

FCC Part 15B

Measurement and Test Report

For

**Inno-Tek Electronic & Plastic Manufacturer (Dong Guan)
Limited.**

**3/F No.14, Ming Ying Road West, Zone Of He Xi, Jin Sha, Chang An Town,
DongGuan, GuangDong, China**

FCC ID: 2ATYX-004

FCC Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>Remote control socket</u>
Tested Model:	<u>IR102</u>
Report No.:	<u>WTX19X07045639W</u>
Sample Receipt Date:	<u>2019-07-08</u>
Tested Date:	<u>2019-07-08 to 2019-08-27</u>
Issued Date:	<u>2019-08-27</u>
Tested By:	<u>Mike Shi / Engineer</u>
Reviewed By:	<u>Silin Chen / EMC Manager</u>
Approved & Authorized By:	<u>Jandy So / PSQ Manager</u>
Prepared By:	

Mike Shi

Silin Chen

Jandy So

Shenzhen SEM Test Technology Co., Ltd.

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

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.

TABLE OF CONTENTS

1. GENERAL INFORMATION	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY.....	4
1.4 TEST FACILITY.....	4
1.5 EUT SETUP AND OPERATION MODE.....	5
1.6 MEASUREMENT UNCERTAINTY.....	5
1.7 TEST EQUIPMENT LIST AND DETAILS.....	6
2. SUMMARY OF TEST RESULTS	7
3. CONDUCTED EMISSIONS	8
3.1 TEST PROCEDURE.....	8
3.2 BASIC TEST SETUP BLOCK DIAGRAM.....	8
3.3 ENVIRONMENTAL CONDITIONS.....	8
3.4 SUMMARY OF TEST RESULTS/PLOTS.....	8
3.5 CONDUCTED EMISSIONS TEST DATA.....	9
4. RADIATED EMISSION	11
4.1 TEST PROCEDURE.....	11
4.2 TEST RECEIVER SETUP.....	11
4.3 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.4 ENVIRONMENTAL CONDITIONS.....	12
4.5 SUMMARY OF TEST RESULTS/PLOTS.....	12

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Inno-Tek Electronic & Plastic Manufacturer (Dong Guan) Limited.
Address of applicant: 3/F No.14, Ming Ying Road West, Zone Of He Xi, Jin Sha, Chang An Town, DongGuan, GuangDong, China
Manufacturer: Inno-Tek Electronic & Plastic Manufacturer (Dong Guan) Limited.
Address of manufacturer: 3/F No.14, Ming Ying Road West, Zone Of He Xi, Jin Sha, Chang An Town, DongGuan, GuangDong, China

General Description of EUT	
Product Name:	Remote control socket
Trade Name:	/
Model No.:	IR102
Adding Model(s):	IR101, HRFR01B,HRFR02B
<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 IR102, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	AC120V 60Hz
Rated Current:	Max. Current: 15A Resistive;5A tungsten lamp
Rated Power:	/
Power Adapter Model:	/
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 working		Supply with Voltage AC120V/60Hz

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	/	HJ-0501000	1408
iPhone6 Plus	Apple	MGAJ2ZP/A	FK1PQ4JBG5QW

Special Cable List and Details

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

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

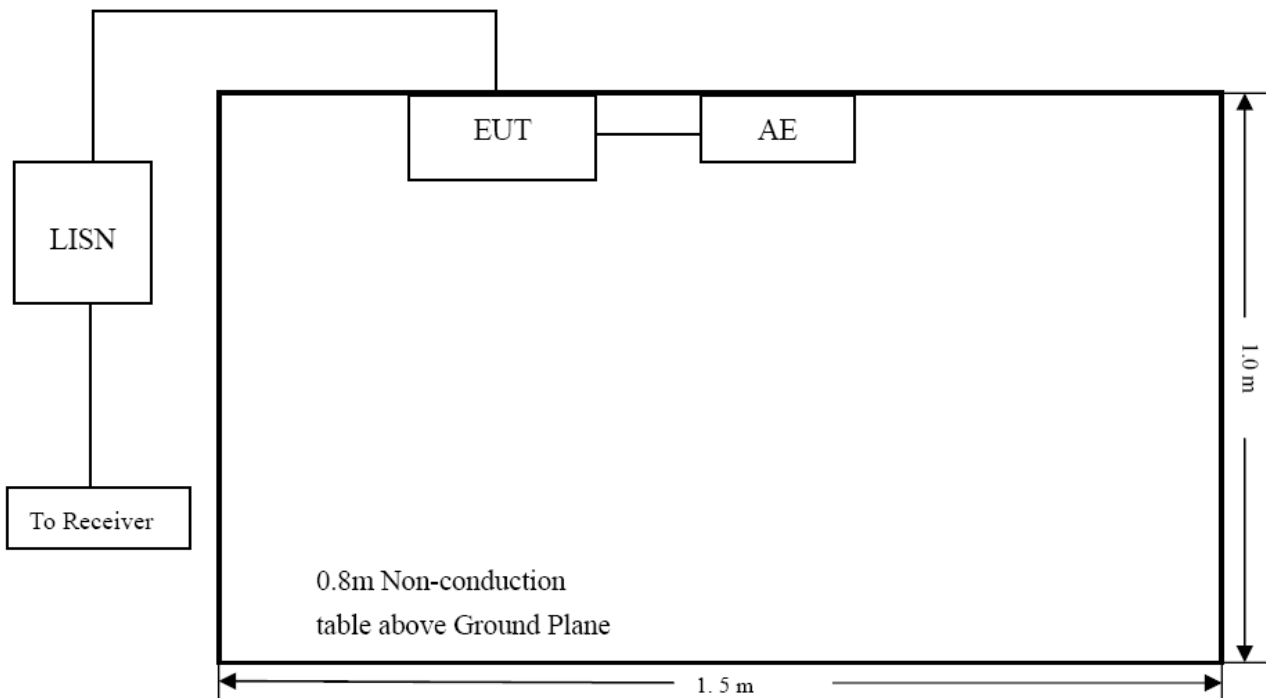
Description of Test	Result
§15.107(a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

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 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

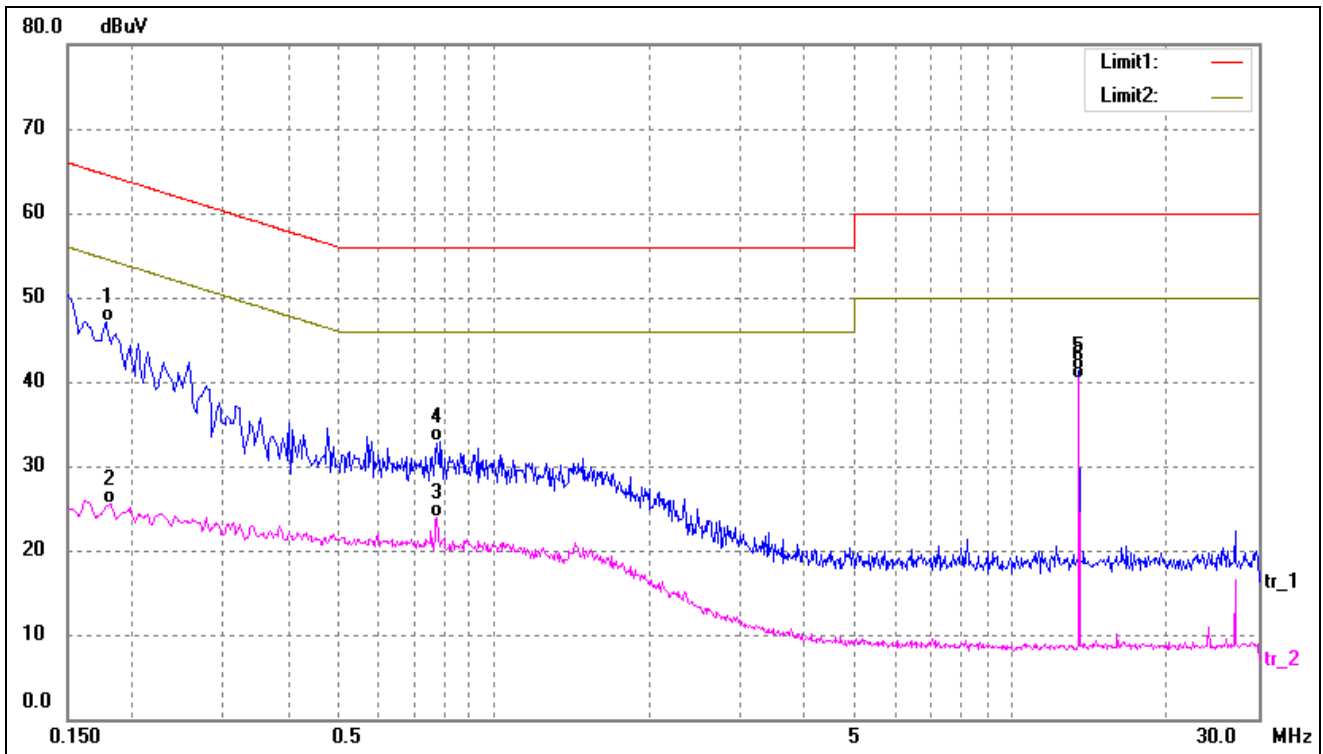
3.4 Summary of Test Results/Plots

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:

-9.33 dB at 13.5220 MHz in the **Neutral, AVG** detector, **TM1** mode, 0.15-30 MHz

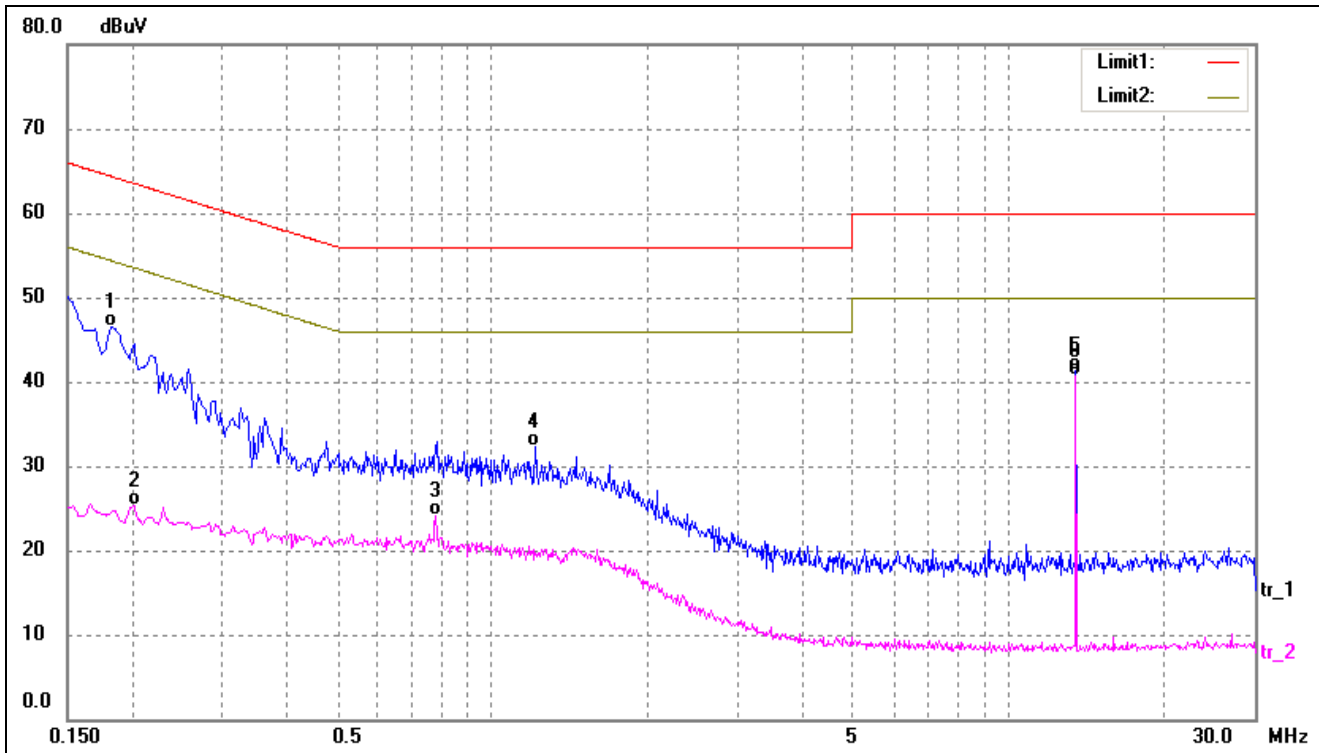
3.5 Conducted Emissions Test Data

Test mode:	TM1	Polarity:	Line
------------	-----	-----------	------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1780	37.09	10.11	47.20	64.58	-17.38	QP
2	0.1820	15.41	10.11	25.52	54.39	-28.87	AVG
3	0.7780	13.51	10.42	23.93	46.00	-22.07	AVG
4	0.7900	22.44	10.43	32.87	56.00	-23.13	QP
5	13.5220	30.40	11.00	41.40	60.00	-18.60	QP
6*	13.5220	29.40	11.00	40.40	50.00	-9.60	AVG

Test mode:	TM1	Polarity:	Neutral
------------	-----	-----------	---------



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1820	36.34	10.11	46.45	64.39	-17.94	QP
2	0.2020	15.19	10.12	25.31	53.53	-28.22	AVG
3	0.7780	13.61	10.42	24.03	46.00	-21.97	AVG
4	1.2100	21.72	10.53	32.25	56.00	-23.75	QP
5	13.5220	30.32	11.00	41.32	60.00	-18.68	QP
6*	13.5220	29.67	11.00	40.67	50.00	-9.33	AVG

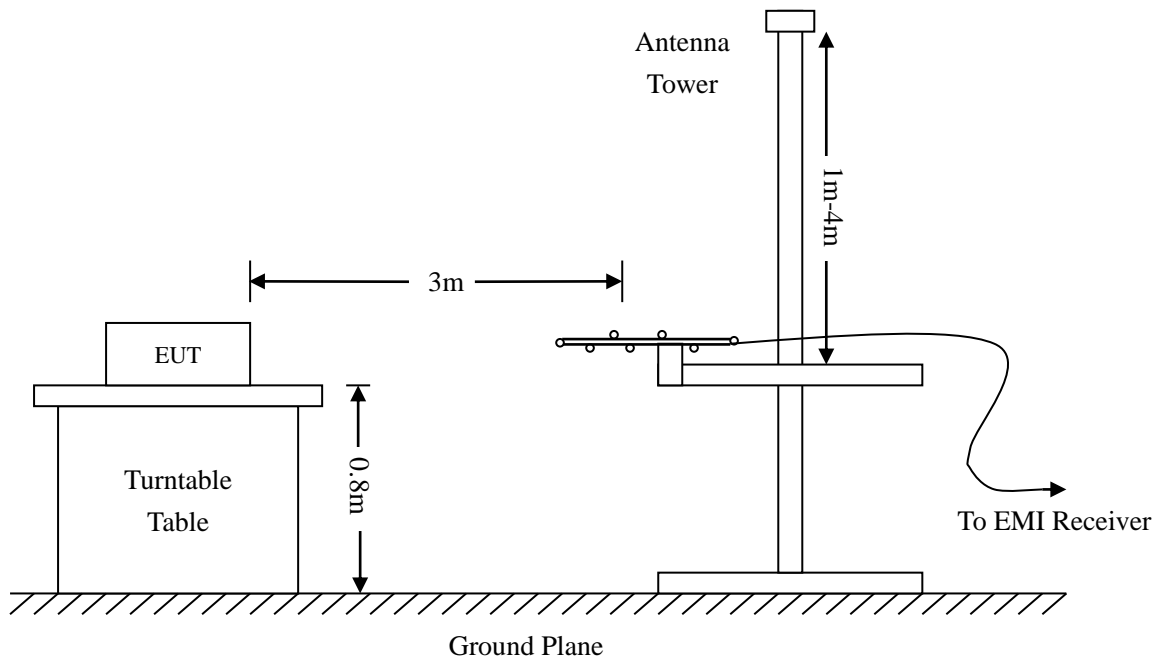
4. RADIATED EMISSION

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:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

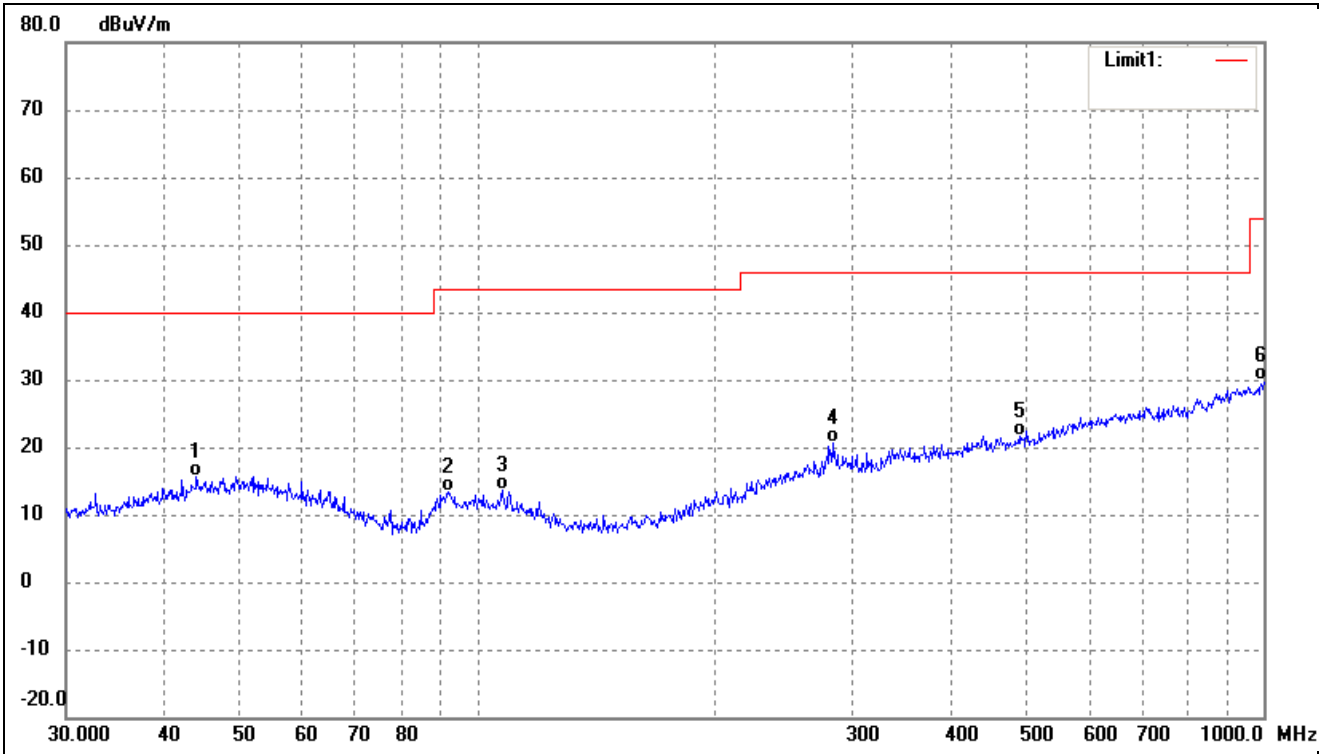
4.5 Summary of Test Results/Plots

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

-17.66 dB at 912.8620 MHz in the Vertical polarization, TM1 mode, 30 MHz to 1 GHz, 3 Meters

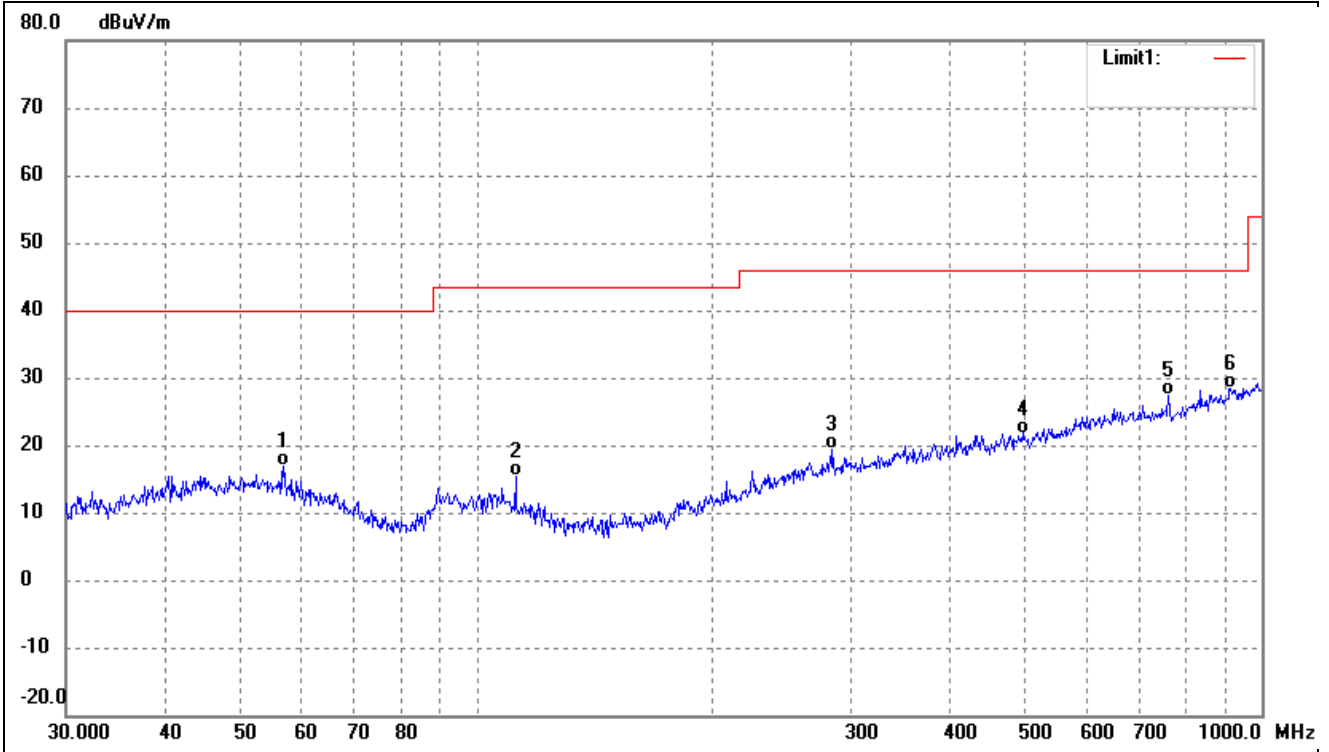
Below 1GHz

Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	43.9658	27.69	-12.05	15.64	40.00	-24.36	321	100	QP
2	91.8163	27.14	-13.76	13.38	43.50	-30.12	98	100	QP
3	107.5101	27.35	-13.62	13.73	43.50	-29.77	249	100	QP
4	282.9852	29.45	-8.84	20.61	46.00	-25.39	109	100	QP
5	489.0269	27.18	-5.57	21.61	46.00	-24.39	334	100	QP
6	1000.0000	27.70	2.20	29.90	54.00	-24.10	320	100	QP

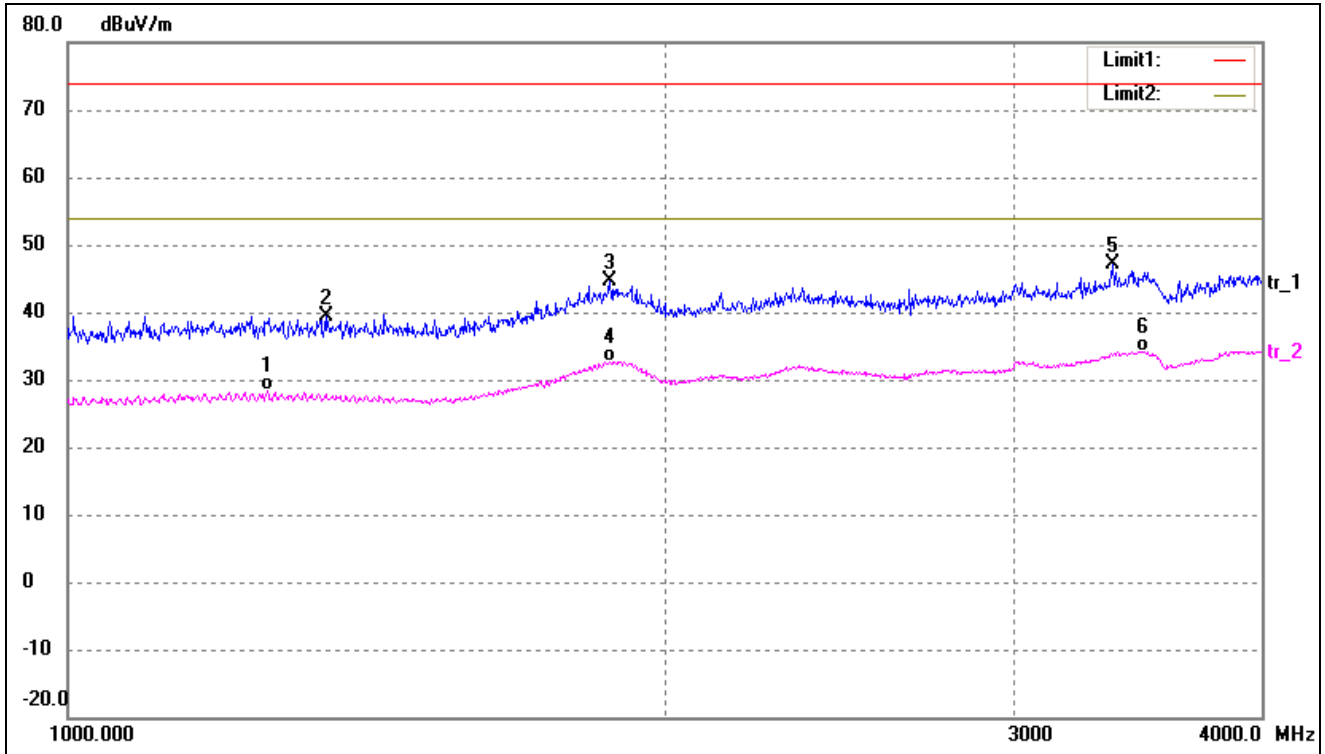
Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	56.7917	29.55	-12.67	16.88	40.00	-23.12	340	100	QP
2	112.1305	29.71	-14.28	15.43	43.50	-28.07	97	100	QP
3	283.9792	28.31	-8.83	19.48	46.00	-26.52	107	100	QP
4	495.9344	27.21	-5.46	21.75	46.00	-24.25	106	100	QP
5	760.7036	28.84	-1.58	27.26	46.00	-18.74	80	100	QP
6	912.8620	26.97	1.37	28.34	46.00	-17.66	333	100	QP

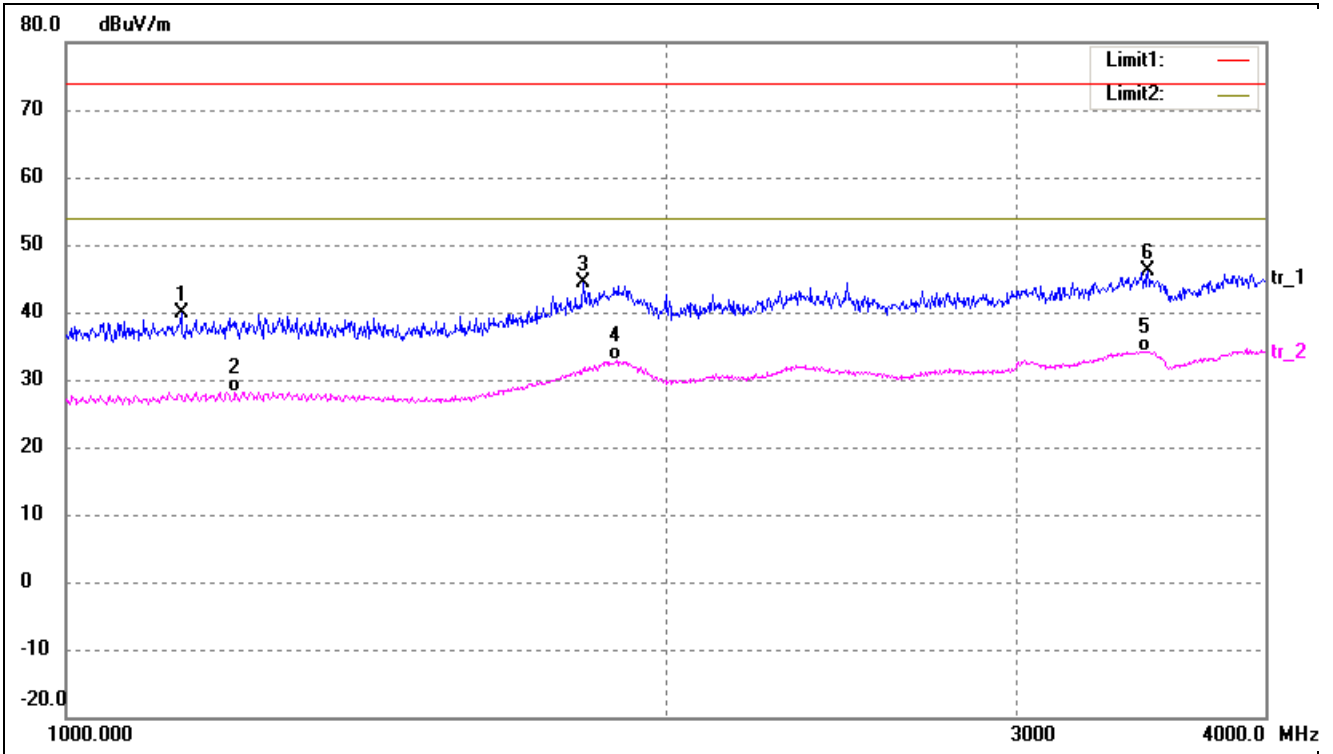
Above 1GHz

Test mode:	TM1	Polarity:	Horizontal
------------	-----	-----------	------------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1260.503	41.99	-13.73	28.26	54.00	-25.74	145	100	AVG
2	1349.102	53.03	-13.60	39.43	74.00	-34.57	310	100	peak
3	1876.442	52.85	-8.29	44.56	74.00	-29.44	89	100	peak
4	1876.442	41.03	-8.29	32.74	54.00	-21.26	244	100	AVG
5	3363.586	54.23	-7.11	47.12	74.00	-26.88	305	100	peak
6	3487.033	41.19	-6.97	34.22	54.00	-19.78	123	100	AVG

Test mode:	TM1	Polarity:	Vertical
------------	-----	-----------	----------



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	1142.346	53.83	-13.97	39.86	74.00	-34.14	77	100	peak
2	1215.879	42.07	-13.83	28.24	54.00	-25.76	162	100	AVG
3	1817.556	53.24	-8.80	44.44	74.00	-29.56	97	100	peak
4	1889.494	40.97	-8.19	32.78	54.00	-21.22	235	100	AVG
5	3477.378	41.21	-6.97	34.24	54.00	-19.76	143	100	AVG
6	3491.870	52.96	-6.95	46.01	74.00	-27.99	186	100	peak

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