
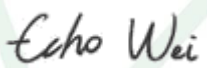
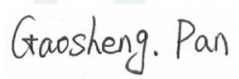




MPE TEST REPORT

Report No. : **CHTEW1910011201** Report verification : 
Project No. : **SHT1906019001EW**
FCC ID..... : **2AE6CER9000U2**
Applicant's name : **Shenzhen Excera Technology Co., Ltd.**
 Address..... : 3rd Floor, Jiada R&D Building, No.5 Songpingshan Road ,
 Hi-Tech Park North, Nanshan District , Shenzhen , China
 Manufacturer..... : Shenzhen Excera Technology Co., Ltd.
 Address..... : 3rd Floor, Jiada R&D Building, No.5 Songpingshan Road ,
 Hi-Tech Park North, Nanshan District , Shenzhen , China
Test item description : **Digital Repeater**
 Trade Mark : EXCERA
 Model/Type reference..... : ER9000 U2
 Listed Model(s) : -
Standard : **FCC Per 47 CFR 2.1091(b)**
 Date of receipt of test sample..... : Sept.17, 2019
 Date of testing..... : Sept.17, 2019- Oct.22, 2019
 Date of issue..... : Oct.23, 2019
Result..... : **PASS**

Compiled by
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 Approved by
 (position+printed name+signature)...: RF Manager Hans Hu 

Testing Laboratory Name : **Shenzhen Huatongwei International Inspection Co., Ltd**
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The test report merely correspond to the test sample.

Contents

| | | |
|------------------|---|-----------------|
| <u>1</u> | <u>TEST STANDARDS AND REPORT VERSION</u> | <u>3</u> |
| 1.1. | Test Standards | 3 |
| 1.2. | Report revised information | 3 |
| <u>2.</u> | <u>SUMMARY</u> | <u>4</u> |
| 2.1. | Client Information | 4 |
| 2.2. | Product Description | 4 |
| <u>3.</u> | <u>TEST RESULT</u> | <u>6</u> |

1 TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

According to [FCC Part 1.1307\(b\)\(1\)](#), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to [FCC Part 1.1310](#) and [FCC Part 2.1091](#) RF exposure is calculated.

[IEEE Std C95.1: 2005](#): "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz".

[FCC OET Bulletin 65, Edition 97-01](#): "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields".

[FCC Supplement C to OET Bulletin 65, Edition 01-01](#): "Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emission".

[IEEE Std C95.3: 2002](#): "IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields with Respect to Human Exposure to Such Fields, 100 kHz – 300 GHz",

1.2. Report revised information

| Revision No. | Date of issue | Description |
|--------------|---------------|-------------|
| N/A | 2019-10-23 | Original |
| | | |
| | | |
| | | |

2. SUMMARY

2.1. Client Information

| | |
|---------------|---|
| Applicant: | Shenzhen Excera Technology Co., Ltd. |
| Address: | 3rd Floor, Jiada R&D Building, No.5 Songpingshan Road , Hi-Tech Park North, Nanshan District , Shenzhen , China |
| Manufacturer: | Shenzhen Excera Technology Co., Ltd. |
| Address: | 3rd Floor, Jiada R&D Building, No.5 Songpingshan Road , Hi-Tech Park North, Nanshan District , Shenzhen , China |

2.2. Product Description

| | | |
|--------------------------------|---|--|
| Name of EUT: | Digital Repeater | |
| Trade mark: | EXCERA | |
| Model/Type reference: | ER9000 U2 | |
| Listed model(s): | - | |
| Power supply: | DC 13.6V | |
| Adapter information: | - | |
| | | |
| Support Frequency Range: | 450MHz~520MHz | |
| Permitted frequency range: *1 | 450MHz~512MHz, 512 MHz~520MHz | |
| Rated Output Power: | <input checked="" type="checkbox"/> High Power: 50W <input checked="" type="checkbox"/> Low Power: 5W | |
| Modulation Type: | Analog: | FM |
| | Digital : | 4FSK |
| Supported Digital Protocol: *2 | DMR | |
| Channel Separation: | Analog: | <input checked="" type="checkbox"/> 12.5kHz |
| | Digital : | <input type="checkbox"/> 6.25kHz <input checked="" type="checkbox"/> 12.5kHz |
| Emission Designator: *3 | Analog: | 11K0F3E |
| | Digital: | 7K60FXW, 7K60FXD |
| Antenna Type: | External | |

Note:

- (1) *1 Listed frequency range 512MHz~520MHz for Federal use Only.
- (2) *2 The DMR standard specifies two-slot Time Division Multiplexing Technology to split the 12.5 kHz channel into two virtual 6.25kHz communication paths. This equates to an efficiency of one voice channel per 6.25 kHz of bandwidth even though it operates in channels of 12.5 kHz
- (3) *3 According to FCC Part 2.202 requirements, the Necessary Bandwidth is calculated as follows:
 - For FM Voice Modulation

Channel Spacing = 12.5 KHz, D = 2.5 KHz max, K = 1, M = 3 KHz

$B_n = 2M + 2DK = 2*3 + 2*2.5*1 = 11 \text{ KHz}$

Emission designation: 11K0F3E

- For FM Data Modulation

Channel Spacing = 12.5 KHz, R = 9600 bps, D = 1944Hz, S = 4, K = 0.72

$$B_n = (R/\log_2 S) + 2DK \cong \mathbf{7.6 \text{ KHz}}$$

Emission designation: 7K60FXW, 7K60FXD

3. TEST RESULT

Limit

FCC Part 1.1310(e):

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | *100 | 6 |
| 3.0-30 | 1842/f | 4.89/f | *900/f ² | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1,500 | | | f/300 | 6 |
| 1,500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *100 | 30 |
| 1.34-30 | 824/f | 2.19/f | *180/f ² | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1,500 | | | f/1500 | 30 |
| 1,500-100,000 | | | 1.0 | 30 |

f=frequency in MHz

*=Plane-wave equivalent power density

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 (mW)

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

| Test Frequency (MHz) | Tune-Up Power (dBm) | Max Output Power (mW) | Power Density (mW/cm ²) | Antenna Gain (dBi) | Safe Distance (m) |
|----------------------|---------------------|-----------------------|-------------------------------------|--------------------|-------------------|
| 450.0125 | 46.7 | 47000 | 1.50 | -5.0 | 1.69 |
| | | | | -2.0 | 2.38 |
| | | | | 0 | 2.99 |
| | | | | 2.0 | 3.75 |
| | | | | 5.0 | 5.33 |
| 481.0125 | 46.7 | 47000 | 1.60 | -5.0 | 1.75 |
| | | | | -2.0 | 2.46 |
| | | | | 0 | 3.09 |
| | | | | 2.0 | 3.88 |
| | | | | 5.0 | 5.50 |
| 511.9875 | 46.7 | 47000 | 1.71 | -5.0 | 1.81 |
| | | | | -2.0 | 2.54 |
| | | | | 0 | 3.20 |
| | | | | 2.0 | 4.00 |
| | | | | 5.0 | 5.69 |
| 512.0125 | 46.7 | 47000 | 1.71 | -5.0 | 1.81 |
| | | | | -2.0 | 2.54 |
| | | | | 0 | 3.20 |
| | | | | 2.0 | 4.00 |
| | | | | 5.0 | 5.69 |
| 519.9875 | 46.7 | 47000 | 1.73 | -5.0 | 1.82 |
| | | | | -2.0 | 2.55 |
| | | | | 0 | 3.22 |
| | | | | 2.0 | 4.03 |
| | | | | 5.0 | 5.72 |

Note:

Antenna Gain (Numeric)=10^{Antenna Gain (dBi)/10}

Power Density(mW/cm²)= f /300

f=frequency in MHz

If the gain of the whip antenna is 2.0dBi, the separation distance is at least 4.03 m from body and the antenna, so meet this standard requirement.

Conclusion

The measurement results comply with the FCC Limit per 47 CFR 1.1310(e) for Occupational/controlled exposure.

-----End of Report-----