

TEST REPORT

Reference No..... : WTX20X10077991W-1
FCC ID : A4X-WPC10-UV
Applicant : CE LINK LIMITED
Address..... : Building M,LiCheng Technology Industrial Zone,GongHe Village,ShaJing
Town,ShenZhen City,China
Product Name : UV Sanitizer & Wireless Charging
Test Model. : WPC10-UV
Standards : FCC Part 18
Date of Receipt sample : Oct.26, 2020
Date of Test..... : Oct.26, 2020 to Nov.06, 2020
Date of Issue : Nov.06, 2020
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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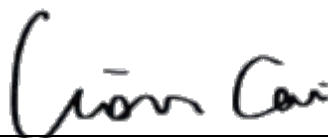
Tested by:

Reviewed By:

Approved & Authorized By:



Jason Su / Project Engineer



Lion Cai / RF Manager



Silin Chen / Manager

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Report version

Version No.	Date of issue	Description
Rev.00	Nov.06, 2020	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: CE LINK LIMITED
Address of applicant: Building M,LiCheng Technology Industrial Zone,
GongHe Village,ShaJing Town,ShenZhen City,China

Manufacturer: CE LINK LIMITED
Address of manufacturer: Building M,LiCheng Technology Industrial Zone,
GongHe Village,ShaJing Town,ShenZhen City,China

Factory#1: SuiChuan CE LINK LIMITED
Address of factory: SuiChuan county industrial park east zone, Ji'an
city,Jiangxi province,China.

Factory#2: CE LINK VIET NAM COMPANY LIMITED.
Address of factory: Lot CNSG04&CNSG06 Van Trung Industrial Zone, Viet
Yen district, Bac Giang Province, Vietnam

General Description of EUT	
Product Name:	UV Sanitizer & Wireless Charging
Trade Name:	CE-LINK
Model No.:	WPC10-UV
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	110~148kHz
Antenna Type:	Coil Antenna
Rated Voltage:	Input: DC 5V/9V/12V, output: DC 5V/9V
Rated Current:	1A / 1.1A
Rated Power:	5W / 10W

1.2 Test Standards

The tests were performed according to following standards:

FCC Part 18 Subpart C: Industrial, Scientific, and medical medical equipment.

ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C. (518101)

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	Wireless Charging	/	Input DC5V/2A; Output:DC5V/1A
TM2	Wireless Charging	/	Input DC9V/2A; Output:DC9V/1.1A
TM3	Wireless Charging	/	Input DC12V/1.5; Output:DC9V/1.1A

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB-C Cable	1.2	Shielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Power Port Speed	ANKER	A2025	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz $\pm 3.74\text{dB}$
		0.15-30MHz $\pm 3.34\text{dB}$
Radiated Emissions	Radiated	30-200MHz $\pm 4.52\text{dB}$
		0.2-1GHz $\pm 5.56\text{dB}$
		1-6GHz $\pm 3.84\text{dB}$
		6-18GHz $\pm 3.92\text{dB}$

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2020-04-28	2021-04-27
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2020-04-28	2021-04-27
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1
EMI Test Software (Conducted Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing

2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 18.307 (b)	Conducted Emission	Compliant
§ 18.305 (b)	Radiated Emission	Compliant

3. Conducted Emissions

3.1 Standard Applicable

According to FCC 18.307(b), the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables:

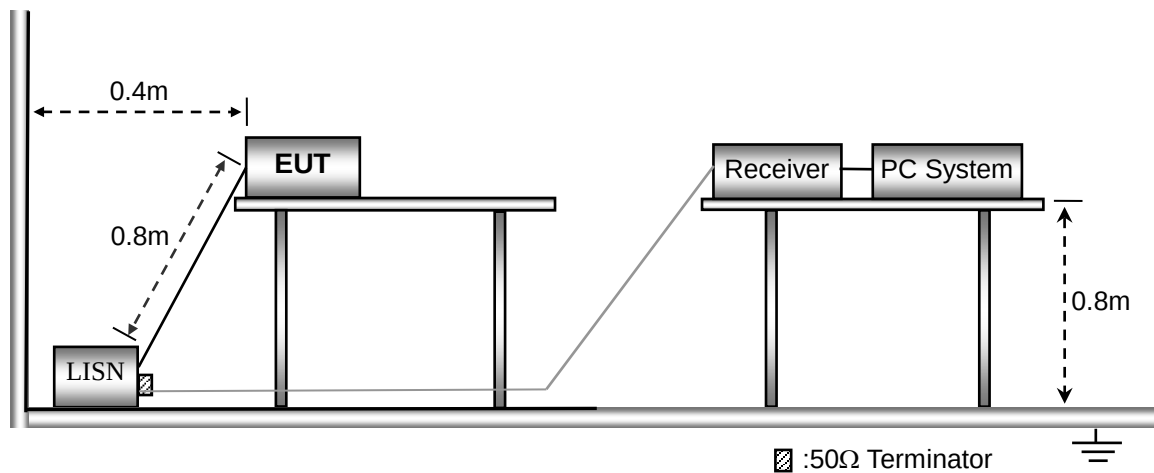
Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

3.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 18.307 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

Temperature:	22.5° C
Relative Humidity:	54%
ATM Pressure:	1016 mbar

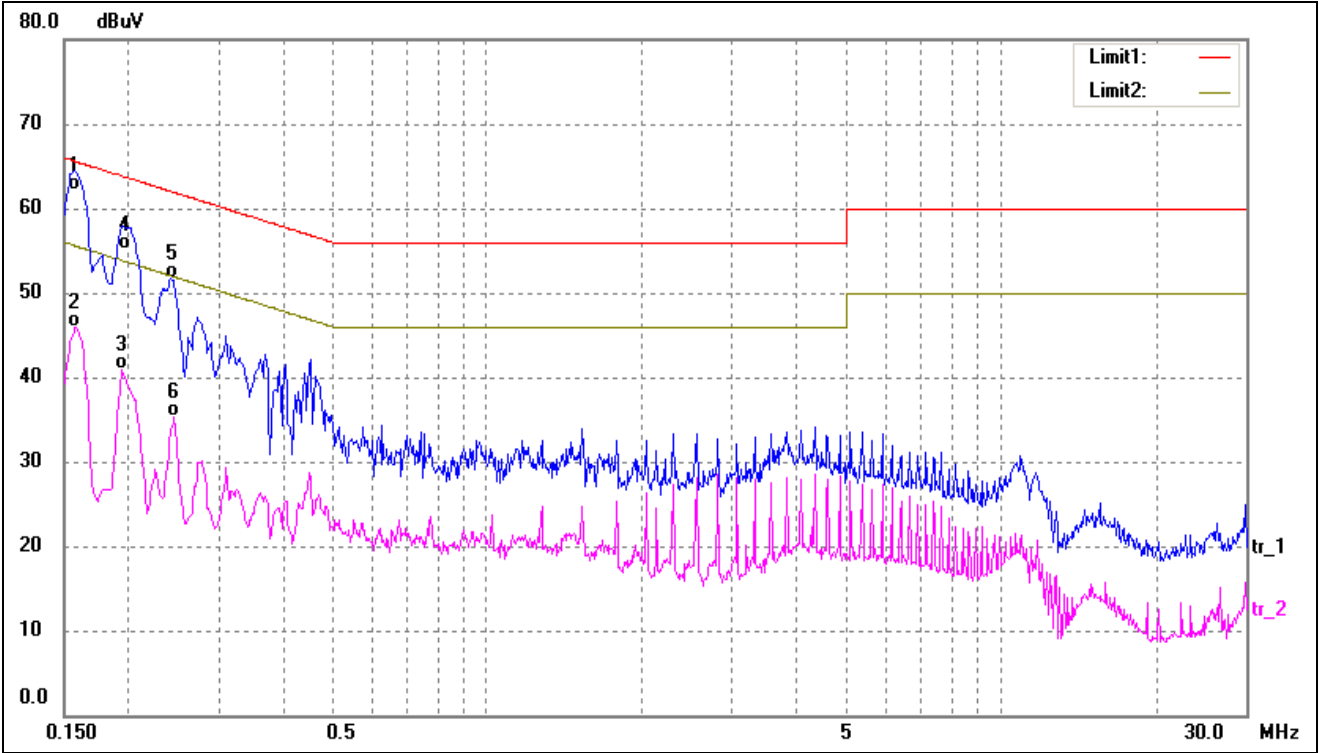
3.5 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency	150 kHz
Stop Frequency.....	30 MHz
Sweep Speed	Auto
IF Bandwidth.....	10 kHz
Quasi-Peak Adapter Bandwidth	9 kHz
Quasi-Peak Adapter Mode.....	Normal

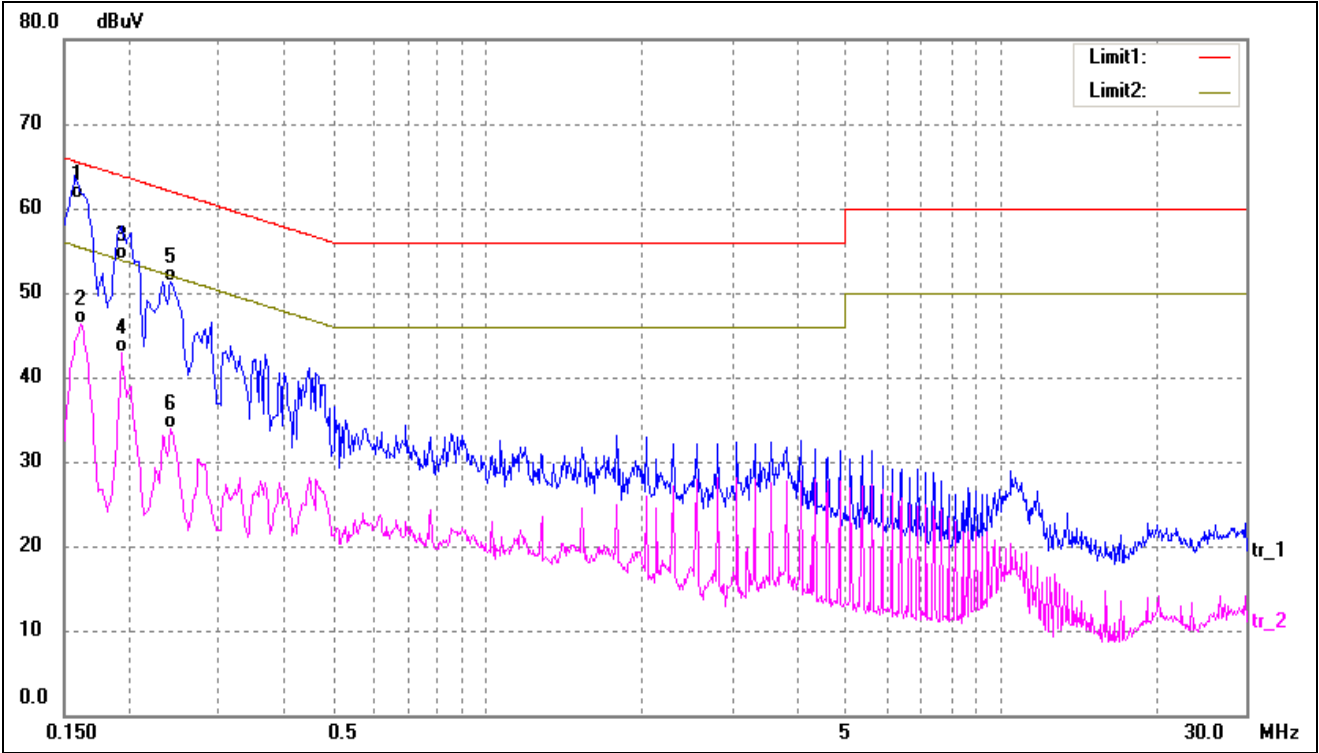
3.6 Summary of Test Results/Plots

Test mode:	TM1	Polarity:	Line
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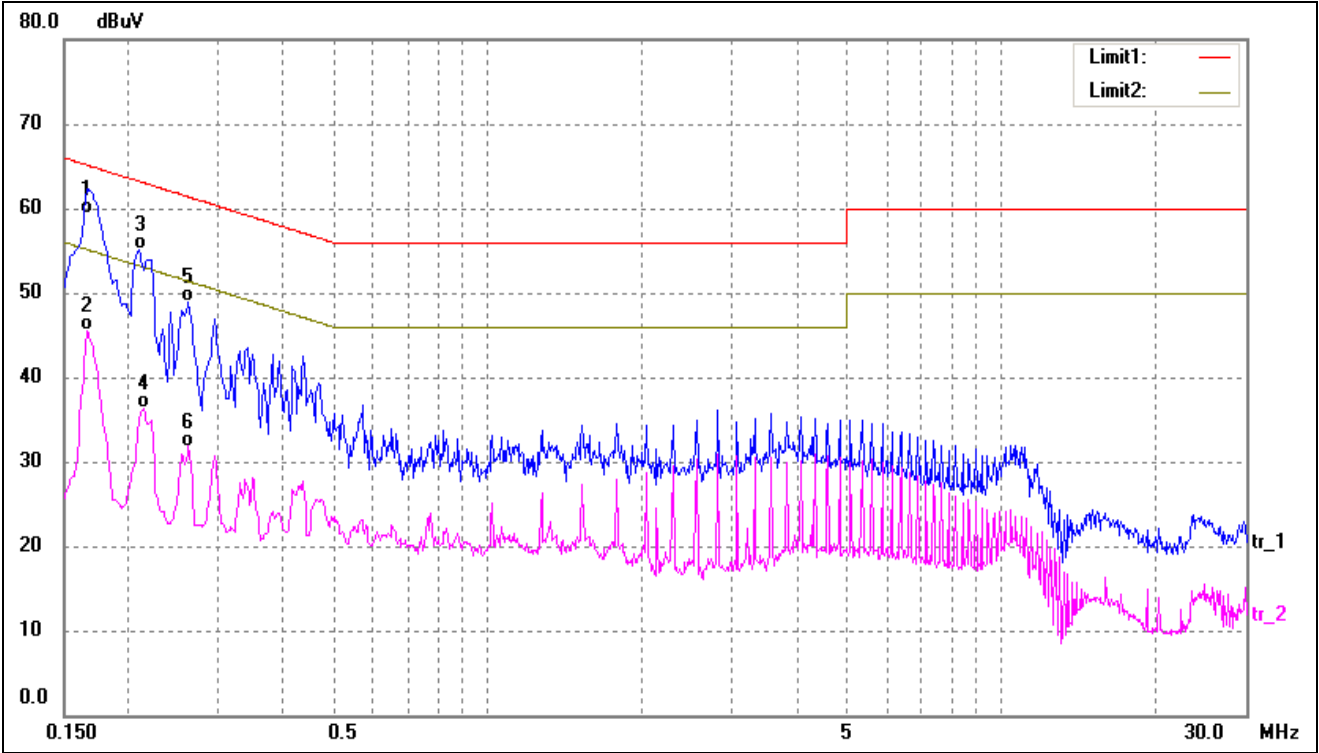
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1580	51.84	10.25	62.09	65.56	-3.47	QP
2	0.1580	35.67	10.25	45.92	55.56	-9.64	AVG
3	0.1940	30.67	10.27	40.94	53.86	-12.92	AVG
4	0.1986	44.77	10.27	55.04	63.66	-8.62	QP
5	0.2420	41.42	10.26	51.68	62.02	-10.34	QP
6	0.2460	25.07	10.26	35.33	51.89	-16.56	AVG

Test mode:	TM1	Polarity:	Neutral
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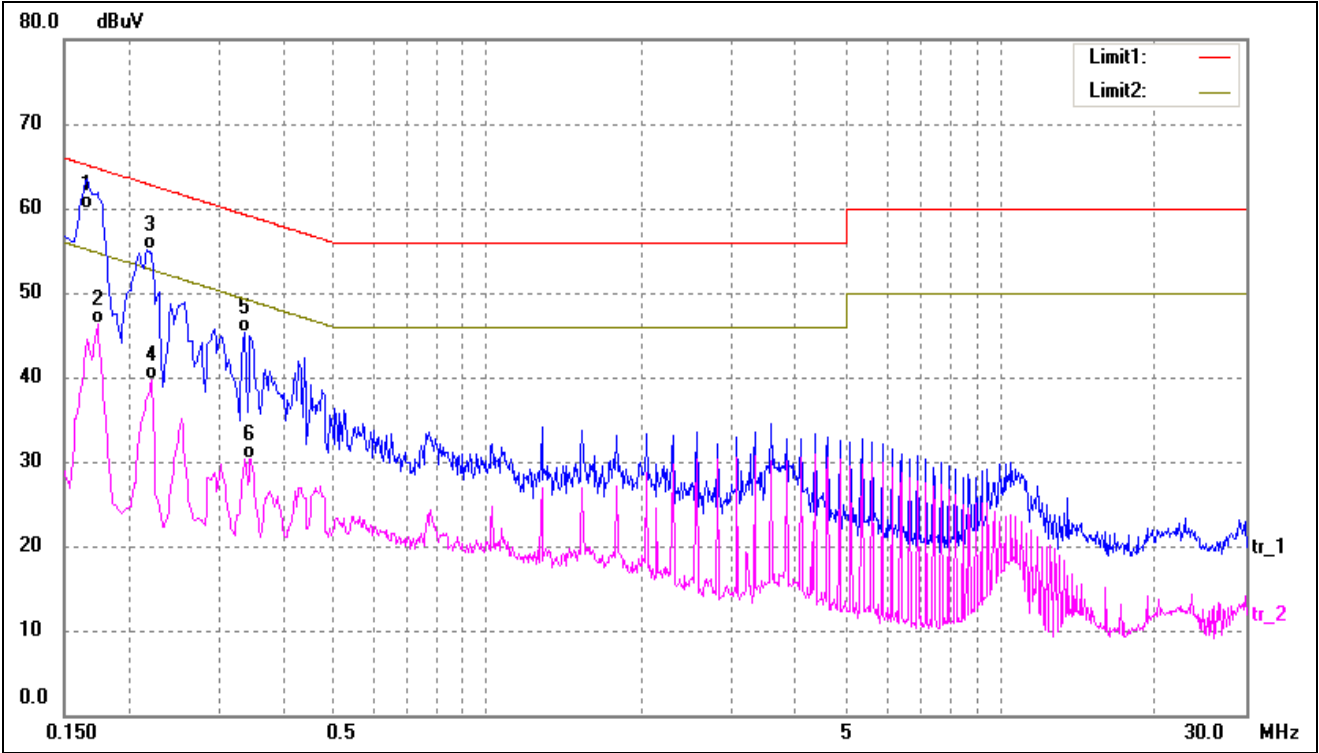
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1580	50.79	10.25	61.04	65.56	-4.52	QP
2	0.1620	36.13	10.26	46.39	55.36	-8.97	AVG
3	0.1940	43.64	10.27	53.91	63.86	-9.95	QP
4	0.1940	32.56	10.27	42.83	53.86	-11.03	AVG
5	0.2420	41.13	10.26	51.39	62.02	-10.63	QP
6	0.2420	23.59	10.26	33.85	52.02	-18.17	AVG

Test mode:	TM2	Polarity:	Line
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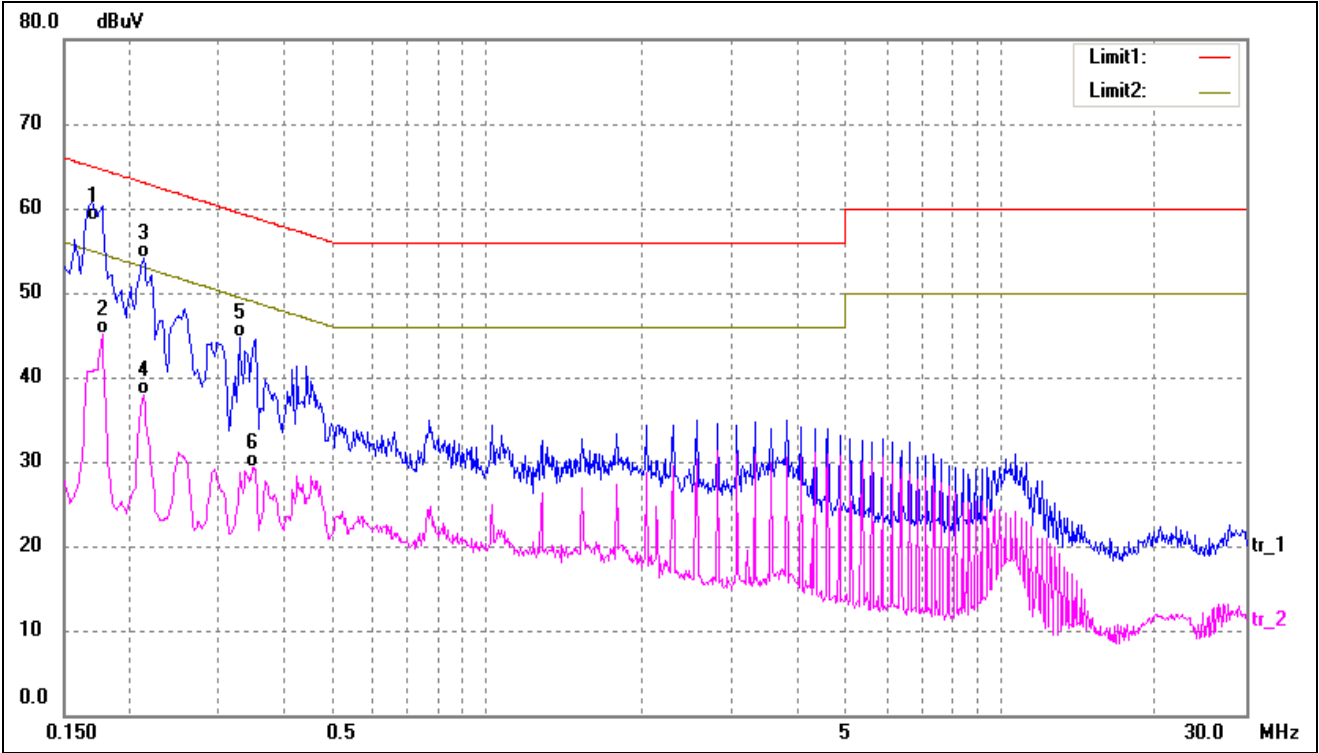
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	48.96	10.26	59.22	65.15	-5.93	QP
2	0.1660	35.32	10.26	45.58	55.15	-9.57	AVG
3	0.2100	44.86	10.27	55.13	63.20	-8.07	QP
4	0.2140	26.09	10.26	36.35	53.04	-16.69	AVG
5	0.2620	38.68	10.26	48.94	61.36	-12.42	QP
6	0.2620	21.54	10.26	31.80	51.36	-19.56	AVG

Test mode:	TM2	Polarity:	Neutral
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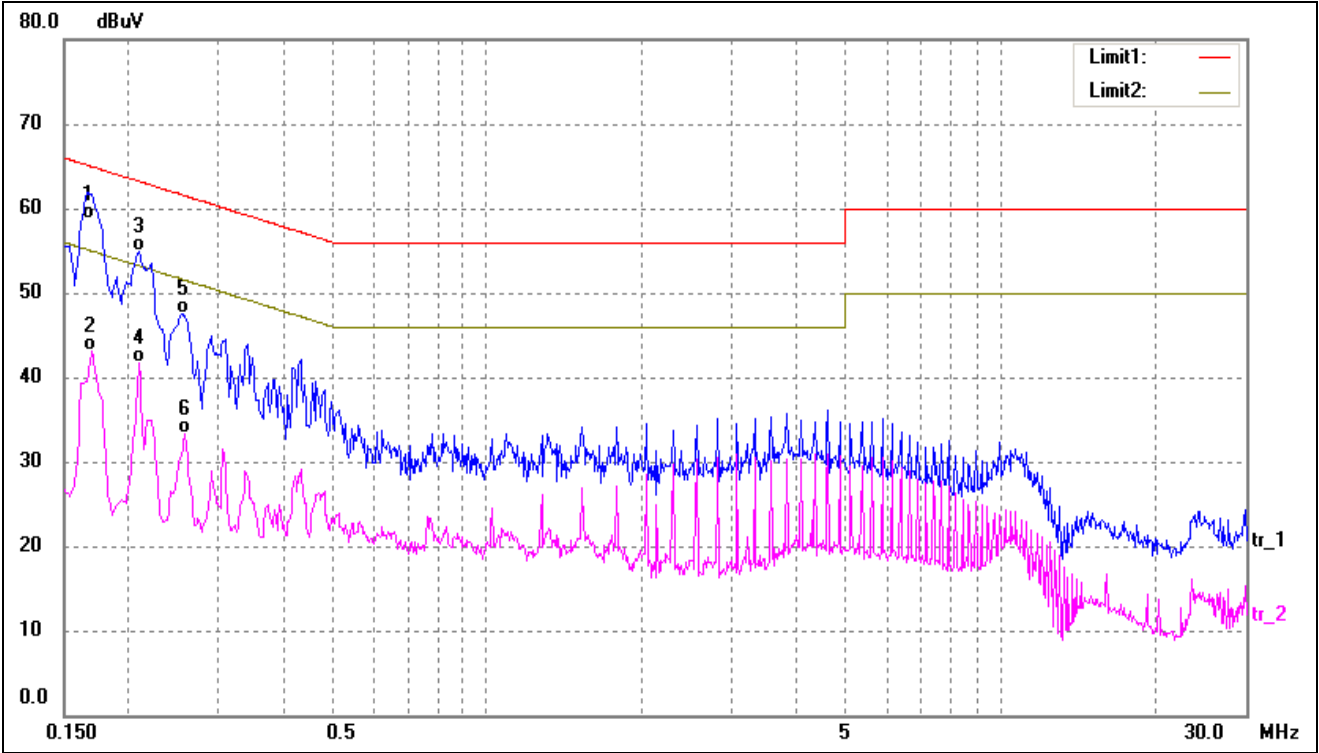
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	49.65	10.26	59.91	65.15	-5.24	QP
2	0.1740	36.09	10.25	46.34	54.76	-8.42	AVG
3	0.2180	44.80	10.26	55.06	62.89	-7.83	QP
4	0.2220	29.51	10.26	39.77	52.74	-12.97	AVG
5	0.3379	35.10	10.26	45.36	59.25	-13.89	QP
6	0.3460	20.13	10.26	30.39	49.06	-18.67	AVG

Test mode:	TM3	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1700	48.34	10.25	58.59	64.96	-6.37	QP
2	0.1780	34.94	10.26	45.20	54.57	-9.37	AVG
3	0.2140	43.86	10.26	54.12	63.04	-8.92	QP
4	0.2140	27.61	10.26	37.87	53.04	-15.17	AVG
5	0.3300	34.43	10.26	44.69	59.45	-14.76	QP
6	0.3500	19.00	10.26	29.26	48.96	-19.70	AVG

Test mode:	TM3	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	48.43	10.26	58.69	65.15	-6.46	QP
2	0.1700	32.85	10.25	43.10	54.96	-11.86	AVG
3	0.2100	44.71	10.27	54.98	63.20	-8.22	QP
4	0.2100	31.38	10.27	41.65	53.20	-11.55	AVG
5	0.2540	37.21	10.26	47.47	61.62	-14.15	QP
6	0.2580	22.96	10.26	33.22	51.49	-18.27	AVG

4. Radiated Emissions

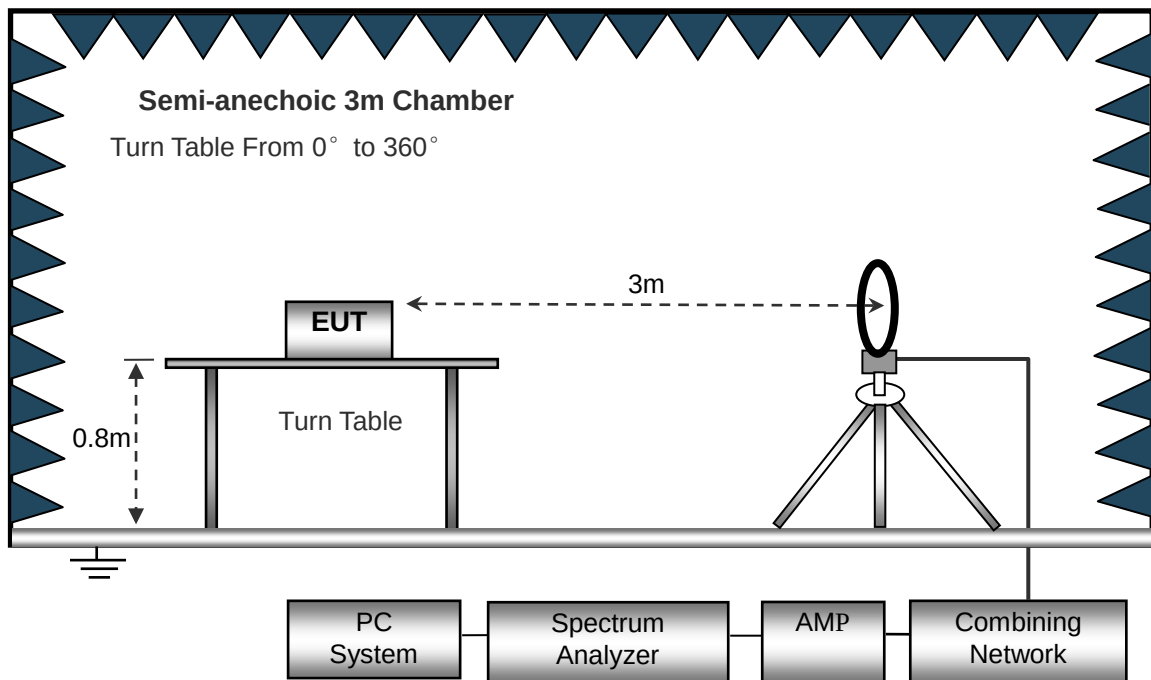
4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 18.305 Limit.

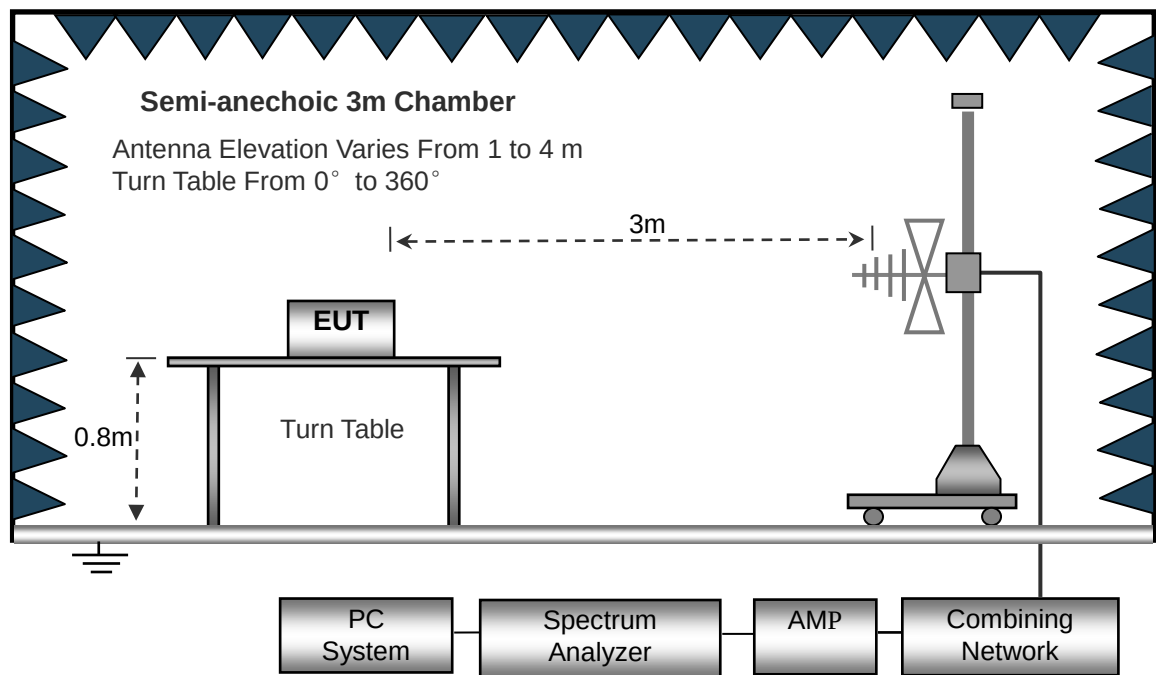
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

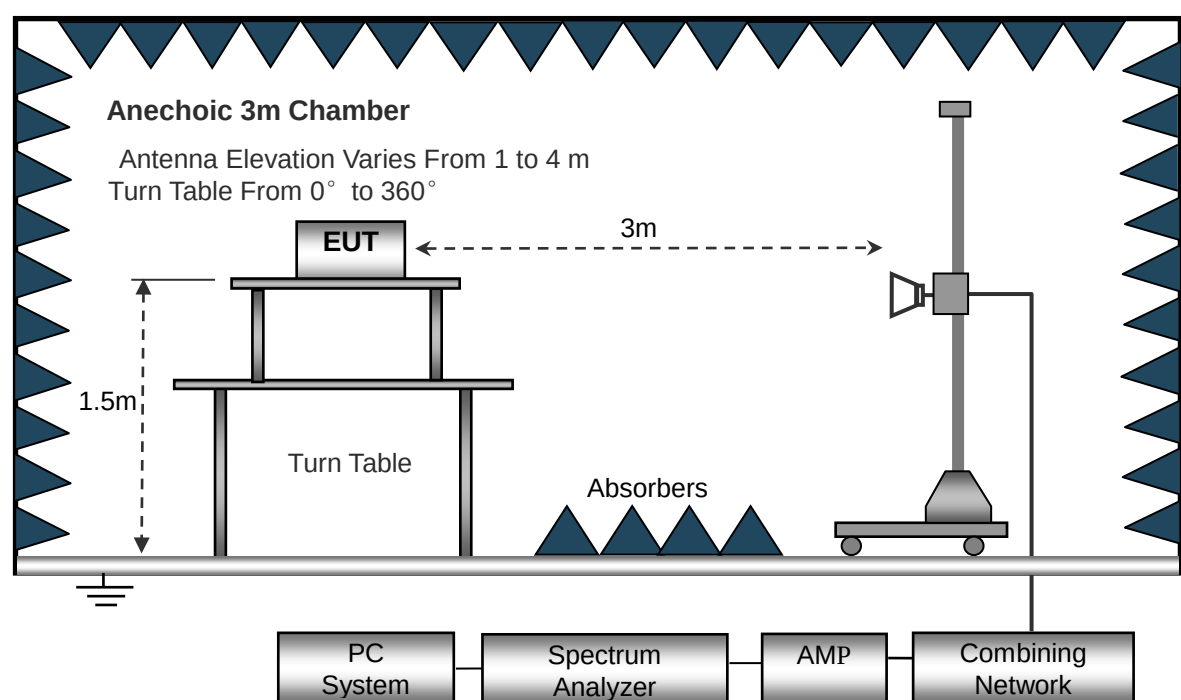
The test setup for emission measurement below 30MHz..



The test setup for emission measurement from 30 MHz to 1 GHz..



The test setup for emission measurement above 1 GHz..



4.2 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Any non-ISM frequency device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 18.305 Limit}$$

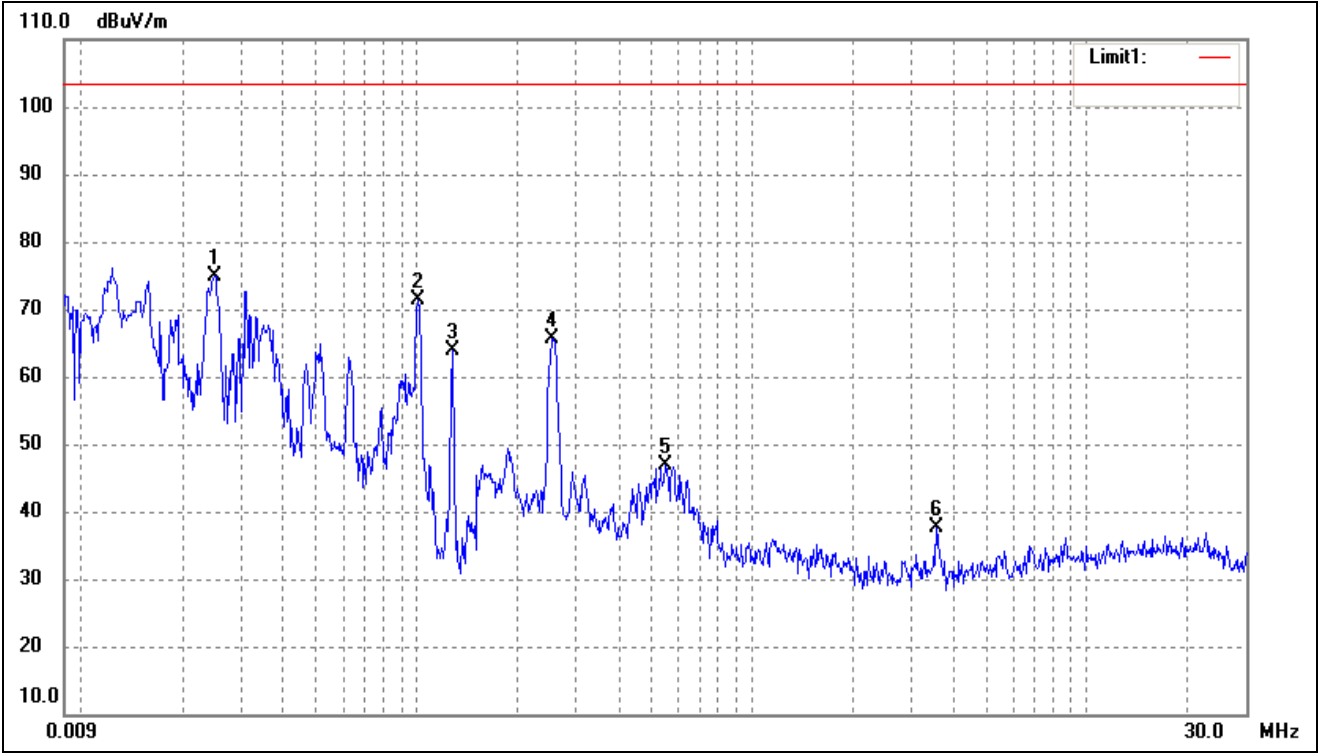
4.4 Environmental Conditions

Temperature:	22.5 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

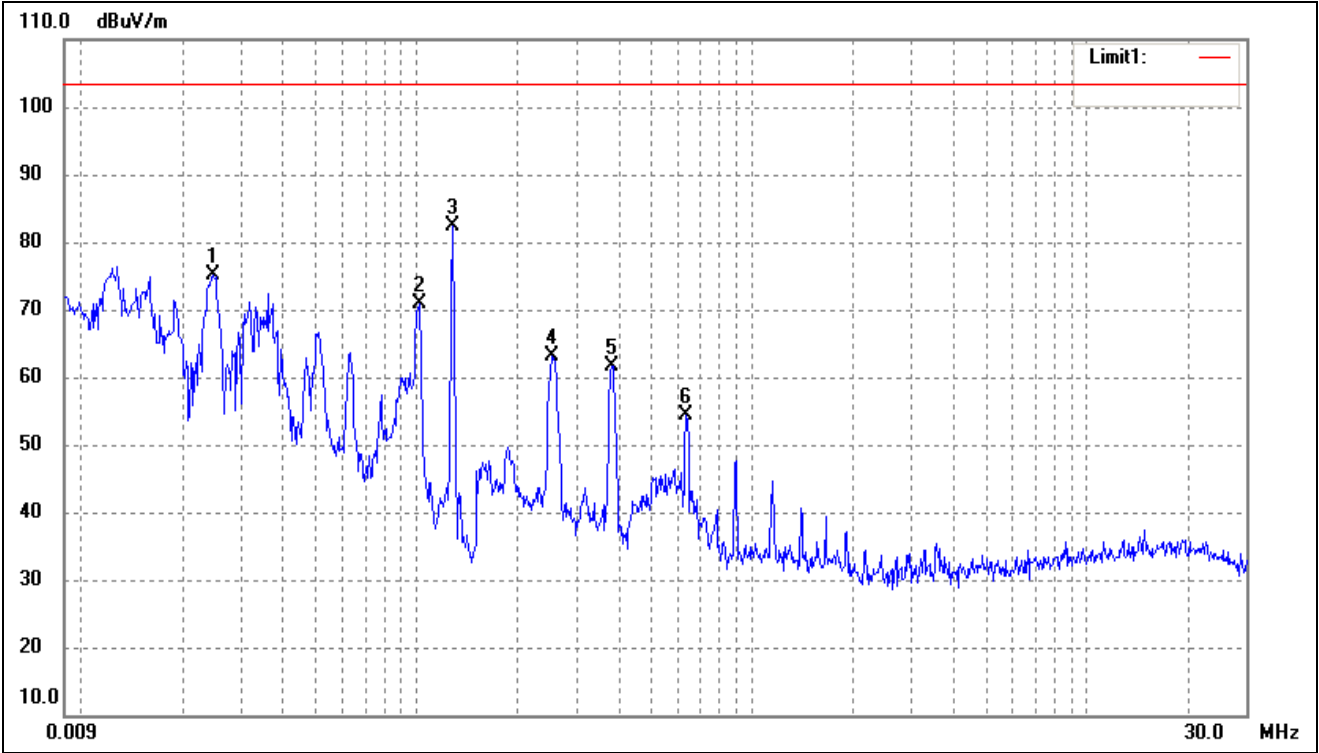
Plot of Radiated Emissions Test Data (Below 30MHz)

Test mode:	TM1	Polarity:	Vertical
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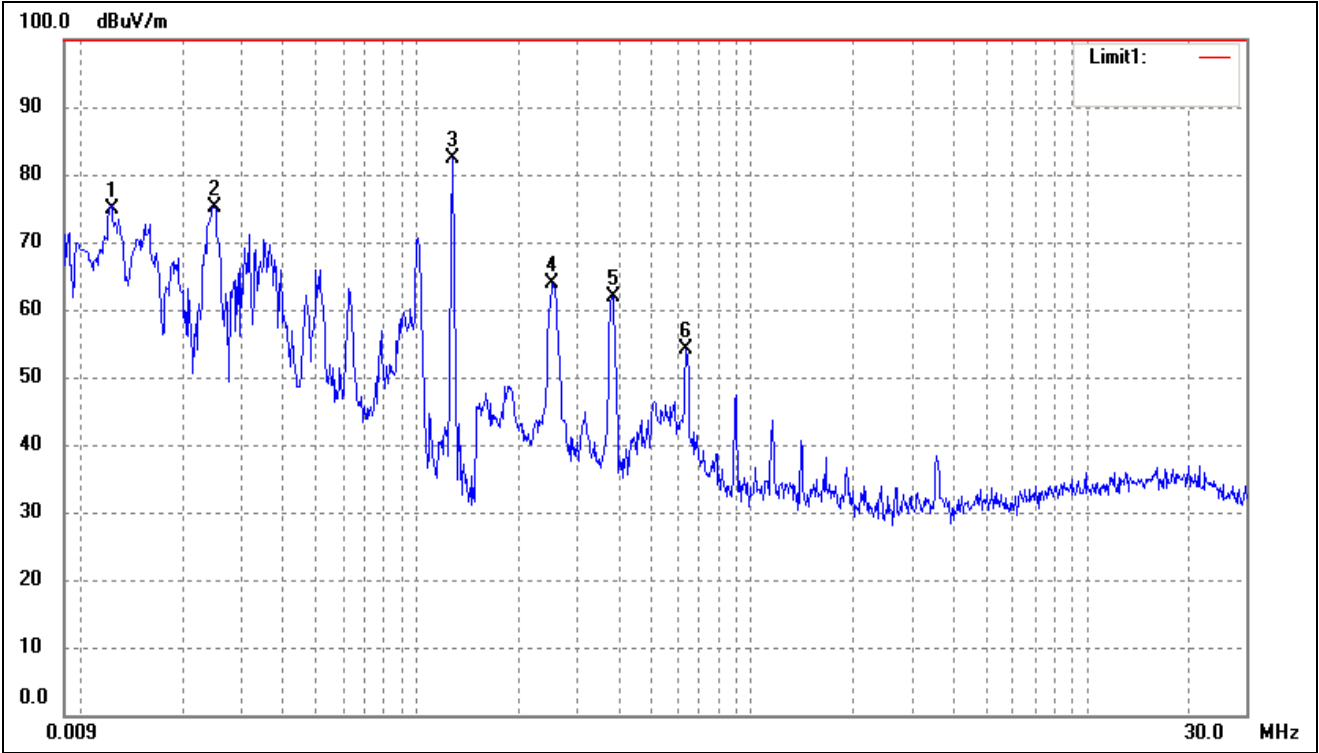
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	0.0250	81.26	-6.49	74.77	103.50	-28.73	-	-	peak
2	0.1006	76.34	-5.06	71.28	103.50	-32.22	-	-	peak
3	0.1278	69.02	-5.13	63.89	103.50	-39.61	-	-	peak
4	0.2548	73.11	-7.42	65.69	103.50	-37.81	-	-	peak
5	0.5523	54.42	-7.42	47.00	103.50	-56.50	-	-	peak
6	3.5654	42.91	-5.21	37.70	103.50	-65.80	-	-	peak

Test mode:	TM2	Polarity:	Vertical
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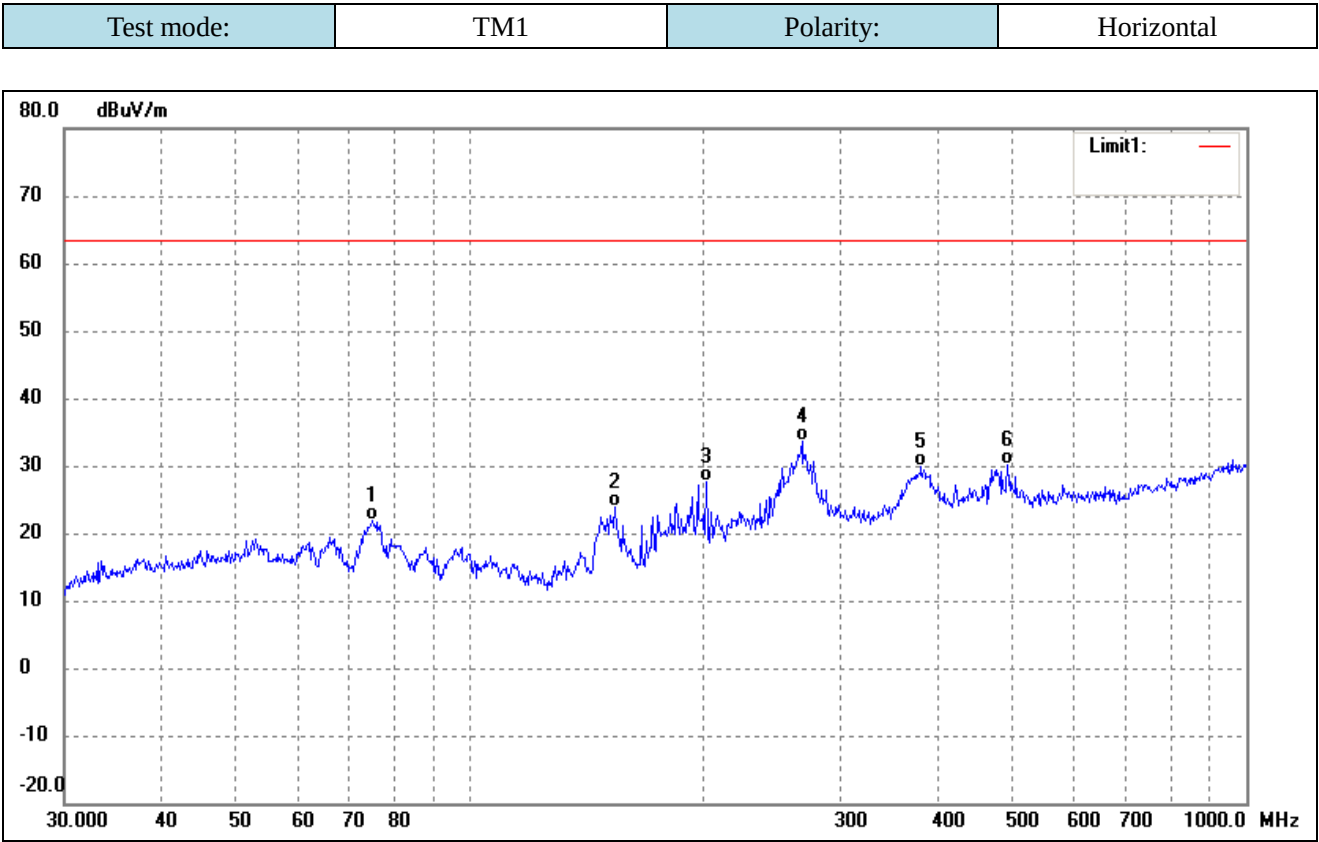
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	0.0249	81.51	-6.49	75.02	103.50	-28.48	-	-	peak
2	0.1017	75.92	-5.06	70.86	103.50	-32.64	-	-	peak
3	0.1278	87.52	-5.13	82.39	103.50	-21.11	-	-	peak
4	0.2548	70.62	-7.42	63.20	103.50	-40.30	-	-	peak
5	0.3811	69.51	-7.83	61.68	103.50	-41.82	-	-	peak
6	0.6372	61.52	-7.03	54.49	103.50	-49.01	-	-	peak

Test mode:	TM3	Polarity:	Vertical
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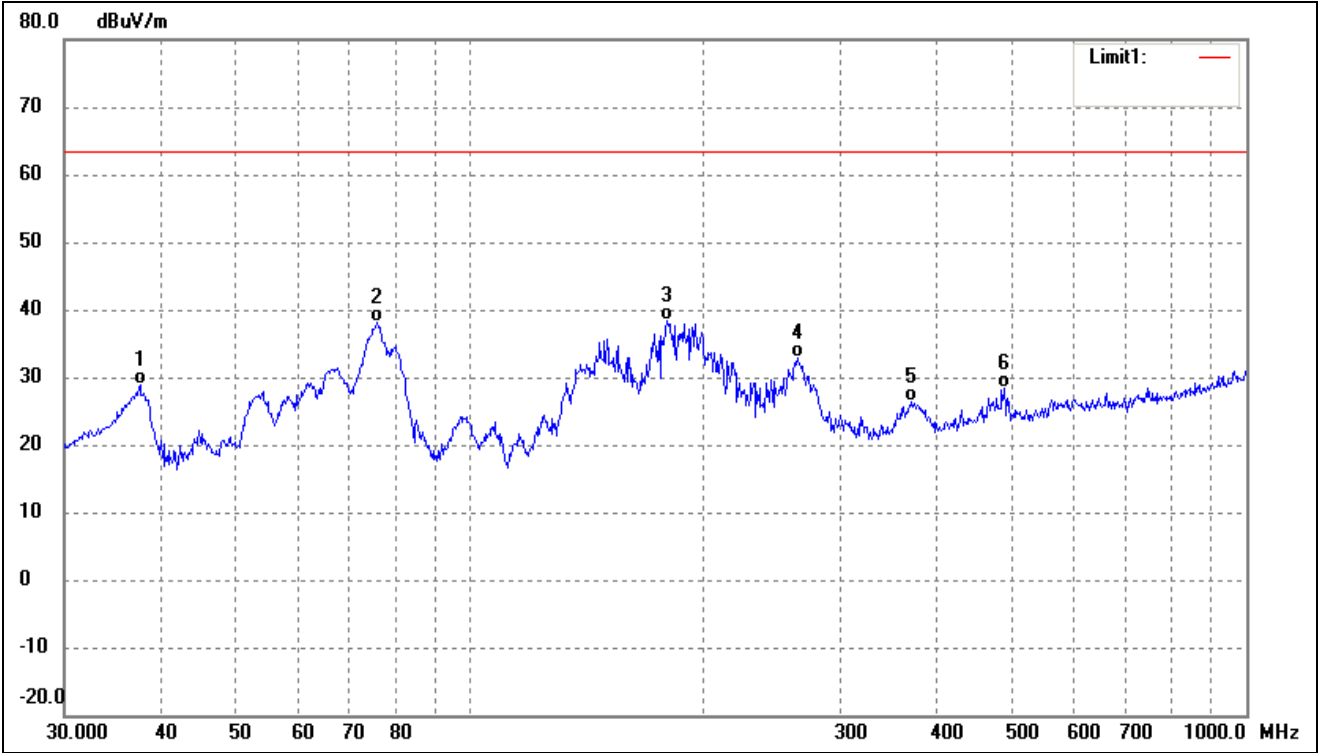
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	0.0123	81.45	-6.45	75.00	103.50	-28.50	-	-	peak
2	0.0250	81.72	-6.49	75.23	103.50	-28.27	-	-	peak
3	0.1278	87.54	-5.13	82.41	103.50	-21.09	-	-	peak
4	0.2548	71.31	-7.42	63.89	103.50	-39.61	-	-	peak
5	0.3832	69.67	-7.83	61.84	103.50	-41.66	-	-	peak
6	0.6372	61.22	-7.03	54.19	103.50	-49.31	-	-	peak

Plot of Radiated Emissions Test Data (Above 30MHz)



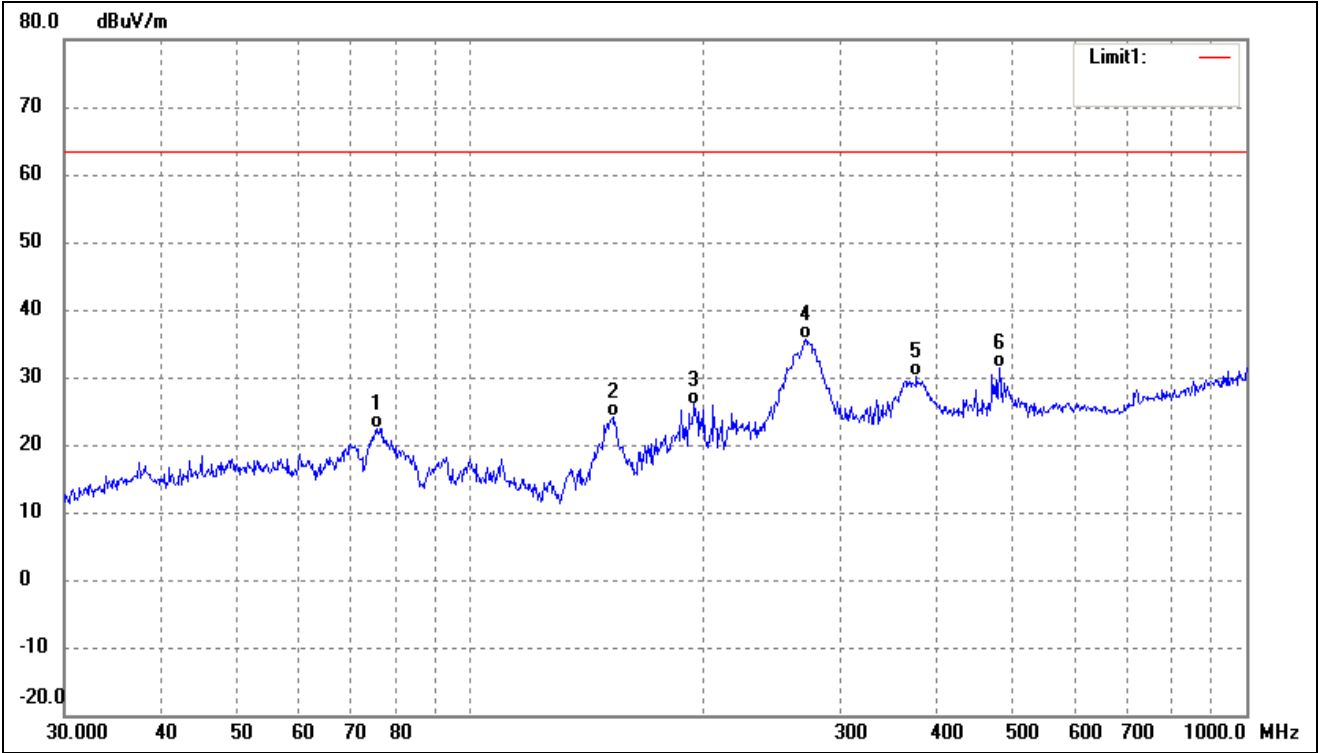
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	74.6569	35.90	-13.94	21.96	63.50	-41.54	-	-	QP
2	153.7385	38.56	-14.65	23.91	63.50	-39.59	-	-	QP
3	201.3930	38.83	-11.27	27.56	63.50	-35.94	-	-	QP
4	267.5455	42.53	-8.88	33.65	63.50	-29.85	-	-	QP
5	381.2487	35.46	-5.70	29.76	63.50	-33.74	-	-	QP
6	492.4685	34.81	-4.57	30.24	63.50	-33.26	-	-	QP

Test mode:	TM1	Polarity:	Vertical
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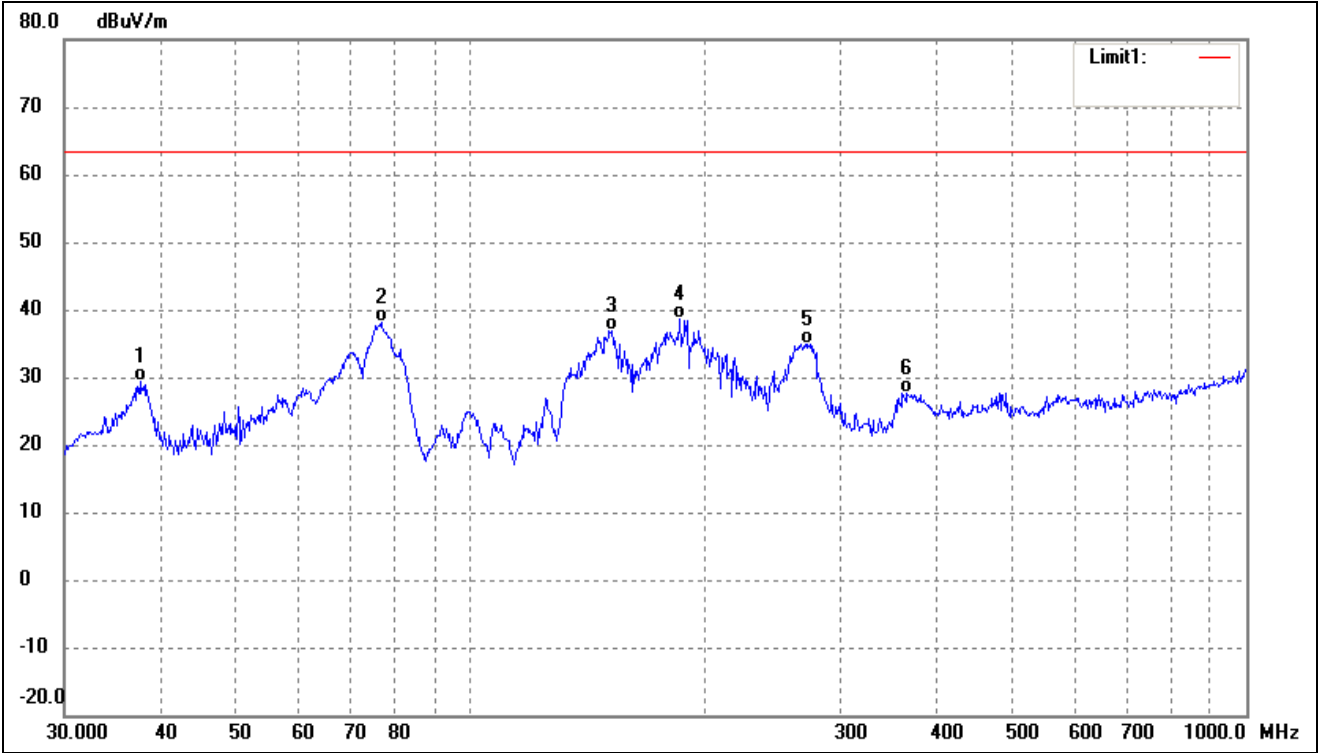
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	37.5479	41.01	-12.18	28.83	63.50	-34.67	-	-	QP
2	75.9773	52.02	-13.98	38.04	63.50	-25.46	-	-	QP
3	179.3863	51.62	-13.34	38.28	63.50	-25.22	-	-	QP
4	263.8190	41.86	-8.98	32.88	63.50	-30.62	-	-	QP
5	370.7023	32.15	-5.77	26.38	63.50	-37.12	-	-	QP
6	487.3151	32.91	-4.64	28.27	63.50	-35.23	-	-	QP

Test mode:	TM2	Polarity:	Horizontal
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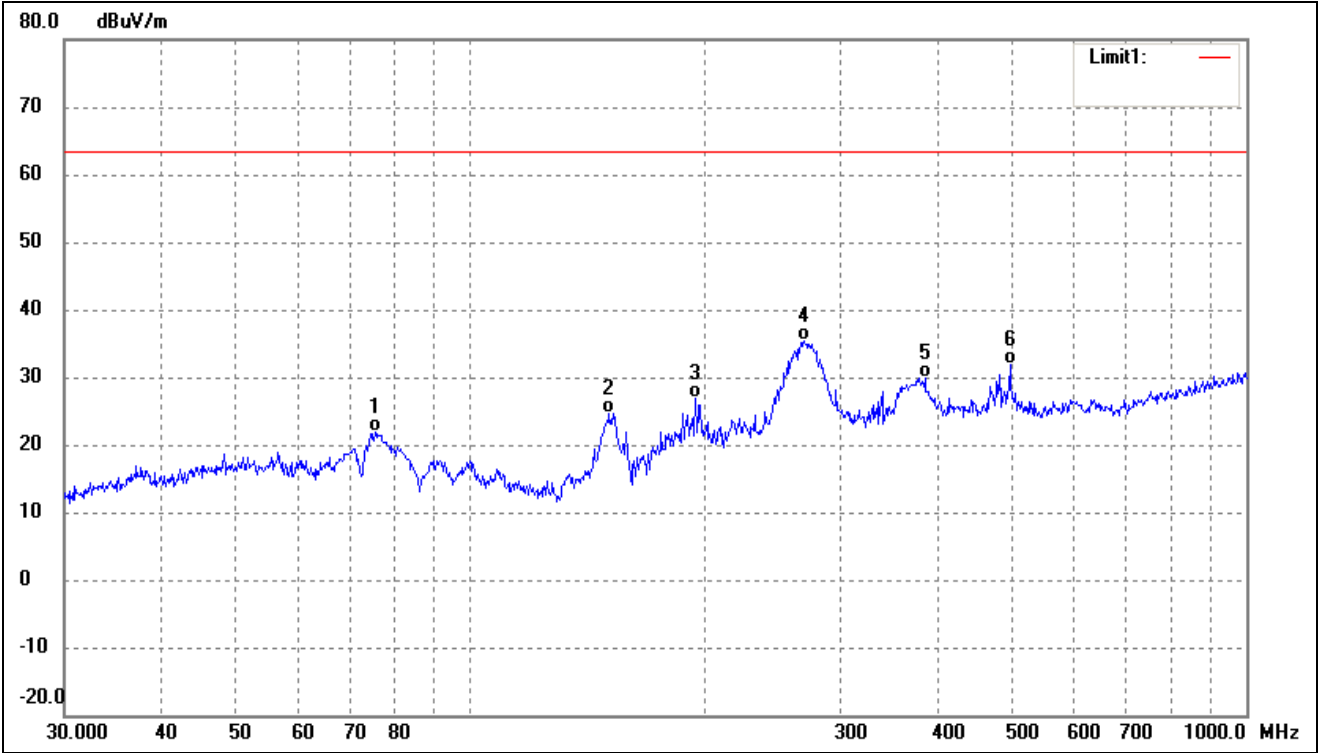
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	75.7114	36.32	-13.96	22.36	63.50	-41.14	-	-	QP
2	152.6641	38.83	-14.70	24.13	63.50	-39.37	-	-	QP
3	194.4534	37.72	-11.72	26.00	63.50	-37.50	-	-	QP
4	270.3748	44.47	-8.82	35.65	63.50	-27.85	-	-	QP
5	375.9385	35.72	-5.69	30.03	63.50	-33.47	-	-	QP
6	480.5276	36.00	-4.72	31.28	63.50	-32.22	-	-	QP

Test mode:	TM2	Polarity:	Vertical
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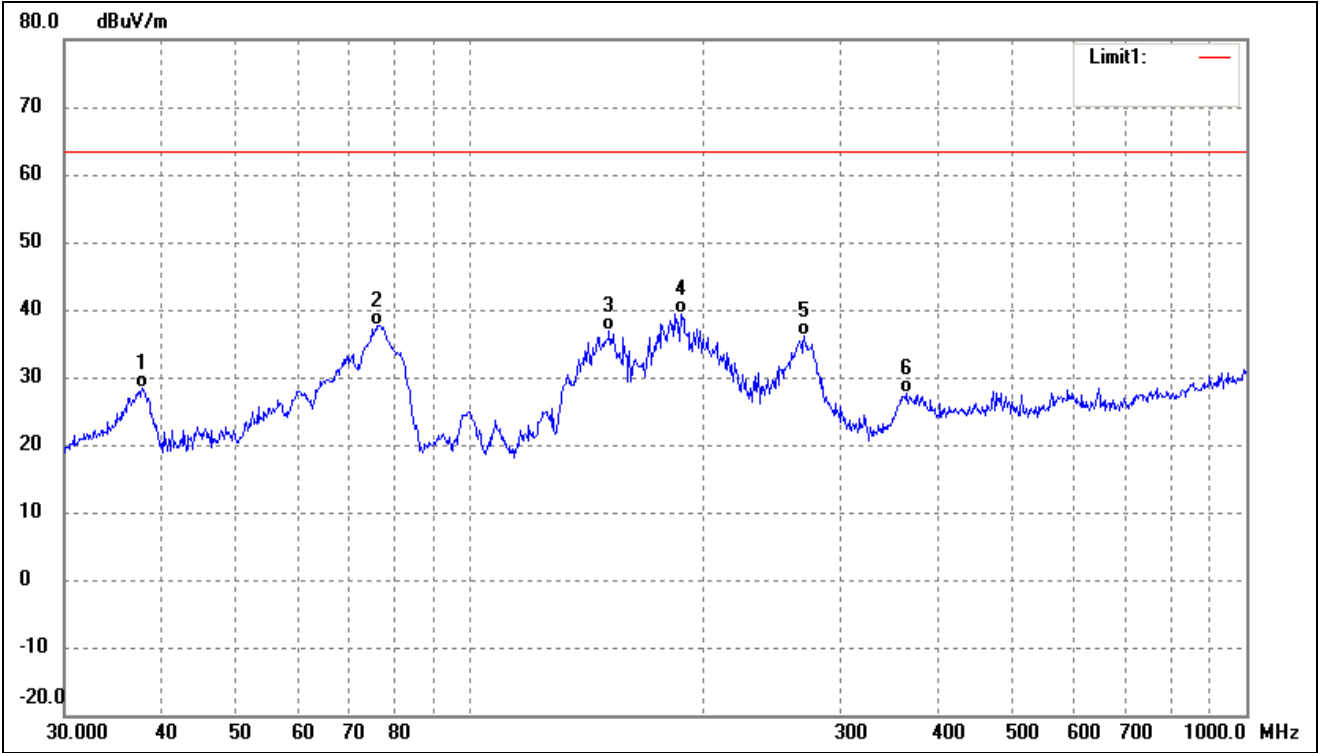
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	37.5479	41.49	-12.18	29.31	63.50	-34.19	-	-	QP
2	76.7808	52.05	-14.01	38.04	63.50	-25.46	-	-	QP
3	152.1297	51.66	-14.73	36.93	63.50	-26.57	-	-	QP
4	186.4409	51.20	-12.50	38.70	63.50	-24.80	-	-	QP
5	272.2776	43.71	-8.77	34.94	63.50	-28.56	-	-	QP
6	365.5391	33.56	-5.86	27.70	63.50	-35.80	-	-	QP

Test mode:	TM3	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	75.4464	35.75	-13.94	21.81	63.50	-41.69	-	-	QP
2	151.0666	39.44	-14.79	24.65	63.50	-38.85	-	-	QP
3	195.1365	38.64	-11.66	26.98	63.50	-36.52	-	-	QP
4	269.4284	44.24	-8.84	35.40	63.50	-28.10	-	-	QP
5	385.2805	35.59	-5.73	29.86	63.50	-33.64	-	-	QP
6	495.9344	36.42	-4.52	31.90	63.50	-31.60	-	-	QP

Test mode:	TM3	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	37.8121	40.62	-12.13	28.49	63.50	-35.01	-	-	QP
2	75.9773	51.67	-13.98	37.69	63.50	-25.81	-	-	QP
3	151.0666	51.70	-14.79	36.91	63.50	-26.59	-	-	QP
4	187.0958	51.92	-12.43	39.49	63.50	-24.01	-	-	QP
5	269.4284	45.08	-8.84	36.24	63.50	-27.26	-	-	QP
6	364.2595	33.43	-5.88	27.55	63.50	-35.95	-	-	QP

Remark: ‘-’Means’ the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

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