

# FCC RF Test Report

## (GSM)

**Report No.:** JYTSZ-R12-2401583

**Applicant:** SWAGTEK

**Address of Applicant:** 10205 NW 19th Street, STE 101, Miami, FL33172, USA

**Equipment Under Test (EUT)**

Product Name: 2G Feature Phone

Model No.: B19, WAVE

Trade Mark: LOGIC, UNONU, iSWAG

**FCC ID:** O55285124

**Applicable Standards:** FCC CFR Title 47 Part 2, 22H, 24E

**Date of Sample Receipt:** 26 Dec., 2024

**Date of Test:** 27 Dec., 2024 to 17 Jan., 2025

**Date of Report Issued:** 17 Jan., 2025

**Test Result:** PASS

**Tested by:** \_\_\_\_\_

**Date:** 17 Jan., 2025

**Reviewed by:** \_\_\_\_\_

**Date:** 17 Jan., 2025

**Approved by:** \_\_\_\_\_

**Date:** 17 Jan., 2025

**Manager**

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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## 1 Version

| Version No. | Date          | Description |
|-------------|---------------|-------------|
| 00          | 17 Jan., 2025 | Original    |
|             |               |             |
|             |               |             |
|             |               |             |
|             |               |             |

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## 3 General Information

### 3.1 Client Information

|                       |                                                    |
|-----------------------|----------------------------------------------------|
| Applicant:            | SWAGTEK                                            |
| Address:              | 10205 NW 19th Street, STE 101, Miami, FL33172, USA |
| Manufacturer/Factory: | SWAGTEK                                            |
| Address:              | 10205 NW 19th Street, STE 101, Miami, FL33172, USA |

### 3.2 General Description of E.U.T.

|                            |                                                                                                                                                                    |                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Product Name:              | 2G Feature Phone                                                                                                                                                   |                                  |
| Model No.:                 | WAVE                                                                                                                                                               |                                  |
| Operation Frequency Range: | GSM850:                                                                                                                                                            | 824.2 MHz - 848.8 MHz            |
|                            | PCS1900:                                                                                                                                                           | 1850.2 MHz - 1909.8 MHz          |
| Modulation Type:           | <input checked="" type="checkbox"/> Voice(GMSK) <input checked="" type="checkbox"/> GPRS(GMSK) <input checked="" type="checkbox"/> EGPRS(GMSK, 8PSK)               |                                  |
| Antenna Type:              | Internal Antenna                                                                                                                                                   |                                  |
| Antenna Gain:              | GSM 850:                                                                                                                                                           | -1.67 dBi (declare by Applicant) |
|                            | PCS1900:                                                                                                                                                           | 0.47 dBi (declare by Applicant)  |
| Power Supply:              | Rechargeable Li-ion Battery DC3.7V, 2300mAh                                                                                                                        |                                  |
| AC Adapter:                | Model: YD050AN-002-01<br>Input: AC100-240V, 50/60Hz, 0.3A<br>Output: DC 5.0V, 500mA                                                                                |                                  |
| Remark:                    | B19, WAVE were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name and trade mark. |                                  |
| Test Sample Condition:     | The test samples were provided in good working order with no visible defects.                                                                                      |                                  |

### 3.3 Test Mode and Environment

| Test Mode:                                                                                                                                                                                                                                                                                                                                                                              |                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| GSM mode:                                                                                                                                                                                                                                                                                                                                                                               | Keep the EUT communication with simulated station in GSM mode     |
| GPRS mode:                                                                                                                                                                                                                                                                                                                                                                              | Keep the EUT communication with simulated station in GPRS mode    |
| EGPRS mode:                                                                                                                                                                                                                                                                                                                                                                             | Keep the EUT communication with simulated station in EGPRS mode   |
| <b>Remark:</b> The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report. |                                                                   |
| Operating Environment:                                                                                                                                                                                                                                                                                                                                                                  |                                                                   |
| Temperature:                                                                                                                                                                                                                                                                                                                                                                            | Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C                       |
| Humidity:                                                                                                                                                                                                                                                                                                                                                                               | 20 % ~ 75 % RH                                                    |
| Atmospheric Pressure:                                                                                                                                                                                                                                                                                                                                                                   | 1008 mbar                                                         |
| Voltage:                                                                                                                                                                                                                                                                                                                                                                                | Nominal: 3.70 Vdc, Extreme: Low 3.40 Vdc, High 4.20 Vdc           |
| Test Engineer:                                                                                                                                                                                                                                                                                                                                                                          | LaoLu (Conducted measurement)<br>Real Chen (Radiated measurement) |

### 3.4 Description of Test Auxiliary Equipment

| Test Equipment    | Manufacturer | Model No. | Serial No. |
|-------------------|--------------|-----------|------------|
| Simulated Station | Anritsu      | MT8820C   | 6201026545 |

### 3.5 Measurement Uncertainty

| Parameter                                     | Expanded Uncertainty<br>(Confidence of 95%(U = 2Uc(y))) |
|-----------------------------------------------|---------------------------------------------------------|
| Radiated Emission (30MHz ~ 200MHz) (3m SAC)   | ±4.6 dB                                                 |
| Radiated Emission (200MHz ~ 1000MHz) (3m SAC) | ±5.8 dB                                                 |
| Radiated Emission (1GHz ~ 6GHz) (3m SAC)      | ±4.5 dB                                                 |
| Radiated Emission (30MHz ~ 1GHz) (3m FAR)     | 3.39 dB                                                 |
| Radiated Emission (1GHz ~ 18GHz) (3m FAR)     | 5.15 dB                                                 |
| Radiated Emission (18GHz ~ 40GHz) (3m FAR)    | 5.30 dB                                                 |

**Note:** All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

### 3.6 Additions to, Deviations, or Exclusions from the Method

|    |
|----|
| No |
|----|

### 3.7 Laboratory Facility

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC - Designation No.: CN1211</b><br/>JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551.</li> <li>● <b>ISED – CAB identifier.: CN0021</b><br/>The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.</li> <li>● <b>CNAS - Registration No.: CNAS L15527</b><br/>JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.</li> <li>● <b>A2LA - Registration No.: 4346.01</b><br/>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <a href="https://portal.a2la.org/scopepdf/4346-01.pdf">https://portal.a2la.org/scopepdf/4346-01.pdf</a></li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 3.8 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info-JYTee@lets.com, Website: <http://jyt.lets.com>

## 3.9 Test Instruments List

| Radiated Emission(3m SAC):   |                 |                |                  |                      |                          |
|------------------------------|-----------------|----------------|------------------|----------------------|--------------------------|
| Test Equipment               | Manufacturer    | Model No.      | Manage No.       | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m SAC                       | ETS             | 9m*6m*6m       | WXJ001-1         | 04-14-2021           | 04-13-2026               |
| BiConiLog Antenna            | Schwarzbeck     | VULB9163       | WXJ002           | 01-09-2024           | 01-08-2025               |
|                              |                 |                |                  | 01-07-2025           | 01-06-2026               |
| Biconical Antenna            | Schwarzbeck     | VUBA9117       | WXJ002-1         | 07-01-2024           | 06-30-2027               |
| Pre-amplifier (30MHz ~ 1GHz) | Schwarzbeck     | BBV9743B       | WXJ001-2         | 12-16-2024           | 12-15-2025               |
| EMI Test Receiver            | Rohde & Schwarz | ESRP7          | WXJ003-1         | 12-16-2024           | 12-15-2025               |
| Coaxial Cable (30MHz ~ 1GHz) | JYTSZ           | JYT3M-1G-NN-8M | WXG001-4         | 01-17-2024           | 01-16-2025               |
|                              |                 |                |                  | 01-15-2025           | 01-14-2026               |
| Band Reject Filter Group     | Tonscend        | JS0806-F       | WXJ089           | N/A                  |                          |
| Test Software                | Tonscend        | TS+            | Version: 3.0.0.1 |                      |                          |

| Radiated Emission(3m FAR):    |                 |                 |                |                      |                          |
|-------------------------------|-----------------|-----------------|----------------|----------------------|--------------------------|
| Test Equipment                | Manufacturer    | Model No.       | Manage No.     | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| 3m FAR                        | YUNYI           | 9m*6m*6m        | WXJ097         | 06-15-2023           | 06-14-2028               |
| BiConiLog Antenna             | Schwarzbeck     | VULB9163        | WXJ097-2       | 07-01-2024           | 06-30-2025               |
| Biconical Antenna             | Schwarzbeck     | VUBA9117        | WXJ002-1       | 07-01-2024           | 06-30-2027               |
| Horn Antenna                  | Schwarzbeck     | BBHA9120D       | WXJ097-3       | 06-16-2024           | 06-15-2025               |
| Horn Antenna                  | Schwarzbeck     | BBHA9120D       | WXJ002-3       | 12-16-2024           | 12-15-2025               |
| Horn Antenna                  | Schwarzbeck     | BBHA9170        | WXJ002-5       | 12-16-2024           | 12-15-2025               |
| Horn Antenna                  | Schwarzbeck     | BBHA9170        | WXJ002-6       | 12-16-2024           | 12-15-2025               |
| Pre-amplifier (30MHz ~ 1GHz)  | YUNYI           | PAM-310N        | WXJ097-5       | 04-24-2024           | 04-23-2025               |
| Pre-amplifier (1GHz ~ 18GHz)  | YUNYI           | PAM-118N        | WXJ097-6       | 04-24-2024           | 04-23-2025               |
| Pre-amplifier (18GHz ~ 40GHz) | RF System       | TRLA-180400G45B | WXJ002-7       | 12-16-2024           | 12-15-2025               |
| EMI Test Receiver             | Rohde & Schwarz | ESCI3           | WXJ003         | 12-16-2024           | 12-15-2025               |
| Spectrum Analyzer             | Rohde & Schwarz | FSP 30          | WXJ004         | 12-16-2024           | 12-15-2025               |
| Spectrum Analyzer             | KEYSIGHT        | N9020B          | WXJ081-1       | 06-11-2024           | 06-10-2025               |
| Coaxial Cable (30MHz ~ 1GHz)  | JYTSZ           | JYT3M-1G-NN-13M | WXG097-1       | 07-30-2024           | 07-29-2025               |
| Coaxial Cable (1GHz ~ 18GHz)  | JYTSZ           | JYT3M-18G-NN-8M | WXG097-2       | 07-30-2024           | 07-29-2025               |
| Coaxial Cable (18GHz ~ 40GHz) | JYTSZ           | JYT3M-40G-SS-8M | WXG097-3       | 07-30-2024           | 07-29-2025               |
| High Band Reject Filter Group | Tonscend        | JS0806-F        | WXJ089         | N/A                  |                          |
| Low Band Reject Filter Group  | Tonscend        | JS0806-F        | WXJ097-4       | N/A                  |                          |
| Test Software                 | Tonscend        | TS+             | Version: 5.0.0 |                      |                          |

| Conducted Method:            |                 |           |                     |                      |                          |
|------------------------------|-----------------|-----------|---------------------|----------------------|--------------------------|
| Test Equipment               | Manufacturer    | Model No. | Manage No.          | Cal. Date (mm-dd-yy) | Cal. Due date (mm-dd-yy) |
| Spectrum Analyzer            | Keysight        | N9020A    | WXJ094              | 09-09-2024           | 09-08-2025               |
| Simulated Station            | Rohde & Schwarz | CMW500    | WXJ081              | 07-18-2024           | 07-17-2025               |
| Temperature Humidity Chamber | ZHONG ZHI       | CZ-A-80D  | WXJ032-3            | 01-09-2023           | 01-08-2025               |
|                              |                 |           |                     | 12-17-2024           | 12-16-2025               |
| DC Power Supply              | Keysight        | E3642A    | WXJ025-2            | N/A                  |                          |
| RF Control Unit              | Tonscend        | JS0806-1  | WXG010              | N/A                  |                          |
| Band Reject Filter Group     | Tonscend        | JS0806-F  | WXG010-1            | N/A                  |                          |
| Test Software                | Tonscend        | TS+       | Version: 2.6.9.0526 |                      |                          |

## 4 Measurement Setup and Procedure

### 4.1 Test Channel

According to ANSI C63.26-2015 chapter 5.1.2.1 Table 2 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

| GSM850         |                 |                |                 |                 |                 |
|----------------|-----------------|----------------|-----------------|-----------------|-----------------|
| Lowest channel |                 | Middle channel |                 | Highest channel |                 |
| Channel No.    | Frequency (MHz) | Channel No.    | Frequency (MHz) | Channel No.     | Frequency (MHz) |
| 128            | 824.2           | 190            | 836.6           | 251             | 848.8           |

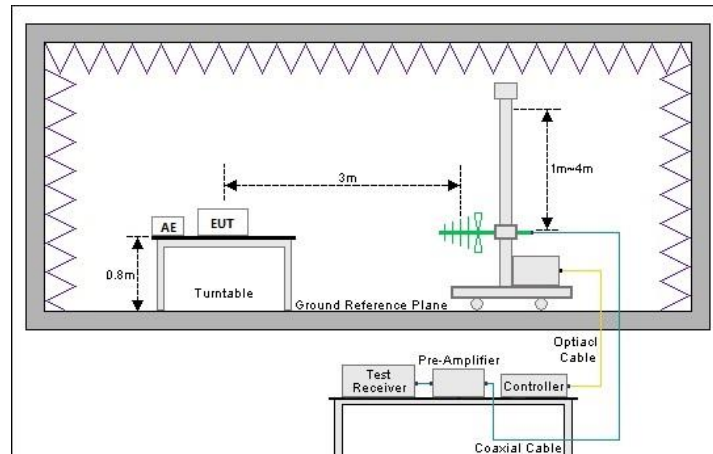
  

| PCS1900        |                 |                |                 |                 |                 |
|----------------|-----------------|----------------|-----------------|-----------------|-----------------|
| Lowest channel |                 | Middle channel |                 | Highest channel |                 |
| Channel No.    | Frequency (MHz) | Channel No.    | Frequency (MHz) | Channel No.     | Frequency (MHz) |
| 512            | 1850.2          | 661            | 1880.0          | 810             | 1909.8          |

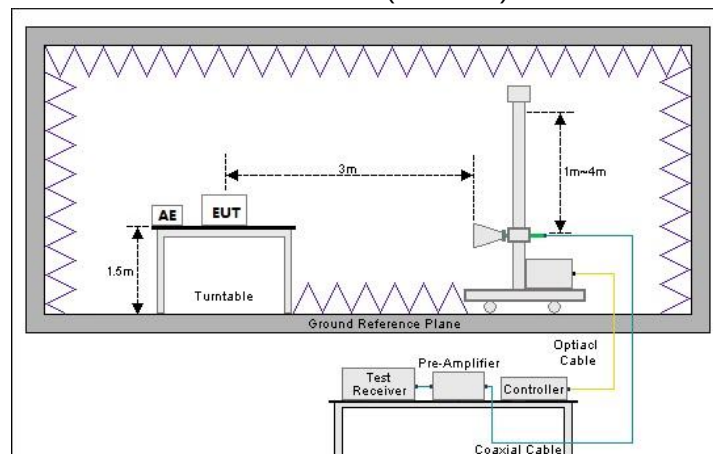
### 4.2 Test Setup

#### 1) Radiated emission measurement:

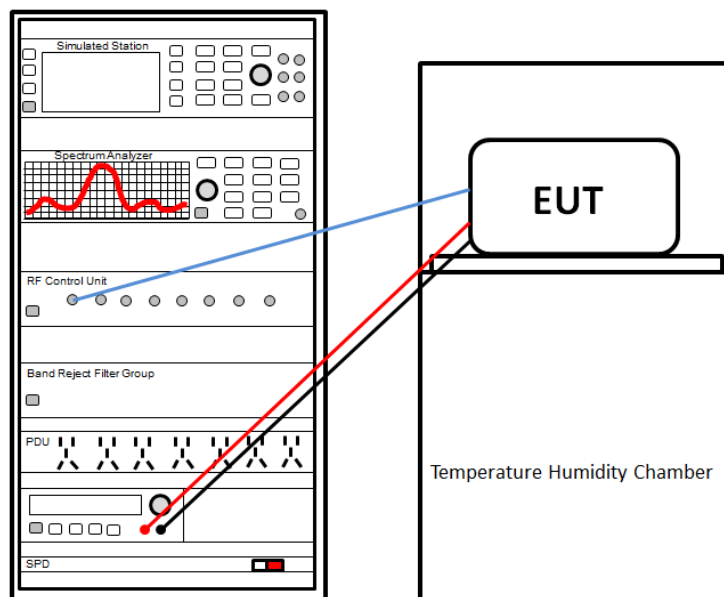
Below 1GHz (3m SAC)



Above 1GHz ( 3m FAR)



## 2) Conducted test method



## 4.3 Test Procedure

| Test method           | Test step                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radiated emission     | <p><b>For below 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>2. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> <p><b>For above 1GHz:</b></p> <ol style="list-style-type: none"> <li>1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>2. EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> |
| Conducted test method | <ol style="list-style-type: none"> <li>1. The GSM antenna port of EUT was connected to the test port of the test system through an RF cable.</li> <li>2. The EUT is keeping in continuous transmission mode and tested in all modulation modes.</li> <li>3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## 5 Test Results

### 5.1 Summary

#### 5.1.1 Clause and Data Summary

| Test items                                                                                                                                                                                                                                                                                                    | Standard clause                                      | Test data       | Result |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------|--------|
| RF Exposure (SAR)                                                                                                                                                                                                                                                                                             | Part 1.1307<br>Part 2.1093                           | See SAR Report  | Pass   |
| RF Output Power                                                                                                                                                                                                                                                                                               | Part 2.1046<br>Part 22.913 (a)(5)<br>Part 24.232 (c) | Appendix A– GSM | Pass   |
| Peak-to-Average Power Ratio                                                                                                                                                                                                                                                                                   | Part 24.232 (d)                                      | Appendix A– GSM | Pass   |
| Modulation Characteristics                                                                                                                                                                                                                                                                                    | Part 2.1047                                          | Appendix A– GSM | Pass   |
| 26dB Emission Bandwidth<br>99% Occupied Bandwidth                                                                                                                                                                                                                                                             | Part 2.1049                                          | Appendix A– GSM | Pass   |
| Out of Band Emission at Antenna<br>Terminals                                                                                                                                                                                                                                                                  | Part 2.1051<br>Part 22.917 (a)<br>Part 24.238 (a)    | Appendix A– GSM | Pass   |
| Field Strength of Spurious Radiation                                                                                                                                                                                                                                                                          | Part 2.1053<br>Part 22.917 (a)<br>Part 24.238 (a)    | See Section 5.2 | Pass   |
| Frequency Stability vs. Temperature                                                                                                                                                                                                                                                                           | Part 22.355<br>Part 24.235<br>Part 2.1055(a)(1)(b)   | Appendix A– GSM | Pass   |
| Frequency Stability vs. Voltage                                                                                                                                                                                                                                                                               | Part 22.355<br>Part 24.235<br>Part 2.1055(d)(2)      | Appendix A– GSM | Pass   |
| <b>Remark:</b><br>1. Pass: The EUT complies with the essential requirements in the standard.<br>2. The cable insertion loss used by “RF Output Power” and other conduction measurement items is 0.5dB (Fundamental Frequency below 1GHz)/1.0dB (Fundamental Frequency above 1GHz) (provided by the customer). |                                                      |                 |        |
| <b>Test Method:</b>                                                                                                                                                                                                                                                                                           | ANSI/TIA-603-E-2016<br>ANSI C63.26-2015              |                 |        |

## 5.1.2 Test Limit

| Items                                             | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|------|------|------|-----------|-----|-----|------|------------|-----|-----|-----|------------|-----|-----|-----|------------|-----|-----|-----|------------|-----|-----|-----|--------------|------|-----|-----|
| RF Output Power                                   | <b>GSM850:</b> 7W ERP<br><b>PCS1900:</b> 2W EIRP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Peak-to-Average Power Ratio                       | The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Modulation Characteristics                        | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 26dB Emission Bandwidth<br>99% Occupied Bandwidth | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Out of Band Emission at Antenna<br>Terminals      | The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Field Strength of Spurious Radiation              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Frequency Stability vs. Temperature               | <b>GSM850:</b><br>Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.<br><b>TABLE C-1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES</b> <table><tr><th>Frequency range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile &gt;3 watts (ppm)</th><th>Mobile ≤3 watts (ppm)</th></tr><tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr><tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr><tr><td>450 to 512</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>928 to 929</td><td>5.0</td><td>n/a</td><td>n/a</td></tr><tr><td>929 to 960</td><td>1.5</td><td>n/a</td><td>n/a</td></tr><tr><td>2110 to 2220</td><td>10.0</td><td>n/a</td><td>n/a</td></tr></table><br><b>PCS1900:</b><br>The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. | Frequency range (MHz) | Base, fixed (ppm)     | Mobile >3 watts (ppm) | Mobile ≤3 watts (ppm) | 25 to 50 | 20.0 | 20.0 | 50.0 | 50 to 450 | 5.0 | 5.0 | 50.0 | 450 to 512 | 2.5 | 5.0 | 5.0 | 821 to 896 | 1.5 | 2.5 | 2.5 | 928 to 929 | 5.0 | n/a | n/a | 929 to 960 | 1.5 | n/a | n/a | 2110 to 2220 | 10.0 | n/a | n/a |
| Frequency range (MHz)                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Base, fixed (ppm)     | Mobile >3 watts (ppm) | Mobile ≤3 watts (ppm) |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 25 to 50                                          | 20.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 20.0                  | 50.0                  |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 50 to 450                                         | 5.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5.0                   | 50.0                  |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 450 to 512                                        | 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5.0                   | 5.0                   |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 821 to 896                                        | 1.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2.5                   | 2.5                   |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 928 to 929                                        | 5.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | n/a                   | n/a                   |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 929 to 960                                        | 1.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | n/a                   | n/a                   |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| 2110 to 2220                                      | 10.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | n/a                   | n/a                   |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |
| Frequency Stability vs. Voltage                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |                       |                       |                       |          |      |      |      |           |     |     |      |            |     |     |     |            |     |     |     |            |     |     |     |            |     |     |     |              |      |     |     |

## 5.2 Field Strength of Spurious Radiation Measurement

| GSM850                                                                                                             |                     |             |             |             |             |              |
|--------------------------------------------------------------------------------------------------------------------|---------------------|-------------|-------------|-------------|-------------|--------------|
| Lowest channel                                                                                                     |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 1648.40                                                                                                            | -18.13              | -11.55      | -29.68      | -13.00      | 16.68       | Vertical     |
| 2472.60                                                                                                            | -35.38              | -8.68       | -44.06      | -13.00      | 31.06       | Vertical     |
| 3296.80                                                                                                            | -44.22              | -3.87       | -48.09      | -13.00      | 35.09       | Vertical     |
| 1648.40                                                                                                            | -18.71              | -10.88      | -29.59      | -13.00      | 16.59       | Horizontal   |
| 2472.60                                                                                                            | -36.06              | -9.15       | -45.21      | -13.00      | 32.21       | Horizontal   |
| 3296.80                                                                                                            | -39.9               | -3.93       | -43.83      | -13.00      | 30.83       | Horizontal   |
| Middle channel                                                                                                     |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 1673.20                                                                                                            | -17.74              | -10.70      | -28.44      | -13.00      | 15.44       | Vertical     |
| 2509.80                                                                                                            | -35.48              | -8.66       | -44.14      | -13.00      | 31.14       | Vertical     |
| 3346.40                                                                                                            | -44.02              | -3.33       | -47.35      | -13.00      | 34.35       | Vertical     |
| 1673.20                                                                                                            | -19.00              | -10.28      | -29.28      | -13.00      | 16.28       | Horizontal   |
| 2509.80                                                                                                            | -36.37              | -8.73       | -45.10      | -13.00      | 32.10       | Horizontal   |
| 3346.40                                                                                                            | -39.59              | -3.42       | -43.01      | -13.00      | 30.01       | Horizontal   |
| Highest channel                                                                                                    |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 1697.60                                                                                                            | -17.39              | -9.90       | -27.29      | -13.00      | 14.29       | Vertical     |
| 2546.40                                                                                                            | -35.5               | -8.40       | -43.90      | -13.00      | 30.90       | Vertical     |
| 3395.20                                                                                                            | -43.96              | -2.55       | -46.51      | -13.00      | 33.51       | Vertical     |
| 1697.60                                                                                                            | -19.43              | -9.70       | -29.13      | -13.00      | 16.13       | Horizontal   |
| 2546.40                                                                                                            | -36.25              | -8.17       | -44.42      | -13.00      | 31.42       | Horizontal   |
| 3395.20                                                                                                            | -40.06              | -2.62       | -42.68      | -13.00      | 29.68       | Horizontal   |
| <b>Remark:</b><br>1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report. |                     |             |             |             |             |              |

| PCS1900                                                                                                            |                     |             |             |             |             |              |
|--------------------------------------------------------------------------------------------------------------------|---------------------|-------------|-------------|-------------|-------------|--------------|
| Lowest channel                                                                                                     |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 3700.40                                                                                                            | -21.07              | -0.34       | -21.41      | -13.00      | 8.41        | Vertical     |
| 5550.60                                                                                                            | -28.27              | 4.15        | -24.12      | -13.00      | 11.12       | Vertical     |
| 3700.40                                                                                                            | -21.5               | -0.16       | -21.66      | -13.00      | 8.66        | Horizontal   |
| 5550.60                                                                                                            | -33.1               | 4.05        | -29.05      | -13.00      | 16.05       | Horizontal   |
| Middle channel                                                                                                     |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 3760.00                                                                                                            | -21.09              | -1.01       | -22.10      | -13.00      | 9.10        | Vertical     |
| 5640.00                                                                                                            | -28.26              | 3.96        | -24.30      | -13.00      | 11.30       | Vertical     |
| 3760.00                                                                                                            | -21.40              | -0.56       | -21.96      | -13.00      | 8.96        | Horizontal   |
| 5640.00                                                                                                            | -33.07              | 4.14        | -28.93      | -13.00      | 15.93       | Horizontal   |
| Highest channel                                                                                                    |                     |             |             |             |             |              |
| Frequency (MHz)                                                                                                    | Reading Level (dBm) | Factor (dB) | Level (dBm) | Limit (dBm) | Margin (dB) | Polarization |
| 3819.60                                                                                                            | -21.05              | -0.53       | -21.58      | -13.00      | 8.58        | Vertical     |
| 5729.40                                                                                                            | -28.07              | 3.44        | -24.63      | -13.00      | 11.63       | Vertical     |
| 3819.60                                                                                                            | -21.85              | -0.06       | -21.91      | -13.00      | 8.91        | Horizontal   |
| 5729.40                                                                                                            | -32.63              | 3.82        | -28.81      | -13.00      | 15.81       | Horizontal   |
| <b>Remark:</b><br>1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report. |                     |             |             |             |             |              |

-----End of report-----