



Test Report No.:
GJWSZ2025-0237-RF

RF Test Report

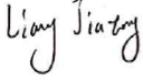
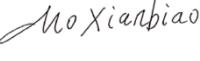
EUT : V10 RTLS Module EXT

APPLICANT : Red Point Positioning Corporation

Classification of Test : N/A

CVC Testing Technology (Shenzhen) Co., Ltd.



Applicant	Name: Red Point Positioning Corporation Address: 313 Washington Street, Unit 304 Newton, MA 02458		
Manufacturer	Name: Redpoint Positioning (Beijing) Technology Co., Ltd. Address: Room 813, Ruichen International Center, No. 13 Nongzhanguan South Road, Chaoyang District, 100025 Beijing P.R. China		
Equipment Under Test	Name: V10 RTLS Module EXT Model/Type: MDE-V10 Additional Model/Type: N/A Brand: Redpoint Positioning FCC ID: 2ADX4-MDEV10		
Date of Receipt.	Apr.25,2025	Date of Testing	Apr.25,2025~May 14,2025
Test Specification		Test Result	
FCC Part 15, Subpart F, Section 15.519		PASS	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied.		
Issue Date: May 14,2025			
Compiled by:  <u>Liang Jiatong</u> Name Signature	Reviewed by:  <u>Mo Xianbiao</u> Name Signature	Approved by:  <u>Dong Sanbi</u> Name Signature	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
GJWSZ2025-0237-RF	Original release	May 14, 2025



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart F (Section 15.519)			
FCC STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.519(a)(1)	Cease Transmission Time	PASS	Meet the requirement of limit.
15.503 15.521(e)	10dB bandwidth	PASS	Meet the requirement of limit.
-	99 % Bandwidth	PASS	Meet the requirement of limit.
15.209(a) 15.519(c) 15.519(d)	Radiated Emissions	PASS	Meet the requirement of limit.
15.519(e) 15.519(c) 15.521(a) 15.521(b) 15.521(g)	Maximum Peak Power and Average Emissions	PASS	Meet the requirement of limit.
15.519(a2) 15.521(b) 15.203	Antenna Requirement	PASS	Meet the requirement of limit.



1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial Number	Cal. interval	Cal.Day	Cal. Due
Antenna Port Conducted Test						
Spectrum Analyzer	R&S	FSV 30	CS030002	1 year	2025/04/23	2026/04/22
Spectrum Analyzer	KEYSIGHT	N9040B	MY6227-132	1 year	2025/05/21	2026/05/21
Analog signal Generator	R&S	SMB 100A	CS0300015	1 year	2025/04/23	2026/04/22
Vector signal Generator	R&S	SGT 100A	CS0300017	1 year	2025/04/23	2026/04/22
RF control unit(BT/WIFI)	Tonscend	JS0806-2-8CH	CS0300023	1 year	2025/04/23	2026/04/22
RF control unit(DTV)	Tonscend	JS0806-1	CS0300024	1 year	2025/04/23	2026/04/22
DC power supply	R&S	HMC8041-G	CS0300026	1 year	2025/04/23	2026/04/22
#3Shielding room	MORI	443	CS0300009	3 year	2025/05/17	2026/05/16
10db attenuator	JUNKE	SMA-10-18-N	250312743	1 year	2025/05/22	2025/05/21
Power Sensor	R&S	NRP18S-10	101843	1 year	2025/09/25	2025/09/24
power splitter	Anritsu	K240CPOWERDIVIDER	012334	1 year	202501/08	2026/01/07
Temperature and humidity meter	UNI-T	A10T	C193561457	1 year	2025/04/29	2026/04/28
Spectrum Analyzer	R&S	FSV 30	CS030002	1 year	2025/04/23	2026/04/22
Analog signal Generator	R&S	SMB 100A	CS0300015	1 year	2025/04/23	2026/04/22
Radiation Spurious(Above 1GHz)						
Spectrum Analyzer	R&S	FSV 40	CS030001	1 year	2025/05/17	2026/05/16
Spectrum Analyzer	R&S	FSVA 3045	CS030004	1 year	2024/05/23	2025/05/22
EMI Test Receiver	R&S	ESR3	CS0300005	1 year	2025/05/25	2025/05/24
Loop antenna (8.3k~30MHz)	Rohde&Schwarz	HFH2-Z2E	100951	1 year	2024/06/04	2025/06/03
Horn antenna(1GHz-18GHz)	ETS-Lindgren	3117	CS0300007	1 year	2025/03/29	2026/03/28
Horn antenna(18GHz-40GHz)	STEATITE	QMS-00880	CS0300008	1 year	2025/03/22	2026/03/21
Automatic control unit(RSE)	R&S	OSP220	CS0300019	1 year	2024/07/03	2025/07/02
Filter group(RSE-BT/WiFi)	R&S	WiFi/BT Variant 1	CS0300020	1 year	2025/04/23	2026/04/22
Filter group(RSE-Cellular)	R&S	Cellular Variant 1	CS0300021	1 year	2025/04/23	2026/04/22
Preamplifier(1GHz-18GHz)	R&S	SCU18F	CS0300031-1	1 year	2025/04/23	2026/04/22
Preamplifier(1GHz-18GHz)	R&S	SCU-18F	CS0300031	1 year	2025/04/23	2026/04/22
Comprehensive Test Instrument	R&S	CMW 500	CS0300033	1 year	2024/05/25	2025/05/24
Antenna(30MHz~1001MHz)	SCHWARZBECK	VULB9168	CS0200006	1 year	2025/01/23	2026/01/22
Preamplifier(1GHz-18GHz)	R&S	SCU-01F	CS0200042	1 year	2025/04/23	2026/04/22
Preamplifier(18GHz-40GHz)	R&S	SCU40A	CS0200044	1 year	2025/04/23	2026/04/22
Attenuator	boyang	BY--N-2W-5dB	/	1 year	2025/01/23	2026/01/22
Temperature and humidity meter	yuhuaze	/	WK0001	1 year	2025/04/29	2026/04/28
#2 control room	MORI	433	CS0300028	3 year	2025/05/17	2026/05/16
3m anechoic chamber	MORI	966	CS0300011	3 year	2025/05/17	2026/05/16



CE Test - 3M Chamber						
EMI Test Receiver	Rohde&Schwarz	ESR3	102693	1 year	2025/5/20	2026/5/21
limiter(10 dB)	Rohde&Schwarz	VTSD 9561	1216	1 year	2025/4/21	2026/4/22
Voltage probe	Rohde&Schwarz	CVP9222C	28	1 year	2025/4/27	2026/4/28
Current probe	Rohde&Schwarz	EZ-17	101442	1 year	2025/4/21	2026/4/22
ISN network	Rohde&Schwarz	ENV 81	100401	1 year	2025/4/21	2026/4/22
ISN network	Rohde&Schwarz	ENV 81 Cat6	101896	1 year	2025/4/21	2026/4/22
#1 Shielding room	MORI	854	N/A	3 year	2025/5/15	2026/5/16
LISN	SCHWARZBECK	NSLK 8129	5021	1 year	2025/4/21	2026/4/22
Temperature and humidity meter	/	C193561430	C193561430	1 year	2025/4/27	2026/4/28

1.2 MEASUREMENT UNCERTAINTY

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

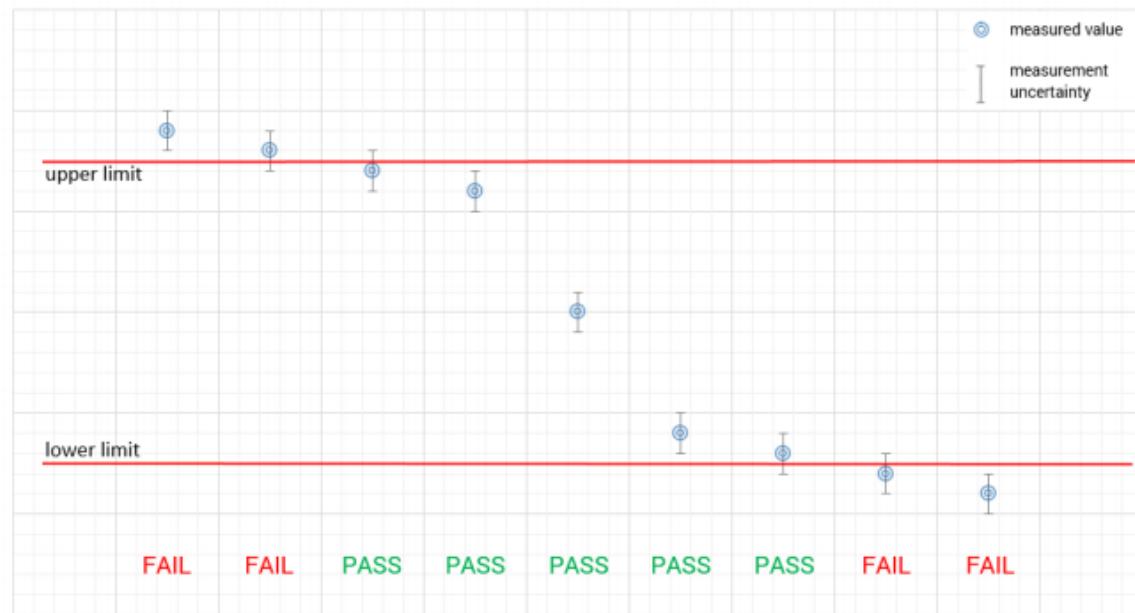
No.	Item	Measurement Uncertainty
1	Conducted emission test	+/-2.70 dB
2	Occupied Channel Bandwidth	$\pm 1.86 \%$
3	RF output power, conducted	$\pm 0.9 \text{ dB}$
4	Power Spectral Density, conducted	$\pm 0.8 \text{ dB}$
5	Conducted emission test	+/-2.7 dB
6	Radiated emission 9kHz-30MHz	+/-5.6 dB
	Radiated emission 30MHz-1GHz	+/-4.6 dB
	Radiated emission 1GHz-18GHz	+/-4.4 dB
	Radiated emission 18GHz-40GHz	+/-5.1 dB
7	Temperature	$\pm 0.73 \text{ }^{\circ}\text{C}$
8	Humidity	$\pm 3.90 \%$
9	Supply voltages	$\pm 0.37 \%$
10	Time	$\pm 0.27 \%$

Remark: 95% Confidence Levels, k=2.

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed.

The measurement uncertainty is mentioned in this test report, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.

measured value, measurement uncertainty, verdict



1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology (Shenzhen) Co., Ltd.



Lab Address: No. 1301-14&16, Guanguang Road, Xinlan Community, Guanlan Subdistrict, Longhua District, Shenzhen, Guangdong, China

Post Code: 518110 Tel: 0755-23763060-8805

Fax: 0755-23763060 E-mail: sz-kf@cvc.org.cn

FCC(Test firm designation number: CN1363)

IC(Test firm CAB identifier number: CN0137)

CNAS(Test firm designation number: L16091)



2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	V10 RTLS Module EXT
FCC ID	2ADX4-MDEV10
BRAND	Redpoint Positioning
TEST MODEL	MDE-V10
ADDITIONAL MODEL	N/A
POWER SUPPLY	DC 2.8V~3.6V Powered by adapter
MODULATION TYPE	BPM/BPSK
OPERATING FREQUENCY	See section 2.2
NUMBER OF CHANNEL	2
ANTENNA TYPE	rod antenna: 2.0dBi FPC antenna: 5.3dBi
I/O PORTS	Refer to user's manual

Note:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for this data and/or information, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion
4. EUT photo refers to the report (Report NO.: GJWSZ2025-0237-EUT).
5. According to 15.519(a). Antennas mounted on outdoor structures such as antennas mounted on the outside of a building or on a telephone pole or any fixed outdoors infrastructure are prohibited for use with this device.
6. According to 15.521(a), UWB devices may not be employed for the operation of toys. Operation onboard aircraft, a ship or a satellite is prohibited.

2.2 OTHER INFORMATION

The EUT only have two channels.

CHANNEL	FREQUENCY (MHz)	CHANNEL	FREQUENCY (MHz)
5	6489.6	9	7987.2



2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

TEST MODE			
MODE	UWB MODEL	FREQUENCY (MHz)	PREAM_LEN
1	Rod antenna1	6489.6	128
2	Rod antenna 1	7987.2	128
3	FPC antenna 2	6489.6	128
4	FPC antenna 2	7987.2	128

EUT CONFIGURE MODE	APPLICABLE TO						DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	BW	MP	CTT	
1	✓	✓	✓	✓	✓	✓	DC 2.8V~3.6V power supply
2	✓	✓	✓	✓	✓	✓	DC 2.8V~3.6V power supply
3	✓	✓	✓	✓	✓	✓	DC 2.8V~3.6V power supply
4	✓	✓	✓	✓	✓	✓	DC 2.8V~3.6V power supply

Where **RE \geq 1G**: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

BW: 10dB Bandwidth measurement

MP: Maximum Peak Power and Average Emissions

CTT: Cease Transmission Time

RE $<$ 1G: Radiated Emission below 1GHz

BW: 10dB Bandwidth measurement

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 53%RH	DC 2.8V ~3.6V	Liu Yuan
RE \geq 1G	23deg. C, 53%RH	DC 2.8V ~3.6V	Liu Yuan
PLC	23deg. C, 53%RH	DC 2.8V ~3.6V	Liu Yuan
BW	20deg. C, 55%RH	DC 2.8V ~3.6V	Liu Yuan
MP	23deg. C, 53%RH	DC 2.8V ~3.6V	Liu Yuan
CTT	23deg. C, 53%RH	DC 2.8V ~3.6V	Liu Yuan



2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, SUBPART F, SECTION 15.519

ANSI C63.10:2020

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

2.5 DESCRIPTION OF SUPPORT UNITS

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

Support Equipment						
NO	Description	Brand	Model No.	Serial Number	Supplied by	
1	Module base plate	N/A	N/A	N/A	Client	
2	Laptop	HUAWEI	Notebook 14	N/A	Lab	
3	Adapter	Adapter	A2669	N/A	Lab	

Support Cable							
NO	Description	Quantity (Number)	Length (m)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
1	Data line	1	1	Yes	No	N/A	Client

3 TEST TYPES AND RESULTS

1.1 CONDUCTED EMISSION

1.1.1 Limits

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107)

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
NOTE: 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

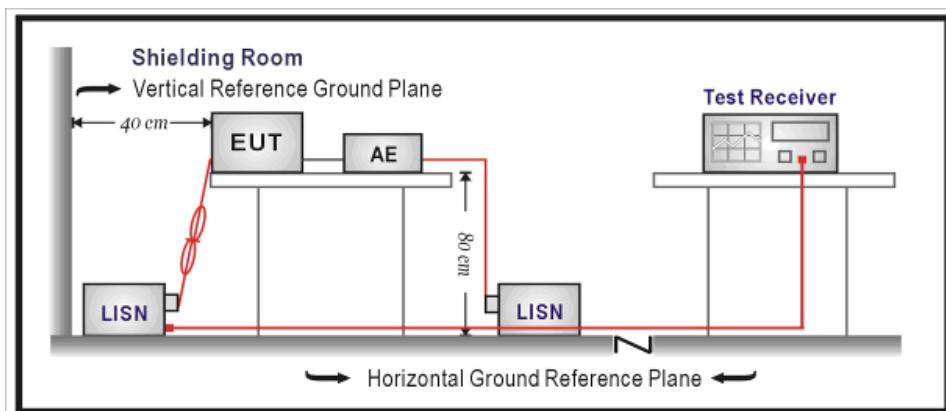
1.1.2 Test Procedures

The basic test procedure was in accordance with ANSI C63.4:2014 (section 7).

- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

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

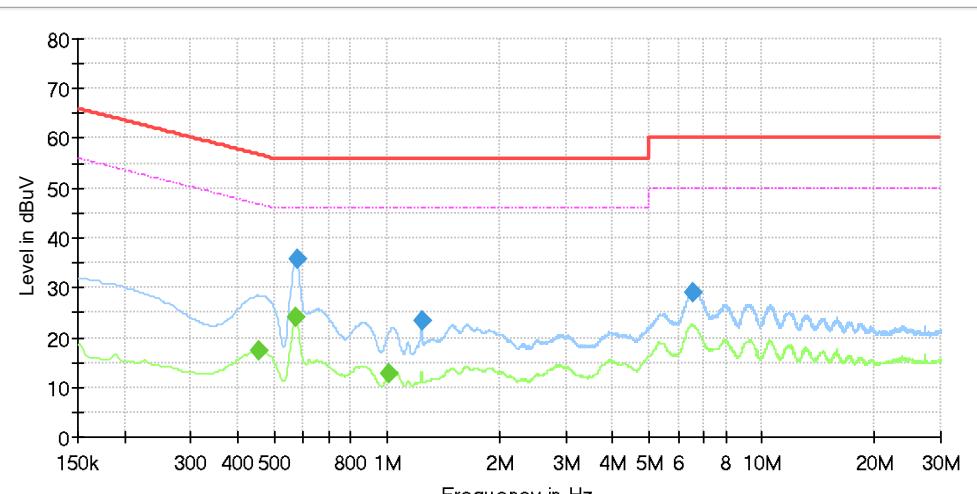
1.1.3 Test setup



1.1.4 Test Results

CONDUCTED WORST-CASE DATA:

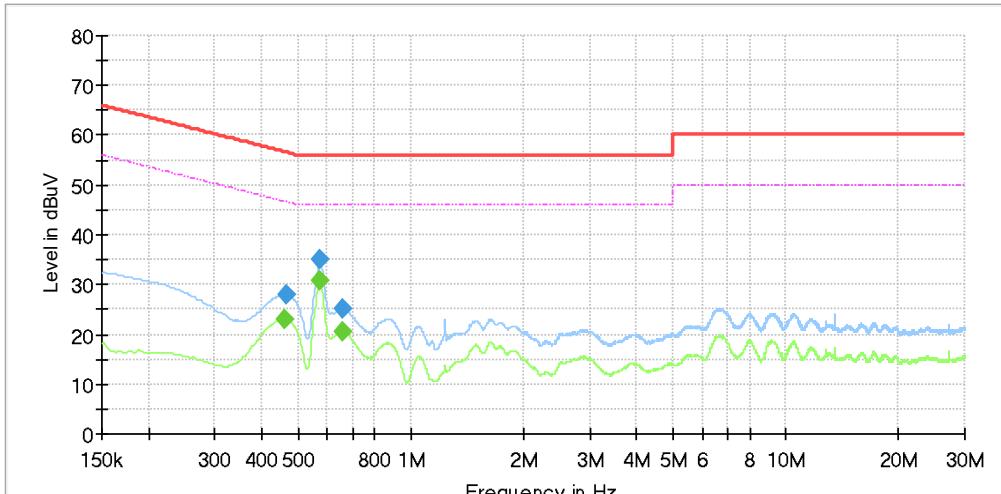
Test Mode	CH5	Frequency Range	150KHz ~ 30MHz
Test Voltage	See section 2.3	PHASE	Line (L)
Environmental Conditions	26deg. C, 51% RH	Tested By	Zhou Ye



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.454	---	17.4	46.8	29.4	L1	20.2
2	0.571	---	24.0	46.0	22.0	L1	20.3
3	0.575	35.9	---	56.0	20.1	L1	20.3
4	1.014	---	12.7	46.0	33.3	L1	20.4
5	1.239	23.3	---	56.0	32.7	L1	20.4
6	6.554	29.2	---	60.0	30.8	L1	22.6

Remark: The emission levels of other frequencies were very low against the limit.

Test Mode	CH5	Frequency Range	150KHz ~ 30MHz
Test Voltage	See section 2.2	PHASE	Line (N)
Environmental Conditions	26deg. C, 51% RH	Tested By	Zhou Ye



Level in dBuV

Frequency in Hz

NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.463	---	23.0	46.6	23.6	N	20.2
2	0.465	27.9	---	56.6	28.7	N	20.2
3	0.571	---	30.7	46.0	15.3	N	20.2
4	0.573	35.1	---	56.0	20.9	N	20.2
5	0.661	---	20.5	46.0	25.5	N	20.3
6	0.661	25.0	---	56.0	31.0	N	20.3

Remark: The emission levels of other frequencies were very low against the limit.



3.1 RADIATED EMISSIONS

3.1.1 Limits

(a) 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:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dB_{UV}/m) = 20 log Emission level (uV/m).

(b) 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	EIRP in dBm	dB _{UV} /m
960-1610	-75.3	19.93
1610-1990	-63.3	31.93
1990-3100	-61.3	33.93
3100-10600	-41.3	53.93
Above 10600	-61.3	33.93

NOTE: E(dB_{UV}/m)=EIRP(dBm)+95.23 (Refer to C63.10)

(c) In addition to the radiated emission limits specified in the table in paragraph (a)(b) 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	EIRP in dBm	dB _{UV} /m
1164-1240	-85.3	9.93
1559-1610	-85.3	9.93

NOTE: E(dB_{UV}/m)=EIRP(dBm)+95.23 (Refer to C63.10)

3.1.2 Measurement procedure

- The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.



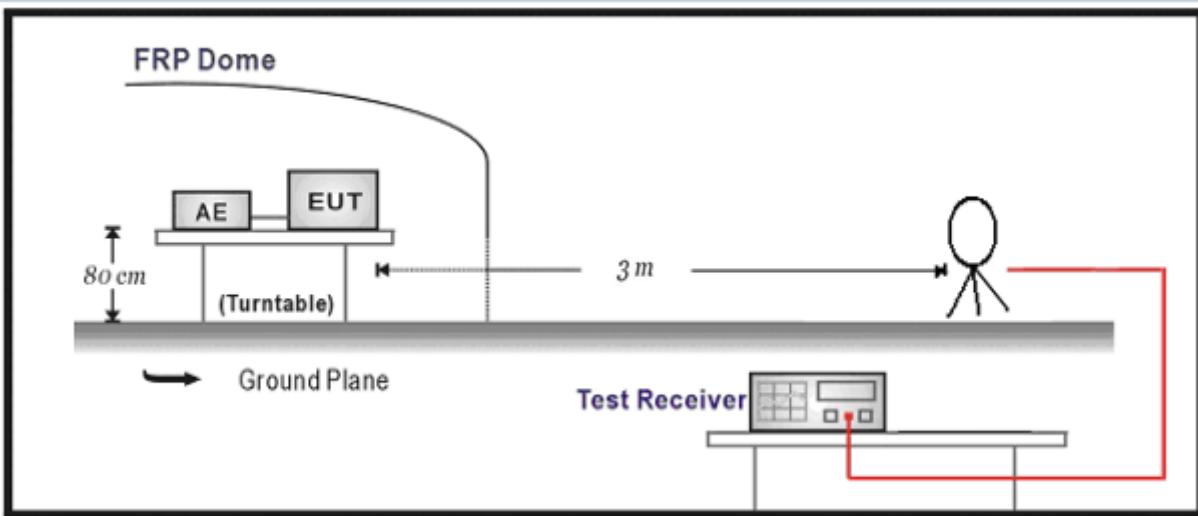
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

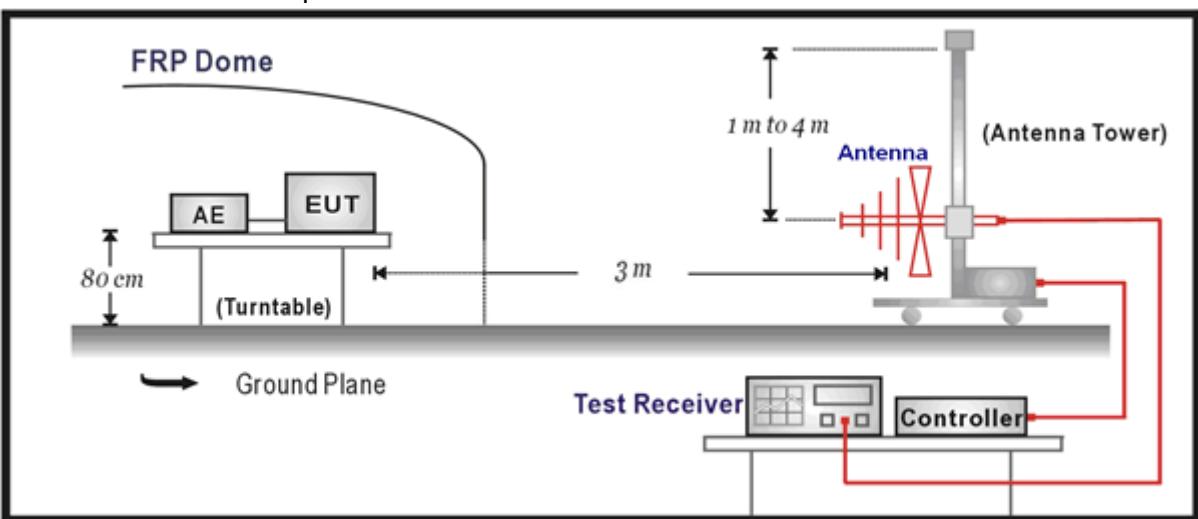
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
- 4. All modes of operation were investigated and the worst-case emissions are reported.
- 5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.1.3 Test setup

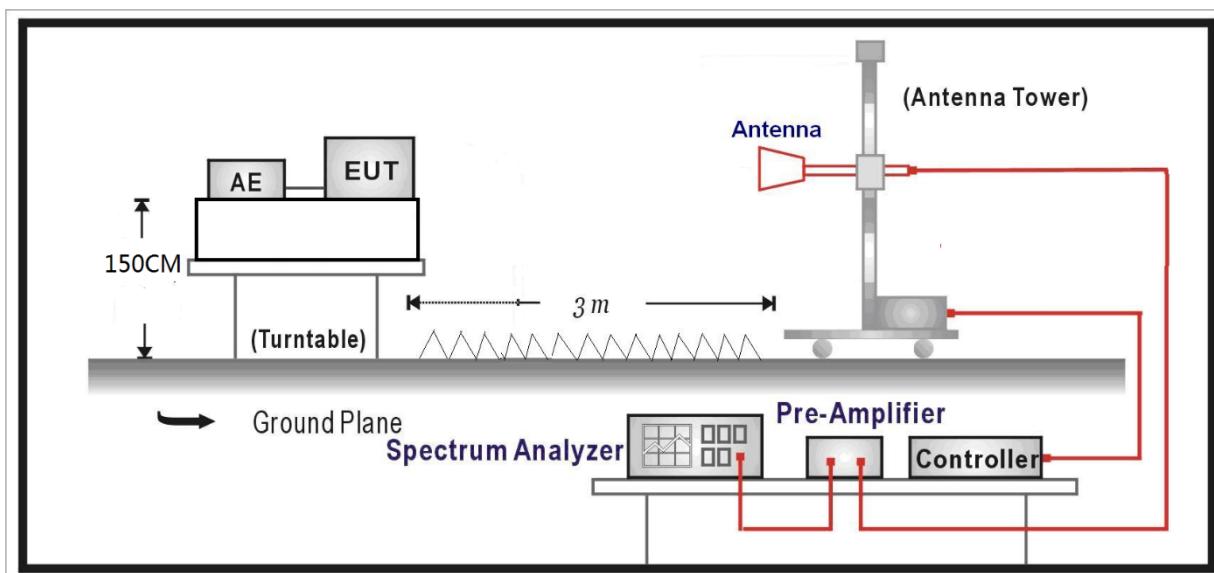
Below 30MHz Test Setup:



Below 960MHz Test Setup:

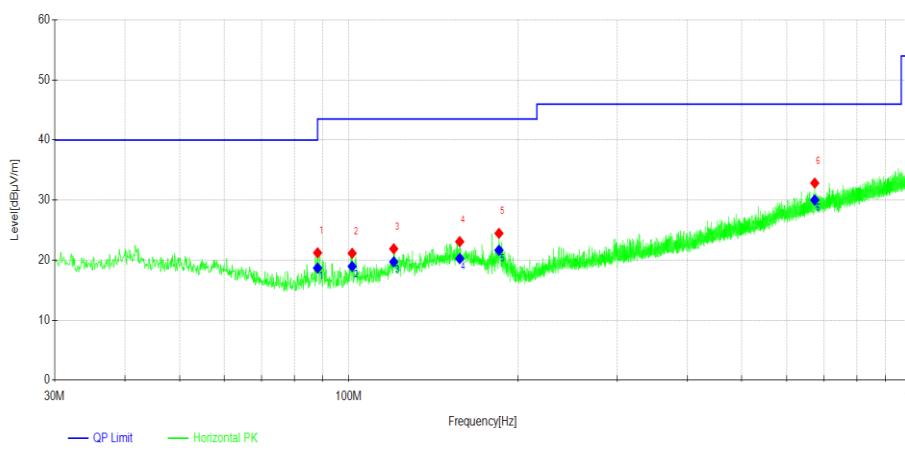


Above 960MHz Test Setup:



3.1.4 Test results

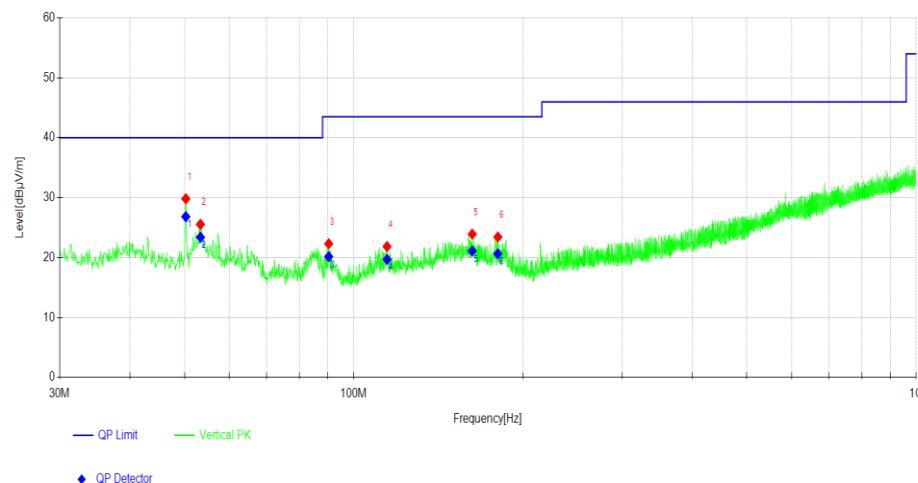
BELOW 1GHz WORST-CASE DATA:

Test Mode:	CH5	Frequency Range	30-1000MHz					
Test Voltage	2.8V~3.6V	Detector Function	Quasi-Peak(QP)					
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye					
Horizontal								
								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBuV/m]	QP Limit [dBuV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	88.012	16.22	18.68	43.50	24.82	100	358	Horizontal
2	101.399	17.23	18.96	43.50	24.54	100	358	Horizontal
3	120.219	19.28	19.71	43.50	23.79	100	358	Horizontal
4	157.471	21.27	20.26	43.50	23.24	100	82	Horizontal
5	184.924	18.42	21.65	43.50	21.85	100	282	Horizontal
6	673.659	27.97	30.02	46.00	15.98	100	358	Horizontal
Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB). 2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB). 3. Margin(dB) = Limit[dBuV/m] - Level [dBuV/m] 4. Emission level (dBuV/m) = 20 log Emission level (uV/m). 5. 9KHz~30MHz have been test and test data more than 20dB margin.								



Test Mode:	CH5	Frequency Range	30-1000MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical



NO.	Freq. [MHz]	Factor [dB]	QP Value [dB μ V/m]	QP Limit [dB μ V/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	50.275	20.18	26.83	40.00	13.17	100	348	Vertical
2	53.379	19.95	23.40	40.00	16.60	200	359	Vertical
3	90.243	16.27	20.16	43.50	23.34	200	4	Vertical
4	114.592	18.60	19.69	43.50	23.81	200	320	Vertical
5	162.418	21.07	21.12	43.50	22.38	100	49	Vertical
6	180.365	18.90	20.64	43.50	22.86	100	356	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.



Mode 1

Radiated Emissions above 960 MHz:

Channel	CH 5	Frequency	6489.6MHz									
Frequency Range	Above 1G											
Horizontal												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1200.29	50.35	-35.13	15.22	19.93	4.71	Horizontal					
2	1916.04	50.98	-34.72	16.26	31.93	15.67	Horizontal					
3	2698.25	50.39	-31.07	19.32	33.93	14.61	Horizontal					
4	4654.64	49.51	-27.03	22.48	53.93	31.45	Horizontal					
5	12979.51	49.88	-17.03	32.85	33.93	1.08	Horizontal					
6	14117.90	48.04	-16.49	31.55	33.93	2.38	Horizontal					
7	19468.80	42.01	-18.81	23.20	33.93	10.73	Horizontal					
8	25958.40	38.82	-17.20	21.62	33.93	12.31	Horizontal					
9	32448.00	39.22	-17.26	21.96	33.93	11.97	Horizontal					
Vertical												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1201.99	53.25	-35.13	18.12	19.93	1.81	Vertical					
2	1921.15	51.26	-34.69	16.57	31.93	15.36	Vertical					
3	2442.63	51.57	-32.53	19.04	33.93	14.89	Vertical					
4	3460.02	50.19	-30.13	20.06	53.93	33.87	Vertical					
5	3460.02	50.19	-30.13	20.06	53.93	33.87	Vertical					
6	12979.51	50.51	-17.03	33.48	33.93	0.45	Vertical					
7	19468.80	41.99	-18.81	23.18	33.93	10.75	Vertical					
8	25958.40	39.00	-17.20	21.80	33.93	12.13	Vertical					
9	32448.00	39.72	-17.26	22.46	33.93	11.47	Vertical					

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).

3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

4. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]



Mode 2

Channel	CH 9	Frequency	7987.2MHz									
Frequency Range	Above 1G											
Horizontal												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1200.29	53.96	-35.13	18.83	19.93	1.10	Horizontal					
2	1916.04	50.70	-34.72	15.98	31.93	15.95	Horizontal					
3	2667.58	50.95	-31.24	19.71	33.93	14.22	Horizontal					
4	3603.17	50.15	-29.98	20.17	53.93	33.76	Horizontal					
5	11912.70	48.95	-17.80	31.15	33.93	2.78	Horizontal					
6	15975.45	52.30	-18.94	33.36	33.93	0.57	Horizontal					
7	23961.60	38.72	-17.95	20.77	33.93	13.16	Horizontal					
8	31948.80	41.07	-15.18	25.89	33.93	8.04	Horizontal					
9	39936.00	42.07	-9.75	32.32	33.93	1.61	Horizontal					
Vertical												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1203.70	52.83	-35.13	17.70	19.93	2.23	Vertical					
2	1747.33	51.20	-35.41	15.79	31.93	16.14	Vertical					
3	2524.43	51.97	-32.02	19.95	33.93	13.98	Vertical					
4	3441.27	50.29	-30.14	20.15	53.93	33.78	Vertical					
5	4076.93	49.19	-28.46	20.73	53.93	33.20	Vertical					
6	14618.93	48.65	-16.80	31.85	33.93	2.08	Vertical					
7	23961.60	41.05	-17.95	23.10	33.93	10.83	Vertical					
8	31948.80	40.30	-15.18	25.12	33.93	8.81	Vertical					
9	39936.00	41.63	-9.75	31.88	33.93	2.05	Vertical					

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]



Mode 3

Radiated Emissions above 960 MHz:

Channel	CH 5	Frequency	6489.6MHz										
Frequency Range	Above 1G												
Horizontal													
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity						
1	1173.02	49.93	-35.16	14.77	19.93	5.16	Horizontal						
2	1919.45	52.21	-34.70	17.51	31.93	14.42	Horizontal						
3	2439.22	53.30	-32.55	20.75	33.93	13.18	Horizontal						
4	3998.54	48.43	-28.63	19.80	53.93	34.13	Horizontal						
5	8640.70	48.67	-19.89	28.78	53.93	25.15	Horizontal						
6	14206.52	48.46	-16.46	32.00	33.93	1.93	Horizontal						
7	19468.80	42.01	-18.81	23.20	33.93	10.73	Horizontal						
8	25958.40	38.82	-17.20	21.62	33.93	12.31	Horizontal						
9	32448.00	39.22	-17.26	21.96	33.93	11.97	Horizontal						
Vertical													
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity						
1	1200.29	53.71	-35.13	18.58	19.93	1.35	Vertical						
2	1210.51	50.92	-35.14	15.78	19.93	4.65	Vertical						
3	1919.45	52.79	-34.70	18.09	31.93	13.84	Vertical						
4	2710.18	50.88	-31.01	19.87	33.93	14.06	Vertical						
5	3570.79	50.25	-30.03	20.22	53.93	33.71	Vertical						
6	12979.51	50.07	-17.03	33.04	33.93	0.89	Vertical						
7	19468.80	41.99	-18.81	23.18	33.93	10.75	Vertical						
8	25958.40	39.00	-17.20	21.80	33.93	12.13	Vertical						
9	32448.00	39.72	-17.26	22.46	33.93	11.47	Vertical						

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).

3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

4. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]



Mode 4

Channel	CH 9	Frequency	7987.2MHz									
Frequency Range	Above 1G											
Horizontal												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1178.13	50.58	-35.15	15.43	19.93	4.50	Horizontal					
2	1922.86	50.53	-34.68	15.85	31.93	16.08	Horizontal					
3	2428.99	51.15	-32.61	18.54	33.93	15.39	Horizontal					
4	3458.31	51.60	-30.13	21.47	53.93	32.46	Horizontal					
5	3458.31	51.60	-30.13	21.47	53.93	32.46	Horizontal					
6	14082.11	48.75	-16.50	32.25	33.93	1.68	Horizontal					
7	23961.60	38.72	-17.95	20.77	33.93	13.16	Horizontal					
8	31948.80	41.57	-15.18	26.39	33.93	7.54	Horizontal					
9	39936.00	41.57	-9.75	31.82	33.93	2.11	Horizontal					
Vertical												
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity					
1	1200.29	53.44	-35.13	18.31	19.93	1.62	Vertical					
2	1919.45	54.07	-34.70	19.37	31.93	12.56	Vertical					
3	2415.36	51.72	-32.70	19.02	33.93	14.91	Vertical					
4	2815.84	51.01	-30.54	20.47	33.93	13.46	Vertical					
5	5096.02	49.20	-25.56	23.64	53.93	30.29	Vertical					
6	15975.45	51.00	-18.94	32.06	33.93	1.87	Vertical					
7	23961.60	40.55	-17.95	22.60	33.93	11.33	Vertical					
8	31948.80	41.30	-15.18	26.12	33.93	7.81	Vertical					
9	39936.00	42.13	-9.75	32.38	33.93	1.55	Vertical					

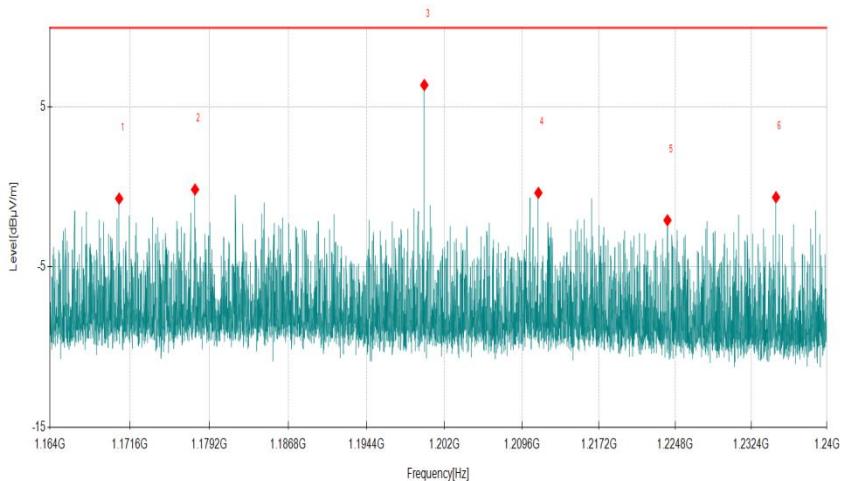
Remark: 1. The emission levels of other frequencies were greater than 20dB margin.

2. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]

Mode 1

Radiated Emissions in GPS band:

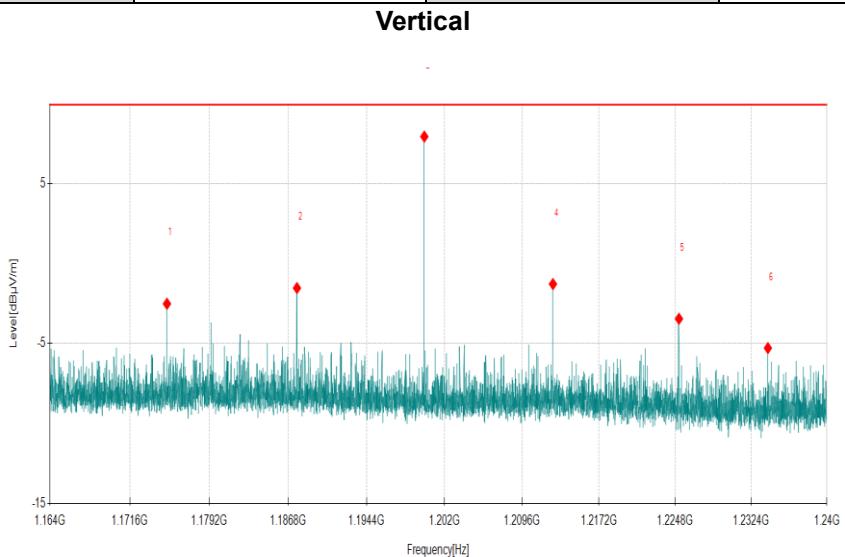
Test Channel:	CH 5	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizonta

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1170.59	34.43	-35.16	-0.73	9.93	10.66	Horizontal
2	1177.84	34.99	-35.15	-0.16	9.93	10.09	Horizontal
3	1200.03	41.49	-35.13	6.36	9.93	3.57	Horizontal
4	1211.22	34.77	-35.14	-0.37	9.93	10.30	Horizontal
5	1224.02	33.06	-35.14	-2.08	9.93	12.01	Horizontal
6	1234.88	34.50	-35.14	-0.64	9.93	10.57	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

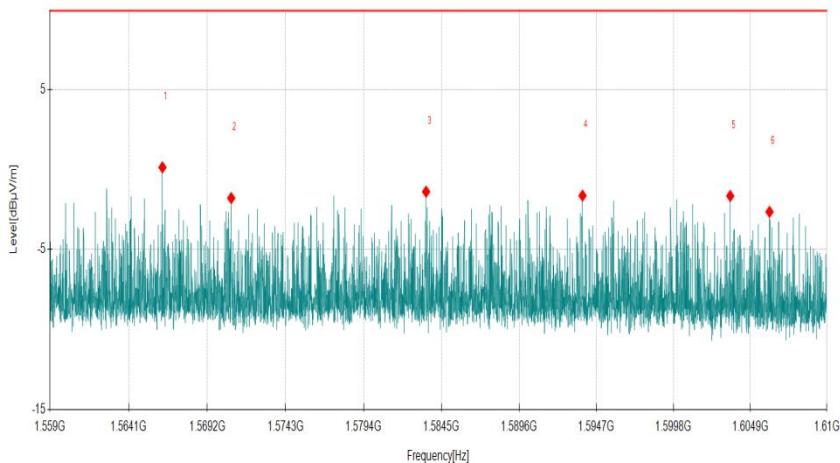
Test Channel:	CH 5	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye



NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1175.15	32.65	-35.16	-2.51	9.93	12.44	Vertical
2	1187.65	33.61	-35.14	-1.53	9.93	11.46	Vertical
3	1200.03	43.07	-35.13	7.94	9.93	1.99	Vertical
4	1212.66	33.86	-35.14	-1.28	9.93	11.21	Vertical
5	1225.16	31.69	-35.14	-3.45	9.93	13.38	Vertical
6	1234.06	29.85	-35.13	-5.28	9.93	15.21	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

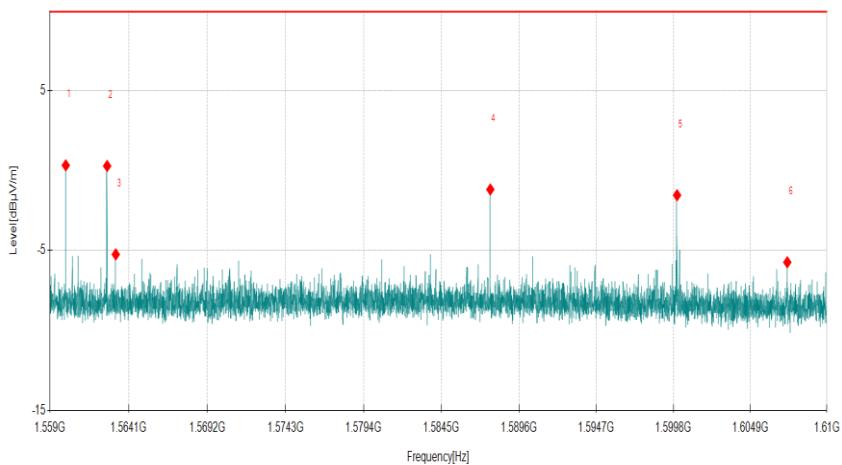
Test Channel:	CH 5	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1566.29	35.55	-35.41	0.14	9.93	9.79	Horizontal
2	1570.76	33.64	-35.42	-1.78	9.93	11.71	Horizontal
3	1583.49	34.07	-35.45	-1.38	9.93	11.31	Horizontal
4	1593.79	33.83	-35.46	-1.63	9.93	11.56	Horizontal
5	1603.57	33.83	-35.48	-1.65	9.93	11.58	Horizontal
6	1606.18	32.84	-35.48	-2.64	9.93	12.57	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Test Channel:	CH 5	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

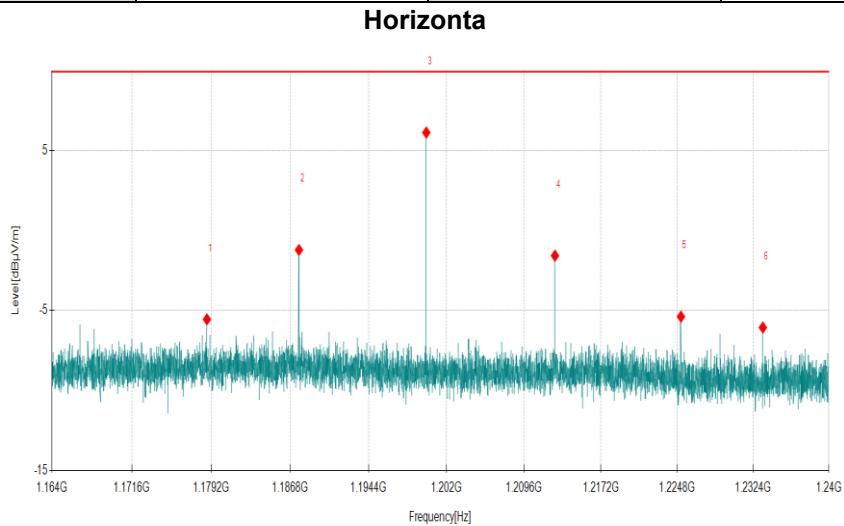
Vertical

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	35.74	-35.41	0.33	9.93	9.60	Vertical
2	1562.71	35.70	-35.41	0.29	9.93	9.64	Vertical
3	1563.26	30.17	-35.41	-5.24	9.93	15.17	Vertical
4	1587.71	34.27	-35.45	-1.18	9.93	11.11	Vertical
5	1600.04	33.94	-35.48	-1.54	9.93	11.47	Vertical
6	1607.36	29.75	-35.48	-5.73	9.93	15.66	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Mode 2

Test Channel:	CH 9	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye



NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1178.79	29.60	-35.15	-5.55	9.93	15.48	Horizontal
2	1187.65	33.93	-35.14	-1.21	9.93	11.14	Horizontal
3	1200.03	41.26	-35.13	6.13	9.93	3.80	Horizontal
4	1212.66	33.57	-35.14	-1.57	9.93	11.50	Horizontal
5	1225.16	29.76	-35.14	-5.38	9.93	15.31	Horizontal
6	1233.36	29.07	-35.13	-6.06	9.93	15.99	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).

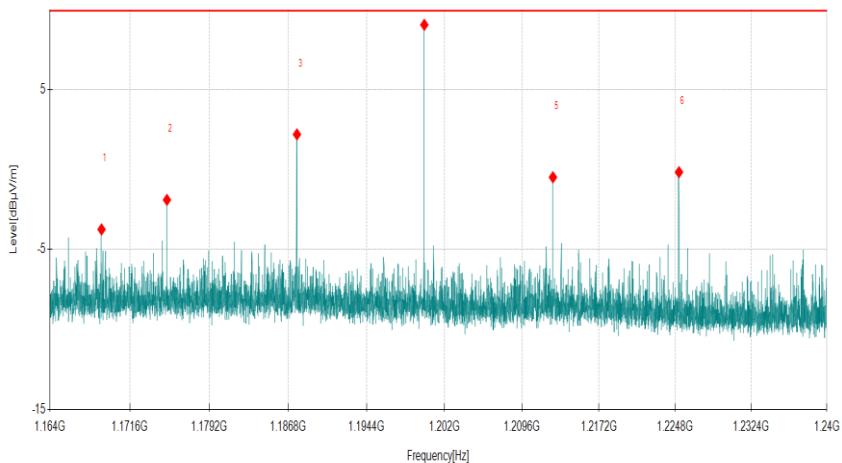
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]

4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).

5. 9KHz~30MHz have been test and test data more than 20dB margin.

Test Channel:	CH 9	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1168.91	31.42	-35.16	-3.74	9.93	13.67	Vertical
2	1175.15	33.27	-35.16	-1.89	9.93	11.82	Vertical
3	1187.65	37.34	-35.14	2.20	9.93	7.73	Vertical
4	1200.03	44.18	-35.13	9.05	9.93	0.88	Vertical
5	1212.66	34.66	-35.14	-0.48	9.93	10.41	Vertical
6	1225.16	34.98	-35.14	-0.16	9.93	10.09	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).

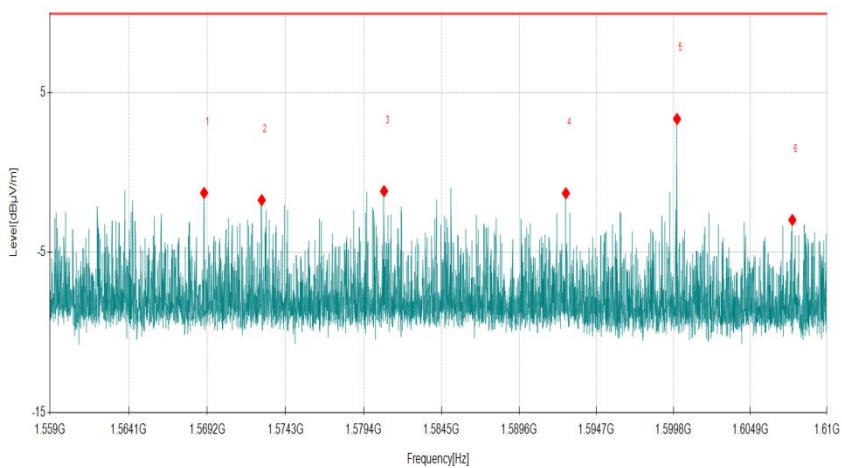
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]

4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).

5. 9KHz~30MHz have been test and test data more than 20dB margin.

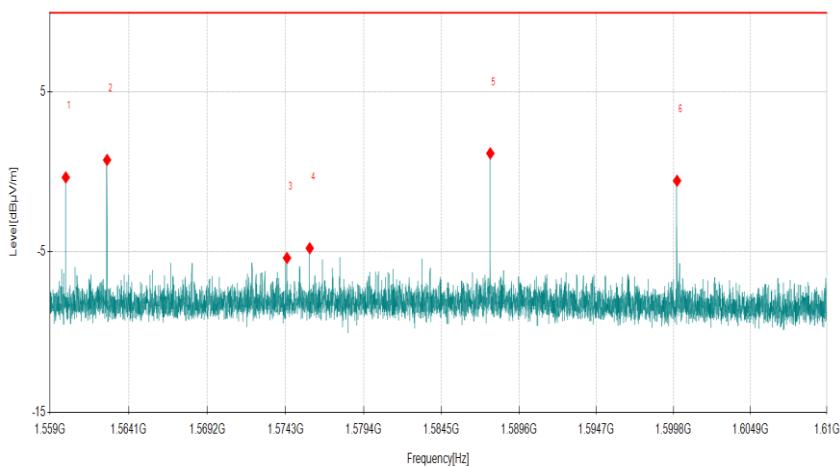
Test Channel:	CH 9	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1569.00	34.15	-35.42	-1.27	9.93	11.20	Horizontal
2	1572.75	33.70	-35.42	-1.72	9.93	11.65	Horizontal
3	1580.74	34.28	-35.44	-1.16	9.93	11.09	Horizontal
4	1592.69	34.17	-35.46	-1.29	9.93	11.22	Horizontal
5	1600.04	38.83	-35.48	3.35	9.93	6.58	Horizontal
6	1607.70	32.52	-35.48	-2.96	9.93	12.89	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Test Channel:	CH 9	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	35.07	-35.41	-0.34	9.93	10.27	Vertical
2	1562.70	36.16	-35.41	0.75	9.93	9.18	Vertical
3	1574.39	30.06	-35.43	-5.37	9.93	15.30	Vertical
4	1575.88	30.67	-35.43	-4.76	9.93	14.69	Vertical
5	1587.71	36.61	-35.45	1.16	9.93	8.77	Vertical
6	1600.04	34.93	-35.48	-0.55	9.93	10.48	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

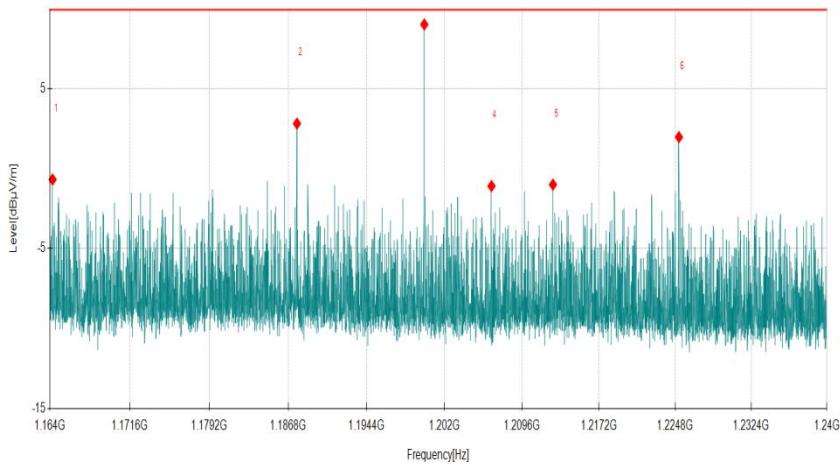


Mode 3

Radiated Emissions in GPS band:

Test Channel:	CH 5	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

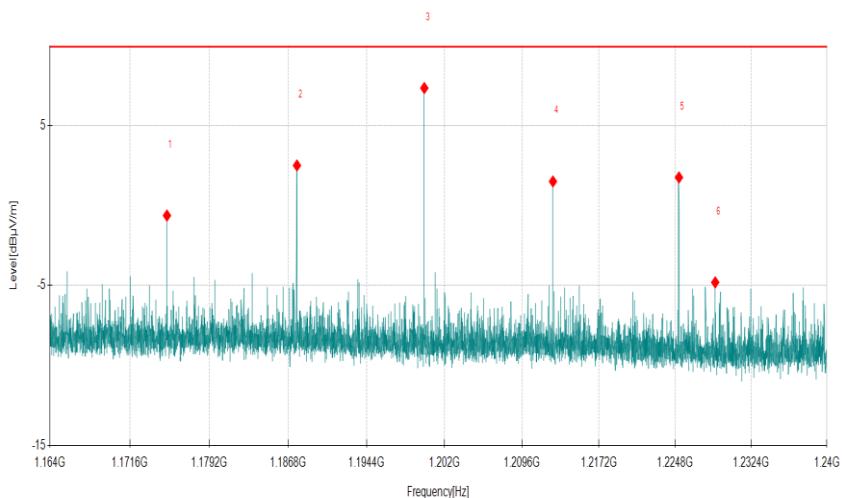
Horizontal



NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1164.26	34.49	-35.17	-0.68	9.93	10.61	Horizontal
2	1187.65	37.95	-35.14	2.81	9.93	7.12	Horizontal
3	1200.03	44.14	-35.13	9.01	9.93	0.92	Horizontal
4	1206.61	34.05	-35.14	-1.09	9.93	11.02	Horizontal
5	1212.66	34.14	-35.14	-1.00	9.93	10.93	Horizontal
6	1225.16	37.11	-35.14	1.97	9.93	7.96	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

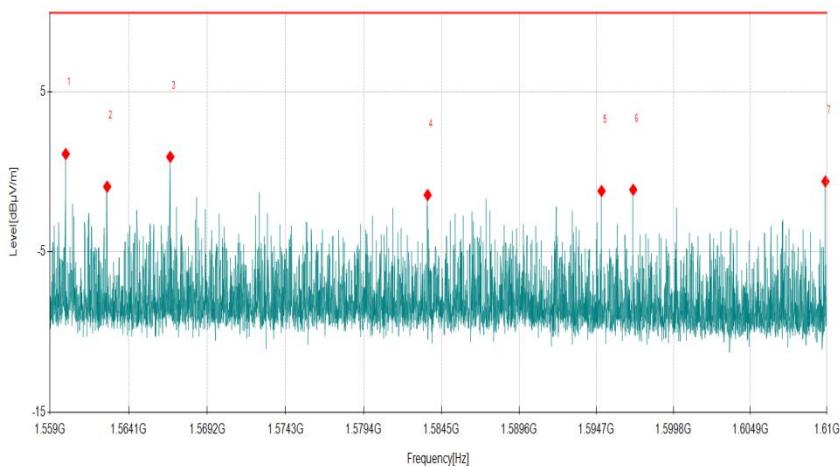
Test Channel:	CH 5	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	34.46	-35.41	-0.95	9.93	10.88	Vertical
2	1562.71	34.99	-35.41	-0.42	9.93	10.35	Vertical
3	1564.13	34.26	-35.41	-1.15	9.93	11.08	Vertical
4	1578.43	33.53	-35.44	-1.91	9.93	11.84	Vertical
5	1592.41	33.12	-35.46	-2.34	9.93	12.27	Vertical
6	1599.24	32.97	-35.48	-2.51	9.93	12.44	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Test Channel:	CH 5	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

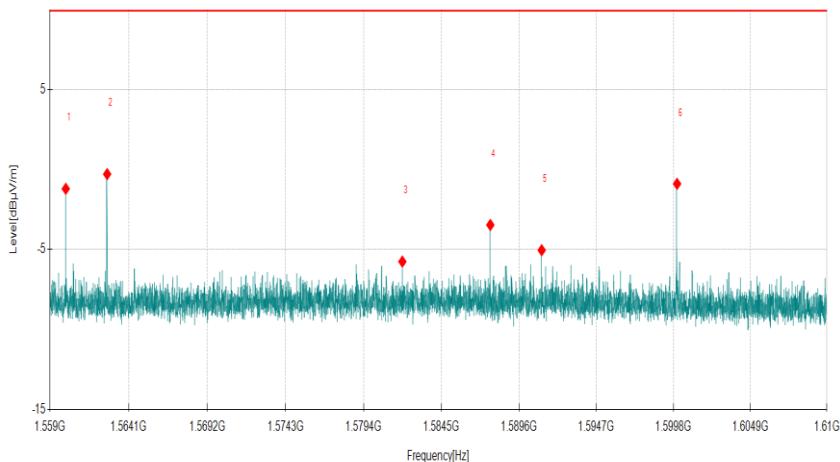
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	36.53	-35.41	1.12	9.93	8.81	Horizontal
2	1562.71	34.49	-35.41	-0.92	9.93	10.85	Horizontal
3	1566.80	36.36	-35.42	0.94	9.93	8.99	Horizontal
4	1583.59	34.01	-35.45	-1.44	9.93	11.37	Horizontal
5	1595.04	34.27	-35.46	-1.19	9.93	11.12	Horizontal
6	1597.14	34.36	-35.47	-1.11	9.93	11.04	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.



Test Channel:	CH 5	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical

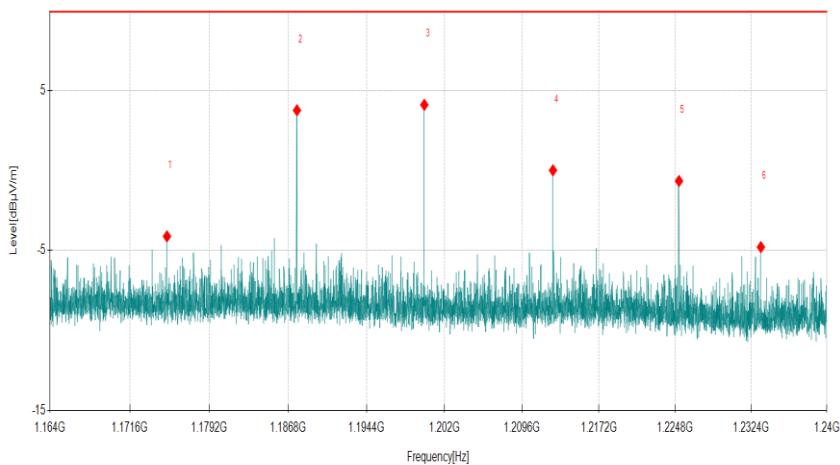


NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	34.21	-35.41	-1.20	9.93	11.13	Vertical
2	1562.71	35.13	-35.41	-0.28	9.93	10.21	Vertical
3	1581.94	29.70	-35.45	-5.75	9.93	15.68	Vertical
4	1587.71	31.99	-35.45	-3.46	9.93	13.39	Vertical
5	1591.09	30.42	-35.46	-5.04	9.93	14.97	Vertical
6	1600.04	34.59	-35.48	-0.89	9.93	10.82	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Mode 4

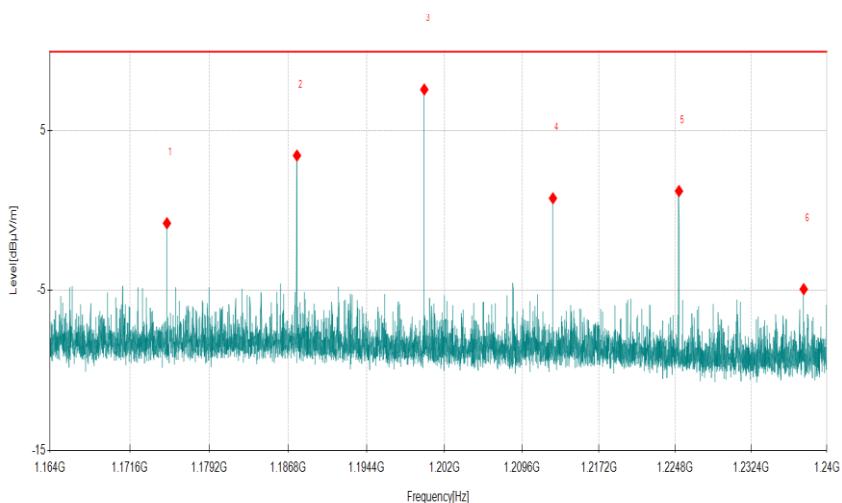
Test Channel:	CH 9	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1175.15	31.05	-35.16	-4.11	9.93	14.04	Horizontal
2	1187.65	38.91	-35.14	3.77	9.93	6.16	Horizontal
3	1200.03	39.24	-35.13	4.11	9.93	5.82	Horizontal
4	1212.66	35.16	-35.14	0.02	9.93	9.91	Horizontal
5	1225.16	34.49	-35.14	-0.65	9.93	10.58	Horizontal
6	1233.36	30.35	-35.13	-4.78	9.93	14.71	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

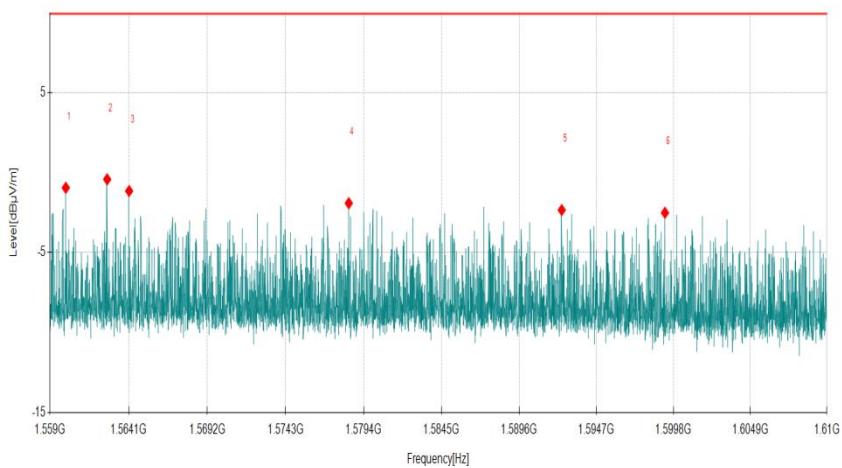
Test Channel:	CH 9	Frequency Range	GPS-1164-1240MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical

NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1175.15	34.37	-35.16	-0.79	9.93	10.72	Vertical
2	1187.65	38.58	-35.14	3.44	9.93	6.49	Vertical
3	1200.03	42.70	-35.13	7.57	9.93	2.36	Vertical
4	1212.66	35.91	-35.14	0.77	9.93	9.16	Vertical
5	1225.16	36.36	-35.14	1.22	9.93	8.71	Vertical
6	1237.67	30.23	-35.14	-4.91	9.93	14.84	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

Test Channel:	CH 9	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Horizontal

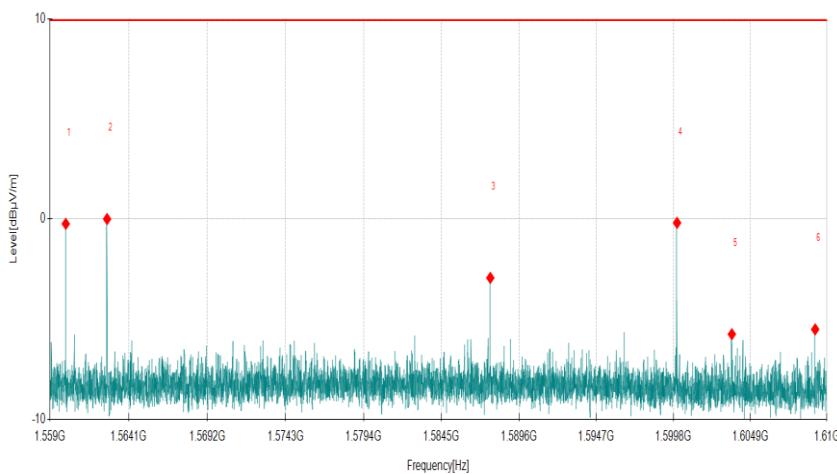
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	34.46	-35.41	-0.95	9.93	10.88	Horizontal
2	1562.71	34.99	-35.41	-0.42	9.93	10.35	Horizontal
3	1564.13	34.26	-35.41	-1.15	9.93	11.08	Horizontal
4	1578.43	33.53	-35.44	-1.91	9.93	11.84	Horizontal
5	1592.41	33.12	-35.46	-2.34	9.93	12.27	Horizontal
6	1599.24	32.97	-35.48	-2.51	9.93	12.44	Horizontal

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.



Test Channel:	CH 9	Frequency Range	GPS-1559-1610MHz
Test Voltage	DC 3.6V	Detector Function	Quasi-Peak(QP)
Environmental Conditions	25deg. C,60% RH	Tested By	Zhou Ye

Vertical



NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Polarity
1	1560.03	35.17	-35.41	-0.24	9.93	10.17	Vertical
2	1562.70	35.41	-35.41	0.00	9.93	9.93	Vertical
3	1587.71	32.51	-35.45	-2.94	9.93	12.87	Vertical
4	1600.04	35.29	-35.48	-0.19	9.93	10.12	Vertical
5	1603.68	29.73	-35.48	-5.75	9.93	15.68	Vertical
6	1609.22	29.97	-35.48	-5.51	9.93	15.44	Vertical

Remark: 1. Level (dB μ V/m) = Reading (dB μ V/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dB μ V/m] - Level [dB μ V/m]
4. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
5. 9KHz~30MHz have been test and test data more than 20dB margin.

3.2 10DB BANDWIDTH

3.2.1 LIMIT

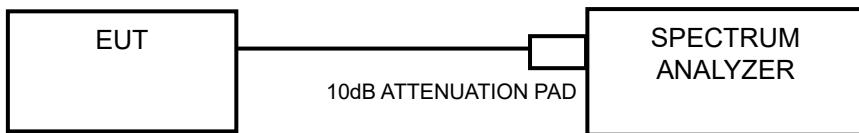
FCC 15.503(d) Has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

FCC 15.519(3)(b) The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

3.2.2 TEST PROCEDURES

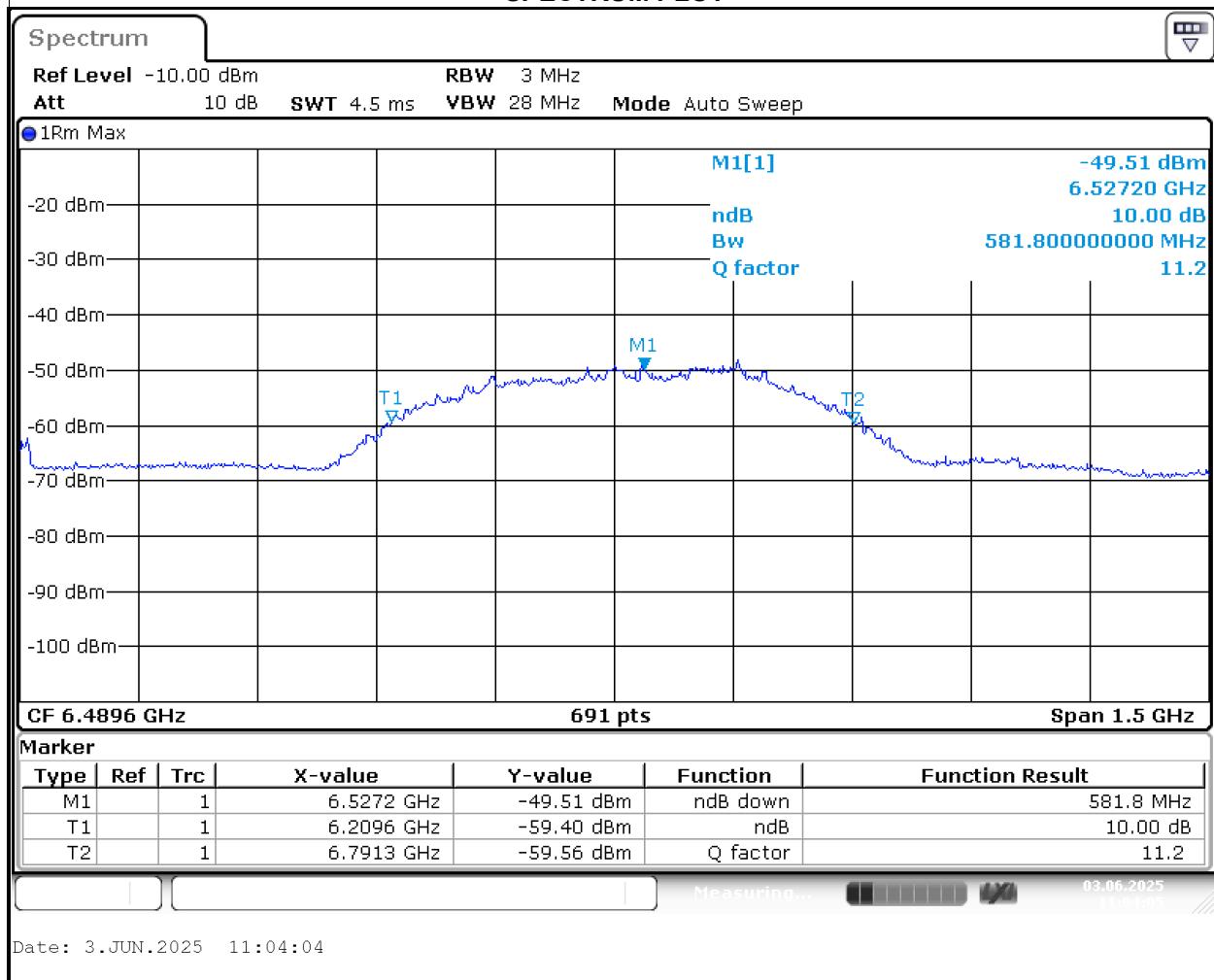
1. Set the centre frequency of the channel under test
2. Set resolution bandwidth (RBW) = 1MHz
3. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 10 dB relative to the maximum level measured in the fundamental emission.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

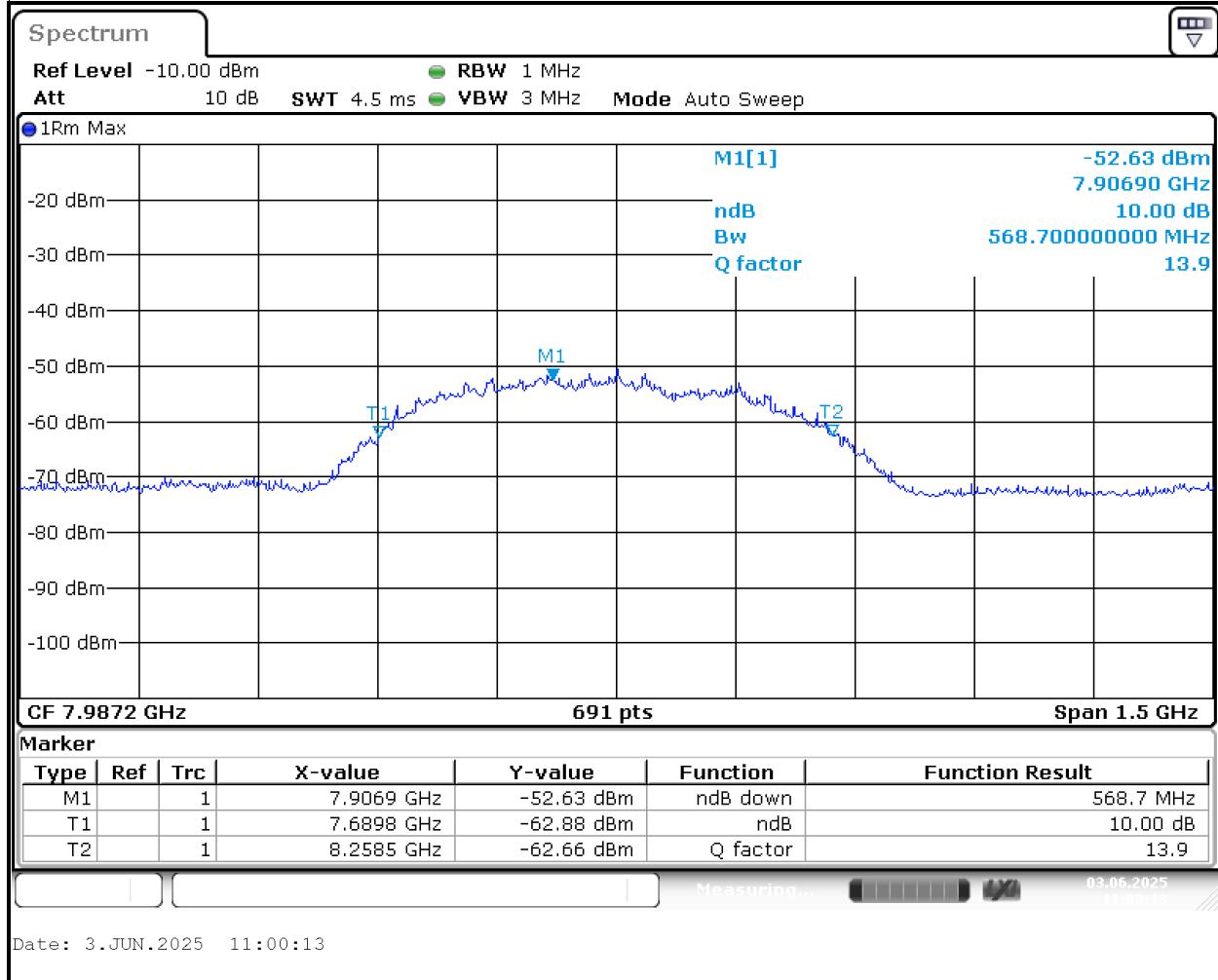
Channel	Measured Frequencies		10dB Bandwidth (MHz)	Operating Limit (MHz)	OBW Limit (MHz)	Pass/Fail
	FL (MHz)	FH (MHz)				
CH5	6209.6	6791.3	581.8	FL > 3100 and FH < 10600	500	Pass

SPECTRUM PLOT



Channel	Measured Frequencies		10dB Bandwidth (MHz)	Operating Limit (MHz)	OBW Limit (MHz)	Pass/Fail
	FL (MHz)	FH (MHz)				
CH9	7689.8	8258.5	568.7	FL > 3100 and FH < 10600	500	Pass

SPECTRUM PLOT



3.3 99% OCCUPIED BANDWIDTH

3.3.1 LIMIT

Only report

3.3.2 Measurement procedure

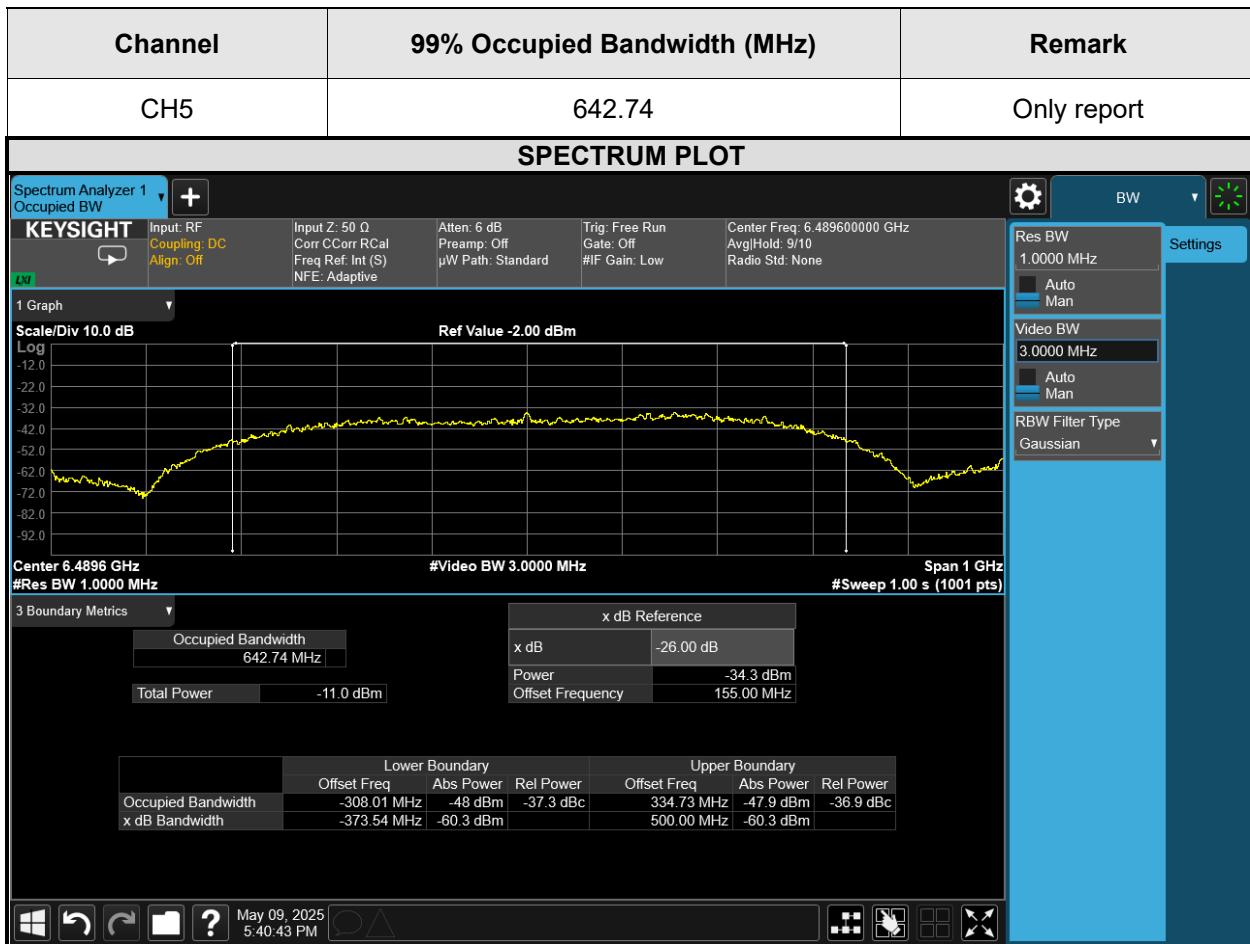
The transmitter antenna output was connected to the spectrum analyzer through an attenuator. The resolution bandwidth shall be set to the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth. below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

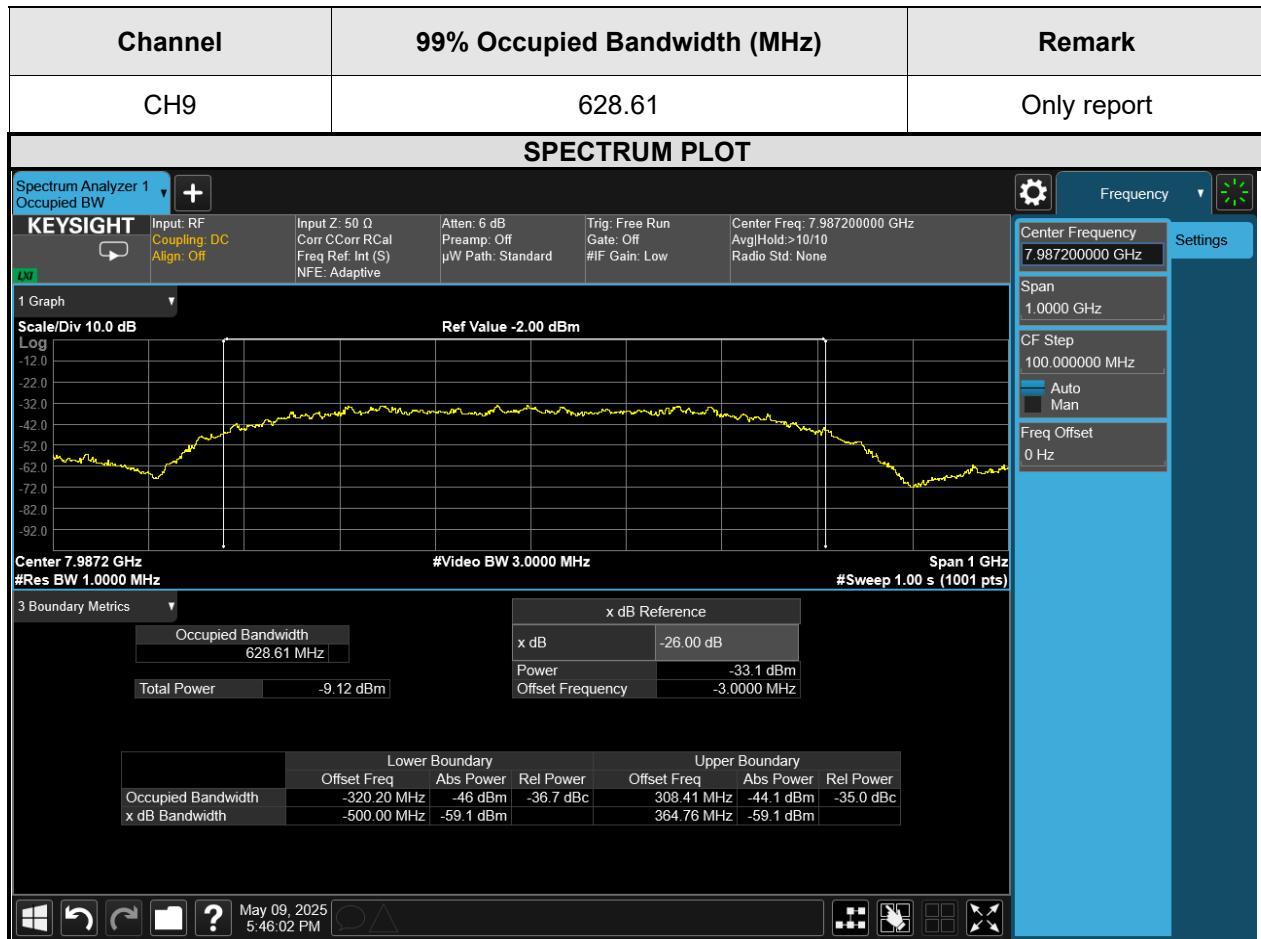
3.3.3 TEST SETUP





3.3.4 TEST RESULTS







3.4 MAXIMUM PEAK POWER AND AVERAGE EMISSIONS

3.4.1 LIMITS

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.

When a peak measurement is required, it is acceptable to use a resolution bandwidth other than the 50 MHz specified in this subpart. This resolution bandwidth shall not be lower than 1 MHz or greater than 50 MHz, and the measurement shall be centered on the frequency at which the highest radiated emission occurs, fM. If a resolution bandwidth other than 50 MHz is employed, the peak EIRP limit shall be $20 \log(RBW/50)$ dBm where RBW is the resolution bandwidth in megahertz that is employed. This converted to a peak field strength level at 3 meters using $E(dBuV/m) = P(dBm EIRP) + 95.2$.

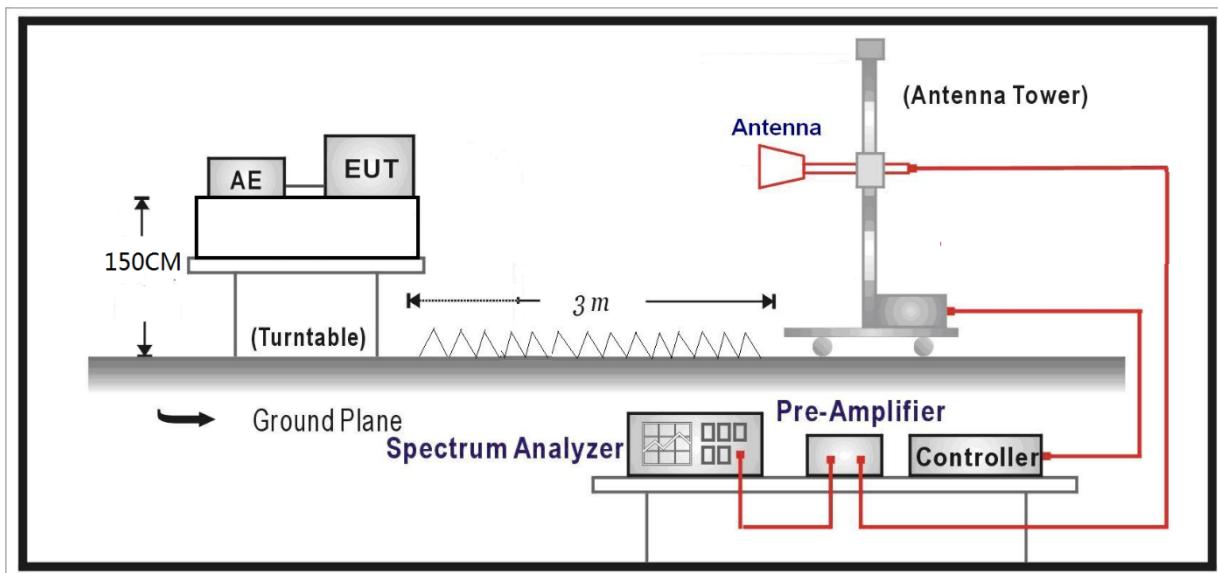
ITEM	LIMIT
AVERAGE EMISSIONS	-41.3dBm/MHz
MAXIMUM PEAK POWER	0 dBm/50MHz

3.4.2 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.4.3 TEST SETUP

3.4.4 TEST RESULTS

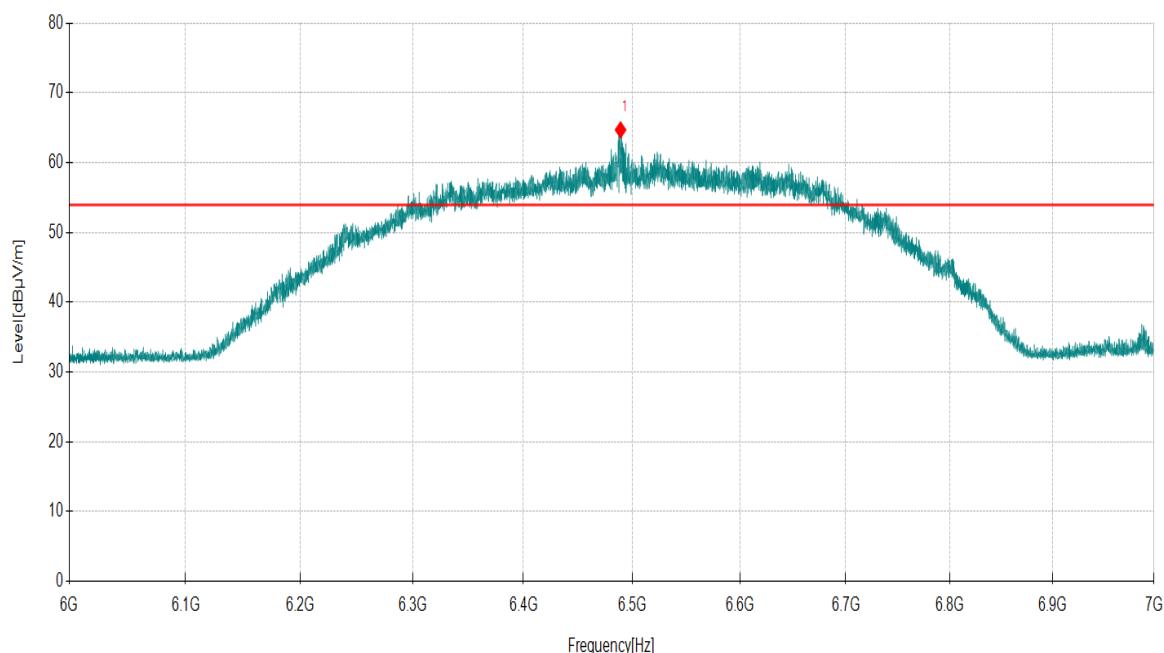
Mode	Pol(H/V)	Frequency (MHz)	Maximum Peak Power (dBuV/10MHz)	Maximum Peak Power (dBuV/50MHz)	Maximum Peak Power (dBm/50MHz)	(dBm/50MHz)	Pass/Fail
1	V	6489.05	59.17	73.15	-22.05	0	Pass
1	H	6490.05	64.70*	78.68	-16.52	0	Pass
2	V	7832.63	61.69	75.67	-19.53	0	Pass
2	H	7986.55	54.79	68.77	-26.43	0	Pass

Bandwidth correction factor (BWCF)= $20\log(50\text{MHz}/10\text{MHz}) = 13.98$

Maximum Peak Power (dBuV/50MHz) = Maximum Peak Power (dBuV/10MHz) + BWCF

Maximum Peak Power (dBm/50MHz) = Maximum Peak Power (dBuV/50MHz) - 95.2

*Note: Only the worst test plot



NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Polarity
1	6488.95	92.10	-27.40	64.70	RMS	Vertical



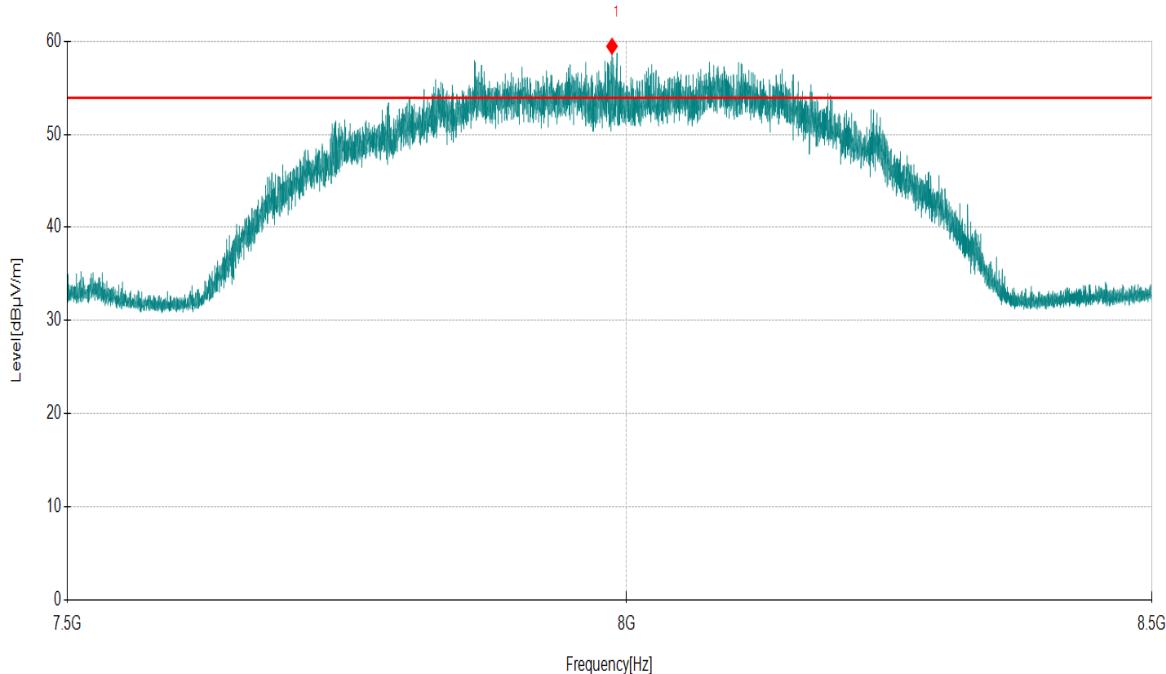
Mode	Pol(H/V)	Frequency (MHz)	Maximum Peak Power (dBuV/10MHz)	Maximum Peak Power (dBuV/50MHz)	Maximum Peak Power (dBm/50MHz)	(dBm/50MHz)	Pass/Fail
3	V	6489.05	45.05	59.03	-36.17	0	Pass
3	H	6490.05	57.13	71.11	-24.09	0	Pass
4	V	7832.63*	59.46*	73.44	-21.76	0	Pass
4	H	7986.55	52.17	66.15	-29.05	0	Pass

Bandwidth correction factor (BWCF)= $20\log(50\text{MHz}/10\text{MHz}) = 13.98$

Maximum Peak Power (dBuV/50MHz) = Maximum Peak Power (dBuV/10MHz) + BWCF

Maximum Peak Power (dBm/50MHz) = Maximum Peak Power (dBuV/50MHz) - 95.2

*Note: Only the worst test plot



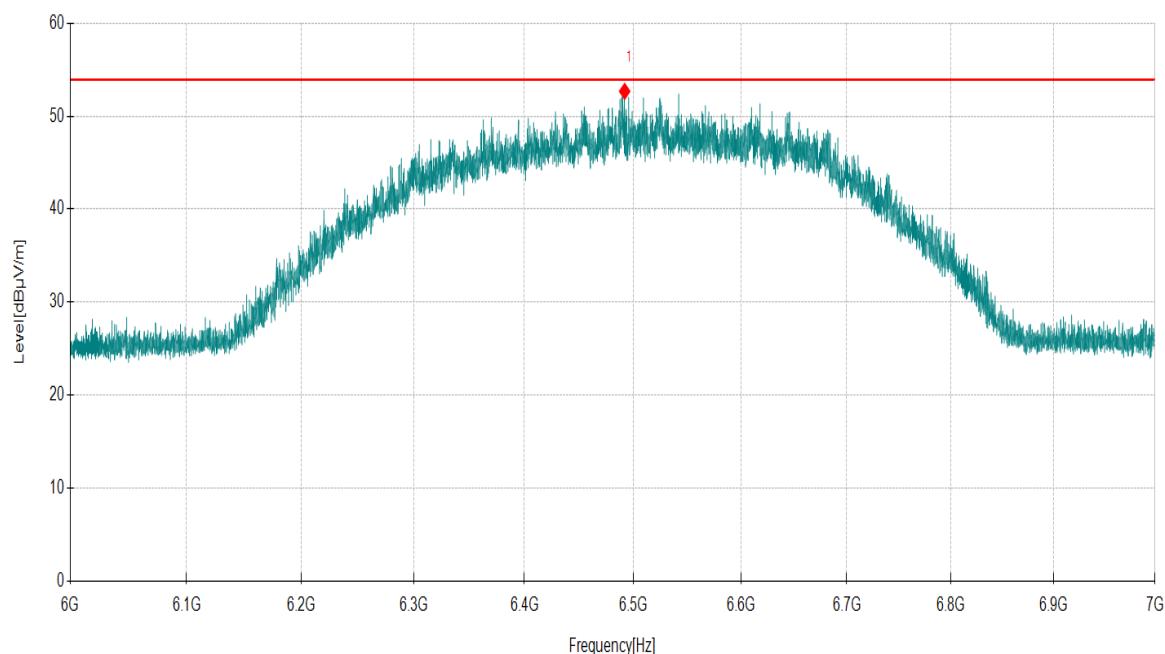
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Detector	Polarity
1	7986.55	86.68	-27.22	59.46	RMS	Vertical



Mode	Frequency (MHz)	Average Emissions (dB μ V/MHz)	Average Emissions (dBm/MHz)	Limit(dBm/MHz)	Pass/Fail
1	H	52.67*	-42.53	-41.3	Pass
1	V	48.35	-46.85	-41.3	Pass
2	H	51.79	-43.41	-41.3	Pass
2	V	45.27	-49.93	-41.3	Pass

Average Emissions (dBm/MHz) = Average Emissions (dB μ V/MHz) -95.2

*Note: Only the worst test plot



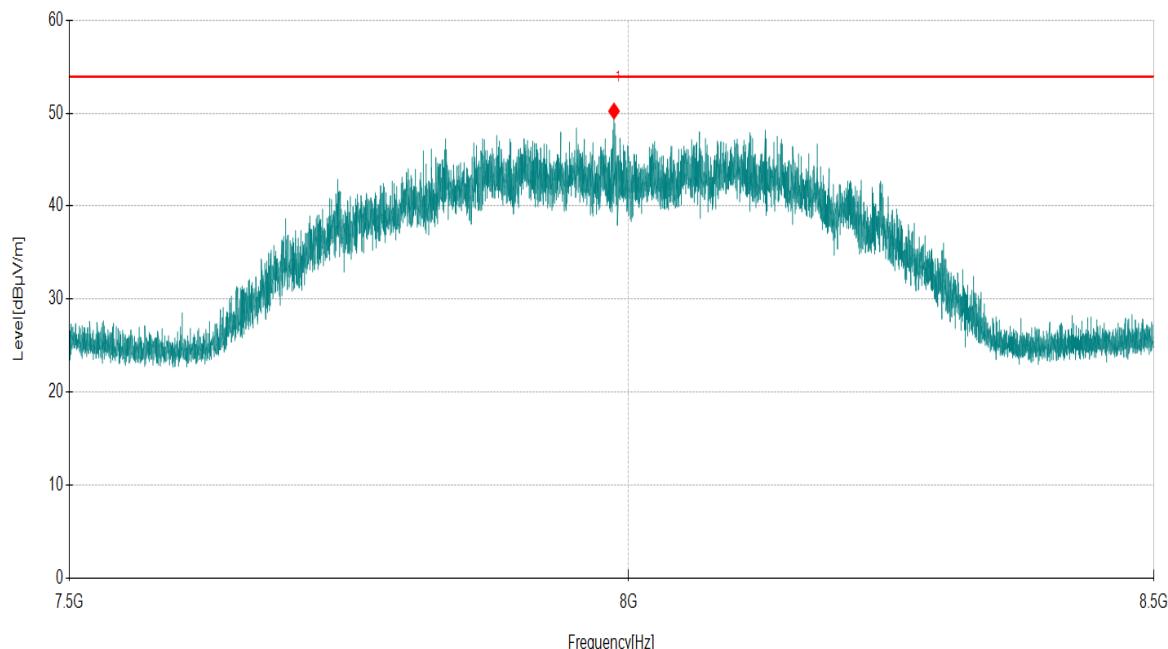
NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Detector	Polarity
1	6491.85	80.07	-27.40	52.67	RMS	Vertical



Mode	Frequency (MHz)	Average Emissions (dB μ V/MHz)	Average Emissions (dBm/MHz)	Limit(dBm/MHz)	Pass/Fail
3	H	48.14*	-47.06	-41.3	Pass
3	V	35.10	-60.10	-41.3	Pass
4	H	50.22	-44.98	-41.3	Pass
4	V	43.31	-51.89	-41.3	Pass

Average Emissions (dBm/MHz) = Average Emissions (dB μ V/MHz) -95.2

*Note: Only the worst test plot



NO.	Freq. [MHz]	Reading [dB μ V]	Factor [dB/m]	Level [dB μ V/m]	Detector	Polarity
1	7986.55	77.44	-27.22	50.22	RMS	Vertical

3.5 CEASE TRANSMISSION TIME

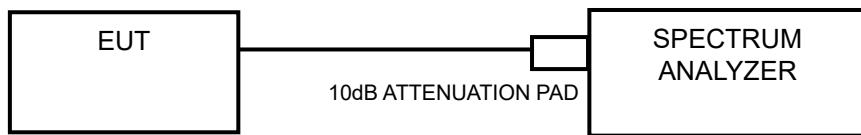
3.5.1 LIMIT

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.

3.5.2 TEST PROCEDURES

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer set the center frequency, than set the spectrum analyzer to Zero Span for the release time reading. During the testing, the transmission duration was measured and recorded.

3.5.3 TEST SETUP



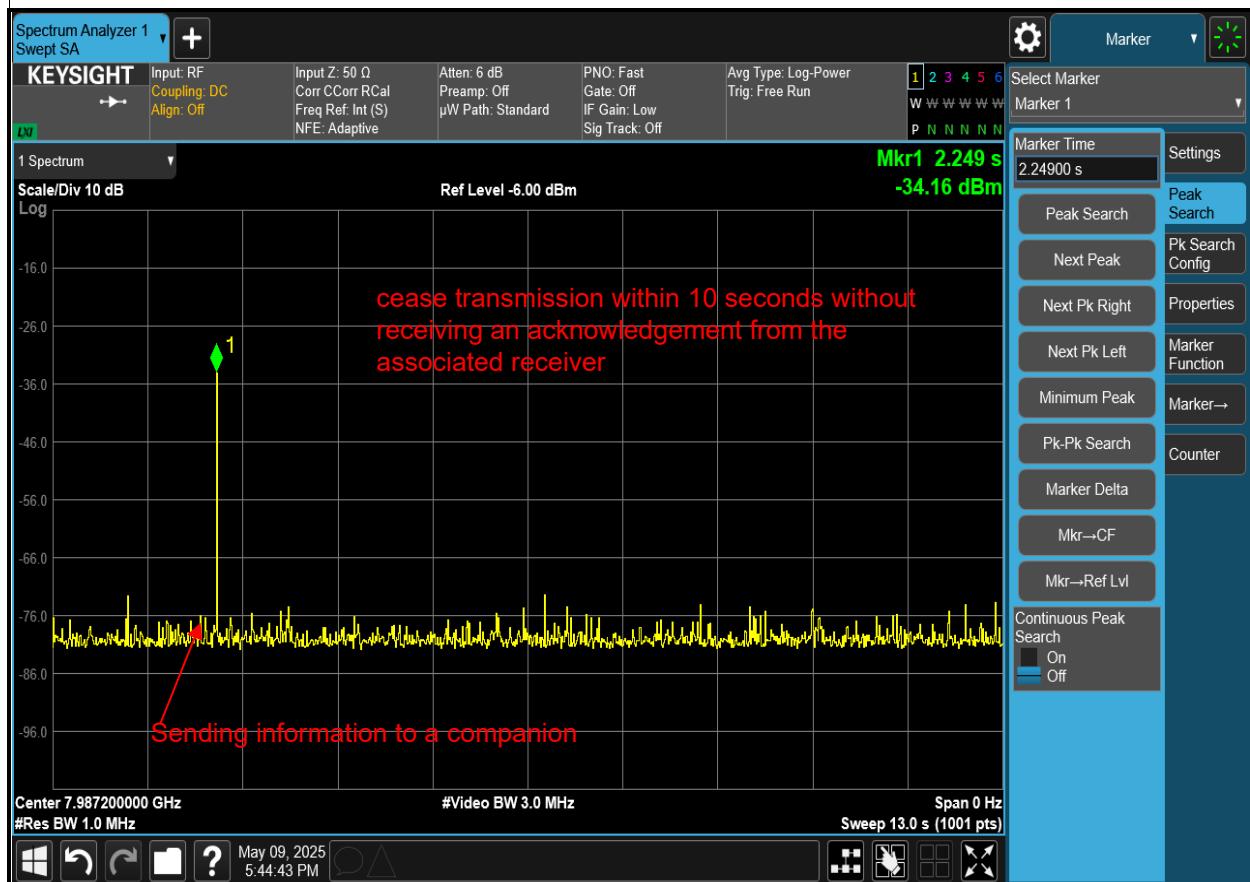
3.5.1 TEST RESULTS

FREQUENCY (MHz)	TRANSMITTER TIMEOUT	MAXIMUM LIMIT (sec)	PASS/FAIL
6489.6	< 10 s	10	PASS





FREQUENCY (MHz)	TRANSMITTER TIMEOUT	MAXIMUM LIMIT (sec)	PASS/FAIL
7987.2	< 10 s	10	PASS





3.6 ANTENNA REQUIREMENT

3.6.1 LIMITS OFFREQUENCY STABILITY

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b) , if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 ANTENNA ANTI-REPLACEMENT CONSTRUCTION

The EUT has two Antennas (rod Antenna and FPC Antenna), permanent attachment with non-standard connector (IPEX) and no consideration of replacement, no antenna other than that furnished by the responsible party shall be used with the device.

3.6.3 ANTENNA GAIN

UWB has two antennas maximum peak value is 5.3 dBi



4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Photos).



5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).



Important

- (1) The test report is invalid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

Address: No. 1301-14&16, Guanguang Road, Xinlan Community, Guanlan Subdistrict, Longhua District, Shenzhen, Guangdong, China

Post Code: 518110 Tel: 0755-23763060-8805

Fax: 0755-23763060 E-mail: sz-kf@cvc.org.cn

<http://www.cvc.org.cn>