




FCC Part 18 Measurement and Test Report

For

ALOGIC Corporation Pty Ltd

Level 40,140 William Street, Melbourne VIC 3000, Australia

FCC ID: 2ATCAP27QC10P60-BK

Test Rule(s):	<u>FCC Part 18</u>
Product Description:	<u>USB-C Power Bank 27000mAH with Wireless Charger</u>
Tested Model:	<u>P27QC10P60-BK</u>
Report No.:	<u>WTX19X05029265W-1</u>
Sample Receipt Date:	<u>2019-05-10</u>
Tested Date:	<u>2019-05-10 to 2019-05-30</u>
Issued Date:	<u>2019-05-30</u>
Tested By:	<u>Jason Su / Engineer</u> 
Reviewed By:	<u>Silin Chen / EMC Manager</u> 
Approved & Authorized By:	<u>Jandy So / PSQ Manager</u> 
Prepared By:	

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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: ALOGIC Corporation Pty Ltd
Address of applicant: Level 40,140 William Street, Melbourne VIC 3000,
Australia

Manufacturer: SuiChuan CE LINK LIMITED
Address of manufacturer: SuiChuan county industrial park east zone, Ji'an
city,Jiangxi province, China.

General Description of EUT	
Product Name:	USB-C Power Bank 27000mAH with Wireless Charger
Trade Name:	ALOGIC
Model No.:	P27QC10P60-BK
Power supply	Battery 3.7V,Wireless Output:DC5V 1A,DC9V 1.1A
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Frequency Range:	110~205kHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna
Rated Voltage:	DC5V /DC9V(Wireless output)
Rated Current:	1A/1.1A (Wireless output)
Rated Power:	5W/10W (Wireless output)

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

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 (5V1A)	/	AC120V 60Hz for adapter
TM2	Wireless Output (9V1.1A)	/	AC120V 60Hz for adapter

EUT Cable List and Details

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

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
iPhone 8 Plus	Apple	MQ8E2CH/A	/
Adapter	KZ	HJ-0503000	/
Adapter	KZ	FJ-2001500	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB-A Cable	0.8	Unshielded	Without Ferrite
USB-C Cable	0.8	Unshielded	Without Ferrite

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	2019-04-30	2020-04-29
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2019-04-30	2020-04-29
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2019-04-30	2020-04-29
Amplifier	Agilent	8447F	3113A06717	2019-04-30	2020-04-29
Amplifier	C&D	PAP-1G18	2002	2019-04-30	2020-04-29
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	2019-04-30	2020-04-29
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2019-04-30	2020-04-29
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2019-04-30	2020-04-29



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:

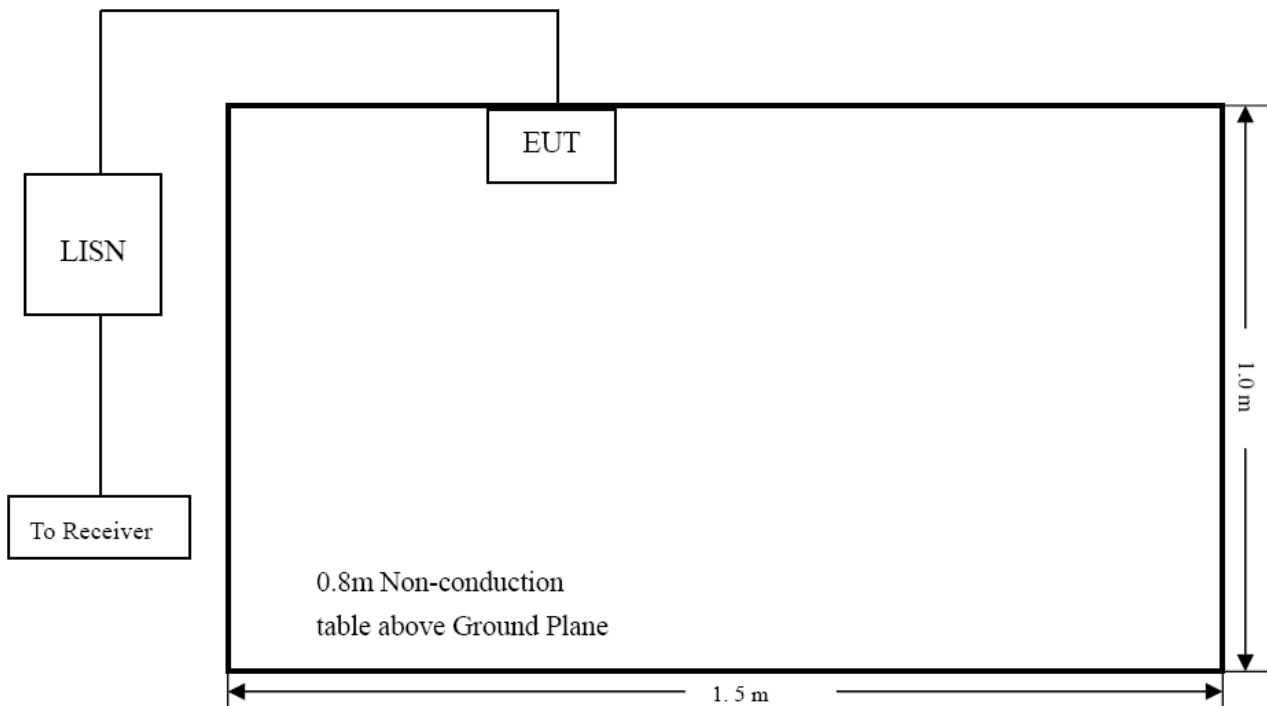
Frequency (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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:

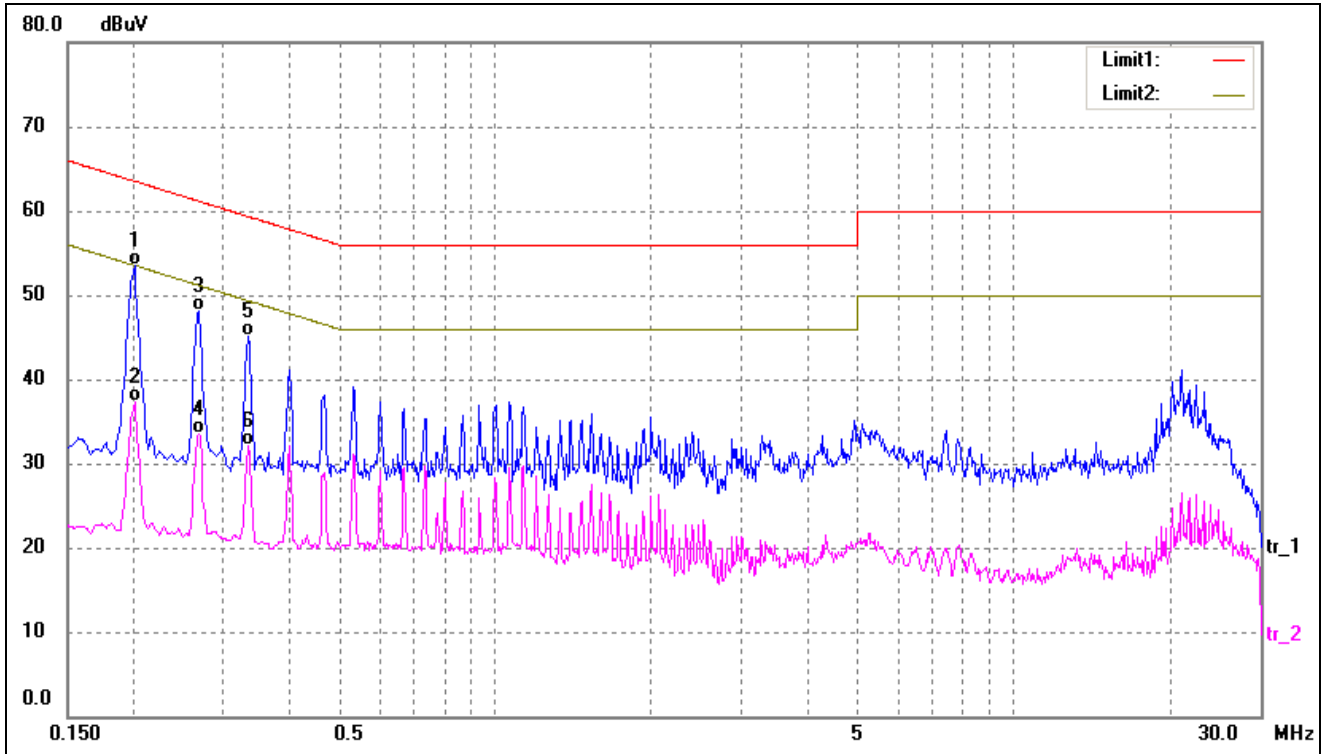
Start Frequency 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth 9 kHz
Quasi-Peak Adapter Mode Normal

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:

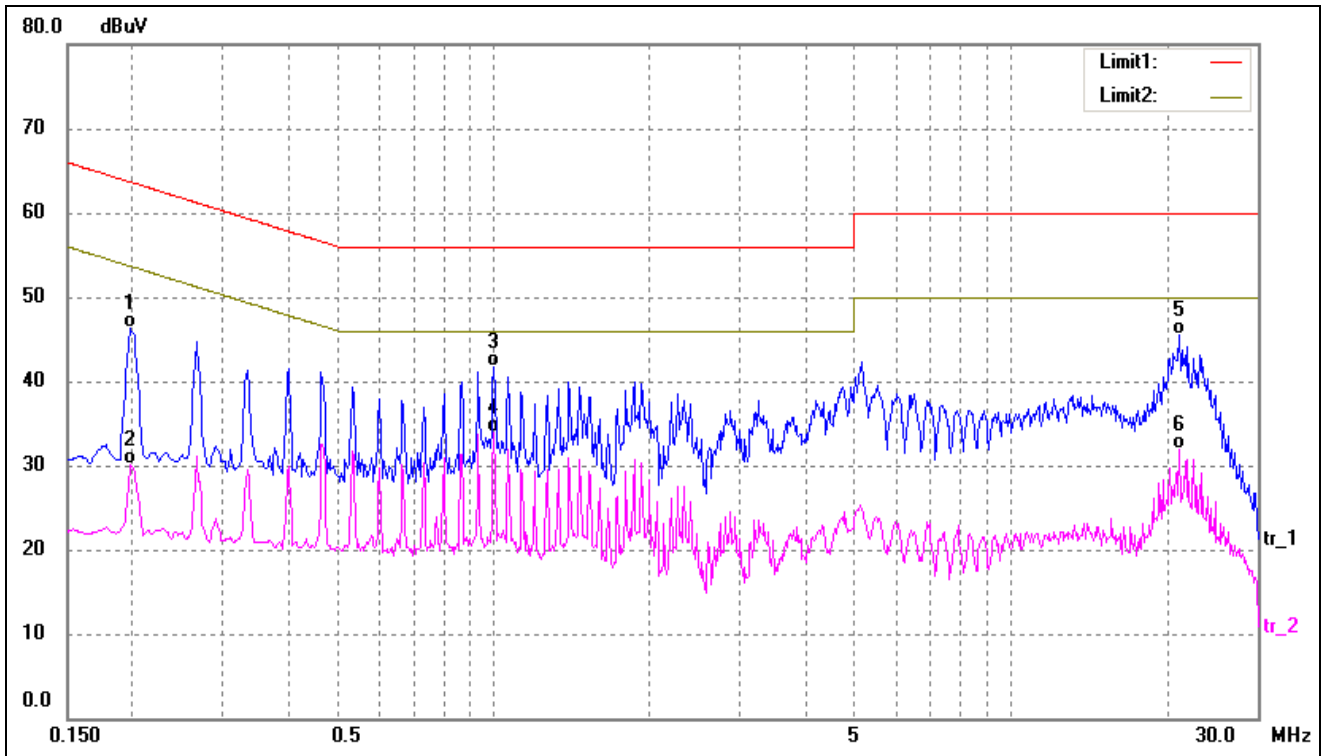
-3.99 dB at 4.6020 MHz in the Neutral, QP detector, TM2 detector, 0.15-30MHz

Test mode:	TM1	Polarity:	Line
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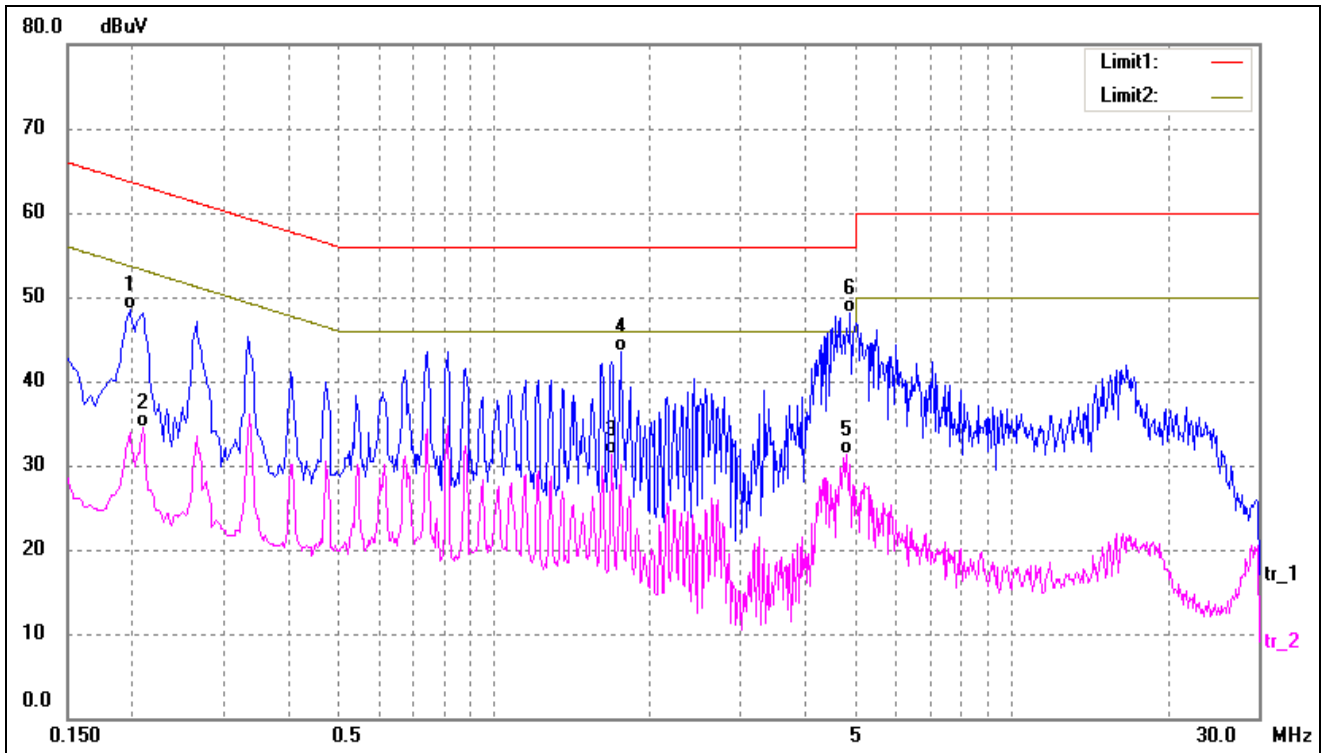
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2020	43.39	10.12	53.51	63.53	-10.02	QP
2	0.2020	27.25	10.12	37.37	53.53	-16.16	AVG
3	0.2700	38.01	10.17	48.18	61.12	-12.94	QP
4	0.2700	23.29	10.17	33.46	51.12	-17.66	AVG
5	0.3340	34.91	10.21	45.12	59.35	-14.23	QP
6	0.3340	21.93	10.21	32.14	49.35	-17.21	AVG

Test mode:	TM1	Polarity:	Neutral
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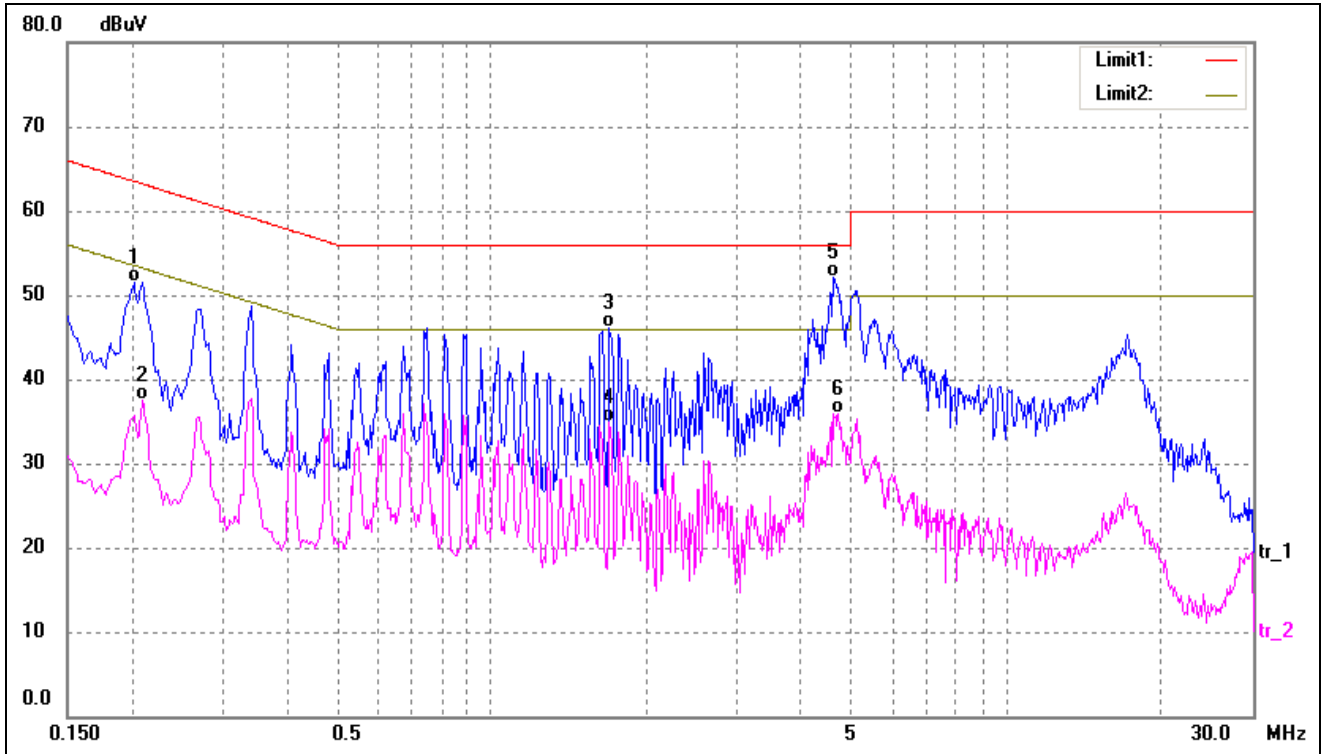
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1980	36.20	10.12	46.32	63.69	-17.37	QP
2	0.1980	20.07	10.12	30.19	53.69	-23.50	AVG
3	1.0020	31.20	10.50	41.70	56.00	-14.30	QP
4*	1.0020	23.42	10.50	33.92	46.00	-12.08	AVG
5	21.1500	34.36	11.19	45.55	60.00	-14.45	QP
6	21.1500	20.69	11.19	31.88	50.00	-18.12	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	0.1980	38.39	10.12	48.51	63.69	-15.18	QP
2	0.2100	24.29	10.13	34.42	53.21	-18.79	AVG
3	1.6940	20.75	10.57	31.32	46.00	-14.68	AVG
4	1.7660	32.91	10.58	43.49	56.00	-12.51	QP
5	4.8140	20.54	10.75	31.29	46.00	-14.71	AVG
6*	4.8820	37.26	10.76	48.02	56.00	-7.98	QP

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	0.2020	41.43	10.12	51.55	63.53	-11.98	QP
2	0.2100	27.43	10.13	37.56	53.21	-15.65	AVG
3	1.6940	35.48	10.57	46.05	56.00	-9.95	QP
4	1.6940	24.41	10.57	34.98	46.00	-11.02	AVG
5*	4.6020	41.26	10.75	52.01	56.00	-3.99	QP
6	4.7020	25.20	10.75	35.95	46.00	-10.05	AVG

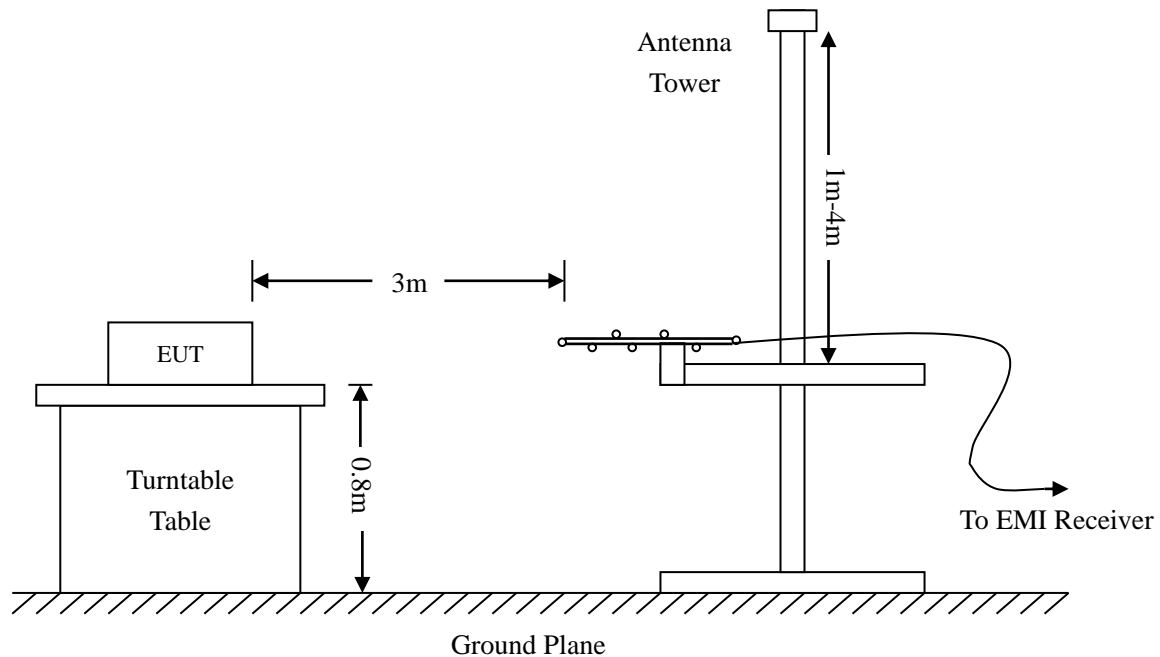
4. Radiated Emissions

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.



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

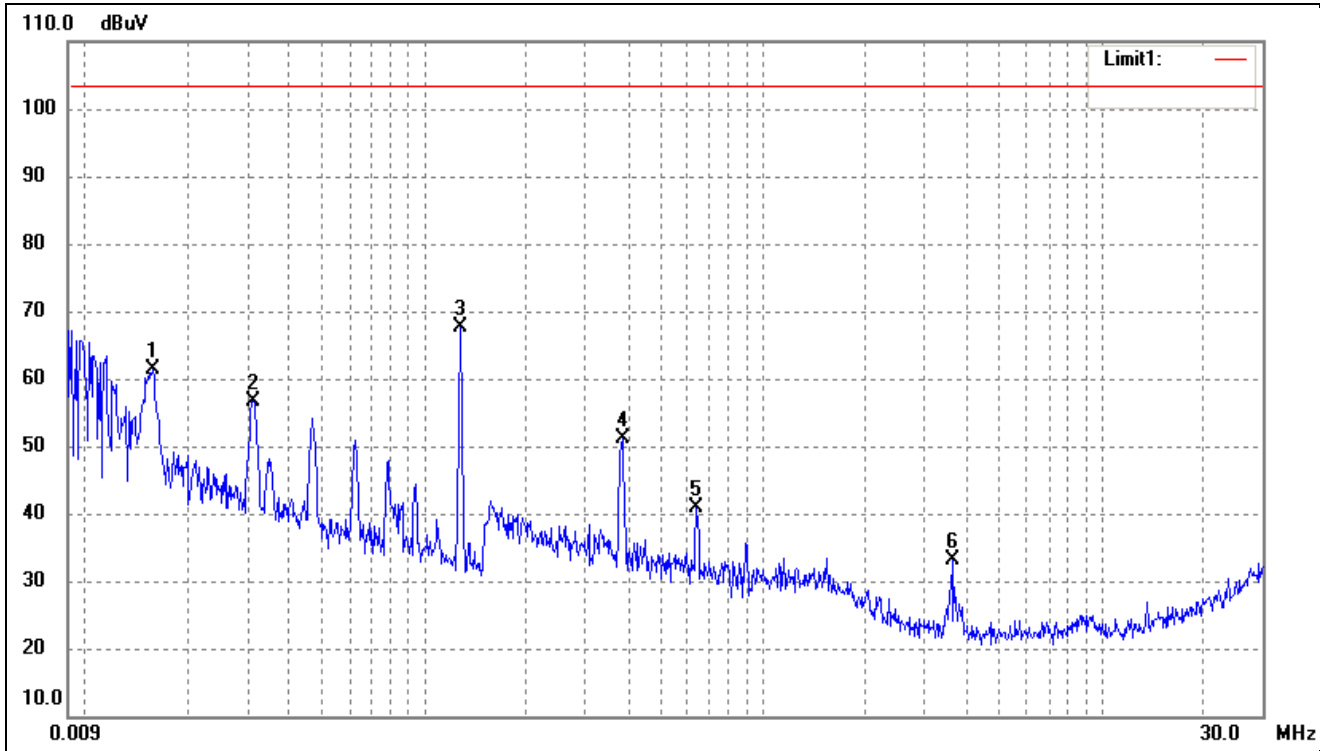
4.5 Summary of Test Results/Plots

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

-30.45 dB at 1000.0000 MHz in the Horizontal polarization, TM2 mode, 3Meters

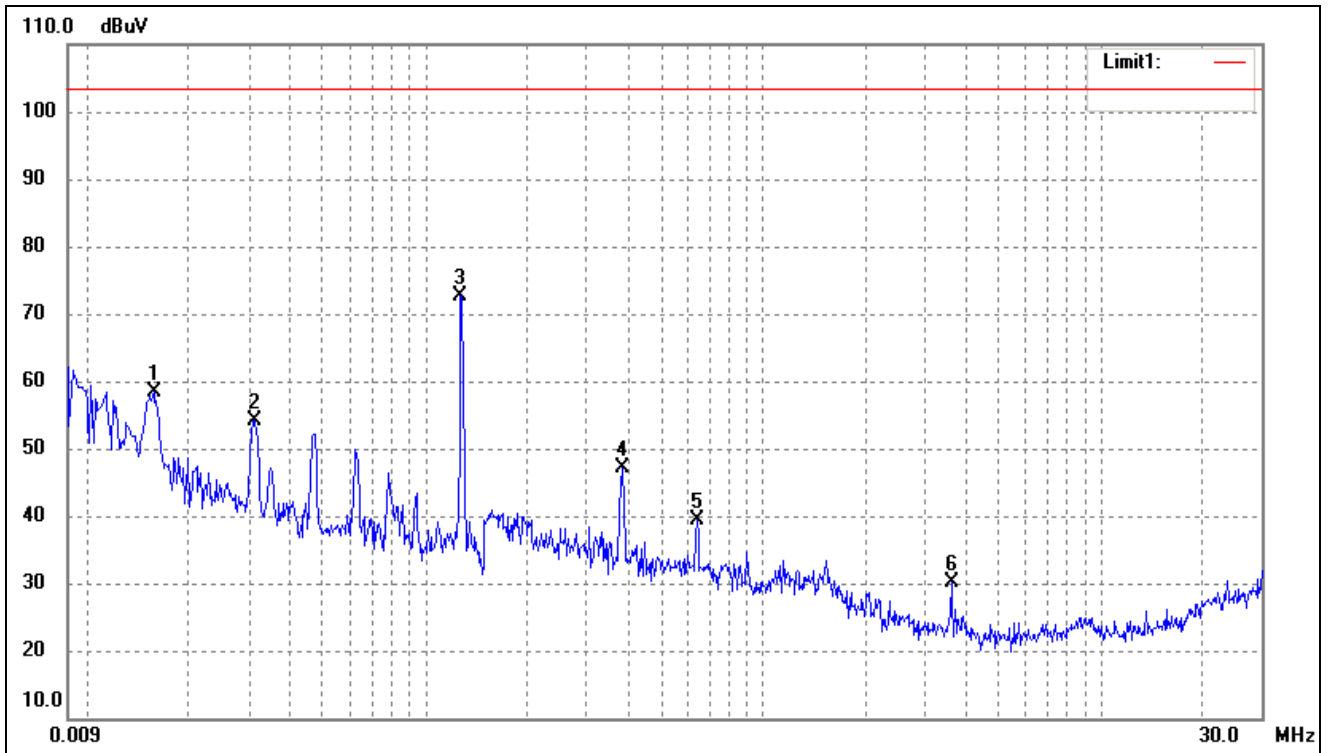
Plot of Radiated Emissions Test Data (Below 30MHz)

Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree ()	Height (cm)	Remark
1	0.0158	67.88	-6.51	61.37	103.50	-42.13	284	100	peak
2	0.0313	63.72	-7.09	56.63	103.50	-46.87	98	100	peak
3	0.1278	73.37	-5.62	67.75	103.50	-35.75	127	100	peak
4	0.3832	58.82	-7.67	51.15	103.50	-52.35	96	100	peak
5	0.6372	49.83	-8.89	40.94	103.50	-62.56	262	100	peak
6	3.6034	43.66	-10.42	33.24	103.50	-70.26	109	100	peak

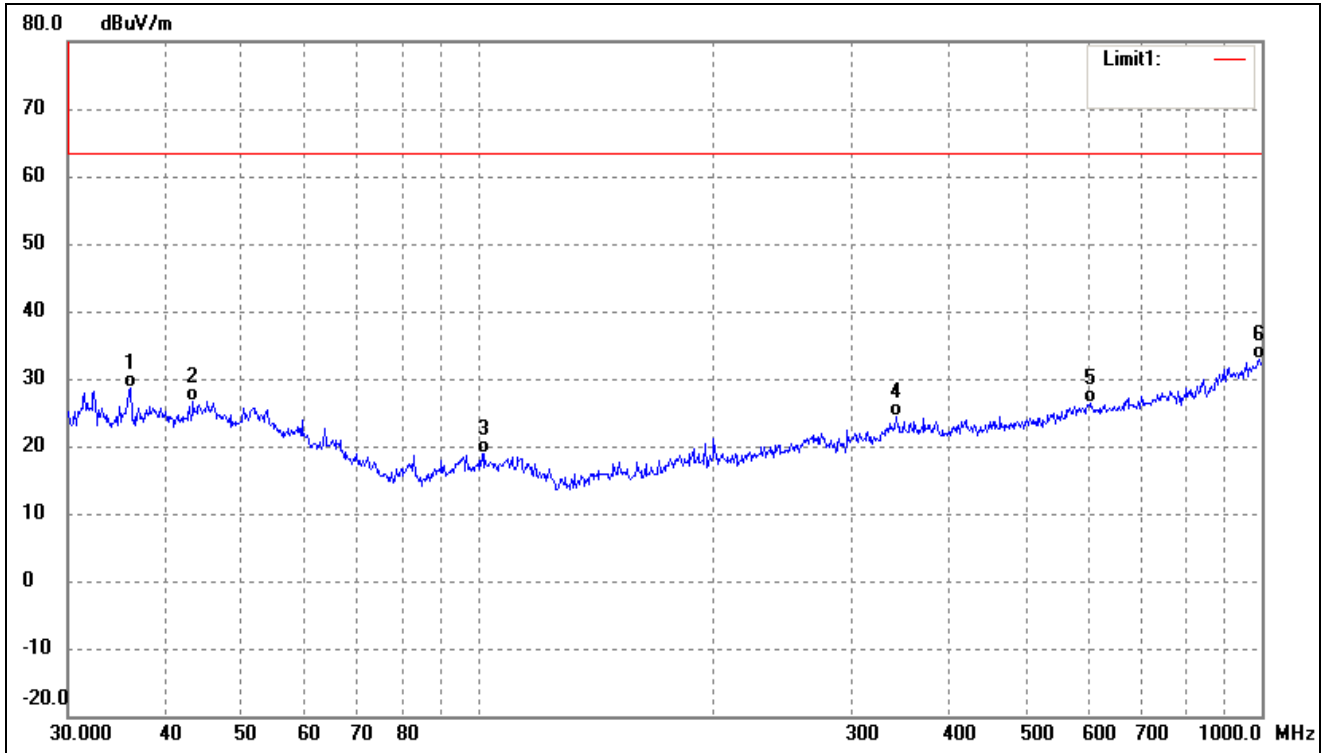
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree ()	Height (cm)	Remark
1	0.0158	64.88	-6.51	58.37	103.50	-45.13	265	100	peak
2	0.0313	61.22	-7.09	54.13	103.50	-49.37	100	100	peak
3	0.1276	78.37	-5.62	72.75	103.50	-30.75	231	100	peak
4	0.3831	54.82	-7.67	47.15	103.50	-56.35	96	100	peak
5	0.6371	48.33	-8.89	39.44	103.50	-64.06	106	100	peak
6	3.6034	40.66	-10.42	30.24	103.50	-73.26	291	100	peak

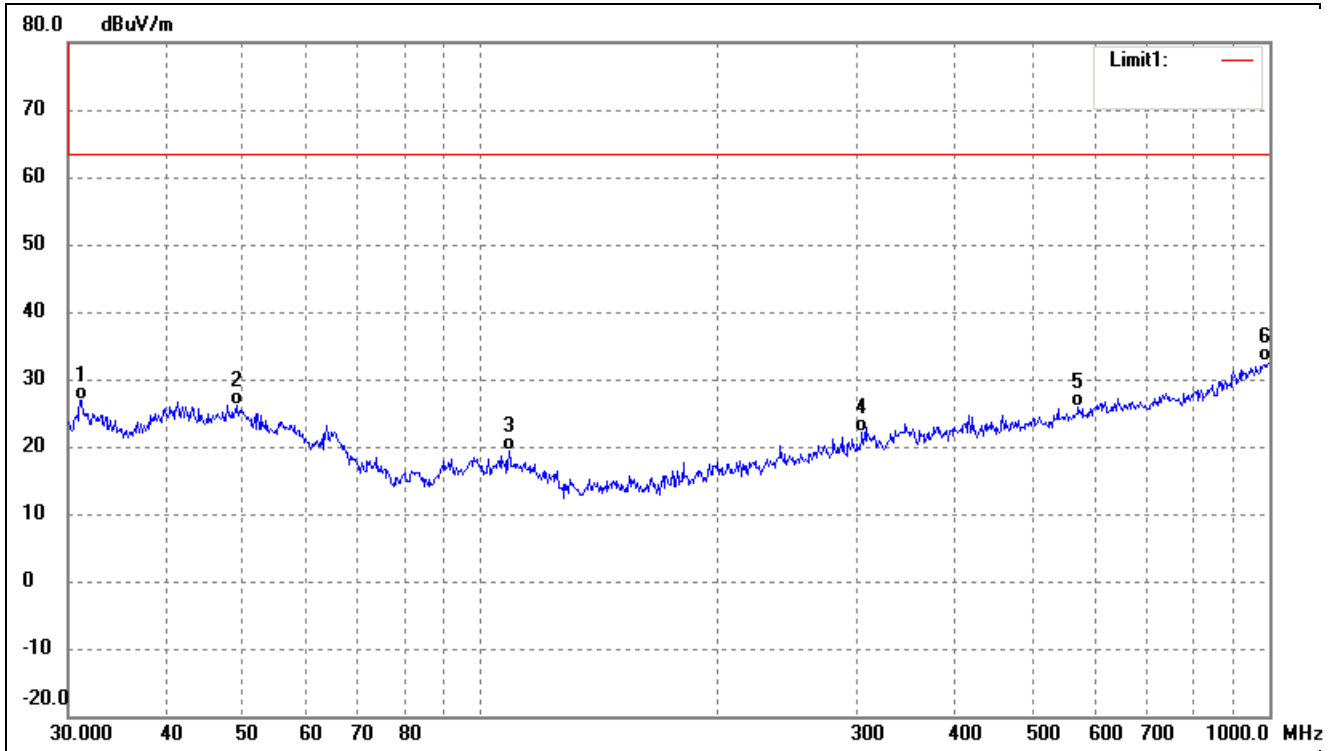
Plot of Radiated Emissions Test Data (Above 30MHz)

Test mode:	TM1	Polarity:	Horizontal
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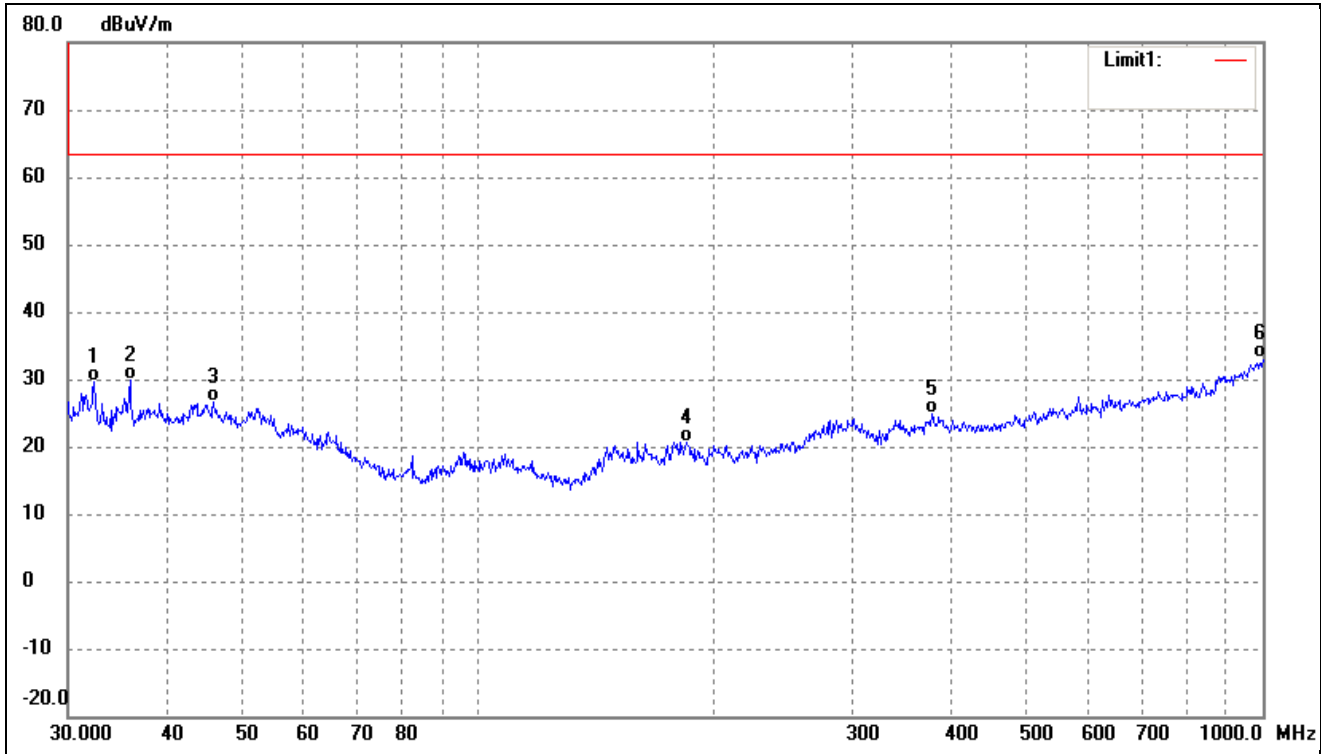
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.1272	38.17	-9.44	28.73	63.50	-34.77	257	100	QP
2	43.3534	34.75	-8.01	26.74	63.50	-36.76	95	100	QP
3	102.0014	33.61	-14.75	18.86	63.50	-44.64	86	100	QP
4	341.9786	32.47	-8.07	24.40	63.50	-39.10	114	100	QP
5	603.5392	30.24	-3.95	26.29	63.50	-37.21	355	100	QP
6	993.0114	28.88	3.93	32.81	63.50	-30.69	148	100	QP

Test mode:	TM1	Polarity:	Vertical
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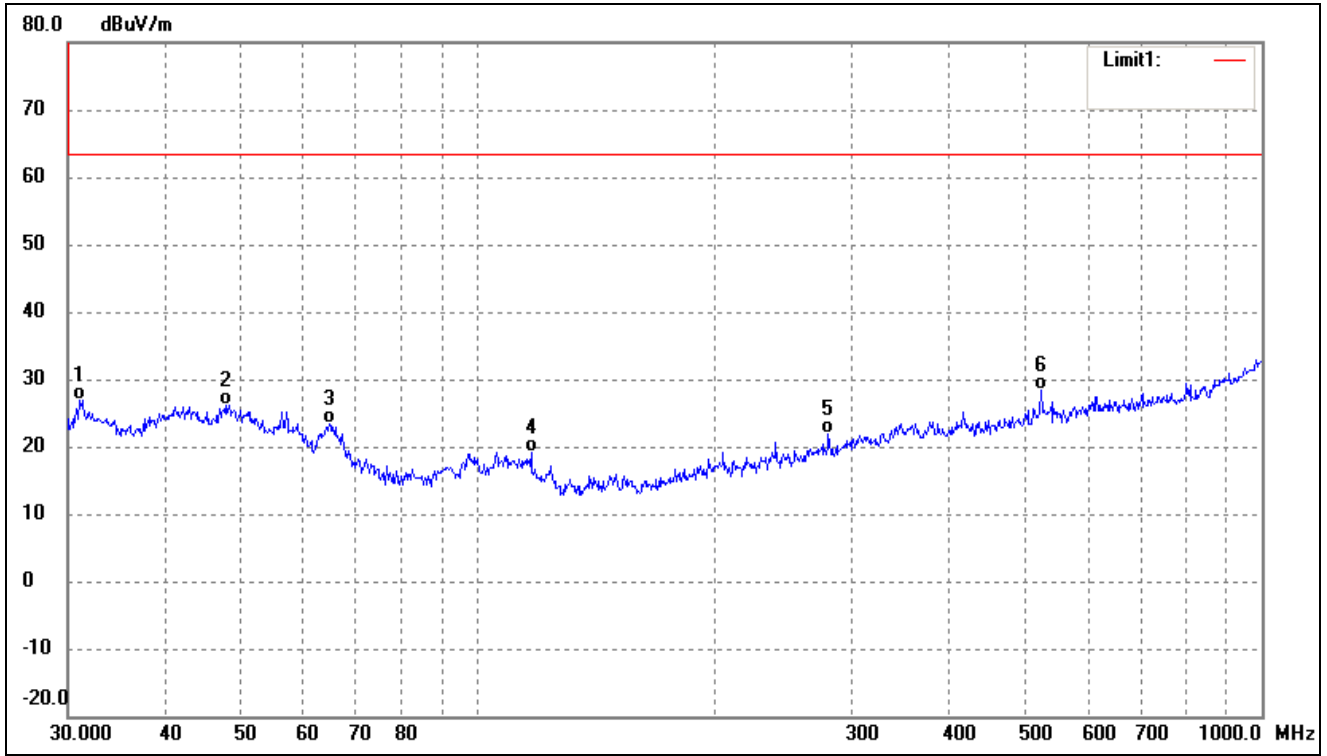
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	31.1798	36.37	-9.56	26.81	63.50	-36.69	346	100	QP
2	49.1865	34.55	-8.38	26.17	63.50	-37.33	99	100	QP
3	108.6470	33.76	-14.45	19.31	63.50	-44.19	217	100	QP
4	304.6099	31.39	-9.25	22.14	63.50	-41.36	101	100	QP
5	572.6144	30.64	-4.64	26.00	63.50	-37.50	313	100	QP
6	1000.0000	28.67	4.04	32.71	63.50	-30.79	104	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	32.4059	39.48	-9.73	29.75	63.50	-33.75	246	100	QP
2	36.0007	39.43	-9.49	29.94	63.50	-33.56	157	100	QP
3	46.0164	34.64	-8.09	26.55	63.50	-36.95	99	100	QP
4	184.4898	35.34	-14.61	20.73	63.50	-42.77	334	100	QP
5	378.5843	32.66	-7.83	24.83	63.50	-38.67	189	100	QP
6	1000.0000	29.01	4.04	33.05	63.50	-30.45	310	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	31.0706	36.42	-9.54	26.88	63.50	-36.62	345	100	QP
2	47.6586	34.27	-8.15	26.12	63.50	-37.38	148	100	QP
3	64.6594	35.46	-12.08	23.38	63.50	-40.12	69	100	QP
4	116.9495	34.77	-15.58	19.19	63.50	-44.31	140	100	QP
5	280.0237	32.01	-10.08	21.93	63.50	-41.57	104	100	QP
6	522.7180	34.08	-5.74	28.34	63.50	-35.16	295	100	QP

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