

FCC Part 15B

Measurement and Test Report

For

K-Mark Industrial Limited.

Flat A, 7/F., Mai On Ind. Bldg, 17-21 Kung Yip St., Kwai Chung, Hong Kong

FCC ID: VEP-EGC01A

FCC Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>FRED EICHLER PREDATOR CALL</u>
Tested Model:	<u>WRC-EGC-SS</u>
Report No.:	<u>WTX19X08058123W</u>
Sample Receipt Date:	<u>2019-07-18</u>
Tested Date:	<u>2019-07-18 to 2019-08-22</u>
Issued Date:	<u>2019-08-22</u>
Tested By:	<u>Mike Shi / Engineer</u>
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Approved & Authorized By:	<u>Jandy So / PSQ 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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Report version

Version No.	Date of issue	Description
Rev.00	2019-08-22	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: K-Mark Industrial Limited.
Address of applicant: Flat A, 7/F., Mai On Ind. Bldg, 17-21 Kung Yip St., Kwai Chung, Hong Kong

Manufacturer: NEW JIN DIAN TECHNOLOGY (SHENZHEN) COMPANY LIMITED.
Address of manufacturer: Building 1/3 NO 43 Jinshi Road, Guangpei Community, Guanlan Street, Longhua New District, Shenzhen, Guangdong Province, China

General Description of EUT

Product Name:	FRED EICHLER PREDATOR CALL
Trade Name:	/
Model No.:	WRC-EGC-SS
Adding Model(s):	/

Note: The test data is gathered from a production sample, provided by the manufacturer.

Technical Characteristics of EUT

Rated Voltage:	Battery: DC1.5V*8
Rated Current:	/
Rated Power:	/
Power Adapter Model:	/
Lowest Internal Frequency:	30MHz
Highest Internal Frequency:	433.92 MHz
Classification of ITE:	Class B

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B:Unintentional Radiators.

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. 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	Normal Playing	Power supply by Battery	DC1.5V*8
TM2	Downloading	Connect to Computer	AC120V 60Hz for PC

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
Notebook	Lenovo	E445	EB12648265

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.9	Shielded	Without Ferrite

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	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

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

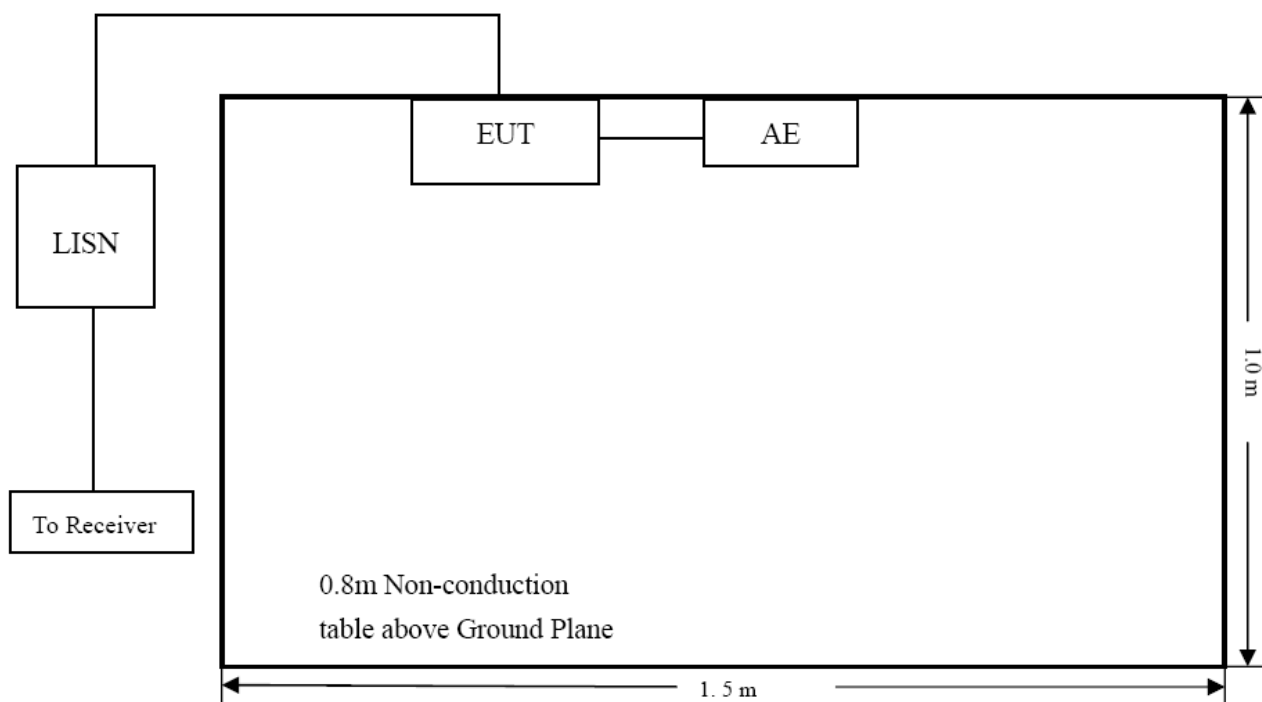
Description of Test	Result
§15.107(a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of 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.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

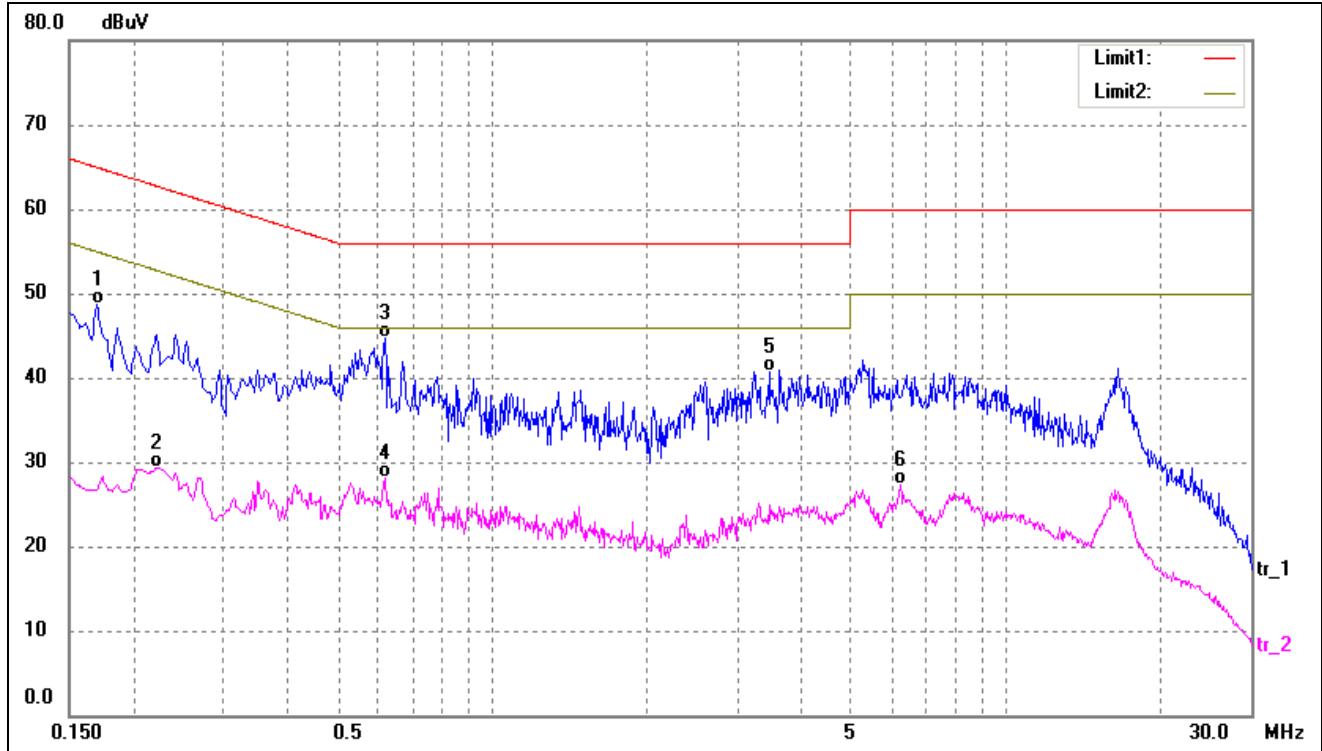
3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) conducted margin for a Class B device, with the *worst* margin reading of:

-11.23 dB at 0.6180 MHz in the Line, QP detector, TM2 mode, 0.15-30 MHz

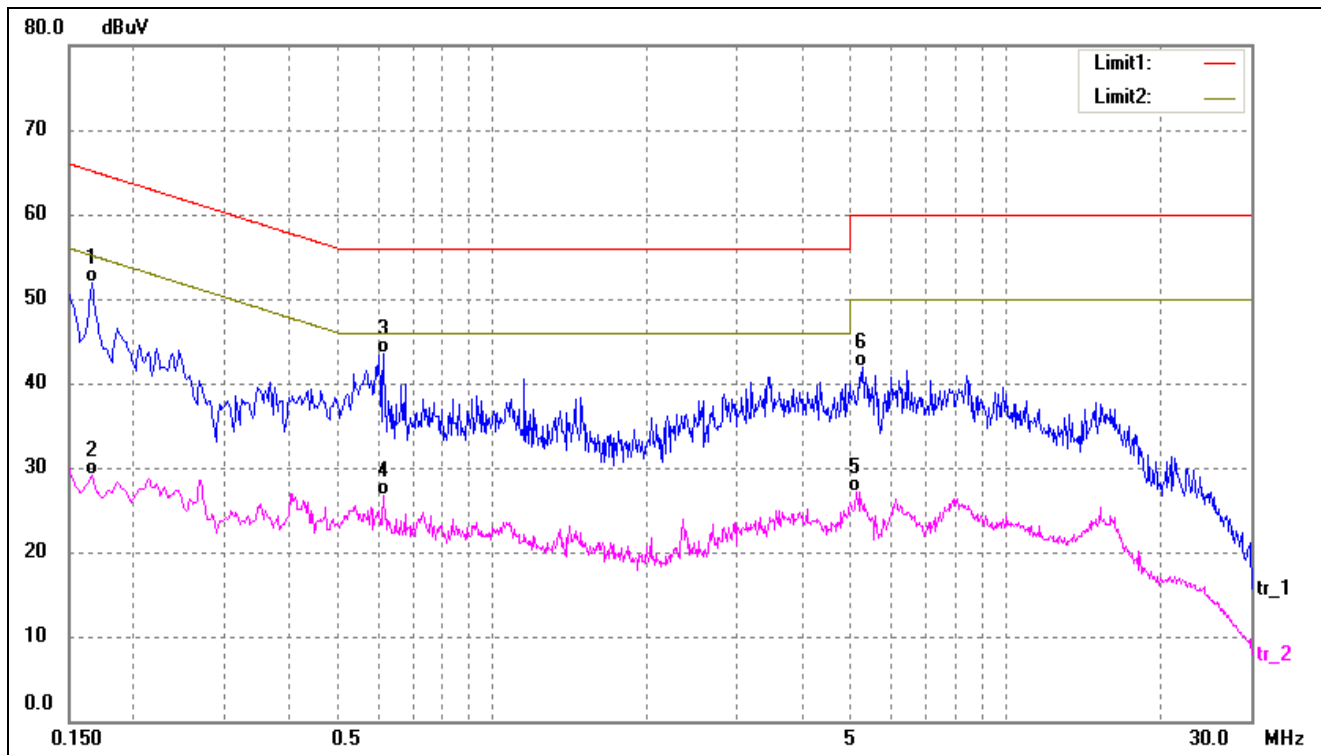
3.5 Conducted Emissions Test Data

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	0.1700	38.80	9.95	48.75	64.96	-16.21	QP
2	0.2220	19.36	9.99	29.35	52.74	-23.39	AVG
3*	0.6180	34.72	10.05	44.77	56.00	-11.23	QP
4	0.6180	18.11	10.05	28.16	46.00	-17.84	AVG
5	3.4660	30.45	10.35	40.80	56.00	-15.20	QP
6	6.2380	16.91	10.47	27.38	50.00	-22.62	AVG

Test mode:	TM2	Polarity:	Neutral
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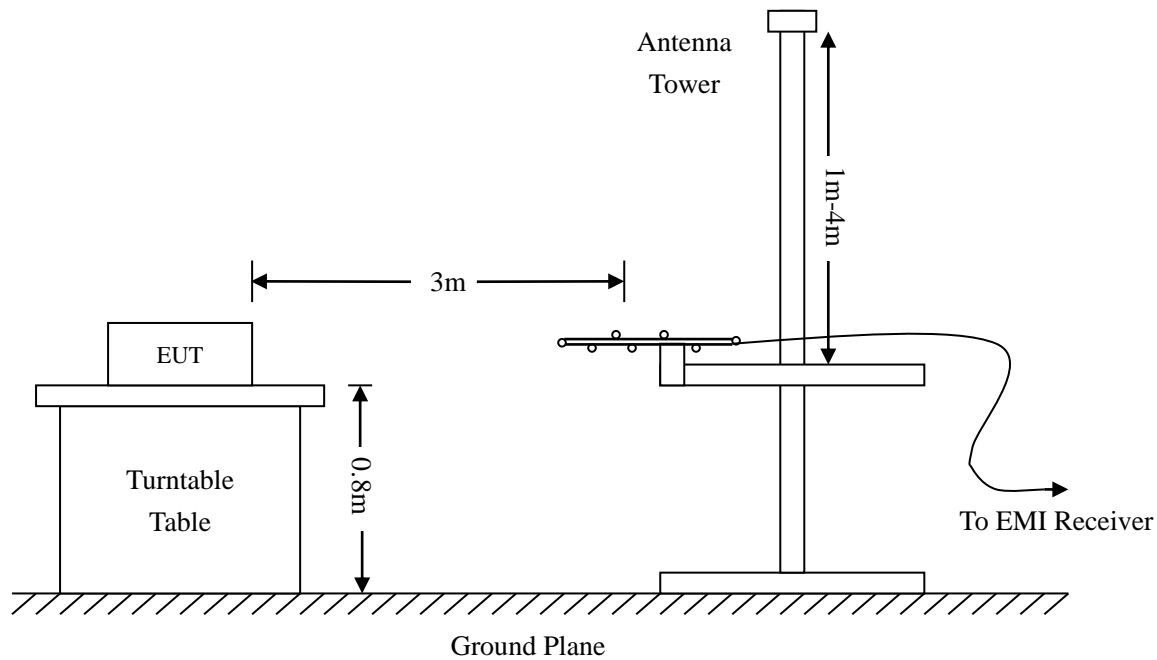
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	41.86	9.95	51.81	65.16	-13.35	QP
2	0.1660	19.08	9.95	29.03	55.16	-26.13	AVG
3*	0.6140	33.37	10.05	43.42	56.00	-12.58	QP
4	0.6140	16.66	10.05	26.71	46.00	-19.29	AVG
5	5.1380	16.73	10.39	27.12	50.00	-22.88	AVG
6	5.2700	31.55	10.40	41.95	60.00	-18.05	QP

4. RADIATED EMISSION

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 15.109 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:

$$\begin{aligned}\text{Corr. Ampl.} &= \text{Indicated Reading} + \text{Correct} \\ \text{Correct} &= \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}\end{aligned}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.4 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

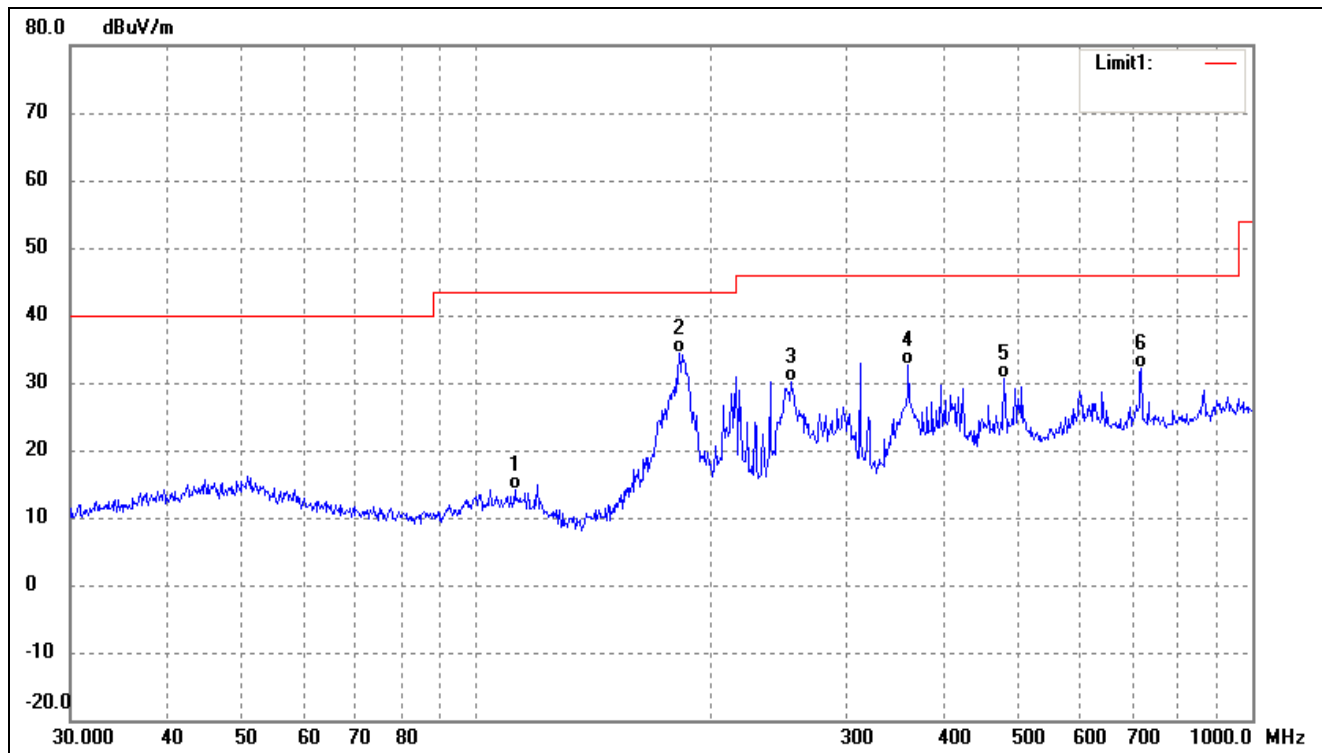
4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-5.58 dB at 312.1794 MHz in the Horizontal polarization, TM2 mode, 30 MHz to 1 GHz, 3 Meters

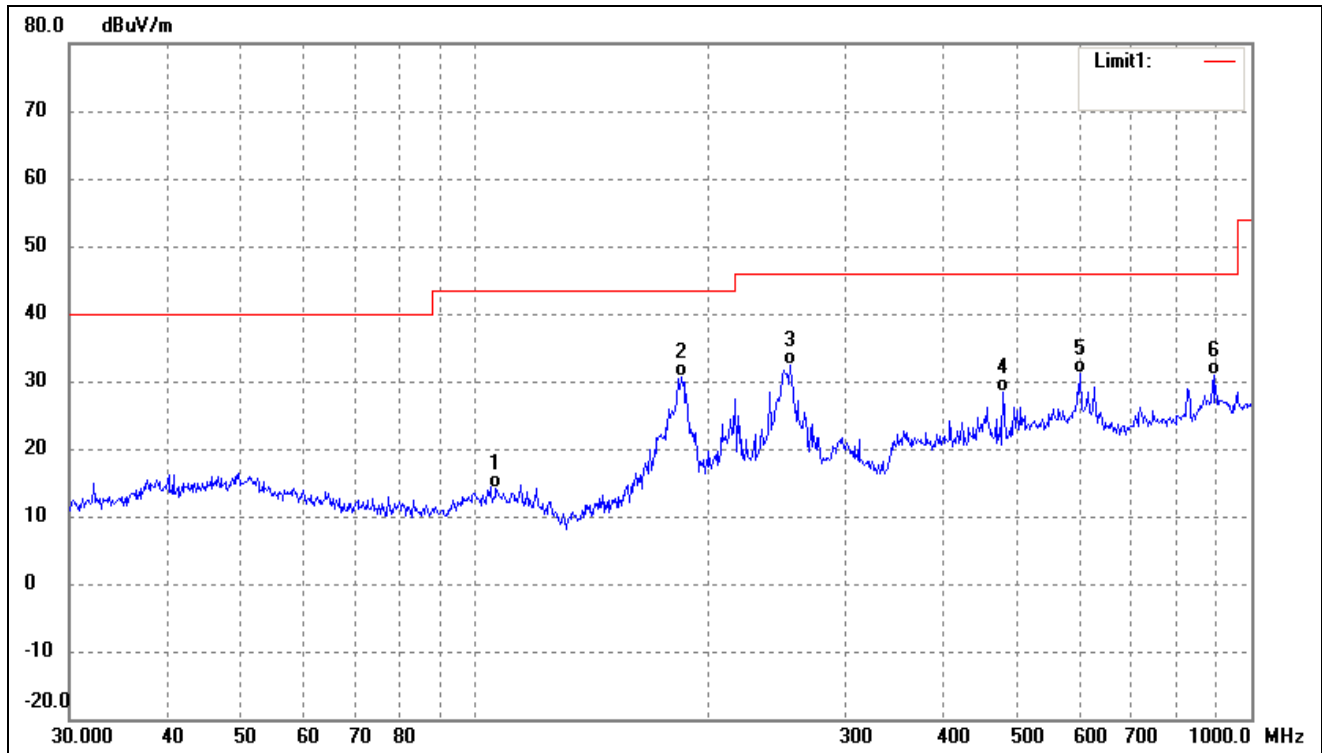
➤ Below 1GHz

Test mode:	TM1	Polarity:	Horizontal
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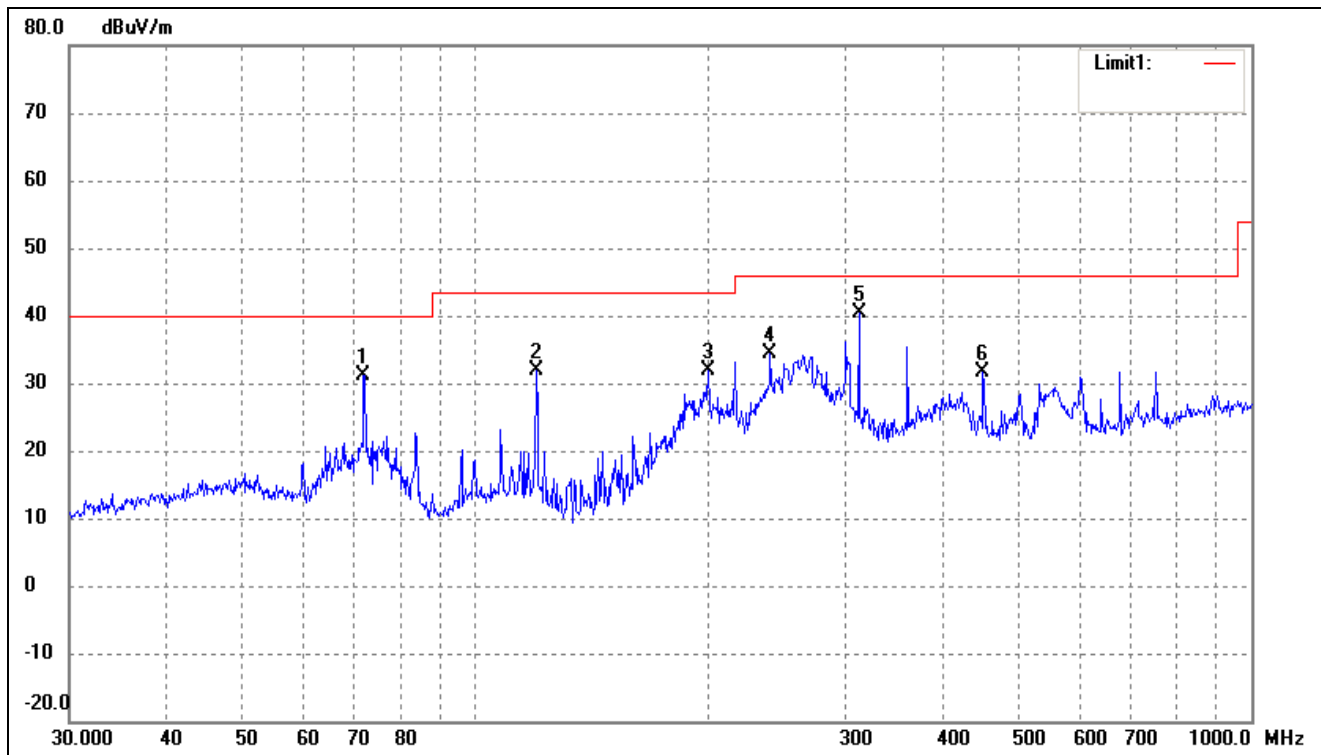
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	112.1305	27.40	-13.26	14.14	43.50	-29.36	309	100	QP
2	182.5592	48.76	-14.29	34.47	43.50	-9.03	94	100	QP
3	254.7284	40.96	-10.91	30.05	46.00	-15.95	278	100	QP
4	360.4477	40.53	-7.86	32.67	46.00	-13.33	106	100	QP
5	478.8456	37.13	-6.49	30.64	46.00	-15.36	281	100	QP
6	719.1995	35.36	-3.20	32.16	46.00	-13.84	103	100	QP

Test mode:	TM1	Polarity:	Vertical
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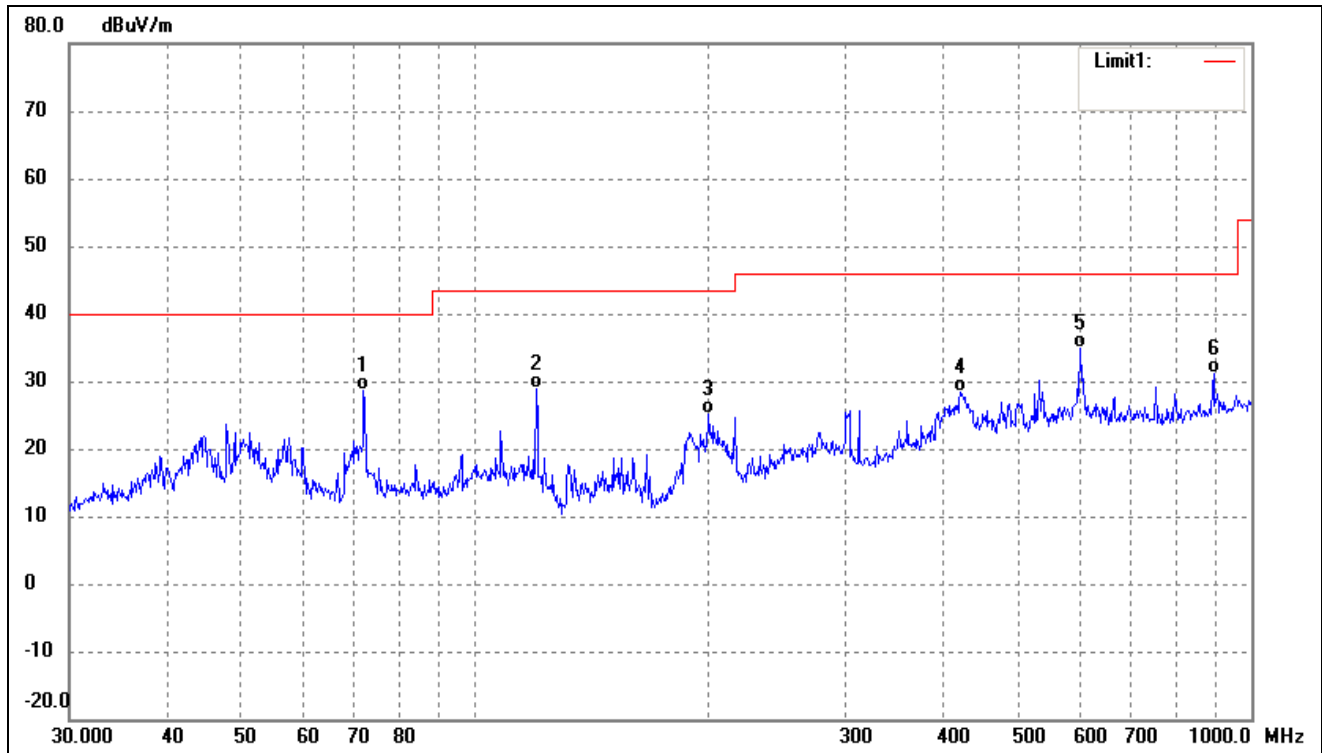
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	106.3850	27.09	-13.08	14.01	43.50	-29.49	226	100	QP
2	184.4898	44.66	-14.07	30.59	43.50	-12.91	283	100	QP
3	254.7284	43.22	-10.91	32.31	46.00	-13.69	60	100	QP
4	478.8456	34.83	-6.49	28.34	46.00	-17.66	330	100	QP
5	601.4265	35.12	-4.02	31.10	46.00	-14.90	120	100	QP
6	893.8567	31.58	-0.67	30.91	46.00	-15.09	235	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	71.8320	46.37	-15.17	31.20	40.00	-8.80	259	100	peak
2	119.8556	45.99	-14.13	31.86	43.50	-11.64	213	100	peak
3	199.2855	44.68	-12.75	31.93	43.50	-11.57	88	100	peak
4	239.9874	45.98	-11.53	34.45	46.00	-11.55	131	100	peak
5	312.1794	49.72	-9.30	40.42	46.00	-5.58	147	100	peak
6	451.1350	38.06	-6.39	31.67	46.00	-14.33	100	100	peak

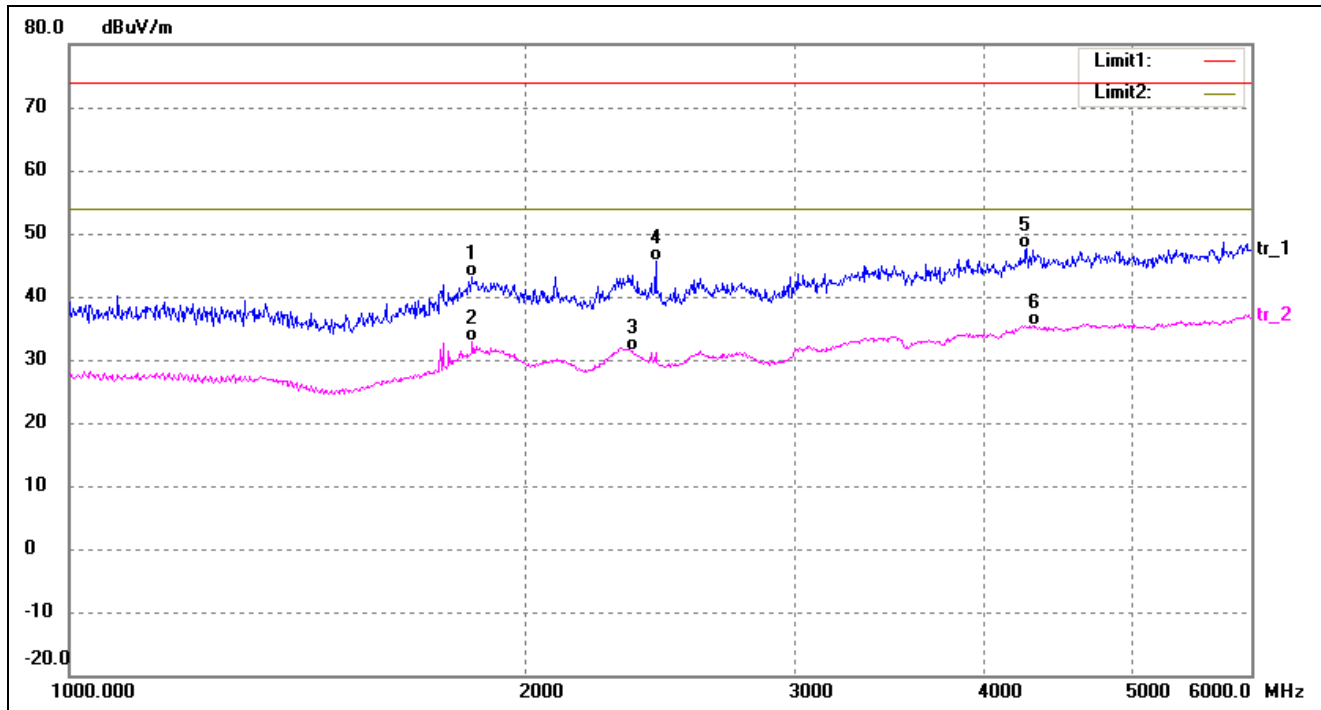
Test mode:	TM2	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	71.8320	43.83	-15.17	28.66	40.00	-11.34	31	100	QP
2	119.8556	42.90	-14.13	28.77	43.50	-14.73	131	100	QP
3	199.9856	37.78	-12.70	25.08	43.50	-18.42	51	100	QP
4	422.0577	34.56	-6.29	28.27	46.00	-17.73	132	100	QP
5	601.4265	39.01	-4.02	34.99	46.00	-11.01	267	100	QP
6	893.8567	31.70	-0.67	31.03	46.00	-14.97	223	100	QP

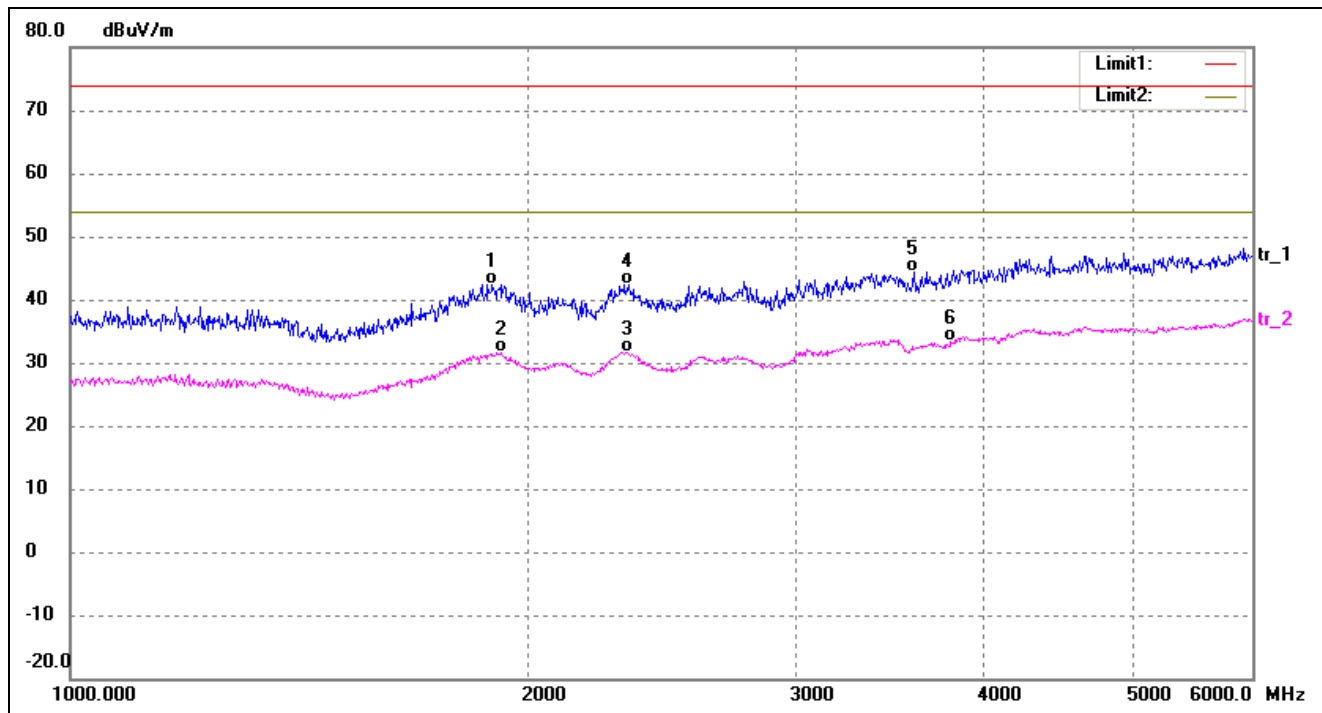
➤ Above 1GHz

Test mode:	TM1(worst case)	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	1838.956	52.34	-9.10	43.24	74.00	-30.76	67	100	QP
2	1842.254	41.88	-9.08	32.80	54.00	-21.20	155	100	AVG
3	2350.597	41.01	-9.58	31.43	54.00	-22.57	108	100	AVG
4	2431.997	55.04	-9.42	45.62	74.00	-28.38	103	100	QP
5	4268.768	53.30	-5.65	47.65	74.00	-26.35	203	100	QP
6	4322.645	40.87	-5.44	35.43	54.00	-18.57	295	100	AVG

Test mode:	TM1(worst case)	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	1895.833	51.01	-8.60	42.41	74.00	-31.59	165	100	QP
2	1923.203	40.59	-8.95	31.64	54.00	-22.36	141	100	AVG
3	2325.462	41.28	-9.63	31.65	54.00	-22.35	80	100	AVG
4	2329.632	51.98	-9.62	42.36	74.00	-31.64	150	100	QP
5	3594.181	51.49	-7.11	44.38	74.00	-29.62	316	100	QP
6	3799.467	40.21	-6.92	33.29	54.00	-20.71	260	100	AVG