





# FCC Part 18 Test Report

## FCC ID: 2AT2E-KT-IW

**Report No.** : TBR-C-202203-0228-15  
**Applicant** : Dongguan Kington Electronic Technology Co.,Ltd.  
**Equipment Under Test (EUT)**  
**EUT Name** : 3 in 1 wireless charger  
**Model No.** : KT-IW  
**Series Model No.** : ----  
**Brand Name** : KingTSYU  
**Receipt Date** : 2022-04-11  
**Test Date** : 2022-04-11 to 2022-05-07  
**Issue Date** : 2022-05-07  
**Standards** : FCC 47 CFR Part 18  
**Conclusions** : **PASS**

In the configuration tested, the EUT complied with the standards specified above.

**Test/Witness Engineer** :   
**Engineer Supervisor** :   
**Engineer Manager** : 



Camille Li  
Ivan Su  
Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

# Contents

**CONTENTS.....2**

**1. GENERAL INFORMATION.....4**

1.1 Client Information.....4

1.2 General Description of EUT (Equipment Under Test) .....4

1.3 Block Diagram Showing The Configuration of System Tested.....5

1.4 Description of Support Units .....5

1.5 Description of Test Mode.....6

1.6 Test Location .....7

1.7 Measurement Uncertainty .....7

**2. TEST SUMMARY .....8**

**3. TEST SOFTWARE.....8**

**4. TEST EQUIPMENT USED .....9**

**5. CONDUCTED EMISSION TEST .....10**

5.1 Test Standard and Limit.....10

5.2 Test Setup.....10

5.3 Test Procedure.....10

5.4 Deviation .....11

5.5 Deviation From Test Standard.....11

5.6 Test Data.....11

**6. RADIATED EMISSION TEST .....12**

6.1 Test Standard and Limit.....12

6.2 Test Setup.....13

6.3 Test Procedure.....13

6.4 Deviation .....14

6.5 Deviation From Test Standard.....14

6.6 Test Data.....14

**ATTACHMENT A--CONDUCTED EMISSION TEST DATA .....15**

**ATTACHMENT B-- RADIATED EMISSION TEST DATA .....17**

**Revision History**

Report No.	Version	Description	Issued Date
TBR-C-202203-0228-15	Rev.01	Initial issue of report	2022-05-07

# 1. General Information

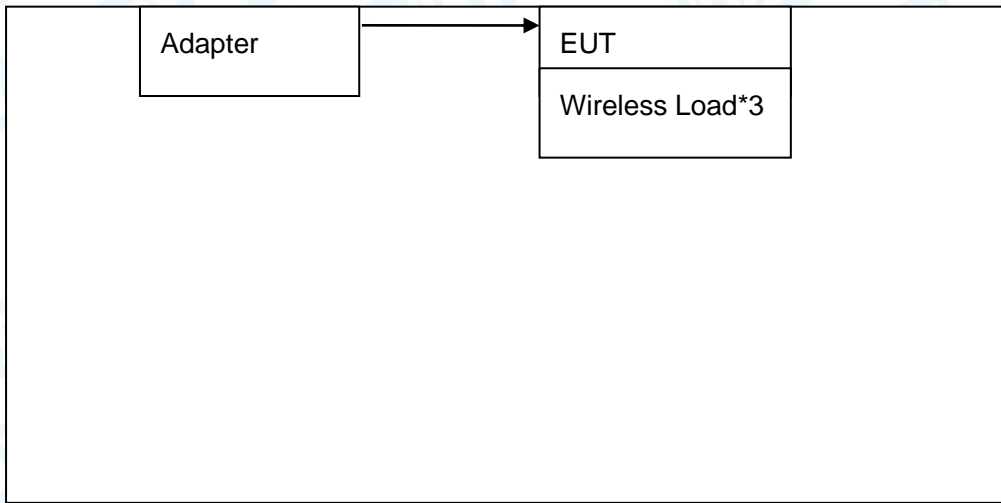
## 1.1 Client Information

<b>Applicant</b>	:	Dongguan Kington Electronic Technology Co.,Ltd.
<b>Address</b>	:	3/F, Building B, Abao Industrial Park No.160 LuYuan Road TangXia Town, DongGuan China
<b>Manufacturer</b>	:	Dongguan Kington Electronic Technology Co.,Ltd.
<b>Address</b>	:	3/F, Building B, Abao Industrial Park No.160 LuYuan Road TangXia Town, DongGuan China

## 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	:	3 in 1 wireless charger	
<b>Models No.</b>	:	KT-IW	
<b>Product Description</b>	:	Operation Frequency:	Watch:300-350KHz Phone:110-205KHz
	:	Modulation Type:	FSK
	:	Antenna:	Coil Antenna 1+2 (Phone) Coil Antenna 3 (Watch)
<b>Power Rating</b>	:	TYPE-C Input: DC 5V/3.1A 9V/2A USB Output: DC 5V 1.5A (Max) Phone: Wireless Charging: 10W(Max) Watch: Wireless Charging: 2.5W(Max)	
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual	
<b>Remark</b>	:	The antenna gain provided by the applicant, the verified for the RF conduction test and adapter provided by TOBY test lab.	

### 1.3 Block Diagram Showing The Configuration of System Tested



### 1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
Adapter	----	----	HUAWEI	√
Wireless Load	----	----	----	√
Watch	----	----	Apple	
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
----	----	----	----	
Remark: The USB Cable provided by the Applicant, The adapter and Load provided by TOBY test lab.				

## 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

Test Modes:		
Mode 1	AC Mode: EUT+Load + Watch (Battery Status: <1%)	Record
Mode 2	AC Mode: EUT+Load+ Watch (Battery Status: <50%)	Pre-tested
Mode 3	AC Mode: EUT+Load + Watch (Battery Status: 99%)	Pre-tested

Note: All test modes were pre-tested, but we only recorded the worst case in this report.

### Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.  
According to ANSI C63.10 standards, All test modes were pre-tested, but we only recorded the worst case in this report.
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

### 1.6 Test Location

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### **A2LA Certificate No.: 4750.01**

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01. FCC Accredited Test Site Number: 854351.

#### **IC Registration No.: (11950A)**

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A.

### 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

Test	Parameters	Expanded Uncertainty ( $U_{Lab}$ )	Expanded Uncertainty ( $U_{Cispr}$ )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	$\pm 3.50$ dB $\pm 3.10$ dB	$\pm 4.0$ dB $\pm 3.6$ dB
Radiated Emission	Level Accuracy: Above 1000MHz	$\pm 4.50$ dB	N/A
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	$\pm 4.40$ dB	$\pm 5.2$ dB

## 2. Test Summary

Standard Section	Test Item	Test Method	Judgment
18.305	Radiated Emission (9KHz to 1GHz)	FCC OST/MP-5:1986	PASS
18.307(b)	Conducted Emission (150KHz to 30MHz)	FCC OST/MP-5:1986	PASS

**Note:** N/A is an abbreviation for Not Applicable.

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE



## 4. Test Equipment Used

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 05, 2021	Jul. 04, 2022
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 05, 2021	Jul. 04, 2022
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 05, 2021	Jul. 04, 2022
LISN	Rohde & Schwarz	ENV216	101131	Jul. 05, 2021	Jul. 04, 2022
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 05, 2021	Jul. 04, 2022
EMI Test Receiver	Rohde & Schwarz	ESCI	101165	Jul. 05, 2021	Jul. 04, 2022
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
Pre-amplifier	Sonoma	310N	185903	Feb. 25, 2021	Feb. 24, 2022
Pre-amplifier	HP	8449B	3008A00849	Feb. 25, 2021	Feb. 24, 2022
Cable	HUBER+SUHNER	100	SUCOFLEX	Feb. 25, 2021	Feb. 24, 2022
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

## 5. Conducted Emission Test

### 5.1 Test Standard and Limit

#### 5.1.1 Test Standard

FCC Part 18.307(b)

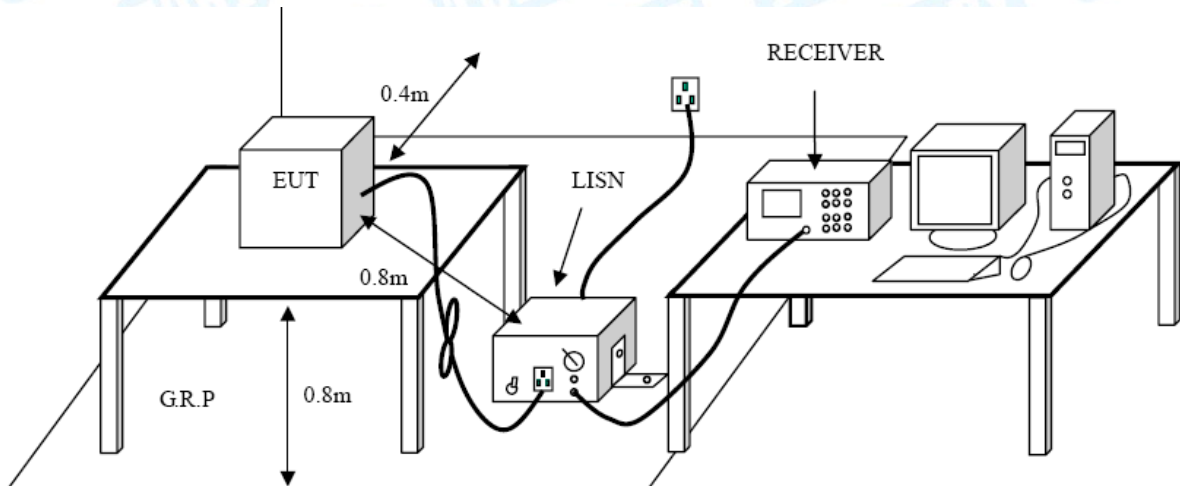
#### 5.1.2 Test Limit

**Conducted Emission Test Limit**

Frequency (MHz)	Maximum RF Line Voltage (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.5	66 ~ 56 *	56 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

Notes:(1) \*Decreasing linearly with logarithm of the frequency.  
 (2) The lower limit shall apply at the transition frequencies.

### 5.2 Test Setup



### 5.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from the nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

#### 5.4 Deviation

The test is no deviation from the standard.

#### 5.5 Deviation From Test Standard

No deviation

#### 5.6 Test Data

Please refer to the Attachment A.

## 6. Radiated Emission Test

### 6.1 Test Standard and Limit

#### 6.1.1 Test Standard

FCC Part 18.305

#### 6.1.2 Test Limit

#### Radiated Emission Limit

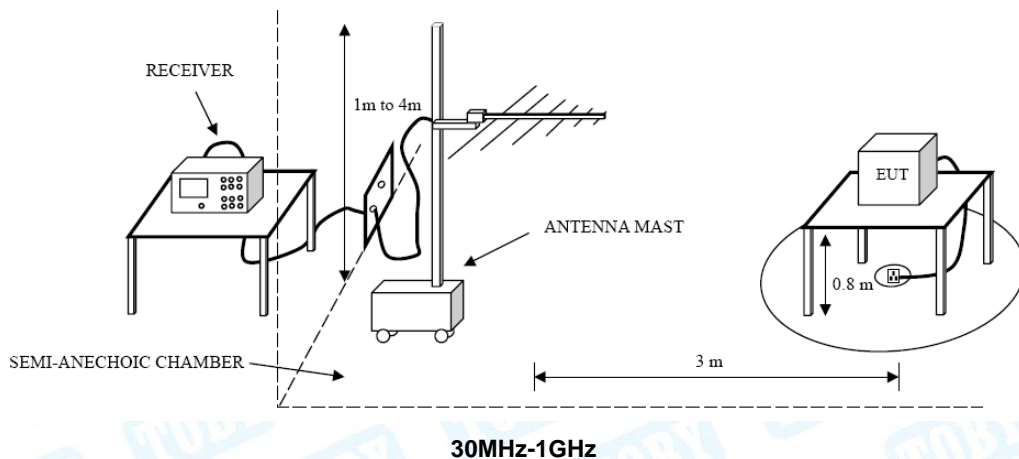
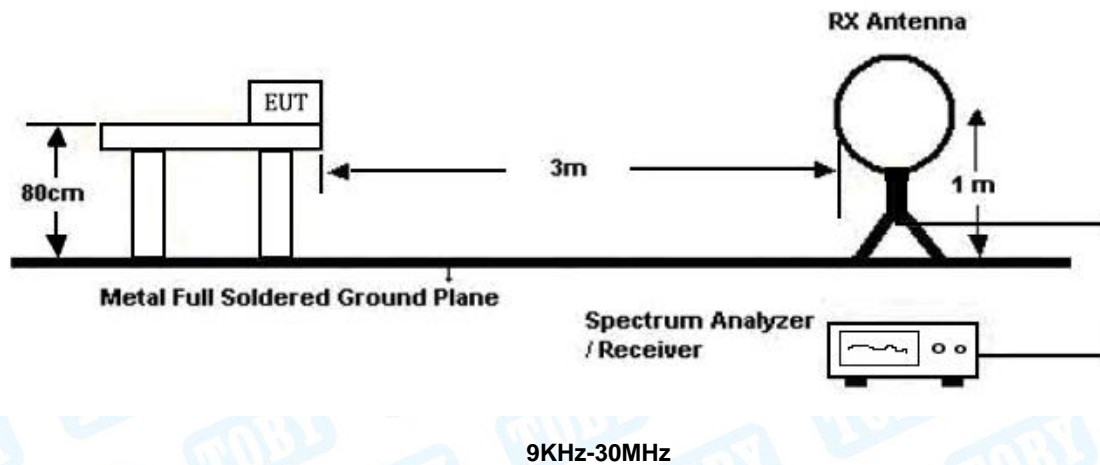
Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500	25	300
		500 or more	$25 \times \text{SQRT}(\text{power}/500)$	1300
	Any non-ISM frequency	Below 500	15	300
		500 or more	$15 \times \text{SQRT}(\text{power}/500)$	1300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ( <sup>2</sup> )	1,600 ( <sup>2</sup> )
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25	300
			15	300
Ultrasonic	Below 490 kHz	Below 500	2,400/F(kHz)	300
		500 or more	$2,400/F(\text{kHz}) \times \text{SQRT}(\text{power}/500)$	3300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz)	30
			15	30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any	1,500	430
		Any	300	430

Frequency (MHz)	Limit (dBuV/m)	Remark	Measurement Distance(m)
0.009-30	103.5	Quasi-Peak	3
30-88	40.0	Quasi-Peak	3
88-216	43.5	Quasi-Peak	3
216-1000	46.0	Quasi-Peak	3

Note: According to the article 18.305(b), The operating frequency is non-ISM frequency; the RF power generated by equipment is below 500(Watts).

Note: Emission Level(dBuV/m)=20log Emission Level(uV/m)

## 6.2 Test Setup



## 6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 30MHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) The EUT was placed on the top of a rotating table which is 0.8 meters above the ground. EUT is set 3.0 meters away from the receiving antenna that mounted on an antenna tower. The table was rotated 360 degrees to determine the position of the highest radiation, the antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (3) An initial scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by a loop antenna.
- (4) For the actual test configuration, please see the test setup photo.

#### 6.4 Deviation

For Radiated Emission, test at 3m distance instead of 30m distance. 40dB was plus to the limit of 30m measurement limit. More details refer to FCC part 15.31(f)(2).

#### 6.5 Deviation From Test Standard

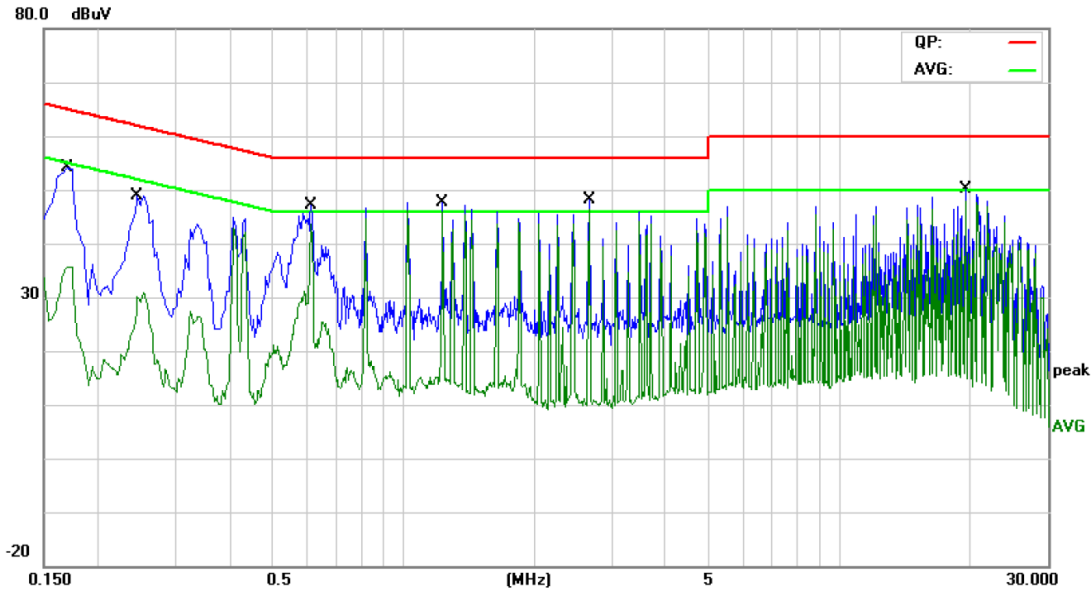
No deviation

#### 6.6 Test Data

Please refer to the Attachment B.

### Attachment A--Conducted Emission Test Data

<b>Temperature:</b>	24.5°C	<b>Relative Humidity:</b>	44%
<b>Test Voltage:</b>	AC 120V/60Hz		
<b>Terminal:</b>	Line		
<b>Test Mode:</b>	Mode 1		
<b>Remark:</b>	Only worse case is reported		



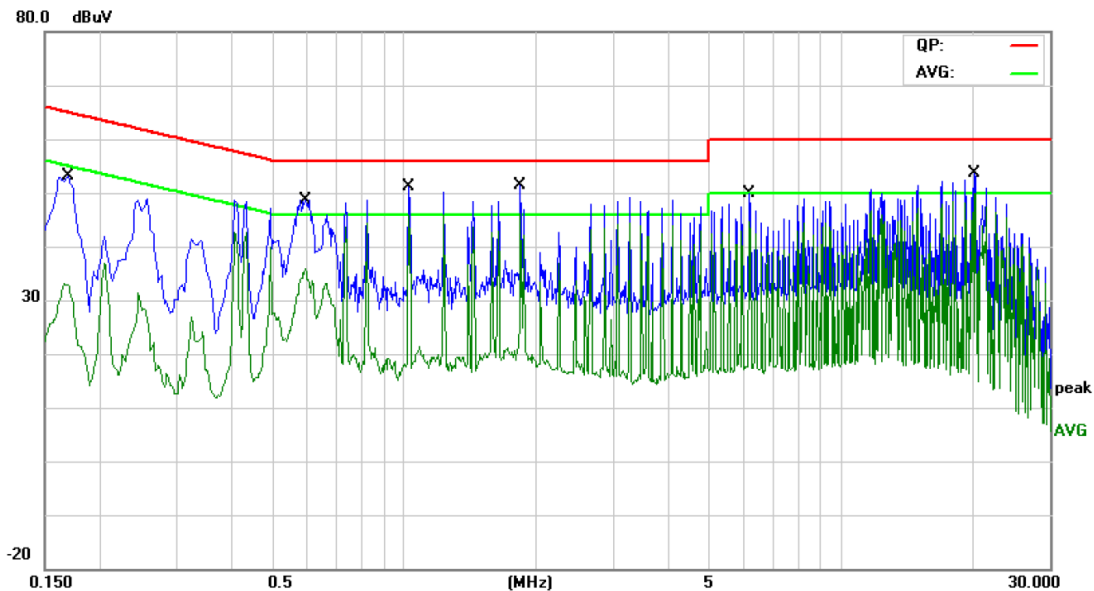
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1700	37.13	11.63	48.76	64.96	-16.20	QP
2		0.1700	18.26	11.63	29.89	54.96	-25.07	AVG
3		0.2460	30.30	11.63	41.93	61.89	-19.96	QP
4		0.2460	15.71	11.63	27.34	51.89	-24.55	AVG
5		0.6140	30.83	11.45	42.28	56.00	-13.72	QP
6		0.6140	23.96	11.45	35.41	46.00	-10.59	AVG
7		1.2300	34.77	11.04	45.81	56.00	-10.19	QP
8	*	1.2300	32.79	11.04	43.83	46.00	-2.17	AVG
9		2.6660	32.54	10.34	42.88	56.00	-13.12	QP
10		2.6660	25.85	10.34	36.19	46.00	-9.81	AVG
11		19.4619	37.16	10.22	47.38	60.00	-12.62	QP
12		19.4619	24.34	10.22	34.56	50.00	-15.44	AVG

**Remark:**

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)

<b>Temperature:</b>	24.5°C	<b>Relative Humidity:</b>	44%
<b>Test Voltage:</b>	AC 120V/60Hz		
<b>Terminal:</b>	Neutral		
<b>Test Mode:</b>	Mode 1		
<b>Remark:</b>	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV	dBuV	dB	
1		0.1700	36.38	11.62	48.00	64.96	-16.96	QP
2		0.1700	18.57	11.62	30.19	54.96	-24.77	AVG
3		0.5940	31.49	11.48	42.97	56.00	-13.03	QP
4		0.5940	21.12	11.48	32.60	46.00	-13.40	AVG
5		1.0260	38.20	11.19	49.39	56.00	-6.61	QP
6	*	1.0260	30.76	11.19	41.95	46.00	-4.05	AVG
7		1.8460	35.86	10.59	46.45	56.00	-9.55	QP
8		1.8460	30.21	10.59	40.80	46.00	-5.20	AVG
9		6.1540	34.44	10.04	44.48	60.00	-15.52	QP
10		6.1540	30.46	10.04	40.50	50.00	-9.50	AVG
11		20.2580	25.85	10.57	36.42	60.00	-23.58	QP
12		20.2580	13.58	10.57	24.15	50.00	-25.85	AVG

**Remark:**

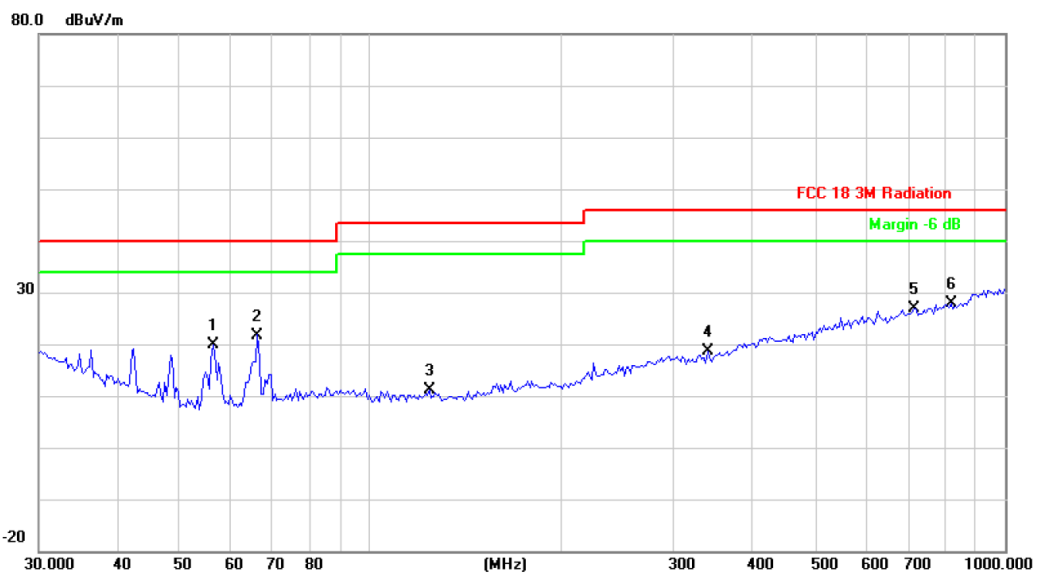
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)

2. Margin (dB) = QuasiPeak/Average (dBuV) - Limit (dBuV)



### Attachment B-- Radiated Emission Test Data

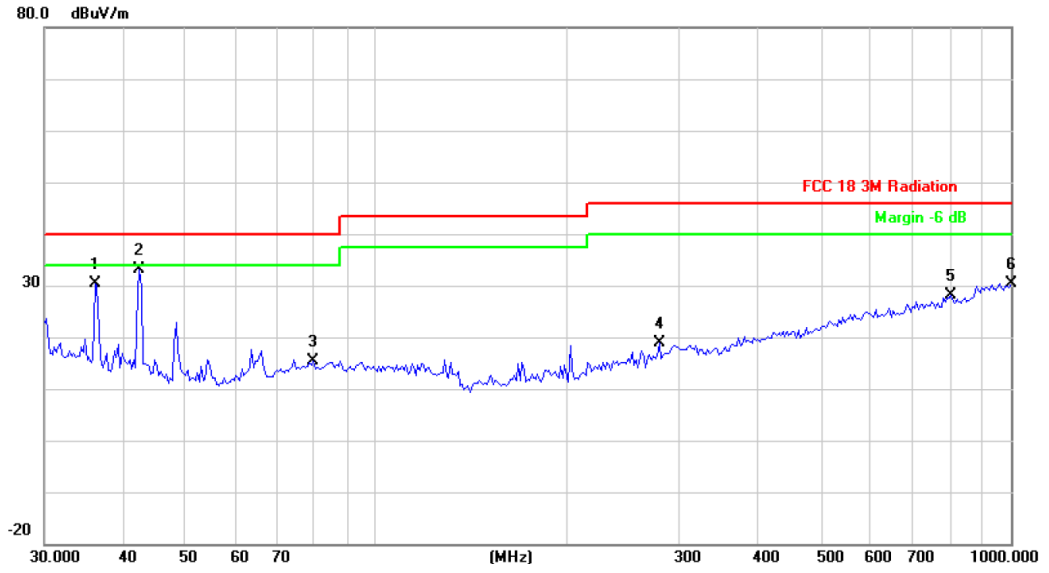
<b>Temperature:</b>	23.5°C	<b>Relative Humidity:</b>	46%
<b>Test Voltage:</b>	AC 120V/60Hz		
<b>Ant. Pol.</b>	Horizontal		
<b>Test Mode:</b>	Mode 1		
<b>Remark:</b>	Only showed test data of the worst mode		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		56.3948	44.03	-24.24	19.79	40.00	-20.21	peak
2		66.2662	45.79	-24.04	21.75	40.00	-18.25	peak
3		123.6985	33.53	-22.48	11.05	43.50	-32.45	peak
4		339.5888	33.66	-15.02	18.64	46.00	-27.36	peak
5		719.1995	33.53	-6.67	26.86	46.00	-19.14	peak
6	*	821.7103	33.39	-5.50	27.89	46.00	-18.11	peak

**Emission Level= Read Level+ Correct Factor**

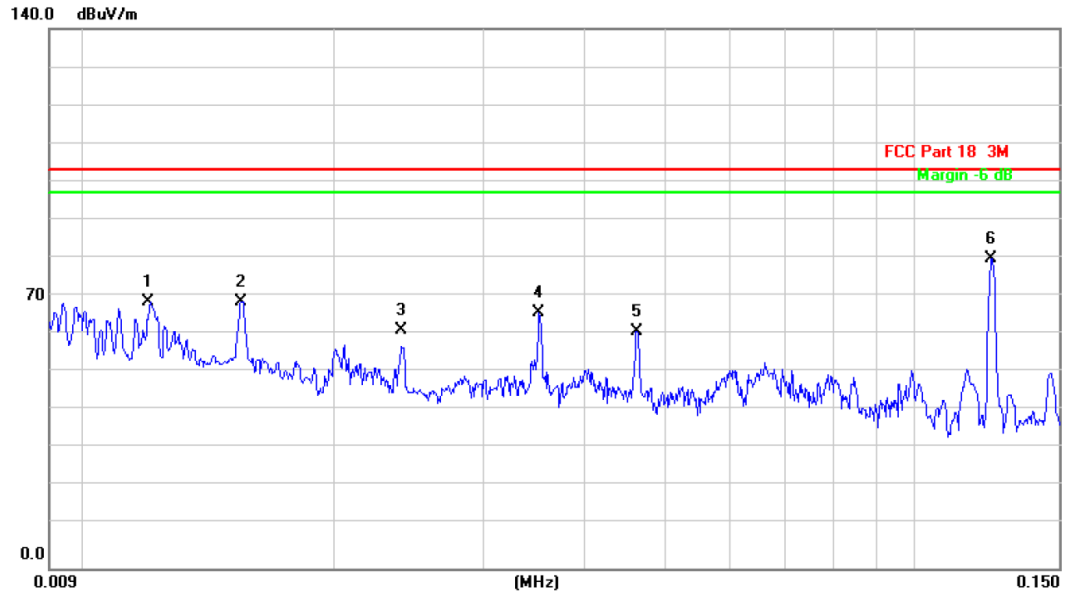
Temperature:	23.5°C	Relative Humidity:	46%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	Mode 1		
Remark:	Only showed test data of the worst mode		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		36.0007	47.96	-17.60	30.36	40.00	-9.64	peak
2	*	42.3022	53.80	-20.59	33.21	40.00	-6.79	peak
3		79.5209	38.03	-22.70	15.33	40.00	-24.67	peak
4		279.0436	35.49	-16.72	18.77	46.00	-27.23	peak
5		804.6028	33.74	-5.54	28.20	46.00	-17.80	peak
6		1000.0000	32.72	-2.30	30.42	46.00	-15.58	peak

**Emission Level= Read Level+ Correct Factor**

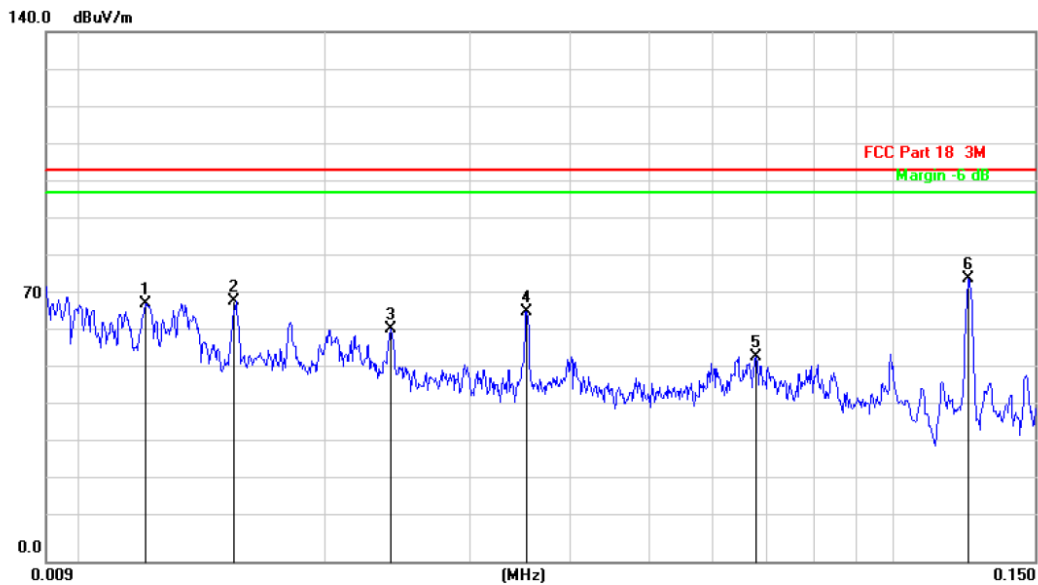
Temperature:	23.7°C	Relative Humidity:	40%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Ant 0°		
Test Mode:	Mode 1		
Remark:	Frequency Range: 9kHz~0.15MHz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1		0.0119	78.17	-9.04	69.13	103.50	-34.37	peak
2		0.0154	78.32	-9.09	69.23	103.50	-34.27	peak
3		0.0240	70.93	-9.22	61.71	103.50	-41.79	peak
4		0.0352	75.72	-9.40	66.32	103.50	-37.18	peak
5		0.0463	70.92	-9.62	61.30	103.50	-42.20	peak
6	*	0.1242	85.32	-4.85	80.47	103.50	-23.03	peak

Emission Level= Read Level+ Correct Factor

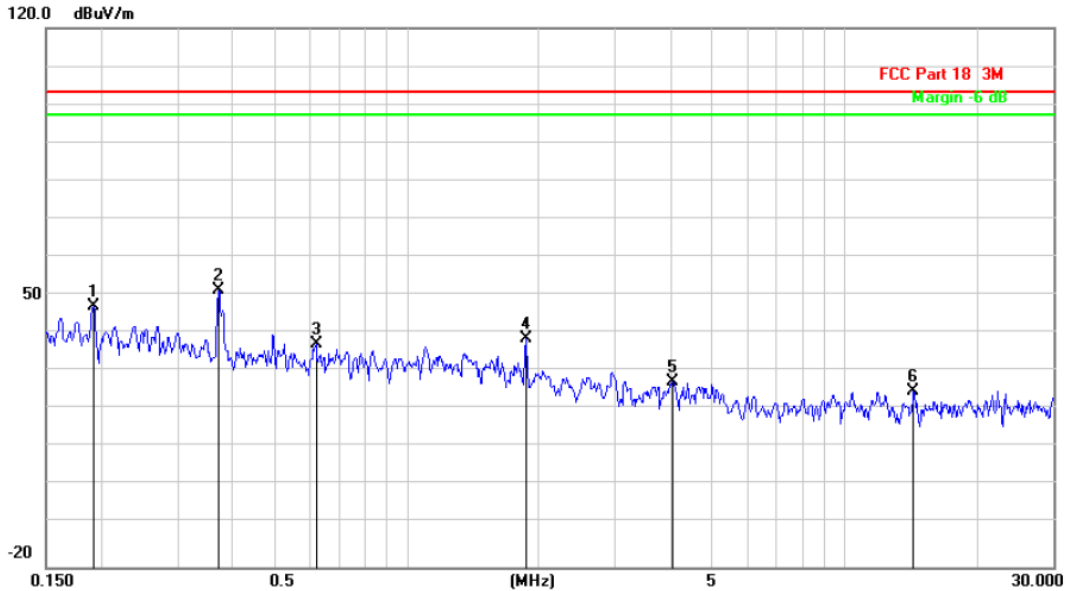
Temperature:	23.5°C	Relative Humidity:	46%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Ant 90°		
Test Mode:	Mode 1		
Remark:	Frequency Range: 9kHz~0.15MHz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		0.0120	77.21	-9.04	68.17	103.50	-35.33	peak
2		0.0154	77.92	-9.09	68.83	103.50	-34.67	peak
3		0.0240	70.62	-9.22	61.40	103.50	-42.10	peak
4		0.0353	75.35	-9.40	65.95	103.50	-37.55	peak
5		0.0678	63.48	-9.51	53.97	103.50	-49.53	peak
6	*	0.1242	79.66	-4.85	74.81	103.50	-28.69	peak

Emission Level= Read Level+ Correct Factor

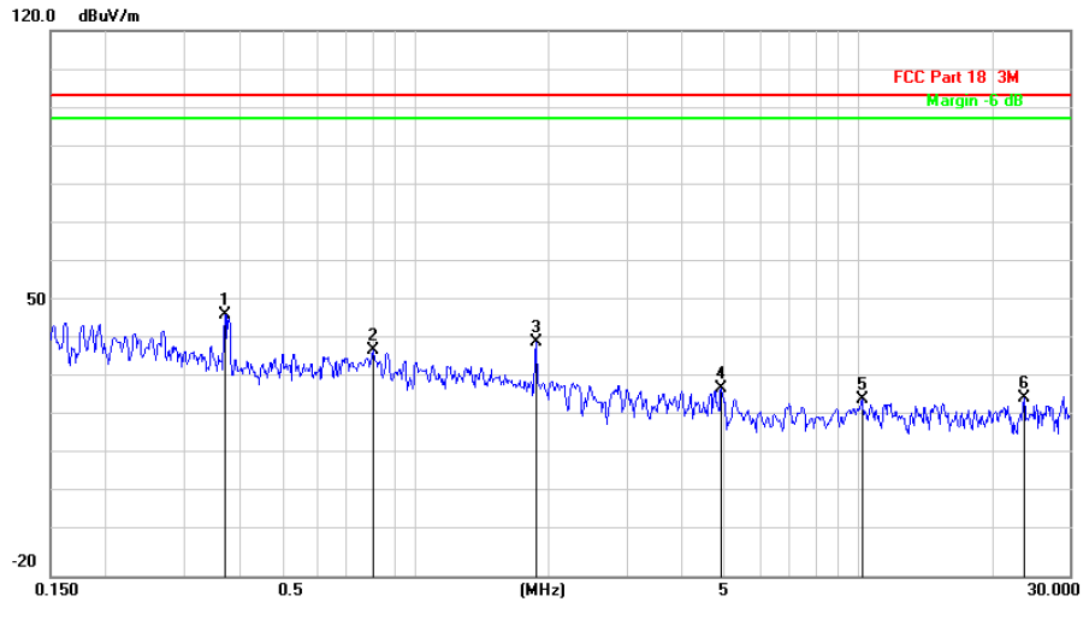
Temperature:	23.7°C	Relative Humidity:	40%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Ant 0°		
Test Mode:	Mode 1		
Remark:	Frequency Range: 0.15MHz~30MHz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		0.1924	55.93	-8.31	47.62	103.50	-55.88	peak
2	*	0.3712	62.21	-10.44	51.77	103.50	-51.73	peak
3		0.6205	49.03	-11.26	37.77	103.50	-65.73	peak
4		1.8680	51.33	-11.84	39.49	103.50	-64.01	peak
5		4.0489	40.21	-11.94	28.27	103.50	-75.23	peak
6		14.3641	37.80	-12.25	25.55	103.50	-77.95	peak

Emission Level= Read Level+ Correct Factor

Temperature:	23.7°C	Relative Humidity:	40%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Ant 90°		
Test Mode:	Mode 1		
Remark:	Frequency Range: 0.15MHz~30MHz		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	0.3712	57.60	-10.44	47.16	103.50	-56.34	peak
2		0.8002	49.60	-11.55	38.05	103.50	-65.45	peak
3		1.8680	51.81	-11.84	39.97	103.50	-63.53	peak
4		4.8997	39.95	-11.86	28.09	103.50	-75.41	peak
5		10.1791	36.91	-11.73	25.18	103.50	-78.32	peak
6		23.6361	37.79	-12.24	25.55	103.50	-77.95	peak

Emission Level= Read Level+ Correct Factor

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