


# RF EXPOSURE REPORT



Report No.: 16070816-FCC-H2

Supersede Report No.: N/A

|  |   |   |
|--|---|---|
| Applicant  | MOBIWIRE MOBILES (NINGBO) CO.,LTD   |   |
| Product Name   | 4G LTE SMARTPHONE   |   |
| Model No.  | N551  |   |
| Serial No.   | N/A   |   |
| Test Standard  | FCC 2.1093:2015   |   |
| Test Date  | July 19 to August 14, 2016  |   |
| Issue Date   | August 15, 2016   |   |
| Test Result  | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail              |   |
| Equipment complied with the specification  | <input checked="" type="checkbox"/>   |   |
| Equipment did not comply with the specification  | <input type="checkbox"/>  |   |
|   |  |  |
| Loren Luo<br>Test Engineer   | David Huang<br>Checked By   |   |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |   |   |

Issued by:

**SIEMIC (SHENZHEN-CHINA) LABORATORIES**

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## Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

| Country/Region | Scope                              |
|----------------|------------------------------------|
| USA            | EMC, RF/Wireless, SAR, Telecom     |
| Canada         | EMC, RF/Wireless, SAR, Telecom     |
| Taiwan         | EMC, RF, Telecom, SAR, Safety      |
| Hong Kong      | RF/Wireless, SAR, Telecom          |
| Australia      | EMC, RF, Telecom, SAR, Safety      |
| Korea          | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan          | EMI, RF/Wireless, SAR, Telecom     |
| Singapore      | EMC, RF, SAR, Telecom              |
| Europe         | EMC, RF, SAR, Telecom, Safety      |

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## 1. Report Revision History

| Report No.      | Report Version | Description | Issue Date      |
|-----------------|----------------|-------------|-----------------|
| 16070816-FCC-H2 | NONE           | Original    | August 15, 2016 |
|                 |                |             |                 |
|                 |                |             |                 |
|                 |                |             |                 |
|                 |                |             |                 |

## 2. Customer information

|                  |  |
|------------------|--|
| Applicant Name   | MOBIWIRE MOBILES (NINGBO) CO.,LTD              |
| Applicant Add    | No.999,Dacheng East Road,Fenghua City,Zhejiang |
| Manufacturer     | MOBIWIRE MOBILES (NINGBO) CO.,LTD              |
| Manufacturer Add | No.999,Dacheng East Road,Fenghua City,Zhejiang |

## 3. Test site information

|                      |  |
|----------------------|--|
| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES   |
| Lab Address          | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park<br>South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China<br>518108 |
| FCC Test Site No.    | 718246   |
| IC Test Site No.     | 4842E-1  |
| Test Software        | Radiated Emission Program-To Shenzhen v2.0   |

## 4. Equipment under Test (EUT) Information

|                     |  |
|---------------------|--|
| Description of EUT: | 4G LTE SMARTPHONE  |
| Main Model:         | N551   |
| Serial Model:       | N/A  |
| Date EUT received:  | July 18, 2016  |
| Test Date(s):       | July 19 to August 14, 2016   |
| Antenna Gain:       | GSM850: -3dBi<br>PCS1900: -1dBi<br>UMTS-FDD Band V: -3dBi<br>UMTS-FDD Band II:-1dBi<br>LTE Band IV: -3dBi<br>Bluetooth/BLE/WIFI: -1dBi<br>GPS: -1dBi                         |
| Antenna Type:       | PIFA antenna   |
| Type of Modulation: | GSM / GPRS: GMSK<br>EGPRS: GMSK,8PSK<br>UMTS-FDD: QPSK<br>LTE Band: QPSK, 16QAM<br>802.11b/g/n: DSSS, OFDM<br>Bluetooth: GFSK, $\pi$ /4DQPSK, 8DPSK<br>BLE: GFSK<br>GPS:BPSK |

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|                               |  |
|-------------------------------|--|
|                               | GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz<br>PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz<br>UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz<br>UMTS-FDD Band II TX:1852.4 ~ 1907.6 MHz;<br>RX: 1932.4 ~ 1987.6 MHz |
| RF Operating Frequency (ies): | LTE Band IV TX: 1712.5 ~ 1752.5 MHz; RX : 2112.5 ~ 2152.5 MHz<br>WIFI: 802.11b/g/n(20M): 2412-2462 MHz<br>WIFI: 802.11n(40M): 2422-2452 MHz<br>Bluetooth& BLE: 2402-2480 MHz<br>GPS: 1575.42 MHz   |
|                               | GSM 850: 124CH<br>PCS1900: 299CH<br>UMTS-FDD Band V: 102CH<br>UMTS-FDD Band II: 277CH  |
| Number of Channels:           | WIFI :802.11b/g/n(20M): 11CH<br>WIFI :802.11n(40M): 7CH<br>Bluetooth: 79CH<br>BLE: 40CH<br>GPS:1CH   |
| Port:                         | Power Port, Earphone Port, USB Port  |
|                               | Adapter:<br>Model: S005UA0500100<br>Input: AC100-240V~50/60Hz,150mA<br>Output: DC 5.0V,1000mA  |
| Input Power:                  | Battery:<br>Spec: 3.8V,3000mAh(11.4Wh)   |
| Trade Name :                  | Noblex   |
| GPRS/EGPRS Multi-slot class   | 8/10/12  |
| FCC ID:                       | 2ADA4N551  |

## 5. FCC §2.1093 - Radiofrequency radiation exposure evaluation: portable devices.

### 5.1 RF Exposure

#### Standard Requirement:

According to §15.247 (i) and §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.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances*  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,<sup>16</sup> where

- $f_{\text{(GHz)}}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum *test separation distance* is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

$$\text{result} = P\sqrt{F} / D$$

P= Maximum turn-up power in mW

F= Channel frequency in GHz

D= Minimum test separation distance in mm

## 5.2 Test Result

### Bluetooth Mode:

| Modulation | CH   | Frequency (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|-----------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK       | Low  | 2402            | <b>4.457</b>          | 4±1                 | 5                       | 3.162                  | 0.98   | 3     |
|            | Mid  | 2441            | 4.368                 | 4±1                 | 5                       | 3.162                  | 0.99   | 3     |
|            | High | 2480            | 3.949                 | 4±1                 | 5                       | 3.162                  | 1.00   | 3     |
| π /4 DQPSK | Low  | 2402            | 3.800                 | 4±1                 | 5                       | 3.162                  | 0.98   | 3     |
|            | Mid  | 2441            | 3.807                 | 4±1                 | 5                       | 3.162                  | 0.99   | 3     |
|            | High | 2480            | 3.368                 | 4±1                 | 5                       | 3.162                  | 1.00   | 3     |
| 8-DPSK     | Low  | 2402            | 3.915                 | 4±1                 | 5                       | 3.162                  | 0.98   | 3     |
|            | Mid  | 2441            | 3.919                 | 4±1                 | 5                       | 3.162                  | 0.99   | 3     |
|            | High | 2480            | 3.351                 | 4±1                 | 5                       | 3.162                  | 1.00   | 3     |

### WIFI Mode:

| Modulation    | CH   | Frequency (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|---------------|------|-----------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| 802.11b       | Low  | 2412            | <b>9.12</b>           | 8.5±1               | 9.5                     | 8.913                  | 2.77   | 3     |
|               | Mid  | 2442            | 8.64                  | 8.5±1               | 9.5                     | 8.913                  | 2.78   | 3     |
|               | High | 2472            | 8.86                  | 8.5±1               | 9.5                     | 8.913                  | 2.80   | 3     |
| 802.11g       | Low  | 2412            | <b>8.73</b>           | 8.5±1               | 9.5                     | 8.913                  | 2.77   | 3     |
|               | Mid  | 2442            | 8.68                  | 8.5±1               | 9.5                     | 8.913                  | 2.78   | 3     |
|               | High | 2472            | 8.30                  | 8.5±1               | 9.5                     | 8.913                  | 2.80   | 3     |
| 802.11n (20M) | Low  | 2412            | 8.76                  | 8.5±1               | 9.5                     | 8.913                  | 2.77   | 3     |
|               | Mid  | 2442            | 8.35                  | 8.5±1               | 9.5                     | 8.913                  | 2.78   | 3     |
|               | High | 2472            | <b>8.84</b>           | 8.5±1               | 9.5                     | 8.913                  | 2.80   | 3     |
| 802.11n (40M) | Low  | 2422            | 8.61                  | 8.5±1               | 9.5                     | 8.913                  | 2.77   | 3     |
|               | Mid  | 2442            | <b>9.24</b>           | 8.5±1               | 9.5                     | 8.913                  | 2.78   | 3     |
|               | High | 2462            | 8.73                  | 8.5±1               | 9.5                     | 8.913                  | 2.79   | 3     |

**BLE Mode:**

| Modulation | CH   | Freq (MHz) | Conducted Power (dBm) | Tune Up Power (dBm) | Max Tune Up Power (dBm) | Max Tune Up Power (mW) | Result | Limit |
|------------|------|------------|-----------------------|---------------------|-------------------------|------------------------|--------|-------|
| GFSK       | Low  | 2402       | -2.452                | -2±1                | -1                      | 0.794                  | 0.25   | 3     |
|            | Mid  | 2440       | <b>-1.961</b>         | -2±1                | -1                      | 0.794                  | 0.25   | 3     |
|            | High | 2480       | -2.855                | -2±1                | -1                      | 0.794                  | 0.25   | 3     |

**Result:** Compliance

No SAR measurement is required.