

## MPE REPORT

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Report No.: SRTC2020-9004(F)-20110604(I)

Product Name: 5G Wireless Router

Product Model: MC8010CA

Applicant: ZTE Corporation.

Manufacturer: ZTE Corporation.

Specification: FCC Part §2.1091, §2.1093, §1.1307(b), §1.1310 (2019)

FCC ID: SRQ-MC8010CA

The State Radio\_monitoring\_center Testing Center (SRTC)

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## 1 GENERAL INFORMATION

### 1.1 Notes of the test report

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### 1.2 Information about the testing laboratory

|                    |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Company:           | The State Radio_monitoring_center Testing Center (SRTC)              |
| Address:           | 15th Building, No.30 Shixing Street, Shijingshan District, P.R.China |
| City:              | Beijing                                                              |
| Country or Region: | P.R.China                                                            |
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### 1.3 Applicant's details

|                    |                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------|
| Company:           | ZTE Corporation.                                                                                       |
| Address:           | ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China |
| City:              | Shenzhen                                                                                               |
| Country or Region: | China                                                                                                  |
| Contacted person:  | Gong Yu                                                                                                |
| Tel:               | 021-68895397                                                                                           |
| Fax:               | ---                                                                                                    |
| Email:             | gongyu@zte.com.cn                                                                                      |

### 1.4 Manufacturer's details

|                    |                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------|
| Company:           | ZTE Corporation.                                                                                       |
| Address:           | ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R.China |
| City:              | Shenzhen                                                                                               |
| Country or Region: | China                                                                                                  |
| Contacted person:  | Gong Yu                                                                                                |
| Tel:               | 021-68895397                                                                                           |
| Fax:               | ---                                                                                                    |
| Email:             | gongyu@zte.com.cn                                                                                      |

## 2 DESCRIPTION OF THE DEVICE UNDER TEST

### 2.1 Final Equipment Build Status

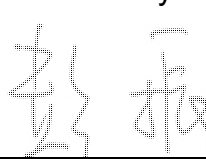
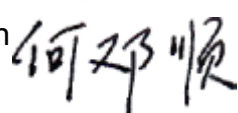
|                  |                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Bands  | <p>WCDMA Band II/IV/V</p> <p>LTE Band 2/4/5/7/12/13/17/25/26/30/66</p> <p>5G NR n66: 1710 MHz – 1780 MHz</p> <p>5G NR n71: 663 MHz – 698 MHz</p> <p>DC_2A_n66A, DC_5A_n66A, DC_7A_n66A, DC_12A_n66A, DC_13A_n66A, DC_30A_n66A</p> <p>DC_2A_n71A, DC_7A_n71A, DC_66A_n71A</p> <p>WIFI2.4GHz: 2400MHz – 2483.5MHz</p> <p>WIFI5GHz UNII-1: 5150MHz – 5250MHz</p> <p>WIFI5GHz UNII-3: 5725MHz – 5850MHz</p> |
| Mode             | <p>WCDMA: RMC 12.2Kbps/HSDPA/HSUPA/DC-HSDPA/HSPA+</p> <p>LTE: QPSK/16QAM/64QAM</p> <p>NR: DFT-s-OFDM (PI/2 BPSK/QPSK/16QAM/64QAM/256QAM)</p> <p>CP-OFDM (QPSK/16QAM/64QAM/256QAM)</p> <p>WIFI2.4GHz: 802.11b/g/n HT20/n HT40/ax HE20/ax HE40</p> <p>WIFI5GHz: 802.11a/n HT20/n HT40/ac VHT20/ac VHT40 /ac VHT80/ax HE20/ax HE40</p>                                                                     |
| Power Supply     | Charger                                                                                                                                                                                                                                                                                                                                                                                                 |
| Hardware Version | MC8010CAHW1.0                                                                                                                                                                                                                                                                                                                                                                                           |
| Software Version | MC8010CAV1.2                                                                                                                                                                                                                                                                                                                                                                                            |
| IMEI             | 867428050000731                                                                                                                                                                                                                                                                                                                                                                                         |

### **3 REFERENCE SPECIFICATION**

| Specification | Version          | Title                                                                                                                 |
|---------------|------------------|-----------------------------------------------------------------------------------------------------------------------|
| 2.1091        | 2019             | Radio frequency radiation exposure evaluation: mobile devices.                                                        |
| 2.1093        | 2019             | Radio frequency radiation exposure evaluation: portable devices.                                                      |
| 1.1307(b)     | 2019             | Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. |
| 1.1310        | 2019             | Radio frequency radiation exposure limits.                                                                            |
| KDB447498     | October 23, 2015 | RF exposure procedures and equipment authorization policies for mobile and portable devices                           |

#### 4 RESULT SUMMARY

| No. | Test case       | FCC reference                                                                                   |
|-----|-----------------|-------------------------------------------------------------------------------------------------|
| 1   | MPE Calculation | FCC Part §2.1091,<br>FCC Part §2.1093,<br>FCC Part §1.1307(b)<br>FCC Part §1.1310<br>KDB 447498 |

|                                                                                                                                        |                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| This Test Report Is Issued by:<br>Mr. Peng Zhen<br> | Checked by:<br>Mr. Li Bin<br> |
| Tested by:<br>Mr. He Dengshun<br>                   | Issued date:<br>20210104                                                                                           |

## 5 TEST RESULTS

### 5.1 Average Power Output Test Result

|       | Mode       | Maximum Average power(dBm) |
|-------|------------|----------------------------|
| WCDMA | Band II    | 24.00                      |
|       | Band IV    | 24.00                      |
|       | Band V     | 24.00                      |
| LTE   | Band 2     | 24.00                      |
|       | Band 4     | 24.00                      |
|       | Band 5     | 24.00                      |
|       | Band 7     | 24.00                      |
|       | Band 12    | 24.00                      |
|       | Band 13    | 24.00                      |
|       | Band 17    | 24.00                      |
|       | Band 25    | 24.00                      |
|       | Band 26    | 24.00                      |
|       | Band 30    | 24.50                      |
|       | Band 66    | 24.00                      |
| 5G NR | N66        | 25.50                      |
|       | N71        | 26.00                      |
| WLAN  | WiFi2.4GHz | 18.00                      |
|       | WiFi5.2GHz | 16.00                      |
|       | WiFi5.8GHz | 18.00                      |

## 5.2 Calculation result

### FCC LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

#### (A) Limits for Occupational/Controlled Exposure ☐

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| 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                                                                 |

#### (B) Limits for General Population/Uncontrolled Exposure ☒

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|-----------------------------------------|-------------------------------------------------------------------|
| 0.3-1.34              | 614                               | 1.63                              | *100                                    | 30                                                                |
| 1.34-30               | 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

Calculation procedure:

According to §2.1091, §2.1093, §1.1307(b) and §1.1310, 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.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$The S = PG / (4\pi R^2)$$

Where S = power density in mW/cm<sup>2</sup>

P = transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

| Band            | Freq. (MHz) | Antenna Gain (dBi) | Maximum Power (dBm) | Maximum EIRP (dBm) | Average EIRP (mW) | Power Density at 20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Power Density / Limit |
|-----------------|-------------|--------------------|---------------------|--------------------|-------------------|---------------------------------------------|-----------------------------|-----------------------|
| WCDMA Band 2    | 1852.4      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| WCDMA Band 4    | 1712.4      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| WCDMA Band 5    | 826.4       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.551                       | 0.114                 |
| LTE Band 2      | 1850.7      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| LTE Band 4      | 1710.7      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| LTE Band 5      | 824.7       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.550                       | 0.114                 |
| LTE Band 7      | 2502.5      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| LTE Band 12     | 699.7       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.466                       | 0.135                 |
| LTE Band 13     | 779.5       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.520                       | 0.121                 |
| LTE Band 17     | 706.5       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.471                       | 0.134                 |
| LTE Band 25     | 1850.7      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| LTE Band 26     | 814.7       | 1.00               | 24.00               | 25.00              | 316.228           | 0.063                                       | 0.543                       | 0.116                 |
| LTE Band 30     | 2307.5      | 2.00               | 24.50               | 26.50              | 446.684           | 0.089                                       | 1.000                       | 0.089                 |
| LTE Band 66     | 1710.7      | 2.00               | 24.00               | 26.00              | 398.107           | 0.079                                       | 1.000                       | 0.079                 |
| 5G NR n66       | 1710        | 2.00               | 25.50               | 27.50              | 562.341           | 0.112                                       | 1.000                       | 0.112                 |
| 5G NR n71       | 663         | 1.00               | 26.00               | 27.00              | 501.187           | 0.100                                       | 0.442                       | 0.226                 |
| WLAN2.4GHz Band | 2412        | 5.10               | 18.00               | 23.10              | 204.174           | 0.041                                       | 1.000                       | 0.041                 |
| WLAN5.2GHz Band | 5180        | 7.00               | 16.00               | 23.00              | 199.526           | 0.040                                       | 1.000                       | 0.040                 |
| WLAN5.8GHz Band | 5745        | 7.00               | 18.00               | 25.00              | 316.228           | 0.063                                       | 1.000                       | 0.063                 |

Note:

For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

#### Worst Simultaneous Transmission Result

| WWAN Power Density / Limit | WLAN Power Density / Limit | Σ(Power Density / Limit) of WWAN + WLAN |
|----------------------------|----------------------------|-----------------------------------------|
| 0.226                      | 0.063                      | 0.289                                   |

Note: Simultaneous Transmission Limit=Power Density<sub>1</sub>/ limit<sub>1</sub> + Power Density<sub>2</sub>/ limit<sub>2</sub><1

According to the KDB447498 D01 section 7.1 determine the device is exclusion from SAR test.

---End of Test Report---