



**TEST REPORT**

**FOR**

**Internal Power, AC to DC**

**MODEL : TPP 180-124A-M**

**SERIES MODEL : Refer to item 5.1 for more details.**

**REPORT NUMBER: 4789855728A-EN-E0-V0**

**ISSUE DATE: Jun. 4, 2021**

**Prepared for**

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**Testing Laboratory**

**3398**

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### Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	Jun. 4, 2021	Initial Issue	Cindy Hsin

Summary of Test Results				
EMISSION				
Standard	Test Item	Limit	Result	Remark
EN 55032:2015 +AC:2016	Conducted disturbance at mains terminals ports	Class B (Note 3)	PASS	N/A
	Conducted common mode (asymmetric mode) disturbance telecommunication ports	Class B	N/A	Note 1
	Radiated disturbance below 1GHz	Class A (Note 3)	PASS	Note 4
	Radiated disturbance above 1GHz	Class B	N/A	Note 2
EN 61000-3-2 : 2014	Harmonic current disturbance	Class D	PASS	Note 4
EN 61000-3-3 : 2013	Voltage Fluctuations & Flicker	Refer to 6.5.1	PASS	Note 4

**Note 1:** Since the EUT does not contain asymmetric port, the test is unnecessary.

**Note 2:** Since the highest frequency of EUT is less than 108 MHz, the measurement above 1GHz is unnecessary.

**Note 3:** The test performed of laboratory was according to the client requirements.

**Note 4:** Please refer to original report no.: 4789548226A-EN-E0-V0.

Summary of Test Results (EN 55024)					
IMMUNITY					
Basic Standard	Test Item	Class / Severity	Require Performance Criteria	Result	Remark
IEC 61000-4-2: 2008 EN 61000-4-2: 2009	Electrostatic discharge immunity	Contact ±4 kV Air ±8 kV	B	PASS	
IEC 61000-4-3: 2006+A1: 2007+A2: 2010 EN 61000-4-3: 2006+A1: 2008+A2: 2010	Radiated, radio frequency electromagnetic field immunity	3V/m 80%, 1kHz, AM	A	PASS	
IEC 61000-4-4: 2012 EN 61000-4-4: 2012	Electrical fast transient/burst immunity	1kV(AC Mains) 5/50ns, 5kHz	B	PASS	Note 6
		0.5kV(DC port) 5/50ns, 5kHz	B	N/A (Note 4)	
		0.5kV(Signal Lines) 5/50ns, 5kHz or 100kHz (Note 3)	B	N/A (Note 5)	
IEC 61000-4-5: 2014 + A1: 2017 EN 61000-4-5: 2014	Surge immunity	AC Mains 2.0kV(Common) 1.0kV(Differential) 1.2/50us	B	PASS	
		DC power port 0.5kV Line to ground 1.2/50us	B	N/A (Note 4)	
		Signal port 1.0kV(w/o primary protector) 4.0kV(w primary protector) 1.2/50us or 10/700us (Note 1)	C	N/A (Note 5)	
IEC 61000-4-6: 2013+ COR1: 2015 EN 61000-4-6: 2014 + AC: 2015	Immunity to conducted disturbances, induced by radio-frequency fields	AC Mains 3V (e.m.f), 80%, 1kHz Amp. Mod. (Note 2)	A	PASS	
		DC power port 3V (e.m.f), 80%, 1kHz Amp. Mod (Note 2)	A	N/A (Note 4)	
		Signal line 3V (e.m.f), 80%, 1kHz Amp. Mod. (Note 2)	A	N/A (Note 5)	
IEC 61000-4-8: 2009 EN 61000-4-8: 2010	Power frequency magnetic field immunity	50Hz, 1.00A/m(r.m.s)	A	PASS	

Summary of Test Results (EN 55024)					
IMMUNITY					
Basic Standard	Test Item	Class / Severity	Require Performance Criteria	Result	Remark
IEC 61000-4-11: 2014+ A1:2017 EN 61000-4-11: 2004	Voltage dips, short interruptions and voltage variations immunity	Voltage dips, >95% reduction with 0.5 period	B	PASS	Note 6
		Voltage dips, 30% reduction with 25 periods	C		
		Voltage interruptions >95% reduction with 250 periods	C		

**Note 1:** Where the coupling network for the 10/700  $\mu$ s waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20)  $\mu$ s waveform and appropriate coupling network.

**Note 2:** The frequency range is scanned as specified. However, when specified in EN 55024 Annex A, an additional comprehensive functional test shall be carried out at a limited number of frequencies. The selected frequencies for conducted tests are: 0,2; 1; 7,1; 13,56; 21; 27,12 and 40,68 MHz ( $\pm 1$  %).

**Note 3:** For xDSL equipment, the repetition frequency for EFT testing shall be 100 kHz .

**Note 4:** Since the EUT does not contain DC power port, the test is unnecessary.

**Note 5:** Since the EUT does not contain signal port, the test is unnecessary.

**Note 6:** Please refer to original report no.: 4789548226A-EN-E0-V0.

Summary of Test Results (EN 55035)					
IMMUNITY					
Basic Standard	Test Item	Class / Severity	Require Performance Criteria	Result	Remark
IEC 61000-4-2: 2008 EN 61000-4-2: 2009	Electrostatic discharge immunity	Contact ±4 kV Air ±8 kV	B	PASS	Note 6
IEC 61000-4-3: 2006+ A1: 2007+A2: 2010 EN 61000-4-3: 2006+ A1: 2008+A2: 2010	Continuous RF electromagnetic field disturbances, swept test	80-1000MHz 3V/m 80%, 1kHz, AM	A	PASS	
	Continuous RF electromagnetic field disturbances, spot test	1800 ;2600 ;3500 5000 MHz (±1%) 3V/m 80%, 1kHz, AM (Note 2)	A	PASS	
	immunity levels to common wireless communication devices	Refer to Table I.1	A	PASS	
IEC 61000-4-4: 2012 EN 61000-4-4: 2012	Electrical fast transient/burst immunity	1kV(AC Mains) 5/50ns, 5kHz	B	PASS	
		0.5kV(DC power port) 5/50ns, 5kHz	B	N/A (Note 4)	
		0.5kV(Signal Lines) 5/50ns, 5kHz or 100kHz (Note 3)	B	N/A (Note 5)	
IEC 61000-4-5: 2014 + A1: 2017 EN 61000-4-5: 2014	Surge immunity	AC Mains 2.0kV(Common) 1.0kV(Differential) 1.2/50us	B	PASS	
		DC power port 0.5kV Line to ground 1.2/50us	B	N/A (Note 4)	
		Signal port 1.0kV (w/o primary protector) 4.0kV (w primary protector) 1.2/50us or 10/700us 0.5kV Coaxial or shielded to ground 1.2/50 (8/20) us (Note 1)	C	N/A (Note 5)	

Summary of Test Results (EN 55035)					
IMMUNITY					
Basic Standard	Test Item	Class / Severity	Require Performance Criteria	Result	Remark
IEC 61000-4-6: 2013+ COR1: 2015 EN 61000-4-6: 2014 + AC: 2015	Continuous induced RF disturbances	AC Mains 0.15~10MHz, 3V 10~30MHz, 3~1V 30~80MHz, 1V with 1kHz 80% AM (Note 2)	A	PASS	Note 6
		DC Ports 0.15~10MHz, 3V 10~30MHz, 3~1V 30~80MHz, 1V with 1kHz 80% AM (Note 2)	A	N/A (Note 4)	
		Signal Line 0.15~10MHz, 3V 10~30MHz, 3~1V 30~80MHz, 1V with 1kHz 80% AM (Note 2)	A	N/A (Note 5)	
IEC 61000-4-8: 2009 EN 61000-4-8: 2010	Power frequency magnetic field immunity	50 or 60Hz, 1.00A/m(r.m.s)	A	PASS	
IEC 61000-4-11: 2014+ A1:2017 EN 61000-4-11: 2004	Voltage dips, short interruptions and voltage variations immunity	Voltage dips, <5% residual with 0.5cycles	B	PASS	
		Voltage dips, 70% residual with 25 cycles	C		
		Voltage interruptions, <5% residual with 250 cycles	C		

**Note 1:** Where the coupling network for the 10/700 μs waveform affects the functioning of high speed data ports, the test shall be carried out using a 1,2/50 (8/20) μs waveform and appropriate coupling network.

**Note 2:** The frequency range is scanned as specified. However, when specified in EN 55035 , an additional EUT contains telephony functional test shall be carried out at a limited number of frequencies. The selected frequencies for conducted immunity tests are: 0,2; 1; 7,1; 13,56; 21; 27,12 and 40,68 MHz (±1 %) and radiated immunity tests are 80; 120; 160; 230; 434; 460; 600; 863 and 900MHz (±1 %).

**Note 3:** For xDSL equipment, the repetition frequency for EFT testing shall be 100 kHz .

**Note 4:** Since the EUT does not contain DC power port, the test is unnecessary.

**Note 5:** Since the EUT does not contain signal port, the test is unnecessary.

**Note 6:** Please refer to original report no.: 4789548226A-EN-E0-V0.

**Table I.1 – Guidance on the selection of immunity levels to common wireless communication devices**

Table clause	Approximate protection distance (m)	Calculated RF field strength in V/m for frequencies and protection distances simulating different radio transmission types, assuming a given ERP						
		LTE/UMTS (0,2 W)	GSM		WiMAX/3 G (1,26 W)	WiMAX (1,26 W)	Wi-Fi (1 W)	Maximum RF field strength at any frequency
			(2 W)	(1 W)				
		800 MHz	900 MHz	1,8 GHz	2,6 GHz	3,5 GHz	5 GHz	
I.1.1	3,0	0,6	1,8	1,3	1,5	1,5	1,3	3
I.1.2	1,5	1,2	3,7	2,6	2,9	2,9	2,6	4
I.1.3	1,0	1,7	5,5	3,9	4,4	4,4	3,9	6
I.1.4	0,5	3,3	10,5	10,5	11,8	11,8	10,5	12
I.1.5	0,2	8,3	26,4	26,4	29,6	29,6	26,4	30

The protection distance is not the test distance as defined in IEC 61000-4-3:2006/AMD1:2007/AMD2:2010, but the shortest expected operating distance between the EUT and the interfering wireless communication device at which the immunity performance criteria will be satisfied.

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS</b>	<b>11</b>
<b>2. TEST METHODOLOGY</b>	<b>12</b>
<b>3. FACILITIES AND ACCREDITATION</b>	<b>12</b>
<b>4. CALIBRATION AND UNCERTAINTY</b>	<b>13</b>
4.1. Measuring Instrument Calibration	13
4.2. Measurement Uncertainty	13
<b>5. EQUIPMENT UNDER TEST</b>	<b>15</b>
5.1. Description of EUT	15
5.2. Test Mode	18
5.3. EUT Operation Test Setup	19
5.4. Monitoring of EUT for All Immunity Test	19
5.5. Accessory	19
5.6. Block diagram showing the configuration of system tested	20
5.7. Description of support units	21
5.8. Measuring Instrument List	22
<b>6. EMISSION TEST</b>	<b>25</b>
6.1. Conducted Disturbance Measurement	25
6.1.1. Limits of conducted disturbance voltage and common mode disturbance	25
6.1.2. Test Procedure	26
6.1.3. Test Setup	26
6.1.4. Test Result	27
6.2. Radiated Disturbance Measurement(below 1GHz)	31
6.2.1. Limits of radiated disturbance measurement	31
6.2.2. Test Procedure	32
6.2.3. Test Setup	32
6.2.4. Test Result	34
6.3. Harmonic Current Disturbance Measurement	36
6.3.1. Limits of Harmonic Current	36
6.3.2. Test Procedure	37
6.3.3. Test Setup	37
6.3.4. Test Condition	37
6.3.5. Test Result	38
6.4. Voltage Fluctuation and Flick Measurement	41
6.4.1. Limits of Voltage Fluctuation and Flick	41
6.4.2. Test Procedure	42
6.4.3. Test Setup	42
6.4.4. Test Condition	42
6.4.5. Test Result	43

<b>7. IMMUNITY TEST</b> .....	<b>44</b>
7.1. Performance Criteria.....	44
7.2. Electrostatic Discharge Immunity Test.....	45
7.2.1. Test Specification .....	45
7.2.2. Test Procedure.....	45
7.2.3. Test Setup.....	46
7.2.4. Test Result .....	47
7.3. Radio Frequency Electromagnetic Field Immunity Test.....	53
7.3.1. Test Specification .....	53
7.3.2. Test Procedure.....	54
7.3.3. Test Setup .....	55
7.3.4. Test Result .....	56
7.4. Electrical Fast Transient/Burst Immunity Test.....	59
7.4.1. Test Specification .....	59
7.4.2. Test Procedure.....	59
7.4.3. Test Setup.....	60
7.4.4. Test Result .....	61
7.5. Surge Immunity Test.....	63
7.5.1. Test Specification .....	63
7.5.2. Test Procedure.....	63
7.5.3. Test Setup .....	64
7.5.4. Test Result .....	65
7.6. Immunity to Conducted Disturbances Induced by RF Fields .....	68
7.6.1. Test Specification .....	68
7.6.2. Test Procedure.....	68
7.6.3. Test Setup .....	69
7.6.4. Test Result .....	70
7.7. Power frequency magnetic field immunity Test.....	72
7.7.1. Test Specification .....	72
7.7.2. Test Procedure.....	72
7.7.3. Test Setup .....	73
7.7.4. Test Results .....	74
7.8. Voltage Dips and Short Interruptions Immunity Test.....	76
7.8.1. Test Specification .....	76
7.8.2. Test Procedure.....	76
7.8.3. Test Setup .....	77
7.8.4. Test Result .....	78
<b>Appendix I: Photographs of EMC Test Configuration</b> .....	<b>82</b>
<b>Appendix II: Photographs of the EUT</b> .....	<b>90</b>
<b>Appendix III: Preliminary Test Raw Data</b> .....	<b>91</b>
<b>Annex : Additional test request by client.</b> .....	<b>126</b>

## 1. ATTESTATION OF TEST RESULTS

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

**MANUFACTURER:** TRACO ELECTRONIC AG  
Sihlbruggstrasse 111 CH-6340 Baar Switzerland

**EUT DESCRIPTION:** Internal Power, AC to DC

**MODEL:** TPP 180-124A-M

**SERIES MODEL :** Refer to item 5.1 for more details.

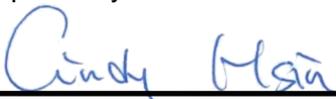
**DATE of TESTED:** May 18, 2020 ~ Jul. 13, 2020

APPLICABLE STANDARDS	
STANDARDS	TEST RESULTS
EN 55032 :2015 +AC :2016 EN 55024: 2010+A1: 2015 EN 55035: 2017 EN 61000-3-2: 2014 EN 61000-3-3: 2013	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 Date : Jun. 4, 2021  
Project Handler

Approved and Authorized By:



Roy Chen Date : Jun. 4, 2021  
Operations Manager

## 2. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented in EN 55032, EN 55024, EN55035, EN 61000-3-2 and EN 61000-3-3.

## 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  $k=2$ .

Electromagnetic interference:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	1.5
966-1 Test Site			
Radiated disturbance below 1 GHz	30MHz ~ 1000MHz	2	5.7

Test Item	K	Voltage(%)	Current(%)
Harmonic&Flicker	2	0.1	0.15

Electromagnetic sensitivity:

Test Item	Measurement Frequency Range	K	U(dB)
Radiated, radio frequency electromagnetic field immunity	80MHz ~ 6000MHz	2	1.9
Immunity to conducted disturbances, induced by radio-frequency fields (CDN)	0.15MHz ~ 80MHz	2	2.4

Test Item	K	Voltage(%)	Rise Time(%)	First Peak Current (%)	Current @ 30ns (%)	Current @ 60ns (%)
Electrostatic discharge immunity	2	2.6	6.9	3.9	4.0	4.0

Test Item	K	Peak Voltage(%)	Rise Time(%)	Pulse width(%)	Burst duration & Period (%)	Repetition rate (%)
Electrical fast transient/burst immunity	2	1.0	2.4	5.1	0.74	0.22

Test Item	K	Phase Shifting (%)	Voltage (%)	Current (%)	Front Time & Duration(For waveform of the surge voltage)(%)	Front Time & Duration(For waveform of the surge current)(%)
Surge immunity	2	0.31	3.6	2.7	1.5	5.9

Test Item	K	Magnetic field Strength(%)	Current (mA/A)
Power Frequency Magnetic Field Immunity Test	2	1.0	31

Test Item	K	Voltage(%)	Time (%)	Phase Angle (%)
Voltage dips, short interruptions and voltage variations immunity	2	1.8	6.5	2.4

## 5. EQUIPMENT UNDER TEST

### 5.1. Description of EUT

<b>EUT Name:</b>	Internal Power, AC to DC
<b>Model:</b>	TPP 180-124A-M
<b>Series Model:</b>	TPP 180-112BA-M, TPP 180-112B-M, TPP 180-112A-M, TPP 180-112-M, TPP 180-115BA-M, TPP 180-115B-M, TPP 180-115A-M, TPP 180-115-M, TPP 180-118BA-M, TPP 180-118B-M, TPP 180-118A-M, TPP 180-118-M, TPP 180-124BA-M, TPP 180-124B-M, TPP 180-124A-M, TPP 180-124-M, TPP 180-128BA-M, TPP 180-128B-M, TPP 180-128A-M, TPP 180-128-M, TPP 180-136BA-M, TPP 180-136B-M, TPP 180-136A-M, TPP 180-136-M, TPP 180-148BA-M, TPP 180-148B-M, TPP 180-148A-M, TPP 180-148-M, TPP 180-153BA-M, TPP 180-153B-M, TPP 180-153A-M, TPP 180-153-M, TPI 180-112BA-M, TPI 180-112B-M, TPI 180-112A-M, TPI 180-112-M, TPI 180-115BA-M, TPI 180-115B-M, TPI 180-115A-M, TPI 180-115-M, TPI 180-118BA-M, TPI 180-118B-M, TPI 180-118A-M, TPI 180-118-M, TPI 180-124BA-M, TPI 180-124B-M, TPI 180-124A-M, TPI 180-124-M, TPI 180-128BA-M, TPI 180-128B-M, TPI 180-128A-M, TPI 180-128-M, TPI 180-136BA-M, TPI 180-136B-M, TPI 180-136A-M, TPI 180-136-M, TPI 180-148BA-M, TPI 180-148B-M, TPI 180-148A-M, TPI 180-148-M, TPI 180-153BA-M, TPI 180-153B-M, TPI 180-153A-M, TPI 180-153-M
<b>Power Rating:</b>	From AC power
<b>Highest Frequency within EUT:</b>	Less than 108MHz
<b>Condition of EUT:</b>	Pre-Production
<b>Date Of Receipt Of Sample:</b>	May 18, 2020

Note :

1. This report was issued base on original report which report number is 4789548226A-EN-E0-V0, the differences were only change models' name and the applicant. There is no additional test shall be verified. For the test data, copied from original report 4789548226A-EN-E0-V0 show on this report.

2. The models difference table as below:

Model Number	Input Voltage Range (Vac)	Output Voltage (Vdc)
TPP 180-112BA-M	85~264	12
TPP 180-115BA-M	85~264	15
TPP 180-118BA-M	85~264	18
TPP 180-124BA-M	85~264	24
TPP 180-128BA-M	85~264	28
TPP 180-136BA-M	85~264	36
TPP 180-148BA-M	85~264	48
TPP 180-153BA-M	85~264	53
TPI 180-112BA-M	85~264	12
TPI 180-115BA-M	85~264	15
TPI 180-118BA-M	85~264	18
TPI 180-124BA-M	85~264	24
TPI 180-128BA-M	85~264	28
TPI 180-136BA-M	85~264	36
TPI 180-148BA-M	85~264	48
TPI 180-153BA-M	85~264	53
TPP 180-112B-M	85~264	12
TPP 180-115B-M	85~264	15
TPP 180-118B-M	85~264	18
TPP 180-124B-M	85~264	24
TPP 180-128B-M	85~264	28
TPP 180-136B-M	85~264	36
TPP 180-148B-M	85~264	48
TPP 180-153B-M	85~264	53
TPI 180-112B-M	85~264	12
TPI 180-115B-M	85~264	15
TPI 180-118B-M	85~264	18
TPI 180-124B-M	85~264	24
TPI 180-128B-M	85~264	28
TPI 180-136B-M	85~264	36
TPI 180-148B-M	85~264	48
TPI 180-153B-M	85~264	53

Model Number	Input Voltage Range (Vac)	Output Voltage (Vdc)
TPP 180-112A-M	85~264	12
TPP 180-115A-M	85~264	15
TPP 180-118A-M	85~264	18
TPP 180-124A-M	85~264	24
TPP 180-128A-M	85~264	28
TPP 180-136A-M	85~264	36
TPP 180-148A-M	85~264	48
TPP 180-153A-M	85~264	53
TPI 180-112A-M	85~264	12
TPI 180-115A-M	85~264	15
TPI 180-118A-M	85~264	18
TPI 180-124A-M	85~264	24
TPI 180-128A-M	85~264	28
TPI 180-136A-M	85~264	36
TPI 180-148A-M	85~264	48
TPI 180-153A-M	85~264	53
TPP 180-112-M	85~264	12
TPP 180-115-M	85~264	15
TPP 180-118-M	85~264	18
TPP 180-124-M	85~264	24
TPP 180-128-M	85~264	28
TPP 180-136-M	85~264	36
TPP 180-148-M	85~264	48
TPP 180-153-M	85~264	53
TPI 180-112-M	85~264	12
TPI 180-115-M	85~264	15
TPI 180-118-M	85~264	18
TPI 180-124-M	85~264	24
TPI 180-128-M	85~264	28
TPI 180-136-M	85~264	36
TPI 180-148-M	85~264	48
TPI 180-153-M	85~264	53

1. Protection class:  
 "B" represents Class I,  
 "blank" represents Class II.
2. Package type:  
 "A" represents Open Frame type,  
 "blank" represents Enclosed type.

Note: The model difference between TPP180 and TPI180 is only for Market segmentation.

## 5.2. Test Mode

The Pre-test modes :

Mode	Description	Conducted Emission	Radiated Emission
Mode 1	Full Load-TPP 180-112B-M	v	v
Mode 2	Full Load-TPP 180-124B-M	v	v
Mode 3	Full Load-TPP 180-112BA-M	v	v
Mode 4	Full Load-TPP 180-124BA-M	v	v
Mode 5	Full Load-TPP 180-112-M	v	v
Mode 6	Full Load-TPP 180-124-M	v	v
Mode 7	Full Load-TPP 180-112A-M	v	v
Mode 8	Full Load-TPP 180-124A-M	v	v

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

Test Items		Test Mode
<b>Emission</b>	Conducted Emission	Mode 8
	Radiated Emission	Mode 8
	Harmonic & Flicker	Mode 8
<b>Immunity</b>	Electrostatic Discharge	Mode 8
	Radio Frequency Electromagnetic Field	Mode 8
	Electrical Fast Transients	Mode 8
	Surge immunity	Mode 8
	Conducted disturbances immunity	Mode 8
	Power frequency magnetic field	Mode 8
	Voltage Dip and Short interruption	Mode 8

Note: The customer only provided TPP 180-112B-M, TPP 180-112-M, TPP 180-124B-M, TPP 180-124-M, TPP 180-112BA-M, TPP 180-112A-M, TPP 180-124BA-M, TPP 180-124A-M for the EMI pretest and choose the worst mode do the EMI and EMS final test.

### 5.3. EUT Operation Test Setup

For Emission test:

- a. The EUT was linked to resistance load with full load during the testing.
- b. Power on the EUT and run test.

For Immunity test:

- a. The EUT was linked to resistance load with full load and the resistance load was connected with a meter during the testing.
- b. Power on the EUT and run test.

### 5.4. Monitoring of EUT for All Immunity Test

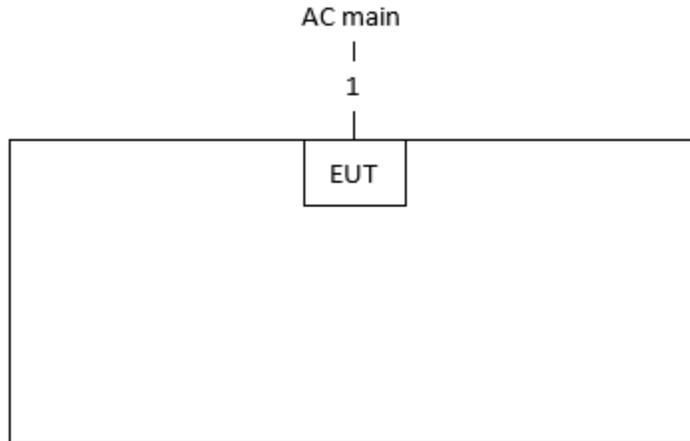
<b>Audio</b>	N/A
<b>Visual</b>	Monitor the output voltage through the meter.

### 5.5. Accessory

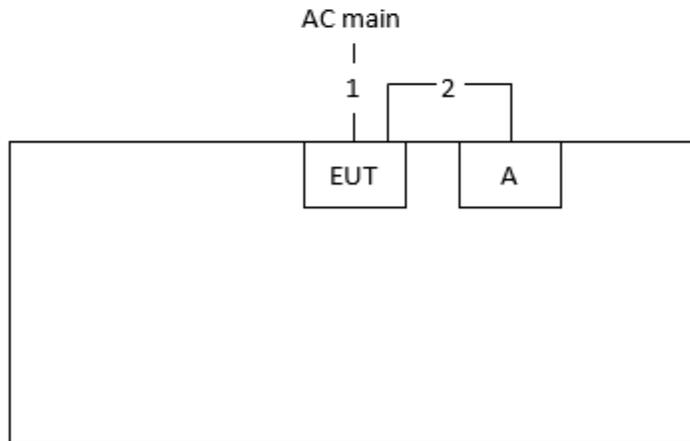
N/A

### 5.6. Block diagram showing the configuration of system tested

For EMI test:



For EMS test:



## 5.7. 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	Meter	CNSCKJ	C85C1-V	N/A	N/A	N/A

Item	Connection	Shielded Type	Length	Note
1	AC power cable	Non-shielded	1.2 m	Provide by the customer
2	Power Wire*2	Non-shielded	0.3 m	N/A

## 5.8. Measuring Instrument List

Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
<b>Conducted Disturbance</b>					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2019/11/19	2020/11/17
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2019/8/8	2020/8/6
Two-Path V-LISN	SCHWARZBECK	NSLK 8127	8127-946	2019/10/17	2020/10/16
RF Current Probe	FCC	F-52	171502	2020/2/5	2021/2/3
Coupling and Decoupling Network	TESEQ	ISN ST08	45105	2020/2/10	2021/2/8
Impedance Stabilization Network	TESEQ	ISN T800	42830	2020/2/10	2021/2/8
Impedance Stabilization Network	TESEQ	ISN T8-Cat6	39923	2020/2/3	2021/2/1
Capacitive Voltage Probe	TESEQ	CVP 2200A	44922	2020/1/22	2021/1/20
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2019/8/6	2020/8/4
Measurement Software	Farad	EZ-EMC Ver: UL-3A1.2	N/A	N/A	N/A
Cables	HARBOUR INDUSTRIES	LL142	170205-5000-1	2020/2/5	2021/2/3
<b>Radiated Disturbance</b>					
<b>966-1</b>					
EMI Test Receiver	Rohde & Schwarz	ESR7	101755	2019/12/4	2020/12/3
Trilog-Broadband Antenna with 5dB Attenuator	SCHWARZBECK	VULB 9168 & N-6-05	9168-773 & AT-N0539	2020/2/11	2021/2/9
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	1686	2019/12/27	2020/12/25
Preamplifier	EMC Instrument	EMC330E	980405	2020/2/4	2021/2/3
Preamplifier	EMC Instrument	EMC051835BE	980407	2020/1/15	2021/1/13
Measurement Software	Farad	EZ-EMC Ver: UL-3A1	N/A	N/A	N/A
Cables	UltraPhase&EMC Instrument	A1K50-UP0358-A1K50-1500&EMC106-NM-SM-2500/8000	170111-3&170104/170223	2020/2/5	2021/2/3
<b>Voltage Harmonic &amp; Flicker</b>					
single phase coupling unit	TESEQ	CCN1000-1	1652A01270	2020/4/15	2021/4/14
Programmable AC and DC Power Sources	TESEQ	NSG1007	1652A00760	2020/4/15	2021/4/14
Measurement Software	TESEQ	WIN2100(4.14.0)	N/A	N/A	N/A

Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
<b>Electrostatic discharge</b>					
ESD Generator	TESEQ	NSG 437	1125	2019/12/9	2020/12/7
Barometer	TFA	DIVA PLUS	35.1078.10.IT	2020/6/12	2021/6/11
<b>Radio frequency electromagnetic field immunity</b>					
RF and Microwave Signal Generator	Rohde & Schwarz	SMB100A	113793	2020/2/26	2021/2/24
Power amplifier	Milmega	80RF1000-300	1077558	N/A	N/A
Power amplifier	Milmega	AS0860B	1077559	N/A	N/A
Directional coupler	Werlatone	C10117-10	111786	N/A	N/A
Directional coupler	Werlatone	C8719-20	111759	N/A	N/A
Antenna	AR	ATR80M6G	346008	N/A	N/A
Antenna	SCHWARZBECK	STLP 9149	00441	N/A	N/A
RF switch	OSP	OSP	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRP2	105524	2019/10/21	2020/10/19
Power Sensor	Rohde & Schwarz	NRP-Z91	103732	2019/10/21	2020/10/19
Power Sensor	Rohde & Schwarz	NRP-Z91	103733	2019/10/21	2020/10/19
Measurement Software	Rohde & Schwarz	EMC32, VER.10.20.01	N/A	N/A	N/A
<b>Electrical fast transient</b>					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2019/12/12	2020/12/10
Capacitive Coupling Clamp	EM TEST	HFK	P1642185790	2019/11/27	2020/11/25
Measurement Software	TESEQ	IEC.control, VER.7.1.5	N/A	N/A	N/A
<b>Surge</b>					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2019/12/12	2020/12/10
Telecom Surge Generator	EM TEST	TSurge7	P1620180015	2019/12/11	2020/12/9
Coupling and Decoupling Network	EM TEST	CNV 508T5	P1637184038	2019/12/16	2020/12/14
Coupling and Decoupling Network	TESEQ	CDN HSS-2	45091	2019/12/16	2020/12/14
Measurement Software	TESEQ	IEC.control, VER.7.1.5	N/A	N/A	N/A

<b>Instrument</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Last Cal.</b>	<b>Expired date</b>
<b>Immunity to conducted disturbances, induced by radio-frequency fields</b>					
Signal Generator	Rohde & Schwarz	SMC100A	105811	2019/10/24	2020/10/22
Power amplifier	Rohde & Schwarz	BBA150-A125B125	102340	N/A	N/A
Coupling and Decoupling Network	TESEQ	CDN M016	45073	2020/3/13	2021/3/12
Coupling and Decoupling Network	TESEQ	CDN T2-10	45003	2020/3/13	2021/3/12
Coupling and Decoupling Network	TESEQ	CDN T4-10	44939	2020/3/13	2021/3/12
Coupling and Decoupling Network	TESEQ	CDN T8-10	49203	2019/12/23	2020/12/21
EM Injection Clamp	TESEQ	CAL 801A & KEMZ 801A	75454.1, 75454.2 & 45181	2020/3/18	2021/3/17
Power - Sensor	Rohde & Schwarz	NRP-Z91	103730	2019/12/5	2020/12/3
Power - Sensor	Rohde & Schwarz	NRP-Z91	103731	2019/12/5	2020/12/3
Measurement Software	Rohde & Schwarz	EMC32, VER.10.20.01	N/A	N/A	N/A
<b>Power frequency magnetic field immunity</b>					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2019/12/12	2020/12/10
Current Transformer	EM TEST	MC 2630	P1644186773	2019/11/15	2020/11/13
Magnetic Field Test Antena	EM TEST	MS 100N	P1627181324	2019/11/15	2020/11/13
<b>Voltage dips and interruptions</b>					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2019/12/12	2020/12/10
Motorized Variac	EM TEST	MV 2616 (varic NX1-260-16)	P1643186426	2019/12/11	2020/12/9
Measurement Software	TESEQ	IEC.control, VER.7.1.5	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.

AC mains port:

FREQUENCY (MHz)	<input type="checkbox"/> Class A (dB $\mu$ V)		<input checked="" type="checkbox"/> Class B (dB $\mu$ V)	
	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

Telecommunications/network port:

FREQUENCY (MHz)	<input type="checkbox"/> Class A			
	Voltage limit (dB $\mu$ V)		Current limit(dB $\mu$ A)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	97 - 87 *	84 - 74*	53 - 43 *	40 - 30*
0.50 -30.0	87.00	74.00	43.00	30.00
FREQUENCY (MHz)	<input type="checkbox"/> Class B			
	Voltage limit (dB $\mu$ V)		Current limit(dB $\mu$ A)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	84 - 74 *	74 - 64*	40 - 30 *	30 - 20*
0.50 -30.0	74.00	64.00	30.00	20.00

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

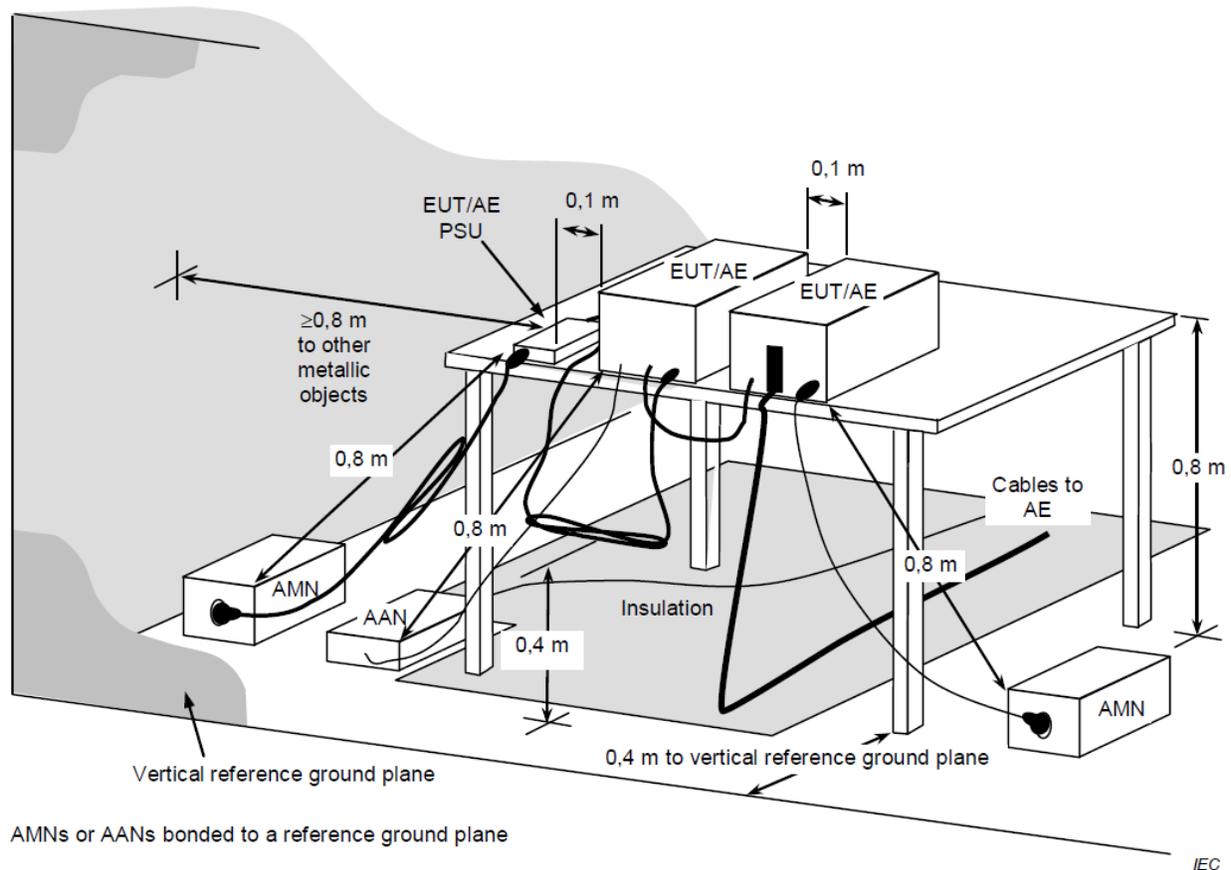
The following table is the setting of the receiver

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

### 6.1.2. Test Procedure

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

### 6.1.3. Test Setup

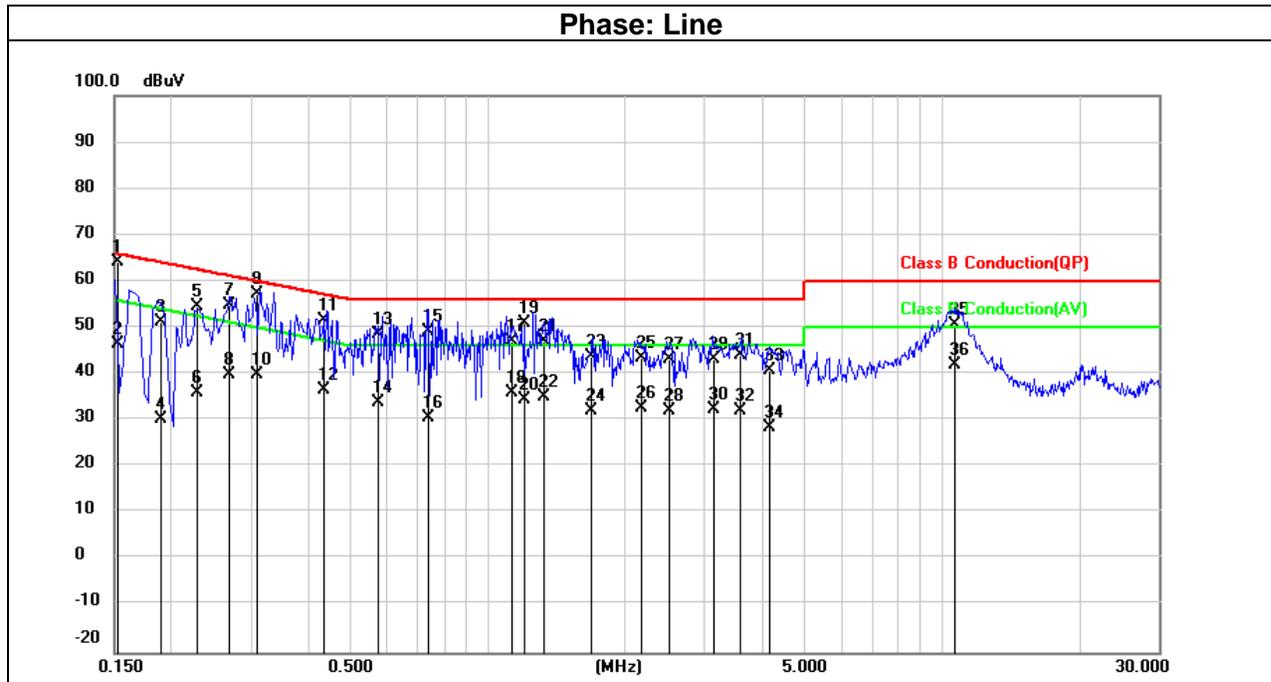


The 0,8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be  $\geq 0,8$  m.

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

### 6.1.4. Test Result

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	60%RH
Tested By:	Edison Lin	Test Date:	May 18, 2020



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1529	44.83	19.47	64.30	65.84	-1.54	QP
2	0.1529	27.05	19.47	46.52	55.84	-9.32	AVG
3	0.1891	31.75	19.46	51.21	64.08	-12.87	QP
4	0.1891	10.76	19.46	30.22	54.08	-23.86	AVG
5	0.2268	35.15	19.47	54.62	62.57	-7.95	QP
6	0.2268	16.52	19.47	35.99	52.57	-16.58	AVG
7	0.2673	35.49	19.47	54.96	61.20	-6.24	QP
8	0.2673	20.24	19.47	39.71	51.20	-11.49	AVG
9	0.3097	37.72	19.47	57.19	59.98	-2.79	QP
10	0.3097	20.35	19.47	39.82	49.98	-10.16	AVG
11	0.4371	31.95	19.48	51.43	57.12	-5.69	QP
12	0.4371	16.98	19.48	36.46	47.12	-10.66	AVG
13	0.5720	29.02	19.48	48.50	56.00	-7.50	QP
14	0.5720	14.40	19.48	33.88	46.00	-12.12	AVG
15	0.7392	29.76	19.49	49.25	56.00	-6.75	QP
16	0.7392	11.10	19.49	30.59	46.00	-15.41	AVG
17	1.1255	27.66	19.50	47.16	56.00	-8.84	QP
18	1.1255	16.36	19.50	35.86	46.00	-10.14	AVG
19	1.1970	31.31	19.50	50.81	56.00	-5.19	QP
20	1.1970	14.90	19.50	34.40	46.00	-11.60	AVG
21	1.3314	27.59	19.50	47.09	56.00	-8.91	QP
22	1.3314	15.58	19.50	35.08	46.00	-10.92	AVG
23	1.6965	24.14	19.52	43.66	56.00	-12.34	QP

24	1.6965	12.45	19.52	31.97	46.00	-14.03	AVG
25	2.1753	23.95	19.53	43.48	56.00	-12.52	QP
26	2.1753	13.10	19.53	32.63	46.00	-13.37	AVG
27	2.5232	23.56	19.53	43.09	56.00	-12.91	QP
28	2.5232	12.49	19.53	32.02	46.00	-13.98	AVG
29	3.1566	23.55	19.55	43.10	56.00	-12.90	QP
30	3.1566	12.83	19.55	32.38	46.00	-13.62	AVG
31	3.5768	24.35	19.58	43.93	56.00	-12.07	QP
32	3.5768	12.46	19.58	32.04	46.00	-13.96	AVG
33	4.1929	21.08	19.59	40.67	56.00	-15.33	QP
34	4.1929	8.87	19.59	28.46	46.00	-17.54	AVG
35	10.6929	30.96	19.68	50.64	60.00	-9.36	QP
36	10.6929	22.22	19.68	41.90	50.00	-8.10	AVG

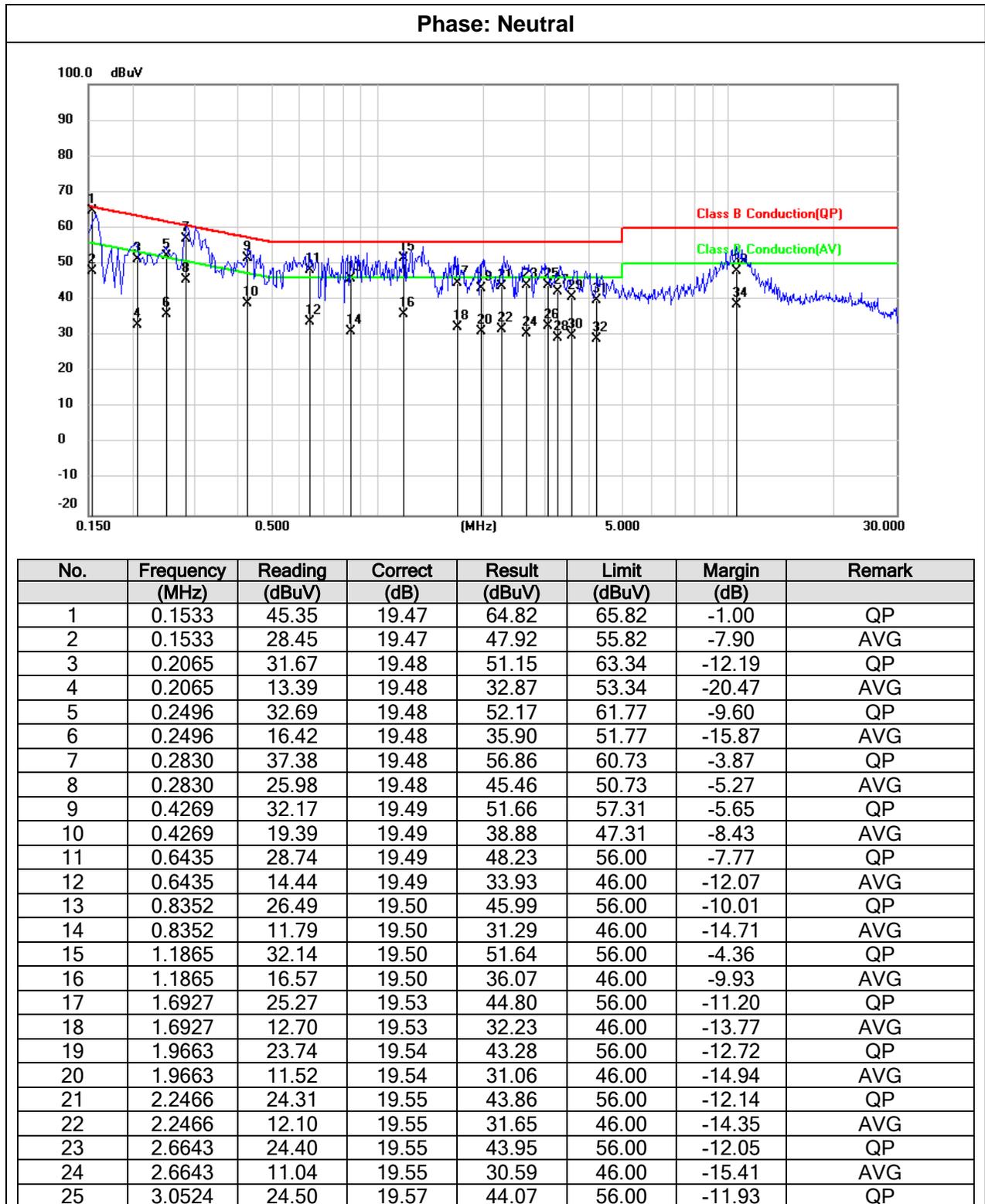
Remark:

Result = Reading +Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

Margin = Result – Limit

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	60%RH
Tested By:	Edison Lin	Test Date:	May 18, 2020



26	3.0524	13.07	19.57	32.64	46.00	-13.36	AVG
27	3.2558	22.83	19.57	42.40	56.00	-13.60	QP
28	3.2558	9.93	19.57	29.50	46.00	-16.50	AVG
29	3.5795	21.19	19.59	40.78	56.00	-15.22	QP
30	3.5795	10.39	19.59	29.98	46.00	-16.02	AVG
31	4.2116	20.40	19.60	40.00	56.00	-16.00	QP
32	4.2116	9.34	19.60	28.94	46.00	-17.06	AVG
33	10.5172	28.11	19.71	47.82	60.00	-12.18	QP
34	10.5172	18.94	19.71	38.65	50.00	-11.35	AVG

Remark:

Result = Reading +Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

Margin = Result – Limit

## 6.2. Radiated Disturbance Measurement(below 1GHz)

### 6.2.1. Limits of radiated disturbance measurement

FREQUENCY (MHz)	<input checked="" type="checkbox"/> Class A		<input type="checkbox"/> Class B	
	<input type="checkbox"/> At 10m	<input checked="" type="checkbox"/> At 3m	<input type="checkbox"/> At 10m	<input type="checkbox"/> At 3m
	dB $\mu$ V/m	dB $\mu$ V/m	dB $\mu$ V/m	dB $\mu$ V/m
30 – 230	40	50	30	40
230 – 1000	47	57	37	47

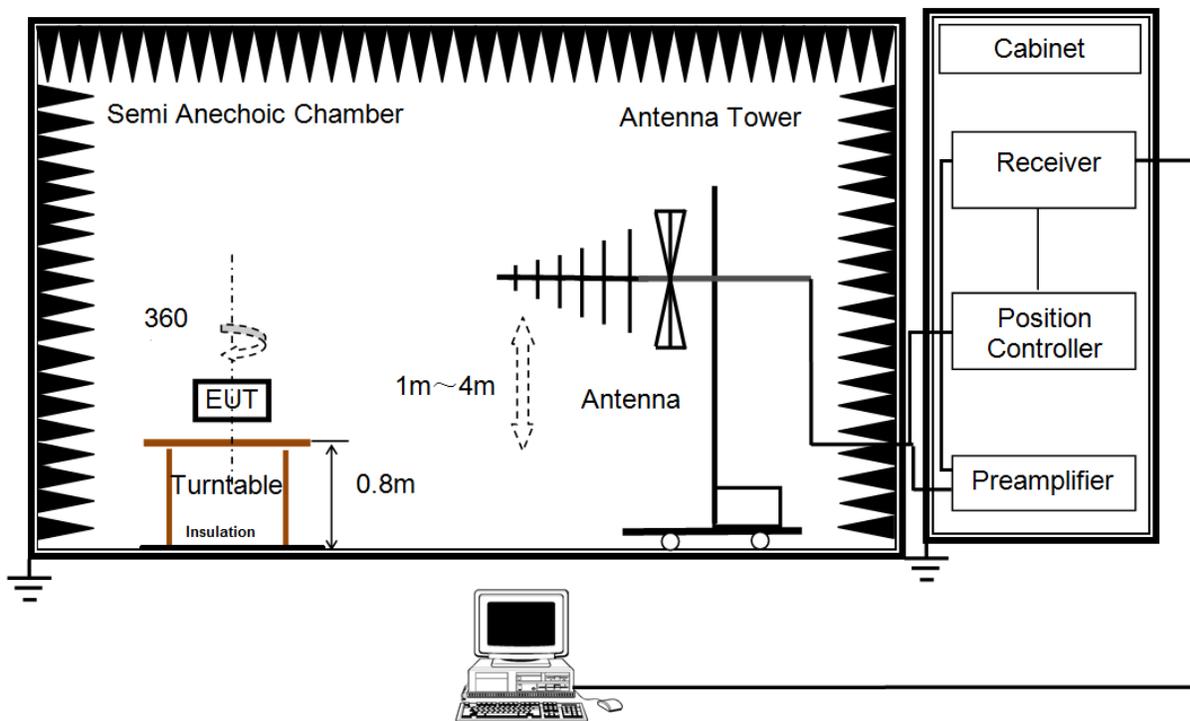
**NOTE:**

- (1) The limit for radiated test was performed according to EN55032.
- (2) The tighter limit applies at the band edges.
- (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.

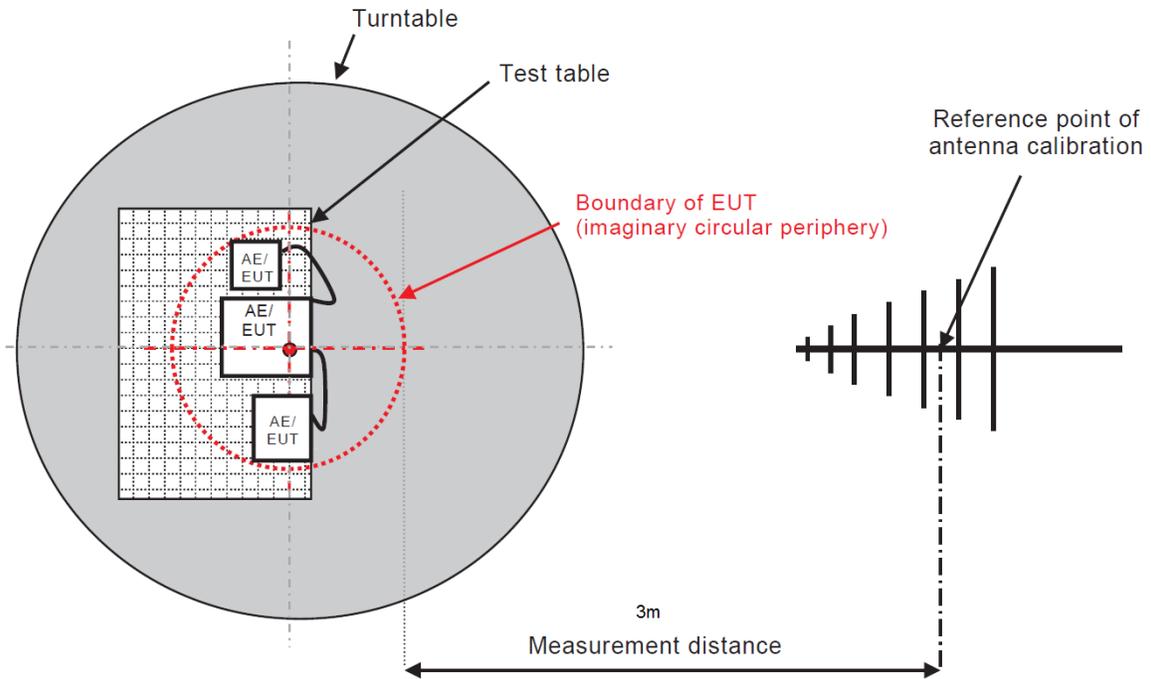
### 6.2.2. Test Procedure

- a. The measuring distance of at 3m shall be used for measurements at frequency from 30 to 1000MHz.
- b. 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.
- c. The height of the equipment shall be set at 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.
- d. 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.
- e. 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.
- f. For the actual test configuration, please refer to the related Item:EUT Test Photos.

### 6.2.3. Test Setup

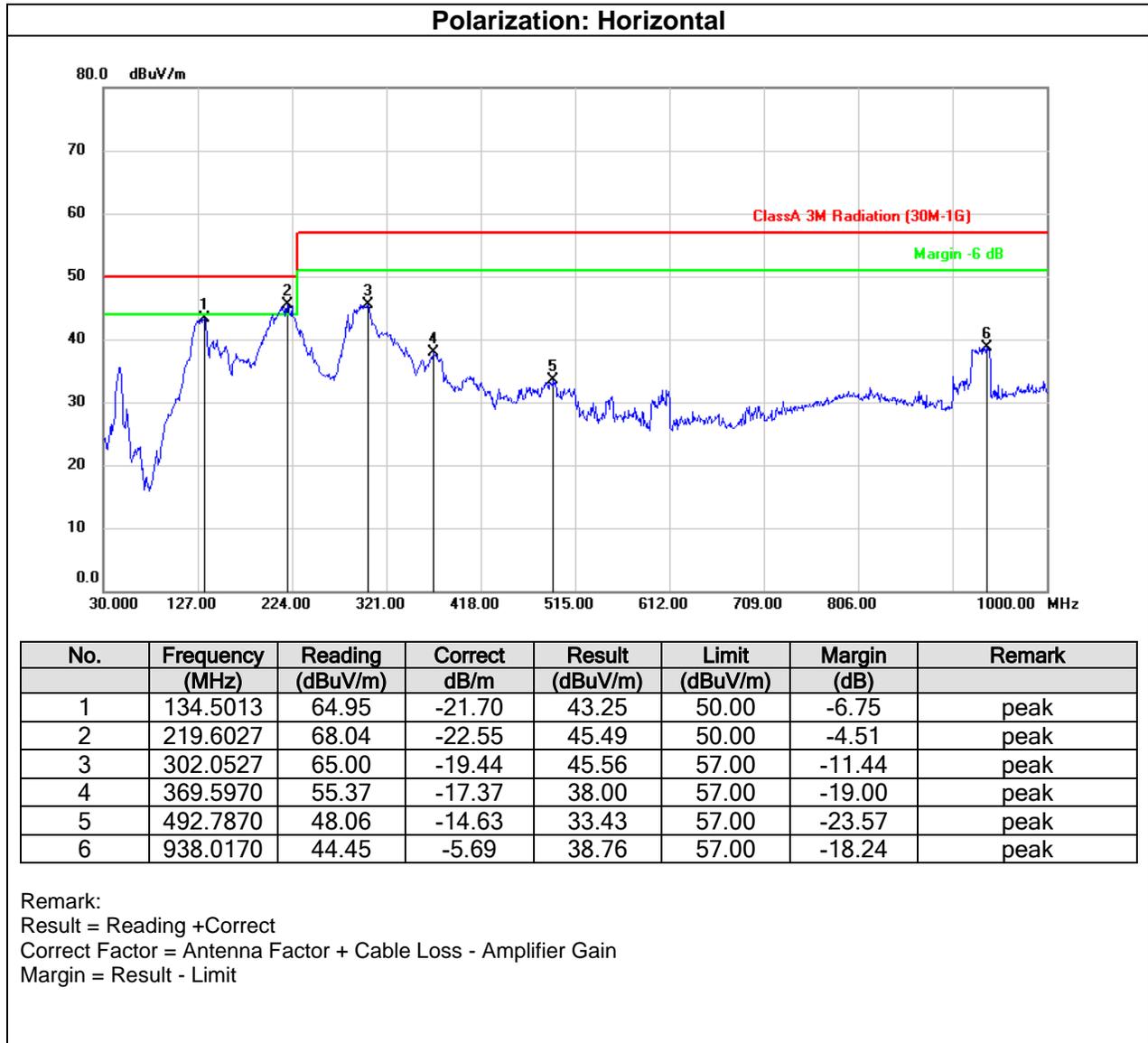


For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

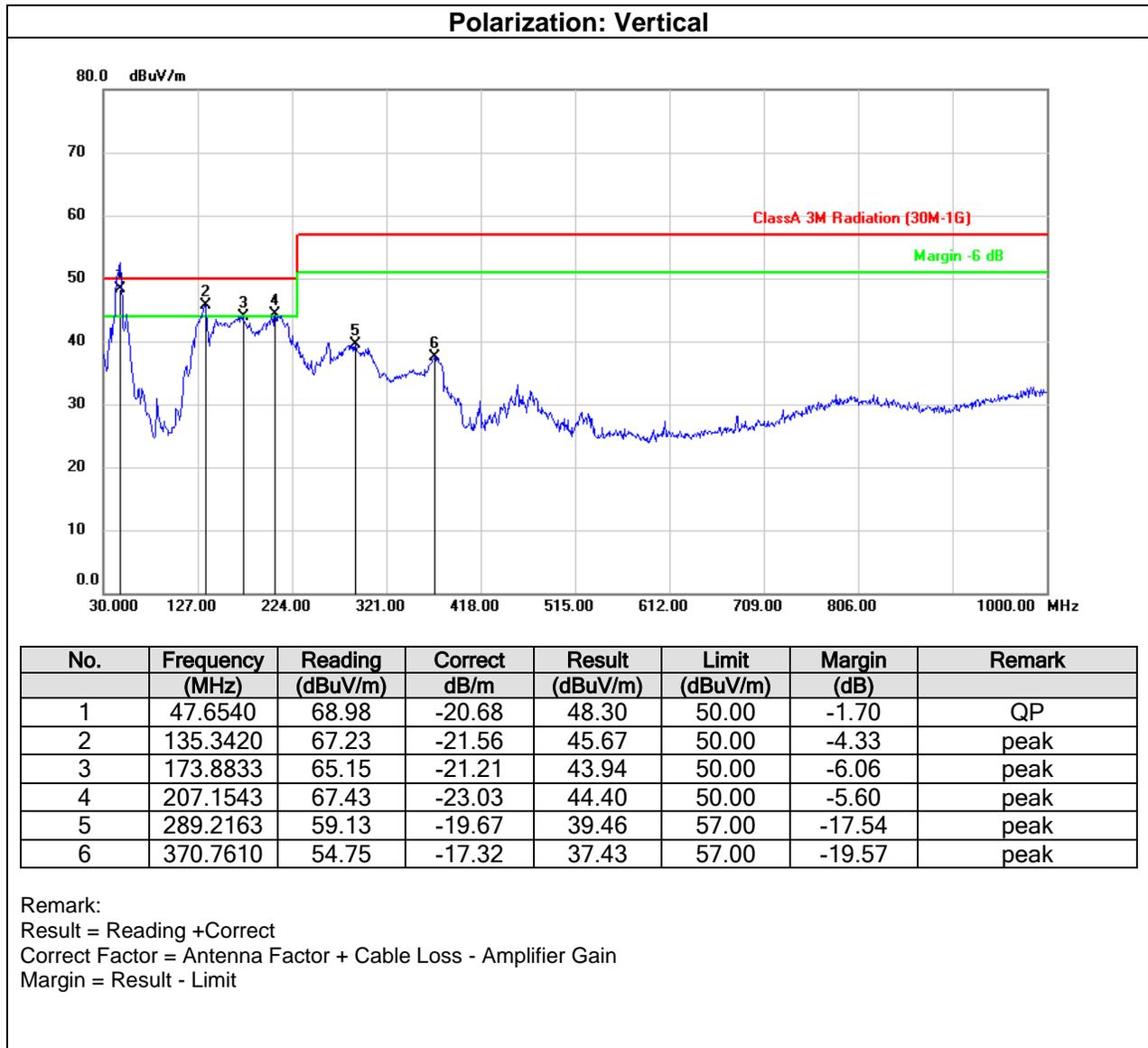


### 6.2.4. Test Result

Test Mode:	Mode 8	Temperature:	25°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Edison Lin	Test Date:	May 18, 2020



Test Mode:	Mode 8	Temperature:	25°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Edison Lin	Test Date:	May 18, 2020



### 6.3. Harmonic Current Disturbance Measurement

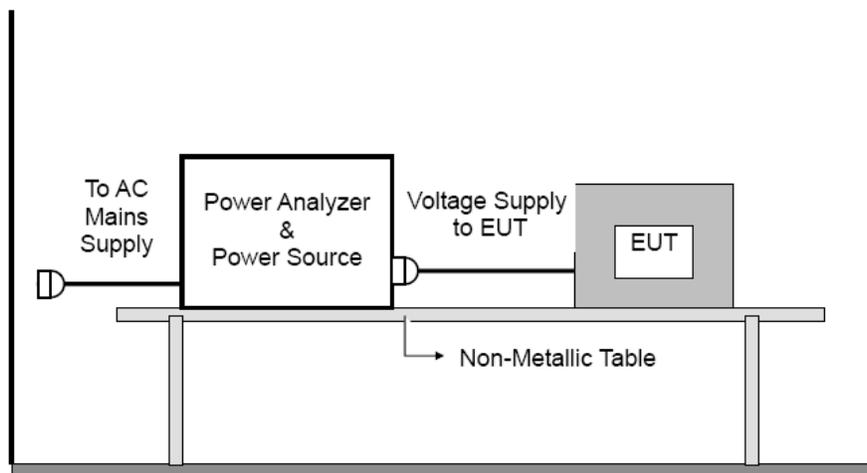
#### 6.3.1. Limits of Harmonic Current

EN 61000-3-2/ IEC 61000-3-2						
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current A	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current A mA/w	
Class A	Odd Harmonics		Class D	Odd Harmonics only		
	3	2.30		3	2.30	3.4
	5	1.14		5	1.14	1.9
	7	0.77		7	0.77	1.0
	9	0.40		9	0.40	0.5
	11	0.33		11	0.33	0.35
	13	0.21		13	0.21	0.296
	15 ≤ n ≤ 39	0.15 x 15/n		15 ≤ n ≤ 39	0.15 x 15/n	3.85/n
	Even Harmonics					
	2	1.08				
	4	0.43				
	6	0.30				
	8 ≤ n ≤ 40	0.23 x 8/n				

### 6.3.2. Test Procedure

- a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce under normal conditions
- b. Tests was performed according to the Test the measured values of the harmonics components of the input current in Clause 7 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.

### 6.3.3. Test Setup



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

### 6.3.4. Test Condition

Test Mode:	Mode 8	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	61%RH
Tested By:	Edison Lin	Test Date:	Aug. 21, 2020

### 6.3.5. Test Result

Mode 8 :

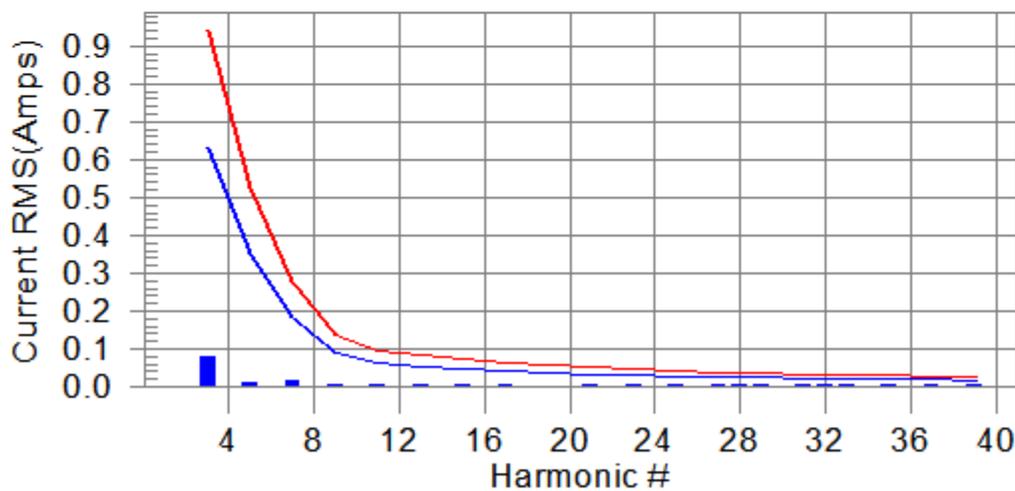
Harmonics – Class-D per Ed. 4.0 (2014)(Run time) incl. inter-harmonics

Test Result: Pass      Source qualification: Normal

#### Current & voltage waveforms



#### Harmonics and Class D limit line      European Limits



**Test result: Pass      Worst harmonics H25-17.9% of 150% limit, H25-17.7% of 100% limit**

**Current Test Result Summary (Run time)**

Test Result: Pass      Source qualification: Normal  
 THC(A): 0.083    I-THD(%): 10.2    POHC(A): 0.014    POHC Limit(A): 0.079

Highest parameter values during test:

V RMS (Volts): 229.98	Frequency(Hz): 50.00
I Peak (Amps): 5.428	I RMS (Amps): 0.833
I Fund (Amps): 0.816	Crest Factor: 6.517
Power (Watts): 184.8	Power Factor: 0.980

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.000	N/A	0.006	0.000	N/A	Pass
3	0.078	0.628	12.4	0.079	0.943	8.4	Pass
4	0.002	0.000	N/A	0.008	0.000	N/A	Pass
5	0.011	0.351	3.1	0.015	0.527	2.9	Pass
6	0.002	0.000	N/A	0.007	0.000	N/A	Pass
7	0.014	0.185	7.4	0.017	0.277	6.3	Pass
8	0.003	0.000	N/A	0.007	0.000	N/A	Pass
9	0.007	0.092	7.4	0.010	0.139	7.2	Pass
10	0.002	0.000	N/A	0.006	0.000	N/A	Pass
11	0.006	0.065	9.7	0.009	0.097	9.3	Pass
12	0.002	0.000	N/A	0.005	0.000	N/A	Pass
13	0.004	0.055	N/A	0.007	0.083	N/A	Pass
14	0.003	0.000	N/A	0.005	0.000	N/A	Pass
15	0.005	0.048	11.3	0.007	0.072	9.3	Pass
16	0.002	0.000	N/A	0.004	0.000	N/A	Pass
17	0.003	0.043	N/A	0.005	0.064	N/A	Pass
18	0.003	0.000	N/A	0.004	0.000	N/A	Pass
19	0.003	0.038	N/A	0.005	0.056	N/A	Pass
20	0.003	0.000	N/A	0.004	0.000	N/A	Pass
21	0.005	0.034	14.9	0.007	0.051	14.1	Pass
22	0.003	0.000	N/A	0.005	0.000	N/A	Pass
23	0.003	0.031	N/A	0.006	0.046	N/A	Pass
24	0.003	0.000	N/A	0.005	0.000	N/A	Pass
25	0.005	0.028	17.7	0.008	0.043	17.9	Pass
26	0.003	0.000	N/A	0.006	0.000	N/A	Pass
27	0.004	0.026	N/A	0.006	0.040	N/A	Pass
28	0.004	0.000	N/A	0.007	0.000	N/A	Pass
29	0.004	0.025	N/A	0.007	0.037	N/A	Pass
30	0.003	0.000	N/A	0.006	0.000	N/A	Pass
31	0.004	0.023	N/A	0.007	0.034	N/A	Pass
32	0.004	0.000	N/A	0.006	0.000	N/A	Pass
33	0.005	0.021	N/A	0.007	0.032	N/A	Pass
34	0.003	0.000	N/A	0.006	0.000	N/A	Pass
35	0.004	0.020	N/A	0.007	0.030	N/A	Pass
36	0.002	0.000	N/A	0.006	0.000	N/A	Pass
37	0.004	0.019	N/A	0.007	0.029	N/A	Pass
38	0.002	0.000	N/A	0.006	0.000	N/A	Pass
39	0.004	0.018	N/A	0.007	0.027	N/A	Pass
40	0.002	0.000	N/A	0.004	0.000	N/A	Pass

**Voltage Source Verification Data (Run time)**

Test Result: Pass Source qualification: Normal  
 THC(A): 0.083 I-THD(%): 10.2 POHC(A): 0.014 POHC Limit(A): 0.079

Highest parameter values during test:

V RMS (Volts): 229.98	Frequency(Hz): 50.00
I Peak (Amps): 5.428	I RMS (Amps): 0.833
I Fund (Amps): 0.816	Crest Factor: 6.517
Power (Watts): 184.8	Power Factor: 0.980

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	0.000	N/A	0.006	0.000	N/A	Pass
3	0.078	0.628	12.4	0.079	0.943	8.4	Pass
4	0.002	0.000	N/A	0.008	0.000	N/A	Pass
5	0.011	0.351	3.1	0.015	0.527	2.9	Pass
6	0.002	0.000	N/A	0.007	0.000	N/A	Pass
7	0.014	0.185	7.4	0.017	0.277	6.3	Pass
8	0.003	0.000	N/A	0.007	0.000	N/A	Pass
9	0.007	0.092	7.4	0.010	0.139	7.2	Pass
10	0.002	0.000	N/A	0.006	0.000	N/A	Pass
11	0.006	0.065	9.7	0.009	0.097	9.3	Pass
12	0.002	0.000	N/A	0.005	0.000	N/A	Pass
13	0.004	0.055	N/A	0.007	0.083	N/A	Pass
14	0.003	0.000	N/A	0.005	0.000	N/A	Pass
15	0.005	0.048	11.3	0.007	0.072	9.3	Pass
16	0.002	0.000	N/A	0.004	0.000	N/A	Pass
17	0.003	0.043	N/A	0.005	0.064	N/A	Pass
18	0.003	0.000	N/A	0.004	0.000	N/A	Pass
19	0.003	0.038	N/A	0.005	0.056	N/A	Pass
20	0.003	0.000	N/A	0.004	0.000	N/A	Pass
21	0.005	0.034	14.9	0.007	0.051	14.1	Pass
22	0.003	0.000	N/A	0.005	0.000	N/A	Pass
23	0.003	0.031	N/A	0.006	0.046	N/A	Pass
24	0.003	0.000	N/A	0.005	0.000	N/A	Pass
25	0.005	0.028	17.7	0.008	0.043	17.9	Pass
26	0.003	0.000	N/A	0.006	0.000	N/A	Pass
27	0.004	0.026	N/A	0.006	0.040	N/A	Pass
28	0.004	0.000	N/A	0.007	0.000	N/A	Pass
29	0.004	0.025	N/A	0.007	0.037	N/A	Pass
30	0.003	0.000	N/A	0.006	0.000	N/A	Pass
31	0.004	0.023	N/A	0.007	0.034	N/A	Pass
32	0.004	0.000	N/A	0.006	0.000	N/A	Pass
33	0.005	0.021	N/A	0.007	0.032	N/A	Pass
34	0.003	0.000	N/A	0.006	0.000	N/A	Pass
35	0.004	0.020	N/A	0.007	0.030	N/A	Pass
36	0.002	0.000	N/A	0.006	0.000	N/A	Pass
37	0.004	0.019	N/A	0.007	0.029	N/A	Pass
38	0.002	0.000	N/A	0.006	0.000	N/A	Pass
39	0.004	0.018	N/A	0.007	0.027	N/A	Pass
40	0.002	0.000	N/A	0.004	0.000	N/A	Pass

## 6.4. Voltage Fluctuation and Flick Measurement

### 6.4.1. Limits of Voltage Fluctuation and Flick

Test items	Limits	Descriptions
$P_{st}$	$\leq 1.0, T_p=10\text{min}$	short-term flicker indicator
$P_{lt}$	$\leq 0.65, T_p=2\text{h}$	long-term flicker indicator
$d_c$	$\leq 3.3\%$	relative steady-state voltage change
$d_{max}$	$\leq 4\%$ (or $6\%$ <sup>Note(1)</sup> , $7\%$ <sup>Note(2)</sup> )	maximum relative voltage change:
$d_{(t)}$	$\leq 3.3\%$ , more than 500ms	relative voltage change characteristic

Note:

(1)6 % for equipment which is:

- a. switched manually, or
- b. switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

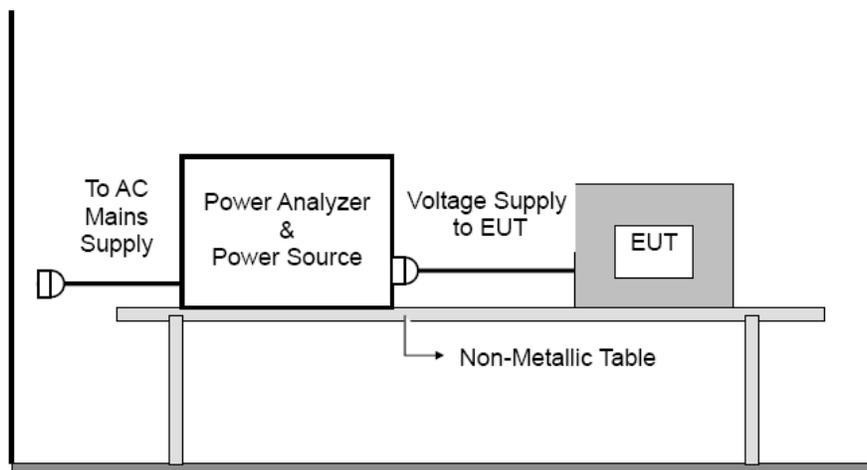
(2)7 % for equipment which is

- a. attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- b. switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

### 6.4.2. Test Procedure

- a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal conditions
- b. During the flick measurement, the measure time shall include that part of whole operation changes according to IEC/EN 61000-3-3 Annex A for each product type has different requirement.
- c. Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.
- d. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

### 6.4.3. Test Setup



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

### 6.4.4. Test Condition

Test Mode:	Mode 8	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	61%RH
Tested By:	Edison Lin	Test Date:	Jul. 6, 2020

### 6.4.5. Test Result

Mode 8 :

#### Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

Test Result: Pass

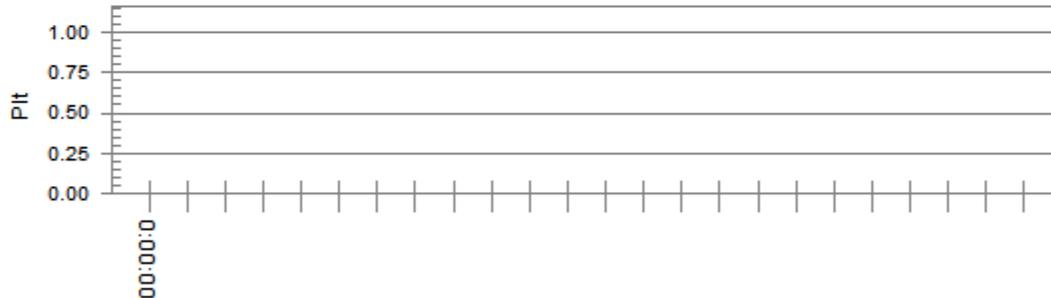
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



**Parameter values recorded during the test:**

Vrms at the end of test (Volt):	229.61		
Highest dt (%):	0.00	Test limit (%):	N/A
T-max (mS):	0	Test limit (mS):	500.0
Highest dc (%):	0.00	Test limit (%):	3.30
Highest dmax (%):	0.00	Test limit (%):	4.00
Highest Pst (10 min. period):	0.064	Test limit:	1.000
Highest Plt (2 hr. period):	0.028	Test limit:	0.650

## 7. IMMUNITY TEST

### 7.1. Performance Criteria

According to EN 55024/ EN 55035 standard, the general performance criteria as following:

<b>Criteria A</b>	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended.</p> <p>The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<b>Criteria B</b>	<p>During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.</p> <p>After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<b>Criteria C</b>	<p>Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.</p> <p>Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>

## 7.2. Electrostatic Discharge Immunity Test

### 7.2.1. Test Specification

#### For EN 55024 & EN 55035

<b>Standard:</b>	EN 55024(Note)/ EN 55035 (refer to IEC/EN 61000-4-2)
<b>Discharge Impedance:</b>	330(1±10%)Ω / 150(1±10%)pF
<b>Discharge Voltage:</b>	Air Discharge: ±2kV/±4kV/±8kV (Direct)
<b>Polarity:</b>	Contact Discharge: ±2kV/±4kV (Direct/Indirect)
	Positive and Negative
<b>Discharge Mode of Operation:</b>	Single discharges
<b>Discharge Period:</b>	1 second minimum

### 7.2.2. Test Procedure

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

- a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT. During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. On each pre-selected point at least 10 single discharges (at each polarity) shall be applied. Test shall be performed at a maximum repetition rate of one discharge per second.

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

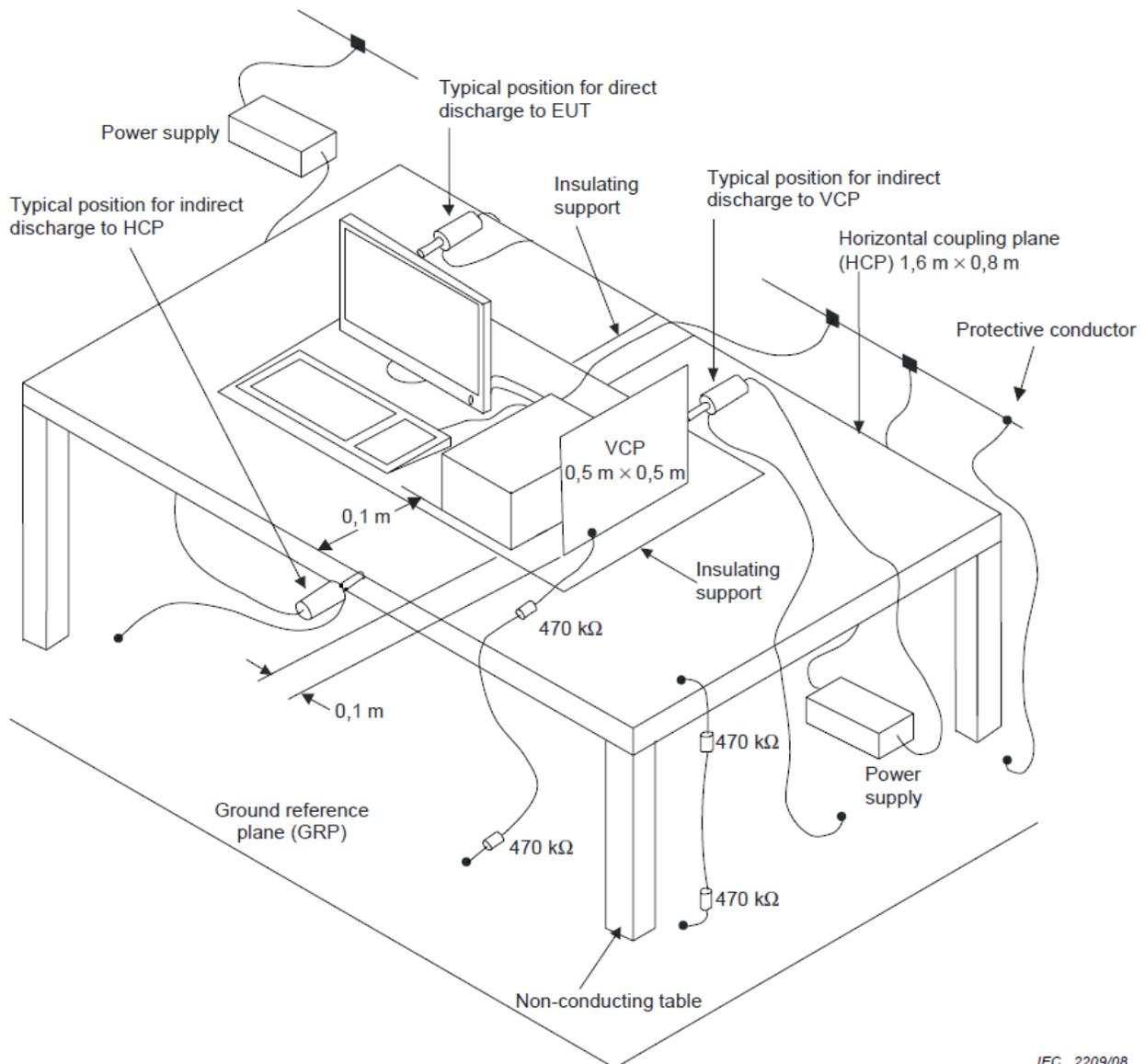
Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

For EN 55024, Step a shall be change to 25 single discharges at each polarity.

- b. Air discharges at insulation surfaces of the EUT.  
It was at least 10 single discharges with positive and negative at the same selected point.
- c. For the actual test configuration, please refer to the related Item :EUT Test Photos.

### 7.2.3. Test Setup



A distance of 0,8 m minimum shall be provided between the EUT and the walls of the laboratory and any other metallic structure.

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

### 7.2.4. Test Result

#### EN 55024 :

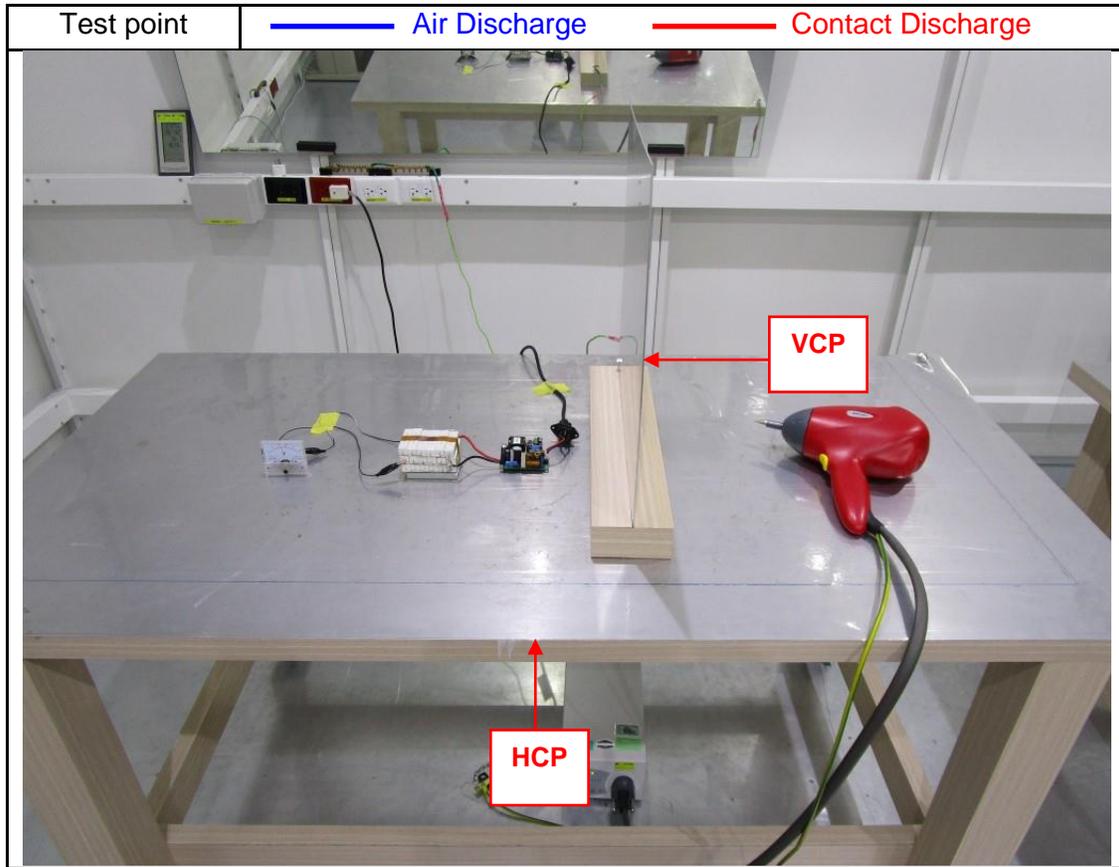
Test Mode:	Mode 8	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	48%RH
Discharge of times:	Air: 10 times Contact: 25 times	ATM pressure:	1017 hpa
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Mode	Air Discharge								Contact Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		-kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
-	NA	NA	NA	NA	NA	NA	-	-	NA	NA	NA	NA	-	-	-	-
Criteria	B								B							
Results	-								-							
Judgment	-															
Note	NA: This product is an internal component of system. Contact & Air discharge cannot be performed on this component after assembly, so the test is not applicable.															

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		-kV		-kV		2kV		4kV		-kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
front	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
rear	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
left	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
right	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
Criteria	B				-				B				-			
Results	A				-				A				-			
Judgment	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															

**Customer Request:**

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
front	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
rear	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
left	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
right	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
Criteria	-				B				-				B			
Results	-				A				-				A			
Judgment	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															



**EN 55035:**

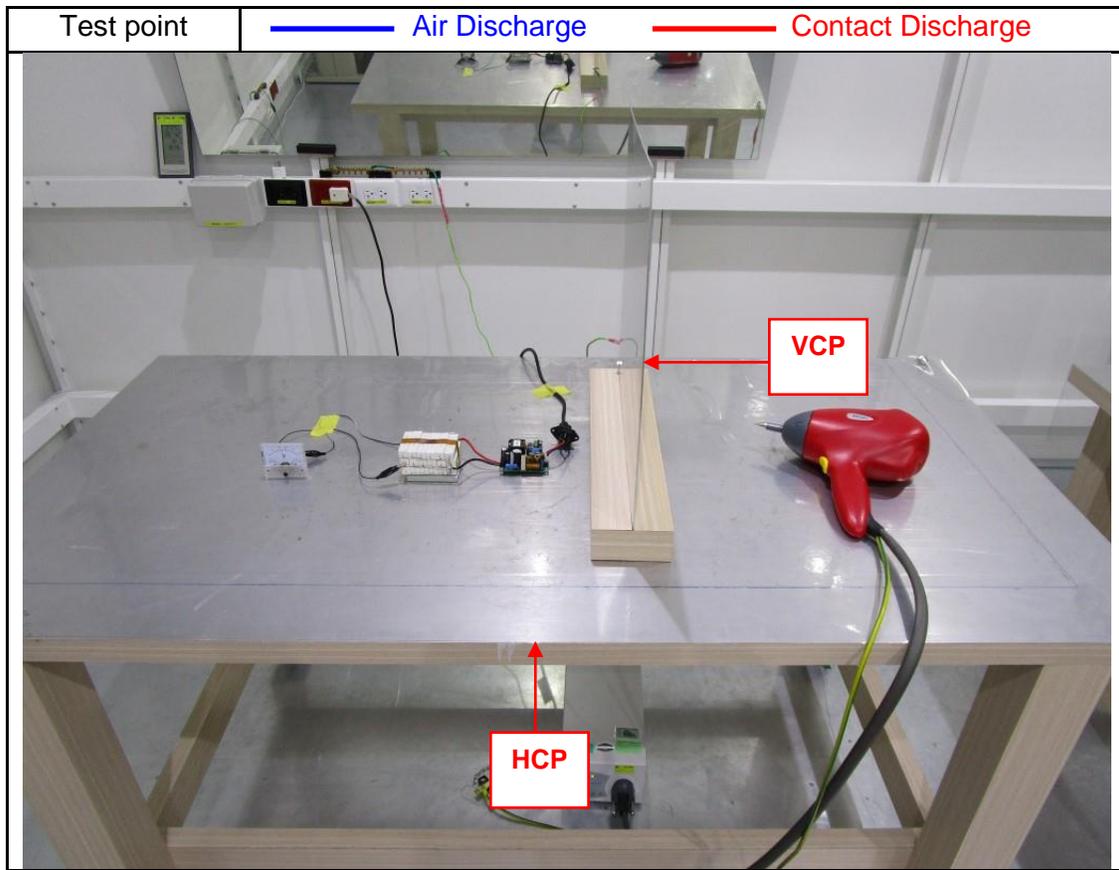
Test Mode:	Mode 8	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	48%RH
Discharge of times:	Air: 10 times Contact: 10 times	ATM pressure:	1017 hpa
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Mode	Air Discharge								Contact Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		-kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
-	NA	NA	NA	NA	NA	NA	-	-	NA	NA	NA	NA	-	-	-	-
Criteria	B								B							
Results	-								-							
Judgement	-															
Note	NA: This product is an internal component of system. Contact & Air discharge cannot be performed on this component after assembly, so the test is not applicable.															

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		-kV		-kV		2kV		4kV		-kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
front	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
rear	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
left	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
right	A	A	A	A	-	-	-	-	A	A	A	A	-	-	-	-
Criteria	B				-				B				-			
Results	A				-				A				-			
Judgement	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															

**Customer Request:**

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
front	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
rear	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
left	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
right	-	-	-	-	A	A	-	-	-	-	-	-	A	A	-	-
Criteria	-				B				-				B			
Results	-				A				-				A			
Judgement	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															



## 7.3. Radio Frequency Electromagnetic Field Immunity Test

### 7.3.1. Test Specification

For Standard EN 55024 :

<b>Standard:</b>	EN 55024 (refer to IEC/EN 61000-4-3)
<b>Frequency Range:</b>	80 MHz to 1000MHz
<b>Field Strength:</b>	3V/m (unmodulated)
<b>Modulation:</b>	80%, AM(1 kHz)
<b>Frequency Step:</b>	1%
<b>Polarity of Antenna</b>	Vertical and Horizontal
<b>Test Distance:</b>	3 meters
<b>Antenna Height:</b>	1.55 meters
<b>Dwell Time:</b>	3 s

For Standard EN 55035 :

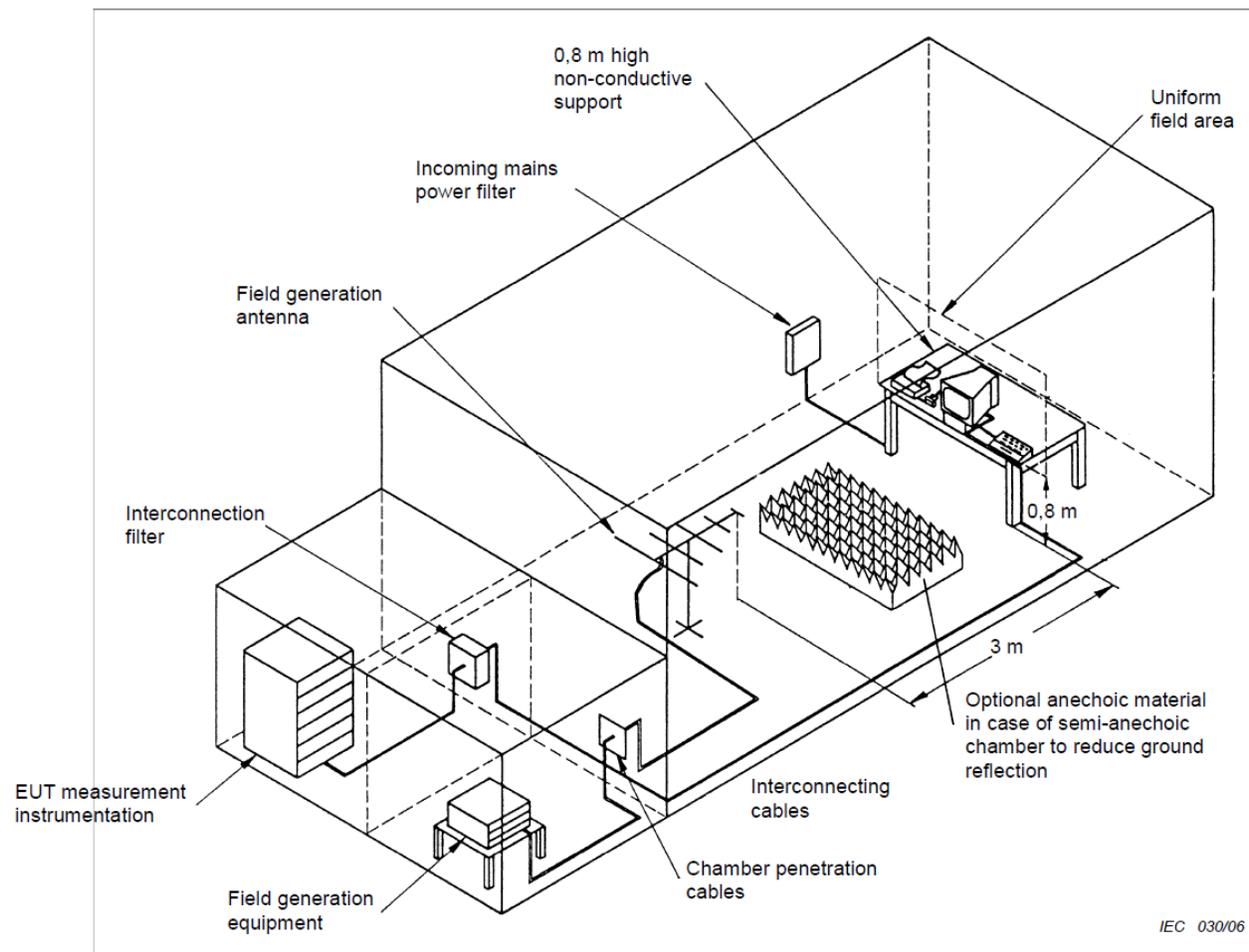
<b>Standard:</b>	EN 55035 (refer to IEC/EN 61000-4-3)
<b>Frequency Range:</b>	80 MHz to 1000MHz
<b>Spot Frequency:</b>	1800, 2600, 3500, 5000 MHz( $\pm 1\%$ )
<b>Field Strength:</b>	3V/m (unmodulated)
<b>Immunity level to common wireless communication:</b>	See Table I.1 for test frequency and level
<b>Modulation:</b>	80%, AM(1 kHz)
<b>Frequency Step:</b>	1%
<b>Polarity of Antenna</b>	Vertical and Horizontal
<b>Test Distance:</b>	3 meters
<b>Antenna Height:</b>	1.55 meters
<b>Dwell Time:</b>	3 s

### 7.3.2. Test Procedure

The test procedure was in accordance with IEC/EN 61000-4-3.

- a. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b. The frequency range is swept from 80 MHz to 1000MHz with the signal 80% amplitude modulated with a 1 KHz sine wave. The rate of sweep did not exceed  $1.5 \times 10^{-3}$  decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- d. The field strength level from 80 MHz to 1000MHz was 3V/m.
- e. A special spot frequency test point are 1800, 2600, 3500 and 5000MHz ( $\pm 1\%$ )
- f. Wireless communication devices are considered to be the most significant sources of interference for MME in the range 800 MHz to 5 GHz. Consequently testing is only required at relevant spot frequencies refer to EN 55035 Annex I.
- g. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

### 7.3.3. Test Setup



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

### 7.3.4. Test Result

#### EN 55024 :

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	58%RH
Tested By:	Edison Lin	Test Date:	Jul. 13, 2020

Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criteria	Results	Judgment
80-1000	Front	H / V	3V/m	A	A	PASS
80-1000	Left	H / V	3V/m	A	A	PASS
80-1000	Right	H / V	3V/m	A	A	PASS
80-1000	Rear	H / V	3V/m	A	A	PASS

Note	There was no abnormal situation during the test compared with initial operation.
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#### Customer Request:

Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criteria	Results	Judgment
80-1000	Front	H / V	10V/m	A	A	PASS
80-1000	Left	H / V	10V/m	A	A	PASS
80-1000	Right	H / V	10V/m	A	A	PASS
80-1000	Rear	H / V	10V/m	A	A	PASS

Note	There was no abnormal situation during the test compared with initial operation.
------	--

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	58%RH
Tested By:	Edison Lin	Test Date:	Jul. 13, 2020

Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criteria	Results	Judgement
80-1000	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
1800(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
2600(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
3500(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
5000(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

Immunity Level to common wireless communication						
Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criterion	Results	Judgement
800(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
900(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
1800(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
2600(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
3500(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
5000(±1%)	Front / Left / Right / Rear	H / V	3V/m	A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

**Customer Request:**

Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criteria	Results	Judgement
80-1000	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
1800(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
2600(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
3500(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
5000(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS

Note	There was no abnormal situation during the test compared with initial operation.
------	--

Immunity Level to common wireless communication						
Freq. Range (MHz)	Position ( Face )	Polarity (H or V)	Field Strength (V/m)	Criterion	Results	Judgement
800(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
900(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
1800(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
2600(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
3500(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS
5000(±1%)	Front / Left / Right / Rear	H / V	10V/m	A	A	PASS

Note	There was no abnormal situation during the test compared with initial operation.
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## 7.4. Electrical Fast Transient/Burst Immunity Test

### 7.4.1. Test Specification

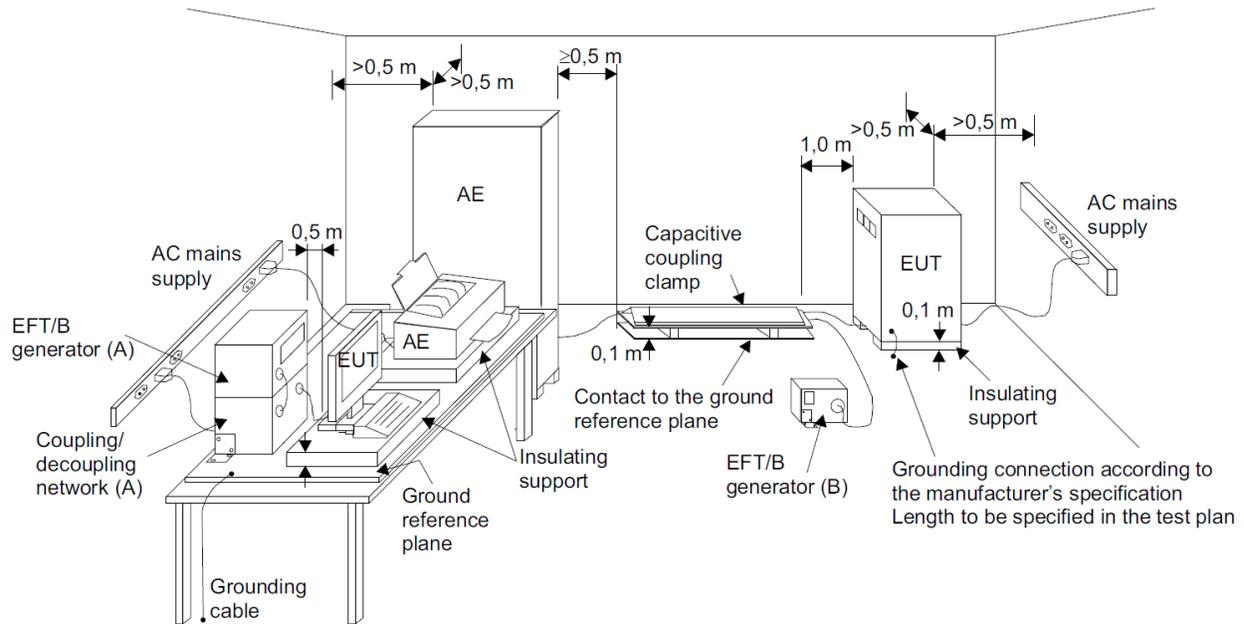
For Standard EN 55024 & EN 55035 :

<b>Standard:</b>	EN 55024/ EN55035 (refer to IEC/EN 61000-4-4)
<b>Test Voltage:</b>	0.5,1 kV(Peak)
<b>Polarity:</b>	Positive and Negative
<b>Impulse Frequency:</b>	5 or 100 kHz
<b>Impulse wave shape:</b>	5/50 Tr/Th ns
<b>Burst Duration:</b>	15ms or 0.75ms
<b>Burst Period:</b>	300ms
<b>Test Duration:</b>	1 Minute

### 7.4.2. Test Procedure

- a. The EUT was tested with 1000 volt discharges to the AC power input leads, 500 volt discharges to the signal/control ports.
- b. Both positive and negative polarity discharges were applied.
- c. Table-top equipment and equipment normally mounted on ceilings or walls as well as built-in equipment shall be tested with the EUT located  $(0,1 \pm 0,01)$  m above the ground reference plane.
- d. The EUT and the auxiliary equipment were placed on a table of 0.8 m heights above a metal ground reference plane. The size of ground plane is greater than 0.8m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The minimum distance between the EUT and all other conductive structures (including the generator, AE and the walls of a shielded room), except the ground reference plane, shall be more than 0,5 m.
- e. The duration time of each test sequential was 1 minute.
- f. The transient/burst waveform was in accordance with IEC/EN 61000-4-4, 5/50ns.

### 7.4.3. Test Setup



IEC 645/12

- (A) location for supply line coupling
- (B) location for signal lines coupling

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

#### 7.4.4. Test Result

##### EN 55024 :

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	62%RH
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Repetition Frequency		5kHz						Criteria	Results	Judgement
Test Port		Test Levels (kV)								
		+0.5	-0.5	+1.0	-1.0	-	-			
AC power Port	L	-	-	A	A	-	-	B	A	PASS
	N	-	-	A	A	-	-			
	L + N	-	-	A	A	-	-			
Note		There was no abnormal situation during the test compared with initial operation.								

##### Customer Request:

Repetition Frequency		5kHz						Criteria	Results	Judgement
Test Port		Test Levels (kV)								
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0			
AC power Port	L	-	-	-	-	A	A	B	A	PASS
	N	-	-	-	-	A	A			
	L + N	-	-	-	-	A	A			
Note		There was no abnormal situation during the test compared with initial operation.								

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	62%RH
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Repetition Frequency		5kHz						Criteria	Results	Judgement
Test Port		Test Levels (kV)								
		+0.5	-0.5	+1.0	-1.0	-	-			
AC power Port	L	-	-	A	A	-	-	B	A	PASS
	N	-	-	A	A	-	-			
	L + N	-	-	A	A	-	-			
Note		There was no abnormal situation during the test compared with initial operation.								

**Customer Request:**

Repetition Frequency		5kHz						Criteria	Results	Judgement
Test Port		Test Levels (kV)								
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0			
AC power Port	L	-	-	-	-	A	A	B	A	PASS
	N	-	-	-	-	A	A			
	L + N	-	-	-	-	A	A			
Note		There was no abnormal situation during the test compared with initial operation.								

## 7.5. Surge Immunity Test

### 7.5.1. Test Specification

#### For Standard EN 55024 :

<b>Standard:</b>	EN 55024 (refer to IEC/EN 61000-4-5)
<b>Waveform:</b>	1.2/50 (8/20) Tr/Th $\mu$ s , 10/700 Tr/Th $\mu$ s
<b>Test Voltage:</b>	0.5,1 kV(Line to Line) 0.5,1,2 kV(Line to Earth)
<b>Polarity:</b>	Positive and Negative
<b>Phase Angle:</b>	0°/90°/180°/270°
<b>Repetition Rate:</b>	1 per minute
<b>Times:</b>	5 times each polarity

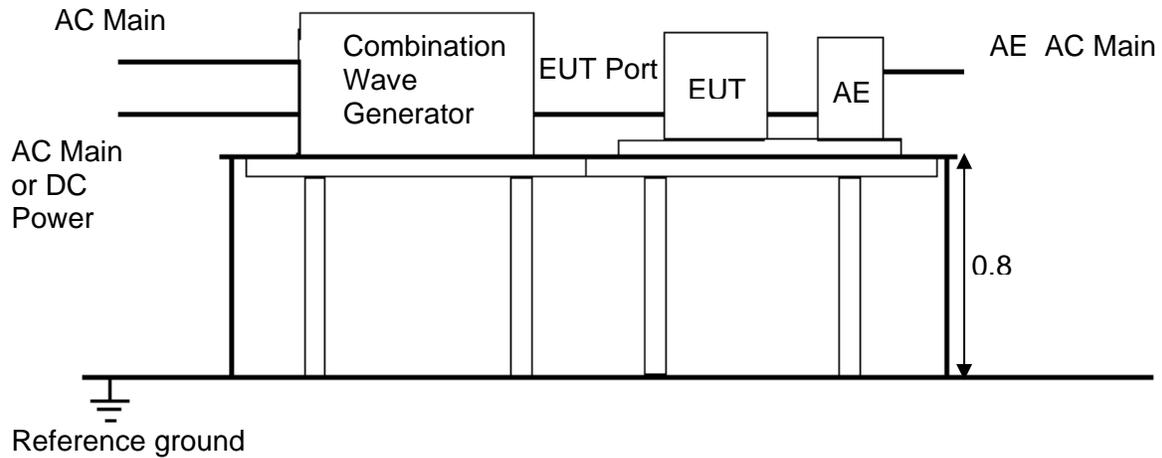
#### For Standard EN 55035 :

<b>Standard:</b>	EN 55035 (refer to IEC/EN 61000-4-5)
<b>Waveform:</b>	1.2/50 (8/20) Tr/Th $\mu$ s , 10/700 Tr/Th $\mu$ s
<b>Test Voltage:</b>	0.5,1 kV(Line to Line) 0.5,1,2 kV(Line to Earth)
<b>Polarity:</b>	Positive and Negative
<b>Phase Angle:</b>	90°/270°
<b>Repetition Rate:</b>	1 per minute
<b>Times:</b>	5 times each polarity

### 7.5.2. Test Procedure

- a. The EUT and the auxiliary equipment were placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m $\times$ 1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT shall not exceed 2 meters (provided by the manufacturer).
- b. The EUT was connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).
- c. The surges were applied line to line and line(s) to earth. When testing line to earth the test voltage was applied successively between each of the lines and earth. Steps up to the test level specified increased the test voltage. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.
- d. If EUT was included telecom port and connected to outdoor directly, test shall be applied to line to earth test using 10/700 surge wave form. If the wave form affects the functioning of high speed data port, the test shall be carried out using 1.2/50 wave form do the test.

### 7.5.3. Test Setup



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

**7.5.4. Test Result**

**EN 55024 :**

Test Mode:	Mode 8	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Edison Lin	Test Date:	Aug. 21, 2020

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Results	Judgment
	Polarity	Phase	Voltage						
			0.5kV	1kV	2kV	-kV			
L - N	+	0°	A	A	-	-	B	A	PASS
	-		A	A	-	-			
	+	90°	A	A	-	-			
	-		A	A	-	-			
	+	180°	A	A	-	-			
	-		A	A	-	-			
	+	270°	A	A	-	-			
	-		A	A	-	-			
Note	There was no abnormal situation during the test compared with initial operation.								

**Customer Request (for 3 pin):**

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Results	Judgment
	Polarity	Phase	Voltage						
			0.5kV	1kV	2kV	-kV			
L - N	+	0°	A	A	-	-	B	A	PASS
	-		A	A	-	-			
	+	90°	A	A	-	-			
	-		A	A	-	-			
	+	180°	A	A	-	-			
	-		A	A	-	-			
	+	270°	A	A	-	-			
	-		A	A	-	-			
L - PE	+	0°	A	A	A	-	B	A	PASS
	-		A	A	A	-			
	+	90°	A	A	A	-			
	-		A	A	A	-			
	+	180°	A	A	A	-			
	-		A	A	A	-			
	+	270°	A	A	A	-			
	-		A	A	A	-			
N - PE	+	0°	A	A	A	-	B	A	PASS
	-		A	A	A	-			
	+	90°	A	A	A	-			
	-		A	A	A	-			
	+	180°	A	A	A	-			
	-		A	A	A	-			
	+	270°	A	A	A	-			
	-		A	A	A	-			
Note	There was no abnormal situation during the test compared with initial operation.								

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Edison Lin	Test Date:	Aug. 21, 2020

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Results	Judgement
	Polarity	Phase	Voltage						
			0.5kV	1kV	2kV	-			
L - N	+	90°	A	A	-	-	B	A	PASS
	-	270°	A	A	-	-			
Note	There was no abnormal situation during the test compared with initial operation.								

**Customer Request (for 3 pin):**

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Results	Judgement
	Polarity	Phase	Voltage						
			0.5kV	1kV	2kV	-			
L - N	+	90°	A	A	-	-	B	A	PASS
	-	270°	A	A	-	-			
L - PE	+	90°	A	A	A	-	B	A	PASS
	-		A	A	A	-			
	+	270°	A	A	A	-			
	-		A	A	A	-			
N - PE	+	90°	A	A	A	-	B	A	PASS
	-		A	A	A	-			
	+	270°	A	A	A	-			
	-		A	A	A	-			
Note	There was no abnormal situation during the test compared with initial operation.								

## 7.6. Immunity to Conducted Disturbances Induced by RF Fields

### 7.6.1. Test Specification

#### For Standard EN 55024 :

<b>Standard:</b>	EN 55024 (refer to IEC/EN 61000-4-6)
<b>Frequency Range:</b>	0.15-80MHz
<b>Field Strength:</b>	3V (unmodulated, r.m.s.)
<b>Modulation:</b>	80% AM (1 kHz)
<b>Frequency Step:</b>	1%
<b>Dwell Time:</b>	3s

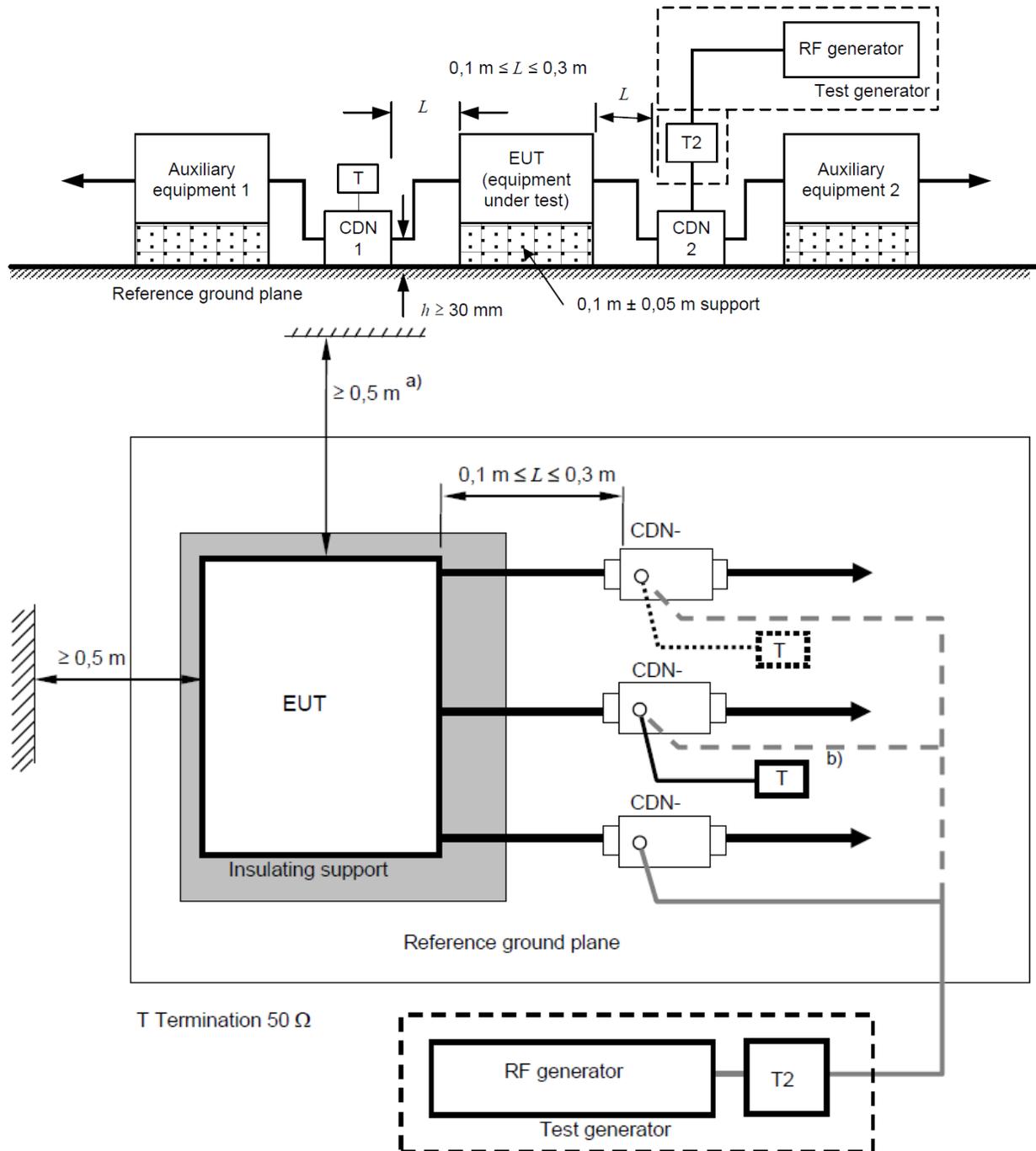
#### For Standard EN 55035 :

<b>Standard:</b>	EN 55035 (refer to IEC/EN 61000-4-6)
<b>Frequency Range:</b>	0.15-10; 10-30; 30-80MHz
<b>Field Strength:</b>	3V; 3 to 1V; 1V (unmodulated, r.m.s.)
<b>Modulation:</b>	80% AM (1 kHz)
<b>Frequency Step:</b>	1%
<b>Dwell Time:</b>	3s

### 7.6.2. Test Procedure

- a. The EUT shall be tested within its intended operating and climatic conditions.
- b. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.
- c. The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The signal is modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
- d. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.
- e. Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

### 7.6.3. Test Setup



- a) The EUT clearance from any metallic objects other than test equipment shall be at least 0,5 m.
- b) Only one of the CDNs not used for injection shall be terminated with 50  $\Omega$ , providing only a return path. All other CDNs shall be configured as decoupling networks.

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

**7.6.4. Test Result**

**EN 55024 :**

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	58%RH
Tested By:	Edison Lin	Test Date:	Jul. 6, 2020

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgment
AC Power Port	0.15 --- 80	3V	M016(M2)	A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

**Customer Request:**

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgment
AC Power Port	0.15 --- 80	10V	M016(M2)	A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	58%RH
Tested By:	Edison Lin	Test Date:	Jul. 6, 2020

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgement
AC Power Port	0.15 --- 10	3V	M016(M2)	A	A	PASS
	10 --- 30	3 to 1V		A	A	PASS
	30 --- 80	1V		A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

**Customer Request:**

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgement
AC Power Port	0.15 --- 80	10V	M016(M2)	A	A	PASS
Note	There was no abnormal situation during the test compared with initial operation.					

## 7.7. Power frequency magnetic field immunity Test

### 7.7.1. Test Specification

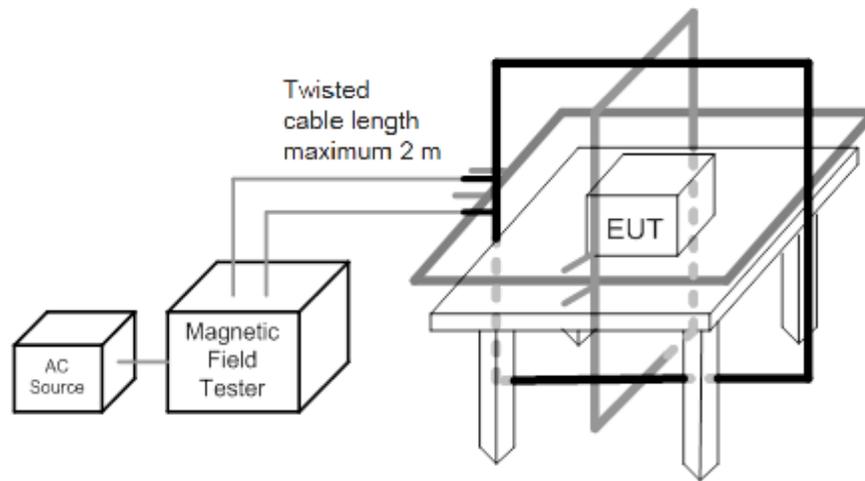
For Standard EN 55024 & EN 55035 :

<b>Standard:</b>	EN 55024/ EN 55035 (refer to IEC/EN 61000-4-8)
<b>Frequency Range:</b>	50 Hz
<b>Field Strength:</b>	1 A/m
<b>Observation Time:</b>	1 minute
<b>Inductance Coil:</b>	Rectangular type, 1m x 1m

### 7.7.2. Test Procedure

- a. The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m\*1m min. and 0.65mm thick min.
- b. The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- c. The cables supplied or recommended by the equipment manufacturer shall be used 1 meter of all cables used shall be exposed to the magnetic field.
- d. The EUT with coil shall be leave all magnetic material and wall 1m away in any axis during the test.
- e. The cable length from generator to coil shall be less than 2m
- f. The background noise shall be 20dB less than test field strength.
- g. Test shall be applied to three axis X, Y, Z and disturbance over 1 minute.
- h. All cables shall be exposed to the magnetic field for 1m of their length.

### 7.7.3. Test Setup



Note:

#### TABLE-TOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

#### FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50% of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

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

### 7.7.4. Test Results

#### EN 55024 :

Test Mode:	Mode 8	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	61%RH
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Level	Magnetic Field Strength (A/m)	Criteria	Results			Judgement
			X	Y	Z	
1	1	A	A	A	A	PASS
2	3	/	/	/	/	
3	10	/	/	/	/	
4	30	/	/	/	/	
5	100	/	/	/	/	
X	Special	/	/	/	/	
Note	There was no abnormal situation during the test compared with initial operation.					

#### Customer Request:

Level	Magnetic Field Strength (A/m)	Criteria	Results			Judgement
			X	Y	Z	
1	1	/	/	/	/	PASS
2	3	/	/	/	/	
3	10	/	/	/	/	
4	30	A	A	A	A	
5	100	/	/	/	/	
X	Special	/	/	/	/	
Note	There was no abnormal situation during the test compared with initial operation.					

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	61%RH
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

Level	Magnetic Field Strength (A/m)	Criteria	Results			Judgement
			X	Y	Z	
1	1	A	A	A	A	PASS
2	3	/	/	/	/	
3	10	/	/	/	/	
4	30	/	/	/	/	
5	100	/	/	/	/	
X	Special	/	/	/	/	
Note	There was no abnormal situation during the test compared with initial operation.					

**Customer Request:**

Level	Magnetic Field Strength (A/m)	Criteria	Results			Judgement
			X	Y	Z	
1	1	/	/	/	/	PASS
2	3	/	/	/	/	
3	10	/	/	/	/	
4	30	A	A	A	A	
5	100	/	/	/	/	
X	Special	/	/	/	/	
Note	There was no abnormal situation during the test compared with initial operation.					

## 7.8. Voltage Dips and Short Interruptions Immunity Test

### 7.8.1. Test Specification

#### For Standard EN 55024 :

<b>Standard:</b>	EN 55024 (refer to IEC/EN 61000-4-11)
<b>Voltage Dips:</b>	>95% reduction ; 30% reduction
<b>Voltage Interruptions:</b>	>95%
<b>Voltage Phase Angle:</b>	0°/45°/90°/135°/180°/225°/270°/315°

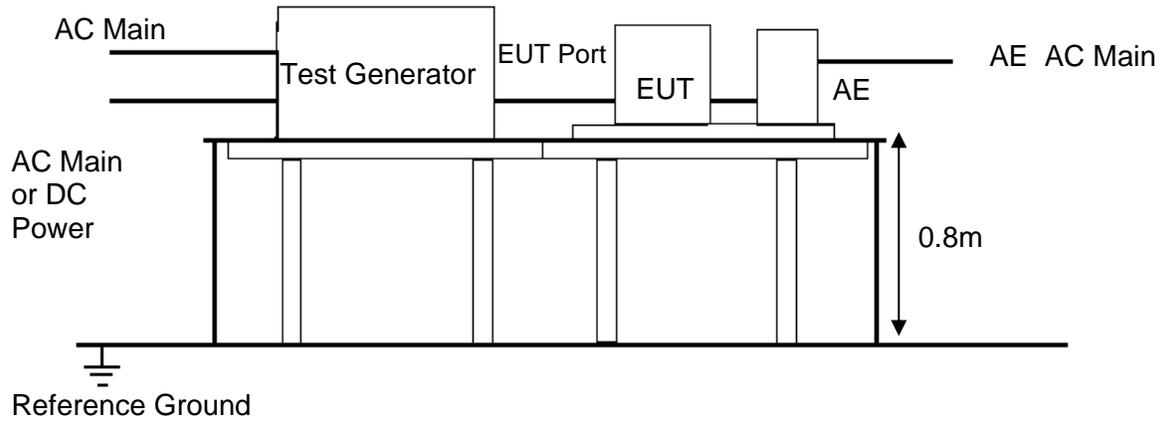
#### For Standard EN 55035 :

<b>Standard:</b>	EN 55035 (refer to IEC/EN 61000-4-11)
<b>Voltage Dips:</b>	<5% residual ; 70% residual
<b>Voltage Interruptions:</b>	<5%
<b>Voltage Phase Angle:</b>	0°/45°/90°/135°/180°/225°/270°/315°

### 7.8.2. Test Procedure

- a. The power cord was used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.
- b. For voltage dips, changes in supply voltage shall occur at zero crossings of the voltage, and at additional angles considered critical by product committees or individual product specifications preferably selected from 45°, 90°, 135°, 180°, 225°, 270° and 315° on each phase.
- c. For short interruptions, the angle shall be defined by the product committee as the worst case. In the absence of definition, it is recommended to use 0° for one of the phases.

### 7.8.3. Test Setup



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

### 7.8.4. Test Result

#### EN 55024 :

Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	AC 100V/50Hz, 240V/50Hz	Humidity:	62%RH
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020

100V/50Hz					
Interruption & Dips	Duration (cycle)	Reduction voltage	Criteria	Results	Judgment
Voltage dips	0.5	>95%	B	B	PASS
	25	30%	C	A	
Voltage interruptions	250	>95%	C	B	
Note	Voltage dips >95%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 30%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

240V/50Hz					
Interruption & Dips	Duration (cycle)	Reduction voltage	Criteria	Results	Judgment
Voltage dips	0.5	>95%	B	B	PASS
	25	30%	C	A	
Voltage interruptions	250	>95%	C	B	
Note	Voltage dips >95%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 30%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

**Customer Request:**

100V/50Hz					
Interruption & Dips	Duration (cycle)	Reduction voltage	Criteria	Results	Judgment
Voltage dips	0.5	>95%	B	B	PASS
	25	30%	B	A	
Voltage interruptions	250	>95%	B	B	
Note	Voltage dips >95%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 30%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

240V/50Hz					
Interruption & Dips	Duration (cycle)	Reduction voltage	Criteria	Results	Judgment
Voltage dips	0.5	>95%	B	B	PASS
	25	30%	B	A	
Voltage interruptions	250	>95%	B	B	
Note	Voltage dips >95%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 30%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

**EN 55035 :**

Test Mode:	Mode 8	Temperature:	23°C		
Test Voltage:	AC 100V/50Hz, 240V/50Hz	Humidity:	62%RH		
Tested By:	Edison Lin	Test Date:	Jul. 7, 2020		
100V/50Hz					
Interruption & Dips	Duration (cycle)	Residual voltage	Perform Criteria	Results	Judgment
Voltage dips	0.5	<5%	B	B	PASS
	25	70%	C	A	
Voltage interruptions	250	<5%	C	B	
Note	Voltage dips <5%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 70%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

240V/50Hz					
Interruption & Dips	Duration (cycle)	Residual voltage	Perform Criteria	Results	Judgment
Voltage dips	0.5	<5%	B	B	PASS
	25	70%	C	A	
Voltage interruptions	250	<5%	C	B	
Note	Voltage dips <5%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 70%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

**Customer Request:**

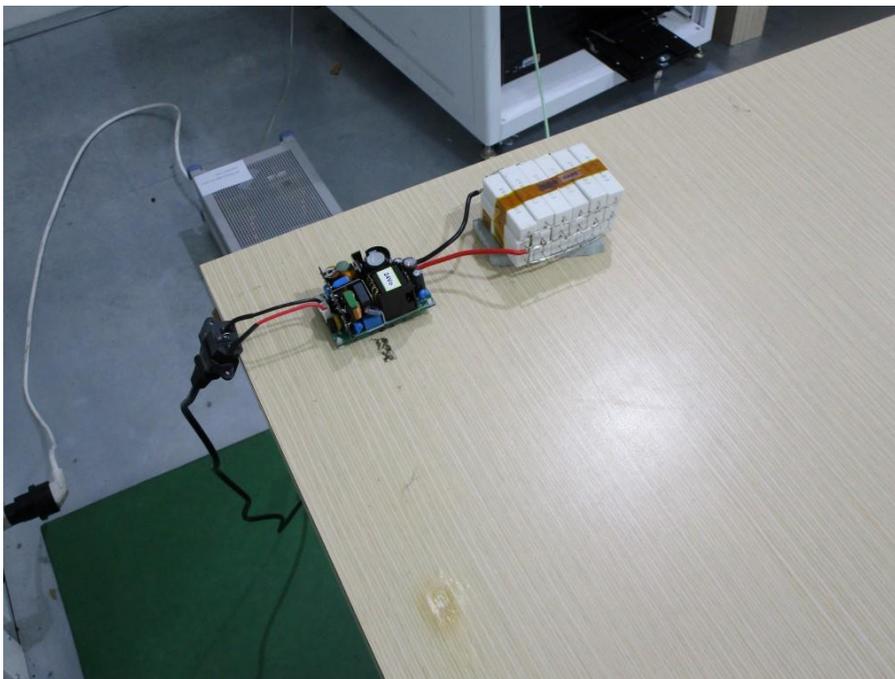
100V/50Hz					
Interruption & Dips	Duration (cycle)	Residual voltage	Perform Criteria	Results	Judgment
Voltage dips	0.5	<5%	B	B	PASS
	25	70%	B	A	
Voltage interruptions	250	<5%	B	B	
Note	Voltage dips <5%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 70%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

240V/50Hz					
Interruption & Dips	Duration (cycle)	Residual voltage	Perform Criteria	Results	Judgment
Voltage dips	0.5	<5%	B	B	PASS
	25	70%	B	A	
Voltage interruptions	250	<5%	B	B	
Note	Voltage dips <5%, 0.5 cycle: The output voltage is unstable during the test, but it will automatically return to normal conditions after the test.				
	Voltage dips 70%, 25 cycle: There was no abnormal situation during the test compared with initial operation.				
	Voltage interruptions: The output voltage was lost during the test, but it will automatically return to normal conditions after the test.				

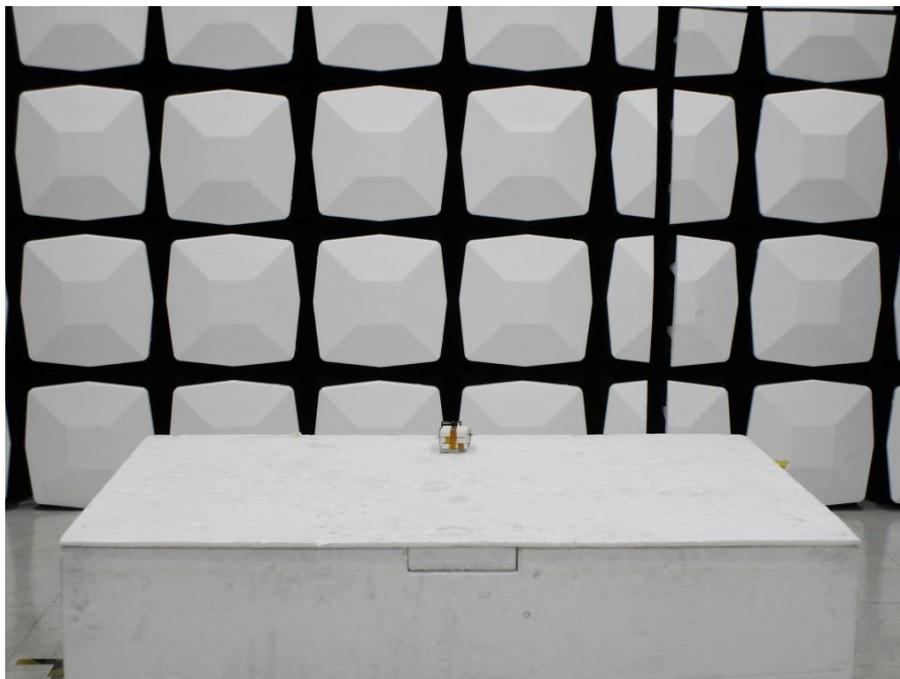
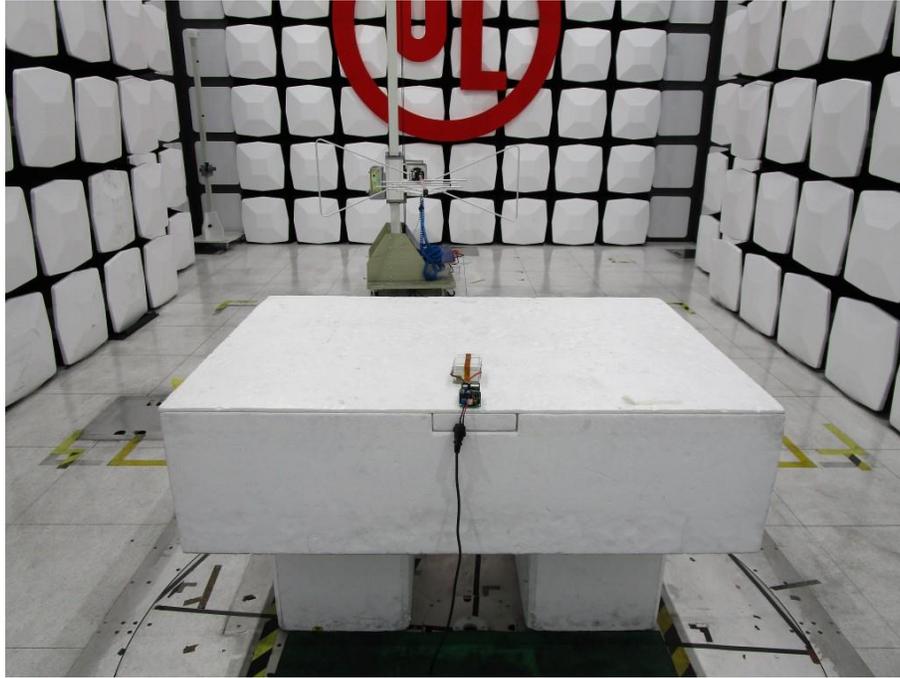
## Appendix I: Photographs of EMC Test Configuration

### Conducted Disturbance

#### Mode 8

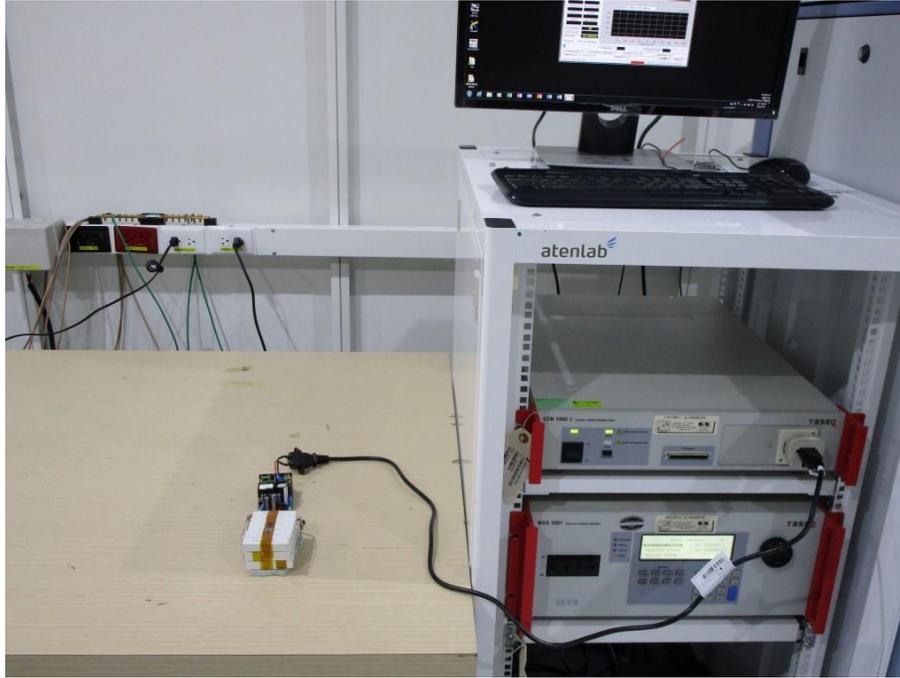


Radiated Disturbance  
Below 1GHz  
Mode 8



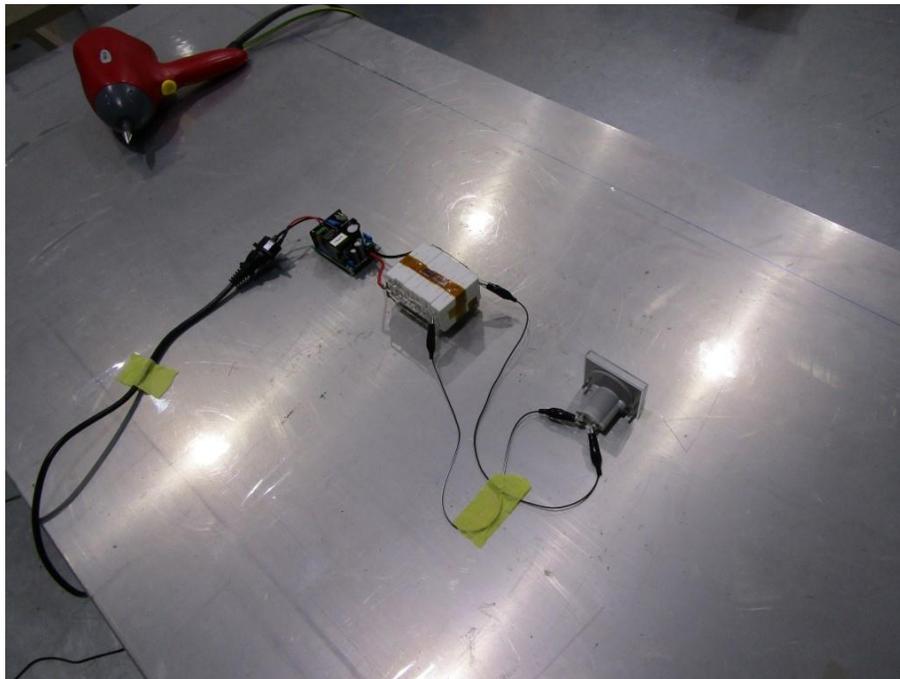
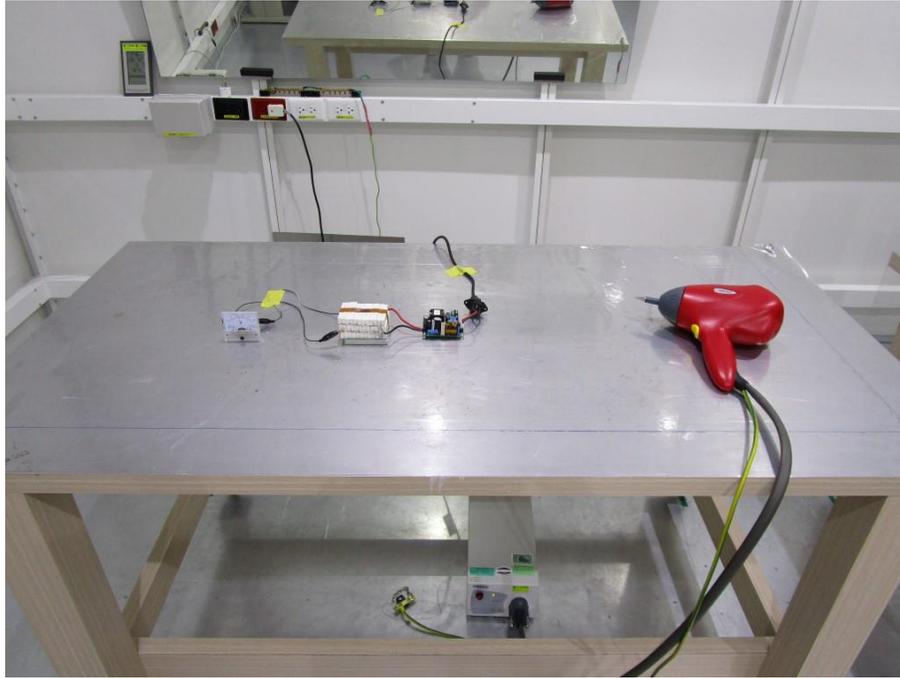
Harmonic and Flicker

Mode 8



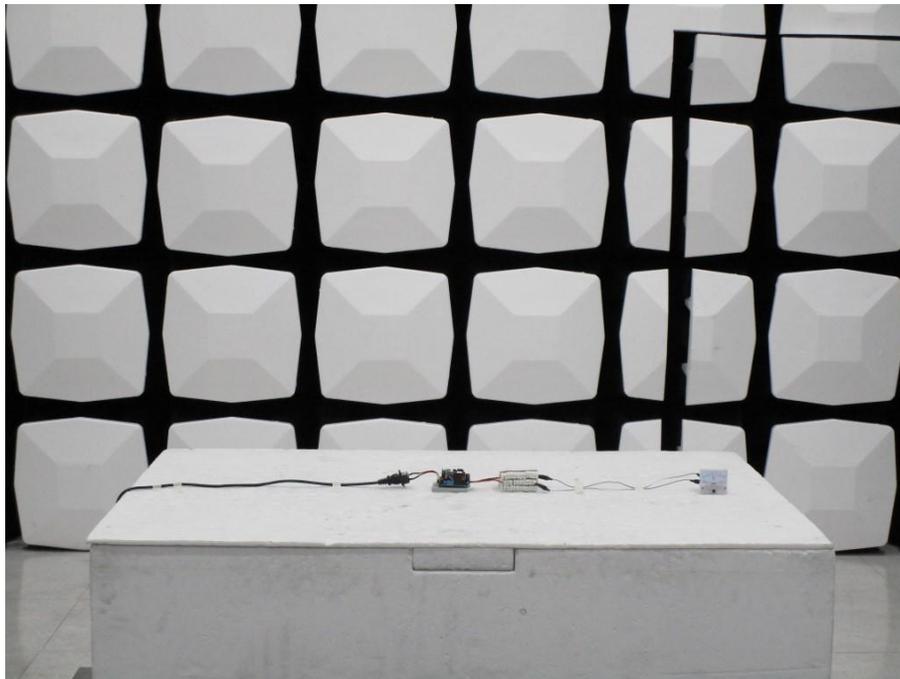
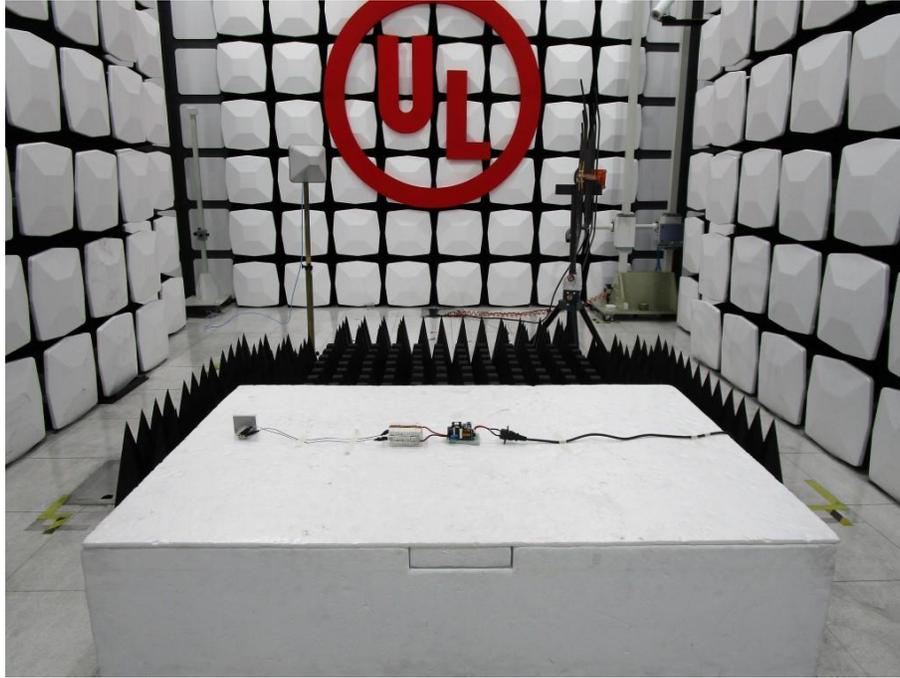
## Electrostatic Discharge Immunity

### Mode 8



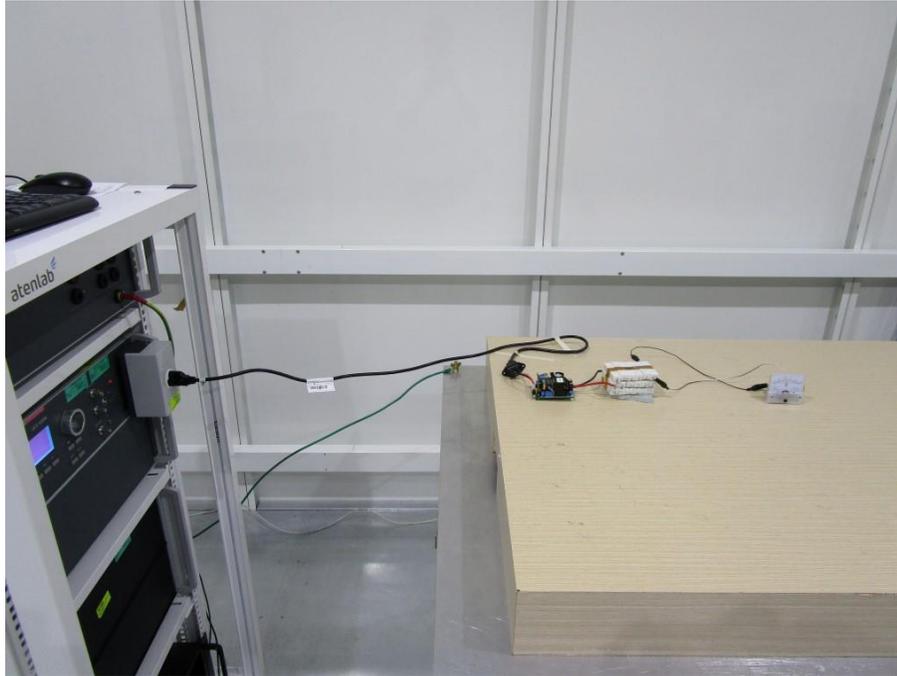
Radio Frequency Electromagnetic Field Immunity

Mode 8



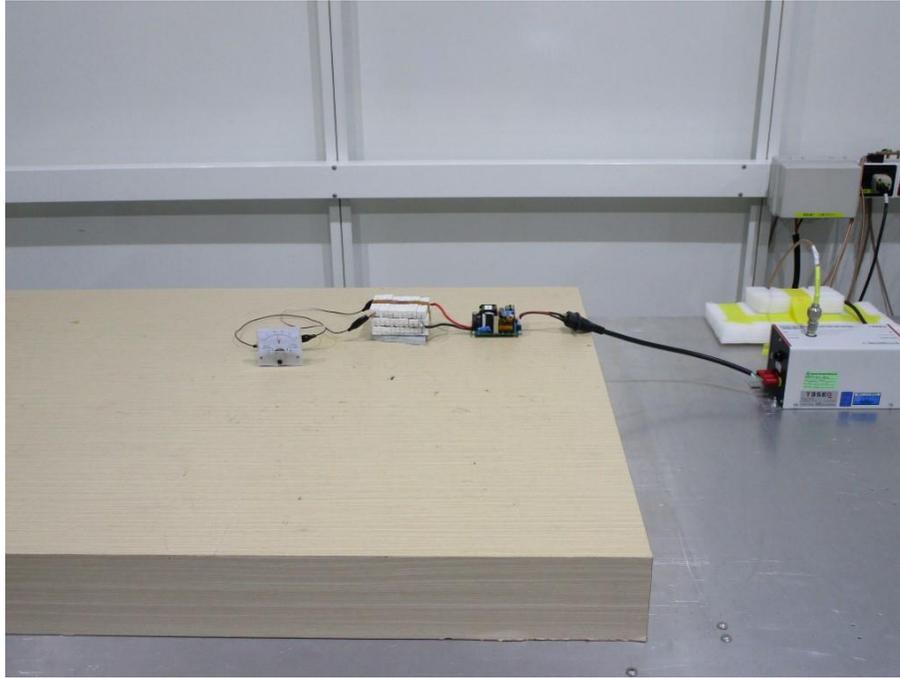
Electrical Fast Transient/ Surge/ Voltage Dips and Short Interruptions Immunity

Mode 8



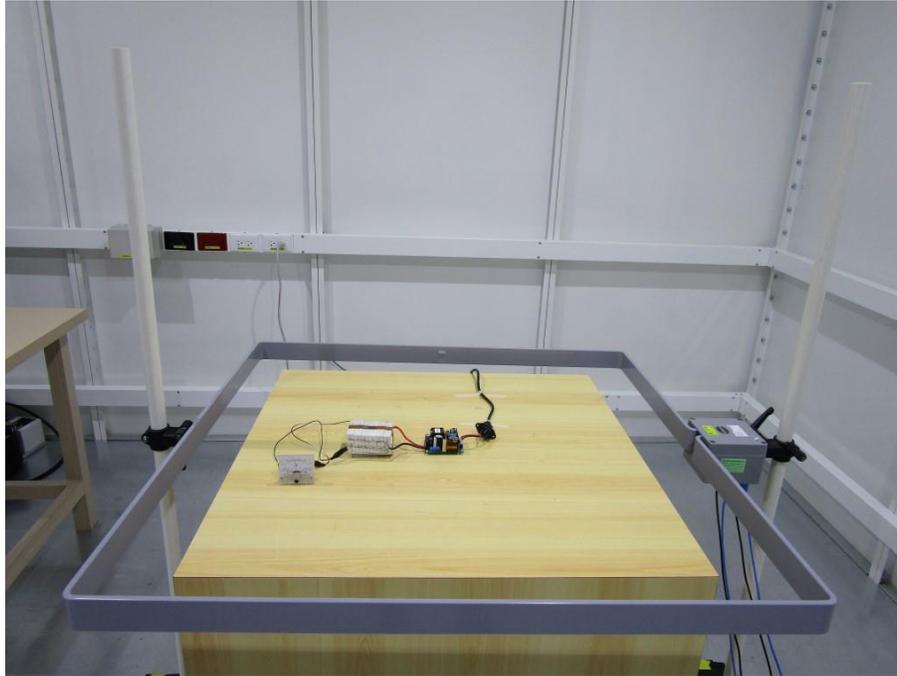
Immunity to conducted disturbances induced by RF fields

Mode 8



Power frequency magnetic field immunity

Mode 8



## **Appendix II: Photographs of the EUT**

Please see the photographs of EUT in the test report no.: 4789855728-EP.

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**END OF REPORT**

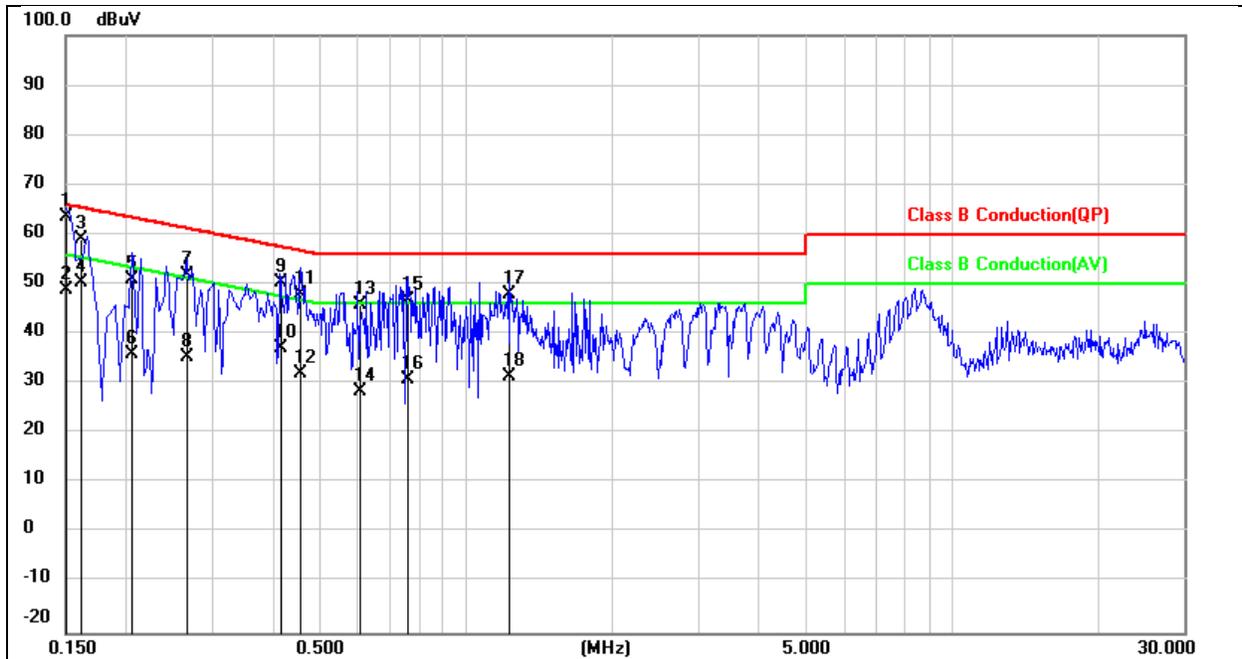
### Appendix III: Preliminary Test Raw Data

Each modes are correspond to original report 4789548226A-EN-E0-V0.  
The difference are the list corresponding models(as below table) and applicant , others circuit design, enclosure and materials are the same.

Mode	TRACO
Mode 1	TPP 180-112B-M
Mode 2	TPP 180-124B-M
Mode 3	TPP 180-112BA-M
Mode 4	TPP 180-124BA-M
Mode 5	TPP 180-112-M
Mode 6	TPP 180-124-M
Mode 7	TPP 180-112A-M
Mode 8	TPP 180-124A-M

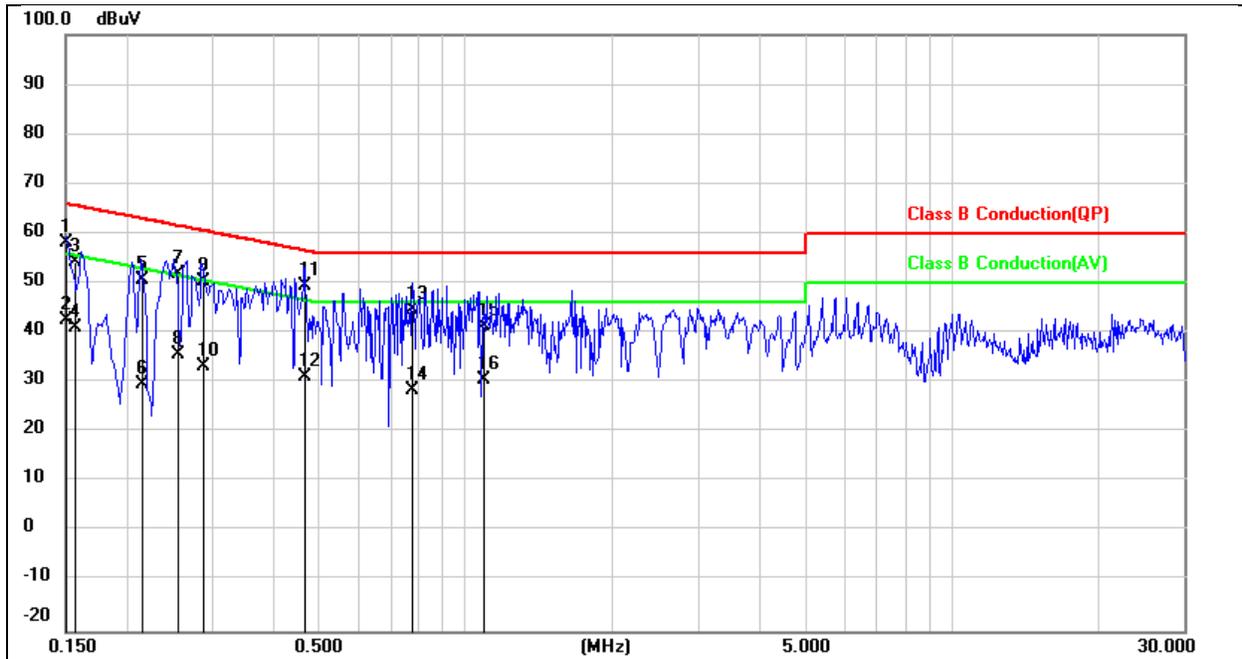
### Conducted Emission

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:14:48 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 1		
Note:			



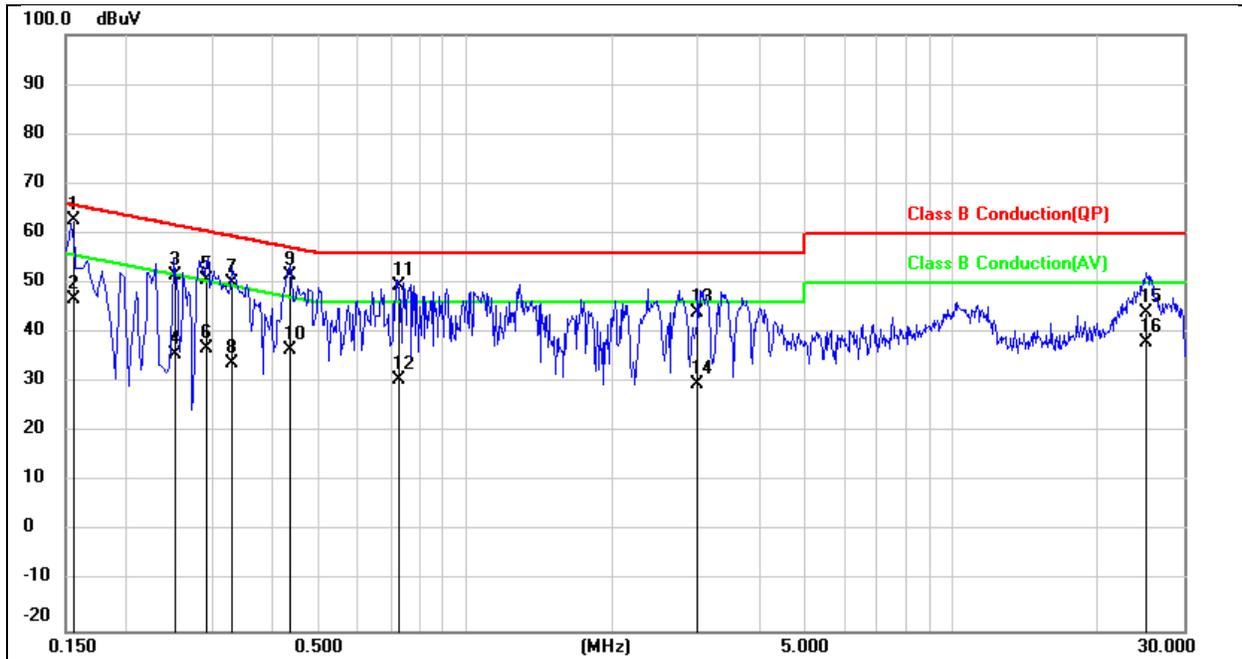
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1508	44.10	19.47	63.57	65.96	-2.39	QP
2	0.1508	29.27	19.47	48.74	55.96	-7.22	AVG
3	0.1619	39.63	19.47	59.10	65.37	-6.27	QP
4	0.1619	30.97	19.47	50.44	55.37	-4.93	AVG
5	0.2047	31.40	19.47	50.87	63.42	-12.55	QP
6	0.2047	16.55	19.47	36.02	53.42	-17.40	AVG
7	0.2651	32.46	19.47	51.93	61.27	-9.34	QP
8	0.2651	15.83	19.47	35.30	51.27	-15.97	AVG
9	0.4163	30.79	19.48	50.27	57.52	-7.25	QP
10	0.4163	17.62	19.48	37.10	47.52	-10.42	AVG
11	0.4572	28.45	19.48	47.93	56.74	-8.81	QP
12	0.4572	12.67	19.48	32.15	46.74	-14.59	AVG
13	0.6050	26.24	19.48	45.72	56.00	-10.28	QP
14	0.6050	8.94	19.48	28.42	46.00	-17.58	AVG
15	0.7593	27.14	19.50	46.64	56.00	-9.36	QP
16	0.7593	11.49	19.50	30.99	46.00	-15.01	AVG
17	1.2275	28.47	19.50	47.97	56.00	-8.03	QP
18	1.2275	12.02	19.50	31.52	46.00	-14.48	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:17:44 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 1		
Note:			



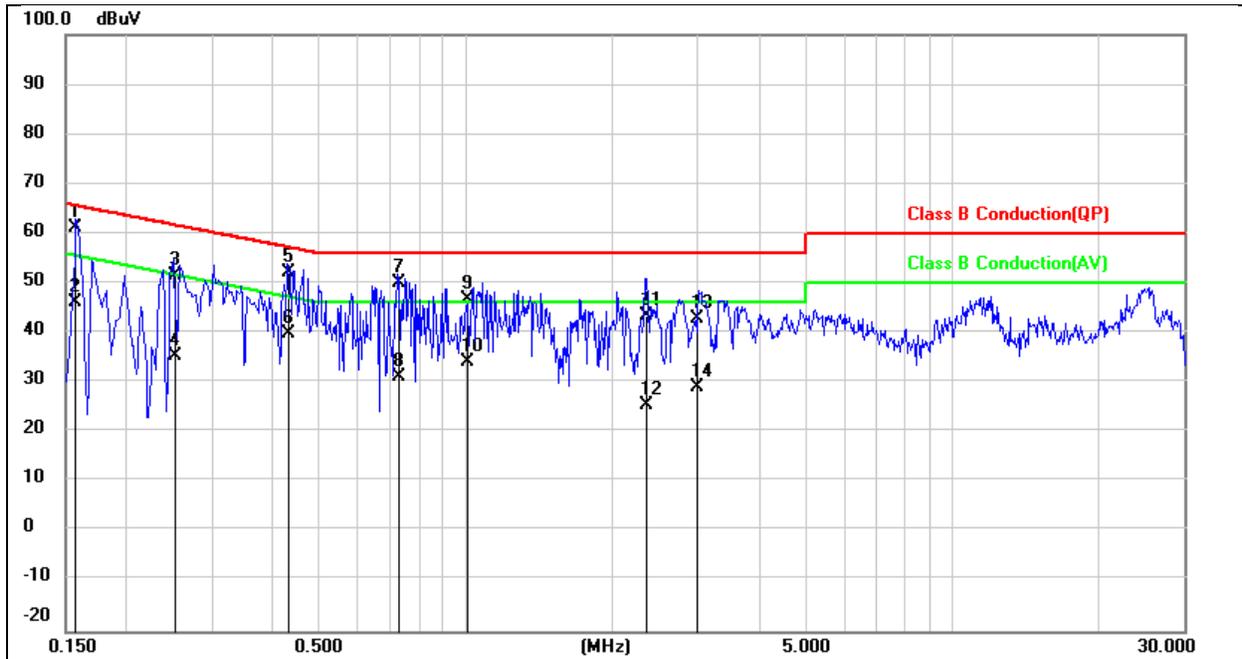
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1502	38.80	19.47	58.27	65.99	-7.72	QP
2	0.1502	23.13	19.47	42.60	55.99	-13.39	AVG
3	0.1572	34.89	19.47	54.36	65.61	-11.25	QP
4	0.1572	21.48	19.47	40.95	55.61	-14.66	AVG
5	0.2175	31.04	19.48	50.52	62.91	-12.39	QP
6	0.2175	10.06	19.48	29.54	52.91	-23.37	AVG
7	0.2545	32.45	19.48	51.93	61.61	-9.68	QP
8	0.2545	16.20	19.48	35.68	51.61	-15.93	AVG
9	0.2891	31.01	19.48	50.49	60.55	-10.06	QP
10	0.2891	13.76	19.48	33.24	50.55	-17.31	AVG
11	0.4673	29.98	19.49	49.47	56.56	-7.09	QP
12	0.4673	11.74	19.49	31.23	46.56	-15.33	AVG
13	0.7767	25.10	19.50	44.60	56.00	-11.40	QP
14	0.7767	9.09	19.50	28.59	46.00	-17.41	AVG
15	1.0883	21.95	19.50	41.45	56.00	-14.55	QP
16	1.0883	11.14	19.50	30.64	46.00	-15.36	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:23:41 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 2		
Note:			



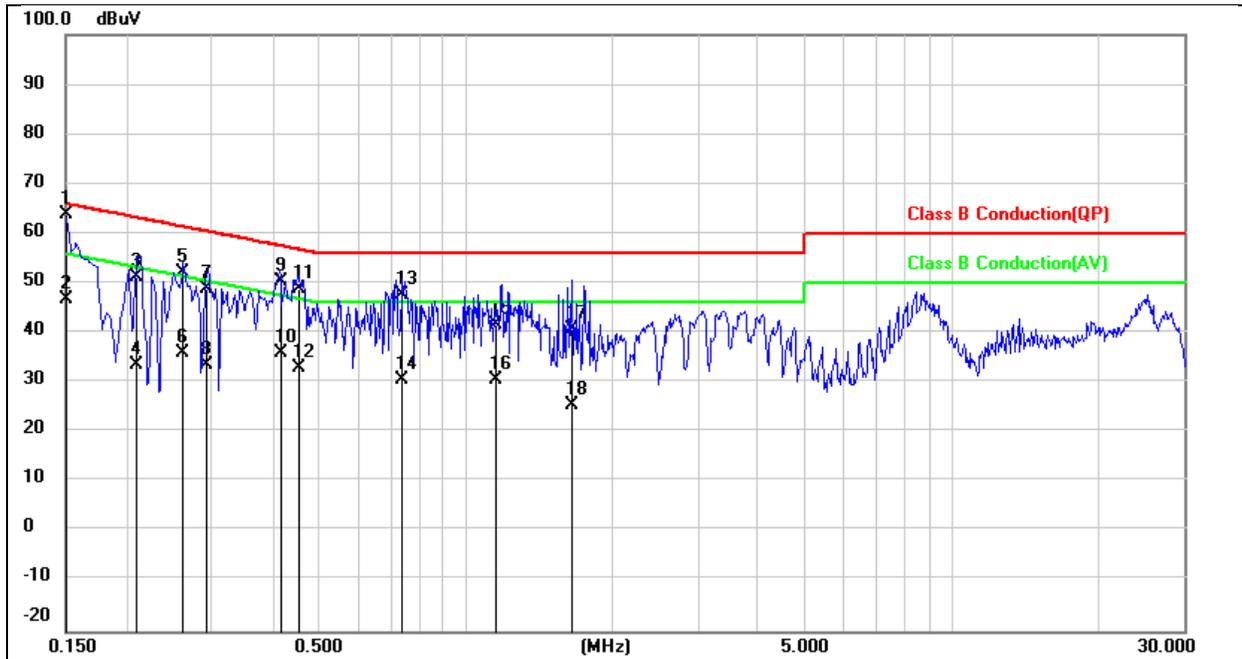
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1561	43.23	19.47	62.70	65.67	-2.97	QP
2	0.1561	27.25	19.47	46.72	55.67	-8.95	AVG
3	0.2538	32.04	19.47	51.51	61.63	-10.12	QP
4	0.2538	16.04	19.47	35.51	51.63	-16.12	AVG
5	0.2915	31.12	19.47	50.59	60.48	-9.89	QP
6	0.2915	17.43	19.47	36.90	50.48	-13.58	AVG
7	0.3277	30.44	19.47	49.91	59.51	-9.60	QP
8	0.3277	14.36	19.47	33.83	49.51	-15.68	AVG
9	0.4371	32.15	19.48	51.63	57.12	-5.49	QP
10	0.4371	17.03	19.48	36.51	47.12	-10.61	AVG
11	0.7302	30.07	19.49	49.56	56.00	-6.44	QP
12	0.7302	11.19	19.49	30.68	46.00	-15.32	AVG
13	3.0018	24.49	19.55	44.04	56.00	-11.96	QP
14	3.0018	10.04	19.55	29.59	46.00	-16.41	AVG
15	25.1818	24.38	19.78	44.16	60.00	-15.84	QP
16	25.1818	18.23	19.78	38.01	50.00	-11.99	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:26:46 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 2		
Note:			



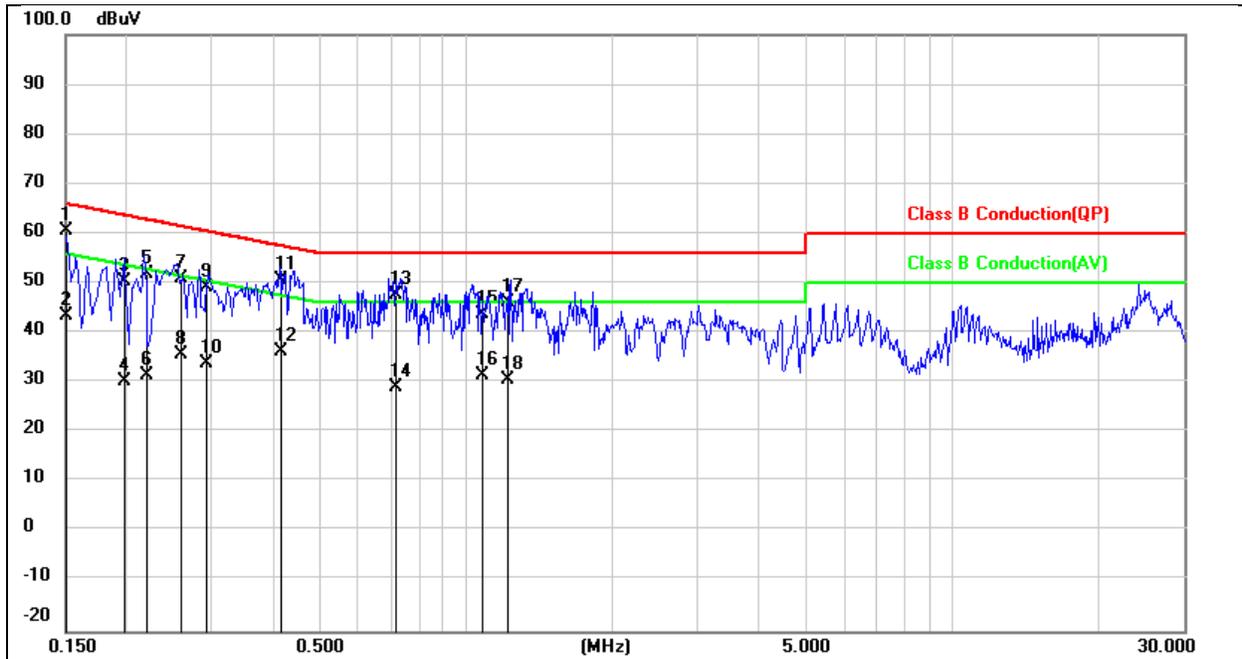
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1564	41.60	19.47	61.07	65.65	-4.58	QP
2	0.1564	26.73	19.47	46.20	55.65	-9.45	AVG
3	0.2538	32.05	19.48	51.53	61.63	-10.10	QP
4	0.2538	15.97	19.48	35.45	51.63	-16.18	AVG
5	0.4334	32.67	19.49	52.16	57.19	-5.03	QP
6	0.4334	20.40	19.49	39.89	47.19	-7.30	AVG
7	0.7304	30.62	19.49	50.11	56.00	-5.89	QP
8	0.7304	11.80	19.49	31.29	46.00	-14.71	AVG
9	1.0026	27.39	19.50	46.89	56.00	-9.11	QP
10	1.0026	14.64	19.50	34.14	46.00	-11.86	AVG
11	2.3591	24.00	19.55	43.55	56.00	-12.45	QP
12	2.3591	6.05	19.55	25.60	46.00	-20.40	AVG
13	3.0023	23.40	19.56	42.96	56.00	-13.04	QP
14	3.0023	9.53	19.56	29.09	46.00	-16.91	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:47:34 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 3		
Note:			



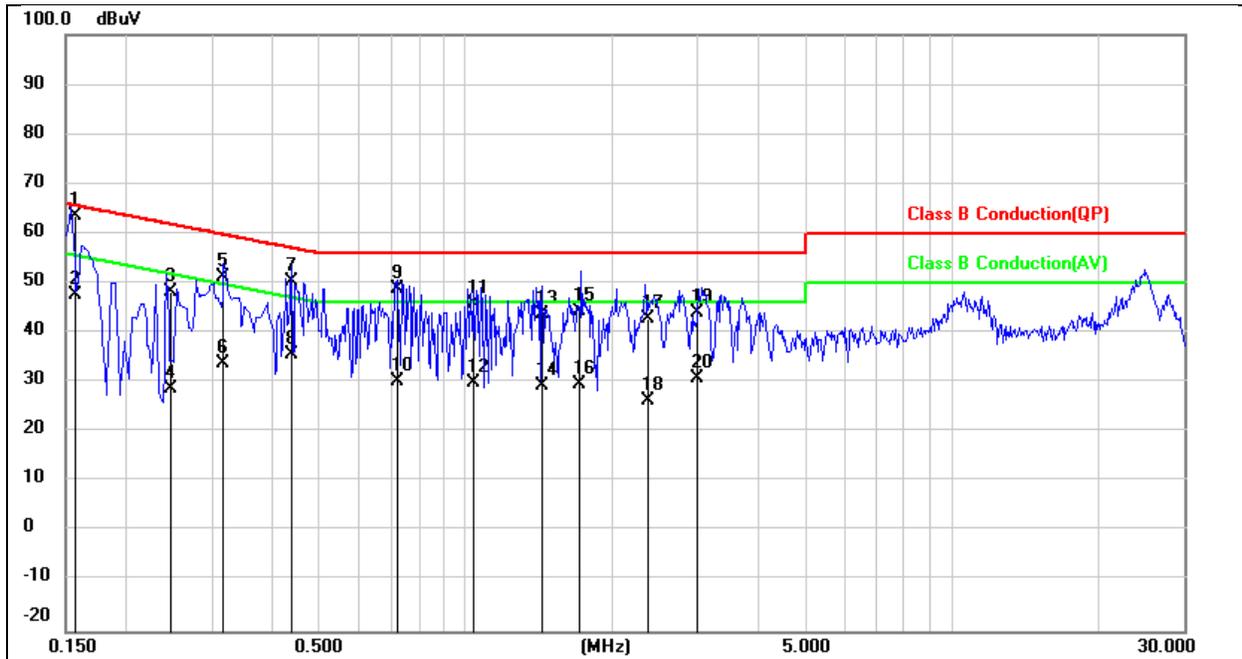
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1508	44.39	19.47	63.86	65.96	-2.10	QP
2	0.1508	27.19	19.47	46.66	55.96	-9.30	AVG
3	0.2101	31.82	19.47	51.29	63.20	-11.91	QP
4	0.2101	14.15	19.47	33.62	53.20	-19.58	AVG
5	0.2623	32.72	19.47	52.19	61.36	-9.17	QP
6	0.2623	16.61	19.47	36.08	51.36	-15.28	AVG
7	0.2915	29.52	19.47	48.99	60.48	-11.49	QP
8	0.2915	14.14	19.47	33.61	50.48	-16.87	AVG
9	0.4172	30.73	19.48	50.21	57.50	-7.29	QP
10	0.4172	16.53	19.48	36.01	47.50	-11.49	AVG
11	0.4522	29.47	19.48	48.95	56.83	-7.88	QP
12	0.4522	13.33	19.48	32.81	46.83	-14.02	AVG
13	0.7403	28.27	19.49	47.76	56.00	-8.24	QP
14	0.7403	11.01	19.49	30.50	46.00	-15.50	AVG
15	1.1539	22.27	19.50	41.77	56.00	-14.23	QP
16	1.1539	10.97	19.50	30.47	46.00	-15.53	AVG
17	1.6496	21.31	19.52	40.83	56.00	-15.17	QP
18	1.6496	6.02	19.52	25.54	46.00	-20.46	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:50:46 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 3		
Note:			



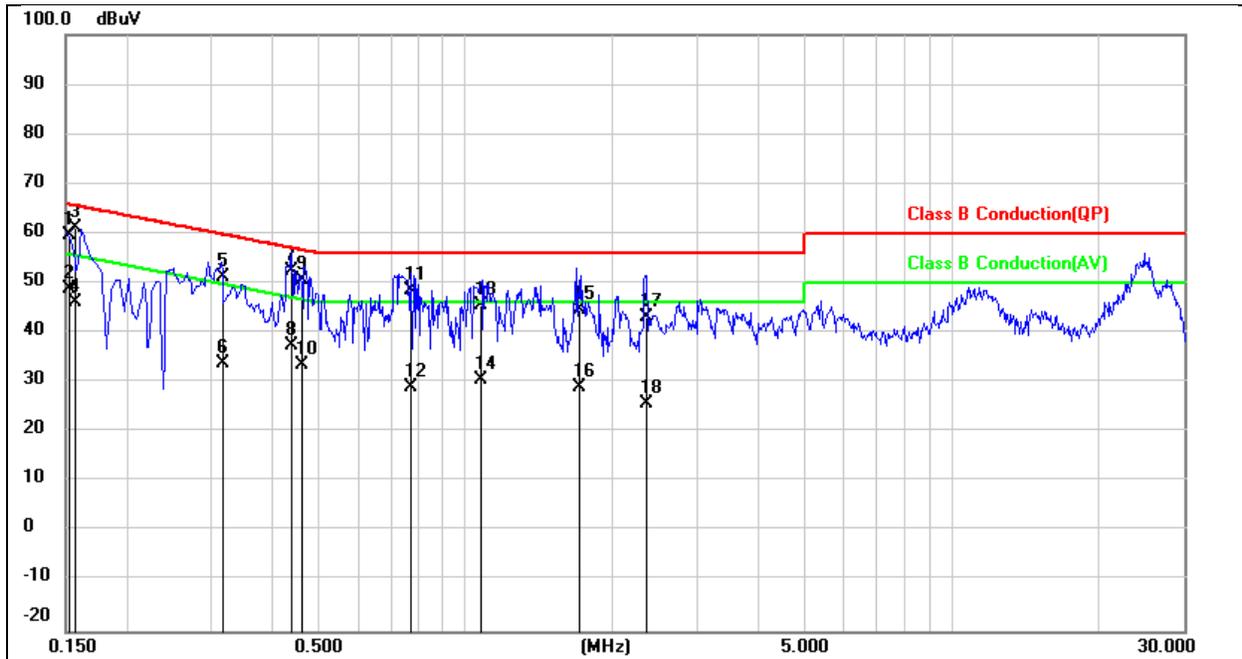
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1507	40.98	19.47	60.45	65.96	-5.51	QP
2	0.1507	24.10	19.47	43.57	55.96	-12.39	AVG
3	0.1993	30.99	19.47	50.46	63.64	-13.18	QP
4	0.1993	10.91	19.47	30.38	53.64	-23.26	AVG
5	0.2202	32.50	19.48	51.98	62.81	-10.83	QP
6	0.2202	11.88	19.48	31.36	52.81	-21.45	AVG
7	0.2586	31.46	19.48	50.94	61.48	-10.54	QP
8	0.2586	16.22	19.48	35.70	51.48	-15.78	AVG
9	0.2914	29.73	19.48	49.21	60.48	-11.27	QP
10	0.2914	14.35	19.48	33.83	50.48	-16.65	AVG
11	0.4171	31.13	19.49	50.62	57.51	-6.89	QP
12	0.4171	16.84	19.49	36.33	47.51	-11.18	AVG
13	0.7217	28.18	19.49	47.67	56.00	-8.33	QP
14	0.7217	9.49	19.49	28.98	46.00	-17.02	AVG
15	1.0876	24.36	19.50	43.86	56.00	-12.14	QP
16	1.0876	11.85	19.50	31.35	46.00	-14.65	AVG
17	1.2250	26.70	19.50	46.20	56.00	-9.80	QP
18	1.2250	10.95	19.50	30.45	46.00	-15.55	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	10:58:43 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 4		
Note:			



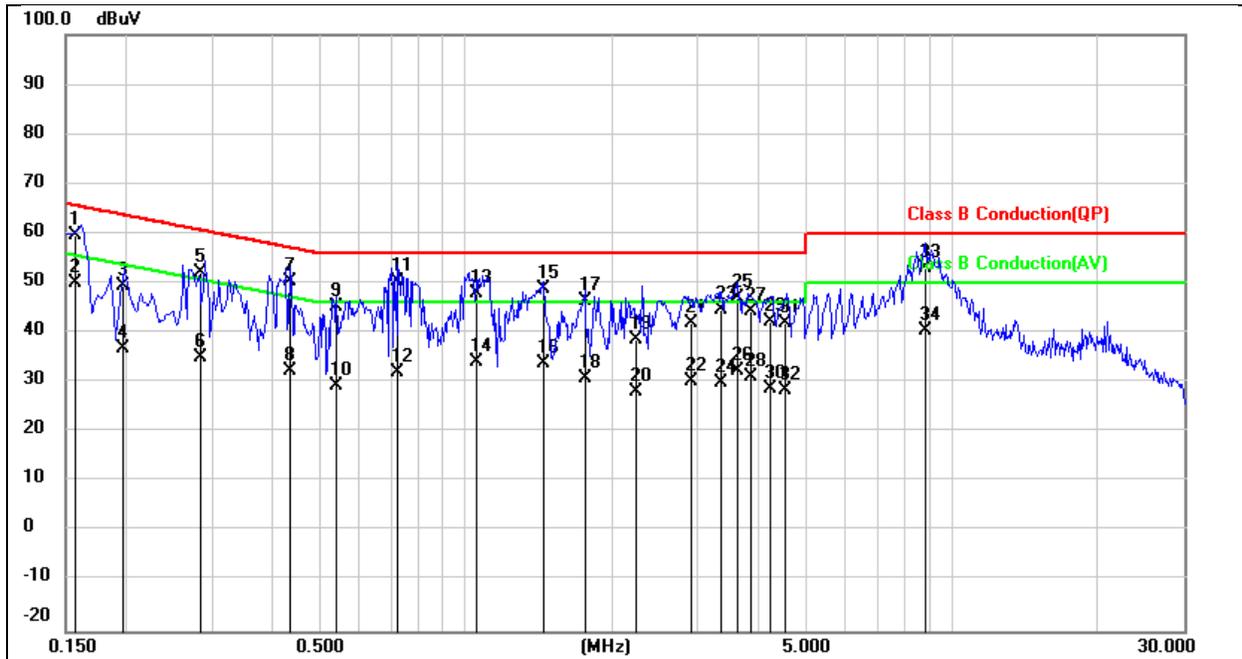
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1570	44.19	19.47	63.66	65.62	-1.96	QP
2	0.1570	28.05	19.47	47.52	55.62	-8.10	AVG
3	0.2468	28.74	19.47	48.21	61.86	-13.65	QP
4	0.2468	9.25	19.47	28.72	51.86	-23.14	AVG
5	0.3144	31.89	19.47	51.36	59.85	-8.49	QP
6	0.3144	14.45	19.47	33.92	49.85	-15.93	AVG
7	0.4361	30.73	19.48	50.21	57.14	-6.93	QP
8	0.4361	16.07	19.48	35.55	47.14	-11.59	AVG
9	0.7273	29.24	19.49	48.73	56.00	-7.27	QP
10	0.7273	10.65	19.49	30.14	46.00	-15.86	AVG
11	1.0431	26.29	19.50	45.79	56.00	-10.21	QP
12	1.0431	10.34	19.50	29.84	46.00	-16.16	AVG
13	1.4279	24.24	19.51	43.75	56.00	-12.25	QP
14	1.4279	9.71	19.51	29.22	46.00	-16.78	AVG
15	1.7141	24.82	19.52	44.34	56.00	-11.66	QP
16	1.7141	10.23	19.52	29.75	46.00	-16.25	AVG
17	2.3562	23.43	19.53	42.96	56.00	-13.04	QP
18	2.3562	6.82	19.53	26.35	46.00	-19.65	AVG
19	2.9921	24.53	19.55	44.08	56.00	-11.92	QP
20	2.9921	11.33	19.55	30.88	46.00	-15.12	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	6/3/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	11:02:54 AM
EUT:		Test By:	Hank
Model:			
Mode:	mode 4		
Note:			



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1525	40.31	19.47	59.78	65.86	-6.08	QP
2	0.1525	29.27	19.47	48.74	55.86	-7.12	AVG
3	0.1577	41.78	19.47	61.25	65.58	-4.33	QP
4	0.1577	26.61	19.47	46.08	55.58	-9.50	AVG
5	0.3160	31.85	19.48	51.33	59.81	-8.48	QP
6	0.3160	14.52	19.48	34.00	49.81	-15.81	AVG
7	0.4359	32.91	19.49	52.40	57.14	-4.74	QP
8	0.4359	17.99	19.49	37.48	47.14	-9.66	AVG
9	0.4619	31.11	19.49	50.60	56.66	-6.06	QP
10	0.4619	14.06	19.49	33.55	46.66	-13.11	AVG
11	0.7709	29.01	19.50	48.51	56.00	-7.49	QP
12	0.7709	9.63	19.50	29.13	46.00	-16.87	AVG
13	1.0698	26.08	19.50	45.58	56.00	-10.42	QP
14	1.0698	11.17	19.50	30.67	46.00	-15.33	AVG
15	1.7142	25.01	19.53	44.54	56.00	-11.46	QP
16	1.7142	9.38	19.53	28.91	46.00	-17.09	AVG
17	2.3571	23.66	19.55	43.21	56.00	-12.79	QP
18	2.3571	6.12	19.55	25.67	46.00	-20.33	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	9:03:26 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 5		
Note:			

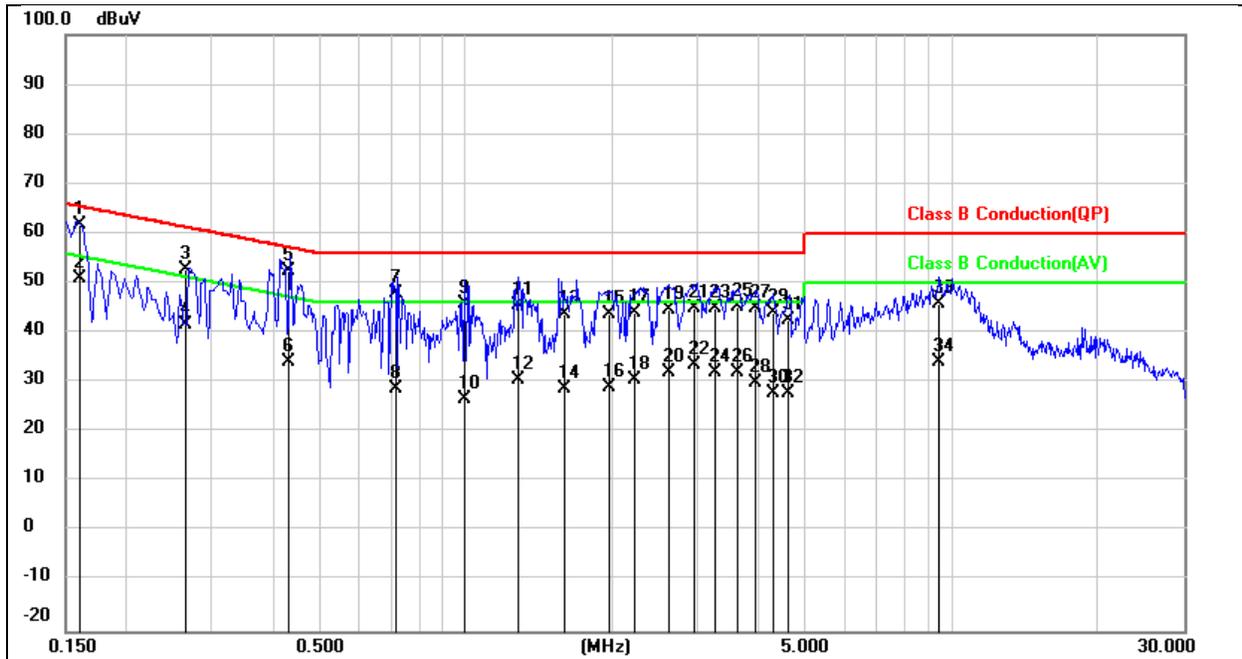


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1580	40.10	19.47	59.57	65.57	-6.00	QP
2	0.1580	30.61	19.47	50.08	55.57	-5.49	AVG
3	0.1964	30.04	19.46	49.50	63.76	-14.26	QP
4	0.1964	17.24	19.46	36.70	53.76	-17.06	AVG
5	0.2853	32.77	19.47	52.24	60.66	-8.42	QP
6	0.2853	15.61	19.47	35.08	50.66	-15.58	AVG
7	0.4305	30.99	19.48	50.47	57.24	-6.77	QP
8	0.4305	12.93	19.48	32.41	47.24	-14.83	AVG
9	0.5428	25.79	19.48	45.27	56.00	-10.73	QP
10	0.5428	10.00	19.48	29.48	46.00	-16.52	AVG
11	0.7265	30.80	19.49	50.29	56.00	-5.71	QP
12	0.7265	12.46	19.49	31.95	46.00	-14.05	AVG
13	1.0510	28.58	19.50	48.08	56.00	-7.92	QP
14	1.0510	14.77	19.50	34.27	46.00	-11.73	AVG
15	1.4397	29.30	19.51	48.81	56.00	-7.19	QP
16	1.4397	14.43	19.51	33.94	46.00	-12.06	AVG
17	1.7577	27.02	19.52	46.54	56.00	-9.46	QP
18	1.7577	11.39	19.52	30.91	46.00	-15.09	AVG
19	2.2414	19.06	19.53	38.59	56.00	-17.41	QP
20	2.2414	8.53	19.53	28.06	46.00	-17.94	AVG
21	2.8883	22.38	19.55	41.93	56.00	-14.07	QP
22	2.8883	10.84	19.55	30.39	46.00	-15.61	AVG

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23	3.3495	25.11	19.56	44.67	56.00	-11.33	QP
24	3.3495	10.52	19.56	30.08	46.00	-15.92	AVG
25	3.6078	27.37	19.58	46.95	56.00	-9.05	QP
26	3.6078	12.71	19.58	32.29	46.00	-13.71	AVG
27	3.8751	24.76	19.58	44.34	56.00	-11.66	QP
28	3.8751	11.64	19.58	31.22	46.00	-14.78	AVG
29	4.2164	22.75	19.59	42.34	56.00	-13.66	QP
30	4.2164	9.19	19.59	28.78	46.00	-17.22	AVG
31	4.5431	22.41	19.59	42.00	56.00	-14.00	QP
32	4.5431	8.72	19.59	28.31	46.00	-17.69	AVG
33	8.7901	33.46	19.66	53.12	60.00	-6.88	QP
34	8.7901	20.65	19.66	40.31	50.00	-9.69	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	9:09:34 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 5		
Note:			

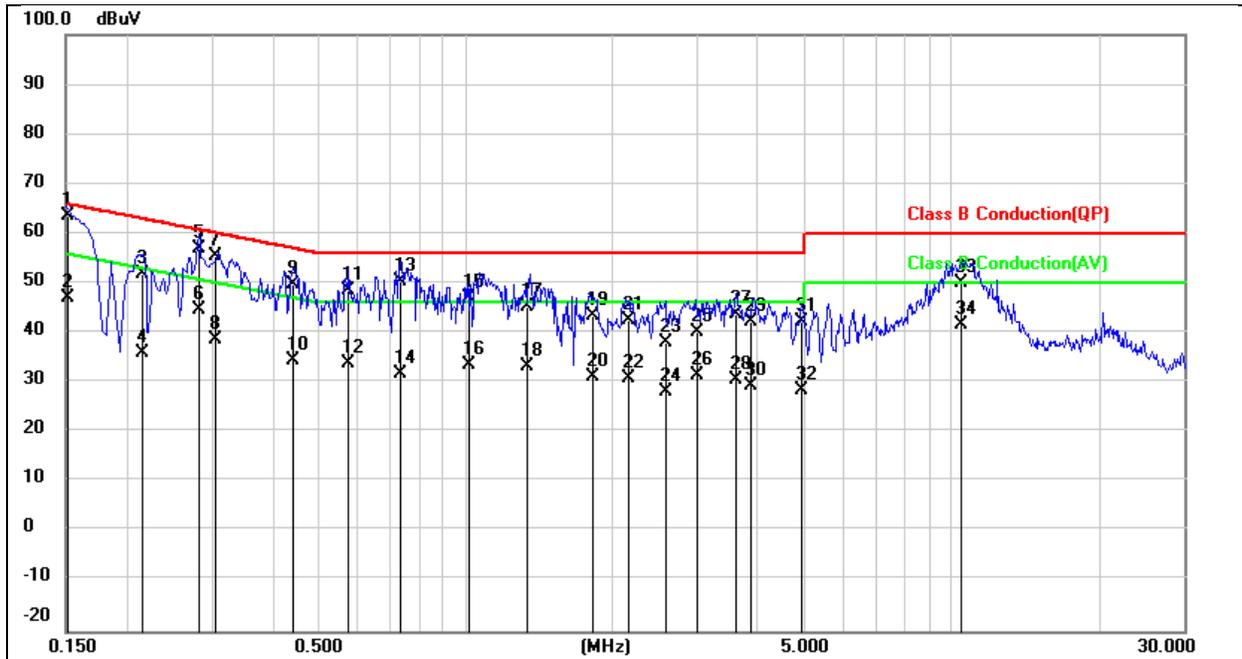


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1602	42.24	19.47	61.71	65.45	-3.74	QP
2	0.1602	31.61	19.47	51.08	55.45	-4.37	AVG
3	0.2652	33.37	19.48	52.85	61.27	-8.42	QP
4	0.2652	22.19	19.48	41.67	51.27	-9.60	AVG
5	0.4301	32.96	19.49	52.45	57.25	-4.80	QP
6	0.4301	14.79	19.49	34.28	47.25	-12.97	AVG
7	0.7193	28.34	19.49	47.83	56.00	-8.17	QP
8	0.7193	9.23	19.49	28.72	46.00	-17.28	AVG
9	0.9959	26.21	19.50	45.71	56.00	-10.29	QP
10	0.9959	7.24	19.50	26.74	46.00	-19.26	AVG
11	1.2779	26.10	19.51	45.61	56.00	-10.39	QP
12	1.2779	11.03	19.51	30.54	46.00	-15.46	AVG
13	1.5985	24.13	19.53	43.66	56.00	-12.34	QP
14	1.5985	9.08	19.53	28.61	46.00	-17.39	AVG
15	1.9709	24.32	19.54	43.86	56.00	-12.14	QP
16	1.9709	9.43	19.54	28.97	46.00	-17.03	AVG
17	2.2410	24.48	19.55	44.03	56.00	-11.97	QP
18	2.2410	11.02	19.55	30.57	46.00	-15.43	AVG
19	2.6232	25.15	19.55	44.70	56.00	-11.30	QP
20	2.6232	12.53	19.55	32.08	46.00	-13.92	AVG
21	2.9593	25.53	19.56	45.09	56.00	-10.91	QP
22	2.9593	14.02	19.56	33.58	46.00	-12.42	AVG

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23	3.2798	25.42	19.57	44.99	56.00	-11.01	QP
24	3.2798	12.41	19.57	31.98	46.00	-14.02	AVG
25	3.6081	25.67	19.59	45.26	56.00	-10.74	QP
26	3.6081	12.36	19.59	31.95	46.00	-14.05	AVG
27	3.9369	25.29	19.59	44.88	56.00	-11.12	QP
28	3.9369	10.42	19.59	30.01	46.00	-15.99	AVG
29	4.3156	24.59	19.60	44.19	56.00	-11.81	QP
30	4.3156	8.11	19.60	27.71	46.00	-18.29	AVG
31	4.5936	22.90	19.61	42.51	56.00	-13.49	QP
32	4.5936	8.23	19.61	27.84	46.00	-18.16	AVG
33	9.4343	26.14	19.69	45.83	60.00	-14.17	QP
34	9.4343	14.48	19.69	34.17	50.00	-15.83	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	8:25:38 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 6		
Note:			

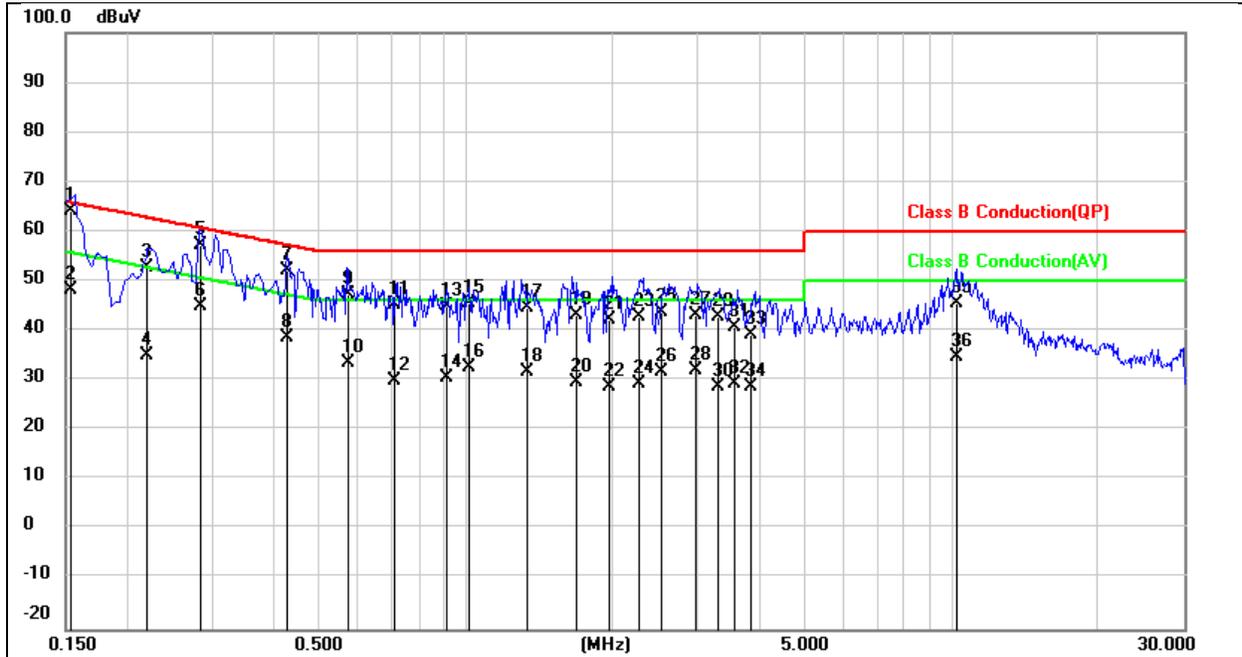


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1517	44.17	19.47	63.64	65.91	-2.27	QP
2	0.1517	27.47	19.47	46.94	55.91	-8.97	AVG
3	0.2161	32.30	19.47	51.77	62.97	-11.20	QP
4	0.2161	16.51	19.47	35.98	52.97	-16.99	AVG
5	0.2816	37.52	19.47	56.99	60.77	-3.78	QP
6	0.2816	25.24	19.47	44.71	50.77	-6.06	AVG
7	0.3050	35.98	19.47	55.45	60.11	-4.66	QP
8	0.3050	19.17	19.47	38.64	50.11	-11.47	AVG
9	0.4410	30.29	19.48	49.77	57.04	-7.27	QP
10	0.4410	15.02	19.48	34.50	47.04	-12.54	AVG
11	0.5725	29.19	19.48	48.67	56.00	-7.33	QP
12	0.5725	14.50	19.48	33.98	46.00	-12.02	AVG
13	0.7304	30.91	19.49	50.40	56.00	-5.60	QP
14	0.7304	12.27	19.49	31.76	46.00	-14.24	AVG
15	1.0163	27.50	19.50	47.00	56.00	-9.00	QP
16	1.0163	14.14	19.50	33.64	46.00	-12.36	AVG
17	1.3369	25.66	19.51	45.17	56.00	-10.83	QP
18	1.3369	13.82	19.51	33.33	46.00	-12.67	AVG
19	1.8270	24.06	19.52	43.58	56.00	-12.42	QP
20	1.8270	11.57	19.52	31.09	46.00	-14.91	AVG
21	2.1770	23.04	19.53	42.57	56.00	-13.43	QP
22	2.1770	11.41	19.53	30.94	46.00	-15.06	AVG

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23	2.5996	18.44	19.54	37.98	56.00	-18.02	QP
24	2.5996	8.67	19.54	28.21	46.00	-17.79	AVG
25	3.0128	20.59	19.55	40.14	56.00	-15.86	QP
26	3.0128	11.84	19.55	31.39	46.00	-14.61	AVG
27	3.5798	24.24	19.58	43.82	56.00	-12.18	QP
28	3.5798	10.84	19.58	30.42	46.00	-15.58	AVG
29	3.8617	22.71	19.58	42.29	56.00	-13.71	QP
30	3.8617	9.92	19.58	29.50	46.00	-16.50	AVG
31	4.9145	22.68	19.61	42.29	56.00	-13.71	QP
32	4.9145	8.87	19.61	28.48	46.00	-17.52	AVG
33	10.3852	30.38	19.67	50.05	60.00	-9.95	QP
34	10.3852	21.94	19.67	41.61	50.00	-8.39	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	8:31:29 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 6		
Note:			

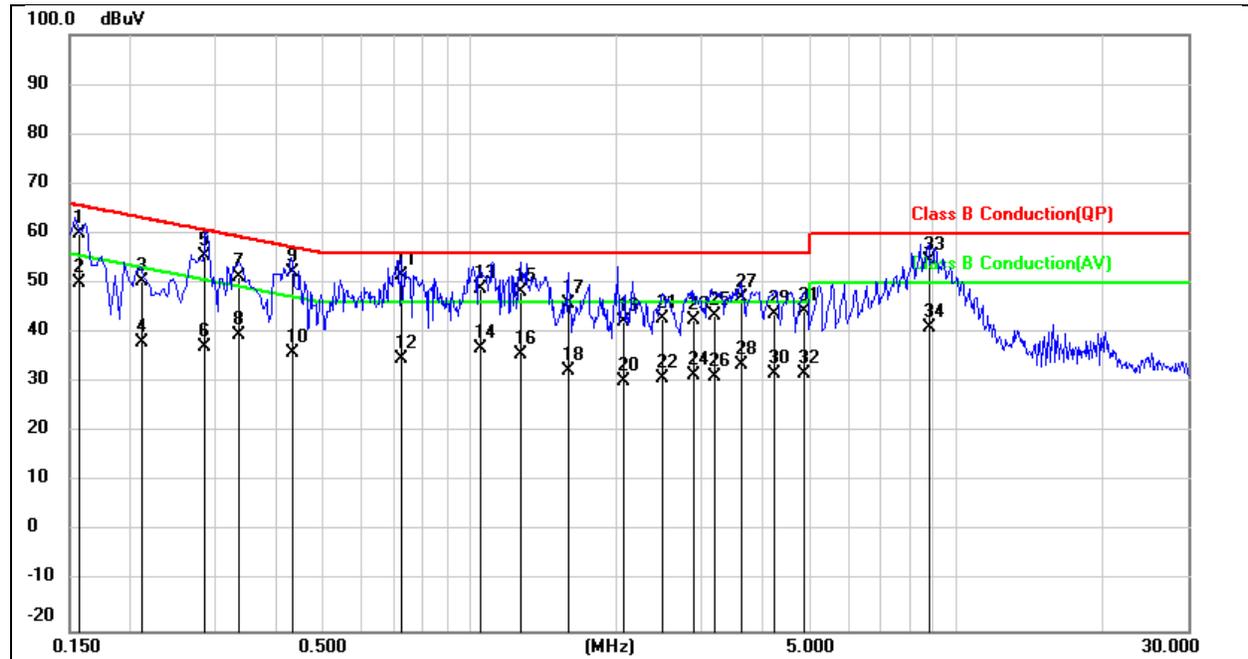


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1530	44.81	19.47	64.28	65.84	-1.56	QP
2	0.1530	28.93	19.47	48.40	55.84	-7.44	AVG
3	0.2218	33.23	19.48	52.71	62.75	-10.04	QP
4	0.2218	15.55	19.48	35.03	52.75	-17.72	AVG
5	0.2842	37.64	19.48	57.12	60.69	-3.57	QP
6	0.2842	25.36	19.48	44.84	50.69	-5.85	AVG
7	0.4280	32.60	19.49	52.09	57.29	-5.20	QP
8	0.4280	19.25	19.49	38.74	47.29	-8.55	AVG
9	0.5722	27.85	19.49	47.34	56.00	-8.66	QP
10	0.5722	14.02	19.49	33.51	46.00	-12.49	AVG
11	0.7136	25.67	19.49	45.16	56.00	-10.84	QP
12	0.7136	10.59	19.49	30.08	46.00	-15.92	AVG
13	0.9210	25.58	19.50	45.08	56.00	-10.92	QP
14	0.9210	11.04	19.50	30.54	46.00	-15.46	AVG
15	1.0148	26.17	19.50	45.67	56.00	-10.33	QP
16	1.0148	13.18	19.50	32.68	46.00	-13.32	AVG
17	1.3369	25.02	19.52	44.54	56.00	-11.46	QP
18	1.3369	12.33	19.52	31.85	46.00	-14.15	AVG
19	1.6906	23.57	19.53	43.10	56.00	-12.90	QP
20	1.6906	9.99	19.53	29.52	46.00	-16.48	AVG
21	1.9678	22.79	19.54	42.33	56.00	-13.67	QP
22	1.9678	9.28	19.54	28.82	46.00	-17.18	AVG

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23	2.2554	23.26	19.55	42.81	56.00	-13.19	QP
24	2.2554	9.71	19.55	29.26	46.00	-16.74	AVG
25	2.5300	24.17	19.55	43.72	56.00	-12.28	QP
26	2.5300	12.13	19.55	31.68	46.00	-14.32	AVG
27	2.9505	23.57	19.56	43.13	56.00	-12.87	QP
28	2.9505	12.44	19.56	32.00	46.00	-14.00	AVG
29	3.3009	23.21	19.57	42.78	56.00	-13.22	QP
30	3.3009	9.20	19.57	28.77	46.00	-17.23	AVG
31	3.5795	21.30	19.59	40.89	56.00	-15.11	QP
32	3.5795	9.64	19.59	29.23	46.00	-16.77	AVG
33	3.8625	19.56	19.59	39.15	56.00	-16.85	QP
34	3.8625	9.20	19.59	28.79	46.00	-17.21	AVG
35	10.1593	25.97	19.70	45.67	60.00	-14.33	QP
36	10.1593	15.17	19.70	34.87	50.00	-15.13	AVG

Project No.:	4789548226	Probe:	L1
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	8:05:47 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 7		
Note:			

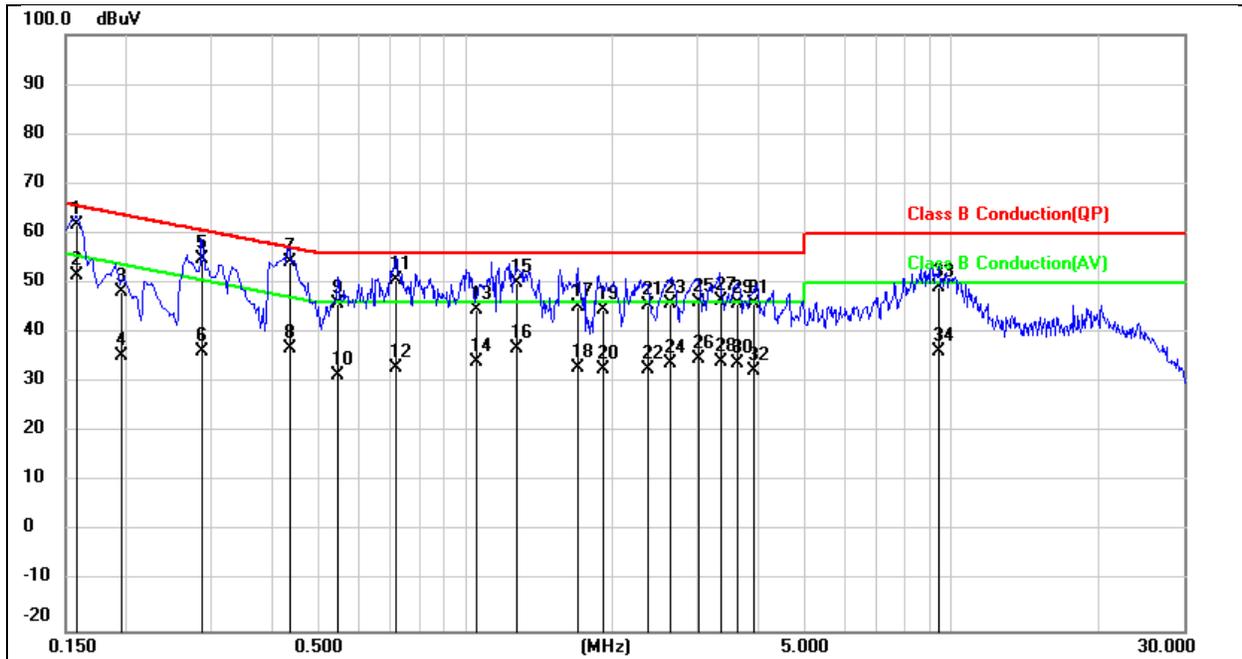


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1573	40.51	19.47	59.98	65.61	-5.63	QP
2	0.1573	30.64	19.47	50.11	55.61	-5.50	AVG
3	0.2112	30.95	19.47	50.42	63.16	-12.74	QP
4	0.2112	18.71	19.47	38.18	53.16	-14.98	AVG
5	0.2853	35.91	19.47	55.38	60.66	-5.28	QP
6	0.2853	17.56	19.47	37.03	50.66	-13.63	AVG
7	0.3345	31.69	19.47	51.16	59.34	-8.18	QP
8	0.3345	20.15	19.47	39.62	49.34	-9.72	AVG
9	0.4323	32.67	19.48	52.15	57.21	-5.06	QP
10	0.4323	16.42	19.48	35.90	47.21	-11.31	AVG
11	0.7228	32.20	19.49	51.69	56.00	-4.31	QP
12	0.7228	15.16	19.49	34.65	46.00	-11.35	AVG
13	1.0534	29.29	19.50	48.79	56.00	-7.21	QP
14	1.0534	17.44	19.50	36.94	46.00	-9.06	AVG
15	1.2754	28.67	19.50	48.17	56.00	-7.83	QP
16	1.2754	16.23	19.50	35.73	46.00	-10.27	AVG
17	1.5941	26.33	19.52	45.85	56.00	-10.15	QP
18	1.5941	12.92	19.52	32.44	46.00	-13.56	AVG
19	2.0633	22.74	19.53	42.27	56.00	-13.73	QP
20	2.0633	10.84	19.53	30.37	46.00	-15.63	AVG
21	2.4986	23.17	19.53	42.70	56.00	-13.30	QP
22	2.4986	11.23	19.53	30.76	46.00	-15.24	AVG

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23	2.8976	22.86	19.55	42.41	56.00	-13.59	QP
24	2.8976	11.89	19.55	31.44	46.00	-14.56	AVG
25	3.1762	23.76	19.55	43.31	56.00	-12.69	QP
26	3.1762	11.69	19.55	31.24	46.00	-14.76	AVG
27	3.6132	27.37	19.58	46.95	56.00	-9.05	QP
28	3.6132	13.89	19.58	33.47	46.00	-12.53	AVG
29	4.2049	24.27	19.59	43.86	56.00	-12.14	QP
30	4.2049	12.07	19.59	31.66	46.00	-14.34	AVG
31	4.8620	24.68	19.61	44.29	56.00	-11.71	QP
32	4.8620	12.04	19.61	31.65	46.00	-14.35	AVG
33	8.7800	35.01	19.66	54.67	60.00	-5.33	QP
34	8.7800	21.50	19.66	41.16	50.00	-8.84	AVG

Project No.:	4789548226	Probe:	N
Standard:	Class B Conduction(QP)	Power Source:	from AC power
Test item:	Conduction Test	Date:	5/18/2020
Temp./Hum.(%RH):	23(C)/60%RH	Time:	8:12:15 PM
EUT:		Test By:	Edison
Model:			
Mode:	mode 7		
Note:			



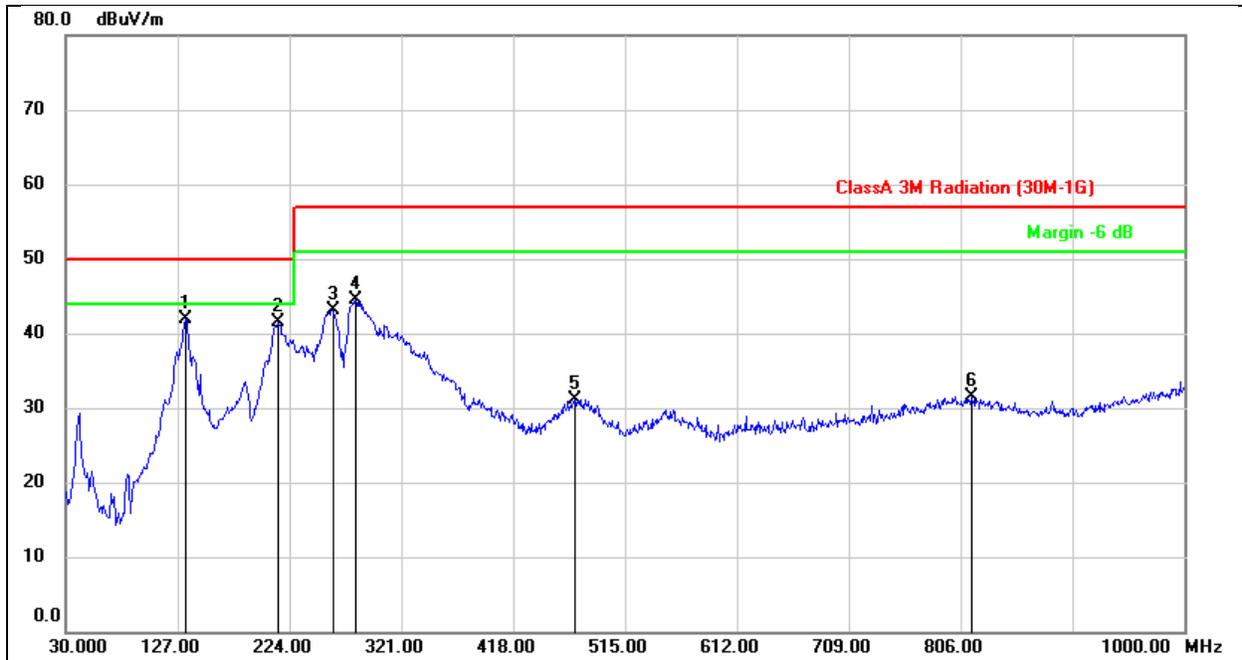
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1587	42.38	19.47	61.85	65.53	-3.68	QP
2	0.1587	32.09	19.47	51.56	55.53	-3.97	AVG
3	0.1949	28.71	19.47	48.18	63.83	-15.65	QP
4	0.1949	15.79	19.47	35.26	53.83	-18.57	AVG
5	0.2877	35.35	19.48	54.83	60.59	-5.76	QP
6	0.2877	16.84	19.48	36.32	50.59	-14.27	AVG
7	0.4315	34.81	19.49	54.30	57.22	-2.92	QP
8	0.4315	17.23	19.49	36.72	47.22	-10.50	AVG
9	0.5444	26.21	19.49	45.70	56.00	-10.30	QP
10	0.5444	12.09	19.49	31.58	46.00	-14.42	AVG
11	0.7186	31.20	19.49	50.69	56.00	-5.31	QP
12	0.7186	13.57	19.49	33.06	46.00	-12.94	AVG
13	1.0526	25.06	19.50	44.56	56.00	-11.44	QP
14	1.0526	14.56	19.50	34.06	46.00	-11.94	AVG
15	1.2764	30.58	19.51	50.09	56.00	-5.91	QP
16	1.2764	17.25	19.51	36.76	46.00	-9.24	AVG
17	1.7090	25.84	19.53	45.37	56.00	-10.63	QP
18	1.7090	13.28	19.53	32.81	46.00	-13.19	AVG
19	1.9148	25.08	19.54	44.62	56.00	-11.38	QP
20	1.9148	13.10	19.54	32.64	46.00	-13.36	AVG
21	2.3654	25.89	19.55	45.44	56.00	-10.56	QP
22	2.3654	13.24	19.55	32.79	46.00	-13.21	AVG

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23	2.6292	26.25	19.55	45.80	56.00	-10.20	QP
24	2.6292	14.26	19.55	33.81	46.00	-12.19	AVG
25	3.0217	26.74	19.56	46.30	56.00	-9.70	QP
26	3.0217	15.34	19.56	34.90	46.00	-11.10	AVG
27	3.3514	26.76	19.58	46.34	56.00	-9.66	QP
28	3.3514	14.45	19.58	34.03	46.00	-11.97	AVG
29	3.6127	26.41	19.59	46.00	56.00	-10.00	QP
30	3.6127	14.32	19.59	33.91	46.00	-12.09	AVG
31	3.9400	26.27	19.59	45.86	56.00	-10.14	QP
32	3.9400	12.90	19.59	32.49	46.00	-13.51	AVG
33	9.4215	29.46	19.69	49.15	60.00	-10.85	QP
34	9.4215	16.63	19.69	36.32	50.00	-13.68	AVG

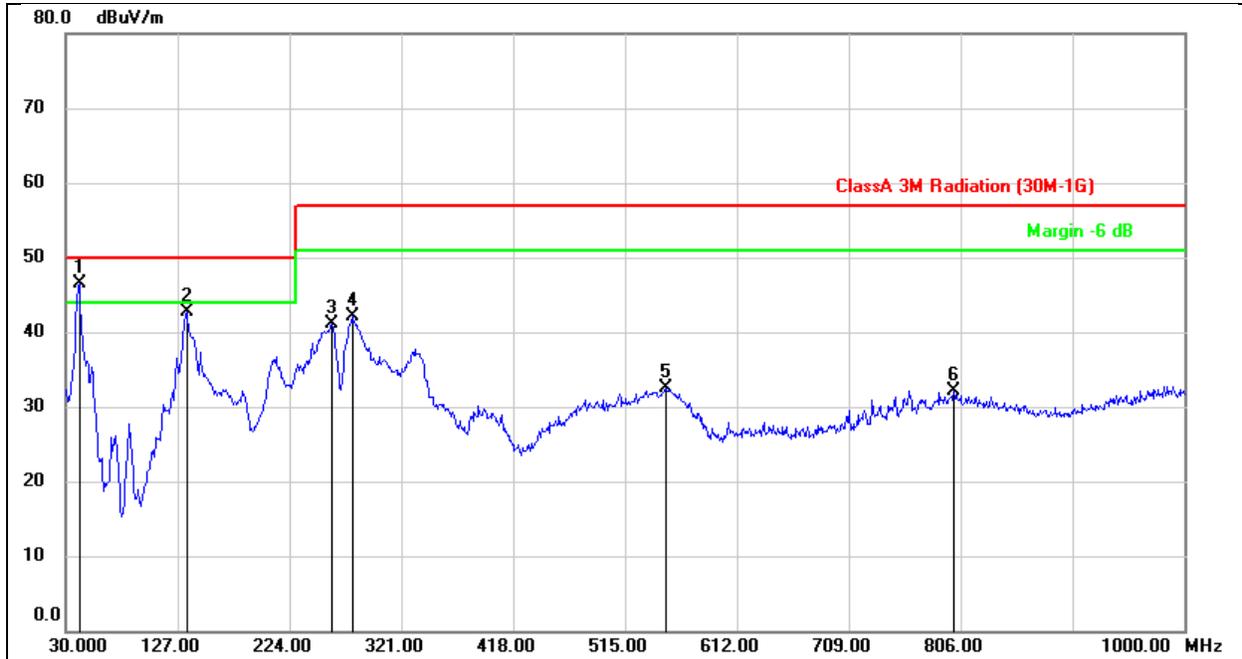
## Radiated Emission

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:04:17 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 1		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	134.6953	63.59	-21.66	41.93	50.00	-8.07	peak
2	214.5587	64.17	-22.70	41.47	50.00	-8.53	peak
3	262.2503	63.94	-20.82	43.12	57.00	-13.88	peak
4	282.0060	64.43	-19.85	44.58	57.00	-12.42	peak
5	471.4793	45.99	-14.91	31.08	57.00	-25.92	peak
6	816.5407	37.53	-5.98	31.55	57.00	-25.45	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:08:55 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 1		
Note:			



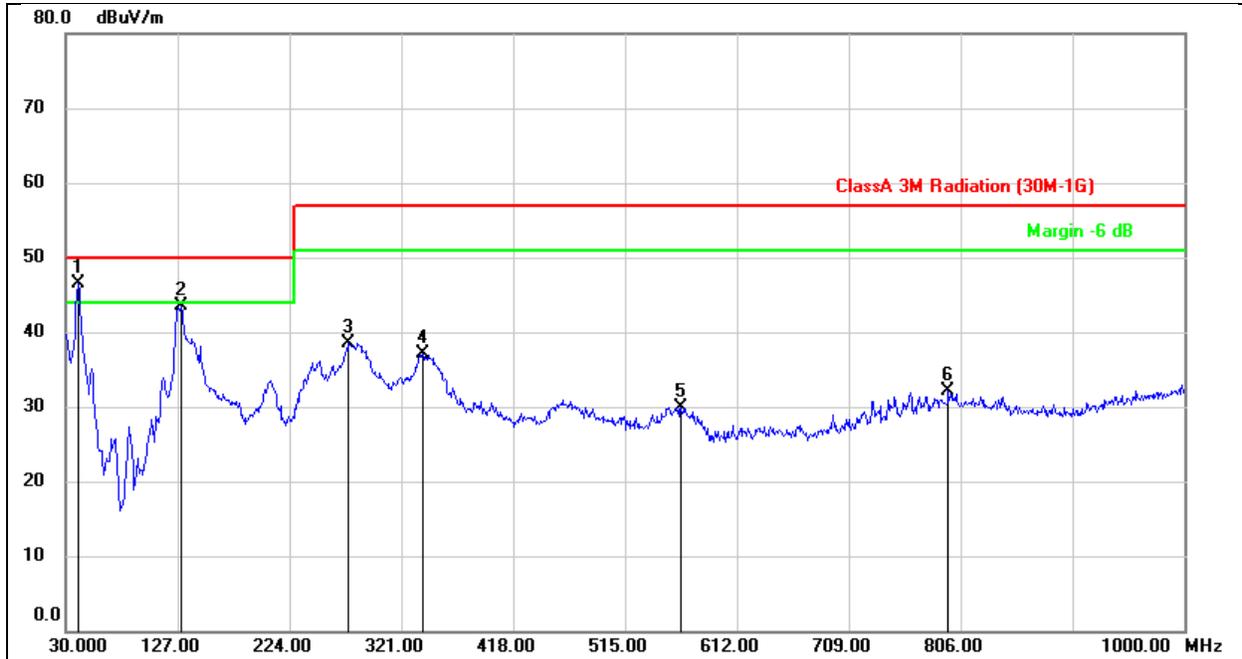
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.8339	67.53	-21.05	46.48	50.00	-3.52	peak
2	135.0187	64.31	-21.59	42.72	50.00	-7.28	peak
3	261.1187	61.95	-20.87	41.08	57.00	-15.92	peak
4	278.5787	62.04	-19.97	42.07	57.00	-14.93	peak
5	551.2456	45.69	-13.15	32.54	57.00	-24.46	peak
6	801.0530	37.78	-5.71	32.07	57.00	-24.93	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:34:03 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 2		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	129.6513	64.74	-22.31	42.43	50.00	-7.57	peak
2	207.8333	59.90	-23.01	36.89	50.00	-13.11	peak
3	279.2577	64.42	-19.94	44.48	57.00	-12.52	peak
4	347.1900	57.70	-18.11	39.59	57.00	-17.41	peak
5	452.9847	47.24	-15.27	31.97	57.00	-25.03	peak
6	805.1593	37.61	-5.81	31.80	57.00	-25.20	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:37:29 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 2		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.3490	67.54	-21.05	46.49	50.00	-3.51	peak
2	130.4597	65.61	-22.18	43.43	50.00	-6.57	peak
3	276.3153	58.53	-20.07	38.46	57.00	-18.54	peak
4	340.2383	55.21	-18.19	37.02	57.00	-19.98	peak
5	563.8232	42.72	-12.83	29.89	57.00	-27.11	peak
6	796.1707	37.91	-5.73	32.18	57.00	-24.82	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	3:32:12 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 3		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	134.4043	63.52	-21.72	41.80	50.00	-8.20	peak
2	209.6440	64.13	-22.92	41.21	50.00	-8.79	peak
3	261.7653	63.91	-20.84	43.07	57.00	-13.93	peak
4	281.9090	65.77	-19.85	45.92	57.00	-11.08	peak
5	608.9283	42.21	-11.71	30.50	57.00	-26.50	peak
6	812.3373	38.43	-5.95	32.48	57.00	-24.52	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	3:35:05 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 3		
Note:			



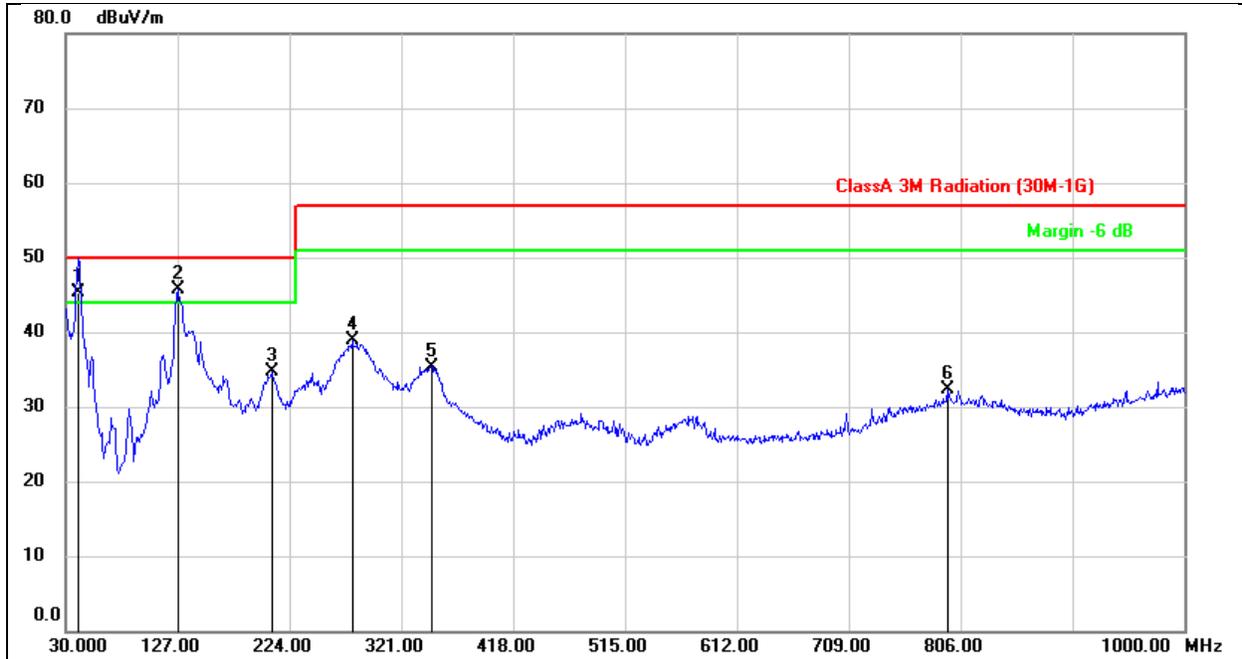
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.8339	66.65	-21.05	45.60	50.00	-4.40	QP
2	135.7623	64.15	-21.51	42.64	50.00	-7.36	peak
3	259.9223	61.50	-20.92	40.58	57.00	-16.42	peak
4	280.4539	61.38	-19.90	41.48	57.00	-15.52	peak
5	564.1790	44.92	-12.83	32.09	57.00	-24.91	peak
6	795.3947	37.62	-5.75	31.87	57.00	-25.13	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	4:00:01 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mdoe 4		
Note:			



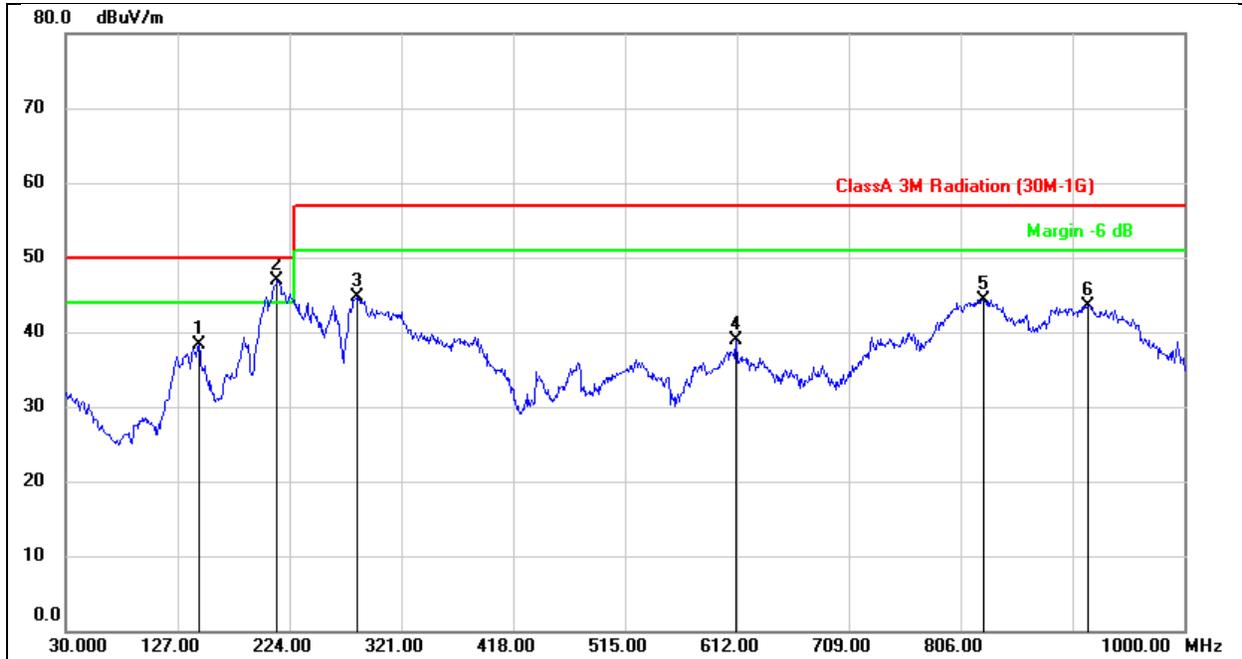
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	127.4203	66.63	-22.51	44.12	50.00	-5.88	peak
2	208.6740	60.70	-22.96	37.74	50.00	-12.26	peak
3	287.5673	64.75	-19.71	45.04	57.00	-11.96	peak
4	369.5970	54.10	-17.37	36.73	57.00	-20.27	peak
5	447.4233	45.78	-15.46	30.32	57.00	-26.68	peak
6	791.9350	37.62	-5.92	31.70	57.00	-25.30	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	4:03:38 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 4		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.5430	66.35	-21.05	45.30	50.00	-4.70	QP
2	127.4203	68.20	-22.51	45.69	50.00	-4.31	peak
3	209.5470	57.56	-22.93	34.63	50.00	-15.37	peak
4	278.3846	58.86	-19.98	38.88	57.00	-18.12	peak
5	347.1900	53.50	-18.11	35.39	57.00	-21.61	peak
6	794.7480	38.03	-5.77	32.26	57.00	-24.74	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:43:50 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 5		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	145.9797	58.94	-20.72	38.22	50.00	-11.78	peak
2	214.1707	69.62	-22.71	46.91	50.00	-3.09	peak
3	282.8790	64.53	-19.83	44.70	57.00	-12.30	peak
4	611.7090	50.52	-11.69	38.83	57.00	-18.17	peak
5	825.4970	50.28	-5.94	44.34	57.00	-12.66	peak
6	916.9033	50.10	-6.53	43.57	57.00	-13.43	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	2:46:57 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 5		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	45.3907	64.33	-20.83	43.50	50.00	-6.50	peak
2	145.9473	65.13	-20.73	44.40	50.00	-5.60	peak
3	212.5863	68.01	-22.78	45.23	50.00	-4.77	peak
4	259.7283	63.82	-20.93	42.89	57.00	-14.11	peak
5	359.3797	56.88	-17.80	39.08	57.00	-17.92	peak
6	537.5363	46.56	-13.58	32.98	57.00	-24.02	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	3:15:59 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 6		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	129.6837	62.05	-22.30	39.75	50.00	-10.25	peak
2	210.2260	69.52	-22.90	46.62	50.00	-3.38	peak
3	294.7777	64.27	-19.52	44.75	57.00	-12.25	peak
4	611.6120	47.38	-11.69	35.69	57.00	-21.31	peak
5	806.5820	49.35	-5.85	43.50	57.00	-13.50	peak
6	898.0530	49.75	-7.22	42.53	57.00	-14.47	peak

Project No.:	4789548226	Polarziation:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	3:18:55 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 6		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	45.1643	67.72	-20.88	46.84	50.00	-3.16	peak
2	134.4367	65.39	-21.71	43.68	50.00	-6.32	peak
3	209.4500	67.07	-22.93	44.14	50.00	-5.86	peak
4	279.5163	58.95	-19.93	39.02	57.00	-17.98	peak
5	423.5937	53.66	-16.07	37.59	57.00	-19.41	peak
6	559.1350	48.41	-12.95	35.46	57.00	-21.54	peak

Project No.:	4789548226	Polarization:	Horizontal
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	4:10:03 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	mode 7		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	144.8803	66.69	-20.83	45.86	50.00	-4.14	peak
2	224.0970	68.31	-22.44	45.87	50.00	-4.13	peak
3	296.6207	64.82	-19.50	45.32	57.00	-11.68	peak
4	617.4320	49.35	-11.67	37.68	57.00	-19.32	peak
5	824.6563	49.76	-5.93	43.83	57.00	-13.17	peak
6	964.7567	45.58	-4.97	40.61	57.00	-16.39	peak

Project No.:	4789548226	Polarization:	Vertical
Standard:	ClassA 3M Radiation (30M-1G)	Power Source:	from AC power
Test item:	Radiation Test	Date:	5/18/2020
Temp./Hum.(%RH):	25(C)/59%RH	Time:	4:13:43 PM
EUT:		Test By:	Edison
Model:		Distance:	3m
Mode:	moe 7		
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	45.3907	66.83	-20.83	46.00	50.00	-4.00	QP
2	146.6586	68.21	-20.71	47.50	50.00	-2.50	QP
3	213.8473	66.18	-22.73	43.45	50.00	-6.55	peak
4	282.0060	61.90	-19.85	42.05	57.00	-14.95	peak
5	366.6870	57.14	-17.49	39.65	57.00	-17.35	peak
6	497.0227	49.15	-14.57	34.58	57.00	-22.42	peak

## **Annex : Additional test request by client.**

In this appendix test item and level, lab has not accredited by TAF, the test data just for client reference.



## RS TEST RESULT FORM

**Project No.: 4789548226**

Product Name	Internal Power, AC to DC	Standard	EN 55024
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Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	From AC power	Humidity:	58%RH
Tested By:	Edison	Test Date:	Jul 13, 2020

**Customer Request:** H: Horizontal V: Vertical

Freq. Range (MHz)	Position (Face)	Polarity (H or V)	Field Strength (V/m)	Criterion	Results	Judgment
80-1000	Front	H / V	20	A	A	Pass
	Left	H / V	20	A	A	
	Right	H / V	20	A	A	
	Rear	H / V	20	A	A	
Note	There was no abnormal situation during the test compared with initial operation.					



## RS TEST RESULT FORM

Project No.: 4789548226

Product Name	Internal Power, AC to DC	Standard	EN 55024
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Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	From AC power	Humidity:	58%RH
Tested By:	Edison	Test Date:	Jul 13, 2020

Customer Request: H: Horizontal V: Vertical

Freq. Range (MHz)	Position (Face)	Polarity (H or V)	Field Strength (V/m)	Criterion	Results	Judgment
80-1000	Front / Left / Right / Rear	H / V	20	A	A	Pass
1800(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
2600(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
3500(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
5000(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
Note	There was no abnormal situation during the test compared with initial operation.					

Immunity Level to common wireless communication						
Freq. Range (MHz)	Position (Face)	Polarity (H or V)	Field Strength (V/m)	Criterion	Results	Judgment
800	Front / Left / Right / Rear	H / V	20	A	A	Pass
900	Front / Left / Right / Rear	H / V	20	A	A	Pass
1800(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
2600(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
3500(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
5000(±1%)	Front / Left / Right / Rear	H / V	20	A	A	Pass
Note	There was no abnormal situation during the test compared with initial operation.					



## CS TEST RESULT FORM

**Project No.: 4789548226**

Product Name	Internal Power, AC to DC	Standard	EN 55024
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Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	From AC power	Humidity:	58%RH
Tested By:	Edison	Test Date:	Jul 06, 2020

**Customer Request:**

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgment
AC Power	0.15 --- 80	20V	M016(M2)	A	A	Pass
Note	There was no abnormal situation during the test compared with initial operation.					

**Project No.: 4789548226**

Product Name	Internal Power, AC to DC	Standard	EN 55024
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Test Mode:	Mode 8	Temperature:	23°C
Test Voltage:	From AC power	Humidity:	58%RH
Tested By:	Edison	Test Date:	Jul 06, 2020

**Customer Request:**

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results	Judgment
AC Power	0.15 --- 80	20V	M016(M2)	A	A	Pass
Note	There was no abnormal situation during the test compared with initial operation.					