



**Partial  
FCC PART 15C  
TEST REPORT  
No. I15Z42269-SRD04**

**for**

**Huawei Technologies Co., Ltd.**

**LTE/WCDMA/GSM Smart Phone**

**Model Name: H1511**

**With**

**Hardware Version: HL1 NINAMH**

**Software Version: User release M MDA**

**FCC ID: QISH1511**

**Issued Date: Sep 10<sup>th</sup>, 2015**



**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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## **REPORT HISTORY**

| <b>Report Number</b> | <b>Revision</b> | <b>Description</b> | <b>Issue Date</b> |
|----------------------|-----------------|--------------------|-------------------|
| I15Z42269-SRD04      | Rev.0           | 1st edition        | 2015-09-10        |

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## **1. Test Laboratory**

### **1.1. Testing Location**

Location 1:CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

Location 2:CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,  
Haidian District, Beijing, P. R. China100191

### **1.2. Testing Environment**

Normal Temperature: 15-35°C  
Extreme Temperature: -20/+55°C  
Relative Humidity: 20-75%

### **1.3. Project data**

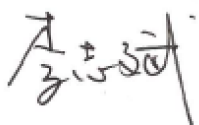
Testing Start Date: 2015-08-26  
Testing End Date: 2015-09-10

### **1.4. Signature**



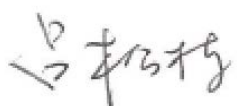
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**Xu Zhongfei**  
**(Prepared this test report)**



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**Li Zhibin**  
**(Reviewed this test report)**



---

**Lv Songdong**  
**(Approved this test report)**



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Huawei Technologies Co., Ltd.  
Address: Huawei Industrial Base, Bantian Longgang, Shenzhen 518129, P.R  
China  
City: Shenzhen  
Postal Code: /  
Country: China  
Telephone: 13811488426  
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### **2.2. Manufacturer Information**

Company Name: Huawei Technologies Co., Ltd.  
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City: Shenzhen  
Postal Code: /  
Country: China  
Telephone: 13811488426  
Fax: /

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

|                    |                           |
|--------------------|---------------------------|
| Description        | LTE/WCDMA/GSM Smart Phone |
| Model Name         | H1511                     |
| Market Name        | /                         |
| Frequency Band     | 2402MHz~2480MHz           |
| Type of Modulation | GFSK                      |
| Number of Channels | 40                        |
| FCC ID             | QISH1511                  |

\*Note: Photographs of EUT are shown in ANNEX A of this test report.

#### **3.2. Internal Identification of EUT**

| <b>EUT ID*</b> | <b>IMEI</b> | <b>HW Version</b> | <b>SW Version</b>  |
|----------------|-------------|-------------------|--------------------|
| EUT1           | /           | HL1 NINAMH        | User release M MDA |

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE**

| <b>AE ID*</b> | <b>Description</b> | <b>Type</b>  | <b>SN</b> |
|---------------|--------------------|--------------|-----------|
| AE1           | Charger            | HW-050300E00 | /         |
| AE2           | Charger            | HW-050300E00 | /         |
| AE3           | Charger            | HW-050300U00 | /         |
| AE4           | Charger            | HW-050300A00 | /         |

\*AE ID: is used to identify the test sample in the lab internally.

## **4. Reference Documents**

### **4.1. Documents supplied by applicant**

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### **4.2. Reference Documents for testing**

The following documents listed in this section are referred for testing.

| Reference   | Title                                                              | Version   |
|-------------|--------------------------------------------------------------------|-----------|
| FCC Part15  | FCC CFR 47, Part 15, Subpart C:                                    | Oct,2014  |
|             | 15.205 Restricted bands of operation;                              |           |
|             | 15.209 Radiated emission limits, general requirements;             |           |
| ANSI C63.10 | 15.247 Operation within the bands 902–928MHz,                      | June,2013 |
|             | 2400–2483.5 MHz, and 5725–5850 MHz.                                |           |
|             | American National Standard for Testing Unlicensed Wireless Devices |           |

## 5. Test Results

### 5.1. Summary of Test Results

| No | Test cases                               | Sub-clause of Part15C | Verdict |
|----|------------------------------------------|-----------------------|---------|
| 0  | Antenna Requirement                      | 15.203                | P       |
| 1  | Transmitter Spurious Emission - Radiated | 15.247,15.205,15.209  | P       |

See **ANNEX B** and **ANNEX C** for details.

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant/manufacture as listed in section 5.1 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2

### 5.3. Terms used in the result table

Terms used in Verdict column

|    |               |
|----|---------------|
| P  | Pass          |
| NA | Not Available |
| F  | Fail          |

Abbreviations

|          |                                                 |
|----------|-------------------------------------------------|
| AC       | Alternating Current                             |
| AFH      | Adaptive Frequency Hopping                      |
| BW       | Band Width                                      |
| E.I.R.P. | equivalent isotropical radiated power           |
| ISM      | Industrial, Scientific and Medical              |
| R&TTE    | Radio and Telecommunications Terminal Equipment |
| RF       | Radio Frequency                                 |
| Tx       | Transmitter                                     |

#### 5.4. Laboratory Environment

**Semi-anechoic chamber** (23 meters×17 meters×10 meters) did not exceed following limits:

|                                                 |                                                   |
|-------------------------------------------------|---------------------------------------------------|
| Temperature                                     | Min. = 15 °C, Max. = 35 °C                        |
| Relative humidity                               | Min. = 15 %, Max. = 75 %                          |
| Shielding effectiveness                         | 0.014MHz - 1MHz, >60dB;<br>1MHz - 1000MHz, >90dB. |
| Electrical insulation                           | > 2 M                                             |
| Ground system resistance                        | < 4                                               |
| Normalised site attenuation (NSA)               | < ± 4 dB, 3m/10m distance,<br>from 30 to 1000 MHz |
| Site voltage standing-wave ratio ( $S_{VSWR}$ ) | Between 0 and 6 dB, from 1GHz to 18GHz            |
| Uniformity of field strength                    | Between 0 and 6 dB, from 80 to 3000 MHz           |

**Shielded room** did not exceed following limits along the EMC testing:

|                          |                                                   |
|--------------------------|---------------------------------------------------|
| Temperature              | Min. = 15 °C, Max. = 35 °C                        |
| Relative humidity        | Min. = 20 %, Max. = 75 %                          |
| Shielding effectiveness  | 0.014MHz - 1MHz, >60dB;<br>1MHz - 1000MHz, >90dB. |
| Electrical insulation    | > 2 M                                             |
| Ground system resistance | < 4                                               |

## 6. Test Facilities Utilized

### Radiated emission test system

| No. | Equipment              | Model    | Serial Number | Manufacturer     | Calibration Due date | Calibration Period |
|-----|------------------------|----------|---------------|------------------|----------------------|--------------------|
| 1   | Semi-anechoic chamber  | /        | CT000332-1074 | Frankonia German | /                    | /                  |
| 2   | Vector Signal Analyzer | FSV      | 101047        | Rohde & Schwarz  | 2016-07-03           | 1 year             |
| 3   | Test Receiver          | ESCI 7   | 100948        | Rohde & Schwarz  | 2016-07-16           | 1 year             |
| 4   | Loop Antenna           | HFH2-Z2  | 829324/007    | Rohde & Schwarz  | 2017-12-16           | 3 years            |
| 5   | EMI Antenna            | VULB9163 | 9163-234      | Schwarzbeck      | 2016-09-15           | 3 years            |
| 6   | EMI Antenna            | 3115     | 6914          | ECMO             | 2017-12-15           | 3 years            |
| 7   | EMI Antenna            | 3116     | 2661          | ETS-Lindgren     | 2017-06-17           | 3 years            |

**ANNEX B: MEASUREMENT RESULTS FOR RECEIVER****B.0 Antenna requirement****Measurement Limit:**

| Standard               | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FCC CRF Part<br>15.203 | An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, § 15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded. |

**Conclusion: The Directional gains of antenna used for transmitting is 1.0 dBi.**

**The RF transmitter uses an integrate antenna without connector.**

## B.1 Transmitter Spurious Emission

### B.1.1 Transmitter Spurious Emission - Radiated

#### Measurement Limit:

| Standard                               | Limit                        |
|----------------------------------------|------------------------------|
| FCC 47 CFR Part 15.247, 15.205, 15.209 | 20dB below peak output power |

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

#### Limit in restricted band:

| Frequency of emission (MHz) | Field strength( $\mu\text{V/m}$ ) | Measurement distance(meters) |
|-----------------------------|-----------------------------------|------------------------------|
| 0.009-0.490                 | 2400/F(kHz)                       | 300                          |
| 0.490-1.705                 | 24000/F(kHz)                      | 30                           |
| 1.705-30.0                  | 30                                | 30                           |
| 30-88                       | 100                               | 3                            |
| 88-216                      | 150                               | 3                            |
| 216-960                     | 200                               | 3                            |
| Above 960                   | 500                               | 3                            |

#### Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW       | Sweep Time(s) |
|-----------------------------|---------------|---------------|
| 30-1000                     | 120kHz/300kHz | 5             |
| 1000-4000                   | 1MHz/3MHz     | 15            |
| 4000-18000                  | 1MHz/3MHz     | 40            |
| 18000-26500                 | 1MHz/3MHz     | 20            |

#### Note:

According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

**Measurement Results:**
**GFSK mode**

| Mode | Channel     | Frequency Range     | Test Results | Conclusion |
|------|-------------|---------------------|--------------|------------|
| GFSK | 0           | 1 GHz ~ 18 GHz      | Fig.1        | P          |
|      | 19          | 9 kHz ~30 MHz       | Fig.2        | P          |
|      |             | 30 MHz ~1 GHz       | Fig.3        | P          |
|      |             | 1 GHz ~ 18 GHz      | Fig.4        | P          |
|      |             | 18 GHz~ 26.5 GHz    | Fig.5        | P          |
|      | 39          | 1 GHz ~ 18 GHz      | Fig.6        | P          |
|      | Power(CH0)  | 2.38 GHz ~ 2.45 GHz | Fig.7        | P          |
|      | Power(CH39) | 2.45 GHz ~ 2.5 GHz  | Fig.8        | P          |

**GFSK CH0 (1-18GHz)**

| Frequency (MHz) | MaxPeak-ClearWrite (dBμV/m) | Polarization | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|-----------------------------|--------------|------------|-------------|----------------|---------|
| 14163.000000    | 55.8                        | H            | 11.2       | 18.2        | 74.0           |         |
| 15135.000000    | 56.9                        | H            | 12.1       | 17.1        | 74.0           |         |
| 15746.000000    | 58.4                        | V            | 12.9       | 15.6        | 74.0           |         |
| 16295.000000    | 58.3                        | V            | 13.4       | 15.7        | 74.0           |         |
| 16693.000000    | 59.0                        | H            | 13.9       | 15.0        | 74.0           |         |
| 17817.000000    | 58.7                        | H            | 14.4       | 15.3        | 74.0           |         |

| Frequency (MHz) | Average-ClearWrite (dBμV/m) | Polarization | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|-----------------------------|--------------|------------|-------------|----------------|---------|
| 14528.000000    | 44.2                        | H            | 11.7       | 9.8         | 54.0           |         |
| 15169.000000    | 44.8                        | H            | 12.1       | 9.2         | 54.0           |         |
| 15731.000000    | 46.4                        | H            | 12.9       | 7.6         | 54.0           |         |
| 16205.000000    | 47.0                        | H            | 13.3       | 7.0         | 54.0           |         |
| 16777.000000    | 47.3                        | H            | 14.0       | 6.7         | 54.0           |         |
| 17293.000000    | 47.0                        | H            | 14.1       | 7.0         | 54.0           |         |

**GFSK CH19 (1-18GHz)**

| Frequency (MHz) | MaxPeak-ClearWrite (dBμV/m) | Polarization | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|-----------------------------|--------------|------------|-------------|----------------|---------|
| 14136.000000    | 54.1                        | V            | 11.2       | 19.9        | 74.0           |         |
| 15166.000000    | 54.9                        | V            | 12.1       | 19.1        | 74.0           |         |
| 15739.000000    | 56.5                        | V            | 12.9       | 17.5        | 74.0           |         |
| 16195.000000    | 56.3                        | H            | 13.3       | 17.7        | 74.0           |         |
| 16696.000000    | 56.6                        | V            | 13.9       | 17.4        | 74.0           |         |
| 17363.000000    | 56.7                        | V            | 14.3       | 17.3        | 74.0           |         |

| Frequency (MHz) | Average-ClearWrite (dBμV/m) | Polarization | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|-----------------------------|--------------|------------|-------------|----------------|---------|
| 14166.000000    | 41.9                        | V            | 11.3       | 12.1        | 54.0           |         |
| 15126.000000    | 43.0                        | V            | 12.1       | 11.0        | 54.0           |         |
| 15777.000000    | 44.5                        | V            | 12.9       | 9.5         | 54.0           |         |
| 16218.000000    | 44.3                        | V            | 13.3       | 9.7         | 54.0           |         |
| 16742.000000    | 44.8                        | V            | 14.0       | 9.2         | 54.0           |         |
| 17348.000000    | 44.3                        | H            | 14.2       | 9.7         | 54.0           |         |

**GFSK CH39 (1-18GHz)**

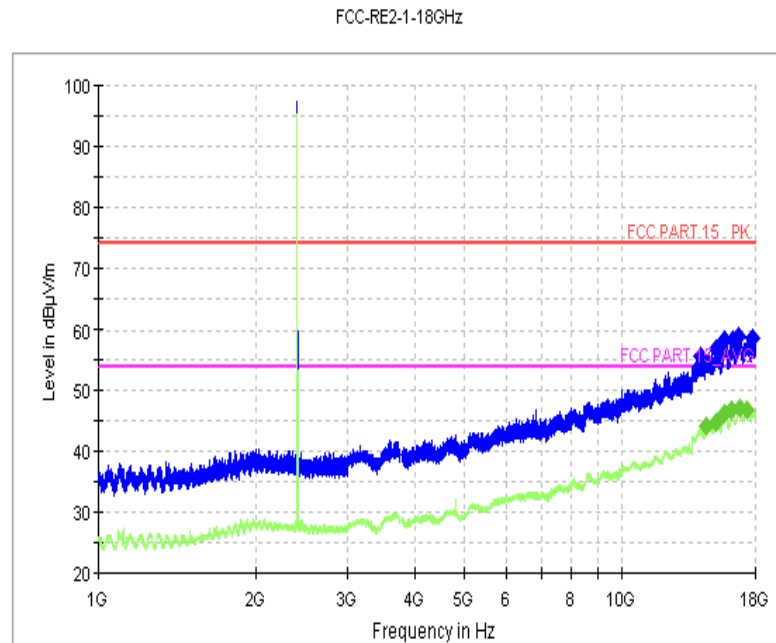
| Frequency (MHz) | MaxPeak-ClearWrite (dBμV/m) | Polarization | Corr. (dB) | Margin (dB) | Limit (dBμV/m) | Comment |
|-----------------|-----------------------------|--------------|------------|-------------|----------------|---------|
| 14397.000000    | 54.8                        | V            | 11.5       | 19.2        | 74.0           |         |
| 15168.000000    | 55.9                        | H            | 12.1       | 18.1        | 74.0           |         |
| 15794.000000    | 57.6                        | V            | 13.0       | 16.4        | 74.0           |         |
| 16336.000000    | 57.2                        | H            | 13.5       | 16.8        | 74.0           |         |
| 16642.000000    | 58.0                        | V            | 13.9       | 16.0        | 74.0           |         |
| 17413.000000    | 58.0                        | H            | 14.3       | 16.0        | 74.0           |         |

| Frequency<br>(MHz) | Average-ClearWrite<br>(dB $\mu$ V/m) | Polarization | Corr.<br>(dB) | Margin<br>(dB) | Limit<br>(dB $\mu$ V/m) | Comment |
|--------------------|--------------------------------------|--------------|---------------|----------------|-------------------------|---------|
| 14464.000000       | 42.8                                 | V            | 11.6          | 11.2           | 54.0                    |         |
| 15134.000000       | 43.8                                 | H            | 12.1          | 10.2           | 54.0                    |         |
| 15742.000000       | 45.5                                 | V            | 12.9          | 8.5            | 54.0                    |         |
| 16295.000000       | 45.2                                 | H            | 13.4          | 8.8            | 54.0                    |         |
| 16756.000000       | 45.6                                 | V            | 14.0          | 8.4            | 54.0                    |         |
| 17343.000000       | 45.3                                 | V            | 14.2          | 8.7            | 54.0                    |         |

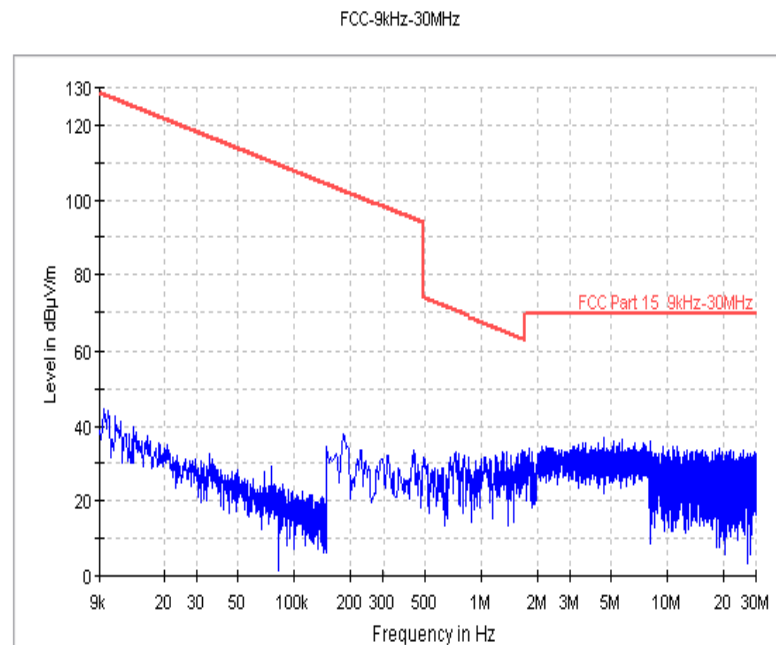
See ANNEX C for test graphs.

Conclusion: Pass

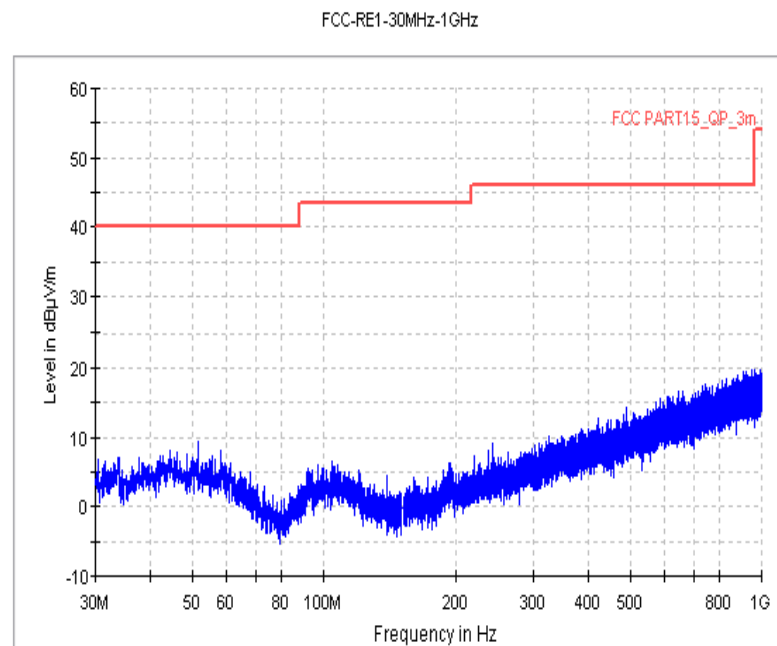
## ANNEX C: TEST FIGURE LIST



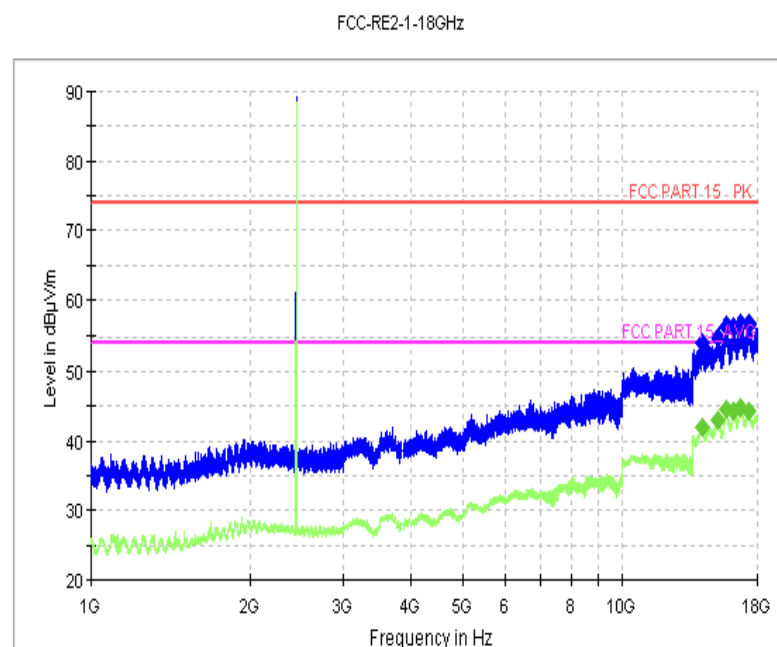
**Fig.1 Radiated Spurious Emission (GFSK, Ch0, 1 GHz-18GHz)**



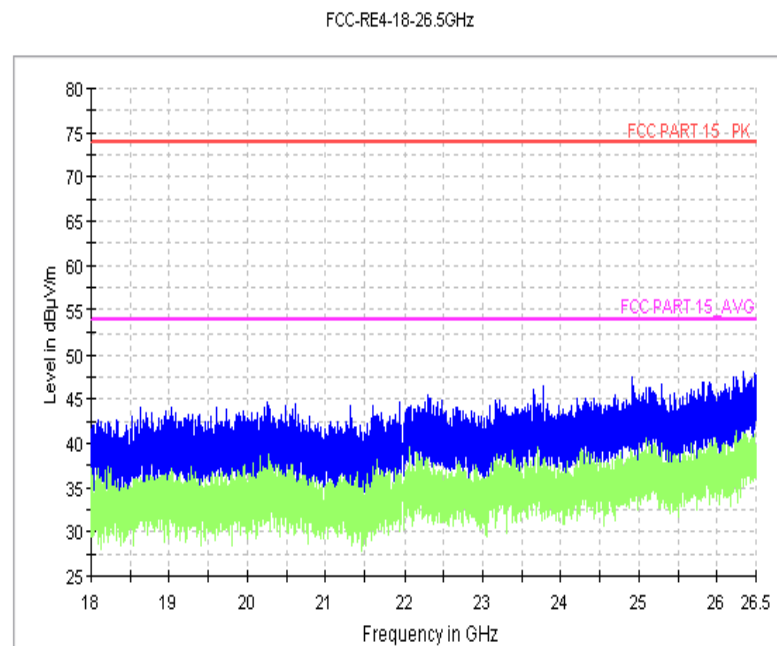
**Fig.2 Radiated Spurious Emission (GFSK, Ch19, 9 kHz-30MHz)**



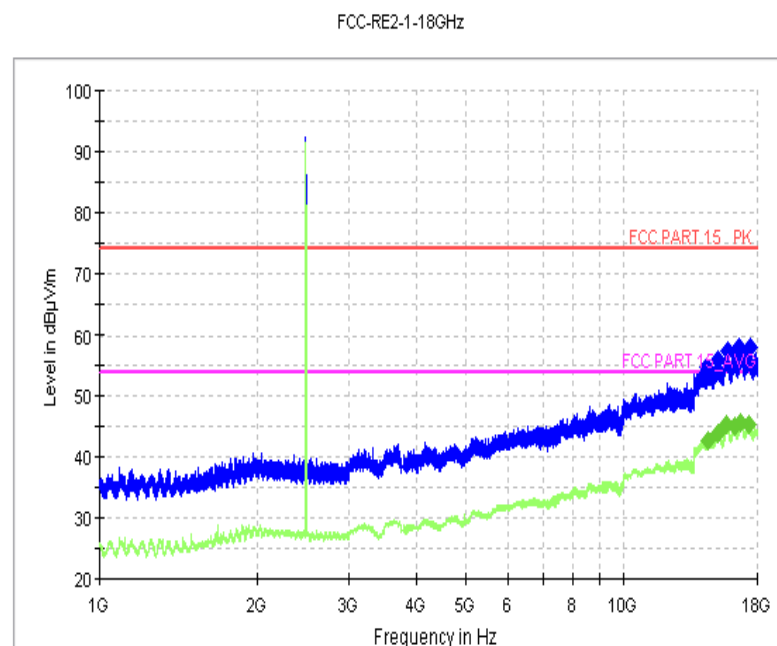
**Fig.3 Radiated Spurious Emission (GFSK, Ch19, 30MHz-1 GHz)**



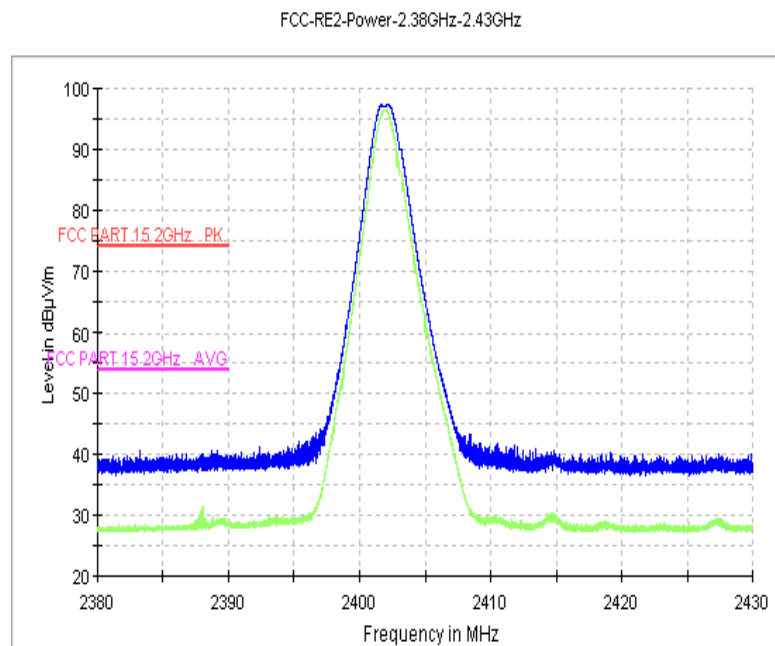
**Fig.4 Radiated Spurious Emission (GFSK, Ch19, 1 GHz-18GHz)**



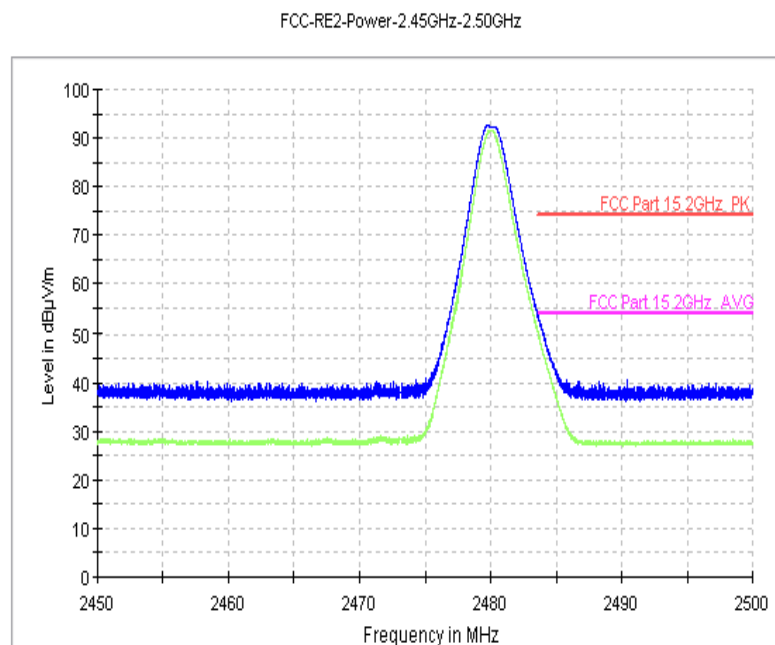
**Fig.5 Radiated Spurious Emission (GFSK, Ch19, 18 GHz-26.5GHz)**



**Fig.6 Radiated Spurious Emission (GFSK, Ch39, 1 GHz-18 GHz)**



**Fig.7 Radiated Emission Power (GFSK, Ch0, 2380GHz~2450GHz)**



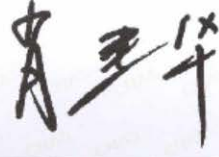
**Fig.8 Radiated Emission Power (GFSK, Ch39, 2450GHz~2500GHz)**



**ANNEX D: Persons involved in this testing**

| Test Name                                | Tester                 |
|------------------------------------------|------------------------|
| Transmitter Spurious Emission - Radiated | Xu Zhongfei, Li Zhibin |

**ANNEX E: Accreditation Certificate**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                         |
| <b>China National Accreditation Service for Conformity Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>LABORATORY ACCREDITATION CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>(Registration No. CNAS L0570 )</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>China Academy of Telecommunication Research of MIIT</b><br><u>No.52, Huayuan North Road, Haidian District, Beijing, China</u>                                                                                                                                                                                                                                                                                                                                                                           |
| <i>is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence of testing and calibration.</i>                                                                                                                                                                                                                                     |
| <i>The scope of accreditation is detailed in the attached appendices bearing the same registration number as above. The appendices form an integral part of this certificate.</i>                                                                                                                                                                                                                                                                                                                          |
| Date of Issue: 2014-06-20<br>Date of Expiry: 2017-06-19<br>Date of Initial Accreditation: 1998-07-03<br>Date of Update: 2014-06-20                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Signed on behalf of China National Accreditation Service<br>for Conformity Assessment                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <small>China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA) and Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).</small> |
| No.CNAS AL 2 0010037                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**\*\*\*END OF REPORT\*\*\***