



# TEST REPORT

**Reference No.**..... : DER0954230463104

**Applicant**..... : Shenzhen Shiji Lighting Co.,Ltd.

**Address**..... : 3F, Building A, Chuangfu Science and Technology Park,202  
Shihuan Road, Shiyan Street, Baoan District, Shenzhen,  
Guangdong, China

**Manufacturer**..... : Shenzhen Shiji Lighting Co.,Ltd.

**Address**..... : 3F, Building A, Chuangfu Science and Technology Park,202  
Shihuan Road, Shiyan Street, Baoan District, Shenzhen,  
Guangdong, China

**Product Name**..... : Led strip

**Model No**..... : See model list on page 11

**Test Model No**..... : SJ-100144-2811

**Test specification**..... : EN IEC 55015:2019+A11:2020,  
EN IEC 61547:2020,  
EN IEC 61000-3-2:2019+A1:2021,  
EN 61000-3-3:2013+A2:2021+AC:2022+AC:2022

**Date of Receipt sample** : August 21, 2023

**Date of Test**..... : August 21, 2023 to August 22, 2023

**Date of Issue**..... : August 23, 2023

**Test Result**..... : **Pass**

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

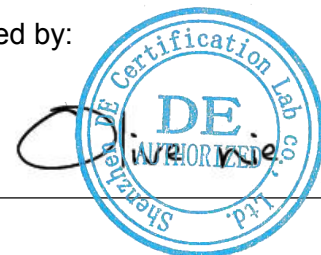
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## 1- GENERAL INFORMATION

### 1.1 Product Description for Equipment under Test (EUT)

#### Client Information

Applicant:	Shenzhen Shiji Lighting Co.,Ltd.
Address of applicant:	3F, Building A, Chuangfu Science and Technology Park,202 Shihuan Road, Shiyuan Street, Baoan District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen Shiji Lighting Co.,Ltd.
Address of Manufacturer:	3F, Building A, Chuangfu Science and Technology Park,202 Shihuan Road, Shiyuan Street, Baoan District, Shenzhen, Guangdong, China

#### General Description of E.U.T

EUT Name:	Led strip
Trade Mark:	N/A
Test Model No.:	SJ-100144-2811
Operating Mode.:	Mode1: Power on
Power Supply:	Input: DC 5V/12V/24V

Remark: \* The test data gathered are from the production sample provided by the manufacturer.



## 1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

EN IEC 55015:2019+A11:2020

EN IEC 61547: 2020

EN IEC 61000-3-2:2019+A1:2021

EN 61000-3-3:2013+A2:2021+AC:2022

Reference Standards:

EN 61000-4-2: 2009

EN 61000-4-3: 2006+A2:2010

EN 61000-4-4: 2012

EN 61000-4-5:2014+A1:2017

EN 61000-4-6: 2014+AC:2015

EN 61000-4-8: 2010

EN 61000-4-11:2004+A1:2017

The objective of the manufacturer is to demonstrate compliance with the described standards above.

## 1.3 Test Summary

Table 1:

Standard	Test Items	Status
EN IEC 55015:2019+A11:2020	Disturbance Voltage at Mains Terminals (9KHz to 30MHz)	<input type="checkbox"/>
	Radiated Electromagnetic Disturbance (9KHz to 30MHz)	<input checked="" type="checkbox"/>
	Radiated Disturbances (30MHz to 1000MHz)	<input checked="" type="checkbox"/>

Table 2:

Standard	Test Items	Status
EN IEC 61000-3-2:2019+A1:2021	Harmonic Current Test	<input type="checkbox"/>
EN 61000-3-3:2013+A2:2021+AC:2022	Voltage Fluctuations and Flicker Test	<input type="checkbox"/>

Table 3:

Standard	Test Items	Status
EN IEC 61547: 2020	Test items as below listed	<input checked="" type="checkbox"/>
EN 61000-4-2:2009	Electrostatic discharge Immunity	<input checked="" type="checkbox"/>
EN 61000-4-3:2006+A2:2010*	Radiated Susceptibility (80MHz to 1GHz)	<input checked="" type="checkbox"/>
EN 61000-4-4:2012	Electrical Fast Transient/Burst Immunity	<input type="checkbox"/>
EN 61000-4-5:2014+A1:2017	Surge Immunity	<input type="checkbox"/>



EN 61000-4-6:2014+AC:2015	Conducted Susceptibility (150kHz to 80MHz)	<input type="checkbox"/>
EN 61000-4-8:2010	Power Frequency Magnetic Field Immunity (50/60Hz)	<input type="checkbox"/>
EN 61000-4-11:2004+A1:2017	Voltage Dips, Short Interruptions Immunity	<input type="checkbox"/>

Note:  Indicates that the test is applicable,  Indicates that the test is not applicable

### 1.4 Test Facility

Other measurement required was performed at Address: Room 202, Building 3, Xin Nan Tian Industrial Area, No.106, Dan Zi Road, Lao Keng Community, Long Tian Street, Ping Shan District, Shenzhen



## 1.5 FACILITIES AND ACCREDITATIONS

### TEST FACILITY

The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

### TEST EQUIPMENT LIST

#### Instrumentation:

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

#### DISTURBANCE VOLTAGE AT MAINS TERMINALS

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-052	EMI Receiver	R&S	ESP17	101404	2022.12.08	1 year
DE-EMC-009	LISN	R&S	ENV216	151028	2023.08.10	1 year
DE-EMC-024	LISN (three phase)	EM Test	/	13835240	2023.08.10	1 year
DE-EMC-F06	Voltage probe	Schwarzbeck	TK9420	TK9420-718	2023.08.10	1 year
DE-EMC-044	Impedance stabilization network	/	CAT58158	#298	2022.10.22	1 year

#### RADIATED DISTURBANCES

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-017	Receiver	R&S	ESP17	101404	2023.08.10	1 year
DE-EMC-019	broadband Antenna	Schwarzbeck	VULB 9168	9120D-1590	2022.10.08	1 year
DE-EMC-020	Pre-amplifier	SKET	LAPA_01G18 G-45dB	1600019	2023.08.10	1years
DE-EMC-021	Pre-amplifier (Low Freq)	SKET	LAPA_30M01 G-30dB	SK202108 2002	2023.08.10	1years



## Radiated electromagnetic (3-Loop)

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-052	EMI Receiver	R&S	ESP17	101404	2022.12.08	1 year
DE-EMC-022	Loop antenna	R&S	HM020	4023.4508.0 2	2023.08.10	1 year

## HARMONIC CURRENT TEST

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-015	Harmonic analyzer	DCUU	DC6100	D22030100 1	2023.07.06	1 year
DE-EMC-001	Programmable power supply	MTONI	HPF5010	1629A0259 8	2023.08.10	1 year

## VOLTAGE FLUCTUATIONS AND FLICKER TEST

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-015	Harmonic analyzer	DCUU	DC6100	D22030100 1	2023.07.06	1 year
DE-EMC-001	Programmable power supply	MTONI	HPF5010	1629A0259 8	2023.08.10	1 year

## Electrostatic Discharge Immunity Test

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-025	ESD generator	HTEC	HESD 16	0220S20955	2022.11.23	1 year





No.	Equipment	Manufacturer	Model No.	S/N	Due Date
1	Signal Generator	ROHDE&SCHWARZ	SMB 100A	A141002004	2024-06-26
2	Amplifier	AR	150W1000A	A0804545	2024-06-26
3	Antenna	AR	HL562	A0304224	2024-06-26
4	5m Chamber	Albatross	SAC-5MAC(EMC12.8*6.8*6.4m)	A0304210	2024-06-26

Radiated Susceptibility (80MHz to 1GHz)

Electrical Fast Transient/Burst Immunity Test

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-026	Transient Comprehensive Test Instrument(EFT&Surge&Dips )	HTEC	HCOMPACT 7	195001	2023.08.10	1 year
DE-EMC-051	Capacitive coupling cNightlight LED Slim Panel Light	HTEC	H3C	222703	2022.12.08	1 year

Surge Immunity Test

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-026	Transient Comprehensive Test Instrument(EFT&Surge&Dips )	HTEC	HCOMPACT 7	195001	2023.08.10	1 year

Conducted Susceptibility Test

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-018	Conduction generator	PRM	CRF61006A-PC	PR220881093	2022.09.22	1 year
DE-EMC-013	M3 network	PRM	CRF-CDN-M316	PR220881094	2022.09.22	1 year



DE-EMC-012	Attenuator	PRM	TZA-50-6-3-N	20221019	2022.10.24	1 year
DE-EMC-053	Electromagnetic injection Nightlight LED Slim Panel Light	PRM	PEGL-100	PR220281065	2022.9.22	1 year
DE-EMC-054	Attenuator	PRM	WDTS100-6-4-B	220726223	2022.10.24	1 year

#### Power Frequency Magnetic Field Immunity Tests

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC29	Magnetic field generator	HTEC	HMFG 100	214505	2023.08.10	1 year

#### Voltage Dips, Short Interruptions Immunity Tests

Equipment No	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
DE-EMC-026	Transient Comprehensive Test Instrument(EFT&Surge&Dips )	HTEC	HCOMPACT 7	195001	2023.08.10	1 year
DE-EMC-028	Program controlled AC fault power supply	SKET	HV1P16T	195002	2023.08.10	1 year



### Model list

Model	Input voltage	Input power
SJ-10030/60/72/144-2812	5V	6w/12w/14.4w/28.8w
SJ-10030/60/72/144-2813	5V	6w/12w/14.4w/28.8w
SJ-10030/60/72/144-2815	12V	6w/12w/14.4w/28.8w
SJ-10030/60/72/144-8208	12V	6w/12w/14.4w/28.8w
SJ-10030/60/72/144-9822	5V	9w/18w/21.6w/43.2w
SJ-10030/60/72/144-102C	5V	9w/18w/21.6w/43.2w
SJ-10030/60/72/144-107S	5V	9w/18w/21.6w/43.2w
SJ-10030/60/72/144-6812	5V	6w/12w/14.4w/28.8w
SJ-10030/60/72-2811	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-1903	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-2903	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-2904	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-8903	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-8904	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-2818	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-1934	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-16703	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/72-DMX512	12V/24V	7.2w/14.4w/17.28w
SJ-10030/60/90/120/144-4020	5V	6w/12w/18w/24w/28.8w
SJ-10030/60/90/120/144-2427	5V	6w/12w/18w/24w/28.8w
SJ-10030/60/90/120/144-3535	5V	6w/12w/18w/24w/28.8w
SJ-100120/180/240-1903	12V/24V	28.8w/43.2w/57.6w
SJ-100120/180/240-2904	12V/24V	38.4w/57.6w/76.8w
SJ-100120/180/240-DMX512	12V/24V	38.4w/57.6w/76.8w
SJ-100200-2020	5V	60w
SJ-10032/48-2801/2811/1903	5V	9.6w/14.4w
SJ-10084-IC	12V/24V	20w/m
SJ-10096-IC	12V/24V	23w/m
SJ-10030/60/120-5050	12V/24V	7.2w/14.4w/28.8w
SJ-10030/60/120-2835-RGB-RGBW	12V/24V	7.2w/14.4w/28.8w
SJ-NHD-5V/12V/24V	5V/12V/24V	--
SJ-8X8	5V	12.8w
SJ-16X16	5V	51.2w
SJ-8X32	5V	51.2w
SJ-A4040-1212	5V	28.8w
SJ-10060/120-D40	12V/24V	14.4w/28.8w
SJ-10060/120-D20	12V/24V	14.4w/28.8w
SJ-10064-DMX /SPI	12V/24V	23.04w
SJ-100180/360A/B	12v/24v	43w/86w
SJ-10024-48W-DMX/SPI	12V/24V	48w
SJ-10036-36W-DMX/SPI	12V/24V	36w
SJ-10048-12W/24W	12V/24V	12W/24W
SJ-A10048IC	12V/24V	11.52w
SJ-A10060IC	12V/24V	14.4w
SJ-10W-RGBW-DMX/SPI	AC220V	10w
Remark: All models have the same mechanical constructure, the model uses SJ-1006-2811 isselected to perform the tests		

## 2- SYSTEM TEST CONFIGURATION

### 2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### 2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

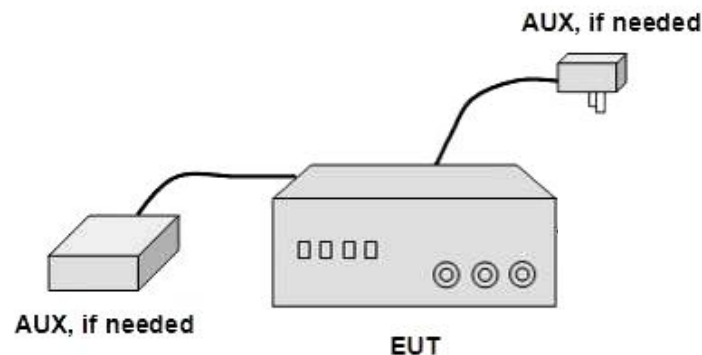
### 2.3 Equipment Modifications

The EUT tested was not modified by DE.

### 2.4 Basic Configuration of Test System

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.





### 2.5 General Description of Test Auxiliary

<b>EUT Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

<b>Special Cable List and Details</b>			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

<b>Auxiliary Equipment List and Details</b>			
Description	Manufacturer	Model	Serial Number
/	/	/	/
/	/	/	/

### 3- DISTURBANCE VOLTAGE AT MAINS TERMINALS

#### 3.1 Measurement Uncertainty

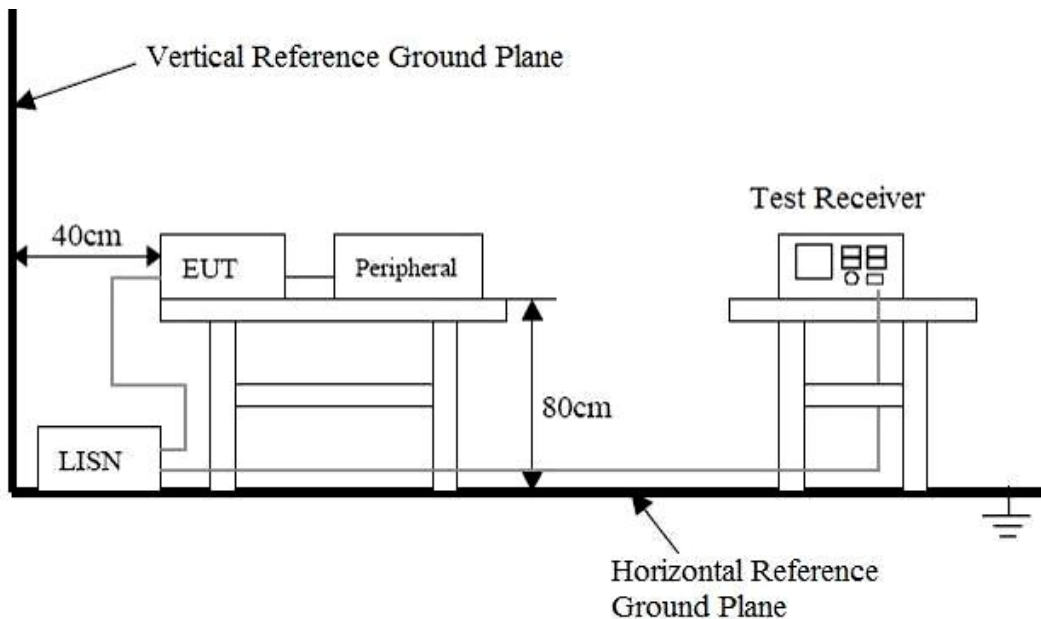
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN. The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 3.38\text{dB}$ .

#### 3.2 Limit of Disturbance Voltage at Mains Terminals

Frequency Range	Equipment Limits	
	Quasi-Peak (dBuV)	Average (dBuV)
9kHz ~ 50kHz	110	-----
50kHz ~ 150kHz	90 ~ 80*	-----
150kHz ~ 0.5MHz	66 ~ 56*	56~46
0.5MHz ~ 2.51MHz	56	46
2.51MHz ~ 3.0MHz	73	63
3.0MHz ~ 5.0MHz	56	46
5.0MHz ~ 30MHz	60	50

NOTE 1: The tighter limit shall apply at the edge between two frequency bands.  
 NOTE 2: The limits decrease linearly with the logarithm of the frequency in the range 50kHz to 150 kHz and 150 kHz to 0.5 MHz.

#### 3.3 EUT Setup





The setup of EUT is according with CISPR 16-1-1: 2019, CISPR 16-2-3: 2016+A1:2019 measurement procedure. The specification used was the EN 55015 limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

### 3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....9 kHz to 30 MHz  
Detector.....Peak & Quasi-Peak & Average  
Sweep Speed.....Auto  
IF Band Width.....9 kHz

### 3.5 Test Procedure

1. During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.
3. All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB $\mu$ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".



### 3.6 Test Data

Temperature:	23.6( °C )
Humidity:	55 ( %RH )
Atmospheric pressure :	101 (kPa)
Operating Mode:	/
Test Result:	N/A



## 4- RADIATED ELECTROMEGNETIC DISTURBANCE

### 4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN. The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 2.5\text{dB}$

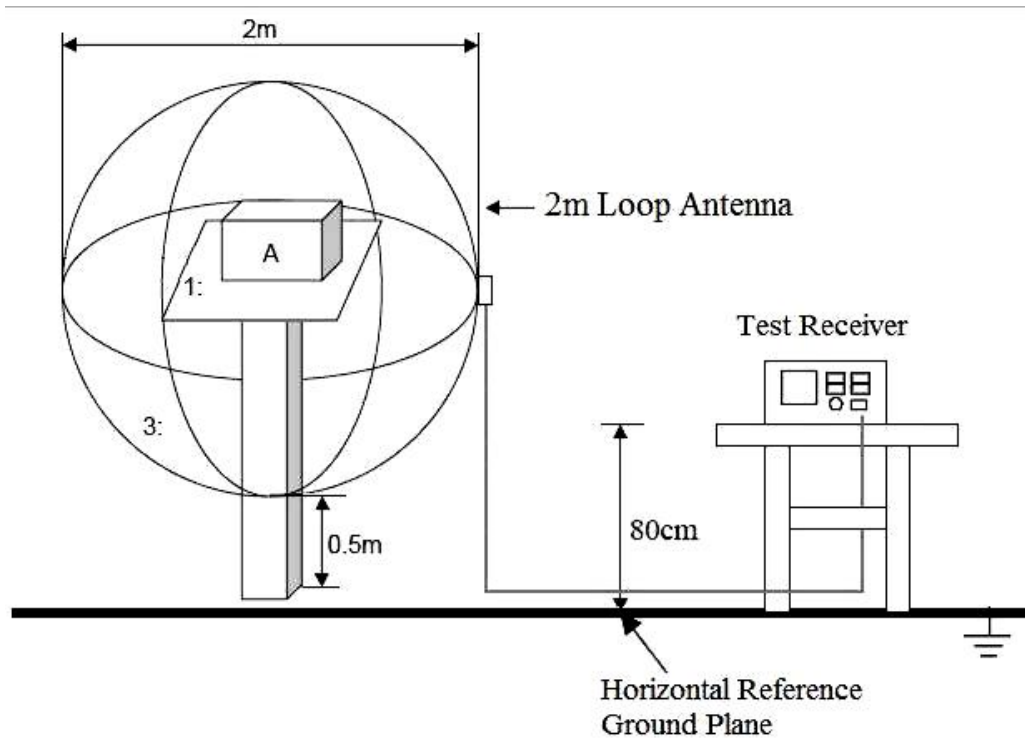
### 4.2 Limit of Radiated Electromagnetic Disturbance

Frequency Range	Limits Frequency for loop diameter (dB $\mu$ A)	
	2m	
9kHz ~ 70kHz	88	
70kHz ~ 150kHz	88 ~ 58*	
150kHz ~ 2.2MHz	58 ~ 26*	
2.2MHz ~ 3.0MHz	58	
3.0MHz ~ 30MHz	22	

NOTE 1: The tighter limit shall apply at the edge between two frequency bands.

NOTE 2: Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

### 4.3 EUT Setup





#### 4.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....9 kHz to 30 MHz  
Detector.....Peak & Quasi-Peak & Average  
Sweep Speed.....Auto  
IF Band Width.....9 kHz

#### 4.5 Test Procedure

1. The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver. Three field components are checked by means of a coaxial switch.
2. The frequency range from 9 kHz to 30MHz is investigated. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.
3. All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB $\mu$ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

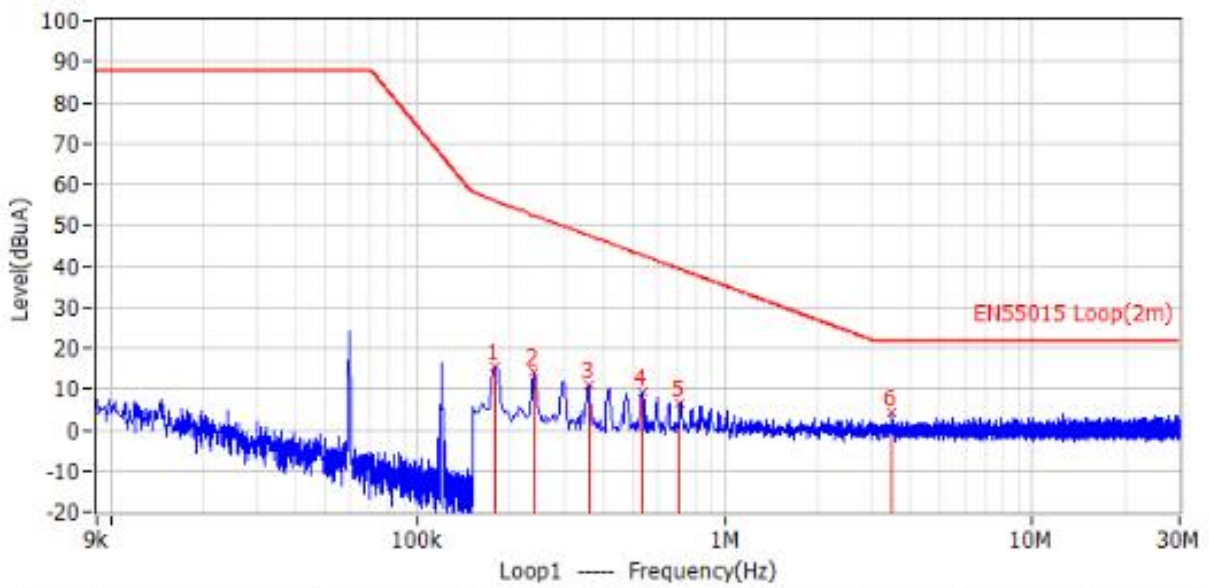
#### 4.6 Test Data

Temperature:	23.6( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Test Result:	Pass



**Magnetic Field Emission Test Data**

EUT:	Led strip
M/N:	SJ-100144-2811
Operating Mode:	Maximum Power
Test Site:	3m CHAMBER
Operator:	INA
Test Voltage:	DC 24V
Comment:	Polarization: X

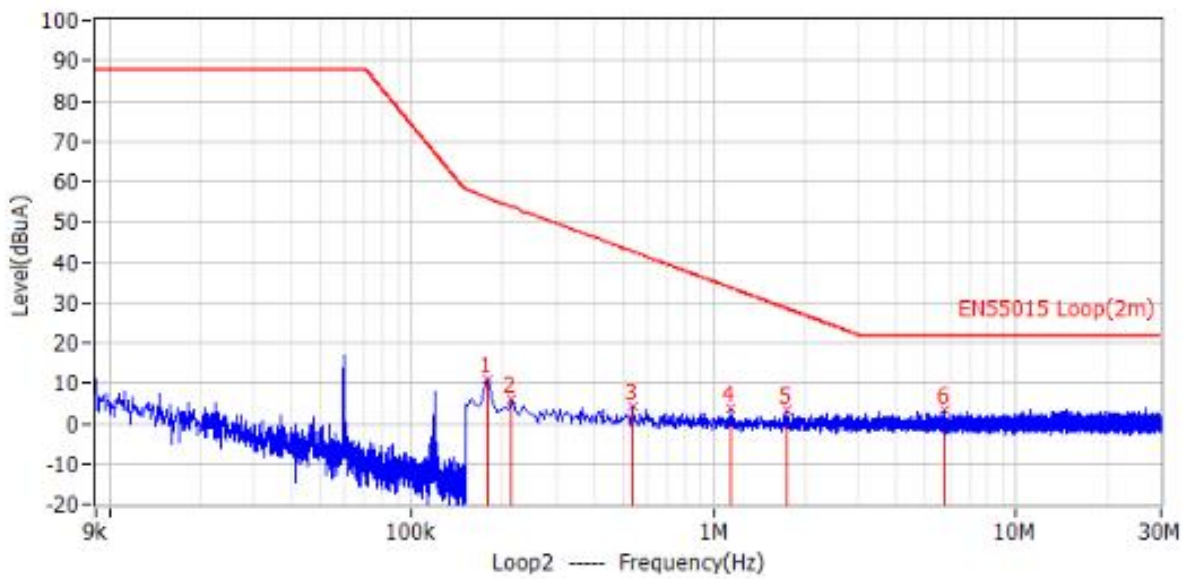


No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	178.000kHz	55.9	15.5	-40.5	15.5	0.0	OP	Loop1
2*	238.000kHz	52.5	14.0	-38.4	14.0	0.0	OP	Loop1
3*	358.000kHz	47.5	11.1	-36.5	11.1	0.0	OP	Loop1
4*	538.000kHz	42.7	9.2	-33.5	9.2	0.0	OP	Loop1
5*	710.000kHz	39.3	6.6	-32.7	6.6	0.0	OP	Loop1
6*	3.498MHz	22.0	4.4	-17.6	4.4	0.0	OP	Loop1



**Magnetic Field Emission Test Data**

EUT:	Led strip
M/N:	SJ-100144-2811
Operating Mode:	Maximum Power
Test Site:	3m CHAMBER
Operator:	INA
Test Voltage:	DC 24V
Comment:	Polarization: Y

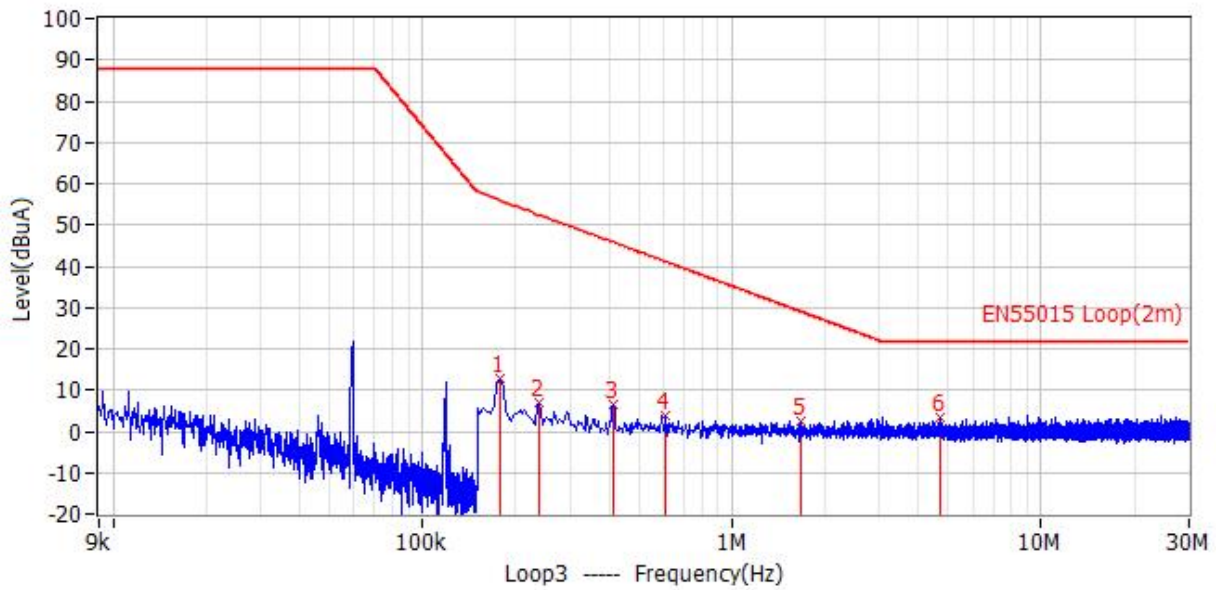


No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar.
1*	178.000kHz	55.9	10.9	-45.0	10.9	0.0	QP	Loop2
2*	214.000kHz	53.7	5.9	-47.9	5.9	0.0	QP	Loop2
3*	538.000kHz	42.7	4.4	-38.3	4.4	0.0	QP	Loop2
4*	1.130MHz	33.7	3.6	-30.1	3.6	0.0	QP	Loop2
5*	1.742MHz	28.5	3.2	-25.3	3.2	0.0	QP	Loop2
6*	5.790MHz	22.0	3.2	-18.8	3.2	0.0	QP	Loop2



**Magnetic Field Emission Test Data**

EUT:	Led strip
M/N:	SJ-100144-2811
Operating Mode:	Maximum Power
Test Site:	3m CHAMBER
Operator:	INA
Test Voltage:	DC 24V
Comment:	Polarization: Z



No.	Frequency	Limit dBuA	Level dBuA	Delta dB	Reading dBuV	Factor dB	Detector	Polar
1*	178.000kHz	55.9	13.0	-42.9	13.0	0.0	QP	Loop3
2*	238.000kHz	52.5	7.1	-45.3	7.1	0.0	QP	Loop3
3*	414.000kHz	45.8	6.3	-39.5	6.3	0.0	QP	Loop3
4*	610.000kHz	41.1	4.0	-37.2	4.0	0.0	QP	Loop3
5*	1.670MHz	29.0	2.4	-26.6	2.4	0.0	QP	Loop3
6*	4.726MHz	22.0	3.5	-18.5	3.5	0.0	QP	Loop3

## 5- RADIATED DISTURBANCES

### 5.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is  $\pm 4.26$  dB.

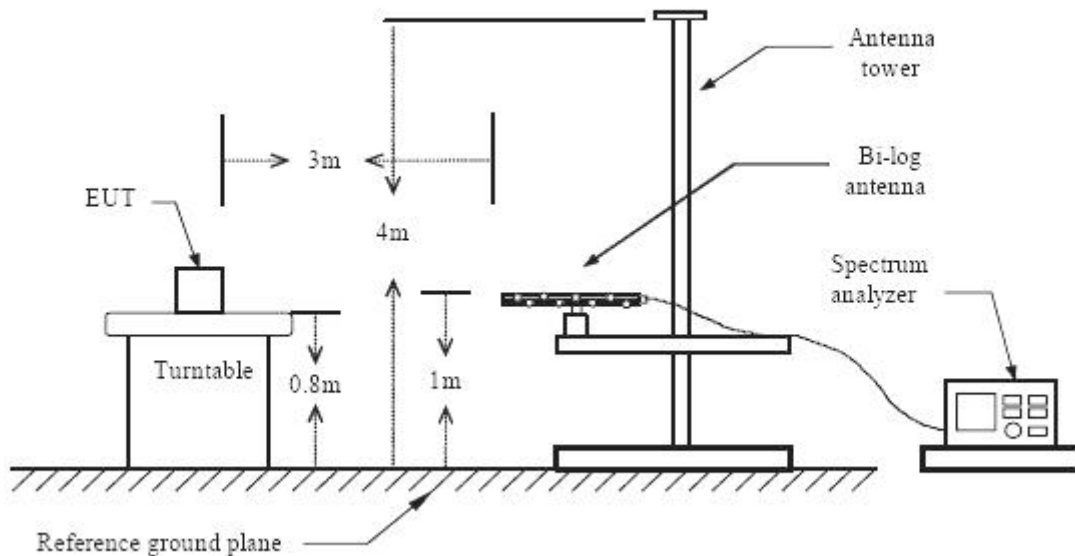
### 5.2 Limit of Radiated Disturbances

Equipment Limits		
Frequency (MHz)	Distance (Meters)	Quasi-Peak (dB $\mu$ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

**NOTE 1** The lower limit shall apply at the transition frequency.  
**NOTE 2** Additional provisions may be required for cases where interference occurs.

### 5.3 EUT Setup

Below 1 GHz



The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1-1: 2019, CISPR 16-2-3: 2016+A1:2019. The specification used was EN 55015 limits.



The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

**5.4 Test Receiver Setup**

The test receiver was set with the following configurations:

Test Receiver Setting:

Detector.....Peak & Quasi-Peak  
IF Band Width.....120KHz  
Frequency Range.....30MHz to 1000MHz  
Turntable Rotated.....0 to 360 degrees

Antenna Position:

Height.....1m to 4m  
Polarity.....Horizonta and Vertical

**5.5 Test Procedure**

1. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.
2. All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dB $\mu$ V of specification limits), and are distinguished with a "QP" in the data table.

**5.6 Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB $\mu$ V means the emission is 7dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Limit – Corr. Ampl.



### 5.7 Test Data

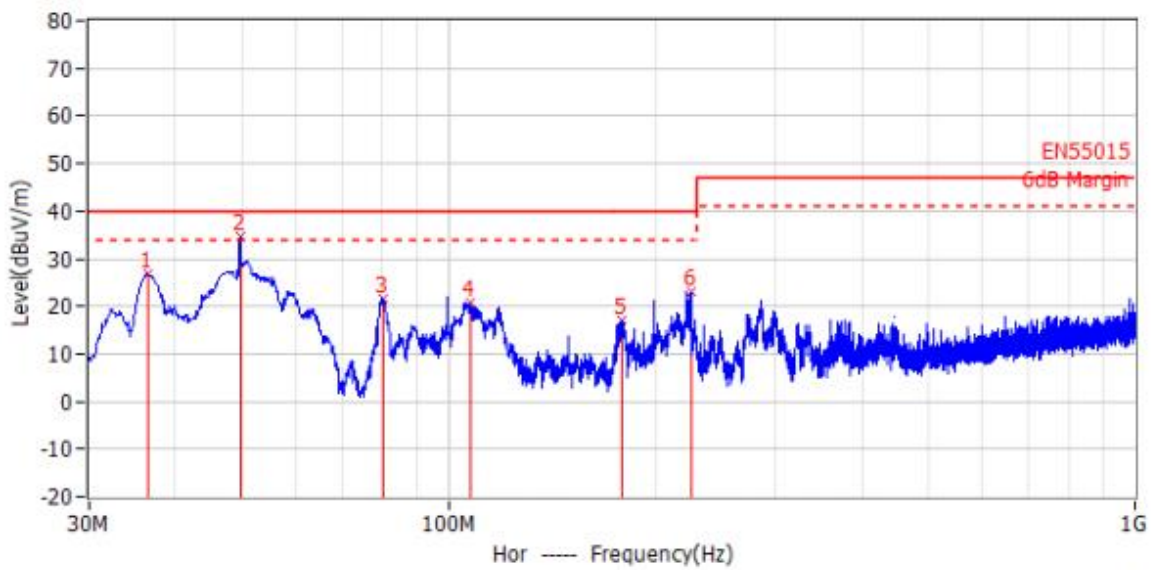
Temperature:	23.6( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Test Result:	Pass





**Radiated Emission Test Data**

EUT:	Led strip
M/N:	SJ-100144-2811
Operating Mode:	Maximum Power
Test Site:	3m CHAMBER
Operator:	INA
Test Voltage:	DC 24V
Comment:	Polarization: Horizontal

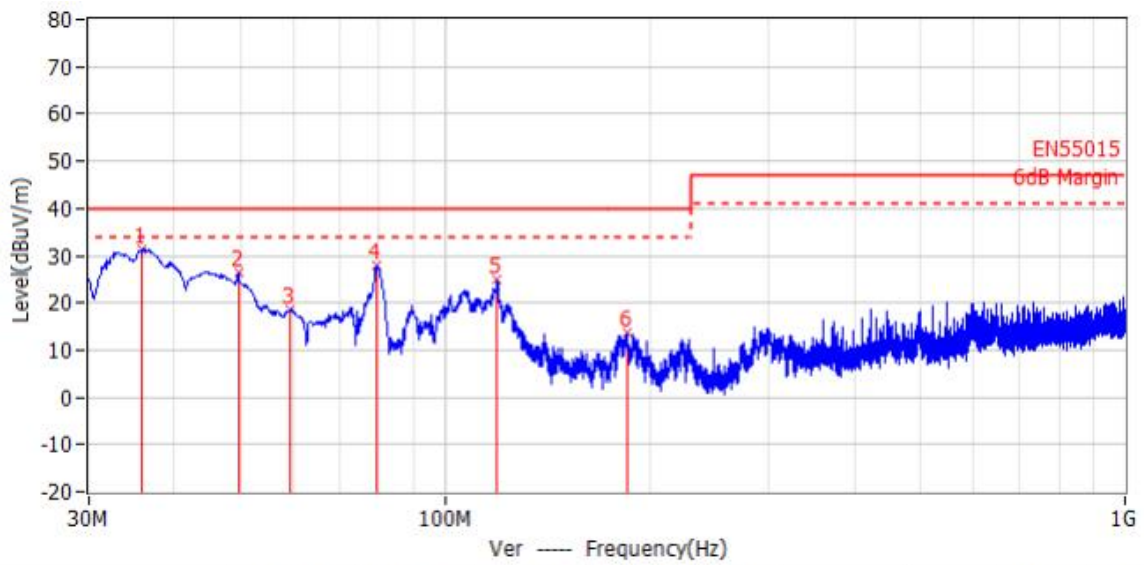


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	36.548MHz	40.0	27.0	-13.0	45.7	-18.7	QP	Hor	100.0	0.0
2*	49.764MHz	40.0	34.8	-5.2	53.5	-18.7	QP	Hor	100.0	0.0
3*	80.198MHz	40.0	21.7	-18.3	44.5	-22.8	QP	Hor	100.0	0.0
4*	107.479MHz	40.0	21.0	-19.0	42.1	-21.1	QP	Hor	100.0	0.0
5*	179.016MHz	40.0	17.0	-23.0	36.7	-19.7	QP	Hor	100.0	0.0
6*	225.334MHz	40.0	23.1	-16.9	43.3	-20.2	QP	Hor	100.0	0.0



**Radiated Emission Test Data**

EUT:	Led strip
M/N:	SJ-100144-2811
Operating Mode:	Maximum Power
Test Site:	3m CHAMBER
Operator:	INA
Test Voltage:	DC 24V
Comment:	Polarization: Vertical



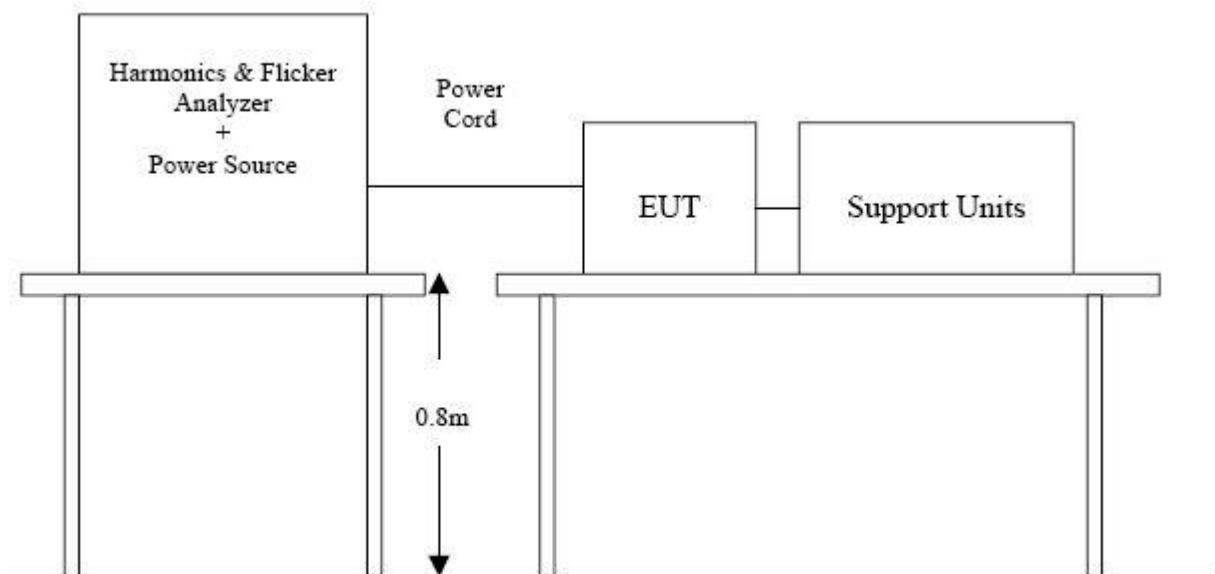
No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	35.820MHz	40.0	31.2	-8.8	50.0	-18.8	QP	Ver	100.0	0.0
2*	49.764MHz	40.0	26.6	-13.4	45.3	-18.7	QP	Ver	100.0	0.0
3*	59.100MHz	40.0	18.5	-21.5	37.9	-19.4	QP	Ver	100.0	0.0
4*	79.470MHz	40.0	28.1	-11.9	50.8	-22.7	QP	Ver	100.0	0.0
5*	119.119MHz	40.0	24.8	-15.2	44.5	-19.7	QP	Ver	100.0	0.0
6*	185.079MHz	40.0	13.8	-26.2	34.3	-20.5	QP	Ver	100.0	0.0

## 6– HARMONIC CURRENT TEST

### 6.1 Application of Harmonic Current Emission

Compliance to these standards ensures that tested equipment will not generate harmonic currents at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

### 6.2 Block Diagram of Test Setup:



### 6.3 Test Procedure:

1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
2. 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.



## 6.4 Test Result

Basic Standard:	EN IEC 61000-3-2:2019+A1:2021
Observation time	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2000)
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	/
Operator:	/
Test Result:	N/A
Note:	The input power of the EUT is less than 5W, then this EUT could be deemed to comply with the requirements of EN IEC 61000-3-2:2019+A1:2021 without test.

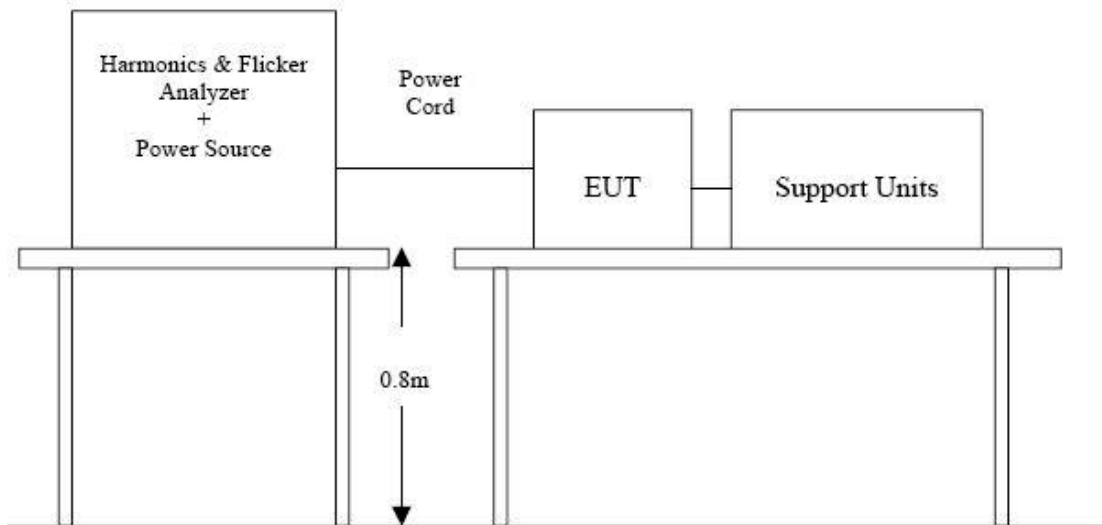
## 7 – VOLTAGE FLUCTUATIONS AND FLICKER TEST

### 7.1 Application and Limit of Voltage Fluctuations and Flicker Test

Compliance to these standards ensures that tested equipment will not generate flickers and voltage change at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

Test Item	Limit	Remark
Pst	1.0	Pst means short-term flicker indicator.
Plt	0.65	Plt means long-term flicker indicator.
Tdt (ms)	500	Tdt means maximum time that dt exceeds 3 %.
dmax (%)	4%	dmax means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

### 7.2 Block Diagram of Test Setup:



### 7.3 Test Procedure:

1. 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 operating conditions.
2. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.



## 7.4 Test Result

Basic Standard:	EN 61000-3-3:2013+A2:2021+AC:2022
Short time (Pst)	10 min
Observation time	10 min (1 Flicker measurement)
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa )
Operating Mode:	/
Operator:	/
Test Result:	N/A

Maximum Flicker results			
Test Item	EUT values	Limit	Result
Pst	/	1.000	/
dc [%]	/	3.300	/
dmax [%]	/	4.000	/
dt [ms]	/	500	/



## 8- IMMUNITY TEST DESCRIPTION

### 8.1 General Description

Product Standard	EN 61547:2009	
Basic Standard, Specification, and Performance Criterion required	EN 61000-4-2	Electrostatic Discharge – ESD: ±8kV air discharge, ±4kV Contact discharge, Performance Criterion B
	EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test – RS: 80 ~ 1000 MHz, 3V/m, 80% AM (1kHz), Performance Criterion A
	EN 61000-4-4	Electrical Fast Transient/Burst - EFT, Power line: ±1kV, Signal line: ±0.5kV, Performance Criterion B
	EN 61000-4-5	Surge Immunity Test: 1.2/50 us Open Circuit Voltage, 8 /20 us Short Circuit Current, Power Line: line to line ±1 kV, line to ground ±2 kV Signal line: line to ground: outdoor: 1kV indoor: ±0.5kV Performance Criterion C
	EN 61000-4-6	Conducted Radio Frequency Disturbances Test – CS: 0.15 ~ 80 MHz, 3Vrms, 80% AM, 1kHz, Performance Criterion A
	EN 61000-4-8	Power Frequency Magnetic Field Tests: 3 A/m, X,Y,Z orientation, Performance Criterion A
	EN 61000-4-11	Voltage Dips: 70% residual for 10 cycles, Performance Criterion C Voltage Interruptions: 0% residual for 0.5 cycles, Performance Criterion B is required for EUT with battery back-up



**8.2 The phenomena allowed during and after test in each criterion are clearly stated in the following table**

Performance criteria		
Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).

**NOTE 1:**  
Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

**NOTE 2:**  
No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

**8.3 Deviations from the standard**

No deviations from EN 61547 were made when performing the tests described in this report.



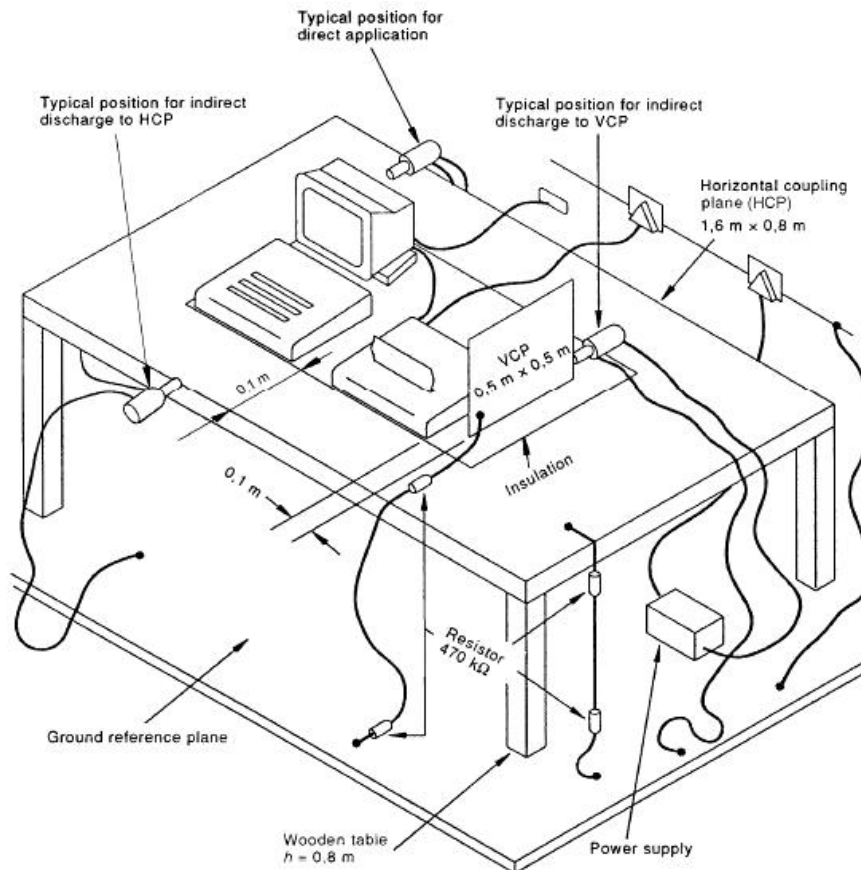
## 9- IMMUNITY TEST RESULTS

### 9.1 Electrostatic Discharge Immunity Test

#### 9.1.1 Test Specification

Basic Standard:	EN 61000-4-2:2009
Test Level:	± 2, 4, 8 kV (Air Discharge) ± 4 kV (Contact Discharge) ± 4 kV (Indirect Contact HCP) ± 4 kV (Indirect Contact VCP)
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1(kPa )
Test Model:	10inch
Operating Mode:	Mode1
Operator:	INA

#### 9.1.2 Test Setup





### 9.1.3 Test Procedure

1. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
2. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
3. The time interval between two successive single discharges was at least 1 second.
4. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.
5. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
6. Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
7. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator was positioned horizontally at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
8. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.



**9.1.4 Performance Criterion Required & Test Result**

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Slots, Apertures, and Insulating Surfaces	A	B

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Conductive Surfaces	A	B

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Front Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Back Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Left Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Right Side	A	B

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Front Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Back Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Left Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Right Side	A	B

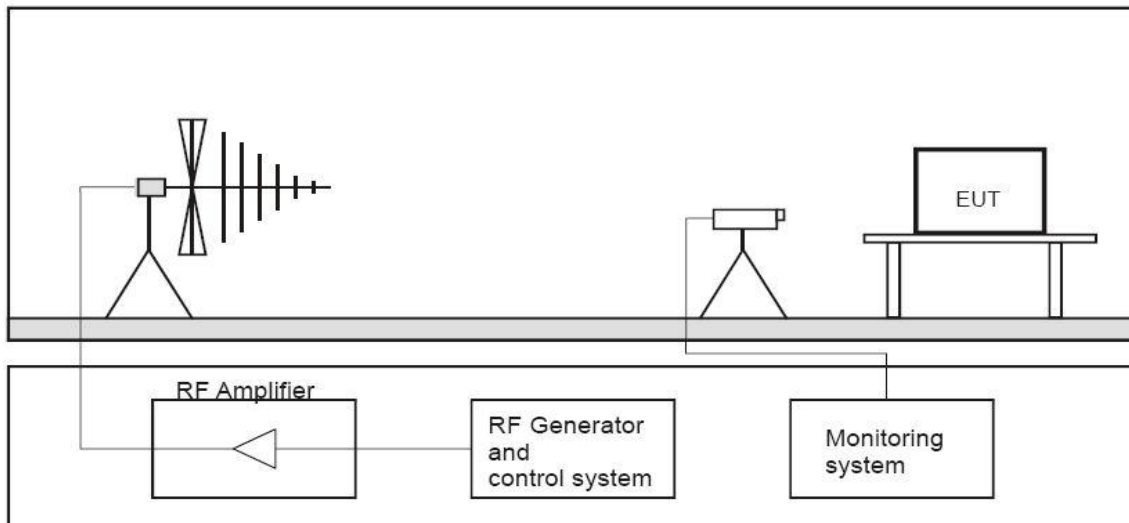
Test Result: Pass

## 9.2 Radiated Susceptibility Test

### 9.2.1 Test Specification

Basic Standard:	EN 61000-4-3:2006+A2:2010
Frequency Range:	80~1000MHz (MHz)
Modulation:	Amplitude 80%, 1kHz sinewave
Test Level:	3V/m
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa )
Test Model:	10inch
Operating Mode:	Mode1
Operator:	INA

### 9.2.2 Test Setup



### 9.2.3 Test Procedure

1. The testing was performed in a fully-anechoic chamber.
2. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave.
3. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0,5s.
4. The field strength level was 3V/m.
5. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.



#### 9.2.4 Performance Criterion Required & Test Result

Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
80-1000	3V/m	Front Side	A	A
80-1000	3V/m	Rear Side	A	A
80-1000	3V/m	Left Side	A	A
80-1000	3V/m	Right Side	A	A

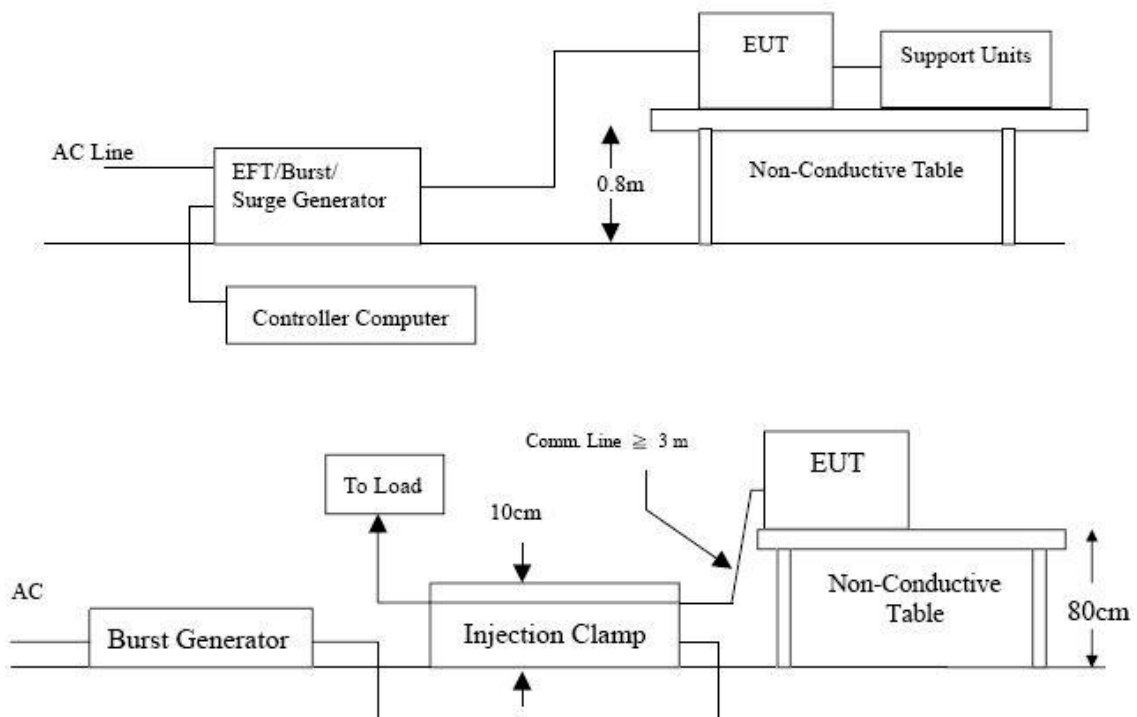
Test Result: Pass

### 9.3 Electrical Fast Transient/Burst Immunity Test

#### 9.3.1 Test Specification

Basic Standard :	EN 61000-4-4:2012
Test Level:	±1 kV for AC Power Line ±0.5 kV for Communication Line (If applicable)
Impulse Frequency:	5kHz
Impulse Wave-shape:	5/50ns
Burst Duration:	15ms
Burst Period:	300ms
Test Duration:	1 min.
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa )
Test Model:	10inch
Operating Mode:	/
Operator:	/

#### 9.3.2 Test Setup





### 9.3.3 Test Procedure

1. Both positive and negative polarity discharges were applied.
2. The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should be 0.5m.
3. The duration time of each test sequential was 1 minute.
4. The transient/burst waveform was in accordance with EN 61000-4-4, 5/50ns.

### 9.3.4 Performance Criterion Required & Test Result

Voltage	Test Points	Observation Performance	Criterion Required
±1kV	/	/	/
±1kV	/	/	/
±1kV	/	/	/
±1kV	/	/	/
±1kV	/	/	/
±1kV	/	/	/
±1kV	/	/	/

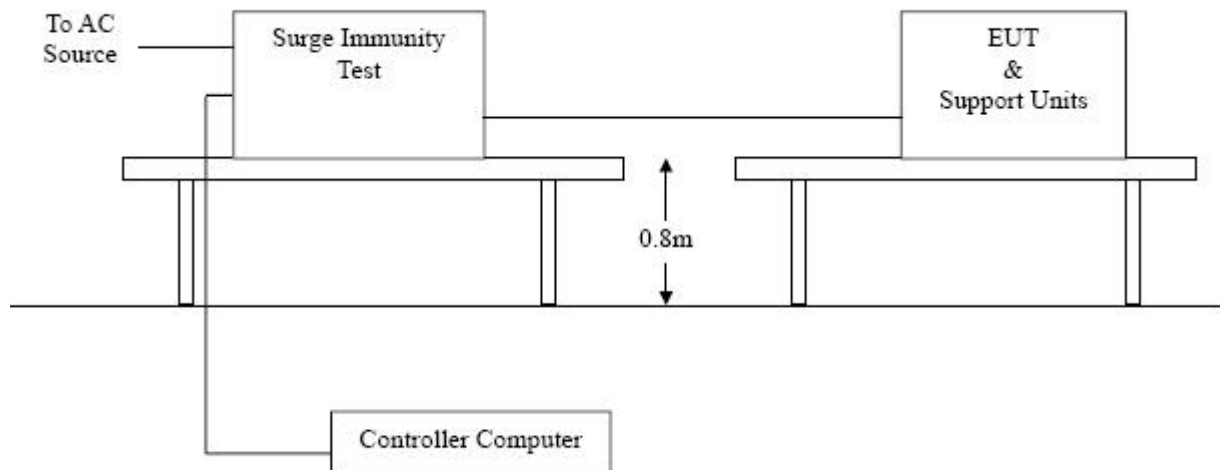
Test Result: N/A

### 9.4 Surge Immunity Test

#### 9.4.1 Test Specification

Basic Standard :	EN 61000-4-5:2014+A1:2017
Test Level:	±1kV (Line to Line) for AC Power Line ±2kV (Line(s) to Ground) for AC Power Line ± 0.5kV for unshielded unsymmetrically operated interconnection lines (If applicable)
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8/20 us Short Circuit Current
Generator Impedance:	42 ohm between signal line and ground 2 ohm between networks
Phase Angle:	90°/270°
Pulse Repetition Rate:	1 time / min
Number of Tests:	90 degree positive pole five times, 270 degree negative pole five times
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure	101.1 (kPa )
Test Model:	10inch
Operating Mode:	/
Operator:	/

#### 9.4.2 Test Setup







### 9.4.3 Test Procedure

1. For EUT power supply:

The surge is applied to the EUT Nightlight LED Slim Panel Light terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

2. For test applied to unshielded unsymmetrically operated interconnection lines of EUT: (If applicable)

The surge was applied to the lines via the capacitive coupling. The coupling / decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

The surge was applied to the lines via the capacitive coupling. The coupling / decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

### 9.4.4 Performance Criterion Required & Test Result

Voltage	Test Points	Phase	Observation Performance	Criterion Required
+1kV	/	/	/	/
-1kV	/	/	/	/
+2kV	/	/	/	/
-2kV	/	/	/	/
+2kV	/	/	/	/
-2kV	/	/	/	/

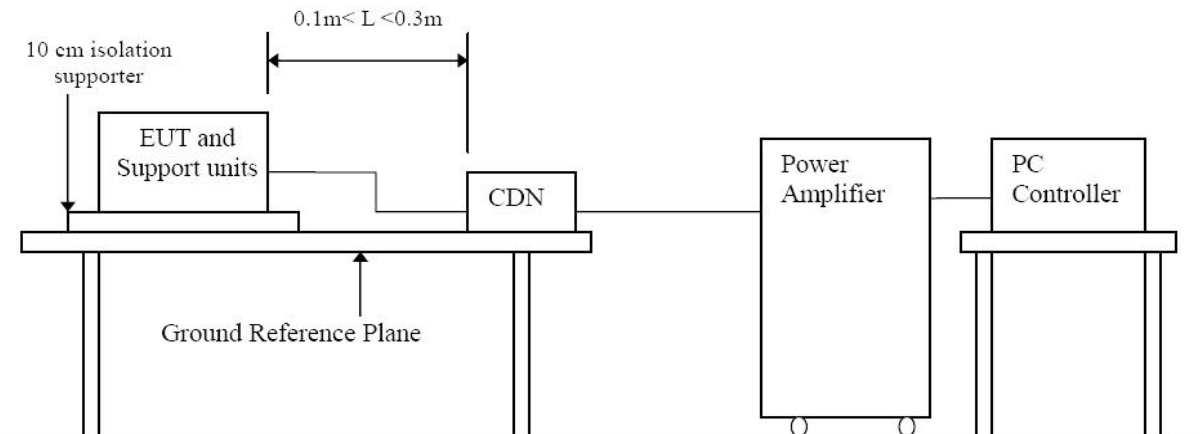
Test Result: N/A

### 9.5 Conducted Susceptibility Test

#### 9.5.1 Test Specification

Basic Standard:	EN 61000-4-6:2014+AC:2015
Test Level:	3Vr.m.s
Frequency Range:	0.15~80MHz (MHz)
Modulation:	Amplitude 80%, 1kHz sinewave
Frequency Step:	1 % of preceding frequency value
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure	101.1 ( kPa )
Test Model:	10inch
Operating Mode:	/
Operator:	/

#### 9.5.2 Test Setup



#### 9.5.3 Test Procedure

1. The test was 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.
2. The frequency range was 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 was modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The sweep rate was  $1.5 \times 10^{-3}$  decades/s. Where the frequency range is swept incrementally, the step size was 1 % of preceding



frequency value from 150 kHz to 80 MHz.

3. The dwell time at each frequency was less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequency(ies) and harmonics or frequencies of dominant interest, was analyzed separately.
4. Attempts was made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

#### 9.5.4 Performance Criterion Required & Test Result

Frequency Band (MHz)	Voltage (Vrms)	Test Points	Observation Performance	Criterion Required
0.15-80	3	/	/	/

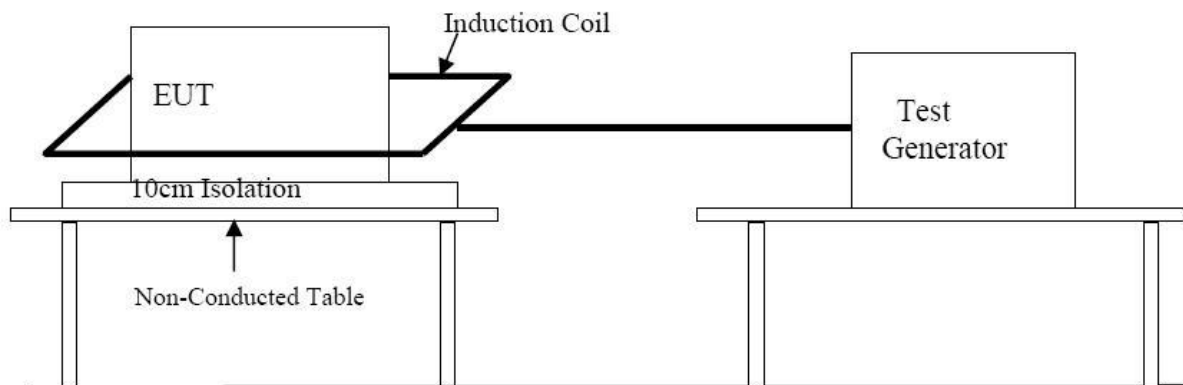
Test Result: N/A

## 9.6 Power Frequency Magnetic Field Immunity Tests

### 9.6.1 Test Specification

Basic Standard:	EN 61000-4-8:2010
Test Level:	3 A/m
Orientation:	X,Y,Z
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa )
Test Model:	10inch
Operating Mode:	/
Operator:	/

### 9.6.2 Test Setup



### 9.6.3 Test Procedure

1. The EUT and its load are placed on a table that is 0.8 meter above the metal ground plane dimension is at least 1 meter x 1 meter. The test magnetic field shall be placed at least than 3 meter distance from the induction coil.
2. The test magnetic field shall be applied by the immersion method to the EUT. The induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z orientation).



### 9.6.4 Performance Criterion Required & Test Result

Frequency (Hz)	Voltage (A/m)	Test Orientation	Observation Performance	Criterion Required
50	3	X	/	/
50	3	Y	/	/
50	3	Z	/	/

Frequency (Hz)	Voltage (A/m)	Test Orientation	Observation Performance	Criterion Required
60	3	X	/	/
60	3	Y	/	/
60	3	Z	/	/

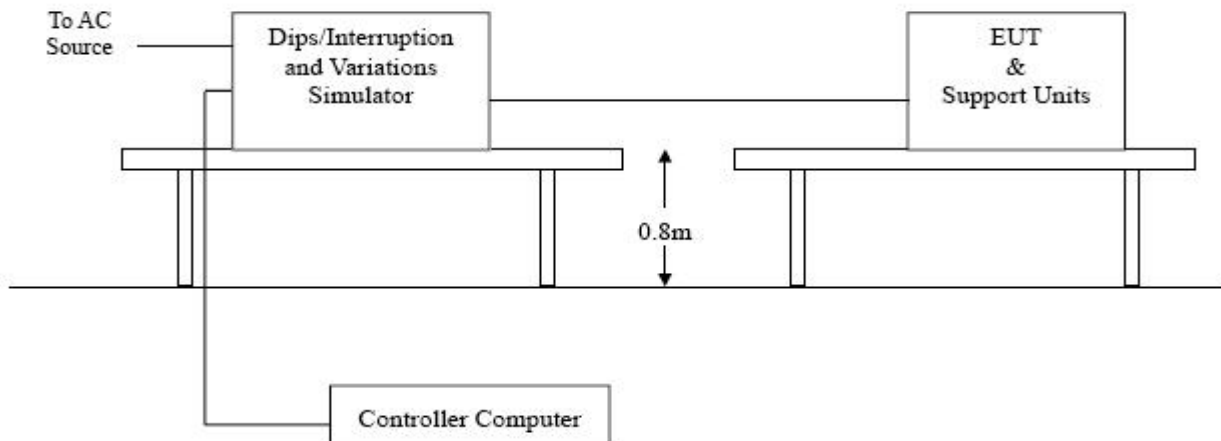
Test Result: N/A

## 9.7 Voltage Dips, Short Interruptions Immunity Tests

### 9.7.1 Test Specification

Basic Standard:	EN 61000-4-11:2004+A1:2017
Test Level:	Voltage Dips: 1) 0% residual voltage for 0.5 cycle, 2) 70% residual voltage for 10 cycles
Interval between event:	10 seconds
Phase Angle:	0°/180°
Test cycle:	3 times
Temperature:	23.6 ( °C )
Humidity:	55 ( %RH )
Atmospheric pressure:	101.1 (kPa )
Test Model:	10inch
Operating Mode:	/
Operator:	/

### 9.7.2 Test Setup



### 9.7.3 Test Procedure

The EUT was tested for each selected combination of test levels and duration with a sequence of 3 dips/interruptions with intervals of 10s (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.



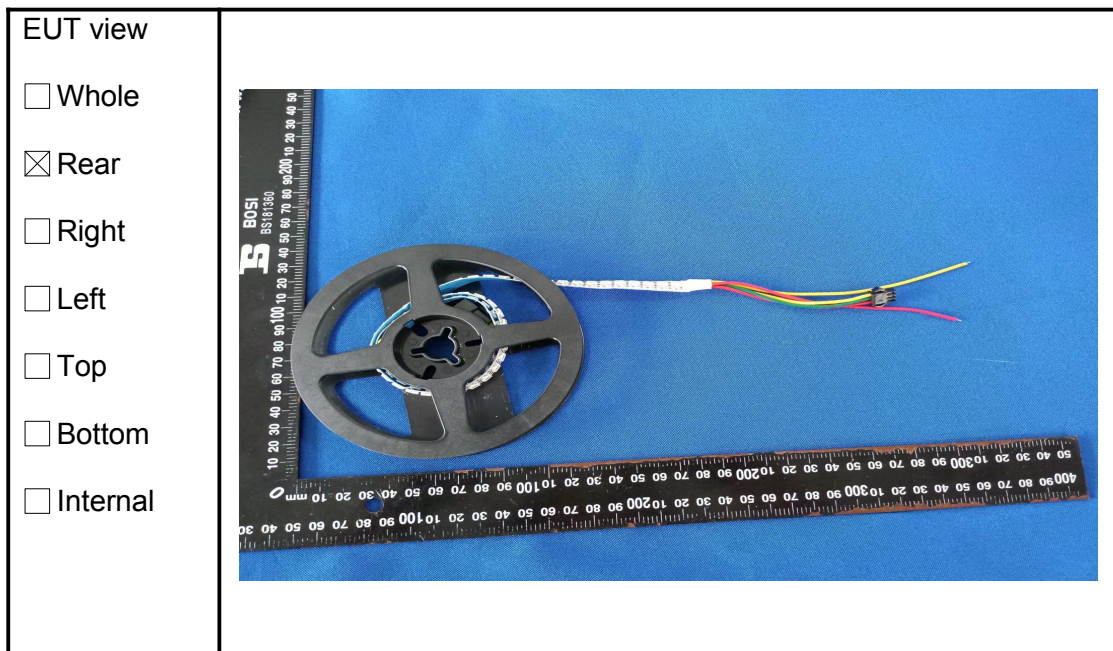
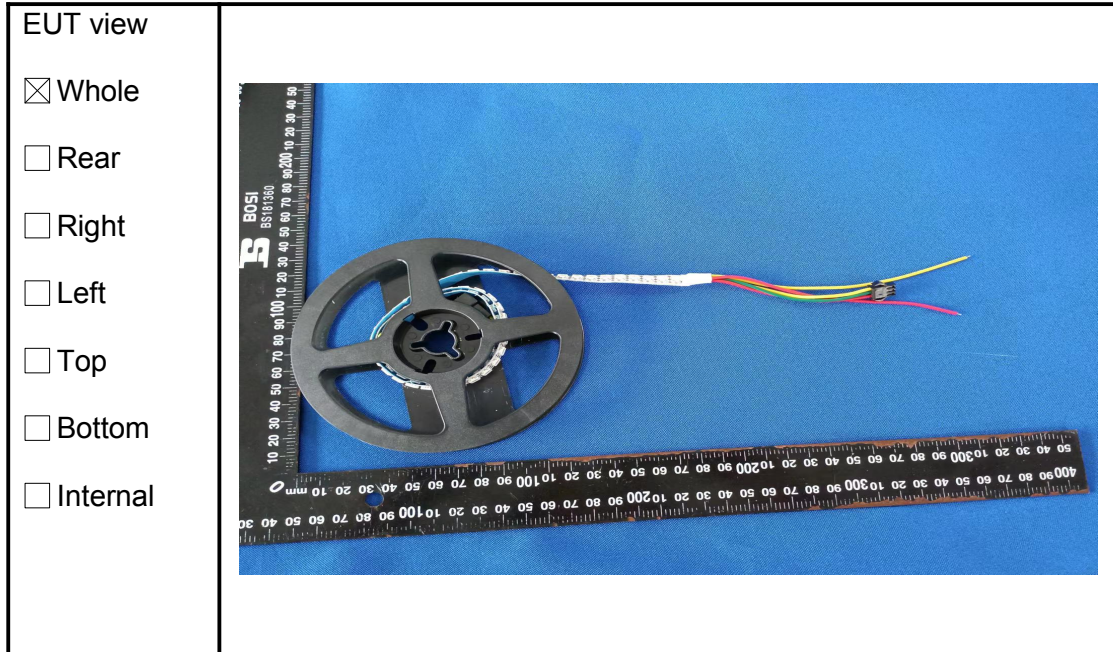
### 9.7.4 Performance Criterion Required & Test Result

Ut: 230V AC, 50Hz			
Voltage (% Residual)	Duration (Period)	Observation Performance	Criterion Required
0	0.5	/	/
70	10	/	/

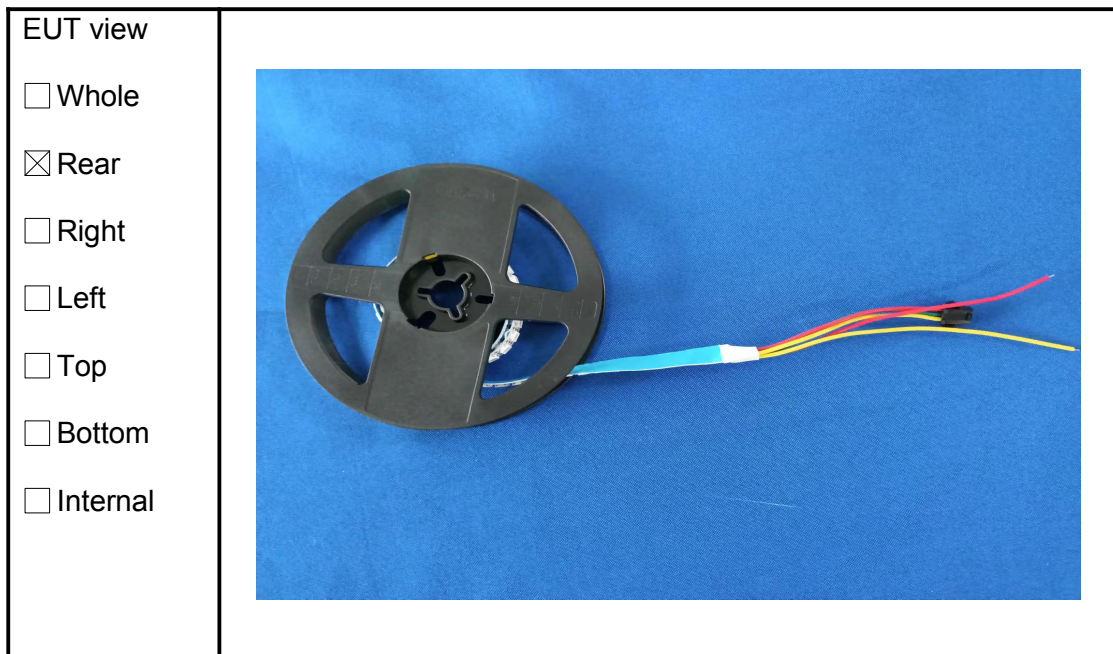
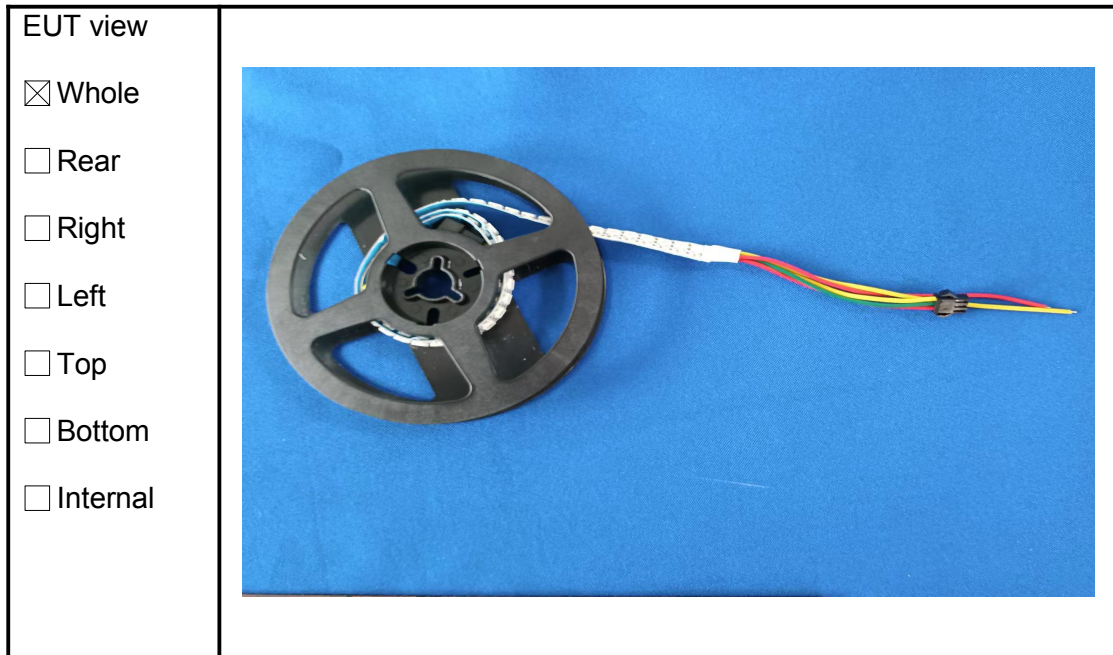
Ut: 230V AC, 60Hz			
Voltage (% Residual)	Duration (Period)	Observation Performance	Criterion Required
0	0.5	/	/
70	10	/	/

Test Result: N/A

### APPENDIX A - EUT PHOTOGRAPHS





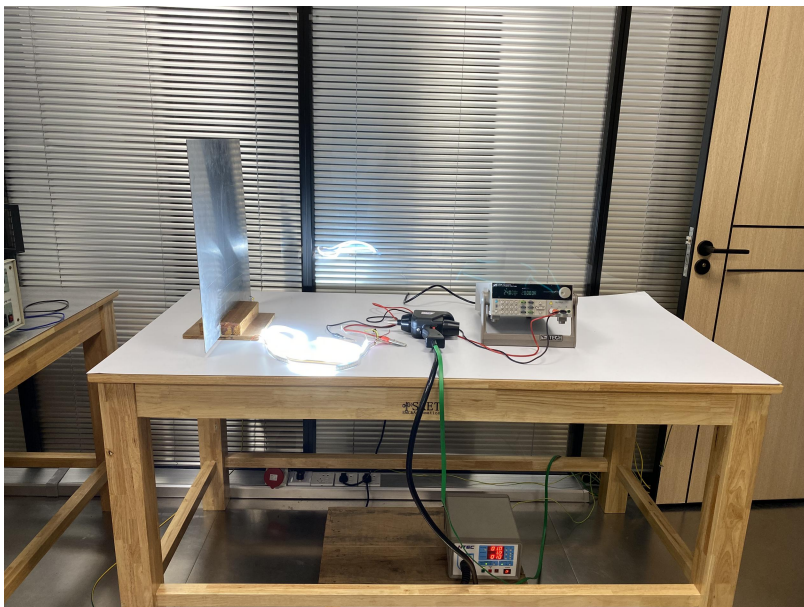


## APPENDIX B - TEST SETUP PHOTOGRAPHS

### Radiated Emission



### Electrostatic Discharge Immunity Test





Statement:

1. This report is considered invalid without approved signature and special;
2. The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which DE hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of DE, this report can't be reproduced except in full.

**\*\*\*\*\* END OF REPORT \*\*\*\*\***