

TEST REPORT

Reference No..... : WTX21X06057858W-1
FCC ID : 2AOAF-650
Applicant : TYLT,INC.
Address..... : 685 Cochran St.Suite 200 Simi Valley CA93065 US
Product Name : Sabre
Test Model. : QISBRBK-T
Standards : FCC Part 18
Date of Receipt sample : Jun. 15, 2021
Date of Test..... : Jun. 15, 2021 to Jun. 22, 2021
Date of Issue : Jun. 22, 2021
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:

WaltekTesting Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road,
Block 70 Bao'an District, Shenzhen, Guangdong, China

Tel.: +86-755-33663308

Fax.: +86-755-33663309

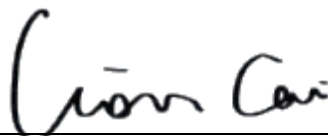
Tested by:

Reviewed By:

Approved & Authorized By:



Jason Su / Project Engineer



Lion Cai / RF Manager



Silin Chen / Manager

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY.....	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND OPERATION MODE	6
1.6 MEASUREMENT UNCERTAINTY	6
1.7 TEST EQUIPMENT LIST AND DETAILS	7
2. SUMMARY OF TEST RESULTS	8
3. CONDUCTED EMISSIONS	9
3.1 STANDARD APPLICABLE.....	9
3.2 TEST PROCEDURE.....	9
3.3BASIC TEST SETUP BLOCK DIAGRAM	9
3.4 ENVIRONMENTAL CONDITIONS	9
3.5 TEST RECEIVER SETUP	10
3.6 SUMMARY OF TEST RESULTS/PLOTS	10
4. RADIATED EMISSIONS.....	17
4.1 TEST PROCEDURE.....	17
4.2 TEST RECEIVER SETUP	19
4.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	19
4.4 ENVIRONMENTAL CONDITIONS	19
4.5 SUMMARY OF TEST RESULTS/PLOTS	19
APPENDIXPHOTOGRAPHS.....	29

Report version

Version No.	Date of issue	Description
Rev.00	Jun. 22, 2021	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: TYLT,INC.
Address of applicant: 685 Cochran St.Suite 200 Simi Valley CA93065 US

Manufacturer: Shenzhen Goodwin Technology Co., Ltd.
Address of manufacturer: 4/F,BuildingA,Huayuan Industrial Park,Fenghuang
NO.1 IndustrailArea,Fuyong,Bao'anDist, Shenzhen,
China

General Description of EUT	
Product Name:	Sabre
Trade Name:	/
Model No.:	QISBRBK-T
Adding Model(s):	QISAB15WBK, QISBRXX-T (XX means different colors)
<i>Note: The test data is gathered from a production sample,provided by the manufacturer.The appearance of others models listed in the report is different from main-test model QISBRBK-T, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	120~130kHz
Antenna Type:	Coil Antenna
Rated Voltage:	Input: DC12V
Rated Current:	Input:4A
Rated Power:	Output: 5W / 10W / 15W

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 DC12V4A; Output 1:5W; Output 2:5W
TM2	Wireless Charging	/	Input DC12V4A; Output 1:10W; Output 2:10W
TM3	Wireless Charging	/	Input DC12V4A; Output 1:15W; Output 2:15W

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Cable	1.2	Shielded	With Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

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	Rohde & Schwarz	FSP	836079/035	2021-03-30	2022-03-29
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2021-04-12	2022-04-11
Amplifier	Agilent	8447F	3113A06717	2021-04-12	2022-04-11
Amplifier	C&D	PAP-1G18	2002	2021-04-12	2022-04-11
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2021-03-20	2023-03-19
Horn Antenna	ETS	3117	00086197	2021-03-19	2023-03-18
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2023-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2023-04-08
Amplifier	Agilent	8447D	2944A10179	2021-04-12	2022-04-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2021-04-15	2022-04-14

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:

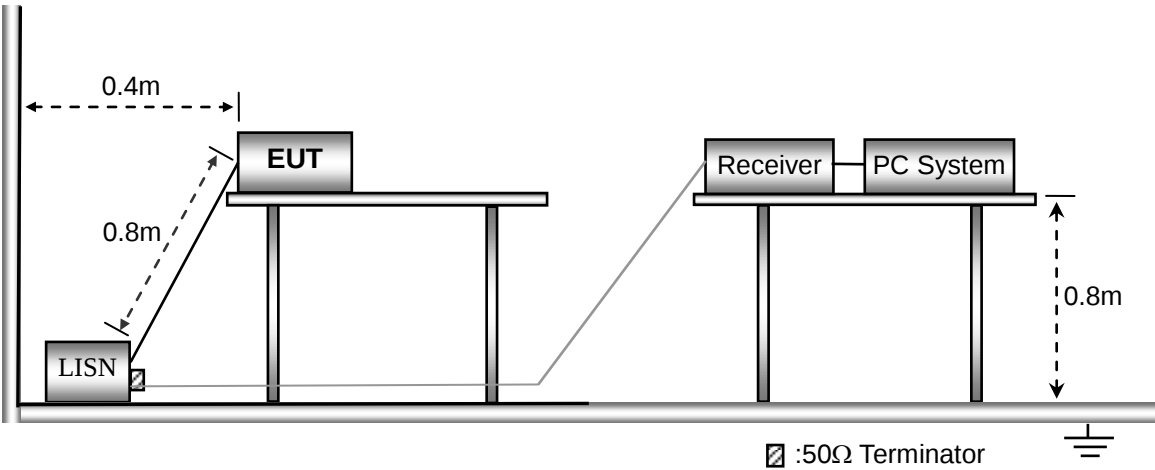
Frequency (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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.

3.3Basic Test Setup Block Diagram



3.4 Environmental Conditions

Temperature:	23.5° C
Relative Humidity:	54%
ATM Pressure:	1016 mbar

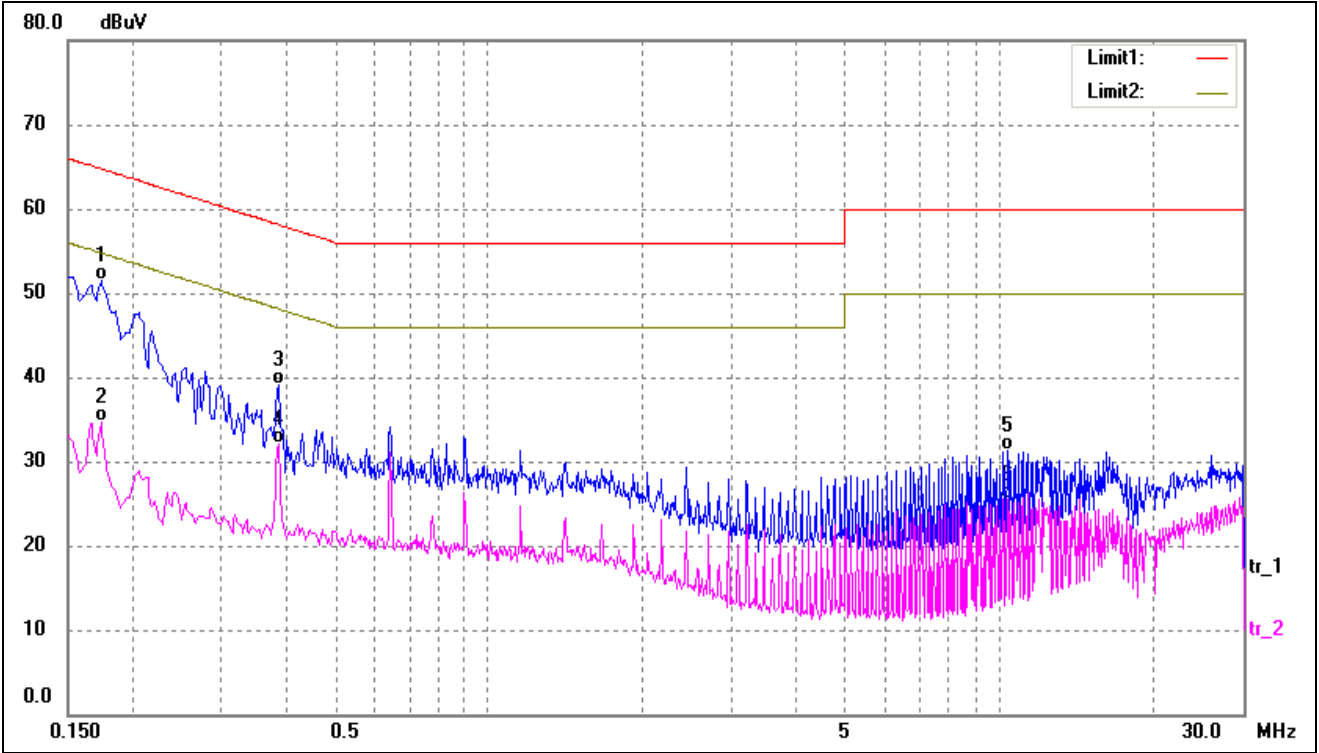
3.5 Test Receiver Setup

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

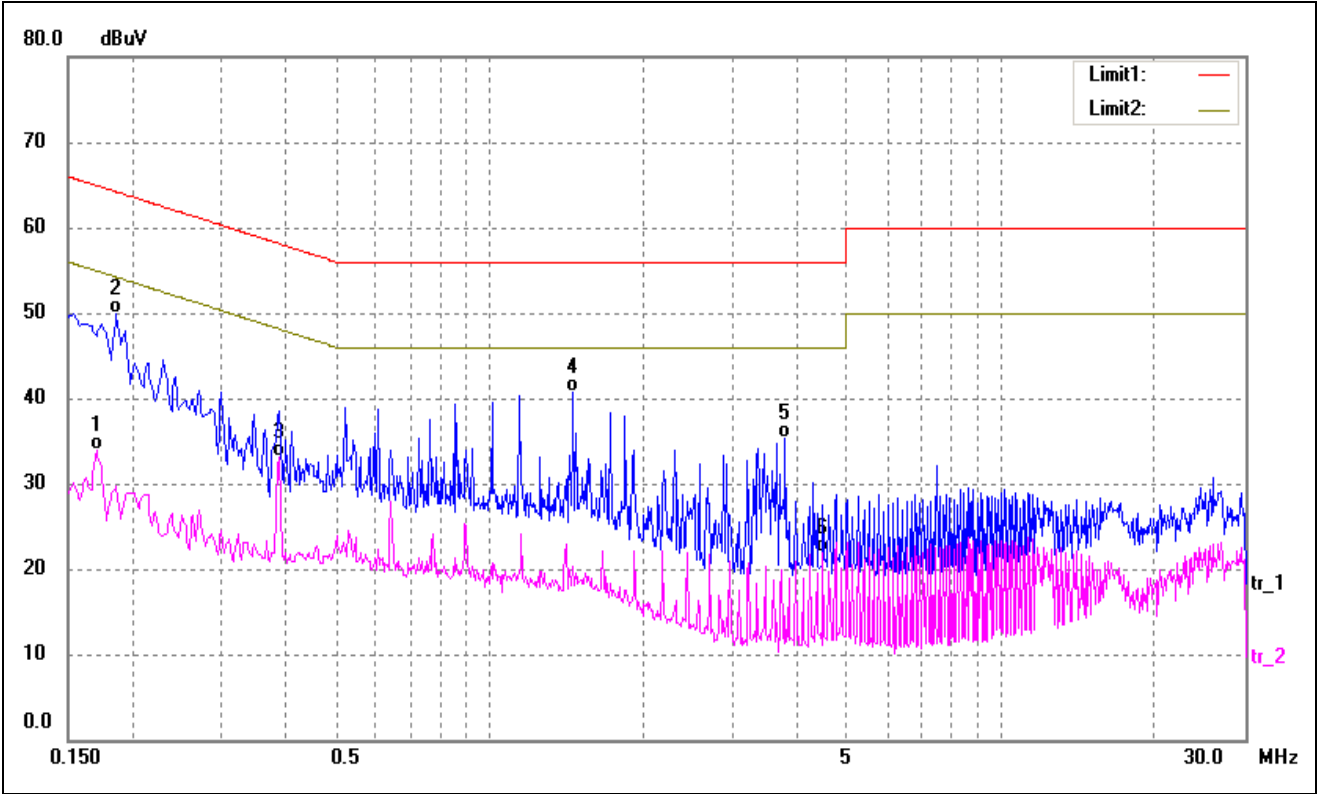
3.6 Summary of Test Results/Plots

Test mode:	TM1	Polarity:	Line
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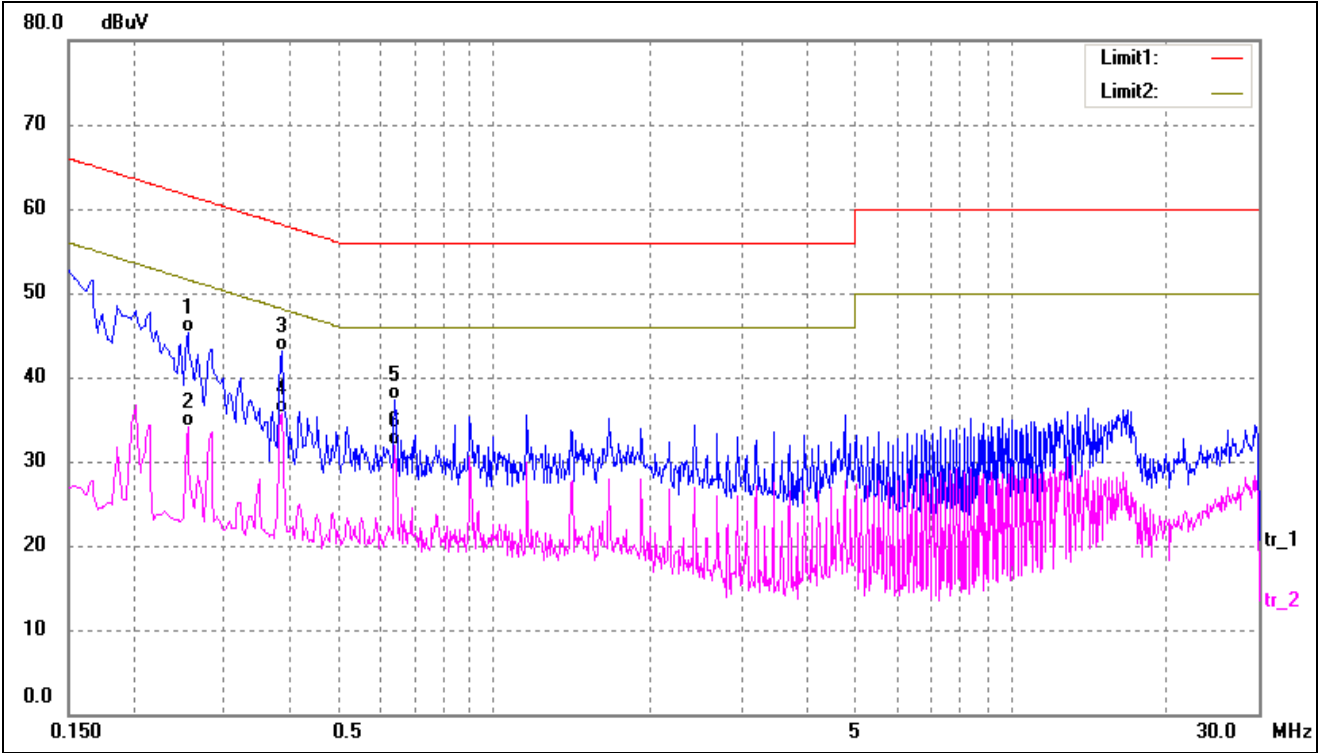
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1740	41.26	10.25	51.51	64.76	-13.25	QP
2	0.1740	24.36	10.25	34.61	54.76	-20.15	AVG
3	0.3860	28.96	10.23	39.19	58.15	-18.96	QP
4	0.3860	21.86	10.23	32.09	48.15	-16.06	AVG
5	10.3940	20.96	10.30	31.26	60.00	-28.74	QP
6	10.3940	15.23	10.30	25.53	50.00	-24.47	AVG

Test mode:	TM1	Polarity:	Neutral
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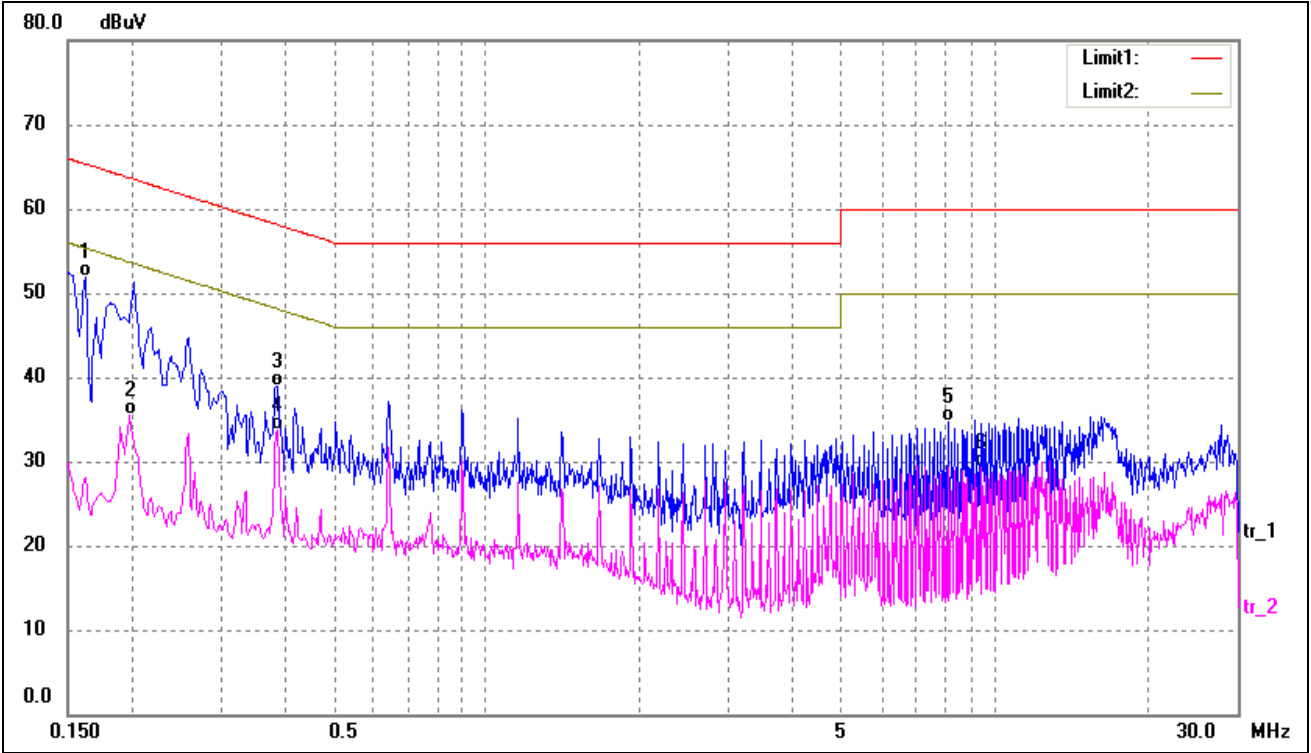
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1700	23.56	10.25	33.81	54.96	-21.15	AVG
2	0.1860	39.64	10.26	49.90	64.21	-14.31	QP
3	0.3860	22.84	10.23	33.07	48.15	-15.08	AVG
4	1.4620	30.51	10.23	40.74	56.00	-15.26	QP
5	3.7900	25.08	10.24	35.32	56.00	-20.68	QP
6	4.4899	11.61	10.23	21.84	46.00	-24.16	AVG

Test mode:	TM2	Polarity:	Line
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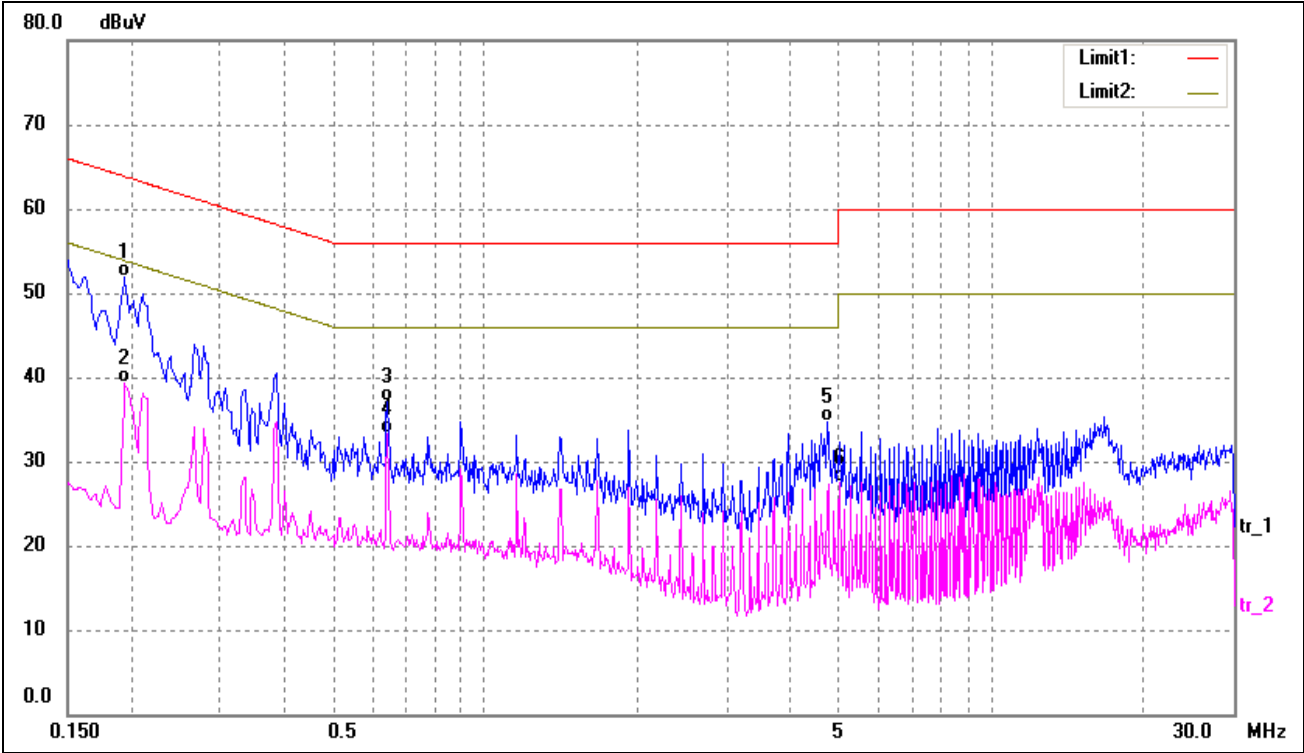
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2540	35.13	10.26	45.39	61.62	-16.23	QP
2	0.2540	23.76	10.26	34.02	51.62	-17.60	AVG
3	0.3860	32.81	10.23	43.04	58.15	-15.11	QP
4	0.3860	25.50	10.23	35.73	48.15	-12.42	AVG
5	0.6419	27.10	10.19	37.29	56.00	-18.71	QP
6	0.6419	21.69	10.19	31.88	46.00	-14.12	AVG

Test mode:	TM2	Polarity:	Neutral
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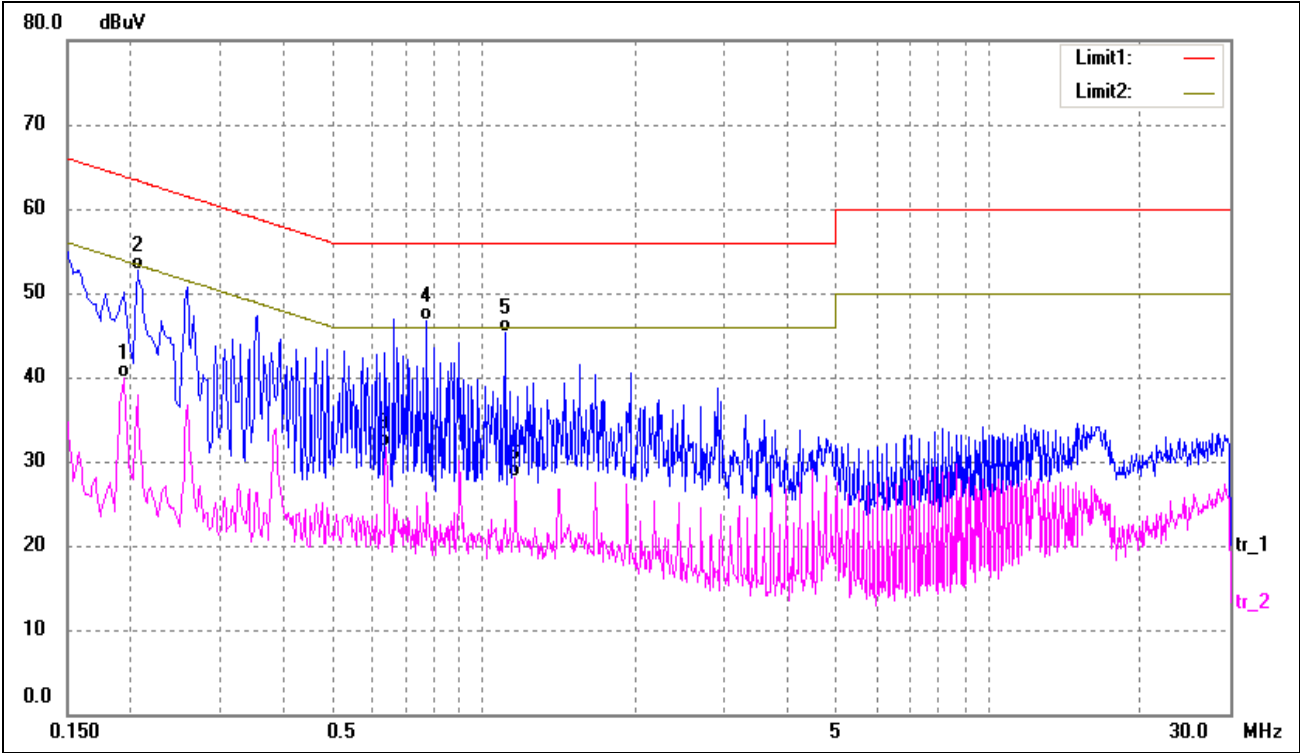
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1620	41.73	10.26	51.99	65.36	-13.37	QP
2*	0.1980	25.24	10.27	35.51	53.69	-18.18	AVG
3	0.3860	28.73	10.23	38.96	58.15	-19.19	QP
4	0.3860	23.48	10.23	33.71	48.15	-14.44	AVG
5	8.0860	24.51	10.27	34.78	60.00	-25.22	QP
6	9.3700	19.07	10.28	29.35	50.00	-20.65	AVG

Test mode:	TM3	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1940	41.61	10.27	51.88	63.86	-11.98	QP
2*	0.1940	29.08	10.27	39.35	53.86	-14.51	AVG
3	0.6419	26.92	10.19	37.11	56.00	-18.89	QP
4	0.6419	23.04	10.19	33.23	46.00	-12.77	AVG
5	4.7460	24.45	10.22	34.67	56.00	-21.33	QP
6	5.0060	17.19	10.22	27.41	50.00	-22.59	AVG

Test mode:	TM3	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1940	29.67	10.27	39.94	53.86	-13.92	AVG
2	0.2060	42.39	10.27	52.66	63.36	-10.70	QP
3	0.6419	21.59	10.19	31.78	46.00	-14.22	AVG
4	0.7740	36.56	10.17	46.73	56.00	-9.27	QP
5	1.1060	35.16	10.21	45.37	56.00	-10.63	QP
6	1.1539	17.91	10.22	28.13	46.00	-17.87	AVG

4. Radiated Emissions

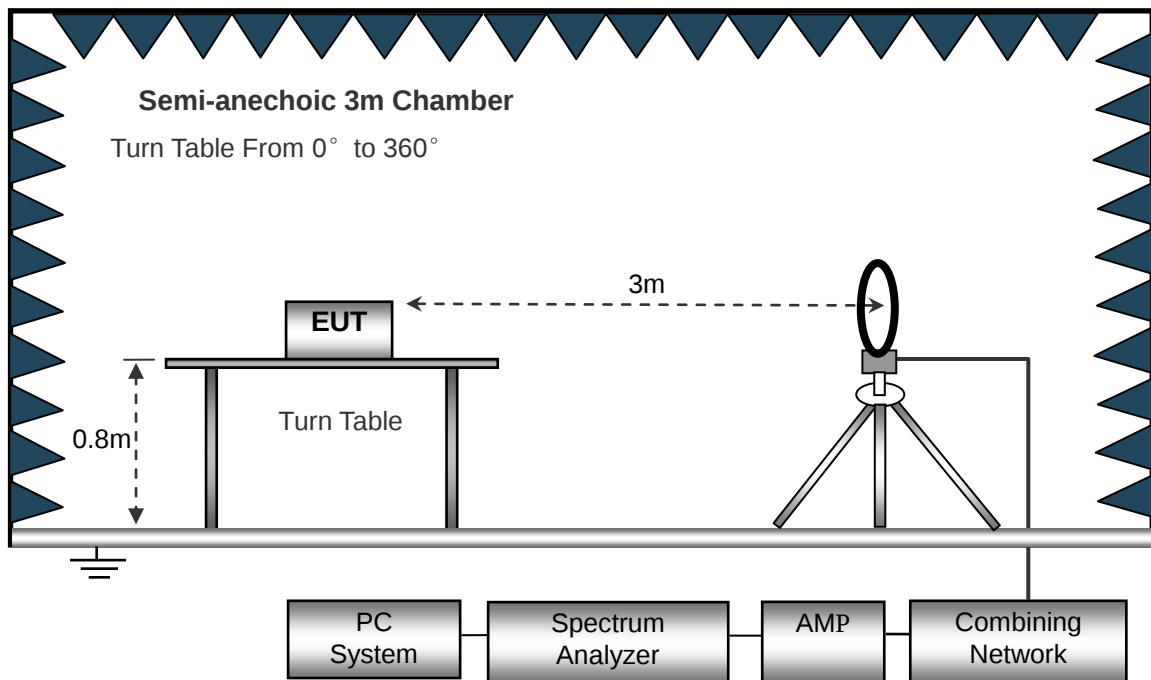
4.1 Test Procedure

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.

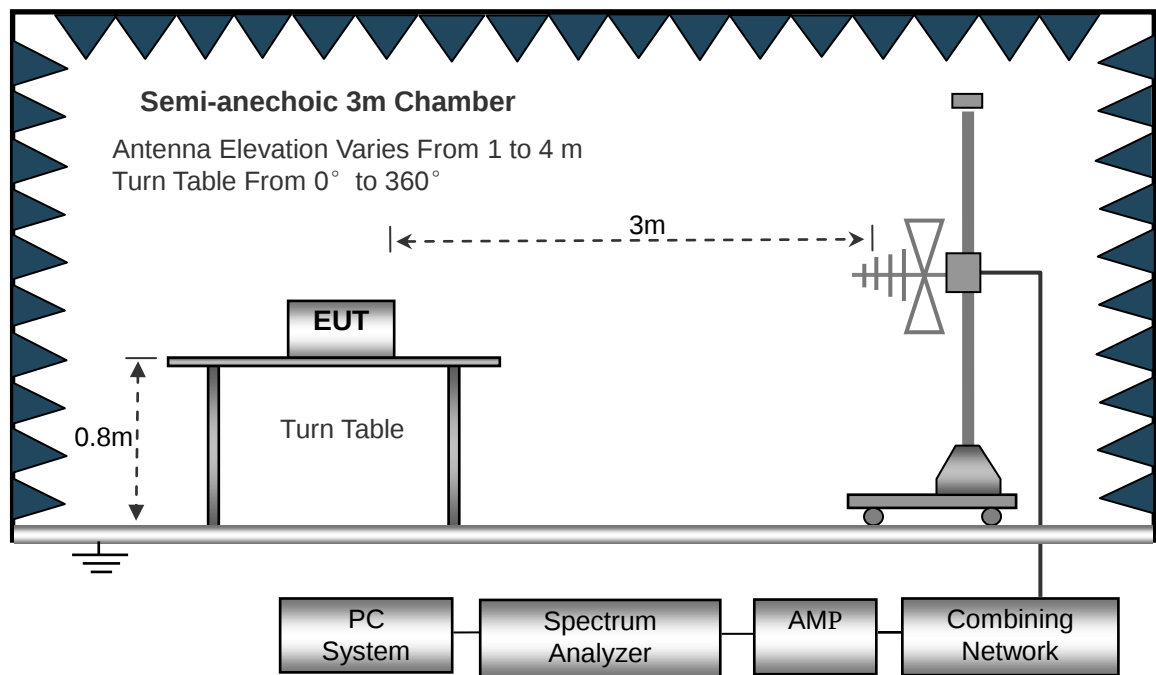
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

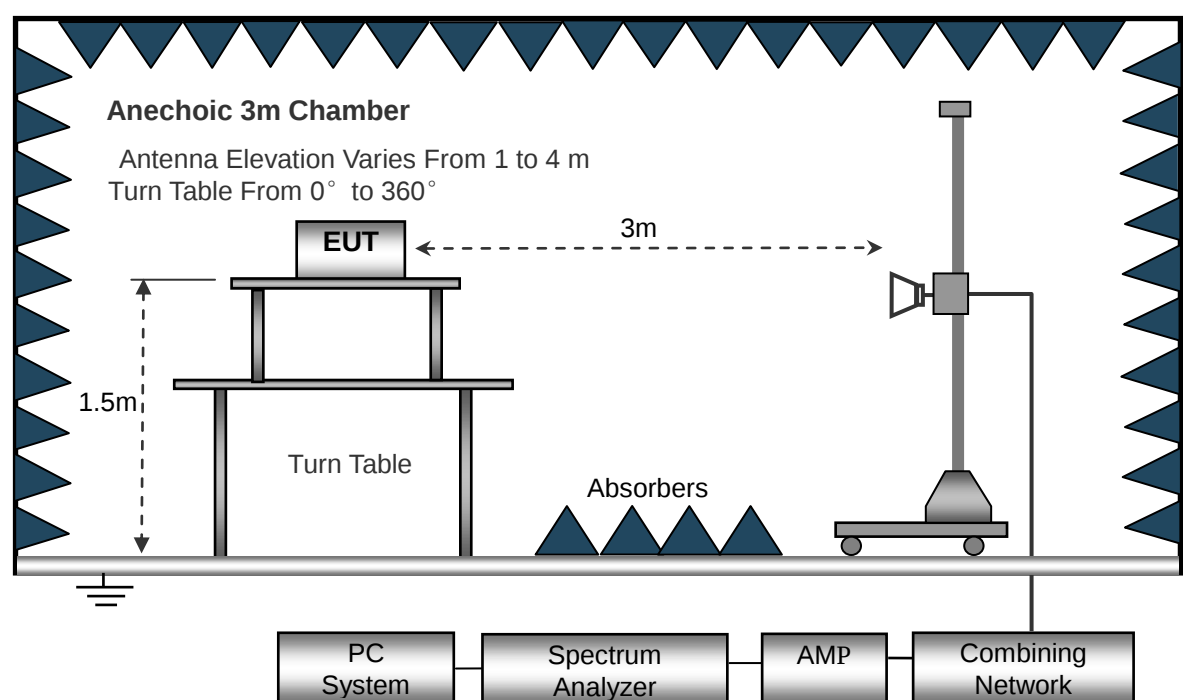
The test setup for emission measurement below 30MHz..



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:

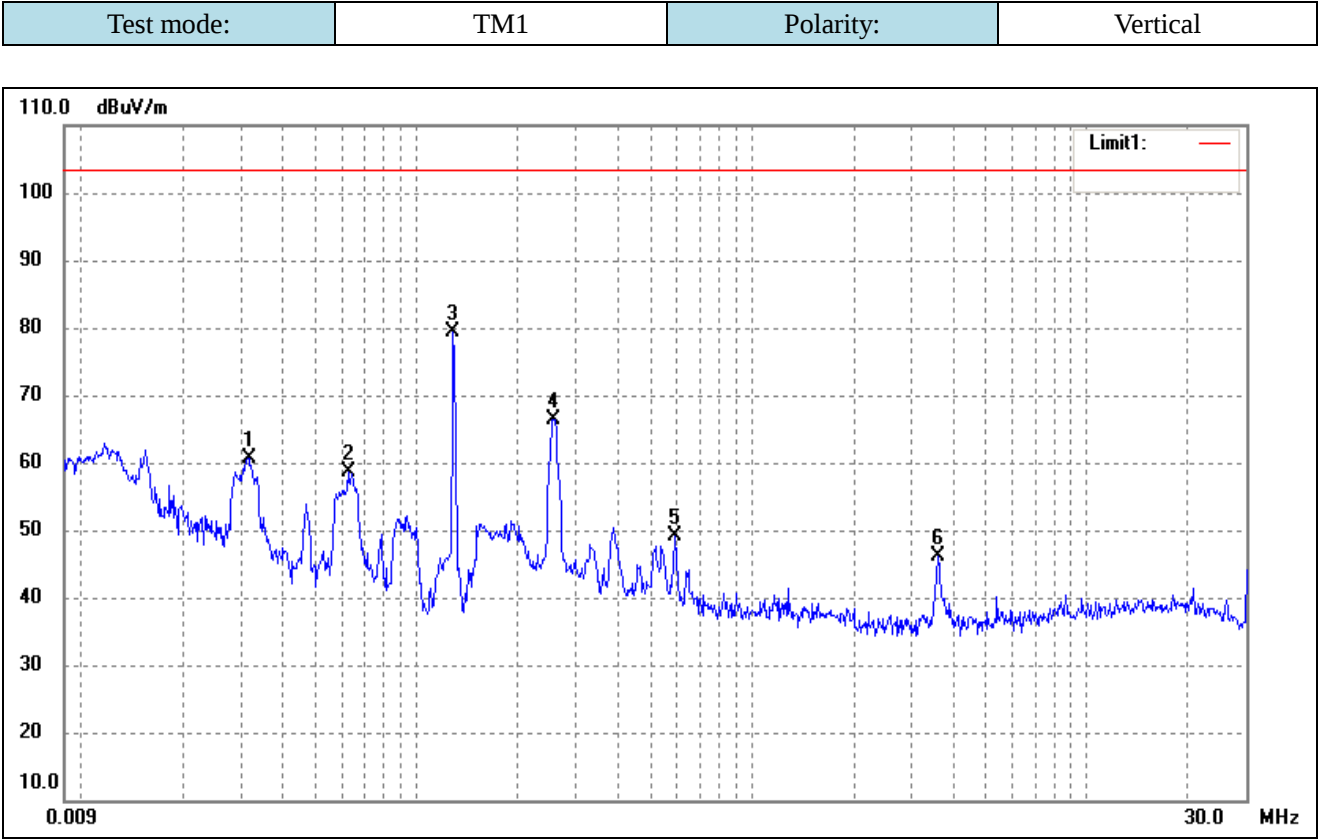
$$\text{Margin} = \text{Corr. Ampl.} - \text{FCCPart18.305 Limit}$$

4.4 Environmental Conditions

Temperature:	22°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

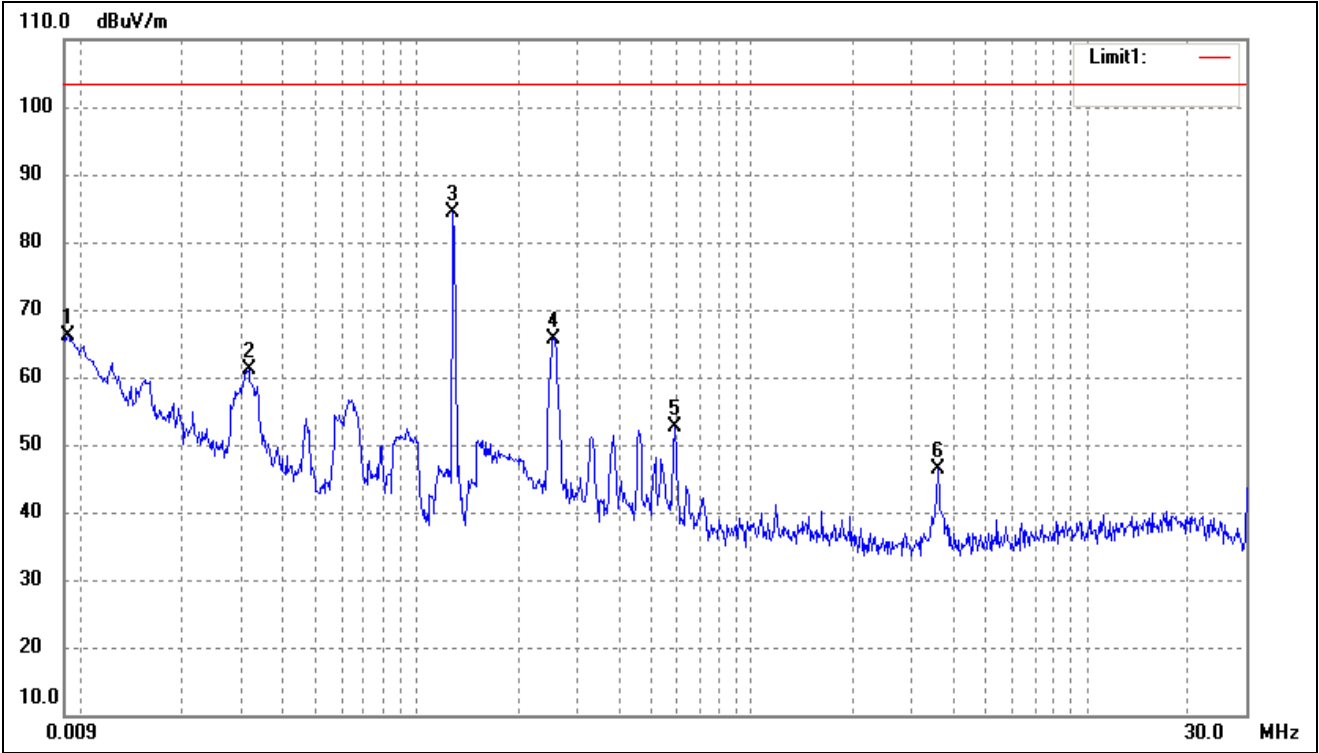
4.5 Summary of Test Results/Plots

Plot of Radiated Emissions Test Data (Below 30MHz)



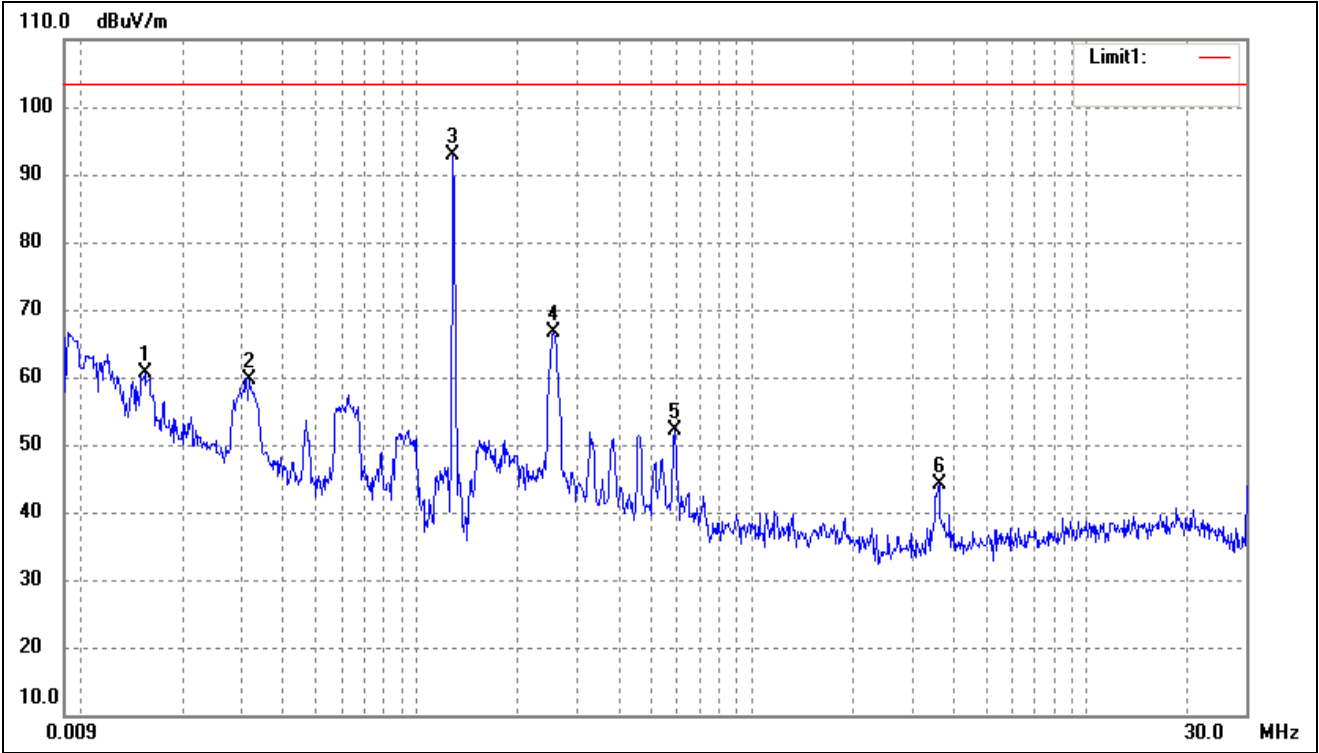
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	0.0316	64.21	-3.61	60.60	103.50	-42.90	-	-	peak
2	0.0625	61.39	-2.88	58.51	103.50	-44.99	-	-	peak
3	0.1289	82.28	-2.95	79.33	103.50	-24.17	-	-	peak
4	0.2562	70.05	-3.56	66.49	103.50	-37.01	-	-	peak
5	0.5885	51.72	-2.70	49.02	103.50	-54.48	-	-	peak
6	3.5843	46.80	-0.72	46.08	103.50	-57.42	-	-	peak

Test mode:	TM2	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	0.0091	69.73	-3.69	66.04	103.50	-37.46	-	-	peak
2	0.0314	64.75	-3.62	61.13	103.50	-42.37	-	-	peak
3	0.1285	87.22	-2.95	84.27	103.50	-19.23	-	-	peak
4	0.2562	69.16	-3.56	65.60	103.50	-37.90	-	-	peak
5	0.5885	55.28	-2.70	52.58	103.50	-50.92	-	-	peak
6	3.5843	47.04	-0.72	46.32	103.50	-57.18	-	-	peak

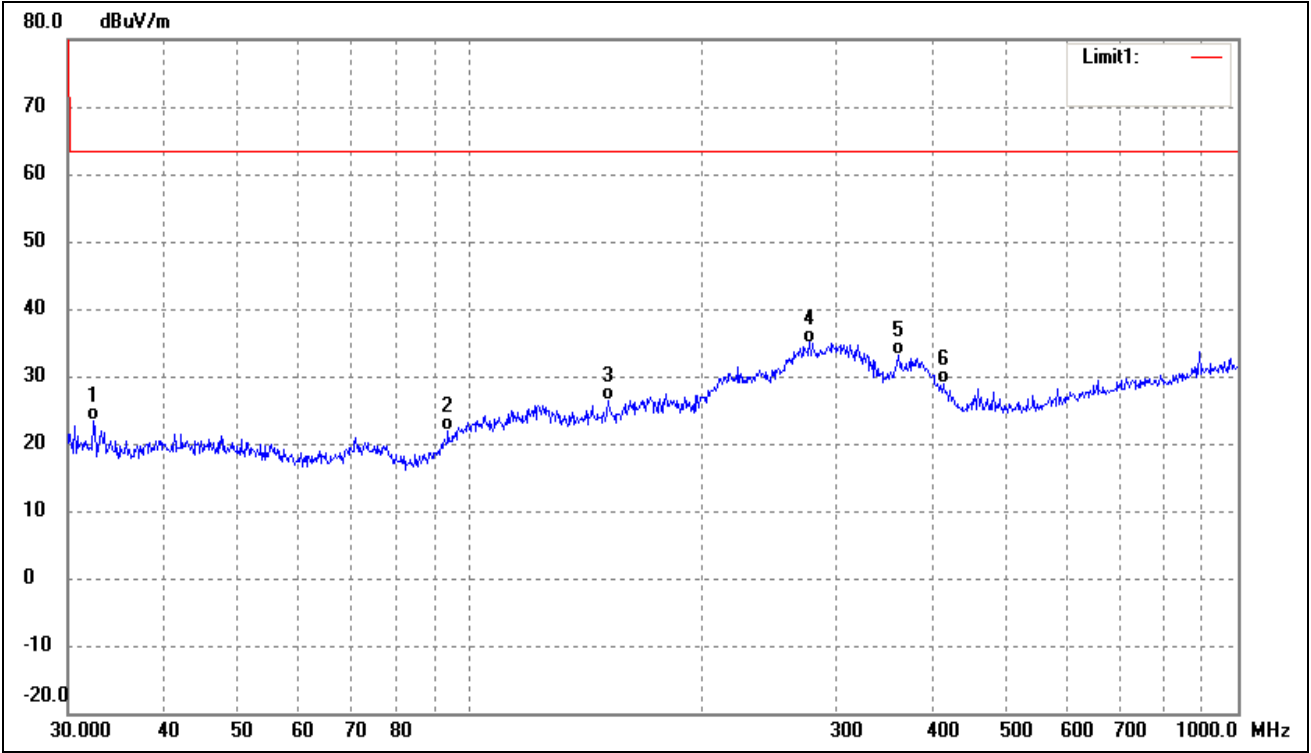
Test mode:	TM3	Polarity:	Vertical
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	0.0156	64.71	-4.07	60.64	103.50	-42.86	-	-	peak
2	0.0316	63.36	-3.61	59.75	103.50	-43.75	-	-	peak
3	0.1285	95.71	-2.95	92.76	103.50	-10.74	-	-	peak
4	0.2562	70.16	-3.56	66.60	103.50	-36.90	-	-	peak
5	0.5885	54.88	-2.70	52.18	103.50	-51.32	-	-	peak
6	3.6225	44.86	-0.72	44.14	103.50	-59.36	-	-	peak

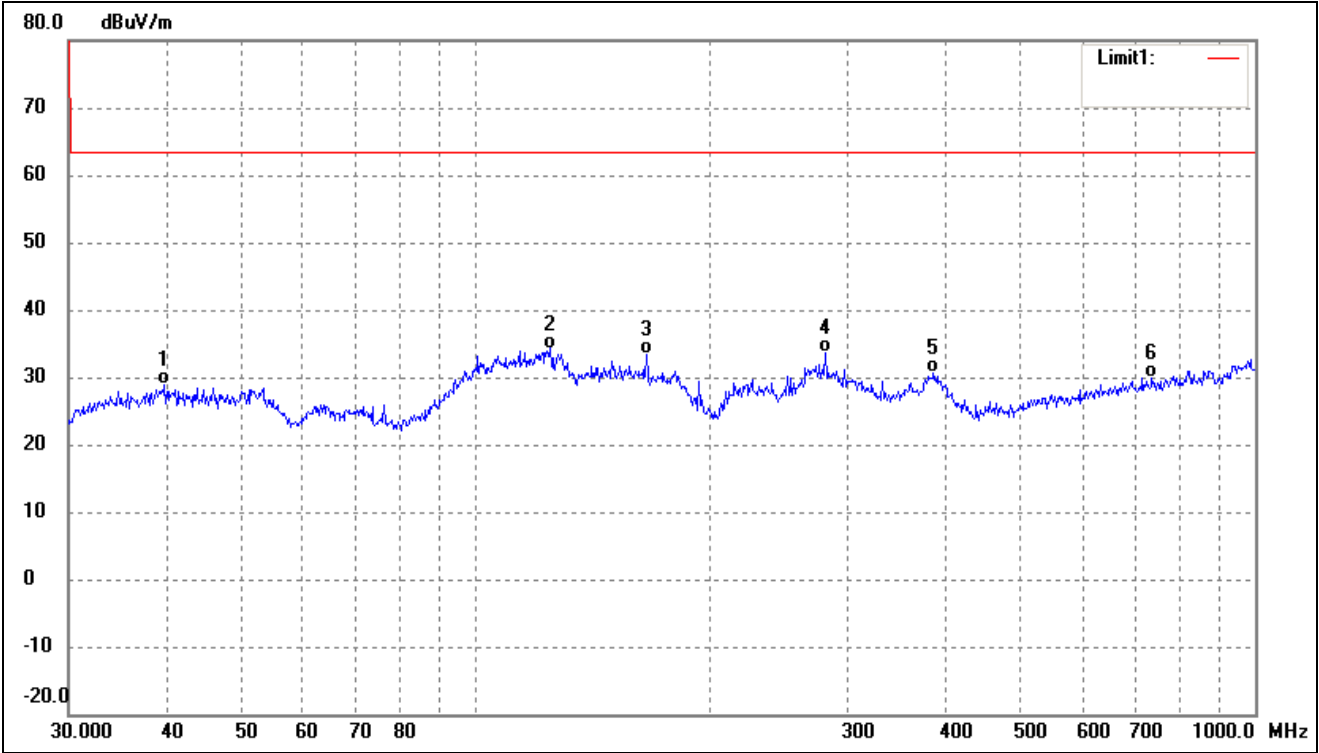
Plot of Radiated Emissions Test Data (Above 30MHz)

Test mode:	TM1	Polarity:	Horizontal
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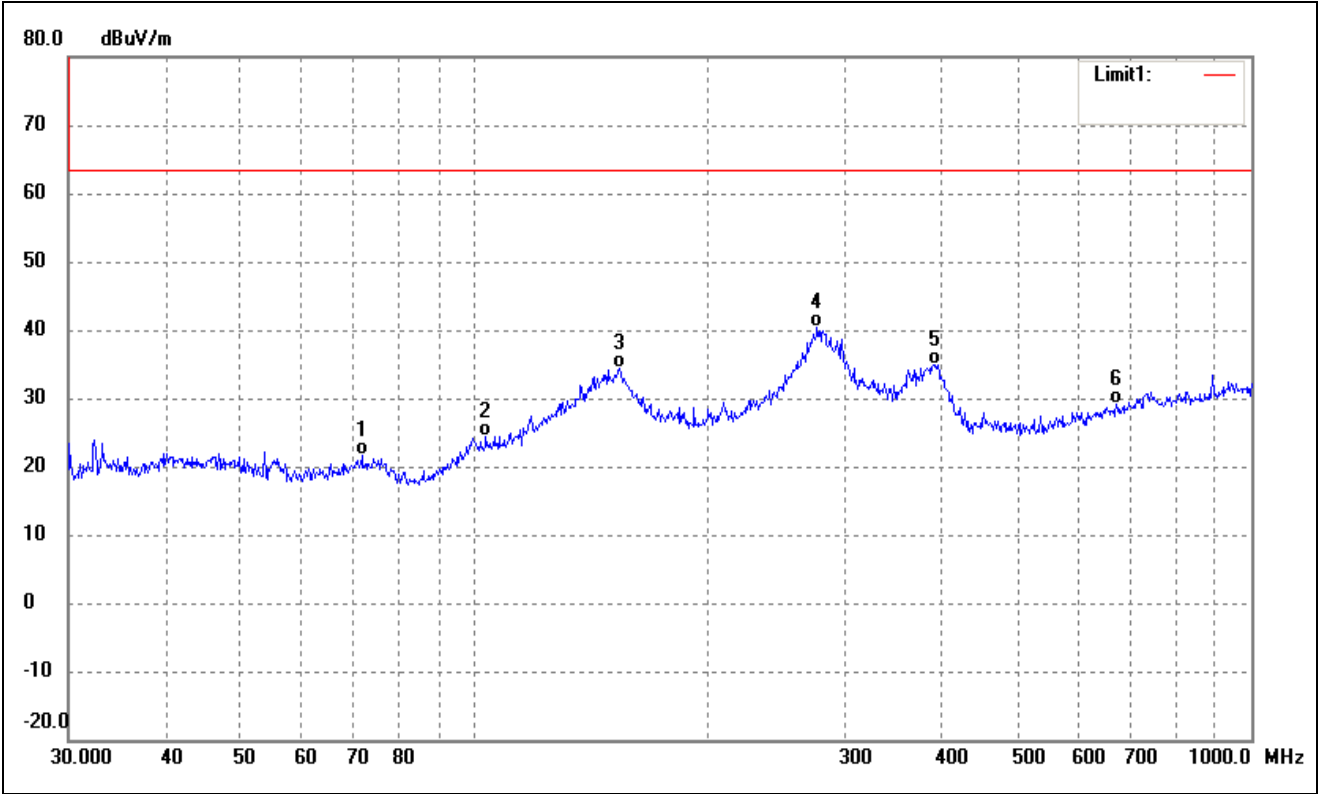
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	32.4059	33.04	-9.58	23.46	63.50	-40.04	-	-	QP
2	93.7685	32.14	-10.32	21.82	63.50	-41.68	-	-	QP
3	151.5972	38.57	-12.09	26.48	63.50	-37.02	-	-	QP
4	277.0935	41.08	-6.08	35.00	63.50	-28.50	-	-	QP
5	361.7139	37.58	-4.53	33.05	63.50	-30.45	-	-	QP
6	413.2706	32.99	-4.12	28.87	63.50	-34.63	-	-	QP

Test mode:	TM1	Polarity:	Vertical
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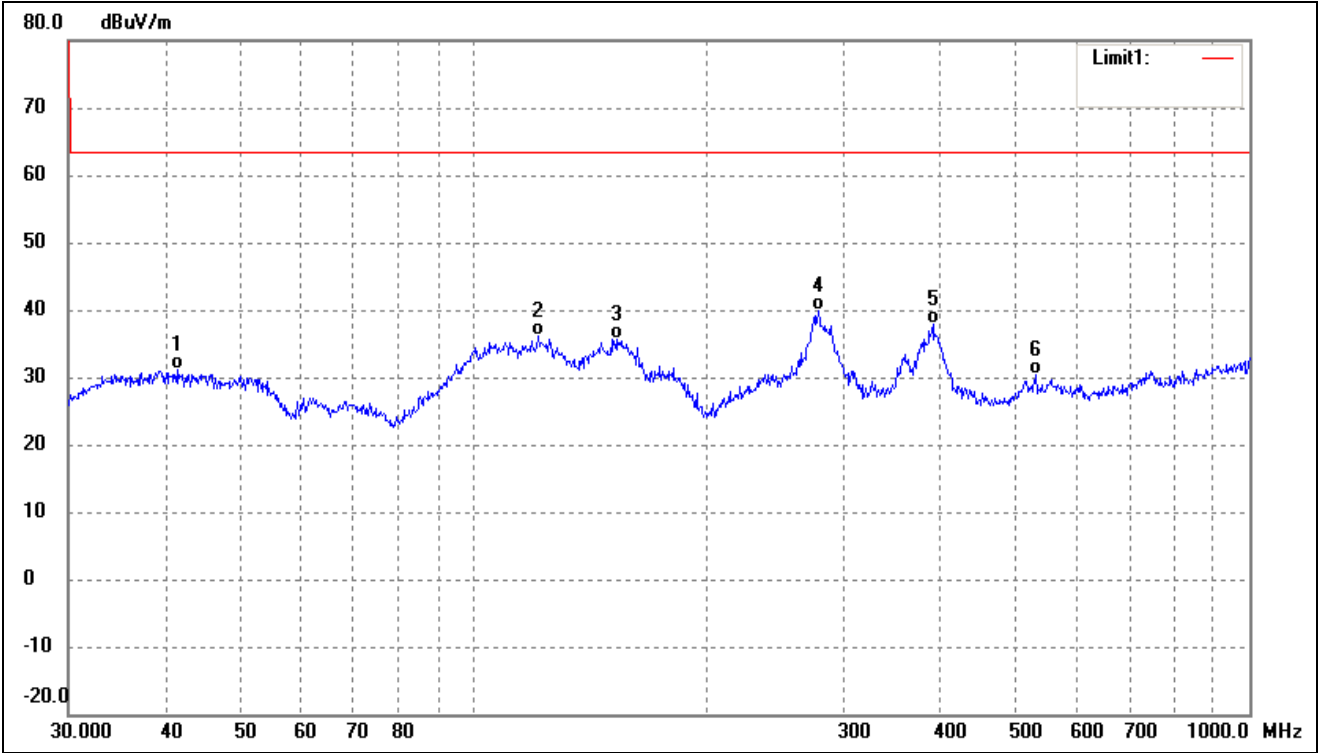
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	39.8542	36.86	-7.89	28.97	63.50	-34.53	-	-	QP
2	124.5690	44.42	-10.17	34.25	63.50	-29.25	-	-	QP
3	165.4866	44.71	-11.37	33.34	63.50	-30.16	-	-	QP
4	281.0075	39.53	-6.00	33.53	63.50	-29.97	-	-	QP
5	386.6338	34.66	-4.11	30.55	63.50	-32.95	-	-	QP
6	737.0714	28.90	1.01	29.91	63.50	-33.59	-	-	QP

Test mode:	TM2	Polarity:	Horizontal
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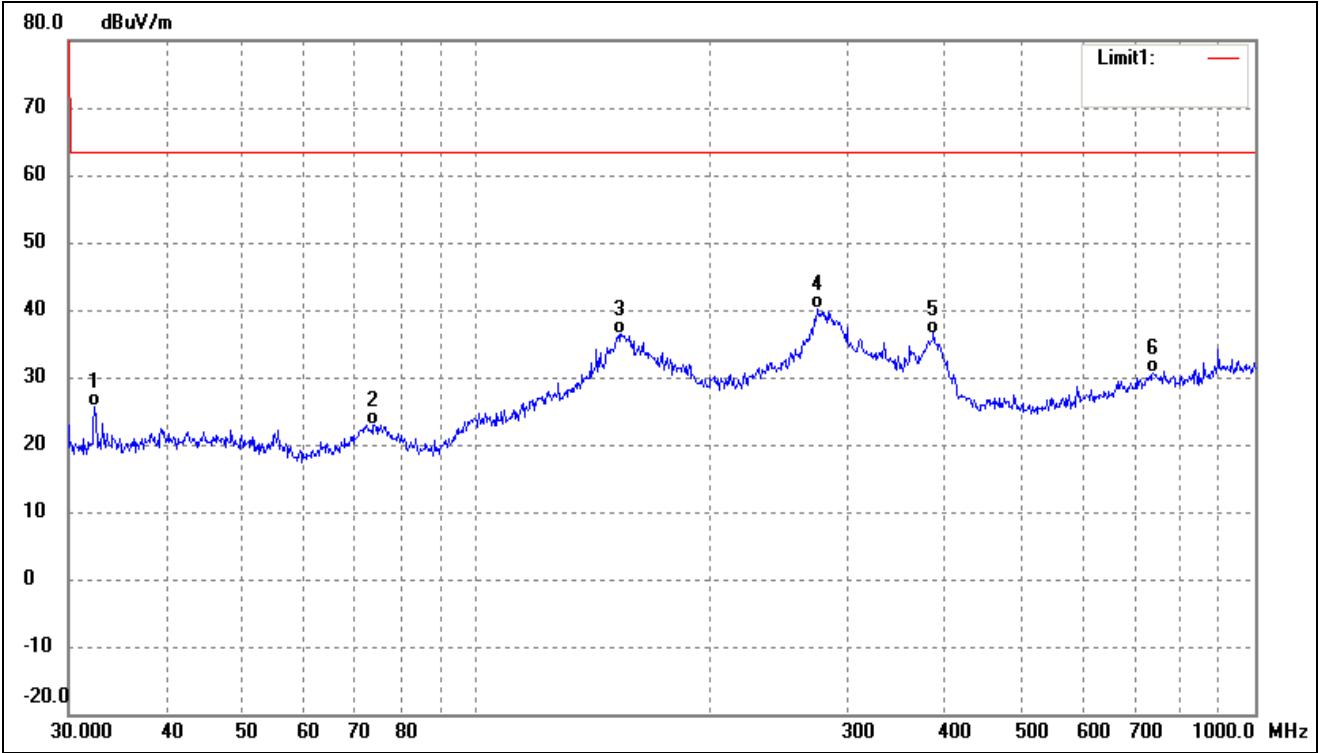
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	71.5806	33.37	-11.74	21.63	63.50	-41.87	-	-	QP
2	103.4420	33.07	-8.65	24.42	63.50	-39.08	-	-	QP
3	153.7385	46.32	-11.98	34.34	63.50	-29.16	-	-	QP
4	276.1235	46.54	-6.09	40.45	63.50	-23.05	-	-	QP
5	392.0951	38.88	-4.01	34.87	63.50	-28.63	-	-	QP
6	670.4893	28.93	0.20	29.13	63.50	-34.37	-	-	QP

Test mode:	TM2	Polarity:	Vertical
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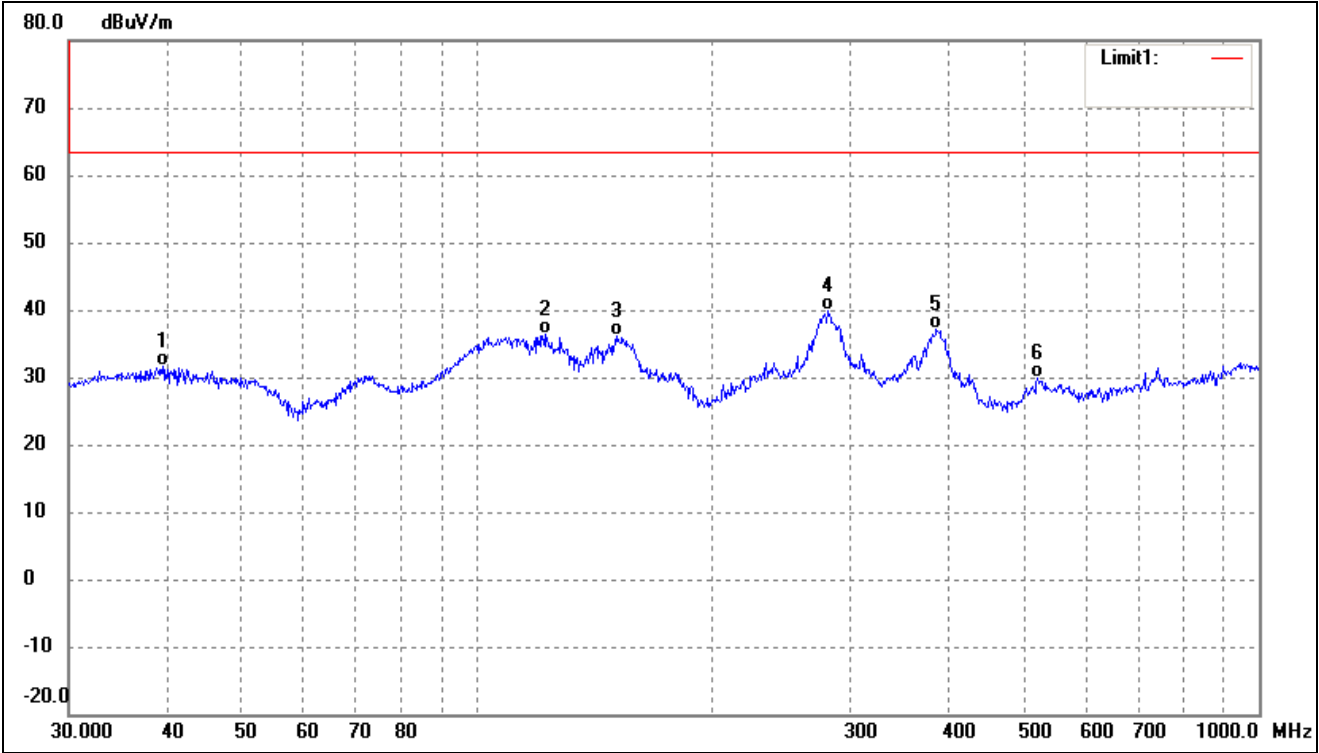
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	41.4215	38.98	-7.88	31.10	63.50	-32.40	-	-	QP
2	121.1231	45.71	-9.56	36.15	63.50	-27.35	-	-	QP
3	153.2004	47.68	-12.00	35.68	63.50	-27.82	-	-	QP
4	278.0668	45.84	-6.06	39.78	63.50	-23.72	-	-	QP
5	390.7226	41.85	-4.04	37.81	63.50	-25.69	-	-	QP
6	530.1014	32.39	-2.13	30.26	63.50	-33.24	-	-	QP

Test mode:	TM3	Polarity:	Horizontal
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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	32.4059	35.12	-9.58	25.54	63.50	-37.96	-	-	QP
2	73.8756	34.88	-11.92	22.96	63.50	-40.54	-	-	QP
3	152.6641	48.29	-12.03	36.26	63.50	-27.24	-	-	QP
4	274.1939	46.19	-6.13	40.06	63.50	-23.44	-	-	QP
5	386.6338	40.61	-4.11	36.50	63.50	-27.00	-	-	QP
6	739.6604	29.56	1.04	30.60	63.50	-32.90	-	-	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	39.5757	39.58	-7.96	31.62	63.50	-31.88	-	-	QP
2	121.9755	46.16	-9.71	36.45	63.50	-27.05	-	-	QP
3	151.0666	48.27	-12.11	36.16	63.50	-27.34	-	-	QP
4	281.0075	45.81	-6.00	39.81	63.50	-23.69	-	-	QP
5	386.6338	41.14	-4.11	37.03	63.50	-26.47	-	-	QP
6	520.8882	32.21	-2.30	29.91	63.50	-33.59	-	-	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.’

APPENDIXPHOTOGRAPHS

Please refer to “ANNEX”

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