



Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

## RF Exposure MPE

Report Reference No.: CTA25052301202

FCC ID.: 2BPZC-HSGQ-X410DW

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Date of issue : May 29, 2025

Testing Laboratory Name: Shenzhen CTA Testing Technology Co., Ltd.

Address: Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name: SHENZHEN HS FIBER COMMUNICATION EQUIPMENT CO., LTD

Address: 5th Floor, Building 2, Zone B, Hongfa Science and Technology Industrial Park, Tangtou Community, Shiyan Street, Baoan District, Shenzhen, China

47CFR §1.1310

Standard: 47CFR §2.1091

KDB447498 D01 General RF Exposure Guidance v06

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Test item description: XPON ONU

Manufacturer: SHENZHEN HS FIBER COMMUNICATION EQUIPMENT CO., LTD

Trade Mark:



Model/Type reference: HSGQ-X410DW

Rating: DC 12.0V From external circuit

Result: PASS

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## TEST REPORT

Equipment under Test : XPON ONU

Model /Type : HSGQ-X410DW

Listed Models : HSGQ-851, HSGQ-852, HSGQ-853, HSGQ-855, HSGQ-856, HSGQ-858, HSGQ-851I, HSGQ-852I, HSGQ-853I, HSGQ-855I, HSGQ-856I, HSGQ-858I, HSGQ-841, HSGQ-842, HSGQ-843, HSGQ-844, HSGQ-810, HSGQ-820, HSGQ-810P, HSGQ-820P, HSGQ-X100DB, HSGQ-X100DC, HSGQ-X100DA, HSGQ-X100DG, HSGQ-X100DE, HSGQ-X100, HSGQ-Z100, HSGQ-Z110, HSGQ-X100W, HSGQ-X100W2, HSGQ-X100W3, HSGQ-X110W, HSGQ-X111W, HSGQ-X111, HSGQ-X110, HSGQ-X101, HSGQ-X111WC, HSGQ-X110WC, HSGQ-X110C, HSGQ-X130, HSGQ-X130W, HSGQ-X130C, HSGQ-X130C2, HSGQ-X131, HSGQ-X131WU, HSGQ-X130WU, HSGQ-X131WC, HSGQ-X210DW, HSGQ-X200DW, HSGQ-X201DW, HSGQ-X210, HSGQ-X200, HSGQ-X400DW, HSGQ-X401DW, HSGQ-X410, HSGQ-X400, HSGQ-X401, HSGQ-X422DW, HSGQ-X420DW, HSGQ-X420, HSGQ-X402, HSGQ-X402DWU, HSGQ-X402DW, HSGQ-X401DW, HSGQ-X401DWU, HSGQ-X421DWU, HSGQ-X421DW, HSGQ-X410AX, HSGQ-X411AX, HSGQ-X421AX, HSGQ-X210AX, HSGQ-X400AX, HSGQ-X200AX, HSGQ-X411DW, HSGQ-X411DWU, HSGQ-X411, HSGQ-R520DW, HSGQ-R510DW, HSGQ-R400AX, HSGQ-F100P, HSGQ-F100, HSGQ-F400, HSGQ-F400P, HSGQ-F853, HSGQ-F851, HSGQ-F852, HSGQ-F855, HSGQ-R300, HSGQ-R301, HSGQ-R1200, HSGQ-R1202, HSGQ-R3000, HSGQ-R3002, HSGQ-R3005, HSGQ-F880, HSGQ-F881

Model difference : The PCB board, circuit, structure and internal of these models are the same, Only model number and colour is different for these model.

Applicant : SHENZHEN HS FIBER COMMUNICATION EQUIPMENT CO., LTD

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Manufacturer : SHENZHEN HS FIBER COMMUNICATION EQUIPMENT CO., LTD

Address : 5th Floor, Building 2, Zone B, Hongfa Science and Technology Industrial Park, Tangtou Community, Shiyan Street, Baoan District, Shenzhen, China

<b>Test Result:</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1 TEST STANDARDS

The tests were performed according to following standards:

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB 447498 D01 General RF Exposure Guidance v06](#): Mobile and Portable Device, RF Exposure, Equipment Authorization Procedures.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices

## 2 SUMMARY

### 2.1 General Remarks

Date of receipt of test sample	:	May 23, 2025
Testing commenced on	:	May 23, 2025
Testing concluded on	:	May 29, 2025

### 2.2 Product Description

Product Name:	XPON ONU			
Model/Type reference:	HSGQ-X410DW			
Power supply:	DC 12.0V From external circuit			
Adapter information:	Model: GLH018F-1200150CU Input: AC 100-240V 50/60Hz 0.5A Output: DC 12.0V 1.5A 18.0W			
Hardware version:	V1.0			
Software version:	V1.0			
Testing sample ID:	CTA250523012-1# (Engineer sample) CTA250523012-2# (Normal sample)			

### 5GWIFI

	20MHz system	40MHz system	80MHz system	160MHz system
Supported type:	802.11a 802.11n 802.11ac	802.11n 802.11ac	802.11ac	N/A
Operation frequency:	5725MHz-5850MHz	5755MHz-5795MHz	5775MHz	N/A
Modulation:	OFDM	OFDM	OFDM	N/A
Channel number:	5	2	1	N/A
Channel separation:	20MHz	40MHz	80MHz	N/A
Antenna type:	External antenna			
Antenna gain:	ANT1: 2.05 dBi for 5745-5825MHz ANT2: 2.05 dBi for 5745-5825MHz			

### 2.3 Special Accessories

The following is the EUT test of the auxiliary equipment provided by the laboratory:

Description	Manufacturer	Model	Technical Parameters	Certificate	Provided by
/	/	/	/	/	/

### 2.4 Modifications

No modifications were implemented to meet testing criteria.

### 3 TEST ENVIRONMENT

#### 3.1 Address of the test laboratory

**Shenzhen CTA Testing Technology Co., Ltd.**

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

#### 3.2 Test Facility

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

**FCC-Registration No.: 517856 Designation Number: CN1318**

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

#### A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfills CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

#### 3.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.02 dB	(1)
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Output Peak power	30MHz~18GHz	0.55 dB	(1)
Power spectral density	/	0.57 dB	(1)
Spectrum bandwidth	/	1.1%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 dB	(1)

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## 4 Test limit

### 4.1 Requirement

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

\*=Plane-wave equivalent power density

### 4.2 MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

### 4.3 Conducted Power Results

Test Mode	Antenna	Freq(MHz)	Result [dBm]
11A	Ant1	5745	11.32
		5785	10.09
		5825	10.44
11N20SI SO	Ant1	5745	10.89
		5785	10.40
		5825	10.18
11N40SI SO	Ant1	5755	10.36
		5795	10.52
11AC20S ISO	Ant1	5745	10.62
		5785	10.09
		5825	10.04
	Ant1	5755	10.58

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11AC40S ISO		5795	10.49
11AC80S ISO	Ant1	5775	11.96

Test Mode	Antenna	Freq(MHz)	Result [dBm]
11A	Ant1	5745	11.40
		5785	10.83
		5825	10.56
11N20SI SO	Ant1	5745	10.88
		5785	10.63
		5825	10.09
11N40SI SO	Ant1	5755	10.46
		5795	10.04
11AC20S ISO	Ant1	5745	11.28
		5785	9.61
		5825	10.19
11AC40S ISO	Ant1	5755	10.83
		5795	9.75
11AC80S ISO	Ant1	5775	11.40

#### 4.4 Manufacturing tolerance

Mode	Max. Average Conducted Output Power (dBm)		Max. tune-up	
	Antenna 1	Antenna 2	Antenna 1	Antenna 2
5.8GWIFI	11.96	11.4	11.0±1.0	11.0±1.0

#### 4.5 Standalone MPE Result

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance,  $r = 20\text{cm}$ , as well as the gain of the used antenna is refer to section 2.2, the RF power density can be obtained.

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm <sup>2</sup> )	MPE Limits (mW/cm <sup>2</sup> )
	dBm	mW				
5.8GWIFI Ant 1	12.0	15.8489	2.05	1.6032	0.0051	1.0000
5.8GWIFI Ant 2	12.0	15.8489	2.05	1.6032	0.0051	1.0000

Remark:

1. Output power (Peak) including turn-up tolerance;
2. MPE evaluate distance is 20cm from user manual provide by manufacturer.
3. The sample support two antennas, they support simultaneous transmission;

#### 4.6 Simultaneous Transmission for MPE Result

5.8GWIFI ANT1 MPE (Ratio)	5.8GWIFI ANT2 MPE (Ratio)	simultaneous MPE (Ratio)	MPE Limits (Ratio)
0.0051	0.0051	0.0102	1.0000

### 5 Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device Threshold per KDB 447498 D01v06

\*\*\*\*\* End of Report \*\*\*\*\*

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