

TEST REPORT

Report No.: BCTC2302965144E

Applicant: GUANGDONG BELITE LIGHTING TECHNOLOGY CO.,LTD

Product Name: LED Inground Light (Side Emitting)

Model/Type Reference: BL-SIG100

Tested Date: 2023-03-10 to 2023-03-13

Issued Date: 2023-03-20

Shenzhen BCTC Technology Co., Ltd.



Product Name: LED Inground Light (Side Emitting)

Trademark: N/A

Model/Type Reference: BL-SIG100, BL-SIG80, BL-SIG60, BL-SIG48

Prepared For: GUANGDONG BELITE LIGHTING TECHNOLOGY CO.,LTD

Address: 15F, Bldg.K, Minjie Plaza, Xin'an Road, Duanzhou District 526060, Zhaoqing City, GD.P.R. China

Manufacturer: JIANGMEN BITASO OPTOELECTRONIC TECHNOLOGY CO.,LTD

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Prepared By: Shenzhen BCTC Technology Co., Ltd.

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Sample Received Date: 2023-03-10

Sample Tested Date: 2023-03-10 to 2023-03-13

Report No.: BCTC2302965144E

Test Standards EN IEC 55015: 2019+A11:2020, EN 61547:2009
EN IEC 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A2:2021

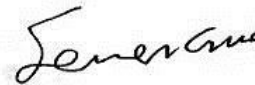
Test Results PASS

Tested by:



Kang Chen/ Project Handler

Approved by:



Sewen Guo/Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Technology Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.



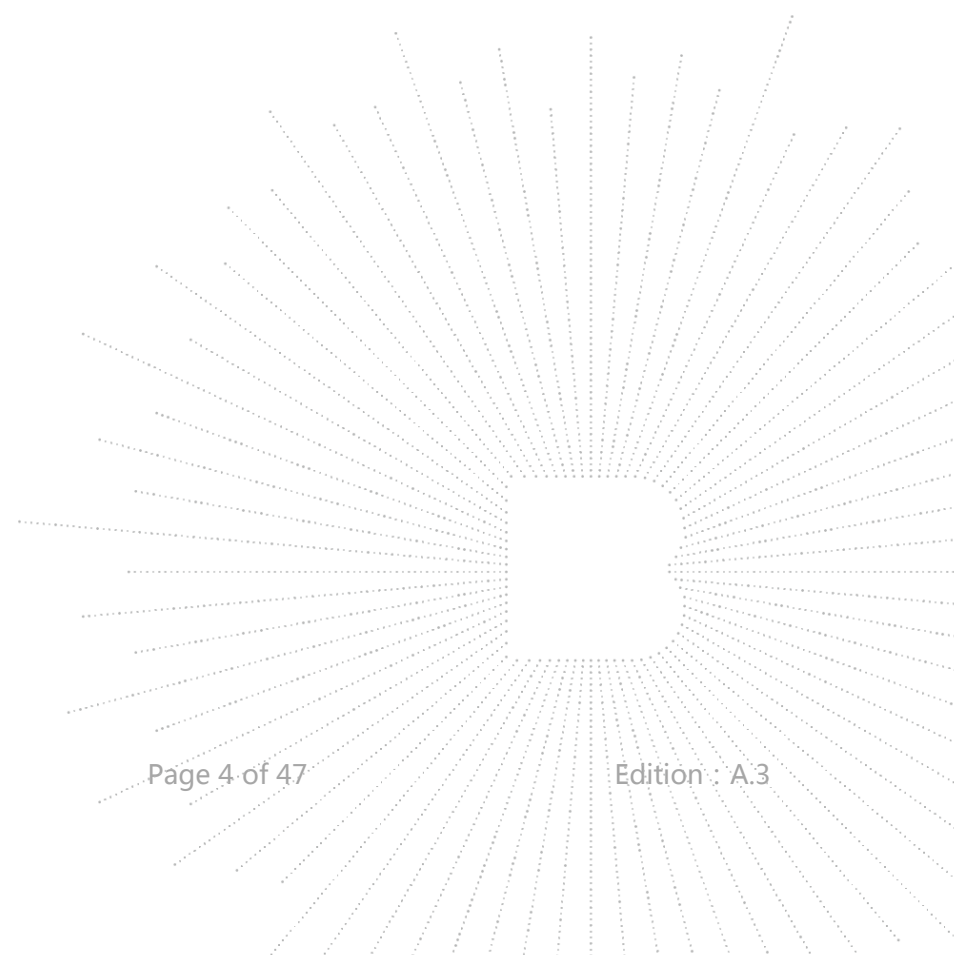
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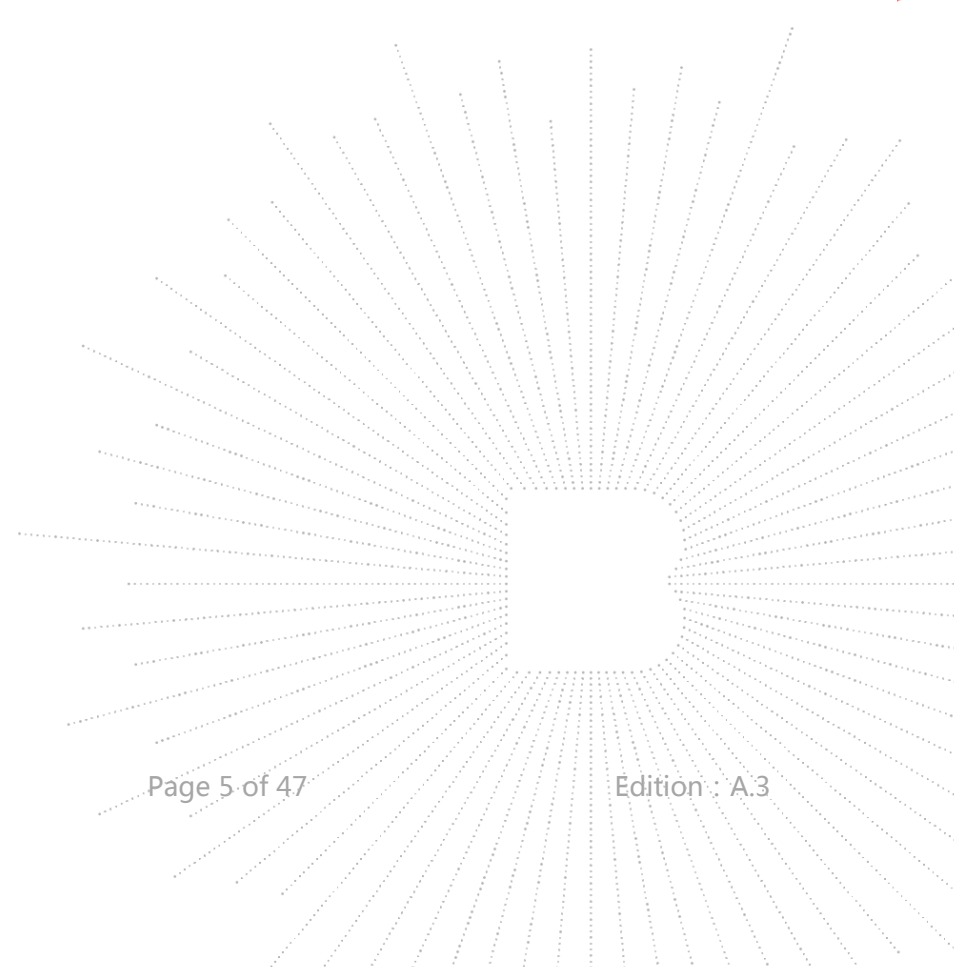
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1. Version

| Report No. | Issue Date | Description | Approved |
|-----------------|------------|-------------|----------|
| BCTC2302965144E | 2023-03-20 | Original | Valid |
| | | | |



2. Test Summary

The Product has been tested according to the following specifications:

| EMISSION | | |
|------------------|---|-------------------|
| Standard | Test Item | Test result |
| EN 55015 | Disturbance voltages (CE) | Pass |
| EN 55015 | Radiated disturbance in frequency range 9KHz to 30MHz (ME) | Pass [#] |
| EN 55015 | Radiated disturbance in frequency range 30MHz to 1000MHz (RE) | Pass |
| EN IEC 61000-3-2 | Harmonic current emission(H) | Pass |
| EN 61000-3-3 | Voltage fluctuations & flicker(F) | Pass |

| IMMUNITY (EN 61547) | | |
|---------------------|--|-------------------|
| Standard | Test Item | Test result |
| IEC 61000-4-2 | Electrostatic discharge (ESD) | Pass |
| IEC 61000-4-3 | Continuous RF electromagnetic field disturbances(RS) | Pass [#] |
| IEC 61000-4-4 | Electrical fast transients/burst (EFT) | Pass |
| IEC 61000-4-5 | Surges | Pass |
| IEC 61000-4-6 | Continuous induced RF disturbances (CS) | Pass |
| IEC 61000-4-8 | Power frequency magnetic field (PFMF) | N/A ¹ |
| IEC 61000-4-11 | Voltage dips and interruptions (DIPS) | Pass |

Remark:

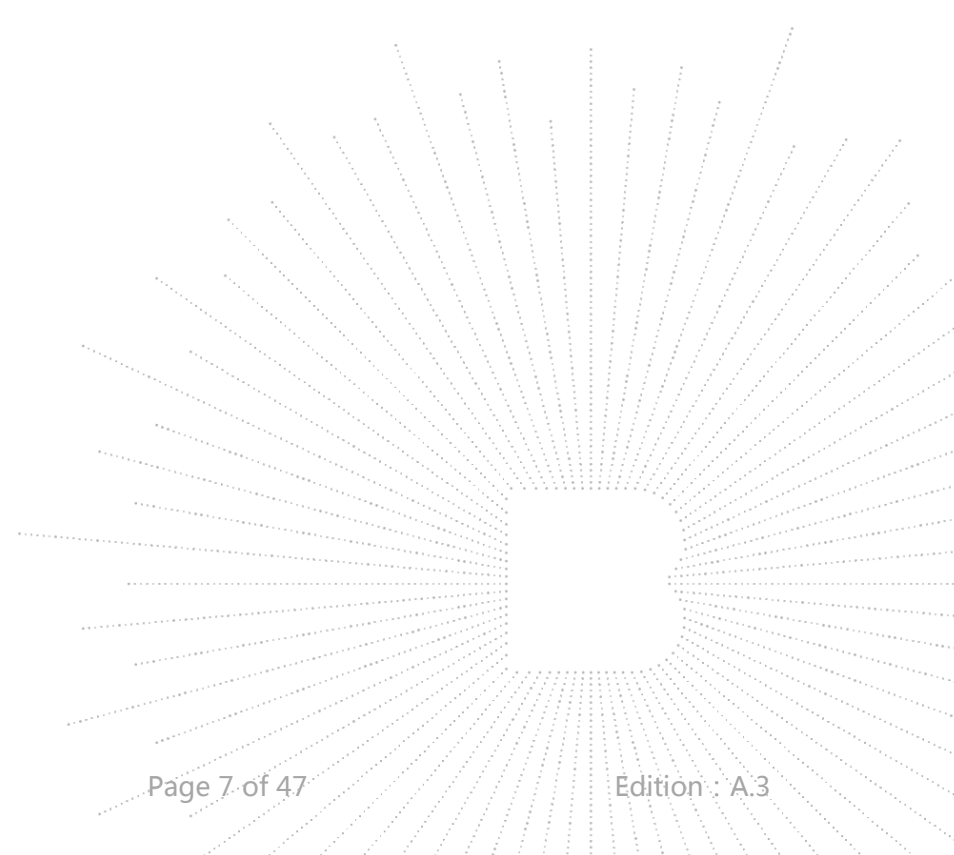
“#” indicates the testing item(s) was (were) fulfilled by subcontracted lab.

1. The Product doesn't contain any device susceptible to magnetic fields.

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

| Test item | Value (dB) |
|-----------------------------------|------------|
| Disturbance voltages (150K-30MHz) | 3.20 |
| Radiated disturbance30MHz-1000MHz | 4.80 |
| Radiated disturbance1GHz -6GMHz | 4.90 |
| Radiated disturbance6GHz -18GMHz | 4.90 |



4. Product Information and Test Setup

4.1 Product Information

| | |
|---------------------------|--|
| Ratings: | AC 220-230V/50Hz 0.045A |
| Model differences: | These models are identical in circuit and electrical, mechanical and physical structure; only use different model names according to market demand; We chose BL-SIG100 |

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

| No. | Device Type | Brand | Model | Series No. | Data Cable | Power Cord |
|-----|-------------|-------|-------|------------|------------|------------|
| 1. | --- | --- | --- | --- | --- | --- |
| 2. | --- | --- | --- | --- | --- | --- |

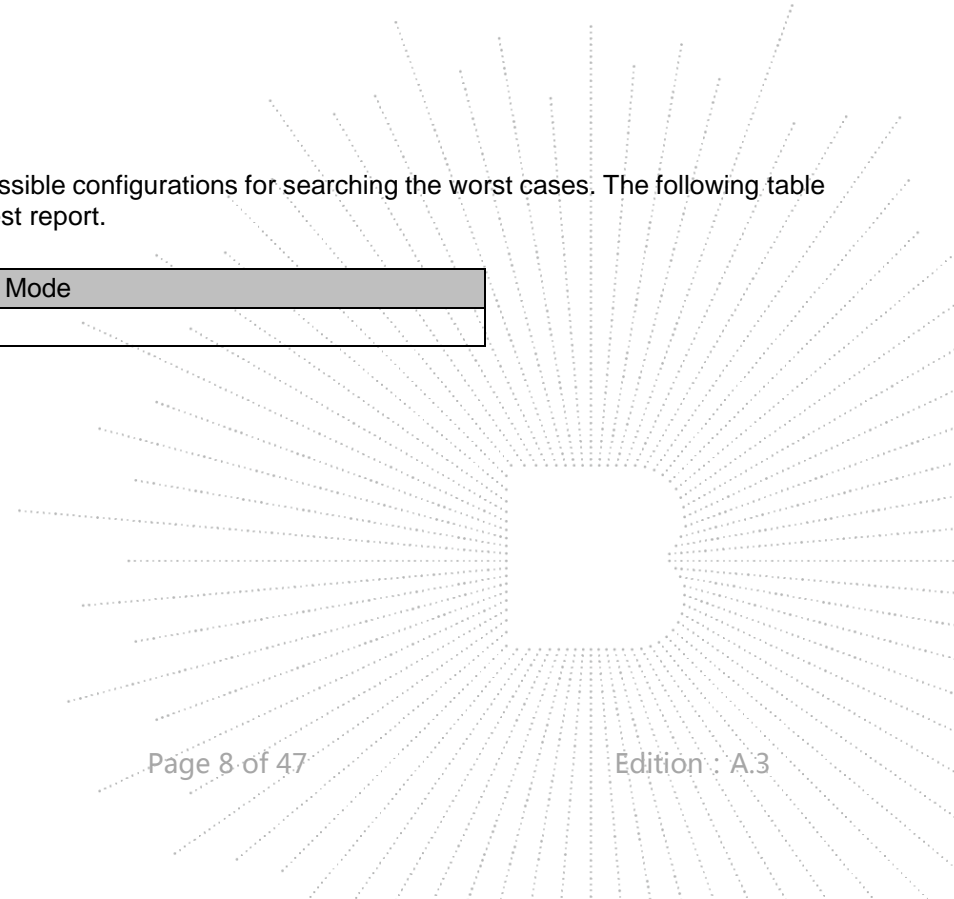
Notes:

- All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Mode | |
|-----------|---------|
| Mode 1: | Working |



| Test item | Test Mode | Test Voltage |
|---|-----------|--------------|
| Disturbance voltages (CE)(9kHz-30MHz) | Mode 1 | AC 230V/50Hz |
| Radiated disturbance in frequency range 9kHz to 30MHz (ME) | Mode 1 | AC 230V/50Hz |
| Radiated disturbance in frequency range 30MHz to 1000MHz (RE) | Mode 1 | AC 230V/50Hz |
| Harmonic current emission(H) Class <u> C </u> | Mode 1 | AC 230V/50Hz |
| Voltage fluctuations & flicker(F) | Mode 1 | AC 230V/50Hz |
| Electrostatic discharge (ESD) B <input checked="" type="checkbox"/> Air Discharge: $\pm 8\text{kV}$ <input checked="" type="checkbox"/> Contact Discharge: $\pm 4\text{kV}$ <input checked="" type="checkbox"/> HCP & VCP: $\pm 4\text{kV}$ | Mode 1 | AC 230V/50Hz |
| Continuous RF electromagnetic field disturbances(RS) A 80MHz-1000MHz, 3V/m,80% AM Front, Rear, Left, Right H/V | Mode 1 | AC 230V/50Hz |
| Electrical fast transients/burst (EFT) B <input checked="" type="checkbox"/> 1kV AC(Input) <input type="checkbox"/> 0.5kV DC(Input) <input type="checkbox"/> 0.5kV signal,Telec,control | Mode 1 | AC 230V/50Hz |
| Surges B $\leq 25\text{W}$ <input checked="" type="checkbox"/> 0.5kV, Line-Line, <input type="checkbox"/> 1kV, L-PE, N-PE $> 25\text{W}$ <input type="checkbox"/> 1kV, Line-Line, <input type="checkbox"/> 2kV, L-PE, N-PE <input type="checkbox"/> 0.5kV DC(Input) <input type="checkbox"/> 1KV, <input type="checkbox"/> 4KV signal,Telec, control C Line-Line: $90^\circ, +0.5, 1\text{kV}; 270^\circ, -0.5, 1\text{kV}$ Line-PE: $90^\circ +1, 2\text{kV}; 270^\circ, -1, 2\text{kV}$ | Mode 1 | AC 230V/50Hz |
| Continuous induced RF disturbances (CS) A 0.15MHz to 80MHz 3V <input checked="" type="checkbox"/> AC(Input) <input type="checkbox"/> DC(Input) <input type="checkbox"/> signal,control | Mode 1 | AC 230V/50Hz |
| Voltage dips and interruptions (DIPS) 0% 0.5P 10ms B 70% 10P 200ms C | Mode 1 | AC 230V/50Hz |

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5. Test Facility and Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located:

Shenzhen BCTC Technology Co., Ltd.

Address: 1 Floor, Building 2, Huayou Industrial, Yousong Road, Fukang Community, Longhua Street, Longhua District, Shenzhen, Guangdong, China.

Shenzhen BCTC Testing Co., Ltd.

Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

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

5.2 Test Instrument Used

| Conducted emissions Test | | | | | |
|--------------------------|--------------|--------------------|---------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Receiver | R&S | ESCI | 101421 | 2022-06-01 | 2023-05-31 |
| AMN | SCHWHRZBECK | NNBM8127 | 8127739 | 2022-06-01 | 2023-05-31 |
| Pulse Limiter | SCHWHRZBECK | VTSD 9561-F-N | 00547 | 2022-06-01 | 2023-05-31 |
| Software | EZ-EMC | Ver.EMC-CON 3A1 | / | / | / |

| ME Test (Shenzhen BCTC Testing Co., Ltd.) | | | | | |
|---|--------------|-----------------|----------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Receiver | R&S | ESR3 | 102075 | 2022-05-24 | 2023-05-23 |
| 3-Loop Antenna | Zhinan/China | ZN30401 | 13017 | 2022-05-24 | 2023-05-23 |
| Software | Frad | EZ-EMC | EMC-CON 3A1 | \ | \ |
| Attenuator | \ | 10dB DC-6GHz | 1650 | 2022-05-24 | 2023-05-23 |

| Radiated disturbance | | | | | |
|----------------------|-----------------------------------|-------------------|------------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Broadband antenna | SCHWHRZBECK | VULB9160 | 3369 | 2022-06-06 | 2023-06-05 |
| Receiver | R&S | ESPI | 1164.6407. 07 | 2022-06-01 | 2023-05-31 |
| Preamplifier | SCHWHRZBECK | BBV9743 | / | 2022-06-01 | 2023-05-31 |
| Horn antenna | SCHWARZBECK | BBHA 9120 D | 2792 | 2022-12-23 | 2023-12-22 |
| Preamplifier | EMC INSTRUMENTS CORPORATION | EMC0518A45SE E | EMT-SZ22 33 | 2022-11-21 | 2023-11-20 |
| RF cable 1# | SKET | 5M | #10 | 2022-12-23 | 2023-12-22 |
| RF cable 2# | / | 5M | 18038628 | 2022-12-23 | 2023-12-22 |
| RF cable 3# | / | 8.5M | 18038631 | 2022-12-23 | 2023-12-22 |
| RF cable 4# | / | 9M | 18038626 | 2022-12-23 | 2023-12-22 |
| Software | EZ-EMC | Ver.FA-03A2 | / | / | / |

| Harmonic / Flicker Test | | | | | |
|--------------------------|--------------|-------------|----------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Harmonic tester | KIKUSUI | KHA1000 | VA002162 | 2022-06-07 | 2023-06-06 |
| Linear impedance network | KIKUSUI | LIN1020JF | UL001611 | 2022-06-01 | 2023-05-31 |
| Multi outlet unit | KIKUSUI | 0T01-RHA | N/A | 2022-06-07 | 2023-06-06 |
| Power supply network | KIKUSUI | PCR4000M | UK001879 | 2022-06-01 | 2023-05-31 |
| Software | KIKUSUI | Ver3.6.1.00 | / | / | |

| Electrostatic discharge Test | | | | | |
|-----------------------------------|--------------|---------|-----------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Electrostatic discharge generator | 3C TEST | EDS 30V | ES0121614 | 2022-06-02 | 2023-06-01 |



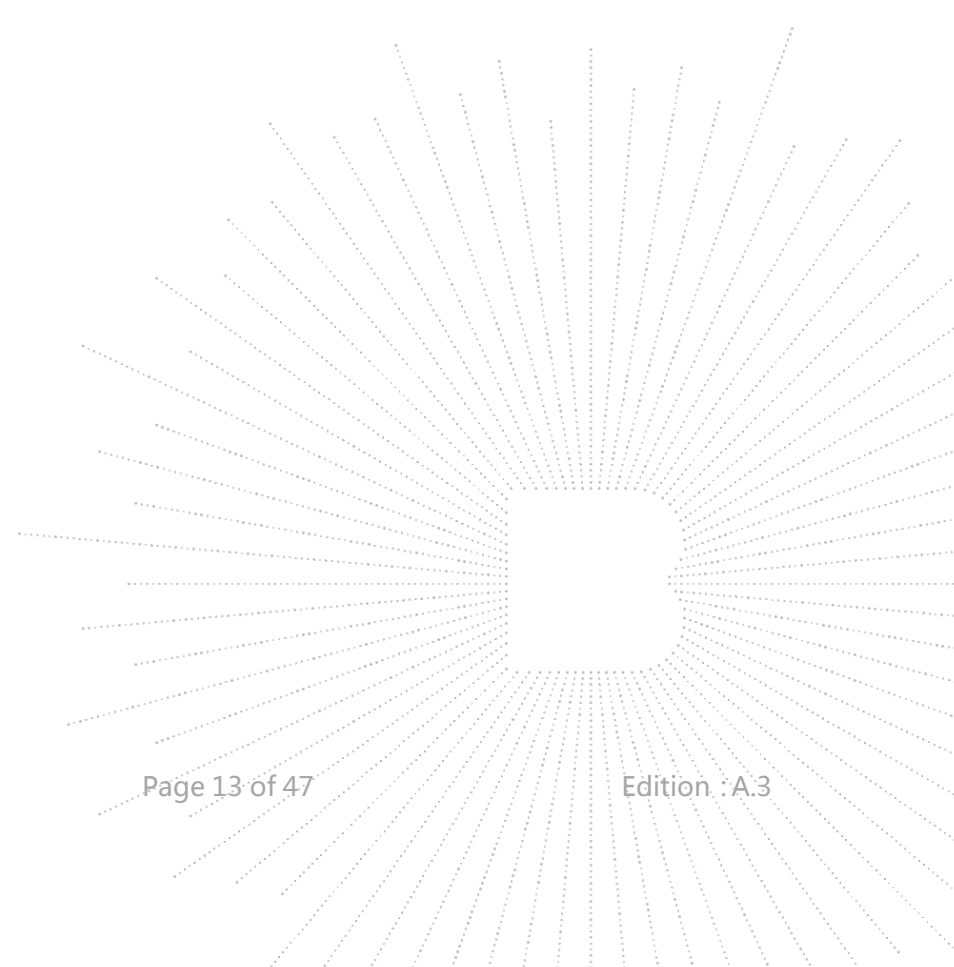
| Continuous RF Electromagnetic Field Disturbances Test (Shenzhen BCTC Testing Co., Ltd.) | | | | | |
|---|--------------|---------------------|------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Power meter | Keysight | E4419 | \ | 2022-05-24 | 2023-05-23 |
| Power sensor | Keysight | E9300A | \ | 2022-05-24 | 2023-05-23 |
| Power sensor | Keysight | E9300A | \ | 2022-05-24 | 2023-05-23 |
| Amplifier | SKET | HAP_801000 -250W | \ | 2022-05-24 | 2023-05-23 |
| Amplifier | SKET | HAP_0103-7 5W | \ | 2022-05-24 | 2023-05-23 |
| Amplifier | SKET | HAP_0306-5 0W | \ | 2022-05-24 | 2023-05-23 |
| Stacked double Log.-Per. Antenna | Schwarzbeck | STLP 9129 | \ | \ | \ |
| Field Probe | Narda | EP-601 | \ | 2022-05-30 | 2023-05-29 |
| Signal Generator | Agilent | N5181A | MY50143748 | 2022-05-24 | 2023-05-23 |
| Communication test set | R&S | CMW500 | 157483 | 2022-03-28 | 2023-03-27 |
| Software | SKET | EMC-S | 1.2.0.18 | \ | \ |

| Fast transients immunity Test | | | | | |
|-------------------------------|--------------|------------|------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Fast pulse generator | Prima | EFT61004AG | PR14054467 | 2022-06-01 | 2023-05-31 |
| Coupling forceps | Prima | EFT61004AG | BCTC009E | 2022-06-01 | 2023-05-31 |

| Surges immunity Test | | | | | |
|--|--------------|------------|------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Power line lightning strike generator | Prima | SUG61005BX | PR12045446 | 2022-05-10 | 2023-05-09 |
| Single phase transformer | Prima | JMB-3KVA | LL-PLM1407 | 2022-06-01 | 2023-05-31 |

| Injected currents immunity Test | | | | | |
|---------------------------------|--------------|------------------------------|---------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| CS signal generator | SCHLODER | CDG6000 | 126B1281 | 2022-06-01 | 2023-05-31 |
| Injection forceps | SCHLODER | EMCL-20 | 132A1214/2015 | 2022-06-01 | 2023-05-31 |
| CDN | SCHLODER | CDN-M2+3 | A2210320/2015 | 2022-06-01 | 2023-05-31 |
| 6dB Attenuator | N/A | CDG60100 | 201411010015 | 2022-06-01 | 2023-05-31 |
| Software | HUBERT | Version 1.3.0(04.02.2014) | 126B1300 | / | / |

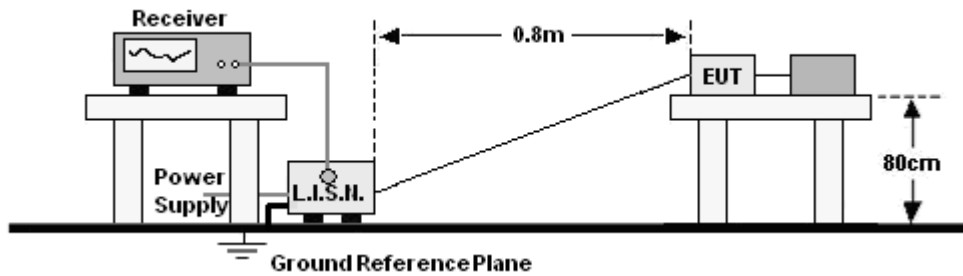
| Voltage dips and interruptions immunity Test | | | | | |
|--|--------------|------------|------------|------------|------------|
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. |
| Voltage drop tester | Prima | DRP61011AG | PR14086284 | 2022-06-01 | 2023-05-31 |



6. Conducted Emissions test

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Disturbance voltage limits at mains terminals

| Frequency range (MHz) | Limits dB(μ V) | |
|--------------------------|---------------------|-----------|
| | Quasi-peak | Average |
| 0,009 to 0,05 | 110 | -- |
| 0,05 to 0,15 | 90 to 80* | -- |
| 0,15 to 0,50 | 66 to 56* | 56 to 46* |
| 0,50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

Note:

1. The lower limit shall apply at the transition frequencies.
2. *Decreasing linearly with logarithm of frequency.
3. For electrodeless lamps and luminaries, the limit in the frequency range of 2.51MHz to 3MHz is 73 dB(μ V) quasi-peak and 63 dB(μ V) average.

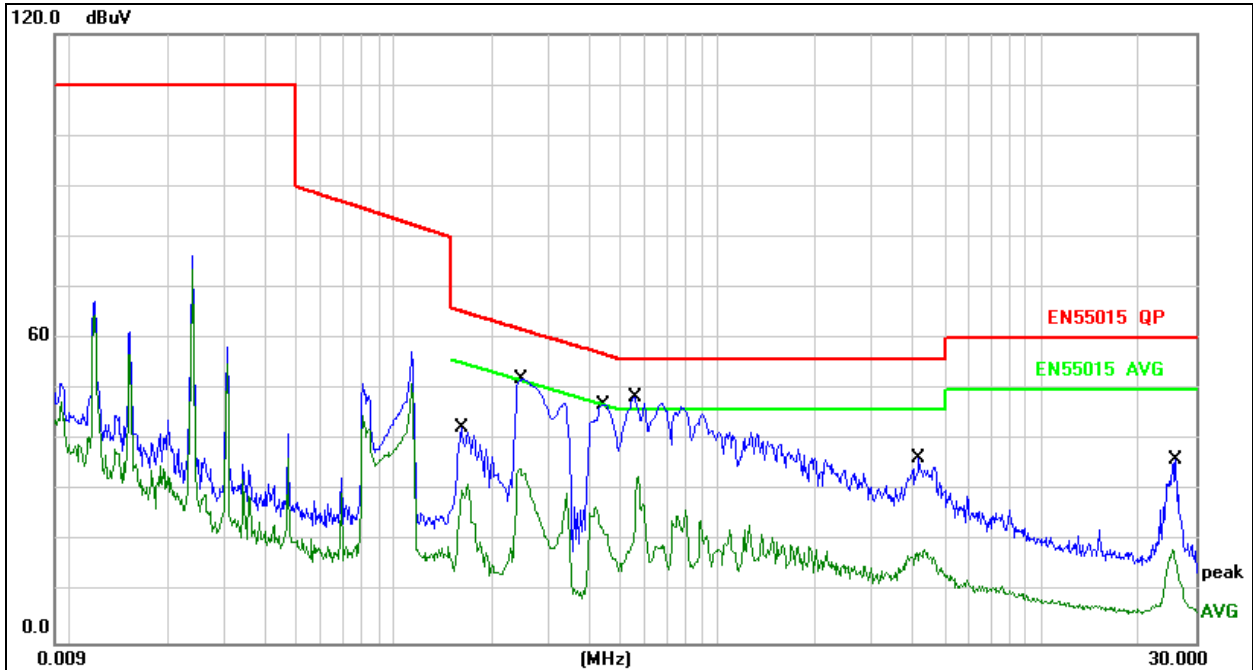
6.3 Test procedure

For mains ports:

- a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 Test Result

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101kPa | Phase: | Line |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |

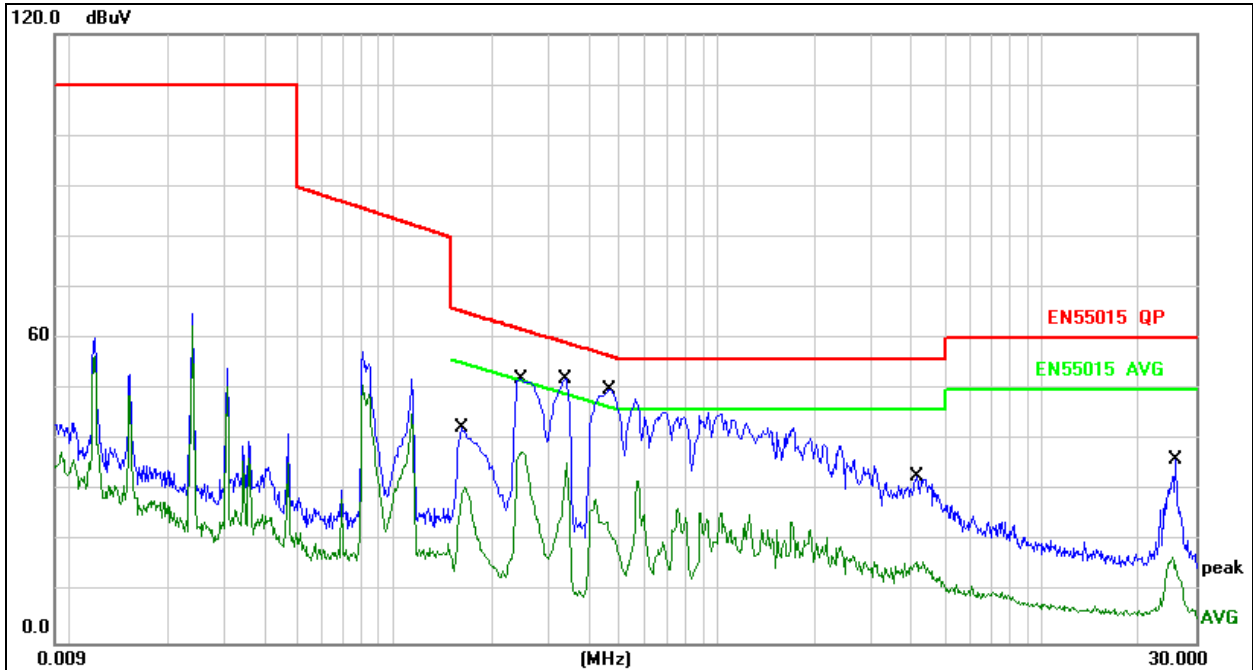


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1 | | 0.1620 | 32.34 | 10.23 | 42.57 | 65.36 | -22.79 | QP | |
| 2 | | 0.1620 | 21.08 | 10.23 | 31.31 | 55.36 | -24.05 | AVG | |
| 3 | | 0.2500 | 41.78 | 10.24 | 52.02 | 61.75 | -9.73 | QP | |
| 4 | | 0.2500 | 24.19 | 10.24 | 34.43 | 51.75 | -17.32 | AVG | |
| 5 | | 0.4460 | 36.70 | 10.23 | 46.93 | 56.95 | -10.02 | QP | |
| 6 | | 0.4460 | 16.68 | 10.23 | 26.91 | 46.95 | -20.04 | AVG | |
| 7 | * | 0.5580 | 38.20 | 10.24 | 48.44 | 56.00 | -7.56 | QP | |
| 8 | | 0.5580 | 22.59 | 10.24 | 32.83 | 46.00 | -13.17 | AVG | |
| 9 | | 4.1860 | 26.08 | 10.25 | 36.33 | 56.00 | -19.67 | QP | |
| 10 | | 4.1860 | 8.07 | 10.25 | 18.32 | 46.00 | -27.68 | AVG | |
| 11 | | 25.9540 | 25.50 | 10.53 | 36.03 | 60.00 | -23.97 | QP | |
| 12 | | 25.9540 | 7.82 | 10.53 | 18.35 | 50.00 | -31.65 | AVG | |

| | | | |
|----------------|--------------|--------------------|---------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101kPa | Phase: | Neutral |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |



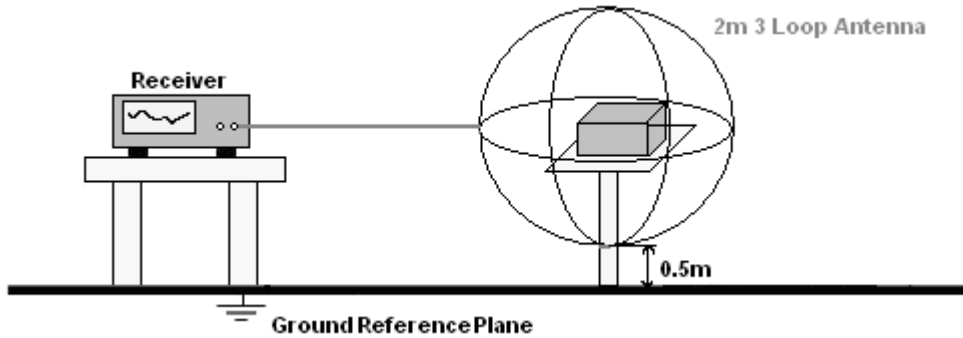
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV | Limit dBuV | Over dB | Detector | Comment |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|---------|
| 1 | | 0.1620 | 32.13 | 10.23 | 42.36 | 65.36 | -23.00 | QP | |
| 2 | | 0.1620 | 20.44 | 10.23 | 30.67 | 55.36 | -24.69 | AVG | |
| 3 | | 0.2500 | 41.79 | 10.24 | 52.03 | 61.75 | -9.72 | QP | |
| 4 | | 0.2500 | 27.48 | 10.24 | 37.72 | 51.75 | -14.03 | AVG | |
| 5 | | 0.3379 | 41.83 | 10.24 | 52.07 | 59.25 | -7.18 | QP | |
| 6 | | 0.3379 | 25.26 | 10.24 | 35.50 | 49.25 | -13.75 | AVG | |
| 7 | * | 0.4660 | 39.73 | 10.24 | 49.97 | 56.58 | -6.61 | QP | |
| 8 | | 0.4660 | 17.75 | 10.24 | 27.99 | 46.58 | -18.59 | AVG | |
| 9 | | 4.1180 | 22.54 | 10.25 | 32.79 | 56.00 | -23.21 | QP | |
| 10 | | 4.1180 | 5.84 | 10.25 | 16.09 | 46.00 | -29.91 | AVG | |
| 11 | | 25.9500 | 25.60 | 10.53 | 36.13 | 60.00 | -23.87 | QP | |
| 12 | | 25.9500 | 6.46 | 10.53 | 16.99 | 50.00 | -33.01 | AVG | |

7. Radiated Disturbance (9 KHz-30MHz)

7.1 Block Diagram Of Test Setup



7.2 Limits

| Frequency | Limits for Loop Diameter (dB μ A) |
|-----------------|---------------------------------------|
| | 2m |
| 9KHz ~ 70KHz | 88 |
| 70KHz ~ 150KHz | 88 ~ 58* |
| 150KHz ~ 3.0MHz | 58 ~ 22* |
| 3.0MHz ~ 30MHz | 22 |

Note:

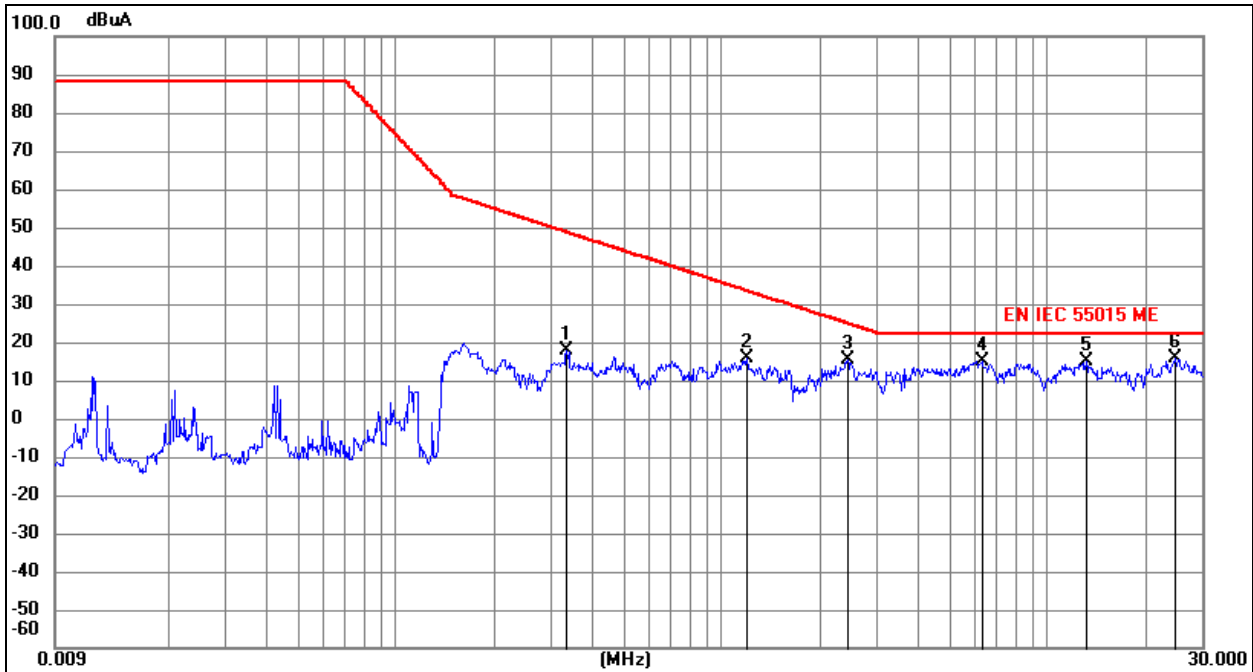
1. At the transition frequency the lower limit applies.
2. * Decreasing linearly with the logarithm of the frequency. For electrodeless lamps and luminaries, the limit in the frequency range of 2.2MHz to 3.0MHz is 58dB(μ A) for 2m.

7.3 Test Procedure

- a. The Product was placed on a wooden table in the center of a loop antenna.
- b. The induced current in the loop antenna was measured by means of a current probe and the test receiver. Three field components were checked by means of a coaxial switch.
- c. The frequency range from 9 KHz to 30MHz is investigated. The receiver was measured with the quasi-peak detector. The RBW of the receiver was set at 200Hz in 9 kHz ~150 kHz and 9 kHz in 150 kHz ~ 30MHz.

7.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Phase : | X |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |

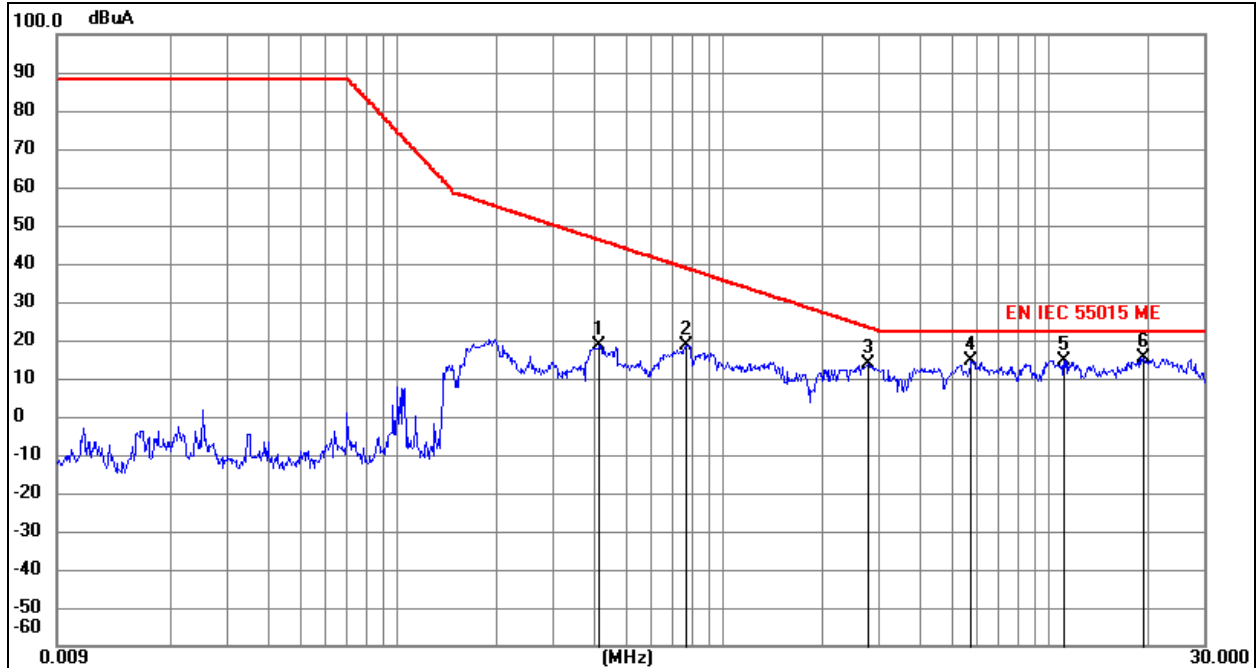


Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuA | Limit dBuA | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|--------------------------|---------------|------------|----------|
| 1 | | 0.3351 | 7.25 | 10.45 | 17.70 | 48.34 | -30.64 | QP |
| 2 | | 1.1975 | 4.83 | 10.81 | 15.64 | 33.04 | -17.40 | QP |
| 3 | | 2.4464 | 3.70 | 11.58 | 15.28 | 24.45 | -9.17 | QP |
| 4 | | 6.3201 | 4.91 | 10.09 | 15.00 | 22.00 | -7.00 | QP |
| 5 | | 13.2224 | 5.01 | 9.84 | 14.85 | 22.00 | -7.15 | QP |
| 6 | * | 24.8931 | 6.50 | 9.44 | 15.94 | 22.00 | -6.06 | QP |

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Phase : | Y |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |

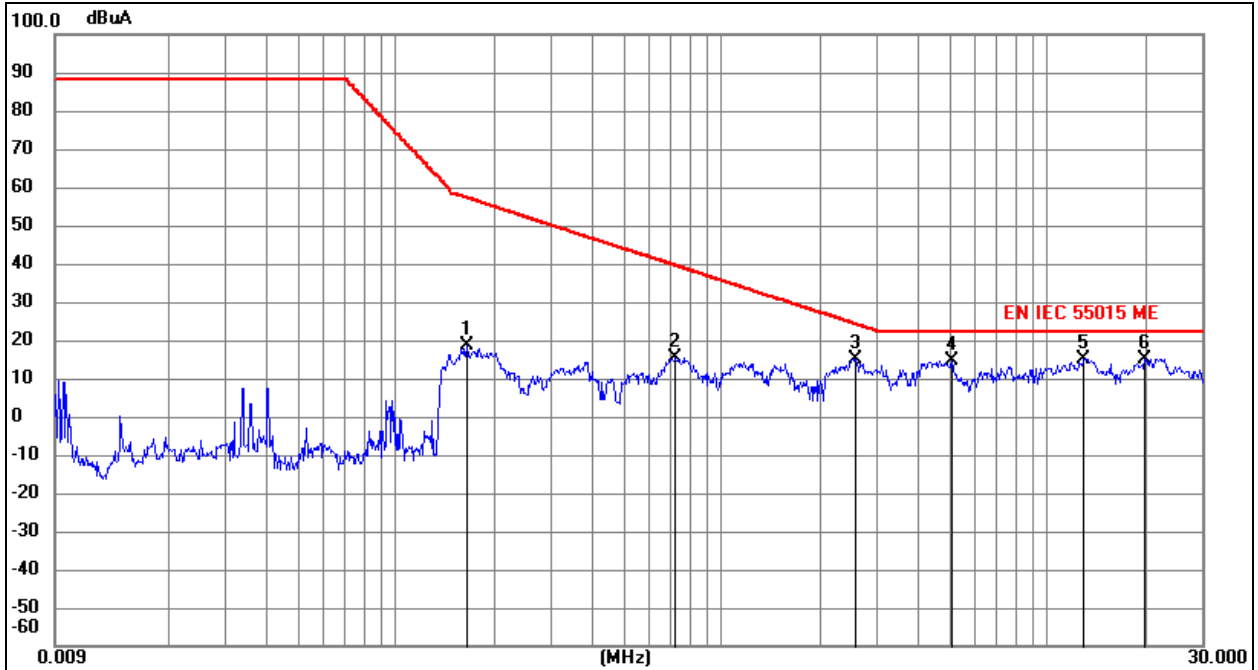

Remark:

1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Detector |
|-----|-----|---------|---------------|----------------|-------------|-------|--------|----------|
| | | MHz | dBuV | dB | dBuA | dBuA | dB | |
| 1 | | 0.4173 | 8.11 | 10.46 | 18.57 | 45.70 | -27.13 | QP |
| 2 | | 0.7669 | 7.89 | 10.59 | 18.48 | 38.39 | -19.91 | QP |
| 3 | | 2.7854 | 2.50 | 11.44 | 13.94 | 22.89 | -8.95 | QP |
| 4 | | 5.7804 | 4.61 | 10.12 | 14.73 | 22.00 | -7.27 | QP |
| 5 | | 11.1514 | 4.80 | 9.91 | 14.71 | 22.00 | -7.29 | QP |
| 6 | * | 19.5167 | 5.65 | 9.66 | 15.31 | 22.00 | -6.69 | QP |

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| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Phase : | Z |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |


Remark:

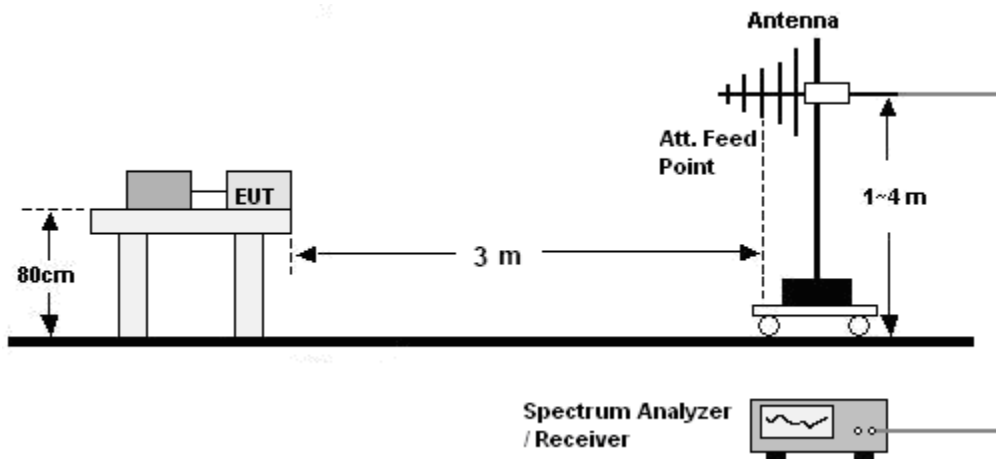
1. All readings are Quasi-Peak values.
2. Factor = Antenna factor+ Cable Loss.
3. Measurement = Reading Level + Correct Factor
4. Over = Measurement - Limit

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measurement | Limit | Over | Detector |
|-----|-----|---------|---------------|----------------|-------------|-------|--------|----------|
| | | MHz | dBuV | dB | dBuA | dBuA | dB | |
| 1 | | 0.1655 | 8.09 | 10.43 | 18.52 | 56.82 | -38.30 | QP |
| 2 | | 0.7246 | 4.97 | 10.57 | 15.54 | 39.07 | -23.53 | QP |
| 3 | | 2.5893 | 3.46 | 11.56 | 15.02 | 23.77 | -8.75 | QP |
| 4 | | 5.1181 | 4.32 | 10.15 | 14.47 | 22.00 | -7.53 | QP |
| 5 | * | 13.0096 | 5.31 | 9.87 | 15.18 | 22.00 | -6.82 | QP |
| 6 | | 19.9969 | 5.46 | 9.67 | 15.13 | 22.00 | -6.87 | QP |

8. Radiated Emissions test

8.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



8.2 Limits

Limits for radiated disturbance

| Frequency (MHz) | Quasi-peak limits at 3m dB(μ V/m) |
|-----------------|--|
| 30-230 | 40 |
| 230-1000 | 47 |

Note: The lower limit shall apply at the transition frequencies.

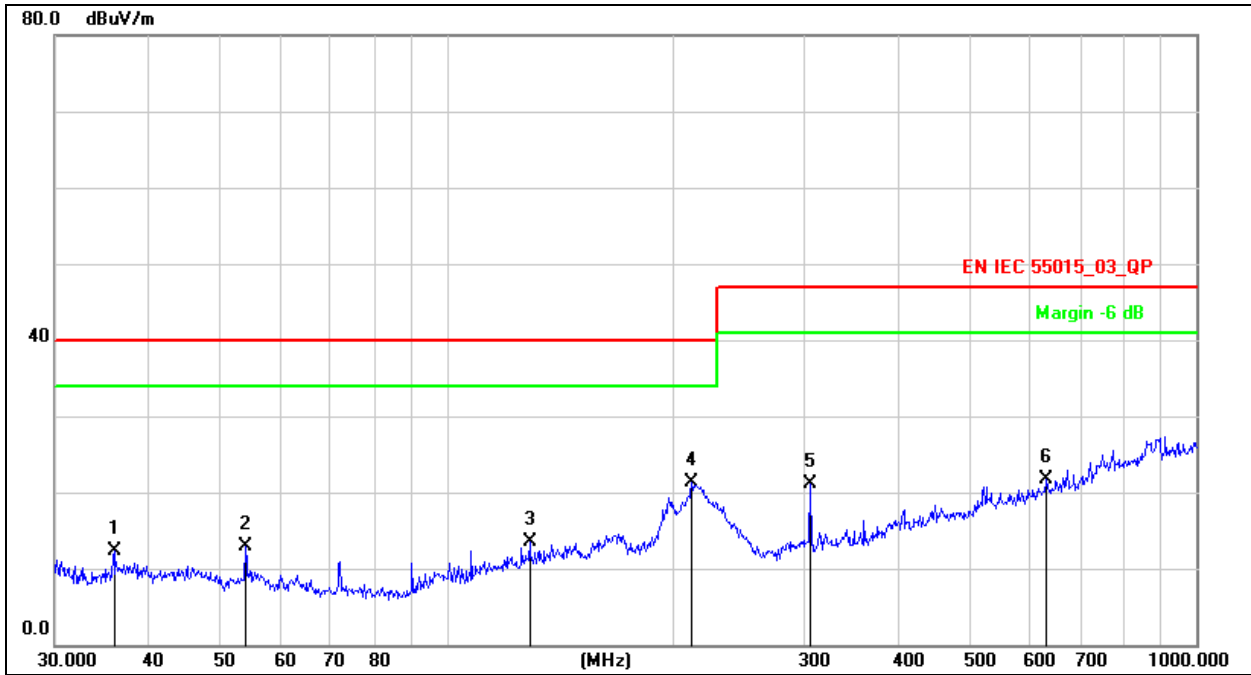
8.3 Test Procedure

30MHz ~ 1GHz:

- The Product was placed on the nonconductive turntable 0.8m above the ground in a semi anechoic chamber.
- Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

8.4 Test Results

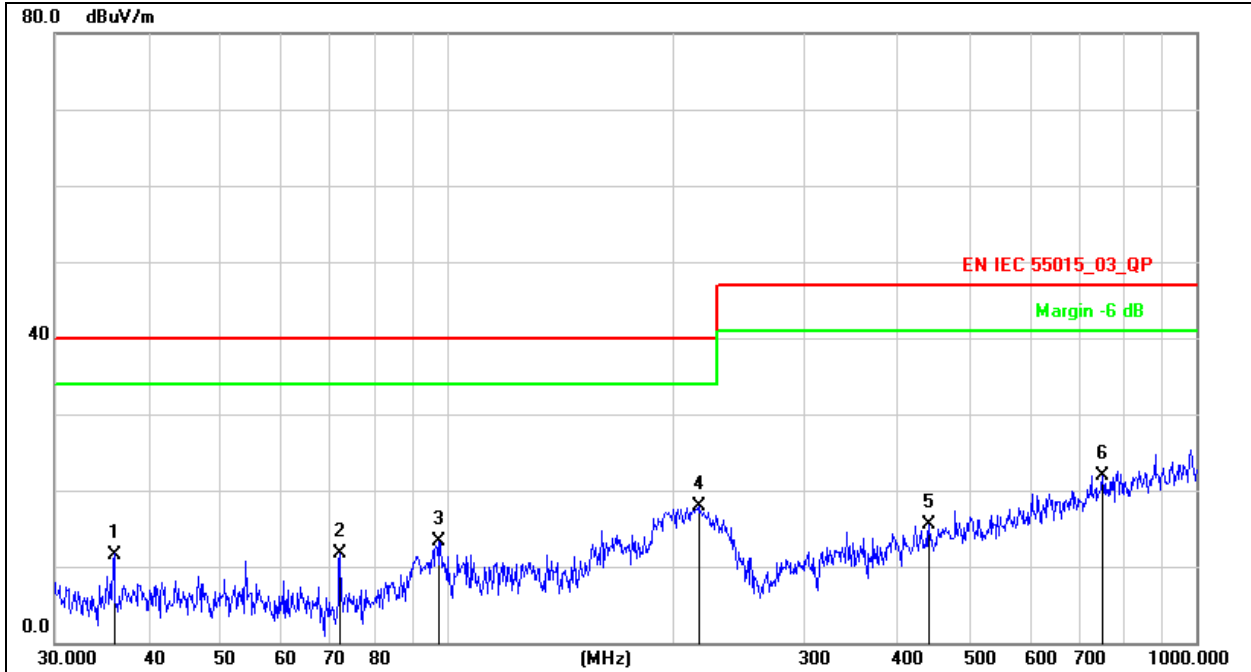
| | | | |
|----------------|--------------|--------------------|------------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Phase: | Horizontal |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 36.0007 | 20.57 | -8.33 | 12.24 | 40.00 | -27.76 | QP |
| 2 | | 53.8818 | 22.31 | -9.39 | 12.92 | 40.00 | -27.08 | QP |
| 3 | | 129.0146 | 20.90 | -7.41 | 13.49 | 40.00 | -26.51 | QP |
| 4 | * | 212.2695 | 30.20 | -8.86 | 21.34 | 40.00 | -18.66 | QP |
| 5 | | 305.6800 | 26.57 | -5.50 | 21.07 | 47.00 | -25.93 | QP |
| 6 | | 631.6884 | 19.59 | 2.20 | 21.79 | 47.00 | -25.21 | QP |

| | | | |
|----------------|--------------|--------------------|----------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Phase: | Vertical |
| Test Voltage : | AC 230V/50Hz | Test Mode: | Mode 1 |

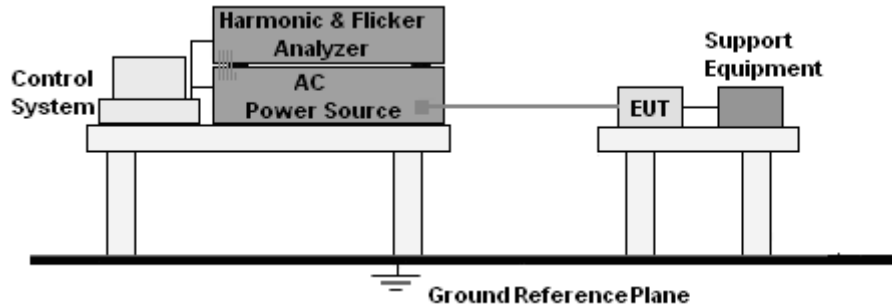


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measure- ment dBuV/m | Limit dB/m | Over dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|---------------|------------|----------|
| 1 | | 36.0007 | 19.93 | -8.33 | 11.60 | 40.00 | -28.40 | QP |
| 2 | | 72.0843 | 22.71 | -11.08 | 11.63 | 40.00 | -28.37 | QP |
| 3 | | 97.7983 | 23.62 | -10.28 | 13.34 | 40.00 | -26.66 | QP |
| 4 | * | 216.7828 | 26.57 | -8.68 | 17.89 | 40.00 | -22.11 | QP |
| 5 | | 440.1963 | 17.17 | -1.64 | 15.53 | 47.00 | -31.47 | QP |
| 6 | | 750.1083 | 17.28 | 4.58 | 21.86 | 47.00 | -25.14 | QP |

9. Harmonic current emission (H)

9.1 Block Diagram of Test Setup



9.2 Limit

EN IEC 61000-3-2 Clause 7..

9.3 Test Procedure

- The Product was placed on the top of a non-conductive table above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
- The correspondent test program of test instrument to measure the current harmonics emanated from Product was chosen. The measure time shall be not less than the time necessary for the Product to be exercised.

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9.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

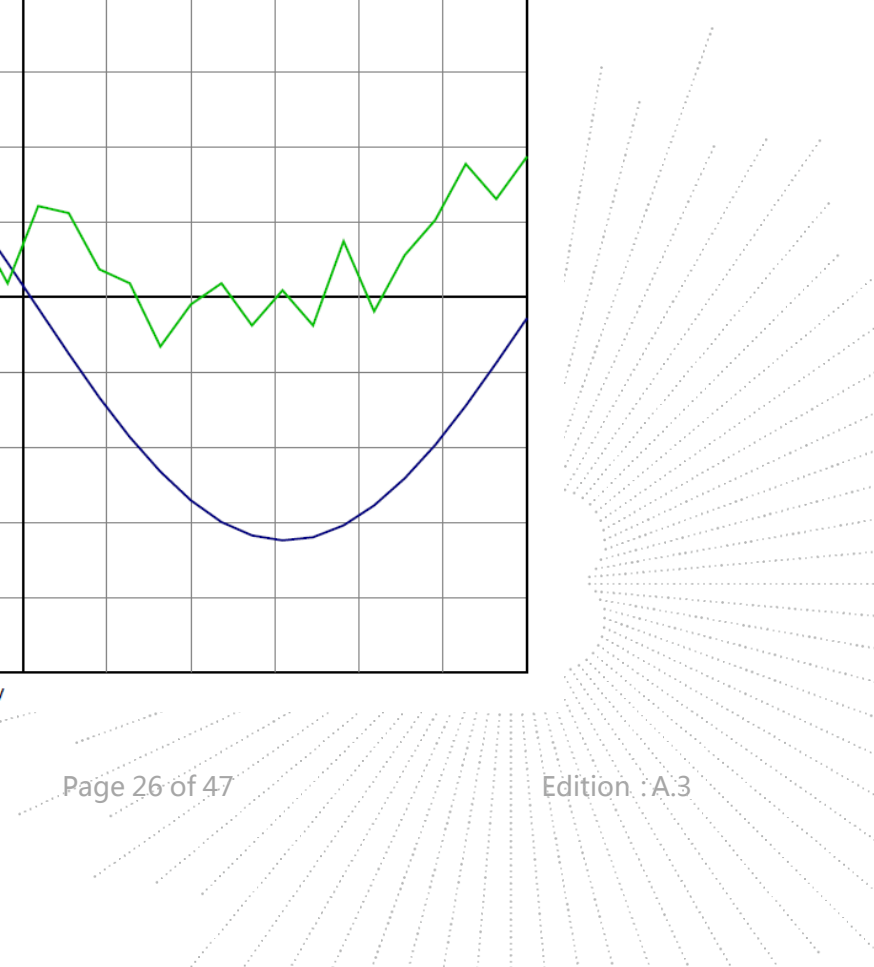
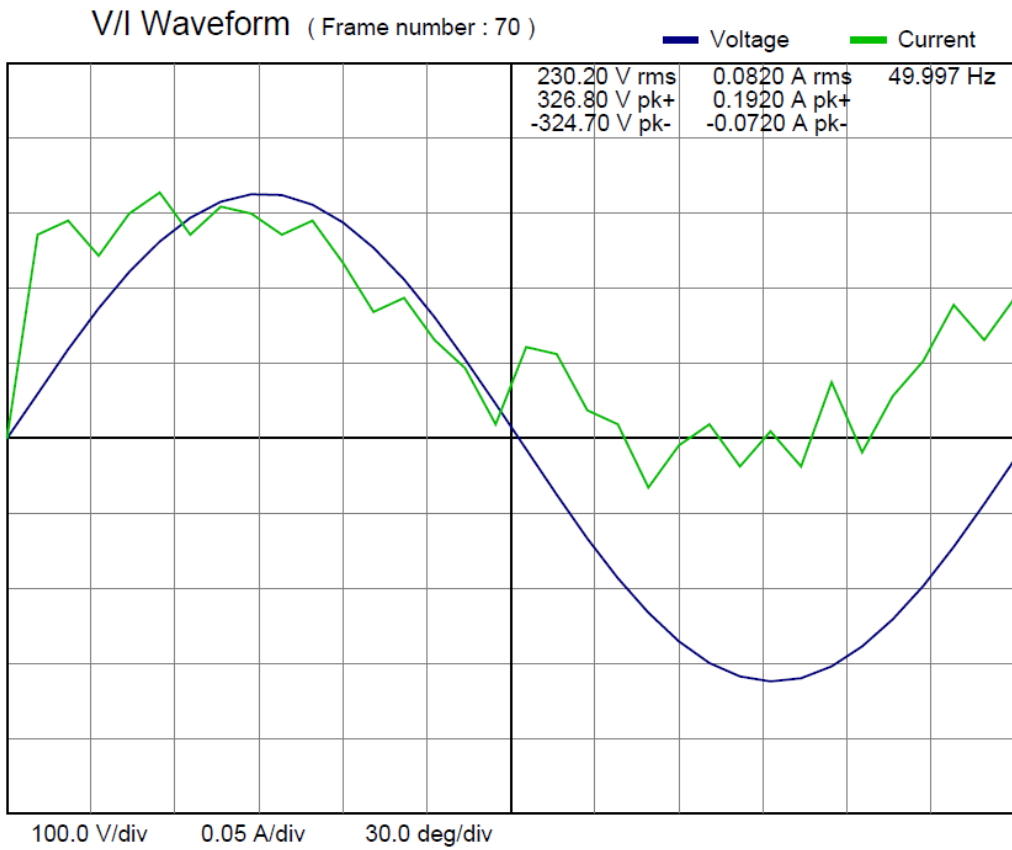
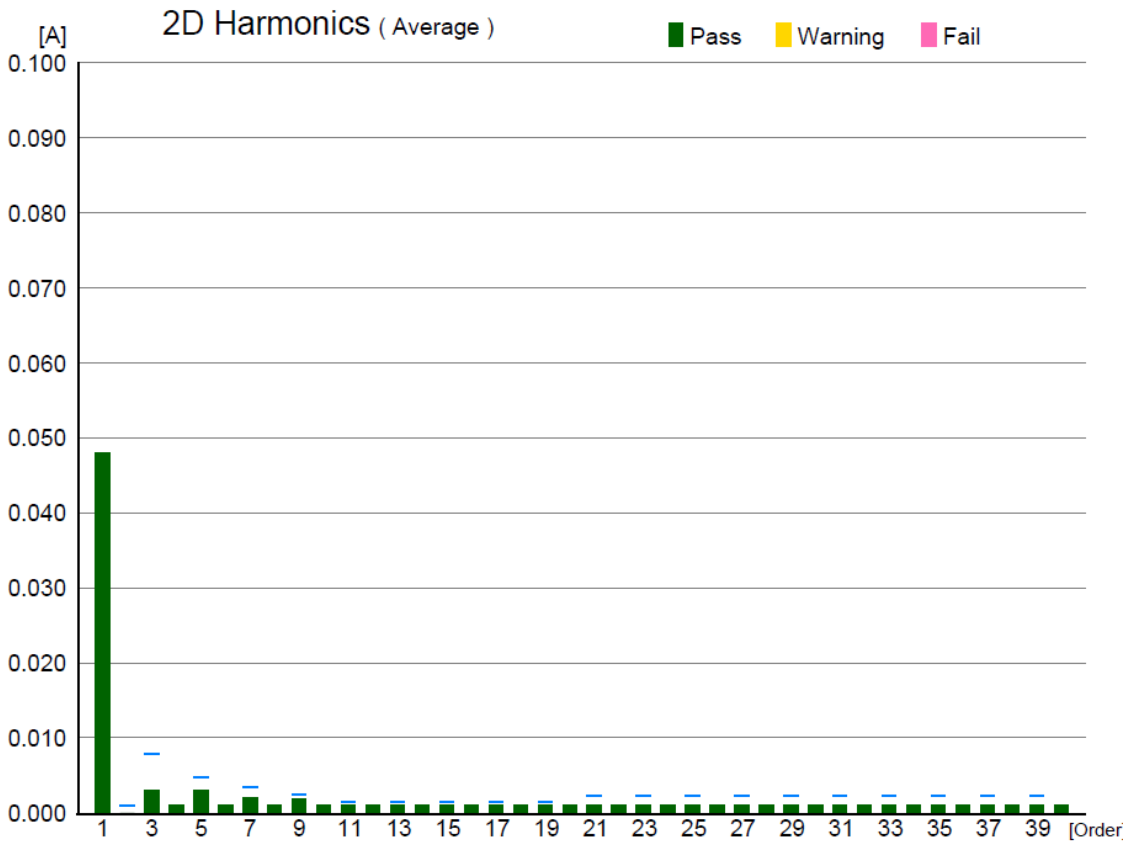
Test Data of Harmonics Current

| | | | |
|-------------------|-------------|---------------------|------------------------|
| Final Test Result | Pass | Tobs | Quasi-Stationary |
| Voltage | 230.22 V | THC | 0.0080 A |
| Current | 0.0830 A | POHC/Limit | 0.0030 A / 0.0044 A *3 |
| Power | 10.34 W | Nominal | 230 V / 50 Hz |
| Power Factor | 0.5456 | Fundamental Current | 0.0480 A |
| Apparent Power | 19.1 VA | Measuring Period | 150 s |
| THD (max) | 16.66 % | Margin | 10 % |

| Order | Limit1(A rms) | Limit2(A rms) | Ave(A rms) | Max(A rms) | Judge |
|-------|---------------|---------------|------------|------------|-------|
| 1 | ---- | ---- | 0.0480 | 0.0480 | N/A |
| 2 | 0.0010 | 0.0014 | 0.0000 | 0.0010 | N/A |
| 3 | 0.0079 | 0.0118 | 0.0030 | 0.0030 | N/A |
| 4 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 5 | 0.0048 | 0.0072 | 0.0030 | 0.0040 | N/A |
| 6 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 7 | 0.0034 | 0.0050 | 0.0020 | 0.0030 | N/A |
| 8 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 9 | 0.0024 | 0.0036 | 0.0019 | 0.0020 | N/A |
| 10 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 11 | 0.0014 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 12 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 13 | 0.0014 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 14 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 15 | 0.0014 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 16 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 17 | 0.0014 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 18 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 19 | 0.0014 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 20 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 21 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 22 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 23 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 24 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 25 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 26 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 27 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 28 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 29 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 30 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 31 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 32 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 33 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 34 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 35 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 36 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 37 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 38 | ---- | ---- | 0.0010 | 0.0010 | N/A |
| 39 | 0.0022 | 0.0022 | 0.0010 | 0.0010 | N/A |
| 40 | ---- | ---- | 0.0010 | 0.0010 | N/A |

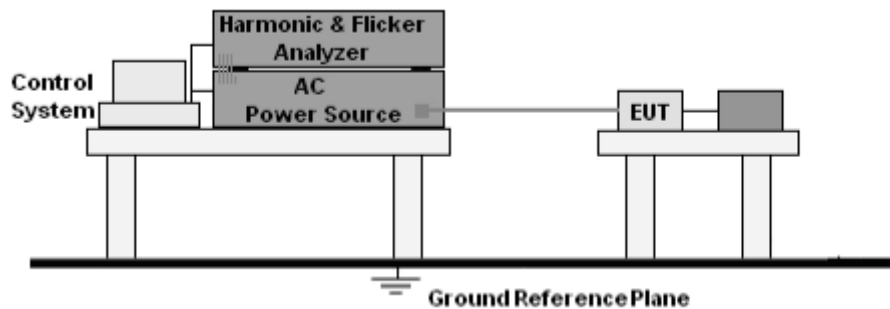
N/A : Not Apply

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10. Voltage fluctuations & flicker(F)

10.1 Block Diagram of Test Setup



10.2 Limit

EN 61000-3-3 Clause 5.

10.3 Test Procedure

- The Product was placed on the top of a non-conductive table above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
- During the flick test, the measure time shall include that part of whole operation cycle in which the Product 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.

10.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

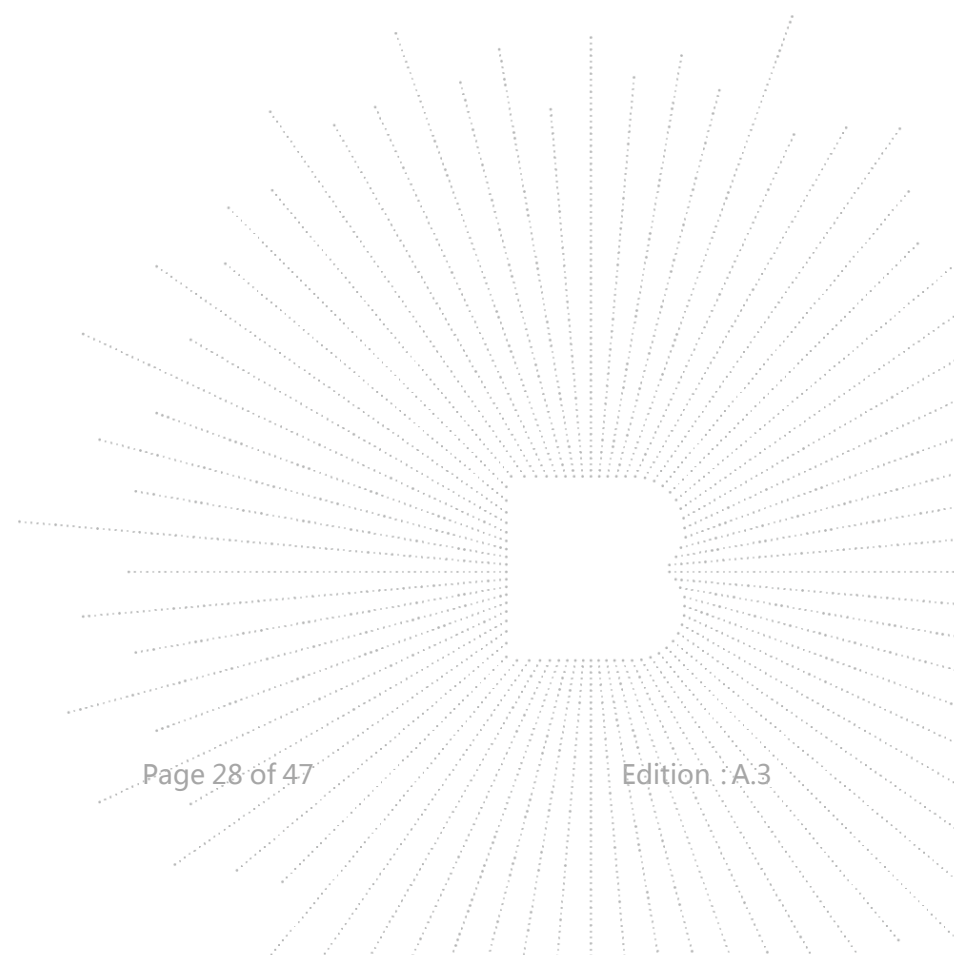
Test Data of Voltage Fluctuation and Flicker

Final Test Result **Pass**
 Nominal Voltage 230 V
 Nominal Frequency 50 Hz
 Plt Test Duration 600 s
 Flicker Margin 100 %
 d Measurement Margin 100 %

| Segment | Pst | dmax(%) | dc(%) | d(t)>3.3%(ms) | Judge |
|---------|-------|---------|-------|---------------|-------------|
| Limit | 1.000 | 4.000 | 3.300 | 500 | |
| Seg. 1 | 0.049 | 0.087 | 0.004 | 0 | Pass |

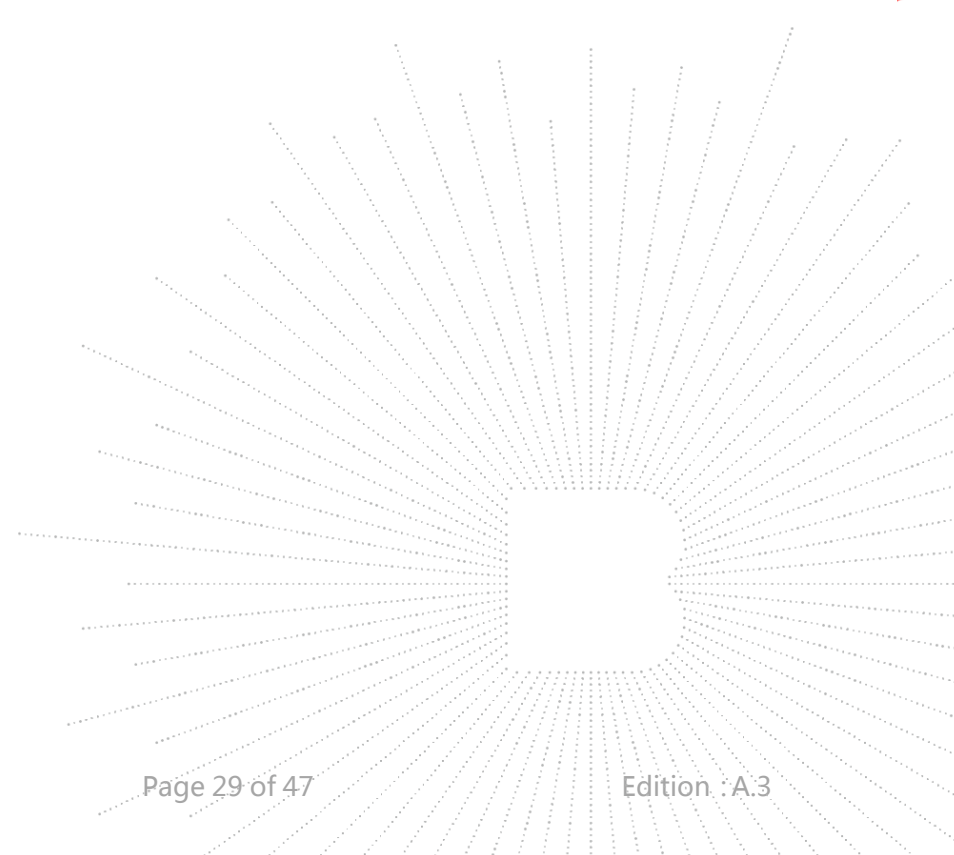
| Plt | Value | Judge |
|-------------|-------|-------------|
| Limit | 0.650 | |
| Measurement | 0.021 | Pass |

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11. Immunity Test Of General The Performance Criteria

| Product Standard | EN 61547: 2009 clause 4.2 |
|--------------------|--|
| 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. |



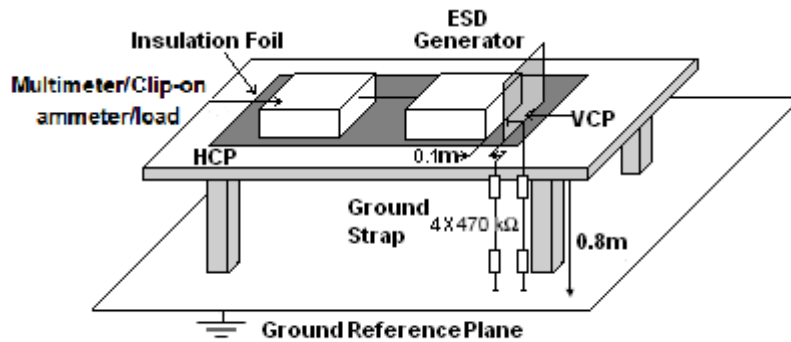
12. Electrostatic Discharge (ESD)

12.1 Test Specification

| | |
|----------------------------|-------------------------------------|
| Test Port | : Enclosure port |
| Discharge Impedance | : 330 ohm / 150 pF |
| Discharge Mode | : Single Discharge |
| Discharge Period | : one second between each discharge |

12.2 Block Diagram of Test Setup

For Floor Stand:



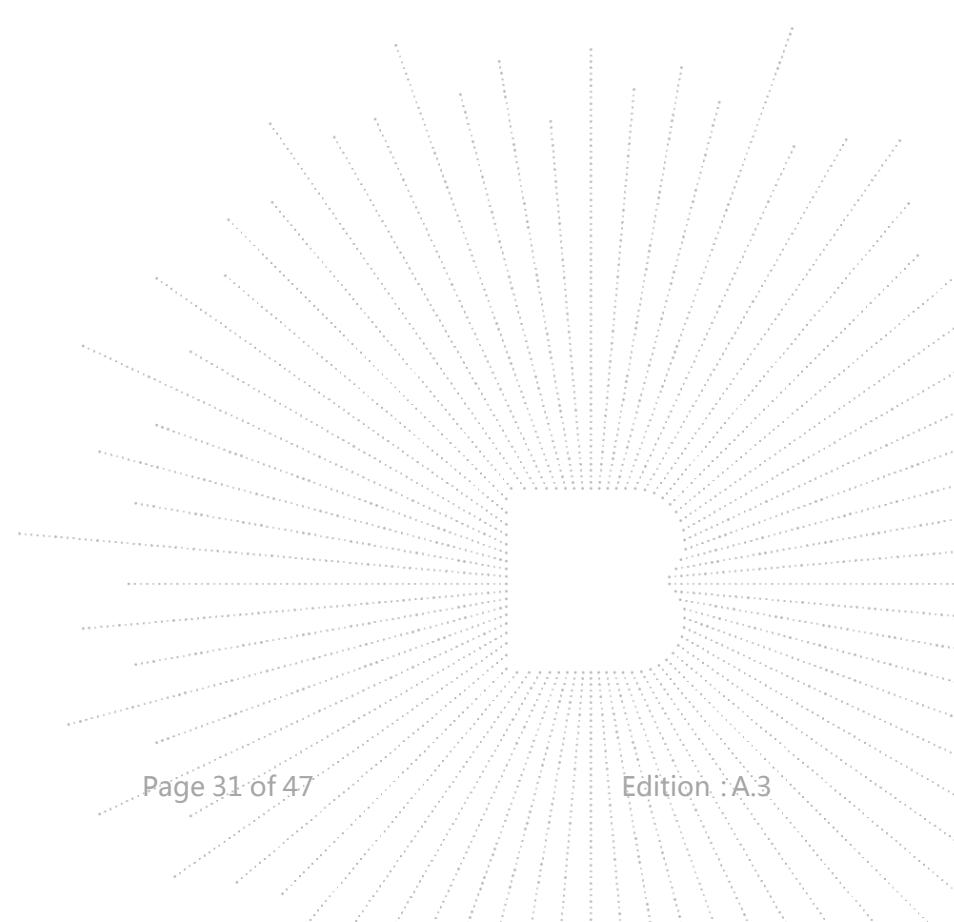
12.3 Test Procedure

- 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 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.

12.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

| Discharge Method | Discharge Position | Voltage (±kV) | Min. No. of Discharge per polarity (Each Point) | Required Level | Performance Criterion |
|-------------------|----------------------------|---------------|---|----------------|-----------------------|
| Contact Discharge | Conductive Surfaces, Screw | 4 | 10 | B | A |
| | Indirect Discharge HCP | 4 | 10 | B | A |
| | Indirect Discharge VCP | 4 | 10 | B | A |
| Air Discharge | Insulating Surfaces | 8 | 10 | B | A |
| Note*: N/A | | | | | |



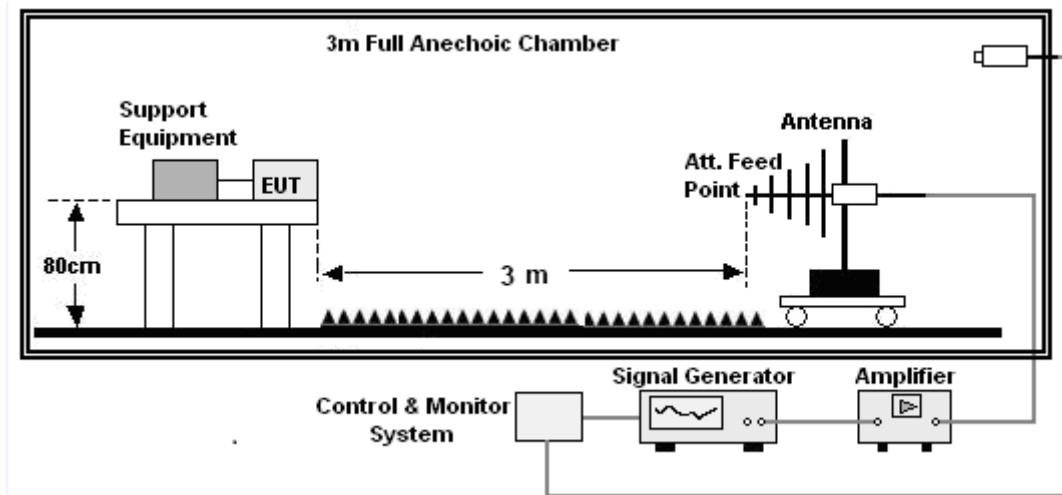
13. Continuous RF Electromagnetic Field Disturbances (RS)

13.1 Test Specification

| | |
|---------------------|-------------------------|
| Test Port | : Enclosure port |
| Step Size | : 1% |
| Modulation | : 1kHz, 80% AM |
| Dwell Time | : 1 second |
| Polarization | : Horizontal & Vertical |

13.2 Block Diagram of Test Setup

Below 1GHz:



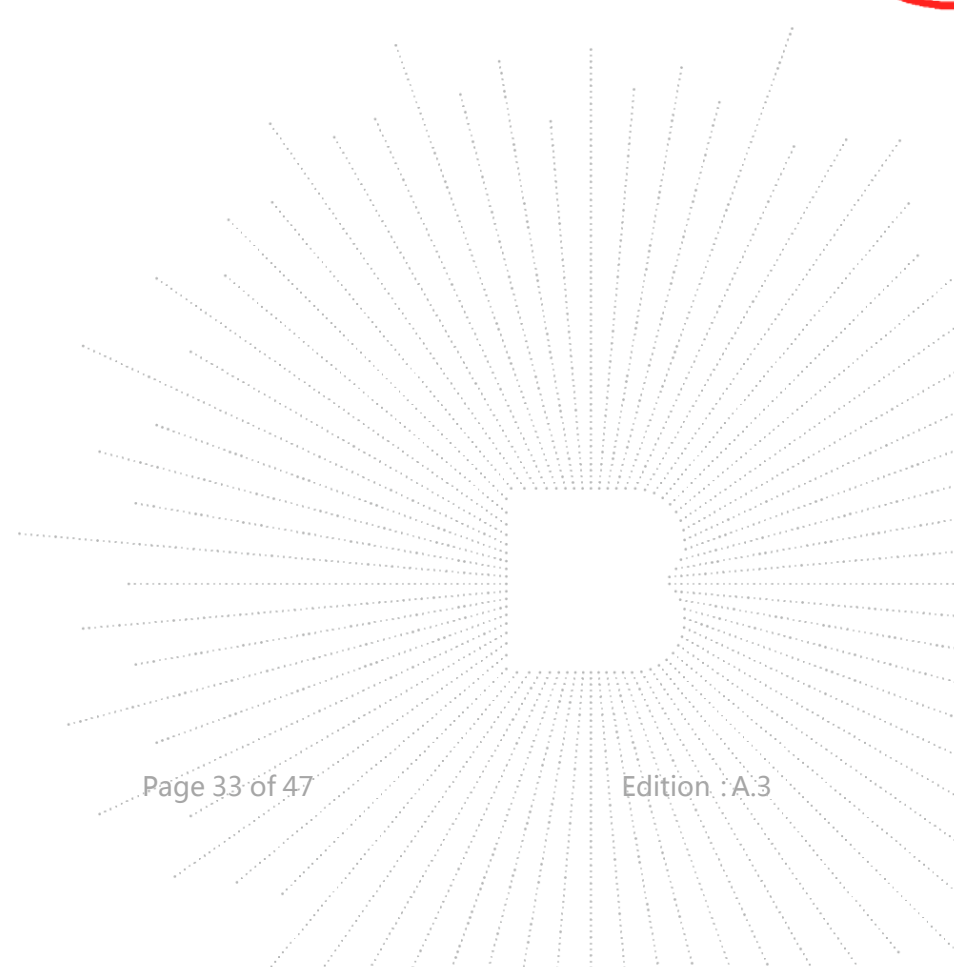
13.3 Test Procedure

- The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3 meters from the Product.
- The frequency range is swept from 80MHz to 1000MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1%.
- The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

13.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

| Frequency | Position | Field Strength (V/m) | Required Level | Performance Criterion |
|---------------|-----------------------------|----------------------|----------------|-----------------------|
| 80 - 1000MHz, | Front, Right, Back, Left | 3 | A | A |



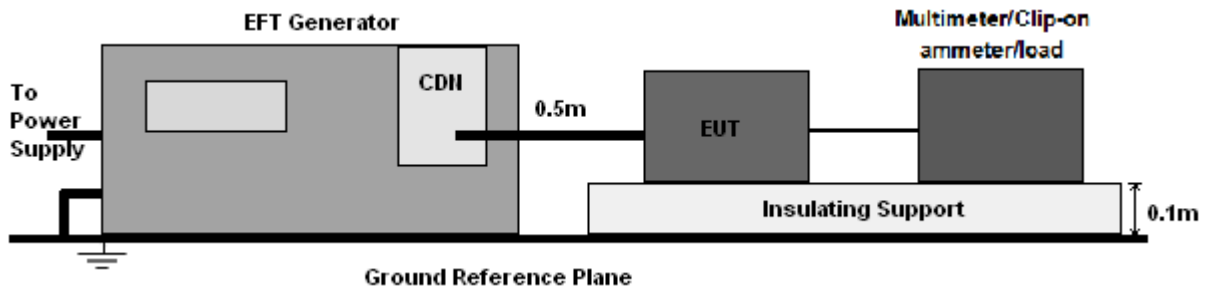
14. Electrical Fast Transients/Burst (EFT)

14.1 Test Specification

| | |
|---------------------------|---------------------------|
| Test Port | : input ac/dc. power port |
| Impulse Frequency | : 5 kHz |
| Impulse Wave-shape | : 5/50 ns |
| Burst Duration | : 15 ms |
| Burst Period | : 300 ms |
| Test Duration | : 2 minutes per polarity |

14.2 Block Diagram of EUT Test Setup

For input ac/dc. power port:



14.3 Test Procedure

- The Product and support units were located on a non-conductive table above ground reference plane.
- A 0.5m-long power cord was attached to Product during the test.

14.4 Test Results

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

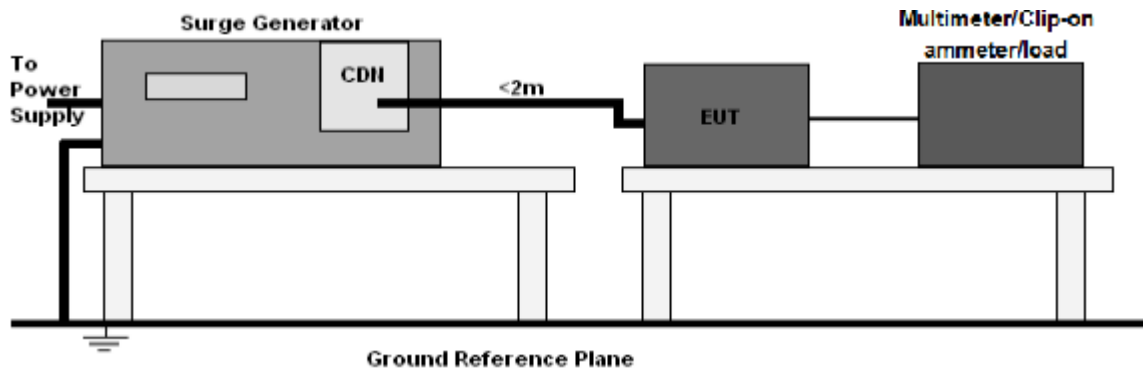
| Coupling | Voltage (kV) | Polarity | Required Level | Performance Criterion |
|----------------|--------------|----------|----------------|-----------------------|
| AC Mains L-N-P | 1.0 | ± | B | A |

15. Surges Immunity Test

15.1 Test Specification

| | |
|------------------------------|---|
| Test Port | : input ac/dc. power port |
| Wave-Shape | : Open Circuit Voltage - 1.2 / 50 us Short Circuit Current - 8 / 20 us |
| Pulse Repetition Rate | : 1 pulse / min. |
| Phase Angle | : 90° / 270° |
| Test Events | : Five positive polarity pulses at the 90° phase angle Five negative polarity pulses at the 270° phase angle |

15.2 Block Diagram of EUT Test Setup



15.3 Test Procedure

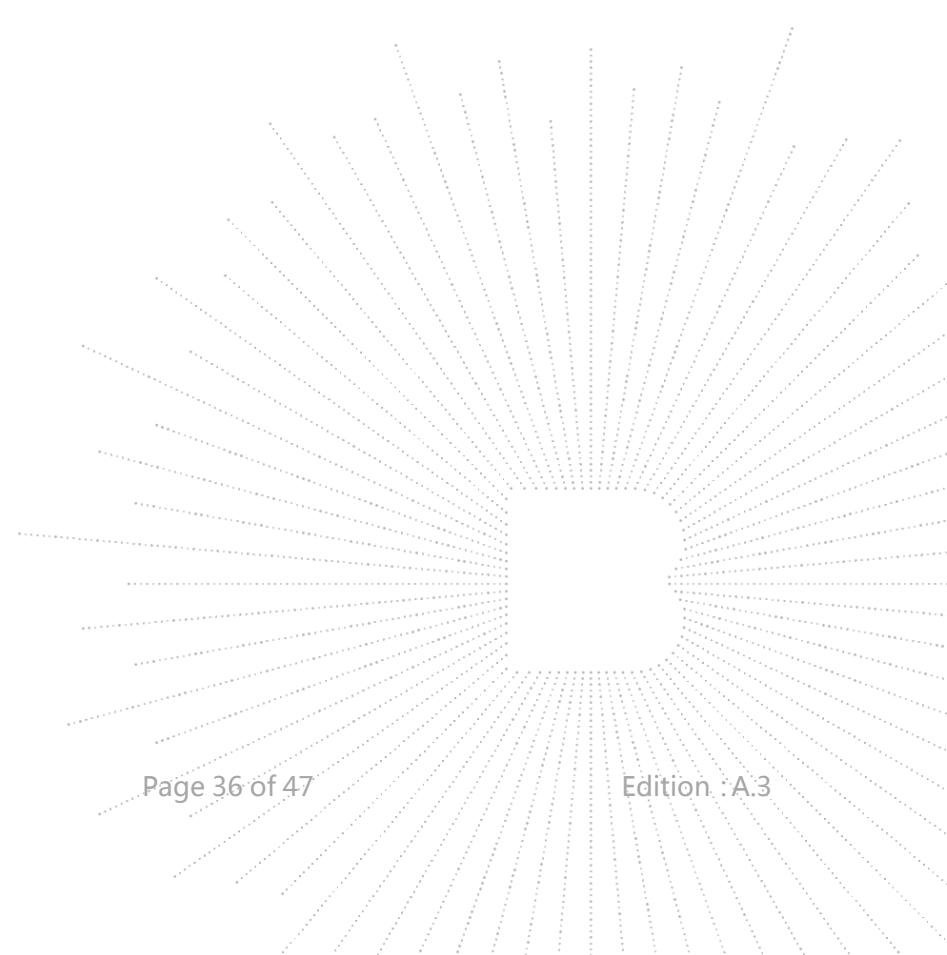
- The surge is to be applied to the Product power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave.
- The power cord between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter). Interconnection line between the Product and the coupling/decoupling networks shall be 2 meters in length (or shorter).



15.4 Test Result

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

| Coupling Line | Voltage(kV) | Phase Angle | Required Level | Performance Criterion |
|---------------|-------------|-------------|----------------|-----------------------|
| L - N | + 0.5 | 90° | B | A |
| | - 0.5 | 270° | | |
| L-PE | + 1 | 90° | B | A |
| | - 1 | 270° | | |
| N-PE | +1 | 90° | B | A |
| | - 1 | 270° | | |

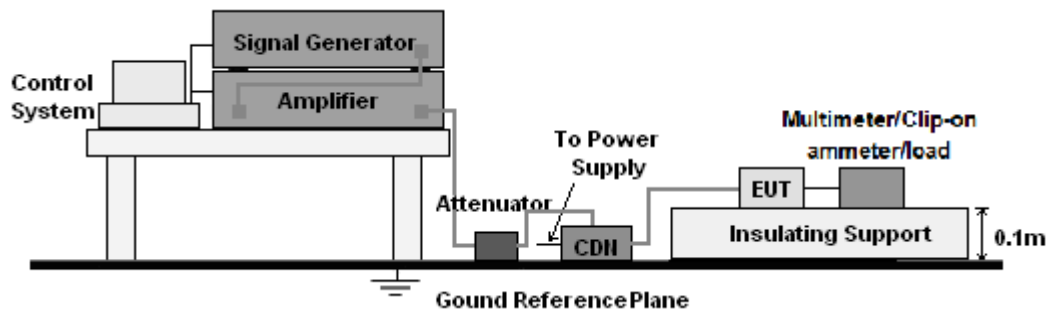
16. Continuous Induced RF Disturbances (CS)

16.1 Test Specification

| | |
|-------------------|---------------------------|
| Test Port | : input ac/dc. power port |
| Step Size | : 1% |
| Modulation | : 1kHz, 80% AM |
| Dwell Time | : 1 second |

16.2 Block Diagram of EUT Test Setup

For input ac/ac. power port:



16.3 Test Procedure

For input ac/dc. power port:

- The Product and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
- The frequency range is swept from 150 kHz to 10MHz, 10MHz to 30MHz, 30MHz to 80MHz with the signal 80% amplitude modulated with a 1 kHz sine wave, and the step size was 1% of fundamental.
- The dwell time at each frequency shall be not less than the time necessary for the Product to be able to respond.

16.4 Test Result

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

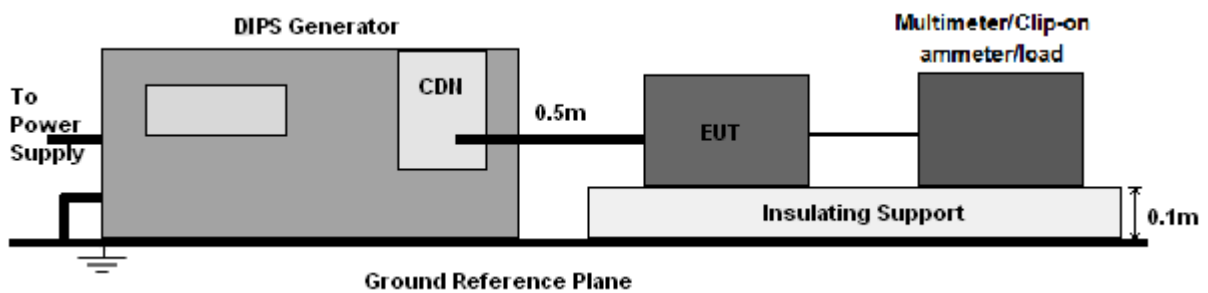
| Inject Line | Frequency (MHz) | Voltage Level (V r.m.s.) | Required Level | Performance Criterion |
|-------------|-----------------|--------------------------|----------------|-----------------------|
| a.c. port | 0.15 - 80 | 3 | A | A |

17. Voltage Dips And Interruptions (DIPS)

17.1 Test Specification

| | |
|--------------------|------------------------|
| Test Port | : input ac. power port |
| Phase Angle | : 0°, 180° |
| Test cycle | : 3 times |

17.2 Block Diagram of EUT Test Setup



17.3 Test Procedure

- The Product and support units were located on a non-conductive table above ground floor.
- Set the parameter of tests and then perform the test software of test simulator.
- Conditions changes to occur at 0 degree crossover point of the voltage waveform.

17.4 Test Result

| | | | |
|----------------|--------------|--------------------|--------|
| Temperature: | 26 °C | Relative Humidity: | 54% |
| Pressure: | 101KPa | Test Mode: | Mode 1 |
| Test Voltage : | AC 230V/50Hz | | |

| Test Level % U_T | Voltage dips in % U_T | Duration (ms) | Required Level | Performance Criterion |
|---|----------------------------|----------------|----------------|--------------------------|
| 70 | 30 | 200 | C | A |
| Voltage Interruptions: | | | | |
| 0 | 100 | 10 | B | B |
| Note: Dips to 0%, EUT stopped Charging, but it can be resumed automatically after test. | | | | |

18. EUT Photographs

EUT Photo 1



EUT Photo 2



C T
30
PPR
检测



EUT Photo 3



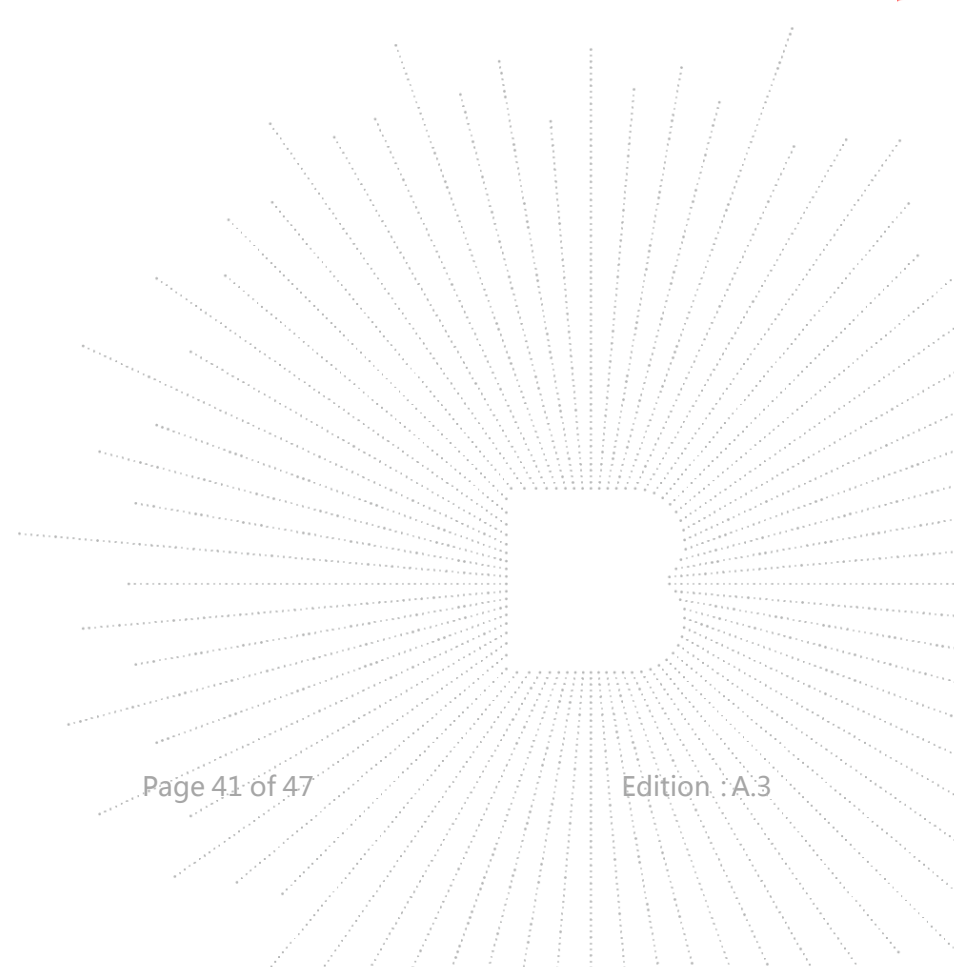
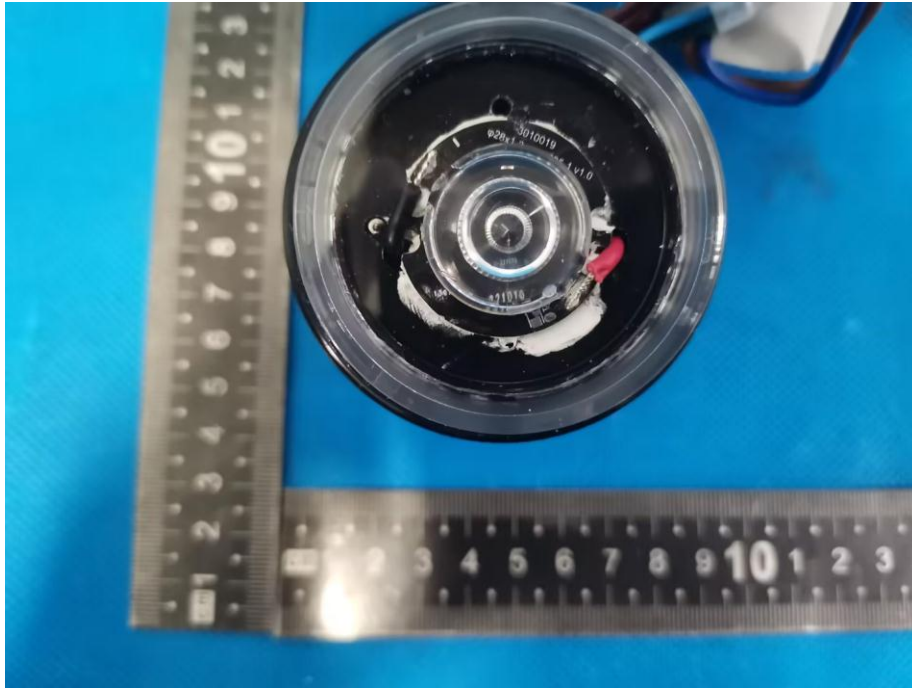
EUT Photo 4



ECH
:TC
OVB
科

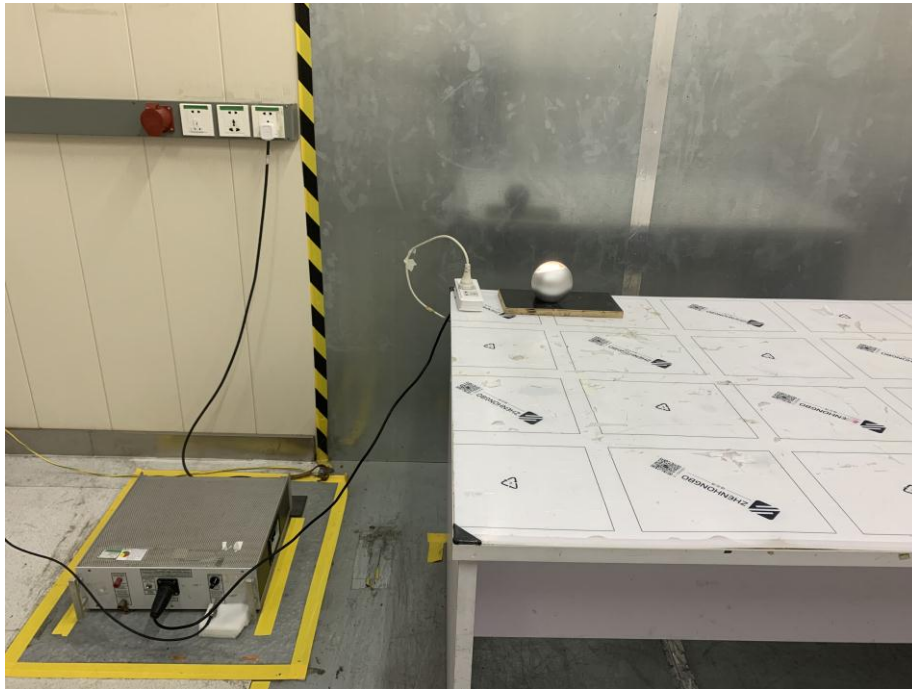


EUT Photo 5



19. EUT Test Setup Photographs

Conducted Emission



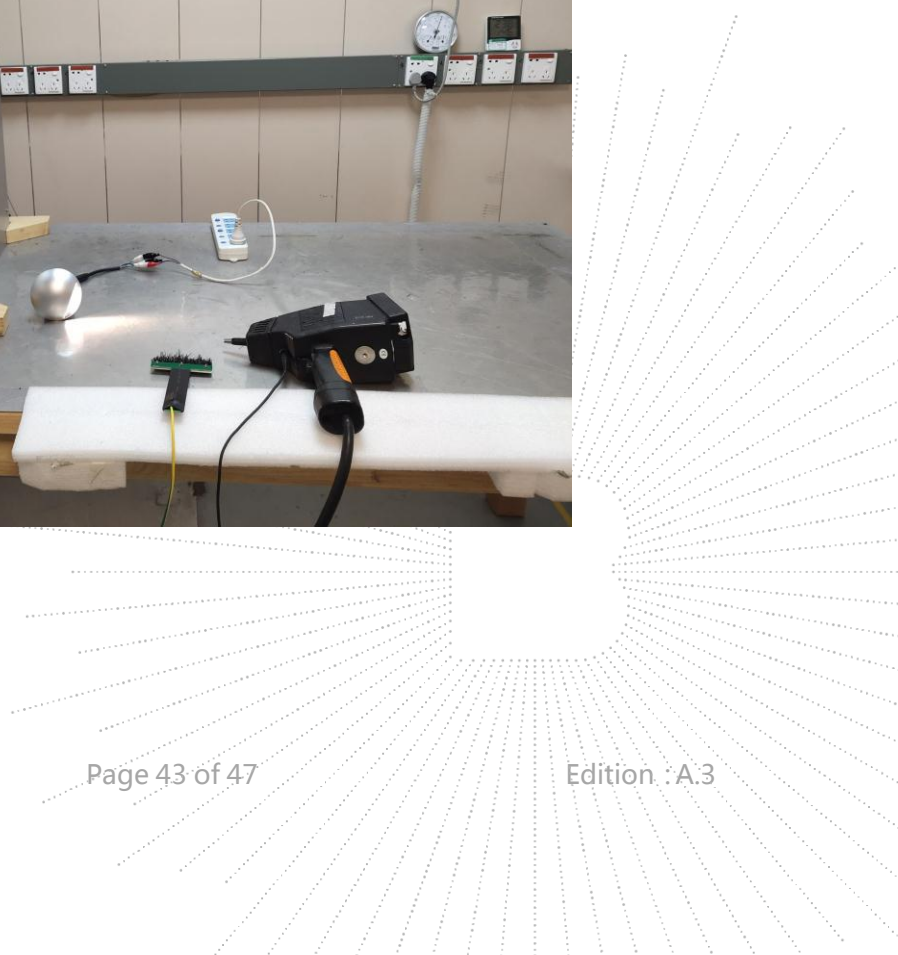
Radiated Emissions



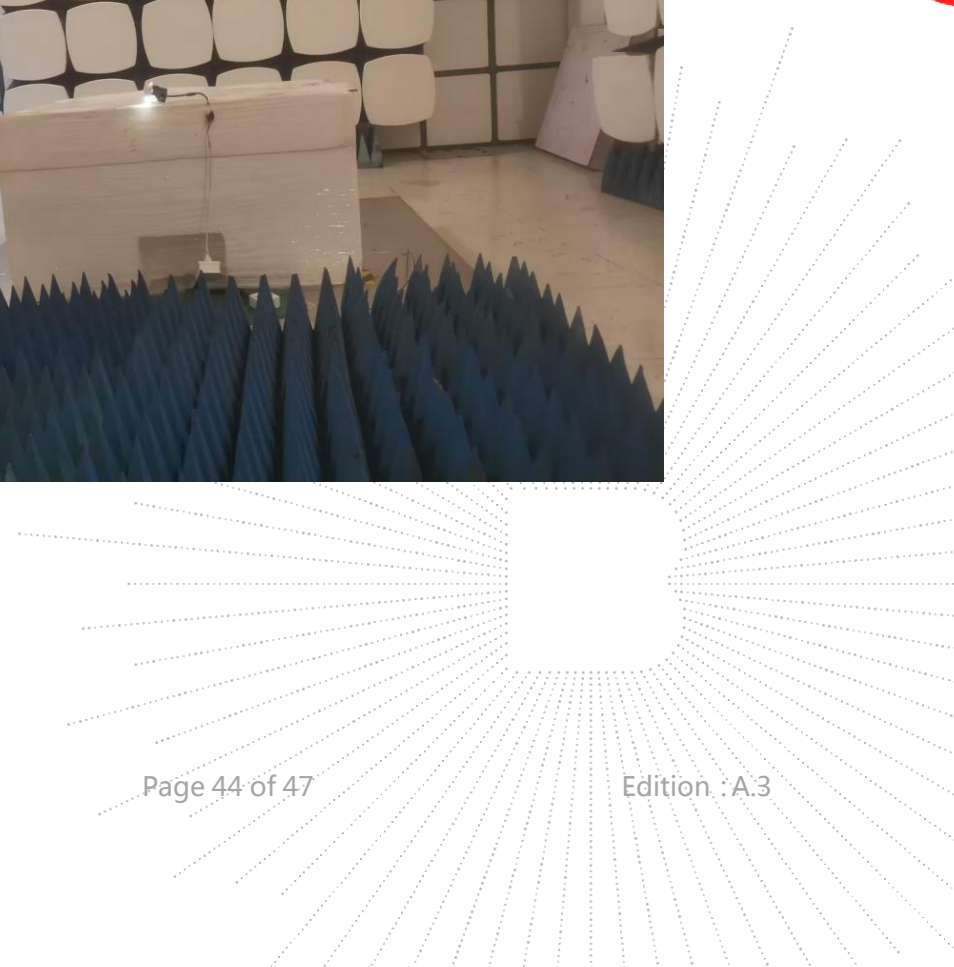
Harmonic / Flicker Measurement



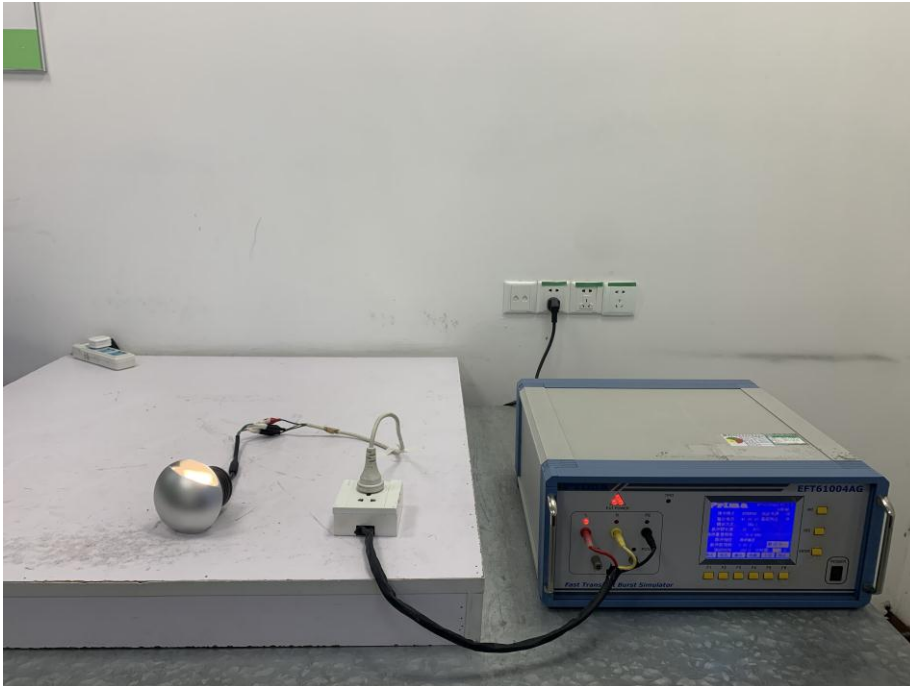
Electrostatic Discharges



Continuous RF Electromagnetic Field Disturbances



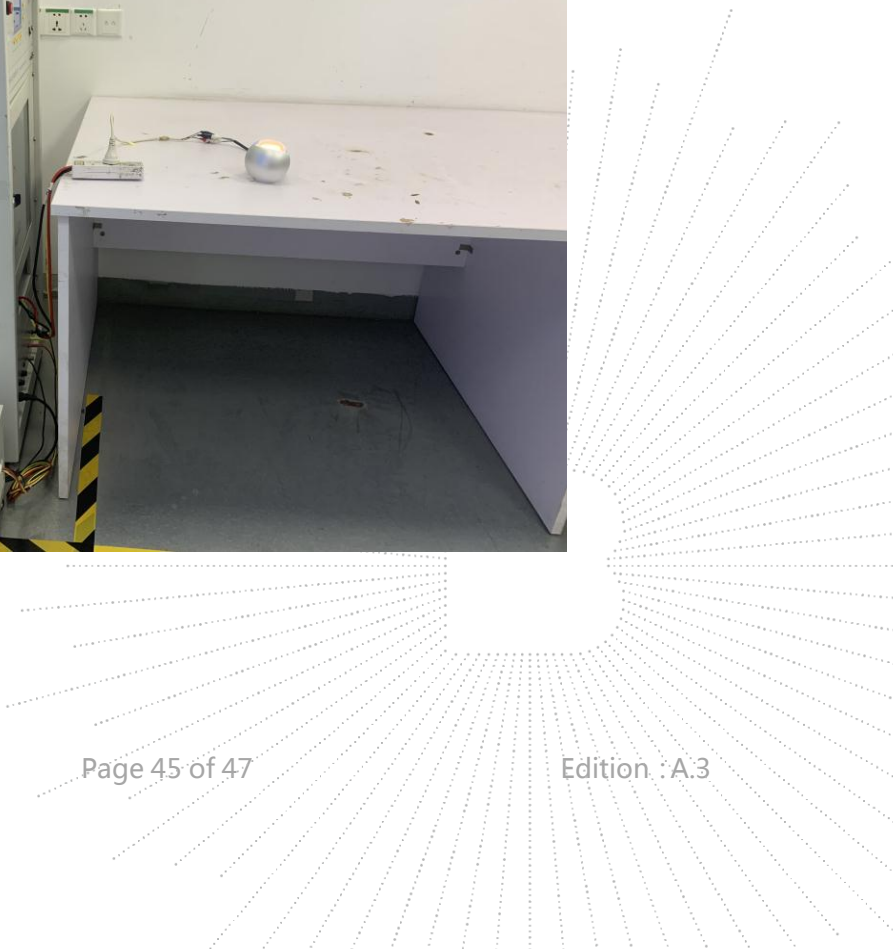
Electrical Fast Transients/Burst



Surges



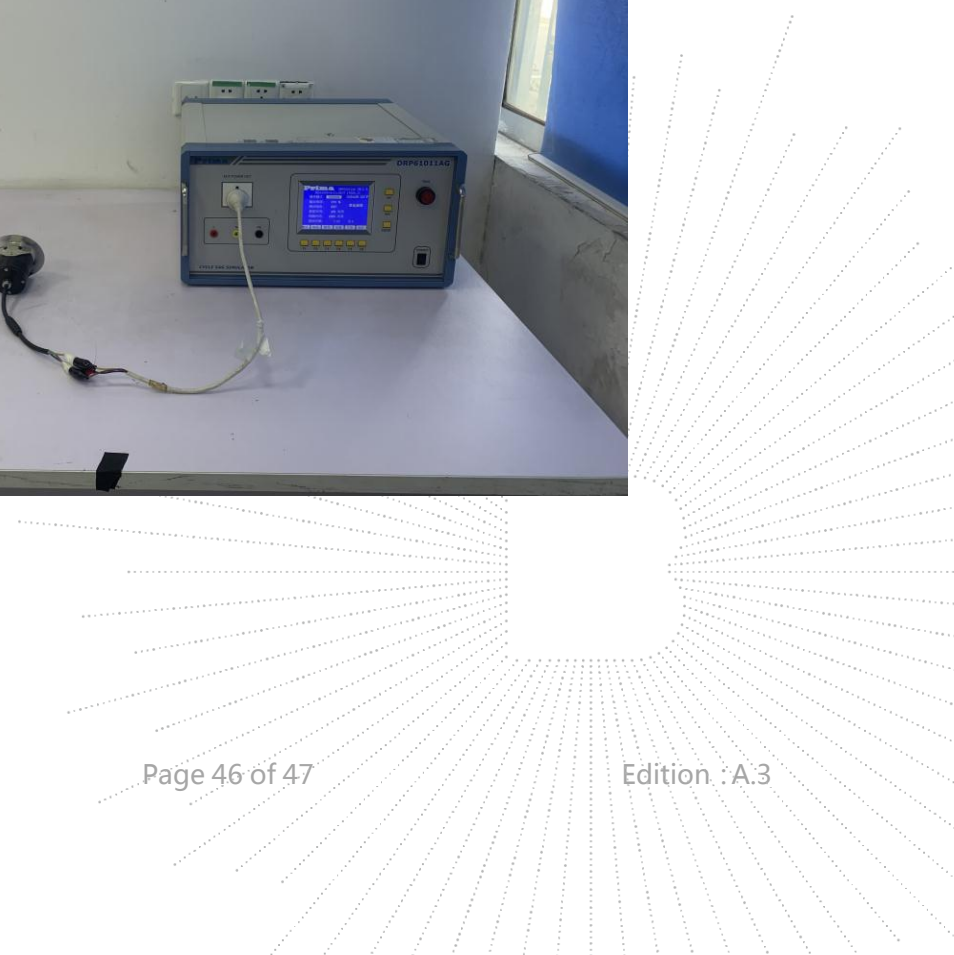
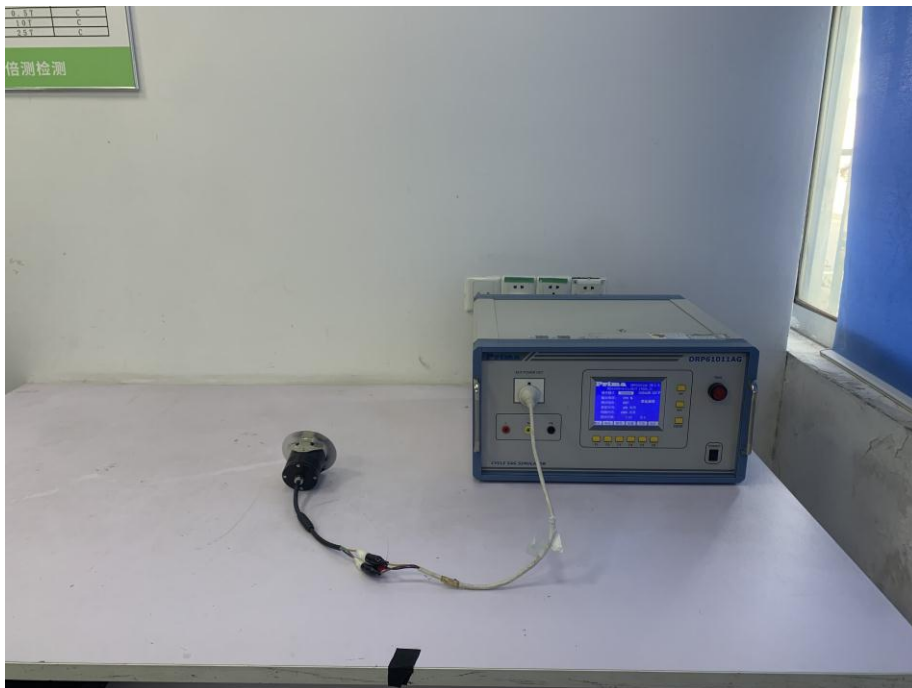
TEC
CT
PROV
测科



Continuous Induced RF Disturbances



Voltage Dips and Interruptions



STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The quality system of our laboratory is in accordance with ISO/IEC17025.
8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****