



Radio Test Report

Report No.: STS2411098W02

Issued for

Litum bilgi teknolojileri san. Ve dis tic. A.S

Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Name: Li3 Series - Little Tag

Brand Name: Litum

Model Name: 636

Series Model: N/A

FCC ID: 2AW7W-6360000001

Test Standard: Title 47 of the CFR, Part 15. Subpart F

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**TEST RESULT CERTIFICATION**

Applicant's Name: Litum bilgi teknolojileri san. Ve dis tic. A.S
Address: Sevket Ozcelik sok. No29 Alsancak izmir Turkey
Manufacture's Name: Litum bilgi teknolojileri san. Ve dis tic. A.S
Address: Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Description

Product Name: Li3 Series - Little Tag
Brand Name: Litum
Model Name: 636
Series Model: N/A

Test Standards: Title 47 of the CFR, Part 15. Subpart F
Test Procedure: ANSI C63.10-2020

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC/IC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test:
Date of receipt of test item: 20 Nov. 2024
Date of performance of tests ...: 20 Nov. 2024~29 Nov. 2024
Date of Issue: 29 Nov. 2024
Test Result: **Pass**

Testing Engineer :

Aaron Bu

(Aaron Bu)

Technical Manager :

Tony Liu

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Bovey Yang

(Bovey Yang)





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Revision History

Rev.	Issue Date	Report No.	Effect Page	Contents
00	29 Nov. 2024	STS2411098W02	ALL	Initial Issue



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15. Subpart F			
Standard Section	Test Item	Judgment	Remark
15.207	AC Power Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.209 15.517(c)	Radiated Spurious Emission	Pass	
15.209 15.517(d)	Radiated Spurious Emission in GPS Band	Pass	
15.517(e)	Peak Emissions within a 50MHz Bandwidth	Pass	
15.517(b)	UWB Bandwidth	Pass	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-2020.



1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : 101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.755\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.874\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 3.80\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 4.18\text{dB}$
5	All emissions, radiated 1G-6GHz	$\pm 4.90\text{dB}$
6	All emissions, radiated >6G	$\pm 5.24\text{dB}$
7	Conducted Emission (9KHz-150KHz)	$\pm 2.19\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Li3 Series - Little Tag								
Trade Name	Litum								
Model Name	636								
Series Model	N/A								
Model Difference	N/A								
Product Description	The EUT is a Li3 Series - Little Tag <table><tr><td>Operation Frequency:</td><td>6489.6MHz</td></tr><tr><td>Modulation Type:</td><td>BPM with BPSK</td></tr><tr><td>Antenna Type:</td><td>Chip Antenna</td></tr><tr><td>Antenna Gain(Peak):</td><td>0.7dBi</td></tr></table> Based on the application, features, or specification exhibited in User Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User Manual.	Operation Frequency:	6489.6MHz	Modulation Type:	BPM with BPSK	Antenna Type:	Chip Antenna	Antenna Gain(Peak):	0.7dBi
Operation Frequency:	6489.6MHz								
Modulation Type:	BPM with BPSK								
Antenna Type:	Chip Antenna								
Antenna Gain(Peak):	0.7dBi								
Channel List	Please refer to the Note 3.								
Power Rating	N/A								
Adapter	N/A								
Battery	Rated Voltage: 3.7V Charge Limit Voltage: 4.2V Capacity: 120mAh								
Hardware version number	TAGV05R0103								
Software version number	300A0611								
Connecting I/O Port(s)	Please refer to the Note 1.								

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refer the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.

3.

Test channel	Frequency(GHz)
1	6489.9

4 Indoor Anchor is a FCC Part 15.517 indoor UWB systems.



2.2 DESCRIPTION OF THE TEST MODES

For Radiated spurious emissions

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Pretest Mode	Description	Modulation
Mode 1	TX CH01	BPM with BPSK

Note:

(1) All above mode have been measurement, only worst data was reported.

(2) We have be tested for all available U.S. voltage and frequencies(For 120V,50/60Hz and DC 3.7V by Battery) for which the device is capable of operation, and the worst case of DC 3.7V is shown in the report.

For AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 2 : Charging mode

2.3 TEST SOFTWARE AND POWER LEVEL

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Type	Mode Or Modulation type	ANT Gain(dBi)	Power Class	Software For Testing
UWB	6489.6MHz	BPM with BPSK	0.7	Default	The EUT has signal transmission when it is powered on

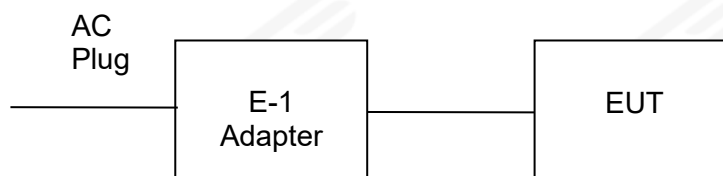
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters.

Radiated Spurious Emission Test



Conducted Emission Test





2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E1	Adapter	ZTC	NB-A515A	N/A
C-1	USB Cable	Litum	636	N/A
	Charging Box	Litum	636	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	Shielded	NO	150cm	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

RF Radiation Test Equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Temperature & Humidity	SW-108	SuWei	N/A	2024.03.15	2025.03.14
Pre-Amplifier(0.1M-3GHz)	EM	EM330	060665	2024.02.23	2025.02.22
Pre-Amplifier(1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2024.09.23	2025.09.22
Pre-Amplifier(18G-40GHz)	SKET	LNPA_1840-50	SK2018101801	2024.02.23	2025.02.22
Active loop Antenna	ZHINAN	ZN30900C	16035	2023.02.28	2025.02.27
Bilog Antenna	TESEQ	CBL6111D	34678	2024.09.30	2025.09.29
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2023.09.24	2025.09.23
Horn Antenna	A-INFOMW	LB-180400-KF	J211020657	2023.10.10	2025.10.09
Positioning Controller	MF	MF-7802	MF-780208587	N/A	N/A
Signal Analyzer	R&S	FSV 40-N	101823	2024.09.23	2025.09.22
Switch Control Box	N/A	N/A	N/A	N/A	N/A
Filter Box	BALUN Technology	SU319E	BL-SZ1530051	N/A	N/A
Antenna Mast	MF	MFA-440H	N/A	N/A	N/A
Turn Table	MF	SC100_1	60531	N/A	N/A
AC Power Source	APC	KDF-11010G	F214050035	N/A	N/A
DC power supply	HONGSHENG FENG	DPS-305AF	17064939	2024.09.23	2025.09.22
Test SW	EZ-EMC	Ver.STSLAB-03A1 RE			
Conduction Test equipment					
Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2024.09.24	2025.09.23
Limtter	CYBERTEK	EM5010	N/A	2024.09.24	2025.09.23
LISN	R&S	ENV216	101242	2024.09.24	2025.09.23
LISN	EMCO	3810/2NM	23625	2024.09.24	2025.09.23
Temperature & Humidity	SW-108	SuWei	N/A	2024.03.15	2025.03.14
Test SW	EZ-EMC	Ver.STSLAB-03A1 CE			



3. EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.207 limit in the table below has to be followed.

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ * ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

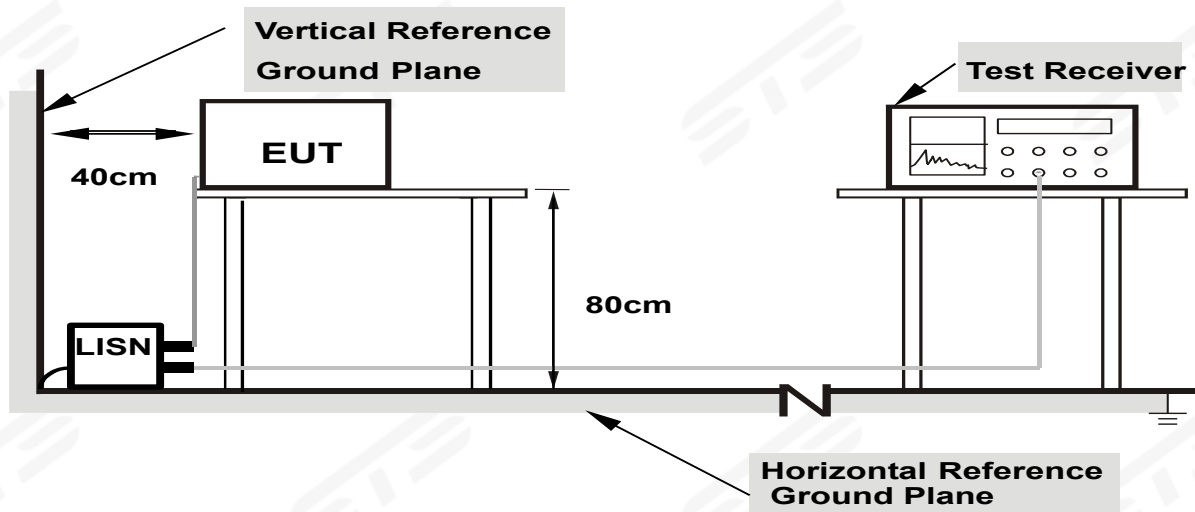
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.1.5 TEST RESULT

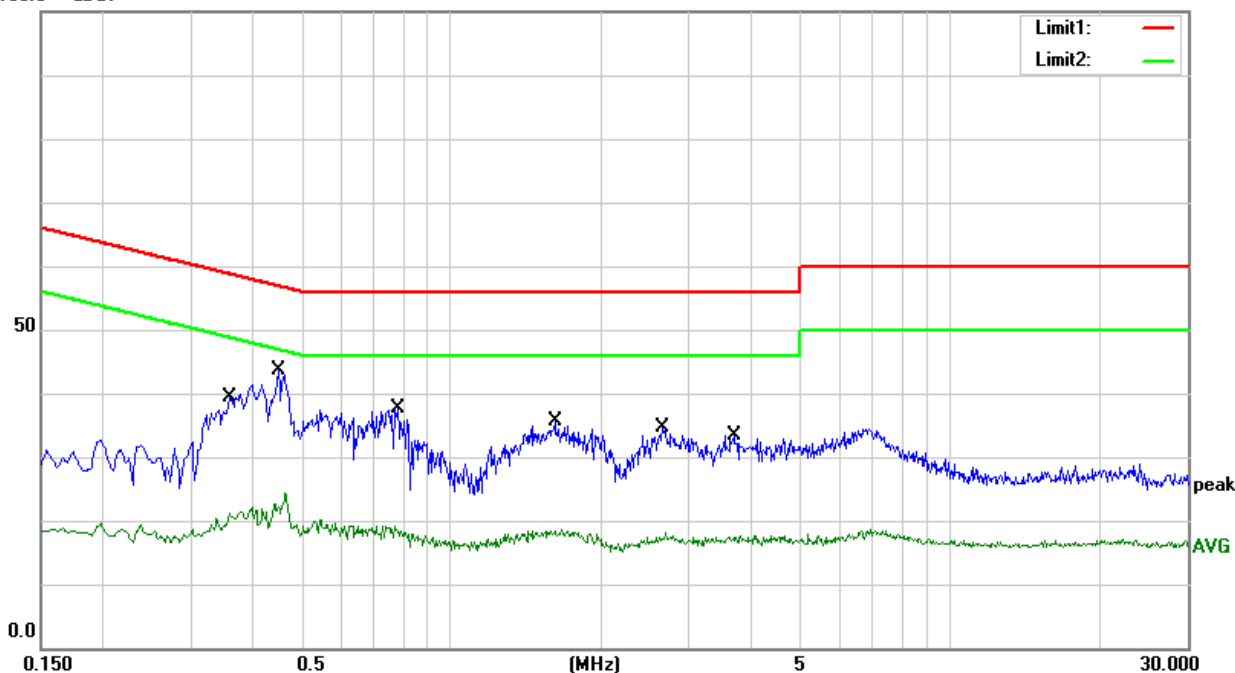
Temperature:	25.1°C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 2		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3558	17.99	20.10	38.09	58.83	-20.74	QP
2	0.3558	1.27	20.10	21.37	48.83	-27.46	AVG
3	0.4500	23.50	20.01	43.51	56.88	-13.37	QP
4	0.4500	4.27	20.01	24.28	46.88	-22.60	AVG
5	0.7820	17.89	19.81	37.70	56.00	-18.30	QP
6	0.7820	-0.74	19.81	19.07	46.00	-26.93	AVG
7	1.6140	15.73	19.78	35.51	56.00	-20.49	QP
8	1.6140	-1.25	19.78	18.53	46.00	-27.47	AVG
9	2.6540	14.77	19.81	34.58	56.00	-21.42	QP
10	2.6540	-1.67	19.81	18.14	46.00	-27.86	AVG
11	3.6940	13.51	19.83	33.34	56.00	-22.66	QP
12	3.6940	-2.20	19.83	17.63	46.00	-28.37	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

100.0 dBuV



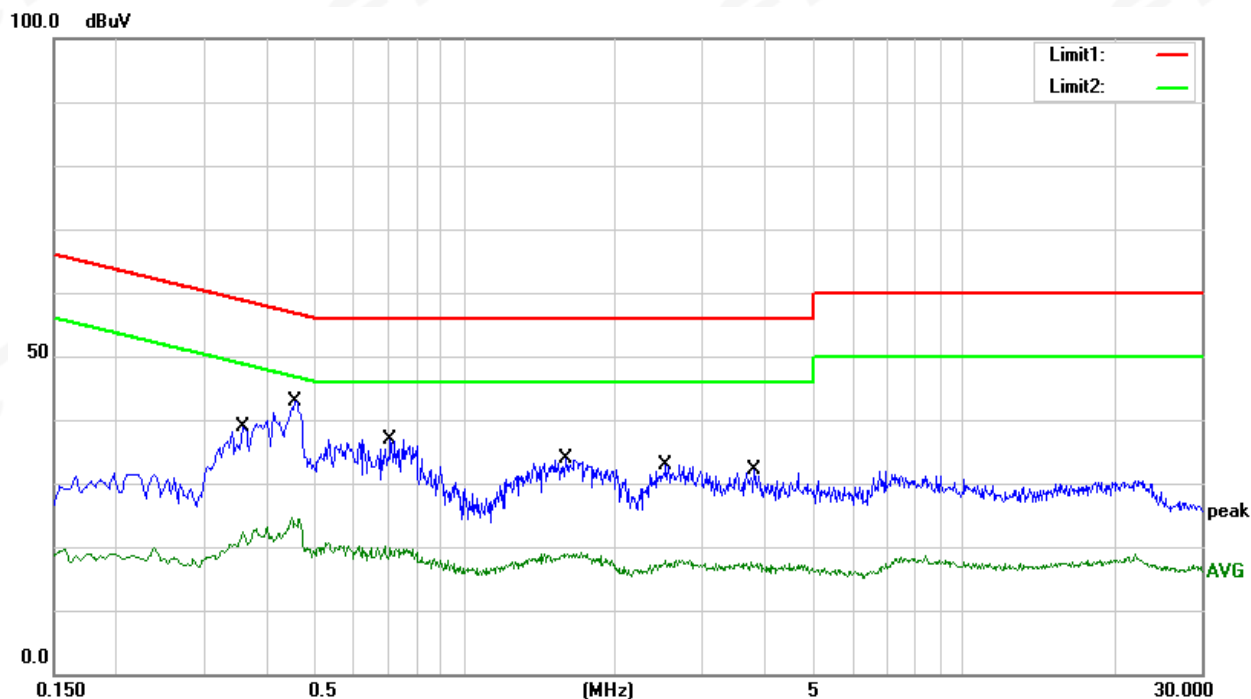


Temperature:	25.1°C	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 2		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3580	18.68	20.13	38.81	58.77	-19.96	QP
2	0.3580	2.76	20.13	22.89	48.77	-25.88	AVG
3	0.4580	23.00	19.99	42.99	56.73	-13.74	QP
4	0.4580	4.63	19.99	24.62	46.73	-22.11	AVG
5	0.7100	17.08	19.84	36.92	56.00	-19.08	QP
6	0.7100	-0.06	19.84	19.78	46.00	-26.22	AVG
7	1.5940	14.03	19.83	33.86	56.00	-22.14	QP
8	1.5940	-0.91	19.83	18.92	46.00	-27.08	AVG
9	2.5340	12.93	19.91	32.84	56.00	-23.16	QP
10	2.5340	-2.00	19.91	17.91	46.00	-28.09	AVG
11	3.8060	12.30	19.94	32.24	56.00	-23.76	QP
12	3.8060	-2.34	19.94	17.60	46.00	-28.40	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)



3.2 RADIATED EMISSION MEASUREMENT (FOR 15.517C)

3.2.1 RADIATED EMISSION LIMITS

The radiated emissions at or below 960MHz from a device operating under the provisions of this section shall not exceed the emission levels in Section 15.209.

Frequencies (MHz)	Field Strength (micorvolts/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 (dBuV/m) = 20 log Emission level (uV/m).

The radiated emissions above 960MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1MHz:

Frequency of Emission (MHz)	EIRP (dBm)	Field Strength (dBuV/m@3m)	Field Strength (dBuV/m@1m)
960~1610	-75.3	19.9	29.44
1610~1990	-53.3	41.9	51.44
1990~3100	-51.3	43.9	53.44
3100~10600	-41.3	53.9	63.44
Above 10600	-51.3	43.9	53.44

Notes: 1. Transfer rules follow 15.521(g),15.31(f)(1).

2. 15.521C Emissions from digital circuitry used to enable the operation of the UWB transmitter shall comply with the limits in Section 15.209 of this chapter, rather than the limits specified in this subpart.

3. $E(\text{dBuV/m})@3\text{m} = P(\text{dBm EIRP}) + 95.2$;
 $E(\text{dBuV/m})@1\text{m} = E(\text{dBuV/m})@3\text{m} + 20 \cdot \log(3/1)$



Spectrum Parameter	Setting
Detector	RMS
Attenuation	Auto
Start Frequency	960 MHz
Stop Frequency	10th of the highest fundamental frequency or to 40 GHz, whichever is lower
RB	1MHz
VB	3MHz
Sweep Point	1001
SweepTime	1s

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
	90kHz~110kHz / RB 200Hz for QP
	110kHz~490kHz / RB 200Hz for PK & AV
	490kHz~30MHz / RB 9kHz for QP
	30MHz~960MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

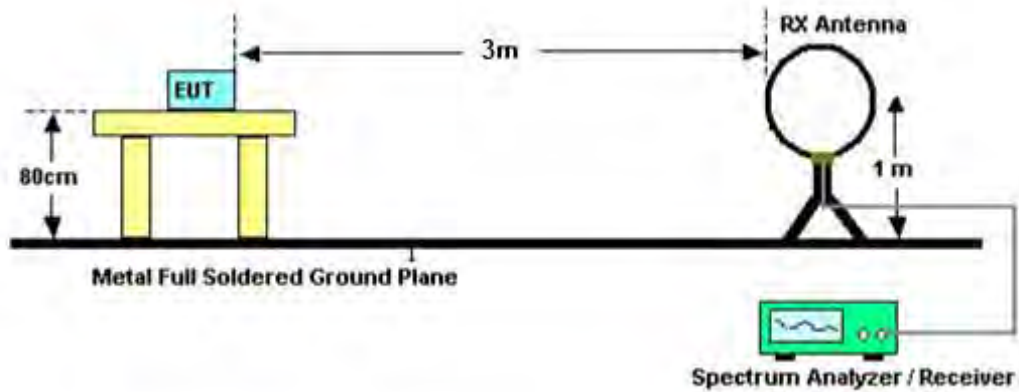
- The measuring distance of 1m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8meter (above 1GHz is 1.5 m) above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform (Below 960MHz)
- All readings are RMS mode value, 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. (Above 960MHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 DEVIATION FROM TEST STANDARD

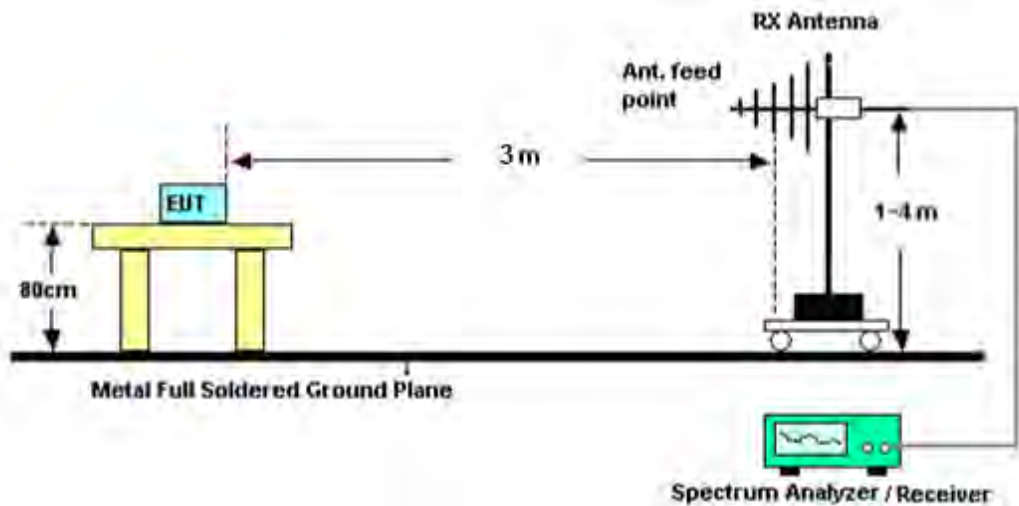
No deviation

3.2.4 TEST SETUP

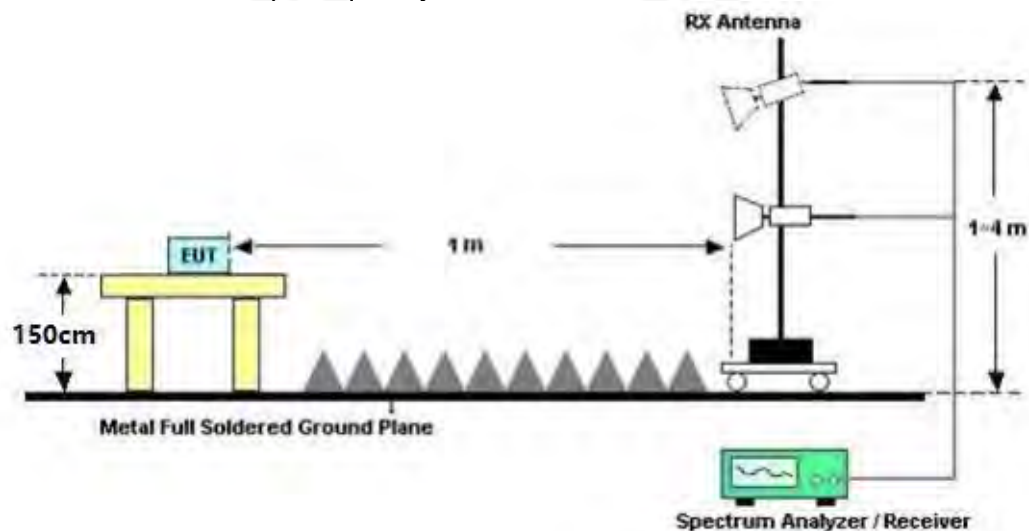
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz





3.2.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

Margin=PL-PK L or AL- AV L; Margin only shown the worst case.

Where

PR = Peak Reading

AR = Average Reading

PL = Peak Level

AL = Average Level

AF = Antenna Factor

PK L = Peak Limit

AV L = AV Limit

For example

Frequency	PR	AR	AF	PL	AL	PK L	AV L	Margin
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)
2178	40.23	30.31	9.83	50.06	40.14	74.00	54.00	-13.86

3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.7 TEST RESULTS

Below 30MHz

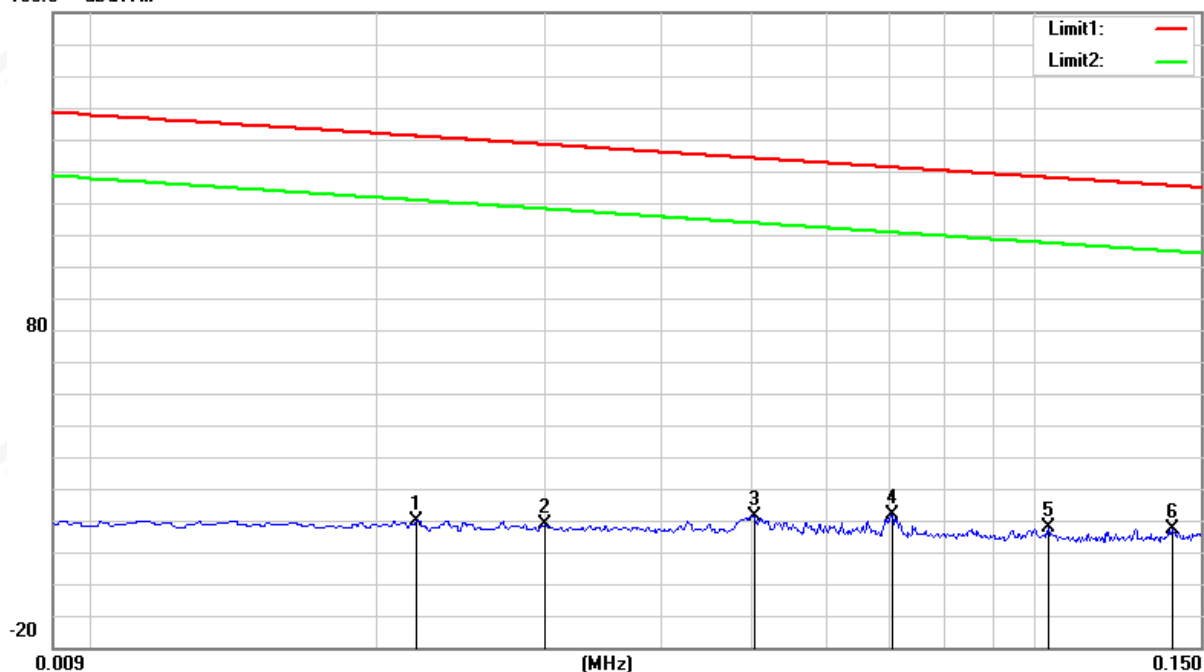
Temperature:	23.4°C	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Test Mode:	CH 1(9KHz - 150KHz)
Test distance:	3m		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.0218	-0.10	20.06	19.96	121.06	-101.10	peak
2	0.0300	-1.06	19.90	18.84	118.37	-99.53	peak
3	0.0502	2.00	19.49	21.49	114.03	-92.54	peak
4	0.0704	2.93	18.93	21.86	111.18	-89.32	peak
5	0.1032	-0.05	17.59	17.54	107.95	-90.41	peak
6	0.1398	-0.22	17.52	17.30	105.39	-88.09	peak

Remark:

- Margin = Result (Result =Reading + Factor)-Limit
- Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

180.0 dBuV/m



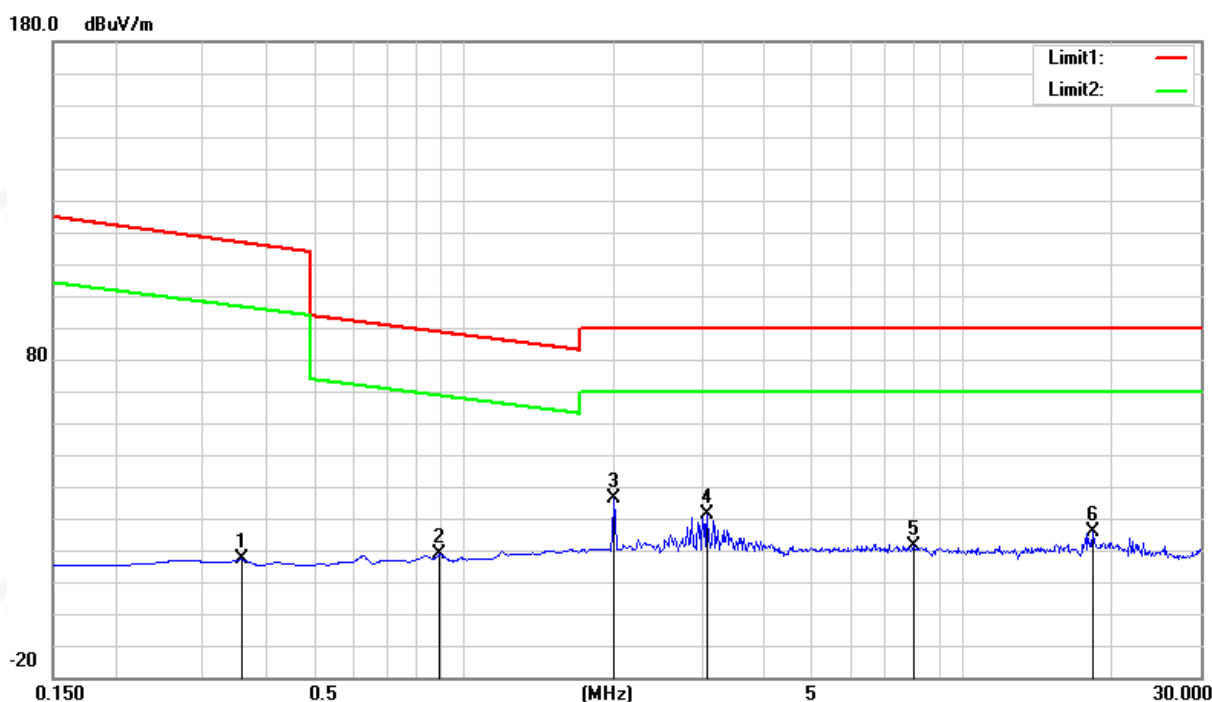


Temperature:	23.1°C	Relative Humidity:	60%
Test Voltage:	DC 3V	Test Mode:	CH 1(150KHz – 30MHz)
Test distance:	3m		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	0.3590	-2.95	20.14	17.19	96.69	-79.50	peak
2	0.8962	-1.40	20.24	18.84	68.56	-49.72	peak
3	2.0007	15.96	20.40	36.36	69.54	-33.18	peak
4	3.0753	11.02	20.12	31.14	69.54	-38.40	peak
5	8.0006	0.79	20.32	21.11	69.54	-48.43	peak
6	18.2391	3.44	22.08	25.52	69.54	-44.02	peak

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain



Note: The position of the measurement polarization (Horizontal / Face-on / Face-off) all has been tested, only shown the worst mode of Horizontal position.



30MHz – 960MHz Radiation Spurious

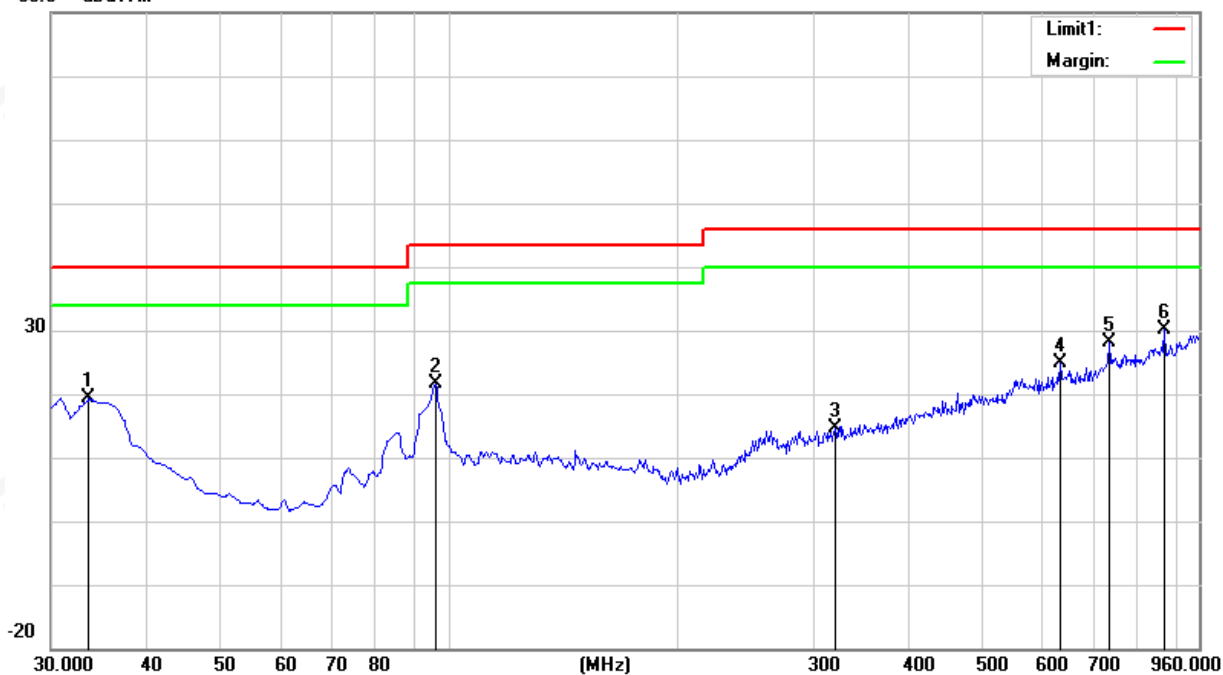
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1	Test distance:	3m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.7200	33.98	-14.72	19.26	40.00	-20.74	peak
2	96.0300	42.22	-20.67	21.55	43.50	-21.95	peak
3	320.1600	28.63	-14.00	14.63	46.00	-31.37	peak
4	631.7100	29.94	-5.01	24.93	46.00	-21.07	peak
5	734.0100	30.41	-2.33	28.08	46.00	-17.92	peak
6	867.0000	30.67	-0.50	30.17	46.00	-15.83	peak

Remark:

- Margin = Result (Result =Reading + Factor)-Limit
- Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

80.0 dBuV/m





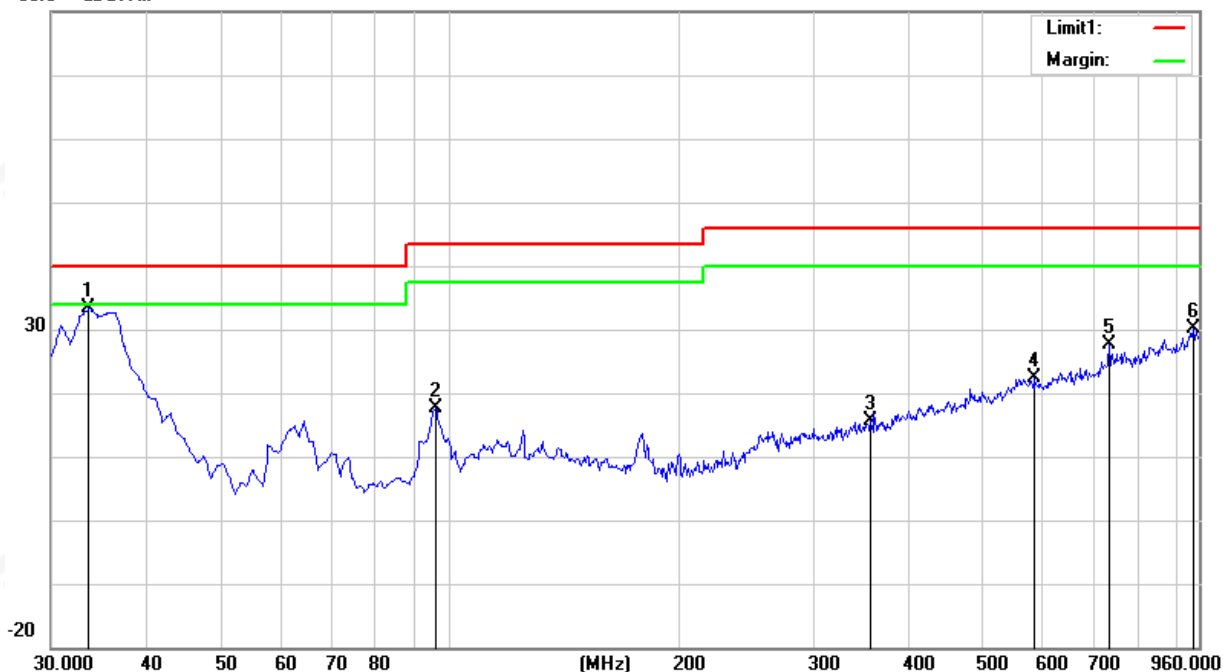
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1	Test distance:	3m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.7200	48.18	-14.72	33.46	40.00	-6.54	peak
2	96.0300	38.19	-20.67	17.52	43.50	-25.98	peak
3	356.4300	28.59	-12.94	15.65	46.00	-30.35	peak
4	586.1400	28.25	-5.80	22.45	46.00	-23.55	peak
5	734.0100	29.92	-2.33	27.59	46.00	-18.41	peak
6	944.1900	28.58	1.47	30.05	46.00	-15.95	peak

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

80.0 dBuV/m





Above 960MHz Radiation Spurious

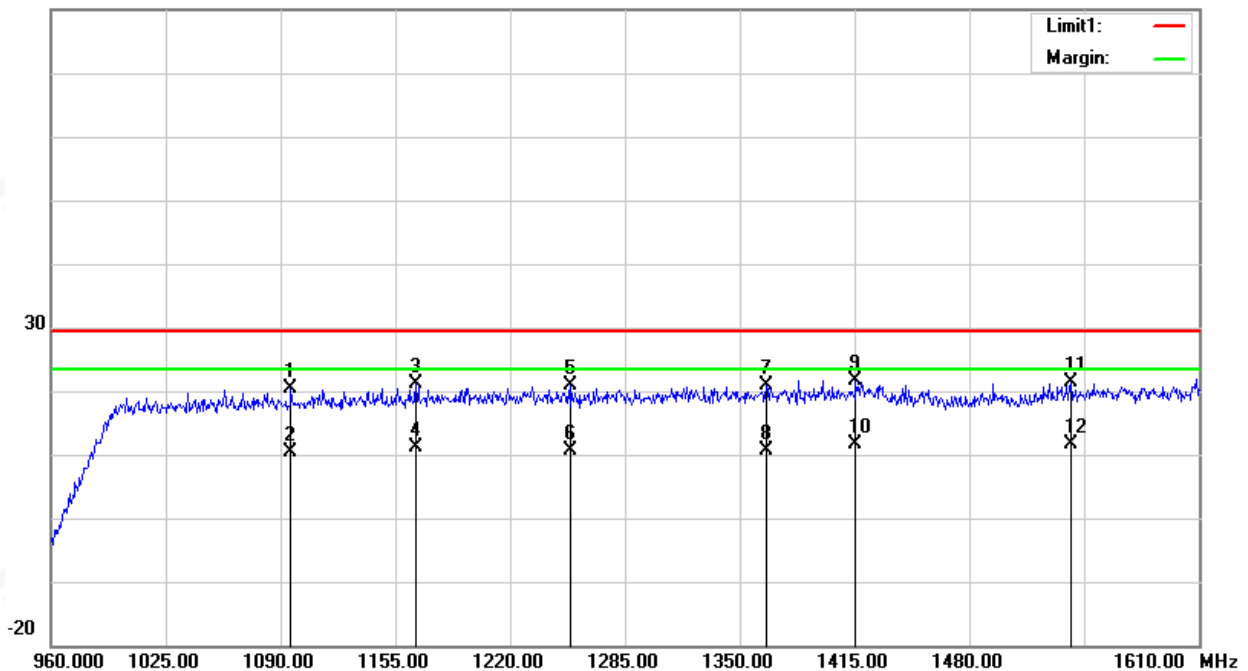
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(960MHz -1610MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1095.850	21.43	-1.10	20.33	29.44	-9.11	peak
2	1095.850	11.37	-1.10	10.27	29.44	-19.17	RMS
3	1166.700	21.93	-0.75	21.18	29.44	-8.26	peak
4	1166.700	11.77	-0.75	11.02	29.44	-18.42	RMS
5	1254.450	21.24	-0.47	20.77	29.44	-8.67	peak
6	1254.450	11.10	-0.47	10.63	29.44	-18.81	RMS
7	1364.950	20.64	0.13	20.77	29.44	-8.67	peak
8	1364.950	10.49	0.13	10.62	29.44	-18.82	RMS
9	1415.650	21.20	0.46	21.66	29.44	-7.78	peak
10	1415.650	11.08	0.46	11.54	29.44	-17.90	RMS
11	1537.850	19.02	2.38	21.40	29.44	-8.04	peak
12	1537.850	9.22	2.38	11.60	29.44	-17.84	RMS

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

80.0 dBuV/m





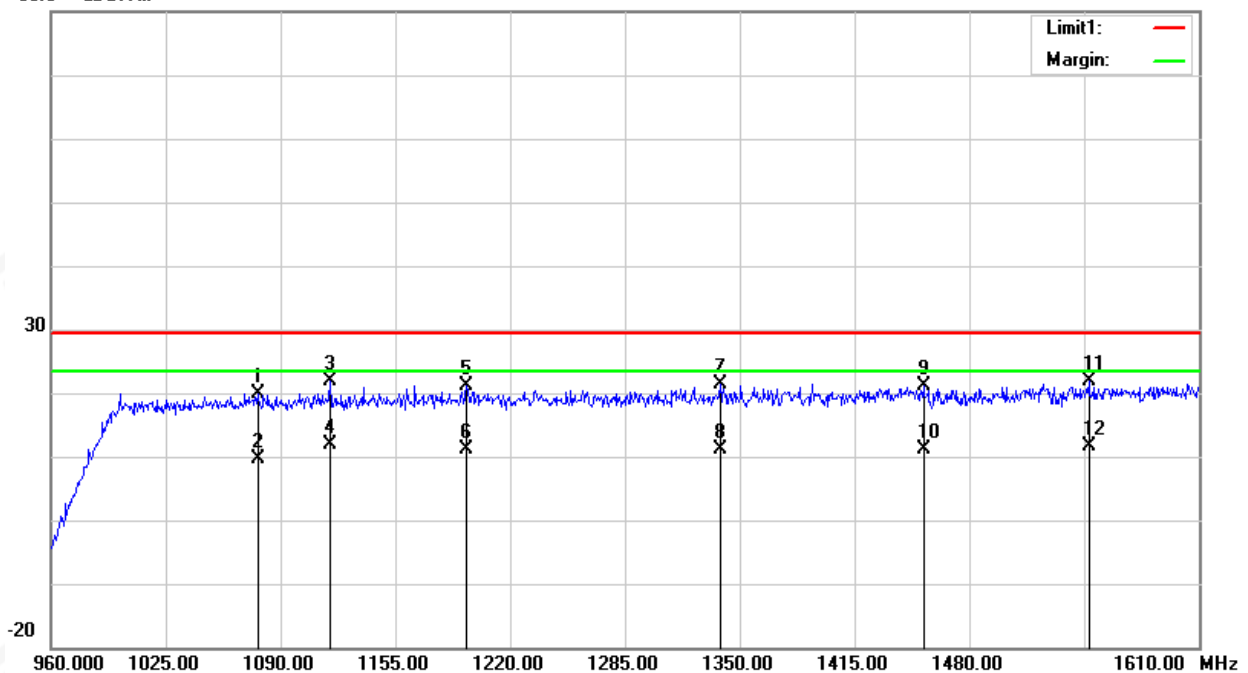
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(960MHz -1610MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1077.000	21.10	-1.22	19.88	29.44	-9.56	peak
2	1077.000	10.94	-1.22	9.72	29.44	-19.72	RMS
3	1117.950	22.82	-1.01	21.81	29.44	-7.63	peak
4	1117.950	12.80	-1.01	11.79	29.44	-17.65	RMS
5	1195.300	21.56	-0.47	21.09	29.44	-8.35	peak
6	1195.300	11.58	-0.47	11.11	29.44	-18.33	RMS
7	1338.950	21.37	0.02	21.39	29.44	-8.05	peak
8	1338.950	11.19	0.02	11.21	29.44	-18.23	RMS
9	1454.000	20.24	0.94	21.18	29.44	-8.26	peak
10	1454.000	10.08	0.94	11.02	29.44	-18.42	RMS
11	1547.600	19.18	2.61	21.79	29.44	-7.65	peak
12	1547.600	9.00	2.61	11.61	29.44	-17.83	RMS

Remark:

1. $\text{Margin} = \text{Result} (\text{Result} = \text{Reading} + \text{Factor}) - \text{Limit}$
2. $\text{Factor} = \text{Antenna factor} + \text{Cable attenuation factor}(\text{cable loss}) - \text{Amplifier gain}$

80.0 dBuV/m





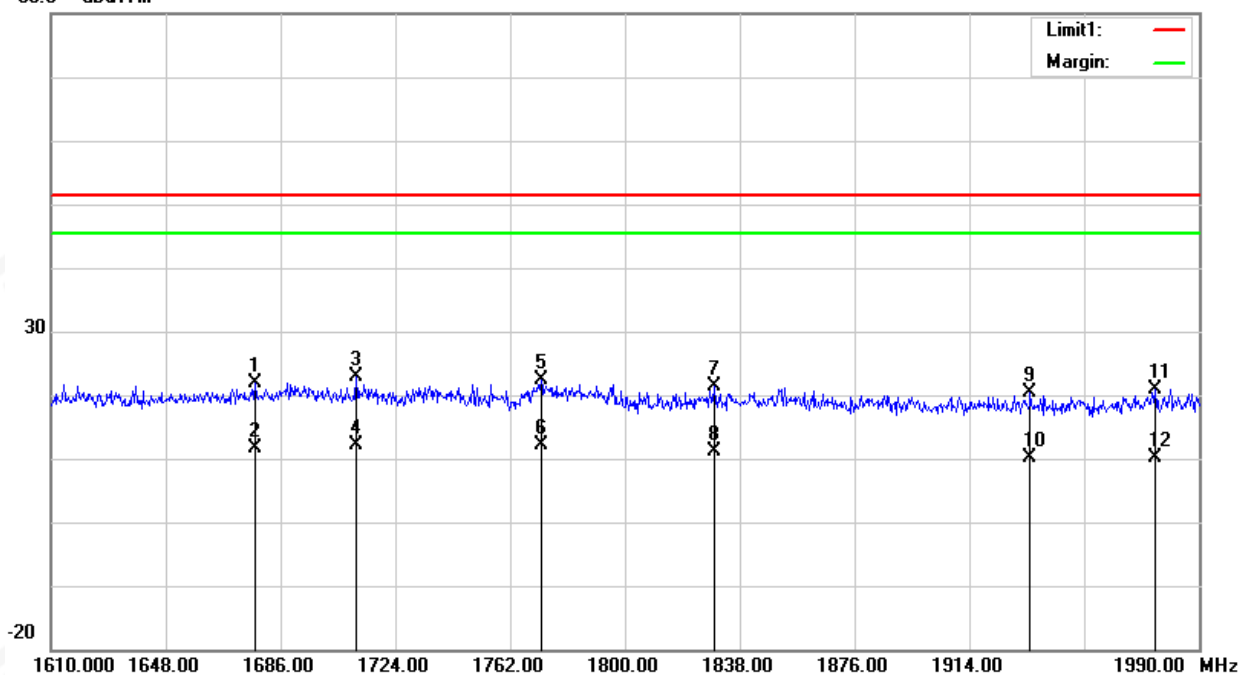
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(1610MHz – 1990MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1677.640	16.98	4.78	21.76	51.44	-29.68	peak
2	1677.640	6.86	4.78	11.64	51.44	-39.80	RMS
3	1711.080	17.92	4.88	22.80	51.44	-28.64	peak
4	1711.080	7.33	4.88	12.21	51.44	-39.23	RMS
5	1772.260	19.50	2.83	22.33	51.44	-29.11	peak
6	1772.260	9.39	2.83	12.22	51.44	-39.22	RMS
7	1829.640	19.15	2.11	21.26	51.44	-30.18	peak
8	1829.640	9.03	2.11	11.14	51.44	-40.30	RMS
9	1934.140	18.79	1.50	20.29	51.44	-31.15	peak
10	1934.140	8.61	1.50	10.11	51.44	-41.33	RMS
11	1975.560	19.13	1.77	20.90	51.44	-30.54	peak
12	1975.560	8.33	1.77	10.10	51.44	-41.34	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





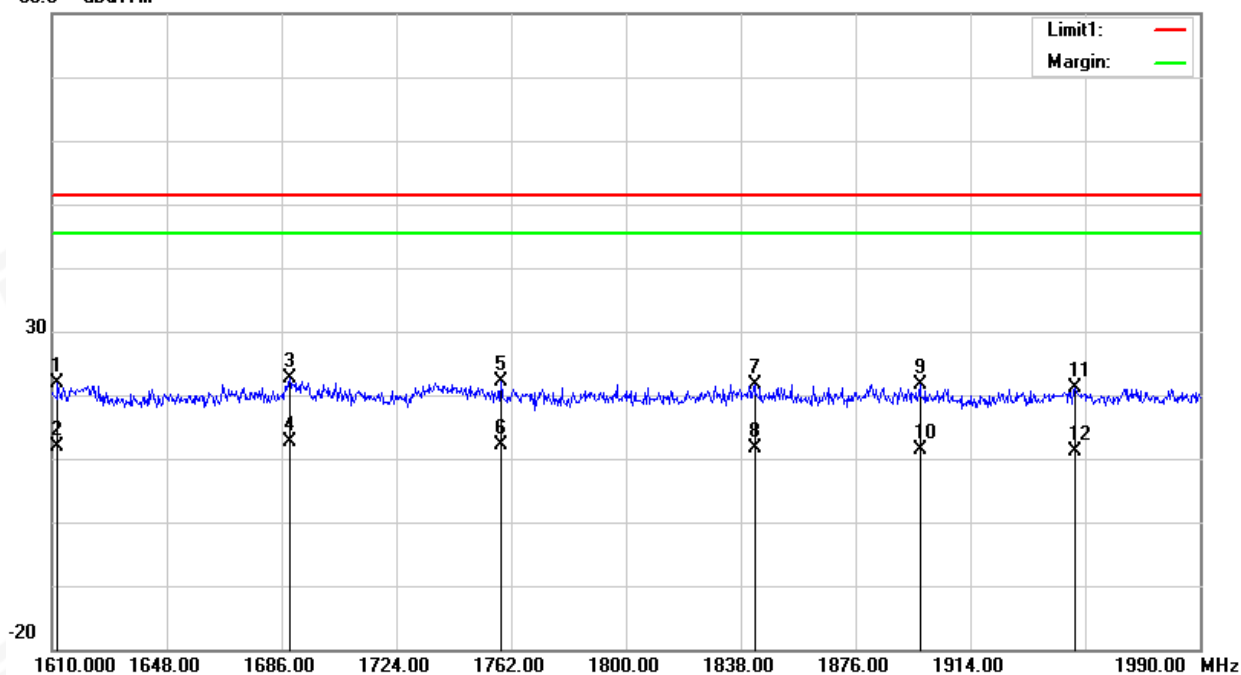
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(1610MHz – 1990MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1611.900	17.59	4.24	21.83	51.44	-29.61	peak
2	1611.900	7.53	4.24	11.77	51.44	-39.67	RMS
3	1688.660	17.65	4.99	22.64	51.44	-28.80	peak
4	1688.660	7.57	4.99	12.56	51.44	-38.88	RMS
5	1758.580	18.80	3.34	22.14	51.44	-29.30	peak
6	1758.580	8.72	3.34	12.06	51.44	-39.38	RMS
7	1842.560	19.39	2.27	21.66	51.44	-29.78	peak
8	1842.560	9.27	2.27	11.54	51.44	-39.90	RMS
9	1897.280	20.03	1.51	21.54	51.44	-29.90	peak
10	1897.280	9.95	1.51	11.46	51.44	-39.98	RMS
11	1948.580	19.69	1.52	21.21	51.44	-30.23	peak
12	1948.580	9.67	1.52	11.19	51.44	-40.25	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





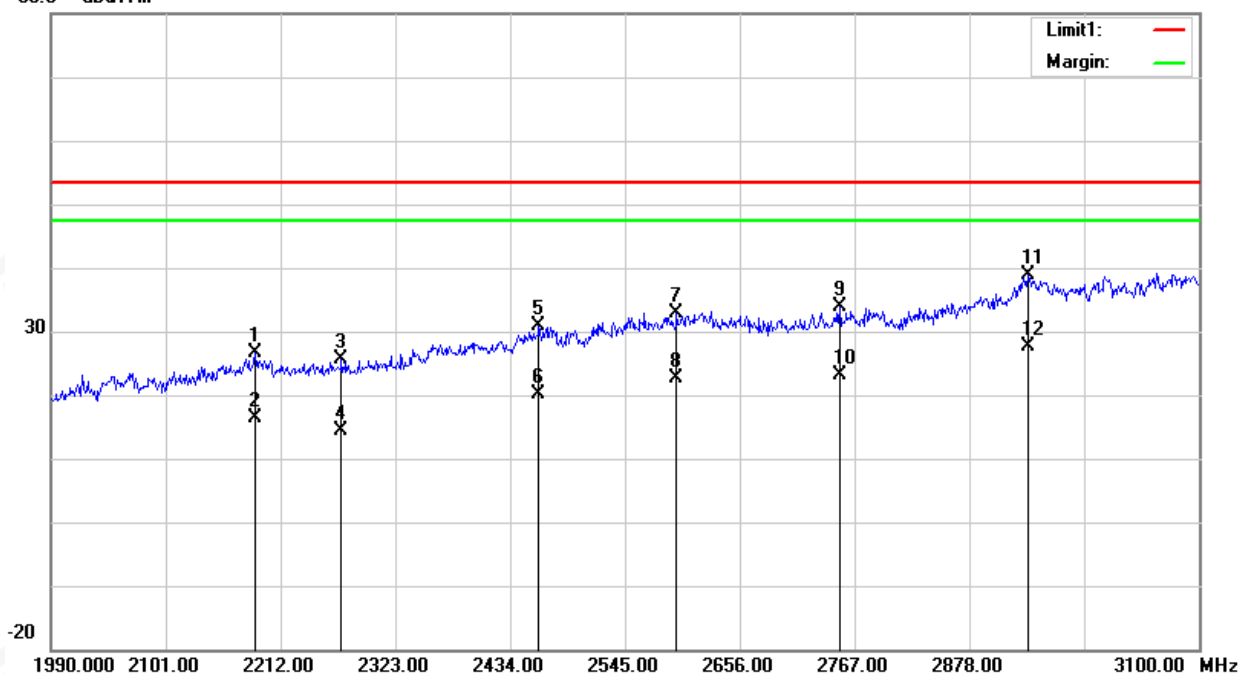
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(1990MHz – 3100MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2187.580	23.49	3.02	26.51	53.44	-26.93	peak
2	2187.580	13.47	3.02	16.49	53.44	-36.95	RMS
3	2270.830	21.95	3.64	25.59	53.44	-27.85	peak
4	2270.830	10.77	3.64	14.41	53.44	-39.03	RMS
5	2461.750	26.21	4.55	30.76	53.44	-22.68	peak
6	2461.750	15.59	4.55	20.14	53.44	-33.30	RMS
7	2594.950	27.78	5.02	32.80	53.44	-20.64	peak
8	2594.950	17.70	5.02	22.72	53.44	-30.72	RMS
9	2752.570	27.83	6.08	33.91	53.44	-19.53	peak
10	2752.570	17.01	6.08	23.09	53.44	-30.35	RMS
11	2934.610	31.93	6.90	38.83	53.44	-14.61	peak
12	2934.610	20.77	6.90	27.67	53.44	-25.77	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





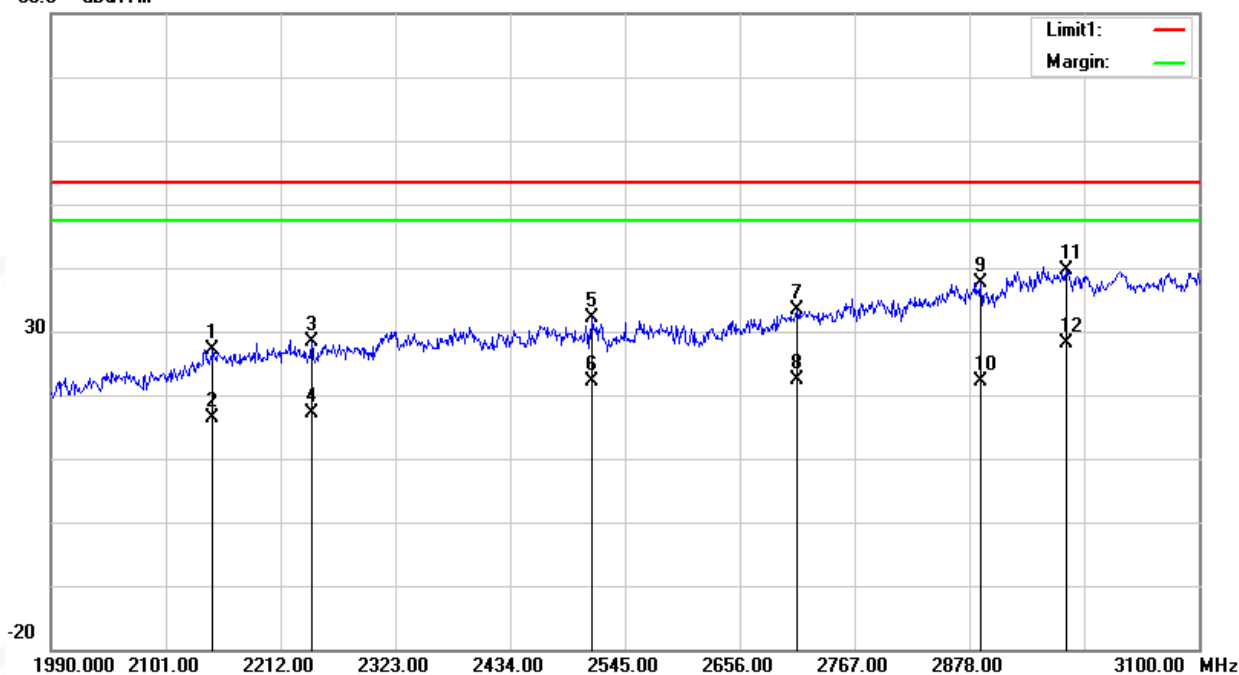
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(1990MHz – 3100MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2146.510	23.93	3.23	27.16	53.44	-26.28	peak
2	2146.510	13.21	3.23	16.44	53.44	-37.00	RMS
3	2241.970	24.76	3.63	28.39	53.44	-25.05	peak
4	2241.970	13.58	3.63	17.21	53.44	-36.23	RMS
5	2512.810	27.27	4.74	32.01	53.44	-21.43	peak
6	2512.810	17.45	4.74	22.19	53.44	-31.25	RMS
7	2711.500	27.73	5.71	33.44	53.44	-20.00	peak
8	2711.500	16.66	5.71	22.37	53.44	-31.07	RMS
9	2889.100	31.02	6.69	37.71	53.44	-15.73	peak
10	2889.100	15.50	6.69	22.19	53.44	-31.25	RMS
11	2971.240	32.56	7.01	39.57	53.44	-13.87	peak
12	2971.240	21.12	7.01	28.13	53.44	-25.31	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





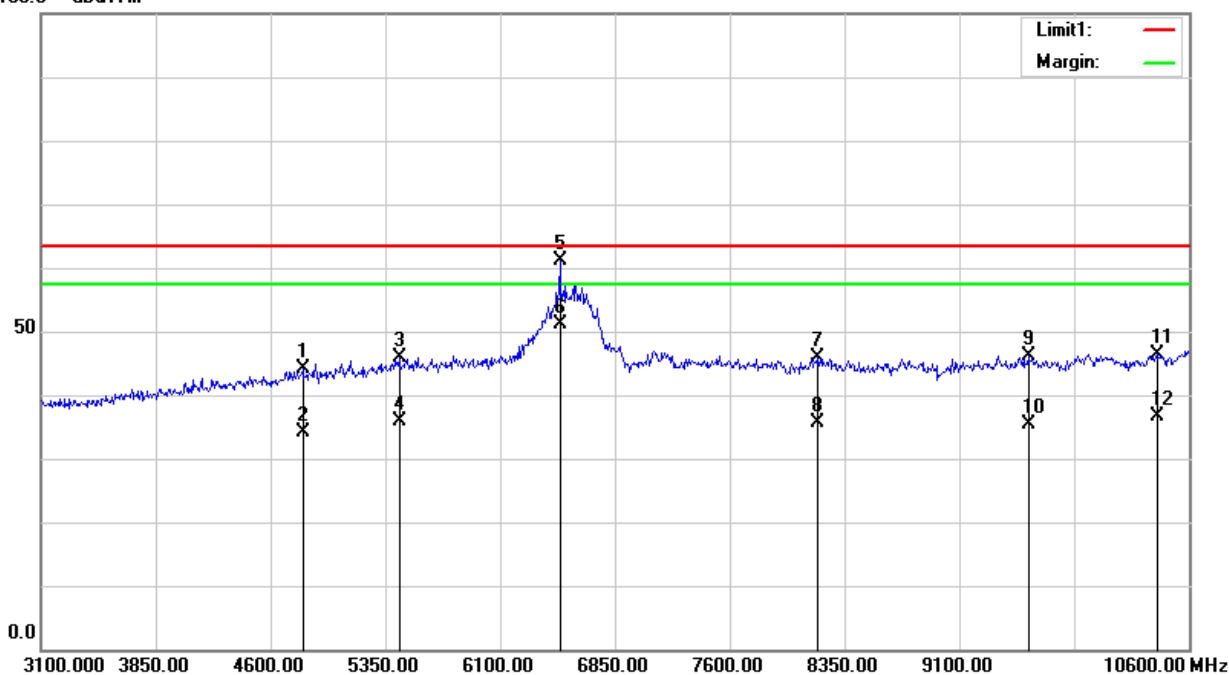
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(3100MHz – 10600MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4810.000	51.33	-7.18	44.15	63.44	-19.29	peak
2	4810.000	41.23	-7.18	34.05	63.44	-29.39	RMS
3	5440.000	51.14	-5.16	45.98	63.44	-17.46	peak
4	5440.000	40.97	-5.16	35.81	63.44	-27.63	RMS
5	6490.000	63.13	-1.97	61.16	63.44	-2.28	peak
6	6490.000	53.01	-1.97	51.04	63.44	-12.40	RMS
7	8170.000	43.52	2.36	45.88	63.44	-17.56	peak
8	8170.000	33.36	2.36	35.72	63.44	-27.72	RMS
9	9550.000	42.93	3.16	46.09	63.44	-17.35	peak
10	9550.000	32.25	3.16	35.41	63.44	-28.03	RMS
11	10390.000	41.77	4.62	46.39	63.44	-17.05	peak
12	10390.000	31.99	4.62	36.61	63.44	-26.83	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

100.0 dBuV/m





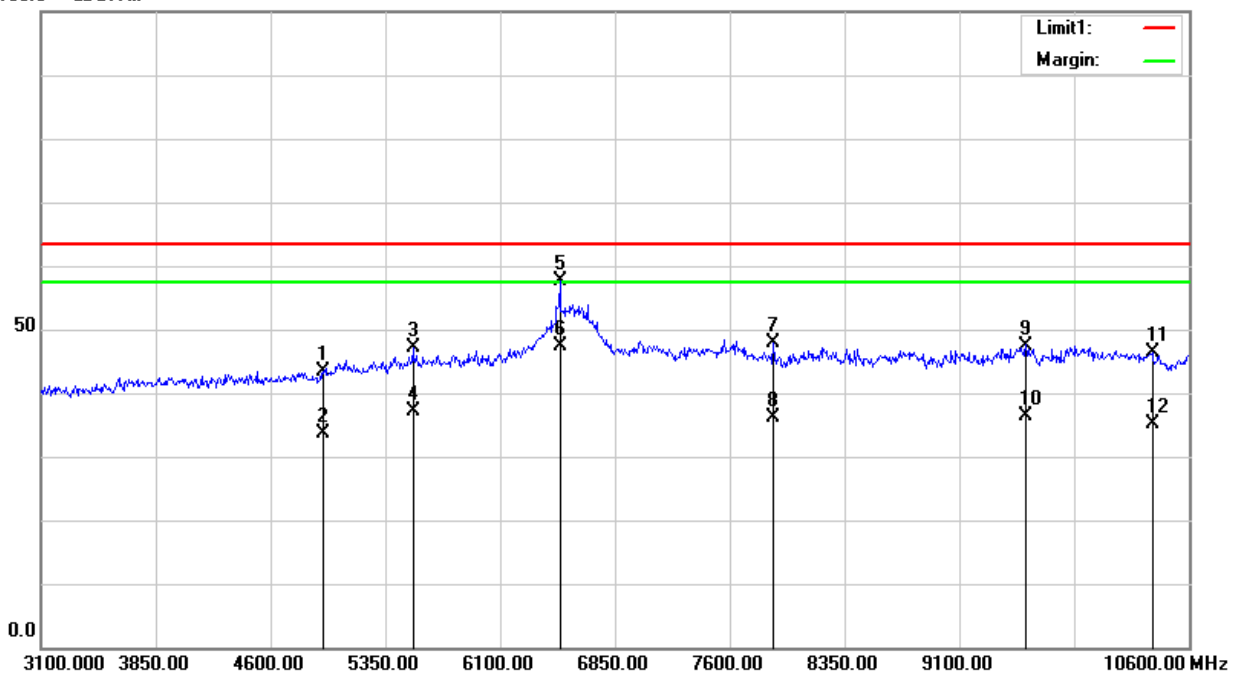
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(3100MHz – 10600MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4945.000	50.04	-6.55	43.49	63.44	-19.95	peak
2	4945.000	40.06	-6.55	33.51	63.44	-29.93	RMS
3	5530.000	52.02	-4.92	47.10	63.44	-16.34	peak
4	5530.000	42.01	-4.92	37.09	63.44	-26.35	RMS
5	6490.000	59.51	-1.97	57.54	63.44	-5.90	peak
6	6490.000	49.43	-1.97	47.46	63.44	-15.98	RMS
7	7885.000	45.81	2.05	47.86	63.44	-15.58	peak
8	7885.000	34.19	2.05	36.24	63.44	-27.20	RMS
9	9535.000	44.35	3.15	47.50	63.44	-15.94	peak
10	9535.000	33.35	3.15	36.50	63.44	-26.94	RMS
11	10360.000	41.74	4.52	46.26	63.44	-17.18	peak
12	10360.000	30.62	4.52	35.14	63.44	-28.30	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

100.0 dBuV/m





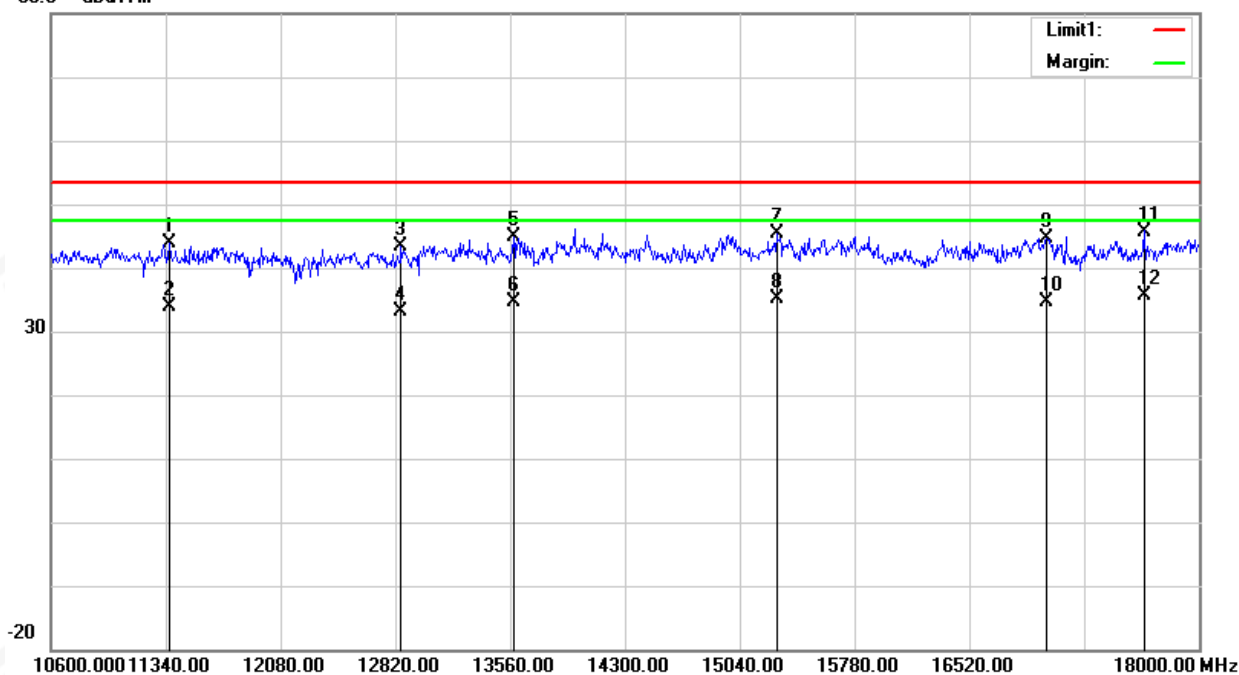
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(10600MHz – 18000MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	11362.200	37.47	6.37	43.84	53.44	-9.60	peak
2	11362.200	27.39	6.37	33.76	53.44	-19.68	RMS
3	12857.000	37.03	6.36	43.39	53.44	-10.05	peak
4	12857.000	26.85	6.36	33.21	53.44	-20.23	RMS
5	13582.200	34.72	10.04	44.76	53.44	-8.68	peak
6	13582.200	24.59	10.04	34.63	53.44	-18.81	RMS
7	15276.800	35.52	9.87	45.39	53.44	-8.05	peak
8	15276.800	25.34	9.87	35.21	53.44	-18.23	RMS
9	17015.800	34.85	9.84	44.69	53.44	-8.75	peak
10	17015.800	24.67	9.84	34.51	53.44	-18.93	RMS
11	17644.800	34.70	11.05	45.75	53.44	-7.69	peak
12	17644.800	24.60	11.05	35.65	53.44	-17.79	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





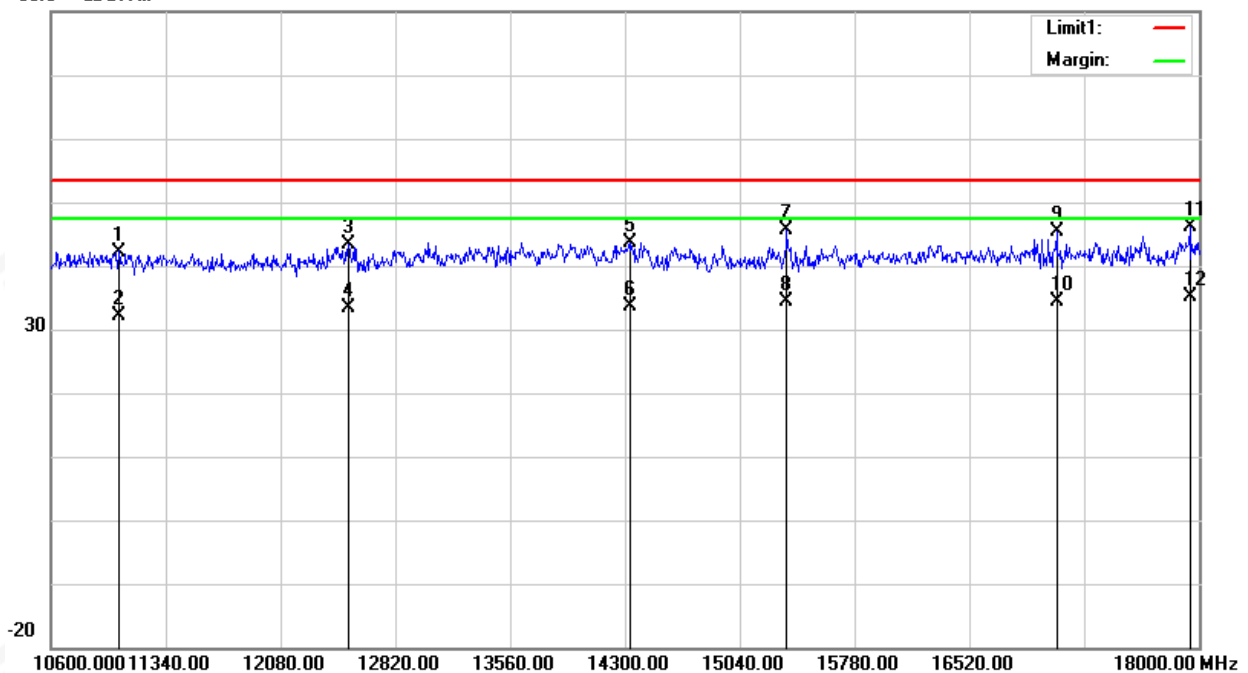
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(10600MHz – 18000MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	11036.600	35.95	6.30	42.25	53.44	-11.19	peak
2	11036.600	25.85	6.30	32.15	53.44	-21.29	RMS
3	12516.600	37.56	5.85	43.41	53.44	-10.03	peak
4	12516.600	27.54	5.85	33.39	53.44	-20.05	RMS
5	14329.600	32.00	11.72	43.72	53.44	-9.72	peak
6	14329.600	21.96	11.72	33.68	53.44	-19.76	RMS
7	15343.400	35.74	9.83	45.57	53.44	-7.87	peak
8	15343.400	24.60	9.83	34.43	53.44	-19.01	RMS
9	17082.400	35.51	9.96	45.47	53.44	-7.97	peak
10	17082.400	24.37	9.96	34.33	53.44	-19.11	RMS
11	17940.800	34.17	11.89	46.06	53.44	-7.38	peak
12	17940.800	23.25	11.89	35.14	53.44	-18.30	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

80.0 dBuV/m





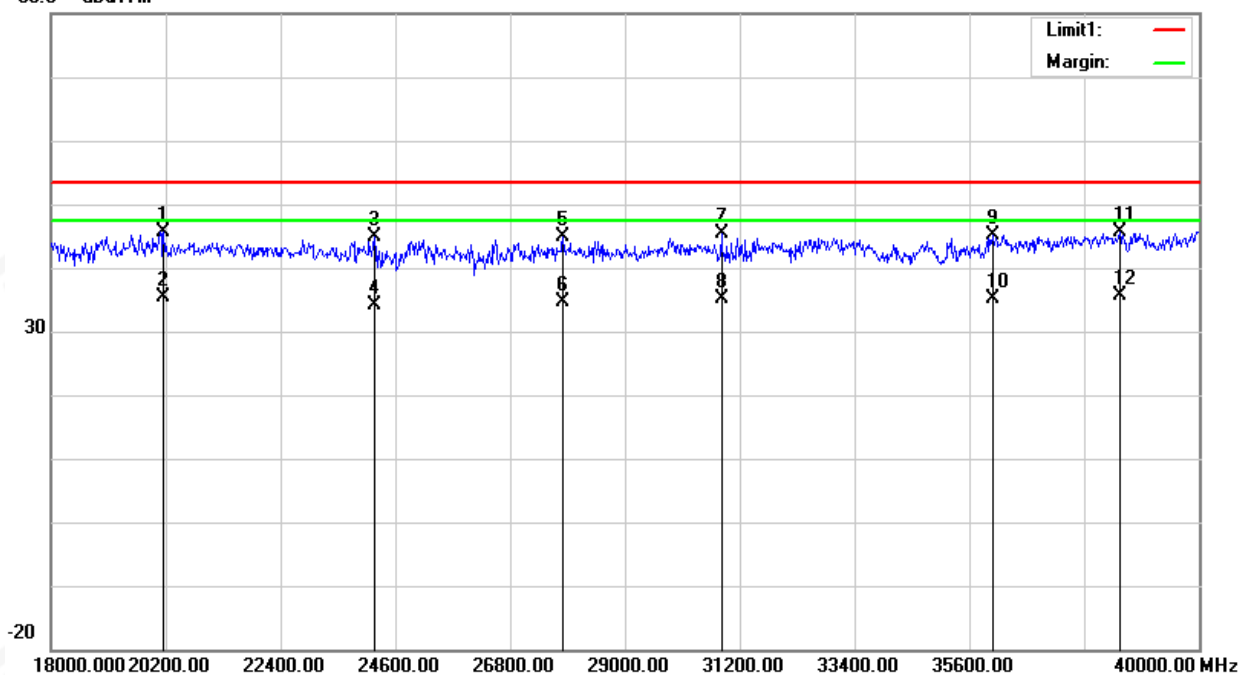
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(18000MHz – 40000MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	20156.000	32.12	13.48	45.60	53.44	-7.84	peak
2	20156.000	21.92	13.48	35.40	53.44	-18.04	RMS
3	24204.000	28.66	16.30	44.96	53.44	-8.48	peak
4	24204.000	17.74	16.30	34.04	53.44	-19.40	RMS
5	27812.000	25.40	19.48	44.88	53.44	-8.56	peak
6	27812.000	15.24	19.48	34.72	53.44	-18.72	RMS
7	30848.000	29.54	15.74	45.28	53.44	-8.16	peak
8	30848.000	19.38	15.74	35.12	53.44	-18.32	RMS
9	36040.000	28.57	16.68	45.25	53.44	-8.19	peak
10	36040.000	18.47	16.68	35.15	53.44	-18.29	RMS
11	38482.000	27.69	17.92	45.61	53.44	-7.83	peak
12	38482.000	17.67	17.92	35.59	53.44	-17.85	RMS

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

80.0 dBuV/m





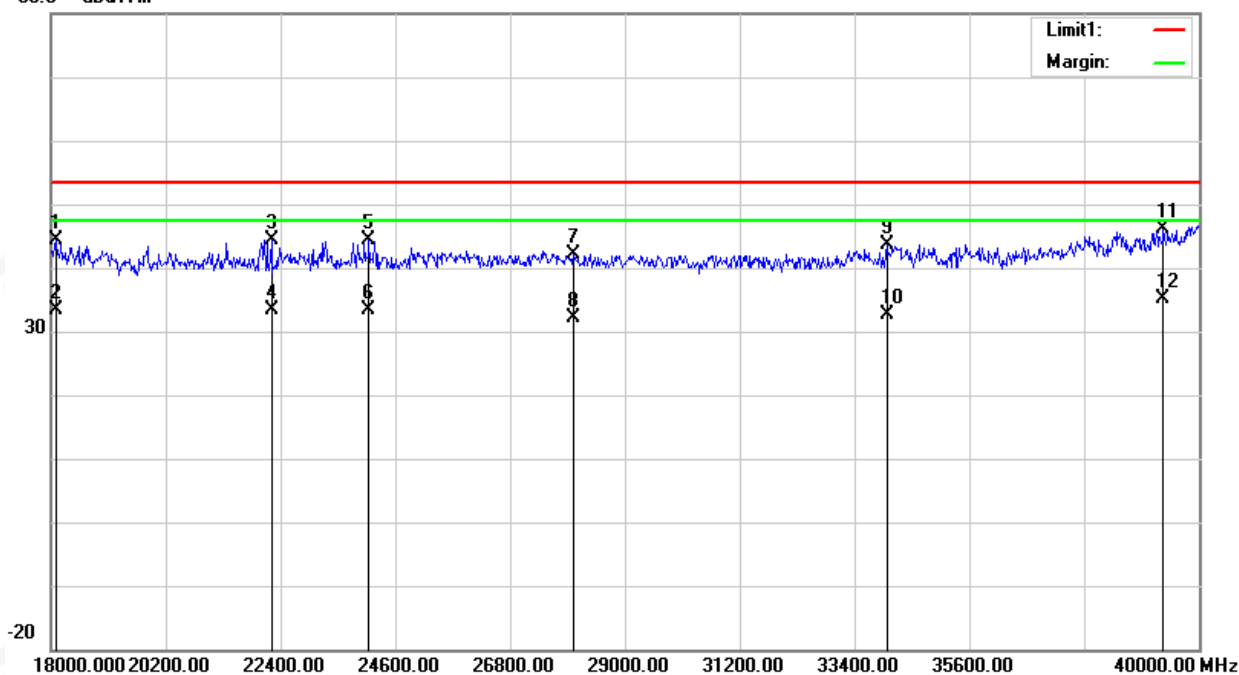
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(18000MHz – 40000MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18088.000	33.67	10.82	44.49	53.44	-8.95	peak
2	18088.000	22.49	10.82	33.31	53.44	-20.13	RMS
3	22224.000	33.29	11.19	44.48	53.44	-8.96	peak
4	22224.000	22.13	11.19	33.32	53.44	-20.12	RMS
5	24094.000	28.14	16.20	44.34	53.44	-9.10	peak
6	24094.000	17.06	16.20	33.26	53.44	-20.18	RMS
7	28010.000	22.60	19.64	42.24	53.44	-11.20	peak
8	28010.000	12.52	19.64	32.16	53.44	-21.28	RMS
9	34016.000	27.94	15.81	43.75	53.44	-9.69	peak
10	34016.000	16.84	15.81	32.65	53.44	-20.79	RMS
11	39318.000	27.71	18.38	46.09	53.44	-7.35	peak
12	39318.000	16.73	18.38	35.11	53.44	-18.33	RMS

Remark:

1. $\text{Margin} = \text{Result} (\text{Result} = \text{Reading} + \text{Factor}) - \text{Limit}$
2. $\text{Factor} = \text{Antenna factor} + \text{Cable attenuation factor}(\text{cable loss}) - \text{Amplifier gain}$

80.0 dBuV/m





3.3 RADIATED EMISSION MEASUREMENT (FOR 15.517(d))

3.3.1 RADIATED EMISSION LIMITS

Frequency of Emission (MHz)	EIRP (dBm)	Field Strength (dBuV/m@3m)	Field Strength (dBuV/m@1m)
1164~1240	-85.3	10	19.54
1559~1610	-85.3	10	19.54

Notes: 1. Transfer rules follow 15.521(g),15.31(f)(1).

2. 15.521(g) converted to a peak field strength level at 3 meters using $E(\text{dBuV/m}) = P(\text{dBmEIRP}) + 95.2$.

3. $\text{dBuV/m@1m} = \text{dBuV/m@3m} + 20 \cdot \log(3/1)$

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 Range	RBW	VBW	Detector	Measurement Distance
1164~1240	1kHz	3kHz	RMS	1 Meter
1559~1610	1kHz	3kHz	RMS	1 Meter

3.3.2 TEST PROCEDURE

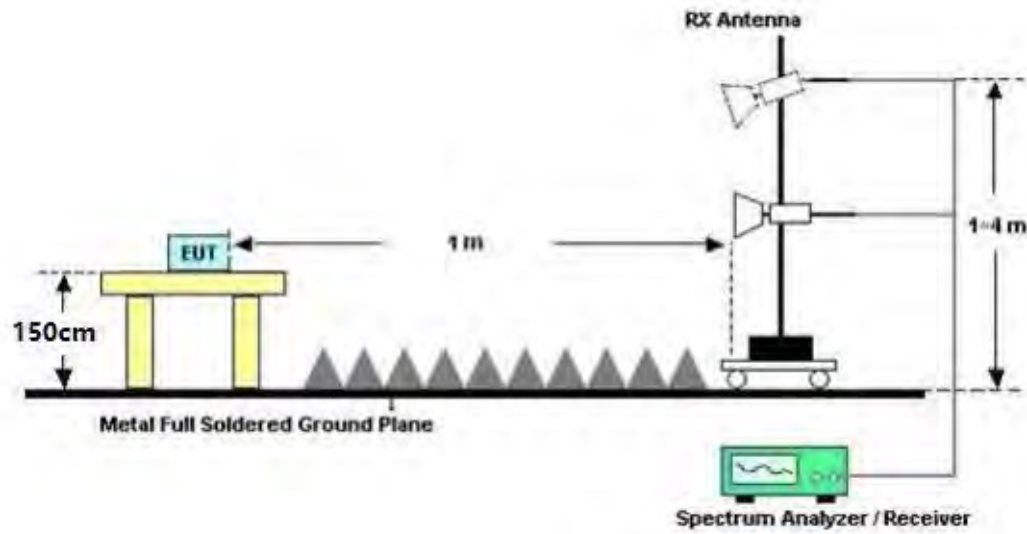
- The measuring distance of 1m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter (above 1GHz is 1.5 m) above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- All readings are RMS mode value, 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.
(Above 960MHz)
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



3.3.5 FIELD STRENGTH CALCULATION

Same as 3.2.5

3.3.6 EUT OPERATING CONDITIONS

Same as 3.2.6



3.3.7 TEST RESULTS

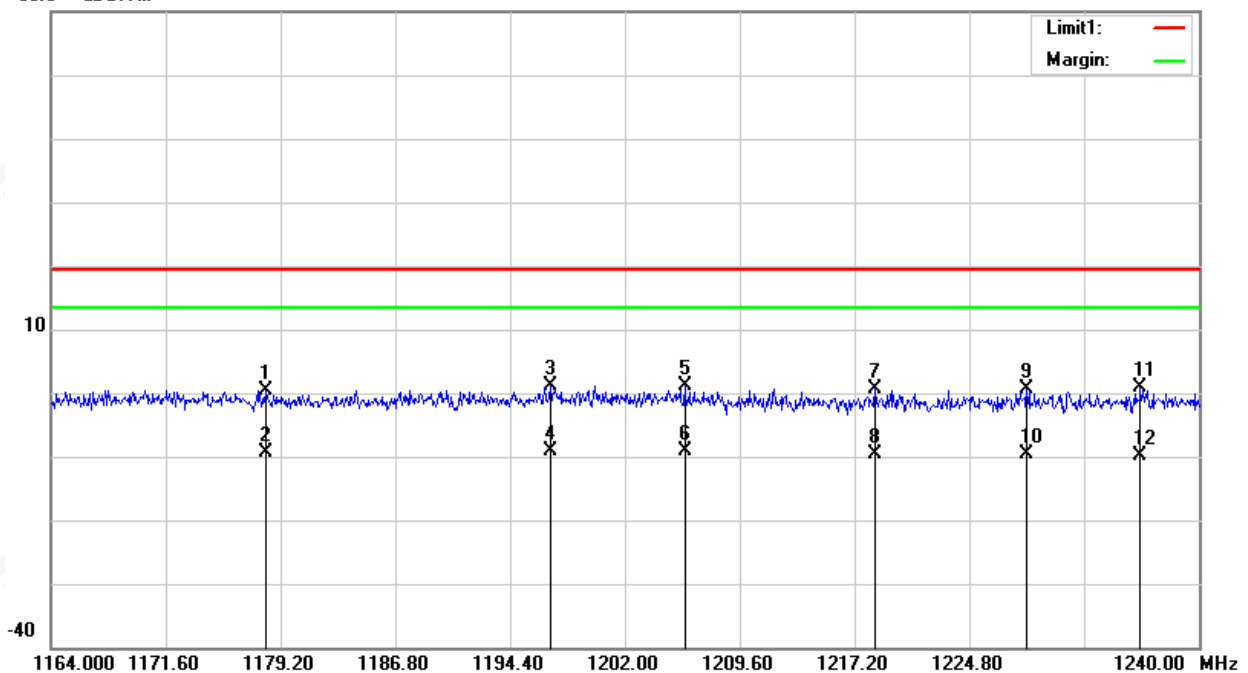
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(1164Hz – 1240MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1178.212	1.11	-0.64	0.47	19.44	-18.97	peak
2	1178.212	-8.69	-0.64	-9.33	19.44	-28.77	RMS
3	1197.060	1.63	-0.45	1.18	19.44	-18.26	peak
4	1197.060	-8.57	-0.45	-9.02	19.44	-28.46	RMS
5	1205.952	1.61	-0.43	1.18	19.44	-18.26	peak
6	1205.952	-8.69	-0.43	-9.12	19.44	-28.56	RMS
7	1218.568	1.11	-0.46	0.65	19.44	-18.79	peak
8	1218.568	-9.09	-0.46	-9.55	19.44	-28.99	RMS
9	1228.600	1.13	-0.47	0.66	19.44	-18.78	peak
10	1228.600	-9.07	-0.47	-9.54	19.44	-28.98	RMS
11	1236.124	1.33	-0.49	0.84	19.44	-18.60	peak
12	1236.124	-9.27	-0.49	-9.76	19.44	-29.20	RMS

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

60.0 dBuV/m





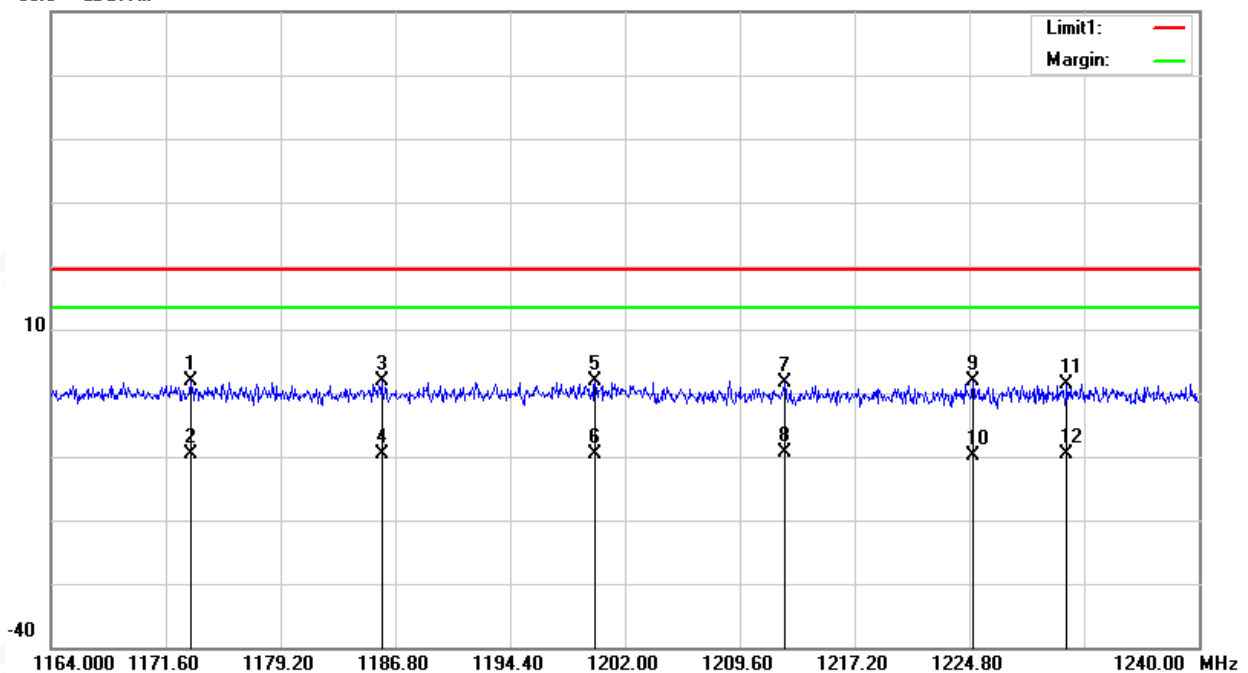
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(1164Hz – 1240MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1173.272	2.45	-0.69	1.76	19.44	-17.68	peak
2	1173.272	-8.95	-0.69	-9.64	19.44	-29.08	RMS
3	1185.888	2.44	-0.56	1.88	19.44	-17.56	peak
4	1185.888	-9.16	-0.56	-9.72	19.44	-29.16	RMS
5	1200.024	2.28	-0.42	1.86	19.44	-17.58	peak
6	1200.024	-9.32	-0.42	-9.74	19.44	-29.18	RMS
7	1212.564	1.98	-0.45	1.53	19.44	-17.91	peak
8	1212.564	-9.02	-0.45	-9.47	19.44	-28.91	RMS
9	1225.028	2.31	-0.47	1.84	19.44	-17.60	peak
10	1225.028	-9.29	-0.47	-9.76	19.44	-29.20	RMS
11	1231.260	1.98	-0.48	1.50	19.44	-17.94	peak
12	1231.260	-9.02	-0.48	-9.50	19.44	-28.94	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

60.0 dBuV/m





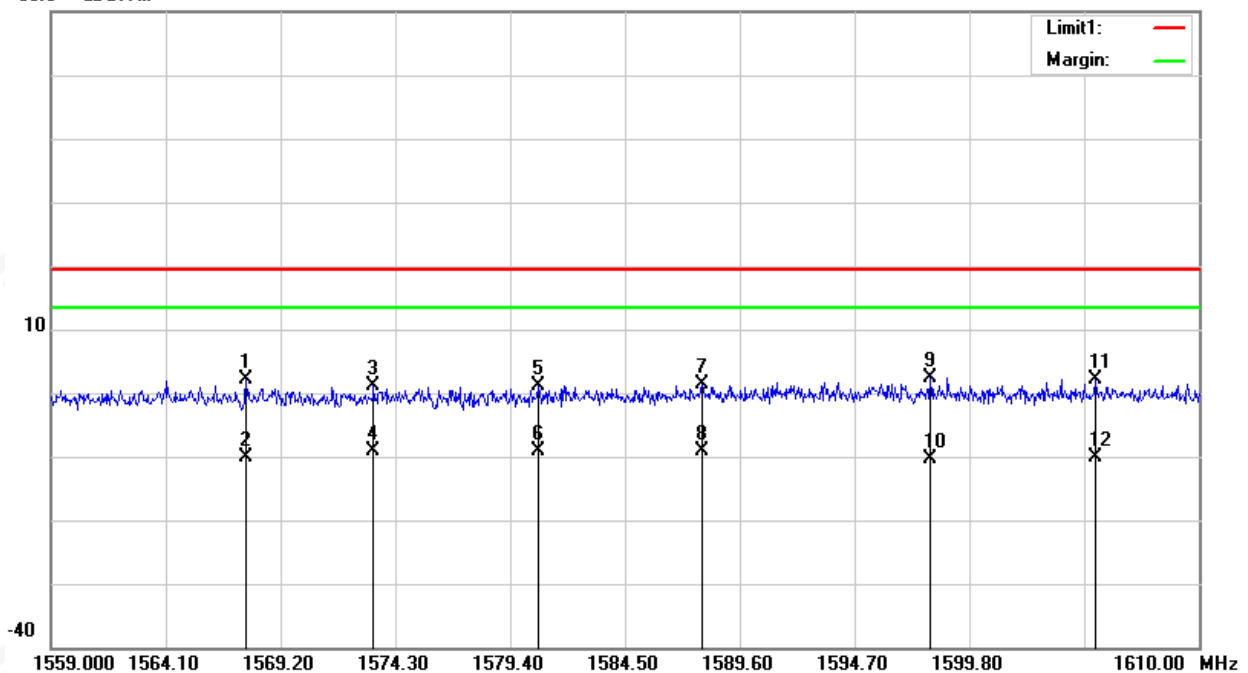
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1(1559Hz – 1610MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1567.670	-1.19	3.22	2.03	19.44	-17.41	peak
2	1567.670	-13.29	3.22	-10.07	19.44	-29.51	RMS
3	1573.331	-2.23	3.41	1.18	19.44	-18.26	peak
4	1573.331	-12.43	3.41	-9.02	19.44	-28.46	RMS
5	1580.624	-2.56	3.63	1.07	19.44	-18.37	peak
6	1580.624	-12.66	3.63	-9.03	19.44	-28.47	RMS
7	1587.917	-2.58	3.86	1.28	19.44	-18.16	peak
8	1587.917	-13.03	3.86	-9.17	19.44	-28.61	RMS
9	1598.066	-1.72	4.18	2.46	19.44	-16.98	peak
10	1598.066	-14.52	4.18	-10.34	19.44	-29.78	RMS
11	1605.410	-2.00	4.24	2.24	19.44	-17.20	peak
12	1605.410	-14.40	4.24	-10.16	19.44	-29.60	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

60.0 dBuV/m





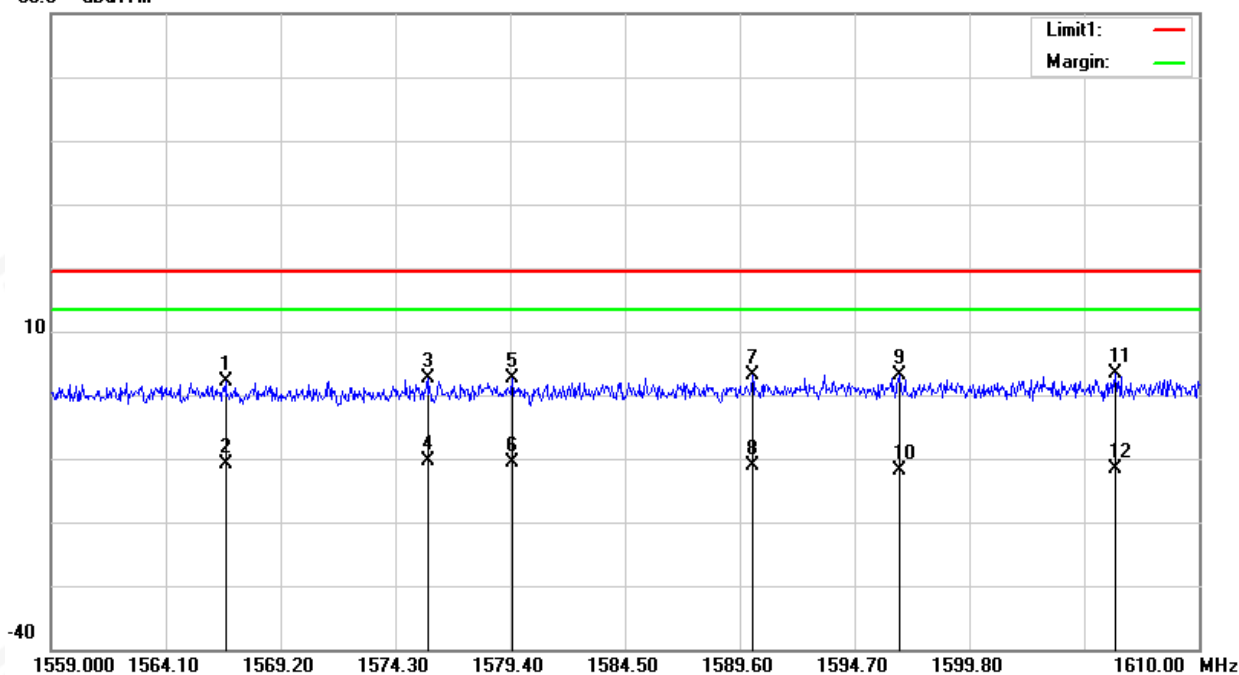
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1(1559Hz – 1610MHz)	Test distance:	1m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1566.752	-1.06	3.19	2.13	19.44	-17.31	peak
2	1566.752	-14.06	3.19	-10.87	19.44	-30.31	RMS
3	1575.728	-0.84	3.47	2.63	19.44	-16.81	peak
4	1575.728	-13.84	3.47	-10.37	19.44	-29.81	RMS
5	1579.502	-0.91	3.60	2.69	19.44	-16.75	peak
6	1579.502	-14.29	3.60	-10.69	19.44	-30.13	RMS
7	1590.161	-0.78	3.93	3.15	19.44	-16.29	peak
8	1590.161	-14.98	3.93	-11.05	19.44	-30.49	RMS
9	1596.689	-0.96	4.13	3.17	19.44	-16.27	peak
10	1596.689	-15.96	4.13	-11.83	19.44	-31.27	RMS
11	1606.277	-0.84	4.24	3.40	19.44	-16.04	peak
12	1606.277	-15.84	4.24	-11.60	19.44	-31.04	RMS

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) – Amplifier gain

60.0 dBuV/m





4. UWB BANDWIDTH

4.1 LIMITS OF UWB BANDWIDTH MEASUREMENT

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

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.

4.2 INSTRUMENT SETUP VALUE AND MEASUREMENT DISTANCE

Frequency Range	RBW	VBW	Detector	Measurement Distance
3100~10600	1MHz	1MHz	PEAK	1 Meter

4.3 TEST PROCEDURE

- The measuring distance of 1m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- All readings are RMS mode value, 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.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The Spectrum Analyzer system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- The UWB Bandwidth is measured at the 10 dB point (FL, FH).

Note: Both horizontal and vertical antenna polarities were tested. The worst case emissions were reported.

4.4 TEST SETUP

Same as 3.3.4

4.5 EUT OPERATION CONDITIONS

Same as 3.2.6

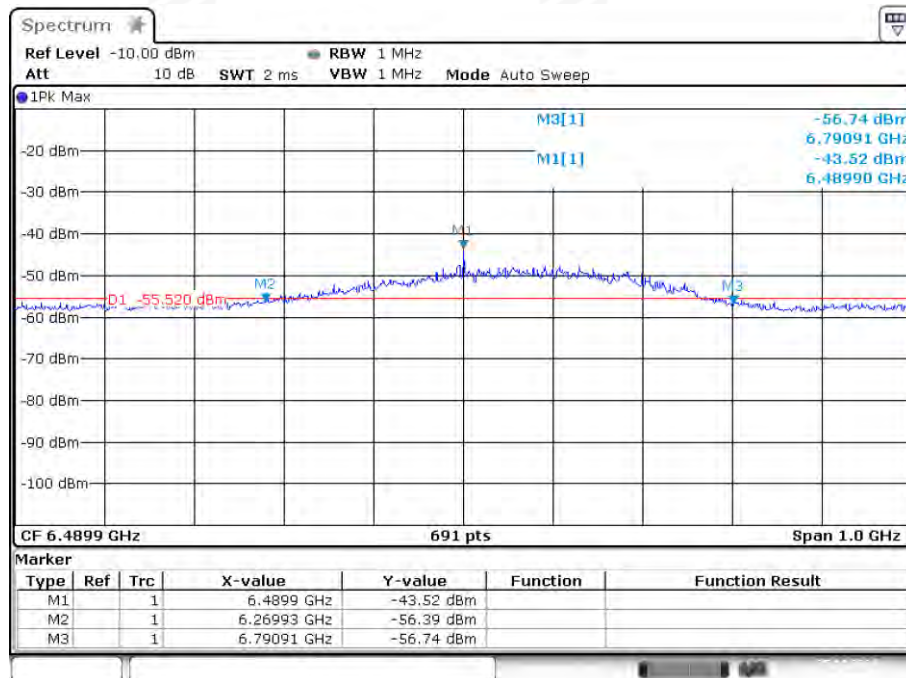


4.6 TEST RESULTS

Temperature:	25 °C	Relative Humidity:	53%
Test Voltage:	DC 3.7V		

Test Channel	fM (MHz)	fL (MHz)	fH (MHz)	-10dB Bandwidth (MHz)	fC (MHz)	Fractional Bandwidth (MHz)	Limit	Result
CH1	6489.9	6269.9	6790.9	520.98	6530.4	0.08	-10dB Bandwidth ≥ 500MHz or Fractional Bandwidth ≥ 0.2	Pass

CH 1



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5 PEAK EMISSION WITHIN A 50MHZ BANDWIDTH (FOR 15.517(e))

5.1 LIMITS OF PEAK EMISSION

The Maximum Peak Output Power Measurement is 0dBm(RBW=50MHz).

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. The resolution bandwidth used to make the peak measurement was 1MHz, resulting in a limit of -34dBm.

This may be converted to a peak field strength level at 3 meters using

$$E(\text{dBuV/m}) = P(\text{dBm EIRP}) + 95.2 = -34 + 95.2 = 61.2 \text{ dBuV/m}$$

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

5.2 INSTRUMENT SETUP VALUE AND MEASUREMENT DISTANCE

Frequency Range	RBW	VBW	Detector	Measurement Distance
3100~10600	1MHz	3MHz	PEAK	3 Meter

5.3 TEST PROCEDURE

Same as 3.3.2

5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5 TEST SETUP

Same as 3.3.4

5.6 FIELD STRENGTH CALCULATION

Same as 3.2.5

5.7 EUT OPERATING CONDITIONS

Same as 3.2.5



5.8 TEST RESULTS

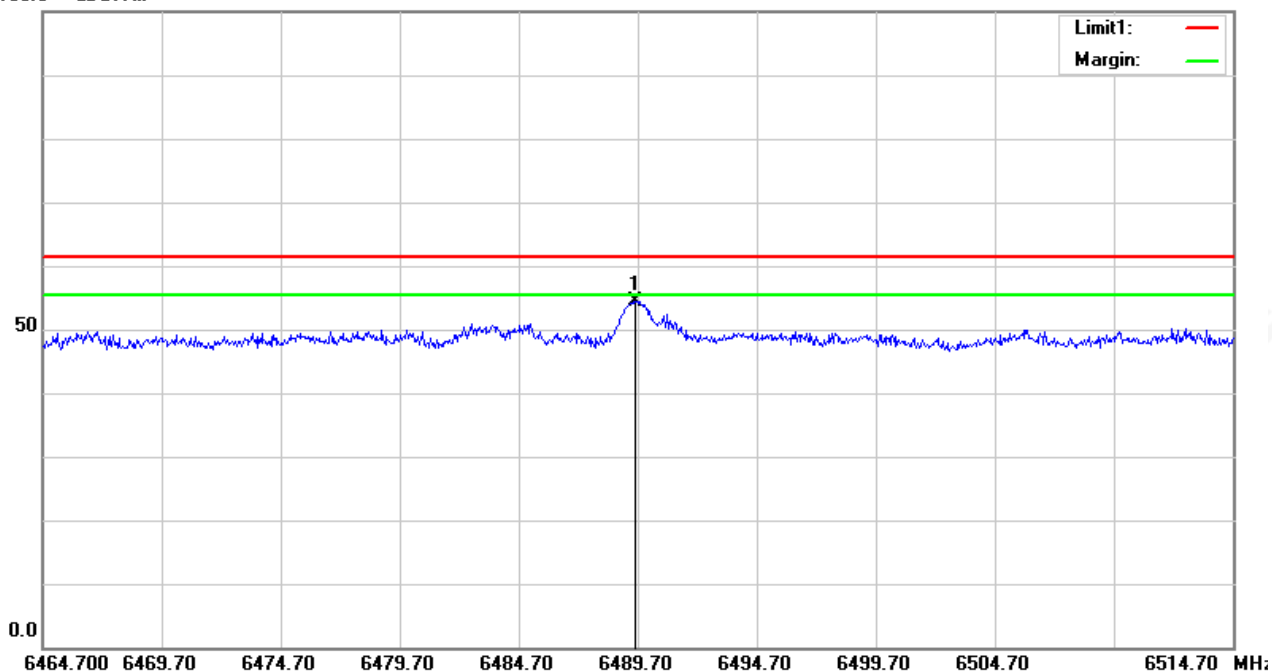
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	CH 1	Test distance:	3m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6489.600	56.41	-1.97	54.44	61.30	-6.86	peak

Remark:

- Margin = Result (Result = Reading + Factor) - Limit
- Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain

100.0 dBuV/m





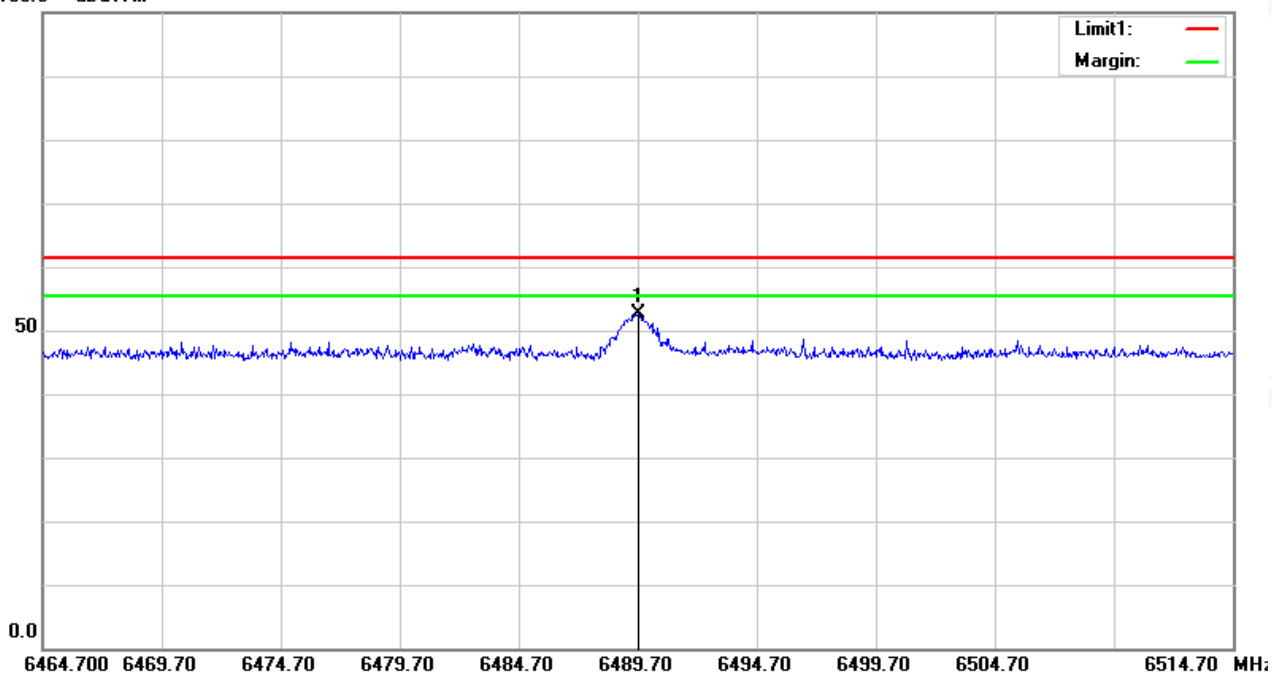
Temperature:	23.4℃	Relative Humidity:	60%
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	CH 1	Test distance:	3m

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6489.700	54.65	-1.97	52.68	61.30	-8.62	peak

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain

100.0 dBuV/m





6. ANTENNA REQUIREMENT

6.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 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.

6.2 EUT ANTENNA

The EUT antenna is Chip Antenna. It conforms to the standard requirements.



APPENDIX- PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

*****END OF THE REPORT*****