FCC 47 CFR PART 15 SUBPART C
TEST REPORT

FOR

Wireless Car Charger Transmitter

Model : WCS-001500XB

Trade Mark: BEAR TA

Issued to

Solar Global Co.,Ltd.
9F.-3, No.111, Zhongyang S. Rd., Sanchong Dist., New Taipei City 241, Taiwan (R.O.C.)

Issued by

WH Technology Corp.

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APPENDIX 1 PHOTOS OF TEST CONFIGURATION

APPENDIX 2 PHOTOS OF EUT

1. GENERAL INFORMATION

Applicant	:	**Solar Global Co.,Ltd.**
Address	:	**9F.-3, No.111, Zhongyang S. Rd., Sanchong Dist., New Taipei City 241, Taiwan (R.O.C.)**
Manufacturer	:	**Subtle Electronic CO.,Ltd.**
Address	:	**3F.,NO.168, Liancheng Rd., Zhonghe Dist., New Taipei City 235, Taiwan**
EUT	:	**Wireless Car Charger Transmitter**
Model Name	:	**WCS-001500XB**
Model Differences	:	**N/A**

Is here with confirmed to comply with the requirements set out in the FCC Rules and Regulations Part 15 Subpart C and the measurement procedures were according to ANSI C63.4-2014. The said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

FCC part 15 subpart C

Receipt Date : 07/07/2017 Final Test Date : 07/26/2017

Tested by: Bell Wei/ Engineer

Reviewed by: Mike Lee / Manager

(Date) (Signature) Designation Number: TW1083

2. REPORT OF MEASUREMENTS AND EXAMINATIONS

2.1 LIST OF MEASUREMENTS AND EXAMINATIONS

FCC Rule	Description of Test	Result
15.207	. Conducted Emission	Pass
15.205 15.209	. Radiated Emission	Pass

2.2 DESCRIPTION OF THE TESTED SAMPLES

EUT Name	:	Wireless Car Charger Transmitter
Model Number	::	WCS-001500XB
FCCID Number		2AK8E0015TX1001
Receipt Date	:	07/07/2017
Output Power	:	DC 12V / 2A
Operate Frequency	:	115kHz~205kHz
Antenna Type	:	Coil Antenna

3. TEST METHODOLOGY

All testing as described bellowed were performed in accordance with ANSI C63.4:2014 and FCC CFR 47 Part 15 Subpart C.

3.1 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on a wood table, which is at 0.8 m above ground plane acceding to clause 15.207 and requirements of ANSI C63.4:2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz are using CISPR Quasi-Peak / Average detectors.

Radiated Emissions

The EUT is a placed on a turn table, which is 0.8 m above ground plane. The turntable was rotated through 360 degrees to determine the position of maximum emission level. The EUT is placed at 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

3.2 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110 10.495 - 0.505 2.1735 - 2.1905 4.125 - 4.128 4.17725 - 4.17775 4.20725 - 4.20775 6.215 - 6.218 6.26775 - 6.26825 6.31175 - 6.31225 8.291 - 8.294 8.362 - 8.366 8.37625 - 8.38675 8.41425 - 8.41475 12.29 - 12.293 12.51975 - 12.52025 12.57675 - 12.57725 13.36 - 13.41	16.42 - 16.423 16.69475 - 16.69525 16.80425 - 16.80475 25.5 - 25.67 37.5 - 38.25 73 - 74.6 74.8 - 75.2 108 - 121.94 123 - 138 149.9 - 150.05 156.52475 - 156.52525 156.7 - 156.9 162.0125 - 167.17 167.72 - 173.2 240 - 285 322 - 335.4	399.9 - 410 608 - 614 960 - 1240 1300 - 1427 1435 - 1626.5 1645.5 - 1646.5 1660 - 1710 1718.8 - 1722.2 2200 - 2300 2310 - 2390 2483.5 - 2500 2655 - 2900 3260 - 3267 3332 - 3339 3345.8 - 3358 3600 - 4400	4.5 - 5.15 5.35 - 5.46 7.25 - 7.75 8.025 - 8.5 9.0 - 9.2 9.3 - 9.5 10.6 - 12.7 13.25 - 13.4 14.47 - 14.5 15.35 - 16.2 17.7 - 21.4 22.01 - 23.12 23.6 - 24.0 31.2 - 31.8 36.43 - 36.5 (2)

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
2 Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.3 DESCRIPTION OF TEST MODES

The EUT was tested under following modes:

Modes:

1. **Continuous transmitting**

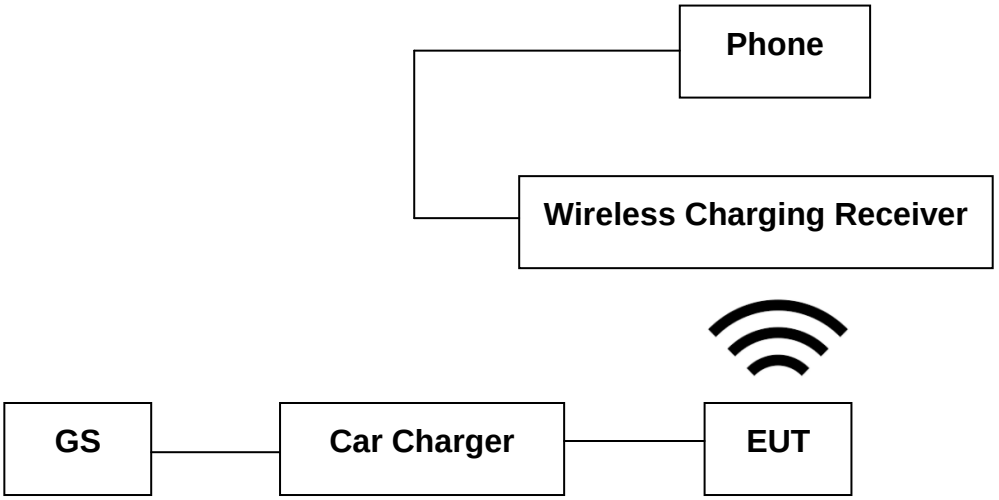
Channels:

1. **135kHz**

3.4 DESCRIPTION OF THE SUPPORT EQUIPMENTS

Setup Diagram

See test photographs attached in appendix 1 for the actual connections between EUT and support equipment.



Support Equipment

Peripherals Devices:

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID/ BSMI ID	Trade name	Data Cable	Power Cord
1.	GS Battery	GTH60S	NA	N/A	PRIMACY	N/A	N/A
2.	Phone	A1524	N/A	BCG-E2817A	N/A	N/A	N/A
3.	Wireless Charger Receiver	N/A	N/A	N/A	NILLKIN	N/A	N/A
EUT							
1.	Car Charger	SYD1162-2412	N/A	N/A	Sunny	N/A	N/A
2.	SWITCHING ADAPTER	SYS1531-2412-W2	N/A	N/A	Sunny	N/A	N/A

Note: All the above equipment /cable were placed in worse case position to maximize emission signals during emission test

Grounding: Grounding was in accordance with the manufacturer's requirement and conditions for the intended use.

4. TEST AND MEASUREMENT EQUIPMENT

4.1 CALIBRATION

The measuring equipment utilized to perform the tests documented in the report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2 EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and. Other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective.

List of Test and Measurement Equipment

● **CALIBRATION INTERVAL OF INSTRUMENTS LISTED ABOVE IS ONE YEAR**

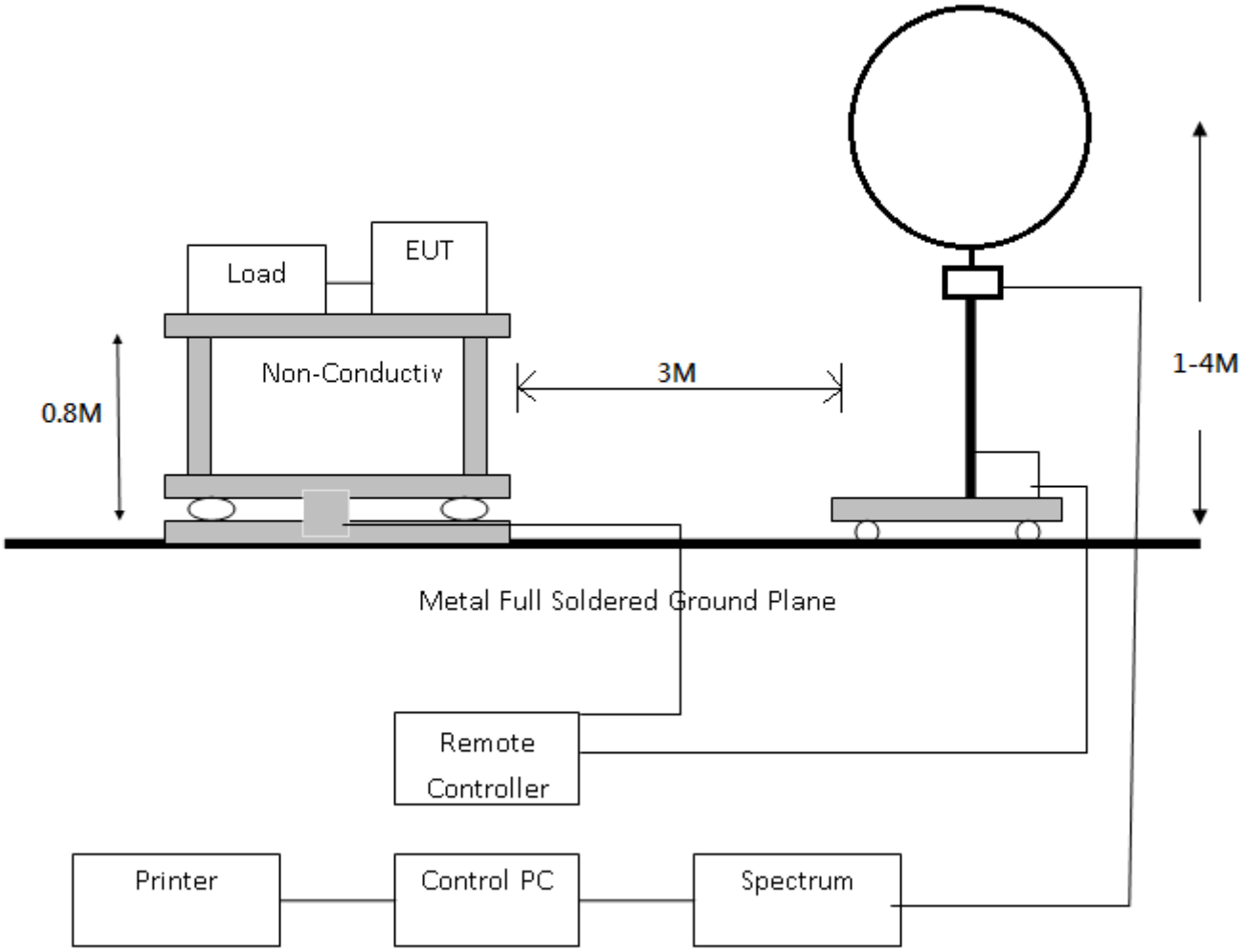
Test Site	Instrument	Manufacturer	Model No.	S/N	Next Cal. Date
Conduction	Spectrum (9K--3GHz)	R&S	FSP3	833387/010	2017/09/20
	EMI Receiver	R&S	ESHS10	830223/008	2018/05/22
	LISN	Rolf Heine Hochfrequenztechnik	NNB-2/16z	98062	2018/05/25
	ISN	Schwarzbeck	8-Wire ISN CAT5	CAT5-8158-0094	2017/09/21
	RF Cable	N/A	N/A	EMI-3	2017/10/19
Radiation	Bilog antenna(30M-1G)	ETC	MCTD2786B	BLB16M04004/JB-5-004	2018/05/03
	Double Ridged Guide Horn antenna(1G-18G)	ETC	MCTD 1209	DRH15N02009	2017/11/23
	Horn antenna (18G-26G)	com-power	AH-826	81000	2017/08/15
	Pre amplifier (30M-1G)	EMC INSTRUMENT	EMC9135	980334	2018/05/04
	Microwave Preamplifier (1G-18G)	EMC INSTRUMENT	EMC051845	980108&AT-18001	2017/10/23
	Pre amplifier (18G~26G)	MITEQ	JS4-18002600-30-5A	808329	2017/08/10
	EMI Test Receiver	R&S	ESVS30 (20M-1000MHz)	863342/012	2017/11/28
	RF Cable (open site)	EMCI	N male on end of both sides (EMI4)	30m	2017/10/19
	RF CABLE (1~26.5G)	HARBOUT INDUSTRIES	LL142MI(4M+4M)	NA	2018/03/08
	RF CABLE (1~26.5G)	HARBOUR INDUSTRIES	LL142MI(7M)	NA	2017/08/11
	Spectrum (9K--7GHz)	R&S	FSP7	830180/006	2018/02/25
	Spectrum (9K--40GHz)	AGILENT	8564EC	4046A0032	2018/01/03
Software	e3	AUDIX	N/A	N/A	N/A

●

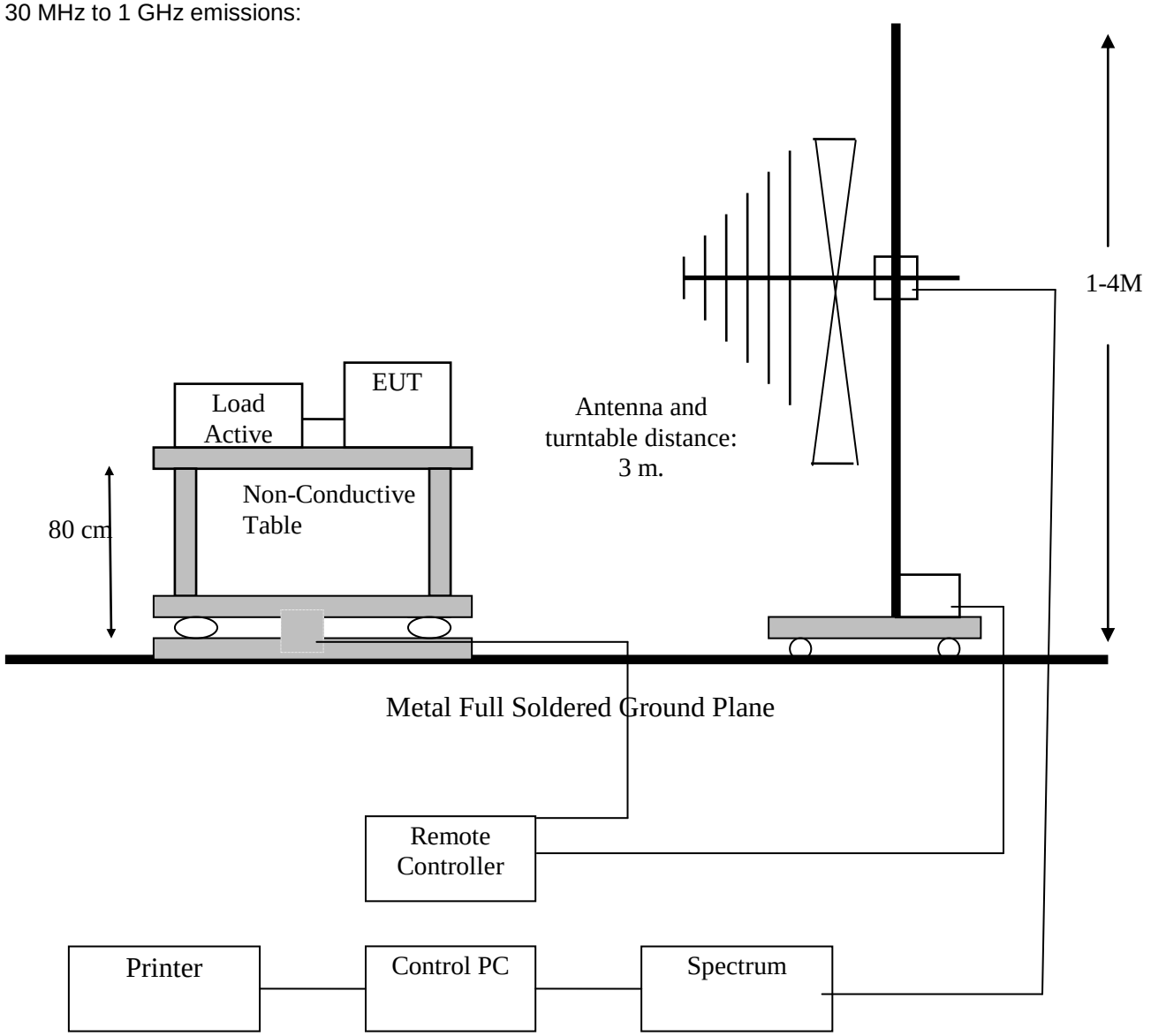
5. SECTION 15.209 REQUIREMENTS (GENERAL RADIATED EMISSION)

5.1 TEST SETUP

9 kHz to 30 MHz emissions:



30 MHz to 1 GHz emissions:



5.2 LIMIT

The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209 as below.

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500*	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz,*
174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

In the above emission table, the tighter limit applies at the band edges.

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	μV/m	dBμV/m	
0.009-0.49	2400/F(kHz)	67.6-20logf(kHz)	300
0.49-1.705	24000/F(kHz)	87.6-20logf(kHz)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

5.3 TEST PROCEDURE

1. The EUT was placed on a turntable, which was 0.8m above ground plane.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT was set at 3m away from the receiving antenna, which was varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was maximized by changing the polarization of receiving antenna, both horizontal and vertical.
6. Repeated above procedures until the measurements for all frequencies are completed.

5.4 RESULT: PASSED

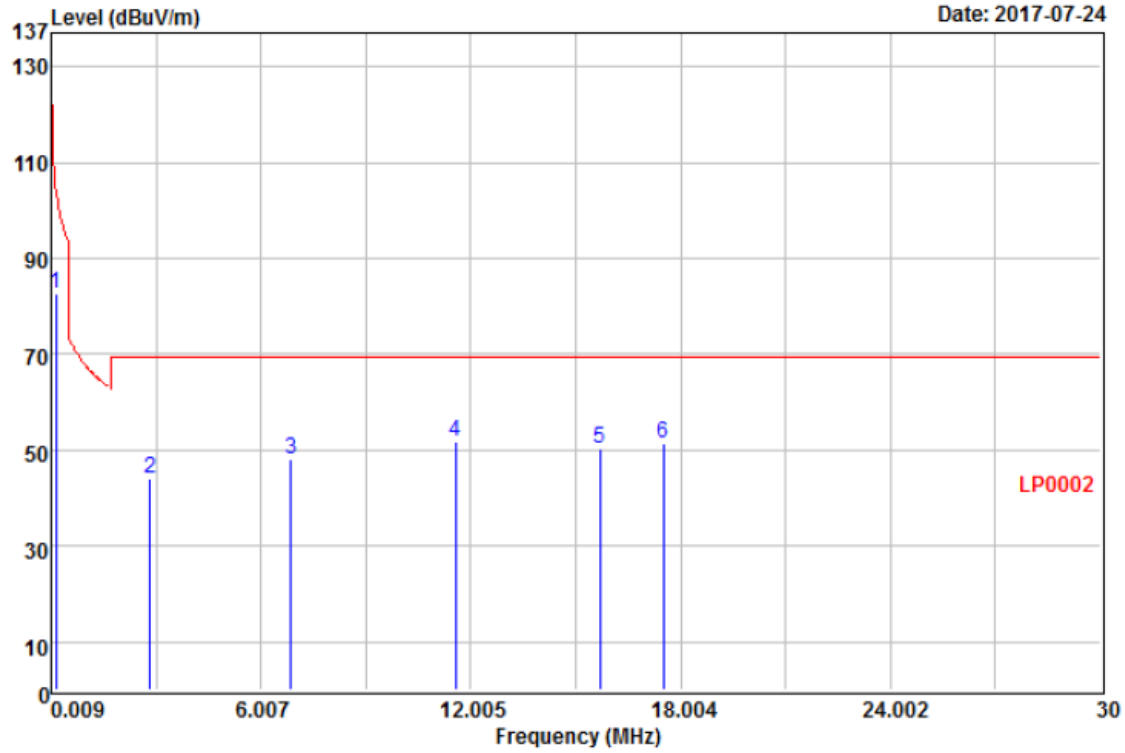
5.5 TEST DATA:

All frequencies not described in this test report and within the range of the general radiated emission limits are not detectable significantly. The table as below is representing worst emissions found.

Below 30MHz

Horizontal

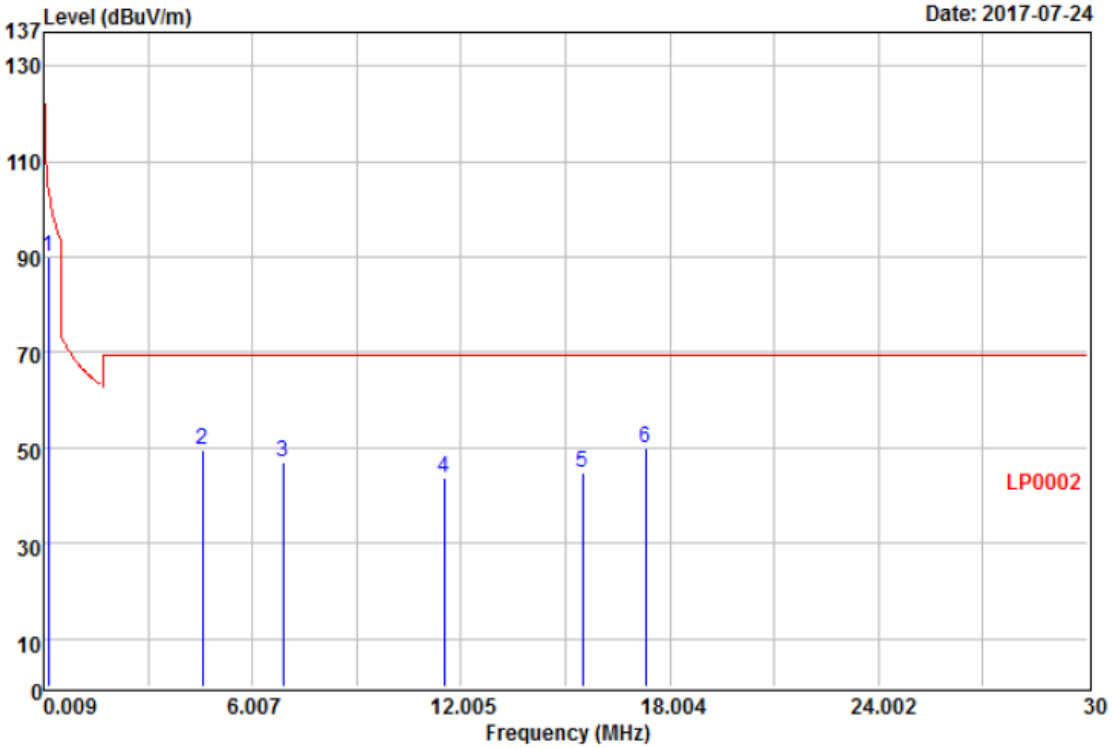
AC110V



Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.135	71.93	10.72	82.65	105.00	-22.35	Average
2	2.850	33.68	10.52	44.20	69.50	-25.30	QP
3	6.860	36.67	11.59	48.26	69.50	-21.24	QP
4 @	11.560	39.53	12.15	51.68	69.50	-17.82	QP
5	15.700	38.27	12.22	50.49	69.50	-19.01	QP
6	17.520	39.06	12.26	51.32	69.50	-18.18	QP

Vertical

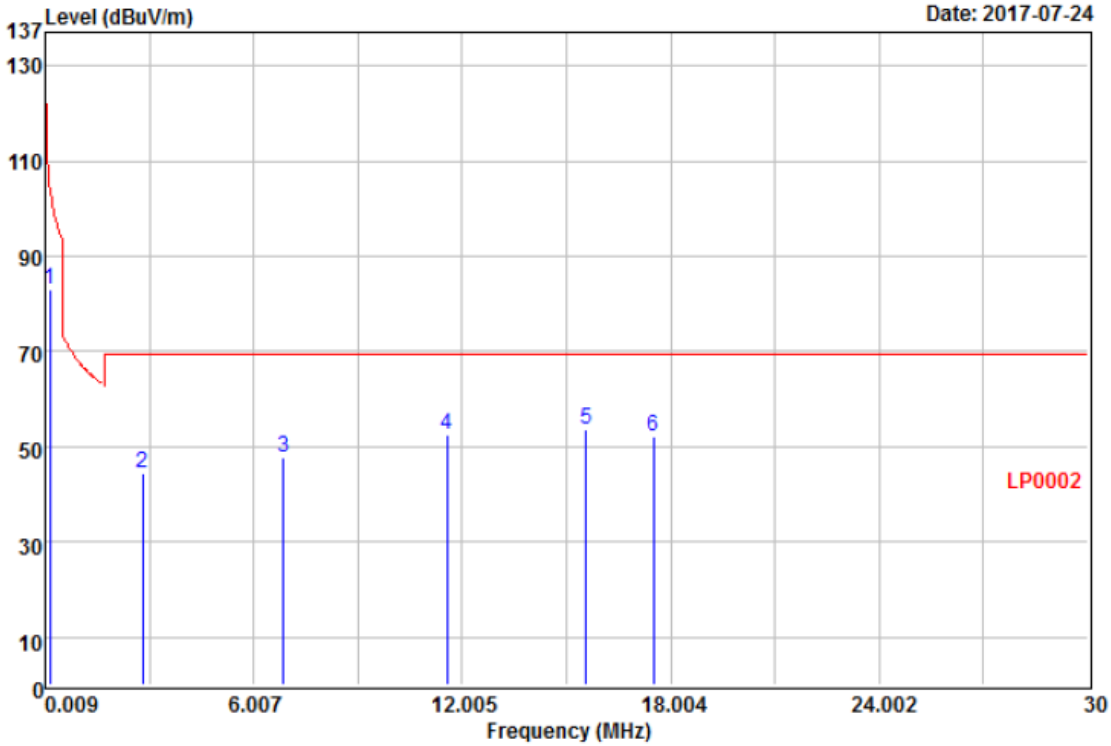


Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @	0.135	79.45	10.72	90.17	105.00	-14.83	Average
2	4.570	38.42	11.11	49.53	69.50	-19.97	QP
3	6.890	35.43	11.59	47.02	69.50	-22.48	QP
4	11.510	31.60	12.15	43.75	69.50	-25.75	QP
5	15.490	32.61	12.22	44.83	69.50	-24.67	QP
6	17.310	37.63	12.25	49.88	69.50	-19.62	QP

Horizontal

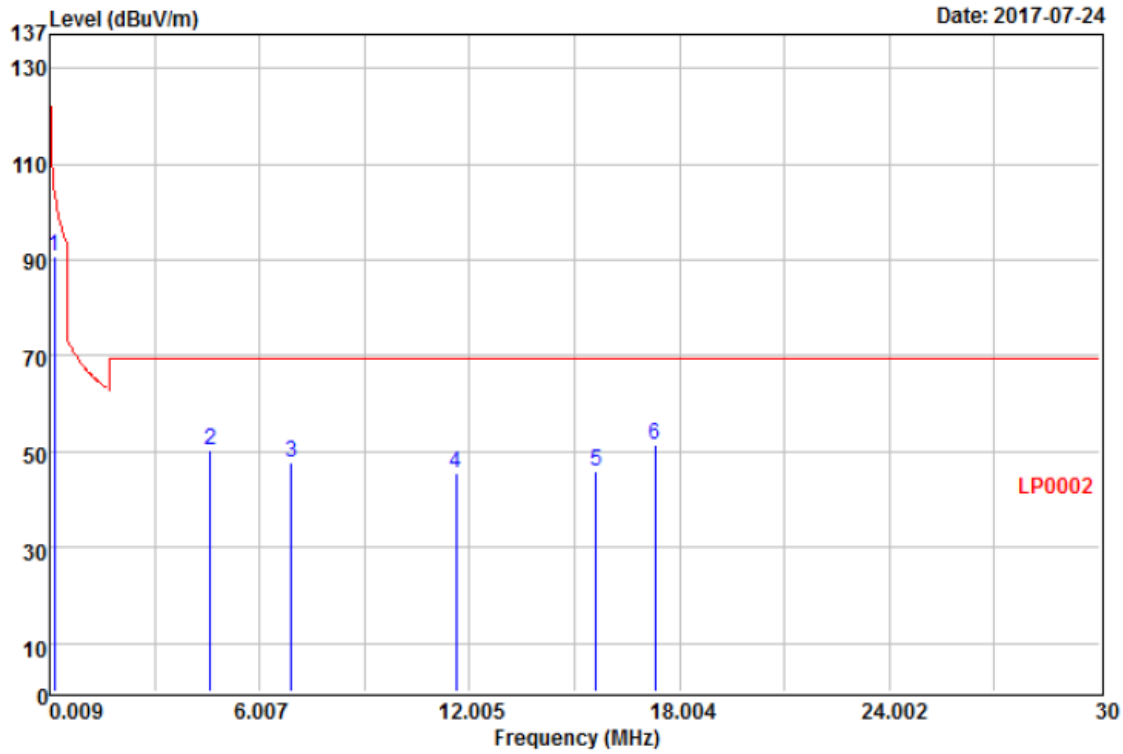
DC12V



Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.135	72.32	10.72	83.04	105.00	-21.96	Average
2	2.810	33.83	10.53	44.36	69.50	-25.14	QP
3	6.870	36.31	11.59	47.90	69.50	-21.60	QP
4	11.570	40.19	12.15	52.34	69.50	-17.16	QP
5 @	15.580	41.27	12.22	53.49	69.50	-16.01	QP
6	17.510	39.78	12.26	52.04	69.50	-17.46	QP

Vertical



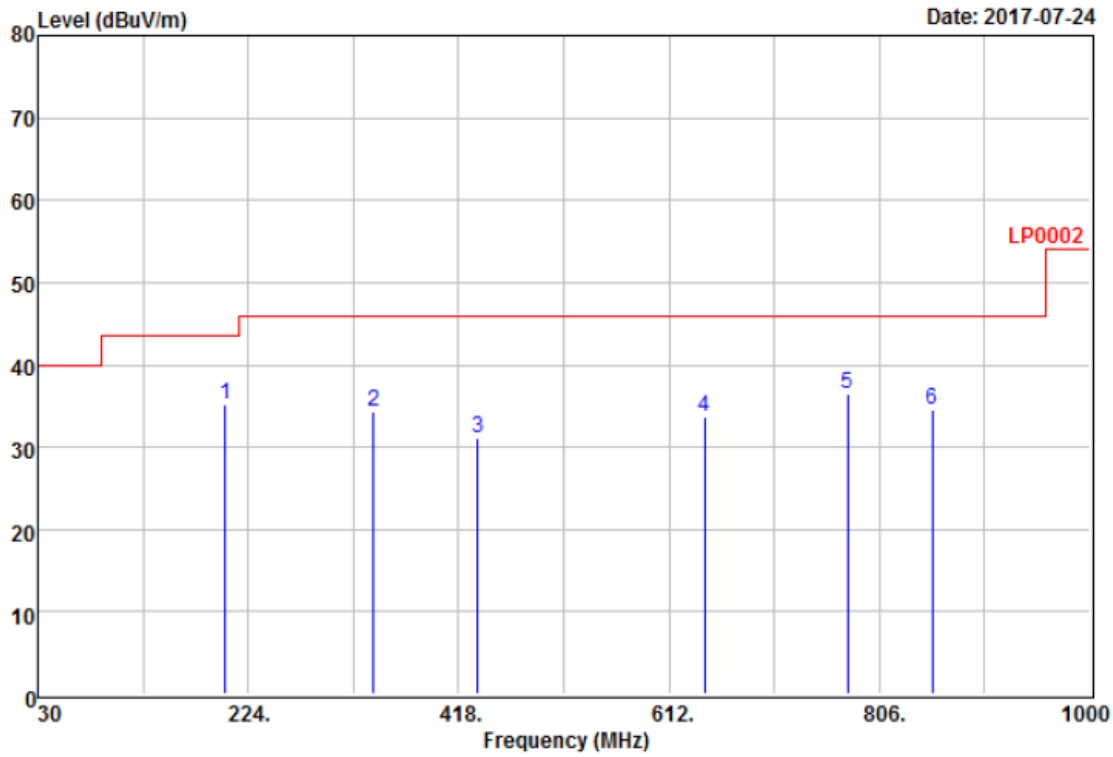
Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @	0.135	79.86	10.72	90.58	105.00	-14.42	Average
2	4.610	39.15	11.12	50.27	69.50	-19.23	QP
3	6.920	36.32	11.60	47.92	69.50	-21.58	QP
4	11.610	33.31	12.15	45.46	69.50	-24.04	QP
5	15.630	33.62	12.22	45.84	69.50	-23.66	QP
6	17.310	39.18	12.25	51.43	69.50	-18.07	QP

Above 30MHz

Horizontal

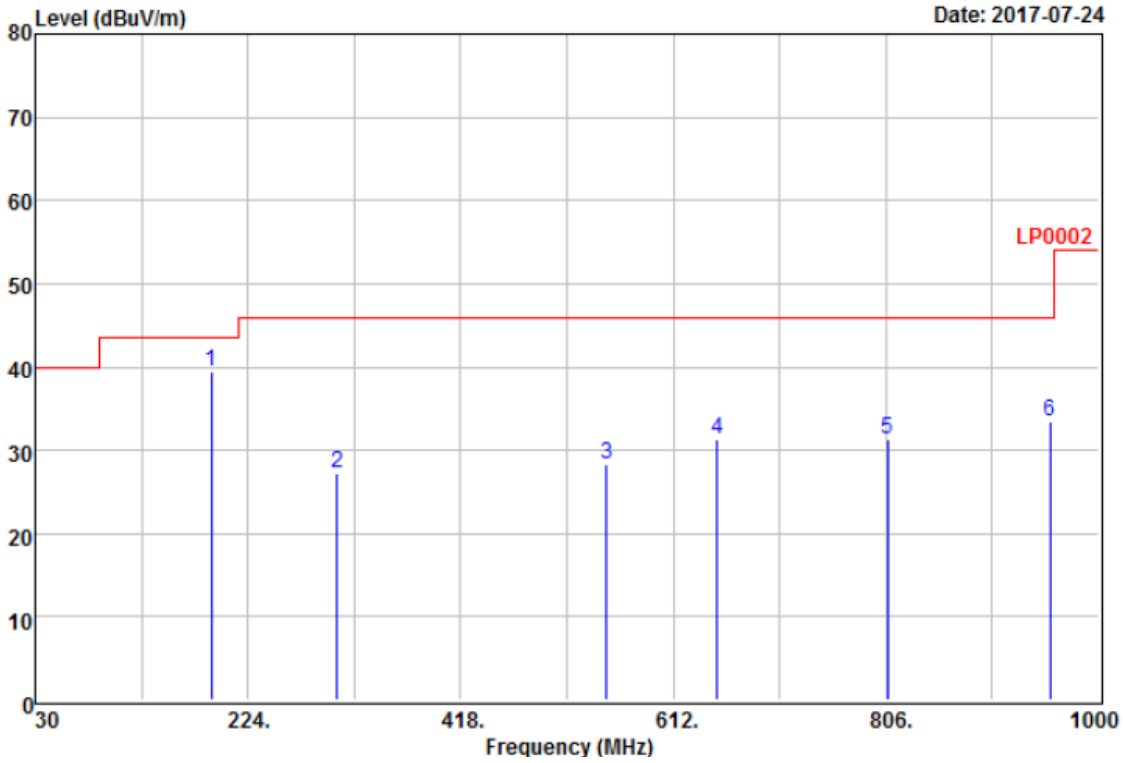
AC110V



Remarks: **: Factor=Insertion loss+Cable loss**

		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	@	202.660	53.55	-18.46	35.09	43.50	-8.41	QP
2		339.430	46.98	-12.66	34.32	46.00	-11.68	QP
3		435.460	41.68	-10.48	31.20	46.00	-14.80	QP
4		644.980	41.06	-7.34	33.72	46.00	-12.28	QP
5		776.900	42.26	-5.70	36.56	46.00	-9.44	QP
6		854.500	38.57	-4.05	34.52	46.00	-11.48	QP

Vertical

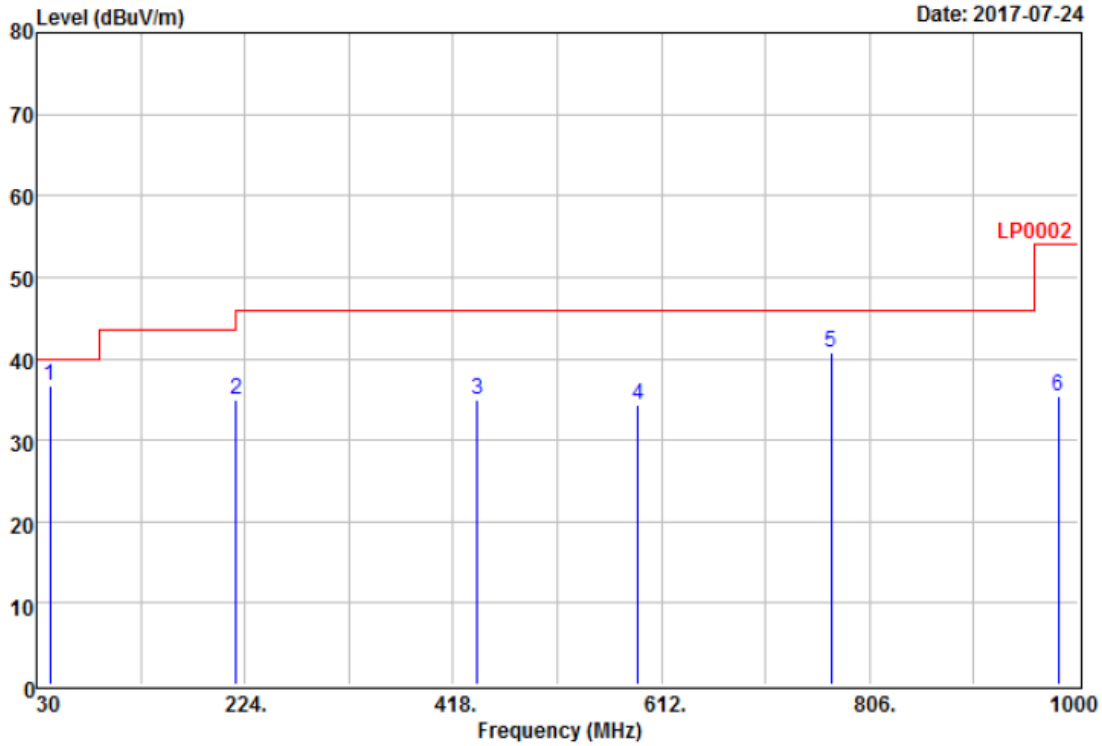


Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @	191.020	58.26	-18.87	39.39	43.50	-4.11	QP
2	305.480	40.74	-13.50	27.24	46.00	-18.76	QP
3	550.890	37.16	-8.77	28.39	46.00	-17.61	QP
4	651.770	38.54	-7.16	31.38	46.00	-14.62	QP
5	807.940	36.35	-5.06	31.29	46.00	-14.71	QP
6	955.380	34.98	-1.48	33.50	46.00	-12.50	QP

Horizontal

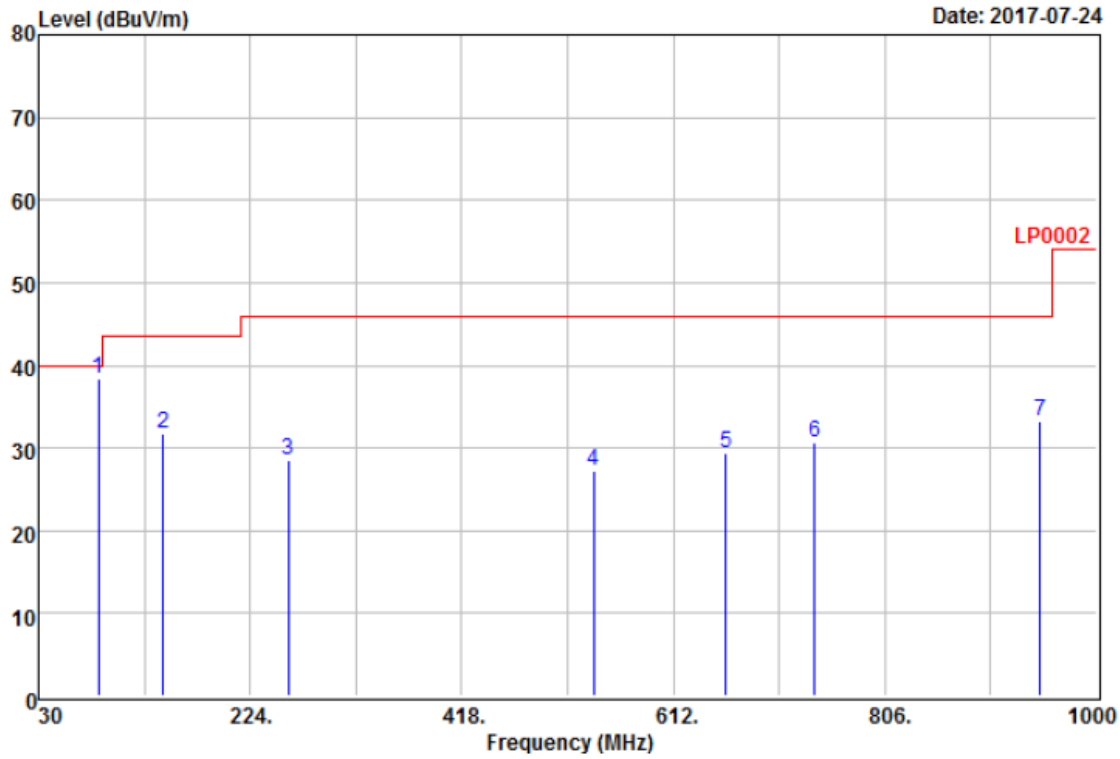
DC12V



Remarks: **: Factor=Insertion loss+Cable loss**

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @	42.610	54.65	-17.99	36.66	40.00	-3.34	QP
2	216.240	53.14	-18.25	34.89	46.00	-11.11	QP
3	440.310	45.32	-10.42	34.90	46.00	-11.10	QP
4	590.660	43.00	-8.76	34.24	46.00	-11.76	QP
5	770.110	46.53	-5.84	40.69	46.00	-5.31	QP
6	981.570	36.86	-1.39	35.47	54.00	-18.53	QP

Vertical



Remarks: **: Factor=Insertion loss+Cable loss**

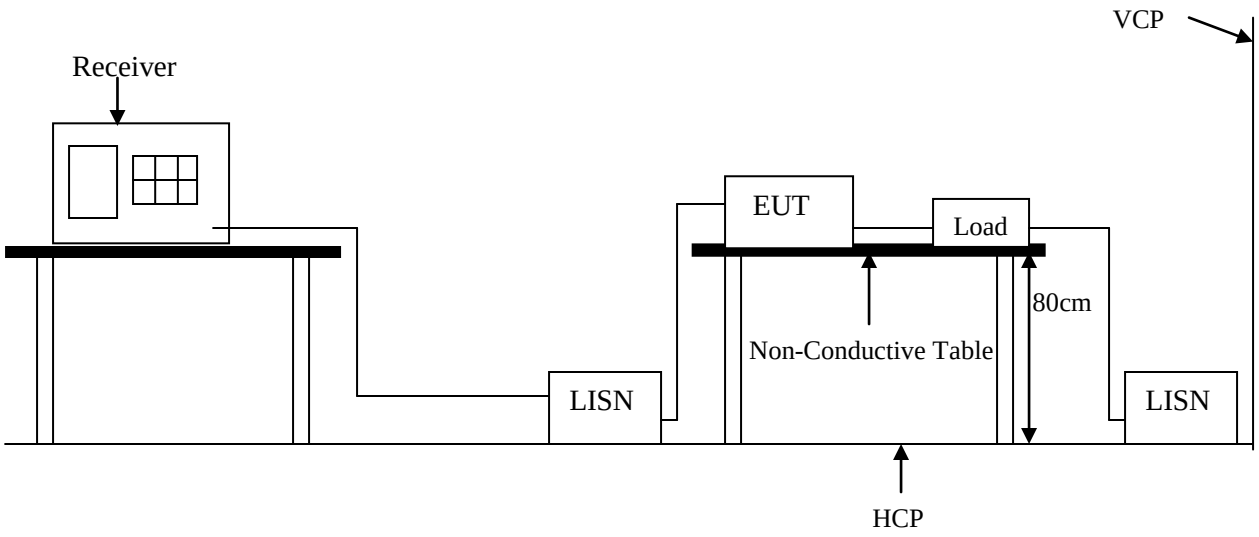
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1 @	85.300	60.71	-22.42	38.29	40.00	-1.71	QP
2	144.460	47.15	-15.47	31.68	43.50	-11.82	QP
3	258.920	43.65	-15.03	28.62	46.00	-17.38	QP
4	539.250	36.20	-8.89	27.31	46.00	-18.69	QP
5	660.500	36.47	-7.15	29.32	46.00	-16.68	QP
6	741.980	36.95	-6.36	30.59	46.00	-15.41	QP
7	948.590	34.81	-1.56	33.25	46.00	-12.75	QP

Note:

1. Emission level = Reading level + Correction factor
2. Correction factor : Antenna factor, Cable loss, Pre-Amp, etc.
3. All emissions as described above were determining by rotating the EUT through three orthogonal axes to maximizing the emissions if the EUT belongs to hand-held or body-worn devices.
4. Measurements from 9 kHz to 150 kHz, Peak detector setting: 100 Hz RBW
5. Measurements from 150 kHz to 30MHz, Peak detector setting: 10 kHz RBW
6. Measurements from 30 MHz to 1000 MHz, Peak detector setting: 100 kHz RBW
7. Measurements from 9 kHz to 150 kHz, CISPR Quasi-Peak detector: 200 Hz RBW
8. Measurements from 150 kHz to 30MHz, CISPR Quasi-Peak detector: 9 kHz RBW
9. Measurements from 30 MHz to 1000 MHz, CISPR Quasi-Peak detector: 120 kHz RBW
10. Peak detector measurement data will represent the worst case results.

6. SECTION 15.207 REQUIREMENTS (POWERLINE CONDUCTED EMISSIONS)

6.1 TEST SETUP



6.2 LIMIT

Frequency range (MHz)	CLASS B	
	QP dB(uV)	Average dB(uV)
0.15-0.5	66 - 56 dBuV	56 - 46 dBuV
0.5-5.0	56 dBuV	46 dBuV
5.0-30.0	60 dBuV	50 dBuV

Remark: In the above table, the tighter limit applies at the band edges.

6.3 TEST PROCEDURE

The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). It provides a 50 ohm / 50 μH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm / 50 μH coupling impedance with 50 ohm termination. (Please refer to the block diagram of the test setup and photograph.)

Both sides of AC line are checked for the maximum conducted emission interference. In order to find the maximum emissions, the relating positions of equipment and all of the interference cables must be changed according to EN 55022 regulations: The measurement procedure on conducted emission interference.

The resolution bandwidth of the field strength meter is set at 9 KHz.

6.4 TEST SPECIFICATION

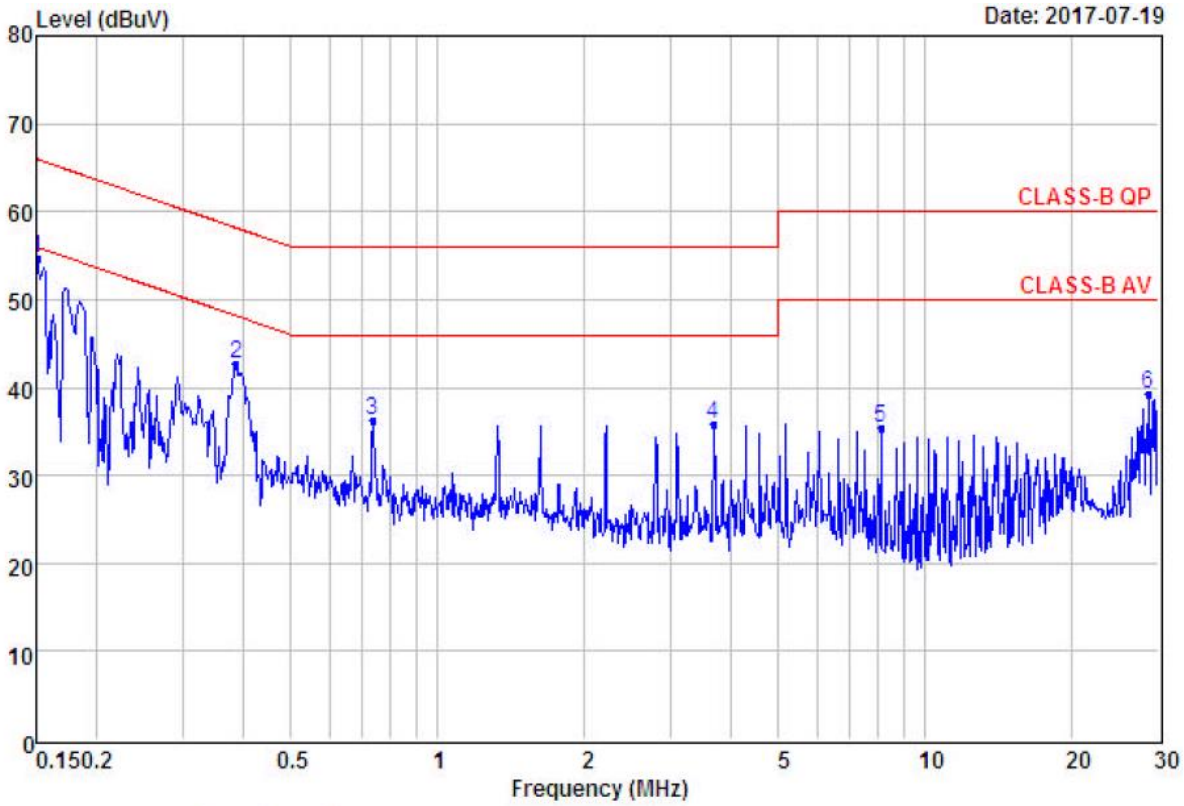
According to PART15.207

6.5 RESULT:

EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range:	150KHz--30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

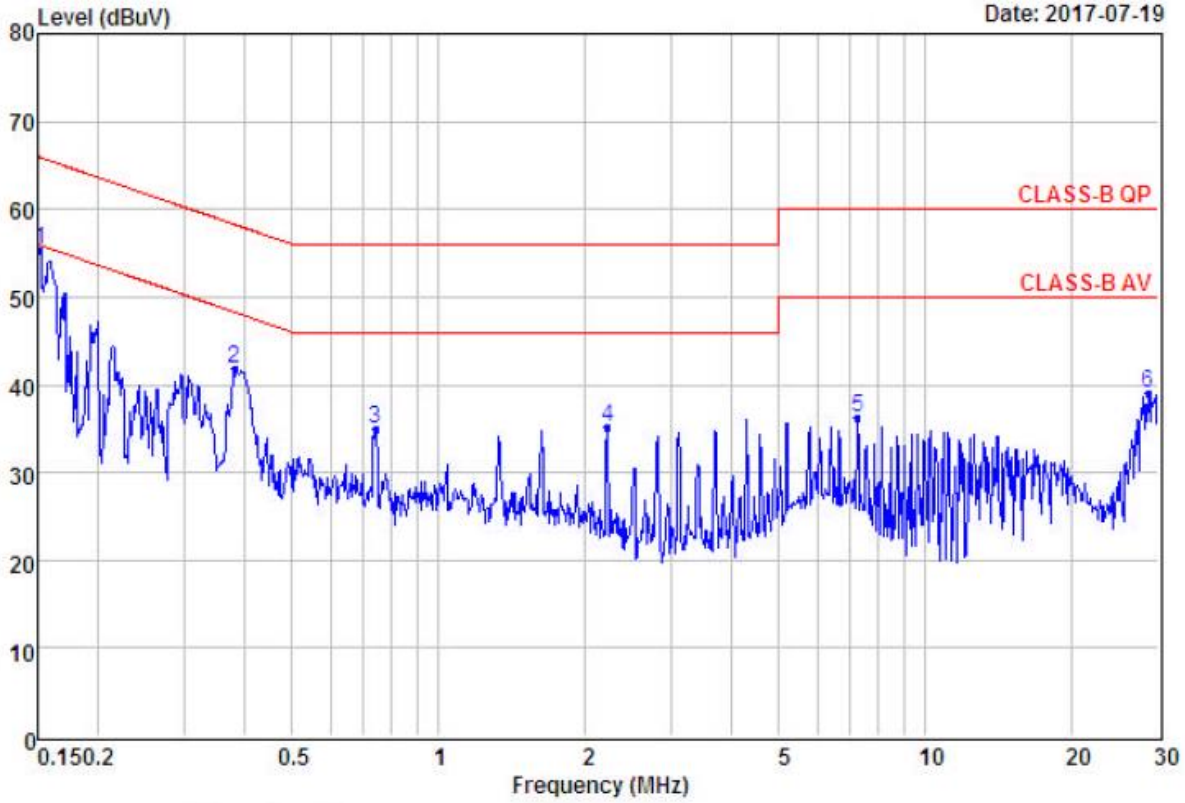
6.6 TEST DATA:



Site : Conduction
Condition : CLASS-B QP CON-LISN-106 LINE
EUT : 充電板
Power : AC 110V
Mode : working
Temperature : 30.8
Humidity : 38
Memo :

Remarks: : Factor=Insertion loss+Cable loss

	Freq	Read Level	Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	
1 @	0.15	44.69	54.71	10.02	-11.25	65.96	Peak
2	0.39	32.57	42.60	10.03	-15.57	58.17	Peak
3	0.74	26.09	36.14	10.05	-19.86	56.00	Peak
4	3.68	25.62	35.72	10.10	-20.28	56.00	Peak
5	8.11	25.17	35.32	10.15	-24.68	60.00	Peak
6	28.60	28.94	39.23	10.29	-20.77	60.00	Peak



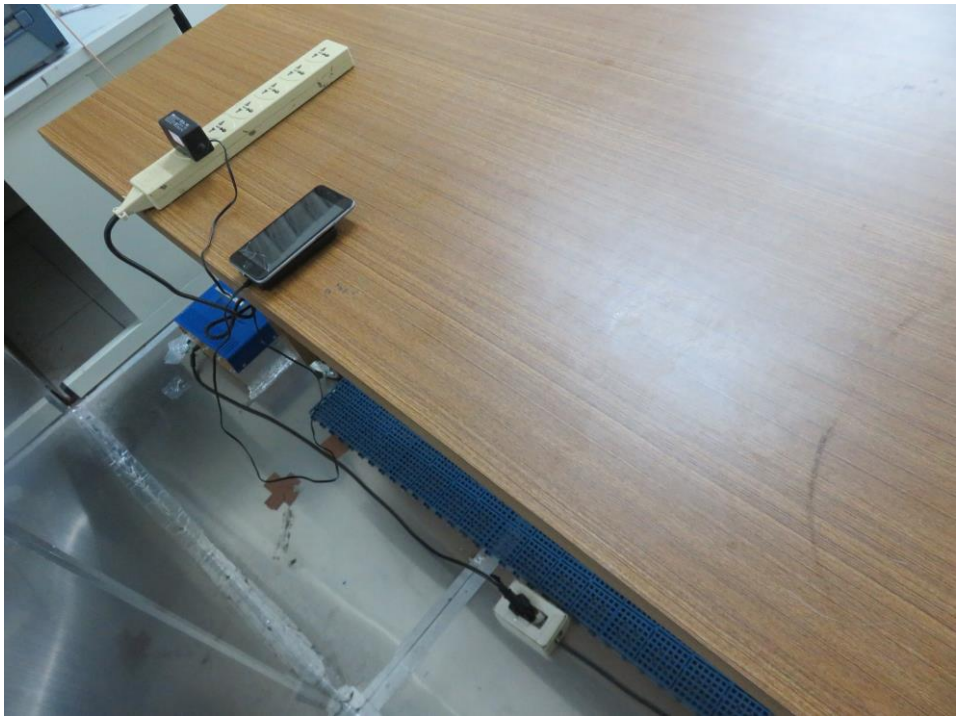
Site : Conduction
Condition : CLASS-B QP CON-LISN-106 NEUTRAL
EUT : 充電板
Power : AC 110V
Mode : working
Temperature : 30.8
Humidity : 38
Memo :

Remarks: : Factor=Insertion loss+Cable loss

	Freq	Read Level	Level	Factor	Over Limit	Limit Line	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	
1 @	0.15	45.38	55.40	10.02	-10.51	65.91	Peak
2	0.38	31.81	41.84	10.03	-16.41	58.25	Peak
3	0.74	24.93	34.98	10.05	-21.02	56.00	Peak
4	2.22	25.10	35.18	10.08	-20.82	56.00	Peak
5	7.25	26.05	36.20	10.15	-23.80	60.00	Peak
6	28.60	28.73	39.02	10.29	-20.98	60.00	Peak

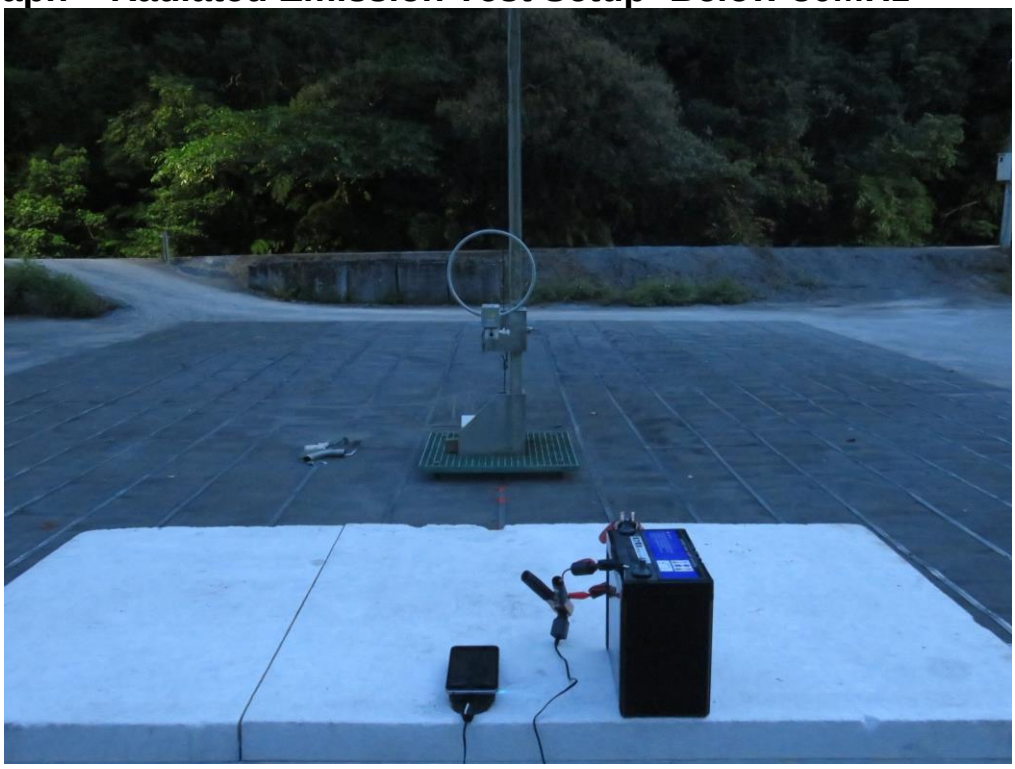
APPENDIX 1
PHOTOS OF TEST CONFIGURATION

Photograph –Conducted Emission Test Setup

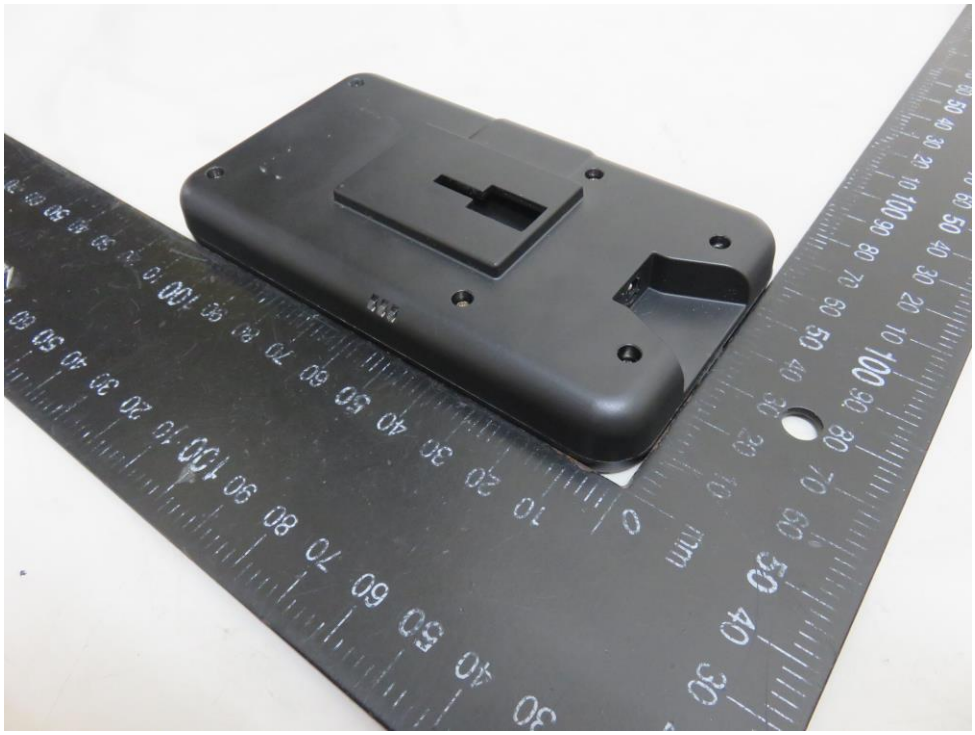


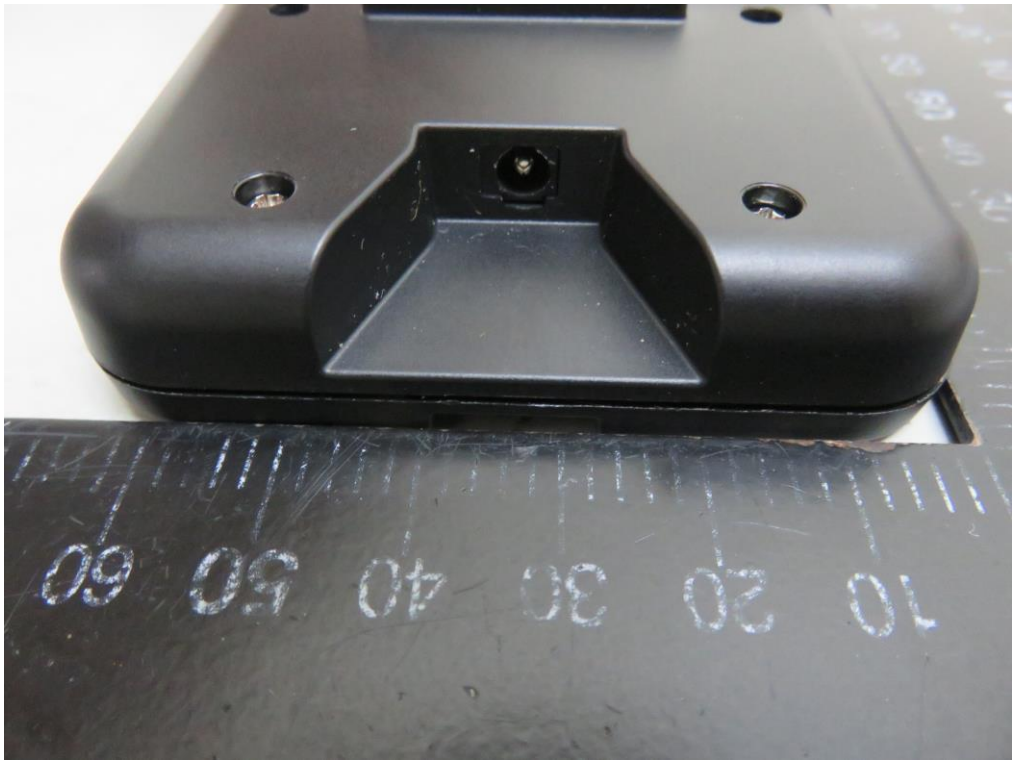
Photograph – Radiated Emission Test Setup- Below 1G

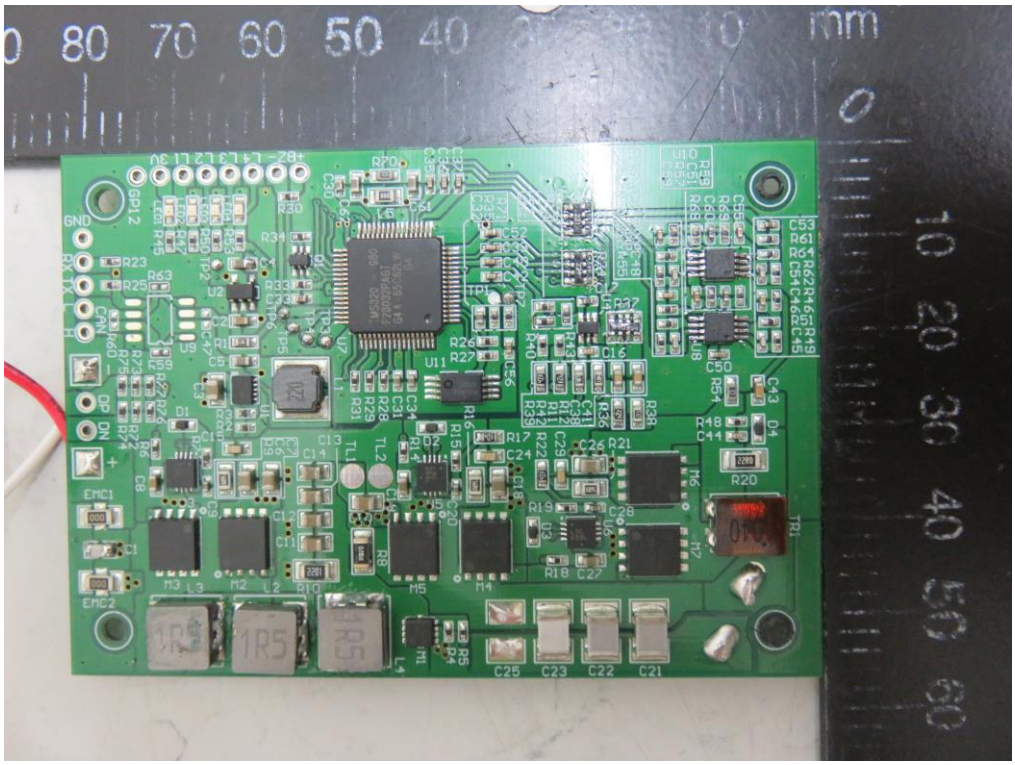
Photograph – Radiated Emission Test Setup- Below 30MHz

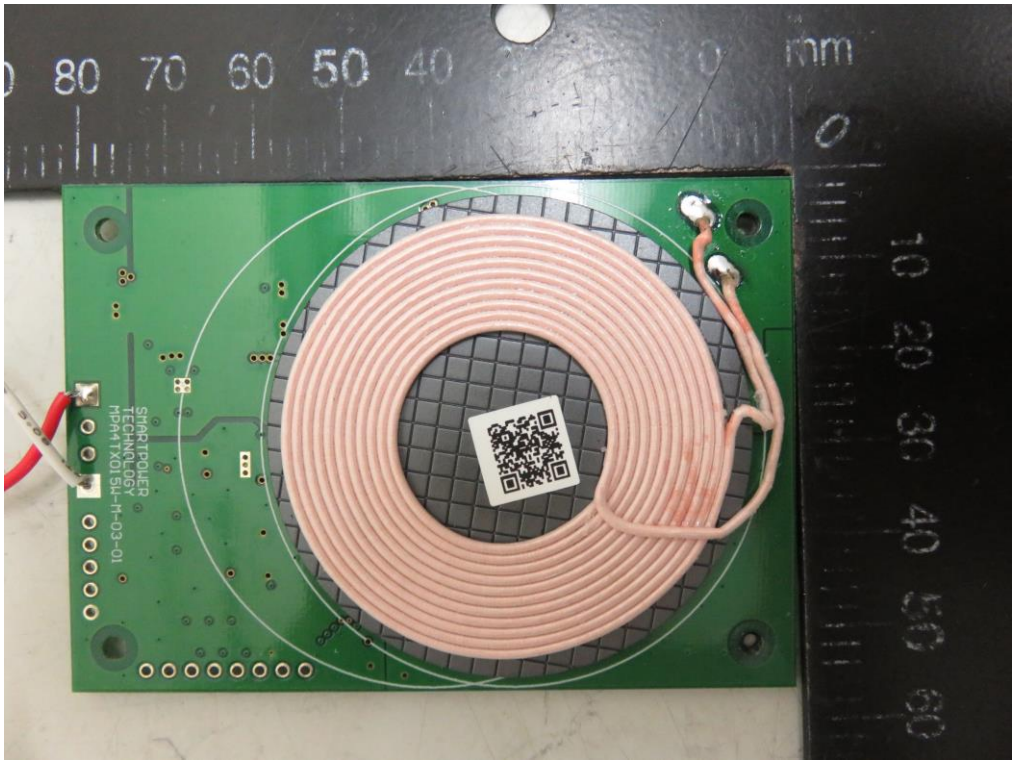


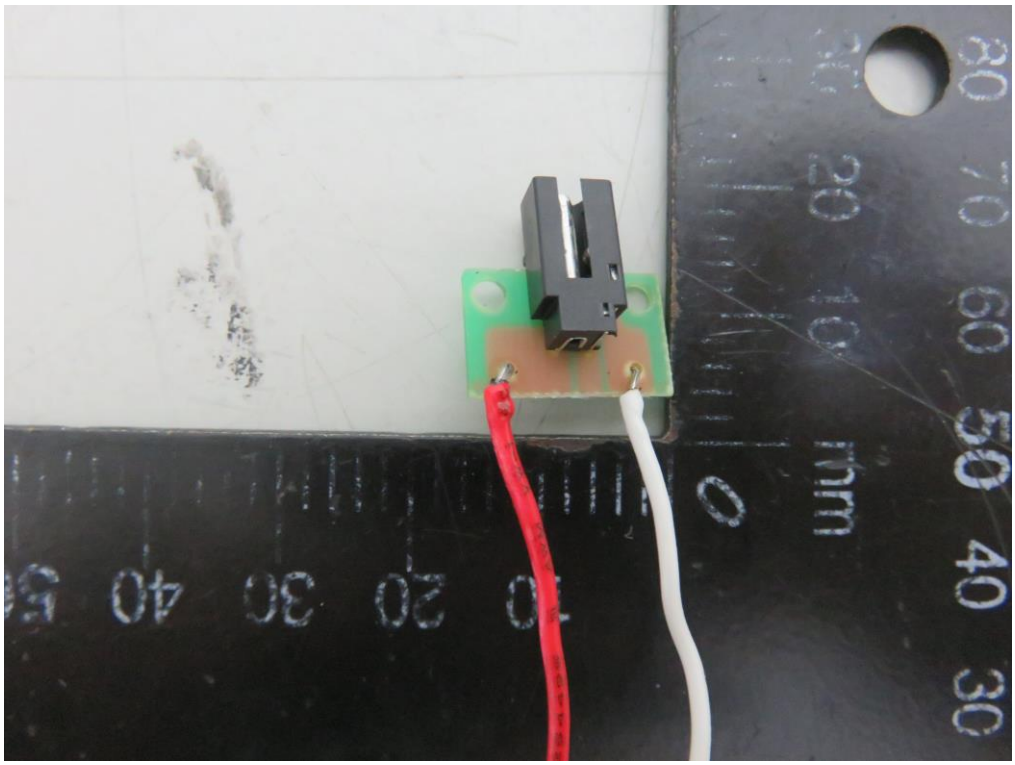
APPENDIX 2
PHOTOS OF EUT

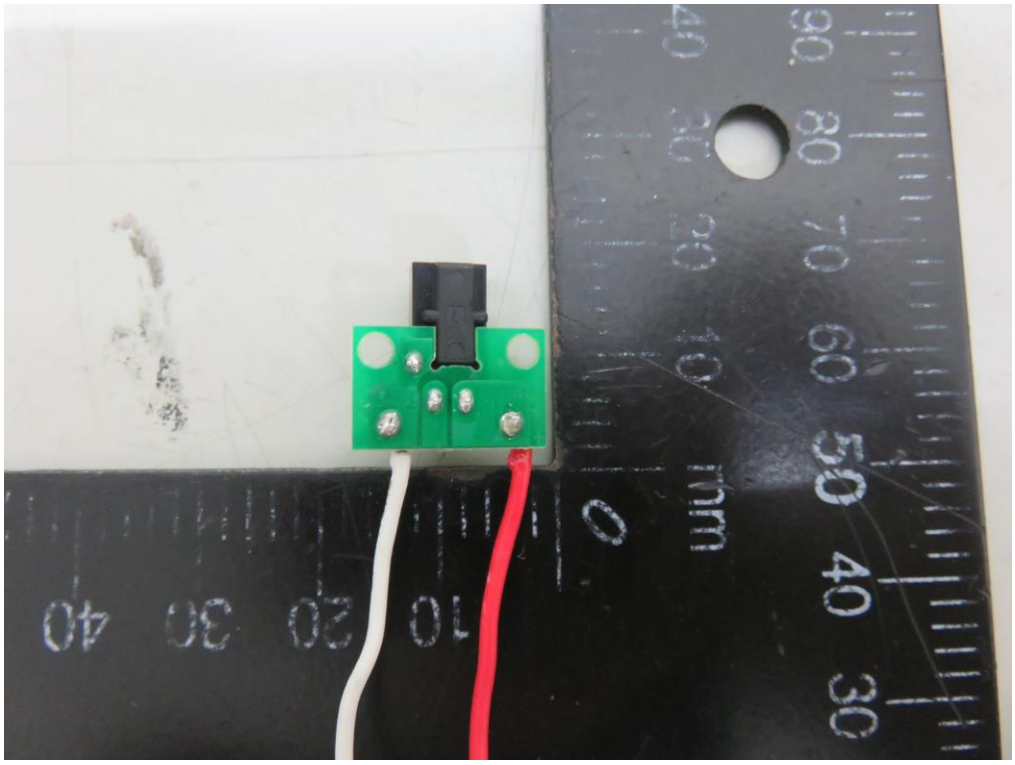







SMARTPOWER
TECHNOLOGY
MPA4TX015W-M-03-01





Sunny COMPUTER TECHNOLOGY CO.,LTD.
SWITCHING ADAPTER
MODEL: SYS1531-2412-W2
INPUT: 100-240V~,1.0A MAX,50-60Hz
OUTPUT: 12V 2.0A
OUTPUT POWER: 24W MAX.
R33215
EFFICIENCY LEVEL:
MADE IN CHINA

COMPUTER TECHNOLOGY CO.,LTD.
MODEL:SYD1162-2412 Car Charger
INPUT : 12V 2A MAX
OUTPUT : 12V 2A
OUTPUT POWER:24W MAX.
MADE IN CHINA
CPC