



TEST REPORT

FOR

AC to DC Power Supply

BRAND : 

MODEL : TPP 300-124B-M

SERIES MODEL : Refer to item 5.1 for more details

REPORT NUMBER : 4790133595A-EN-E1-V0

ISSUE DATE: Nov. 9, 2021

Prepared for

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	Nov. 09, 2021	Initial Issue	Cindy Hsin

Summary of Test Results				
EMISSION (IEC 60601-1-2:2014, EN 60601-1-2:2015 standards)				
Standard	Test Item	Limit	Result	Remark
CISPR 11: 2015/A1: 2016 EN55011: 2016/A1: 2017	Conducted disturbance at mains terminals ports	Class B (Note 3)	PASS	Note 4
	Patient-coupled cable conducted emission	24dBuA	N/A	Note 1
	Radiated disturbance below 1GHz	Class A (Note 3)	PASS	Note 4
	Radiated disturbance above 1 GHz	Class B	N/A	Note 2
IEC 61000-3-2:2018 EN IEC 61000-3-2: 2019	Harmonic current disturbance	Class A	PASS	Note 4
IEC 61000-3-3:2013 /A1: 2017 EN 61000-3-3:2013/A1: 2019	Voltage Fluctuations & Flicker	Refer to chapter 6.4.1	PASS	Note 4

Note 1: There is no patient-coupled cable, so the test is unnecessary

Note 2: For Group 1, in the frequency range 1 to 18GHz limits are not specified.

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

Note 4: All test data are copied from 4789837839A-EN-E1-V0 report.

Summary of Test Results				
IMMUNITY (IEC 60601-1-2:2014, EN 60601-1-2:2015 standards)				
Professional healthcare facility environment				
Basic Standard	Test Item	Test Level	Criteria	Result
IEC 61000-4-2:2008 EN 61000-4-2: 2009	Electrostatic discharge immunity	Contact ± 8 kV Air ± 15 kV	Clause 7.1	PASS (Note 4)
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 80MHz~2.7GHz	Clause 7.1	PASS (Note 4)
	Proximity fields from RF wireless communications equipment	See page 6	Clause 7.1	PASS (Note 4)
IEC 61000-4-4:2012 EN 61000-4-12	Electrical fast transient/burst immunity	2.0kV(AC Mains) 1kV(Signal Lines) 5/50ns, 100kHz	Clause 7.1	PASS (Note 4)
IEC 61000-4-5: 2014 /A1: 2017 EN 61000-4-5 : 2014 /A1 : 2017	Surge immunity	2.0kV(Common) 1.0kV(Differential) 1.2/50us	Clause 7.1	PASS (Note 4)
IEC 61000-4-6: 2013+ COR1: 2015 EN 61000-4-6 : 2014/ AC : 2015	Immunity to conducted disturbances, induced by radio-frequency fields	3V(rms) 80%, 1kHz AM. 0.15MHz~80MHz 6 V(rms) in ISM bands between 0,15 MHz and 80 MHz.(Note1)	Clause 7.1	PASS (Note 4)
IEC 61000-4-8:2009 EN 61000-4-8: 2010	Power frequency magnetic field immunity	50Hz, 30 A/m	Clause 7.1	PASS (Note 4)
IEC 61000-4-11:2020 EN IEC 61000-4-11: 2020	Voltage dips, short interruptions and voltage variations immunity	Voltage dips, 0% residual for 0.5 cycle (Note 3)	Clause 7.1	PASS (Note 4)
		Voltage dips, 0% residual for 1 cycle (Note 3)	Clause 7.1	
		Voltage dips, 70% residual for 25/30 cycle (Note 2,3)	Clause 7.1	
		Voltage interruptions For 250/300 cycle (NOTE 2,3)	Clause 7.1	

Note: (1) The ISM (industrial, scientific and medical) bands between 0,15 MHz and 80 MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.

Note: (2) 25/30 or 250/300 means 25 or 250 periods at 50 Hz or 30 or 300 periods at 60 Hz.

Note: (3) For ME EQUIPMENT and ME SYSTEMS that have multiple voltage settings or auto ranging voltage capability, the test shall be performed at the minimum and maximum RATED input voltage. ME EQUIPMENT and ME SYSTEMS with a RATED input voltage range of less than 25 % of the highest RATED input voltage shall be tested at one RATED input voltage within the range.

Note: (4) All test data are copied from 4789837839A-EN-E1-V0 report.

Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment						
Test frequency	Band	Service	Modulation	Maximum power	Distance	IMMUNITY TEST LEVEL
385	380 – 390	TETRA 400	Pulse modulation 18 Hz	1,8	0,3	27
450	430 – 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	2	0,3	28
710	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	0,2	0,3	9
745						
780						
810	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	0,3	28
870						
930						
1720	1700 – 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	2	0,3	28
1845						
1970						
2450	2400 – 2570	Bluetooth, WLAN,802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0,3	28
5240	5100 – 5800	WLAN 802.11 a/n	Pulse Modulation 217 Hz	0,2	0,3	9
5500						
5785						
NOTE: If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.						

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	8
2. TEST METHODOLOGY	9
3. FACILITIES AND ACCREDITATION	9
4. CALIBRATION AND UNCERTAINTY	10
4.1. Measuring Instrument Calibration	10
4.2. Measurement Uncertainty	10
5. EQUIPMENT UNDER TEST	12
5.1. Description of EUT	12
5.2. Test Mode	14
5.3. EUT Configuration Test Setup	14
5.4. Monitoring of EUT for All Immunity Test	15
5.5. Accessory	15
5.6. Block diagram showing the configuration of system tested	16
5.7. Description of support units	17
5.8. Measuring Instrument List	18
6. EMISSION TEST	22
6.1. Conducted Disturbance Measurement	22
6.1.1. Limits of conducted disturbance voltage and common mode disturbance.	22
6.1.2. Test Procedure	23
6.1.3. Test Setup and Configuration :	23
6.1.4. Test Result	24
6.2. Radiated Disturbance Measurement	28
6.2.1. Limits of radiated disturbance measurement	28
6.2.2. Test Procedure	30
6.2.3. Test Setup and Configuration	31
6.2.4. Test Result	32
6.3. Harmonic Current Disturbance Measurement	34
6.3.1. Limits of Harmonic Current	34
6.3.2. Test Procedure	35
6.3.3. Test Setup and Configuration	35
6.3.4. Test Condition	35
6.3.5. Test Result	36
6.4. Voltage Fluctuation and Flicker Measurement	39
6.4.1. Limits of Voltage Fluctuation and Flicker	39
6.4.2. Test Procedure	40
6.4.3. Test Setup and Configuration	40
6.4.4. Test Condition	40
6.4.5. Test Result	41


7. IMMUNITY TEST	42
7.1. Performance Criteria.....	42
7.2. Electrostatic Discharge Immunity Test	43
7.2.1. Test Specification	43
7.2.2. Test Procedure	43
7.2.3. Test Setup and Configuration	44
7.2.4. Test Result	45
7.3. Radio Frequency Electromagnetic Field Immunity Test	52
7.3.1. Test Specification	52
7.3.2. Test Procedure	52
7.3.3. Test Setup and Configuration	53
7.3.4. RS proximity fields from RF Wireless Communication Test Specification.....	54
7.3.5. Test Procedure	54
7.3.6. Test Setup and Configuration	54
7.3.7. Test Result	55
7.4. Electrical Fast Transient/Burst Immunity Test	57
7.4.1. Test Specification	57
7.4.2. Test Procedure	57
7.4.3. Test Setup and Configuration	58
7.4.4. Test Result	59
7.5. Surge Immunity Test.....	60
7.5.1. Test Specification	60
7.5.2. Test Procedure	60
7.5.3. Test Setup and Configuration	61
7.5.4. Test Result	62
7.6. Immunity to Conducted Disturbances Induced by RF Fields	63
7.6.1. Test Specification	63
7.6.2. Test Procedure	63
7.6.3. Test Setup and Configuration	64
7.6.4. Test Result	65
7.7. Power frequency magnetic field immunity Test	66
7.7.1. Test Specification	66
7.7.2. Test Procedure	66
7.7.3. Test Setup and Configuration	67
7.7.4. Test Results.....	68
7.8. Voltage Dips and Short Interruptions Immunity Test	69
7.8.1. Test Specification	69
7.8.2. Test Procedure	69
7.8.3. Test Setup and Configuration	70
7.8.4. Test Result	71
Appendix I: Photographs of EMC Test Configuration.....	73
Appendix II: Photographs of the EUT.....	84
Appendix III: Preliminary Test Raw Data.....	85

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: AC to DC Power Supply

BRAND: 

MODEL: TPP 300-124B-M

SERIES MODEL: Refer to item 5.1 for more details

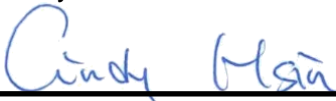
DATE of TESTED: Feb. 25, 2021 ~ Jul. 7, 2021

APPLICABLE STANDARDS	
STANDARDS	TEST RESULTS
CISPR 11: 2015 / A1: 2016 IEC 60601-1-2:2014 EN 55011: 2016 / A1: 2017 EN 60601-1-2:2015	PASS

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

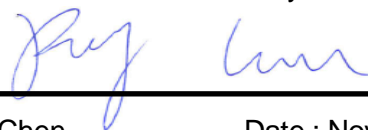
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions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

Prepared By:


Cindy Hsin
Project Handler

Date : Nov. 9, 2021

Approved and Authorized By:


Roy Chen
Operations Manager

Date : Nov. 9, 2021

2. TEST METHODOLOGY

All tests were performed in accordance with the procedures documented in the reference standards listed in summary of test results page 3 and page 4.

3. FACILITIES AND ACCREDITATION

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

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

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

4.2. Measurement Uncertainty

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

Electromagnetic interference:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	3.1
966-1 Test Site			
Radiated disturbance below 1 GHz	30MHz ~ 1000MHz	2	5.3

Test Item	K	Voltage(%)	Current(%)
Harmonic&Flicker	2	0.17	0.39

Electromagnetic sensitivity:

Test Item	Measurement Frequency Range	K	U(dB)
Radiated, radio frequency electromagnetic field immunity	80MHz ~ 6000MHz	2	1.8
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	2.8	7.1	4.2	4.0	4.5

Test Item	K	Peak Voltage(%)	Rise Time(%)	Pulse width(%)	Burst Period (%)	Burst duration (%)	Repetition rate (%)
Electrical fast transient/burst immunity	2	1.1	1.5	1.7	0.94	0.41	0.29


Test Item	K	Phase Shifting (%)	Voltage (%)	Current (%)	Front Time (For waveform of the surge voltage)(%)	Duration (For waveform of the surge voltage)(%)	Front Time (For waveform of the surge current)(%)	Duration (For waveform of the surge current)(%)
Surge immunity	2	0.98	3.6	2.7	1.2	0.43	5.9	0.79

Test Item	K	Magnetic field Strength(%)
Power Frequency Magnetic Field Immunity Test	2	10.0

Test Item	K	Voltage(%)	Time (%)	Phase Angle (%)
Voltage dips, short interruptions and voltage variations immunity	2	2.2	3.1	1.1

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name:	AC to DC Power Supply
Brand:	
Model:	TPP 300-124B-M
Series Model:	TPP 300-112XY-Z, TPP 300-115XY-Z, TPP 300-118XY-Z, TPP 300-124XY-Z, TPP 300-128XY-Z, TPP 300-136XY-Z, TPP 300-148XY-Z, TPP 300-153XY-Z
Power Rating :	From AC power
Group :	Group 1
Condition of EUT:	Pre-Production
Environments:	Professional healthcare facility environment
DATE of Sample Received:	Feb. 24, 2021

Note :

1. This report was issued base on original report which report number is 4789837839A-EN-E1-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 4789837839A-EN-E1-V0 show on this report.

2. The models difference table as below:

Model Number	Input Voltage Range (Vac)	Output Voltage (Vdc)
TPP 300-112XY-Z	85 ~ 264	12
TPP 300-115XY-Z	85 ~ 264	15
TPP 300-118XY-Z	85 ~ 264	18
TPP 300-124XY-Z	85 ~ 264	24
TPP 300-128XY-Z	85 ~ 264	28
TPP 300-136XY-Z	85 ~ 264	36
TPP 300-148XY-Z	85 ~ 264	48
TPP 300-153XY-Z	85 ~ 264	53

"X" can be blank or B

When X = blank represents no provision for protective earthing

When X = B represents protective earthing

"Y" can be blank, DR, L, A

when Y = blank represent Enclosed type

when Y = DR represent Din rail type

when Y = L represent Base plate type

when Y = A represents Open type

"Z" can be -M, blank or -J

when Z = -M represents Molex connector

when Z = blank represents terminal block

when Z = -J represents JST connector

Note: The customer only provided TPP 300-124L-M, TPP 300-124B-M for the EMI pretest and choose the worst mode do the EMI and EMS final test.

5.2. Test Mode

The Pre-test modes:

Mode	Description	Conducted Emission	Radiated Emission
Mode 1	Full Load (TPP 300-124L-M)	v	v
Mode 2	Full Load (TPP 300-124B-M)	v	v

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

Test Items		Test Mode
Emission	Conducted Emission	Mode 2
	Radiated Emission	Mode 2
	Harmonic & Flicker	Mode 2
Immunity	Electrostatic Discharge	Mode 1~2
	Radio Frequency Electromagnetic Field	Mode 2
	Electrical Fast Transient	Mode 2
	Surge Immunity	Mode 2
	Immunity to conducted disturbances, induced by radio-frequency fields	Mode 2
	Power frequency magnetic field immunity	Mode 2
	Voltage Dips and Interruptions	Mode 2

Note : The customer requires mode 1 in the "ESD" test item. Simulate the test when the open type product is installed in the system, using the base plate as the system chassis.

5.3. EUT Configuration Test Setup

For Emission test :

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

For Immunity test :

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

5.4. Monitoring of EUT for All Immunity Test

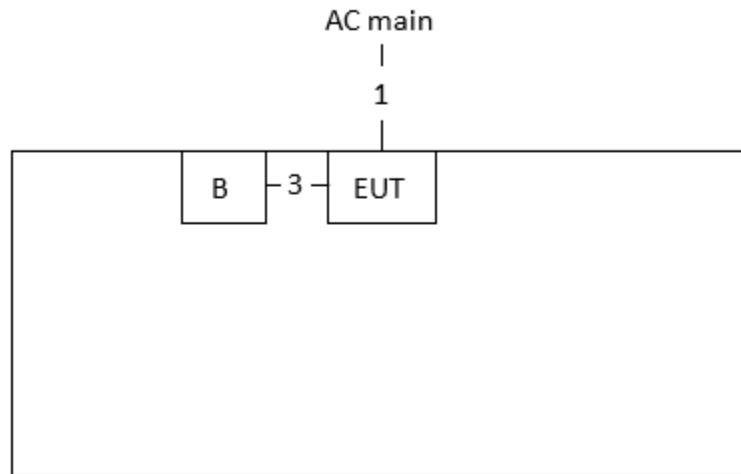
Audio	N/A
Visual	Monitor the output voltage through the meter.

5.5. Accessory

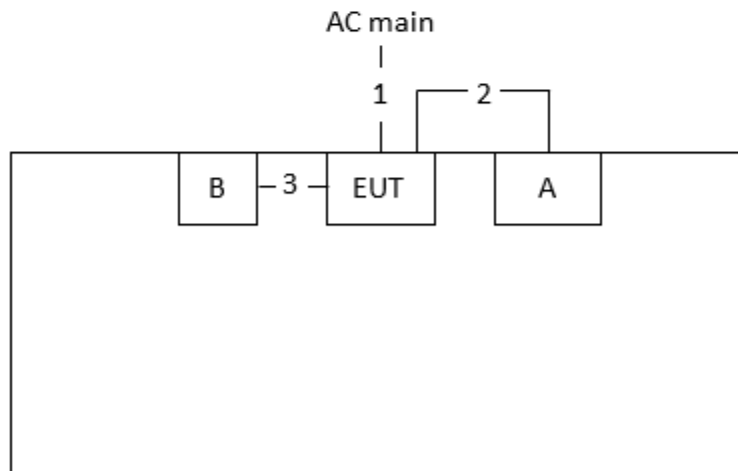
N/A

5.6. Block diagram showing the configuration of system tested

For Emission test :



For Immunity 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
B	Load	N/A	N/A	N/A	N/A	N/A

Item	Connection	Shielded Type	Note
1	AC power cable	Non-shielded	Provide by customer
2	Power Wire*2	Non-shielded	N/A
3	Power wire *2	Non-shielded	Provide by customer

5.8. Measuring Instrument List

Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
Conducted Disturbance					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2020/11/17	2021/11/16
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2020/8/19	2021/8/18
RF Current Probe	FCC	F-52	171502	2021/1/19	2022/1/18
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2020/8/12	2021/8/11
Cable	TITAN	CFD200	T0732ACFD200 20A300-1	2021/3/2	2022/3/1
Measurement Software	Farad	EZ-EMC Ver: UL-3A1.2	N/A	N/A	N/A
Radiated Disturbance					
966-1					
EMI Test Receiver	Rohde & Schwarz	ESR7	101755	2020/12/4	2021/12/3
Loop Antenna	ETS Lindgren	6502	00213440	2020/12/25	2021/12/24
Trilog-Broadband Antena with 5dB Attenuator	SCHWARZBECK	VULB 9168 & N-6-05	774 & AT-N0538	2021/1/13	2022/1/12
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	1686	2020/12/23	2021/12/22
Preamplifier	EMC Instrument	EMC330E	980404	2020/6/4	2021/6/3
Preamplifier	EMC Instrument	EMC051835BE	980407	2021/1/20	2022/1/19
Cables	UltraPhase&EMC Instrument	A1K50-UP0358-A1K50-1500&EMC106-NM-SM-2500/8000	170111-3&170104/170223	2021/2/3	2022/2/2
Measurement Software	Farad	EZ-EMC Ver: UL-3A1	N/A	N/A	N/A
Voltage Harmonic & Flicker					
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
Electrostatic discharge					
ESD Generator	TESEQ	NSG 437	1125	2020/12/3	2021/12/2
Barometer	TFA	DIVA PLUS	35.1078.10.IT	2021/6/4	2022/6/3
Radio frequency electromagnetic field immunity					
RF and Microwave Signal Generator	Rohde & Schwarz	SMB100A	113793	2021/2/20	2022/2/19
Power amplifier	Milmega	80RF1000-300	1077558	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	2020/9/16	2021/9/15
Power Sensor	Rohde & Schwarz	NRP-Z91	103732	2020/9/16	2021/9/15
Power Sensor	Rohde & Schwarz	NRP-Z91	103733	2020/9/16	2021/9/15
Sound Calibrator	Brüel&Kjaer	Type 4231	3016784	2020/2/14	2023/2/12
Audio Analyzer	Rohde & Schwarz	UPV	104227	2020/11/23	2021/11/22
Pressure-field 1/2" Microphone	Brüel&Kjaer	Type 4192	3069928	2020/3/13	2023/3/12
Mouth Simulator	Brüel&Kjaer	Type 4227	3078961	2020/3/6	2023/3/5
GPS signal generator	Keysight Technologies	N5172B	MY56200315	2021/1/15	2022/1/14
Radio Communication Analyzer	Rohde & Schwarz	CMW500	161254	2020/12/13	2021/12/12
Measurement Software	Rohde & Schwarz	EMC32, VER.10.20.01	N/A	N/A	N/A
Electrical fast transient					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2020/12/2	2021/12/1
Capacitive Coupling Clamp	EM TEST	HFK	P1642185790	2020/11/19	2021/11/18
Measurement Software	TESEQ	IEC.control, VER.7.1.5	N/A	N/A	N/A

Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
Surge					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2020/12/2	2021/12/1
Telecom Surge Generator	EM TEST	TSurge7	P1620180015	2020/12/4	2021/12/3
Coupling and Decoupling Network	EM TEST	CNV 508T5	P1637184038	2020/12/7	2021/12/6
Coupling and Decoupling Network	TESEQ	CDN HSS-2	45091	2020/12/7	2021/12/6
Measurement Software	TESEQ	IEC.control, VER.7.1.5	N/A	N/A	N/A
Immunity to conducted disturbances, induced by radio-frequency fields					
Signal Generator	Rohde & Schwarz	SMC100A	105811	2020/10/6	2021/10/5
Power amplifier	Rohde & Schwarz	BBA150-A125B125	102340	N/A	N/A
Coupling and Decoupling Network	TESEQ	CDN M016	45073	2021/3/19	2022/3/18
Coupling and Decoupling Network	TESEQ	CDN T2-10	45003	2021/3/19	2022/3/18
Coupling and Decoupling Network	TESEQ	CDN T4-10	44939	2021/3/19	2022/3/18
Coupling and Decoupling Network	TESEQ	CDN T8-10	49203	2020/12/14	2021/12/13
EM Injection Clamp	TESEQ	CAL 801A & KEMZ 801A	75454.1, 75454.2 & 45181	2021/3/23	2022/3/22
Current injection Probe	TESEQ	CIP 9136A	44618	2020/10/25	2021/10/24
Power - Sensor	Rohde & Schwarz	NRP-Z91	103730	2020/12/9	2021/12/8
Power - Sensor	Rohde & Schwarz	NRP-Z91	103731	2020/12/9	2021/12/8
Sound Calibrator	Brüel&Kjaer	Type 4231	3016784	2020/2/14	2023/2/12
Audio Analyzer	Rohde & Schwarz	UPV	104227	2020/11/23	2021/11/22
Radio Communication Analyzer	Rohde & Schwarz	CMW500	161254	2020/12/13	2021/12/12
Pressure-field 1/2" Microphone	Brüel&Kjaer	Type 4192	3069928	2020/3/13	2023/3/12
Mouth Simulator	Brüel&Kjaer	Type 4227	3078961	2020/3/6	2023/3/5
Measurement Software	Rohde & Schwarz	EMC32, VER.10.20.01	N/A	N/A	N/A

Instrument					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
Power frequency magnetic field immunity					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2020/12/2	2021/12/1
Current Transformer	EM TEST	MC 2630	P1644186773	2020/9/4	2021/9/3
Magnetic Field Test Antena	EM TEST	MS 100N	P1627181324	2020/9/4	2021/9/3
Voltage dips and interruptions					
Ultra Compact Simulator	EM TEST	UCS 500N7	P1628180275	2020/12/2	2021/12/1
Motorized Variac	EM TEST	MV 2616 (varic NX1-260-16)	P1643186426	2020/12/2	2021/12/1
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"/> Group 1 Class A (dBμV) ≤ 20kVA		<input checked="" type="checkbox"/> Group 1 Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79	66	66 - 56 *	56 - 46*
0.50 -5.0	73	60	56	46
5.0 -30.0	73	60	60	50

FREQUENCY (MHz)	<input type="checkbox"/> Group 2 Class A (dBμV) ≤ 75kVA		<input type="checkbox"/> Group 2 Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	100	90	66 - 56 *	56 - 46*
0.50 -5.0	86	76	56	46
5.0 -30.0	90 - 73 *	80 - 60 *	60	50

Limit of patient-couple port cable emission :

Frequency (MHz)	Peak Current (dBuA)
1-30	24

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

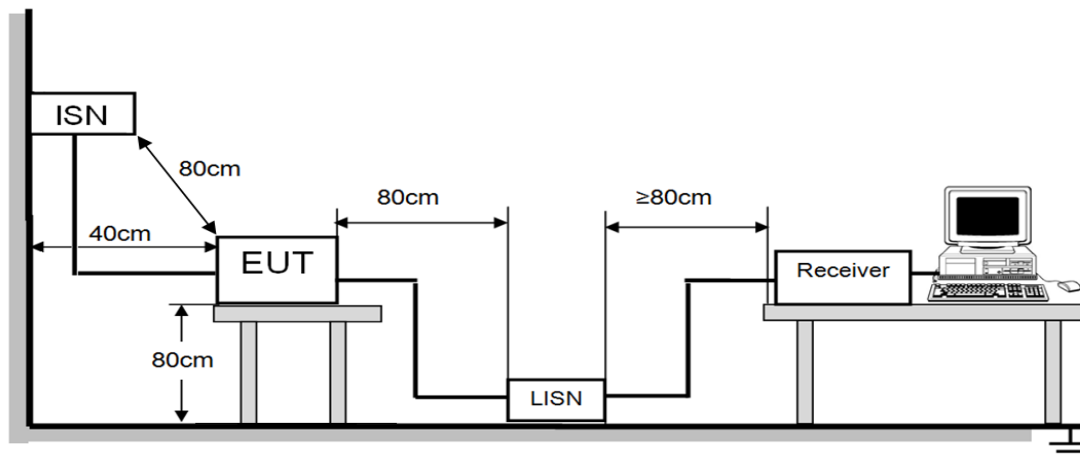
The following table is the setting of the receiver

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.

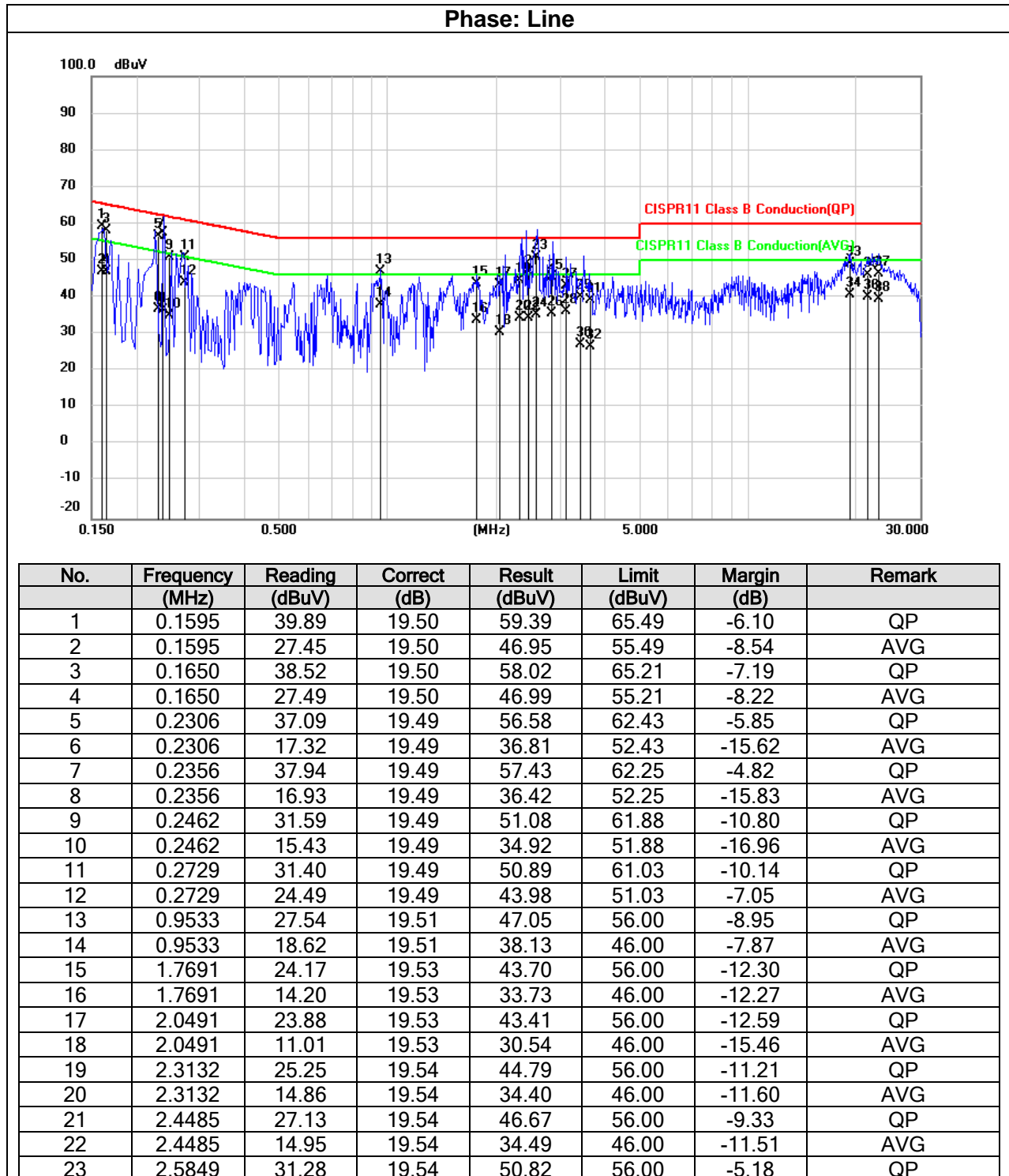
6.1.3. Test Setup and Configuration : For LISN conducted emission



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

6.1.4. Test Result

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	53%RH
Tested By:	Eric T. Fan	Test Date:	Mar. 17, 2021



24	2.5849	15.70	19.54	35.24	46.00	-10.76	AVG
25	2.8568	25.89	19.54	45.43	56.00	-10.57	QP
26	2.8568	15.99	19.54	35.53	46.00	-10.47	AVG
27	3.1288	23.71	19.56	43.27	56.00	-12.73	QP
28	3.1288	16.57	19.56	36.13	46.00	-9.87	AVG
29	3.4226	20.72	19.56	40.28	56.00	-15.72	QP
30	3.4226	7.73	19.56	27.29	46.00	-18.71	AVG
31	3.6261	19.81	19.57	39.38	56.00	-16.62	QP
32	3.6261	7.19	19.57	26.76	46.00	-19.24	AVG
33	19.1649	29.26	19.75	49.01	60.00	-10.99	QP
34	19.1649	21.09	19.75	40.84	50.00	-9.16	AVG
35	21.4728	26.49	19.76	46.25	60.00	-13.75	QP
36	21.4728	20.39	19.76	40.15	50.00	-9.85	AVG
37	23.1121	26.78	19.75	46.53	60.00	-13.47	QP
38	23.1121	19.89	19.75	39.64	50.00	-10.36	AVG

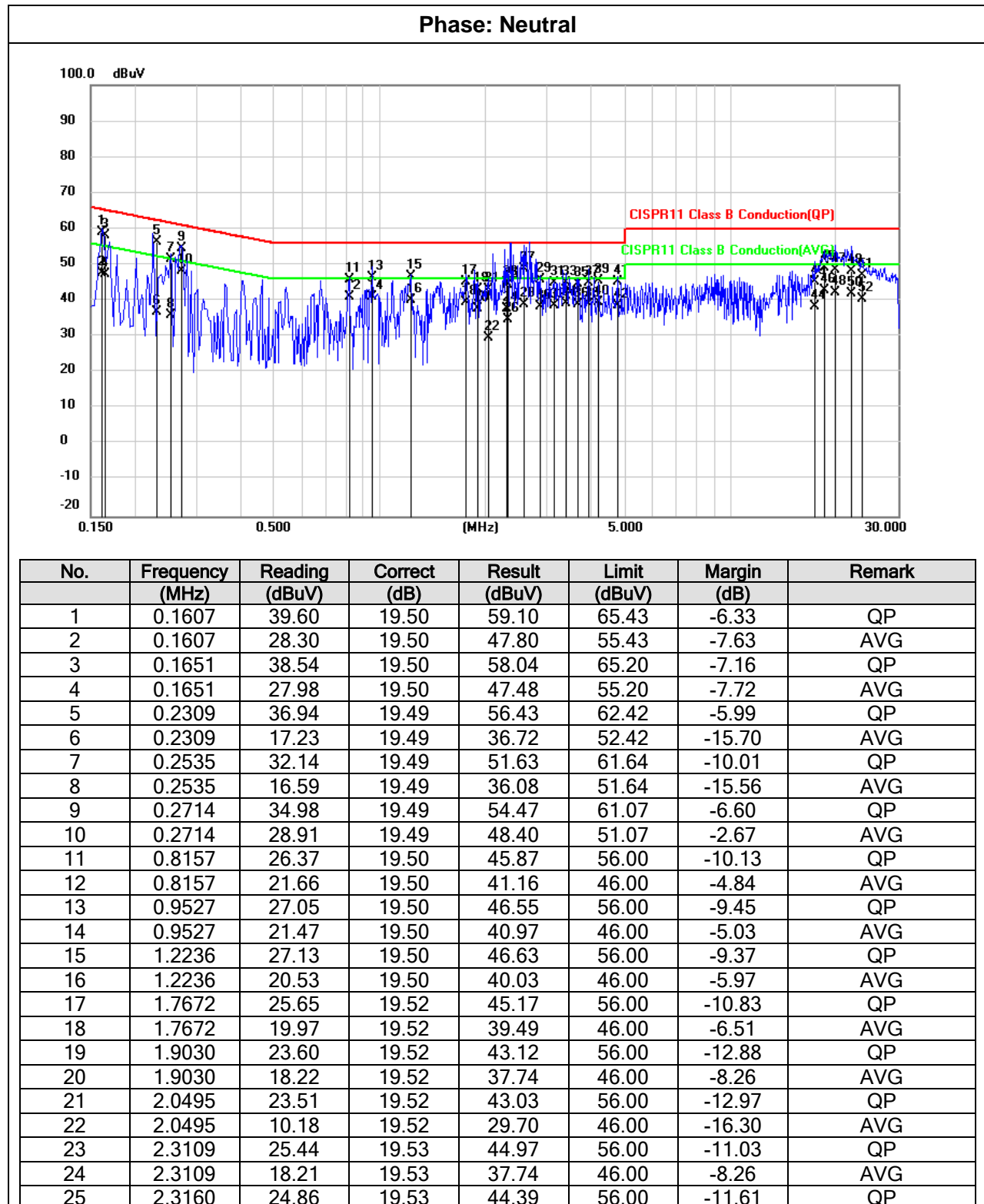
Remark:

Result = Reading +Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

Margin = Result – Limit

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	53%RH
Tested By:	Eric T. Fan	Test Date:	Mar. 17, 2021



26	2.3160	15.12	19.53	34.65	46.00	-11.35	AVG
27	2.5826	29.33	19.54	48.87	56.00	-7.13	QP
28	2.5826	19.51	19.54	39.05	46.00	-6.95	AVG
29	2.8543	26.20	19.54	45.74	56.00	-10.26	QP
30	2.8543	18.79	19.54	38.33	46.00	-7.67	AVG
31	3.1261	25.44	19.55	44.99	56.00	-11.01	QP
32	3.1261	19.02	19.55	38.57	46.00	-7.43	AVG
33	3.3976	25.35	19.55	44.90	56.00	-11.10	QP
34	3.3976	19.59	19.55	39.14	46.00	-6.86	AVG
35	3.6695	25.08	19.57	44.65	56.00	-11.35	QP
36	3.6695	19.35	19.57	38.92	46.00	-7.08	AVG
37	3.9411	25.27	19.58	44.85	56.00	-11.15	QP
38	3.9411	19.37	19.58	38.95	46.00	-7.05	AVG
39	4.2122	25.96	19.58	45.54	56.00	-10.46	QP
40	4.2122	19.92	19.58	39.50	46.00	-6.50	AVG
41	4.7558	25.51	19.60	45.11	56.00	-10.89	QP
42	4.7558	19.17	19.60	38.77	46.00	-7.23	AVG
43	17.3861	25.53	19.79	45.32	60.00	-14.68	QP
44	17.3861	18.54	19.79	38.33	50.00	-11.67	AVG
45	18.4721	29.37	19.81	49.18	60.00	-10.82	QP
46	18.4721	22.93	19.81	42.74	50.00	-7.26	AVG
47	19.9641	28.77	19.83	48.60	60.00	-11.40	QP
48	19.9641	22.57	19.83	42.40	50.00	-7.60	AVG
49	22.1450	28.53	19.84	48.37	60.00	-11.63	QP
50	22.1450	22.05	19.84	41.89	50.00	-8.11	AVG
51	23.6390	27.22	19.85	47.07	60.00	-12.93	QP
52	23.6390	20.64	19.85	40.49	50.00	-9.51	AVG

Remark:

Result = Reading +Correct

Correct = Insertion Loss + Cable Loss + Attenuator factor

Margin = Result – Limit

6.2. Radiated Disturbance Measurement

6.2.1. Limits of radiated disturbance measurement

FREQUENCY (MHz)	<input checked="" type="checkbox"/> Group 1 Class A ≤ 20 kVA		<input type="checkbox"/> Group 1 Class B	
	<input type="checkbox"/> At 10m	<input checked="" type="checkbox"/> At 3m	<input type="checkbox"/> At 10m	<input type="checkbox"/> At 3m
	Quasi-peak dBμV/m	Quasi-peak dBμV/m	Quasi-peak dBμV/m	Quasi-peak dBμV/m
30 – 230	40	50	30	40
230 – 1000	47	57	37	47

FREQUENCY (MHz)	☐Group 2 Class A ≤ 20 kVA		FREQUENCY (MHz)	☐Group 2 Class B		
	☐At 3m			☐At 3m		
	Magnetic Field Quasi-peak* dBμA/m	Electric Field Quasi-peak* dBμV/m		Magnetic Field Quasi-peak* dBμA/m	Electric Field	
					Quasi-peak* dBuV/m	Average* dBuV/m
0.15 – 0.49	82	-	0.15 - 30	39 - 3	-	-
0.49 – 1.705	72	-				
1.705 – 2.194	77	-				
2.194 – 3.95	68	-				
3.95 – 11	43.5 – 28.5*	-				
11 – 20	28.5	-				
20 – 30	18.5	-				
30 - 47	-	78	30 – 80.872	-	40	35
47 – 53.91	-	60				
53.91 – 54.56	-	60				
54.56 – 68	-	60				
68 – 80.872	-	73				
80.872 – 81.848	-	88	80.872 – 81.848	-	60	55
81.848 – 87	-	73	81.848 – 134.786	-	40	35
87 – 134.786	-	70	134.786 – 136.414	-	60	55
134.786 – 136.414	-	80	136.414 – 230	-	40	35
136.414 – 156	-	70				
156 – 174	-	84				
174 – 188.7	-	60				
188.7 – 190.979	-	70				
190.979 – 230	-	60	230 - 1000	-	47	42
230 – 400	-	70				
400 – 470	-	73				
470 – 1000	-	70				

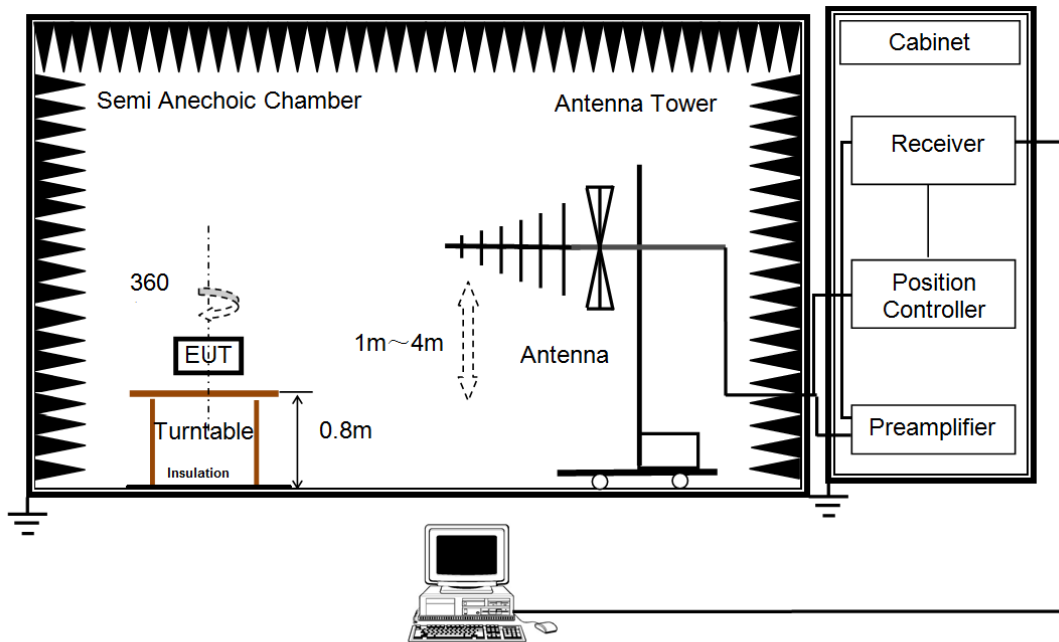
NOTE:

- (1) The limit for radiated test was performed according to EN55011.
- (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.
- (4) For Group 2 at 3m distance radiated magnetic field test, EUT shall be meet the small equipment requirement.
- (5) The average limits apply to magnetron driven equipment only. If magnetron driven equipment exceeds the quasi-peak limit at certain frequencies, then the measurement shall be repeated at these frequencies with the average detector, and the average limits specified in this table apply.
- (6) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

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.

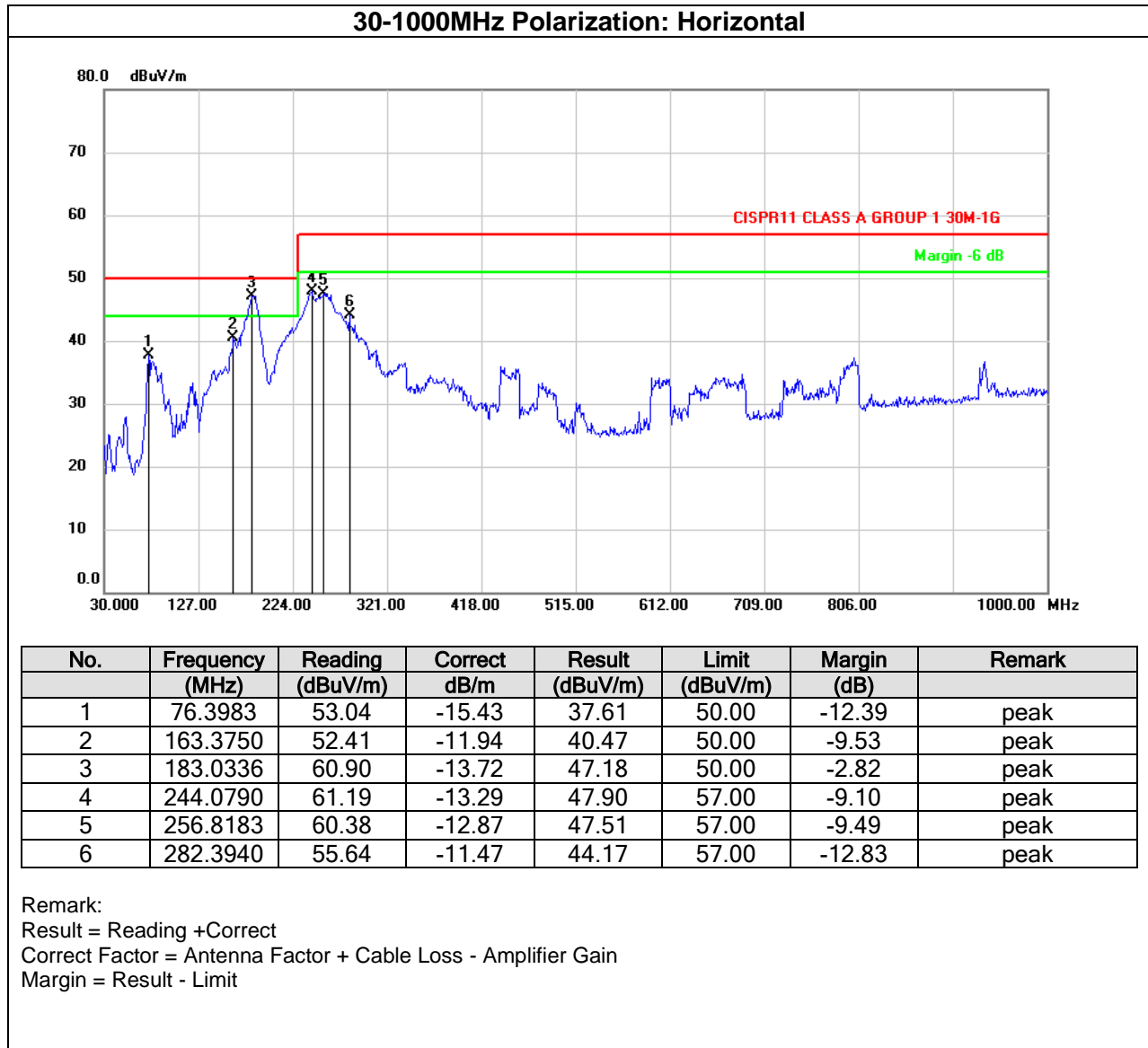
6.2.3. Test Setup and Configuration



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

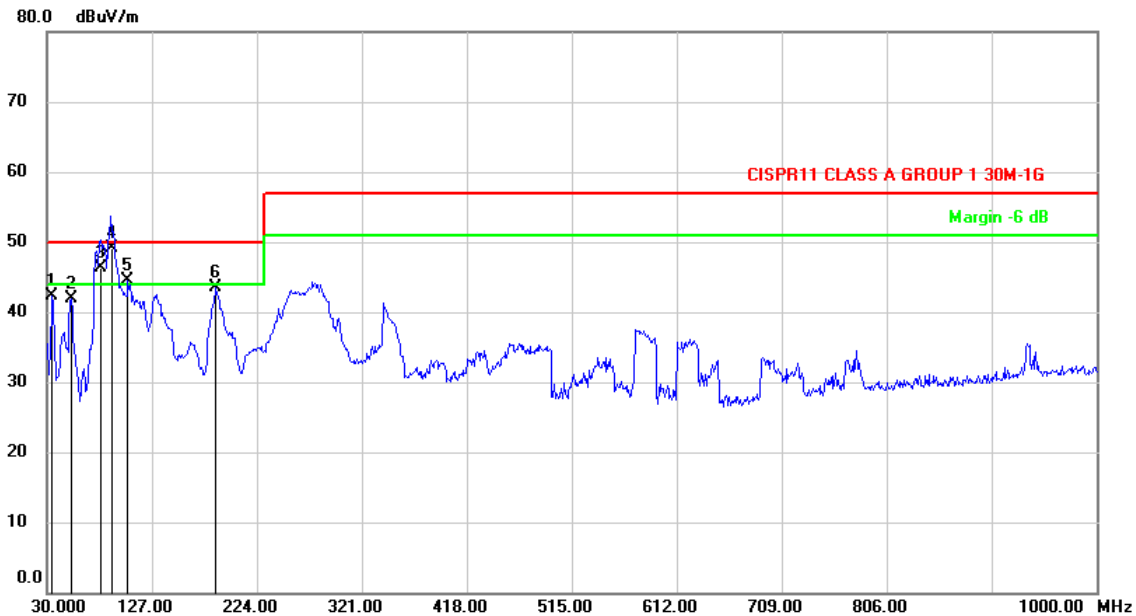
6.2.4. Test Result

Test Mode:	Mode 2	Temperature:	25°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Rupert Hunag	Test Date:	Feb. 25, 2021



Test Mode:	Mode 2	Temperature:	25°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Rupert Hunag	Test Date:	Feb. 25, 2021

30-1000MHz Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.4320	55.33	-13.06	42.27	50.00	-7.73	peak
2	52.6333	54.24	-12.37	41.87	50.00	-8.13	peak
3	80.2460	62.95	-16.55	46.40	50.00	-3.60	QP
4	90.3017	67.26	-18.06	49.20	50.00	-0.80	QP
5	105.4660	60.44	-15.97	44.47	50.00	-5.53	peak
6	186.2670	57.59	-14.14	43.45	50.00	-6.55	peak

Remark:

Result = Reading +Correct

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain

Margin = Result - Limit

6.3. Harmonic Current Disturbance Measurement

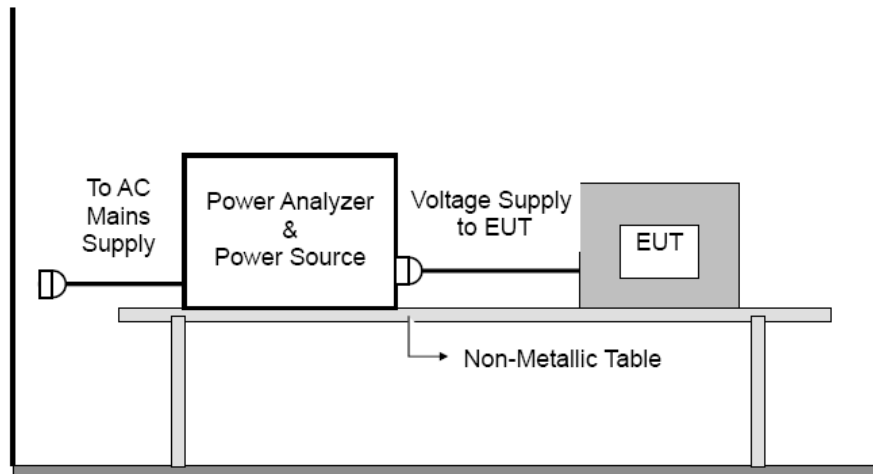
6.3.1. Limits of Harmonic Current

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 0.30
	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

- The EUT was placed on the top of a wooden table 0.8 meters above the ground and set to standby mode condition.
- 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.
- The Patient-coupled cable shall be separate connected to suitable simulator.

6.3.3. Test Setup and Configuration



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

6.3.4. Test Condition

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	62%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 9, 2021

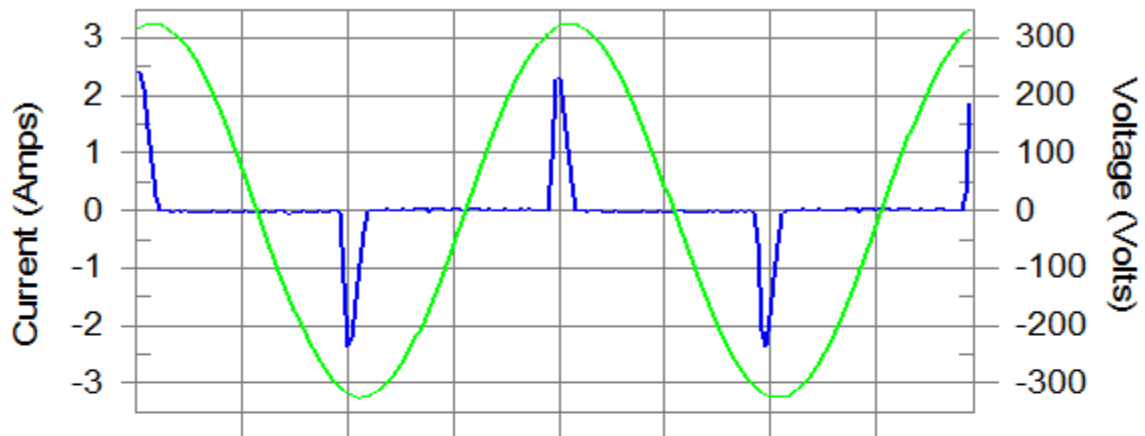
6.3.5. Test Result

Mode 2 :

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

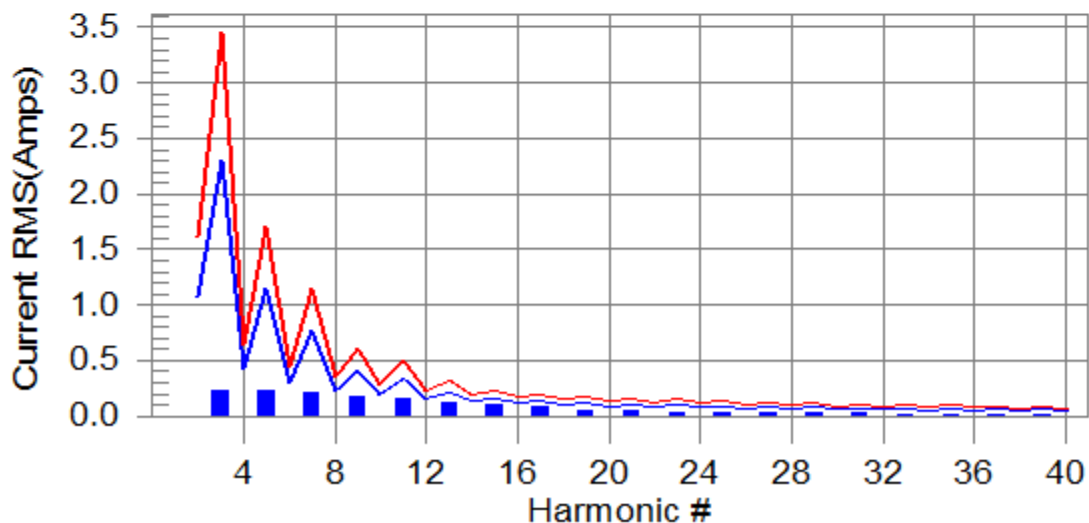
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H15-46.4% of 150% limit, H15-66.7% of 100% limit

Current Test Result Summary (Run Time)

Test Result: Pass Source qualification: Normal
THC(A): 0.493 I-THD(%): 197.2 POHC(A): 0.085 POHC Limit(A): 0.251

Highest parameter values during test:

V_{RMS} (Volts): 229.95 Frequency(Hz): 50.00
I_{Peak} (Amps): 2.474 I_{RMS} (Amps): 0.552
I_{Fund} (Amps): 0.250 Crest Factor: 4.484
Power (Watts): 56.1 Power Factor: 0.453

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	N/A	0.001	1.620	N/A	Pass
3	0.235	2.300	10.2	0.239	3.450	6.9	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.221	1.140	19.4	0.224	1.710	13.1	Pass
6	0.001	0.300	N/A	0.001	0.450	N/A	Pass
7	0.202	0.770	26.3	0.203	1.155	17.6	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.179	0.400	44.8	0.180	0.600	30.0	Pass
10	0.001	0.184	N/A	0.001	0.276	N/A	Pass
11	0.153	0.330	46.4	0.156	0.495	31.4	Pass
12	0.001	0.153	N/A	0.002	0.230	N/A	Pass
13	0.126	0.210	60.1	0.130	0.315	41.2	Pass
14	0.003	0.131	N/A	0.003	0.197	N/A	Pass
15	0.100	0.150	66.7	0.104	0.225	46.4	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.077	0.132	58.0	0.081	0.198	41.0	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.057	0.118	48.2	0.062	0.178	34.7	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.043	0.107	40.4	0.047	0.161	29.2	Pass
22	0.003	0.084	N/A	0.003	0.125	N/A	Pass
23	0.035	0.098	36.2	0.038	0.147	25.7	Pass
24	0.001	0.077	N/A	0.002	0.115	N/A	Pass
25	0.032	0.090	35.5	0.033	0.135	24.4	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.030	0.083	36.2	0.031	0.125	24.7	Pass
28	0.002	0.066	N/A	0.002	0.099	N/A	Pass
29	0.028	0.078	36.1	0.029	0.116	24.7	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.025	0.073	34.1	0.026	0.109	23.7	Pass
32	0.002	0.058	N/A	0.002	0.086	N/A	Pass
33	0.020	0.068	29.9	0.022	0.102	21.3	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.016	0.064	24.3	0.017	0.096	17.7	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.011	0.061	18.3	0.012	0.091	13.6	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.008	0.058	14.0	0.009	0.087	10.1	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.95	Frequency(Hz):	50.00
I _{Peak} (Amps):	2.474	I _{RMS} (Amps):	0.552
I _{Fund} (Amps):	0.250	Crest Factor:	4.484
Power (Watts):	56.1	Power Factor:	0.453

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.034	0.460	7.48	OK
3	0.378	2.069	18.27	OK
4	0.015	0.460	3.33	OK
5	0.052	0.920	5.67	OK
6	0.011	0.460	2.42	OK
7	0.050	0.690	7.32	OK
8	0.012	0.460	2.56	OK
9	0.063	0.460	13.75	OK
10	0.009	0.460	1.87	OK
11	0.071	0.230	30.79	OK
12	0.013	0.230	5.67	OK
13	0.059	0.230	25.76	OK
14	0.006	0.230	2.53	OK
15	0.060	0.230	26.02	OK
16	0.006	0.230	2.55	OK
17	0.053	0.230	22.93	OK
18	0.011	0.230	4.60	OK
19	0.043	0.230	18.53	OK
20	0.011	0.230	4.96	OK
21	0.035	0.230	15.30	OK
22	0.004	0.230	1.70	OK
23	0.031	0.230	13.69	OK
24	0.003	0.230	1.12	OK
25	0.030	0.230	13.20	OK
26	0.002	0.230	0.76	OK
27	0.035	0.230	15.20	OK
28	0.002	0.230	0.86	OK
29	0.032	0.230	13.75	OK
30	0.004	0.230	1.74	OK
31	0.031	0.230	13.45	OK
32	0.002	0.230	0.88	OK
33	0.028	0.230	12.24	OK
34	0.002	0.230	0.82	OK
35	0.025	0.230	10.75	OK
36	0.002	0.230	0.97	OK
37	0.020	0.230	8.81	OK
38	0.001	0.230	0.64	OK
39	0.016	0.230	6.78	OK
40	0.006	0.230	2.64	OK

6.4. Voltage Fluctuation and Flicker Measurement

6.4.1. Limits of Voltage Fluctuation and Flicker

Test items	Limits	Descriptions
P_{st}	≤ 1.0 , $T_p=10\text{min}$	short-term flicker indicator
P_{lt}	≤ 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% Note(1), 7% Note(2))	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.

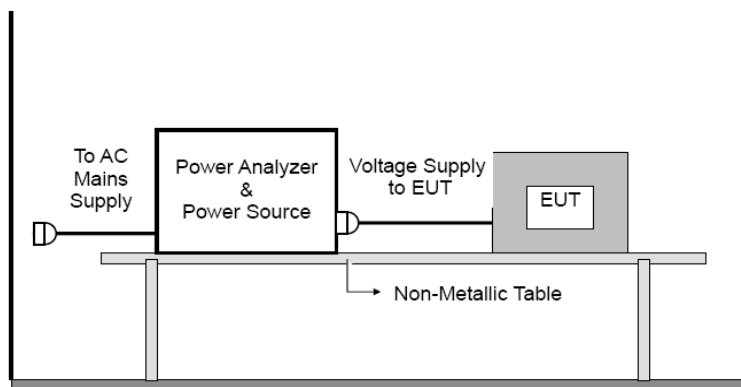
(2)7 % for equipment which is

- 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

- 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
- During the flicker measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.
- 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.
- All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.
- The Patient-coupled cable shall be separate connected to suitable simulator.

6.4.3. Test Setup and Configuration



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

6.4.4. Test Condition

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	62%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 9, 2021

6.4.5. Test Result

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

Test Result: Pass

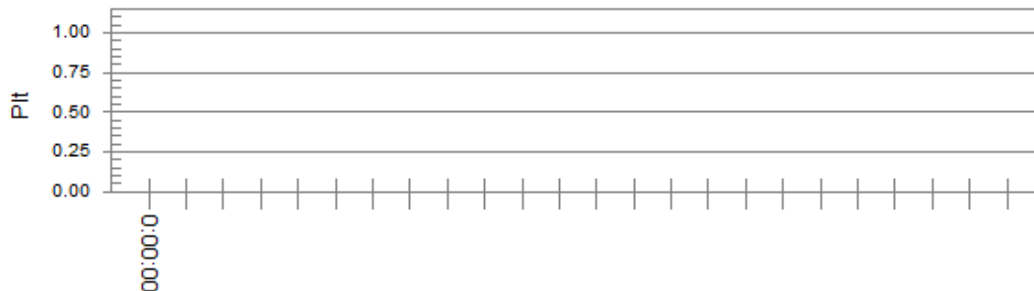
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.85		
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 60601-1-2 standard, the general performance criteria as following:

Type of test	Reaction of ME EQUIPMENT or ME SYSTEM during test	How to continue with testing
Transient(a)	The ME EQUIPMENT or ME SYSTEM is permanently damaged. However, BASIC SAFETY and ESSENTIAL PERFORMANCE continue to be provided.	The test sequence shall be repeated two times with this IMMUNITY TEST LEVEL and polarity. The ME EQUIPMENT or ME SYSTEM passes the test if it continues to provide its BASIC SAFETY and ESSENTIAL PERFORMANCE. If any equipment is damaged, it can continue to be used for the IMMUNITY test for this specific phenomenon, as long as it can be proven (e.g. by RISK MANAGEMENT, engineering analysis, experience, redundancy) that the ability of the ME EQUIPMENT or ME SYSTEM to provide its BASIC SAFETY and ESSENTIAL PERFORMANCE can still be determined while using the damaged equipment. If a PORT of the ME EQUIPMENT or ME SYSTEM is damaged and the ME EQUIPMENT or ME SYSTEM has multiple identical ports, the test shall not be repeated on any of the identical ports. To test the next non-identical PORT, the ME EQUIPMENT or ME SYSTEM shall be restored to normal operation. To continue with the IMMUNITY test of the next EM phenomenon, the ME EQUIPMENT or ME SYSTEM shall be restored to normal operation.
	The ME EQUIPMENT or ME SYSTEM is permanently damaged. BASIC SAFETY or ESSENTIAL PERFORMANCE does not continue to be provided.	The ME EQUIPMENT or ME SYSTEM has failed the test.
Continuous(b)	The ME EQUIPMENT or ME SYSTEM is permanently damaged. However, BASIC SAFETY and ESSENTIAL PERFORMANCE continue to be provided.	The test sequence shall be repeated two times with this IMMUNITY TEST LEVEL and polarity or frequency. BASIC SAFETY and ESSENTIAL PERFORMANCE shall continue to be provided. To continue with the next frequency step the ME EQUIPMENT or ME SYSTEM shall be restored to normal operation.
	The ME EQUIPMENT or ME SYSTEM is permanently damaged. BASIC SAFETY or ESSENTIAL PERFORMANCE does not continue to be provided.	The ME EQUIPMENT or ME SYSTEM has failed the test.
(a) Tests according to IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5 and IEC 61000-4-11		
(b) Tests according to IEC 61000-4-3, IEC 61000-4-6 and IEC 61000-4-8		

7.2. Electrostatic Discharge Immunity Test

7.2.1. Test Specification

Standard:	IEC 60601-1-2、EN 60601-1-2 (refer to IEC 61000-4-2)
Colleteral Standard:	N/A
Discharge Impedance:	330(1±10%)Ω / 150(1±10%)pF
Discharge Voltage:	Air Discharge: ±2kV/±4kV/±8kV/±15kV (Direct)
Polarity:	Contact Discharge: ±2kV/±4kV/±8kV (Direct/Indirect)
	10 times each polarity
Discharge mode of operation:	Single discharges
Discharge Period:	1 second minimum
Repeat test time:	2 times (Note 1)

Note: (1) The test performed of laboratory was according to the client requirements.

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 (in the most sensitive 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.

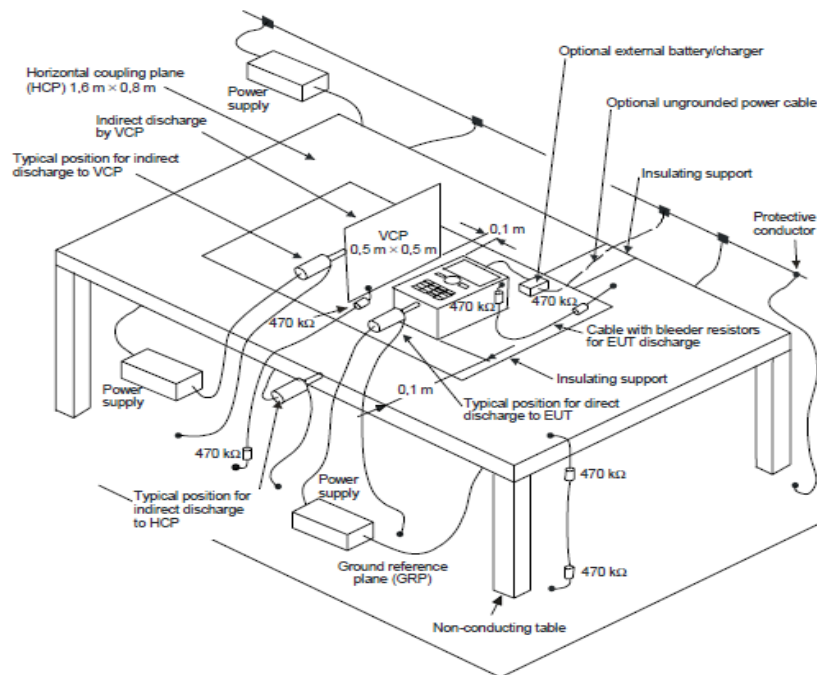
The four faces of the EUT will be performed with electrostatic discharge.

- b. Air discharges at insulation surfaces of the EUT.

It was at least ten 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 and Configuration



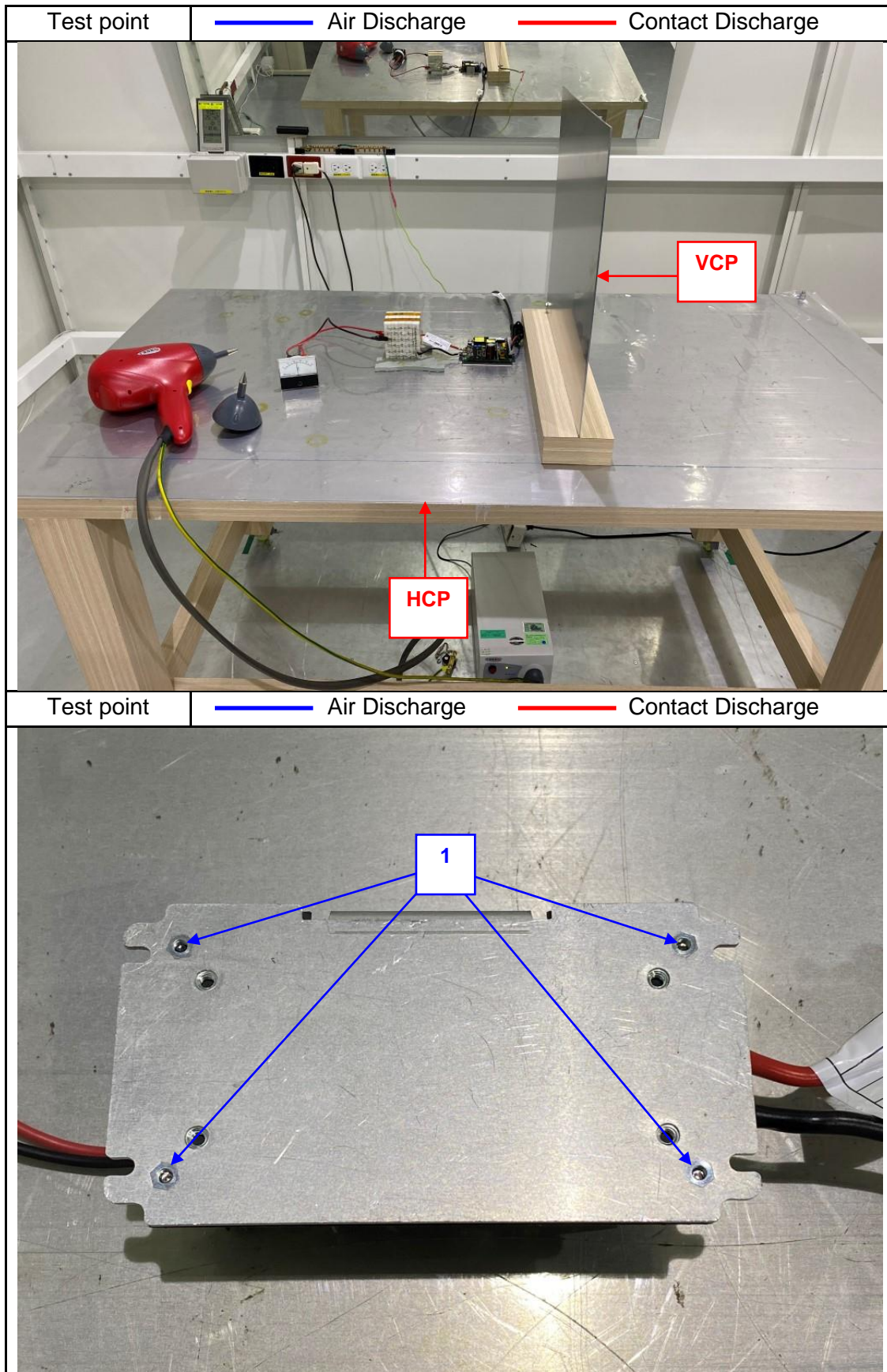
For the actual test configuration, please refer to Appendix I : Photographs of the Test Configuration.

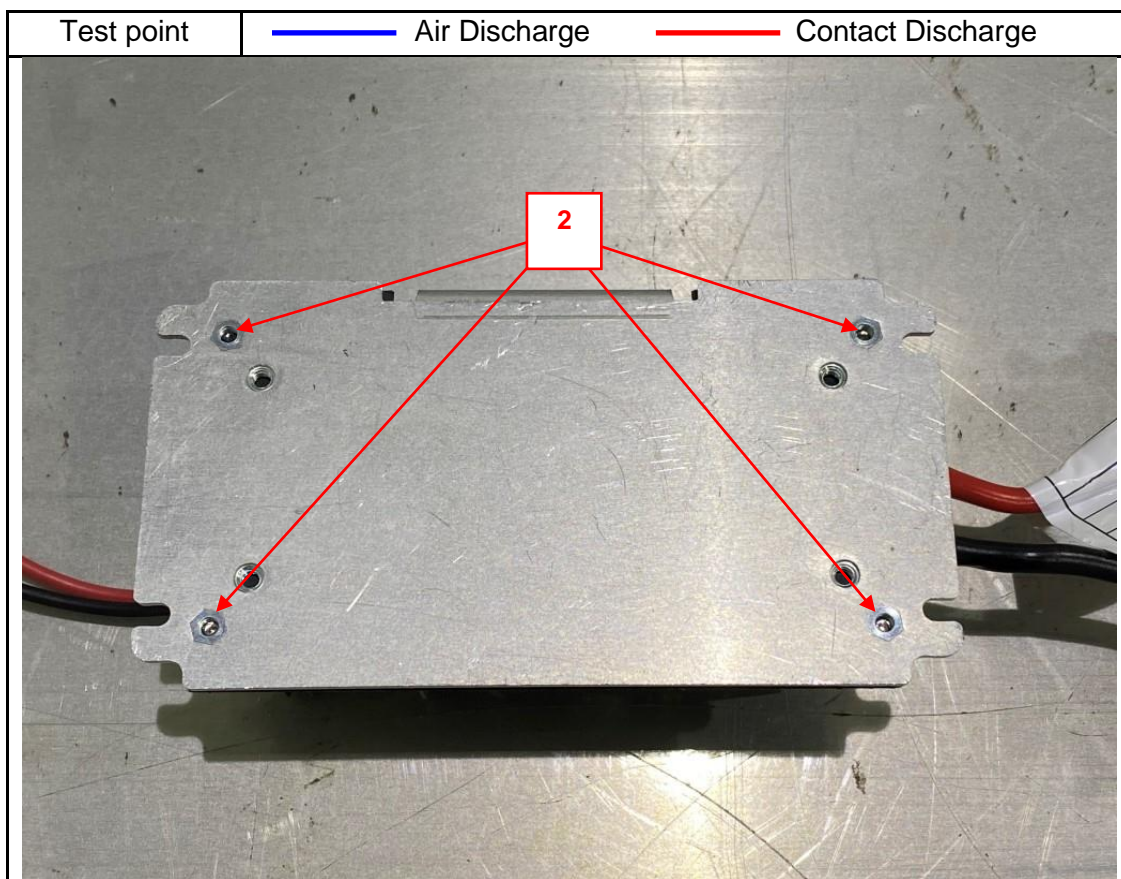
7.2.4. Test Result

Test Mode:	Mode 1	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	42%RH
Discharge of times:	Air: 10 times Contact: 10 times	ATM pressure:	1018 hpa
Tested By:	Rupert Huang	Test Date:	Jul. 7, 2021

Mode	Air Discharge								Contact Discharge							
	2kV		4kV		8kV		15kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-
1	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
Criteria	Please refer to 7.1															
Results	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	-	-	+	-	+	-	+	-	-	-
front	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
rear	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
left	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
right	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
Criteria	Please refer to 7.1															
Results	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															

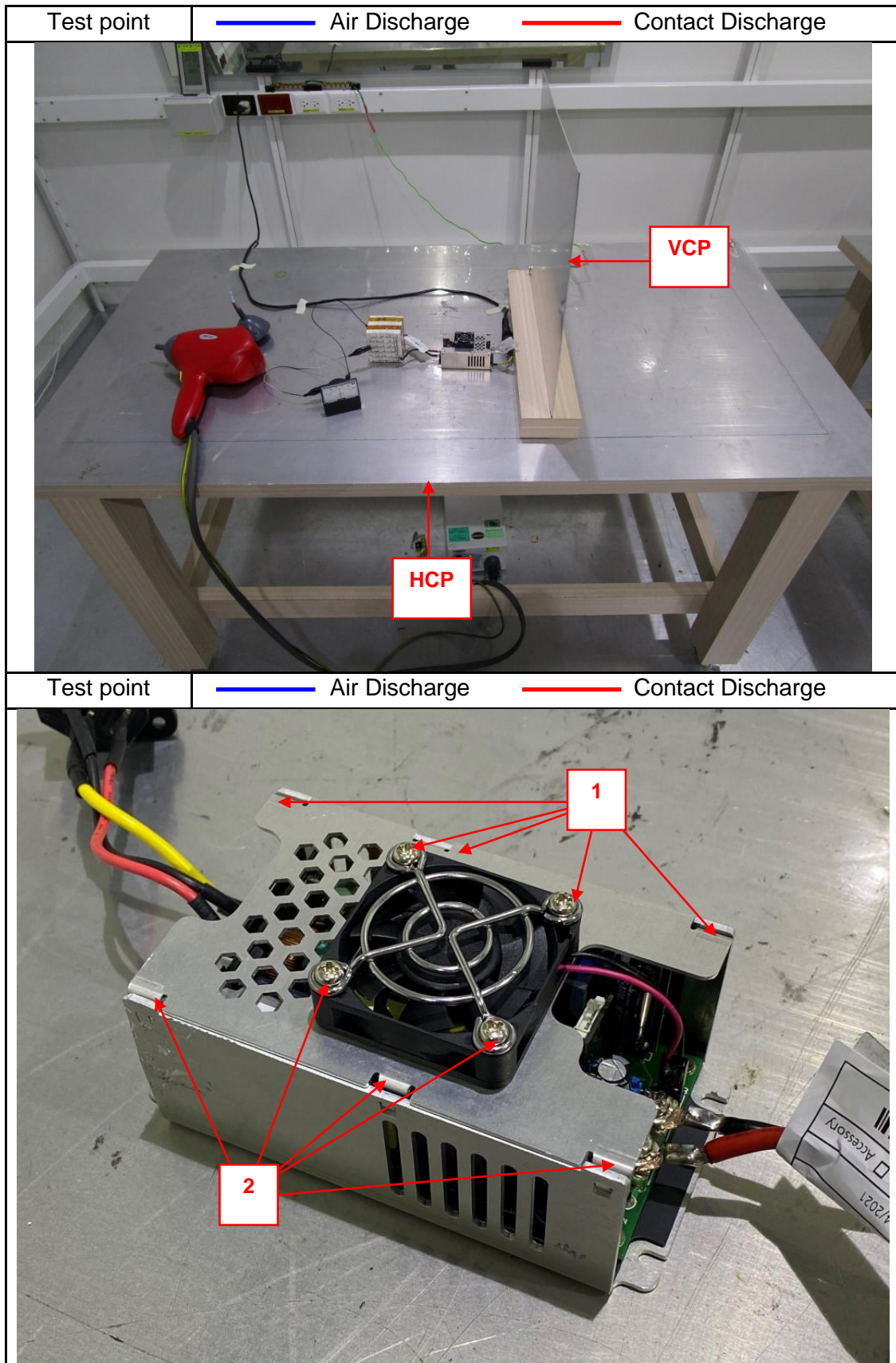


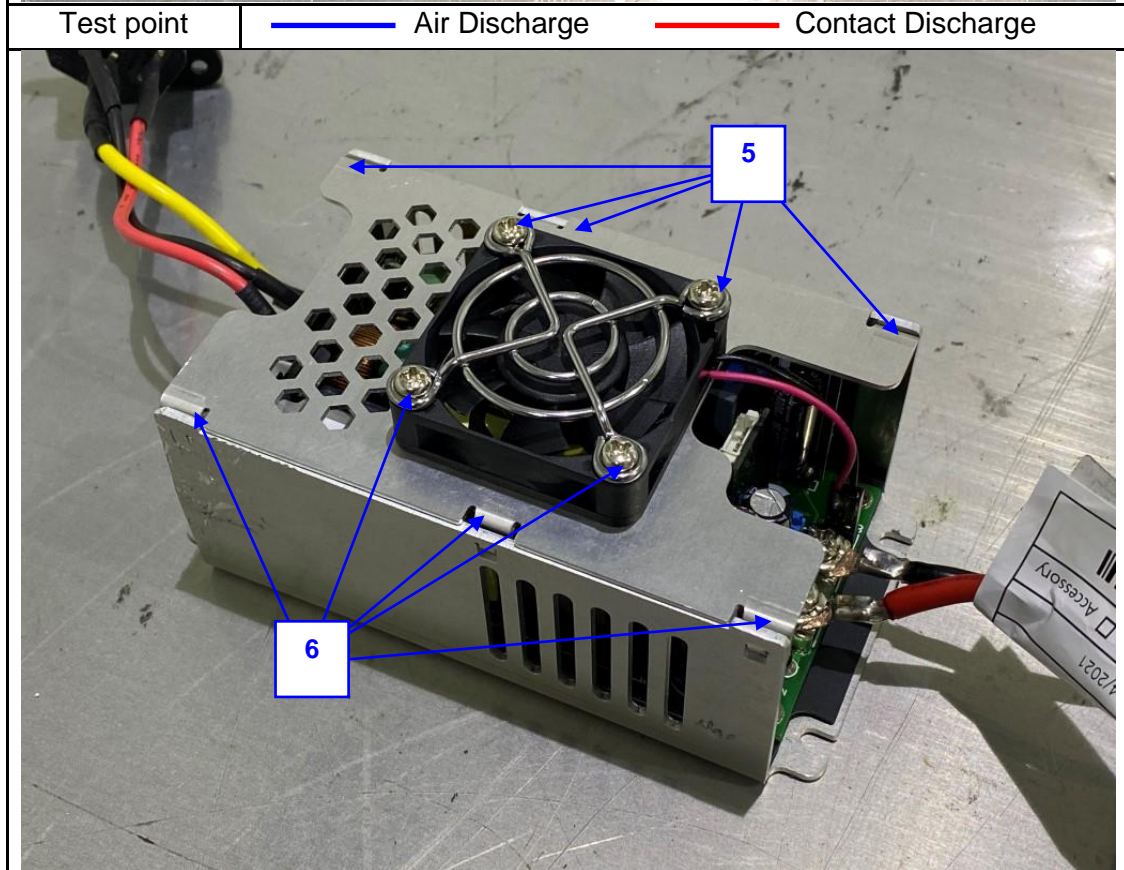
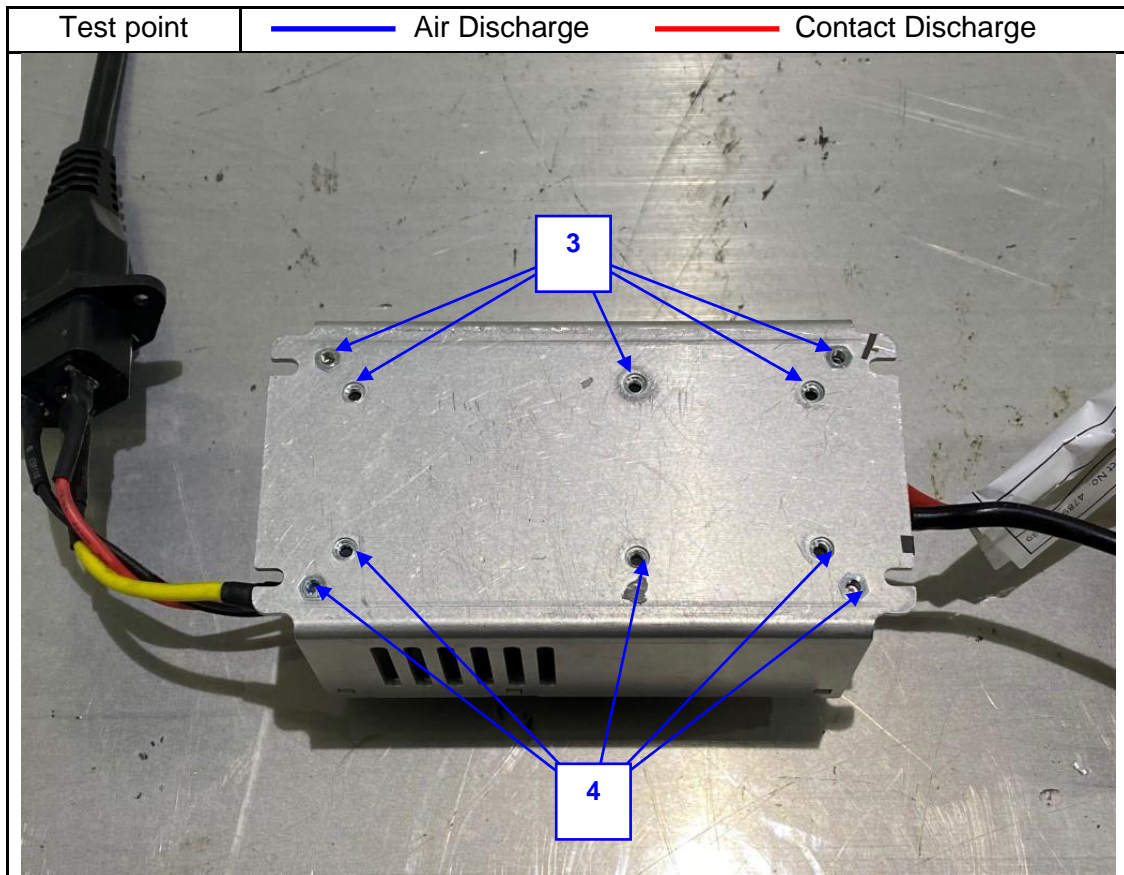


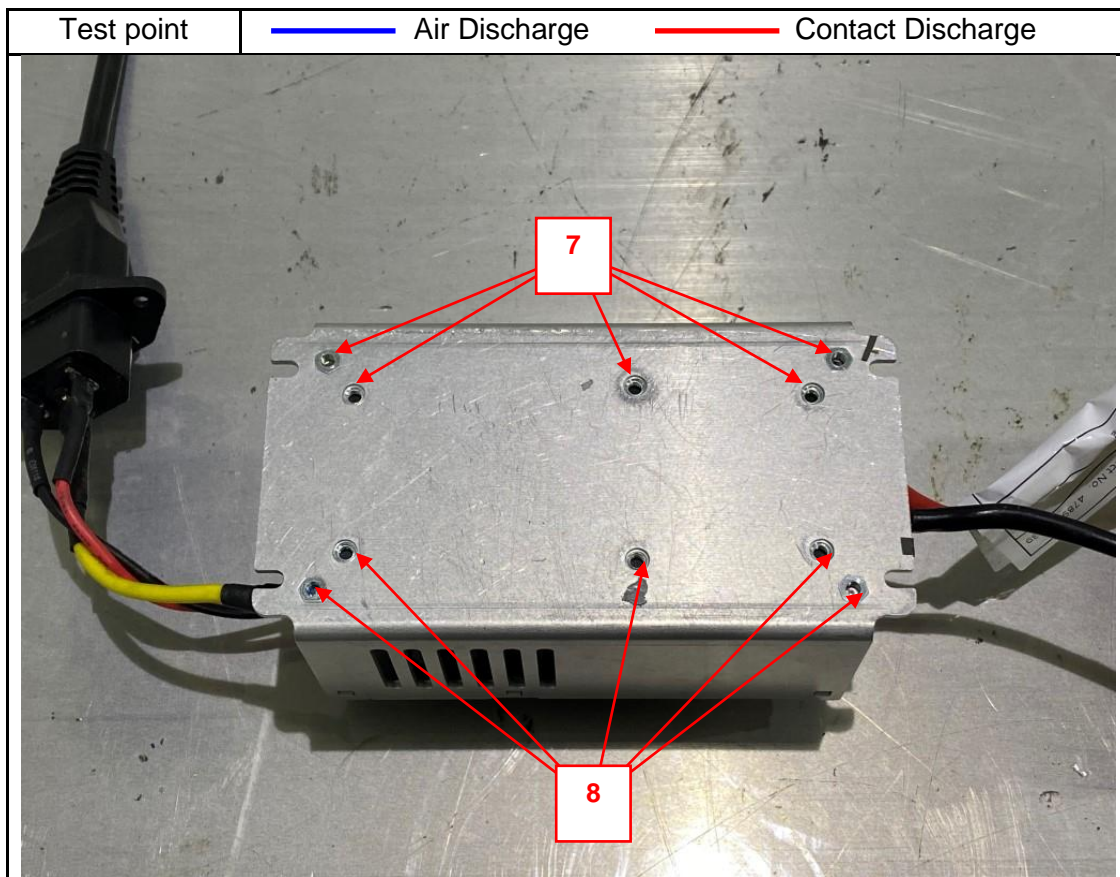
Test Mode:	Mode 2	Temperature:	24°C
Test Voltage:	AC 230V/50Hz	Humidity:	42%RH
Discharge of times:	Air: 10 times Contact: 10 times	ATM pressure:	1018 hpa
Tested By:	Rupert Huang	Test Date:	Jul. 7, 2021

Mode	Air Discharge								Contact Discharge							
	2kV		4kV		8kV		15kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	+	-	+	-	+	-	+	-	-	-
1~2, 7~8	-	-	-	-	-	-	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
3~6	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	-	-	-	-	-	-	-	-
Criteria	Please refer to 7.1															
Results	PASS															
Note	There was no abnormal situation during the test compared with initial operation.															

Mode	HCP Discharge								VCP Discharge							
	2kV		4kV		8kV		-kV		2kV		4kV		8kV		-kV	
Location	+	-	+	-	+	-	-	-	+	-	+	-	+	-	-	-
front	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
rear	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
left	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
right	PASS	PASS	PASS	PASS	PASS	PASS	-	-	PASS	PASS	PASS	PASS	PASS	PASS	-	-
Criteria	Please refer to 7.1															
Results	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

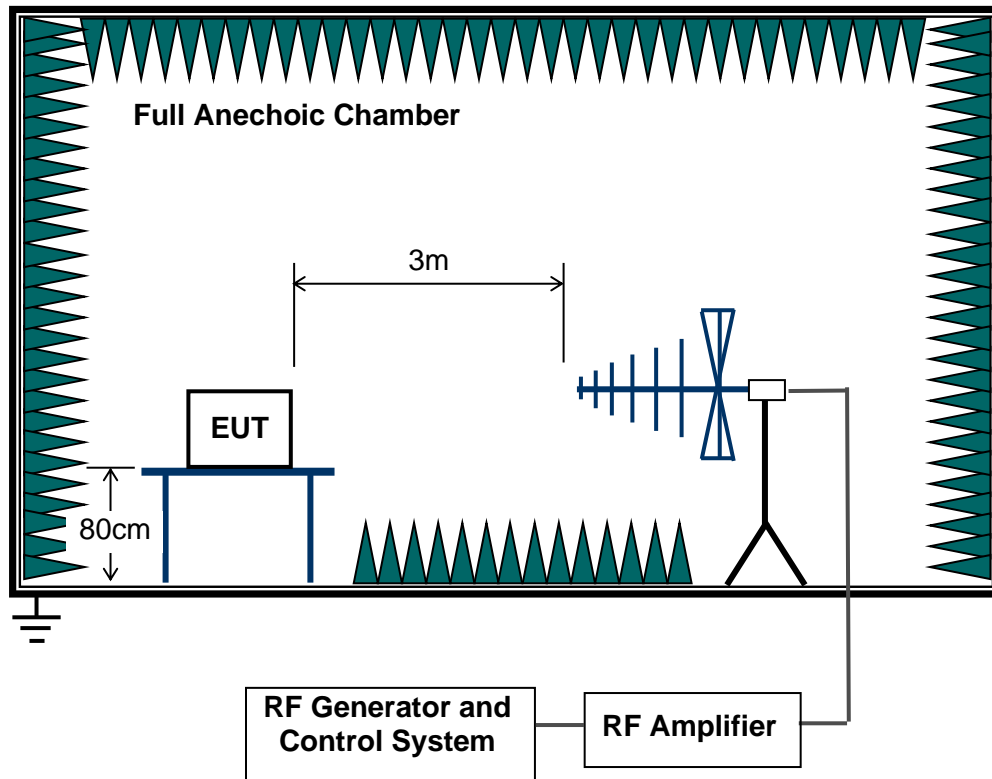
Standard:	IEC 60601-1-2、EN 60601-1-2 (refer to IEC 61000-4-3)
Colleteral Standard:	N/A
Frequency Range:	80 MHz to 2700MHz
Field Strength:	3V/m (unmodulated)
Modulation:	80%, AM(1 KHz)
Frequency Step:	1% of fundamental
Polarity of Antenna	Vertical and Horizontal
Test Distance:	3 meters
Antenna Height:	1.55 meters
Dwell Time:	3 s
Repeat test time:	2 times (Note 1)

Note: (1) The test performed of laboratory was according to the client requirements.

7.3.2. Test Procedure

- The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- The frequency range is swept from 80 MHz to 2700MHz with the signal 80% amplitude modulated with a 1 KHz sine wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- The field strength level 80 MHz to 2700MHz was 3V/m for Professional healthcare facility environment ,80MHz to 2700MHz was 10V/m for Home healthcare environment.

7.3.3. Test Setup and Configuration



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

7.3.4. RS proximity fields from RF Wireless Communication Test Specification

Standard:	IEC 60601-1-2、EN 60601-1-2 (refer to IEC 61000-4-3)
Colleteral Standard:	N/A
Frequency Range:	See page 5
Field Strength:	
Modulation:	
Polarity of Antenna	Vertical and Horizontal
Test Distance:	3 meters
Dwell Time:	3 s

7.3.5. Test Procedure

- The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- The field strength and modulation was according to Page 5 table.
- The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

7.3.6. Test Setup and Configuration

Please refer to Clause 7.3.3.

7.3.7. Test Result

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	53%RH
Tested By:	Rupert Huang	Test Date:	Apr. 7, 2021

Freq. Range (MHz)	Position (Face)	Polarity (H & V)	Field Strength (V/m)	Criteria	Results
80~2700	Front	H&V	3V/m	Please refer to 7.1	PASS
80~2700	Left	H&V	3V/m	Please refer to 7.1	PASS
80~2700	Rear	H&V	3V/m	Please refer to 7.1	PASS
80~2700	Right	H&V	3V/m	Please refer to 7.1	PASS
385	Front/ Left/ Rear/ Right	H&V	27V/m	Please refer to 7.1	PASS
450	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
710	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
745	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
780	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
810	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
870	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
930	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
1720	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
1845	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
1970	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
2450	Front/ Left/ Rear/ Right	H&V	28V/m	Please refer to 7.1	PASS
5240	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
5500	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
5785	Front/ Left/ Rear/ Right	H&V	9V/m	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035				

Customer request:

Freq. Range (MHz)	Position (Face)	Polarity (H & V)	Field Strength (V/m)	Criteria	Results
80~2700	Front	H&V	10V/m	Please refer to 7.1	PASS
80~2700	Left	H&V	10V/m	Please refer to 7.1	PASS
80~2700	Rear	H&V	10V/m	Please refer to 7.1	PASS
80~2700	Right	H&V	10V/m	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035				

Freq. Range (MHz)	Position (Face)	Polarity (H & V)	Field Strength (V/m)	Criteria	Results
80~2700	Front	H&V	20V/m	Please refer to 7.1	PASS
80~2700	Left	H&V	20V/m	Please refer to 7.1	PASS
80~2700	Rear	H&V	20V/m	Please refer to 7.1	PASS
80~2700	Right	H&V	20V/m	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035				

7.4. Electrical Fast Transient/Burst Immunity Test

7.4.1. Test Specification

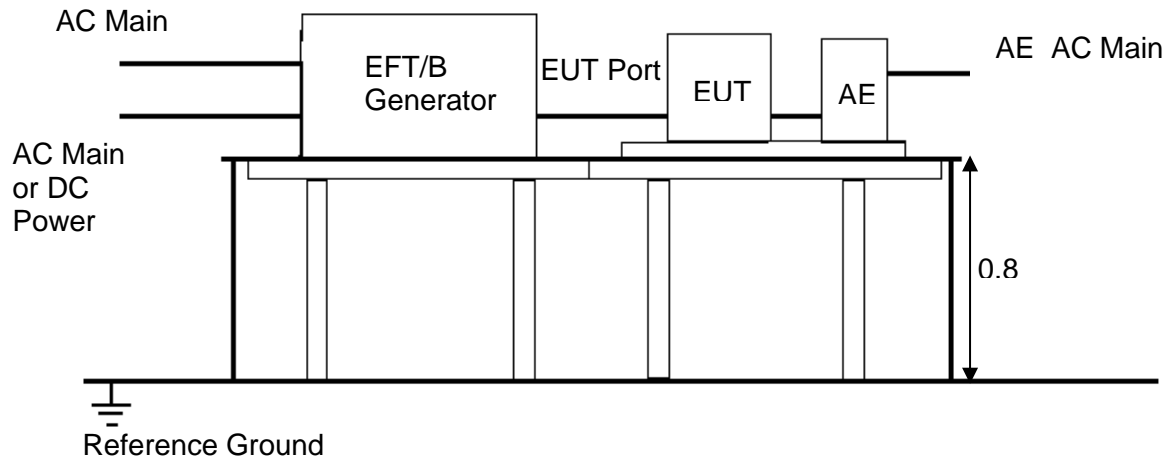
Standard:	IEC 60601-1-2、 EN 60601-1-2 (refer to IEC 61000-4-4)
Colleteral Standard:	N/A
Test Voltage:	2 kV for AC Mains and DC port, 1kV for signal
Polarity:	Positive and Negative
Impulse Frequency:	100 KHz
Impulse wave shape:	5/50 Tr/Th ns
Burst Duration:	0.75ms
Burst Period:	300ms
Test Duration:	1 Minute
Repeat test time:	2 times (Note 1)

Note: (1) The test performed of laboratory was according to the client requirements.

7.4.2. Test Procedure

- The EUT was tested with 2000 volt discharges to the AC power input leads, 1000 volt discharges to the signal/control ports.
- Both positive and negative polarity discharges were applied.
- 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.
- 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 length of power cord between the coupling device and the EUT was less than 0.5 meters (provided by the manufacturer), 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.
- The duration time of each test sequential was 1 minute.
- The transient/burst waveform was in accordance with IEC 61000-4-4, 5/50ns.
- The patient-couple cable specified greater than 3m shall be used capacitive clamp do the test.

7.4.3. Test Setup and Configuration



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

7.4.4. Test Result

Test Mode:	Mode 2	Temperature:	23°C
Test Voltage:	AC 230V/50Hz	Humidity:	62%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 9, 2021

Test Port		Test Levels (kV)						Criteria	Results
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0		
AC Power Port	L	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	N	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	PE	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	L + N	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	L + PE	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	N + PE	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
	L+N+PE	-	-	-	-	PASS	PASS	Please refer to 7.1	PASS
Note		<p>There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.</p>							

7.5. Surge Immunity Test

7.5.1. Test Specification

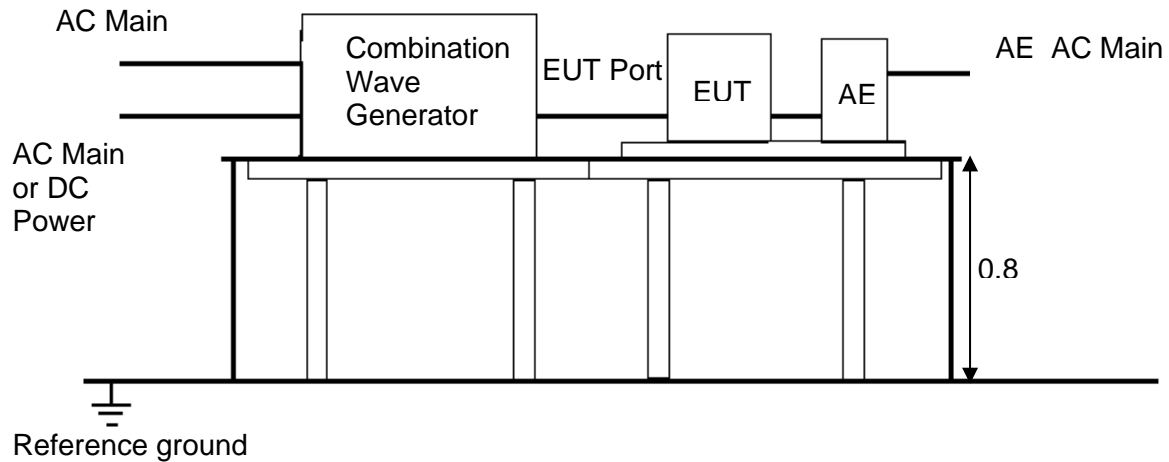
Standard:	IEC 60601-1-2、EN 60601-1-2 (refer to IEC 61000-4-5)
Colleteral Standard:	N/A
Waveform:	1.2/50 (8/20) Tr/Th μ s
Test Voltage:	0.5, 1, 2 kV
Polarity:	Positive and Negative
Phase Angle:	0°/90°/180°/270°
Repetition Rate:	1 per minute
Discharge Times:	5
Repeat test time:	2 times (Note 1)

Note: (1) The test performed of laboratory was according to the client requirements.

7.5.2. Test Procedure

- 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 1mx1m 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 was less than 2 meters (provided by the manufacturer).
- 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).
- 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.

7.5.3. Test Setup and Configuration



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

7.5.4. Test Result

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	59%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 12, 2021

Wave Form EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Results
	Polarity	Phase	Voltage					
			0.5kV	1kV	2kV	-kV		
L - N	+	0°	PASS	PASS	-	-	Please refer to 7.1	PASS
	-		PASS	PASS	-	-		
	+	90°	PASS	PASS	-	-		
	-		PASS	PASS	-	-		
	+	180°	PASS	PASS	-	-		
	-		PASS	PASS	-	-		
	+	270°	PASS	PASS	-	-		
	-		PASS	PASS	-	-		
L - PE	+	0°	PASS	PASS	PASS	-	Please refer to 7.1	PASS
	-		PASS	PASS	PASS	-		
	+	90°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
	+	180°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
	+	270°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
N - PE	+	0°	PASS	PASS	PASS	-	Please refer to 7.1	PASS
	-		PASS	PASS	PASS	-		
	+	90°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
	+	180°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
	+	270°	PASS	PASS	PASS	-		
	-		PASS	PASS	PASS	-		
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.							

7.6. Immunity to Conducted Disturbances Induced by RF Fields

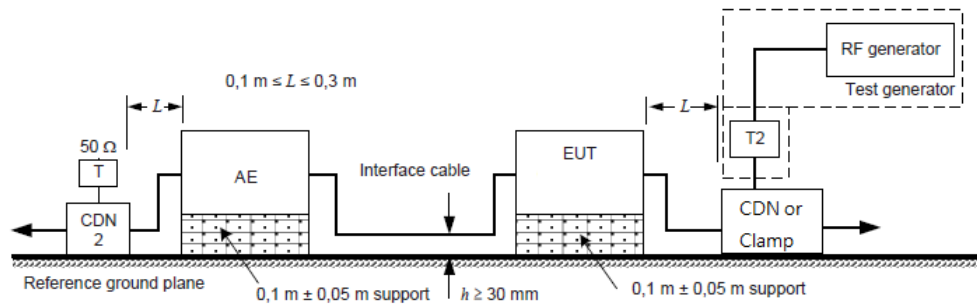
7.6.1. Test Specification

Standard:	IEC 60601-1-2、EN 60601-1-2 (refer to IEC 61000-4-6)
Colleteral Standard:	N/A
Frequency Range:	0.15-80MHz
Field Strength:	3V, 6V (unmodulated, r.m.s.)
Modulation:	80% AM (1 kHz)
Frequency Step:	1% of fundamental
Dwell Time:	3 s
Repeat test time:	2 times

7.6.2. Test Procedure

- The EUT shall be tested within its intended operating and climatic conditions.
- 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.
- 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 sweep rate shall not exceed 1.5×10^{-3} decades/s. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
- 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.
- 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 and Configuration



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

7.6.4. Test Result

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	65%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 9, 2021

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results
AC. Power Port	0.15 ---80	3V	M016(M3)	Please refer to 7.1	PASS
AC. Power Port	ISM bands	6V	M016(M3)	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.				

Customer Request:

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results
AC. Power Port	0.15 ---80	10V	M016(M3)	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.				

Test Ports (Mode)	Freq. Range (MHz)	Field Strength	CDN	Criteria	Results
AC. Power Port	0.15 ---80	20V	M016(M3)	Please refer to 7.1	PASS
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.				

7.7. Power frequency magnetic field immunity Test

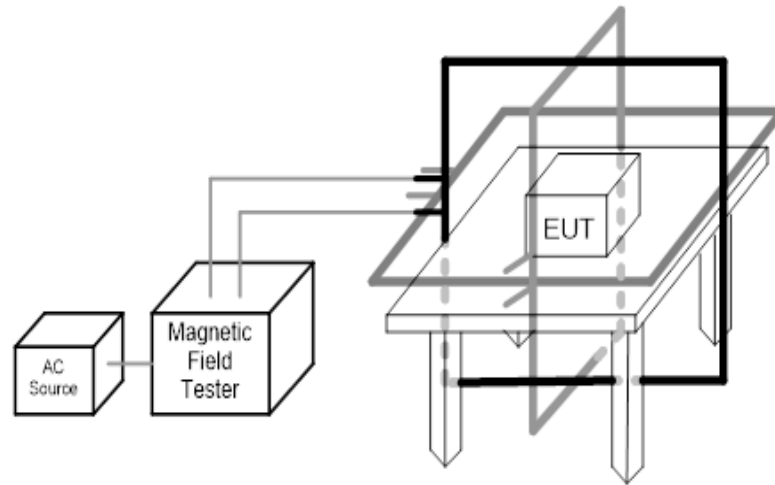
7.7.1. Test Specification

Standard:	IEC 60601-1-2、 EN 60601-1-2 (refer to IEC 61000-4-8)
Collateral Standard:	N/A
Frequency Range:	50 Hz
Field Strength:	30 A/m
Axis:	X, Y, Z
Observation Time:	1 minute
Inductance Coil:	Rectangular type, 1mx1m
Repeat test time:	2 times

7.7.2. Test Procedure

- 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.
- The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- 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.
- The EUT with coil shall be leave all magnetic material and wall 1m away in any axis during the test.
- The cable length from generator to coil shall be less than 2m
- The background noise shall be 20db less than test field strength.
- Test shall be applied to three axis X, Y, Z and disturbance over 1 minute.
- All cables shall be exposed to the magnetic field for 1m of their length.

7.7.3. Test Setup and Configuration



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

7.7.4. Test Results

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 230V/50Hz	Humidity:	65%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 14, 2021

Level	Magnetic Field Strength (A/m)	Criteria	Results		
			X	Y	Z
1	1	-	-	-	-
2	3	-	-	-	-
3	10	-	-	-	-
4	30	Please refer to 7.1	PASS	PASS	PASS
5	100	-	-	-	-
X	Special	-	-	-	-
Note	There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.				

7.8. Voltage Dips and Short Interruptions Immunity Test

7.8.1. Test Specification

Standard:	IEC 60601-1-2、 EN 60601-1-2 (refer to IEC 61000-4-11)
Voltage Dips:	0% residual(0.5 & 1cycles) ; 70% residual (25/30 cycles with 50/60Hz)
Voltage Interruptions:	0% residual (250/300 cycles with 50/60Hz)
Voltage Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°
Test Voltage:	100V/60Hz and 250V/50Hz
Repeat test time:	2 times

7.8.2. Test Procedure

- 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.
- Voltage reductions occur at 0 degree crossover point of the voltage waveform. The performance of the EUT was checked after the voltage dip or interruption.
- If the rated voltage smaller than 25% of the lowest rated voltage, one rated input voltage. Otherwise, minimum and maximum rated voltage shall be test.

The diagram illustrates the test setup components and their connections. A 'Test Generator' is connected to 'AC Main' and has an 'EUT Port' leading to the 'EUT' (Equipment Under Test). The 'EUT' is connected to an 'AE' (Antenna) which is also connected to 'AC Main'. The entire setup is mounted on a structure with a height of 0.8m, which is connected to a 'Reference Ground'.

Page 70 of 90

7.8.4. Test Result

Test Mode:	Mode 2	Temperature:	22°C
Test Voltage:	AC 100V/50Hz, 240V/50Hz	Humidity:	65%RH
Tested By:	Eric T. Fan	Test Date:	Apr. 12, 2021

100V/50Hz				
Interruption & Dips	Duration (T)	Residual voltage	Perform Criteria	Results
Voltage dips	0.5	0%	Please refer to 7.1	PASS
	1	0%	Please refer to 7.1	PASS
	25	70%	Please refer to 7.1	PASS
Voltage interruptions	250	0%	Please refer to 7.1	PASS
Note	Voltage dips : There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.			
	Voltage interruptions : The output voltage was lost during the test, but it will automatically return to normal conditions after the test. Pass means that the test performance meet Criteria B which identical with EN 55035.			

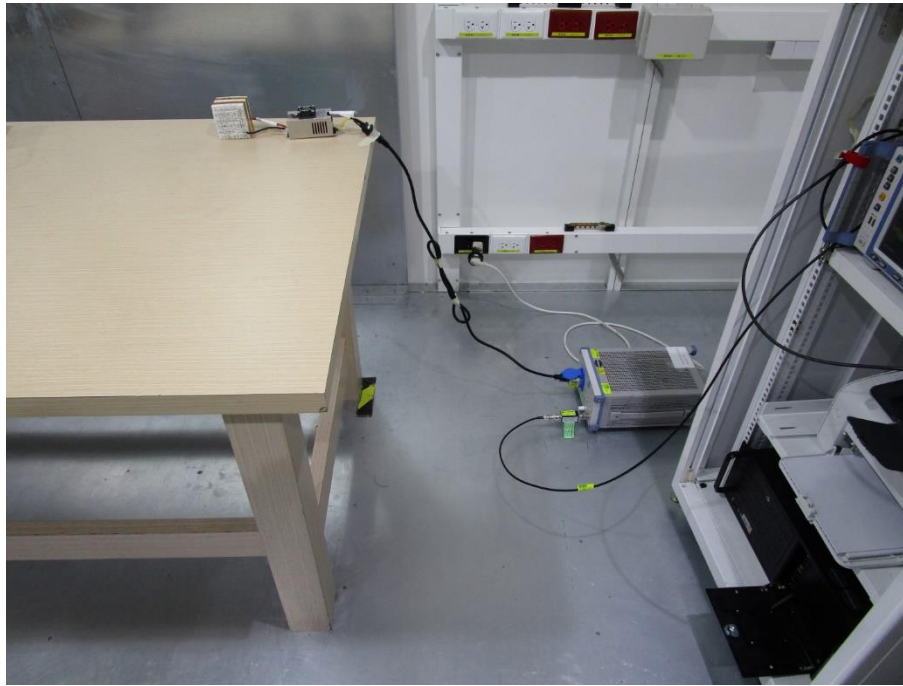
240V/50Hz				
Interruption & Dips	Duration (T)	Residual voltage	Perform Criteria	Results
Voltage dips	0.5	0%	Please refer to 7.1	PASS
	1	0%	Please refer to 7.1	PASS
	25	70%	Please refer to 7.1	PASS
Voltage interruptions	250	0%	Please refer to 7.1	PASS
Note	Voltage dips : There was no abnormal situation during the test compared with initial operation. Pass means that the test performance meet Criteria A which identical with EN 55035.			
	Voltage interruptions : The output voltage was lost during the test, but it will automatically return to normal conditions after the test. Pass means that the test performance meet Criteria B which identical with EN 55035.			

Note:

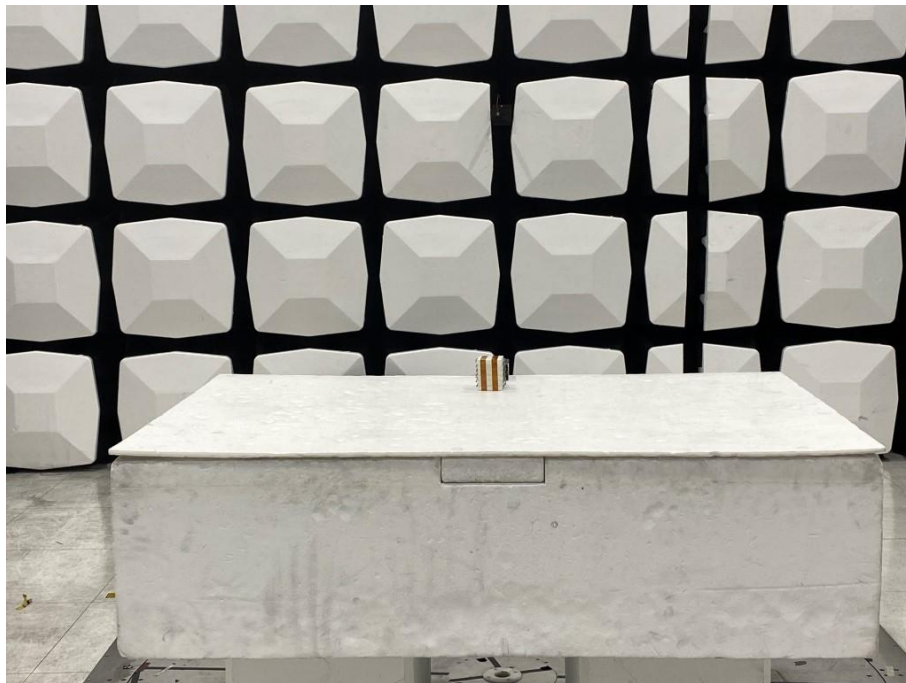
The test shall be carried out at the frequencies appropriate to the power supply frequency. Equipment intended to be used in regions where only one of these frequencies is applied needs to be tested at this specific frequency only. 25/30 or 250/300 at 50/60 Hz.

Appendix I: Photographs of EMC Test Configuration

Conducted Disturbance



Radiated Disturbance
Below 1GHz

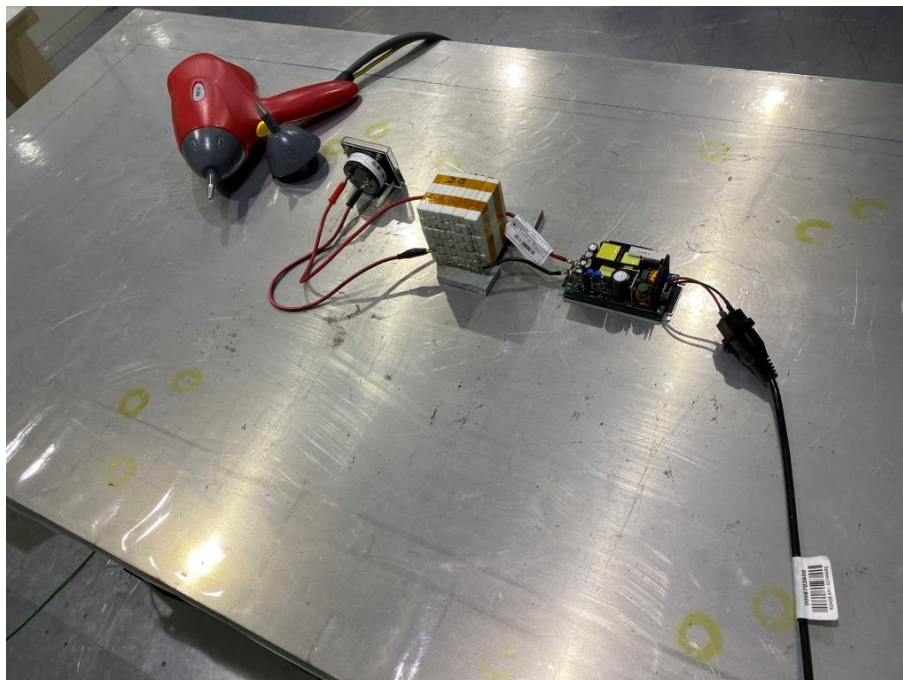
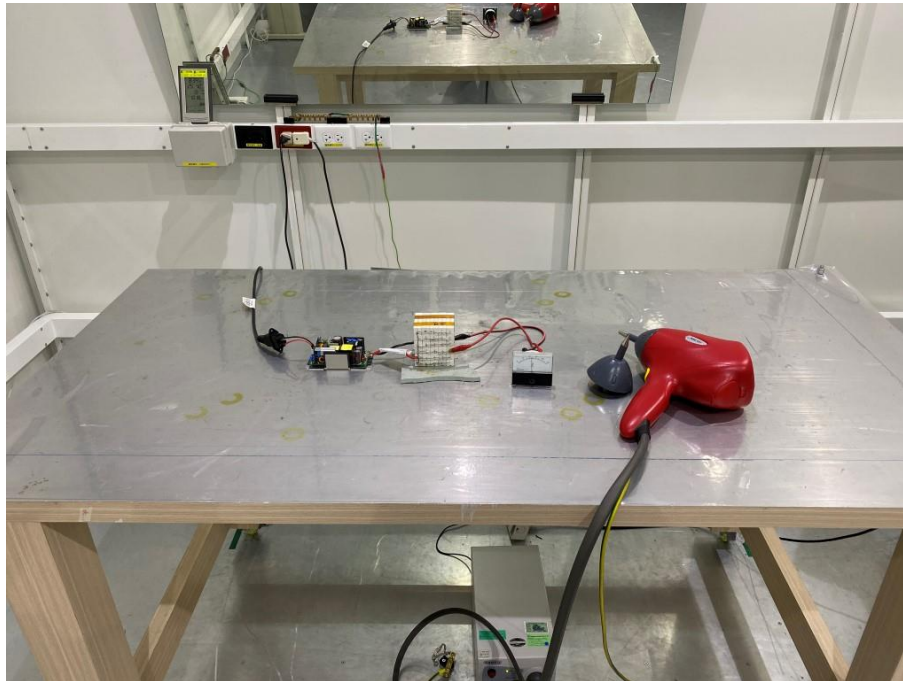


Harmonic and Flicker

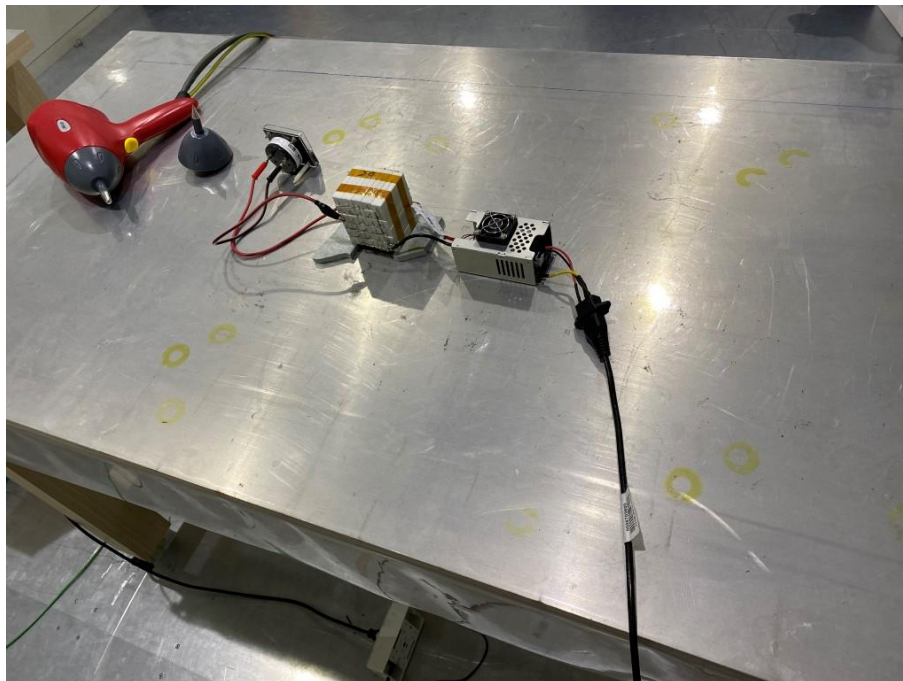
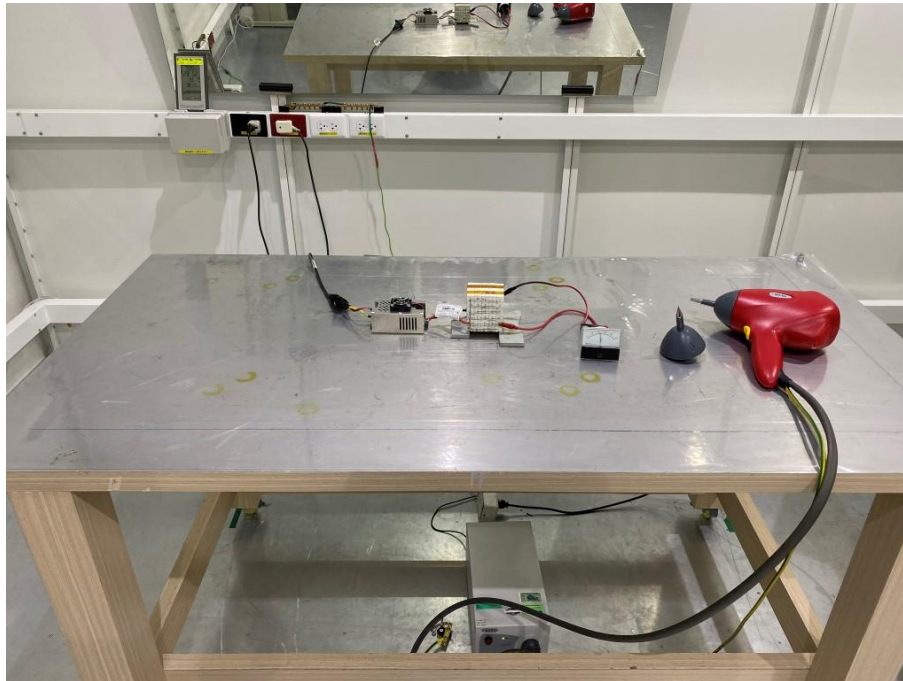


Electrostatic Discharge Immunity

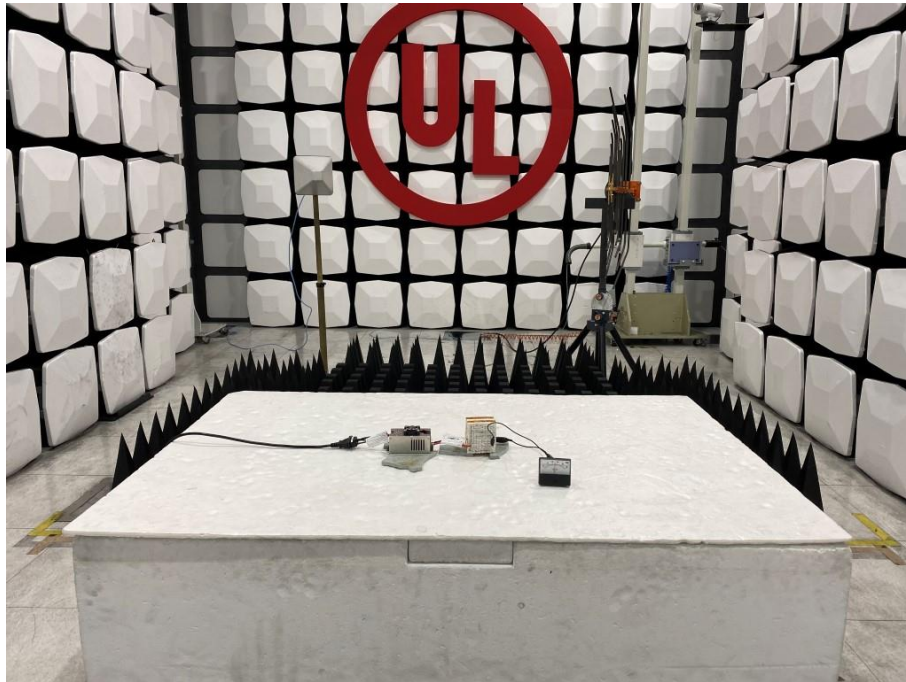
Mode 1



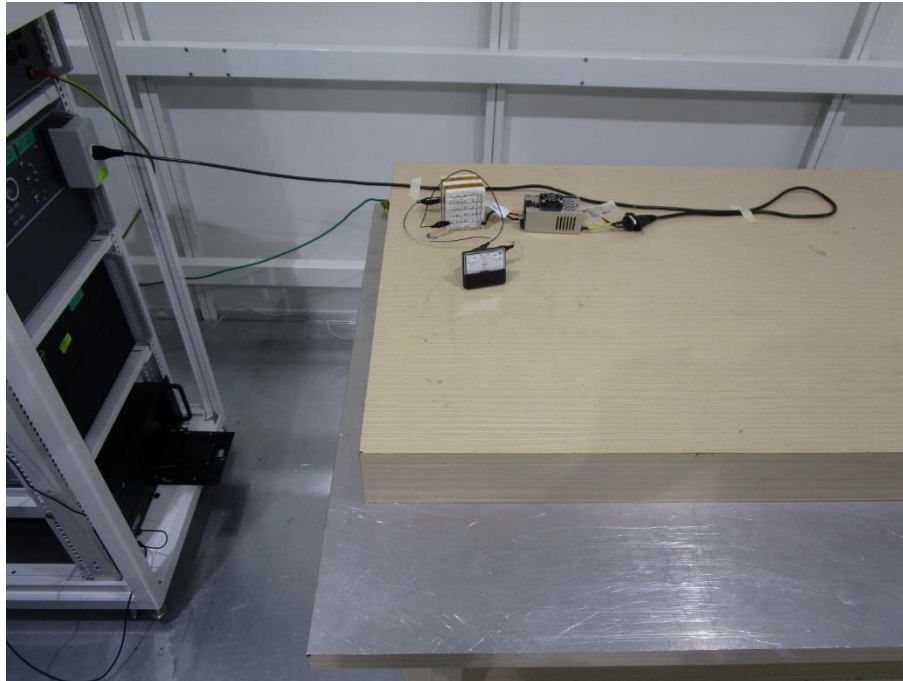
Mode 2



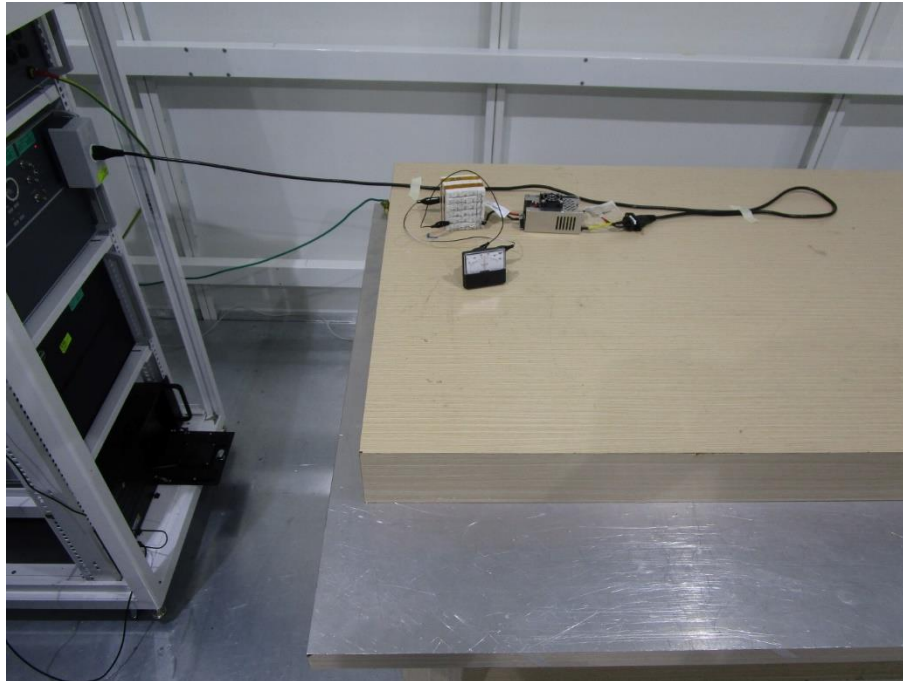
Radio Frequency Electromagnetic Field Immunity



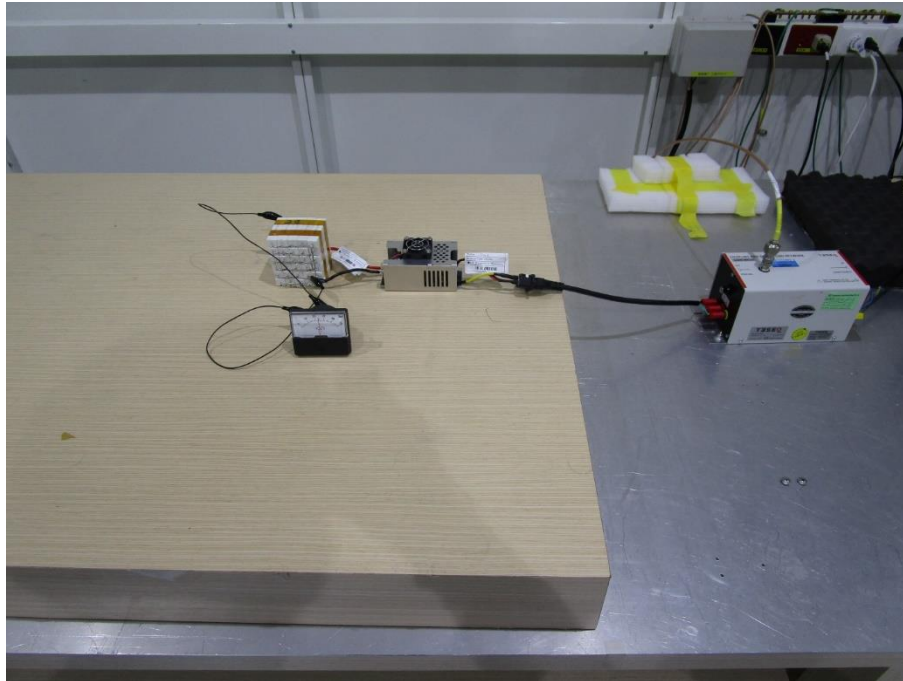
Electrical Fast Transient Immunity



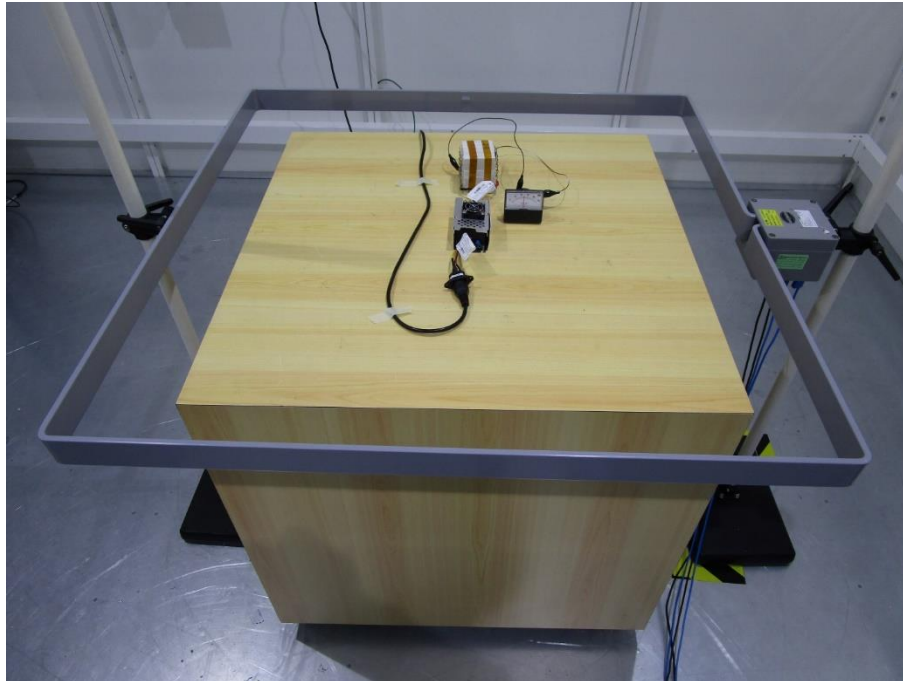
Surge Immunity



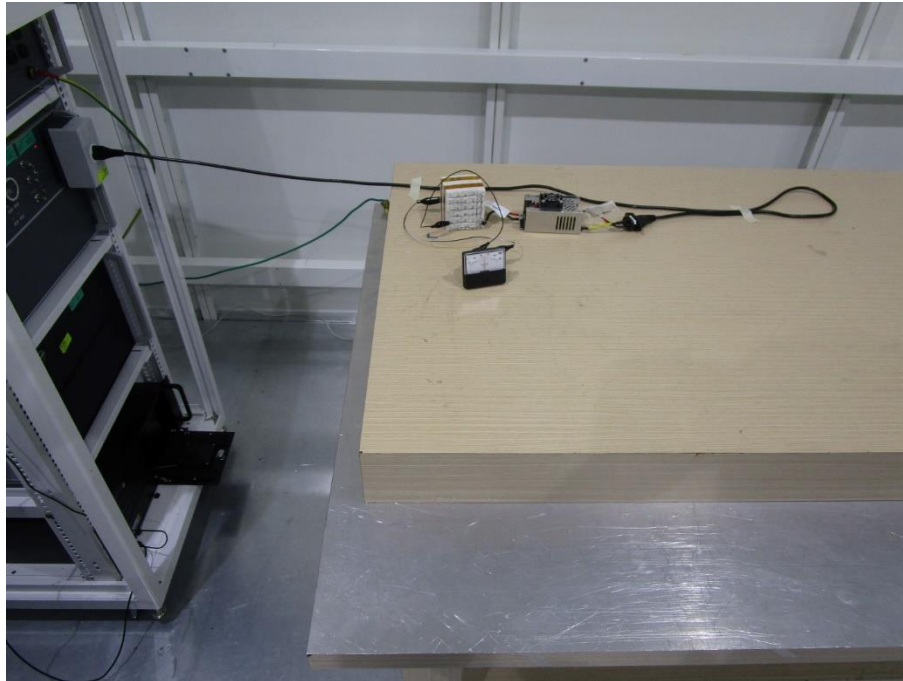
Immunity to conducted disturbances induced by RF fields



Power frequency magnetic field immunity



Voltage Dips and Short Interruptions Immunity



Appendix II: Photographs of the EUT

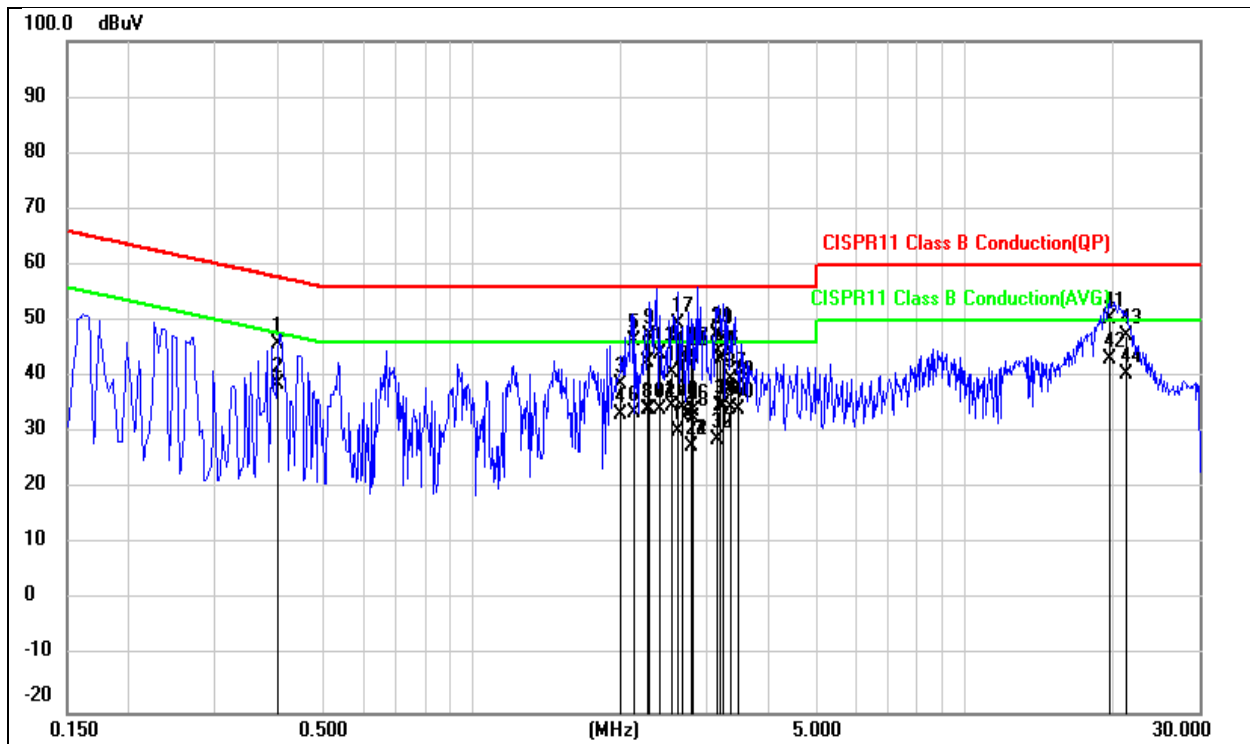
Please see the photographs of EUT in the test report no.: 4790133595-EP.

END OF REPORT

Appendix III: Preliminary Test Raw Data

Conducted Emission :

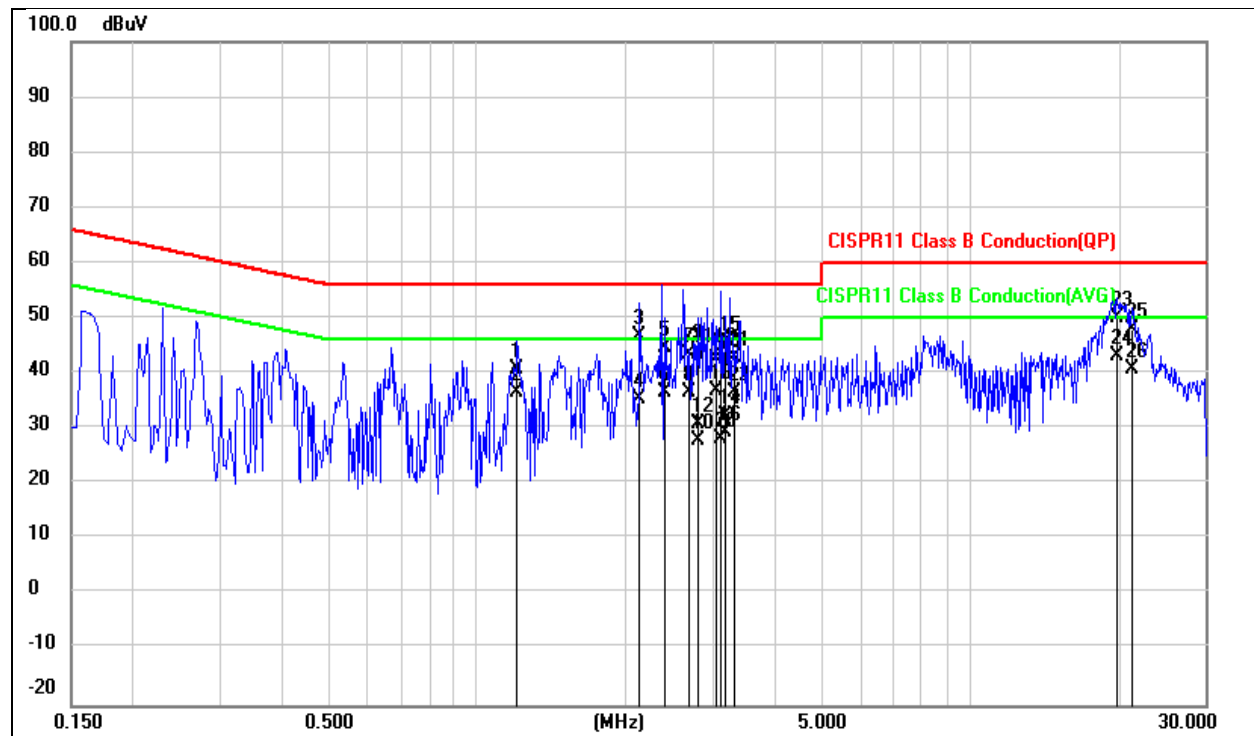
Project No.:	4790133595	Probe:	L1
Standard:	CISPR11 Class B Conduction(QP)	Power Source:	AC230V_50Hz
Test item:	Conduction Test	Date:	3/17/2021
Temp./Hum.(%RH):	23(C)/53%RH	Time:	5:53:26 PM
EUT:	AC to DC Power Supply	Test By:	Eric T Fan
Model:	29. TPP 300-124L-M		
Mode:	mode 1		
Note:			



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4010	26.39	19.48	45.87	57.83	-11.96	QP
2	0.4010	19.06	19.48	38.54	47.83	-9.29	AVG
3	2.0068	19.04	19.53	38.57	56.00	-17.43	QP
4	2.0068	13.76	19.53	33.29	46.00	-12.71	AVG
5	2.1403	26.79	19.53	46.32	56.00	-9.68	QP
6	2.1403	14.06	19.53	33.59	46.00	-12.41	AVG
7	2.2739	23.04	19.54	42.58	56.00	-13.42	QP
8	2.2739	14.49	19.54	34.03	46.00	-11.97	AVG
9	2.2816	27.69	19.54	47.23	56.00	-8.77	QP
10	2.2816	14.68	19.54	34.22	46.00	-11.78	AVG
11	2.4069	24.49	19.54	44.03	56.00	-11.97	QP
12	2.4069	14.52	19.54	34.06	46.00	-11.94	AVG
13	2.4072	24.49	19.54	44.03	56.00	-11.97	QP
14	2.4072	14.59	19.54	34.13	46.00	-11.87	AVG

15	2.5402	21.09	19.54	40.63	56.00	-15.37	QP
16	2.5402	15.10	19.54	34.64	46.00	-11.36	AVG
17	2.6183	30.05	19.54	49.59	56.00	-6.41	QP
18	2.6183	10.80	19.54	30.34	46.00	-15.66	AVG
19	2.6739	24.01	19.54	43.55	56.00	-12.45	QP
20	2.6739	15.03	19.54	34.57	46.00	-11.43	AVG
21	2.7937	23.92	19.54	43.46	56.00	-12.54	QP
22	2.7937	8.12	19.54	27.66	46.00	-18.34	AVG
23	2.7949	23.92	19.54	43.46	56.00	-12.54	QP
24	2.7949	8.13	19.54	27.67	46.00	-18.33	AVG
25	2.8138	24.06	19.54	43.60	56.00	-12.40	QP
26	2.8138	14.23	19.54	33.77	46.00	-12.23	AVG
27	2.8166	24.44	19.54	43.98	56.00	-12.02	QP
28	2.8166	12.99	19.54	32.53	46.00	-13.47	AVG
29	3.1390	27.71	19.56	47.27	56.00	-8.73	QP
30	3.1390	9.19	19.56	28.75	46.00	-17.25	AVG
31	3.1416	28.16	19.56	47.72	56.00	-8.28	QP
32	3.1416	9.11	19.56	28.67	46.00	-17.33	AVG
33	3.2169	23.61	19.56	43.17	56.00	-12.83	QP
34	3.2169	15.17	19.56	34.73	46.00	-11.27	AVG
35	3.2181	23.91	19.56	43.47	56.00	-12.53	QP
36	3.2181	15.10	19.56	34.66	46.00	-11.34	AVG
37	3.3532	19.88	19.56	39.44	56.00	-16.56	QP
38	3.3532	14.93	19.56	34.49	46.00	-11.51	AVG
39	3.4882	18.48	19.56	38.04	56.00	-17.96	QP
40	3.4882	14.65	19.56	34.21	46.00	-11.79	AVG
41	19.6549	30.55	19.76	50.31	60.00	-9.69	QP
42	19.6549	23.43	19.76	43.19	50.00	-6.81	AVG
43	21.2638	27.48	19.75	47.23	60.00	-12.77	QP
44	21.2638	20.60	19.75	40.35	50.00	-9.65	AVG

Project No.:	4790133595	Probe:	N
Standard:	CISPR11 Class B Conduction(QP)	Power Source:	AC230V_50Hz
Test item:	Conduction Test	Date:	3/17/2021
Temp./Hum.(%RH):	23(C)/53%RH	Time:	6:00:34 PM
EUT:	AC to DC Power Supply	Test By:	Eric T Fan
Model:	30. TPP 300-124L-M		
Mode:	mode 1		
Note:			

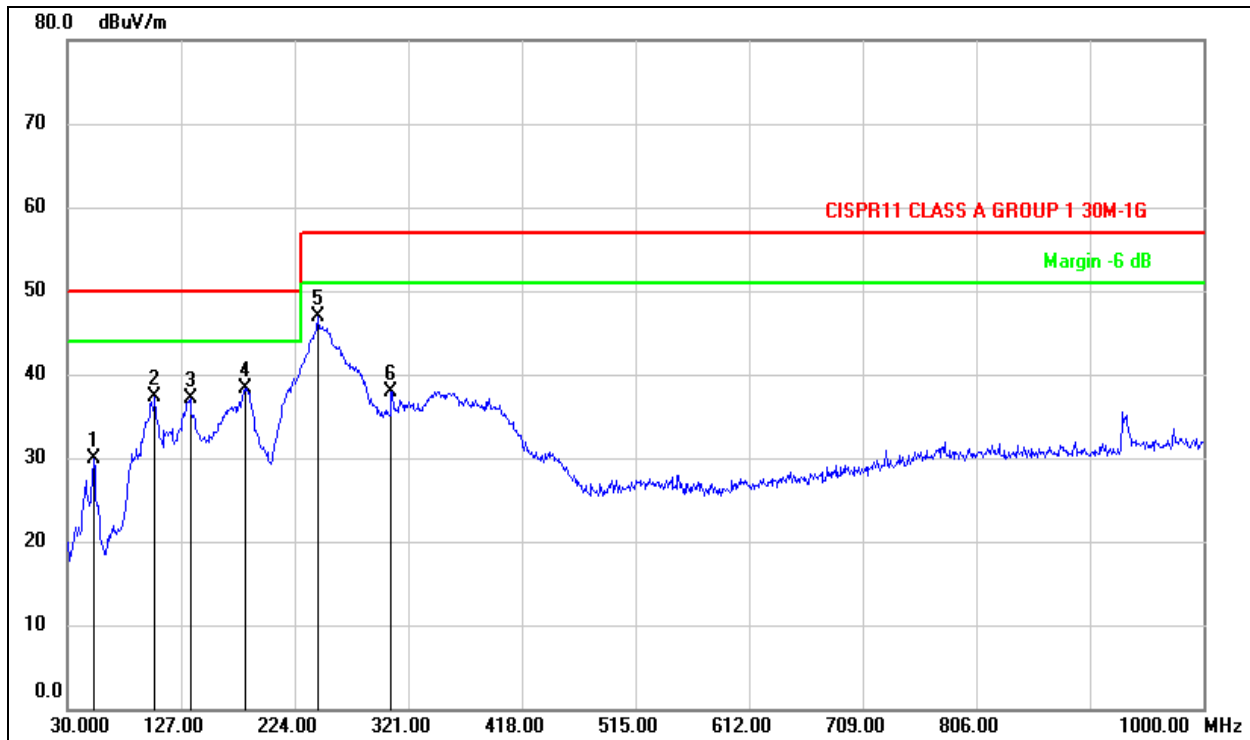


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	1.2043	21.30	19.50	40.80	56.00	-15.20	QP
2	1.2043	17.08	19.50	36.58	46.00	-9.42	AVG
3	2.1409	27.24	19.52	46.76	56.00	-9.24	QP
4	2.1409	15.92	19.52	35.44	46.00	-10.56	AVG
5	2.4086	25.01	19.53	44.54	56.00	-11.46	QP
6	2.4086	16.95	19.53	36.48	46.00	-9.52	AVG
7	2.6757	23.85	19.54	43.39	56.00	-12.61	QP
8	2.6757	16.99	19.54	36.53	46.00	-9.47	AVG
9	2.7962	24.46	19.54	44.00	56.00	-12.00	QP
10	2.7962	8.34	19.54	27.88	46.00	-18.12	AVG
11	2.8174	23.96	19.54	43.50	56.00	-12.50	QP
12	2.8174	11.44	19.54	30.98	46.00	-15.02	AVG
13	3.2166	22.89	19.55	42.44	56.00	-13.56	QP
14	3.2166	12.67	19.55	32.22	46.00	-13.78	AVG
15	3.2031	25.99	19.55	45.54	56.00	-10.46	QP
16	3.2031	9.79	19.55	29.34	46.00	-16.66	AVG
17	3.0770	22.86	19.55	42.41	56.00	-13.59	QP
18	3.0770	17.23	19.55	36.78	46.00	-9.22	AVG
19	3.1364	23.88	19.55	43.43	56.00	-12.57	QP

20	3.1364	8.61	19.55	28.16	46.00	-17.84	AVG
21	3.3468	23.36	19.55	42.91	56.00	-13.09	QP
22	3.3468	16.99	19.55	36.54	46.00	-9.46	AVG
23	19.9234	30.35	19.83	50.18	60.00	-9.82	QP
24	19.9234	23.38	19.83	43.21	50.00	-6.79	AVG
25	21.2676	28.14	19.83	47.97	60.00	-12.03	QP
26	21.2676	21.07	19.83	40.90	50.00	-9.10	AVG

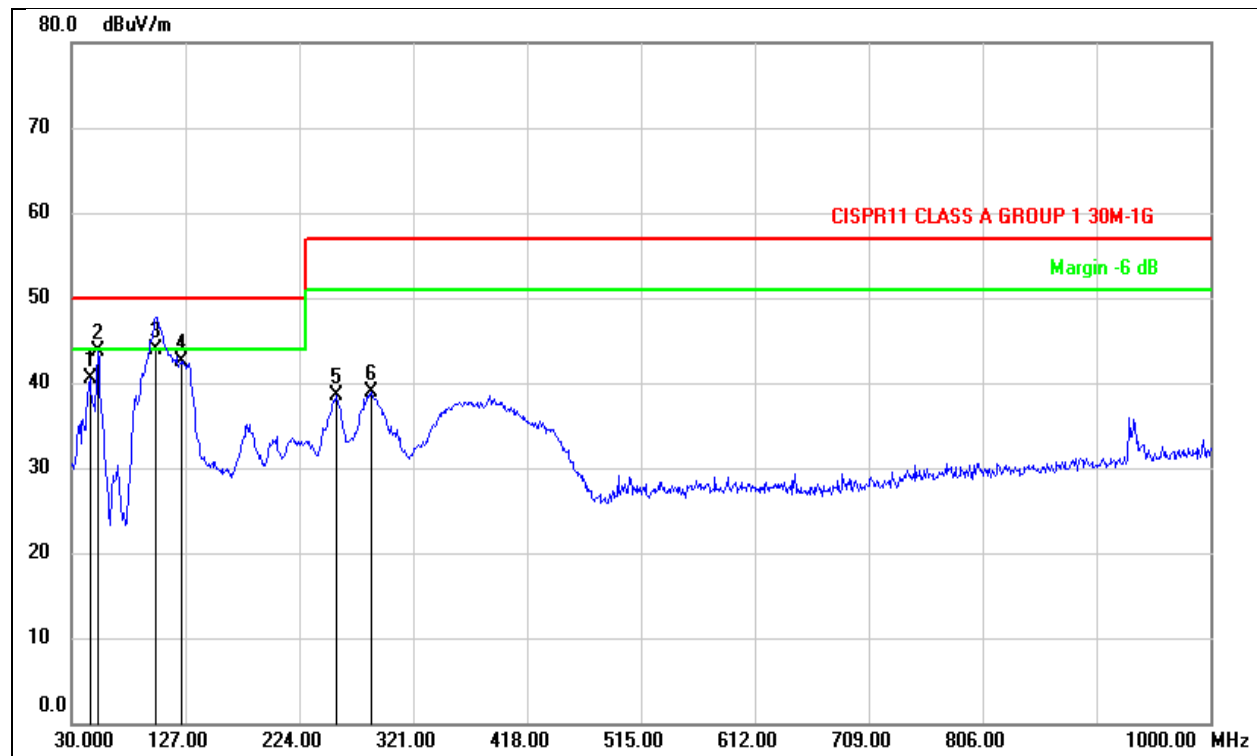
Radiated Emission :

Project No.:	4790133595	Polarization:	Horizontal
Standard:	CISPR11 CLASS A GROUP 1 30M-1G	Power Source:	AC 230V/50Hz
Test item:	Radiation Test	Date:	2/25/2021
Temp./Hum.(%RH):	25(C)/59%RH	Time:	8:20:42 PM
EUT:	AC to DC Power Supply	Test By:	Rupert Hunag
Model:	TPP 300-124L-M	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	52.9890	42.16	-12.30	29.86	50.00	-20.14	peak
2	104.8193	53.24	-16.01	37.23	50.00	-12.77	peak
3	135.5360	49.95	-12.87	37.08	50.00	-12.92	peak
4	182.5810	52.08	-13.71	38.37	50.00	-11.63	peak
5	243.7557	60.16	-13.30	46.86	57.00	-10.14	peak
6	307.3877	48.86	-10.88	37.98	57.00	-19.02	peak

Project No.:	4790133595	Polarization:	Vertical
Standard:	CISPR11 CLASS A GROUP 1 30M-1G	Power Source:	AC 230V/50Hz
Test item:	Radiation Test	Date:	2/25/2021
Temp./Hum.(%RH):	25(C)/59%RH	Time:	8:22:14 PM
EUT:	AC to DC Power Supply	Test By:	Rupert Hunag
Model:	TPP 300-124L-M	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	46.0050	52.63	-12.11	40.52	50.00	-9.48	peak
2	53.1183	56.01	-12.34	43.67	50.00	-6.33	peak
3	102.6207	60.53	-16.53	44.00	50.00	-6.00	QP
4	124.9630	56.44	-13.88	42.56	50.00	-7.44	peak
5	255.4603	51.42	-12.88	38.54	57.00	-18.46	peak
6	285.2717	50.24	-11.39	38.85	57.00	-18.15	peak