34	-53.3	23.04	Peak	14.00	Vertical	Horizontal	Pass
3	3169.000	-71.76	-41.3	30.46	Peak	212.00	Vertical	Horizontal	Pass
4	4344.000	-69.37	-41.3	28.07	Peak	10.00	Vertical	Horizontal	Pass
5	6989.000	-60.09	-41.3	18.79	Peak	127.00	Vertical	Horizontal	Pass
6	8832.400	-62.10	-41.3	20.80	Peak	8.00	Vertical	Horizontal	Pass

UWB CH9, 10.6 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Antenna	EUT	Verdict
1	11302.680	-67.16	-51.3	15.86	Peak	165.00	Vertical	Horizontal	Pass
2	11868.381	-67.52	-51.3	16.22	Peak	165.00	Vertical	Horizontal	Pass
3	13039.799	-61.88	-51.3	10.58	Peak	134.00	Vertical	Horizontal	Pass
4	13776.325	-63.94	-51.3	12.64	Peak	134.00	Vertical	Horizontal	Pass
5	15835.977	-67.28	-51.3	15.98	Peak	31.00	Vertical	Horizontal	Pass
6	17047.875	-62.64	-51.3	11.34	Peak	31.00	Vertical	Horizontal	Pass

A.4 Radiated Emissions in GPS Bands

Test Data and Plots

PCB Patch Antenna

UWB CH5, 1.164 GHz to 1.61 GHz ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1176.488	-91.07	-85.3	5.77	62.00	Horizontal	Pass
2	1585.265	-92.92	-85.3	7.62	301.00	Horizontal	Pass

UWB CH5, 1.164 GHz to 1.61 GHz ANT V

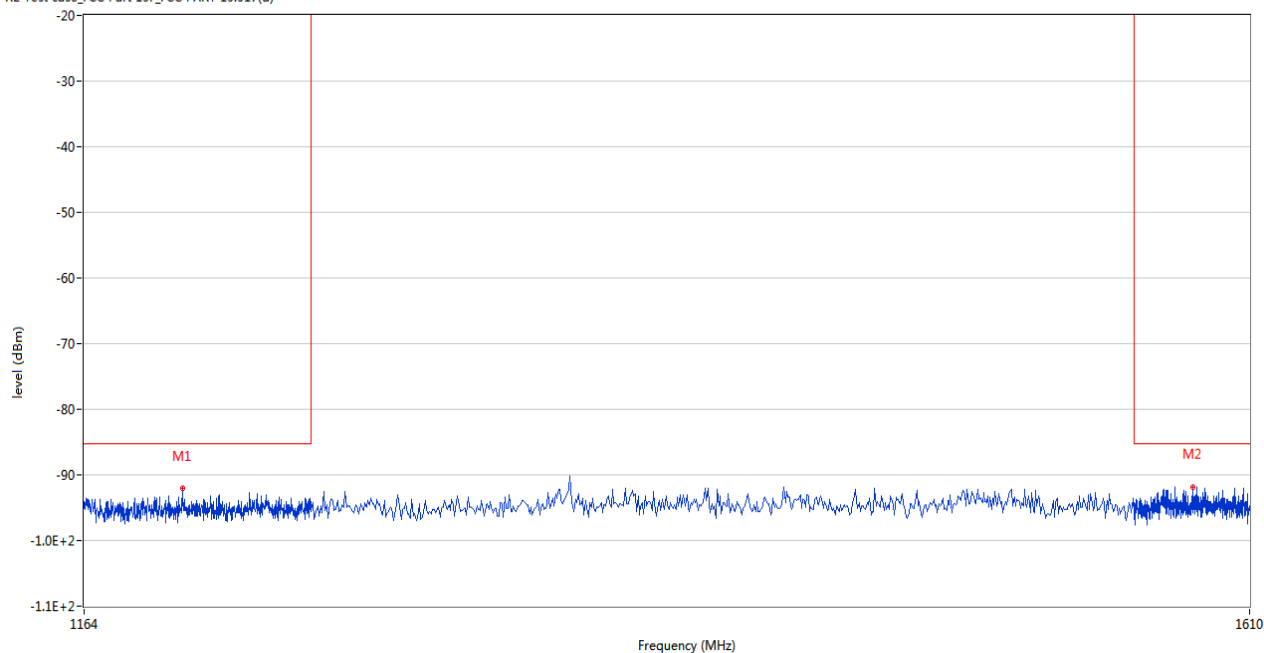
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1232.194	-91.94	-85.3	6.64	64.00	Vertical	Pass
2	1572.515	-92.26	-85.3	6.96	111.00	Vertical	Pass

UWB CH9, 1.164 GHz to 1.61 GHz ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1177.954	-92.09	-85.3	6.79	331.00	Horizontal	Pass
2	1585.265	-92.66	-85.3	7.36	297.00	Horizontal	Pass

UWB CH9, 1.164 GHz to 1.61 GHz ANT V

RE Test case_FCC Part 15F_FCC PART 15.517(d)



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1196.300	-92.07	-85.3	6.77	348.00	Vertical	Pass
2	1584.585	-91.86	-85.3	6.56	301.00	Vertical	Pass

External Antenna

UWB CH5, 1.164 GHz to 1.61 GHz ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1177.115	-92.77	-85.3	7.47	183.00	Horizontal	Pass
2	1585.265	-92.2	-85.3	6.90	19.00	Horizontal	Pass

UWB CH5, 1.164 GHz to 1.61 GHz ANT V

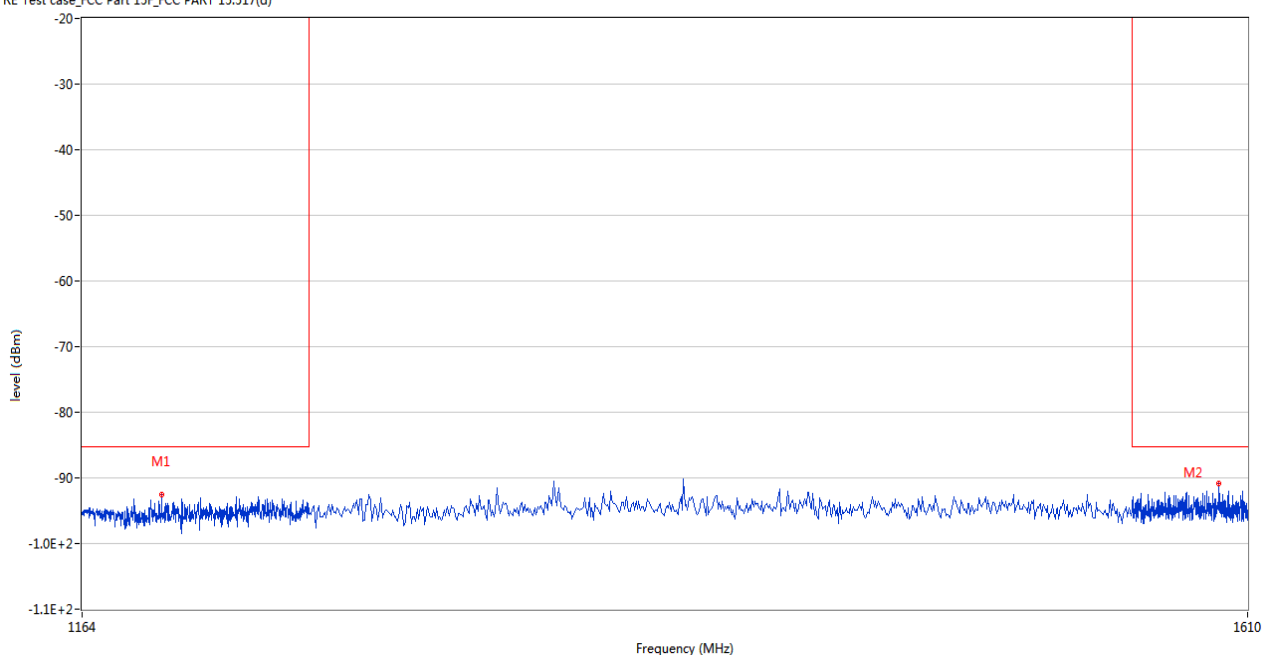
No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1231.967	-91.76	-85.3	6.46	190.00	Vertical	Pass
2	1572.515	-94.58	-85.3	9.28	52.00	Vertical	Pass

UWB CH9, 1.164 GHz to 1.61 GHz ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1178.055	-92.79	-85.3	7.49	237.00	Horizontal	Pass
2	1585.265	-94.49	-85.3	9.19	291.00	Horizontal	Pass

UWB CH9, 1.164 GHz to 1.61 GHz ANT V

RE Test case_FCC Part 15F_FCC PART 15.517(d)



No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table (Degree)	Antenna	Verdict
1	1190.093	-92.48	-85.3	7.18	282.00	Vertical	Pass
2	1597.335	-90.91	-85.3	5.61	78.00	Vertical	Pass

A.5 Peak Emissions within a 50MHz Bandwidth

Test Data

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

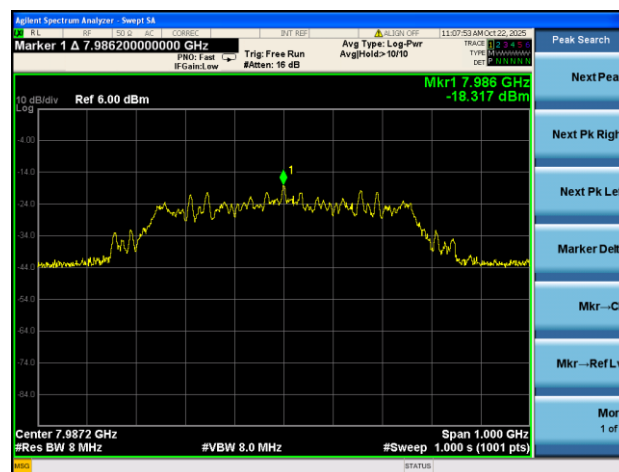
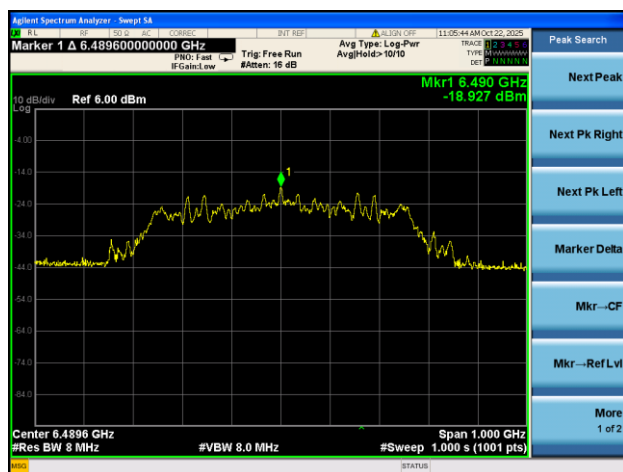
Measured Channel (MHz)	Maximum value of peak power (dBm/8MHz)	Maximum value of peak power (dBm/50MHz)	Limit (dBm/50MHz)	Verdict
6489.6	-18.93	-3.01	≤0	Pass
7987.2	-18.32	-2.40	≤0	Pass

Test Plots

Maximum value of peak power

6489.6 MHz

7987.2 MHz



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2570782-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2570782-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2570782-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.
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--END OF REPORT--