



EMC TEST REPORT

FOR

Photoelectric Beam Sensor

Model : IR-1000ExD-BV, IR-1000ExL, IR-1000ExD, IR-3000ExL,
IR-3000ExD, IR-100ExL, IR-100ExD, IR-1000EXD-B,
IR-1000EXD-P, IR-1000EXL-P, IR-1000EXD-B-UL, IR-1000EXD-BV-UL,
IR-1000EXD-BV, IR-1000EXL-B, IR-1000EXL-B-UL, IR-1000EXL-BV,
IR-1000EXL-BV-U, IR-1000EXLUL, IR-1000EXLULS, IR-1000EXLULSF,
IR-1000EXU, IR-3000ExL-BV, IR-3000ExD-BV, IR-3000ExL-B,
IR-3000ExD-B, IR-1000ExL-XX, IR-1000ExD-XX, IR-3000ExL-XX,
IR-3000ExD-XX, IR-100ExL-XX, IR-100ExD-XX

Issued to

Yu-Heng Electric Co., Ltd.

No.8, Gongye 2nd Rd., Renwu Dist., Kaohsiung City 81469 Taiwan R.O.C. (Ren
Wu Industry Park)

Issued by

WH Technology Corp.

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TABLE OF CONTENTS

REVISION HISTORY	4
1. GENERAL INFORMATION	5
1.1 DESCRIPTION OF THE TESTED SAMPLES	6
1.2 SUMMARY OF TEST RESULT	7
1.3 TEST FACILITY	8
1.4 TEST METHODOLOGY	9
1.5 DESCRIPTION OF THE SUPPORT EQUIPMENTS	10
1.6 FEATURES OF EUT:	10
2. INSTRUMENT AND CALIBRATION	11
2.1 MEASURING INSTRUMENT CALIBRATION	11
2.2 TEST AND MEASUREMENT EQUIPMENT	11
2.3 TEST PERFORMED	13
2.4 APPENDIX	13
3. CONDUCTED EMISSION MEASUREMENT	15
3.1 TEST SET-UP	15
3.2 LIMIT	15
3.3 TEST PROCEDURE	15
3.4 TEST SPECIFICATION	16
3.5 RESULT: PASSED	16
3.6 TEST DATA:	16
3.7 LIMIT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORT	17
3.8 RESULT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORT	17
4. RADIATED EMISSION MEASUREMENT	18
4.1 TEST SETUP	18
4.2 LIMIT	19
4.3 TEST PROCEDURE	19
4.4 TEST SPECIFICATION	19
4.5 RESULT: PASSED	20
4.6 TEST DATA:	20
5. POWER HARMONIC MEASUREMENT	21
5.1 TEST SETUP	21
5.2 LIMITS	21
5.3 TEST PROCEDURE	22
5.4 TEST SPECIFICATION	22
5.5 RESULT: PASSED	22
5.6 TEST DATA:	22
6. VOLTAGE FLUCTUATIONS	23
6.1 TEST SETUP	23
6.2 LIMITS	23
6.3 TEST PROCEDURE	23
6.4 TEST SPECIFICATION	23
6.5 RESULT: PASSED	23
6.6 TEST DATA:	23
7. PERFORMANCE CRITERIA	24
8. ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)	25
8.1 TEST SETUP	25
8.2 TEST SPECIFICATION	25



8.3	TEST LEVEL	25
8.4	TEST PROCEDURE	25
8.5	TEST RESULT	26
9.	RADIATED SUSCEPTIBILITY MEASUREMENT (RS)	31
9.1	TEST SETUP	31
9.2	TEST SPECIFICATION	31
9.3	TEST LEVEL	31
9.4	TEST PROCEDURE	31
9.5	TEST RESULT	32
10.	ELECTRICAL FAST TRANSIENT/BURST (EFT)	33
10.1	TEST SETUP	33
10.2	TEST SPECIFICATION	33
10.3	TEST PROCEDURE	33
10.4	TEST LEVEL	34
10.5	TEST RESULT	34
11.	SURGE	36
11.1	TEST SETUP	36
11.2	TEST SPECIFICATION	36
11.3	TEST LEVEL	36
11.4	TEST PROCEDURE	36
11.5	TEST RESULT	37
12.	IMMUNITY TEST TO CS CONDUCTED DISTURBANCE (CS)	38
12.1	TEST SETUP	38
12.2	TEST SPECIFICATION	38
12.3	TEST LEVEL	38
12.4	TEST PROCEDURE	39
12.5	TEST RESULT	39
13.	VOLTAGE DIPS AND INTERRUPTION MEASUREMENT(DIPS)	40
13.1	TEST SETUP	40
13.2	TEST SPECIFICATION	40
13.3	TEST LEVEL	40
13.4	TEST PROCEDURE	41
13.5	TEST RESULT	41
14.	MEASUREMENT UNCERTAINTY	42
APPENDIX 1		43
APPENDIX 2		49
PHOTS OF EUT		58



REVISION HISTORY

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	Aug. 27, 2020	Initial Issue	ALL	Ely



1. GENERAL INFORMATION

Applicant : Yu-Heng Electric Co., Ltd.
Address : No.8, Gongye 2nd Rd., Renwu Dist., Kaohsiung City 81469
Taiwan R.O.C. (Ren Wu Industry Park)
Manufacturer : Yu-Heng Electric Co., Ltd.
Address : No.8, Gongye 2nd Rd., Renwu Dist., Kaohsiung City 81469
Taiwan R.O.C. (Ren Wu Industry Park)
EUT : Photoelectric Beam Sensor
IR-1000ExD-BV, IR-1000ExL, IR

Model Name :



1.1 DESCRIPTION OF THE TESTED SAMPLES

EUT Name : Photoelectric Beam Sensor

Model Number : IR-1000ExD-BV

Receipt Date : 08/17/2020

EUT Power Rating : ☒ AC
☒ DC
AC/DC12~250V
☐ DC 5V from PC
☐ DC 12V from Adaptor

EUT highest operating frequency : 100 MHz

EUT Covered : N/A

I/O Port of EUT : N/A



1.2 SUMMARY OF TEST RESULT

Test Result measurement is not including uncertainty.

Emission				
Test Standard	Test Item	Limit	Test Result	Remark
EN 55032: 2015	Conducted emission	Class B	PASS	
	Conducted emission at telecommunication ports	Class B	N/A	
	Radiated emission Below 1 GHz	Class B	PASS	
	Radiated emission Above 1 GHz	Class B	N/A	NOTE (2)
EN 61000-3-2: 2014	Harmonic current emissions	Class A	PASS	NOTE (3)
EN 61000-3-3: 2013	Voltage fluctuations	-----	PASS	

Immunity EN 50130-4:2011+A1:2014			
Test Standard	Test Item	Test Result	Remark
EN 61000-4-2: 2009	Electrostatic discharge	Pass	
EN 61000-4-3: 2006 +A1: 2008 +A2: 2010	Radiated Frequency electromagnetic field	Pass	
EN 61000-4-4: 2012	Electrical fast transient/burst	Pass	
EN 61000-4-5: 2014	Surge	Pass	
EN 61000-4-6: 2014/AC: 2015	Conducted Disturbances induced by Radio-Frequency Fields	Pass	
EN 61000-4-11: 2004	Voltage Dips and Interruption	Pass	

NOTE:

- 1) "N/A" denotes test is not applicable in this Test Report.
- 2) If the EUT's highest operating frequency does not exceed 108 MHz, the test will not be performed.
- 3) If the EUT's category is Class D and power consumption is less than 75W, there is no limit applied.



1.3 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

☐ **C01:** 7F., No.262, Sec. 3, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan, (R.O.C.)

☒ **C02:** No. 67-22, Baoxin St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Conducted emission at telecommunication ports Test:

☐ **C01:** 7F., No.262, Sec. 3, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan, (R.O.C.)

☐ **C02:** No. 67-22, Baoxin St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Radiated emission Test (Below 1 GHz):

☐ **OS01:** No.120, Ln. 5, Hudong St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

☒ **CB02:** No. 67-22, Baoxin St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

Radiated emission Test (Above 1 GHz):

☐ **OS01:** No.120, Ln. 5, Hudong St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

☐ **CB02:** No. 67-22, Baoxin St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

The immunity test:

No. 67-22, Baoxin St., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)



1.4 TEST METHODOLOGY

EUT SYSTEM OPERATION

1. All peripherals connect EUT and power on.

DESCRIPITON OF TEST MODES

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

Pretest Test Mode	Description
Mode 1(worst)	Full system(AC)
Mode 2	Full system(DC)

Conducted emission test	
Final Test Mode	Description
Mode 1(worst)	Full system(AC)

Radiated emission test	
Final Test Mode	Description
Mode 1(worst)	Full system(AC)
Mode 2	Full system(DC)

Harmonic current emissions & Voltage fluctuations	
Final Test Mode	Description
Mode 1(worst)	Full system(AC)

Immunity tests	
Final Test Mode	Description
Mode 1(worst)	Full system(AC)



1.5 DESCRIPTION OF THE SUPPORT EQUIPMENTS

Setup Diagram

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

Support Equipment

OUTSIDE SUPPORT EQUIPMENT							
No.	Equipment	Model	Serial No.	FCC ID	Trade name	Data Cable	Power Cord
	N/A						

Note:

- (1) The support equipment was authorized by Declaration of conformity (DOC).
- (2) All the above equipment/cable were placed in worse case position to maximize emission signals during emission test.
- (3) Grounding was established in accordance with the manufacturer's requirement and conditions for the intended use.

1.6 FEATURES OF EUT:

Please refer to user manual or product specification.



2. INSTRUMENT AND CALIBRATION

2.1 MEASURING INSTRUMENT CALIBRATION

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

2.2 TEST AND MEASUREMENT EQUIPMENT

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

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

TABLELIST OF TEST AND MEASUREMENT EQUIPMENT

Conducted emission				
Instrument	Manufacturer	Model No.	Serial No.	Cali Due Date
EMI Test Receiver	R&S	ESHS30	838550/003	2021/08/12
Spectrum Analyzer	R&S	FSP7	830180/009	2021/08/14
Two-Line V-Network	EMCO	3810/2NM	9801-1849	2021/08/07
ISN	Schwarzbeck	NTFM 8158	8158#125	2021/08/07
Test Cable	EMCI	EMCCFD300-B M-BM-3000	180618	2021/08/11
Measurement Software	AUDIX	e3	V9.160707	N/A
Radiated emission Below 1GHz				
Instrument	Manufacturer	Model No.	Serial No.	Cali Due Date
Bilog antenna	Chase	CBL6111A	1546	2021/07/30
LOOP Antenna	EMCO	6507	9301-1298	2021/01/08
Pre-amplifier	Anritsu	MH648A	M15180	2021/08/11
Cable	EMCI	EMCCFD400-N M-NM-7000	180617	2021/08/11
Cable	Marvelous Microwave	260260.F141	120A	2021/08/11
Receiver	R&S	ESCI3	101131	2020/09/08
Measurement Software	AUDIX	e3	V9.160707	N/A
Radiated emission Above 1GHz				
Instrument	Manufacturer	Model No.	Serial No.	Cali Due Date



Horn antenna	ETS LINDGREN	3117	00114397	2021/03/24
Pre-amplifier	EMCI	EMC051845	980108	2020/12/19
RF CABLE	SUCOFLEX	104PEA	27348/4PEA	2021/06/10
RF CABLE	EMCI	EMC102-KM-K M-3000	160101	2021/08/18
RF CABLE	EMCI	EMC102-KM-K M-600	160102	2021/08/18
Spectrum Analyzer	ADVANTEST	R3182	150900201	2021/01/17
Measurement Software	AUDIX	e3	V9.160707	N/A
Harmonic/Flicker				
Instrument	Manufacturer	Model No.	Serial No.	Cali Due Date
Power & Harmonics Analyzer	EMC Partner	HARMONICS-1 000-1P	71	2021/06/09
Measurement Software	EMC Partner	Harcs	V4.22	N/A
Immunity				
Instrument	Manufacturer	Model No.	Serial No.	Cali Due Date
ESD Simulator	Noiseken	ESS-2002	ESS0767151	2021/02/03
SIGNAL GENERATOR	Agilent	N5182A	MY50144390	2020/12/12
Log Periodic Antenna	SCHWARZBECK	STLP 9129	9129 101	N/A
Electric Field Probe	PMM	EP 601	611WX70786	2020/09/01
Power Meter	Agilent	E4419B	MY41291664	2020/12/12
Power Sensor	Agilent	8481D	MY41091347	2020/12/12
Power Sensor	Agilent	E9301	US39211864	2020/12/12
Amplifier	TESEQ	CBA 1G-300B	W2408-1218	N/A
Amplifier	MILMEGA	AS0860B-50-50	1085442	N/A
Measurement Software	AR	emcware	V3.6.0	N/A
EMC Immunity Test System	EMC PARTNER	TRANSIENT 2000IN6	456	2021/01/15
Capacitive Clamp	EMC PARTNER	CN-EFT1000	268	2021/01/15
Telccom Surge Module	SKYLARKSH	NSG 3060	0506C1817	2021/07/04
COUPLING/DECOUPLING NETWORK	SKYLARKSH	CDN-5802	05LN8A14001	2021/02/23
Conducted Immunity Test System	FRANKONIA	CIT-10-75-MIL	18901628-0101	2021/02/17
CDN	FRANKONIA	CDN M2+M3	A3011021	2021/02/23



CDN	FRANKONIA	CDN RJ45	A3023011	2021/02/23
EM clamp	FCC	F-203I-23MM	520	2021/02/20
Measurement Software	Frankonia	CD-LAB C5.315	V1435V2372015	N/A
Magnetic Field Immunity Loop	EMC PARTNER	MF-1000-1-69	169	2021/03/28
EMF Tester	TES	1390	110305943	2021/02/19

Remark: "N/A" denotes No Model Name, No Serial No. or No Calibration specified.

2.3 TEST PERFORMED

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a receiver which resolution bandwidth is set at 9 kHz.

Radiated emissions were investigated over the frequency range from 30 MHz to 1000 MHz using a receiver which resolution bandwidth is set at 120 kHz. Radiated measurement was performed at distance that from an antenna to EUT is 3 meters.

2.4 APPENDIX

Appendix A: Measurement Procedure for Main Power Port Conducted Emissions

The measurements are performed in a WH lab test room; The EUT was placed on non-conductive 1.0m x 1.5m table, which is 0.8 meters above an earth grounded.

Power to the EUT was provided through the LISN which has the Impedance (50 ohm/50 uH) vs. Frequency Characteristic in accordance with the standard. Powers to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

If the EUT is supplied with a flexible power cord, the power cord length in excess of the distance separating the EUT from the LISN shall be folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall not be longer than 1 meter. The excess power cord shall be bundled as described above. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, was measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.



Appendix B: Test Procedure for Radiated Emissions

Preliminary Measurements in 743 Semi Anechoic Chamber

The radiated emissions are initially measured in the anechoic chamber at a measurement distance of 3 meters. Desktop EUT are placed on a wooden stand 0.8 meter in height. The measurement antenna is 3 meters from the EUT. The test setup in anechoic chamber is the same as open site. The turntable rotated 360°C. The antenna height is 1m. The primary objective of the radiated measurements in the anechoic chamber is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open test site. The frequencies can then be pre-selected on the open test site to obtain the corresponding amplitude. The initial scan is made with the spectrum analyzer in automatic sweep mode. The spectrum peaks are then measured manually to determine the exact frequencies.

Measurements on the Open Site or 1166 Semi Anechoic Chamber

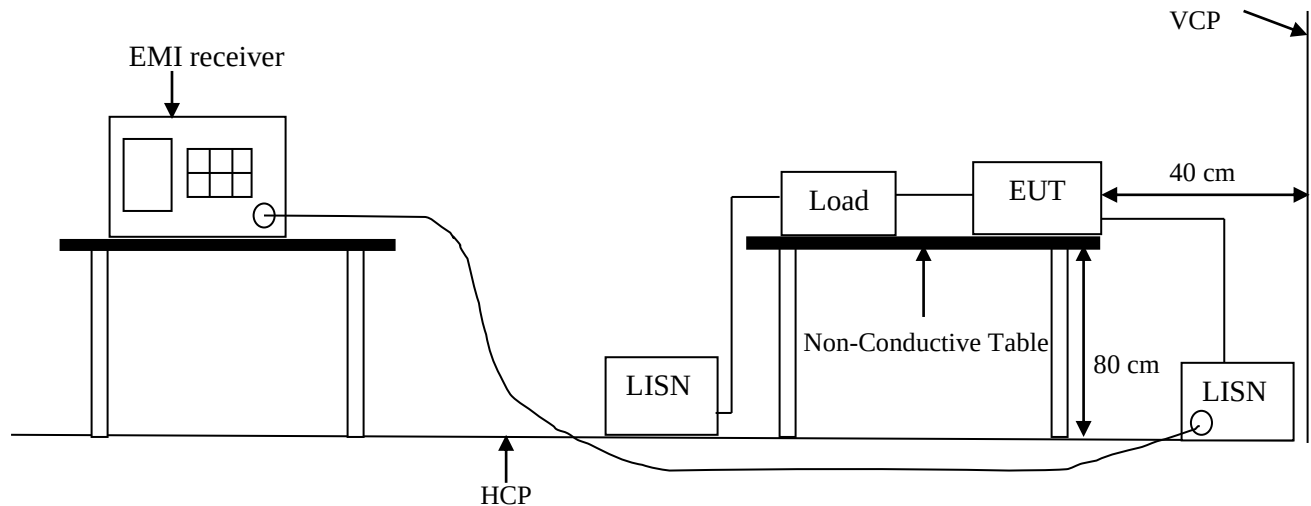
The radiated emissions test will then be repeated on the open site or chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipments are set up on the turntable. Desktop EUT are set up on a wooden stand 0.8 meter above the ground.

For the initial measurements, the receiving antenna is varied from 1-4-meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. Both reading is recorded with the quasi-peak detector with 120 kHz bandwidth. For frequency between 30 MHz and 1000 MHz, the reading is recorded with peak detector or quasi-peak detector.

At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

3. CONDUCTED EMISSION MEASUREMENT

3.1 TEST SET-UP



3.2 LIMIT

Frequency range (MHz)	CLASS A		CLASS B	
	QP (dBµV)	Average (dBµV)	QP (dBµV)	Average (dBµV)
0.15 – 0.5	79	66	66 - 56	56 - 46
0.5 – 5.0	73	60	56	46
5.0 – 30	73	60	60	50

NOTE:

- 1) In the above table, the tighter limit applies at the band edges.
- 2) The test result calculated as following:
Level Value = Reading Level + Factor
Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
Over Limit Value = Level Value – Limit Value

3.3 TEST PROCEDURE

Please refer to

Appendix A: Measurement Procedure for Main Power Port Conducted Emissions

Note:

1. Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
2. All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP



Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.

3.4 TEST SPECIFICATION

According to EN 55032 Class B

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

3.5 RESULT: PASSED

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	20 °C
Humidity:	50 % RH

3.6 TEST DATA:

Please refer to APPENDIX 2



3.7 LIMIT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORT

TEST STANDARD: EN 55032

Frequency Range	Class A (dB μ V)		Class B (dB μ V)	
	Quasi Peak	Average	Quasi Peak	Average
0.15 – 0.5 MHz	97 – 87	84 – 74	84 – 74	74 – 64
0.5 – 30 MHz	87	74	74	64

NOTE:

- 1) The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.
- 2) The test result calculated as following:
Level Value = Reading Level + Factor
Factor = Insertion Loss + Cable Loss + Attenuator Factor (if use)
Over Limit Value = Level Value – Limit Value

3.8 RESULT OF CONDUCTED COMMON MODE DISTURBANCE AT TELECOMMUNICATION PORT

TEST RESULT: N/A

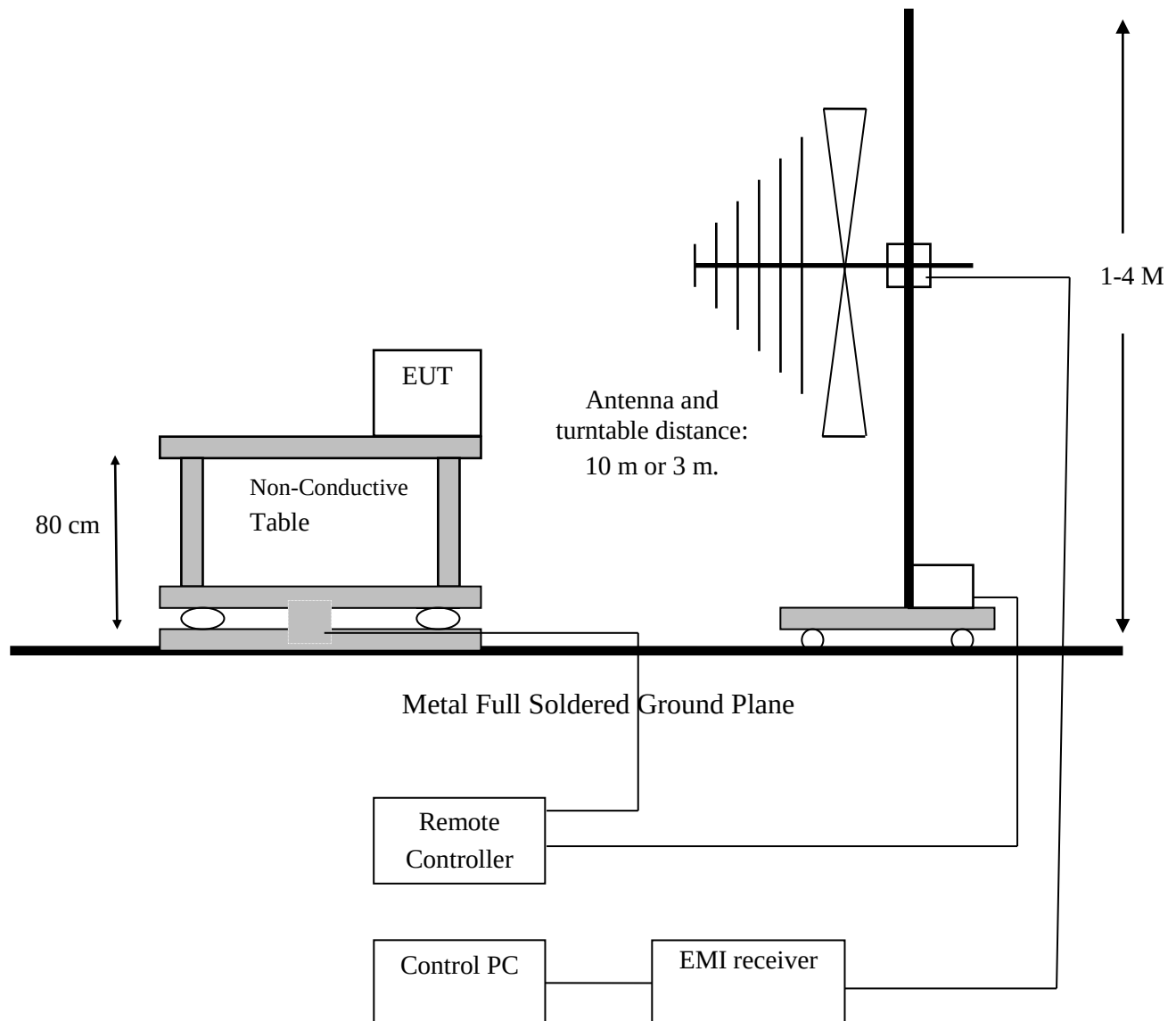
Note:

1. Reading in which marked as Peak, QP or AVG means measurements by using are Quasi-Peak or Average Mode with Detector BW=9 kHz (6 dB Bandwidth).
2. All readings are Peak Mode value unless otherwise stated QP or AVG in column of Note. If the Peak or QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only Peak or QP Mode was measured, but AVG Mode didn't perform.



4. RADIATED EMISSION MEASUREMENT

4.1 TEST SETUP





4.2 LIMIT

Frequency	Class A		Class B	
MHz	Quasi-peak at 3m (dBμV/m)	Quasi-peak at 10m (dBμV/m)	Quasi-peak at 3m (dBμV/m)	Quasi-peak at 10m (dBμV/m)
30 ~ 230	50	40	40	30
230 ~ 1000	57	47	47	37

Frequency range (GHz)	Class A (at 3m)		Class B (at 3m)	
	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)
1 ~ 3	56	76	50	70
3 ~ 6	60	80	54	74

NOTE:

- 1) In the above table, the tighter limit applies at the band edges.
- 2) The test result calculated as following:
Level Value = Reading Level + Factor
Factor = Antenna Factor + Cable Loss – Amplifier Gain (if use)
Over Limit Value = Level Value – Limit Value

4.3 TEST PROCEDURE

Please refer to

Appendix B: Test Procedure for Radiated Emissions

Note:

(Below 1 GHz)

1. Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz.

2. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

(Above 1 GHz)

1. Reading in which marked as Peak means measurements by using are Peak Mode with instrument setting in RBW=1 MHz, VBW= 1MHz.

Reading in which marked as AV means measurements by using are Average Mode with instruments setting in RBW=1 MHz, VBW= 10Hz.

2. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.

4.4 TEST SPECIFICATION

According to EN 55032 Class B



(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

4.5 RESULT: PASSED

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	20 °C
Humidity:	50 % RH

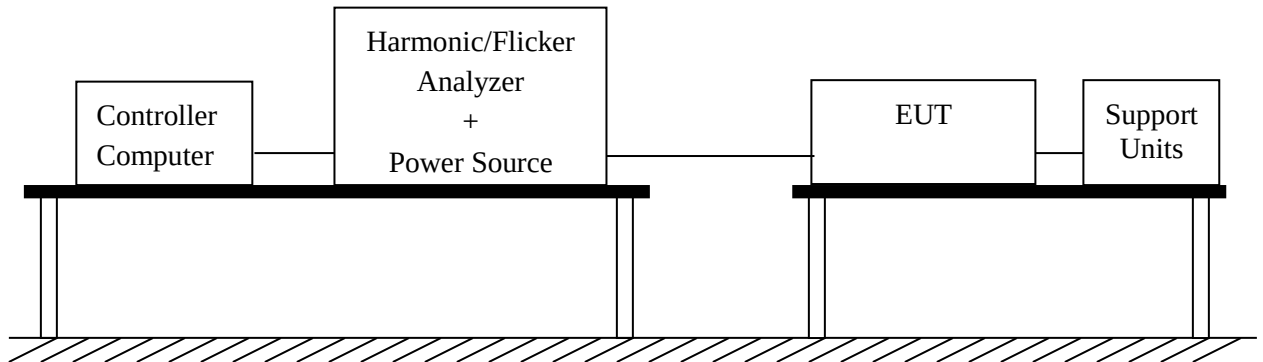
4.6 TEST DATA:

Please refer to APPENDIX 2



5. POWER HARMONIC MEASUREMENT

5.1 TEST SETUP



5.2 LIMITS

Limits for Class A equipment		Limits for Class D equipment		
Harmonic Order n	Maximum Permissible Harmonic Current A	Harmonic Order n	Maximum Permissible Harmonic Current A	mAW
Odd Harmonic		Odd Harmonic 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 Harmonic				
2	1.08			
4	0.43			
6	0.30			
8 ≤ n ≤ 40	0.23 x 8/n			

Note:

1. Class A and Class D are classified according to item section 5 of EN 61000-3-2:2014.
2. According to section 7 of EN 61000-3-2:2014, the above limits for all equipment except for lighting equipment are for all applications having an active input power > 75 W and no limits apply for equipment with an active input power up to and including 75W.



5.3 TEST PROCEDURE

The EUT was operated to produce the maximum harmonic components under normal operating conditions.

The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

5.4 TEST SPECIFICATION

According to EN 61000-3-2

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

5.5 RESULT: PASSED

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

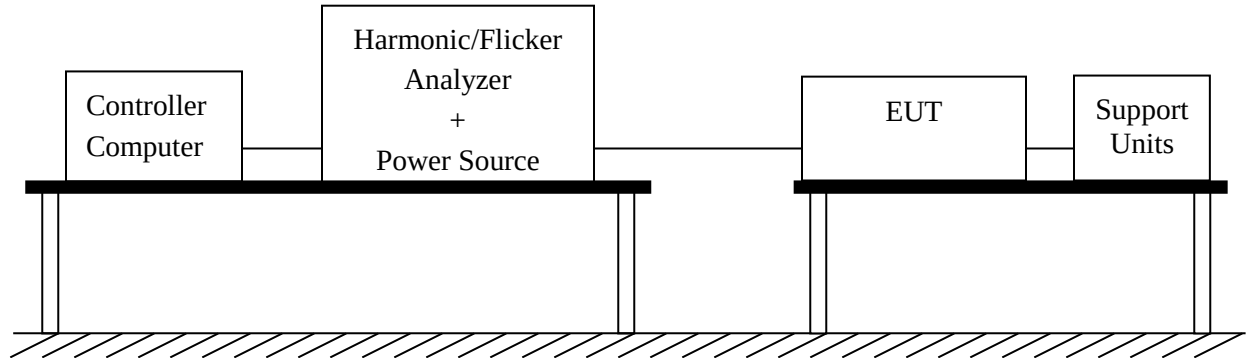
5.6 TEST DATA:

Please refer to APPENDIX 2



6. VOLTAGE FLUCTUATIONS

6.1 TEST SETUP



6.2 LIMITS

TEST ITEM	Limits	Descriptions
P_{st}	≤ 1.0 , $T_p = 10$ min.	Short Term Flicker Indicator
P_{lt}	≤ 0.65 , $T_p = 2$ hr.	Long Term Flicker Indicator
dc	$\leq 3.3\%$	Relative Steady-State V-Chang
d_{max}	$\leq 4\%$	Maximum Relative V-change
$d_{(t)}$	$\leq 3.3\%$ for > 500 ms	Relative V-change characteristic

6.3 TEST PROCEDURE

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in EN 61000-3-3/IEC 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.

6.4 TEST SPECIFICATION

According to EN 61000-3-3

(Please refers to Page 5 for dated references which are related to the standard as mentioned above)

6.5 RESULT: PASSED

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

6.6 TEST DATA:

Please refer to APPENDIX 2



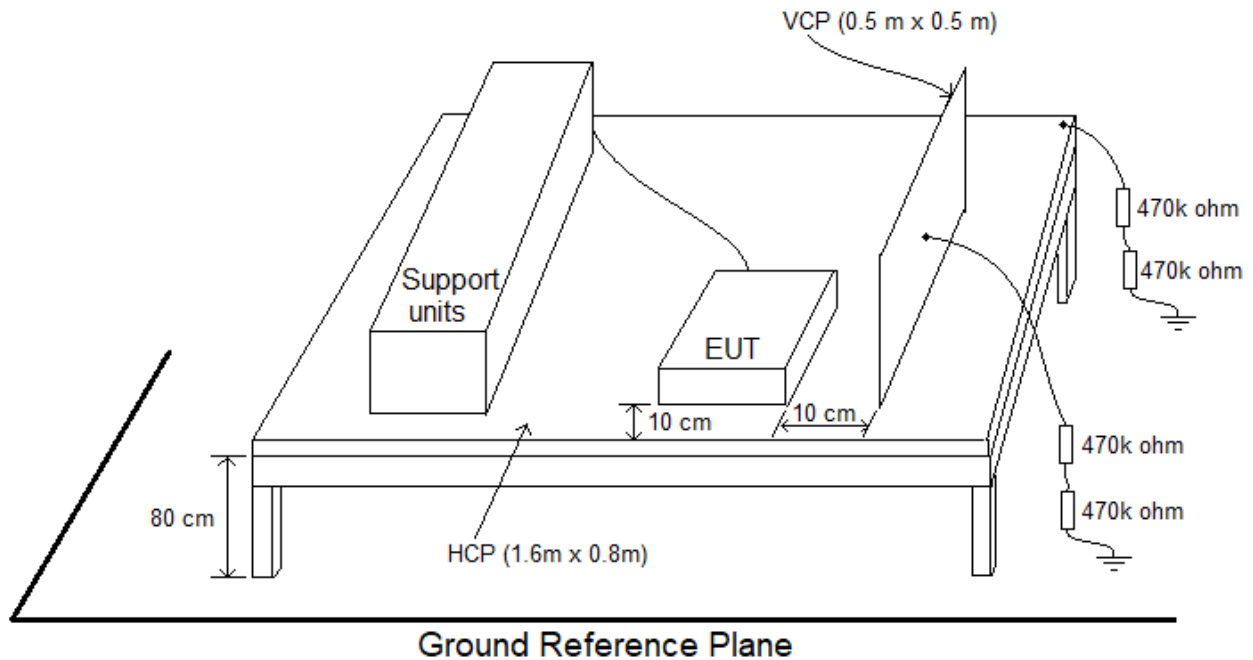
7. PERFORMANCE CRITERIA

There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the conditioning is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.



8. ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

8.1 TEST SETUP



8.2 TEST SPECIFICATION

According to EN 61000-4-2

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

8.3 TEST LEVEL

Item	Test Specification	Unit
Air Discharge	$\pm 2, 4, 8$ (Direct)	kV (Charge Voltage)
Contact Discharge	± 6 (Direct/Indirect)	
Discharge Period	1 (minimum)	sec

Number of tests: 10 Discharges / Test point / Polarity / Level

8.4 TEST PROCEDURE

When the measurement was taken, The ESD discharger was performed in single discharge. For the single discharge time between successive single discharges will keep on one second. It was at least ten single discharges with positive and negative at the same selected pointed. The selected pointed, which was performed with electrostatic discharge, was marked on the red label on the EUT Indirect applicant of discharge to the EUT

Vertical Coupling Plane (VCP)



The coupling plane, of dimensions 0.5 m x 0.5 m, is placed parallel to, and positioned at a distance 0.1 m from, the EUT, with the discharge electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten singles discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP)

The coupling plane is placed under the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the discharge electrode touching the coupling.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected pointed.

8.5 TEST RESULT:

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH
Pressure	1012 hPa

	Contact Discharge						Air Discharge							
	10 times / each						10 times / each							
Voltage	2kV		4kV		6kV		2kV		4kV		8kV		Results	
Polarity	+	-	+	-	+	-	+	-	+	-	+	-	Pass	Fail
HCP	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☒	☐
VCP	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☒	☐
P ₁ ~P ₆	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐

Final Result: **PASSED**

Photos of test configuration please refer to APPENDIX 1.

Discharge points please refer below photos (Red dot: Contact; Blue dot: Air)





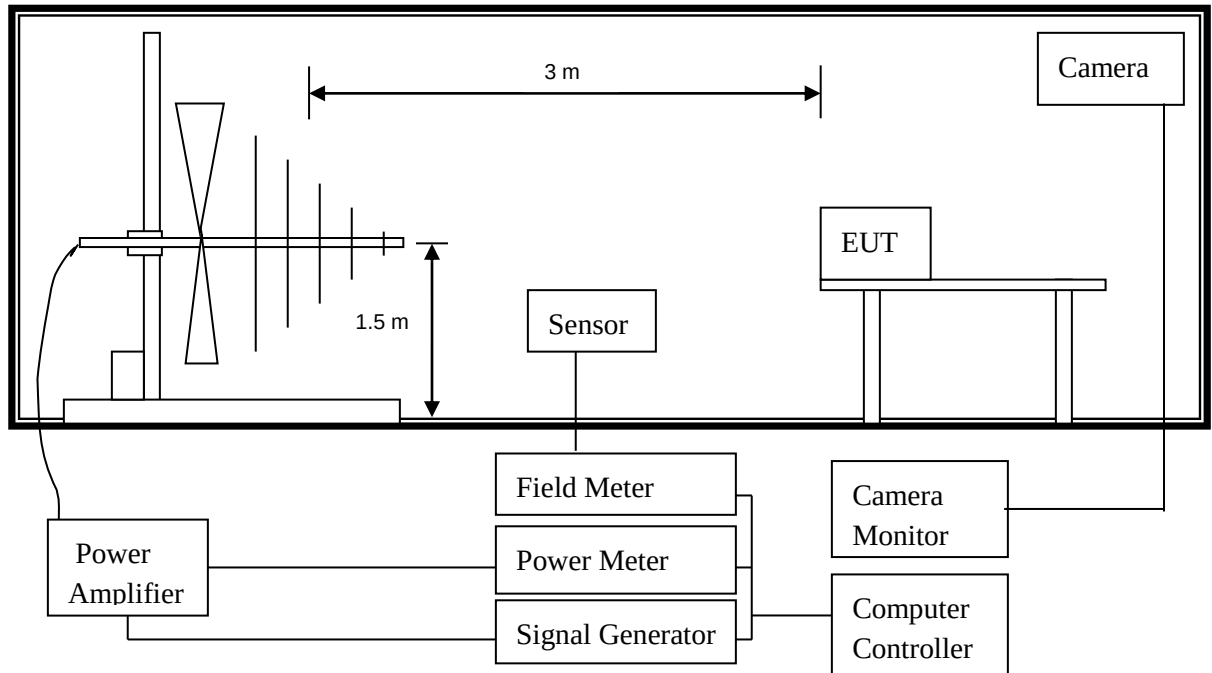






9. RADIATED SUSCEPTIBILITY MEASUREMENT (RS)

9.1 TEST SETUP



9.2 TEST SPECIFICATION

According to EN 61000-4-3

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

9.3 TEST LEVEL

Item	Test Specification	Unit
Radio –Frequency	80 ~ 2700	MHz
Electromagnetic Field	10	V/m (unmodulated)
Amplitude Modulated	80, 1 Hz	%AM (1 kHz) PM
Dwell time	3, 0.5 on : 0.5 off	second

9.4 TEST PROCEDURE

The EUT and load, which are placed on a wooden table whose height is 0.8 meter aboveground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT is 3 meters.

Both horizontal and vertical polarization of the antenna position and four sides of the EUT are set on measurement. In order to judge the EUT performance, a CCD camera is used to monitor the situation of EUT.



All the scanning conditions are as follows:

a) Radiated RF EM fields:

Condition of Test	
1. Field Strength	10 V/m, 10 V/m
2. Radiated Signal	AM 80% modulated with 1 kHz, PM modulated with 1 Hz
3. Scanning Frequencies	80 ~ 2700 MHz
4. Frequency step size	1%
5. Antenna Polarity	HORIZONTAL & VERTICAL
6. The four sides of EUT are tested	FRONT, REAR, RIGHT, LEFT

9.5 TEST RESULT:

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

Frequency (MHz)	Modulation	Polarization	Level (V/m)	Result
80 – 2700	AM 80%,1 kHz	H	10	Pass
80 – 2700	AM 80%,1 kHz	V	10	Pass
80 – 2700	PM,1 Hz	H	10	Pass
80 – 2700	PM,1 Hz	V	10	Pass

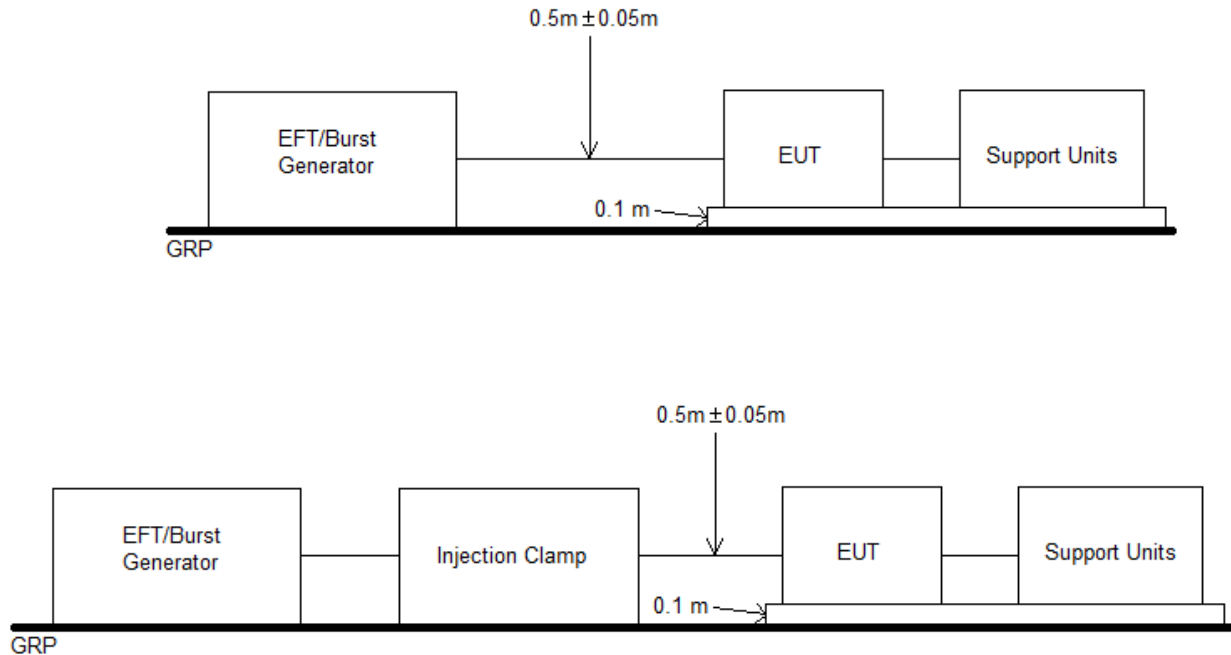
Final Result: **PASSED**

Photos of test configuration please refer to APPENDIX 1.



10. ELECTRICAL FAST TRANSIENT/BURST (EFT)

10.1 TEST SETUP



10.2 TEST SPECIFICATION

According to EN 61000-4-4

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

10.3 TEST PROCEDURE

The EUT and load are placed on a ground reference plane and insulated from it by an insulating support $0,1 \text{ m} \pm 0,01 \text{ m}$ thick. The minimum area of the ground reference plane is $1 \text{ m} \times 1 \text{ m}$. It also projected beyond the EUT by at least 0.1 meter on all sides.

For Input and Output AC power or DC Input and DC Output Power Ports:

The EUT is connected with the power mains through a coupling device that directly couples the EFT interference signal.

Each of the line and nature conductors is impressed with burst noise for 1 minute.

For Protective Earth Port:



The EUT is connected to the power mains through a coupling device that directly couples the EFT interference signal. The protective earth line (PE) is impressed with burst noise for 1 minute.

The length of power cord between the coupling device and the EUT shall be $0.5\text{ m} \pm 0.05\text{m}$.
For signal Lines and Control Lines Test:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1 minute.

10.4 TEST LEVEL

Item	Test Specification	Unit
Test Voltage	AC port: $\pm 0.5, \pm 1, \pm 2$ DC/Signal port: $\pm 0.5, \pm 1$	kV (Peak)
Impulse Wave-shape	5/50	ns (Tr/Ts)
Repetition frequency	100	kHz
Burst Duration	15	ms
Burst Period	300	ms
Test Duration	Not less than 1	mins

10.5 TEST RESULT

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

Test Point/ Mode / Result		0.5 kV		1 kV		2 kV		Results	
		+	-	+	-	+	-	Pass	Fail
Power Line	L	☒	☒	☒	☒	☒	☒	☒	☐
	N	☒	☒	☒	☒	☒	☒	☒	☐
	L+N	☒	☒	☒	☒	☒	☒	☒	☐
	PE	☐	☐	☐	☐	☐	☐	☐	☐
	L+PE	☐	☐	☐	☐	☐	☐	☐	☐
	N+PE	☐	☐	☐	☐	☐	☐	☐	☐
	L+N+PE	☐	☐	☐	☐	☐	☐	☐	☐
Signal Line Clamp Test		☐	☐	☐	☐	☐	☐	☐	☐



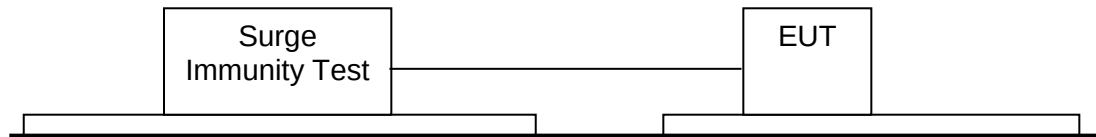
Final Result: **PASSED**

Photos of test configuration please refer to APPENDIX 1.



11. SURGE

11.1 TEST SETUP



11.2 TEST SPECIFICATION

According to EN 61000-4-5

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

11.3 TEST LEVEL

Item		Test Specification	Unit
DC Input and DC Output Power Ports			
	Surge	1.2/50(8/20)	Tr/Ts (μs)
	Line to Ground	±0.5, ±1	kV
AC Input and AC Output Power Ports			
	Surge	1.2/50(8/20)	Tr/Ts (μs)
	Line to Ground	±0.5, ±1, ±2	kV
	Line to Line	±0.5, ±1	kV
Signal Ports			
	Surge	10/700	Tr/Ts (μs)
	Line to Ground	±0.5, ±1	kV
Polarity		POSITIVE / NEGATIVE	
Pulse Repetition Rate		1 time / min (maximum)	

11.4 TEST PROCEDURE

The length of power cord between the coupling device and the EUT shall be 2 meters or less.

For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.



The Surge noise shall be applied synchronized to the voltage phase at 0°, 90°, 180°, 270° and the peak value of the AC voltage wave. (5 Positive and 5 Negative)

Each of line-earth and line-line is impressed with a sequence of five surge voltages with interval of 1 minute.

11.5 TEST RESULT

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

Power Port / Waveform: 1.2/50μs(8/20μs)			Results	
Phase/Polarity/Mode/Result			Pass	Fail
0.5 kV, 1 kV	+	Line to Neutral	☒	☐
	-		☒	☐
0.5 kV, 1 kV, 2 kV	+	Line to Ground	☐	☐
	-		☐	☐
	+	Neutral to Ground	☐	☐
	-		☐	☐
Signal Port / Waveform: 10/700μs			Results	
Phase/Polarity/Mode			Pass	Fail
0.5 kV, 1 kV	+	Line to Ground	☐	☐
	-		☐	☐

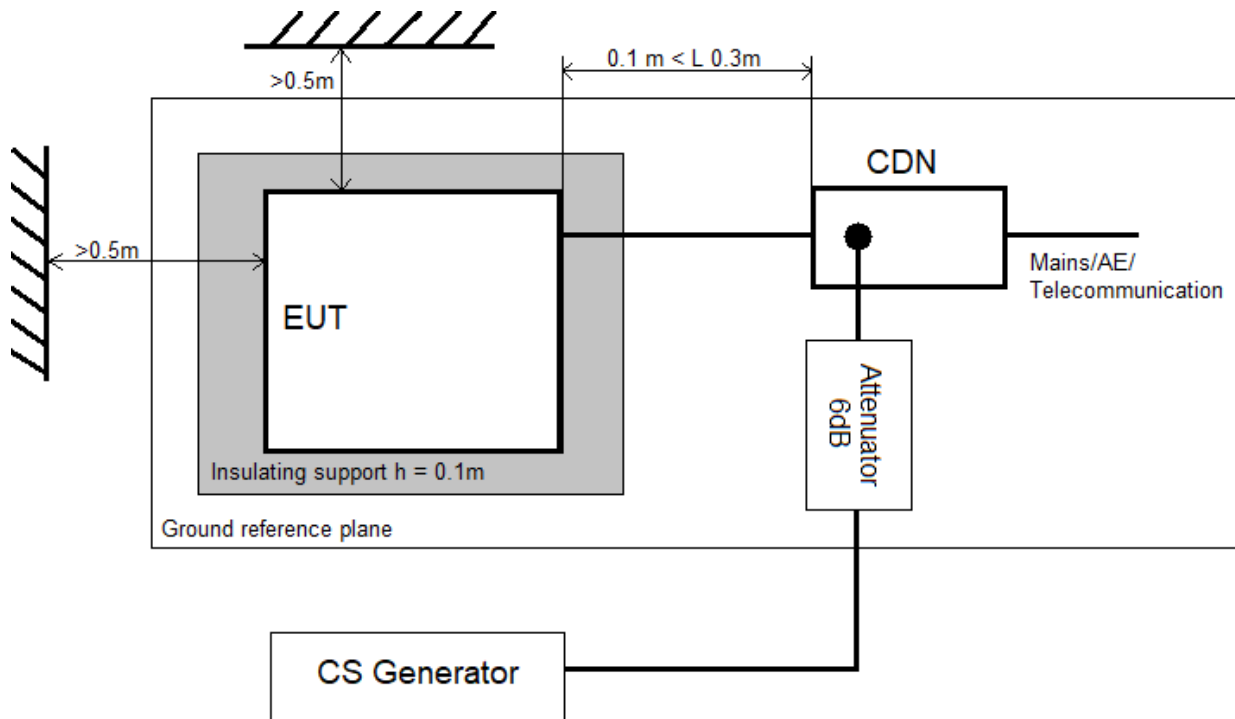
Final Result: **PASSED**

Photos of test configuration please refer to APPENDIX 1.



12. IMMUNITY TEST TO CS CONDUCTED DISTURBANCE (CS)

12.1 TEST SETUP



12.2 TEST SPECIFICATION

According to EN 61000-4-6

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

12.3 TEST LEVEL

Item		Test Specification	Unit
Signal Port			
	Frequency Range	0.15 ~ 100	MHz
	Field Strength	10	Vrms (unmodulated)
	Amplitude Modulated	80, 1 Hz	%AM (1 kHz) PM
AC Input and AC Output and DC Input and DC output Ports and Functional Earth Ports			
	Frequency Range	0.15 ~ 100	MHz
	Field Strength	10	Vrms (unmodulated)
	Amplitude Modulated	80, 1 Hz	%AM (1 kHz) PM



12.4 TEST PROCEDURE

The EUT are placed upon table and use 10cm insulation between the EUT and ground reference plane.

For AC Input and AC Output Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling and decoupling network for Power supply lines. It also directly couples the disturbance signal into EUT.

Use CDN-M2 for two wires or CDN-M3 for three wires.

For Signal Lines and Control Lines Test:

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp which is to couple the signal and control lines of the EUT.

All scanning frequencies conditions are as following:

Condition of Test	
1. Field Strength	10 V, 10V
2. Radiated Signal	AM 80% modulated with 1 kHz, PM modulated with 1 Hz
3. Scanning Frequencies	0.15 MHz ~ 100 MHz
4. Dwell Time	3 seconds, 0.5s ON : 0.5s OFF
5. Frequency step size	1%
6. The rate of swept of frequency	1.5×10^{-3} decades/s

12.5 TEST RESULT

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

Test Ports	Frequency Range (MHz)	Modulation	Field Strength (Vrms)	Result	
				Pass	Fail
Power Port	0.15 – 100	AM 80%,1 kHz	10	☒	☐
		PM,1 Hz	10	☒	☐
Signal Port	0.15 – 100	AM 80%,1 kHz	10	☐	☐
		PM,1 Hz	10	☐	☐

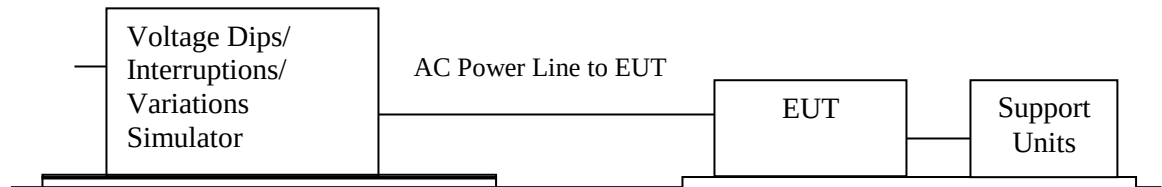
Final Result: **PASSED**

Photos of test configuration please refer to APPENDIX 1.



13. VOLTAGE DIPS AND INTERRUPTION MEASUREMENT(DIPS)

13.1 TEST SETUP



13.2 TEST SPECIFICATION

According to EN 61000-4-11

(Please refer to Page 5 for dated references which are related to the standard as mentioned above)

13.3 TEST LEVEL

Class ^a	Test level and durations for voltage dips				
Class 1	Case-by-case according to the equipment requirements				
Class 2	0 % during 1/2 cycle	0 % during 1 cycle	70 % during 25/30 ^c cycles		
Class 3	0 % during 1/2 cycle	0 % during 1 cycle	40 % during 10/12 ^c cycles	70 % during 25/30 ^c cycles	80 % during 250/300 ^c cycles
Class X ^b	X	X	X	X	X

a: Classes as per IEC 61000-2-4.

b: To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.

c: "25/30 cycles" means "25 cycles for 50 Hz test" and "30 cycles for 60 Hz test".

Class ^a	Test level and durations for short interruptions (t_s) (50Hz / 60Hz)
Class 1	Case-by-case according to the equipment requirements
Class 2	0 % during 250/300 ^c cycles
Class 3	0 % during 250/300 ^c cycles
Class X ^b	X

a: Classes as per IEC 61000-2-4.

b: To be defined by product committee. For equipment connected directly or indirectly to the public network, the levels must not be less severe than Class 2.

c: "250/300 cycles" means "250 cycles for 50 Hz test" and "300 cycles for 60 Hz test".



13.4 TEST PROCEDURE

The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips / Interruption Test:

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 60% voltage dips of supplied voltage and duration time is 200ms, for 30% voltage dips of supplied voltage and duration time is 500ms, for 20% voltage dips of supplied voltage and duration time is 5000ms with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and the duration time is 5000ms with a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage phase shifting are shall occur at 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315° of the voltage.

13.5 TEST RESULT

Model Name	IR-1000ExD-BV
Test Voltage	AC 240V/50Hz
Temperature:	24 °C
Humidity:	49 % RH

Voltage Dips	Test Level % U _T	Reduction (%)	Duration	Results
	40	60	10 (periods)	Pass
	70	30	25 (periods)	Pass
	80	20	250 (periods)	Pass

Voltage Interruptions	Test Level % U _T	Reduction (%)	Duration	Results
	<5	>95	250 (periods)	Pass

Final Result: **PASSED**

Please refer to APPENDIX 1.

**14. MEASUREMENT UNCERTAINTY**

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	3.54 dB
Conducted Emission at telecommunication ports	150 kHz ~ 30 MHz	/	3.36 dB
Radiated Emission	Below 1GHz	Horizontal	2.81 dB
		Vertical	4.01 dB
	Above 1GHz	Horizontal	4.64 dB
		Vertical	5.16 dB

Measurement Item		Uncertainty
Harmonic/Flicker emissions	Harmonic	0.54 %
	Voltage	0.5 %
	Flicker	4.96 %

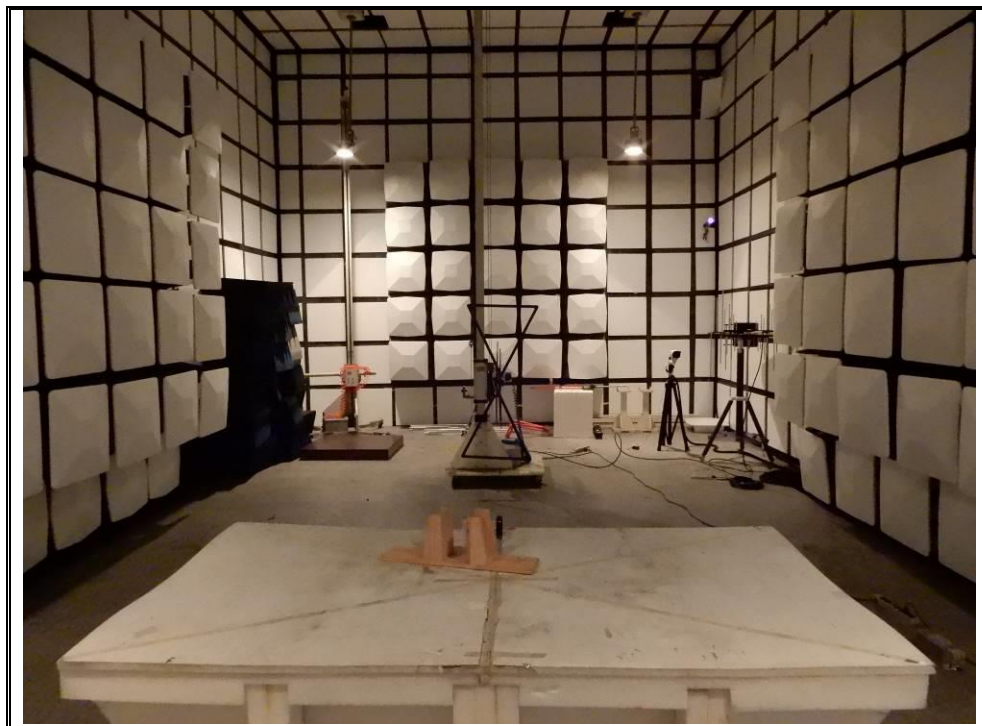


APPENDIX 1
PHOTOS OF TEST CONFIGURATION
Conducted Emission Test Setup





Radiated Emission Test Setup





ESD Test Setup

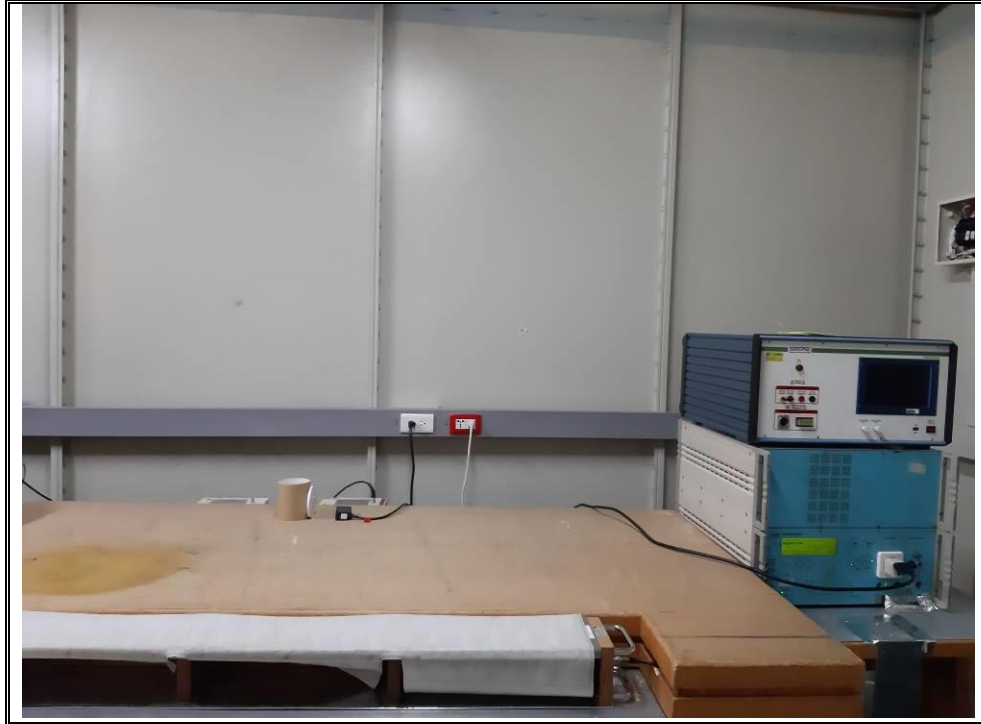


RS Test Setup



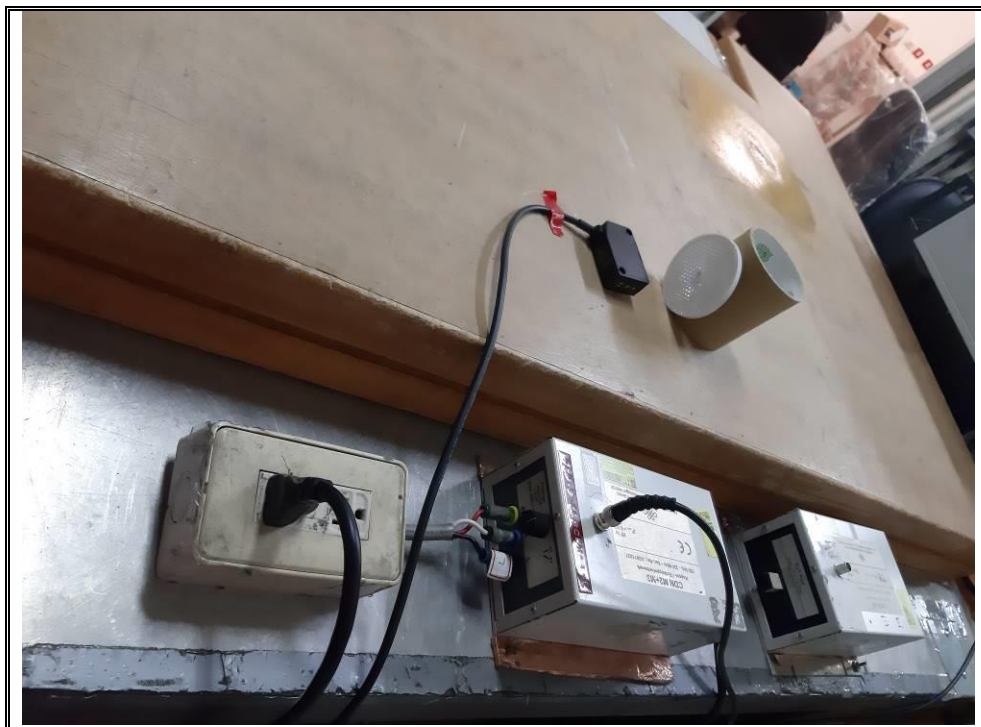
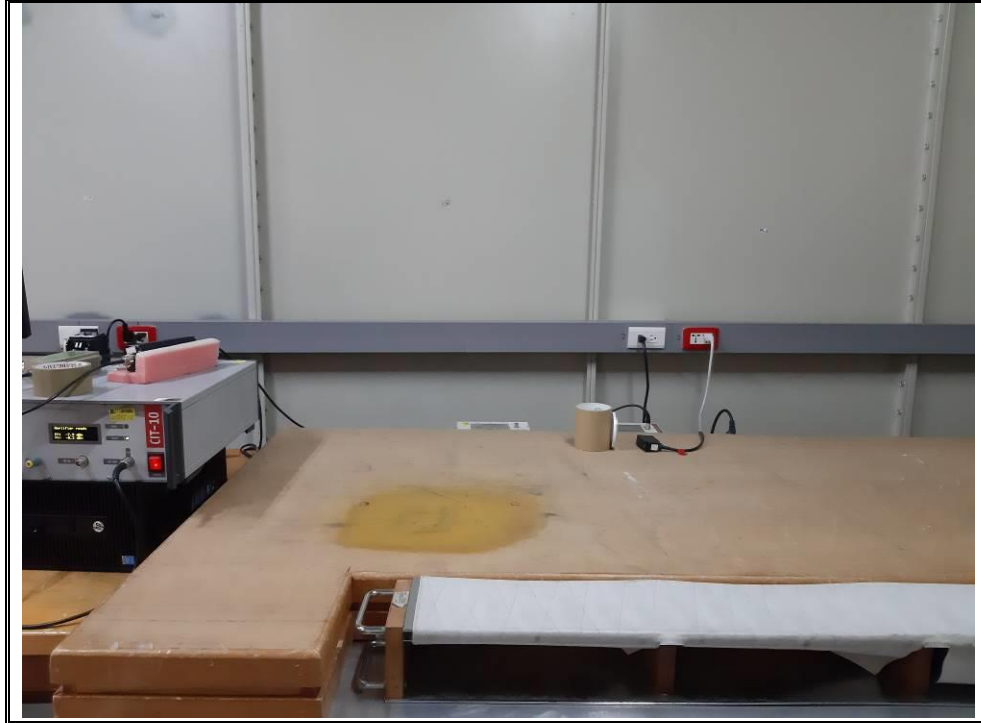


EFT & SURGE Test Setup



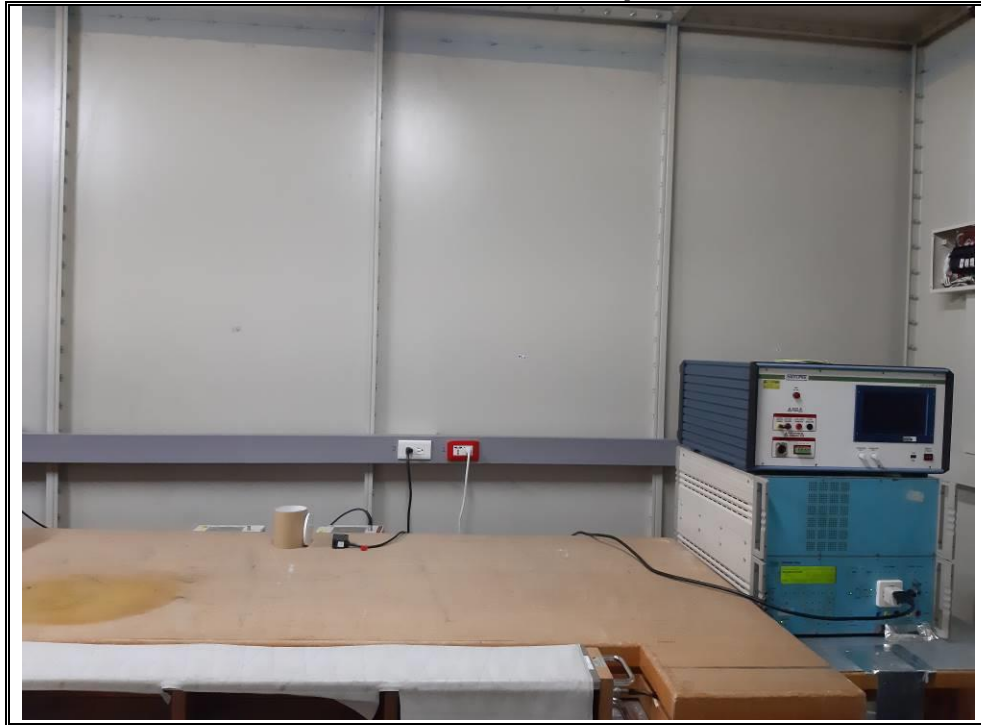


CS Test Setup

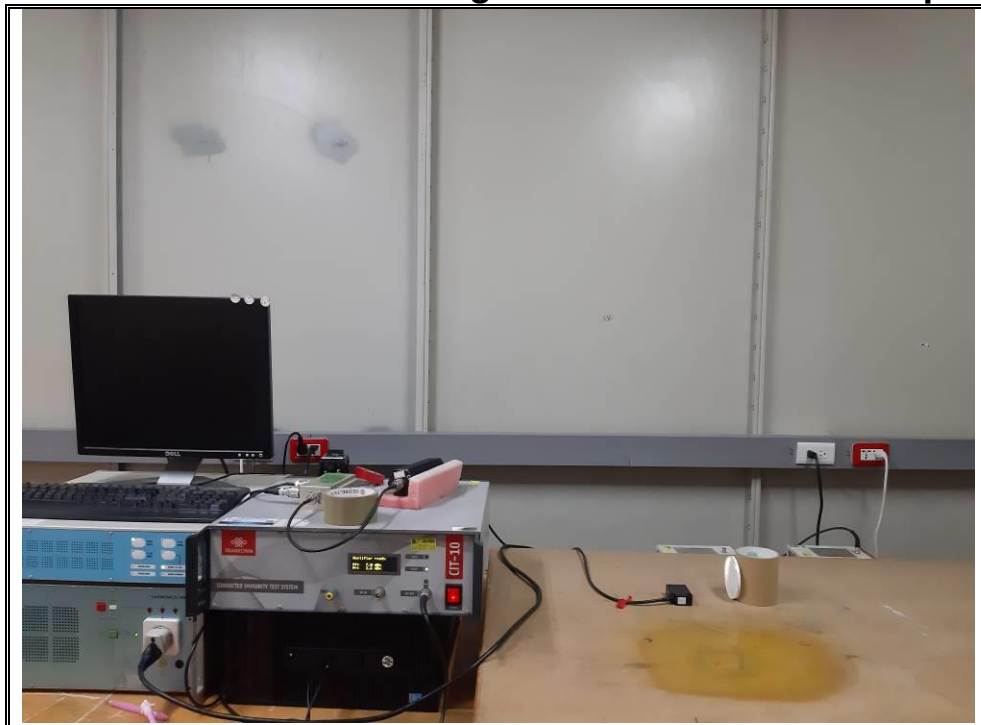




DIPS Test Setup



Power Harmonic / Voltage Fluctuations Test Setup

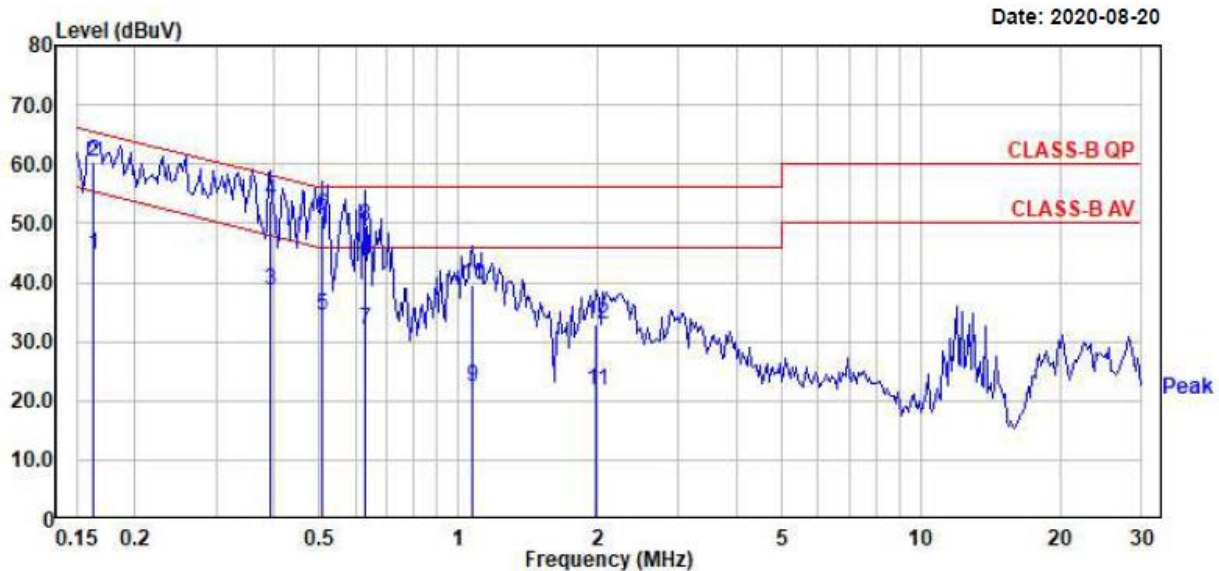




APPENDIX 2 TEST DATA

Test Data – Conducted Emission

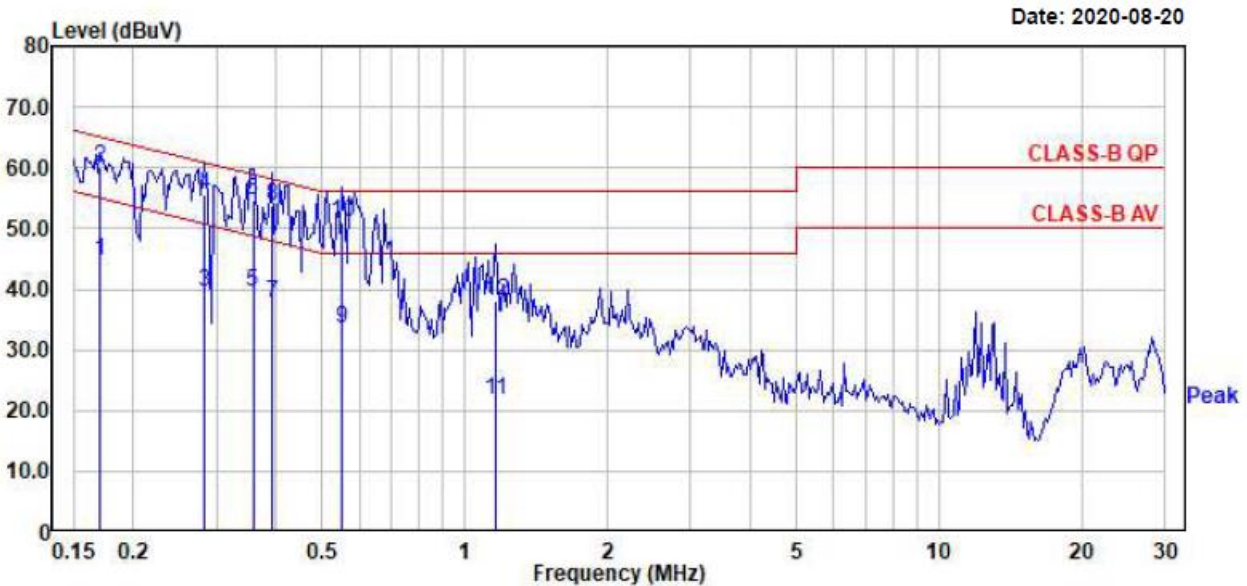
Phase: L



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.163	43.79	0.82	44.61	55.30	-10.69	Average
2	0.163	59.54	0.82	60.36	65.30	-4.94	QP
3	0.393	37.91	0.81	38.72	47.99	-9.27	Average
4	0.393	52.98	0.81	53.79	57.99	-4.20	QP
5	0.507	33.53	0.82	34.35	46.00	-11.65	Average
6	0.507	50.48	0.82	51.30	56.00	-4.70	QP
7	0.627	31.28	0.83	32.11	46.00	-13.89	Average
8	0.627	48.80	0.83	49.63	56.00	-6.37	QP
9	1.077	21.55	0.86	22.41	46.00	-23.59	Average
10	1.077	38.72	0.86	39.58	56.00	-16.42	QP
11	1.991	20.83	0.86	21.69	46.00	-24.31	Average
12	1.991	32.12	0.86	32.98	56.00	-23.02	QP



Phase: N

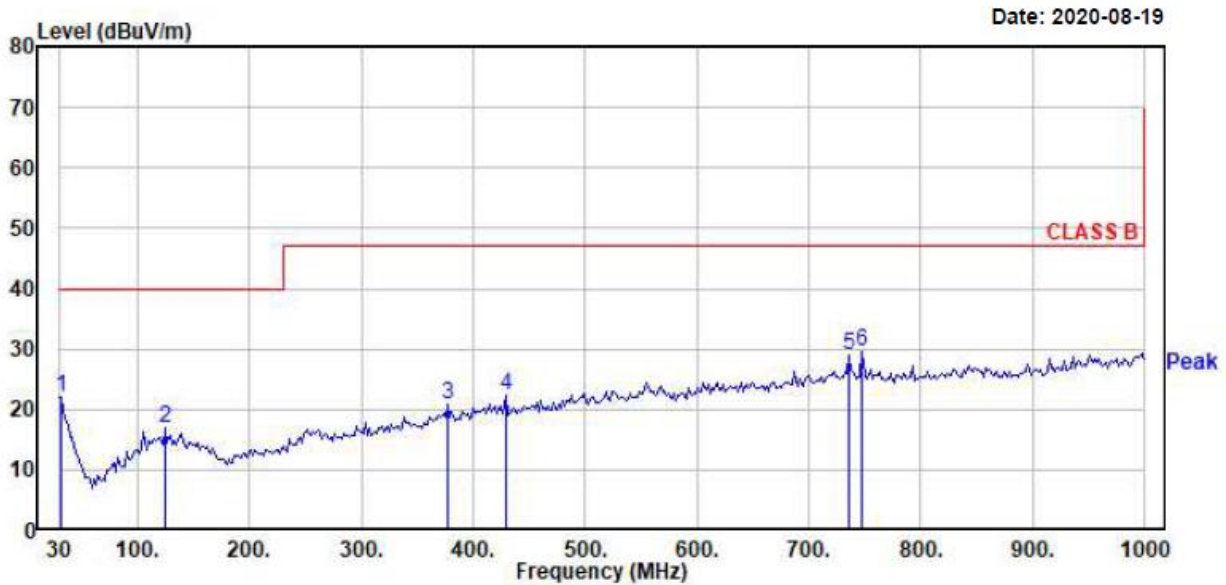


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.170	43.88	0.81	44.69	54.94	-10.25	Average
2	0.170	59.34	0.81	60.15	64.94	-4.79	QP
3	0.283	38.60	0.81	39.41	50.72	-11.31	Average
4	0.283	54.62	0.81	55.43	60.72	-5.29	QP
5	0.358	38.68	0.81	39.49	48.78	-9.29	Average
6	0.358	53.70	0.81	54.51	58.78	-4.27	QP
7	0.393	36.80	0.81	37.61	47.99	-10.38	Average
8	0.393	52.92	0.81	53.73	57.99	-4.26	QP
9	0.552	32.66	0.82	33.48	46.00	-12.52	Average
10	0.552	50.12	0.82	50.94	56.00	-5.06	QP
11	1.160	20.80	0.85	21.65	46.00	-24.35	Average
12	1.160	37.12	0.85	37.97	56.00	-18.03	QP



Test Data – Radiated Emission-Below 1GHz AC

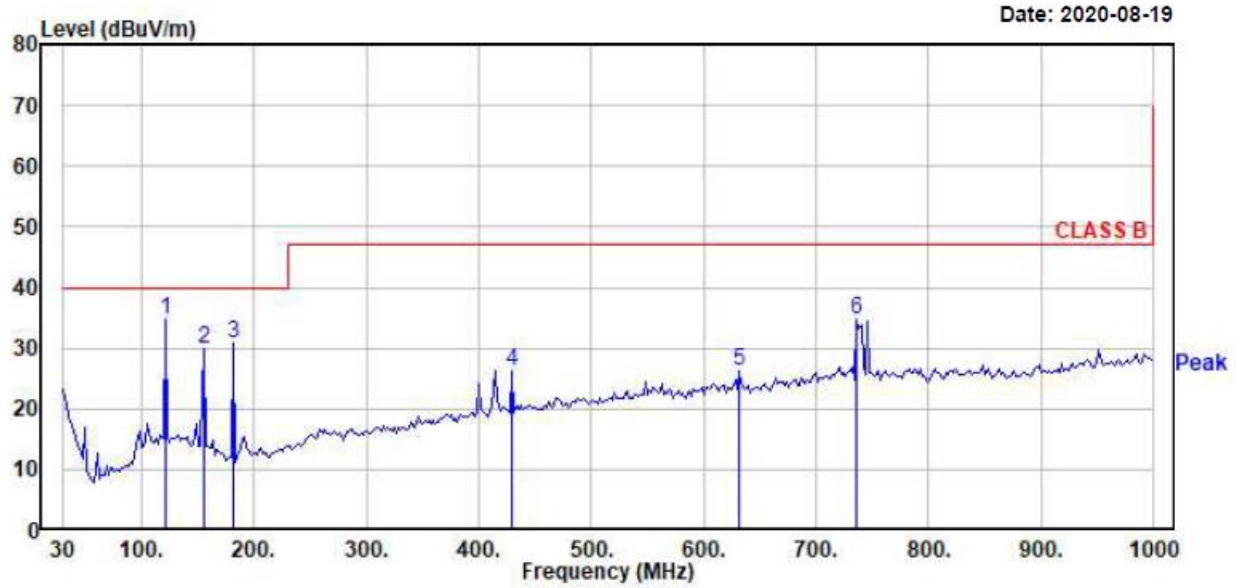
Polarization: Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	31.940	27.96	-5.90	22.06	40.00	-17.94	200	21	Peak
2	125.060	28.66	-11.65	17.01	40.00	-22.99	100	236	Peak
3	377.260	29.13	-8.19	20.94	47.00	-26.06	100	187	Peak
4	429.640	29.46	-7.05	22.41	47.00	-24.59	200	200	Peak
5	736.160	30.33	-1.29	29.04	47.00	-17.96	200	164	Peak
6	747.800	30.99	-1.26	29.73	47.00	-17.27	100	53	Peak



Polarization: Vertical

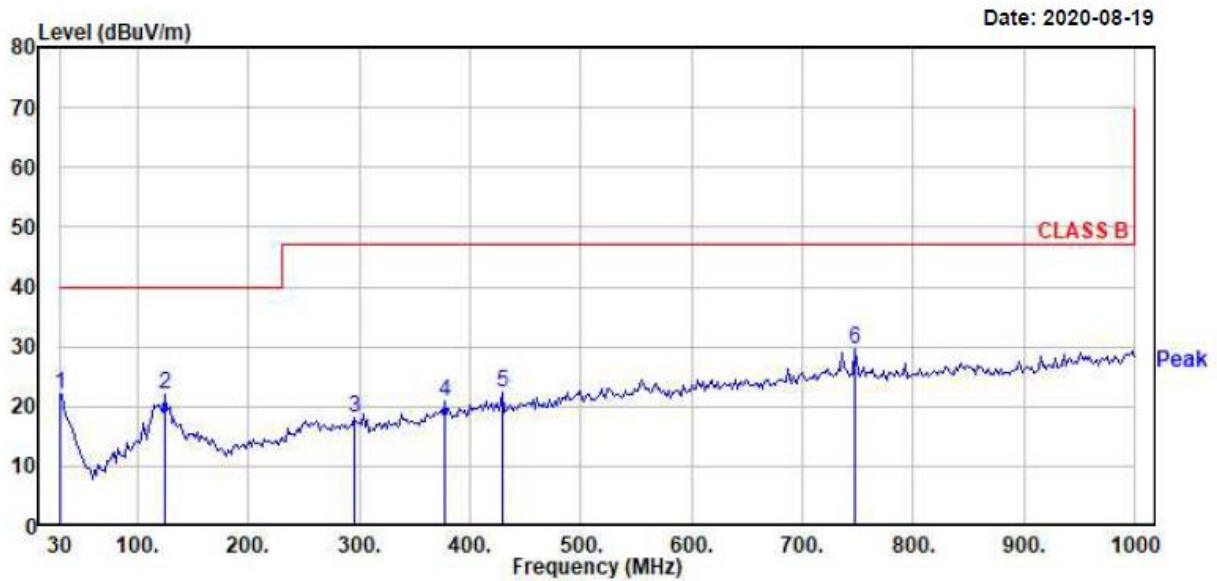


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	121.180	46.56	-11.94	34.62	40.00	-5.38	100	205	Peak
2	156.100	42.56	-12.71	29.85	40.00	-10.15	100	226	Peak
3	181.320	45.60	-14.70	30.90	40.00	-9.10	100	189	Peak
4	429.640	33.45	-7.05	26.40	47.00	-20.60	200	4	Peak
5	631.400	29.60	-3.27	26.33	47.00	-20.67	100	219	Peak
6	736.160	36.06	-1.29	34.77	47.00	-12.23	200	155	Peak



DC

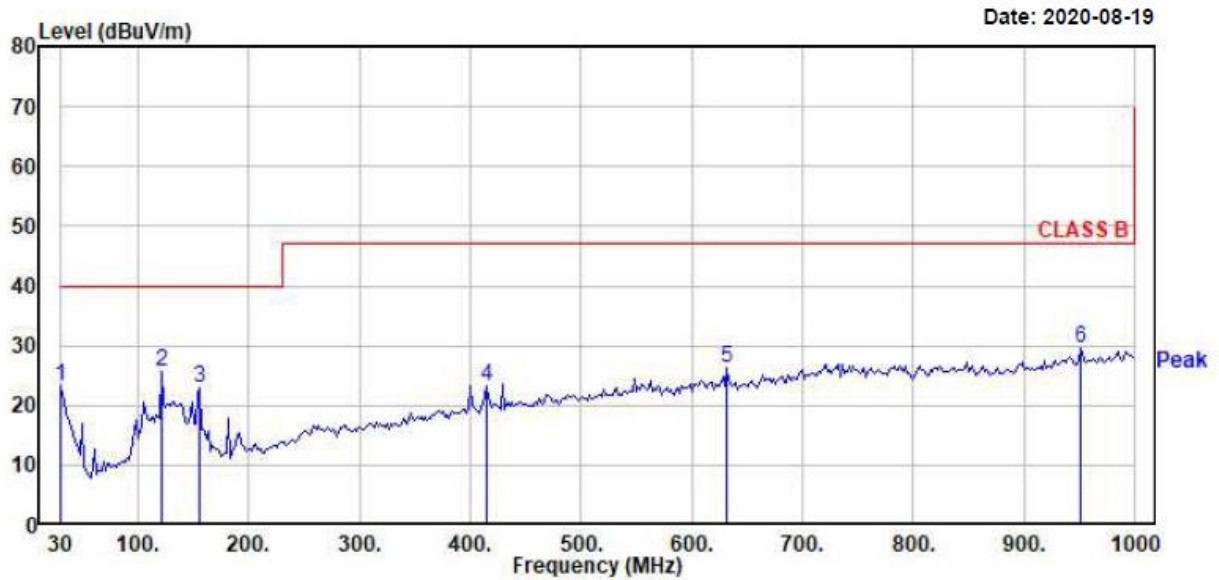
Polarization: Horizontal



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	30.000	26.93	-4.82	22.11	40.00	-17.89	100	324	Peak
2	125.060	33.66	-11.65	22.01	40.00	-17.99	100	236	Peak
3	295.780	28.74	-10.50	18.24	47.00	-28.76	100	60	Peak
4	377.260	29.13	-8.19	20.94	47.00	-26.06	100	187	Peak
5	429.640	29.46	-7.05	22.41	47.00	-24.59	200	200	Peak
6	747.800	30.99	-1.26	29.73	47.00	-17.27	100	53	Peak



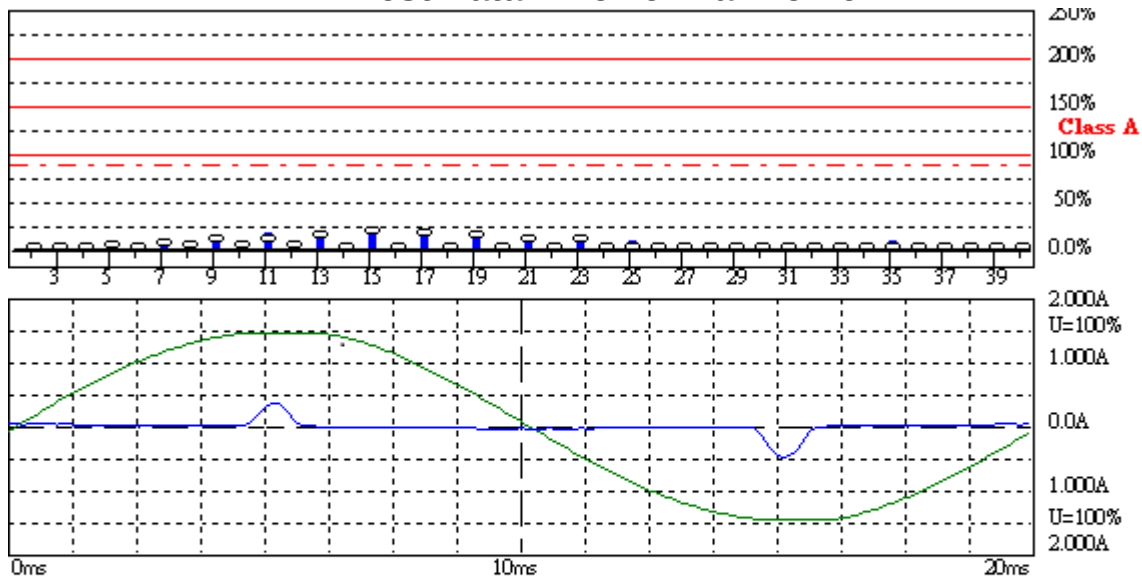
Polarization: Vertical



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	APos	TPos	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	cm	deg	
1	30.000	28.01	-4.82	23.19	40.00	-16.81	200	198	Peak
2	121.180	37.56	-11.94	25.62	40.00	-14.38	100	205	Peak
3	156.100	35.56	-12.71	22.85	40.00	-17.15	100	226	Peak
4	414.120	30.34	-6.99	23.35	47.00	-23.65	100	226	Peak
5	631.400	29.60	-3.27	26.33	47.00	-20.67	100	219	Peak
6	951.500	27.81	1.65	29.46	47.00	-17.54	200	41	Peak



Test Data – Power Harmonic



Harmonic Emission - IEC 61000-3-2, EN 61000-3-2, (EN60555-2)

U_{rms} = 231.3 V P = 1.423 W THD = 0.091 A Range: 2 A
I_{rms} = 0.028 A pf = 0.217 V_{nom}: 230 V
TestTime: 5 min (100%)

24

Test completed, Result: PASSED

Anna

HAR-1000 EMC-Porter

WH Technology Corp.

Date : 2020/8/26 PM 02:21: V4.22

EUT : 20081704
Temperature : 24
Humidity : 49
Tester : Anna

Urms = 231.3V Freq = 49.922 Range: 2 A
Irms = 0.027A Ipk = 0.115A cf = 4.103
P = 1.423W S = 6.54VA pf = 0.217
THDi = 193 % THDu = 1.60 % Class A

Test - Time : 5min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Imax [A]	Limit [A]	Status	Vrms [V]	Limit [V]
1	50	0.0526	0.0776			230.23	0.0000
2	100	0.0080	0.0099	1.0800		0.5154	0.4663
3	150	0.0463	0.0699	2.3000		2.9451	2.0615
4	200	0.0079	0.0098	0.4300		0.2454	0.4663
5	250	0.0441	0.0662	1.1400		1.5952	0.9081
6	300	0.0075	0.0092	0.3000		0.0982	0.4663
7	350	0.0407	0.0608	0.7700		1.0062	0.6872
8	400	0.0070	0.0087	0.2300		0.1473	0.4663
9	450	0.0371	0.0547	0.4000		0.7117	0.4663
10	500	0.0060	0.0076	0.1840		0.1227	0.4663
11	550	0.0328	0.0476	0.3300		0.5154	0.2209
12	600	0.0054	0.0068	0.1533		0.0245	0.2209



13	650	0.0286	0.0404	0.2100	0.2700	0.2209
14	700	0.0000	0.0057	0.1314	0.0736	0.2209
15	750	0.0239	0.0328	0.1500	0.1718	0.2209
16	800	0.0000	0.0050	0.1150	0.0245	0.2209
17	850	0.0195	0.0256	0.1324	0.0245	0.2209
18	900	0.0000	0.0042	0.1022	0.0245	0.2209
19	950	0.0151	0.0188	0.1184	0.0736	0.2209
20	1000	0.0000	0.0035	0.0920	0.0245	0.2209
21	1050	0.0111	0.0126	0.1071	0.0491	0.2209
22	1100	0.0000	0.0029	0.0836	0.0000	0.2209
23	1150	0.0075	0.0079	0.0978	0.0245	0.2209
24	1200	0.0000	0.0026	0.0767	0.0736	0.2209
25	1250	0.0016	0.0054	0.0900	0.0491	0.2209
26	1300	0.0000	0.0022	0.0708	0.0491	0.2209
27	1350	0.0000	0.0031	0.0833	0.0491	0.2209
28	1400	0.0000	0.0023	0.0657	0.0491	0.2209
29	1450	0.0000	0.0020	0.0776	0.0736	0.2209
30	1500	0.0000	0.0017	0.0613	0.0245	0.2209
31	1550	0.0000	0.0034	0.0726	0.0000	0.2209
32	1600	0.0000	0.0015	0.0575	0.0000	0.2209
33	1650	0.0000	0.0038	0.0682	0.0491	0.2209
34	1700	0.0000	0.0012	0.0541	0.0245	0.2209
35	1750	0.0000	0.0039	0.0643	0.0245	0.2209
36	1800	0.0000	0.0010	0.0511	0.0245	0.2209
37	1850	0.0000	0.0033	0.0608	0.0000	0.2209
38	1900	0.0000	0.0007	0.0484	0.0245	0.2209
39	1950	0.0000	0.0026	0.0577	0.0245	0.2209
40	2000	0.0000	0.0005	0.0460	0.0245	0.2209

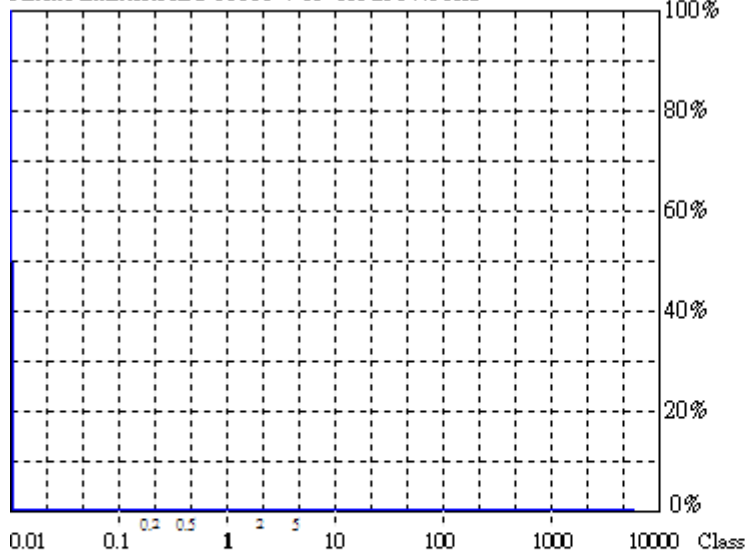
Important:

- without Interharmonics
- 100% of time voltage "out of Spec"



Test Data – Voltage Fluctuations

Flicker Emission IEC 61000-4-15 for 230V/50Hz



Actual Flicker (Fli): 0.00
Short-term Flicker (Pst): 0.07
 Limit (Pst): 1.00
Long-term Flicker (Plt): 0.07
 Limit (Plt): 0.65
Maximum Relative Volt. Change (dmax): 0.00%
 Limit (dmax): 4.00%
Relative Steady-state Voltage Change (dc): 0.02%
 Limit (dc): 3.30%
Tmax 3.30% (dt): 0.00ms
 Limit (dt>Lim): 500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3

Urms = 231.3 V P = 1.423 W
 Irms = 0.028 A pf = 0.217

Range: 2 A
 V-nom: 230 V
 TestTime: 10 min (100%)

24

Test completed, Result: PASSED

Anna

HAR-1000 EMC-Portap

WH Technology Corp.

Date : 2020/8/26 PM 02:34: V4.22

EUT : 20081704
 Temperature : 24
 Humidity : 49
 Tester : Anna

Urms = 231.3V Freq = 49.909 Range: 2 A
 Irms = 0.028A Ipk = 0.116A cf = 4.103
 P = 1.423W S = 6.550VA pf = 0.217

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : L: 0.24ohm +j0.15ohm N: 0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
 dmax : 4.00 % dc : 3.30 %
 dtLim: 3.30 % dt>Lim: 500ms

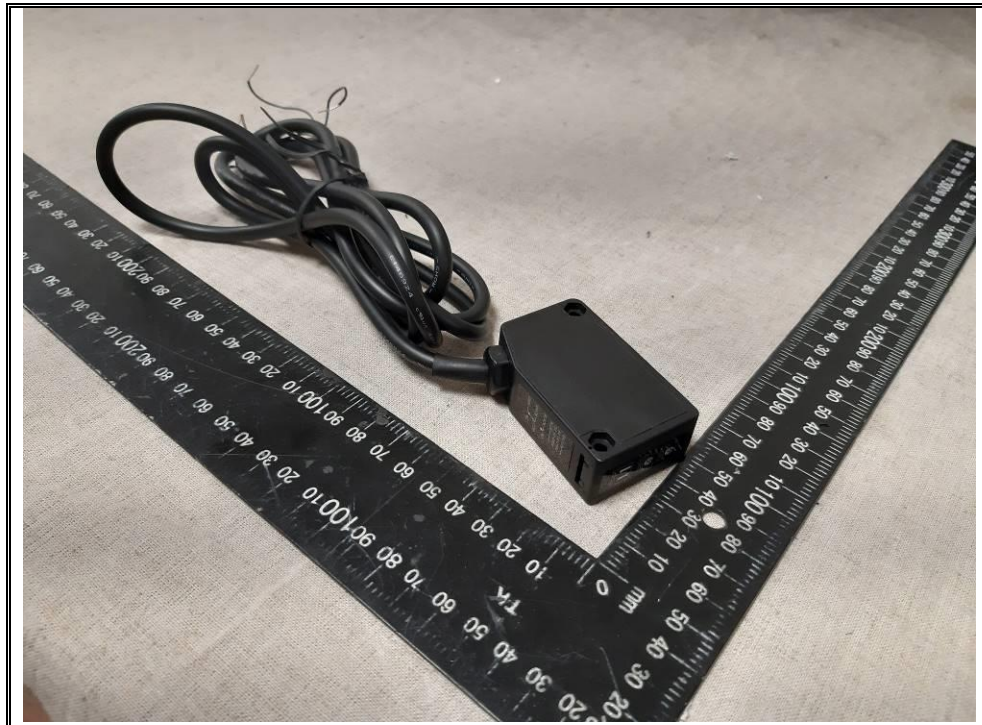
Test completed, Result: PASSED

Plt = 0.072

	Pst	dmax	dc	dt>Lim
		[%]	[%]	[ms]
1	0.072	0.000	0.020	0.000



PHOTS OF EUT



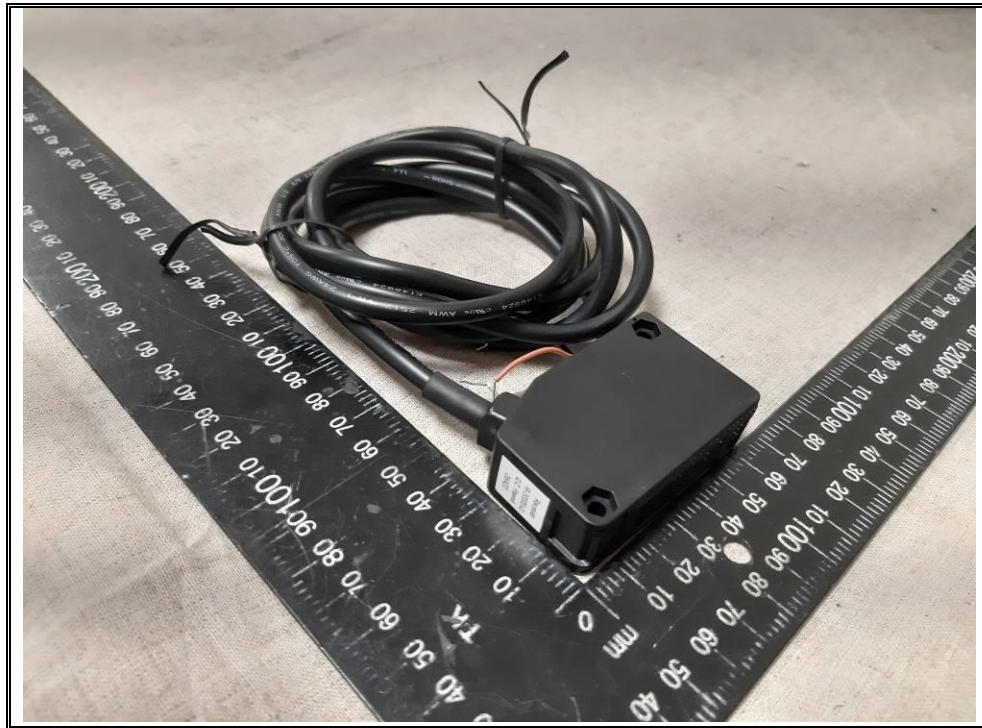


Transmitter





Receiver





IE-3000ExD

