FCC Part 18
Measurement and Test Report

For

WI Co.,LTD

3F, SUNG SU BUILDING, 680-25, BANGHAK DONG, DOBONG GU,

SEOUL, KOREA

FCC ID: 2AS4EWM-WLQC

Test Rule(s):	FCC Part 18
Product Description:	Figure Wireless Charger
Tested Model:	WM-WLQC
Report No.:	WTX19X03013499W-2
Sample Receipt Date:	2019-03-12
Tested Date:	2019-03-12 to 2019-04-04
Issued Date:	2019-04-08
Tested By:	Jason Su / 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:	WI Co.,LTD
Address of applicant:	3F, SUNG SU BUILDING, 680-25, BANGHAK DONG, DOBONG GU, SEOUL, KOREA
Manufacturer:	CE LINK LIMITED
Address of manufacturer:	Building M,LiCheng Technology Industrial Zone, GongHe Village, ShaJing Town, ShenZhen City, China

General Description of EUT	
Product Name:	Figure Wireless Charger
Trade Name:	WI
Model No.:	WM-WLQC
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
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 Charger	/	Input:DC5V2A; Output:DC5V1A
TM2	Wireless Charger	/	Input:DC9V1.67A; Output:DC9V1.1A

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB-C Cable	0.3	Shielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
HUAWEI Mate 20 Pro	HUAWEI	LYA-AL00	/
USB Power Adapter	Qualcomm	W0920U-1U05F	/

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 ±3.74dB
		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	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

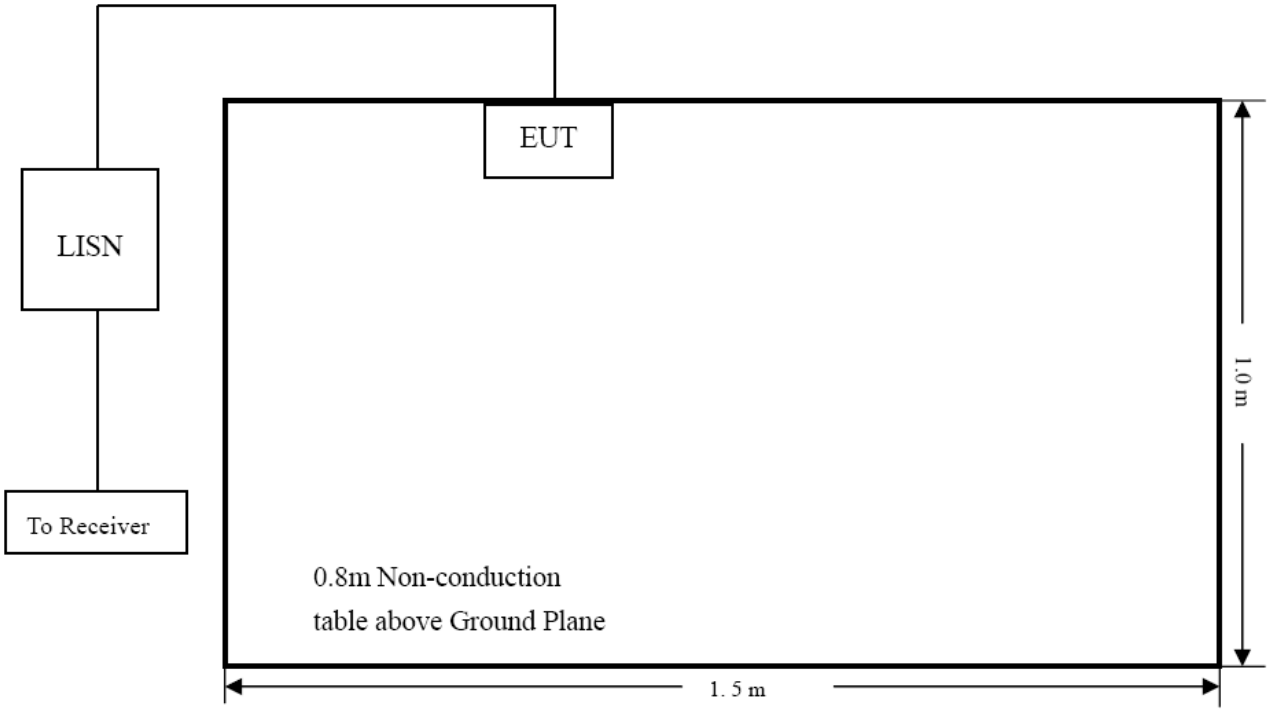
According to FCC 18.307(b), the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables:

Frequency (MHz)	Conducted limit (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:	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:

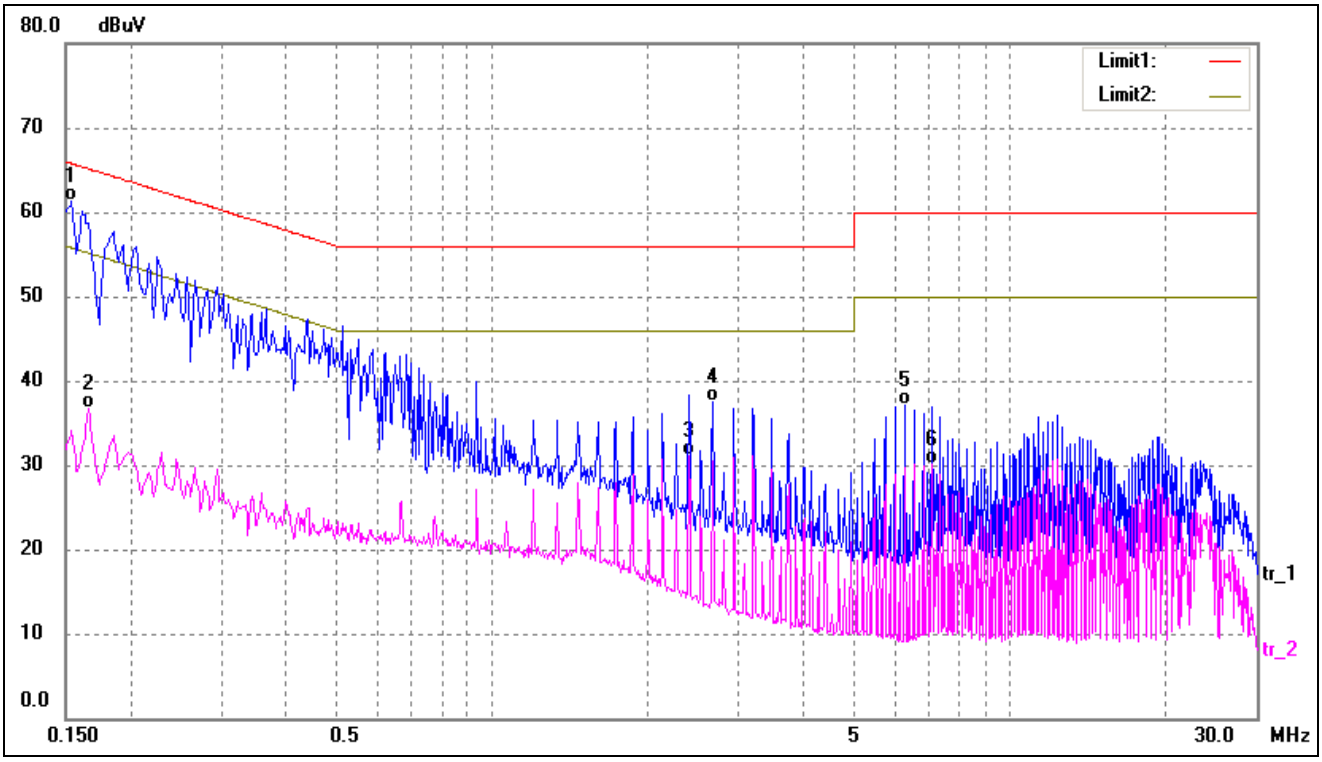
Start Frequency ..... 150 kHz
Stop Frequency..... 30 MHz
Sweep Speed ..... Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth ..... 9 kHz
Quasi-Peak Adapter Mode ..... Normal

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:

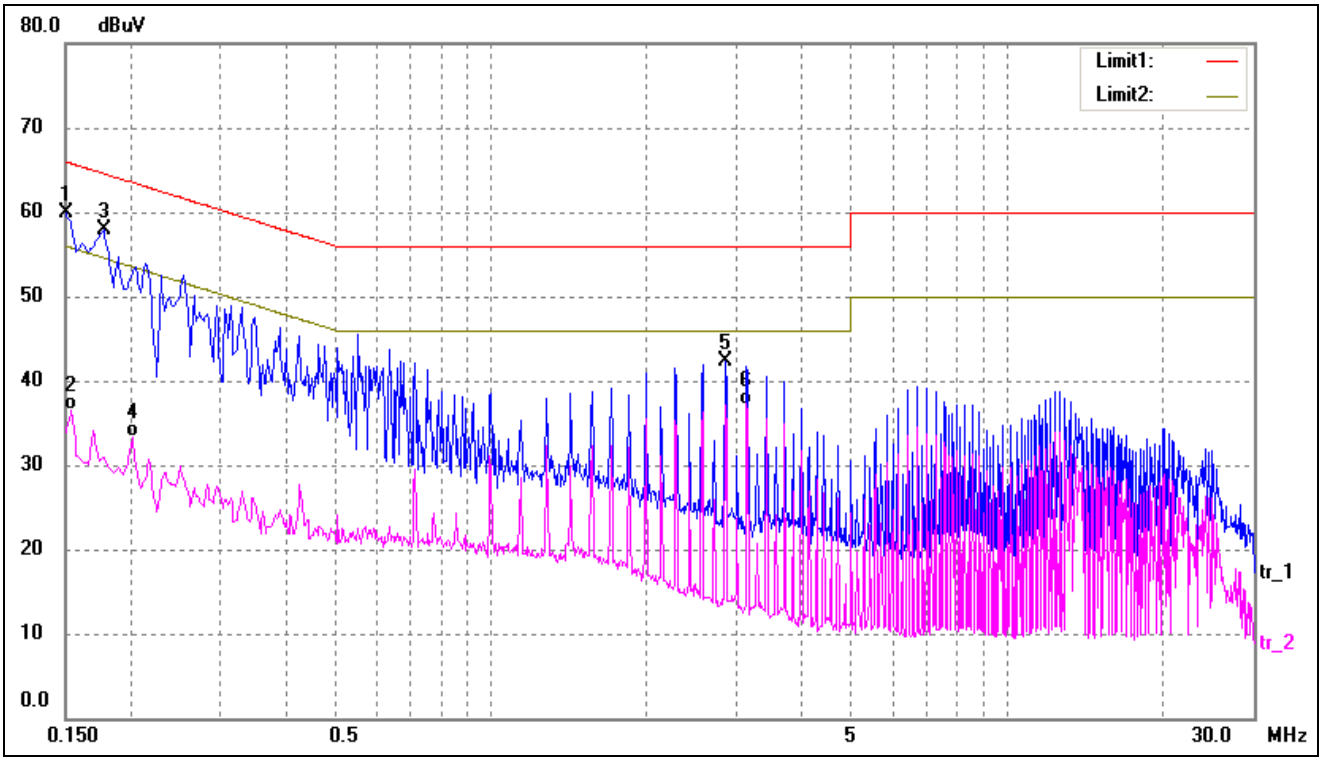
-2.70 dB at **2.3060 MHz** in the **Neutral, AVG** detector, **TM2** detector, **0.15-30MHz**

Test mode:	TM1	Polarity:	Line



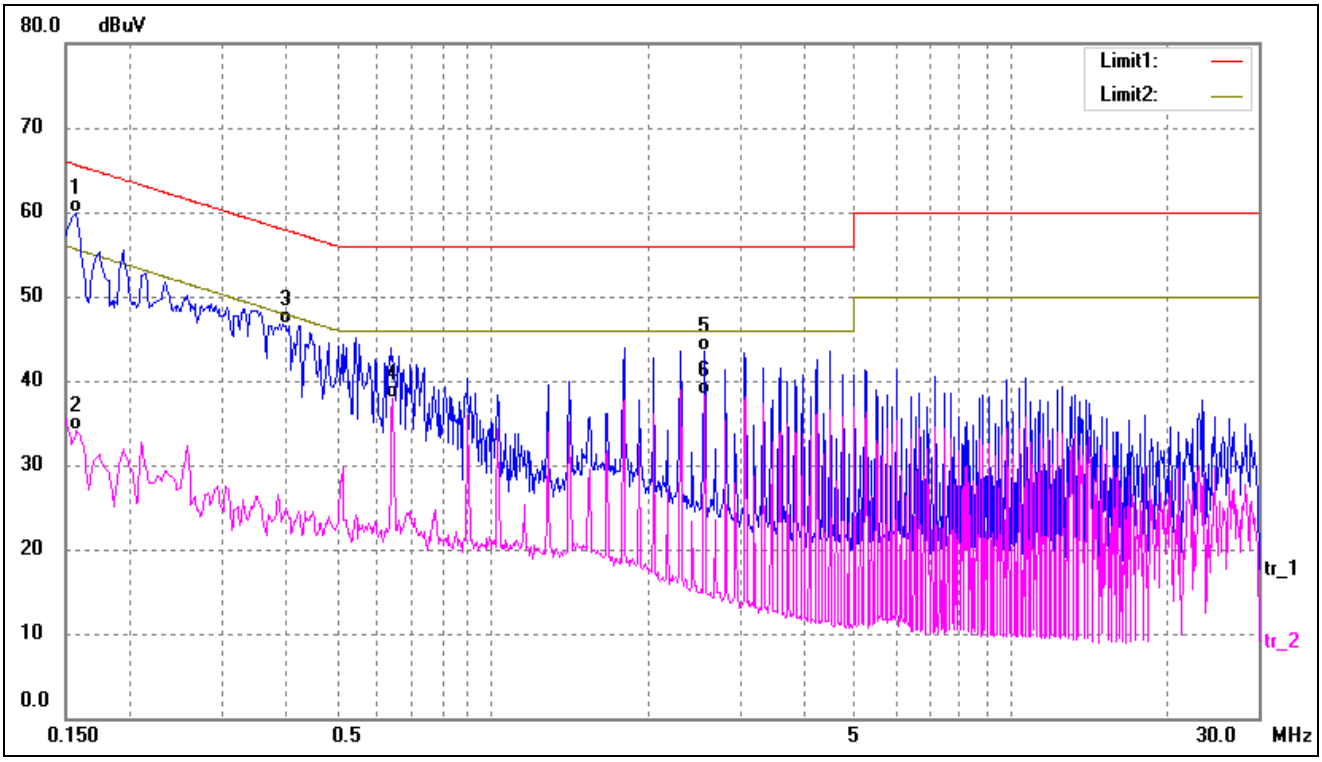
No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1539	51.12	10.10	61.22	65.78	-4.56	QP
2	0.1660	26.50	10.11	36.61	55.15	-18.54	AVG
3	2.4060	20.50	10.63	31.13	46.00	-14.87	AVG
4	2.6740	26.91	10.65	37.56	56.00	-18.44	QP
5	6.2819	26.25	10.81	37.06	60.00	-22.94	QP
6	7.0819	19.35	10.84	30.19	50.00	-19.81	AVG

Test mode:	TM1	Polarity:	Neutral



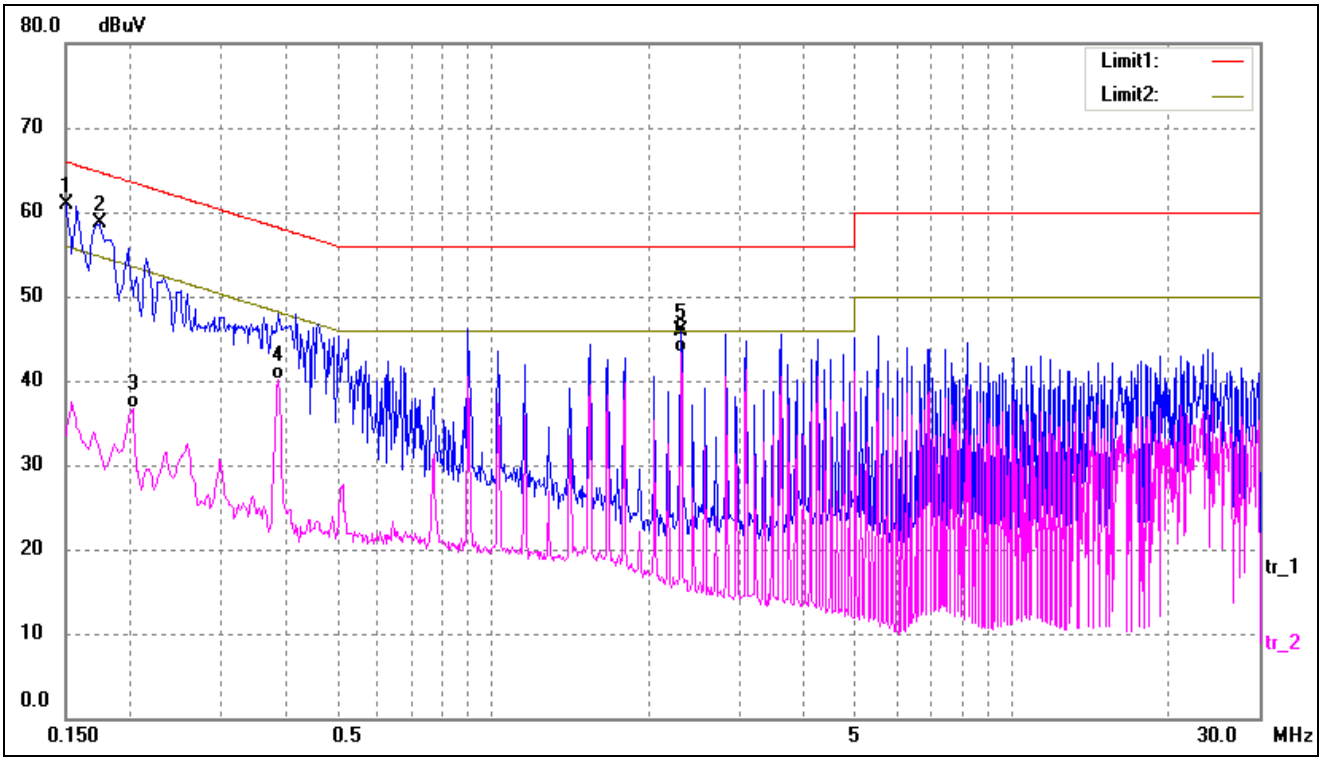
No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1499	49.72	10.10	59.82	66.00	-6.18	peak
2	0.1539	26.41	10.10	36.51	55.78	-19.27	AVG
3	0.1780	47.78	10.11	57.89	64.57	-6.68	peak
4	0.2020	23.25	10.12	33.37	53.52	-20.15	AVG
5	2.8540	31.65	10.67	42.32	56.00	-13.68	peak
6	3.1380	26.52	10.68	37.20	46.00	-8.80	AVG

Test mode:	TM2	Polarity:	Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1580	49.84	10.10	59.94	65.56	-5.62	QP
2	0.1580	23.95	10.10	34.05	55.56	-21.51	AVG
3	0.3940	36.40	10.25	46.65	57.98	-11.33	QP
4	0.6420	27.61	10.36	37.97	46.00	-8.03	AVG
5	2.5620	32.80	10.64	43.44	56.00	-12.56	QP
6	2.5620	27.69	10.64	38.33	46.00	-7.67	AVG

Test mode:	TM2	Polarity:	Neutral

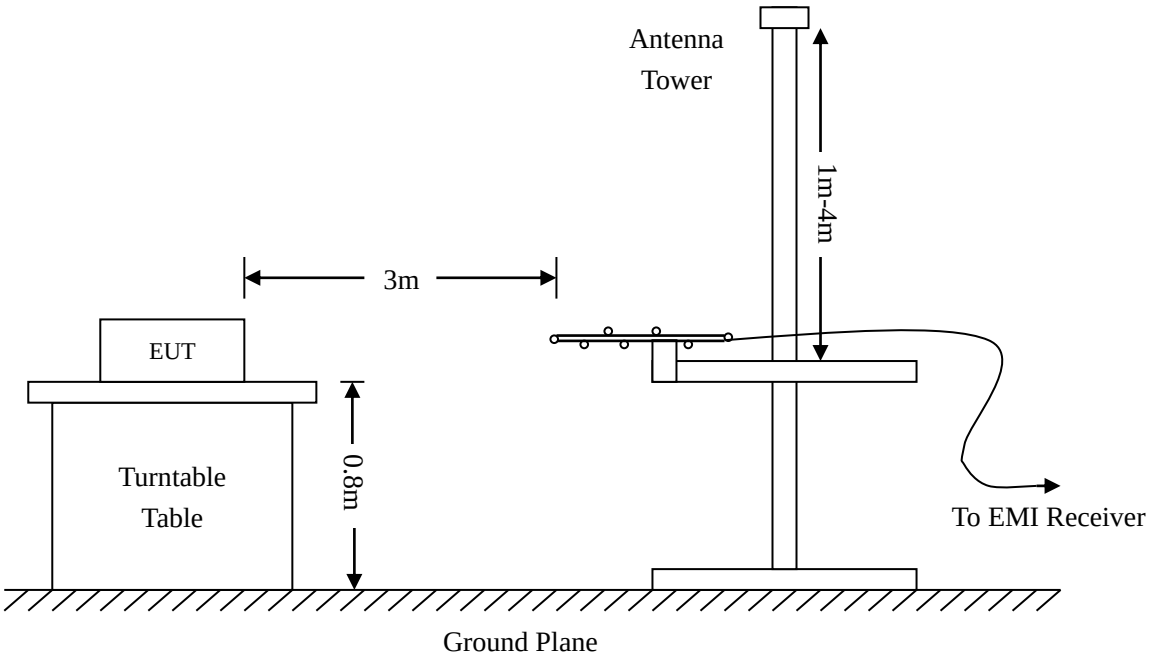


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1499	50.85	10.10	60.95	66.00	-5.05	peak
2	0.1740	48.68	10.11	58.79	64.76	-5.97	peak
3	0.2020	26.49	10.12	36.61	53.52	-16.91	AVG
4	0.3860	29.85	10.24	40.09	48.15	-8.06	AVG
5	2.3060	35.23	10.63	45.86	56.00	-10.14	peak
6*	2.3060	32.67	10.63	43.30	46.00	-2.70	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	Frequency :30MHz-1GHz	Frequency :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:	22 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

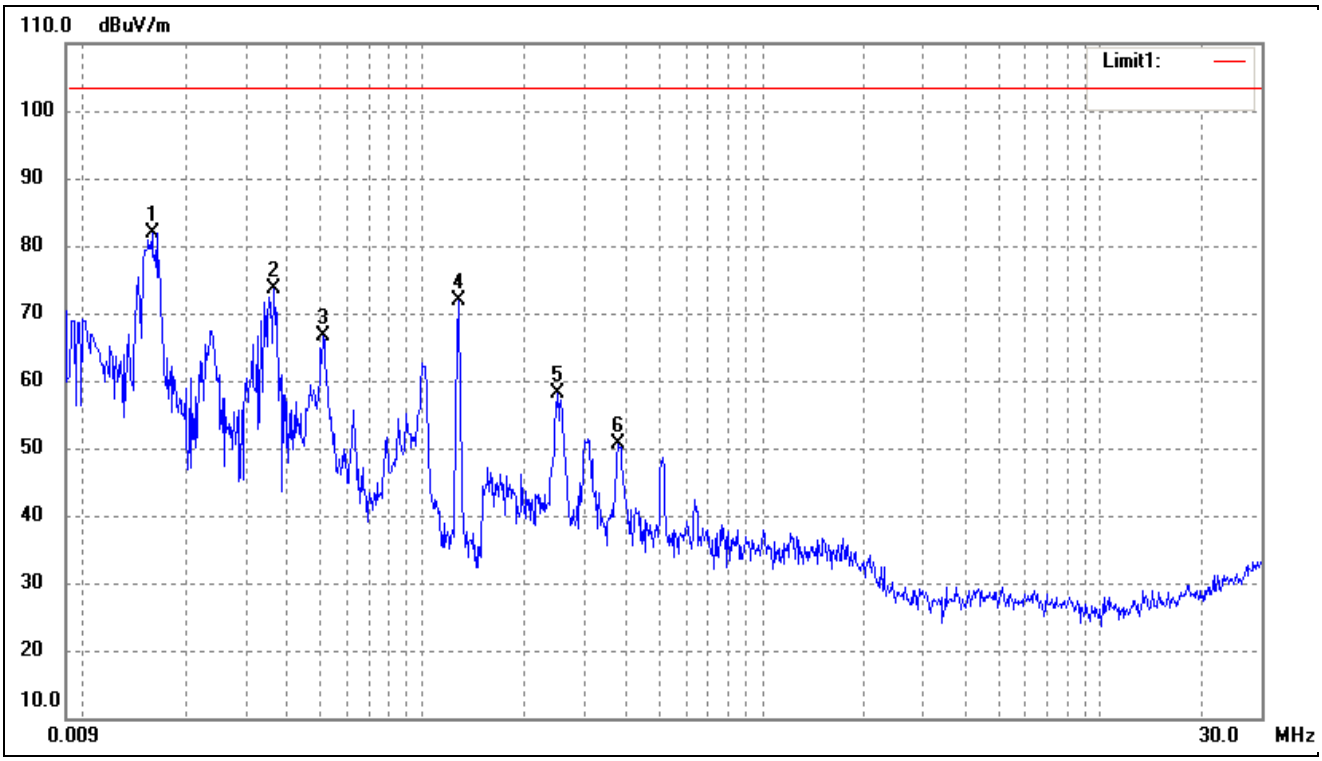
4.5 Summary of Test Results/Plots

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

-21.57 dB at **0.0160 MHz** in the **Vertical** polarization, **TM1** mode, **3Meters**

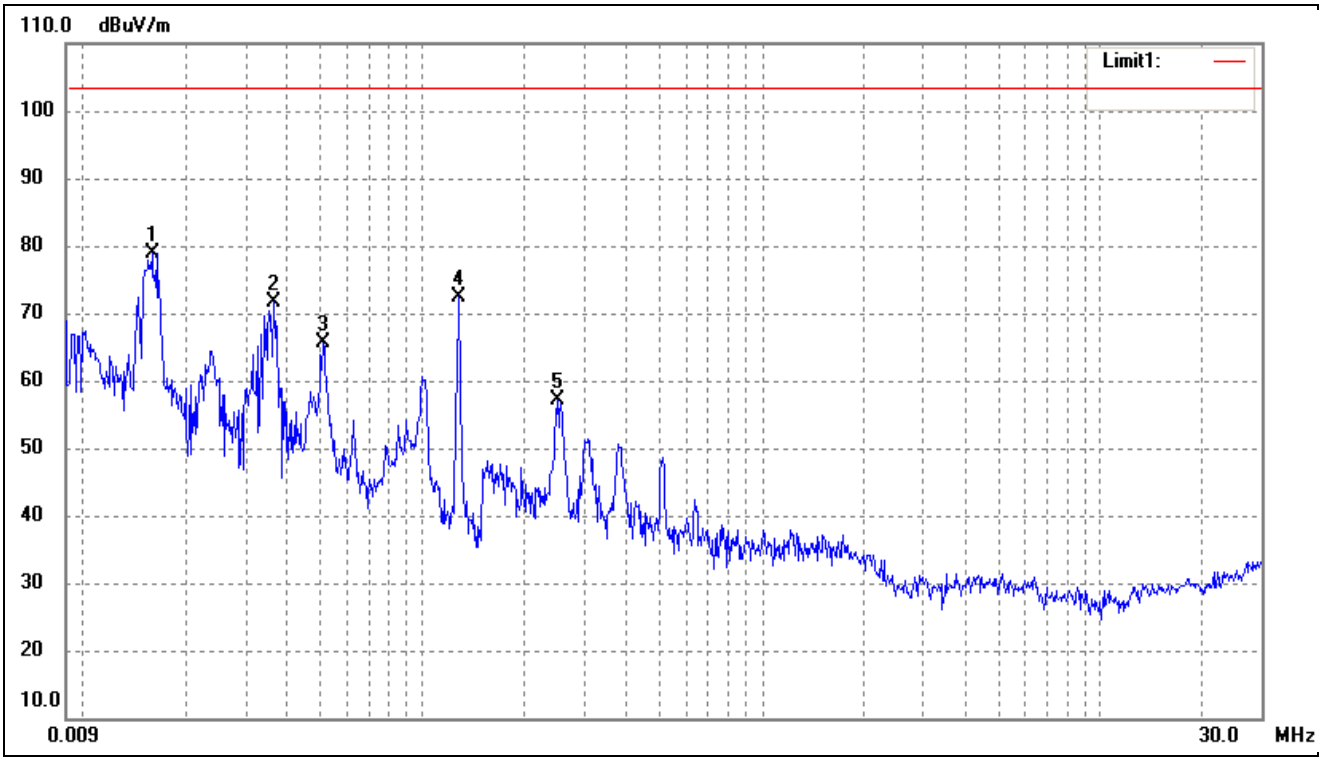
Plot of Radiated Emissions Test Data (Below 30MHz)

Test mode:	TM1	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	0.0160	88.44	-6.51	81.93	103.50	-21.57	254	100	peak
2	0.0364	80.62	-7.04	73.58	103.50	-29.92	98	100	peak
3	0.0509	73.47	-6.81	66.66	103.50	-36.84	228	100	peak
4	0.1274	77.52	-5.62	71.90	103.50	-31.60	114	100	peak
5	0.2494	64.69	-6.44	58.25	103.50	-45.25	153	100	peak
6	0.3790	58.14	-7.62	50.52	103.50	-52.98	326	100	peak

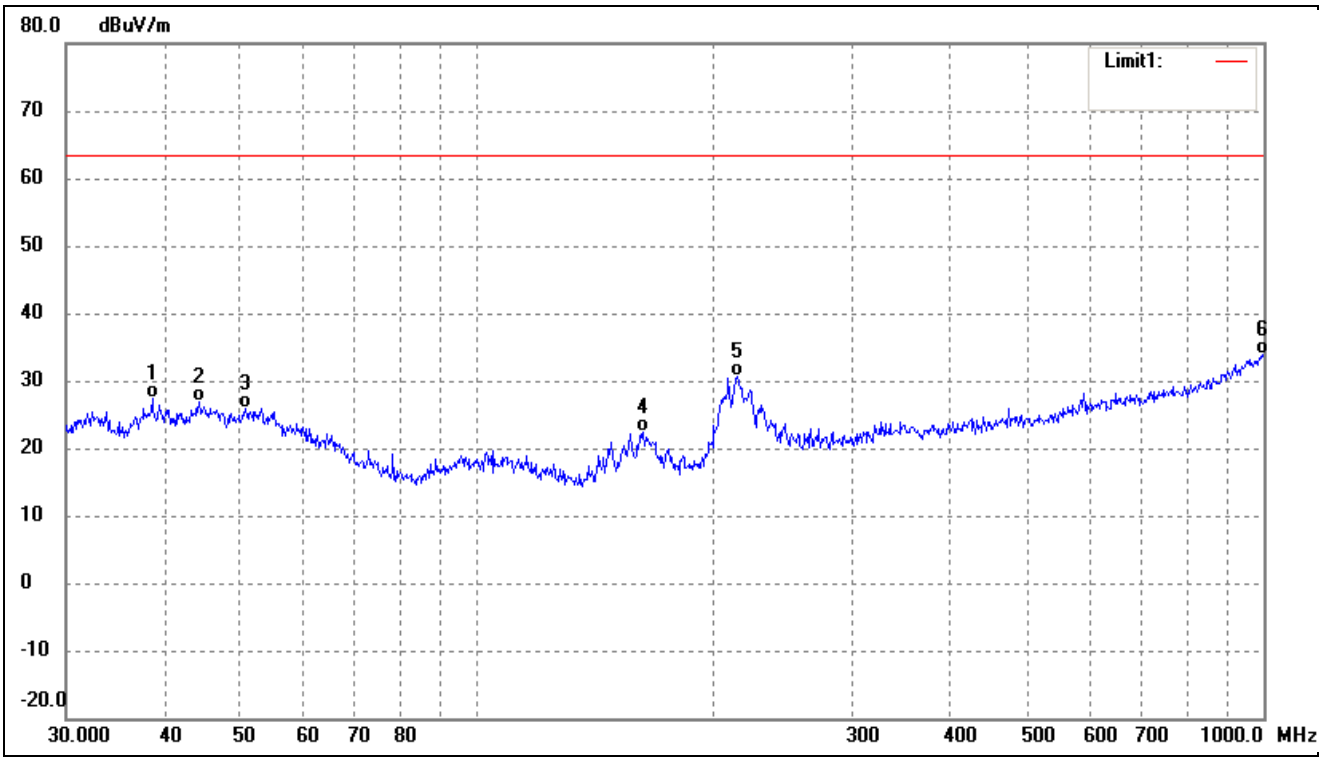
Test mode:	TM2	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	0.0160	85.44	-6.51	78.93	103.50	-24.57	264	100	peak
2	0.0364	78.62	-7.04	71.58	103.50	-31.92	98	100	peak
3	0.0509	72.47	-6.81	65.66	103.50	-37.84	121	100	peak
4	0.1280	78.01	-5.62	72.39	103.50	-31.11	117	100	peak
5	0.2494	63.69	-6.44	57.25	103.50	-46.25	191	100	peak

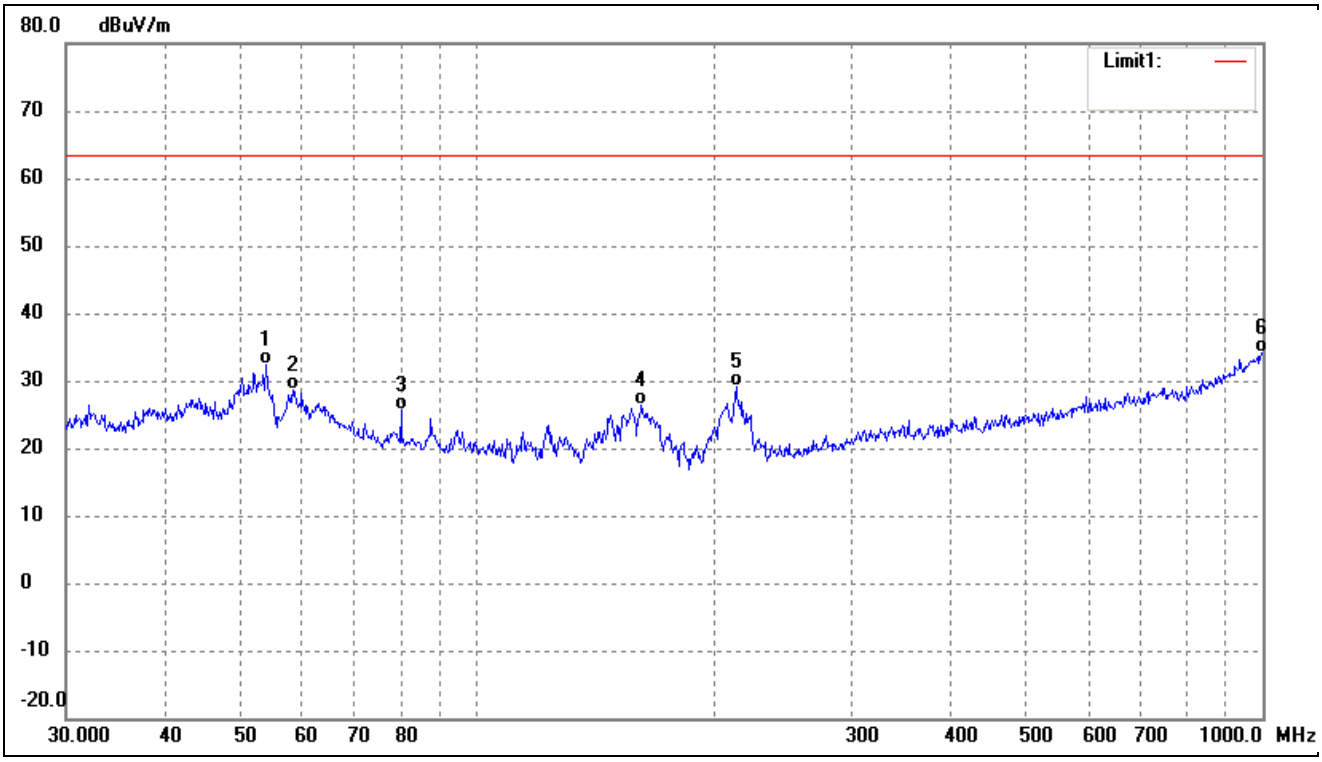
Plot of Radiated Emissions Test Data (Above 30MHz)

Test mode:	TM1	Polarity:	Horizontal



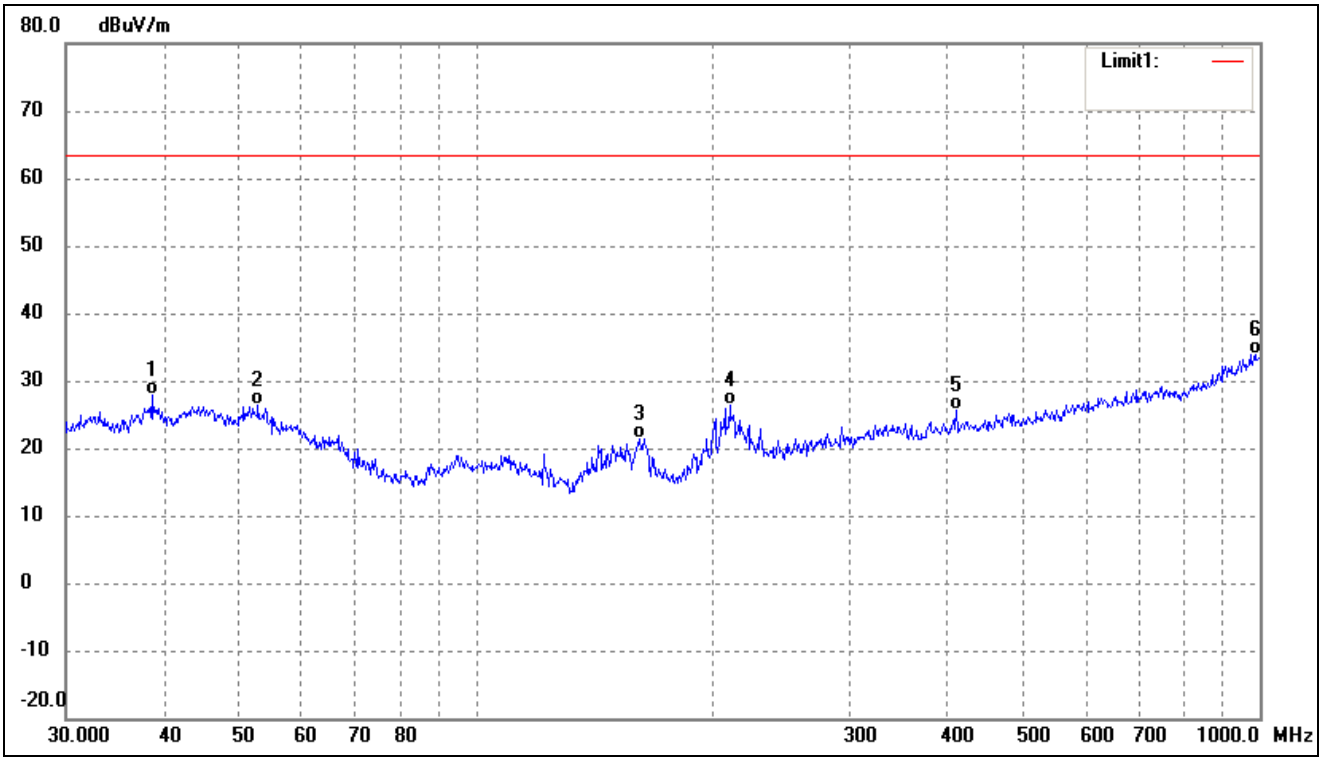
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.6160	36.00	-8.70	27.30	63.50	-36.20	317	100	QP
2	44.2752	34.81	-8.02	26.79	63.50	-36.71	165	100	QP
3	50.7637	34.53	-8.55	25.98	63.50	-37.52	59	100	QP
4	162.6106	38.88	-16.61	22.27	63.50	-41.23	118	100	QP
5	214.5143	43.64	-12.95	30.69	63.50	-32.81	188	100	QP
6	996.4996	29.81	3.98	33.79	63.50	-29.71	292	100	QP

Test mode:	TM1	Polarity:	Vertical



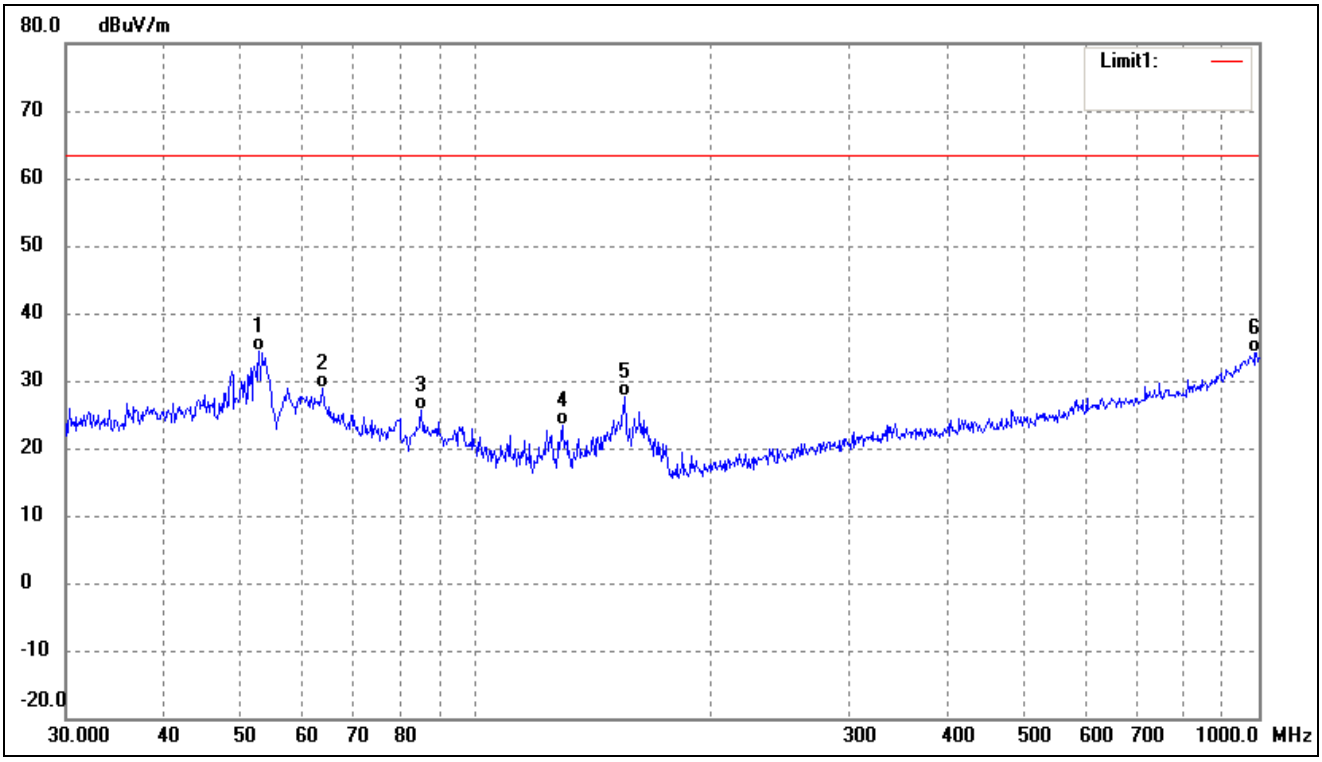
No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	53.8818	41.38	-8.92	32.46	63.50	-31.04	258	100	QP
2	58.4074	39.21	-10.65	28.56	63.50	-34.94	308	100	QP
3	80.0806	42.74	-17.04	25.70	63.50	-37.80	53	100	QP
4	162.0414	43.06	-16.67	26.39	63.50	-37.11	261	100	QP
5	213.7634	42.07	-12.99	29.08	63.50	-34.42	92	100	QP
6	996.4996	30.11	3.98	34.09	63.50	-29.41	134	100	QP

Test mode:	TM2	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	38.6160	36.64	-8.70	27.94	63.50	-35.56	189	100	QP
2	52.7600	35.02	-8.72	26.30	63.50	-37.20	147	100	QP
3	161.4742	38.15	-16.71	21.44	63.50	-42.06	104	100	QP
4	210.7860	39.47	-13.15	26.32	63.50	-37.18	113	100	QP
5	410.3825	32.70	-7.15	25.55	63.50	-37.95	338	100	QP
6	986.0717	30.04	3.82	33.86	63.50	-29.64	264	100	QP

Test mode:	TM2	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	52.9453	43.25	-8.75	34.50	63.50	-29.00	64	100	QP
2	63.7588	40.72	-11.89	28.83	63.50	-34.67	109	100	QP
3	85.2980	42.50	-16.98	25.52	63.50	-37.98	83	100	QP
4	129.0146	40.92	-17.45	23.47	63.50	-40.03	144	100	QP
5	155.3644	44.72	-17.13	27.59	63.50	-35.91	125	100	QP
6	989.5355	30.15	3.88	34.03	63.50	-29.47	211	100	QP

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