

# RF TEST REPORT



Report No.: FCC\_RF\_SL13091901-ZBR-052\_RFID Rev1.0  
Supersede Report No.: FCC\_RF\_SL13091901-ZBR-052\_RFID

|                                                                                                                                      |                                                                       |                                                                                       |  |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| Applicant                                                                                                                            | Zebra Technologies Corporation                                        |                                                                                       |  |
| Product Name                                                                                                                         | RFID Module                                                           |                                                                                       |  |
| Model No.                                                                                                                            | M5E                                                                   |                                                                                       |  |
| Test Standard                                                                                                                        | 47CFR15.247: 2013, RSS-210 Issue8: 2010                               |                                                                                       |  |
| Test Method                                                                                                                          | ANCI C63.4:2009<br>FCC Public Notice DA 00-705, RSS-Gen Issue 3: 2010 |                                                                                       |  |
| FCC ID                                                                                                                               | I28-URFIDM5E                                                          |                                                                                       |  |
| IC ID                                                                                                                                | 3798B-URFIDM5E                                                        |                                                                                       |  |
| Date of test                                                                                                                         | 01/13/2014 – 01/16/2014                                               |                                                                                       |  |
| Issue Date                                                                                                                           | 02/19/2014                                                            |                                                                                       |  |
| Test Result                                                                                                                          | <u>Pass</u> Fail                                                      |                                                                                       |  |
| Equipment complied with the specification                                                                                            | [ x ]                                                                 |                                                                                       |  |
| Equipment did not comply with the specification                                                                                      | [   ]                                                                 |                                                                                       |  |
|                                                                                                                                      |                                                                       |                                                                                       |  |
|                                                   |                                                                       |  |  |
| David Zhang                                                                                                                          |                                                                       | Nima Molaei                                                                           |  |
| Test Engineer                                                                                                                        |                                                                       | Engineer 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:  
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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          |

### 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_SL13091901-ZBR-052_RFID        | None           | Original     | 01/23/2014 |
| FCC_RF_SL13091901-ZBR-052_RFID Rev1.0 | Rev1.0         | Correct typo | 02/19/2014 |
|                                       |                |              |            |
|                                       |                |              |            |
|                                       |                |              |            |
|                                       |                |              |            |

## 2 Executive Summary

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

Company: Zebra Technologies Corporation  
Product: RFID Module  
Model: M5E

, which is FCC certified radio module(FCC ID: I28-URFIDM5E, IC ID: 3798B-URFIDM5E), to be installed into a printer host (Printer Model: ZE500R (ZE500-4)) and simultaneously transmission with FCC certified WLAN radio module (FCC ID: I28MD-CXLAN11G, IC ID: 3798B-CXLAN11G), against the current Stipulated Standards. The specified model product stated above to be installed into this specific host has demonstrated compliance with the Stipulated Standard listed on 1<sup>st</sup> page.

## 3 Customer information

|                      |                                                      |
|----------------------|------------------------------------------------------|
| Applicant Name       | Zebra Technologies Corporation                       |
| Applicant Address    | 333 Corporate Woods Pkwy. Vernon Hills,IL 60061, USA |
| Manufacturer Name    | Zebra Technologies Corporation                       |
| Manufacturer Address | 333 Corporate Woods Pkwy. Vernon Hills,IL 60061, USA |

## 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              | RFID Module                                 |
| Model No.                 | M5E                                         |
| Trade Name                | Zebra                                       |
| Host Serial No.           | 67J134300114                                |
| Host Input Power          | 100-240VAC_47/63Hz                          |
| Power Adapter Manu/Model  | N/A                                         |
| Power Adapter SN          | -                                           |
| Hardware version          | N/A                                         |
| Software version          | N/A                                         |
| Date of EUT received      | 01/13/2013                                  |
| Equipment Class/ Category | DSS                                         |
| Clock Frequencies         | -                                           |
| Port/Connectors           | RJ-45, SER MGT, Parallel, USB, Antenna Port |
| Remark                    | NONE                                        |

## 6.2 Radio Description

### Spec for Radio -

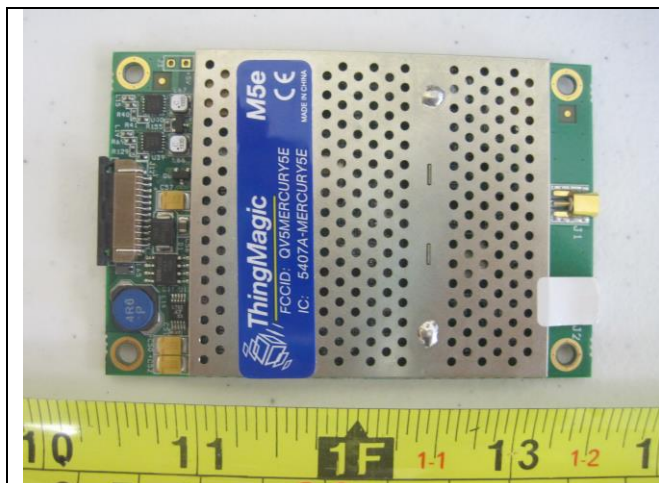
| Radio Type             | UHF RFID             |
|------------------------|----------------------|
| Operating Frequency    | 902.75-927.25 MHz    |
| Modulation             | ASK                  |
| Channel Spacing        | 500KHz               |
| Number of Channels     | 50                   |
| Antenna Type           | External PCB antenna |
| Antenna Gain           | -28.1 dBi            |
| Antenna Connector Type | MMCX                 |

## 6.3 EUT test modes/configuration Description

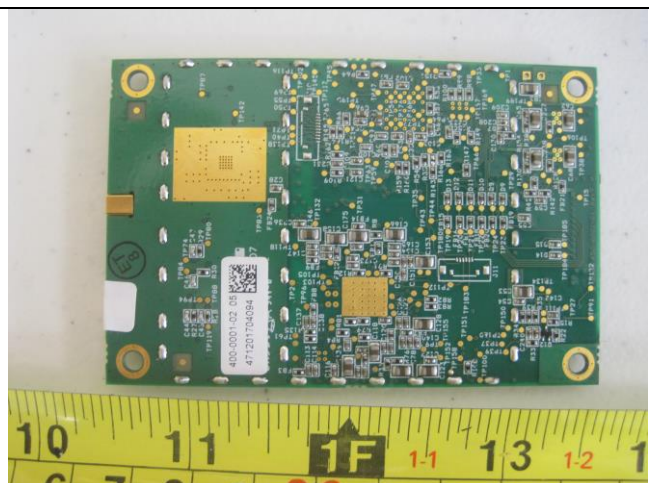
### Test mode

| Test Mode   |                                                                                           | Note |
|-------------|-------------------------------------------------------------------------------------------|------|
| Test_mode_1 | Below 1GHz-Mode1: UHF cont TX at 915.75MHz                                                | -    |
| Test_mode_2 | Below 1GHz-Mode2: UHF (915.75MHz) + WLAN at 802.11b (2437MHz) all transmit simultaneously | -    |
| Test_mode_3 | Above 1GHz-Mode1: UHF cont TX at 915.75MHz                                                | -    |
| Test_mode_4 | Above 1GHz-Mode2: UHF cont TX at 902.75MHz                                                | -    |
| Test_mode_5 | Above 1GHz-Mode3: UHF cont TX at 927.25MHz                                                | -    |
| Test_mode_6 | Above 1GHz-Mode4: UHF (915.75MHz) + WLAN at 802.11b (2437MHz) all transmit simultaneously | -    |
| Test_mode_7 | -                                                                                         | -    |
| Test_mode_8 | -                                                                                         | -    |
| Test_mode_9 | -                                                                                         | -    |
| Remark:     |                                                                                           |      |

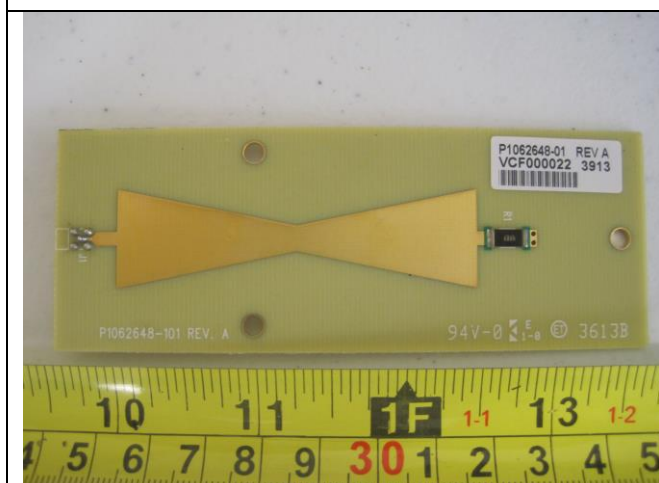
## 6.4 EUT Photos - External



EUT – Top View



EUT – Bottom View

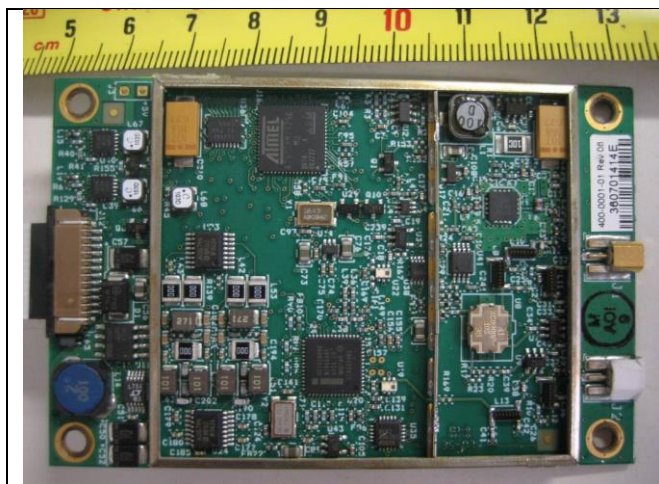


RFID Antenna – Top view

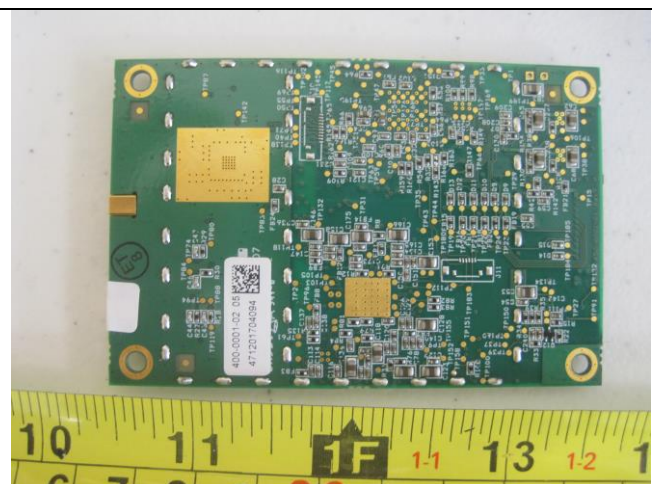


RFID Antenna – Bottom view

## 6.5 EUT Photos - Internal

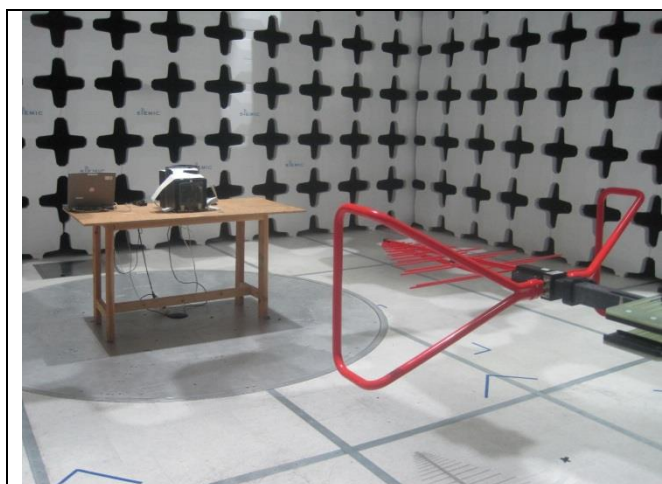


EUT – Top View

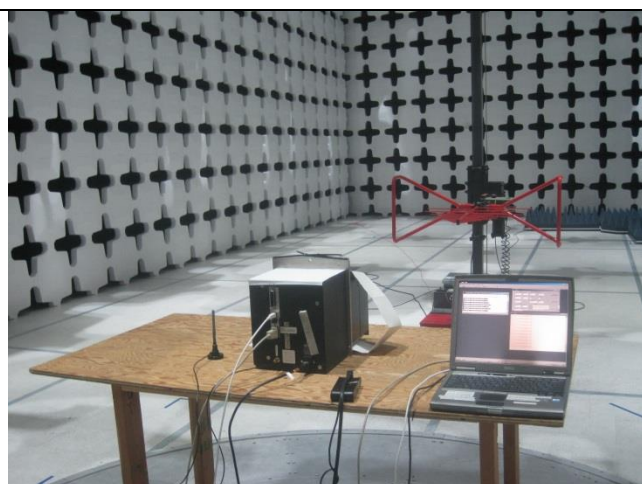


EUT – Bottom View

## 6.6 EUT Test Setup Photos



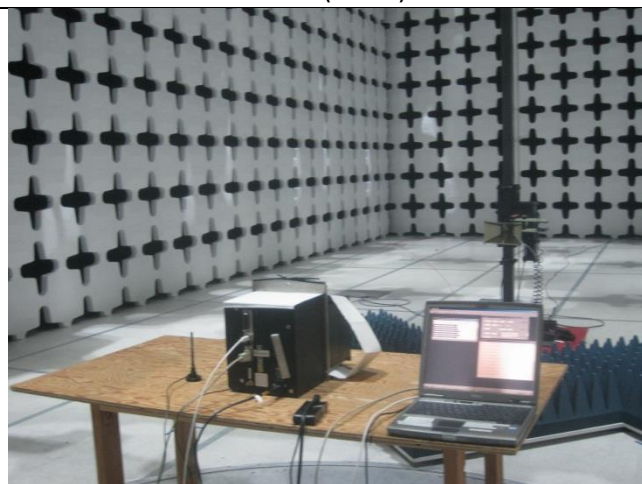
**Radiated Emissions (<1GHz) – Front View**



**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    | D600                             | Laptop PC        | 9444352681    | Dell         |      |
| 2    | PA-1650-05D2                     | AC Power Adapter | F7970         | Dell         |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
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|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |
|      |                                  |                  |               |              |      |

### 7.2 Test Software Description

| Test Item         | Software              | Description                  |
|-------------------|-----------------------|------------------------------|
| Spurious Emission | Zebra printer toolbox | Enable RF Test mode for RFID |
|                   |                       |                              |
|                   |                       |                              |
|                   |                       |                              |
|                   |                       |                              |

## 8 Test Summary

| Spurious Emissions               |               |                                                 |                                                                        |
|----------------------------------|---------------|-------------------------------------------------|------------------------------------------------------------------------|
| Test Item                        | Test standard | Test Method/Procedure                           | Pass / Fail                                                            |
| Radiated Spurious Emissions<1GHz | FCC-15.247    | ANSI C63.4: 2009<br>FCC Public Notice DA 00-705 | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Radiated Spurious Emissions<1GHz | IC-RSS 210    | RSS-Gen Issue 3: 2010                           | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Radiated Spurious Emissions>1GHz | FCC-15.247    | ANSI C63.4: 2009<br>FCC Public Notice DA 00-705 | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Radiated Spurious Emissions>1GHz | IC-RSS 210    | RSS-Gen Issue 3: 2010                           | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |

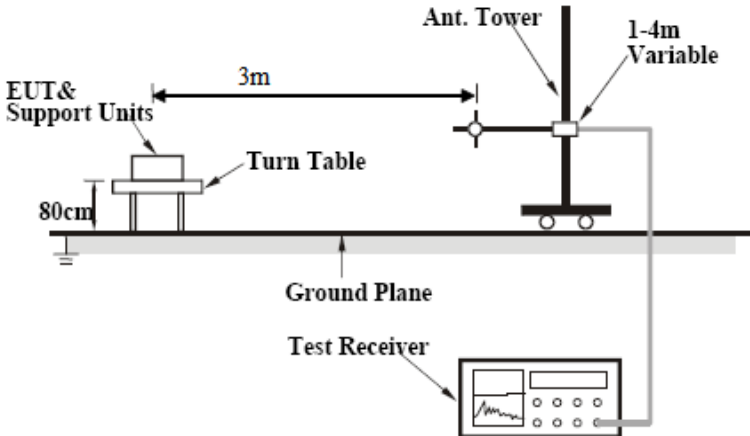
## 9 Measurement Uncertainty

| Emissions                   |                 |                                                                                                                                                 |               |
|-----------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Test Item                   | Frequency Range | Description                                                                                                                                     | Uncertainty   |
| Radiated Spurious Emissions | 30MHz – 1GHz    | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +5.6dB/-4.5dB |
| Radiated Spurious Emissions | 1GHz – 40GHz    | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +4.3dB/-4.1dB |

## 10 Measurements, Examination and Derived Results

### 10.1 Radiated Emissions below 1GHz

Requirement(s):

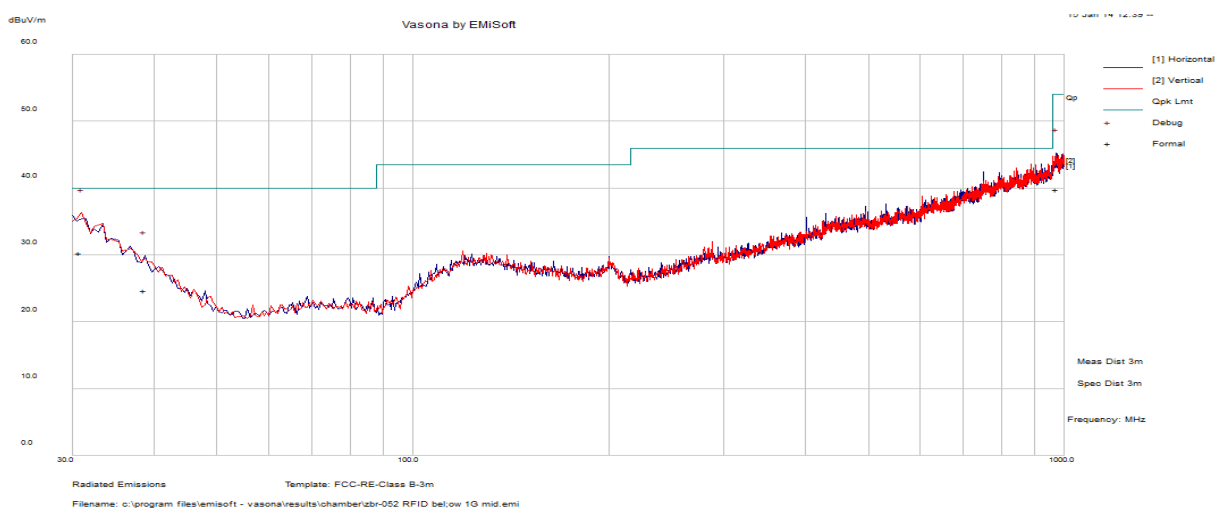
| Spec                             | Item | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Applicable                          |                       |                       |         |     |          |     |         |     |           |     |
|----------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------|-----------------------|---------|-----|----------|-----|---------|-----|-----------|-----|
| 47CFR§15.247(d),<br>RSS210(A8.5) | a)   | Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/> |                       |                       |         |     |          |     |         |     |           |     |
|                                  |      | <table><tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr><tr><td>30 – 88</td><td>100</td></tr><tr><td>88 – 216</td><td>150</td></tr><tr><td>216 960</td><td>200</td></tr><tr><td>Above 960</td><td>500</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     | Frequency range (MHz) | Field Strength (uV/m) | 30 – 88 | 100 | 88 – 216 | 150 | 216 960 | 200 | Above 960 | 500 |
|                                  |      | Frequency range (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | Field Strength (uV/m) |                       |         |     |          |     |         |     |           |     |
|                                  |      | 30 – 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     | 100                   |                       |         |     |          |     |         |     |           |     |
|                                  |      | 88 – 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     | 150                   |                       |         |     |          |     |         |     |           |     |
|                                  |      | 216 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     | 200                   |                       |         |     |          |     |         |     |           |     |
| Above 960                        | 500  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                       |                       |         |     |          |     |         |     |           |     |
|                                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                       |                       |         |     |          |     |         |     |           |     |
|                                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                       |                       |         |     |          |     |         |     |           |     |
|                                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                       |                       |         |     |          |     |         |     |           |     |
|                                  |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                       |                       |         |     |          |     |         |     |           |     |
| Test Setup                       |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |                       |                       |         |     |          |     |         |     |           |     |
| Procedure                        |      | <div>1. The EUT was switched on and allowed to warm up to its normal operating condition.</div> <div>2. 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:<div>a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</div><div>b. The EUT was then rotated to the direction that gave the maximum emission.</div><div>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</div></div> <div>3. A Quasi-peak measurement was then made for that frequency point.</div> <div>4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</div> |                                     |                       |                       |         |     |          |     |         |     |           |     |
| Remark                           |      | NONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                       |                       |         |     |          |     |         |     |           |     |
| Result                           |      | <div><input checked="" type="checkbox"/> Pass</div> <div><input type="checkbox"/> Fail</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |                       |                       |         |     |          |     |         |     |           |     |

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

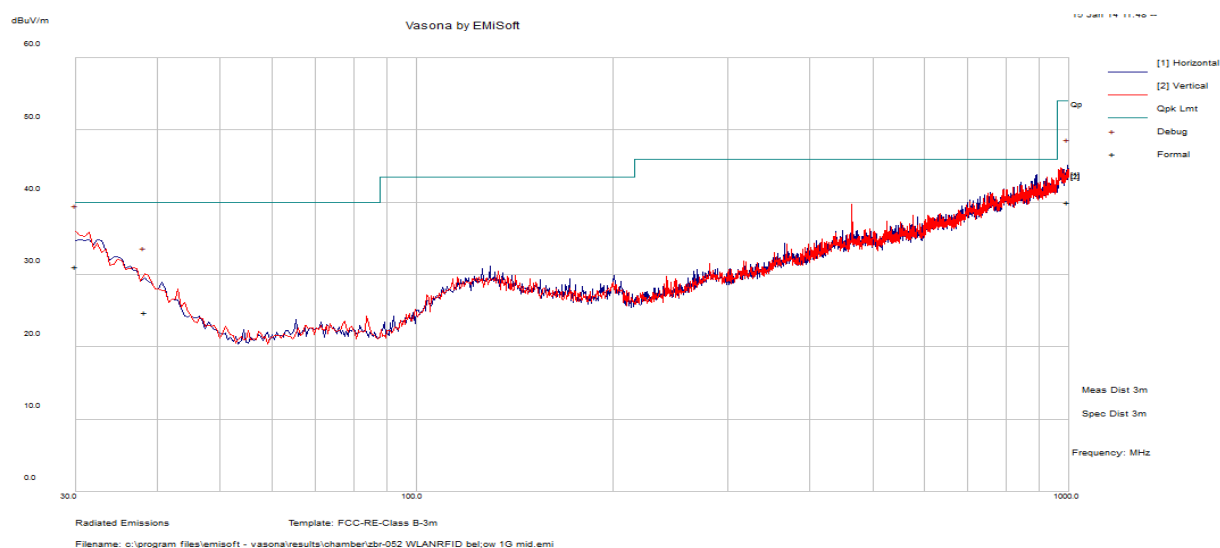
## Radiated Emission Test Results (Below 1GHz)

|                           |                                            |      |        |      |
|---------------------------|--------------------------------------------|------|--------|------|
| Test specification        | below 1GHz                                 |      | Result | Pass |
| Environmental Conditions: | Temp (°C):                                 | 22   |        |      |
|                           | Humidity (%)                               | 45   |        |      |
|                           | Atmospheric (mbar):                        | 1008 |        |      |
| Mains Power:              | 110VAC,60Hz                                |      |        |      |
| Tested by:                | Teody Manansala                            |      |        |      |
| Test Date:                | 01-13-2014                                 |      |        |      |
| Remarks:                  | Below 1GHz-Mode1: UHF cont TX at 915.75MHz |      |        |      |



| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Polarization | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass/Fail |
|---------------|----------|------------|-------|--------------|------------------|--------------|--------|---------|--------------|-----------|-----------|
| 30.72         | 30.14    | 1.26       | -1.15 | 30.26        | Quasi Max        | V            | 254    | 161.00  | 40.00        | -9.74     | Pass      |
| 971.25        | 31.36    | 6.47       | 1.96  | 39.79        | Quasi Max        | H            | 270    | 45.00   | 54.00        | -14.21    | Pass      |
| 38.61         | 29.94    | 1.39       | -6.72 | 24.62        | Quasi Max        | H            | 350    | 283.00  | 40.00        | -15.38    | Pass      |

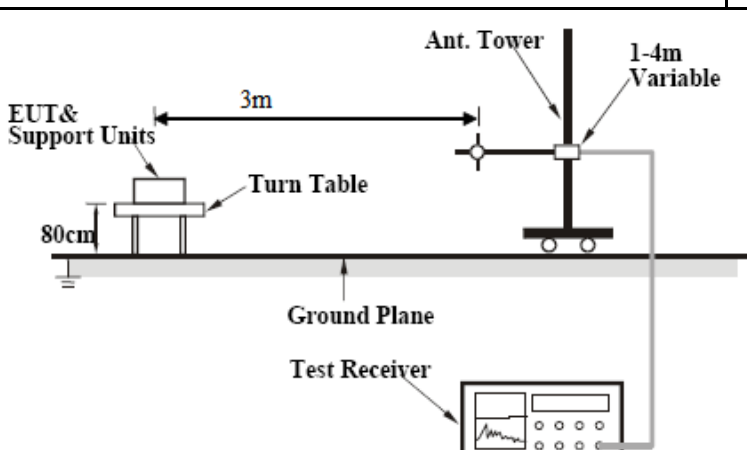
|                           |                                                                                           |      |        |      |
|---------------------------|-------------------------------------------------------------------------------------------|------|--------|------|
| Test specification        | below 1GHz                                                                                |      | Result | Pass |
| Environmental Conditions: | Temp (°C):                                                                                | 20.3 |        |      |
|                           | Humidity (%)                                                                              | 45   |        |      |
|                           | Atmospheric (mbar):                                                                       | 1008 |        |      |
| Mains Power:              | 110VAC,60Hz                                                                               |      |        |      |
| Tested by:                | Teody Manansala                                                                           |      |        |      |
| Test Date:                | 01-15-2014                                                                                |      |        |      |
| Remarks:                  | Below 1GHz-Mode2: UHF (915.75MHz) + WLAN at 802.11b (2437MHz) all transmit simultaneously |      |        |      |



| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Po l | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|------|--------|---------|--------------|-----------|------------|
| 30.02         | 30.33    | 1.25       | -0.51 | 31.06        | Quasi Max        | V    | 177.00 | 34.00   | 40.00        | -8.94     | Pass       |
| 996.21        | 31.44    | 6.57       | 2.05  | 40.07        | Quasi Max        | H    | 160.00 | 36.00   | 54.00        | -13.93    | Pass       |
| 38.35         | 29.92    | 1.38       | -6.56 | 24.74        | Quasi Max        | V    | 208.00 | 87.00   | 40.00        | -15.26    | Pass       |

## 10.2 Radiated Spurious Emissions above 1GHz

### Requirement(s):

| Spec                             | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Applicable                          |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 47CFR§15.247(d),<br>RSS210(A8.5) | a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required<br><br><input checked="" type="checkbox"/> 20 dB down <input type="checkbox"/> 30 dB down | <input checked="" type="checkbox"/> |
|                                  | b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | or restricted band, emission must also comply with the radiated emission limits specified in 15.209.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input checked="" type="checkbox"/> |
| Test Setup                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| Procedure                        | <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>An average measurement was then made for that frequency point.</li> <li>Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| Remark                           | Test date: 4-Dec-13<br>Temp (°C): 23<br>Humidity (%): 22<br>Atmospheric (mbar): 1008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| Result                           | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |

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

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

## Radiated Emission Test Results (Above 1GHz)

Above 1GHz-25GHz -Mode1: UHF cont TX at 915.75MHz

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Polarization | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|--------------|--------|---------|--------------|-----------|------------|
| 1215.50       | 46.76    | 0.93       | -6.75 | 40.94        | Peak Max         | V            | 123    | 269     | 74           | -33.06    | Pass       |
| 3995.44       | 42.93    | 2.31       | -0.19 | 45.05        | Peak Max         | V            | 140    | 83      | 74           | -28.95    | Pass       |
| 1215.50       | 31.87    | 0.93       | -6.75 | 26.05        | Average Max      | V            | 123    | 269     | 54           | -27.95    | Pass       |
| 3995.44       | 30.44    | 2.31       | -0.19 | 32.56        | Average Max      | V            | 140    | 83      | 54           | -21.44    | Pass       |

Above 1GHz-25GHz-Mode2: UHF cont TX at 902.75MHz

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Polarization | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|--------------|--------|---------|--------------|-----------|------------|
| 1350.07       | 43.95    | 1.04       | -6.52 | 38.47        | Peak Max         | V            | 133    | 278     | 74           | -35.53    | Pass       |
| 2239.85       | 44.83    | 1.63       | -3.9  | 42.56        | Peak Max         | H            | 181    | 346     | 74           | -31.44    | Pass       |
| 2800.01       | 43.76    | 1.77       | -2.51 | 43.03        | Peak Max         | H            | 124    | 104     | 74           | -30.97    | Pass       |
| 1350.07       | 30.86    | 1.04       | -6.52 | 25.38        | Average Max      | V            | 133    | 278     | 54           | -28.62    | Pass       |
| 2239.85       | 31.89    | 1.63       | -3.9  | 29.62        | Average Max      | H            | 181    | 346     | 54           | -24.38    | Pass       |
| 2800.01       | 31.00    | 1.77       | -2.51 | 30.27        | Average Max      | H            | 124    | 104     | 54           | -23.73    | Pass       |

Above 1GHz-25GHz-Mode3: UHF cont TX at 927.25MHz

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Polarization | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|--------------|--------|---------|--------------|-----------|------------|
| 1202.06       | 43.31    | 0.92       | -6.78 | 37.45        | Peak Max         | H            | 154    | 256     | 74           | -36.55    | Pass       |
| 1326.67       | 53.09    | 1.02       | -6.56 | 47.55        | Peak Max         | V            | 147    | 276     | 74           | -26.45    | Pass       |
| 1202.06       | 30.43    | 0.92       | -6.78 | 24.57        | Average Max      | H            | 154    | 256     | 54           | -29.43    | Pass       |
| 1326.67       | 34.16    | 1.02       | -6.56 | 28.62        | Average Max      | V            | 147    | 276     | 54           | -25.38    | Pass       |

Above 1GHz-25GHz- Mode4: UHF (915.75MHz) + WLAN at 802.11b (2437MHz) all transmit simultaneously

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Polarization | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|--------------|--------|---------|--------------|-----------|------------|
| 2748.39       | 44.3     | 1.77       | -2.64 | 43.43        | Peak Max         | H            | 189    | 22      | 74           | -30.57    | Pass       |
| 1011.14       | 53.53    | 0.75       | -7.17 | 47.12        | Peak Max         | V            | 146    | 104     | 74           | -26.88    | Pass       |
| 1330.99       | 48.45    | 1.02       | -6.55 | 42.93        | Peak Max         | V            | 187    | 264     | 74           | -31.07    | Pass       |
| 2748.39       | 31.29    | 1.77       | -2.64 | 30.42        | Average Max      | H            | 189    | 22      | 54           | -23.58    | Pass       |
| 1011.14       | 46.19    | 0.75       | -7.17 | 39.77        | Average Max      | V            | 146    | 104     | 54           | -14.23    | Pass       |
| 1330.99       | 31.81    | 1.02       | -6.55 | 26.28        | Average Max      | V            | 187    | 264     | 54           | -27.72    | Pass       |

## Annex A. TEST INSTRUMENT

| Instrument                         | Model   | Serial #    | Cal Date   | Cal Cycle | Cal Due    | In use                              |
|------------------------------------|---------|-------------|------------|-----------|------------|-------------------------------------|
| <b>Conducted Emissions</b>         |         |             |            |           |            |                                     |
| R & S Receiver                     | ESIB 40 | 100179      | 04/20/2013 | 1 Year    | 04/20/2014 | <input type="checkbox"/>            |
| R&S LISN                           | ESH2-Z5 | 861741/013  | 05/18/2013 | 1 Year    | 05/18/2014 | <input type="checkbox"/>            |
| CHASE LISN                         | MN2050B | 1018        | 07/24/2013 | 1 Year    | 07/24/2014 | <input type="checkbox"/>            |
| Sekonic Hygro Hermograph           | ST-50   | HE01-000092 | 05/25/2013 | 1 Year    | 05/25/2014 | <input type="checkbox"/>            |
| <b>Radiated Emissions</b>          |         |             |            |           |            |                                     |
| R & S Receiver                     | ESL6    | 100178      | 03/01/2013 | 1 Year    | 03/01/2014 | <input checked="" type="checkbox"/> |
| R & S Receiver                     | ESIB 40 | 100179      | 04/20/2013 | 1 Year    | 04/20/2014 | <input checked="" type="checkbox"/> |
| ETS-Lingren Loop Antenna           | 6512    | 00049120    | 05/13/2013 | 1 Year    | 05/13/2014 | <input checked="" type="checkbox"/> |
| Bi-Log antenna (30MHz~2GHz)        | JB1     | A030702     | 02/09/2013 | 1 Year    | 02/09/2014 | <input checked="" type="checkbox"/> |
| Horn Antenna (1-26.5GHz)           | 3115    | 10SL0059    | 04/26/2013 | 1 Year    | 04/26/2014 | <input checked="" type="checkbox"/> |
| Horn Antenna (18-40 GHz)           | AH-840  | 101013      | 04/23/2013 | 1 Year    | 04/23/2014 | <input checked="" type="checkbox"/> |
| Pre-Amplifier (1-26.5GHz)          | 8449B   | 3008A00715  | 05/30/2013 | 1 Year    | 05/30/2014 | <input checked="" type="checkbox"/> |
| Microwave Preamplifier (18-40 GHz) | PA-840  | 181251      | 05/30/2013 | 1 Year    | 05/30/2014 | <input checked="" type="checkbox"/> |
| 3 Meters SAC                       | 3M      | N/A         | 10/13/2013 | 1 Year    | 10/13/2014 | <input type="checkbox"/>            |
| 10 Meters SAC                      | 10M     | N/A         | 06/05/2013 | 1 Year    | 06/05/2014 | <input checked="" type="checkbox"/> |
| Sekonic Hygro Hermograph           | ST-50   | HE01-000092 | 05/25/2013 | 1 Year    | 05/25/2014 | <input checked="" type="checkbox"/> |
| <b>RF Conducted Measurement</b>    |         |             |            |           |            |                                     |
| Spectrum Analyzer                  | N9010A  | MY50210206  | 05/30/2013 | 1 Year    | 05/30/2014 | <input type="checkbox"/>            |
| Spectrum Analyzer                  | E4407B  | US88441016  | 05/31/2013 | 1 Year    | 05/31/2014 | <input type="checkbox"/>            |
| R & S Receiver                     | ESIB 40 | 100179      | 04/20/2013 | 1 Year    | 04/20/2014 | <input type="checkbox"/>            |

## **Annex B. USER MANUAL, BLOCK & CIRCUIT DIAGRAM**

Please see attachment

## Annex C. 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                         |                                                                                     | A1, A2, A3, A4, B1, B2, B3, B4, 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                                   |   | <b>Radio &amp; Telecommunications Terminal Equipment:</b><br>EN45001 – EN ISO/IEC 17025 |
|                                         |  | <b>Electromagnetic Compatibility:</b><br>EN45001 – EN ISO/IEC 17025                     |
| Singapore iDA<br>CB(Certification Body) |  | Phase I, Phase II                                                                       |
| 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                     |  | <b>Radio:</b> Scope A – All Radio Standard Specification in Category I                  |
|                                         |  | <b>Telecom:</b> CS-03 Part I, II, V, VI, VII, VIII                                      |

|                                                    |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Japan Recognized Certification<br>Body Designation |    | <b>Radio</b> : A1. Terminal equipment for purpose of calling<br><b>Telecom</b> : B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law                                                                                                                                                                                                                                                                                                                                        |
| Korea CAB Accreditation                            |    | <b>EMI</b> : KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI<br>KN22: Test Method for EMI<br><b>EMS</b> : 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                                                                                                                                                                                                                                                    |
| 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                          |  | <b>EMC</b> : AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4<br><b>Radiocommunications</b> : 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><b>Telecommunications</b> : 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                                                                                                                                                                                                                                                                                                                                                                          |