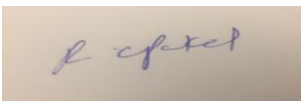
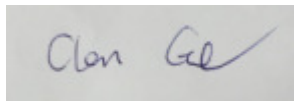


# RF TEST REPORT



Report No.: FCC-IC\_RF\_SL15052101-STR-002\_RFID Rev 1.0  
Supersede Report No.: FCC-IC\_RF\_SL15052101-STR-002\_RFID

|                                                                                                      |   |                                                                        |
|------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------|
| Applicant                                                                                            | : | Stryker Endoscopy                                                      |
| Product Name                                                                                         | : | Universal Gateway (hereafter called Spoke)                             |
| Model No.                                                                                            | : | 0240-060-150                                                           |
| Test Standard                                                                                        | : | FCC 15.225<br>FCC 15.207<br>RSS 210 Issue 8 (2010)                     |
| Test Method                                                                                          | : | ANSI C63.10: 2013<br>RSS Gen 4.6, RSS Gen 4.7 & RSS Gen 4.9            |
| FCC ID                                                                                               | : | SSH-UNIGTY15                                                           |
| IC ID                                                                                                | : | 4919C-UNIGTY15                                                         |
| Dates of test                                                                                        | : | 09/05/2015                                                             |
| Issue Date                                                                                           | : | 11/10/2015                                                             |
| Test Result                                                                                          | : | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Equipment complied with the specification [X]<br>Equipment did not comply with the specification [ ] |   |                                                                        |

| This Test Report is Issued Under the Authority of:                                  |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |
| Ronak Patel                                                                         | Chen Ge                                                                              |
| Test Engineer                                                                       | Engineer Reviewer                                                                    |

Issued By:  
SIEMIC Laboratories  
775 Montague Expressway, Milpitas, 95035 CA



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## Laboratory Introduction

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



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

### Accreditations for Conformity Assessment

| Country/Region | 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/RRA, 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           |
| Hong Kong | OFTA (US002)       | RF, Telecom           |

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## 1 Report Revision History

| Report No.                                | Report Version | Description          | Issue Date |
|-------------------------------------------|----------------|----------------------|------------|
| FCC-IC_RF_SL15052101-STR-002_RFID         | -              | Original             | 10/29/2015 |
| FCC-IC_RF_SL15052101-STR-002_RFID Rev 1.0 | Rev 1.0        | Updated product name | 11/10/2015 |

## 2 Executive Summary

The purpose of this test program was to demonstrate compliance of the HID Global Corporation., and model: V371 against the current Stipulated Standards. The V371 has demonstrated compliance with the Stipulated Standard listed on 1<sup>st</sup> page.

## 3 Customer information

|                      |   |                                      |
|----------------------|---|--------------------------------------|
| Applicant Name       | : | Stryker Endoscopy                    |
| Applicant Address    | : | 5900 OPTICAL CT, SAN JOSE, CA, 95138 |
| Manufacturer Name    | : | Styker Endoscopy                     |
| Manufacturer Address | : | 5900 OPTICAL CT, SAN JOSE, CA, 95138 |

## 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                | : | Universal Gateway (hereafter called Spoke) |
| Model No.                   | : | 0240-060-150                               |
| Trade Name                  | : | Stryker Endoscopy                          |
| Serial No.                  | : | Radiated Emission Unit: UGPP10074          |
| Input Power                 | : | 100-240V, 50-60Hz                          |
| Date of EUT received        | : | 07/08/2015                                 |
| Equipment Class/ Category   | : | DXX                                        |
| Clock/Operating Frequencies | : | 8MHz/13.56 MHz                             |
| Port/Connectors             | : | USB, Ethernet, HDMI                        |

### 6.2 Radio Description

#### Spec for Radio

| Radio Type          | RFID     |
|---------------------|----------|
| Operating Frequency | 13.56MHz |
| Modulation          | ASK      |
| Antenna Type        | PCB      |
| Antenna Gain        |          |

### 6.3 EUT test modes/configuration Description

| Mode       | Note                                  |
|------------|---------------------------------------|
| RF test    | EUT continuous transmit when power on |
|            |                                       |
|            |                                       |
| Note: None |                                       |

| Test Item                                                                                             | Operating mode      | Tested antenna port | Test frequencies |
|-------------------------------------------------------------------------------------------------------|---------------------|---------------------|------------------|
| Antenna Requirement                                                                                   | N/A                 | -                   | 13.56MHz         |
| Conducted Emissions Voltage                                                                           | Continuous Transmit | -                   |                  |
| Limit in the band of 13.553 – 13.567 MHz                                                              | Continuous Transmit | -                   |                  |
| Limit in the band of 13.410 – 13.553 MHz and 13.567 – 13.710 MHz                                      | Continuous Transmit | -                   |                  |
| Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz                                      | Continuous Transmit | -                   |                  |
| Limit outside the band of 13.110 – 14.010 MHz                                                         | Continuous Transmit | -                   |                  |
| Frequency Stability                                                                                   | Continuous Transmit | -                   |                  |
| Occupied Bandwidth                                                                                    | Continuous Transmit | -                   |                  |
| Note: EUT uses a PCB trace antenna attached to the PCB board. Only radiated measurements were tested. |                     |                     |                  |

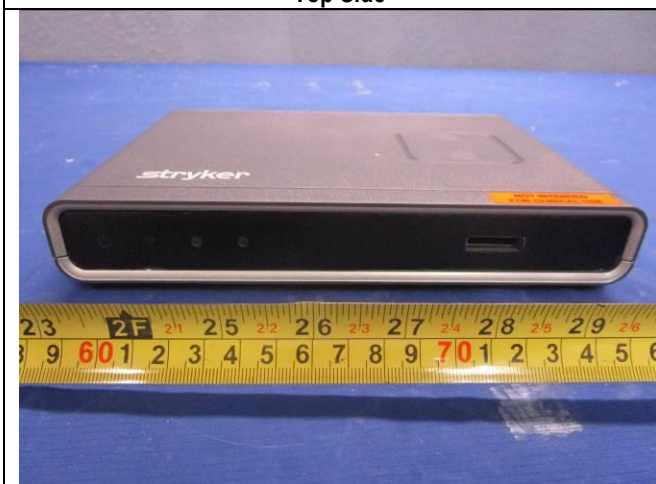
#### 6.4 EUT Photos – External



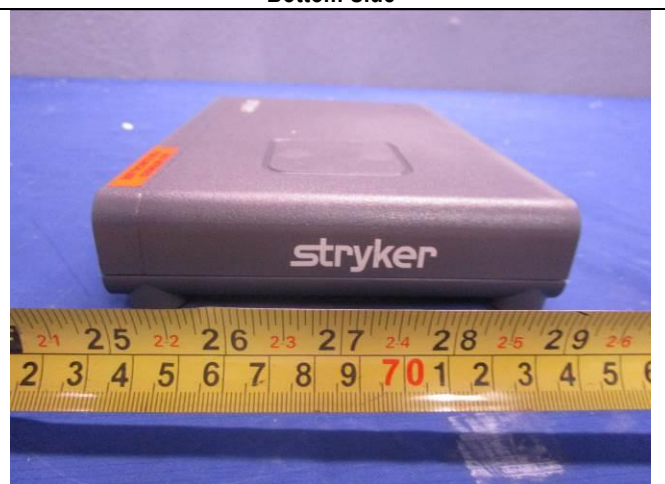
Top Side



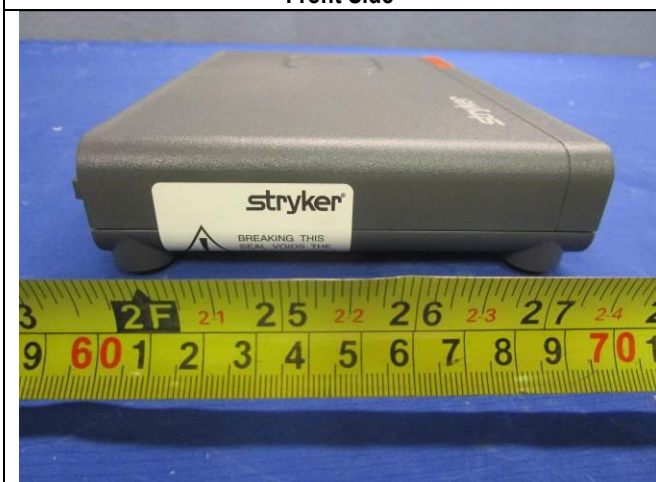
Bottom Side



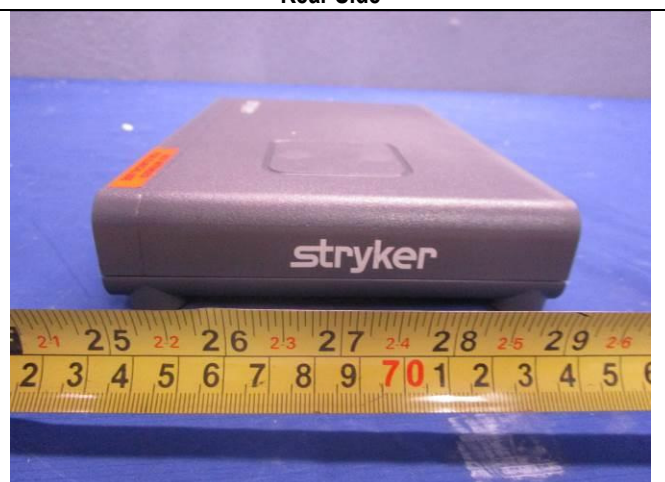
Front Side



Rear Side



Left Side

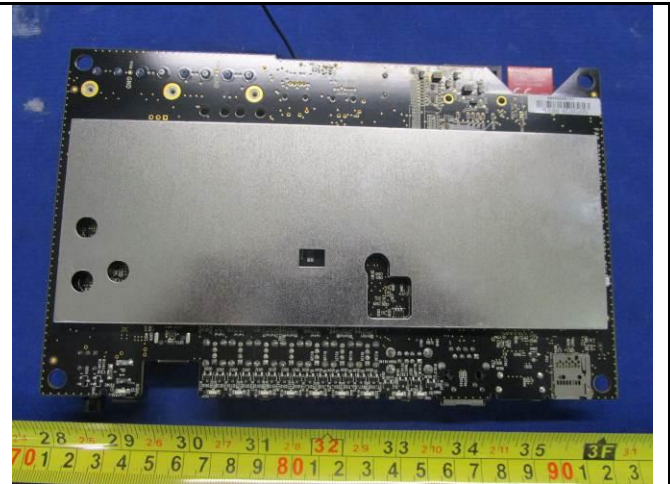


Right Side

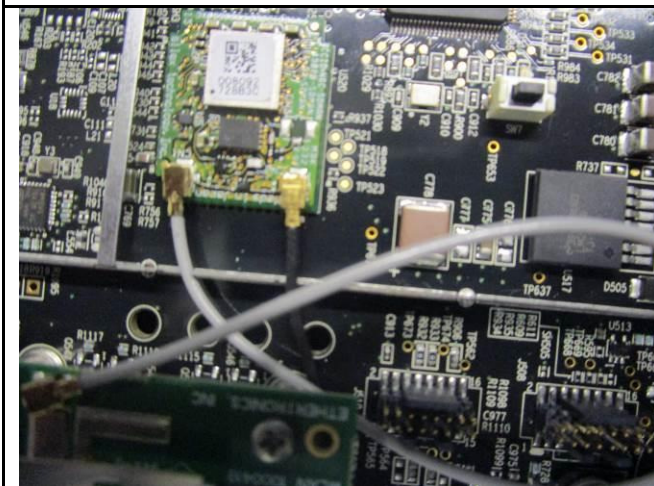
## 6.5 EUT Photos – Internal



Cover off View 1



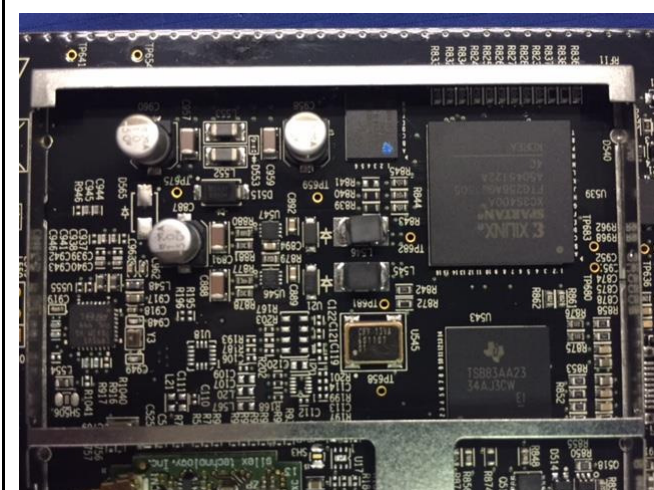
Cover off View 2 with PCBA1



PCBA1 Top View



PCBA Bottom View



PCBA Bottom View



PCBA 2 Bottom View



**PCBA WLAN Antenna**



**PCBA RFID Antenna**



**Power Adapter – top view**

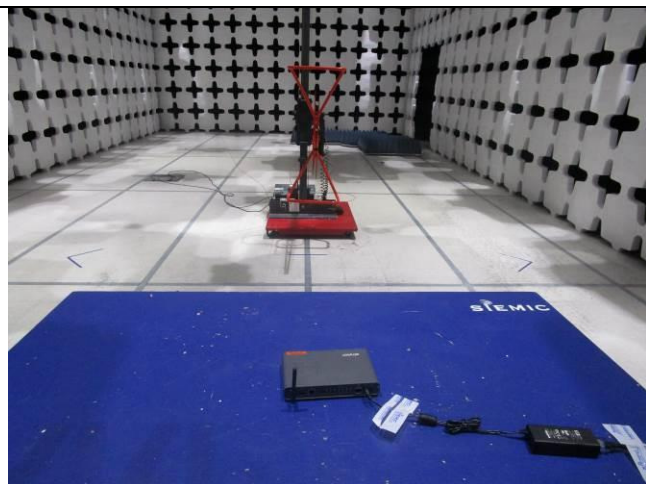


**Power Adapter – Bottom view**

## 6.6 EUT Test Setup Photos



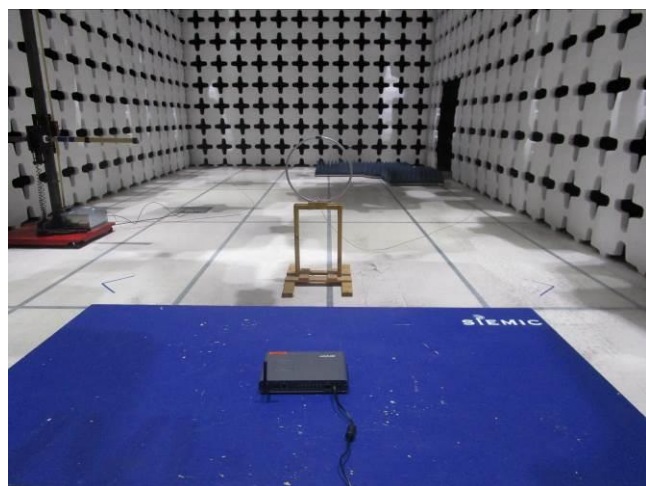
Radiated Emission Test setup (<1GHz) – Front View



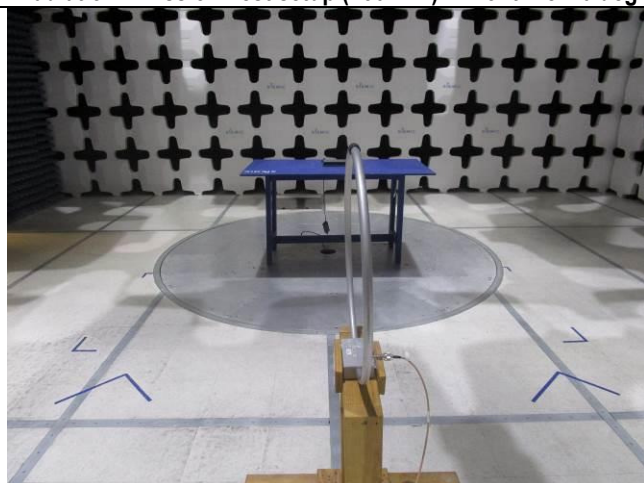
Radiated Emission Test setup (<1GHz) – Rear View



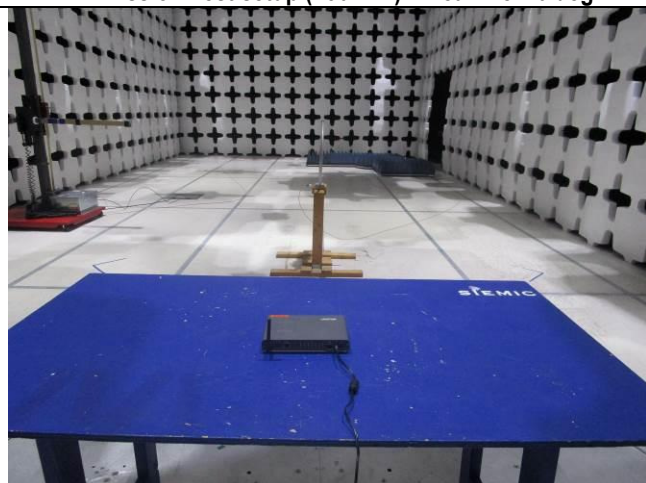
Radiation Emission Test setup (<30MHz) – Front View 0 deg



R Emission Test setup (<30MHz) – Rear View 0 deg



Radiation Emission Test setup (<30MHz) – Front View 90 deg



R Emission Test setup (<30MHz) – Rear View 90 deg



**Conducted Emission test setup– Front View**



**Conducted Emission Test setup – Rear View**

## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

| Index | Supporting Equipment Description | Model | Serial No.  | Manu | Note |
|-------|----------------------------------|-------|-------------|------|------|
| 1     | Laptop                           | D6410 | 18209556397 | DELL | -    |

### 7.2 Cabling Description

| Name | Connection Start |          | Connection Stop |          | Length / shielding Info |           | Note |
|------|------------------|----------|-----------------|----------|-------------------------|-----------|------|
|      | From             | I/O Port | To              | I/O Port | Length (m)              | Shielding |      |
| N/A  | N/A              | N/A      | N/A             | N/A      | N/A                     | N/A       | N/A  |

### 7.3 Test Software Description

| Test Item | Software | Description |
|-----------|----------|-------------|
| N/A       | N/A      | N/A         |

## 8 Test Summary

| Test Item                      | Test standard |                 | Test Method/Procedure |                  | Pass / Fail                              |
|--------------------------------|---------------|-----------------|-----------------------|------------------|------------------------------------------|
| Antenna Requirement            | FCC           | 15.203          | FCC                   | -                | <input checked="" type="checkbox"/> Pass |
|                                | IC            |                 | IC                    | -                | <input type="checkbox"/> N/A             |
| AC Conducted Emissions Voltage | FCC           | 15.207(a)       | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                                | IC            | RSS Gen (7.2.2) | IC                    | -                | <input type="checkbox"/> N/A             |

| Test Item                                                        | Test standard                                                                                                                                                                                                                                                                                                                                                                                                             |                   | Test Method/Procedure |                  | Pass / Fail                              |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|------------------|------------------------------------------|
| Limit in the band of 13.553 – 13.567 MHz                         | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.225(a)         | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS210(A2.6)      | IC                    | RSS Gen 4.9      | <input type="checkbox"/> N/A             |
| Limit in the band of 13.410 – 13.553 MHz and 13.567 – 13.710 MHz | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.225(b)         | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS210(A2.6)      | IC                    | RSS Gen 4.9      | <input type="checkbox"/> N/A             |
| Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.225(c)         | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS210(A2.6)      | IC                    | RSS Gen 4.9      | <input type="checkbox"/> N/A             |
| Limit outside the band of 13.110 – 14.010 MHz                    | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.225(d), 15.209 | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS210(A2.6)      | IC                    | RSS Gen 4.9      | <input type="checkbox"/> N/A             |
| Frequency Stability                                              | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | 15.225(e)         | FCC                   | -                | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS210(A2.6)      | IC                    | RSS Gen 4.7      | <input type="checkbox"/> N/A             |
| Occupied Bandwidth                                               | FCC                                                                                                                                                                                                                                                                                                                                                                                                                       | -                 | FCC                   | -                | <input checked="" type="checkbox"/> Pass |
|                                                                  | IC                                                                                                                                                                                                                                                                                                                                                                                                                        | RSS-210(5.9.1)    | IC                    | RSS Gen 4.6      | <input type="checkbox"/> N/A             |
| Remark                                                           | <ol style="list-style-type: none"> <li>All measurement uncertainties are not taken into consideration for all presented test result.</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>Test Method: ANSI C63.10: 2009 / RSS – Gen Issue 4: 2014</li> </ol> |                   |                       |                  |                                          |

## 9 Measurement Uncertainty

| Test Item                                                        | Frequency Range                             | Description                                                                                                                                     | Uncertainty   |
|------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| AC Conducted Emissions Voltage                                   | 150KHz – 30MHz                              | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2                                 | ±3.5dB        |
| Limit in the band of 13.553 – 13.567 MHz                         | 13.553 – 13.567 MHz                         | 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 |
| Limit in the band of 13.410 – 13.553 MHz and 13.567 – 13.710 MHz | 13.410 – 13.553 MHz and 13.567 – 13.710 MHz |                                                                                                                                                 | +5.6dB/-4.5dB |
| Limit in the band of 13.110 – 13.410 MHz and 13.710 – 14.010 MHz | 13.110 – 13.410 MHz and 13.710 – 14.010 MHz |                                                                                                                                                 | +5.6dB/-4.5dB |
| Limit outside the band of 13.110 – 14.010 MHz                    | 9KHz – 30MHz                                |                                                                                                                                                 | +5.6dB/-4.5dB |
| Radiated Spurious Emissions                                      | 30MHz – 1GHz                                |                                                                                                                                                 | +5.6dB/-4.5dB |

## 10 Measurements, examination and derived results

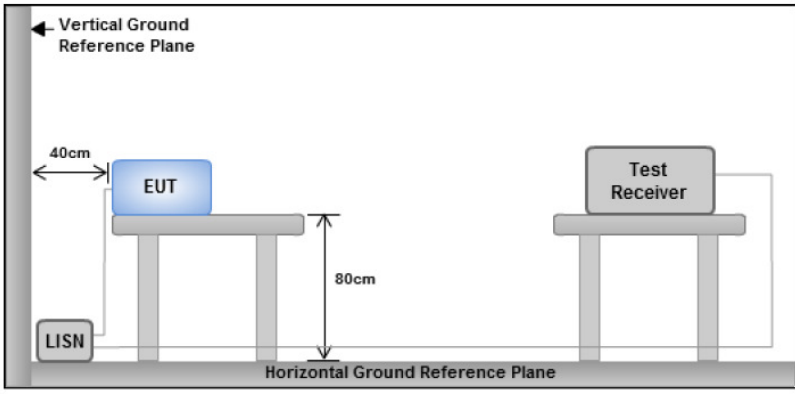
### 10.1 Antenna Requirement

| Spec    | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Applicable                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| §15.203 | <p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.</p> <p>Antenna requirement must meet at least one of the following:</p> <p>a) Antenna must be permanently attached to the device.<br/> b) The antenna must use a unique type of connector to attach to the device.<br/> c) Device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.</p> | <input checked="" type="checkbox"/> |
| Remark  | The RFID antenna is integral to the PCB board permanently to the device which meets the requirement (See Internal Photographs submitted as another Exhibit).                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| Result  | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |

## 10.2 Conducted Emission Test Result

### Conducted Emission Limits

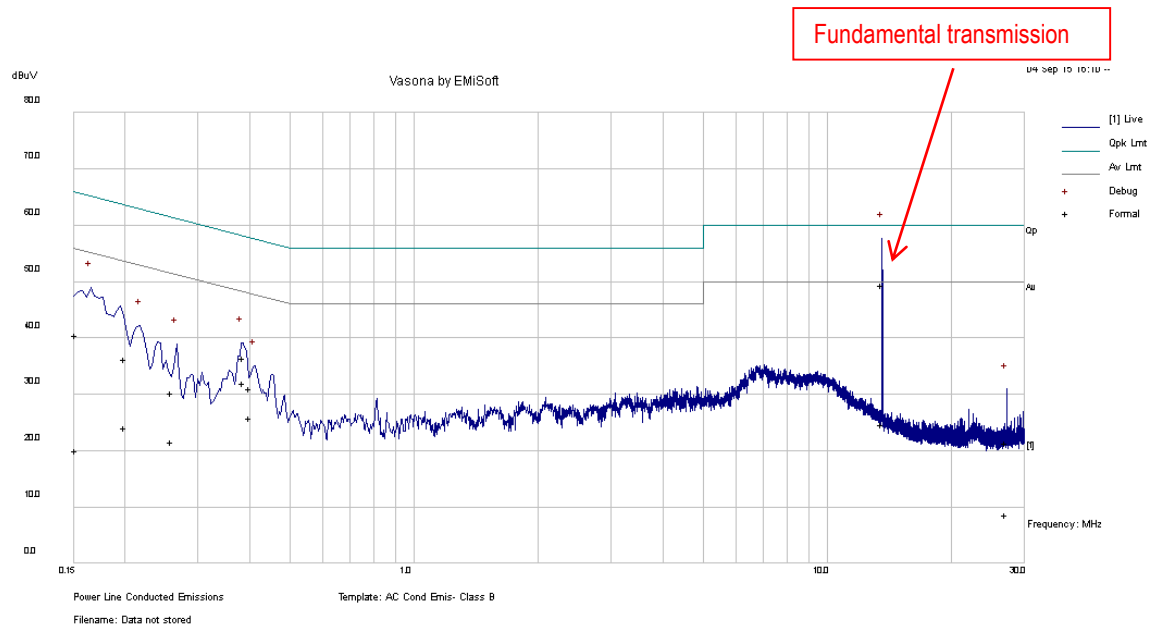
| Section         | Frequency ranges (MHz) | Limit (dBuV) |         |
|-----------------|------------------------|--------------|---------|
|                 |                        | QP           | Average |
| Class B devices | 0.15 ~ 0.5             | 66 – 56      | 56 – 46 |
|                 | 0.5 ~ 5                | 56           | 46      |
|                 | 5 ~ 30                 | 60           | 50      |

| Spec                   | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                          | Applicable                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| § 15.207, RSS210(A8.1) | a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits set in § 15.207, as measured using a 50 $\mu$ H/50 ohms line impedance stabilization network (LISN).<br><br>AC Line conducted emission within the band 150KHz to 30MHz | <input checked="" type="checkbox"/>                                        |
| Test Setup             |  <p>Note: 1. Support units were connected to second LISN.<br/>2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes</p>                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                            |
| Procedure              | <ul style="list-style-type: none"> <li>- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.</li> <li>- The power supply for the EUT was fed through a 50<math>\Omega</math>/50<math>\mu</math>H EUT LISN, connected to filtered mains.</li> <li>- The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</li> <li>- All other supporting equipment was powered separately from another main supply.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                            |
| Test Date              | 09/05/2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Environmental condition                                                                                                                                                                                                                                                                                                                                                                                                                              | Temperature 22°C<br>Relative Humidity 31%<br>Atmospheric Pressure 1021 HPA |
| Remark                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                            |
| Result                 | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                            |

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes ☐ N/A

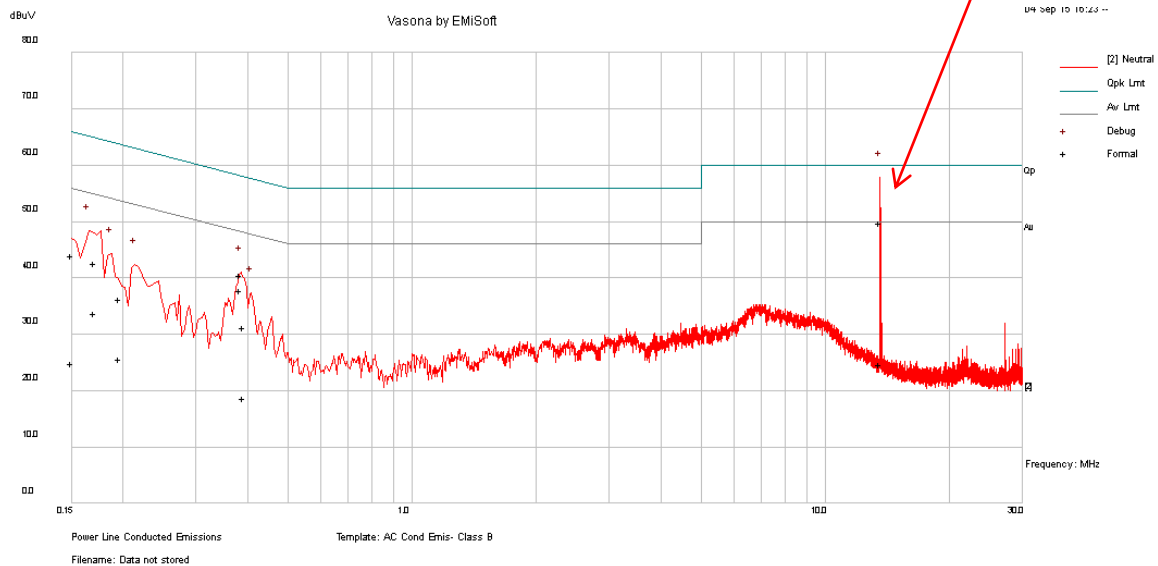
### Line Plot at V= 120V<sub>AC</sub>, 60Hz



### Live Measurements

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line/ Neutral | Limit dBuV | Margin dB | Pass /Fail |
|---------------|----------|------------|------------|------------|------------------|---------------|------------|-----------|------------|
| 13.56         | 38.85    | 10.06      | 0.59       | 49.50      | Quasi Peak       | Live          | 60.00      | -10.50    | Pass       |
| 0.15          | 28.68    | 10.00      | 1.77       | 40.45      | Quasi Peak       | Live          | 65.89      | -25.43    | Pass       |
| 0.39          | 25.73    | 10.01      | 0.77       | 36.51      | Quasi Peak       | Live          | 58.15      | -21.65    | Pass       |
| 0.20          | 25.05    | 10.00      | 1.31       | 36.36      | Quasi Peak       | Live          | 63.63      | -27.27    | Pass       |
| 0.26          | 19.19    | 10.00      | 1.03       | 30.23      | Quasi Peak       | Live          | 61.44      | -31.21    | Pass       |
| 0.40          | 20.29    | 10.01      | 0.75       | 31.04      | Quasi Peak       | Live          | 57.82      | -26.78    | Pass       |
| 13.56         | 14.12    | 10.06      | 0.59       | 24.76      | Average          | Live          | 50.00      | -25.24    | Pass       |
| 0.15          | 8.31     | 10         | 1.77       | 20.09      | Average          | Live          | 55.89      | -35.80    | Pass       |
| 0.39          | 21.19    | 10.01      | 0.77       | 31.96      | Average          | Live          | 48.15      | -16.19    | Pass       |
| 0.20          | 12.84    | 10         | 1.31       | 24.16      | Average          | Live          | 53.63      | -29.47    | Pass       |
| 0.26          | 10.63    | 10         | 1.03       | 21.66      | Average          | Live          | 51.44      | -29.78    | Pass       |
| 0.40          | 15.05    | 10.01      | 0.75       | 25.81      | Average          | Live          | 47.82      | -22.02    | Pass       |

### Neutral Line Plot at V= 120V<sub>AC</sub>, 60Hz



### Neutral Line Measurements

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line/ Neutral | Limit dBuV | Margin dB | Pass /Fail |
|---------------|----------|------------|------------|------------|------------------|---------------|------------|-----------|------------|
| 13.56         | 39.23    | 10.06      | 0.59       | 49.87      | Quasi Peak       | Neutral       | 60.00      | -10.13    | Pass       |
| 0.15          | 32.13    | 10.00      | 1.80       | 43.93      | Quasi Peak       | Neutral       | 66.00      | -22.07    | Pass       |
| 0.38          | 29.70    | 10.01      | 0.77       | 40.47      | Quasi Peak       | Neutral       | 58.20      | -17.73    | Pass       |
| 0.17          | 31.14    | 10.00      | 1.55       | 42.69      | Quasi Peak       | Neutral       | 64.94      | -22.25    | Pass       |
| 0.39          | 20.51    | 10.01      | 0.76       | 31.28      | Quasi Peak       | Neutral       | 58.03      | -26.75    | Pass       |
| 0.20          | 25.04    | 10.00      | 1.34       | 36.38      | Quasi Peak       | Neutral       | 63.76      | -27.38    | Pass       |
| 13.56         | 13.98    | 10.06      | 0.59       | 24.62      | Average          | Neutral       | 50.00      | -25.38    | Pass       |
| 0.15          | 13.08    | 10.00      | 1.80       | 24.88      | Average          | Neutral       | 56.00      | -31.12    | Pass       |
| 0.38          | 26.96    | 10.01      | 0.77       | 37.74      | Average          | Neutral       | 48.20      | -10.46    | Pass       |
| 0.17          | 22.25    | 10.00      | 1.55       | 33.80      | Average          | Neutral       | 54.94      | -21.14    | Pass       |
| 0.39          | 8.03     | 10.01      | 0.76       | 18.80      | Average          | Neutral       | 48.03      | -29.23    | Pass       |
| 0.20          | 14.33    | 10.00      | 1.34       | 25.67      | Average          | Neutral       | 53.76      | -28.09    | Pass       |

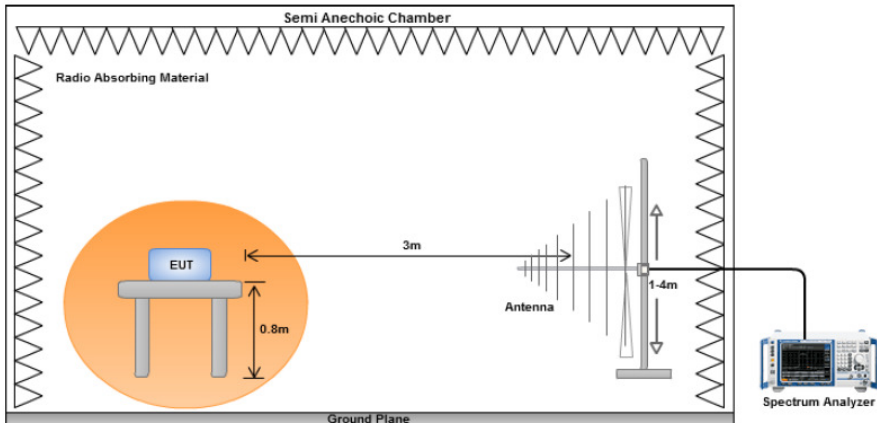
### **10.3 Radiated Measurement**

Receiver/Spectrum analyzer setting

| TEST                                    | Detector | RBW    | VBW    | Test Distance | NOTES |
|-----------------------------------------|----------|--------|--------|---------------|-------|
| Radiated Emission < 1GHz (30MHz – 1GHz) | PK       | 100KHz | 300KHz | 3m            | -     |
| Radiated Emission < 30MHz               | PK       | 10KHz  | 30KHz  | 3m            | -     |

### 10.3.1 Radiated Measurement 30MHz - 1GHz

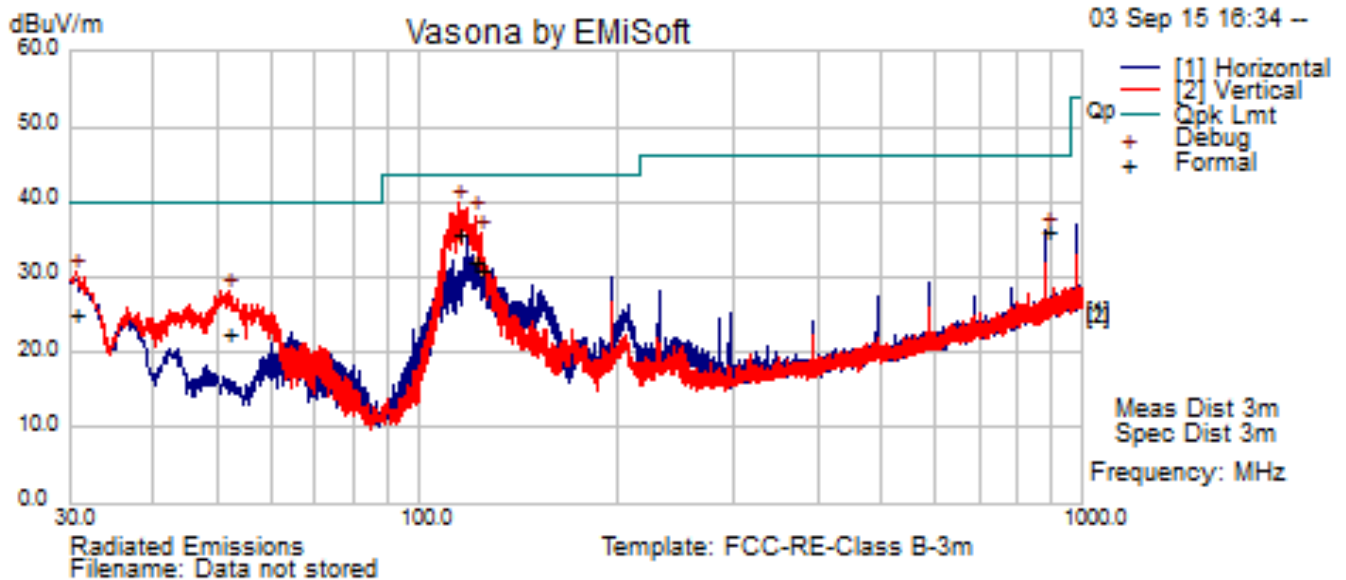
#### Requirement(s):

| Spec                                          | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Applicable      |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------|-----------|--|--|-----------------|----------------------|--|----------------------------------------|--|--------|------|--------|----------|-------------|-----|----|-----|-----------|--------------|-----|----|-----|-----------|---------------|-----|----|-----|-----------|-------------|-----|----|-----|-----------|------|--------------------------------------|--|--|--|--------------|
| <div>§ 15.209</div> <div>,RSS210 (A8.5)</div> | <div>Except higher limit as specified elsewhere in another 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</div> <div><table><tr><th colspan="5">FCC Part 15.209</th></tr><tr><th rowspan="2">Frequency (MHz)</th><th colspan="2">Field Strength Limit</th><th colspan="2">Field Strength Limit at 3m Measurement</th></tr><tr><th>(uV/m)</th><th>Dist</th><th>(uV/m)</th><th>(dBuV/m)</th></tr><tr><td>30.0 – 88.0</td><td>100</td><td>3m</td><td>100</td><td>20log 100</td></tr><tr><td>88.0 – 216.0</td><td>150</td><td>3m</td><td>150</td><td>20log 150</td></tr><tr><td>216.0 – 960.0</td><td>200</td><td>3m</td><td>200</td><td>20log 200</td></tr><tr><td>Above 960.0</td><td>500</td><td>3m</td><td>500</td><td>20log 500</td></tr><tr><td>Note</td><td colspan="4">The measurement distance was 3 meter</td></tr></table></div> | FCC Part 15.209 |                                        |           |  |  | Frequency (MHz) | Field Strength Limit |  | Field Strength Limit at 3m Measurement |  | (uV/m) | Dist | (uV/m) | (dBuV/m) | 30.0 – 88.0 | 100 | 3m | 100 | 20log 100 | 88.0 – 216.0 | 150 | 3m | 150 | 20log 150 | 216.0 – 960.0 | 200 | 3m | 200 | 20log 200 | Above 960.0 | 500 | 3m | 500 | 20log 500 | Note | The measurement distance was 3 meter |  |  |  | <div>☒</div> |
| FCC Part 15.209                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Frequency (MHz)                               | Field Strength Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 | Field Strength Limit at 3m Measurement |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
|                                               | (uV/m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Dist            | (uV/m)                                 | (dBuV/m)  |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| 30.0 – 88.0                                   | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3m              | 100                                    | 20log 100 |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| 88.0 – 216.0                                  | 150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3m              | 150                                    | 20log 150 |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| 216.0 – 960.0                                 | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3m              | 200                                    | 20log 200 |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Above 960.0                                   | 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3m              | 500                                    | 20log 500 |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Note                                          | The measurement distance was 3 meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Test Setup                                    | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Procedure                                     | <div><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><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><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></div>                                                                                                                                   |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Remark                                        | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |
| Result                                        | <div><div>☒ Pass</div><div>☐ Fail</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                        |           |  |  |                 |                      |  |                                        |  |        |      |        |          |             |     |    |     |           |              |     |    |     |           |               |     |    |     |           |             |     |    |     |           |      |                                      |  |  |  |              |

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

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

|                           |                             |      |         |                                                                               |
|---------------------------|-----------------------------|------|---------|-------------------------------------------------------------------------------|
| Test specification:       | Radiated Spurious Emissions |      |         |                                                                               |
| Environmental Conditions: | Temp(°C):                   | 20   | Result: | <input checked="" type="checkbox"/> Pass<br><br><input type="checkbox"/> Fail |
|                           | Humidity (%):               | 36   |         |                                                                               |
|                           | Atmospheric(mbar):          | 1021 |         |                                                                               |
| Mains Power:              | 12VDC                       |      |         |                                                                               |
| Tested by:                | Ronak Patel                 |      |         |                                                                               |
| Test Date:                | 09/04/2015                  |      |         |                                                                               |
| Remarks:                  | 30 – 1000 MHz               |      |         |                                                                               |



#### Test Data

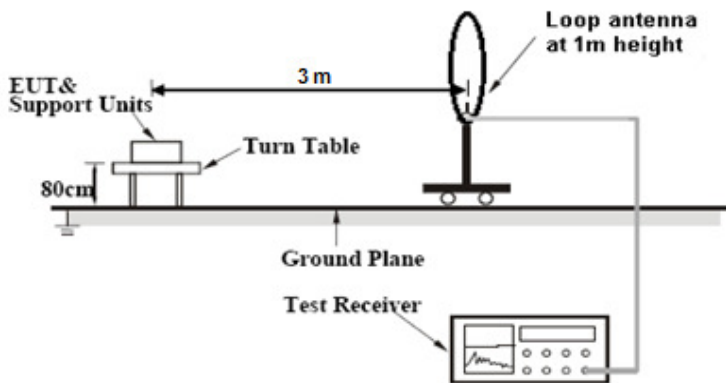
| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | AF (dB) | Level (dBuV/m) | Measurement Type | Pol (V/H) | Hgt (cm) | Azt (Deg) | Limit (dBuV/m) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|---------|----------------|------------------|-----------|----------|-----------|----------------|-------------|------------|
| 114.75          | 59.02      | 1.75            | -25.22  | 35.55          | Quasi Max        | V         | 100      | 250       | 43.52          | -7.97       | Pass       |
| 122.06          | 54.98      | 1.82            | -24.64  | 32.16          | Quasi Max        | V         | 105      | 187       | 43.52          | -11.36      | Pass       |
| 124.45          | 53.53      | 1.84            | -24.62  | 30.75          | Quasi Max        | V         | 101      | 314       | 43.52          | -12.77      | Pass       |
| 30.44           | 38.85      | 0.81            | -14.8   | 24.86          | Quasi Max        | V         | 400      | 283       | 40.00          | -15.14      | Pass       |
| 884.73          | 46.92      | 5.38            | -16.29  | 36.00          | Quasi Max        | H         | 101      | 34        | 46.02          | -10.02      | Pass       |
| 51.75           | 50.72      | 1.10            | -29.32  | 22.50          | Quasi Max        | V         | 185      | 298       | 40.00          | -17.50      | Pass       |

**Note:** test was performed at 3 meter distance.

### 10.3.2 Radiated Measurement below 30MHz

#### Requirement(s):

| Spec                             | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Applicable   |                       |                       |                                             |                            |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------|-----------------------|---------------------------------------------|----------------------------|
| 47 CFR §15.225<br>RSS-210 (A2.6) | Operation within the band 13.110–14.010 MHz.<br>(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.<br>(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.<br>(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.<br>(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209. | <div>⊗</div> |                       |                       |                                             |                            |
|                                  | FCC Part 15.225(a)/(b)/(c)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |                       |                       |                                             |                            |
|                                  | Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | Field Strength Limit  |                       | Field Strength Limit at 3m Measurement Dist |                            |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | (uV/m) Dist           | (dBuV/m)              | Dis ConvF (dB)                              | (dBuV/m)                   |
|                                  | 13.553 – 13.567                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | 15,848 30m            | 84                    | 40                                          | 124                        |
|                                  | 13.410 – 13.553<br>13.567 – 13.710                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              | 334 30m               | 50.5                  | 40                                          | 90.5                       |
|                                  | 13.110 – 13.410<br>13.710 – 14.010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              | 106 30m               | 40.5                  | 40                                          | 80.5                       |
|                                  | FCC Part 15.209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                       |                       |                                             |                            |
|                                  | Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | Field Strength Limit  |                       | Field Strength Limit at 3m Measurement      |                            |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | (uV/m) Dist           | (dBuV/m)              | Dis ConvF (dB)                              | (dBuV/m)                   |
|                                  | 0.009 – 0.490                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              | 2400 / F(KHz)<br>300m | 20log<br>2400/F(KHz)  | 80                                          | 20log<br>2400/F(KHz) + 80  |
|                                  | 0.490 – 1.705                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              | 24000 / F(KHz)<br>30m | 20log<br>24000/F(KHz) | 40                                          | 20log<br>24000/F(KHz) + 40 |
| 1.705 – 30.00                    | 30 30m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 29.5         | 40                    | 69.5                  |                                             |                            |
| Note                             | The measurement distance was 3 meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |                       |                       |                                             |                            |

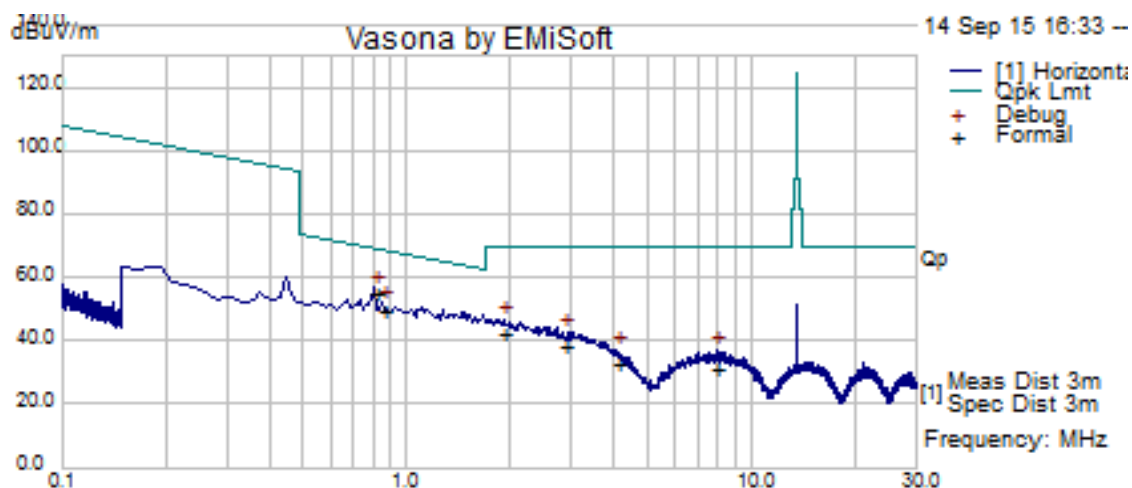
|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Setup |  <ol style="list-style-type: none"> <li>The EUT and supporting equipment was set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.</li> <li>The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.</li> <li>The relevant loop antenna was set at the required test distance away from the EUT and supporting equipment boundary.</li> </ol>                                               |
| Procedure  | <p>For &lt; 30MHz, Radiated emissions were measured according to ANSI C63.10. The EUT was set to transmit at the highest output power.</p> <p>The EUT was set 3 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the centre of the loop. The measuring bandwidth was set to 10 kHz.</p> <p>The limit is converted from microvolt/meter to decibel microvolt/meter.</p> <p>Note: The limit convert from distance D1(dBuV/m) to D2(dBuV/m): add the factor <math>20 \cdot \log(D1/D2)</math> for above 30MHz, and <math>40 \cdot \log(D1/D2)</math> for below 30MHz.</p> |
| Remark     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 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 specification:       | Radiated Spurious Emissions |      |         |                                                                               |
| Environmental Conditions: | Temp(°C):                   | 21   | Result: | <input checked="" type="checkbox"/> Pass<br><br><input type="checkbox"/> Fail |
|                           | Humidity (%):               | 35   |         |                                                                               |
|                           | Atmospheric(mbar):          | 1021 |         |                                                                               |
| Mains Power:              | 12VDC                       |      |         |                                                                               |
| Tested by:                | Ronak Patel                 |      |         |                                                                               |
| Test Date:                | 09/14/2015                  |      |         |                                                                               |
| Remarks:                  | 100kHz – 30 MHz             |      |         |                                                                               |

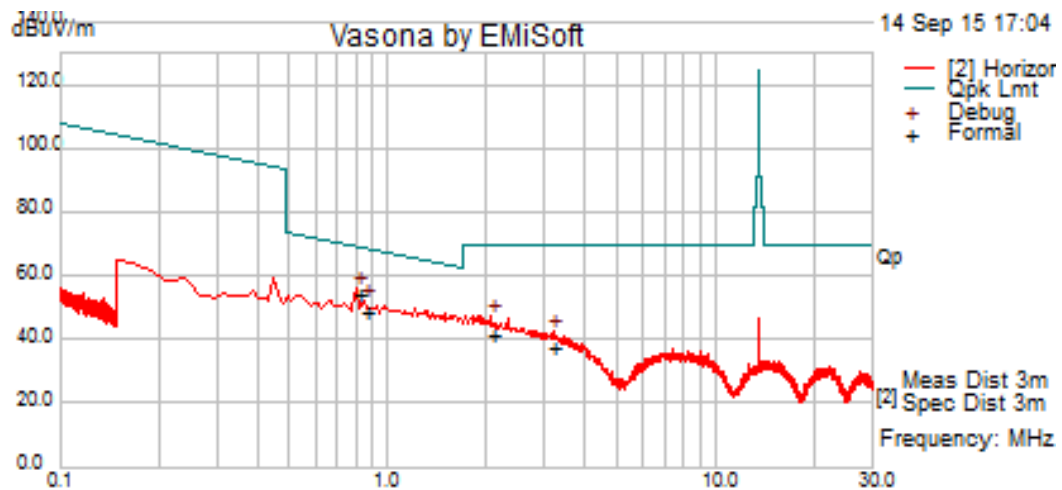
**Loop Antenna at 0 degree @ 3meter distance**



**Note:** test was performed at 3 meter distance.

| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | AF (dB) | Level (dBuV/m) | Measurement Type | Pol (V/H) | Hgt (cm) | Azt (Deg) | Limit (dBuV/m) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|---------|----------------|------------------|-----------|----------|-----------|----------------|-------------|------------|
| 0.81            | 40.57      | -0.20           | 14.29   | 54.66          | Quasi Max        | H         | 100.00   | 118.00    | 69.44          | -14.78      | Pass       |
| 0.86            | 36.02      | -0.21           | 13.84   | 49.66          | Quasi Max        | H         | 100.00   | 252.00    | 68.93          | -19.28      | Pass       |
| 1.90            | 35.06      | -0.28           | 7.74    | 42.52          | Quasi Max        | H         | 100.00   | 239.00    | 69.54          | -27.02      | Pass       |
| 2.85            | 34.09      | -0.31           | 4.86    | 38.64          | Quasi Max        | H         | 100.00   | 324.00    | 69.54          | -30.90      | Pass       |
| 7.91            | 30.89      | -0.46           | 0.83    | 31.26          | Quasi Max        | H         | 100.00   | 232.00    | 69.54          | -38.29      | Pass       |
| 4.06            | 30.55      | -0.30           | 2.77    | 33.02          | Quasi Max        | H         | 100.00   | 35.00     | 69.54          | -36.52      | Pass       |

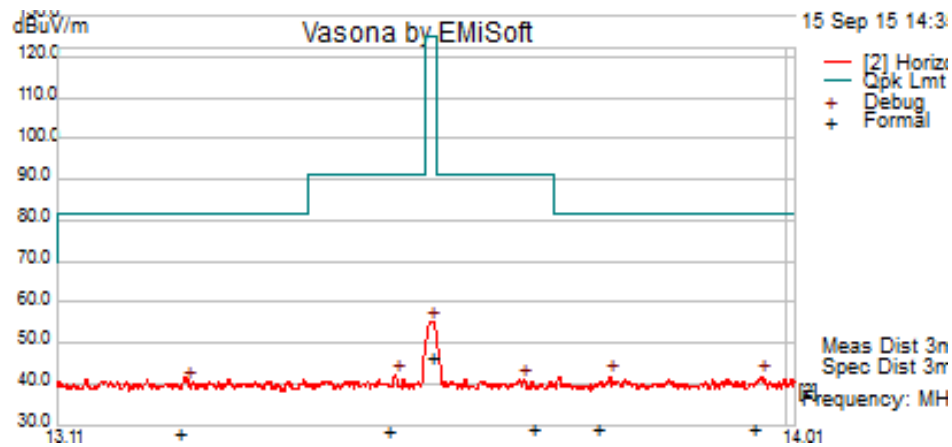
**Loop Antenna at 90 degree @ 3meter distance**



| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | AF (dB) | Level (dBuV/m) | Measurement Type | Hgt (cm) | Antenna (Deg) | Limit (dBuV/m) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|---------|----------------|------------------|----------|---------------|----------------|-------------|------------|
| 0.81            | 40.49      | -0.20           | 14.28   | 54.56          | Quasi Max        | H        | 100.00        | 63.00          | 69.43       | -14.87     |
| 0.86            | 35.30      | -0.21           | 13.80   | 48.90          | Quasi Max        | H        | 100.00        | 181.00         | 68.89       | -19.99     |
| 2.08            | 35.01      | -0.29           | 7.10    | 41.82          | Quasi Max        | H        | 100.00        | 57.00          | 69.54       | -27.72     |
| 3.19            | 33.79      | -0.31           | 4.15    | 37.64          | Quasi Max        | H        | 100.00        | 114.00         | 69.54       | -31.90     |

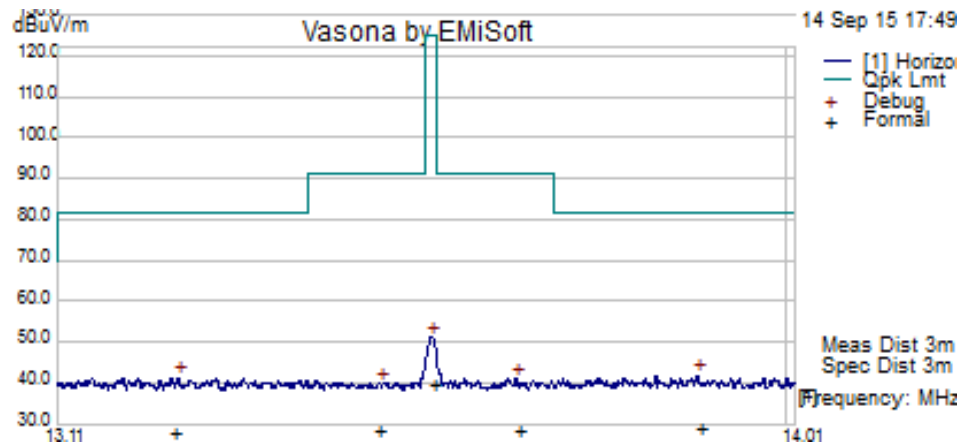
**Note:** test was performed at 3 meter distance.

**Loop Antenna at 0 degree @ 3meter distance**



| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | AF (dB) | Level (dBuV/m) | Measurement Type | Pol (V/H) | Hgt (cm) | Azt (Deg) | Limit (dBuV/m) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|---------|----------------|------------------|-----------|----------|-----------|----------------|-------------|------------|
| 13.96           | 29.65      | -0.62           | -0.19   | 28.84          | Quasi Max        | H         | 100.00   | 111.00    | 81.43          | -52.59      | Pass       |
| 13.76           | 29.47      | -0.62           | -0.17   | 28.67          | Quasi Max        | H         | 100.00   | 31.00     | 81.43          | -52.75      | Pass       |
| 13.26           | 28.81      | -0.62           | -0.13   | 28.07          | Quasi Max        | H         | 100.00   | 146.00    | 81.43          | -53.36      | Pass       |
| 13.51           | 29.28      | -0.62           | -0.15   | 28.51          | Quasi Max        | H         | 100.00   | 67.00     | 91.39          | -62.87      | Pass       |
| 13.68           | 29.44      | -0.62           | -0.17   | 28.65          | Quasi Max        | H         | 100.00   | 140.00    | 91.39          | -62.73      | Pass       |
| 13.56           | 46.93      | -0.62           | -0.16   | 46.16          | Quasi Max        | H         | 100.00   | 357.00    | 124.92         | -78.76      | Pass       |

**Loop Antenna at 90 degree @ 3meter distance**



| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | AF (dB) | Level (dBuV/m) | Measurement Type | Pol (V/H) | Hgt (cm) | Azt (Deg) | Limit (dBuV/m) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|---------|----------------|------------------|-----------|----------|-----------|----------------|-------------|------------|
| 13.89           | 29.46      | -0.62           | -0.19   | 28.65          | Quasi Max        | H         | 100.00   | 339.00    | 81.43          | -52.77      | Pass       |
| 13.25           | 28.65      | -0.62           | -0.13   | 27.91          | Quasi Max        | H         | 100.00   | 158.00    | 81.43          | -53.52      | Pass       |
| 13.67           | 29.17      | -0.62           | -0.16   | 28.39          | Quasi Max        | H         | 100.00   | 171.00    | 91.39          | -63.00      | Pass       |
| 13.49           | 29.06      | -0.62           | -0.15   | 28.30          | Quasi Max        | H         | 100.00   | 285.00    | 91.39          | -63.09      | Pass       |
| 13.56           | 40.29      | -0.62           | -0.16   | 39.51          | Quasi Max        | H         | 100.00   | 230.00    | 124.92         | -85.40      | Pass       |

## 10.4 Frequency Stability

### Requirement(s):

| Spec                                | Requirement                                                                                                                                                                                                                                | Applicable                          |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 47 CFR §15.225 e)<br>RSS-210 (A2.6) | Limit: $\pm 0.01\%$ of 13.56 MHz = 1356 Hz                                                                                                                                                                                                 | <input checked="" type="checkbox"/> |
| Test Setup                          | 1. The EUT was set up inside an environmental chamber.<br>2. The EUT was placed in the centre of the environmental.                                                                                                                        |                                     |
| Procedure                           | Frequency Stability was measured according to 47 CFR §2.1055. Measurement was taken with a spectrum analyzer. The spectrum analyzer bandwidth and span was set to read in hertz. A voltmeter was used to monitor when varying the voltage. |                                     |
| Remark                              | None                                                                                                                                                                                                                                       |                                     |
| 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 specification:       | Frequency Stability |      |         |                                                                                              |
| Environmental Conditions: | Temp(°C):           | 22   | Result: | <div><input checked="" type="checkbox"/> Pass</div> <div><input type="checkbox"/> Fail</div> |
|                           | Humidity (%):       | 35   |         |                                                                                              |
|                           | Atmospheric(mbar):  | 1022 |         |                                                                                              |
| Mains Power:              | 12VDC               |      |         |                                                                                              |
| Tested by:                | Ronak Patel         |      |         |                                                                                              |
| Test Date:                | 09/23/2015          |      |         |                                                                                              |
| Remarks:                  | -                   |      |         |                                                                                              |

## Test Result

**Frequency Stability versus Temperature:** The Frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of +10°C to +40°C at normal supply voltage.

Reference Frequency: 13.56040 MHz at 20°C

| Temperature (°C) | Measured Freq. (MHz)      | Freq. Drift (KHz) | Freq. Deviation (Limit: 0.01%) | Pass/Fail |
|------------------|---------------------------|-------------------|--------------------------------|-----------|
| 40               | 13.559929                 | 0.000033          | <0.01                          | Pass      |
| 30               | 13.559940                 | 0.000012          | <0.01                          | Pass      |
| 25               | Reference (13.559962 MHz) |                   |                                |           |
| 20               | 13.559955                 | 0.000007          | <0.01                          | Pass      |
| 10               | 13.559960                 | 0.000002          | <0.01                          | Pass      |

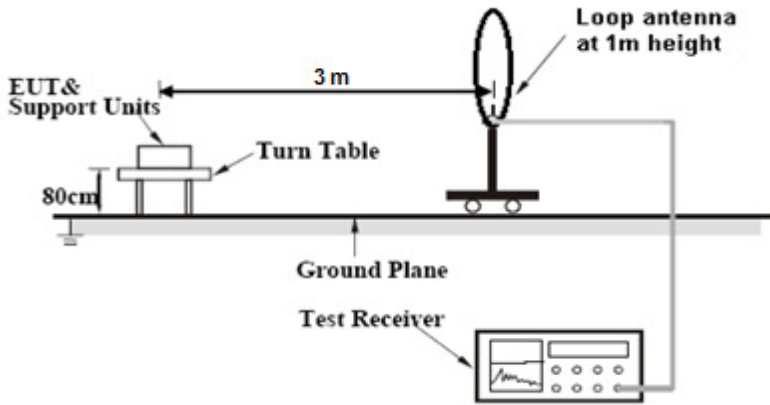
**Frequency Stability versus Input Voltage:** The Frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$ , the frequency of the transmitter was measured at 85% and at 115% of the rated power supply voltage at a 25°C environmental temperature.

Carrier Frequency: 13.559962 MHz at 25°C at 12VDC

| Measured Voltage $\pm 15\%$ of nominal (AC) | Measured Freq. (MHz) | Freq. Drift (Hz) | Freq. Deviation (Limit: 0.01%) | Pass/Fail |
|---------------------------------------------|----------------------|------------------|--------------------------------|-----------|
| 10.2                                        | 13.560400            | 0                | <0.01                          | Pass      |
| 13.8                                        | 13.560400            | 0                | <0.01                          | Pass      |

## 10.5 Occupied bandwidth

### Requirement(s):

| Spec             | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Applicable                          |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| RSS-Gen<br>4.6.1 | The transmitter shall be operated at its maximum carrier power measured under normal test conditions. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual. The trace data points are recovered and directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth. | <input checked="" type="checkbox"/> |
| Test Setup       |  <p>1. The EUT was set up inside a semi-anechoic chamber in accordance with the standard.<br/>The EUT was placed on top of a 0.8m high, non-metallic table in a typical configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |
| Procedure        | <p>1. The EUT was switched on and allowed to warm up to its normal operating condition.</p> <p>2. To measure conducted, an SMA cable was used to replace the EUT antenna. To measure radiated, an external antenna was used to detect EUT transmission signal.</p> <p>3. Measurement of the 99% Occupied Bandwidth of EUT transmission signal and make records.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |
| Remark           | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 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 specification:       | Frequency Stability |      |         |                                                                               |
| Environmental Conditions: | Temp(°C):           | 20   | Result: | <input checked="" type="checkbox"/> Pass<br><br><input type="checkbox"/> Fail |
|                           | Humidity (%):       | 36   |         |                                                                               |
|                           | Atmospheric(mbar):  | 1021 |         |                                                                               |
| Mains Power:              | 12VDC               |      |         |                                                                               |
| Tested by:                | Ronak Patel         |      |         |                                                                               |
| Test Date:                | 09/23/2015          |      |         |                                                                               |
| Remarks:                  | -                   |      |         |                                                                               |

**Test Results:**

| Radio    | Channel Frequency (MHz) | 99% Occupied BW (kHz) | Limit (MHz) |
|----------|-------------------------|-----------------------|-------------|
| 13.56MHz | 13.56                   | 1.595KHz              | N/A         |



## 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   | 05/23/2015 | 1 Year    | 05/23/2016 | <input checked="" type="checkbox"/> |
| CHASE LISN                      | MN2050B | 1018     | 08/07/2015 | 1 Year    | 08/07/2016 | <input checked="" type="checkbox"/> |
| <b>Radiated Emissions</b>       |         |          |            |           |            |                                     |
| R & S Receiver                  | ESL6    | 100178   | 05/27/2015 | 1 Year    | 05/27/2016 | <input checked="" type="checkbox"/> |
| R & S Receiver                  | ESIB 40 | 100179   | 05/23/2015 | 1 Year    | 05/23/2016 | <input checked="" type="checkbox"/> |
| ETS-Lingren Loop Antenna        | 6512    | 00049120 | 05/12/2015 | 1 Year    | 05/12/2016 | <input checked="" type="checkbox"/> |
| Bi-Log antenna (30MHz~2GHz)     | JB1     | A030702  | 08/12/2015 | 1 Year    | 08/12/2016 | <input checked="" type="checkbox"/> |
| 3 Meters SAC                    | 3M      | N/A      | 08/08/2015 | 1 Year    | 08/08/2016 | <input checked="" type="checkbox"/> |
| 10 Meters SAC                   | 10M     | N/A      | 09/05/2015 | 1 Year    | 09/05/2016 | <input checked="" type="checkbox"/> |
| <b>RF Conducted Measurement</b> |         |          |            |           |            |                                     |
| Spectrum Analyzer               | N9010A  | 10SL0219 | 08/20/2015 | 1 Year    | 08/20/2016 | <input checked="" type="checkbox"/> |
| R & S Receiver                  | ESIB 40 | 100179   | 05/23/2015 | 1 Year    | 05/23/2016 | <input checked="" type="checkbox"/> |
| Test Equity Environment Chamber | 1007H   | 61201    | 07/31/2015 | 1 Year    | 07/31/2016 | <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                         |                                                                                     | 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                                          |
| Hong Kong 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 |    | <p><b>Radio:</b> A1. Terminal equipment for purpose of calling</p> <p><b>Telecom:</b> B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Korea CAB Accreditation                            |    | <p><b>EMI:</b> KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI<br/>KN22: Test Method for EMI</p> <p><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</p> <p><b>Radio:</b> 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</p> <p><b>Telecom:</b> 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</p> |
| Taiwan NCC CAB Recognition                         |    | LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Taiwan BSMI CAB Recognition                        |  | CNS 13438                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Japan VCCI                                         |  | <p>R-3083: Radiation 3 meter site</p> <p>C-3421: Main Ports Conducted Interference Measurement</p> <p>T-1597: Telecommunication Ports Conducted Interference Measurement</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Australia CAB Recognition                          |  | <p><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</p> <p><b>Radio communications:</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</p> <p><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</p>                                                                                                             |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |