

CE/EMC TEST REPORT

For

TAIZHOU TAILI LIGHTING CO., LTD.

Product Name:	Christmas light
Brand Name:	N/A
Model Number:	C, D, B, W, D/C
Prepared For:	TAIZHOU TAILI LIGHTING CO., LTD.
Address:	Unit 2, 2nd floor, NO.11 Building, Caideng Park, Dongcheng, Linhai, Zhejiang, CN
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Report No.:	XK2209012098E

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TEST RESULT CERTIFICATION

Applicant : TAIZHOU TAILI LIGHTING CO., LTD.
Address : Unit 2, 2nd floor, NO.11 Building, Caideng Park, Dongcheng, Linhai,
Zhejiang, CN
Manufacturer : TAIZHOU TAILI LIGHTING CO., LTD.
Address : Unit 2, 2nd floor, NO.11 Building, Caideng Park, Dongcheng, Linhai,
Zhejiang, CN
EUT : Christmas light

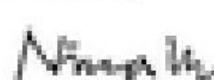
Brand Name: : N/A
Model Number : C, D, B, W, D/C
Date of Receipt: : September 14, 2022
Test Date : September 15, 2022-September 17, 2022
Date of Report : September 17, 2022
Test Result: : The equipment under test was found to be compliance with the
requirements of the standards applied.
Test Procedure Used:
EMI : EN IEC 55015:2019+A11:2020
EN IEC 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A1:2019 A2:2021
EMS : EN 61547:2009

Compiled by:



Smile Xu

Reviewed by:



Nina Li

Approved by:



Andy Wang, Manager



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen SiCT Technology Co., Ltd.

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT : Christmas light

Brand Name : N/A

Model No. : C, D, B, W, D/C

Power Supply : AC 220-240V~ 50-60Hz, 6W

1.2 Tested System Details

None.

1.3 Test Uncertainty

Conducted Emission Uncertainty : $\pm 2.57\text{dB}$

Radiated Emission Uncertainty : $\pm 4.51\text{dB}$

2. TEST INSTRUMENT USED

For Conducted Emission at the mains terminals Test

Conducted Emission Test (854 — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Apr. 2,22	Apr. 1,23
EMI Receiver	R&S	ESCI	101421	Apr. 2,22	Apr. 1,23
LISN	SCHWARZBECK	NSLX08127	812779	Apr. 2,22	Apr. 1,23

For Magnetic Emission Test

Conducted Emission Test (854 — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
EMI Receiver	R&S	ESCI	101421	Apr. 2,22	Apr. 1,23
Power Clamp	LUTHI	MD521	4293	Apr. 2,22	Apr. 1,23
Attenuator	R&S	ESHS-22	DL021E	Apr. 2,22	Apr. 1,23
843 Cable 2#	FUJIKURA	843C1#	002	Apr. 2,22	Apr. 1,23

For Radiated Emission Test

Radiation Emission Test (956 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
956 chamber	ChengYu	956 Room	956	Apr. 2,22	Apr. 1,23
Spectrum Analyzer	Agilent	E4407B	M745109572	Apr. 2,22	Apr. 1,23
Amplifier	Schwarzbeck	ESV9743	9743-119	Apr. 2,22	Apr. 1,23
Amplifier	Schwarzbeck	ESV9718	9718-270	Apr. 2,22	Apr. 1,23
Log-periodic Antenna	Schwarzbeck	VULB9160	VULB9160-336 9	Apr. 2,22	Apr. 1,23
EMI Receiver	R&S	ESCI	101421	Apr. 2,22	Apr. 1,23
Horn Antenna	Schwarzbeck	BSHA91200	91200-1275	Apr. 2,22	Apr. 1,23
956 Cable 1#	CHENGYU	956	004	Apr. 2,22	Apr. 1,23
956 Cable 2#	CHENGYU	956	003	Apr. 2,22	Apr. 1,23

For Harmonic & Flicker Test

For Harmonic / Flicker Test (EMI — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Harmonic / Flicker Analyzer	KIKUSUI	KHA1000	VA002445	Apr. 2,22	Apr. 1,23
AC Power Supply	KIKUSUI	PCR4000M	UK001579	Apr. 2,22	Apr. 1,23
Line Impedance network	KIKUSUI	LIN1020JF	UL001611	Apr. 2,22	Apr. 1,23

For Electrostatic Discharge Immunity Test

For Electrostatic Discharge Immunity Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
ESD Tester	KIKUSUI	KE54201A	UH002321	Apr. 2,22	Apr. 1,23

For RF Field Strength Susceptibility Test(SMQ)

For RF Field Strength Susceptibility Test (SMQ — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Signal Generator	HP	8645A	3625U00573	Apr. 2,22	Apr. 1,23
Amplifier	A&R	500A100	17034	Apr. 2,22	Apr. 1,23
Amplifier	A&R	100W/1000M1	17028	Apr. 2,22	Apr. 1,23
Audio Analyzer (20Hz~1GHz)	Panasonic	20238	202301428	Apr. 2,22	Apr. 1,23
Isotropic Field Probe	A&R	FP2000	16755	Apr. 2,22	Apr. 1,23
Antenna	EMCO	3158	9507-2534	Apr. 2,22	Apr. 1,23
Log-periodic Antenna	A&R	AT1080	16812	Apr. 2,22	Apr. 1,23

For Electrical Fast Transient /Burst Immunity Test

For Electrical Fast Transient/Burst Immunity Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Burst Tester	Prima	EFT8100MAG	PR14054467	Apr. 2,22	Apr. 1,23
Coupling Clamp	Prima	EFT8100MAG	DL009E	Apr. 2,22	Apr. 1,23

For Surge Test

For Electrical Fast Transient/Burst Immunity Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Burst Tester	Prima	EFT61004AG	PR14054467	Apr. 2,22	Apr. 1,23

For Injected Currents Susceptibility Test

For Injected Currents Susceptibility Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
C/S Test System	SCHLODER	CDG600	1268/1281	Apr. 2,22	Apr. 1,23
CDN	SCHLODER	CDN-M2+3	A2210326/2015	Apr. 2,22	Apr. 1,23
Injection Clamp	SCHLODER	EMCL-20	132A1214/2015	Apr. 2,22	Apr. 1,23

For Magnetic Field Immunity Test

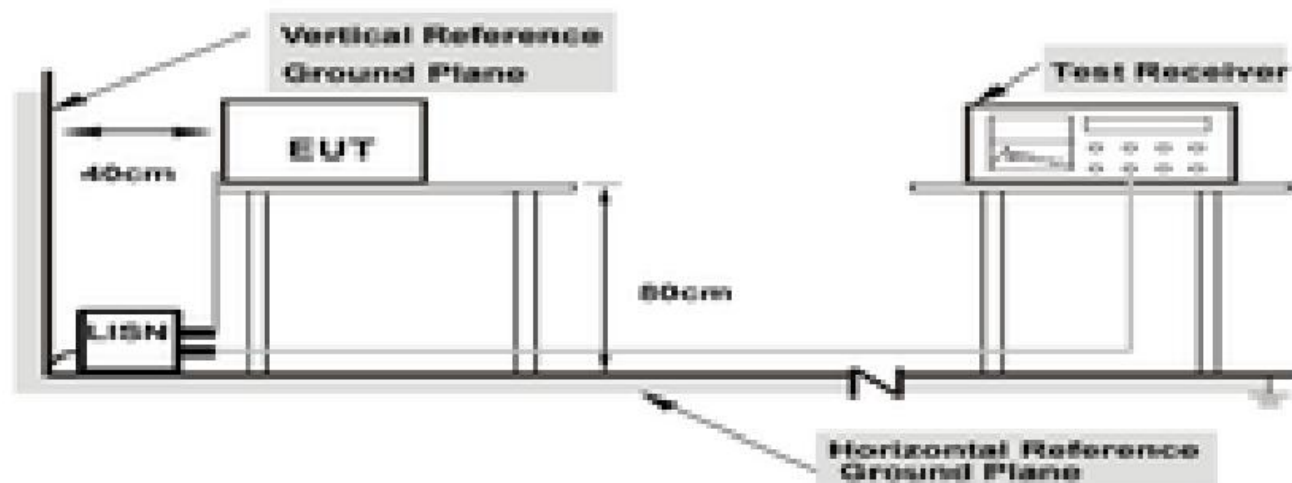
For Injected Currents Susceptibility Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Magnetic field generator	HTEC	H9F6MF	15701	Apr. 2,22	Apr. 1,23

For Voltage Dips Interruptions Test

For Voltage Dips Interruptions Test (EMS — site)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Dips Tester	Prima	DRP61011AG	PR14086284	Apr. 2,22	Apr. 1,23

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1 Block Diagram Of Test Setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.2 Test Standard

EN IEC 55015

3.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.009 ~ 0.05	110	N/A
0.05 ~ 0.15	90 ~ 80*	N/A
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4 EUT Configuration on Test

The following equipment's are installed on conducted emission test to meet EN IEC 55015 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.

3.5.2 Turn on the power of all equipments.

3.5.3 Let the EUT work in test modes and test it.

3.6 Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **EN IEC 55015** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

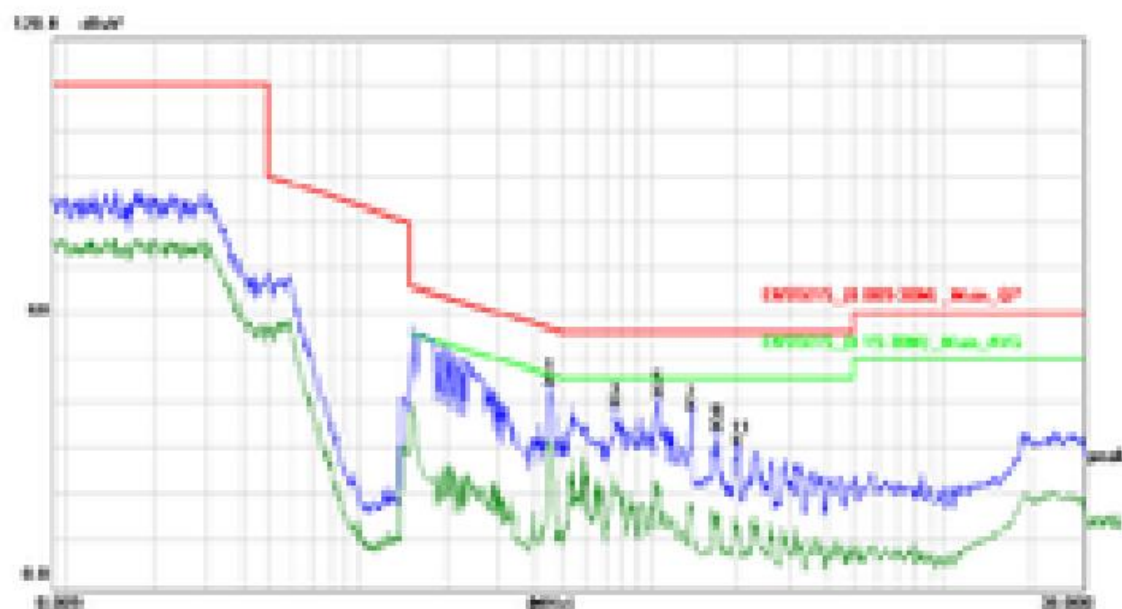
The frequency range from 150 KHz to 30 MHz is investigated.

3.7 Test Result

PASS

Please refer to the following page.

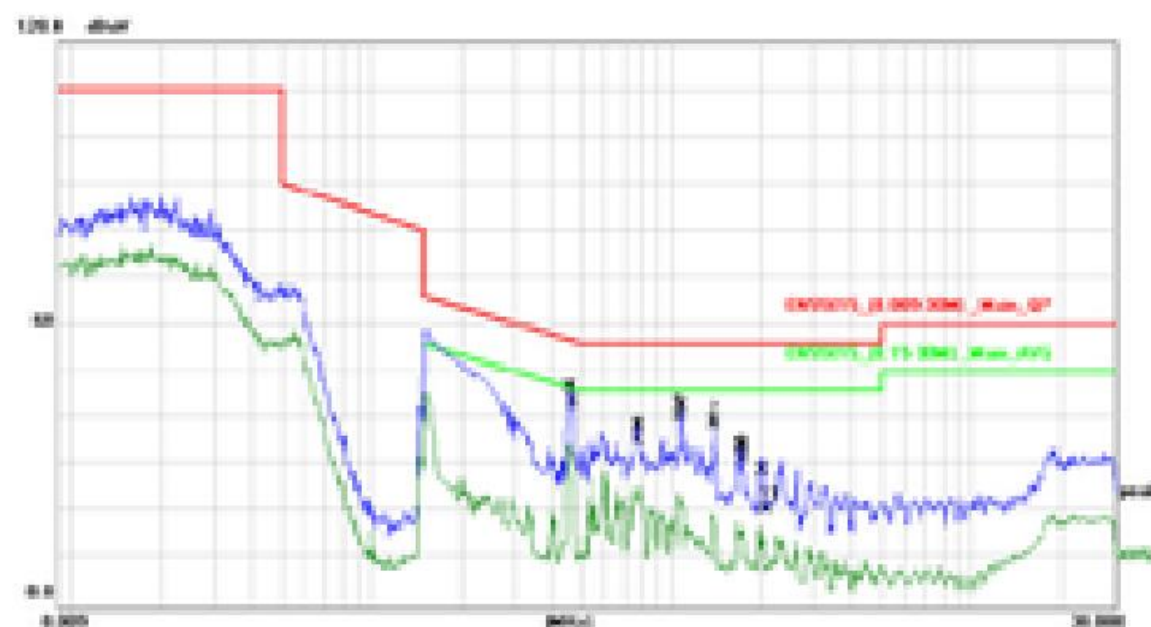
Conducted Emission Test Data			
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Line
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1	+	0.4540	45.00	0.00	45.00	50.00	-11.71	peak	
2		0.4540	31.96	0.00	31.96	40.00	-14.04	Avg	
3		0.7560	40.36	0.00	40.36	50.00	-15.62	peak	
4		0.7560	31.64	0.00	31.64	40.00	-24.36	Avg	
5		1.0600	42.86	0.00	42.86	50.00	-13.14	peak	
6		1.0600	22.71	0.00	22.71	40.00	-23.29	Avg	
7		1.3700	39.73	0.00	39.73	50.00	-16.27	peak	
8		1.3700	18.17	0.00	18.17	40.00	-27.83	Avg	
9		1.6820	35.35	0.00	35.35	50.00	-20.65	peak	
10		1.6820	16.16	0.00	16.16	40.00	-29.82	Avg	
11		1.9940	31.64	0.00	31.64	50.00	-24.36	peak	
12		1.9940	12.86	0.00	12.86	40.00	-33.14	Avg	

Conducted Emission Test Data

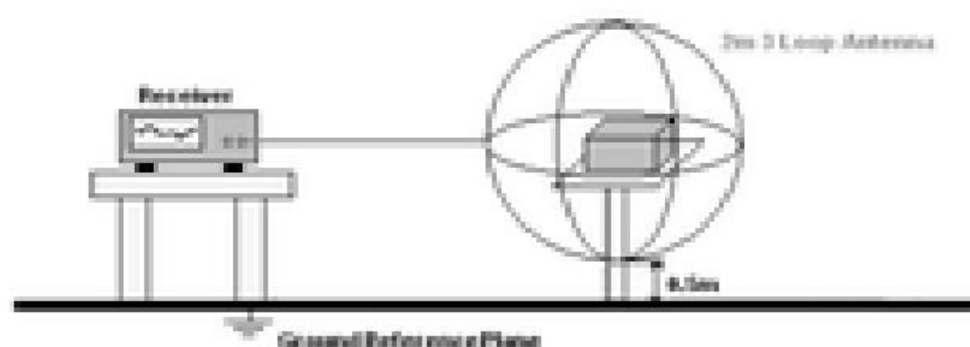
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Neutral
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode



No.	Idk	Freq kHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.2250	40.27	10.07	50.34	62.50	-12.15	QP	
2		0.2250	30.25	10.07	40.32	52.50	-12.17	AVG	
3		0.6250	34.90	10.13	45.02	56.00	-10.98	QP	
4		0.6250	19.52	10.13	29.65	46.00	-16.35	AVG	
5		1.5000	36.06	10.18	46.24	56.00	-9.76	QP	
6		1.5000	19.17	10.18	30.35	46.00	-15.65	AVG	
7	*	2.9000	30.30	10.19	40.49	56.00	-15.51	QP	
8		2.9000	21.89	10.19	32.08	46.00	-13.92	AVG	
9		6.3000	14.82	10.11	24.93	60.00	-35.07	QP	
10		6.3000	-0.63	10.11	9.48	50.00	-40.52	AVG	
11		29.5180	26.68	10.22	36.90	60.00	-23.10	QP	
12		29.5180	8.89	10.22	19.11	50.00	-30.89	AVG	

4. MAGNETIC EMISSION TEST

4.1 Block Diagram of Test Setup



4.2 Test Standard

EN IEC 55015

4.3 Magnetic Emission Limit

Frequency MHz	Limits dB(μ A)
	Quasi-peak Level
0.009 ~ 0.07	68
0.07 ~ 0.15	68 ~ 58*
0.15 ~ 0.50	58 ~ 22*
0.50 ~ 5.00	22

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

4.4 EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN55015 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT and simulators as shown in Section 3.1.

4.5.2 Turn on the power of all equipments.

4.5.3 Let the EUT work in test modes and test it.

4.6 Test Procedure

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 is checked by means of a coax switch.

The frequency range from 9KHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9KHz to 150KHz, the bandwidth of the field strength meter (R&S Test Receiver ESC1) is set at 200Hz. For frequency band 150KHz to 30MHz, the bandwidth is set at 10KHz.

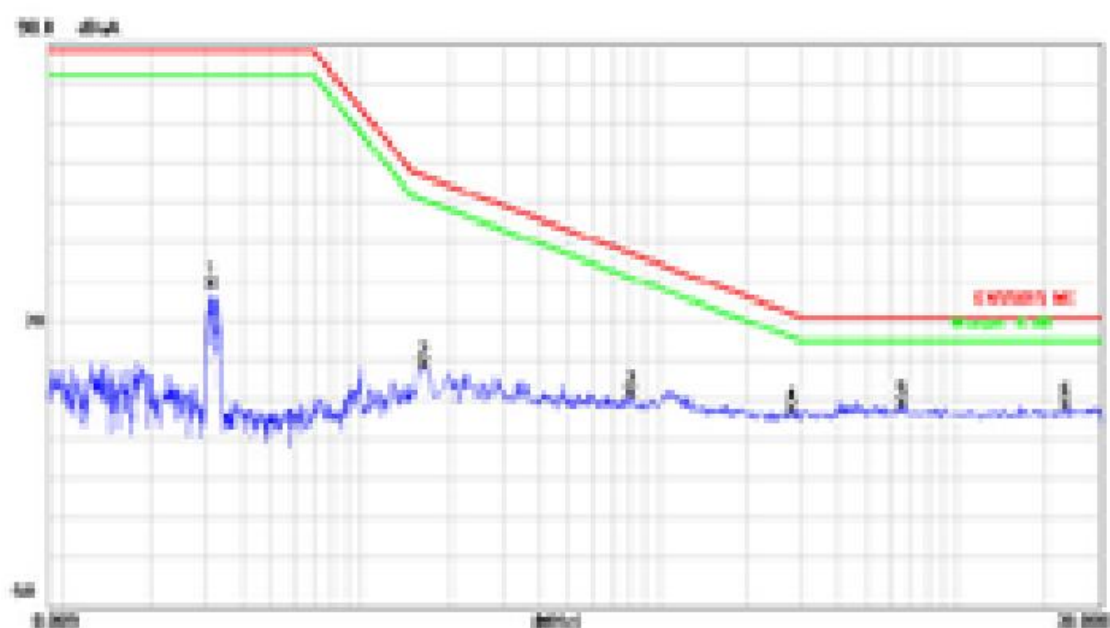
4.7 Test Result

PASS

Please refer to the following page.

Magnetic Emission Test Data

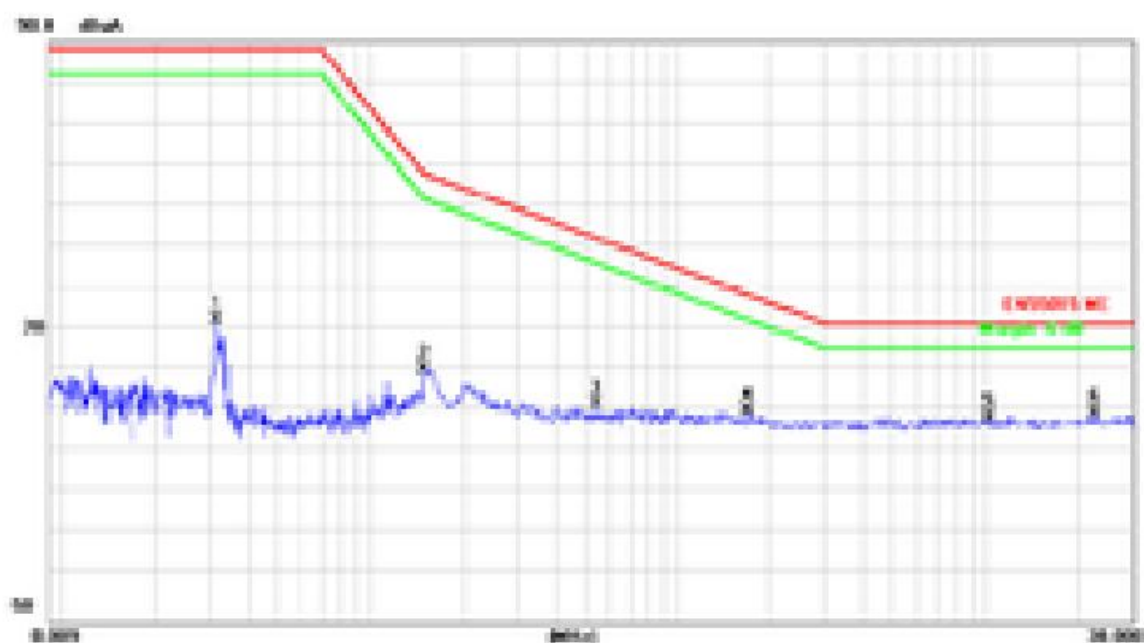
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Ant. Polarity	X
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode



No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.0317	7.41	22.44	29.85	88.00	-58.15	GP	
2		0.1620	-16.96	27.00	10.04	57.08	-47.04	GP	
3		0.8100	-23.99	27.00	3.01	37.73	-34.72	GP	
4		2.6000	-26.05	27.00	-1.05	22.80	-23.85	GP	
5	*	6.5220	-26.80	27.00	0.20	22.00	-21.80	GP	
6		22.0000	-27.29	27.00	-0.29	22.00	-22.29	GP	

Magnetic Emission Test Data

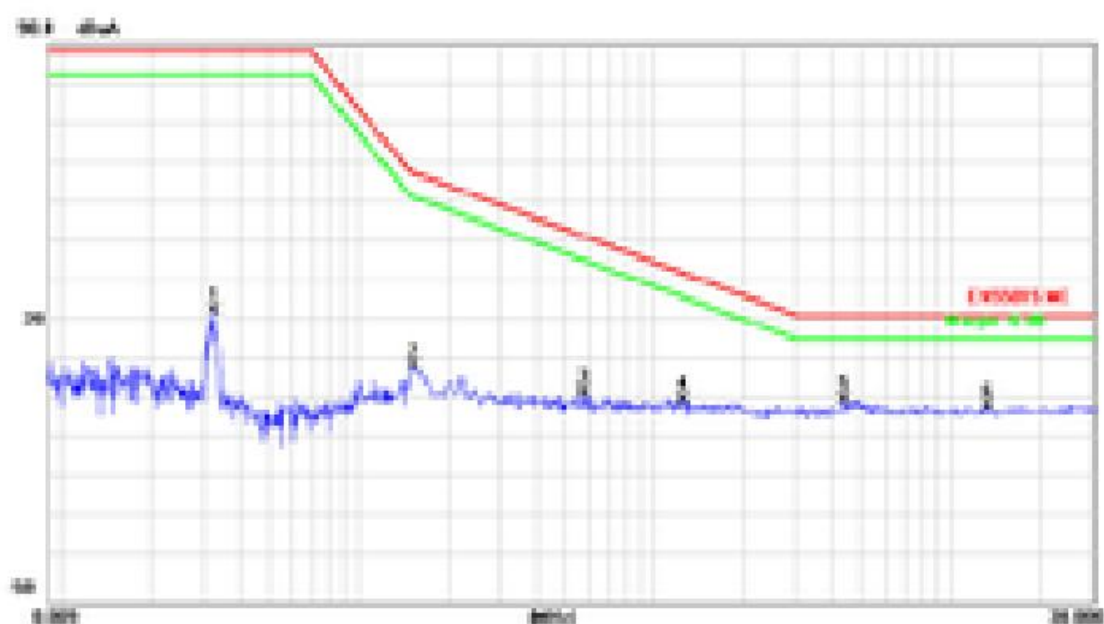
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Ant. Polarity	Y
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode



No.	Mh.	Freq.	Reading	Correct	Measure-	Limit	Over		
		Mhz	dBuA	dB	dBuA	dBuA	dB	Detector	Comment
1		0.0315	-0.45	22.45	22.90	66.00	-45.10	GP	
2		0.1590	-15.87	27.00	11.13	58.00	-46.87	GP	
3		0.5080	-24.29	27.00	2.71	42.00	-39.94	GP	
4		1.6040	-25.95	27.00	1.05	28.87	-27.82	GP	
5		10.2620	-27.53	27.00	-0.53	22.00	-22.53	GP	
6	*	22.5820	-28.57	27.00	-0.43	22.00	-21.57	GP	

Magnetic Emission Test Data

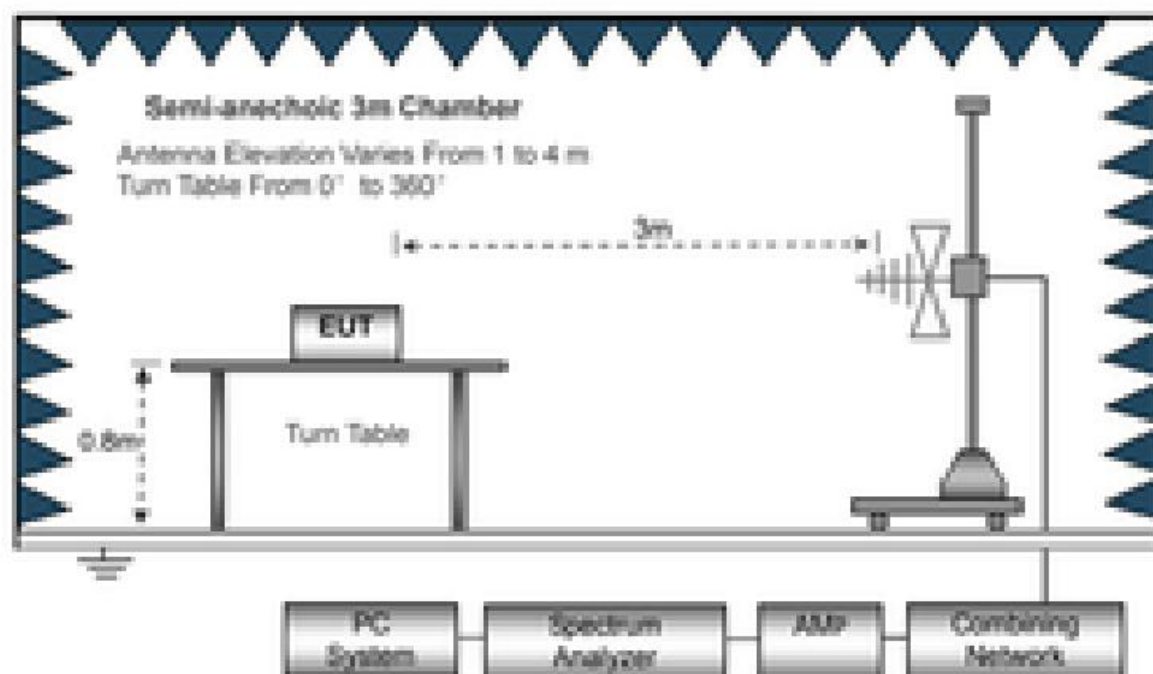
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Ant. Polarity	Z
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode



No.	Mk.	Freq. MHz	Reading Level dBμA	Correct Factor dB	Measure- ment dBμA	Limit dBμA	Over dB	Detector	Comment
1		0.0330	1.12	22.27	23.39	88.00	-64.61	GP	
2		0.1540	-17.77	27.00	9.23	57.58	-48.45	GP	
3		0.5820	-24.53	27.00	2.67	41.71	-39.04	GP	
4		1.2400	-26.09	27.00	0.91	32.56	-31.65	GP	
5	*	4.3540	-26.16	27.00	0.84	22.00	-21.16	GP	
6		13.2740	-27.70	27.00	-0.70	22.00	-22.70	GP	

5. RADIATION EMISSION TEST

5.1 Block Diagram of Test Setup



5.2 Test Standard

EN IEC 55015

5.3 Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μ V)/m
30 ~ 230	3	40.0
230 ~ 300	3	47.0

Remark:

(1) Emission level (dB(μ V)/m) = 20 log Emission level (μ V/m)

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

5.4 EUT Configuration on Test

The EN IEC 55015 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 2.2.

5.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

5.6 Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to EN IEC 55015 on radiated emission test.

The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz.

The frequency range from 30MHz to 1000MHz is checked.

5.7 Test Result

PASS

Please refer to the following page.

Radiation Emission Test Data

Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode

dBμV/m

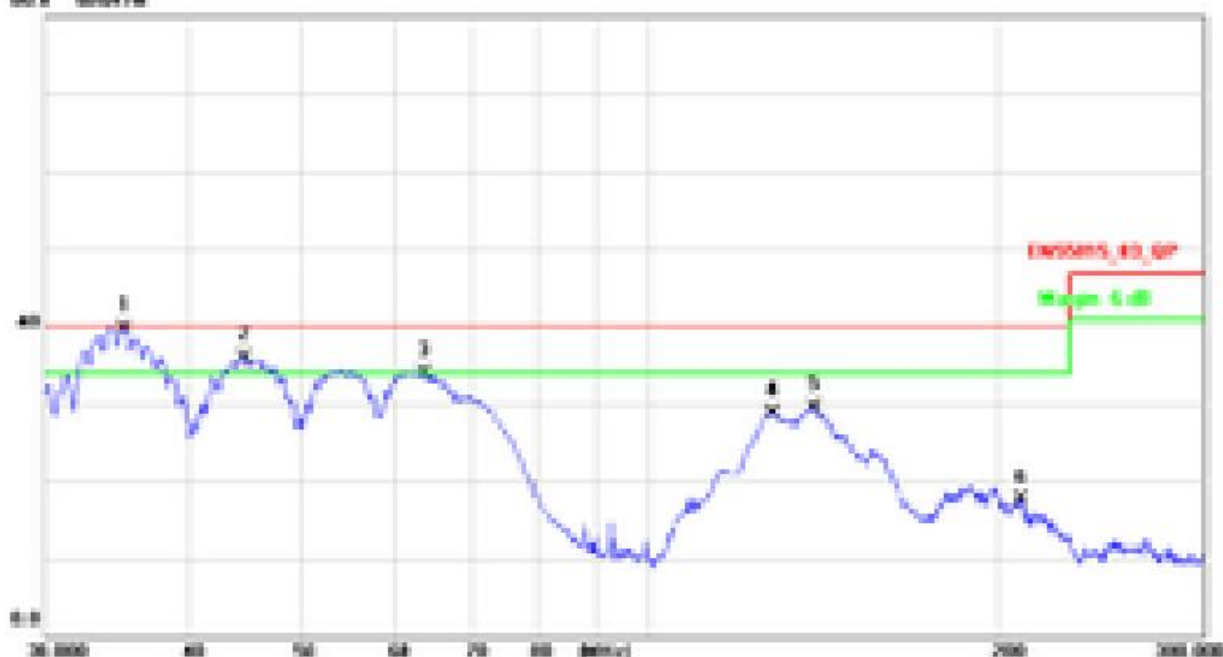


No.	Site	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	dBμV	Factor	ment	dBμV/m	dB			
				dBμV	dBμV/m			Height	Degree	Comment
1		34.4445	35.33	-8.47	26.86	40.00	-13.14	GP		
2		53.7182	35.30	-10.62	24.68	40.00	-15.32	GP		
3		71.9649	40.11	-15.34	24.77	40.00	-15.23	GP		
4	*	126.8000	41.19	-14.31	26.88	40.00	-13.12	GP		
5		219.8474	54.40	-15.65	38.75	40.00	-21.25	GP		
6		262.5668	29.26	-13.05	16.21	40.00	-23.79	GP		

Radiation Emission Test Data

Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode

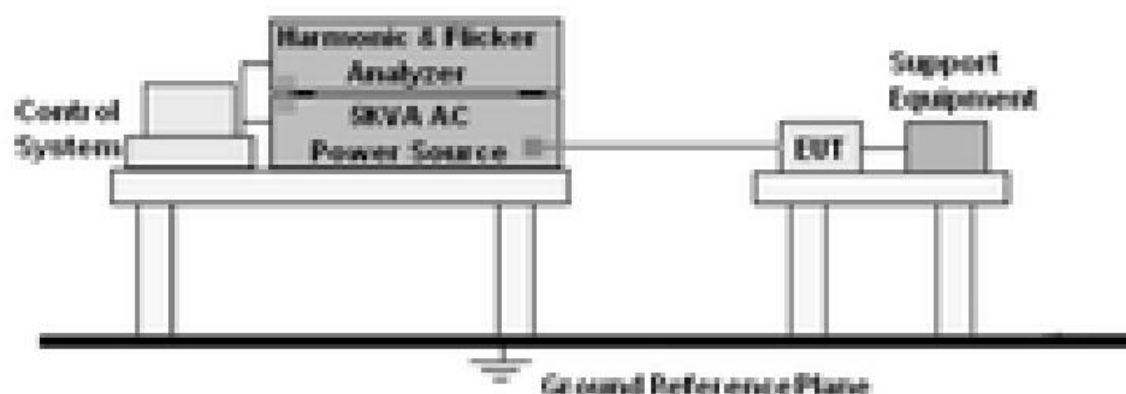
dBμV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBμV	dBμV	dBμV/m	dBμV/m	dB	cm	degree
1	-	35.1559	45.28	-8.51	36.77	40.00	-3.23	GP	
2	1	44.0808	45.40	-9.45	35.95	40.00	-4.05	GP	
3		63.6973	46.19	-12.26	33.93	40.00	-6.07	GP	
4		127.3859	43.02	-14.27	28.75	40.00	-11.25	GP	
5		138.3953	42.99	-13.50	29.49	40.00	-10.51	GP	
6		208.5073	33.54	-15.97	17.57	40.00	-22.43	GP	

6. HARMONIC CURRENT EMISSION TEST

6.1 Block Diagram of Test Setup



6.2 Test Standard

EN 61000-3-2

6.3 Operating Condition of EUT

Setup the EUT as shown in Section 5.1.
Turn on the power of all equipments.
Let the EUT work in test mode and test it.

6.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

6.5 Test Results

PASS

Please refer to the following page.

There is no need for Harmonic current test to be performed on this product (rated power is less than 75 W) in accordance with EN 61000-3-2.

For further details, please refer to Clause 7 of EN 61000-3-2 which states:

"For the following categories of equipment, limits are not specified in this standard:

- equipment with a rated power of 75 W or less, other than lighting equipment."

7. VOLTAGE FLUCTUATIONS & FLICKER TEST

7.1 Block Diagram of Test Setup

Same as Section 5.1.

7.2 Test Standard

EN 61000-3-3

7.3 Operating Condition of EUT

Same as Section 5.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test Items	Limits
Pst	1.0
dc	3.3%
Tmax	4.0%
dt	Not exceed 3.3% for 500ms

7.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

7.5 Test Results

Flicker Test Data			
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa		
Test Voltage :	AC 230V/50Hz	Test Mode:	ON Mode

Voltage Fluctuation	Limit	Value
Relative Voltage Change Characteristic Tmax (dc > 3%)	500 ms	0 ms
Maximum Relative Voltage Change dmax	4%	0.00
	6%	/
	7%	/
Relative Steady-state Voltage Change dc	3.3%	0.00

Flicker	Limit	Value
Short-term Flicker Indicator Pst	1.0	0.063
Long-term Flicker Indicator Pt	0.65	/

8. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

Product Standard	EN 61547
CRITERION A	During the test, no change of the luminous intensity shall be observed and the regulating control, if any, shall operate during the test as intended.
CRITERION B	During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.
CRITERION C	During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test the lighting equipment is switched off. After half an hour it is switched on again. The lighting equipment shall start and operate as intended.

9.4 Test Procedure

- Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
- The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- The time interval between two successive single discharges was at least 1 second.
- 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 Product.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
- At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
- 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 Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

9.5 Test Results

PASS

Please refer to the following data.

Electrostatic Discharge Test Data					
Temperature:	25.1℃	Humidity:	55%		
Power Supply :	AC 230V/50Hz	Test Mode:	ON Mode		
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Result
Contact Discharge	Conductive Surfaces	4	10	B	Pass
	Indirect Discharge HCP	4	10	B	Pass
	Indirect Discharge VCP	4	10	B	Pass
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	Pass
Note: N/A					

10.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

All the scanning conditions are as follows :

Condition of Test	Remarks
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Modulated
Scanning Frequency	80 – 1000 MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	1 Sec.

10.5 Test Results

PASS

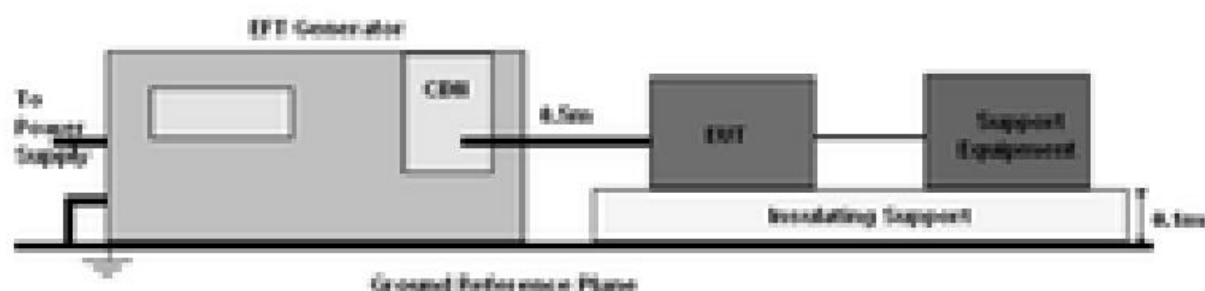
Please refer to the following data.

R/S Test Data				
Temperature:	25.1℃	Humidity:	55%	
Power Supply :	AC 230V/50Hz	Test Mode:	ON Mode	
Criterion:	A	Steps	1 %	
Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Result
80 - 1000	Front, Right, Back, Left	3	A	Pass
Note: N/A				

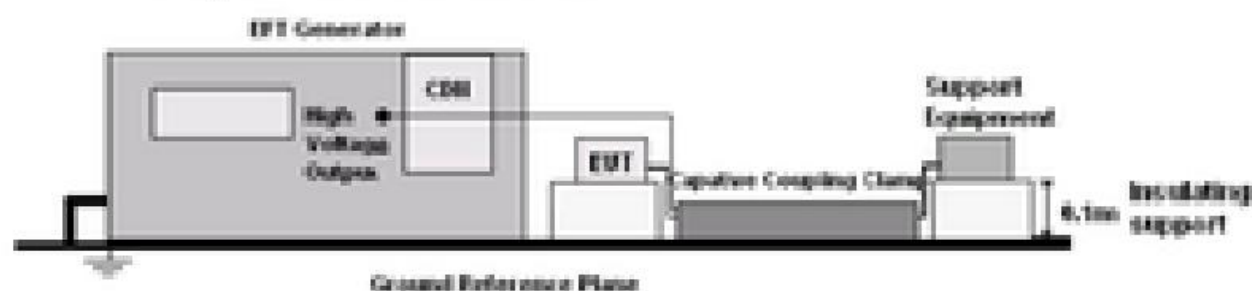
11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



11.2 Test Standard

EN 61547, EN 61000-4-4

11.3 Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS

Severity Level:

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On power ports	On I/O(input/output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

Performance criterion: B

11.4 Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a

min. 1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m

For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

11.5 Test Results

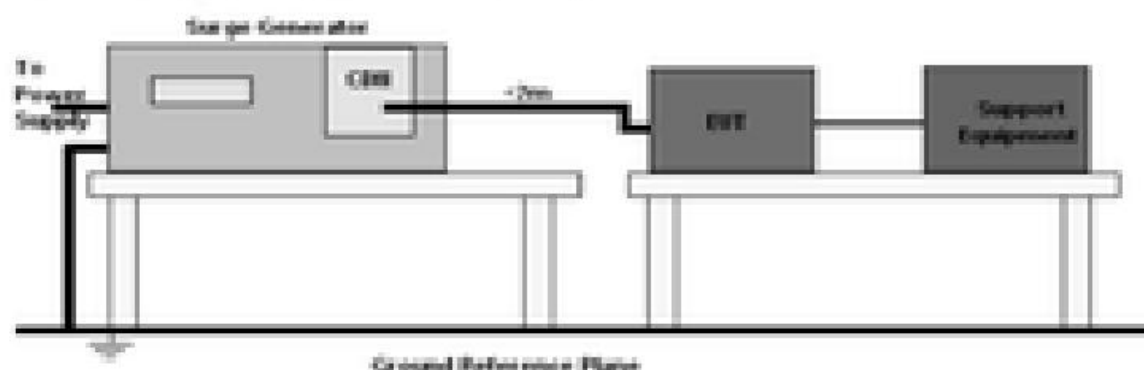
PASS

Please refer to the following data.

EFT Test Data			
Temperature:	24.5℃	Humidity:	53%
Power Supply :	AC 230V/50Hz	Test Mode:	ON Mode
Coupling Line	Test Voltage(kV)	Performance Criterion	Result
L	±0.5, 1	B	PASS
N	±0.5, 1	B	PASS
L-N	±0.5, 1	B	PASS

12. SURGE TEST

12.1 Block Diagram of EUT Test Setup



12.2 Test Standard

EN 61547, EN61000-4-5

12.3 Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;

Severity Level: Line to Earth, Level 3 at 2KV;

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

Performance criterion: B

12.4 Test Procedure

- 1) Set up the EUT and test generator as shown on section 10.1
- 2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
- 6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.5 Test Result

PASS

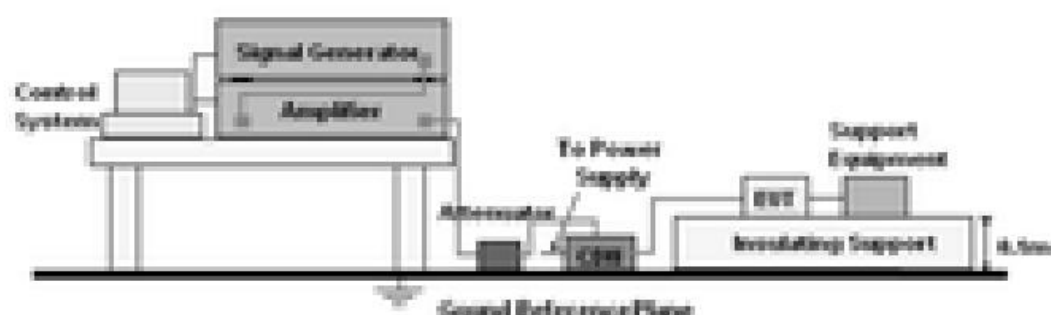
Please refer to the following data.

Surge Test Data						
Temperature:	24.5°C			Humidity:	53%	
Power Supply:	AC 230V/50Hz			Test Mode:	ON Mode	
Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Performance Criterion	Result
L-N	+	90	5	1	B	Pass
L-N	-	270	5	1	B	Pass
Note: N/A						

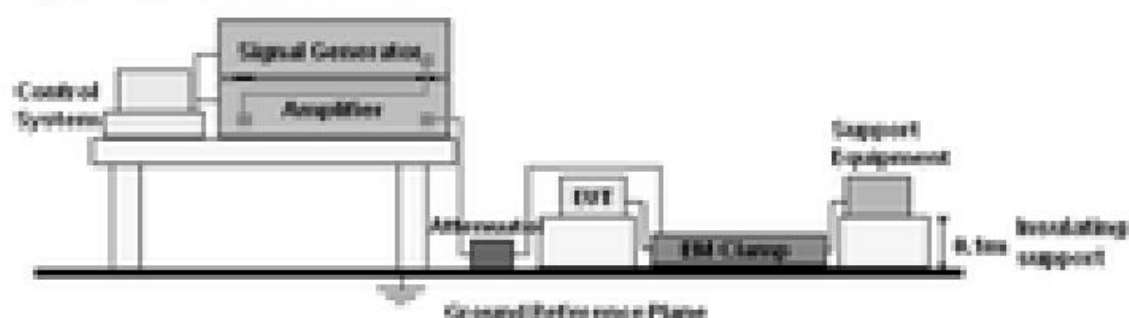
13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



13.2 Test Standard

EN 61547, EN61000-4-6

13.3 Severity Levels and Performance Criterion

Severity Level 2: 3V(rms), 150KHz ~ 80MHz

Severity Level:

Level	Field Strength V
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

13.4 Test Procedure

- 1) Set up the EUT, CDN and test generator as shown on section 12.1
- 2) Let EUT work in test mode and measure.
- 3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave
- 7) The rate of sweep shall not exceed 1.5×10^{-5} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

13.5 Test Result

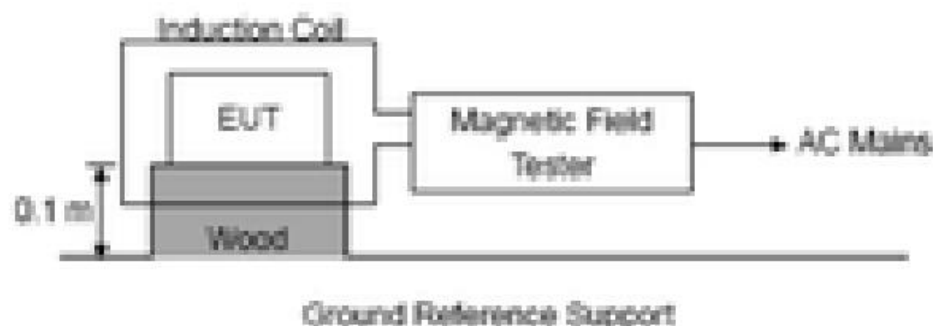
PASS

Please refer to the following data.

CS Test Data						
Temperature:	24.5℃			Humidity:	53%	
Power Supply :	AC 230V/50Hz			Test Mode:	ON Mode	
Frequency Range(MHz)	Injected Position	Strength	Modulation Signal	Freq. Step	Performance Criterion	Result
150KHz ~ 80MHz	AC Line	3V(rms), Unmodulated	AM 80%, 1kHz sine wave	1%	A	Pass
150KHz ~ 80MHz	DC Line, Signal Line	3V(rms), Unmodulated	AM 80%, 1kHz sine wave	1%	/	/
Note: N/A						

14. MAGNETIC FIELD IMMUNITY TEST

14.1 Block Diagram of EUT Test Setup



14.2 Test Standard

EN 61547, EN61000-4-8

14.3 Severity Levels and Performance Criterion

Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

Performance criterion: B

14.4 Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 10.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

14.5 Test Result

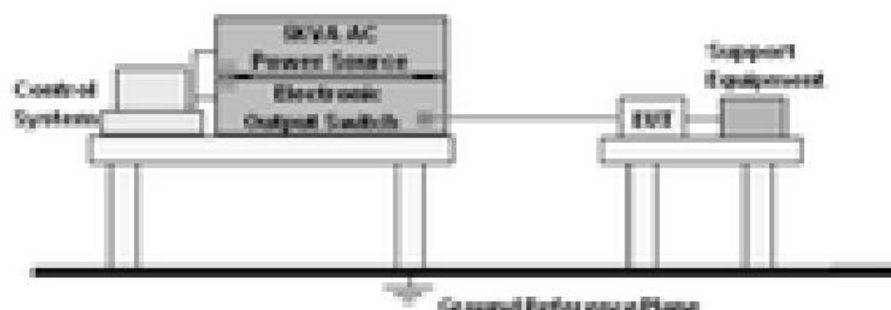
PASS

Please refer to the following data.

MS Test Data					
Temperature:	24.5℃		Humidity:	53%	
Power Supply :	AC 230V/50Hz		Test Mode:	ON Mode	
Environmental Phenomena	Test specification	Units	Coil Orientation	Performance Criterion	Result
Magnetic Field	3	A/m	X	A	PASS
			Y	A	PASS
			Z	A	PASS
Note: N/A					

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1 Block Diagram of EUT Test Setup



15.2 Test Standard

EN 61547, EN61000-4-11

15.3 Severity Levels and Performance Criterion

Severity Level:

Input and Output AC Power Ports.

- ☒ Voltage Dips.
- ☒ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	70 10	% Reduction period	C
	0 0.5	% Reduction period	B

15.4 Test Procedure

Set up the EUT and test generator as shown on section 13.1

The interruption is introduced at selected phase angles with specified duration.

There is a 3mins minimum interval between each test event.

After each test a full functional check is performed before the next test.

Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.

Record any degradation of performance.

15.5 Test Result

PASS

Please refer to the following table.

DIPS Test Data			
Temperature:	24.5℃	Humidity:	53%
Power Supply :	AC 230V/50Hz	Test Mode:	ON Mode
Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	70 10	% Reduction period	C
	30 0.5	% Reduction period	B

16. EUT PHOTOGRAPHS





※※※※※ END OF REPORT ※※※※※