



FCC Test Report

Test report
On Behalf of
E-LIKE INDUSTRIAL (HONG KONG) LIMITED
For
HDMI ACTIVE OPTICAL CABLE
Model No.: SHDC-8810;
(Serial models See Page 6)

Prepared for : **E-LIKE INDUSTRIAL (HONG KONG) LIMITED**
M 905 Workingberg Commercial Building 41-47 Marble Road North Point,
HongKong

Prepared By : **Shenzhen Union Test Technology Co., Ltd.**
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P.R.China

Date of Test: **Aug. 31, 2018 ~ Sept. 06, 2018**
Date of Report: **Sept. 06, 2018**
Report Number: **UNI18N090368-1ER**

TEST RESULT CERTIFICATION

Applicant's name: E-LIKE INDUSTRIAL (HONG KONG) LIMITED
Address: M 905 Workingberg Commercial Building 41-47 Marble Road
North Point, HongKong
Manufacturer's Name: E-LIKE INDUSTRIAL (HONG KONG) LIMITED
Address: M 905 Workingberg Commercial Building 41-47 Marble Road
North Point, HongKong

Product description

Product name.....: HDMI ACTIVE OPTICAL CABLE
Trade Mark.....: N/A
Model and/or type reference : SHDC-8810;
Serial models see page 6

Standards: FCC Part 15 Subpart B
ANSI C63.4:2014

This device described above has been tested by UNION, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test:
Date (s) of performance of tests.....: Aug. 31, 2018 ~ Sept. 06, 2018
Date of Issue.....: Sept. 06, 2018
Test Result.....: **Pass**

Testing Engineer : _____

(Sam Chen)

Technical Manager : _____

Authorized Signatory : _____

(Mark Tang)



| | |
|--|----|
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1. TEST SUMMARY

Test procedures according to the technical standards:

| EMC Emission | | | | |
|--|--------------------|---------|----------|--------|
| Standard | Test Item | Limit | Judgment | Remark |
| FCC Part 15 Subpart B ANSI C63.4:2014 | Conducted Emission | Class B | N/A | |
| | Radiated Emission | Class B | PASS | |

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

Shenzhen Union Test Technology Co., Ltd.

Add. : 2nd Floor, Construction Building, Xin'an Community, Bao'an, Shenzhen, P.R.China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

A. Conducted Measurement :

| Test Site | Method | Measurement Frequency Range | U , (dB) | NOTE |
|-----------|--------|-----------------------------|----------|------|
| UNIONC01 | ANSI | 150 KHz ~ 30MHz | 3.2 | |

B. Radiated Measurement :

| Test Site | Method | Measurement Frequency Range | U , (dB) | NOTE |
|-----------|--------|-----------------------------|----------|------|
| UNIONA01 | ANSI | 30MHz ~ 1000MHz | 4.7 | |
| | | | | |

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| | | |
|---------------------|--|-----|
| Equipment | HDMI ACTIVE OPTICAL CABLE | |
| Model Name | SHDC-8810 | |
| Serial No | SHDC-8810-005; SHDC-8810-010; SHDC-8810-015; SHDC-8810-020; SHDC-8810-025; SHDC-8810-030; SHDC-8810-035; SHDC-8810-040; SHDC-8810-045; SHDC-8810-050; SHDC-8810-055; SHDC-8810-060; SHDC-8810-065; SHDC-8810-070; SHDC-8810-075; SHDC-8810-080; SHDC-8810-085; SHDC-8810-090; SHDC-8810-095; SHDC-8810-100 | |
| Model Difference | All models are identical except model names and length. | |
| Product Description | The EUT is a HDMI ACTIVE OPTICAL CABLE | |
| | Operating frequency: | N/A |
| | Connecting I/O port: | N/A |
| | Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. | |
| Power Source | DC Voltage | |
| Power Rating | 5VDC, 250mA, 1.2W | |

2.2 DESCRIPTION OF TEST MODES

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

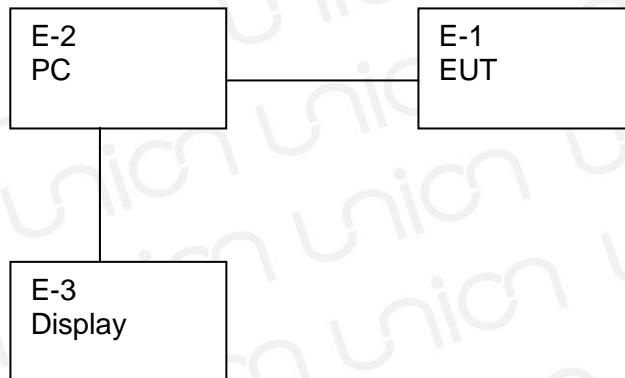
| Pretest Mode | Description |
|--------------|-------------|
| Mode 1 | Running |

| For Conducted Test | |
|--------------------|-------------|
| Final Test Mode | Description |
| Mode 1 | N/A |

| For Radiated Test | |
|-------------------|-------------|
| Final Test Mode | Description |
| Mode 1 | Running |

2.3 DESCRIPTION OF TEST SETUP

Mode 1:



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|------|---------------------------|-----------|----------------|------------|------|
| E-1 | HDMI ACTIVE OPTICAL CABLE | N/A | SHDC-8810 | N/A | EUT |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-----------------------|--------------|----------|------------|------------------|
| 1 | LISN | R&S | ENV216 | 101313 | June 30, 2019 |
| 2 | LISN | EMCO | 3816/2 | 00042990 | June 30, 2019 |
| 3 | 50Ω Switch | ANRITSU CORP | MP59B | 6200983704 | June 30, 2019 |
| 4 | Test Cable | N/A | C01 | N/A | June 30, 2019 |
| 5 | Test Cable | N/A | C02 | N/A | June 30, 2019 |
| 6 | Test Cable | N/A | C03 | N/A | June 30, 2019 |
| 7 | EMI Test Receiver | R&S | ESCI | 101160 | June 30, 2019 |
| 8 | Passive Voltage Probe | ESH2-Z3 | R&S | 100196 | June 30, 2019 |
| 9 | Triple-Loop Antenna | EVERFINE | LIA-2 | 11020003 | June 30, 2019 |
| 10 | Absorbing Clamp | R&S | MDS-21 | 100423 | June 30, 2019 |

2.5.2 RADIATED TEST SITE

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|-----------------|------------|------------------|
| 1 | Bilog Antenna | TESEQ | CBL6111D | 31216 | June 30, 2019 |
| 2 | Test Cable | N/A | R-01 | N/A | June 30, 2019 |
| 3 | Test Cable | N/A | R-02 | N/A | June 30, 2019 |
| 4 | EMI Test Receiver | R&S | ESCI-7 | 101318 | June 30, 2019 |
| 5 | Antenna Mast | EM | SC100_1 | N/A | N/A |
| 6 | Turn Table | EM | SC100 | 060531 | N/A |
| 7 | 50Ω Switch | Anritsu Corp | MP59B | 6200983705 | June 30, 2019 |
| 8 | Spectrum Analyzer | Aglient | E4407B | MY45108040 | June 30, 2019 |
| 9 | Horn Antenna | EM | EM-AH-1018 0 | 2011071402 | June 30, 2019 |
| 10 | Amplifier | EM | EM-30180 | 060538 | June 30, 2019 |

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class A (dBuV) | | Class B (dBuV) | |
|-----------------|----------------|---------|----------------|-----------|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 -0.5 | 79.00 | 66.00 | 66 - 56 * | 56 - 46 * |
| 0.50 -5.0 | 73.00 | 60.00 | 56.00 | 46.00 |
| 5.0 -30.0 | 73.00 | 60.00 | 60.00 | 50.00 |

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

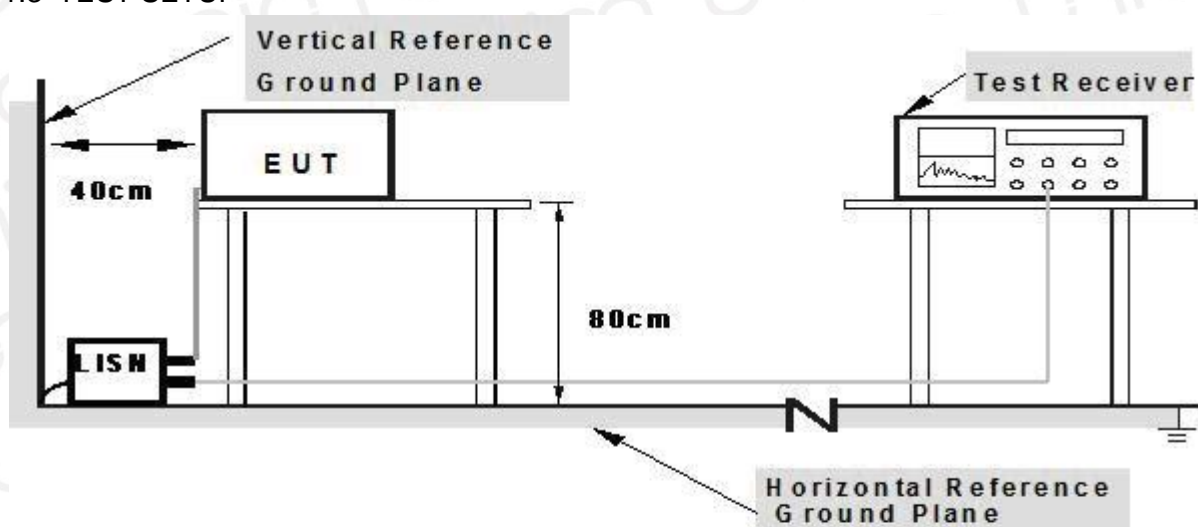
The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---------------------|----------|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 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

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

| | | | |
|----------------|---------------------------|---------------------|-----------|
| EUT : | HDMI ACTIVE OPTICAL CABLE | Model Name. : | SHDC-8810 |
| Temperature : | 26 °C | Relative Humidity : | 54% |
| Pressure : | 1010hPa | Test Date : | N/A |
| Test Mode : | N/A | Phase : | N/A |
| Test Voltage : | N/A | | |

Note:

- 1) N/A - denotes test is not applicable in this test report
- 2) There was not any unintentional transmission in standby mode

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Class A (at 10m) | Class B (at 3m) |
|-----------------|------------------|-----------------|
| | dBuV/m | dBuV/m |
| 30 ~ 88 | 39.0 | 40.0 |
| 88 ~ 216 | 43.5 | 43.5 |
| 216 ~ 960 | 46.5 | 46.0 |
| Above 960 | 49.5 | 54.0 |

Notes:

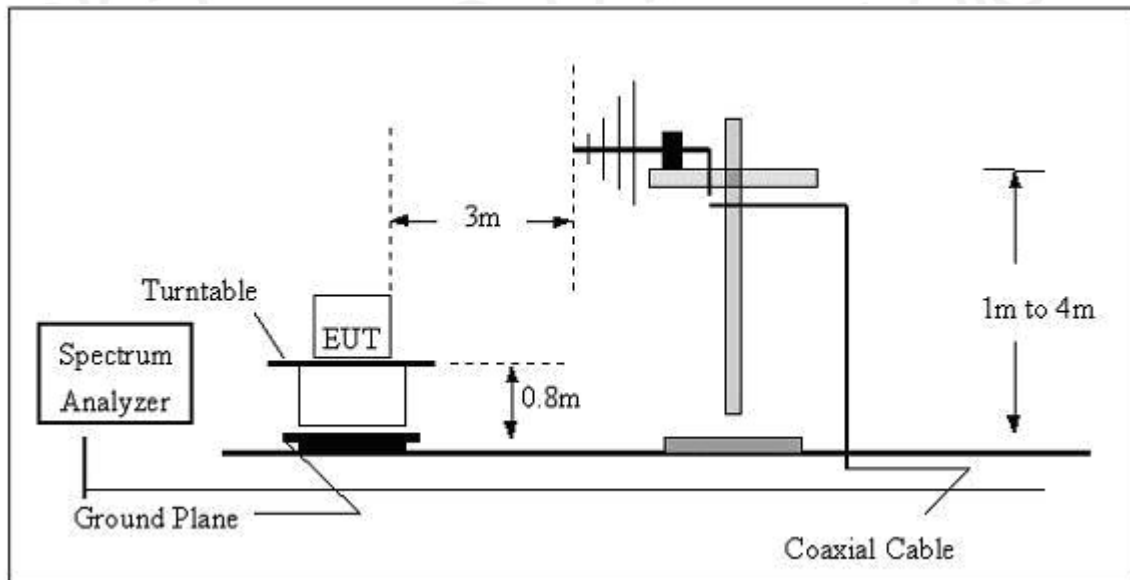
- (1) The limit for radiated test was performed according to as following:
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

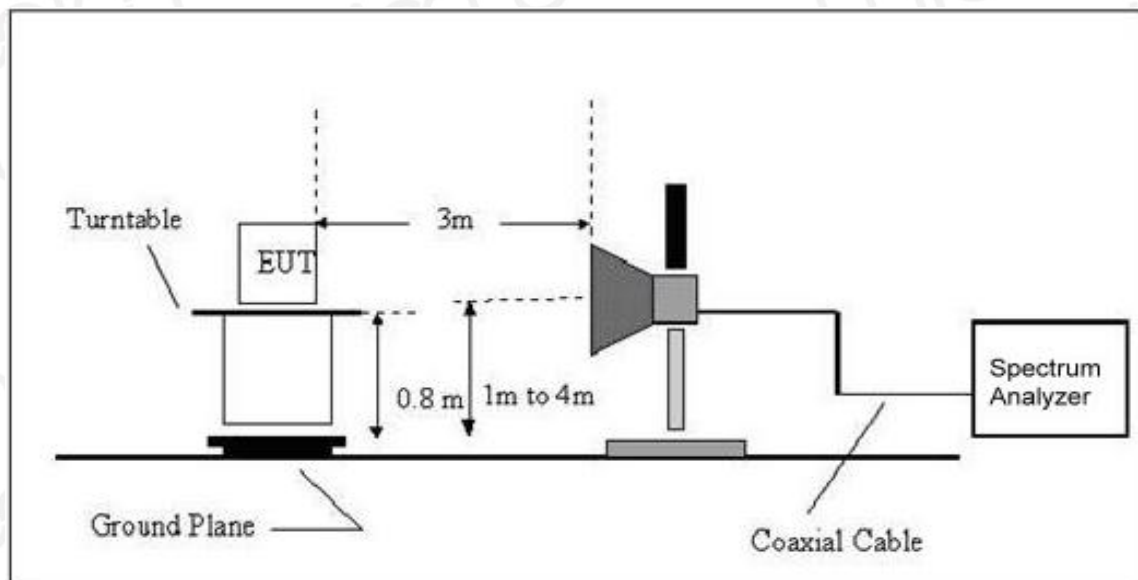
- a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

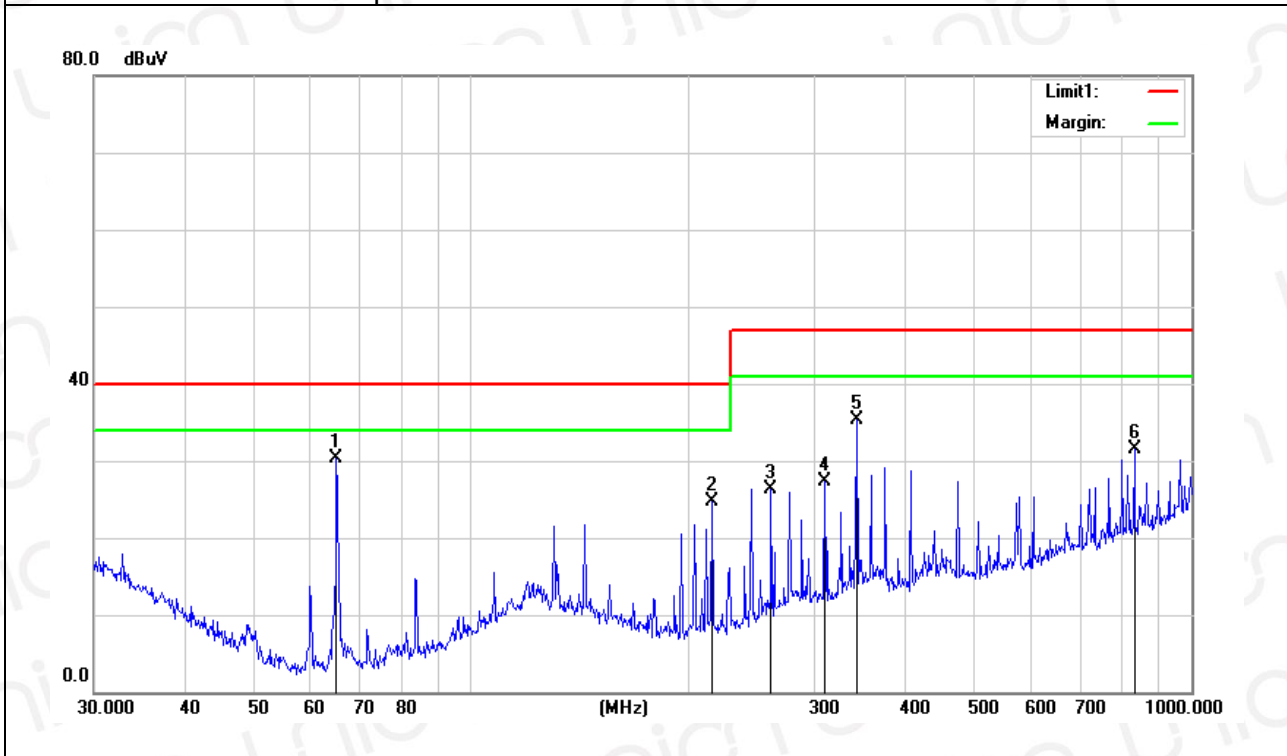
3.2.5 TEST RESULTS

| | | | |
|---------------|---------------------------|---------------------|------------|
| EUT : | HDMI ACTIVE OPTICAL CABLE | Model Name : | SHDC-8810 |
| Temperature : | 24 °C | Relative Humidity : | 54% |
| Pressure : | 1010 hPa | Test Date : | 2018-09-05 |
| Test Mode : | Running | Polarization : | Horizontal |
| Test Power : | DC5V | | |

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|-----|-----------|---------|------------|--------|--------|--------|--------|--------|--------|
| | (MHz) | (dBuV) | Factor(dB) | (dBuV) | (dBuV) | (dB) | (cm) | (deg.) | |
| 1* | 65.1145 | 53.53 | -23.30 | 30.23 | 40.00 | -9.77 | | | peak |
| 2 | 216.0240 | 42.48 | -17.70 | 24.78 | 40.00 | -15.22 | | | peak |
| 3 | 261.0583 | 41.80 | -15.47 | 26.33 | 47.00 | -20.67 | | | peak |
| 4 | 309.9977 | 40.65 | -13.27 | 27.38 | 47.00 | -19.62 | | | peak |
| 5 | 343.1800 | 48.28 | -13.03 | 35.25 | 47.00 | -11.75 | | | peak |
| 6 | 833.3171 | 36.52 | -5.06 | 31.46 | 47.00 | -15.54 | | | peak |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit

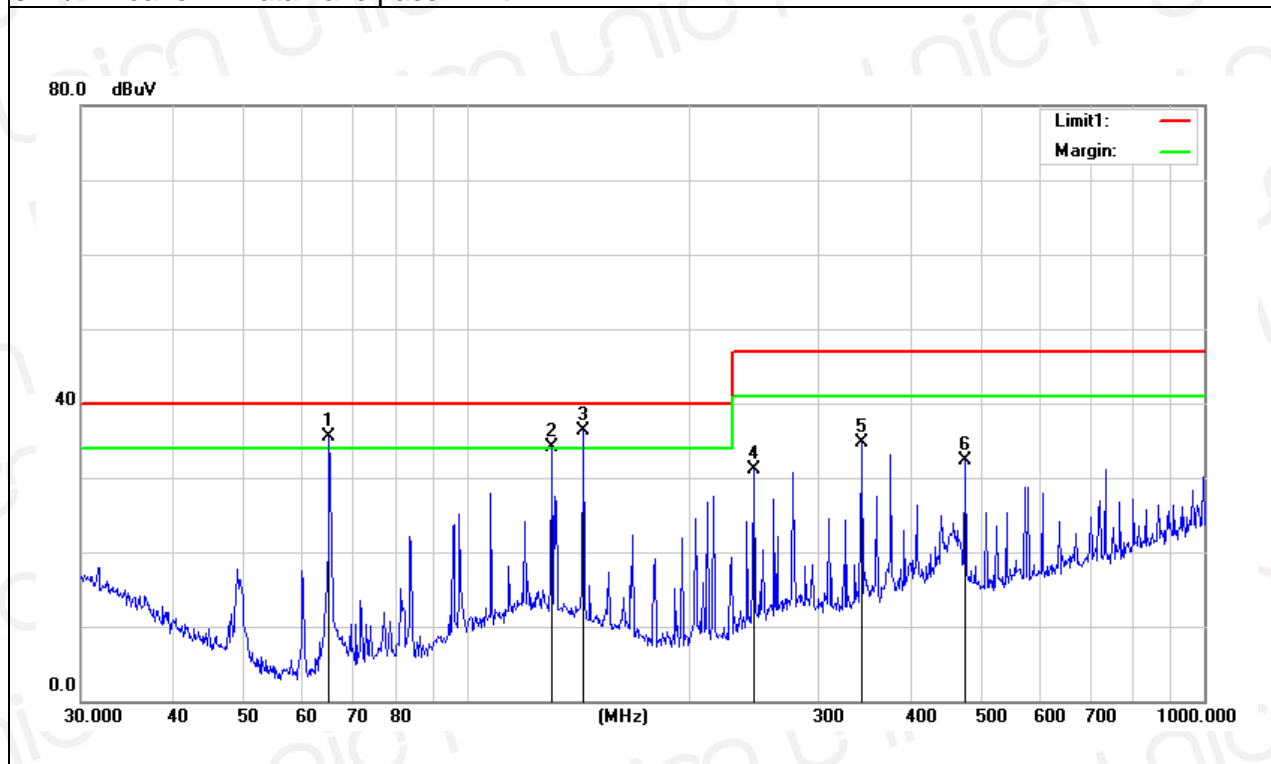


| | | | |
|---------------|---------------------------|---------------------|------------|
| EUT : | HDMI ACTIVE OPTICAL CABLE | Model Name : | SHDC-8810 |
| Temperature : | 24 °C | Relative Humidity : | 54% |
| Pressure : | 1010 hPa | Test Date : | 2018-09-05 |
| Test Mode : | Running | Polarization : | Vertical |
| Test Power : | DC5V | | |

| No. | Frequency | Reading | Correct | Result | Limit | Margin | Height | Degree | Remark |
|-----|-----------|---------|------------|--------|--------|--------|--------|--------|--------|
| | (MHz) | (dBuV) | Factor(dB) | (dBuV) | (dBuV) | (dB) | (cm) | (deg.) | |
| 1! | 65.1145 | 58.78 | -23.30 | 35.48 | 40.00 | -4.52 | | | peak |
| 2! | 130.3789 | 48.49 | -14.46 | 34.03 | 40.00 | -5.97 | | | peak |
| 3* | 143.8295 | 51.46 | -15.21 | 36.25 | 40.00 | -3.75 | | | peak |
| 4 | 245.0900 | 47.29 | -16.23 | 31.06 | 47.00 | -15.94 | | | peak |
| 5 | 343.1800 | 47.64 | -13.03 | 34.61 | 47.00 | -12.39 | | | peak |
| 6 | 473.8347 | 43.95 | -11.68 | 32.27 | 47.00 | -14.73 | | | peak |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Antenna Factor + Cable Loss.
3. N/A means All Data have pass Limit



3.2.6 TEST RESULTS(Above 1GHz)

| | | | |
|---------------|---------------------------|---------------------|-----------|
| EUT : | HDMI ACTIVE OPTICAL CABLE | Model Name : | SHDC-8810 |
| Temperature : | 24 °C | Relative Humidity : | 54% |
| Pressure : | 1010 hPa | Test Date : | N/A |
| Test Mode : | N/A | | |
| Test Power : | N/A | | |

Note:

- 1) N/A - denotes test is not applicable in this test report
- 2) There was not any unintentional transmission in standby mode

4. EUT TEST PHOTO

Radiated Measurement Photos



ATTACHMENT PHOTOGRAPHS OF EUT

Photo 1

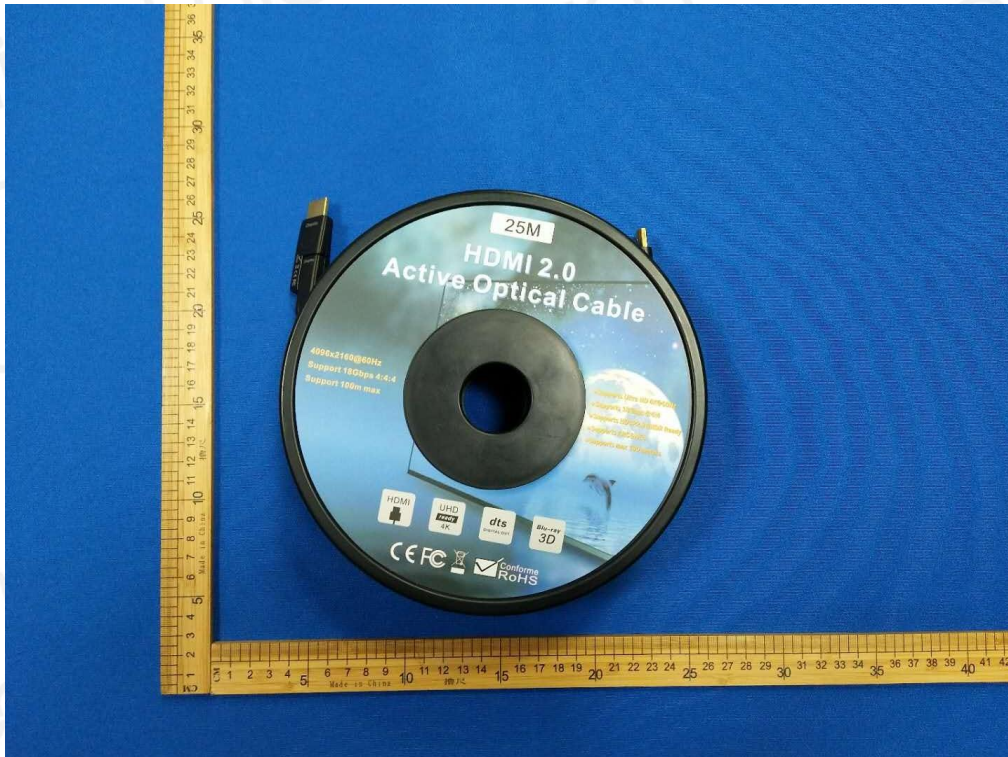


Photo 2



Photo 3

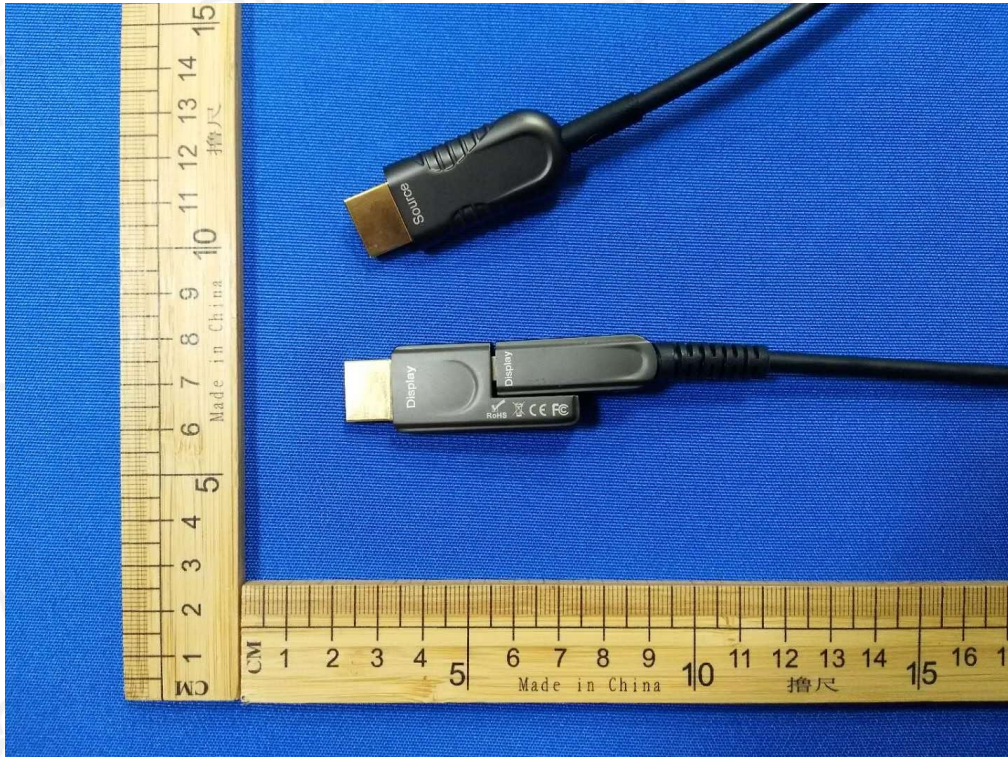


Photo 4

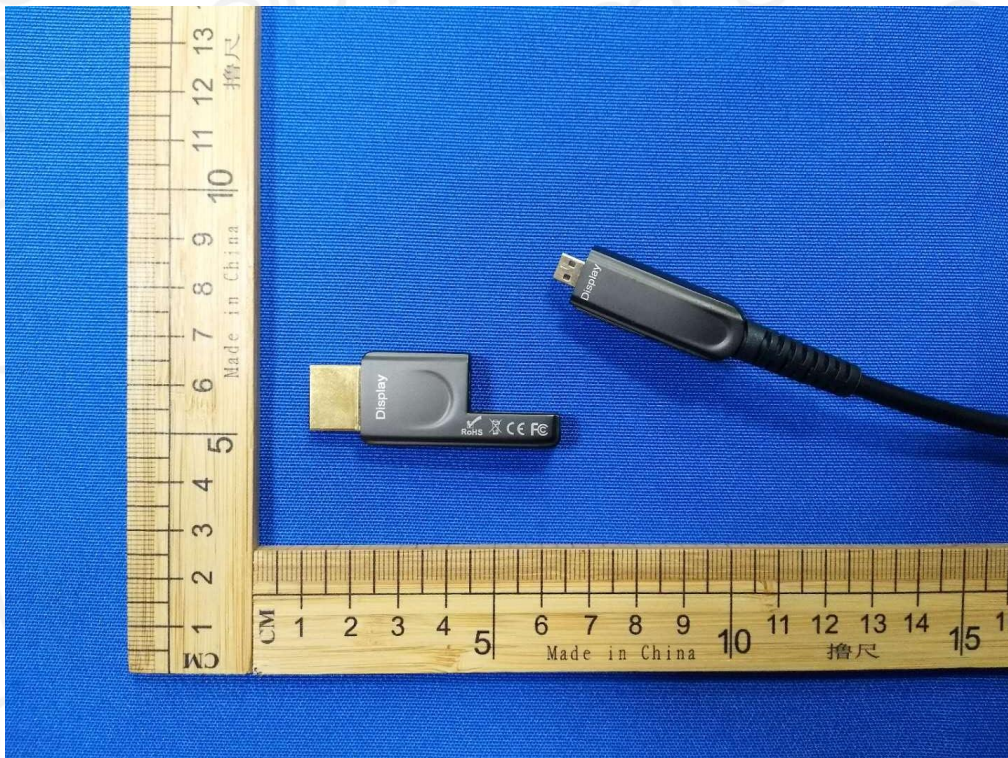
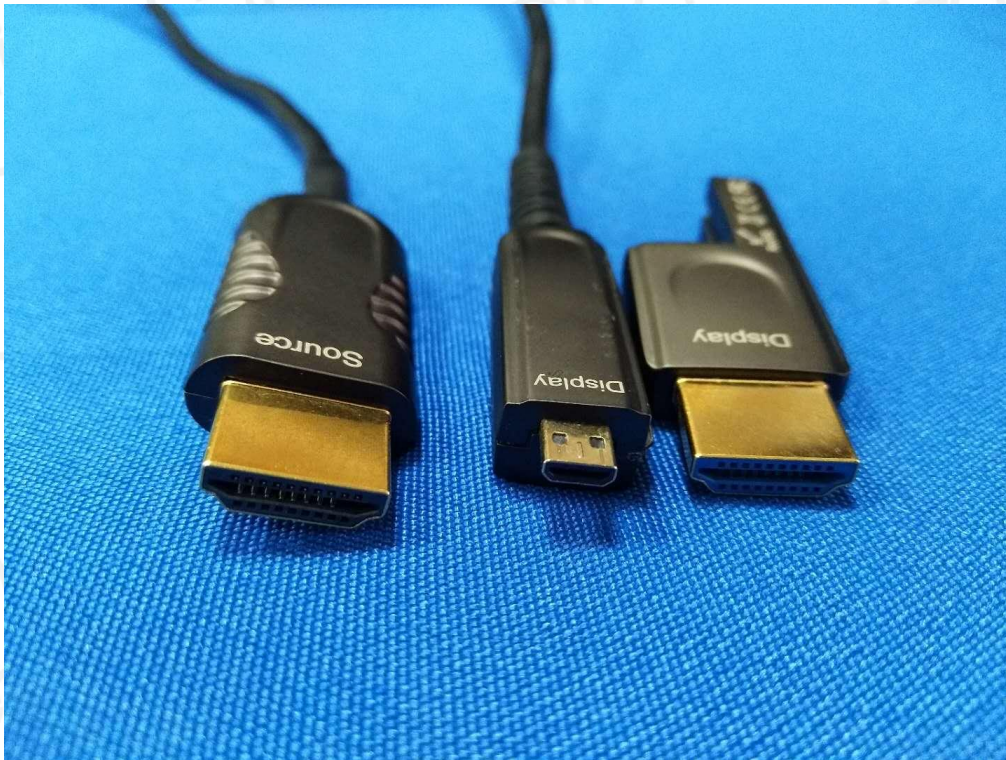


Photo 5



---The end of report---