



EMI TEST REPORT

FOR

Internal Power, AC to DC

MODEL : TPP 450-136BA-MB4, TPP 450-124BA-MB4

SERIES MODEL : Refer to item 5.1 for more details

REPORT NUMBER : 4789043511B-US-E1-V0

ISSUE DATE : Sep. 2, 2019

Prepared for

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	Sep. 2, 2019	Initial Issue	Cindy Hsin

Summary of Test Results			
Standard	Test Item	Limit	Result
FCC Part 15 Subpart B Class B ANSI C63.4:2014	Conducted emission	Class B (Note 2)	PASS
	Radiated emission (Below 1 GHz)	Class A (Note 2)	PASS
	Radiated emission (Above 1 GHz)	Class B	N/A (Note 1)

Note 1: The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall test to below 1GHz only.

Note 2: The test performed of laboratory was according to the client requirements

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: TRACO ELECTRONIC AG
Sihlbruggstrasse 111 CH-6340 Baar Switzerland

EUT DESCRIPTION: Internal Power, AC to DC

MODEL: TPP 450-136BA-MB4, TPP 450-124BA-MB4

SERIES MODEL: Refer to item 5.1 for more details

DATE TESTED: Jul. 10, 2019 ~ Jul. 15, 2019

APPLICABLE STANDARDS	
STANDARDS	TEST RESULTS
FCC Part 15 Subpart B: Class B ANSI C63.4:2014	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

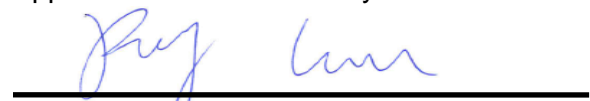
Prepared By:



Cindy Hsin
Project Handler

Date : Sep. 2, 2019

Approved and Authorized By:



Roy Chen
Operations Manager

Date : Sep. 2, 2019

2. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented FCC Part 15 Subpart B and ANSI C63.4

3. FACILITIES AND ACCREDITATION

Test Location	Underwriters Laboratories Taiwan Co., Ltd.,
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Description	All measurement facilities use to collect the measurement data are located at Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

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

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	1.7
966-1 Test Site			
Radiated disturbance below 1 GHz	30MHz ~ 1000MHz	2	5.2

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name:	Internal Power, AC to DC
Model:	TPP 450-136BA-MB4, TPP 450-124BA-MB4
Series Model:	TPP 450-112BA-MB4, TPP 450-115BA-MB4, TPP 450-118BA-MB4, TPP 450-124BA-MB4, TPP 450-128BA-MB4, TPP 450-136BA-MB4, TPP 450-136BA-MC2, TPP 450-142BA-MB4, TPP 450-148BA-MB4, TPP 450-153BA-MB4, TPP 450-112BA-M, TPP 450-115BA-M, TPP 450-118BA-M, TPP 450-124BA-M, TPP 450-128BA-M, TPP 450-136BA-M, TPP 450-142BA-M, TPP 450-148BA-M, TPP 450-153BA-M, TPP 450-112B-MB5, TPP 450-115B-MB5, TPP 450-118B-MB5, TPP 450-124B-MB5, TPP 450-128B-MB5, TPP 450-136B-MB5, TPP 450-142B-MB5, TPP 450-148B-MB5, TPP 450-153B-MB5, TPP 450-112B-MB6, TPP 450-115B-MB6, TPP 450-118B-MB6, TPP 450-124B-MB6, TPP 450-128B-MB6, TPP 450-136B-MB6, TPP 450-142B-MB6, TPP 450-148B-MB6, TPP 450-153B-MB6, TPP 450-112B-MB3, TPP 450-115B-MB3, TPP 450-118B-MB3, TPP 450-124B-MB3, TPP 450-128B-MB3, TPP 450-136B-MB3, TPP 450-142B-MB3, TPP 450-148B-MB3, TPP 450-153B-MB3, TPP 450-112B-MB1, TPP 450-115B-MB1, TPP 450-118B-MB1, TPP 450-124B-MB1, TPP 450-128B-MB1, TPP 450-136B-MB1, TPP 450-142B-MB1, TPP 450-148B-MB1, TPP 450-153B-MB1, TPP 450-112B-MB2, TPP 450-115B-MB2, TPP 450-118B-MB2, TPP 450-124B-MB2, TPP 450-128B-MB2, TPP 450-136B-MB2, TPP 450-142B-MB2, TPP 450-148B-MB2, TPP 450-153B-MB2, TPP 450-112B-M, TPP 450-115B-M, TPP 450-118B-M, TPP 450-124B-M, TPP 450-128B-M, TPP 450-136B-M, TPP 450-142B-M, TPP 450-148B-M, TPP 450-153B-M
Power Rating:	For TPP 450-136BA-MB4 : I/P: 85 – 264 Vac, O/P: 36 Vdc, 8.9A For TPP 450-124BA-MB4 : I/P: 85 – 264 Vac, O/P: 24 Vdc, 13.3A
Highest Frequency within EUT:	Less than 100MHz
Condition of EUT:	Pre-Production
Date Of Receipt Of Sample:	Jul. 10, 2019

5.2. Test Mode

The pre-test mode:

Mode	Description	Conducted Emission	Radiated Emission
Mode 1	TPP 450-136BA-MB4	v	v
Mode 2	TPP 450-124BA-MB4	v	v

There are some DC output voltage, current and market segmentation between the serials model no. show as 5.1, others PCB layout and enclosure are the same. So client only provided TPP 450-136BA-MB4 and TPP 450-124BA-MB4 for lab test.

After pre-testing, the final test mode was displayed as below table.

Test Items		Test Mode
Emission	Conducted Emission	Mode 1, 2
	Radiated Emission	Mode 1, 2

5.3. EUT Operation Test Setup

Mode 1:

- The EUT was linked to resistance load with full load and the resistance load was connected with a meter during the testing.

Mode 2:

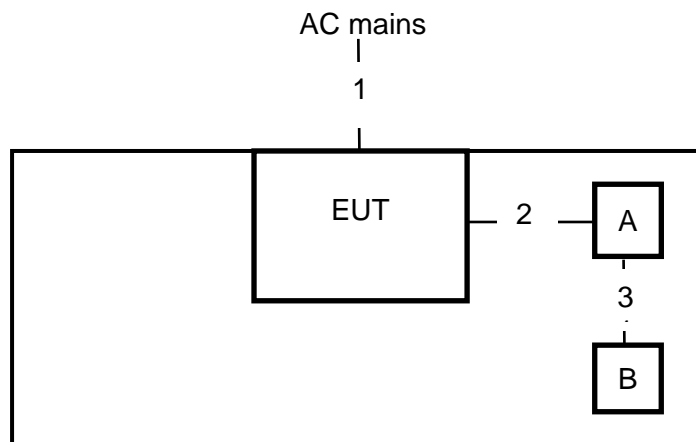
- The EUT was linked to resistance load with full load and the resistance load was connected with a meter during the testing.

5.4. Accessory

Item	Accessory	Brand Name	Model Name	Note
N/A	N/A	N/A	N/A	N/A

5.5. Block diagram showing the configuration of system tested

Mode 1~2 :



5.6. Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	FCC ID	Note
A	Load	N/A	N/A	N/A	N/A	Supported by the client
B	Meter	N/A	N/A	N/A	N/A	N/A

Item	Connection	Shielded Type	Length	Note
1	Power cable	Non-Shielded	2.1 m	Supported by the client
2	Power cable	Non-Shielded	0.1 m	Supported by the client
3	Power Wire	Non-shielded	1.4 m	N/A

Note: (1) for detachable type I/O cable should be specified the length in m in "Length" column.

5.7. Measuring Instrument List

Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
Conducted Disturbance						
<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2018/11/14	2019/11/13
<input checked="" type="checkbox"/>	Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2018/8/5	2019/8/4
<input checked="" type="checkbox"/>	Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2018/8/2	2019/8/1
<input checked="" type="checkbox"/>	Measurement Software	Farad	EZ-EMC Ver: EMEC-3A1	N/A	N/A	N/A
Radiated Disturbance						
966-1						
<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESR7	101755	2018/11/27	2019/11/26
<input checked="" type="checkbox"/>	Trilog-Broadband Antenna with 5dB Attenuator	SCHWARZ BECK	VULB 9168 & N-6-05	9168-773 & AT-N0539	2019/1/14	2020/1/13
<input type="checkbox"/>	Double Ridged Guide Horn Antenna	SCHWARZ BECK	BBHA 9120 D	1686	2019/1/16	2020/1/15
<input type="checkbox"/>	Broadband Horn Antenna	SCHWARZ BECK	BBHA 9170	759	2018/11/13	2019/11/12
<input checked="" type="checkbox"/>	Preamplifier	EMC Instrument	EMC330E	980404	2019/1/8	2020/1/7
<input type="checkbox"/>	Preamplifier	EMC Instrument	EMC051835BE	980407	2019/1/8	2020/1/7
<input type="checkbox"/>	Preamplifier	EMC Instrument	EMC184045SE	980408	2019/3/21	2020/3/19
<input checked="" type="checkbox"/>	Measurement Software	Farad	EZ-EMC Ver: EMEC-3A1	N/A	N/A	N/A

6. EMISSION TEST

6.1. Conducted Disturbance Measurement

6.1.1. Limits of conducted disturbance voltage and common mode disturbance

FREQUENCY (MHz)	<input type="checkbox"/> Class A (dBμV)		<input checked="" type="checkbox"/> Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 – 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

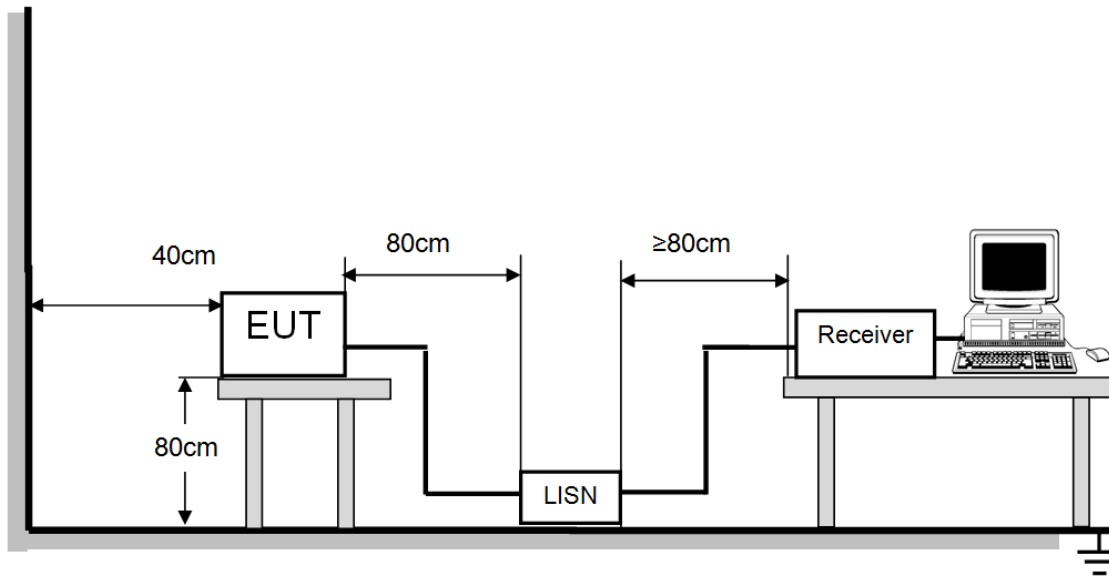
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

6.1.2. Test Procedure

- a. 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.
- b. 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.
- c. 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 at least 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item: EUT Test Photos.

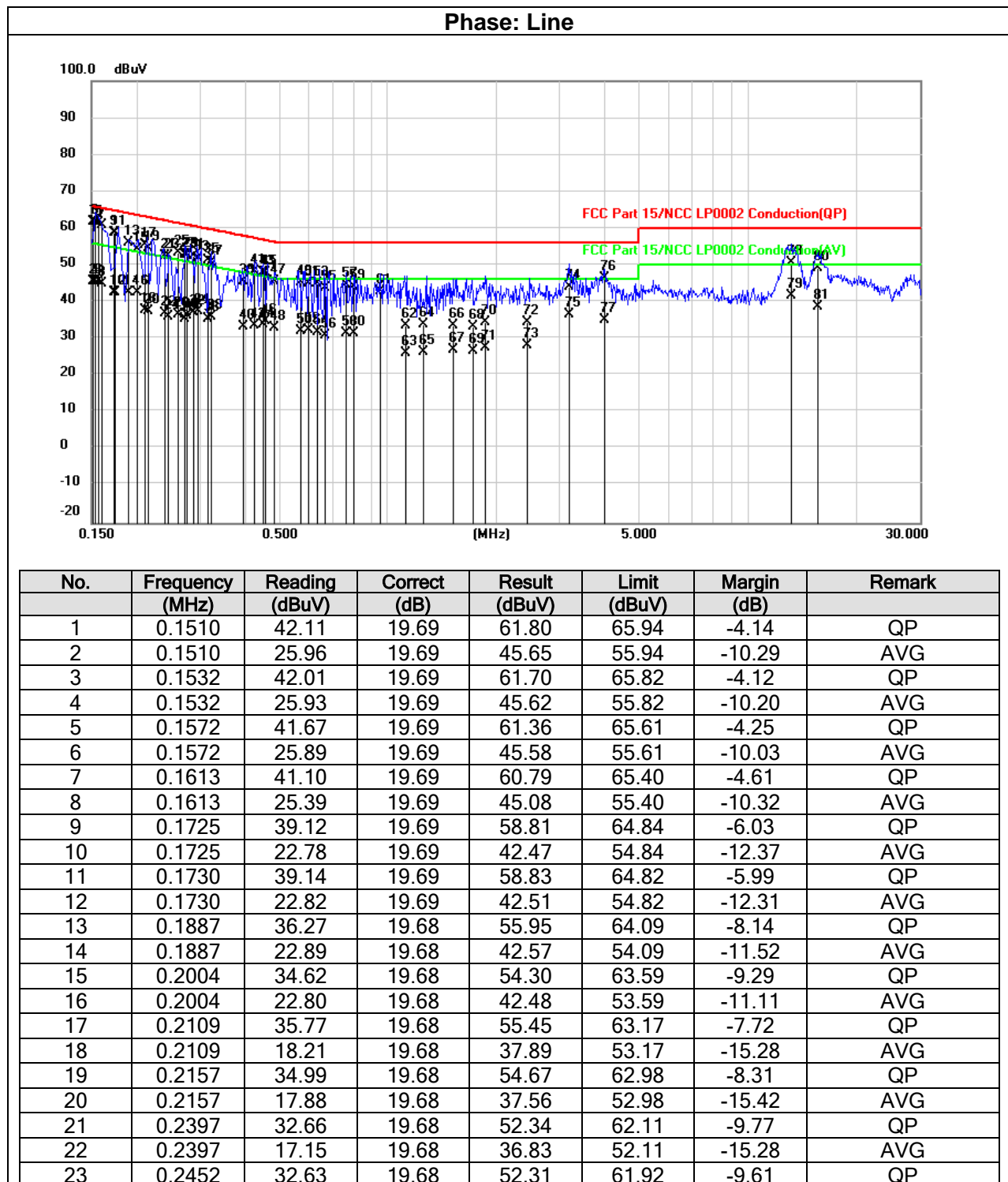
6.1.3. Test Setup



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

6.1.4. Test Result

Test Mode:	Mode 1	Temperature:	23°C
Test Voltage:	AC 120V/60Hz	Humidity:	60%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 15, 2019



24	0.2452	16.38	19.68	36.06	51.92	-15.86	AVG
25	0.2621	33.75	19.68	53.43	61.36	-7.93	QP
26	0.2621	16.94	19.68	36.62	51.36	-14.74	AVG
27	0.2710	33.10	19.68	52.78	61.09	-8.31	QP
28	0.2710	15.74	19.68	35.42	51.09	-15.67	AVG
29	0.2759	33.19	19.68	52.87	60.94	-8.07	QP
30	0.2759	16.63	19.68	36.31	50.94	-14.63	AVG
31	0.2894	32.63	19.68	52.31	60.54	-8.23	QP
32	0.2894	17.56	19.68	37.24	50.54	-13.30	AVG
33	0.2973	32.15	19.68	51.83	60.32	-8.49	QP
34	0.2973	17.69	19.68	37.37	50.32	-12.95	AVG
35	0.3171	31.53	19.67	51.20	59.78	-8.58	QP
36	0.3171	15.60	19.67	35.27	49.78	-14.51	AVG
37	0.3224	30.93	19.67	50.60	59.64	-9.04	QP
38	0.3224	16.35	19.67	36.02	49.64	-13.62	AVG
39	0.3976	25.98	19.67	45.65	57.90	-12.25	QP
40	0.3976	13.49	19.67	33.16	47.90	-14.74	AVG
41	0.4256	28.64	19.67	48.31	57.34	-9.03	QP
42	0.4256	13.80	19.67	33.47	47.34	-13.87	AVG
43	0.4483	28.41	19.67	48.08	56.91	-8.83	QP
44	0.4483	14.32	19.67	33.99	46.91	-12.92	AVG
45	0.4580	28.32	19.67	47.99	56.73	-8.74	QP
46	0.4580	15.01	19.67	34.68	46.73	-12.05	AVG
47	0.4831	25.77	19.67	45.44	56.29	-10.85	QP
48	0.4831	13.39	19.67	33.06	46.29	-13.23	AVG
49	0.5765	25.54	19.67	45.21	56.00	-10.79	QP
50	0.5765	12.47	19.67	32.14	46.00	-13.86	AVG
51	0.5985	25.24	19.67	44.91	56.00	-11.09	QP
52	0.5985	12.64	19.67	32.31	46.00	-13.69	AVG
53	0.6371	25.34	19.67	45.01	56.00	-10.99	QP
54	0.6371	12.08	19.67	31.75	46.00	-14.25	AVG
55	0.6703	24.15	19.67	43.82	56.00	-12.18	QP
56	0.6703	11.32	19.67	30.99	46.00	-15.01	AVG
57	0.7681	25.06	19.68	44.74	56.00	-11.26	QP
58	0.7681	11.84	19.68	31.52	46.00	-14.48	AVG
59	0.8043	24.24	19.68	43.92	56.00	-12.08	QP
60	0.8043	11.63	19.68	31.31	46.00	-14.69	AVG
61	0.9458	23.26	19.68	42.94	56.00	-13.06	QP
62	1.1254	13.89	19.68	33.57	56.00	-22.43	QP
63	1.1254	6.28	19.68	25.96	46.00	-20.04	AVG
64	1.2585	14.18	19.68	33.86	56.00	-22.14	QP
65	1.2585	6.79	19.68	26.47	46.00	-19.53	AVG
66	1.5239	13.89	19.69	33.58	56.00	-22.42	QP
67	1.5239	7.26	19.69	26.95	46.00	-19.05	AVG
68	1.7193	13.52	19.69	33.21	56.00	-22.79	QP
69	1.7193	7.01	19.69	26.70	46.00	-19.30	AVG
70	1.8550	14.82	19.69	34.51	56.00	-21.49	QP
71	1.8550	7.92	19.69	27.61	46.00	-18.39	AVG
72	2.4539	14.63	19.70	34.33	56.00	-21.67	QP
73	2.4539	8.58	19.70	28.28	46.00	-17.72	AVG
74	3.1867	24.44	19.72	44.16	56.00	-11.84	QP
75	3.1867	16.84	19.72	36.56	46.00	-9.44	AVG
76	3.9862	26.81	19.73	46.54	56.00	-9.46	QP
77	3.9862	15.37	19.73	35.10	46.00	-10.90	AVG
78	13.2477	30.85	19.83	50.68	60.00	-9.32	QP

79	13.2477	21.68	19.83	41.51	50.00	-8.49	AVG
80	15.7084	29.45	19.83	49.28	60.00	-10.72	QP
81	15.7084	18.84	19.83	38.67	50.00	-11.33	AVG

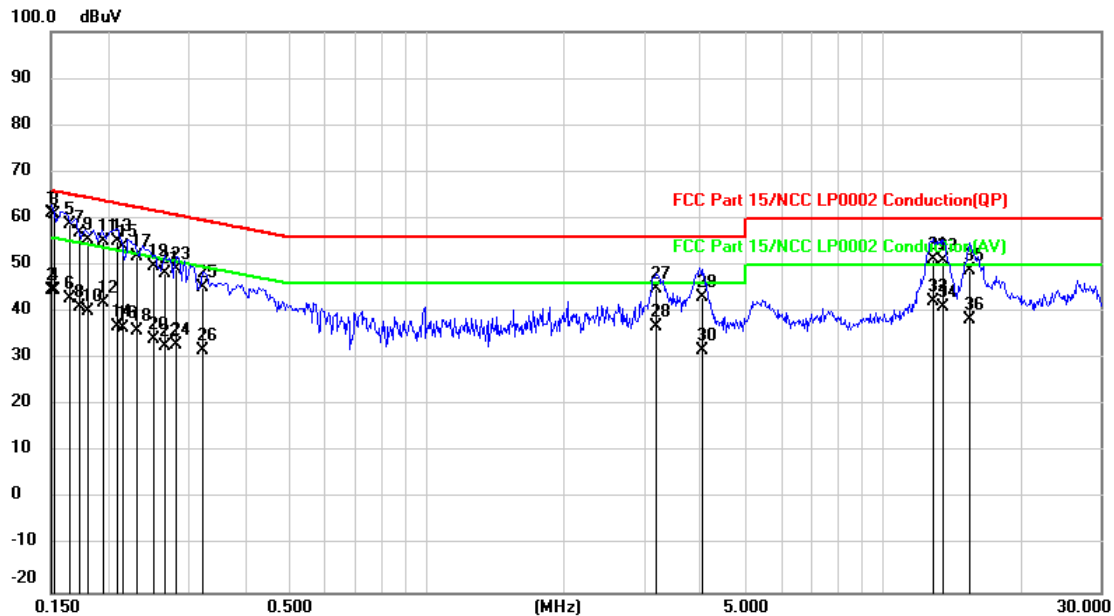
Remark:

Result = Reading +Correct

Margin = Result - Limit

Test Mode:	Mode 1	Temperature:	23°C
Test Voltage:	AC 120V/60Hz	Humidity:	60%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 15, 2019

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1504	41.34	19.68	61.02	65.98	-4.96	QP
2	0.1504	25.00	19.68	44.68	55.98	-11.30	AVG
3	0.1533	41.04	19.68	60.72	65.82	-5.10	QP
4	0.1533	25.02	19.68	44.70	55.82	-11.12	AVG
5	0.1651	39.13	19.68	58.81	65.20	-6.39	QP
6	0.1651	23.15	19.68	42.83	55.20	-12.37	AVG
7	0.1730	37.40	19.68	57.08	64.82	-7.74	QP
8	0.1730	21.51	19.68	41.19	54.82	-13.63	AVG
9	0.1817	35.72	19.68	55.40	64.41	-9.01	QP
10	0.1817	20.38	19.68	40.06	54.41	-14.35	AVG
11	0.1960	35.61	19.68	55.29	63.78	-8.49	QP
12	0.1960	22.39	19.68	42.07	53.78	-11.71	AVG
13	0.2099	35.41	19.68	55.09	63.21	-8.12	QP
14	0.2099	17.25	19.68	36.93	53.21	-16.28	AVG
15	0.2174	34.39	19.68	54.07	62.92	-8.85	QP
16	0.2174	16.83	19.68	36.51	52.92	-16.41	AVG
17	0.2330	32.27	19.68	51.95	62.34	-10.39	QP
18	0.2330	16.41	19.68	36.09	52.34	-16.25	AVG
19	0.2507	29.98	19.68	49.66	61.73	-12.07	QP
20	0.2507	14.42	19.68	34.10	51.73	-17.63	AVG
21	0.2686	28.59	19.68	48.27	61.16	-12.89	QP
22	0.2686	13.08	19.68	32.76	51.16	-18.40	AVG
23	0.2816	29.35	19.68	49.03	60.77	-11.74	QP
24	0.2816	13.23	19.68	32.91	50.77	-17.86	AVG

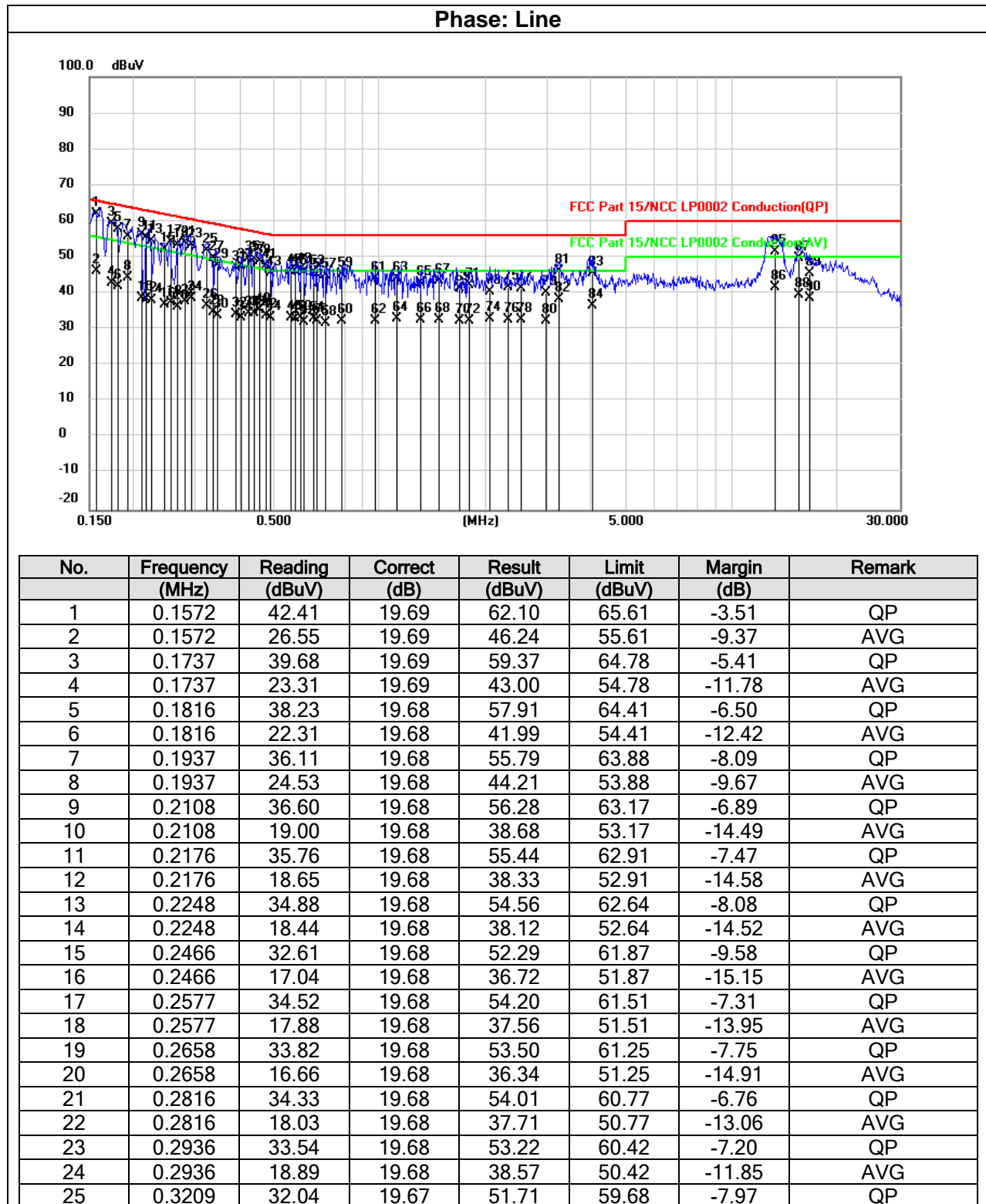
25	0.3212	25.72	19.67	45.39	59.68	-14.29	QP
26	0.3212	11.94	19.67	31.61	49.68	-18.07	AVG
27	3.1971	25.14	19.72	44.86	56.00	-11.14	QP
28	3.1971	17.04	19.72	36.76	46.00	-9.24	AVG
29	4.0328	23.53	19.74	43.27	56.00	-12.73	QP
30	4.0328	11.93	19.74	31.67	46.00	-14.33	AVG
31	12.8627	31.53	19.87	51.40	60.00	-8.60	QP
32	12.8627	22.31	19.87	42.18	50.00	-7.82	AVG
33	13.5262	31.01	19.88	50.89	60.00	-9.11	QP
34	13.5262	21.19	19.88	41.07	50.00	-8.93	AVG
35	15.5867	29.01	19.90	48.91	60.00	-11.09	QP
36	15.5867	18.35	19.90	38.25	50.00	-11.75	AVG

Remark:

Result = Reading +Correct

Margin = Result - Limit

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 120V/60Hz	Humidity:	60%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 15, 2019



26	0.3209	16.98	19.67	36.65	49.68	-13.03	AVG
27	0.3364	29.99	19.67	49.66	59.29	-9.63	QP
28	0.3364	14.96	19.67	34.63	49.29	-14.66	AVG
29	0.3484	28.10	19.67	47.77	59.00	-11.23	QP
30	0.3484	14.27	19.67	33.94	49.00	-15.06	AVG
31	0.3938	27.24	19.67	46.91	57.98	-11.07	QP
32	0.3938	14.63	19.67	34.30	47.98	-13.68	AVG
33	0.4043	28.13	19.67	47.80	57.76	-9.96	QP
34	0.4043	13.64	19.67	33.31	47.76	-14.45	AVG
35	0.4244	30.15	19.67	49.82	57.36	-7.54	QP
36	0.4244	14.69	19.67	34.36	47.36	-13.00	AVG
37	0.4407	29.77	19.67	49.44	57.05	-7.61	QP
38	0.4407	14.87	19.67	34.54	47.05	-12.51	AVG
39	0.4546	29.22	19.67	48.89	56.79	-7.90	QP
40	0.4546	15.58	19.67	35.25	46.79	-11.54	AVG
41	0.4747	27.85	19.67	47.52	56.43	-8.91	QP
42	0.4747	14.19	19.67	33.86	46.43	-12.57	AVG
43	0.4925	25.95	19.67	45.62	56.13	-10.51	QP
44	0.4925	13.57	19.67	33.24	46.13	-12.89	AVG
45	0.5645	26.47	19.67	46.14	56.00	-9.86	QP
46	0.5645	13.51	19.67	33.18	46.00	-12.82	AVG
47	0.5743	26.45	19.67	46.12	56.00	-9.88	QP
48	0.5743	13.24	19.67	32.91	46.00	-13.09	AVG
49	0.5947	26.77	19.67	46.44	56.00	-9.56	QP
50	0.5947	13.48	19.67	33.15	46.00	-12.85	AVG
51	0.6114	26.10	19.67	45.77	56.00	-10.23	QP
52	0.6114	12.46	19.67	32.13	46.00	-13.87	AVG
53	0.6500	26.33	19.67	46.00	56.00	-10.00	QP
54	0.6500	13.34	19.67	33.01	46.00	-12.99	AVG
55	0.6628	25.42	19.67	45.09	56.00	-10.91	QP
56	0.6628	12.71	19.67	32.38	46.00	-13.62	AVG
57	0.7019	25.20	19.68	44.88	56.00	-11.12	QP
58	0.7019	12.02	19.68	31.70	46.00	-14.30	AVG
59	0.7823	25.68	19.68	45.36	56.00	-10.64	QP
60	0.7823	12.76	19.68	32.44	46.00	-13.56	AVG
61	0.9759	24.42	19.68	44.10	56.00	-11.90	QP
62	0.9759	12.62	19.68	32.30	46.00	-13.70	AVG
63	1.1196	24.50	19.68	44.18	56.00	-11.82	QP
64	1.1196	13.14	19.68	32.82	46.00	-13.18	AVG
65	1.3080	23.21	19.68	42.89	56.00	-13.11	QP
66	1.3080	12.84	19.68	32.52	46.00	-13.48	AVG
67	1.4741	23.71	19.68	43.39	56.00	-12.61	QP
68	1.4741	12.89	19.68	32.57	46.00	-13.43	AVG
69	1.6802	21.79	19.69	41.48	56.00	-14.52	QP
70	1.6802	12.70	19.69	32.39	46.00	-13.61	AVG
71	1.7959	22.54	19.69	42.23	56.00	-13.77	QP
72	1.7959	12.70	19.69	32.39	46.00	-13.61	AVG
73	2.0584	20.90	19.69	40.59	56.00	-15.41	QP
74	2.0584	13.12	19.69	32.81	46.00	-13.19	AVG
75	2.3131	21.92	19.69	41.61	56.00	-14.39	QP
76	2.3131	13.01	19.69	32.70	46.00	-13.30	AVG
77	2.5211	21.67	19.70	41.37	56.00	-14.63	QP
78	2.5211	12.94	19.70	32.64	46.00	-13.36	AVG
79	2.9572	20.35	19.71	40.06	56.00	-15.94	QP
80	2.9572	12.63	19.71	32.34	46.00	-13.66	AVG

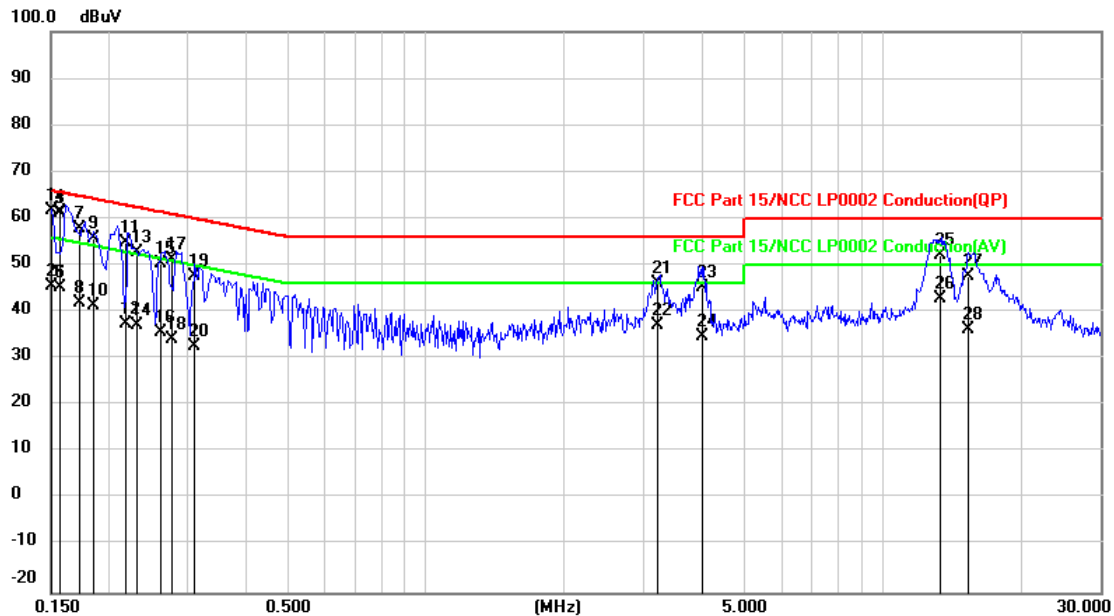
81	3.2176	26.43	19.72	46.15	56.00	-9.85	QP
82	3.2176	18.55	19.72	38.27	46.00	-7.73	AVG
83	4.0288	25.85	19.73	45.58	56.00	-10.42	QP
84	4.0288	16.70	19.73	36.43	46.00	-9.57	AVG
85	13.2863	31.72	19.83	51.55	60.00	-8.45	QP
86	13.2863	21.85	19.83	41.68	50.00	-8.32	AVG
87	15.5653	29.83	19.83	49.66	60.00	-10.34	QP
88	15.5653	19.71	19.83	39.54	50.00	-10.46	AVG
89	16.5937	25.72	19.84	45.56	60.00	-14.44	QP
90	16.5937	18.70	19.84	38.54	50.00	-11.46	AVG

Remark:

Result = Reading +Correct

Margin = Result - Limit

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 120V/60Hz	Humidity:	60%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 15, 2019

Phase: Neutral

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1512	42.15	19.68	61.83	65.93	-4.10	QP
2	0.1512	25.85	19.68	45.53	55.93	-10.40	AVG
3	0.1570	41.62	19.68	61.30	65.62	-4.32	QP
4	0.1570	41.64	19.68	61.32	65.62	-4.30	QP
5	0.1570	25.56	19.68	45.24	55.62	-10.38	AVG
6	0.1570	25.60	19.68	45.28	55.62	-10.34	AVG
7	0.1731	38.11	19.68	57.79	64.81	-7.02	QP
8	0.1731	22.18	19.68	41.86	54.81	-12.95	AVG
9	0.1853	35.95	19.68	55.63	64.24	-8.61	QP
10	0.1853	21.74	19.68	41.42	54.24	-12.82	AVG
11	0.2180	35.25	19.68	54.93	62.89	-7.96	QP
12	0.2180	17.63	19.68	37.31	52.89	-15.58	AVG
13	0.2331	33.01	19.68	52.69	62.34	-9.65	QP
14	0.2331	17.42	19.68	37.10	52.34	-15.24	AVG
15	0.2611	30.80	19.68	50.48	61.40	-10.92	QP
16	0.2611	15.86	19.68	35.54	51.40	-15.86	AVG
17	0.2773	31.42	19.68	51.10	60.90	-9.80	QP
18	0.2773	14.51	19.68	34.19	50.90	-16.71	AVG
19	0.3110	28.12	19.67	47.79	59.94	-12.15	QP
20	0.3110	13.02	19.67	32.69	49.94	-17.25	AVG
21	3.2174	26.33	19.72	46.05	56.00	-9.95	QP
22	3.2174	17.37	19.72	37.09	46.00	-8.91	AVG
23	4.0136	25.61	19.74	45.35	56.00	-10.65	QP
24	4.0136	15.11	19.74	34.85	46.00	-11.15	AVG

25	13.4039	32.42	19.88	52.30	60.00	-7.70	QP
26	13.4039	22.92	19.88	42.80	50.00	-7.20	AVG
27	15.4223	27.66	19.90	47.56	60.00	-12.44	QP
28	15.4223	16.30	19.90	36.20	50.00	-13.80	AVG

Remark:

Result = Reading +Correct

Margin = Result - Limit

6.2. Radiated Disturbance Measurement (below 1G)

6.2.1. Limits of radiated disturbance measurement

FREQUENCY (MHz)	<input checked="" type="checkbox"/> Class A	<input type="checkbox"/> Class B
	<input checked="" type="checkbox"/> At 3m	
	(microvolts/meter)	
30 – 88	90 (*)	100
88 – 216	150 (*)	150
216 – 960	210 (*)	200
960 – 1000	300 (*)	500

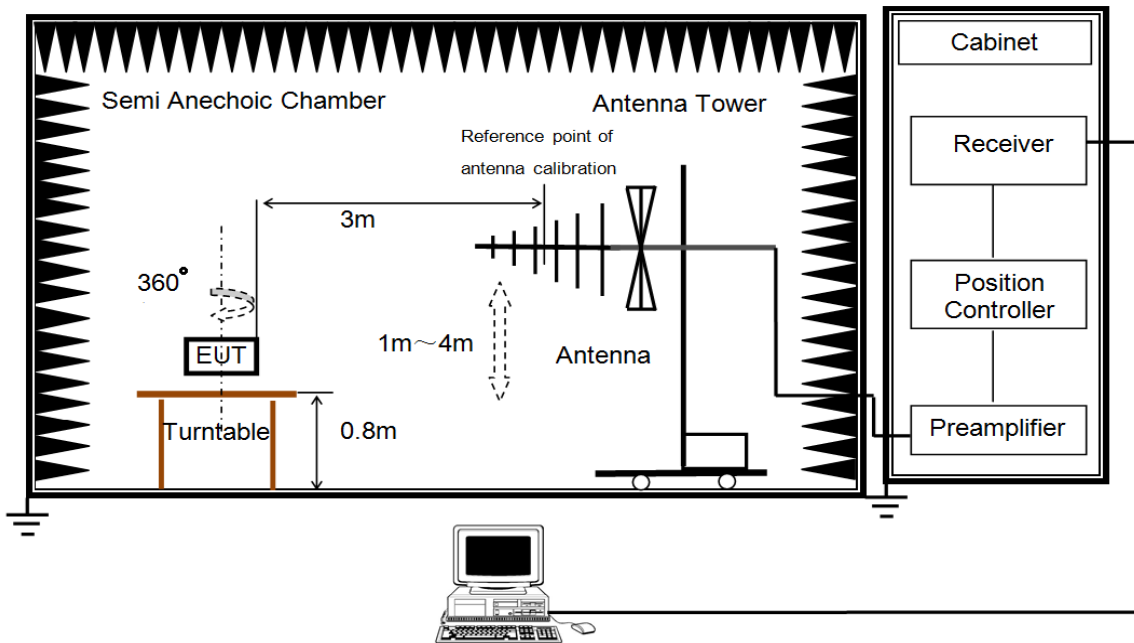
NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBμV/m)=20*log Emission level (uV/m).
- (3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor,
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use),
Margin Level = Measurement Value - Limit Value.
- (4) (*) 10m limit for Class A device
For Class A device test distance at 3 meter, the limit shall be relax and calculate in dBuV
 $L_3 = L_{10} + 20 \cdot \log(10/3)$

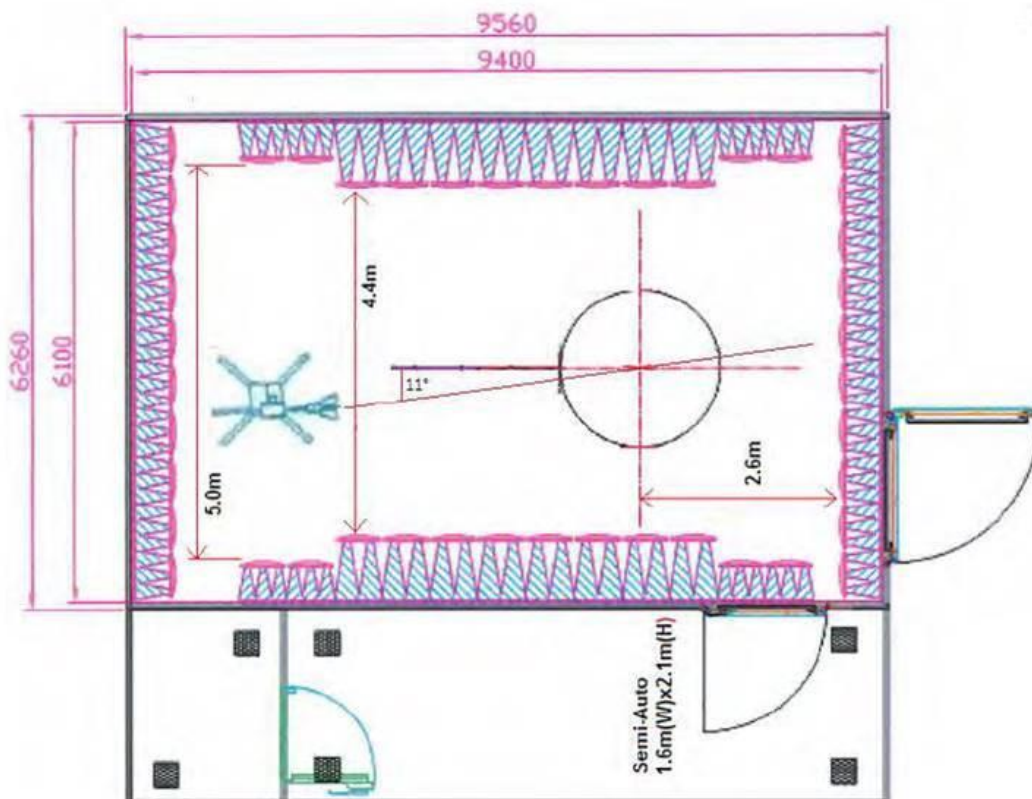
6.2.2. Test Procedure

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item: EUT Test Photos.

6.2.3. Test Setup

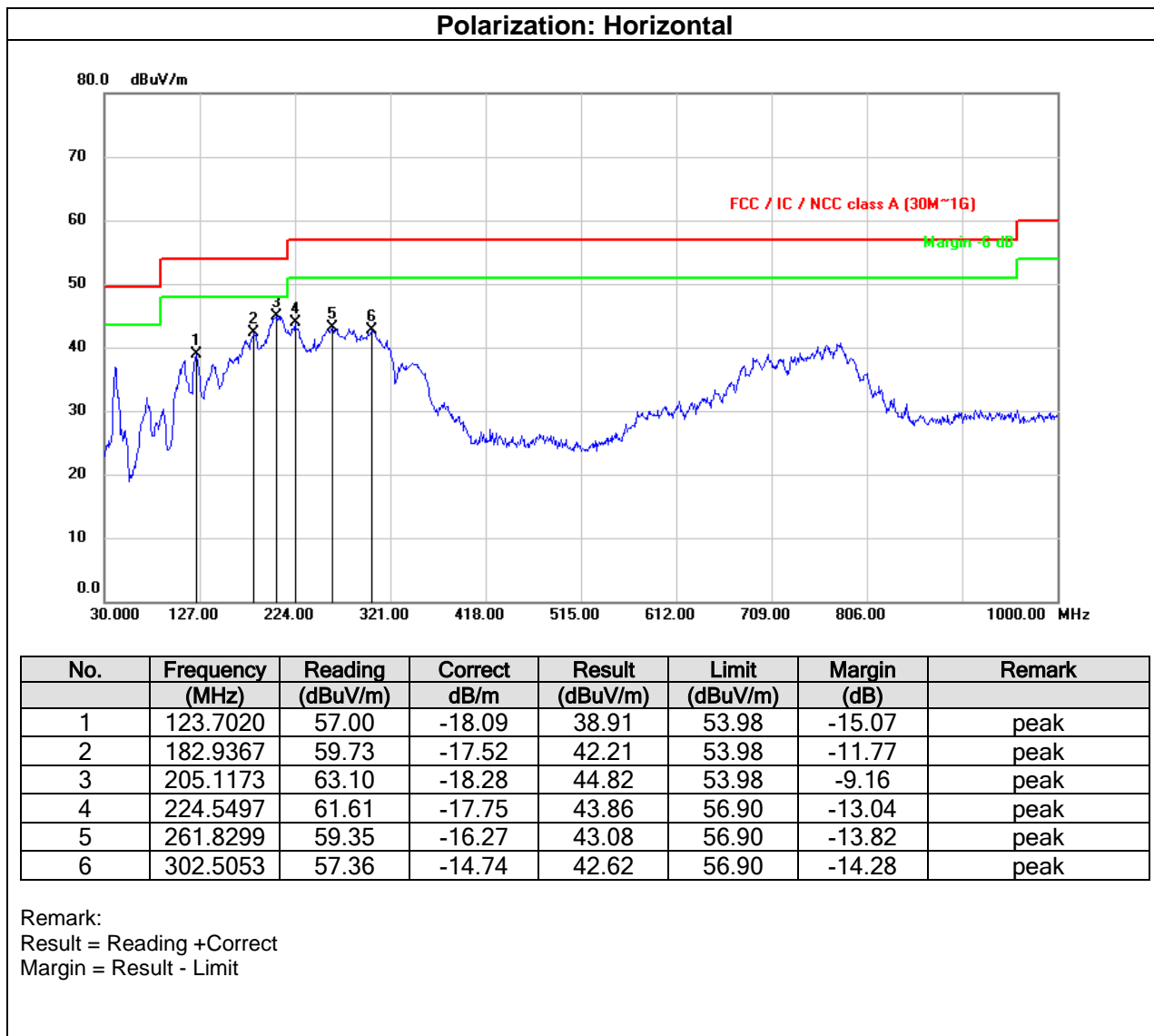


For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

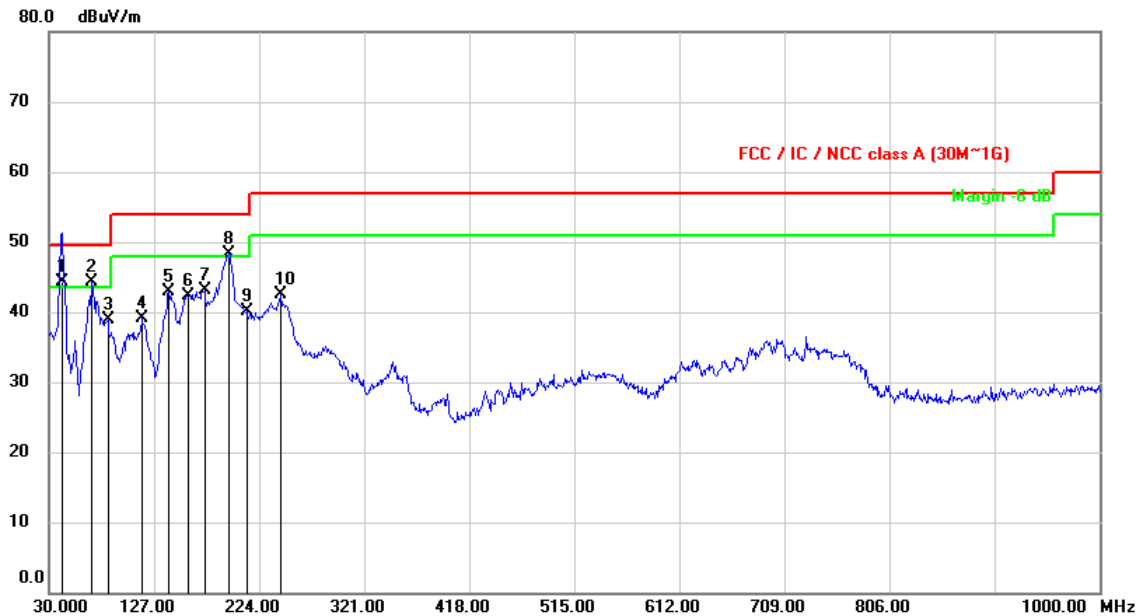


6.2.4. Test Result

Test Mode:	Mode 1	Temperature:	25°C
Test Voltage:	AC 120V/60Hz	Humidity:	52%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 10, 2019



Test Mode:	Mode 1	Temperature:	25°C
Test Voltage:	AC 120V/60Hz	Humidity:	52%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 10, 2019

Polarization: Vertical

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.7047	60.46	-16.16	44.30	49.50	-5.20	QP
2	70.5136	62.86	-18.48	44.38	49.50	-5.12	peak
3	85.1607	60.12	-21.31	38.81	49.50	-10.69	peak
4	116.2977	57.80	-18.77	39.03	53.98	-14.95	peak
5	140.8387	59.12	-16.31	42.81	53.98	-11.17	peak
6	159.0747	58.32	-15.99	42.33	53.98	-11.65	peak
7	173.5922	59.61	-16.48	43.13	53.98	-10.85	peak
8	196.6137	66.67	-18.31	48.36	53.98	-5.62	peak
9	212.7157	58.20	-18.14	40.06	53.98	-13.92	peak
10	244.6610	59.24	-16.78	42.46	56.90	-14.44	peak

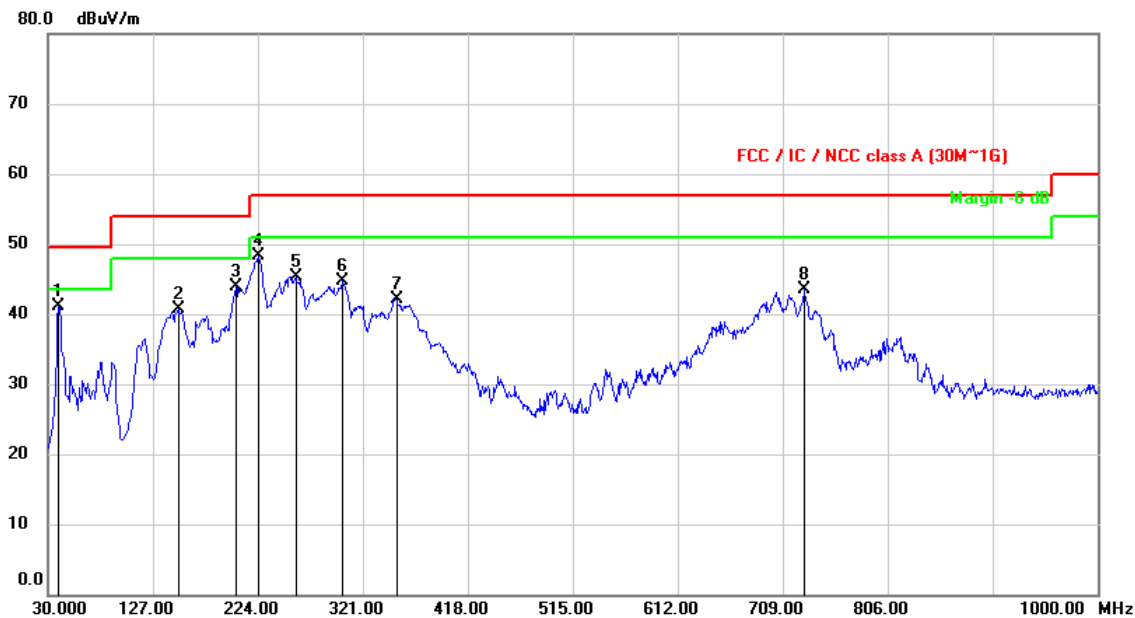
Remark:

Result = Reading +Correct

Margin = Result - Limit

Test Mode:	Mode 2	Temperature:	25°C
Test Voltage:	AC 120V/60Hz	Humidity:	52%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 10, 2019

Polarization: Horizontal

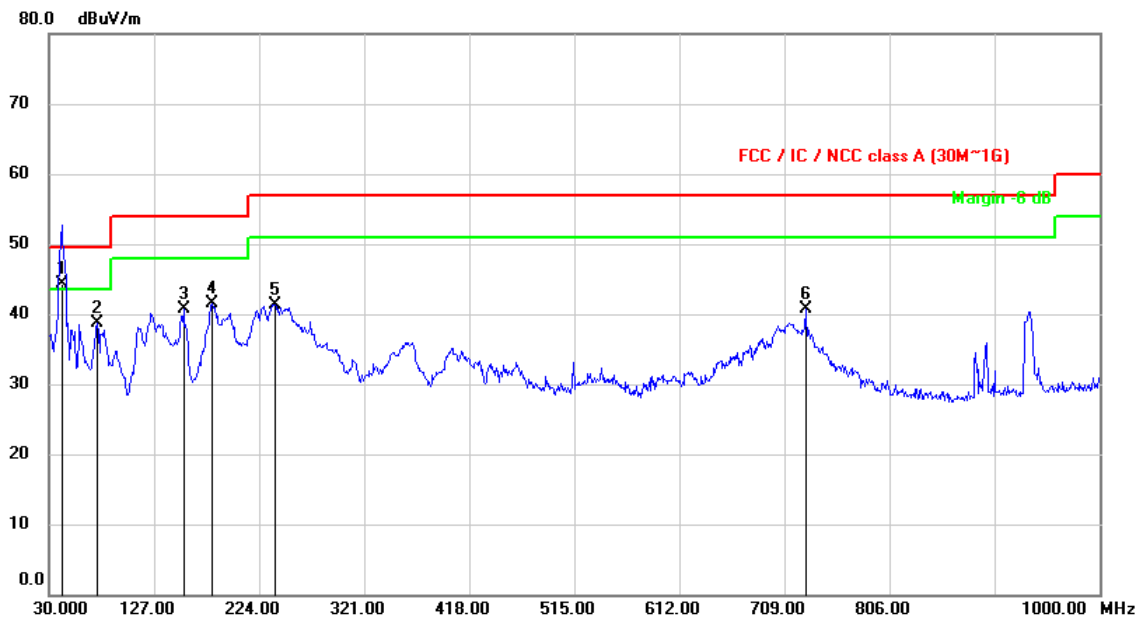


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	40.5730	57.32	-16.26	41.06	49.50	-8.44	peak
2	150.3770	56.91	-16.12	40.79	53.98	-13.19	peak
3	204.3736	62.11	-18.29	43.82	53.98	-10.16	peak
4	224.1616	66.01	-17.76	48.25	56.90	-8.65	peak
5	259.2110	61.73	-16.39	45.34	56.90	-11.56	peak
6	302.3759	59.42	-14.74	44.68	56.90	-12.22	peak
7	352.6865	55.60	-13.48	42.12	56.90	-14.78	peak
8	729.3376	48.52	-5.07	43.45	56.90	-13.45	peak

Remark:
Result = Reading +Correct
Margin = Result - Limit

Test Mode:	Mode 2	Temperature:	25°C
Test Voltage:	AC 120V/60Hz	Humidity:	52%RH
Tested By:	Eric T. Fan	Test Date:	Jul. 10, 2019

Polarization: Vertical



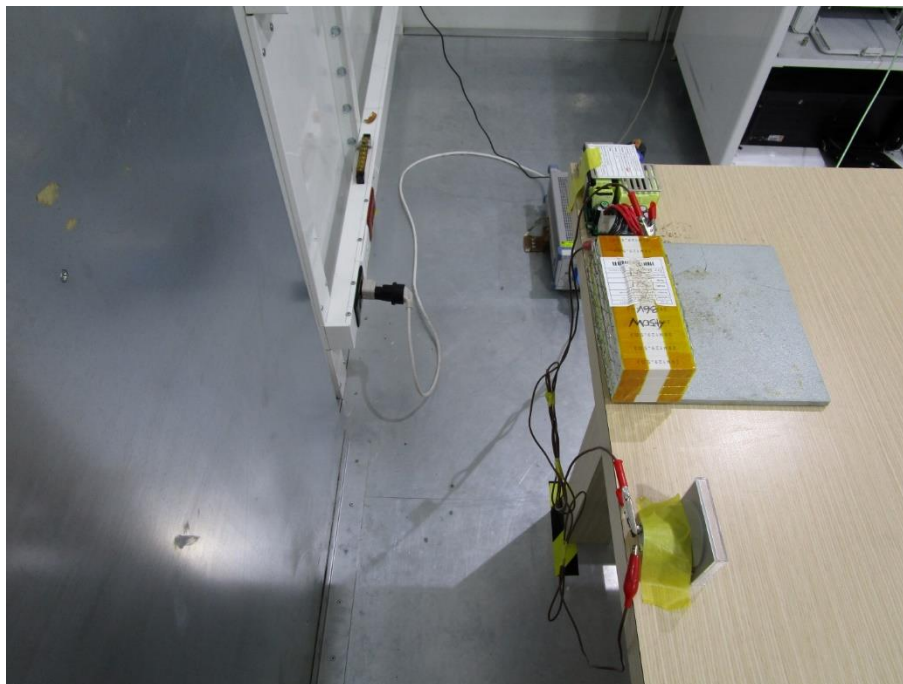
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	42.5130	65.64	-21.24	44.40	49.50	-5.10	QP
2	75.0727	63.23	-24.62	38.61	49.50	-10.89	peak
3	154.6127	61.93	-21.21	40.72	53.98	-13.26	peak
4	181.1260	63.94	-22.49	41.45	53.98	-12.53	peak
5	238.6147	63.50	-22.12	41.38	56.90	-15.52	peak
6	728.4323	51.06	-10.34	40.72	56.90	-16.18	peak

Remark:
Result = Reading +Correct
Margin = Result - Limit

Appendix I: Photographs of Test Configuration

Conducted Emission

Mode 1

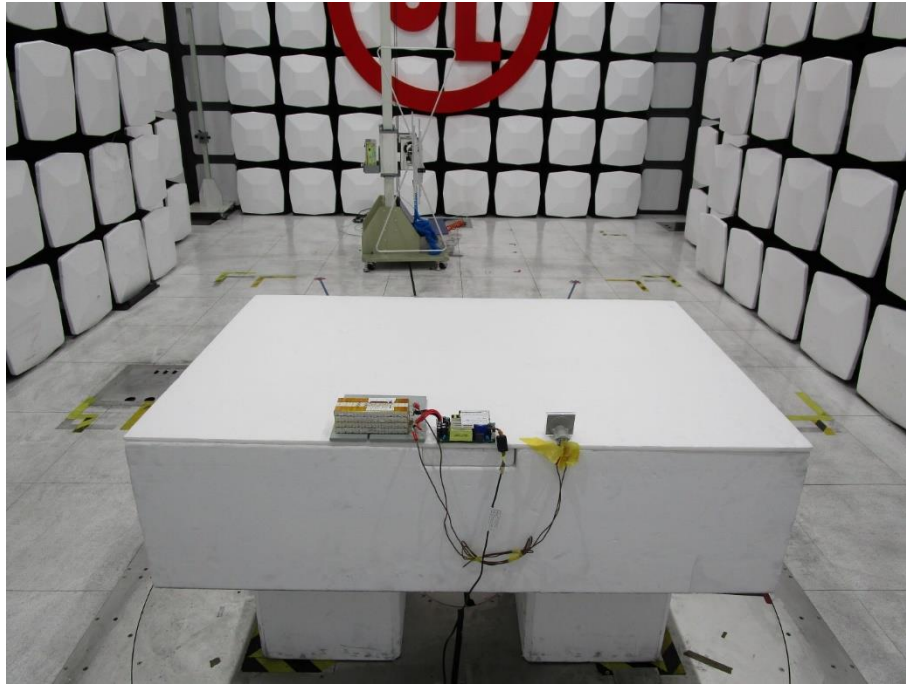


Mode 2

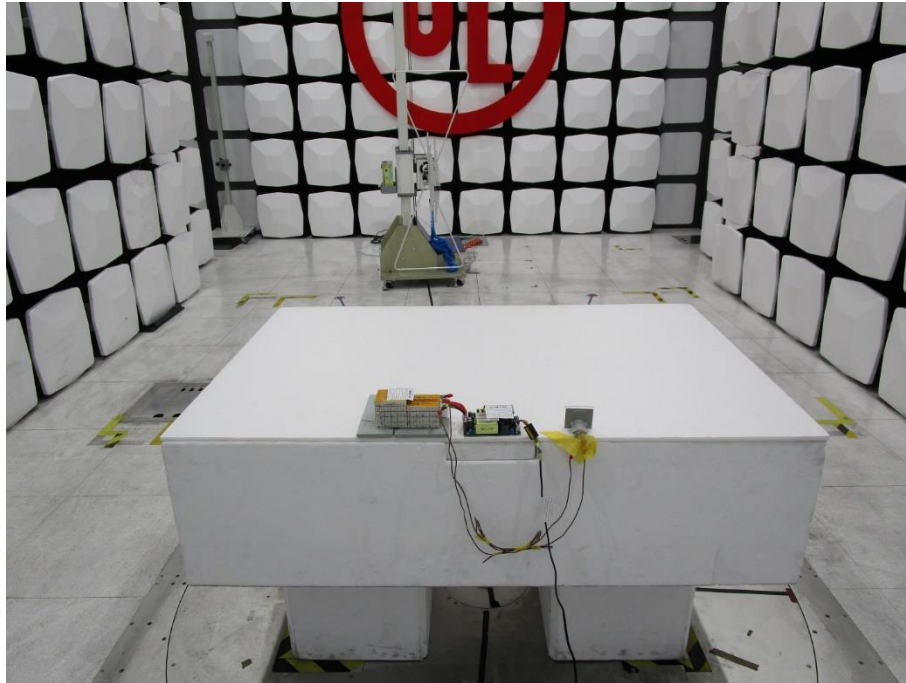


Radiated Emission

Below 1G/ Mode 1



Below 1G/ Mode 2



Appendix II: Photographs of the EUT

Please see the photographs of EUT in the test report no.: 4789043511-EP.

END OF REPORT