



FCC Part15, Subpart B

TEST REPORT

For

USB RECEIVER

MODEL NUMBER: RX666

FCC ID: 2AN3N-RX666

REPORT NUMBER: 4788164888.1-2

ISSUE DATE: Oct. 24, 2017

Prepared for

HERO LOYAL LIMITED

**B015, UNIT 5,27/F RICHMOND COMMERCIAL BUILDING 109 ARGYLE ST MONGKOK
HONGKONG**

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	10/24/2017	Initial Issue	

Summary of Test Results				
Standard	Test Item	Limit	Result	Remark
FCC Part15, Subpart B ANSI C63.4-2014	Conducted Emission	Class B	PASS	
	Radiated Emission below 1 GHz	Class B	PASS	
	Radiated Emission above 1 GHz	Class B	N/A	NOTE(1) NOTE(2)

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: HERO LOYAL LIMITED
Address: B015, UNIT 5,27/F RICHMOND COMMERCIAL BUILDING 109
ARGYLE ST MONGKOK HONGKONG

Manufacturer Information

Company Name: HERO LOYAL LIMITED
Address: B015, UNIT 5,27/F RICHMOND COMMERCIAL BUILDING 109
ARGYLE ST MONGKOK HONGKONG

EUT Description

Product Name: USB RECEIVER
Brand Name: N/A
Model Name: RX666
Serial Number: N/A
Model Difference: N/A
Date of Receipt: October 12
Sample ID: 12303963
Date Tested: October 16, 2017 ~ October 19, 2017

APPLICABLE STANDARDS	
STANDARDS	TEST RESULTS
FCC Part15, Subpart B ANSI C63.4-2014	PASS

Tested By: 

Andy Xiong
Engineer Project Associate

Checked By: 

Shawn Wen
Laboratory Leader

Approved By: 

Stephen Guo
Laboratory Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC Part15, Subpart B and ANSI C63.4-2014.

3. FACILITIES AND ACCREDITATION

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	The Laboratory has been assessed and proved to be in compliance with IAS, The Certificate Registration Number is TL-702. The Laboratory has been assessed and proved to be in compliance with A2LA, The Certificate Registration Number is 4102.01 FCC Designation Number: CN1187
Description	All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	2.9 dB
Radiated Emission Test	Below 1GHz	2	4.52 dB
Radiated Emission Test	Above 1GHz	2	5.04 dB

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name:	USB RECEIVER
M/N:	RX666
Highest Clock Frequency:	2480MHz
Power Supply:	DC 5V

Remark:

Applicant declared that have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with Wireless Mouse SL-630012. The difference lies only in the appearance of the different models, therefore only one model sl630012 was tested in this report.

5.2. Test Mode

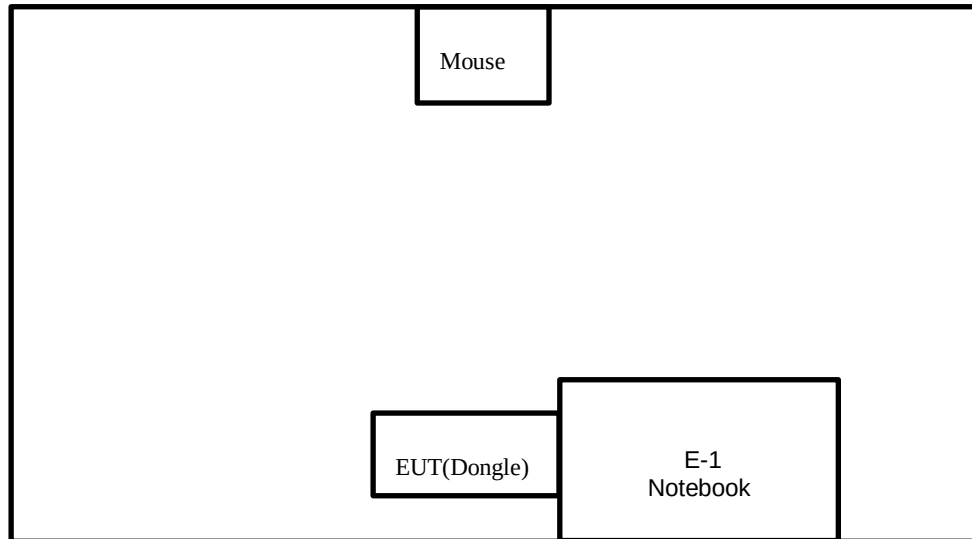
Mode 1:	Running
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5.3. EUT Accessory

Item	Accessory	Brand Name	Model Name	Description

Note:No accessory

5.4. Block diagram showing the configuration of system tested



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.	Specification	Series No.
E-1	Notebook	Lenovo	E42-80	N/A	N/A

Item	Type of cable	Shielded Type	Ferrite Core	Length

Note: No cable

6. MEASURING INSTRUMENT LIST

Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
Conducted Disturbance						
☒	EMI Test Receiver	R&S	ESR 3	101961	Dec. 20, 2016	Dec. 20, 2017
☒	Two-Line V-Network	R&S	ENV216	101983	Dec. 20, 2016	Dec. 20, 2017
☒	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb. 10, 2017	Feb.10, 2018
☒	Measurement Software	Farad	EZ-EMC Ver: UL-3A1	N/A	N/A	N/A
Radiated Disturbance						
☒	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Feb. 24, 2017	Feb. 24, 2018
☒	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan. 09, 2016	Jan. 09, 2019
☒	Preamplifier	HP	8447D	2944A09099	Feb. 13, 2017	Feb. 13, 2018
☒	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec. 20, 2017
☒	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019
☒	Preamplifier	TDK	PA-02-0118	TRS-305-00066	Jan. 14, 2017	Jan. 14, 2018
☒	Measurement Software	Farad	EZ-EMC Ver: UL-3A1	N/A	N/A	N/A

7. EMISSION TEST

7.1. Conducted Disturbance Measurement

7.1.1. Limits of conducted disturbance voltage

FREQUENCY (MHz)	☐ Class A (dBμV)		☒ Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	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.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value - Limit Value

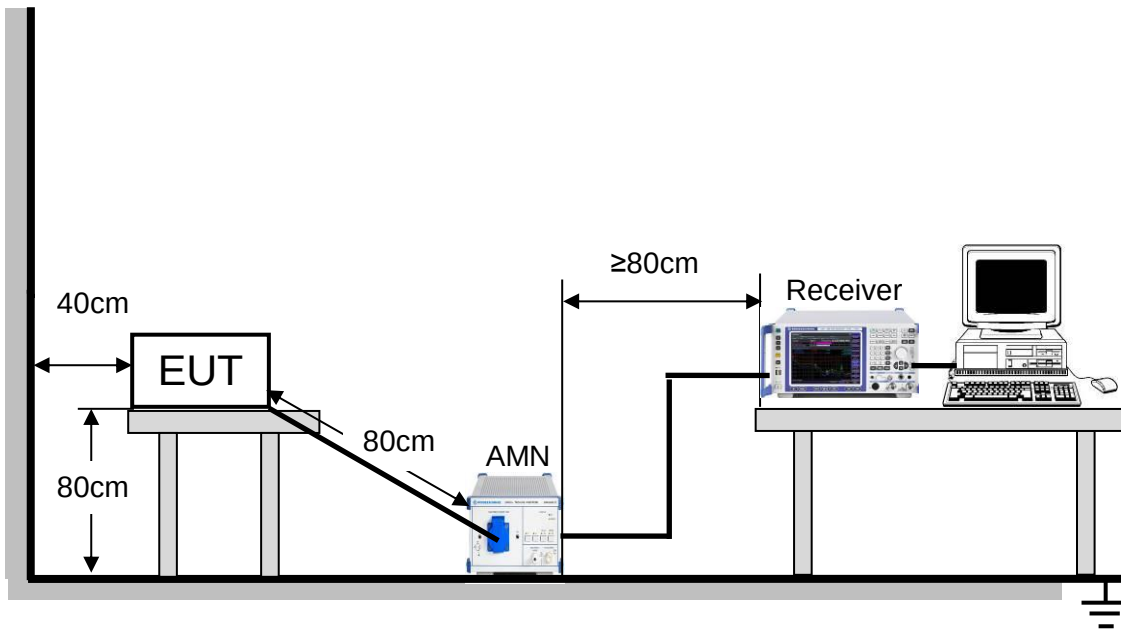
The following table is the setting of the receiver

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

7.1.2. Test Procedure

- a. The EUT was placed 0.8 meters from the horizontal 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item:EUT Test Photos.

7.1.3. Test Setup



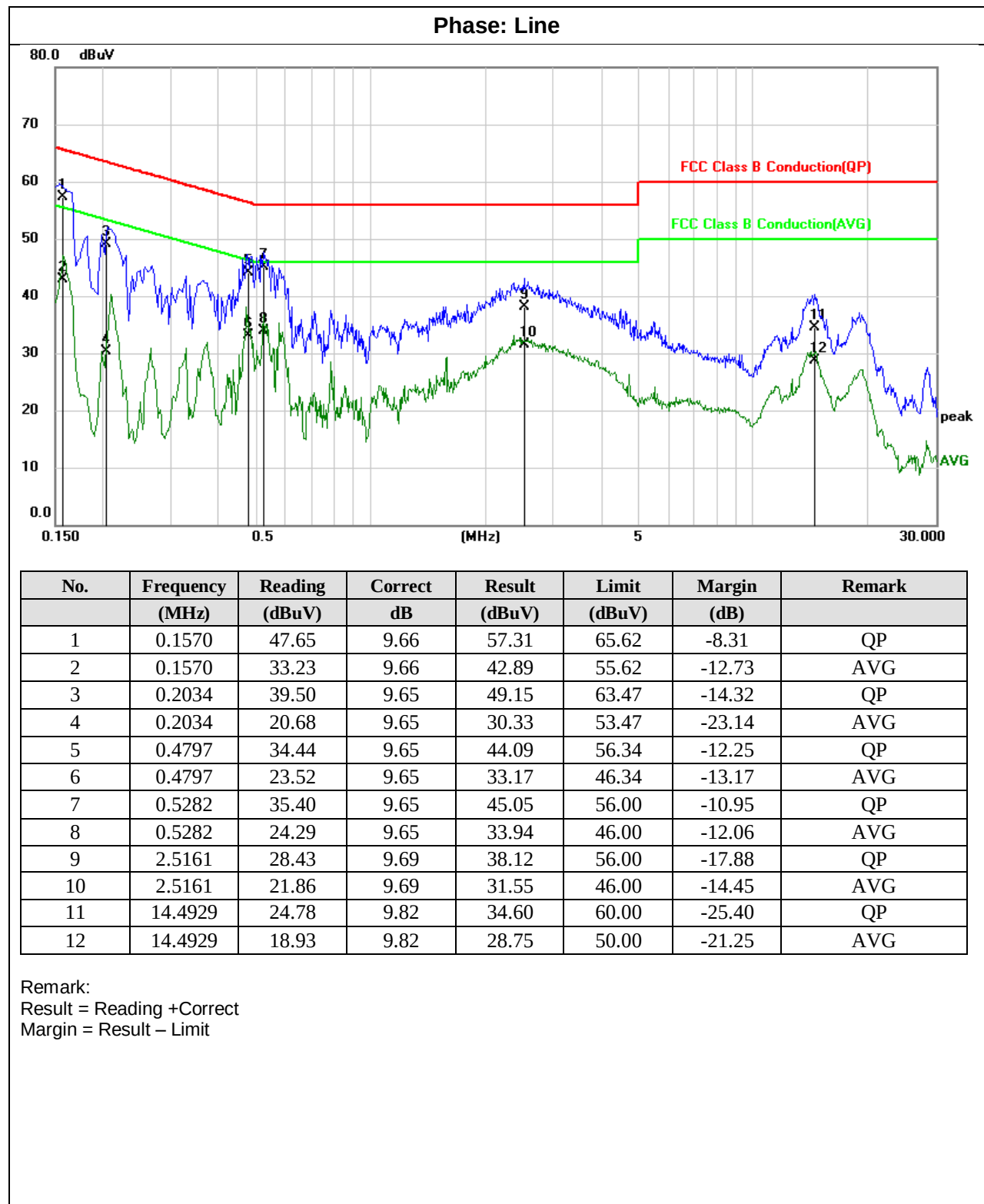
For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.1.4. Test conditions

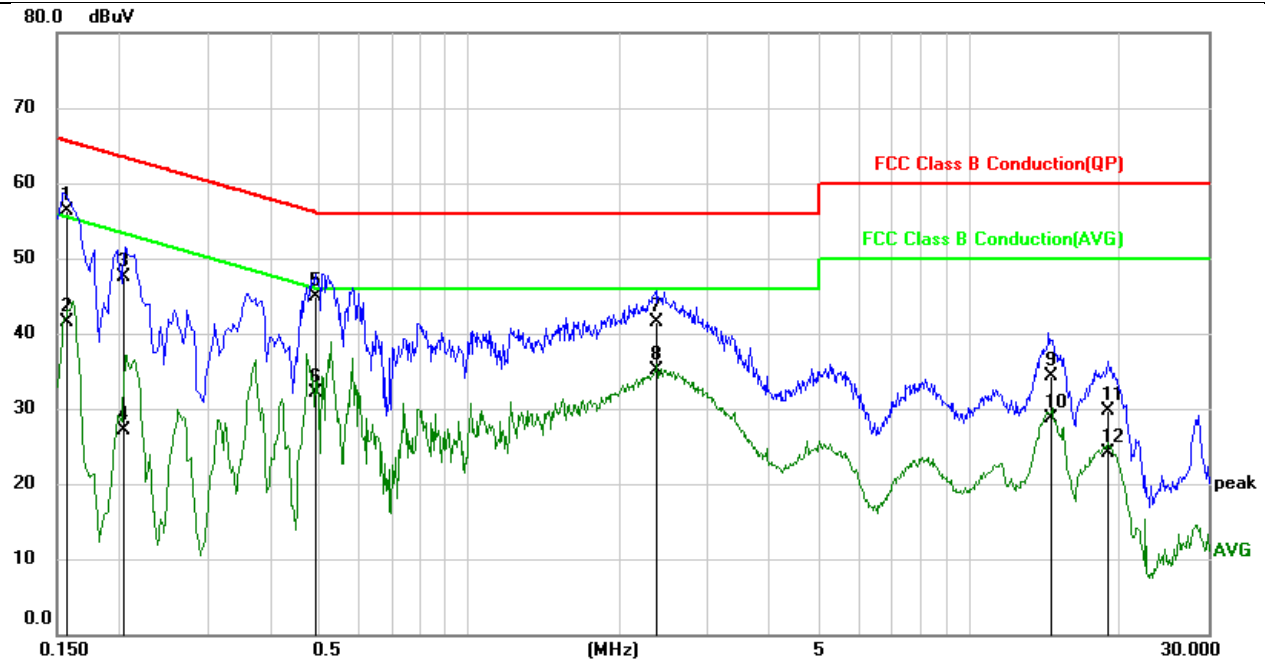
Temperature: 22.4° C, Relative Humidity: 66%, ATM pressure: 101kPa.

7.1.5. Test Result

Test Mode:	Mode 1
Test Voltage:	AC 120V/60Hz



Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1570	46.57	9.65	56.22	65.62	-9.40	QP
2	0.1570	31.85	9.65	41.50	55.62	-14.12	AVG
3	0.2033	37.90	9.64	47.54	63.47	-15.93	QP
4	0.2033	17.47	9.64	27.11	53.47	-26.36	AVG
5	0.4921	35.20	9.65	44.85	56.13	-11.28	QP
6	0.4921	22.44	9.65	32.09	46.13	-14.04	AVG
7	2.3647	31.75	9.68	41.43	56.00	-14.57	QP
8	2.3647	25.52	9.68	35.20	46.00	-10.80	AVG
9	14.4978	24.38	9.84	34.22	60.00	-25.78	QP
10	14.4978	18.91	9.84	28.75	50.00	-21.25	AVG
11	18.9182	19.77	9.88	29.65	60.00	-30.35	QP
12	18.9182	14.16	9.88	24.04	50.00	-25.96	AVG

Remark:

Result = Reading +Correct

Margin = Result - Limit

7.2. Radiated Disturbance Measurement

7.2.1. Limits of radiated disturbance measurement

Below 1 GHz

Measurement Method and Applied Limits:

ANSI C63.4:

Frequency (MHz)	☐ Class A (at 10m)		☒ Class B (at 3m)	
	(uV/m) Field strength	(dBuV/m) Field strength	(uV/m) Field strength	(dBuV/m) Field strength
30 - 88	90	39	100	40
88 - 216	150	43.5	150	43.5
216 - 960	210	46.4	200	46
Above 960	300	49.5	500	54

Above 1 GHz

Measurement Method and Applied Limits:

ANSI C63.4:

Frequency (MHz)	☐ Class A				☒ Class B	
	(dBuV/m) (at 3m)		(dBuV/m) (at 10m)		(dBuV/m) (at 3m)	
	Peak	Average	Peak	Average	Peak	Average
Above 1000	80	60	69.5	49.5	74	54

FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:

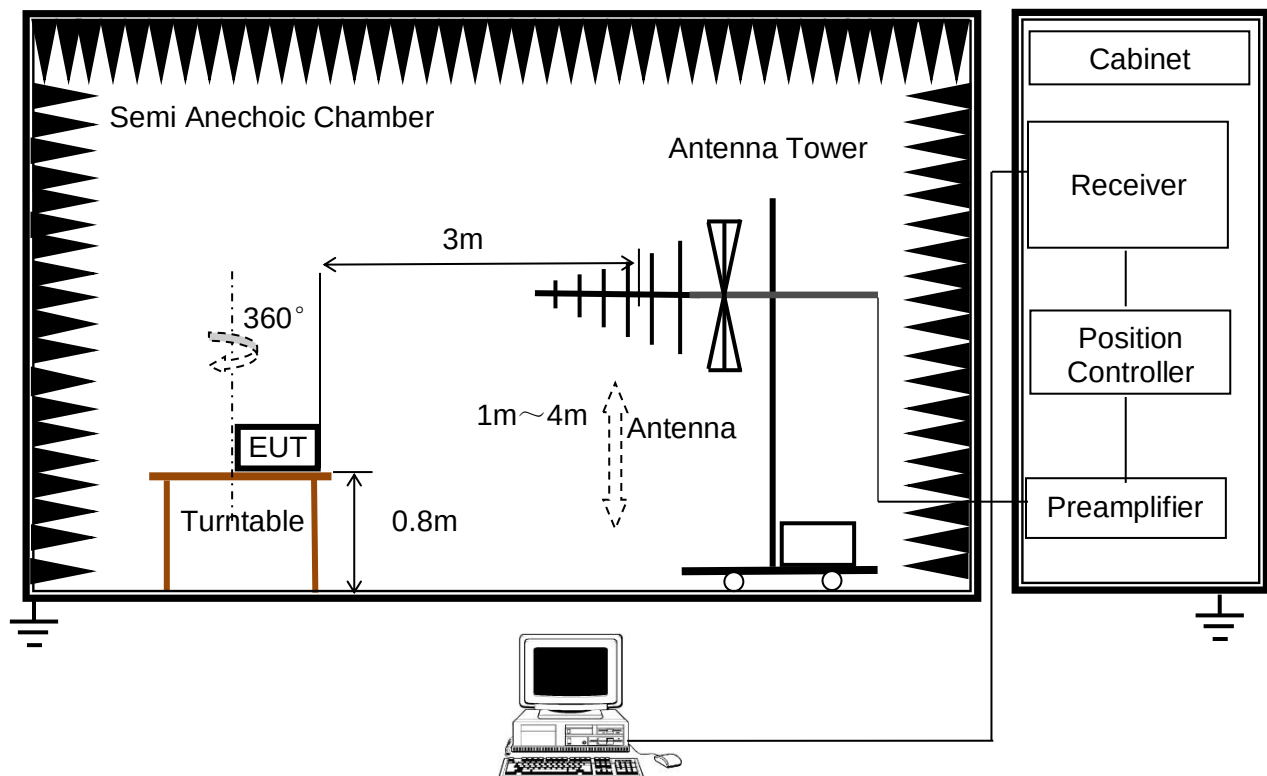
- (1) The limit for radiated test was performed according to FCC Part 15, Subpart B;
- (2) The tighter limit applies at the band edges;
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m),
3m Emission level = 10m Emission level + 20log(10m/3m);
- (4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),
Margin Level = Measurement Value - Limit Value.

7.2.2. Test Procedure

- The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range.
For frequency below 1GHz, Quasi Peak detector mode should be used for QP final test.
For frequency above 1GHz, Average detector mode should be used for average final test.
- For the actual test configuration, please refer to the related Item:EUT Test Photos.

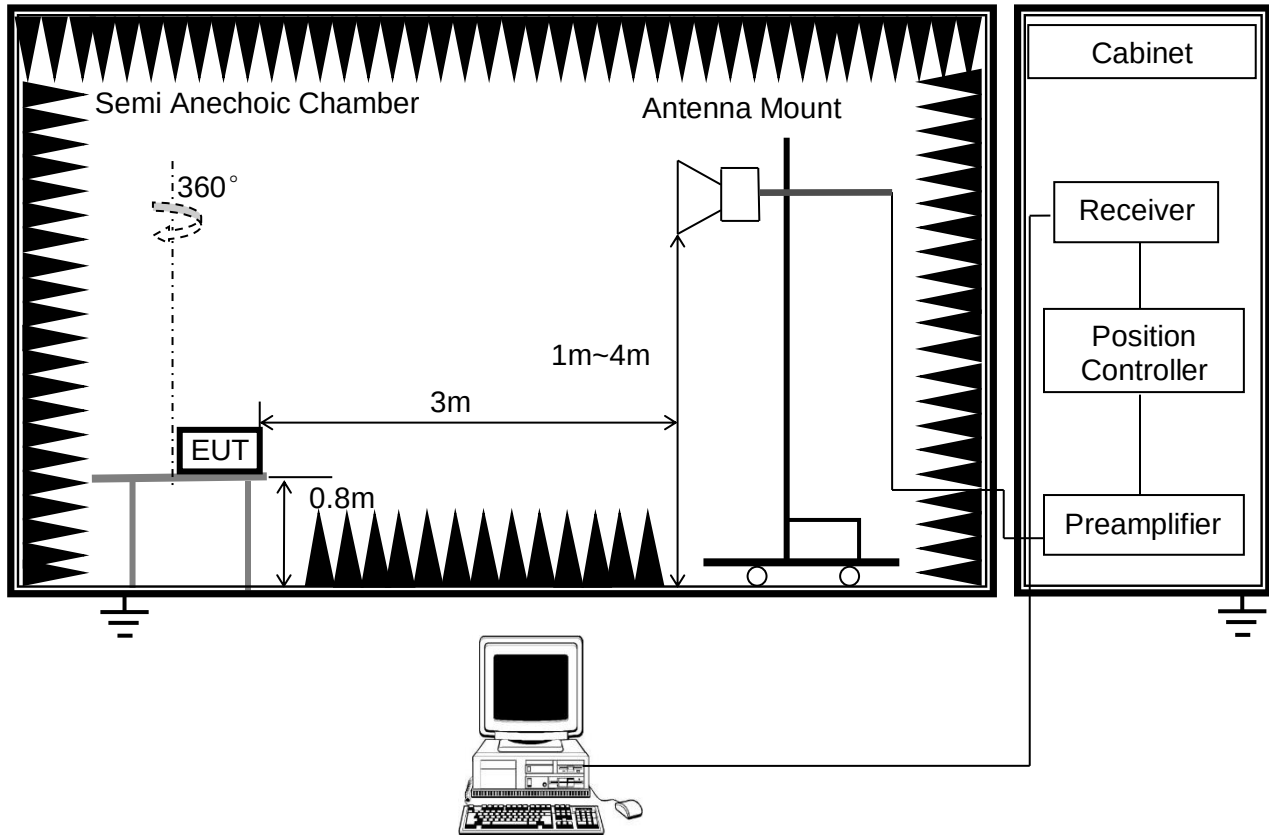
7.2.3. Test Setup

(a) Radiated Emissions Test Set-Up Frequency 30MHz - 1GHz



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

(b) Radiated Emissions Test Set-Up Frequency above 1GHz



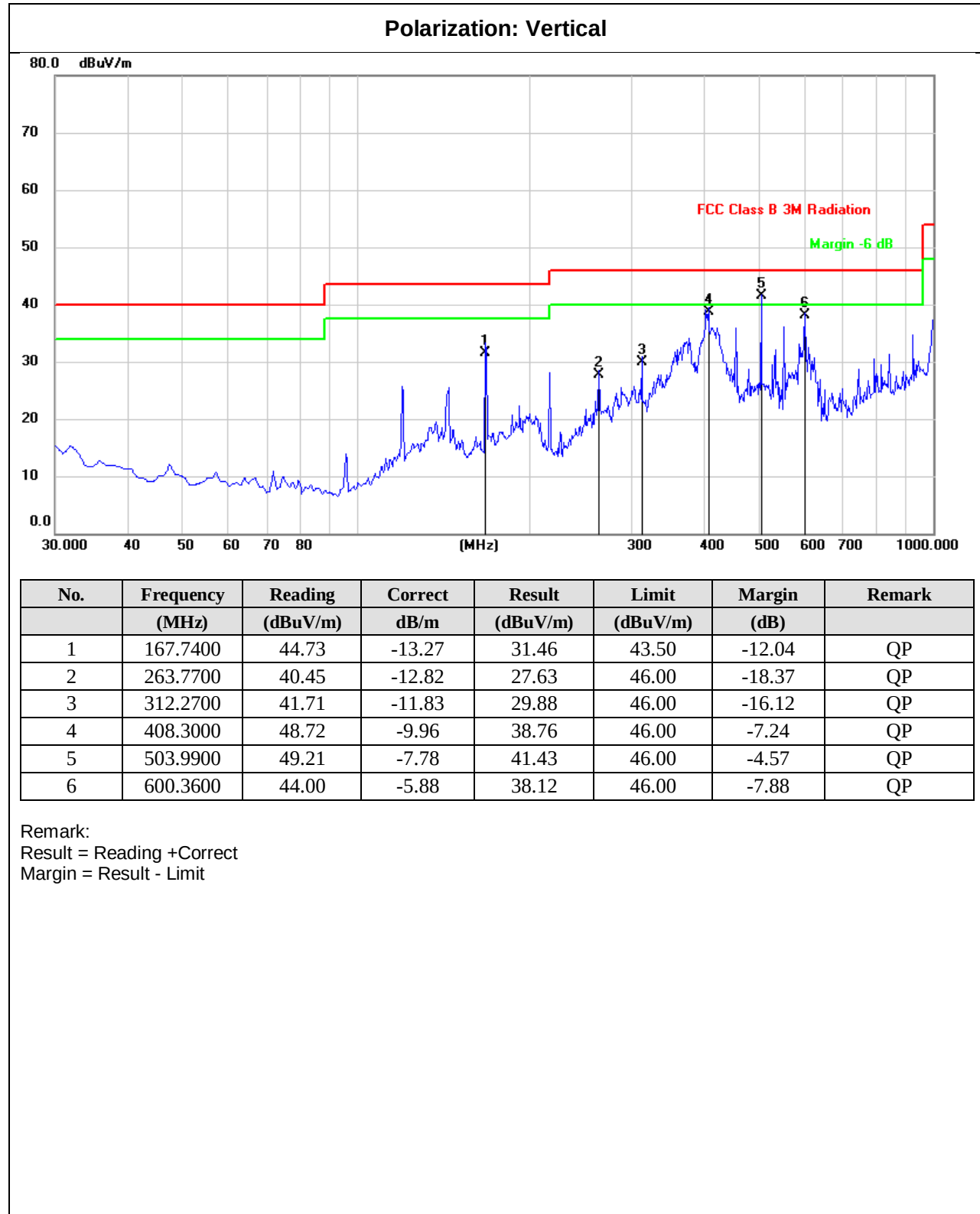
For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.2.4. Test conditions

Temperature: 24.7° C, Relative Humidity: 60%, ATM pressure:101kPa.

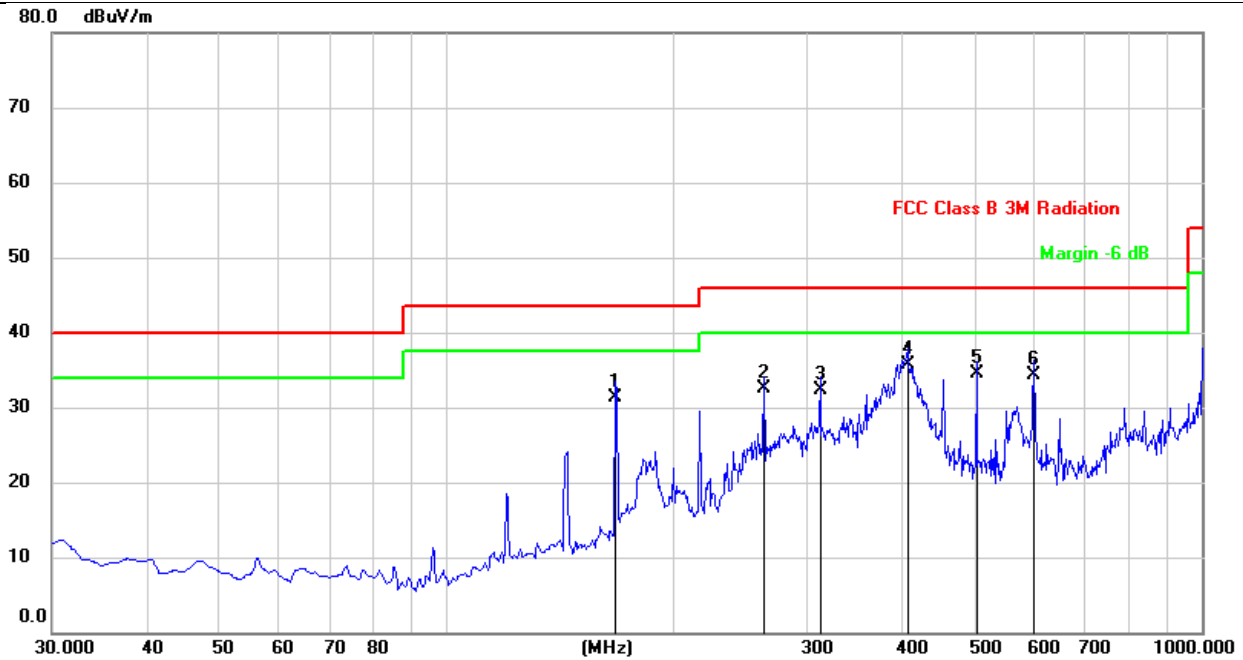
7.2.5. Test Result-Below 1GHz

Test Mode: Mode 1



Test Mode: Mode 1

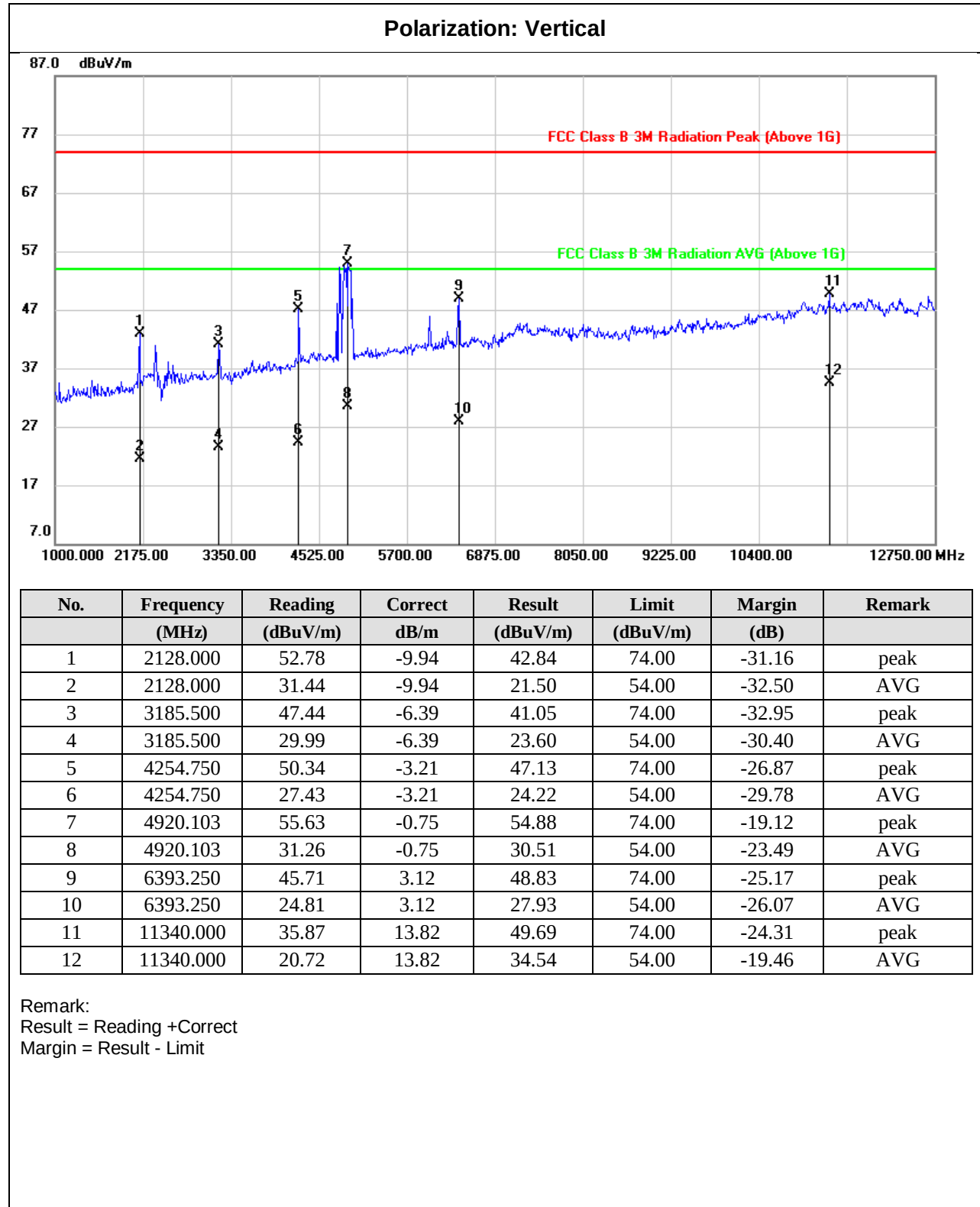
Polarization: Horizontal



Remark:
EMI = Trace + Cable +Transducer
Margin = EMI - Limit

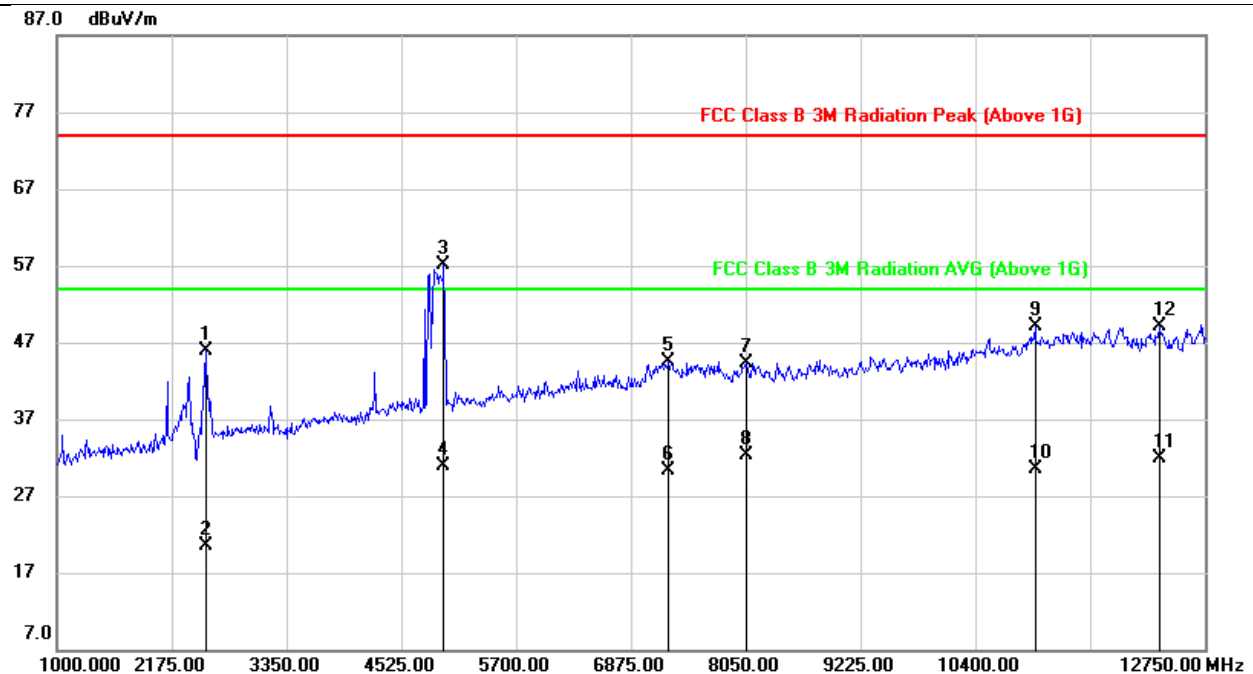
7.2.6. Test Result-Above 1GHz

Test Mode: Mode 1



Test Mode: Mode 1

Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2527.500	55.01	-9.16	45.85	74.00	-28.15	peak
2	2527.500	29.63	-9.16	20.47	54.00	-33.53	AVG
3	4952.118	57.82	-0.76	57.06	74.00	-16.94	peak
4	4952.118	31.69	-0.76	30.93	54.00	-23.07	AVG
5	7266.566	38.50	5.96	44.46	74.00	-29.54	peak
6	7266.566	24.29	5.96	30.25	54.00	-23.75	AVG
7	8050.000	37.57	6.71	44.28	74.00	-29.72	peak
8	8050.000	25.63	6.71	32.34	54.00	-21.66	AVG
9	11011.000	35.99	13.09	49.08	74.00	-24.92	peak
10	11011.000	17.46	13.09	30.55	54.00	-23.45	AVG
11	12273.566	17.21	14.74	31.95	54.00	-22.05	AVG
12	12280.000	34.39	14.73	49.12	74.00	-24.88	peak

Remark:
EMI = Trace + Cable +Transducer
Margin = EMI - Limit

END OF REPORT