

FCC Part 18 Measurement and Test Report

For

CE LINK LIMITED

Building G, Li Cheng Technology Industrial Zone, Gong He

Village, Sha Jing Town, Shen Zhen City, China

FCC ID: A4XWPC10-2TX01

Test Rule(s):	<u>FCC Part 18</u>
Product Description:	<u>Wireless Charger</u>
Tested Model:	<u>WPC10-2TX01</u>
Report No.:	<u>WTX19X01001939W-1</u>
Sample Receipt Date:	<u>2019-01-09</u>
Tested Date:	<u>2019-01-10 to 2019-01-18</u>
Issued Date:	<u>2019-01-18</u>
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Reviewed By:	<u>Silin Chen / EMC Manager</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: CE LINK LIMITED
Address of applicant: Building G, Li Cheng Technology Industrial Zone,
Gong He Village, Sha Jing Town, Shen Zhen City,
China

Manufacturer: CE LINK LIMITED
Address of manufacturer: Building G, Li Cheng Technology Industrial Zone,
Gong He Village, Sha Jing Town, Shen Zhen City,
China

General Description of EUT	
Product Name:	Wireless Charger
Trade Name:	CE-LINK
Model No.:	WPC10-2TX01
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Voltage:	Input 5V/9V
Current:	2A/1.8A
Output Power:	5W/7.5W/10W
Power Adapter Model:	/
Wireless Charger Transmit Frequency Range:	110~205KHz

1.2 Test Standards

The tests were performed according to following standards:

FCC Part 18 Subpart C: Industrial, Scientific, and 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

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM Test Technology 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 Output	/	Input DC5V2A; Output:DC5V1A
TM2	Wireless Output	/	Input DC9V1.8A; Output:DC9V1.1A

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Type C Cable	1.2	shielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Adapter	LCC	A824A-120150U-EU 1	/
iPhone 8 Plus	Apple	MQ8E2CH/A	/

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 ± 3.74 dB
		0.15-30MHz ± 3.34 dB
Radiated Emissions	Radiated	30-200MHz ± 4.52 dB
		0.2-1GHz ± 5.56 dB
		1-6GHz ± 3.84 dB
		6-18GHz ± 3.92 dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2018-05-22	2019-05-21
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2018-05-22	2019-05-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2018-05-22	2019-05-21
Amplifier	Agilent	8447F	3113A06717	2018-05-22	2019-05-21
Amplifier	C&D	PAP-1G18	2002	2018-05-22	2019-05-21
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2018-06-07
Horn Antenna	ETS	3117	00086197	2017-06-08	2018-06-07
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2018-06-07
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2018-05-22	2019-05-21
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2018-05-22	2019-05-21
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2018-05-22	2019-05-21

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:

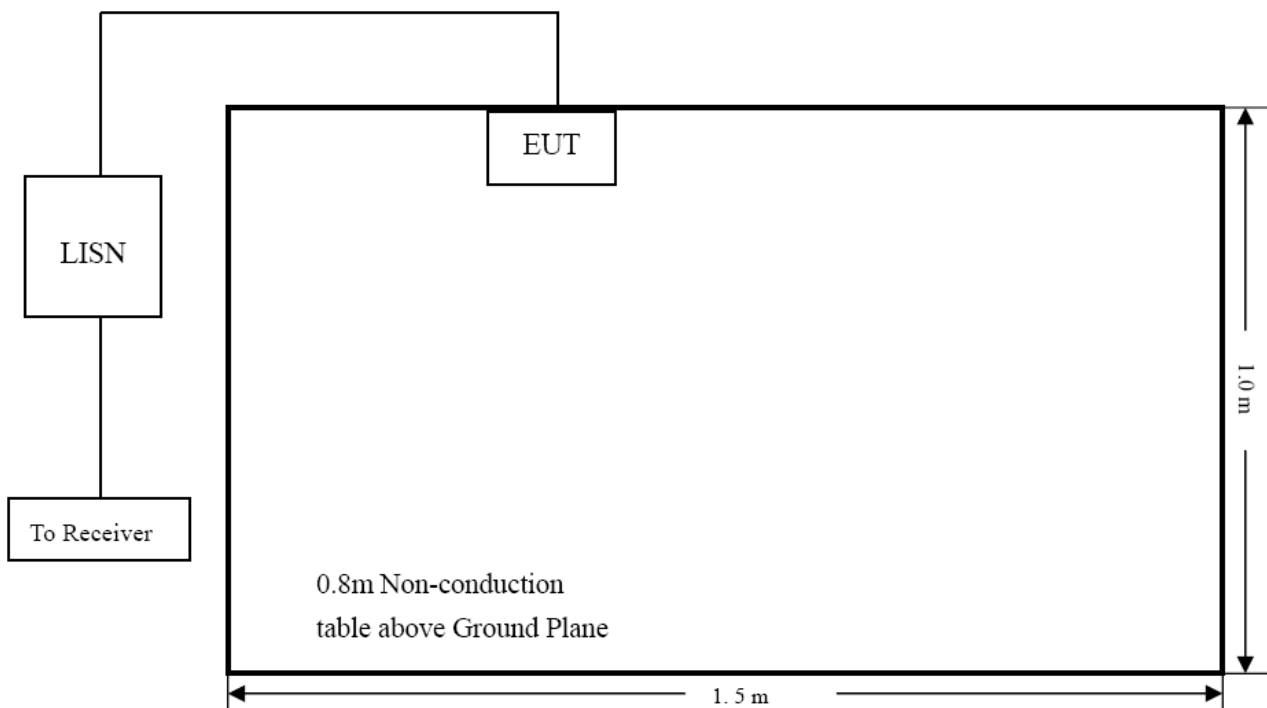
Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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:	23.5° C
Relative Humidity:	55%
ATM Pressure:	1016 mbar

3.5 Test Receiver Setup

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

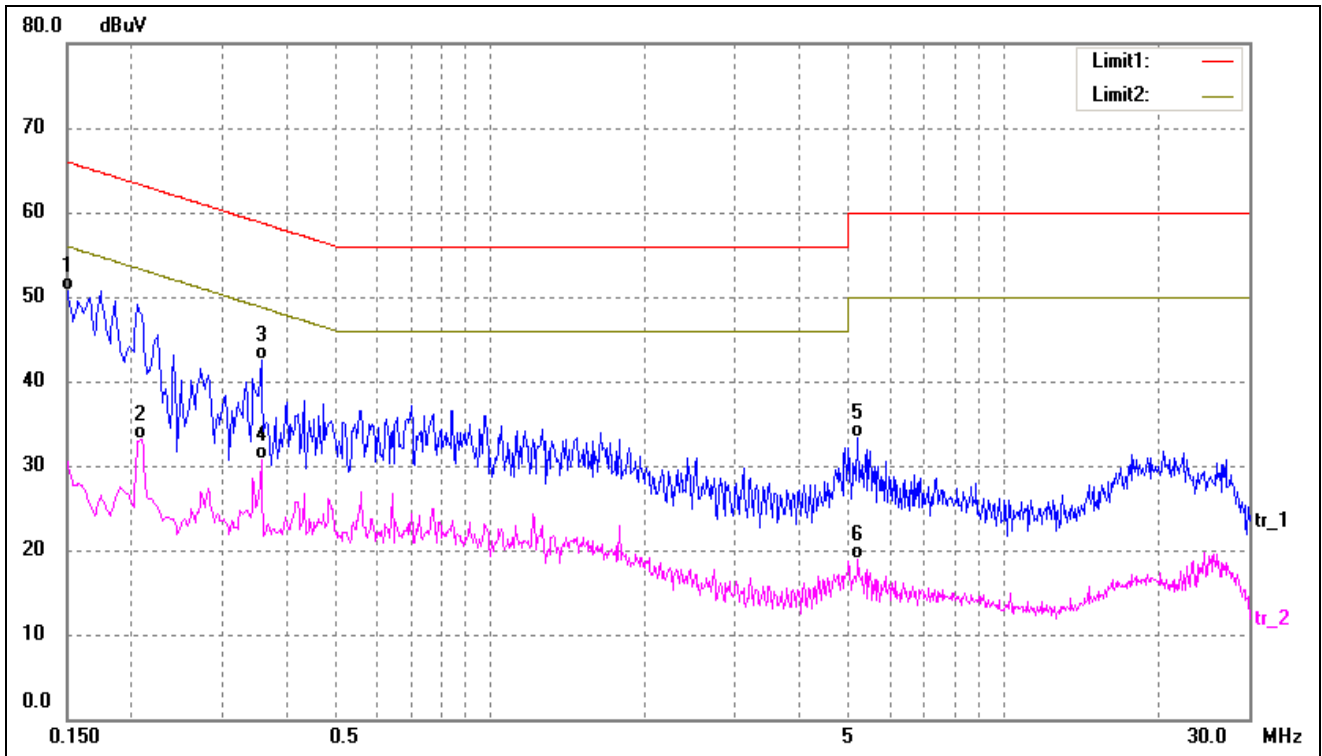
Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

3.6 Summary of Test Results/Plots

According to the data in this section, the EUT complied with the FCC Part 18C Conducted margin for Any non-ISM frequency device, with the *worst* margin reading of:

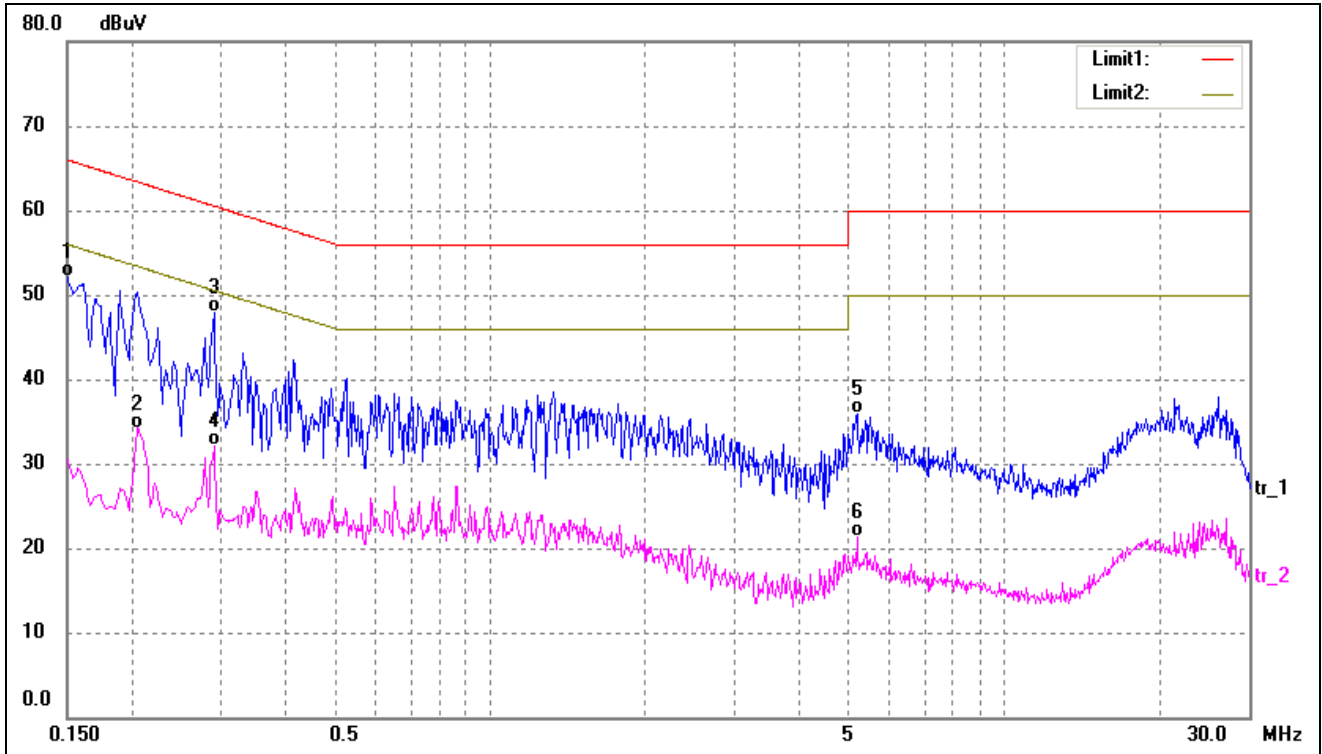
-3.50 dB at 0.2100 MHz in the Line, QP detector, TM2 detector, 0.15-30MHz

Test mode:	TM1	Polarity:	Line
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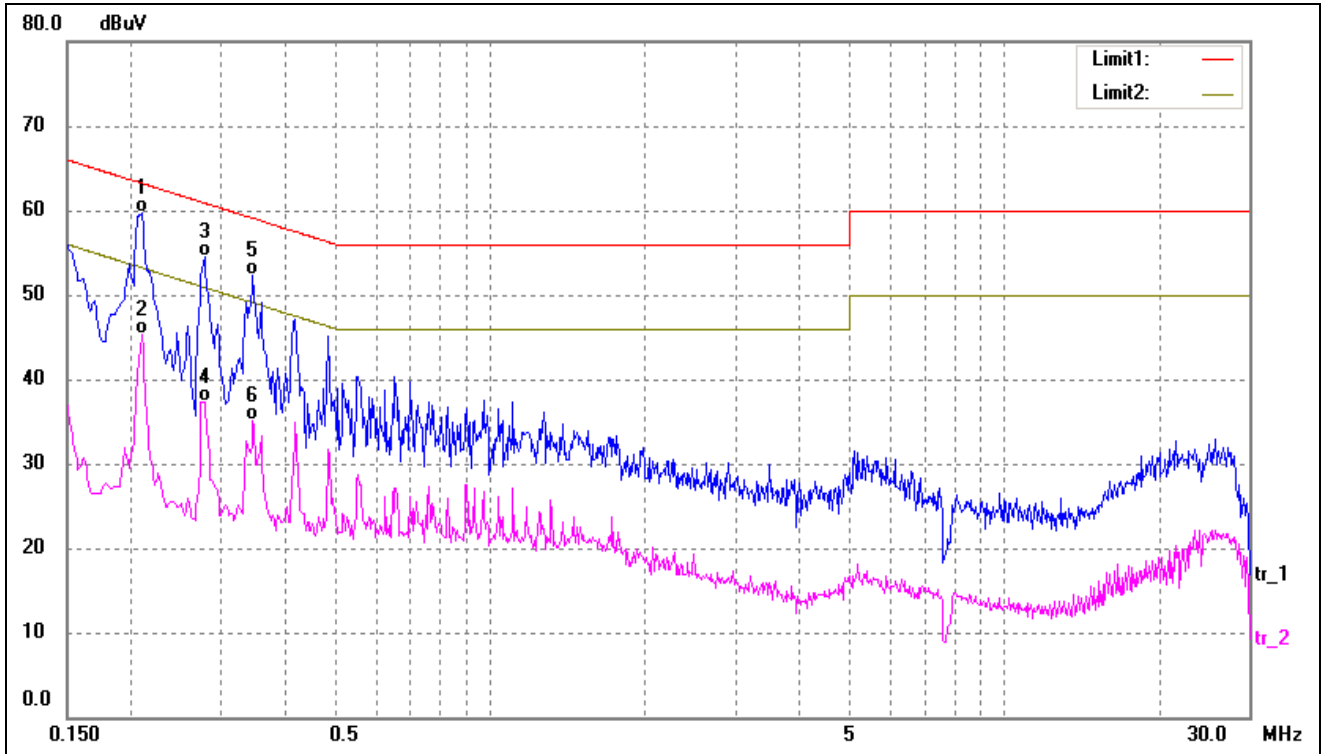
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1499	40.52	10.10	50.62	66.00	-15.38	QP
2	0.2100	23.06	10.13	33.19	53.20	-20.01	AVG
3	0.3580	32.32	10.23	42.55	58.77	-16.22	QP
4	0.3580	20.48	10.23	30.71	48.77	-18.06	AVG
5	5.1899	22.57	10.77	33.34	60.00	-26.66	QP
6	5.1939	8.04	10.77	18.81	50.00	-31.19	AVG

Test mode:	TM1	Polarity:	Neutral
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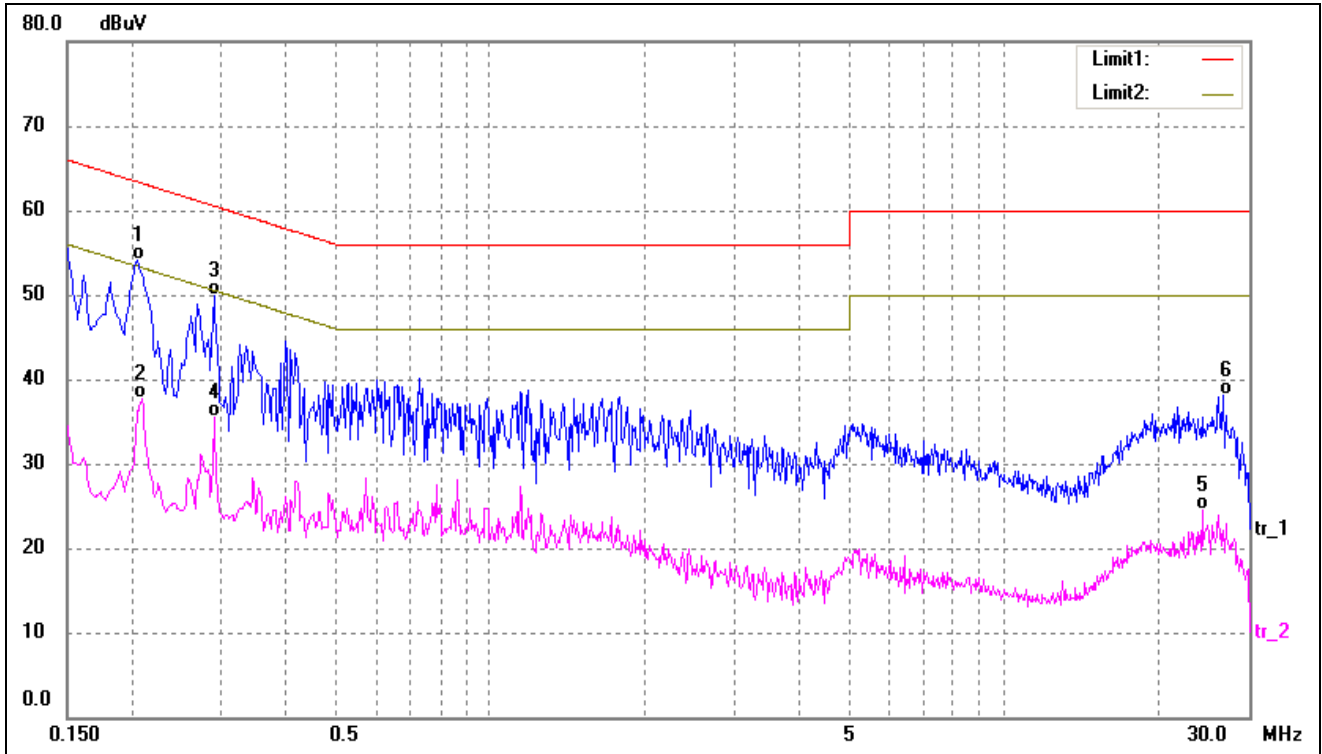
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	41.93	10.10	52.03	66.00	-13.97	QP
2	0.2060	24.08	10.12	34.20	53.37	-19.17	AVG
3*	0.2900	37.74	10.18	47.92	60.52	-12.60	QP
4	0.2900	21.85	10.18	32.03	50.52	-18.49	AVG
5	5.1900	25.23	10.77	36.00	60.00	-24.00	QP
6	5.1900	10.55	10.77	21.32	50.00	-28.68	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*	0.2100	49.58	10.13	59.71	63.21	-3.50	QP
2	0.2100	35.15	10.13	45.28	53.21	-7.93	AVG
3	0.2780	44.40	10.17	54.57	60.88	-6.31	QP
4	0.2780	27.19	10.17	37.36	50.88	-13.52	AVG
5	0.3460	42.06	10.21	52.27	59.06	-6.79	QP
6	0.3460	24.90	10.21	35.11	49.06	-13.95	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*	0.2060	44.03	10.12	54.15	63.37	-9.22	QP
2	0.2100	27.54	10.13	37.67	53.21	-15.54	AVG
3	0.2900	39.78	10.18	49.96	60.52	-10.56	QP
4	0.2900	25.37	10.18	35.55	50.52	-14.97	AVG
5	24.3380	13.21	11.22	24.43	50.00	-25.57	AVG
6	26.8260	26.95	11.23	38.18	60.00	-21.82	QP

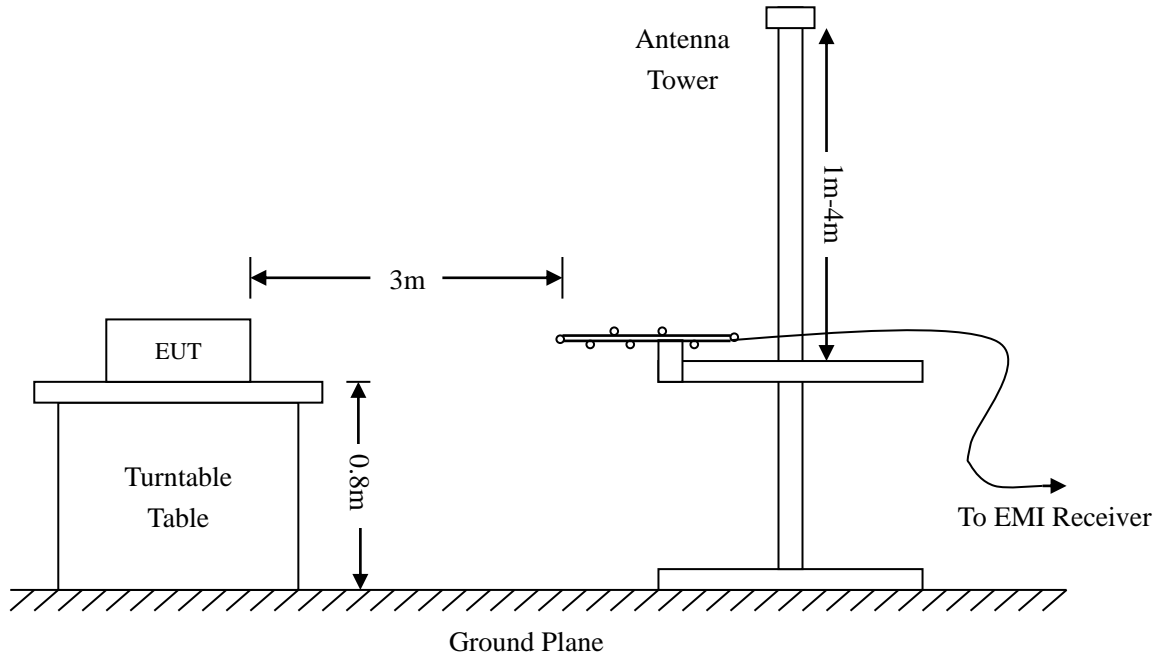
4. Radiated Emissions

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.



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 $-6\text{dB}\mu\text{V}$ means the emission is $6\text{dB}\mu\text{V}$ below the maximum limit for Any non-ISM frequency device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 18.305 Limit

4.4 Environmental Conditions

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

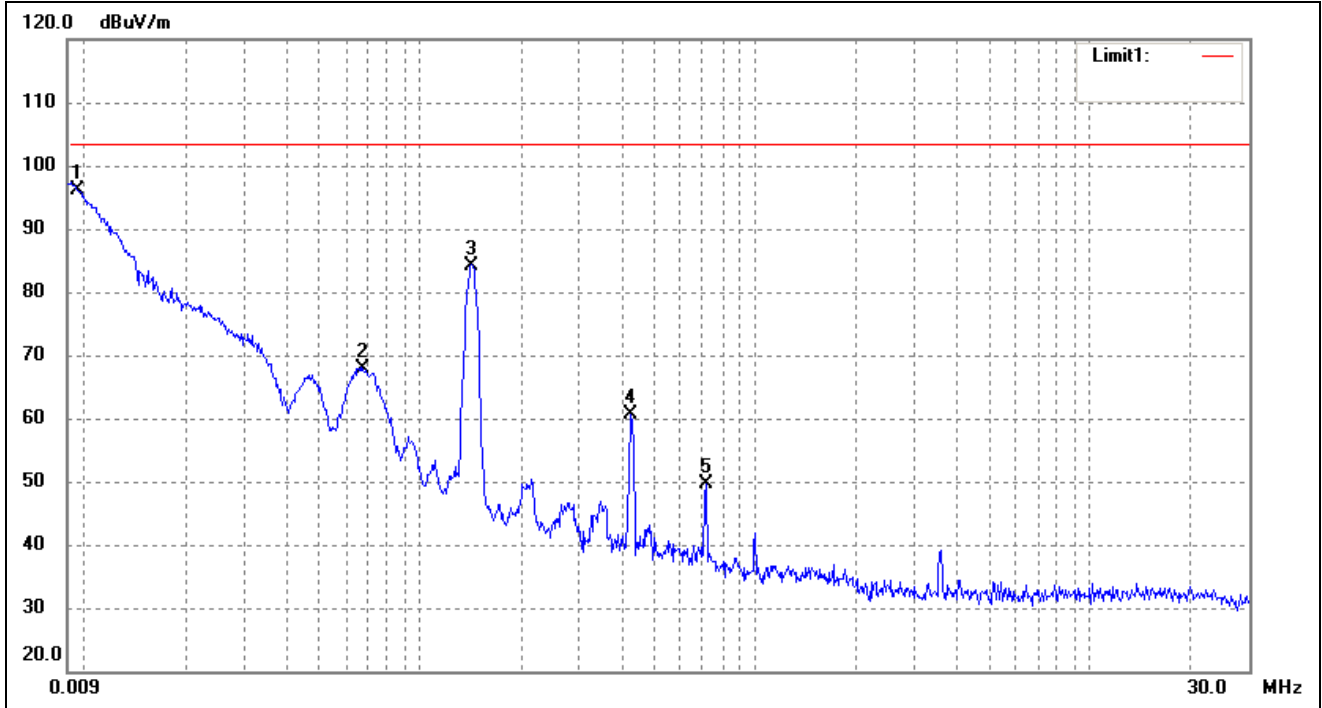
4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 18.305 rule, and had the worst margin of:

-6.44 dB at 0.0091 MHz in the Vertical polarization, TM2 mode, Below 30MHz, 3Meters

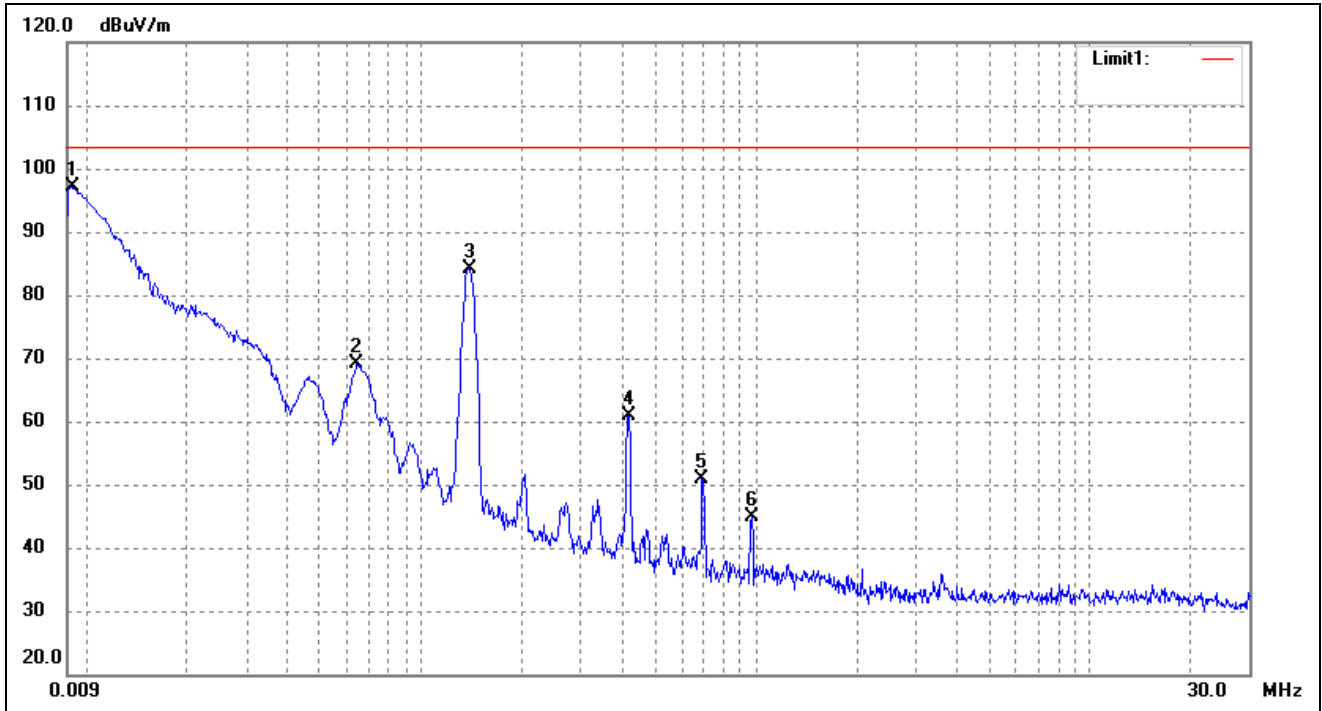
Plot of Radiated Emissions Test Data (Below 30MHz)

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	0.0096	122.36	-26.28	96.08	103.50	-7.42	72	100	peak
2	0.0677	94.05	-26.27	67.78	103.50	-35.72	157	100	peak
3	0.1426	110.50	-26.25	84.25	103.50	-19.25	138	100	peak
4	0.4282	88.20	-27.55	60.65	103.50	-42.85	150	100	peak
5	0.7122	78.92	-29.19	49.73	103.50	-53.77	83	100	peak

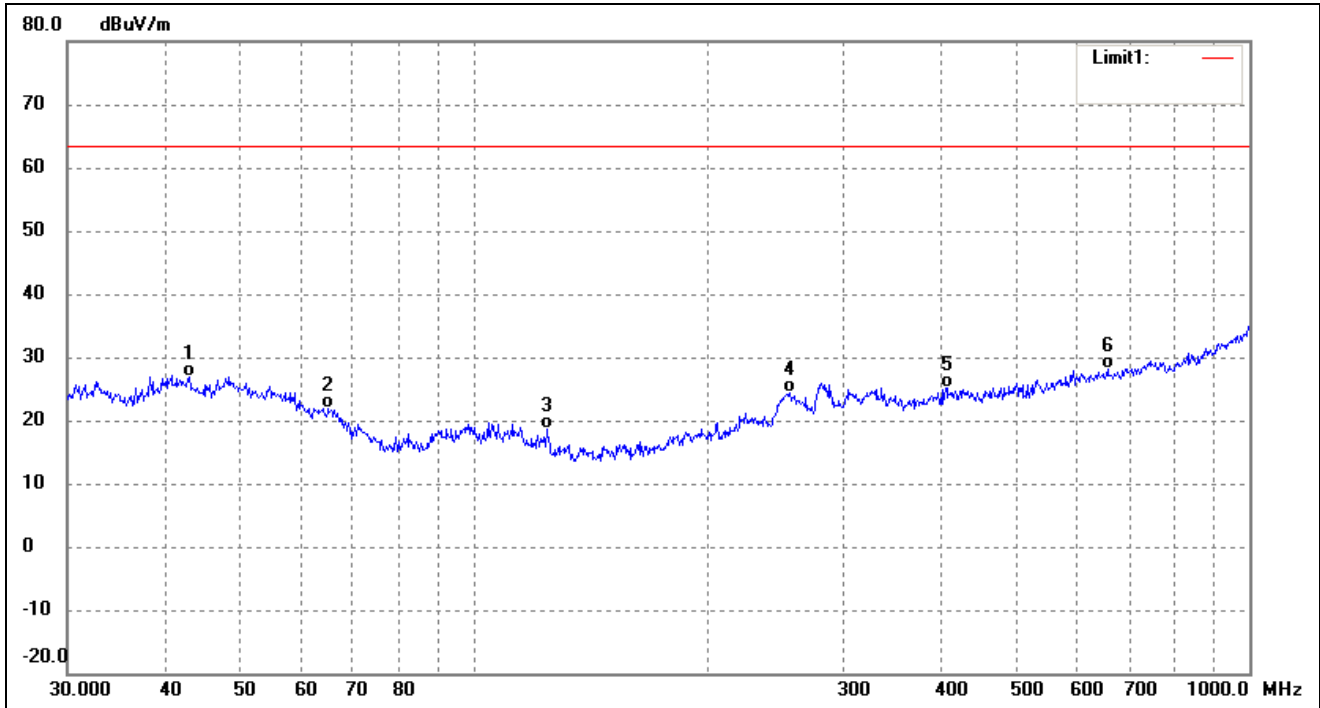
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	0.0091	123.34	-26.28	97.06	103.50	-6.44	202	100	peak
2	0.0646	95.33	-26.27	69.06	103.50	-34.44	123	100	peak
3	0.1394	110.46	-26.25	84.21	103.50	-19.29	67	100	peak
4	0.4171	88.49	-27.49	61.00	103.50	-42.50	267	100	peak
5	0.6936	80.03	-29.08	50.95	103.50	-52.55	126	100	peak
6	0.9735	75.69	-30.70	44.99	103.50	-58.51	335	100	peak

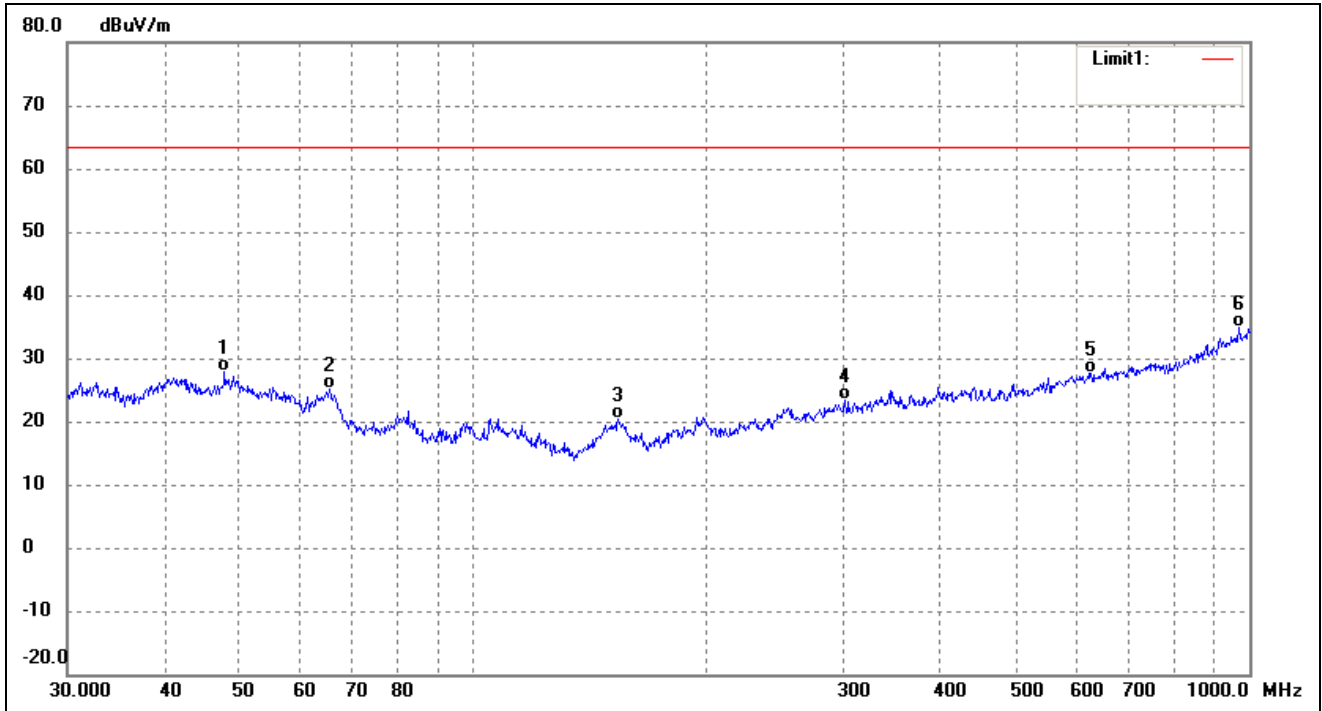
Plot of Radiated Emissions Test Data (Above 30MHz)

Test mode:	TM1	Polarity:	Horizontal
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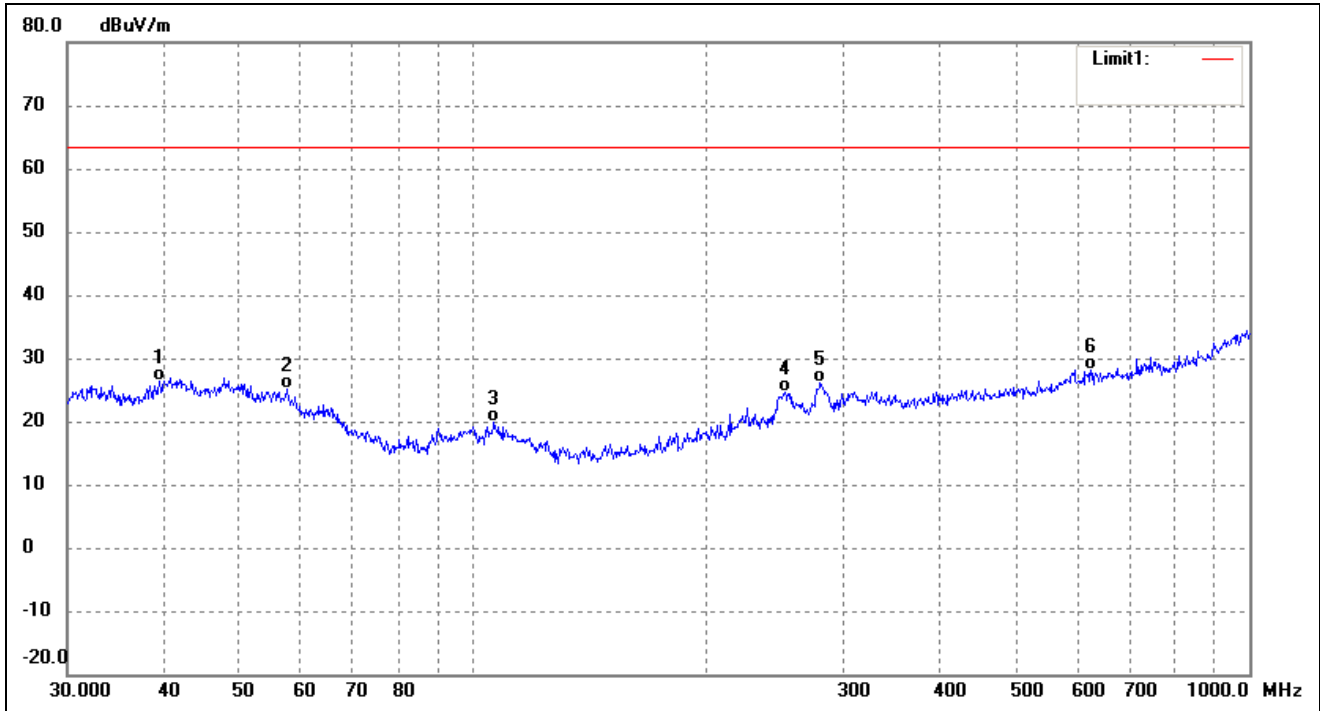
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	43.0505	34.87	-8.01	26.86	63.50	-36.64	52	100	QP
2	65.1145	34.18	-12.21	21.97	63.50	-41.53	134	100	QP
3	124.5690	35.58	-16.95	18.63	63.50	-44.87	114	100	QP
4	255.6231	35.58	-11.08	24.50	63.50	-39.00	144	100	QP
5	407.5145	32.47	-7.23	25.24	63.50	-38.26	249	100	QP
6	656.5300	31.40	-3.31	28.09	63.50	-35.41	332	100	QP

Test mode:	TM1	Polarity:	Vertical
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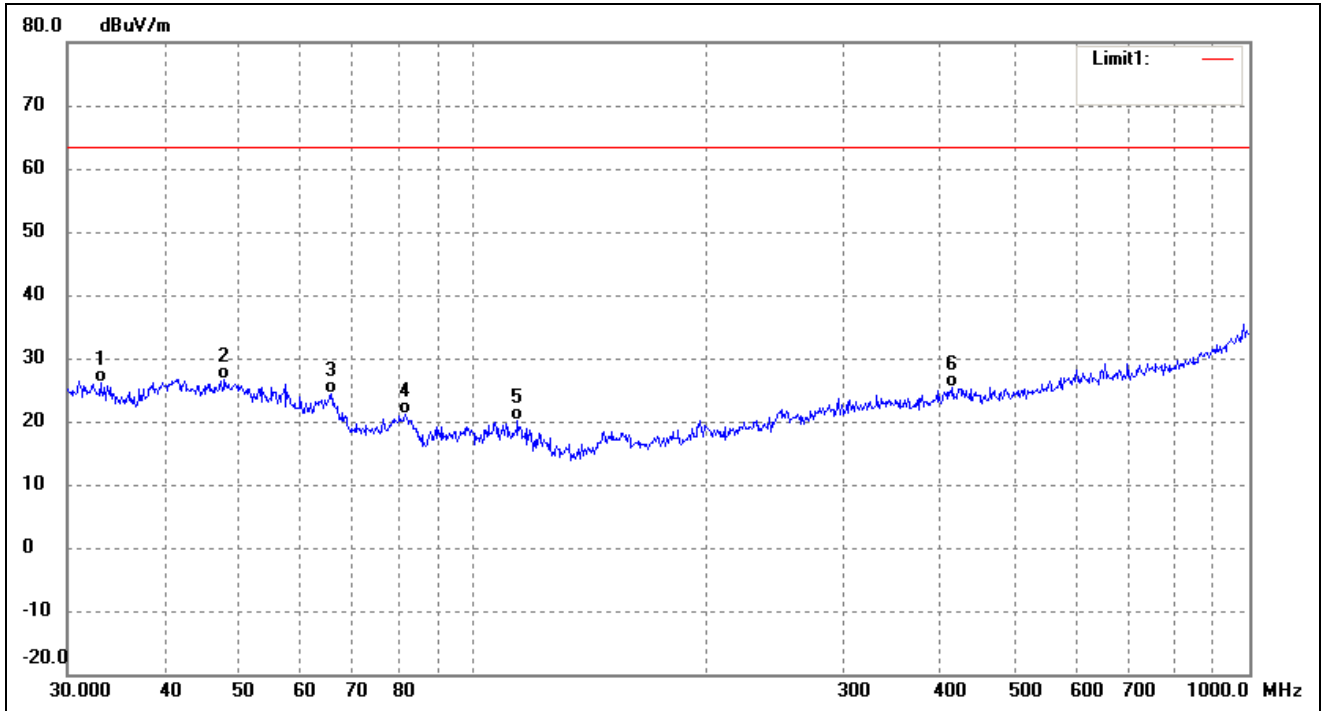
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	47.8260	36.09	-8.16	27.93	63.50	-35.57	257	100	QP
2	65.3432	37.34	-12.32	25.02	63.50	-38.48	170	100	QP
3	153.7385	37.50	-17.23	20.27	63.50	-43.23	105	100	QP
4	301.4224	32.72	-9.36	23.36	63.50	-40.14	146	100	QP
5	625.0780	31.49	-3.76	27.73	63.50	-35.77	321	100	QP
6	968.9338	31.58	3.25	34.83	63.50	-28.67	101	100	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	39.4372	34.99	-8.61	26.38	63.50	-37.12	197	100	QP
2	57.5939	35.58	-10.34	25.24	63.50	-38.26	236	100	QP
3	106.3850	34.36	-14.49	19.87	63.50	-43.63	97	100	QP
4	252.0627	35.93	-11.20	24.73	63.50	-38.77	262	100	QP
5	280.0238	36.17	-10.08	26.09	63.50	-37.41	119	100	QP
6	625.0780	31.88	-3.76	28.12	63.50	-35.38	291	100	QP

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	33.0950	35.78	-9.77	26.01	63.50	-37.49	345	100	QP
2	47.8260	34.88	-8.16	26.72	63.50	-36.78	95	100	QP
3	65.5727	36.70	-12.42	24.28	63.50	-39.22	123	100	QP
4	81.7833	38.06	-17.05	21.01	63.50	-42.49	102	100	QP
5	114.1138	35.25	-15.15	20.10	63.50	-43.40	90	100	QP
6	414.7223	32.30	-7.04	25.26	63.50	-38.24	219	100	QP

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