



## EMC TEST REPORT

For

### SHENZHEN YOUTHTON TECHNOLOGY CO.,LTD.

F4, Jinma Building, Jinma Industrial Park, Shihuan Road No.4, Shiyuan Street,  
Baoan District, Shenzhen ,China

Test Model: YSP96-3110

YGBaa-baaaabb-bb,YSPaa-baaaabb-bb,YX2aa-baaaabb-bb,YXEaa-baaaabb-bb,

Additional Model No.: YXPaa-baaaabb-bb,YQSaa-baaaabb-bb,YCPaa-baaaabb-bb,YSFaa-baaaabb-bb,

YCSaa-baaaabb-bb,YQ2aa-baaaabb-bb (a=0~9; b=A~Z)

|                                       |  |
|---------------------------------------|--|
| <b>Equipment Under Test</b>           | : Optical Module   |
| <b>Date of receipt of test sample</b> | : Mar. 06, 2019  |
| <b>Test Date</b>                      | : Mar. 06, 2019 - Mar. 12, 2019  |
| <b>Issue Date</b>                     | : Mar. 12, 2019  |
| <b>Compiled By</b>                    | : Mary Wu  |
| <b>Supervised By</b>                  | : Caven He   |
| <b>Approved &amp; Authorized By</b>   | : Bill Lee   |
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**Note:** This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen BCT Technology Co., Ltd.

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## 1. GENERAL INFORMATION

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

#### Client Information

Applicant: SHENZHEN YOUTHTON TECHNOLOGY CO.,LTD.  
Address of applicant: F4, Jinma Building, Jinma Industrial Park, Shihuan Road No.4, Shiyan Street, Baoan District, Shenzhen ,China  
Manufacturer: SHENZHEN YOUTHTON TECHNOLOGY CO.,LTD.  
Address of manufacturer: F4, Jinma Building, Jinma Industrial Park, Shihuan Road No.4, Shiyan Street, Baoan District, Shenzhen ,China

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

EUT Description: Optical Module  
Trade Name:   
EUT Model No.: YSP96-3110  
Supplementary Model: See page 1  
Remark: supplementary models are only different in exterior with tested Model and with the same circuit construction.  
Power Supply: Input: 3.3Vd.c.

*Note: This Report is based on report BCT171227R-001E*

### 1.2 Test Standards

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

EN 61000-6-3: 2007+A1:2011+AC:2012

EN 61000-6-1:2007

EN 61000-3-2: 2014

EN 61000-3-3: 2013

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

### 1.3 Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

EMC Lab. : CNAS Registration Number. is L7472.  
 FCC Registration Number. is 203110.  
 Industry Canada Registration Number. is 12135A.  
 UL Registration Number. is 557662.  
 TUV RH Registration Number. is UA 5027993 0001

Name of Firm : SHENZHEN ALPHA PRODUCT TESTING CO.,LTD.  
 Site Location : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District, 518103,  
 Shenzhen, Guangdong, China

### 1.4. Support equipment List

| Manufacturer | Description | Model | Serial Number | Certificate |
|--------------|-------------|-------|---------------|-------------|
| --           | --          | --    | --            | --          |
|              |             |       |               |             |
|              |             |       |               |             |

### 1.5. External I/O

| I/O Port Description | Quantity | Cable |
|----------------------|----------|-------|
| --                   | --       | --    |
|                      |          |       |
|                      |          |       |

### 1.6. Description Of Test Modes

There was 2 test Modes.

**TM1** : Operating Mode

**TM2** : Idle mode

\*\*\*Note: All test modes were tested, but we only recorded the worst case in this report.

## 1.7. List Of Measuring Equipment

Table 1: Test Equipment for Emission Test

| Equipment                      | Manufacturer           | Model No.        | Serial No. | Last Cal   | Calibration Period |
|--------------------------------|------------------------|------------------|------------|------------|--------------------|
| Spectrum Analyzer              | ANRITSU                | MS2651B          | 6200238856 | 2018.05.06 | 1 year             |
| EMI Test Receiver              | ROHDE&SCHWARZ          | ESCS30           | 100307     | 2018.05.06 | 1 year             |
| LISN                           | ROHDE&SCHWARZ          | ESH3-Z5          | 100305     | 2018.05.06 | 1 year             |
| Pulse Limiter                  | ROHDE&SCHWARZ          | ESH3-Z2          | 100305     | 2018.05.06 | 1 year             |
| Bilog Antenna                  | SCHWARZBECK            | VULB 9163        | 9163-194   | 2018.05.06 | 1 year             |
| 50 $\Omega$ Coaxial Switch     | ANRITSU CORP           | MP59B            | 6200283933 | 2018.05.06 | 1 year             |
| Power Clamp                    | ROHDE&SCHWARZ          | MDS21            | 100142     | 2018.05.06 | 1 year             |
| Loop Antenna                   | Laplace Instrument Ltd | RF300            | 8006       | 2018.05.06 | 1 year             |
| Cable                          | Resenberger            | N/A              | NO.1       | N/A        | N/A                |
| Cable                          | SCHWARZBECK            | N/A              | NO.2       | N/A        | N/A                |
| Cable                          | SCHWARZBECK            | N/A              | NO.3       | N/A        | N/A                |
| DC Power Filter                | DuoJi                  | DL2 $\times$ 30B | N/A        | N/A        | N/A                |
| Single Phase Power Line Filter | DuoJi                  | FNF 202B30       | N/A        | N/A        | N/A                |
| 3 Phase Power Line Filter      | DuoJi                  | FNF 402B30       | N/A        | N/A        | N/A                |
| AC Power Source                | California Instruments | 5001iX-400       | 55689      | 2018.05.06 | 1 year             |
| Test analyzer                  | California Instruments | PACS-1           | 72254      | 2018.05.06 | 1 year             |

Table 2: Test Equipment for Immunity Test

| Equipment                           | Manufacturer | Model No.   | Serial No.   | Last Cal   | Calibration Period |
|-------------------------------------|--------------|-------------|--------------|------------|--------------------|
| ESD Tester                          | HAEFELY      | PESD 1610   | H4001552     | 2018.05.07 | 1 year             |
| EMC PRO System                      | Thermo       | PRO-BASE    | 0403271      | 2018.05.07 | 1 year             |
| Capacitive Clamp                    | Thermo       | PRO-CCL     | 0403272      | 2018.05.07 | 1 year             |
| Coupler decoupler for telecom lines | Thermo       | CM-TEL-CD   | 0403273      | 2018.05.07 | 1 year             |
| Magnetic field Tester               | HAEFELY      | MAG 100     | 150577       | 2018.05.07 | 1 year             |
| AC Transformer                      | CHOKUN       | TDGC2J-5    | N/A          | 2018.05.07 | 1 year             |
| Signal Generator                    | IFR          | 2032        | 203002/100   | 2018.05.07 | 1 year             |
| Amplifier                           | AR           | 150W1000    | 301584       | 2018.05.07 | 1 year             |
| Dual Directional Coupler            | AR           | DC6080      | 301508       | 2018.05.07 | 1 year             |
| Power Head                          | AR           | PH2000      | 301193       | 2018.05.08 | 1 year             |
| Power Meter                         | AR           | PM2002      | 302799       | 2018.05.08 | 1 year             |
| Transmitting Antenna                | AR           | AT1080      | 28570        | 2018.05.08 | 1 year             |
| Simulator                           | EMTEST       | CWS 500C    | 0900-12      | 2018.05.08 | 1 year             |
| CDN                                 | EMTEST       | CDN-M2      | 510010010010 | 2018.05.08 | 1 year             |
| CDN                                 | EMTEST       | CDN-M3      | 0900-11      | 2018.05.08 | 1 year             |
| Injection Clamp                     | EMTEST       | F-2031-23MM | 368          | 2018.05.08 | 1 year             |
| Attenuator                          | EMTEST       | ATT 6       | 0010222A     | 2018.05.08 | 1 year             |

**2. SUMMARY OF TEST**

For the EUT described above.

Table 1: Tests Carried Out Under EN 61000-6-3: 2007+A1:2011+AC:2012

| Standard                              | Test Items   | Status |
|---------------------------------------|--|--------|
| EN 61000-6-3:<br>2007+A1:2011+AC:2012 | Disturbance Voltage at The Mains Terminals (150KHz To 30MHz) | x      |
|                                       | Radiated Disturbances (30MHz To 1000MHz)                     | √      |

- √ Indicates that the test is applicable  
 x Indicates that the test is not applicable

Table 2: Tests Carried Out Under EN 61000-6-1:2007

| Standard                  | Test Items                                      | Status |
|---------------------------|---|--------|
| EN61000-4-2: 2009         | Electrostatic discharge Immunity                | √      |
| EN61000-4-3: 2006+A2:2010 | Radiated Susceptibility (80MHz to 1GHz)         | √      |
| EN61000-4-4: 2012         | Electrostatic Fast Transient/Burst Immunity     | x      |
| EN61000-4-5: 2014         | Surge Immunity                                  | x      |
| EN61000-4-6: 2014         | Conducted Susceptibility (150KHz to 80MHz)      | x      |
| EN61000-4-11:2004         | Voltage Dips Short Interruptions Immunity Tests | x      |

- √ Indicates that the test is applicable  
 x Indicates that the test is not applicable

Table 3: Tests Carried Out Under EN61000-3-2: 2014 & EN 61000-3-3: 2013

| Standard           | Test Items           | Status |
|--------------------|----------------------|--------|
| EN 61000-3-2: 2014 | Harmonic Current     | x      |
| EN 61000-3-3: 2013 | Voltage Fluctuations | x      |

- √ Indicates that the test is applicable  
 x Indicates that the test is not applicable

### 3. RADIATED DISTURBANCES

#### 3.1 Radiated Emission Limit

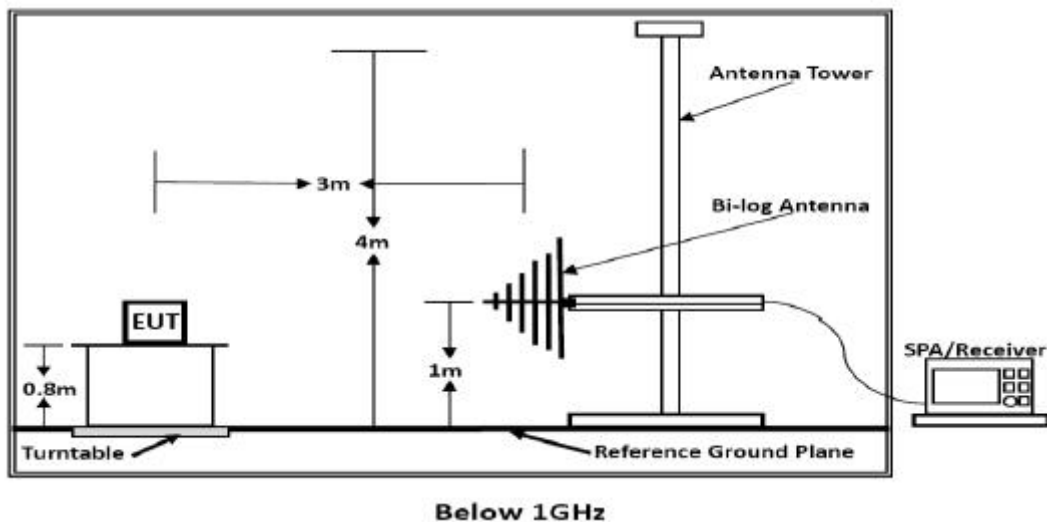
EN 55032 Class B

Limits for radiated disturbance Blow 1GHz

| Frequency (MHz) | Distance (Meters) | Field Strengths Limits (dB $\mu$ V/m) |
|-----------------|-------------------|---------------------------------------|
| 30 ~ 230        | 3                 | 40                                    |
| 230 ~ 1000      | 3                 | 47                                    |

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.  
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

#### 3.2 Test Configuration



#### 3.3 Test Procedure

Please refer to EN 55032 Clause 6 for the measurement Methods.

#### 3.4 Test Data

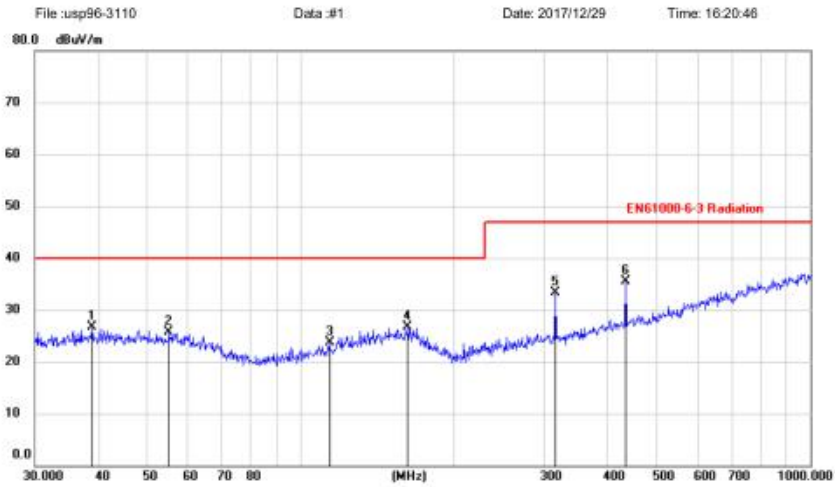
The worst test mode of the EUT was TM1, and its test data was showed as the follow:

**Test Result: PASS**



**Vertical:**

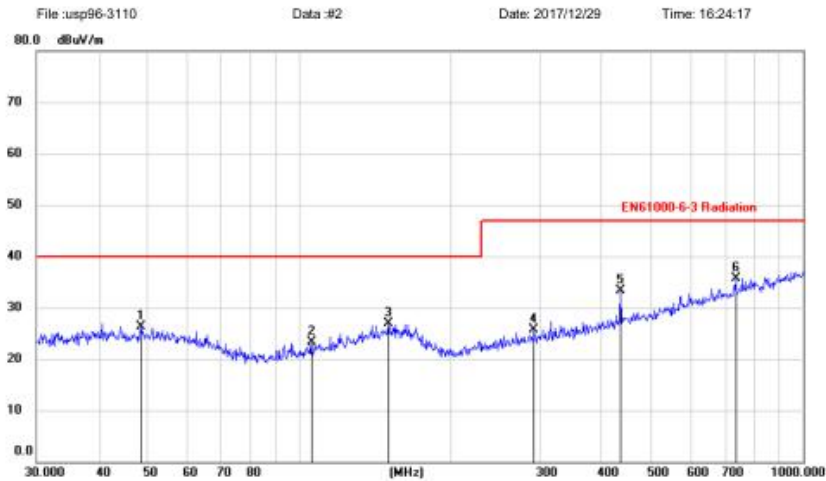
**Radiated Emission Measurement**



| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV/m | Limit dBuV/m | Margin dB | Detector | Antenna Height cm | Table Degree | Comment |
|---------|-----------|--------------------|-------------------|--------------------|--------------|-----------|----------|-------------------|--------------|---------|
| 1       | 39.0245   | 12.55              | 14.20             | 26.75              | 40.00        | -13.25    | peak     |                   |              |         |
| 2       | 55.0274   | 12.39              | 13.25             | 25.64              | 40.00        | -14.36    | peak     |                   |              |         |
| 3       | 113.7143  | 11.76              | 11.91             | 23.67              | 40.00        | -16.33    | peak     |                   |              |         |
| 4       | 162.6106  | 12.38              | 14.37             | 26.75              | 40.00        | -13.25    | peak     |                   |              |         |
| 5       | 316.5890  | 19.57              | 13.79             | 33.36              | 47.00        | -13.64    | peak     |                   |              |         |
| 6 *     | 434.0651  | 19.16              | 16.37             | 35.53              | 47.00        | -11.47    | peak     |                   |              |         |

**Horizontal:**

**Radiated Emission Measurement**



| No. Mk. | Freq. MHz | Reading Level dBuV | Correct Factor dB | Measurement dBuV/m | Limit dBuV/m | Margin dB | Detector | Antenna Height cm | Table Degree | Comment |
|---------|-----------|--------------------|-------------------|--------------------|--------------|-----------|----------|-------------------|--------------|---------|
| 1       | 48.5016   | 12.67              | 13.66             | 26.33              | 40.00        | -13.67    | peak     |                   |              |         |
| 2       | 105.2718  | 12.12              | 11.09             | 23.21              | 40.00        | -16.79    | peak     |                   |              |         |
| 3       | 150.0108  | 12.30              | 14.55             | 26.85              | 40.00        | -13.15    | peak     |                   |              |         |
| 4       | 292.0583  | 12.56              | 13.20             | 25.76              | 47.00        | -21.24    | peak     |                   |              |         |
| 5       | 434.0651  | 16.86              | 16.37             | 33.23              | 47.00        | -13.77    | peak     |                   |              |         |
| 6 *     | 734.4913  | 14.34              | 21.30             | 35.64              | 47.00        | -11.36    | peak     |                   |              |         |

## **4. PERFORMANCE CRITERIA**

### **4.1 General performance criteria**

The manufacturer has the obligation to express the performance criteria in terms which relate to the performance of his specific product when used as intended.

The following performance criteria are applicable, and shall only be evaluated when the functions referred to are implemented.

### **4.2 Performance criteria A**

During and after the test the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a minimum performance level specified by the manufacturer when the EUT is used as intended.

### **4.3 Performance criteria B**

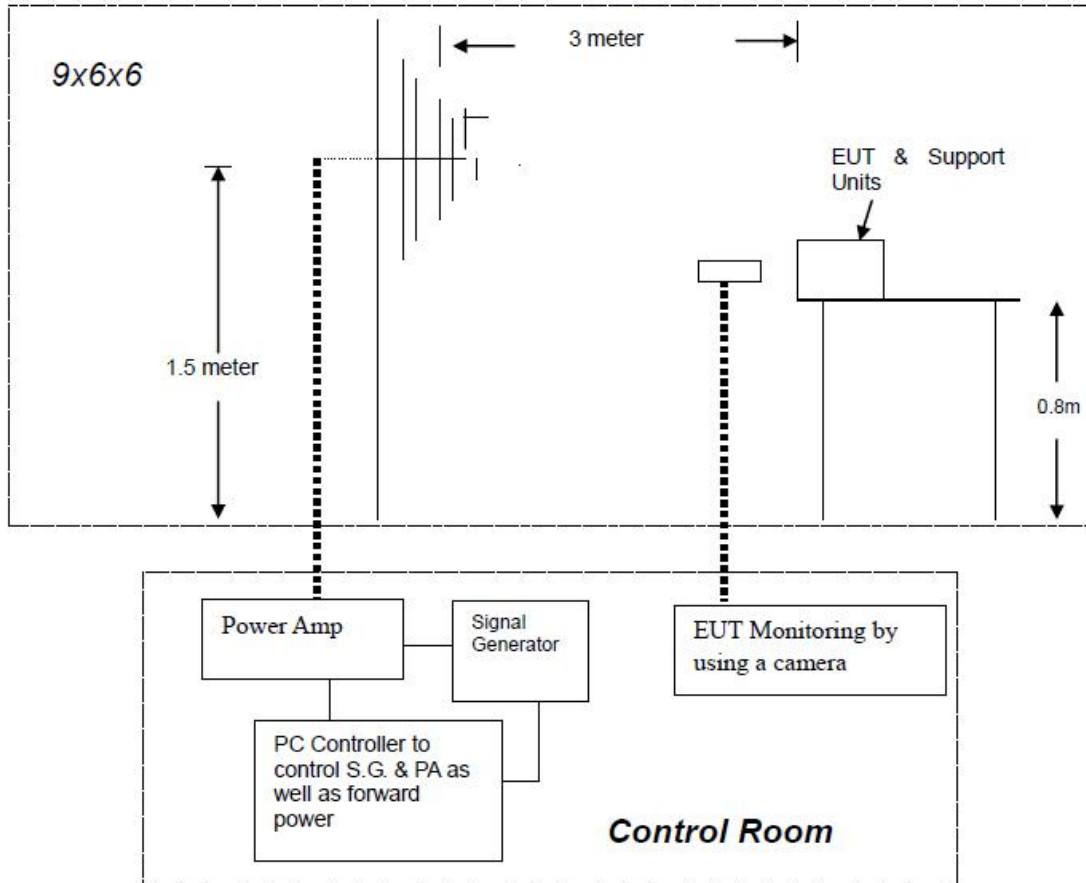
After the test, the EUT shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

### **4.4 Performance criteria C**

During and after testing, a temporary loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls or cycling of the power to the EUT by the user in accordance with the manufacturer's instructions.

## 5. CONTINUOUS RADIO FREQUENCY DISTURBANCE

### 5.1 Test Configuration



### 5.2 Test Standard

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

Test level 2 at 3V / m.

### 5.3 Severity Level

| Level | Field Strength V/m |
|-------|--------------------|
| 1.    | 1                  |
| 2.    | 3                  |
| 3.    | 10                 |
| X     | Special            |

Performance criterion: A

## 5.4 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. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

| Condition of Test         | Remarks                  |
|---------------------------|--------------------------|
| 1. Fielded Strength       | 3 V/m (Severity Level 2) |
| 2. Radiated Signal        | Unmodulated              |
| 3. Scanning Frequency     | 80 - 1000MHz             |
| 4. Dwell time of radiated | 0.0015 decade/s          |
| 5. Waiting Time           | 3 Sec.                   |

## 5.5 Test Result

| EUT Working Mode | Antenna Polarity | Frequency (MHz) | Field Strength (V/m) | Position                 | Result (Pass/Fail) |      |
|------------------|------------------|-----------------|----------------------|--------------------------|--------------------|------|
|                  |                  |                 |                      |                          | Criterion A        | Pass |
| Operating Mode   | Vertical         | 80-1000         | 3                    | Front, Right, Left, Back | Criterion A        | Pass |
|                  | Horizontal       | 80-1000         | 3                    | Front, Right, Left, Back | Criterion A        | Pass |
| Standby Idle     | Vertical         | 80-1000         | 3                    | Front, Right, Left, Back | Criterion A        | Pass |
|                  | Horizontal       | 80-1000         | 3                    | Front, Right, Left, Back | Criterion A        | Pass |

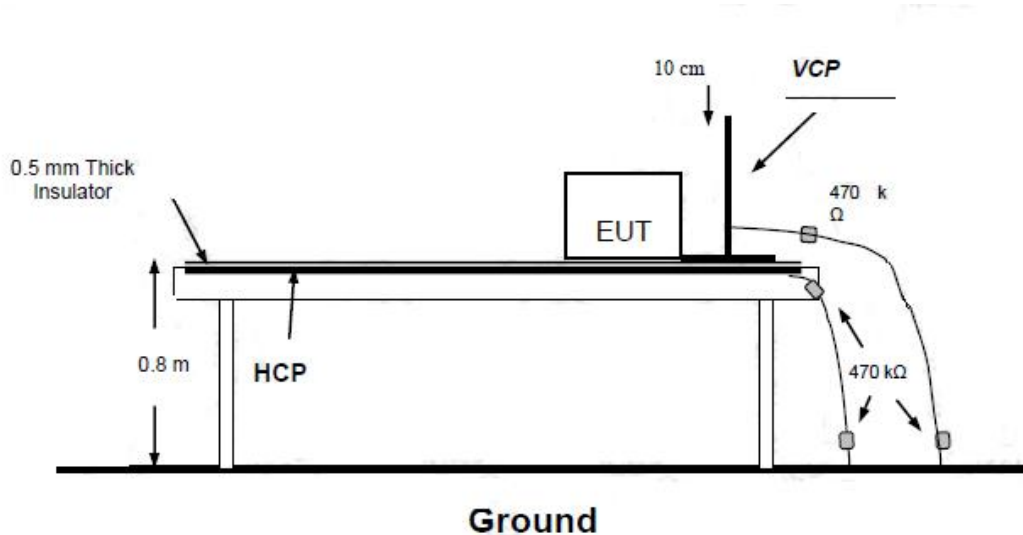
Note: Unintentional transmission is not founded from the EUT.

N/A: Not applicable

## 6. ELECTROSTATIC DISCHARGE (ESD)

Please refer to EN 61000-4-2.

### 6.1 Test Configuration



EN 61000-4-2 specifies that a tabletop EUT shall be placed on a non-conducting table which is 80 centimeters above a ground reference plane and that floor mounted equipment shall be placed on an insulating support approximately 10 centimeters above a ground plane. During the tests, the EUT is positioned over a ground reference plane in conformance with this requirement.

For tabletop equipment, a 1.5 by 1.0-meter metal sheet (HCP) is placed on the table and connected to the ground plane via a metal strap with two 470 k Ohms resistors in series. The EUT and attached cables are isolated from this metal sheet by 0.5-millimeter thick insulating material. A Vertical Coupling Plane (VCP) grounded on the ground plane through the same configuration as in the HCP is used.

### 6.2 Test Procedure

EN 61000-4-2: 2009

Test level 3 for Air Discharge at  $\pm 8$  kV

Test level 2 for Contact Discharge at  $\pm 4$  kV

#### 9.2.1. Air Discharge

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new

single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

#### 9.2.2. Contact Discharge

All the procedure shall be same as Section 9.3.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

**9.2.3. Indirect Discharge For Horizontal Coupling Plane**

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

**9.2.4. Indirect Discharge For Vertical Coupling Plane**

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

**6.3 Test Data**

**Pass.**

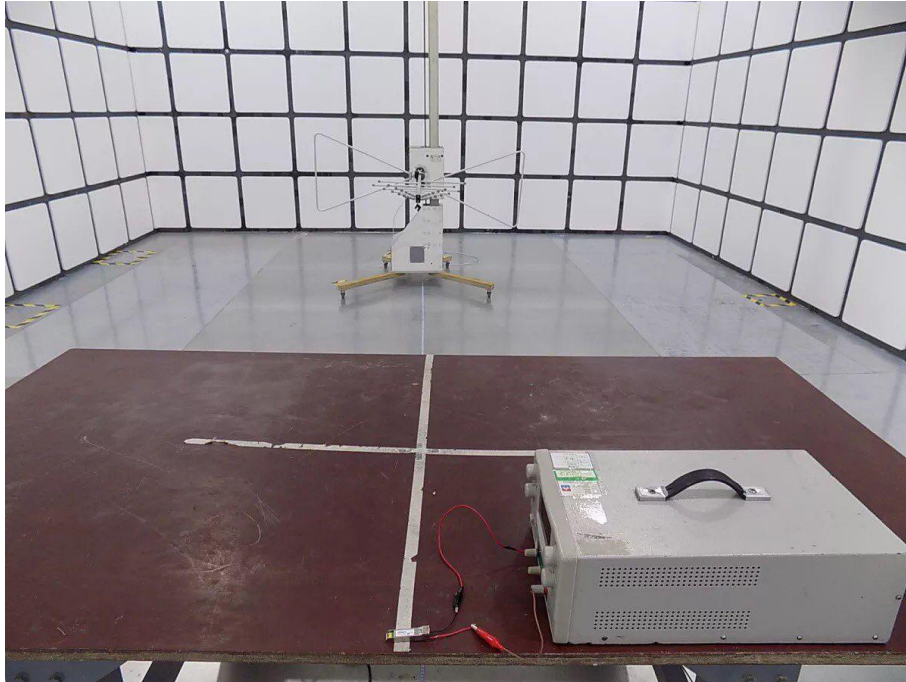
| Test Result of TM1 |                        |                    |      |
|--------------------|------------------------|--------------------|------|
| Test Voltage       | Coupling               | Result (Pass/Fail) |      |
| ±2KV, ±4kV         | Contact Discharge      | Criterion A        | Pass |
| ±2KV, ±4kV, ±8kV   | Air Discharge          | Criterion A        | Pass |
| ±2KV, ±4kV         | Indirect Discharge HCP | Criterion A        | Pass |
| ±2KV, ±4kV         | Indirect Discharge VCP | Criterion A        | Pass |

Note: The EUT performance complied with performance criteria A and there is no any degradation of performance and function.

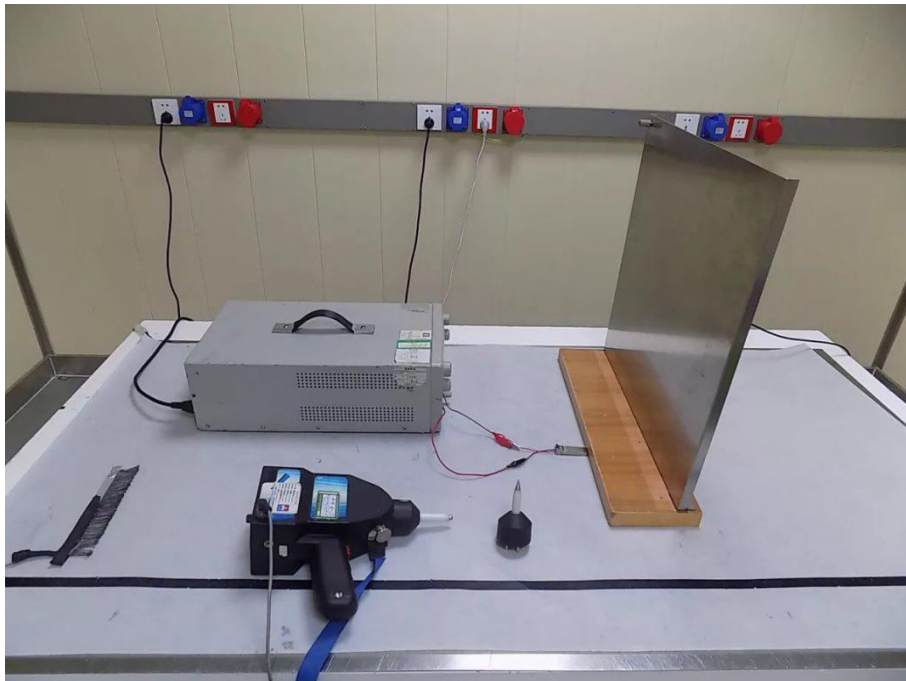
N/A: Not applicable.

## 7. TEST SETUP PHOTOGRAPHS

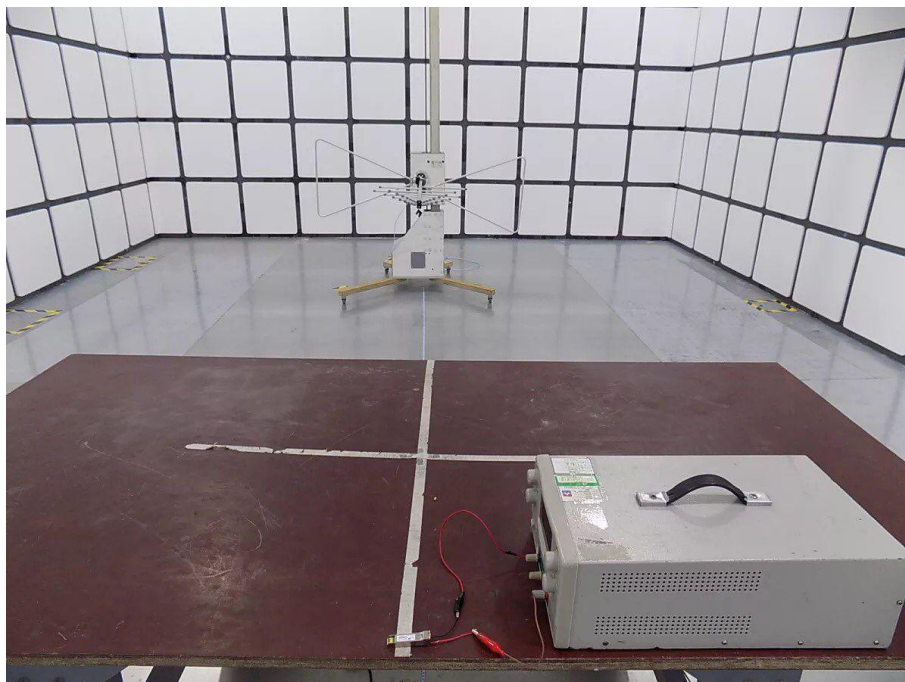
### 1. Photo of Radiated Measurement



### 2. Photo of Electrostatic Discharge Test



### 3.Photo of Radio-frequency, Continuous radiated disturbance





## APPENDIX A - PRODUCT LABELING

### CE Marking Label Specification

Specification: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.

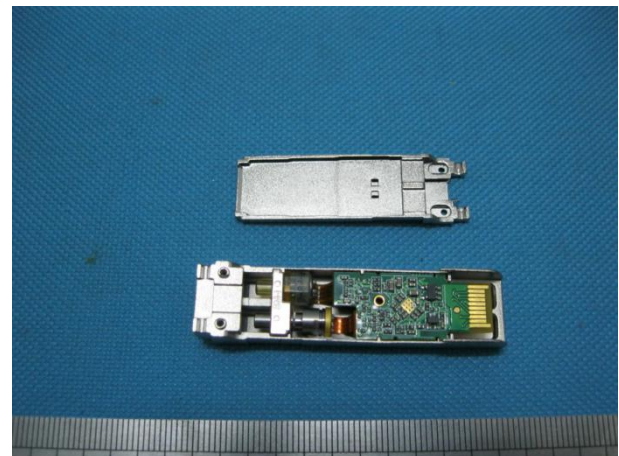


### Proposed Label Location on EUT

CE marking Location



**APPENDIX B - EUT EXTERIOR AND INTERIOR PHOTOGRAPHS**



**--End Of The Report --**