

# RF TEST REPORT



Report No.: FCC\_RF\_SL17062101-SEV-039\_GSM\_WCDMA  
Supersede Report No.:

|                                                                                                                                      |                                     |                                                                                      |  |
|--------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------|--|
| Applicant                                                                                                                            | Continental Automotive Systems, Inc |                                                                                      |  |
| Product Name                                                                                                                         | FLEX CM                             |                                                                                      |  |
| Model No.                                                                                                                            | 1819-X                              |                                                                                      |  |
| Test Standard                                                                                                                        | 47CFR Part22<br>47CFR Part24        |                                                                                      |  |
| Test Method                                                                                                                          | TIA-603-D: 2010                     |                                                                                      |  |
| FCC ID                                                                                                                               | 2AJW5FLEXCM                         |                                                                                      |  |
| Date of test                                                                                                                         | 06/22/2017 - 06/23/2017             |                                                                                      |  |
| Issue Date                                                                                                                           | 07/17/2017                          |                                                                                      |  |
| Test Result                                                                                                                          | <u>Pass</u> Fail                    |                                                                                      |  |
| Equipment complied with the specification                                                                                            |                                     | [ x ]                                                                                |  |
| Equipment did not comply with the specification                                                                                      |                                     | [   ]                                                                                |  |
|                                                                                                                                      |                                     |                                                                                      |  |
|                                                   |                                     |  |  |
| Gary Chou                                                                                                                            |                                     | Chen Ge                                                                              |  |
| Test Engineer                                                                                                                        |                                     | Engineering Reviewer                                                                 |  |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                                     |                                                                                      |  |

Issued By:  
SIEMIC Laboratories  
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## Laboratory Introduction

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

### Accreditations for Conformity Assessment

| Country/Region | Accreditation Body     | Scope                              |
|----------------|------------------------|------------------------------------|
| USA            | FCC, A2LA              | EMC , RF/Wireless , Telecom        |
| Canada         | IC, A2LA, NIST         | EMC, RF/Wireless , Telecom         |
| Taiwan         | BSMI , NCC , NIST      | EMC, RF, Telecom , Safety          |
| Hong Kong      | OFTA , NIST            | RF/Wireless ,Telecom               |
| Australia      | NATA, NIST             | EMC, RF, Telecom , Safety          |
| Korea          | KCC/RRR, NIST          | EMI, EMS, RF , Telecom, Safety     |
| Japan          | VCCI, JATE, TELEC, RFT | EMI, RF/Wireless, Telecom          |
| Mexico         | NOM, COFETEL, Caniety  | Safety, EMC , RF/Wireless, Telecom |
| Europe         | A2LA, NIST             | EMC, RF, Telecom , Safety          |
| Israel         | MOC, NIST              | EMC, RF, Telecom, Safety           |

### Accreditations for Product Certifications

| Country   | Accreditation Body | Scope                 |
|-----------|--------------------|-----------------------|
| USA       | FCC TCB, NIST      | EMC , RF , Telecom    |
| Canada    | IC FCB , NIST      | EMC , RF , Telecom    |
| Singapore | iDA, NIST          | EMC , RF , Telecom    |
| EU        | NB                 | EMC & R&TTE Directive |
| Japan     | MIC (RCB 208)      | RF , Telecom          |
| HongKong  | OFTA (US002)       | RF , Telecom          |

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## 1 Report Revision History

| Report No.                          | Report Version | Description | Issue Date |
|-------------------------------------|----------------|-------------|------------|
| FCC_RF_SL17062101-SEV-039_GSM_WCDMA | None           | Original    | 07/17/2017 |
|                                     |                |             |            |
|                                     |                |             |            |
|                                     |                |             |            |
|                                     |                |             |            |
|                                     |                |             |            |

## 2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Continental Automotive Systems, Inc  
Product: FLEX CM  
Model: 1819-X

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1<sup>st</sup> page.

## 3 Customer information

|                      |   |                                                                           |
|----------------------|---|---------------------------------------------------------------------------|
| Applicant Name       | : | Continental Automotive Systems, Inc                                       |
| Applicant Address    | : | 6755 Snowdrift Road, US                                                   |
| Manufacturer Name    | : | Continental Automotive Guadalajara México, S.A. de C.V                    |
| Manufacturer Address | : | Camino a la Tijera 3<br>Municipio de Tlajomulco de Zuniga, Jalisco Mexico |

## 4 Test site information

|                      |                                             |
|----------------------|---------------------------------------------|
| Lab performing tests | SIEMIC Laboratories                         |
| Lab Address          | 775 Montague Expressway, Milpitas, CA 95035 |
| FCC Test Site No.    | 881796                                      |
| IC Test Site No.     | 4842D-2                                     |
| VCCI Test Site No.   | A0133                                       |

## 5 Modification

| Index | Item | Description | Note |
|-------|------|-------------|------|
| -     | -    | -           | -    |
|       |      |             |      |
|       |      |             |      |
|       |      |             |      |
|       |      |             |      |
|       |      |             |      |

## 6 EUT Information

### 6.1 EUT Description

|                           |   |                                                              |
|---------------------------|---|--------------------------------------------------------------|
| Product Name              | : | FLEX CM                                                      |
| Model No.                 | : | 1819-X                                                       |
| Trade Name                | : | Continental                                                  |
| Serial No.                | : | 0029                                                         |
| Input Power               | : | 12VDC                                                        |
| Power Adapter Manu/Model  | : | N/A                                                          |
| Power Adapter SN          | : | N/A                                                          |
| Product Hardware version  | : | 1819-X                                                       |
| Product Software version  | : | 4.1                                                          |
| Radio Hardware version    | : | PDS6 / RBHA-C213B                                            |
| Radio Software version    | : | 3.001                                                        |
| Date of EUT received      | : | 06/21/2017                                                   |
| Equipment Class/ Category | : | Class B                                                      |
| Port/Connectors           | : | USB,RS-232,CAN/LIN, Dig I/O, Ana In, Power, Ground, Ignition |

### 6.2 Radio Description

| Item                       | GSM/EDGE                             | GSM/EDGE                             |
|----------------------------|--------------------------------------|--------------------------------------|
| Operating Band /Radio Type | GSM-850                              | PCS-1900                             |
| Bandwidth                  | 25MHz                                | 25MHz                                |
| Modulation                 | GMSK,8PSK                            | GMSK,8PSK                            |
| Tx Frequency Range (MHz)   | 824.2MHz to 848.8MHz                 | 1850.2MHz to 1909.8MHz               |
| Rx Frequency Range (MHz)   | 869.2MHz to 893.8MHz                 | 1930.2MHz to 1989.8MHz               |
| Antenna Type               | PCB                                  | PCB                                  |
| Antenna Gain               | 5.5dBi                               | 2.5dBi                               |
| Antenna Connector Type     | intern. microstrip line / ext. FAKRA | intern. microstrip line / ext. FAKRA |

| Item                       | WCDMA                                | WCDMA                                |
|----------------------------|--------------------------------------|--------------------------------------|
| Operating Band /Radio Type | WCDMA Band II                        | WCDMA Band V                         |
| Bandwidth                  | 3.84MHz                              | 3.84MHz                              |
| Modulation                 | QPSK                                 | QPSK                                 |
| Tx Frequency Range (MHz)   | 1850MHz to 1910MHz                   | 824MHz to 849MHz                     |
| Rx Frequency Range (MHz)   | 1930MHz to 1990MHz                   | 869MHz to 894MHz                     |
| Antenna Type               | PCB                                  | PCB                                  |
| Antenna Gain               | 2.5dBi                               | 5.5dBi                               |
| Antenna Connector Type     | intern. microstrip line / ext. FAKRA | intern. microstrip line / ext. FAKRA |

### 6.3 EUT test modes/configuration Description

Test mode

[illegible]

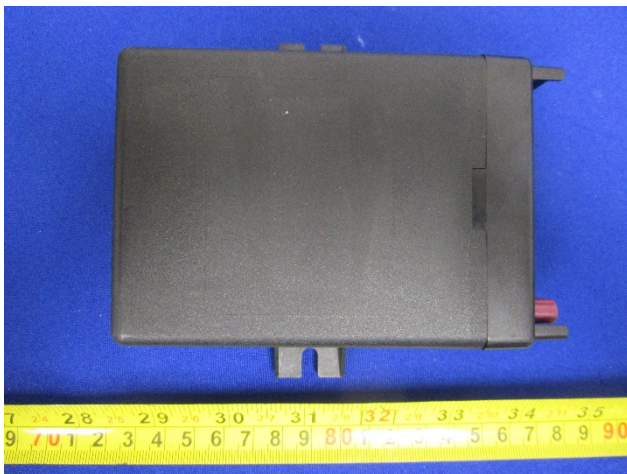
#### 6.4 EUT Photos - External



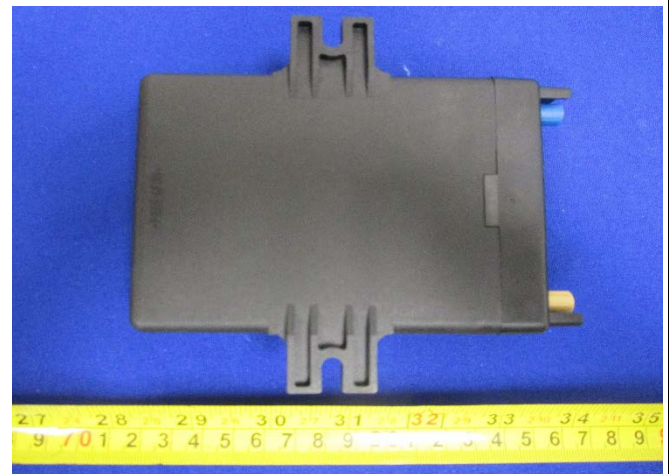
EUT – Front View



EUT – Rear View



EUT – Top View



EUT – Bottom View



EUT – Left Side View

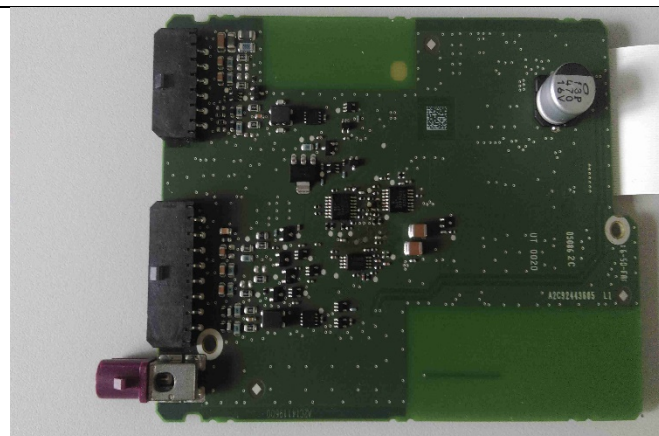


EUT – Right Side View

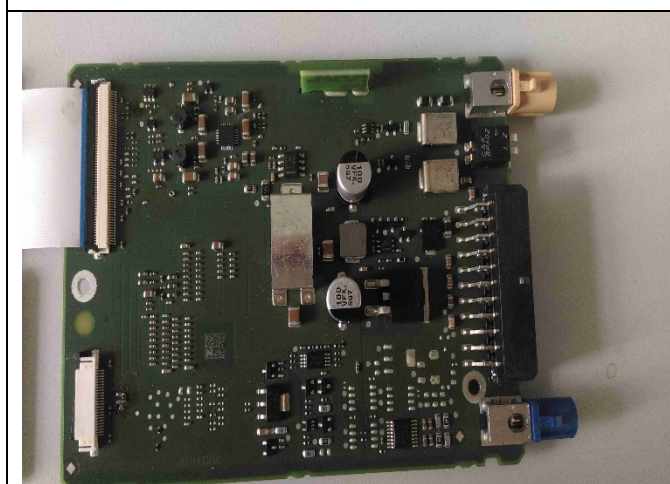
## 6.5 EUT Photos – Internal



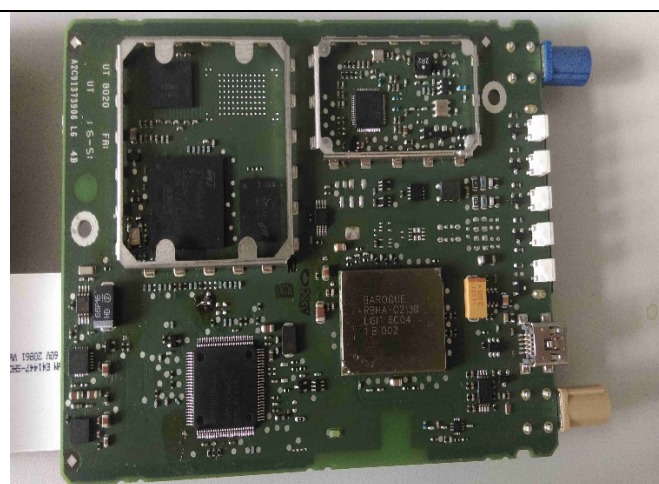
FLEXCM- External Board- Top View



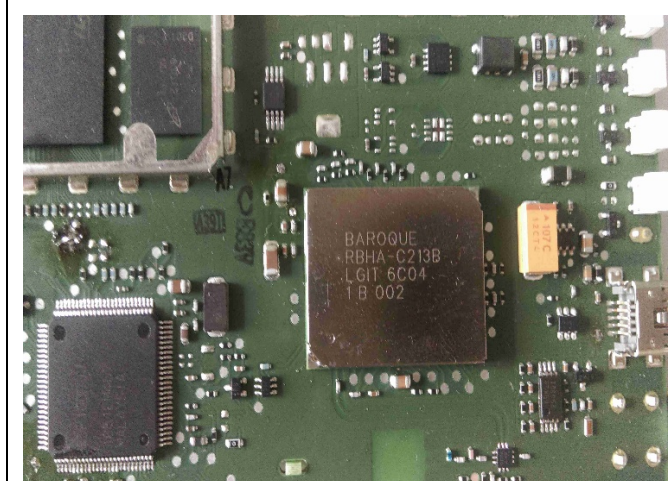
FLEXCM-External Board- Bottom View



FLEXCM- Main Board- Top View



FLEXCM-Main Board- Bottom View

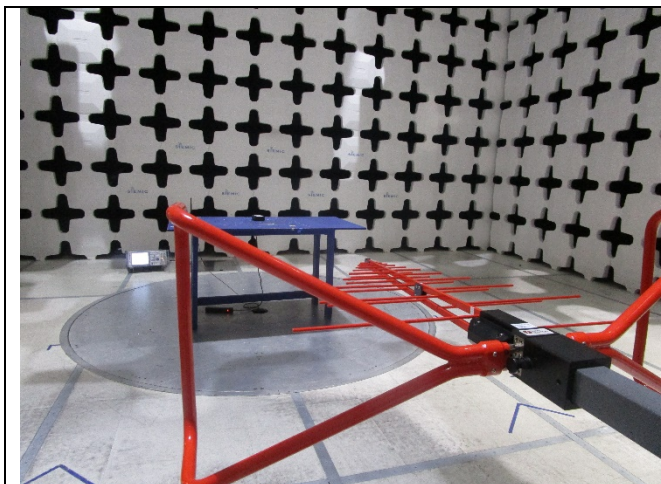


FLEXCM-WLAN and BT Module

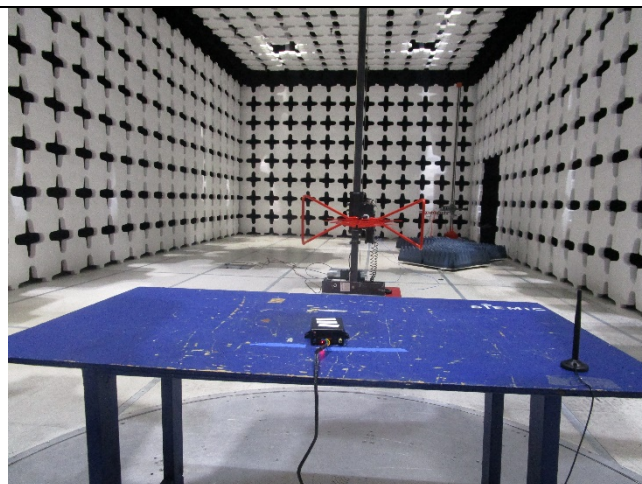


FLEXCM-Cellular Module

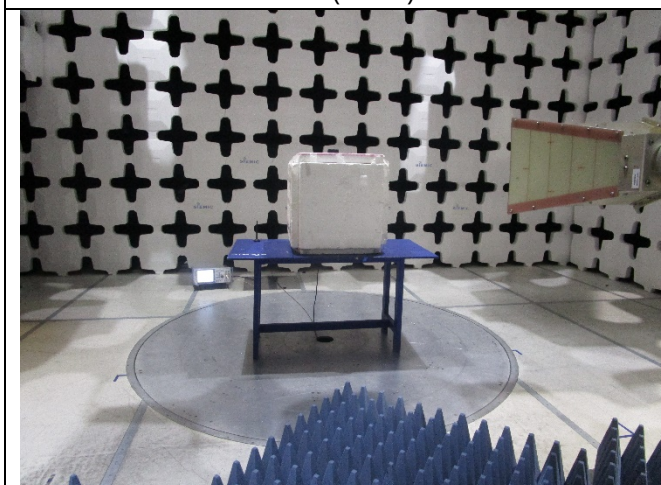
## 6.6 EUT Test Setup Photos



Radiated Emissions (<1GHz) – Front View



Radiated Emissions (<1GHz) – Rear View



Radiated Emissions (>1GHz) – Front View



Radiated Emissions (>1GHz) – Rear View

## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

| Item | Supporting Equipment Description | Model         | Serial Number | Manufacturer | Note |
|------|----------------------------------|---------------|---------------|--------------|------|
| 1    | Laptop                           | Latitude 3550 | N/A           | Dell         | -    |
| 2    | DC Power Supply                  | DP712         | DP7B190700020 | RIGOL        | -    |
|      |                                  |               |               |              |      |
|      |                                  |               |               |              |      |

### 7.1 Cabling Description

| Name | Connection Start |          | Connection Stop |          | Length / shielding Info |            | Note |
|------|------------------|----------|-----------------|----------|-------------------------|------------|------|
|      | From             | I/O Port | To              | I/O Port | Length (m)              | Shielding  |      |
| USB  | EUT              | I/O Port | Laptop          | USB      | 2                       | Unshielded | -    |
|      |                  |          |                 |          |                         |            |      |

### 7.2 Test Software Description

| Test Item  | Software | Description                                                 |
|------------|----------|-------------------------------------------------------------|
| RF testing | Putty    | Set the EUT to transmit continuously in different test mode |
|            |          |                                                             |
|            |          |                                                             |
|            |          |                                                             |

## 8 Test Summary

| Test Item                                      | Test standard                                                                                                                                                                                                                                                                                                                                                                                                                     |                                        | Test Method/Procedure |                 | Pass / Fail                                                                |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------|-----------------|----------------------------------------------------------------------------|
| E.R.P/ E.I.R.P                                 | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR24.232, 47CFR27.50                | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass *<br><input type="checkbox"/> N/A |
| Occupied Bandwidth                             | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR24.238(a), 47CFR27.53             | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass*<br><input type="checkbox"/> N/A  |
| Peak-Average Ratio                             | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR24.232, 47CFR27.50                | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass*<br><input type="checkbox"/> N/A  |
| Spurious and harmonic Emission at antenna port | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR2.1051, 47CFR22.917, 47CFR24.238, | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A   |
| Band Edge                                      | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR2.1053, 47CFR24.238, 47CFR27.53   | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass*<br><input type="checkbox"/> N/A  |
| Radiated spurious and harmonic emission        | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR2.1053, 47CFR22.917, 47CFR24.238  | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A   |
| Frequency stability                            | FCC                                                                                                                                                                                                                                                                                                                                                                                                                               | 47CFR2.1055, 47CFR24.135, 47CFR27.54   | FCC                   | TIA-603-D: 2010 | <input checked="" type="checkbox"/> Pass*<br><input type="checkbox"/> N/A  |
| Remark                                         | <ol style="list-style-type: none"> <li>All measurement uncertainties do not take into consideration for all presented test results.</li> <li>The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.</li> <li>Pass *: Please refer to test report no. UL05420150130FCC/IC038-1.</li> </ol> |                                        |                       |                 |                                                                            |

## 9 Measurement Uncertainty

### 9.1 Conducted Emissions

The test is to measure the conducted emissions to the mains port of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the LISN
- Uncertainty of cables
- Uncertainty due to the mismatches
- Etc, see the below table for details

| Source of Uncertainty         | Value (dB) | Probability Distribution | Division | Sensitivity Coefficient | Expanded Uncertainty |
|-------------------------------|------------|--------------------------|----------|-------------------------|----------------------|
| Receiver Reading              | 0.12       | Rectangular              | 1.732    | 1                       | 0.069284             |
| Cable Insertion Loss          | 0.21       | Normal                   | 2        | 1                       | 0.105                |
| Filter Insertion Loss         | 0.25       | Normal                   | 2        | 1                       | 0.125                |
| LISN Insertion Loss           | 0.40       | Normal                   | 2        | 1                       | 0.20                 |
| Receiver CW accuracy          | 0.5        | Rectangular              | 1.732    | 1                       | 0.2886836            |
| Pulse Amplitude Response      | 1.5        | Rectangular              | 1.732    | 1                       | 0.86605081           |
| PRF Response                  | 1.5        | Rectangular              | 1.732    | 1                       | 0.86605081           |
| Mismatch LISN - Receiver      | 0.25       | U-Shape                  | 1.414    | 1                       | 0.1768033            |
| LISN Impedance                | 2.5        | Triangular               | 2.449    | 1                       | 1.0208248            |
| Combined Standard Uncertainty |            |                          |          |                         | 1.928133             |
| Expanded Uncertainty (K=2)    |            |                          |          |                         | 3.856266             |

The total derived measurement uncertainty is +/- 3.86 dB.

### 9.2 Radiated Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

| Source of Uncertainty         | Value (dB) | Probability Distribution | Division | Sensitivity Coefficient | Expanded Uncertainty |
|-------------------------------|------------|--------------------------|----------|-------------------------|----------------------|
| Receiver Reading              | 0.12       | Rectangular              | 1.732    | 1                       | 0.069284             |
| Cable Insertion Loss          | 0.21       | Normal                   | 2        | 1                       | 0.105                |
| Filter Insertion Loss         | 0.25       | Normal                   | 2        | 1                       | 0.125                |
| Antenna Factor                | 0.65       | Normal                   | 2        | 1                       | 0.325                |
| Receiver CW accuracy          | 0.5        | Rectangular              | 1.732    | 1                       | 0.2886836            |
| Pulse Amplitude Response      | 1.5        | Rectangular              | 1.732    | 1                       | 0.86605081           |
| PRF Response                  | 1.5        | Rectangular              | 1.732    | 1                       | 0.86605081           |
| Mismatch Filter - Receiver    | 0.25       | U-Shape                  | 1.414    | 1                       | 0.1768033            |
| NSA Calibration               | 4.0        | U-Shape                  | 1.414    | 1                       | 2.8288543            |
| Combined Standard Uncertainty |            |                          |          |                         | 3.0059131            |
| Expanded Uncertainty (K=2)    |            |                          |          |                         | 6.0118262            |

The total derived measurement uncertainty is +/- 6.00 dB.

### 9.3 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

| Source of Uncertainty         | Value (dB) | Probability Distribution | Division | Sensitivity Coefficient | Expanded Uncertainty |
|-------------------------------|------------|--------------------------|----------|-------------------------|----------------------|
| Receiver Reading              | 0.12       | Rectangular              | 1.732    | 1                       | 0.0692840            |
| Cable Insertion Loss          | 0.21       | Normal                   | 2        | 1                       | 0.1050000            |
| Filter Insertion Loss         | 0.25       | Normal                   | 2        | 1                       | 0.1250000            |
| Antenna Factor                | 0.65       | Normal                   | 2        | 1                       | 0.3250000            |
| Receiver CW accuracy          | 0.5        | Rectangular              | 1.732    | 1                       | 0.2886836            |
| Pulse Amplitude Response      | 1.5        | Rectangular              | 1.732    | 1                       | 0.8660508            |
| PRF Response                  | 1.5        | Rectangular              | 1.732    | 1                       | 0.8660508            |
| Mismatch Filter - Receiver    | 0.25       | U-Shape                  | 1.414    | 1                       | 0.1768033            |
| VSWR Calibration              | 2.0        | U-Shape                  | 1.414    | 1                       | 1.4144272            |
| Combined Standard Uncertainty |            |                          |          |                         | 4.2363               |
| Expanded Uncertainty (K=2)    |            |                          |          |                         | 8.4726               |

The total derived measurement uncertainty is +/- 8.47 dB.

### 9.4 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

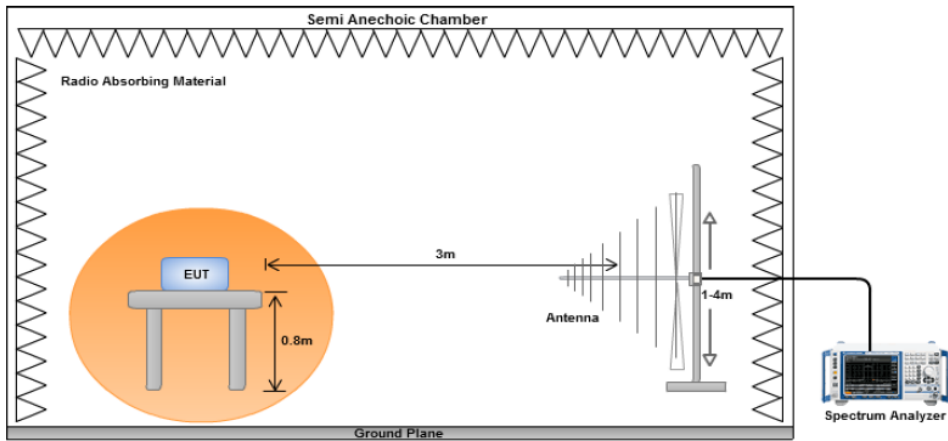
| Source of Uncertainty         | Value (dB) | Probability Distribution | Division | Sensitivity Coefficient | Expanded Uncertainty |
|-------------------------------|------------|--------------------------|----------|-------------------------|----------------------|
| Reference Level               | 0.12       | Rectangular              | 1.732    | 1                       | 0.069284             |
| Cable Insertion Loss          | 0.21       | Normal                   | 2        | 1                       | 0.105                |
| Attenuator                    | 0.25       | Normal                   | 2        | 1                       | 0.125                |
| Mismatch                      | 0.25       | U-Shape                  | 1.414    | 1                       | 0.1768033            |
| Combined Standard Uncertainty |            |                          |          |                         | 0.476087             |
| Expanded Uncertainty (K=2)    |            |                          |          |                         | 0.952174             |

The total derived measurement uncertainty is +/- 0.95 dB.

## 10 Measurements, Examination and Derived Results

### 10.1 Radiated Spurious Emission below 1GHz

Requirement(s):

| Spec           | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Requirement                                                                                                                                                                                             | Applicable                                                                 |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 47CFR22.917    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Out of band emissions. 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. | <input checked="" type="checkbox"/>                                        |
| 47CFR24.238    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Out of band emissions. 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. | <input checked="" type="checkbox"/>                                        |
| Test Setup     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                         |                                                                            |
| Test Procedure | <p><u>Substitution method:</u></p> <ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: <ol style="list-style-type: none"> <li>Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</li> <li>The EUT was then rotated to the direction that gave the maximum emission.</li> <li>Finally, the antenna height was adjusted to the height that gave the maximum emission.</li> </ol> </li> <li>Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter.</li> <li>Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained.</li> <li>Steps 4 were repeated for the next frequency point, until all selected frequency points were measured.</li> </ol> |                                                                                                                                                                                                         |                                                                            |
| Test Date      | 06/22/2017 – 06/23/2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Environmental condition                                                                                                                                                                                 | Temperature 23°C<br>Relative Humidity 48%<br>Atmospheric Pressure 1008mbar |
| Remark         | Both horizontal and vertical polarities were investigated. The results show only the worst case.<br>Limit calculation:<br>$\text{Emission limit} = \text{Pd}Bm - [43 + 10 \log(PW)] = 10 \log(1000 \times PW) - 43 - 10 \log(PW) = 30 \text{ dBm} - 43 = -13 \text{ dBm}$<br>All different modulation and bandwidth configuration has been verified and only the test data of worst case with QPSK modulation and greatest bandwidth was presented in this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                         |                                                                            |
| Result         | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                         |                                                                            |

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Gary Chou at 10m chamber.

## Radiated Emission Test Results for GSM850

|                           |                     |      |        |      |
|---------------------------|---------------------|------|--------|------|
| Test specification        | Below 1GHz          |      | Result | Pass |
| Environmental Conditions: | Temp (°C):          | 24   |        |      |
|                           | Humidity (%)        | 39   |        |      |
|                           | Atmospheric (mbar): | 1012 |        |      |
| Mains Power:              | 12VDC               |      |        |      |
| Tested by:                | Gary Chou           |      |        |      |
| Test Date:                | 06/22/2017          |      |        |      |
| Remarks:                  | GSM850-Mid Channel  |      |        |      |

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 100.22          | -60.91    | 236    | 165          | V        | 100.22          | -62.21      | 0              | 0.8             | -63.01               | -13         | -50.01      |
| 100.22          | -59.73    | 167    | 176          | H        | 100.22          | -61.03      | 0              | 0.8             | -61.83               | -13         | -48.83      |
| 200.05          | -65.15    | 264    | 168          | V        | 200.05          | -66.45      | 0              | 1.28            | -67.73               | -13         | -54.73      |
| 200.05          | -62.56    | 153    | 156          | H        | 200.05          | -63.86      | 0              | 1.28            | -65.14               | -13         | -52.14      |
| 176.10          | -65.71    | 269    | 169          | V        | 176.10          | -67.01      | 0              | 1.09            | -68.10               | -13         | -55.10      |
| 176.10          | -63.98    | 147    | 161          | H        | 176.10          | -65.28      | 0              | 1.09            | -66.37               | -13         | -53.37      |

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

## Radiated Emission Test Results for PCS1900

|                           |                       |      |        |      |
|---------------------------|-----------------------|------|--------|------|
| Test specification        | Below 1GHz            |      | Result | Pass |
| Environmental Conditions: | Temp (°C):            | 24   |        |      |
|                           | Humidity (%)          | 39   |        |      |
|                           | Atmospheric (mbar):   | 1012 |        |      |
| Mains Power:              | 12VDC                 |      |        |      |
| Tested by:                | Gary Chou             |      |        |      |
| Test Date:                | 06/22/2016            |      |        |      |
| Remarks:                  | PCS1900 – Mid Channel |      |        |      |

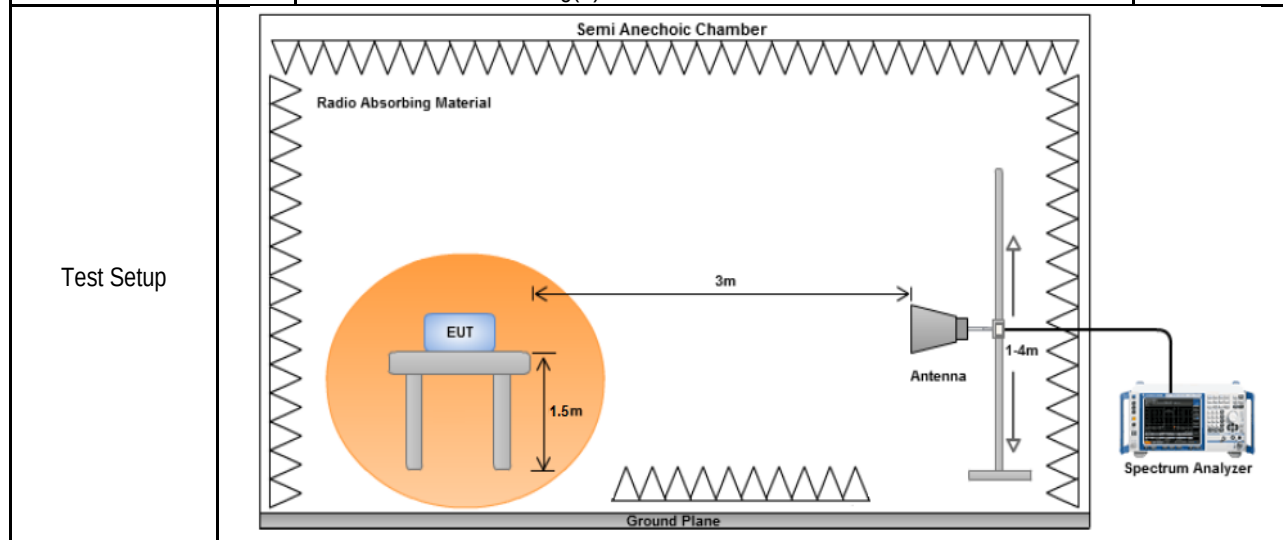
| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 100.22          | -61.26    | 236    | 165          | V        | 100.22          | -62.56      | 0              | 0.8             | -63.36               | -13         | -50.36      |
| 100.22          | -59.17    | 167    | 176          | H        | 100.22          | -60.47      | 0              | 0.8             | -61.27               | -13         | -48.27      |
| 200.05          | -64.85    | 264    | 168          | V        | 200.05          | -66.15      | 0              | 1.28            | -67.43               | -13         | -54.43      |
| 200.05          | -62.98    | 153    | 156          | H        | 200.05          | -64.28      | 0              | 1.28            | -65.56               | -13         | -52.56      |
| 176.10          | -66.40    | 269    | 169          | V        | 176.1           | -67.70      | 0              | 1.09            | -68.79               | -13         | -55.79      |
| 176.10          | -64.45    | 147    | 161          | H        | 176.1           | -65.75      | 0              | 1.09            | -66.84               | -13         | -53.84      |

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

## 10.2 Radiated Spurious Emissions above 1GHz

Requirement(s):

| Spec        | Item | Requirement                                                                                                                                                                                             | Applicable                          |
|-------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 47CFR22.917 | -    | Out of band emissions. 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. | <input checked="" type="checkbox"/> |
| 47CFR24.238 | -    | Out of band emissions. 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. | <input checked="" type="checkbox"/> |



|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Test Procedure | <p><b>Substitution method:</b></p> <ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: <ol style="list-style-type: none"> <li>Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</li> <li>The EUT was then rotated to the direction that gave the maximum emission.</li> <li>Finally, the antenna height was adjusted to the height that gave the maximum emission.</li> </ol> </li> <li>Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter.</li> <li>Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained.</li> <li>Steps 4 were repeated for the next frequency point, until all selected frequency points were measured.</li> </ol> |  |  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

|           |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                         |                                                                            |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------------|
| Test Date | 06/22/2017 – 06/23/2017                                                                                                                                                                                                                                                                                                                                                                                                                                 | Environmental condition | Temperature 23°C<br>Relative Humidity 48%<br>Atmospheric Pressure 1008mbar |
| Remark    | Both horizontal and vertical polarities were investigated. The results show only the worst case.<br>Limit calculation:<br>Emission limit = $P_{dBm} - [43 + 10 \log(PW)] = 10 \log(1000 \times PW) - 43 - 10 \log(PW) = 30 \text{ dBm} - 43 = -13 \text{ dBm}$<br>All different modulation and bandwidth configuration has been verified and only the test data of worst case with QPSK modulation and greatest bandwidth was presented in this report. |                         |                                                                            |
| Result    | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                  |                         |                                                                            |

Test Data ☒ Yes (See below)    ☐ N/A  
Test Plot ☐ Yes (See below)    ☒ N/A

Test was done by Gary Chou at 10m chamber.

## Radiated Emission Test Results (Above 1GHz):

### GSM/EDGE:

#### GSM850- Low Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1648.46         | -67.30    | 236    | 165          | V        | 1648.46         | -57.90      | 10.08          | 1.78            | -66.20               | -13         | -53.20      |
| 2472.86         | -68.78    | 167    | 176          | V        | 2472.86         | -54.06      | 8.91           | 2.36            | -60.61               | -13         | -47.61      |
| 3297.19         | -69.36    | 264    | 168          | V        | 3297.19         | -52.64      | 9.03           | 2.58            | -59.09               | -13         | -46.09      |

#### GSM850- Mid Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1673.99         | -64.19    | 236    | 165          | V        | 1673.99         | -54.80      | 10.08          | 1.78            | -63.10               | -13         | -50.10      |
| 2510.00         | -68.51    | 167    | 176          | V        | 2510.00         | -53.79      | 8.91           | 2.36            | -60.34               | -13         | -47.34      |
| 3348.06         | -69.23    | 264    | 168          | V        | 3348.06         | -52.51      | 9.03           | 2.58            | -58.96               | -13         | -45.96      |

#### GSM850- High Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1697.35         | -63.52    | 236    | 165          | V        | 1697.35         | -54.12      | 10.08          | 1.78            | -62.42               | -13         | -49.42      |
| 2546.48         | -69.44    | 167    | 176          | V        | 2546.48         | -54.72      | 8.91           | 2.36            | -61.27               | -13         | -48.27      |
| 3395.29         | -70.09    | 264    | 168          | V        | 3395.29         | -53.37      | 9.03           | 2.58            | -59.82               | -13         | -46.82      |

#### PCS1900- Low Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3700.40         | -65.37    | 236    | 165          | V        | 3700.40         | -46.97      | 11.11          | 2.93            | -55.15               | -13         | -42.15      |
| 5550.00         | -69.43    | 167    | 176          | V        | 5550.00         | -44.71      | 12.03          | 3.71            | -53.03               | -13         | -40.03      |
| 7401.00         | -70.52    | 264    | 168          | V        | 7401.00         | -42.80      | 10.67          | 4.34            | -49.13               | -13         | -36.13      |

#### PCS1900- Middle Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3759.80         | -66.25    | 236    | 165          | V        | 3759.80         | -48.02      | 11.11          | 2.93            | -56.20               | -13         | -43.20      |
| 5639.90         | -69.14    | 167    | 176          | V        | 5639.90         | -43.64      | 12.03          | 3.71            | -51.96               | -13         | -38.96      |
| 7519.60         | -70.37    | 264    | 168          | V        | 7519.60         | -41.91      | 10.67          | 4.34            | -48.24               | -13         | -35.24      |

#### PCS1900- High Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3810.00         | -67.42    | 236    | 165          | V        | 3810.00         | -49.19      | 11.11          | 2.93            | -57.37               | -13         | -44.37      |
| 5729.60         | -69.53    | 167    | 176          | V        | 5729.60         | -44.03      | 12.03          | 3.71            | -52.35               | -13         | -39.35      |
| 7639.00         | -70.27    | 264    | 168          | V        | 7639.00         | -41.81      | 10.67          | 4.34            | -48.14               | -13         | -35.14      |

#### WCDMA Band II -Low Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3703.40         | -66.05    | 120    | 150          | V        | 3703.4          | -47.82      | 11.11          | 3.12            | -55.81               | -13         | -42.81      |
| 5557.52         | -63.15    | 156    | 153          | V        | 5557.52         | -44.65      | 12.21          | 3.57            | -53.29               | -13         | -40.29      |
| 7410.16         | -70.70    | 243    | 150          | V        | 7410.16         | -42.24      | 10.67          | 4.34            | -48.57               | -13         | -35.57      |

#### WCDMA Band II-Middle Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3578.16         | -63.14    | 120    | 150          | V        | 3578.16         | -44.91      | 11.18          | 2.89            | -53.20               | -13         | -40.20      |
| 5639.84         | -69.95    | 156    | 153          | V        | 5639.84         | -43.45      | 12.21          | 3.62            | -52.04               | -13         | -39.04      |
| 7519.86         | -70.56    | 243    | 150          | V        | 7519.86         | -42.10      | 11.11          | 4.34            | -48.87               | -13         | -35.87      |

#### WCDMA Band II-High Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 3817.12         | -65.40    | 120    | 150          | V        | 3817.12         | -47.17      | 10.77          | 3.52            | -54.42               | -13         | -41.42      |
| 5723.40         | -68.99    | 156    | 153          | V        | 5723.4          | -43.49      | 12.30          | 3.61            | -52.18               | -13         | -39.18      |
| 7630.32         | -68.75    | 243    | 150          | V        | 7630.32         | -42.29      | 11.09          | 4.36            | -49.02               | -13         | -36.02      |

#### WCDMA Band V-Low Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1655.01         | -63.64    | 120    | 150          | V        | 1655.01         | -49.24      | 10.08          | 1.78            | -57.54               | -13         | -44.54      |
| 2478.10         | -68.68    | 156    | 153          | V        | 2478.10         | -48.96      | 8.91           | 2.36            | -55.51               | -13         | -42.51      |
| 3304.00         | -68.68    | 243    | 150          | V        | 3304.00         | -51.96      | 9.03           | 2.58            | -58.41               | -13         | -45.41      |

#### WCDMA Band V-Middle Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1673.18         | -66.16    | 120    | 150          | V        | 1673.18         | -50.76      | 10.08          | 1.78            | -59.06               | -13         | -46.06      |
| 2509.77         | -67.56    | 156    | 153          | V        | 2509.77         | -48.84      | 8.91           | 2.36            | -55.39               | -13         | -42.39      |
| 3346.00         | -67.91    | 243    | 150          | V        | 3346.00         | -51.19      | 9.03           | 2.58            | -57.64               | -13         | -44.64      |

#### WCDMA Band V-High Channel

| Indicated       |           |        | Test Antenna |          | Substituted     |             |                |                 |                      |             |             |
|-----------------|-----------|--------|--------------|----------|-----------------|-------------|----------------|-----------------|----------------------|-------------|-------------|
| Frequency (MHz) | Raw (dBm) | Degree | Height (cm)  | Polarity | Frequency (MHz) | Level (dBm) | Ant Gain (dBi) | Cable Loss (dB) | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
| 1693.43         | -67.60    | 120    | 150          | V        | 1693.43         | -49.62      | 10.08          | 1.78            | -57.92               | -13         | -44.92      |
| 2539.31         | -68.41    | 156    | 153          | V        | 2539.31         | -48.69      | 8.91           | 2.36            | -55.24               | -13         | -42.24      |
| 3386.29         | -69.91    | 243    | 150          | V        | 3386.29         | -53.19      | 9.03           | 2.58            | -59.64               | -13         | -46.64      |

## Annex A. TEST INSTRUMENT

| Instrument                                    | Model    | Serial #   | Cal Date   | Cal Cycle | Cal Due    | In use                              |
|-----------------------------------------------|----------|------------|------------|-----------|------------|-------------------------------------|
| <b>Radiated Emissions</b>                     |          |            |            |           |            |                                     |
| Keysight EXA 44GHz Spectrum Analyzer          | N9010A   | MY51440112 | 08/02/2016 | 1 Year    | 08/02/2017 | <input checked="" type="checkbox"/> |
| R & S Wideband Communication Tester           | CMW500   | 108852     | 07/28/2016 | 1 Year    | 07/28/2017 | <input checked="" type="checkbox"/> |
| R & S Universal Radio Communication Tester    | CMU200   | 111078     | N/A        | N/A       | N/A        | <input checked="" type="checkbox"/> |
| Pre-Amplifier (1-40GHz)                       | SAS-474  | 579        | 04/04/2017 | 1 Year    | 04/04/2018 | <input checked="" type="checkbox"/> |
| Preamplifier (100KHz-7GHz)                    | LPA-6-30 | 11140711   | 02/09/2017 | 1 Year    | 02/09/2018 | <input checked="" type="checkbox"/> |
| Bi-Log antenna (30MHz~2GHz)                   | JB1      | A030702    | 01/13/2017 | 1 Year    | 01/13/2018 | <input checked="" type="checkbox"/> |
| Horn Antenna (1-26.5GHz)                      | 3115     | 10SL0059   | 08/11/2016 | 1 Year    | 08/11/2017 | <input checked="" type="checkbox"/> |
| Horn Antenna (700MHz-18GHz)                   | SAS-571  | 411        | 05/13/2017 | 1 Year    | 05/13/2018 | <input checked="" type="checkbox"/> |
| Tuned Dipole Antenna 30 - 1000 MHz (4pcs set) | AD-100   | 40133      | 03/08/2017 | 1 Year    | 03/08/2018 | <input checked="" type="checkbox"/> |
| 10 Meters SAC                                 | 10M      | N/A        | 07/06/2016 | 1 Year    | 07/06/2017 | <input checked="" type="checkbox"/> |

## Annex B. SIEMIC Accreditation

| Accreditations                          | Document                                                                            | Scope / Remark                                                                                                                                                            |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 17025 (A2LA)                        |    | Please see the documents for the detailed scope                                                                                                                           |
| ISO Guide 65 (A2LA)                     |    | Please see the documents for the detailed scope                                                                                                                           |
| TCB Designation                         |                                                                                     | <a href="#">A1</a> , <a href="#">A2</a> , <a href="#">A3</a> , <a href="#">A4</a> , <a href="#">B1</a> , <a href="#">B2</a> , <a href="#">B3</a> , <a href="#">B4</a> , C |
| FCC DoC Accreditation                   |    | FCC Declaration of Conformity Accreditation                                                                                                                               |
| FCC Site Registration                   |    | 3 meter site                                                                                                                                                              |
| FCC Site Registration                   |    | 10 meter site                                                                                                                                                             |
| IC Site Registration                    |    | 3 meter site                                                                                                                                                              |
| IC Site Registration                    |    | 10 meter site                                                                                                                                                             |
| EU NB                                   |    | Radio & Telecommunications Terminal Equipment:<br>EN45001 – EN ISO/IEC 17025                                                                                              |
|                                         |  | Electromagnetic Compatibility:<br>EN45001 – EN ISO/IEC 17025                                                                                                              |
| Singapore iDA<br>CB(Certification Body) |  | <a href="#">Phase I</a> , <a href="#">Phase II</a>                                                                                                                        |
| Vietnam MIC<br>CAB Accreditation        |  | Please see the document for the detailed scope                                                                                                                            |
| HongKong OFCA                           |  | (Phase II) OFCA Foreign Certification Body for Radio and Telecom                                                                                                          |
|                                         |  | (Phase I) Conformity Assessment Body for Radio and Telecom                                                                                                                |
| Industry Canada CAB                     |  | Radio: Scope A – All Radio Standard Specification in Category I                                                                                                           |
|                                         |  | Telecom: CS-03 Part I, II, V, VI, VII, VIII                                                                                                                               |

|                                                    |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Japan Recognized Certification<br>Body Designation |    | Radio : A1. Terminal equipment for purpose of calling<br>Telecom : B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Korea CAB Accreditation                            |    | EMI: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI<br>KN22: Test Method for EMIEMS: KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS<br>KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS<br><br>Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68<br><br>Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4 |
| Taiwan NCC CAB Recognition                         |    | LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Taiwan BSMI CAB Recognition                        |  | CNS 13438                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Japan VCCI                                         |  | R-3083: Radiation 3 meter site<br>C-3421: Main Ports Conducted Interference Measurement<br>T-1597: Telecommunication Ports Conducted Interference Measurement                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Australia CAB Recognition                          |  | EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4<br><br>Radiocommunications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771<br><br>Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1                                                                                             |
| Australia NATA Recognition                         |  | AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2                                                                                                                                                                                                                                                                                                                                                                                                                                                      |