FCC Part 18
Measurement and Test Report

For

Eggtronic Engineering srl

Via Campagna, 8, 41126

FCC ID: 2ANP7-EGG160047

Test Rule(s):	FCC Part 18
Product Description:	Wireless Charging Pad
Tested Model:	EGG160047
Report No.:	STR18108297I
Sample Receipt Date:	2018-10-31
Tested Date:	2018-11-01 to 2018-11-06
Issued Date:	2018-11-06
Tested By:	Mike Shi / Engineer
Reviewed By:	Silin Chen / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Eggtronic Engineering srl
Address of applicant:	Via Campagna, 8, 41126
Manufacturer:	Eggtronic Engineering srl
Address of manufacturer:	Via Campagna, 8, 41126

General Description of EUT	
Product Name:	Wireless Charging Pad
Trade Name:	Eggtronic
Model No.:	EGG160047
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	110~205KHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna
Rated Voltage:	DC5V (Wireless output)
Rated Current:	<1A (Wireless output)
Rated Power:	< 5W (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.

FCC/OST MP-5: FCC methods of measurements of radio noise emissions from industrial, scientific, and medical equipment.

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 charging	Transmit	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
Adapter /		KZ0502000	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB CABLE 1.0	Unshie	lded	Without Core

1.6 Measurement Uncertainty

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

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 A	gilent	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	2020-06-07
Horn Antenna	ETS	3117	00086197	2017-06-08	2020-06-07
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2020-06-07
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2018-05-22	2019-05-21
L.I.S.N Schw	arz 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

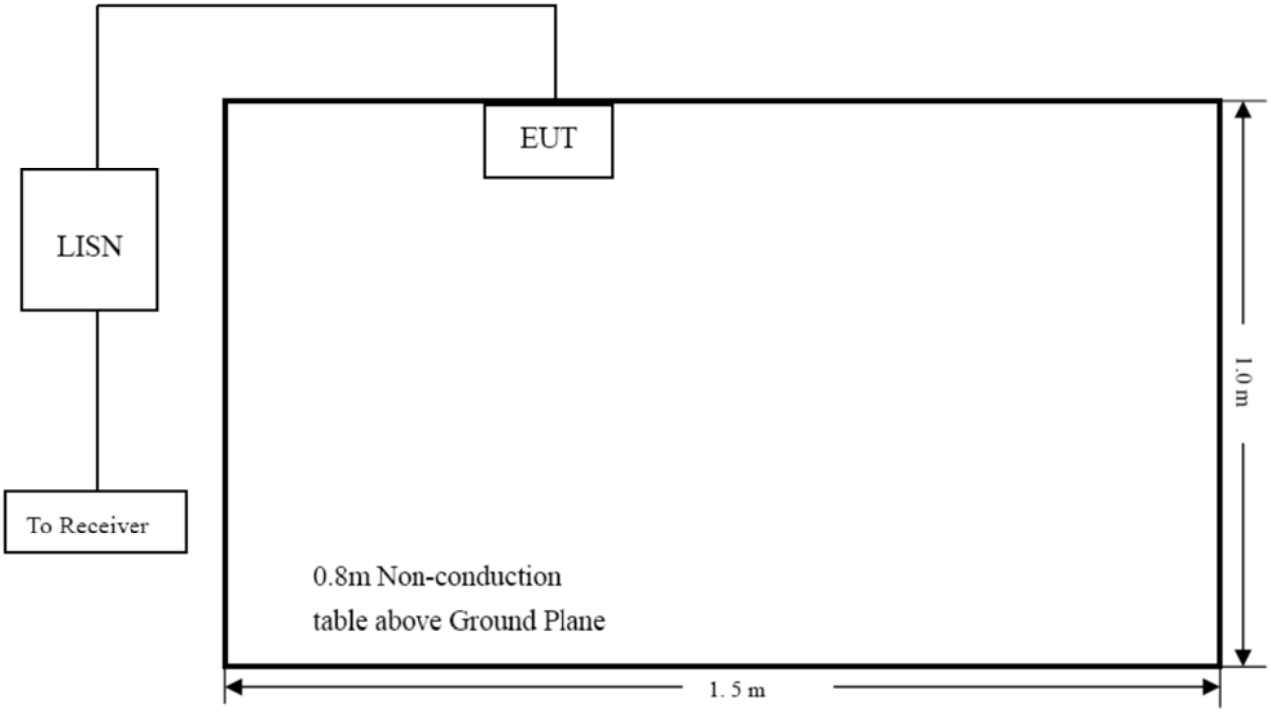
According to FCC 18.307(b), the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables:

Frequency (MHz)	Conducted limit (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.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

Temperature:	24° C
Relative Humidity:	56%
ATM Pressure:	1016 mbar

3.5 Test Receiver Setup

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

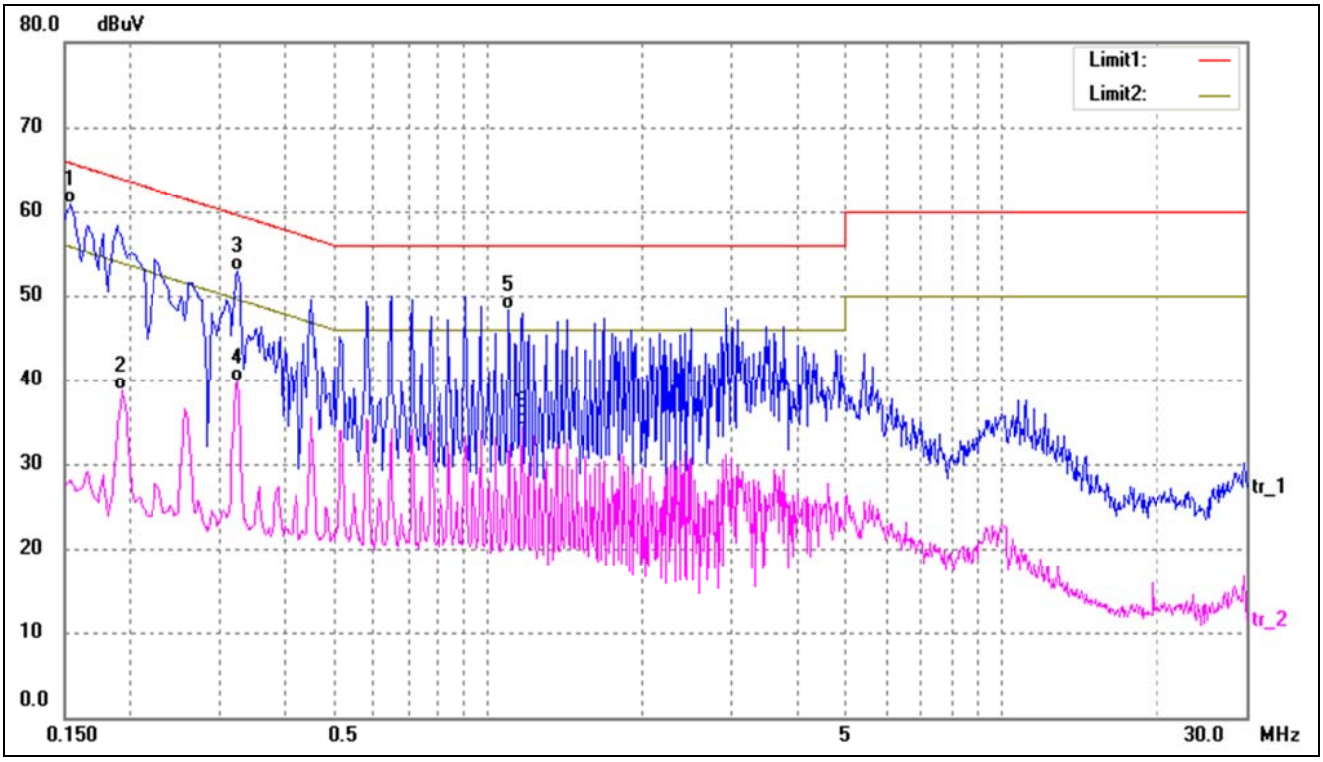
Start Frequency ..... 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed ..... Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth ..... 9 kHz
Quasi-Peak Adapter Mode ..... Normal

3.6 Summary of Test Results/Plots

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

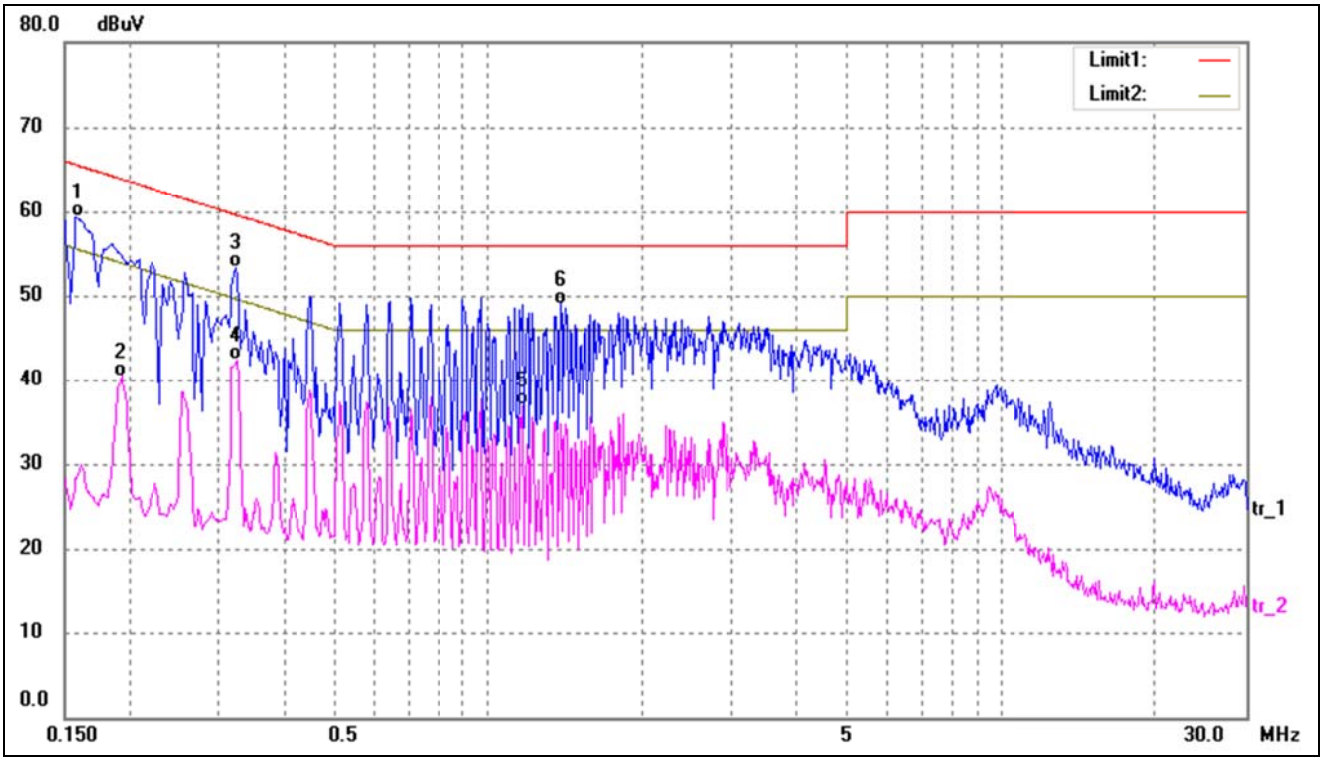
-4.85 dB at **0.1540MHz** in the **Line**, **QP** detector, **0.15-30MHz**

Test mode:	TM1	Polarity:	Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1540	50.83 10	.10 6	0.93	65.78	-4.85	QP
2	0.1940	28.64 10	.12 3	8.76	53.86	-15.10	AVG
3	0.3260	42.70 10	.20 5	2.90	59.55	-6.65	QP
4	0.3260	29.58 10	.20 3	9.78	49.55	-9.77	AVG
5	1.0980	37.86 10	.51 4	8.37	56.00	-7.63	QP
6	1.1660	24.04 10	.52 3	4.56	46.00	-11.44	AVG

Test mode:	TM1	Polarity:	Neutral

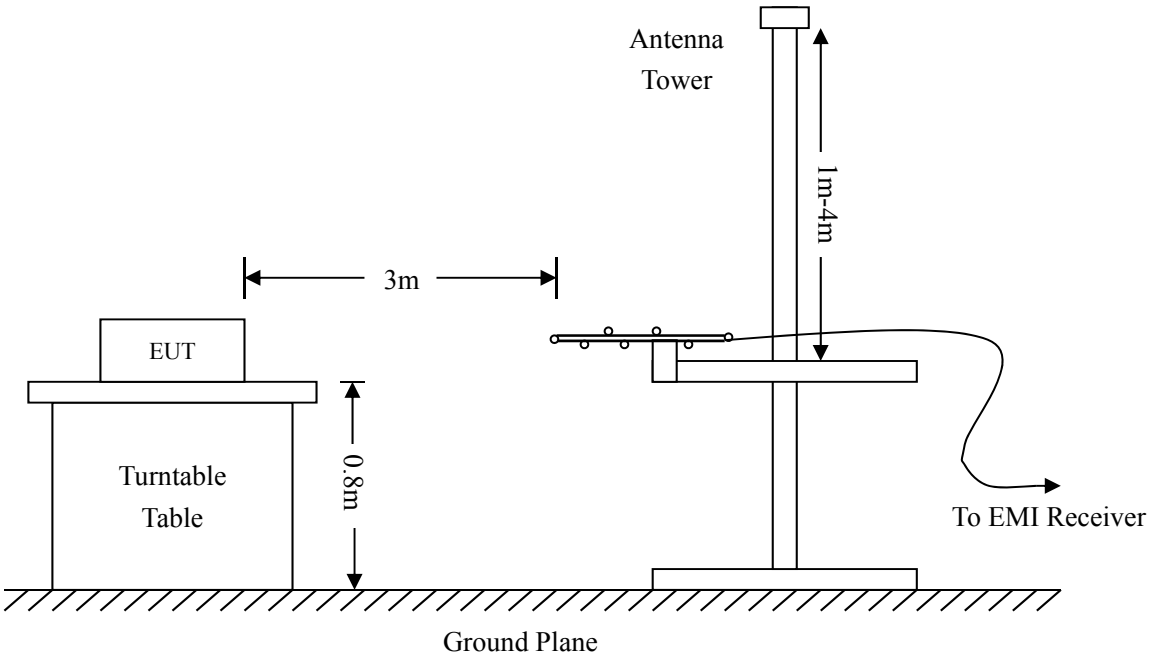


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1580	49.25 10	.10 5	9.35	65.57	-6.22	QP
2	0.1940	30.28 10	.12 4	0.40	53.86	-13.46	AVG
3	0.3220	43.10 10	.20 5	3.30	59.66	-6.36	QP
4	0.3260	32.03 10	.20 4	2.23	49.55	-7.32	AVG
5	1.1660	26.35 10	.52 3	6.87	46.00	-9.13	AVG
6	1.3820	38.45 10	.55 4	9.00	56.00	-7.00	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	Freque ncy :30MHz-1GHz	Freque ncy :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	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:

Corr. Ampl. = Indicated Reading – 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:

Margin = Corr. Ampl. – FCC Part 18.305 Limit

4.4 Environmental Conditions

Temperature:	24° C
Relative Humidity:	56%
ATM Pressure:	1011 mbar

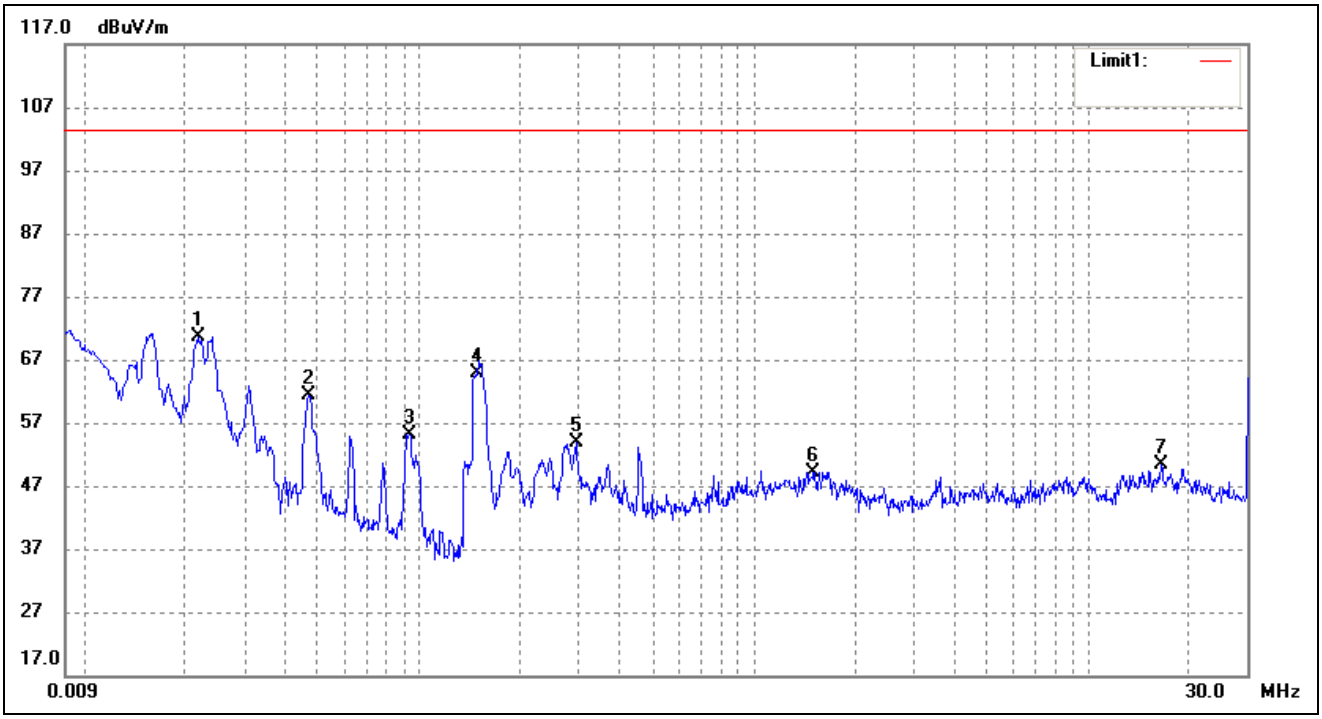
4.5 Summary of Test Results/Plots

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

-29.58 dB at 993.0114 **MHz** in the **Horizontal** polarization, **Below 30MHz**, **3Meters**

Plot of Radiated Emissions Test Data (Below 30MHz)

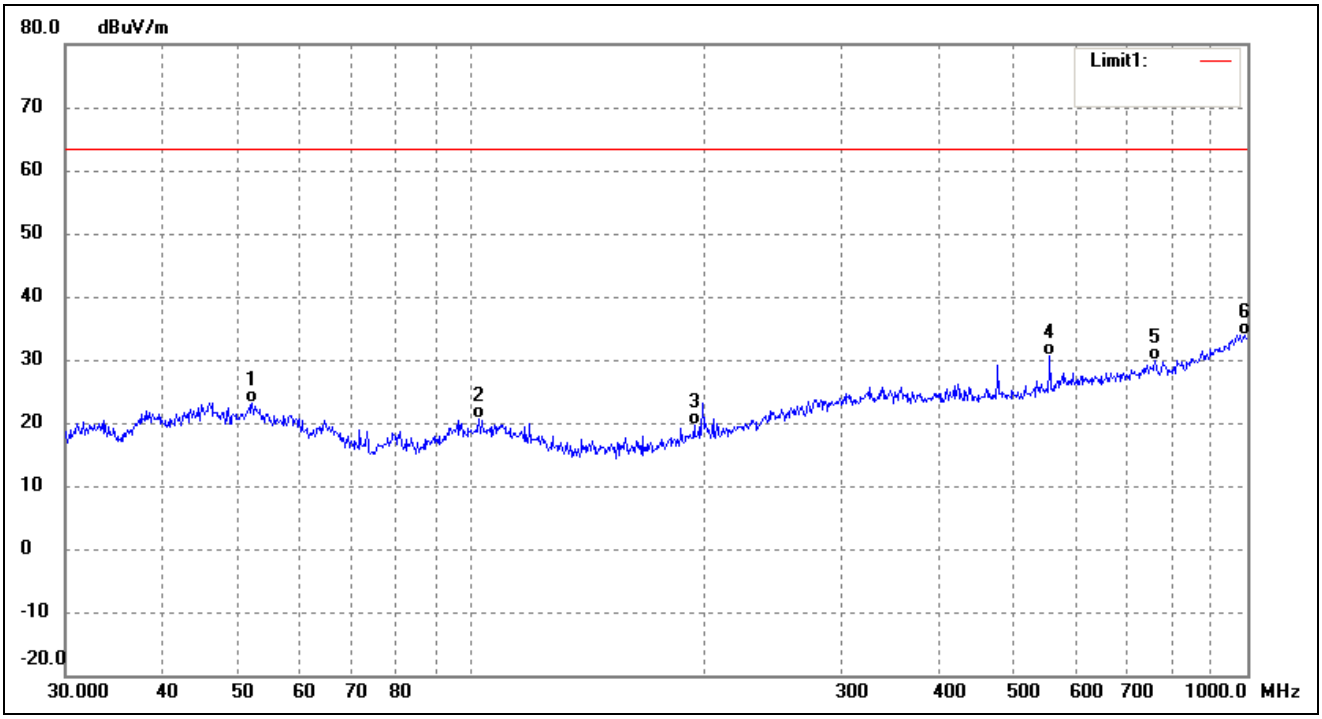
Test mode:	TM1	Polarity: V	ertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1 0	.0220	77.76	-7.17	70.59	103.50	-32.91	105	100	peak
2 0	.0469	68.29	-6.99	61.30	103.50	-42.20	168	100	peak
3 0	.0935	61.77	-6.53	55.24	103.50	-48.26	63	100	peak
4 0	.1491	70.19	-5.36	64.83	103.50	-38.67	111	100	peak
5 0	.2940	60.76	-6.83	53.93	103.50	-49.57	180	100	peak
6 1	.5113	59.20	-9.98	49.22	103.50	-54.28	261	100	peak
7	16.4856	60.48 -	10.20 5	0.28	103.50	-53.22	105	100	peak

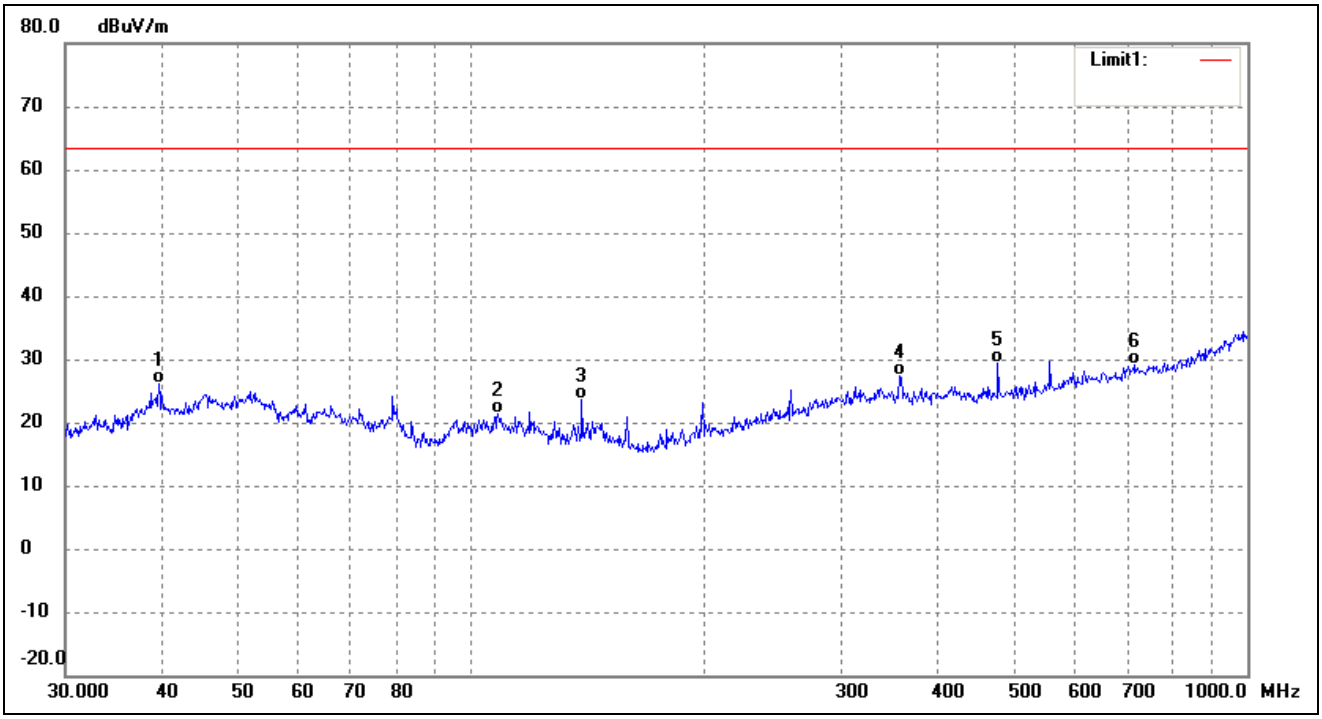
Plot of Radiated Emissions Test Data (30MHz to 1GHz)

Test mode:	TM1	Polarity: Horizo	ntal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	52.2079	36.00 -	12.82 2	3.18	63.50	-40.32	353	100	QP
2	102.3597	34.87 -	14.26 2	0.61	63.50	-42.89	119	100	QP
3	193.7728	32.39 -	12.84 1	9.55	63.50	-43.95	52	100	QP
4 5	56.7744	35.77	-5.07	30.70	63.50	-32.80	127	100	QP
5 7	60.7036	31.55	-1.60	29.95	63.50	-33.55	281	100	QP
6	993.0114	29.99 3	.93 3	3.92	63.50	-29.58	148	100	QP

Test mode:	TM1	Polarity: V	ertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	39.5757	40.34 -	14.12 2	6.22	63.50	-37.28	260	100	QP
2	108.2667	35.23 -	13.96 2	1.27	63.50	-42.23	223	100	QP
3	138.8735	40.67 -	16.99 2	3.68	63.50	-39.82	66	100	QP
4 3	56.6758	33.95	-6.69	27.26	63.50	-36.24	158	100	QP
5 4	77.1694	35.64	-6.17	29.47	63.50	-34.03	110	100	QP
6 7	14.1734	31.46	-2.42	29.04	63.50	-34.46	228	100	QP