

# RF TEST REPORT



Report No.: FCC\_IC\_RF\_SL18102201-SEN-005 Rev 3.0

Supersede Report No.: FCC\_IC\_RF\_SL18102201-SEN-005 Rev 2.0

|                                                 |   |                                                                        |
|-------------------------------------------------|---|------------------------------------------------------------------------|
| Applicant                                       | : | Sensormatic Electronics LLC                                            |
| Product Name                                    | : | Electronic Article Surveillance System (EAS)                           |
| Model No.                                       | : | AMS-9080                                                               |
| Regulatory Model                                | : | LFAMS1803                                                              |
| Test Standard                                   | : | FCC 15 Subpart C<br>RSS-210 Issue 9: 2016                              |
| Test Method                                     | : | FCC 15.209<br>ANSI C63.10 2013<br>RSS Gen Issue 5 2018                 |
| FCC ID                                          | : | BVCAMSUSUPC                                                            |
| IC ID                                           | : | 3506A-AMSUSUPC                                                         |
| Dates of test                                   | : | 12/03/2018-12/06/2018                                                  |
| Issue Date                                      | : | 02/26/2018                                                             |
| Test Result                                     | : | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail |
| Equipment complied with the specification       |   | [X]                                                                    |
| Equipment did not comply with the specification |   | [ ]                                                                    |

|                                                                                                                                      |                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| This Test Report is Issued Under the Authority of:                                                                                   |                                                                                       |
|                                                   |  |
| Gary Chou                                                                                                                            | Chen Ge                                                                               |
| RF Test Engineer                                                                                                                     | Engineer Reviewer                                                                     |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                                                                                       |

Issued By:  
**SIEMIC Laboratories**  
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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  | EMC, RF/Wireless, Telecom, Safety |
| 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 & RED Directive |
| Japan     | MIC (RCB 208)      | RF, Telecom         |
| Hong Kong | OFTA (US002)       | RF, Telecom         |

## **CONTENTS**

|           |                                                                   |           |
|-----------|-------------------------------------------------------------------|-----------|
| <b>1</b>  | <b>REPORT REVISION HISTORY .....</b>                              | <b>4</b>  |
| <b>2</b>  | <b>EXECUTIVE SUMMARY .....</b>                                    | <b>5</b>  |
| <b>3</b>  | <b>CUSTOMER INFORMATION .....</b>                                 | <b>5</b>  |
| <b>4</b>  | <b>TEST SITE INFORMATION .....</b>                                | <b>5</b>  |
| <b>5</b>  | <b>MODIFICATION .....</b>                                         | <b>5</b>  |
| <b>6</b>  | <b>EUT INFORMATION .....</b>                                      | <b>6</b>  |
| 6.1       | EUT Description .....                                             | 6         |
| 6.2       | Radio Description .....                                           | 6         |
| 6.3       | EUT test modes/configuration Description.....                     | 7         |
| <b>7</b>  | <b>SUPPORTING EQUIPMENT/SOFTWARE AND CABLING DESCRIPTION.....</b> | <b>8</b>  |
| 7.1       | Supporting Equipment .....                                        | 8         |
| 7.2       | Cabling Description .....                                         | 8         |
| 7.3       | Test Software Description .....                                   | 8         |
| <b>8</b>  | <b>TEST SUMMARY .....</b>                                         | <b>9</b>  |
| <b>9</b>  | <b>MEASUREMENT UNCERTAINTY .....</b>                              | <b>10</b> |
| <b>10</b> | <b>MEASUREMENTS, EXAMINATION AND DERIVED RESULTS .....</b>        | <b>11</b> |
| 10.1      | Antenna Requirement.....                                          | 11        |
| 10.2      | Conducted Emissions.....                                          | 12        |
| 10.3      | Radiated Measurements.....                                        | 15        |
| 10.3.1    | Radiated Measurements below 30MHz.....                            | 15        |
| 10.3.2    | Occupied bandwidth .....                                          | 22        |
|           | <b>ANNEX A. TEST INSTRUMENT .....</b>                             | <b>24</b> |
|           | <b>ANNEX A. SIEMIC ACCREDITATION .....</b>                        | <b>25</b> |

## 1 Report Revision History

| Report No.                           | Report Version | Description          | Issue Date |
|--------------------------------------|----------------|----------------------|------------|
| FCC_IC_RF_SL18102201-SEN-005         | None           | Original             | 12/14/2018 |
| FCC_IC_RF_SL18102201-SEN-005 Rev 1.0 | Rev 1.0        | Updated per reviewer | 01/09/2018 |
| FCC_IC_RF_SL18102201-SEN-005 Rev 2.0 | Rev 2.0        | Updated per reviewer | 01/20/2018 |
| FCC_IC_RF_SL18102201-SEN-005 Rev 3.0 | Rev 3.0        | Updated per reviewer | 02/22/2018 |
|                                      |                |                      |            |

## 2 Executive Summary

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

Company: Sensormatic Electronics, LLC  
Product: Ultra 1.5m ABS Pedestal System  
Model: AMS-9080  
Regulatory Model: LFAMS1803

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

## 3 Customer information

|                      |   |                                         |
|----------------------|---|-----------------------------------------|
| Applicant Name       | : | Sensormatic Electronics, LLC            |
| Applicant Address    | : | 6600 Congress Ave, Boca Raton, FL-33487 |
| Manufacturer Name    | : | Sensormatic Electronics, LLC            |
| Manufacturer Address | : | 6600 Congress Ave, Boca Raton, FL-33487 |

## 4 Test site information

|                      |   |                                             |
|----------------------|---|---------------------------------------------|
| Lab performing tests | : | SIEMIC Laboratories                         |
| Lab Address          | : | 775 Montague Expressway, Milpitas, CA 95035 |
| FCC Test Site No.    | : | 540430                                      |
| 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             | : | Electronic Article Surveillance System (EAS) |
| Model No.                | : | AMS-9080                                     |
| Regulatory Model         | : | LFAMS1803                                    |
| Trade Name               | : | Sensormatic                                  |
| Serial No.               | : | ENGINEERING SAMPLE 1                         |
| Input Power              | : | 120VAC, 60HZ                                 |
| Product Hardware version | : | HWProto1                                     |
| Product Software version | : | SWProto1                                     |
| Date of EUT received     | : | 12/01/2018                                   |
| Working Frequencies      | : | 0.0578-0.0582MHz                             |

### 6.2 Radio Description

#### Specifications for Radio:

| Radio Type             | RFID             |
|------------------------|------------------|
| Operating Frequency    | 0.0578-0.0582MHz |
| Modulation             | ASK              |
| Antenna Model          | AMS-1156         |
| Regulatory Model       | LFAMS1802        |
| Antenna Type           | Loop Antenna     |
| Antenna Gain           | 0 dBi            |
| Antenna Connector Type | Screw Terminal   |

#### Channel List:

| Type | Mode  | Channel No. | Frequency (MHz) | Available (Y/N) |
|------|-------|-------------|-----------------|-----------------|
| RFID | 58kHz | 1           | 0.058           | Y               |

### 6.3 EUT test modes/configuration Description

| Mode              | Note                                         |
|-------------------|----------------------------------------------|
| RF test           | EUT is set to continuously transmit at 58kHz |
|                   |                                              |
|                   |                                              |
| <b>Note:</b> None |                                              |

| Test Item                   | Operating mode      | Tested antenna port | Test frequencies |
|-----------------------------|---------------------|---------------------|------------------|
| Conducted Emissions Voltage | Continuous Transmit | -                   |                  |
| Radiated Spurious Emission  | Continuous Transmit | -                   |                  |
| Frequency Stability         | N/A                 | -                   |                  |
| Occupied Bandwidth          | Continuous Transmit | -                   |                  |
| Note: None                  |                     |                     |                  |

## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

| Index | Supporting Equipment Description | Model | Serial No | Manu | Note |
|-------|----------------------------------|-------|-----------|------|------|
| -     | -                                | -     | -         | -    | -    |

### 7.2 Cabling Description

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

### 7.3 Test Software Description

| Test Item  | Software  | Description                                             |
|------------|-----------|---------------------------------------------------------|
| RF Testing | Tera Term | Set the EUT to transmit continuously in 58kHz test mode |
| -          | -         | -                                                       |

## 8 Test Summary

| Test Item                      | Test standard |                 | Test Method/Procedure                                      | Pass / Fail                              |
|--------------------------------|---------------|-----------------|------------------------------------------------------------|------------------------------------------|
| Antenna Requirement            | FCC           | 15.203          | ANSI C63.10 – 2013<br>558074 D01 DTS Meas. Guidance v03r02 | <input checked="" type="checkbox"/> Pass |
|                                | IC            | -               |                                                            | <input type="checkbox"/> N/A             |
| AC Conducted Emissions Voltage | FCC           | 15.207(a)       | ANSI C63.10 2013<br>RSS Gen. 8.8                           | <input checked="" type="checkbox"/> Pass |
|                                | IC            | RSS Gen (7.2.2) |                                                            | <input type="checkbox"/> N/A             |
| Remark                         | None          |                 |                                                            |                                          |

| Test Item                  | Test standard                                                                                                                                                                                                                                                                                                                                           |               | Test Method/Procedure |                  | Pass / Fail                              |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|------------------|------------------------------------------|
| Radiated Spurious Emission | FCC                                                                                                                                                                                                                                                                                                                                                     | 15.209        | FCC                   | ANSI C63.10 2013 | <input checked="" type="checkbox"/> Pass |
|                            | IC                                                                                                                                                                                                                                                                                                                                                      | RSS           | IC                    | RSS Gen 7.1      | <input type="checkbox"/> N/A             |
| Frequency Stability        | FCC                                                                                                                                                                                                                                                                                                                                                     | 15.225(e)     | FCC                   | -                | <input type="checkbox"/> Pass            |
|                            | IC                                                                                                                                                                                                                                                                                                                                                      | RSS210(B.6)   | IC                    | RSS Gen 6.11     | <input checked="" type="checkbox"/> N/A  |
| Occupied Bandwidth         | FCC                                                                                                                                                                                                                                                                                                                                                     | -             | FCC                   | -                | <input checked="" type="checkbox"/> Pass |
|                            | IC                                                                                                                                                                                                                                                                                                                                                      | RSS Gen (6.6) | IC                    | RSS Gen 6.6      | <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> </ol> |               |                       |                  |                                          |

## 9 Measurement Uncertainty

| Test Item                      | Description                                                                                                                                     | Uncertainty        |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| AC Conducted Emissions Voltage | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2                                 | $\pm 3.5\text{dB}$ |
| Radiated Spurious Emissions    | 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      |

## 10 Measurements, examination and derived results

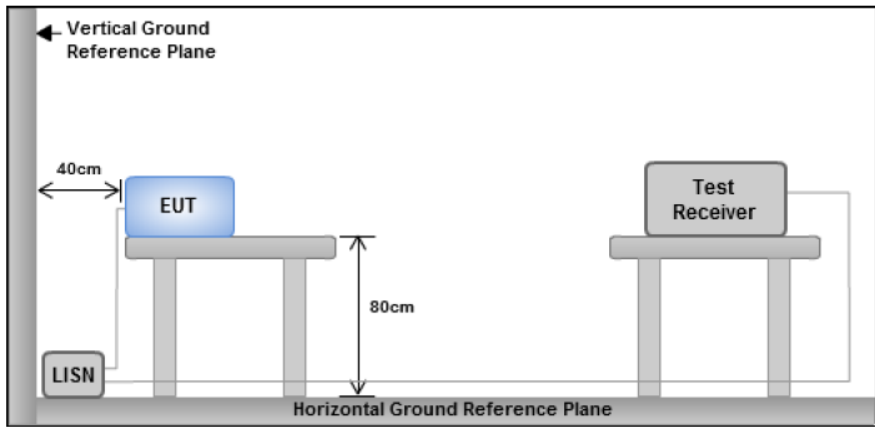
### 10.1 Antenna Requirement

| 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  | <p>Device use loop antenna (Inductive loop coil transmitter)</p> <p>The device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.</p>                                                                                                                                                                                                                                                                                                             |                                     |
| Result  | <input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |

## 10.2 Conducted Emissions

### Conducted Emission Limit

| Frequency ranges<br>(MHz) | Limit (dBuV) |         |
|---------------------------|--------------|---------|
|                           | QP           | Average |
| 0.15 ~ 0.5                | 66 – 56      | 56 – 46 |
| 0.5 ~ 5                   | 56           | 46      |
| 5 ~ 30                    | 60           | 50      |

| Spec                    | Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Applicable                          |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 47CFR§15.207<br>RSS-GEN | a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | For Low-power radio-frequency devices 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 in the following table, as measured using a 50 $\mu$ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges. | <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> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |
| Remark                  | EUT tested with AC 120V 60Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |
| Result                  | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |

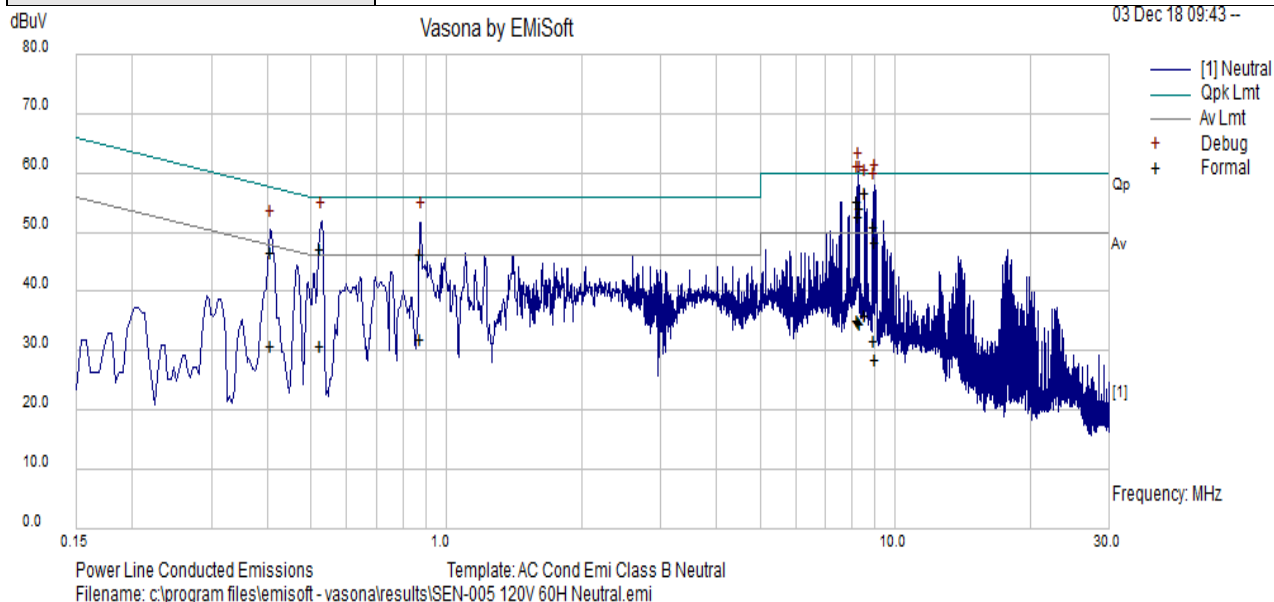
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by *John Plotner* at *Conducted Emission Test Site*.

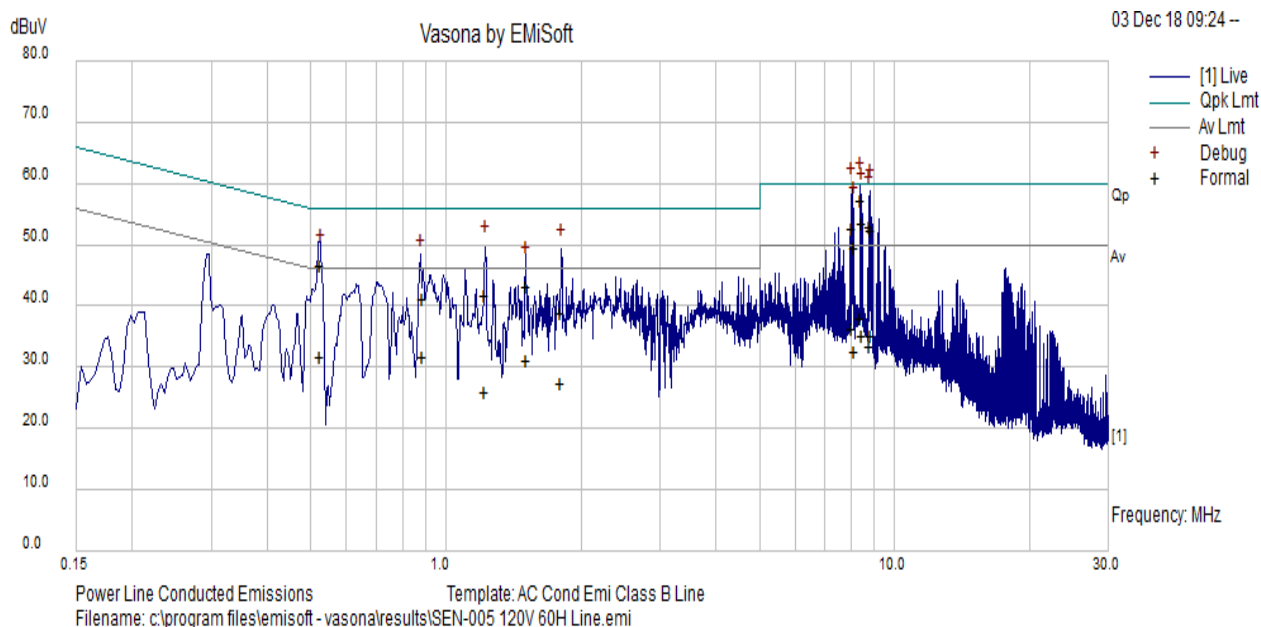
## Conducted Emission Test Results

| Test specification:       | Conducted Emissions |      |         |        |
|---------------------------|---------------------|------|---------|--------|
| Environmental Conditions: | Temp(°C):           | 18   | Result: |        |
|                           | Humidity (%):       | 45   |         | X Pass |
|                           | Atmospheric(mbar):  | 1019 |         |        |
| Mains Power:              | 120V 50Hz           |      |         |        |
| Tested by:                | John Plotner        |      |         | Fail   |
| Test Date:                | December 3, 2018    |      |         |        |
| Remarks:                  | Neutral             |      |         |        |



| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line/Neutral | Limit (dBuV) | Margin (dB) | Pass/Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|--------------|--------------|-------------|-----------|
| 8.554649        | 47.06      | 9.36            | 0.2          | 56.61        | Quasi Peak       | Neutral      | 60           | -3.39       | Pass      |
| 8.205707        | 45.62      | 9.36            | 0.18         | 55.16        | Quasi Peak       | Neutral      | 60           | -4.84       | Pass      |
| 8.322565        | 44.38      | 9.36            | 0.19         | 53.92        | Quasi Peak       | Neutral      | 60           | -6.08       | Pass      |
| 8.266373        | 43.11      | 9.36            | 0.19         | 52.65        | Quasi Peak       | Neutral      | 60           | -7.35       | Pass      |
| 0.523862        | 37.83      | 9.33            | 0.03         | 47.19        | Quasi Peak       | Neutral      | 56           | -8.81       | Pass      |
| 8.95886         | 41.27      | 9.36            | 0.21         | 50.84        | Quasi Peak       | Neutral      | 60           | -9.16       | Pass      |
| 8.554649        | 26.27      | 9.36            | 0.2          | 35.83        | Average          | Neutral      | 50           | -14.17      | Pass      |
| 8.205707        | 25.51      | 9.36            | 0.18         | 35.05        | Average          | Neutral      | 50           | -14.95      | Pass      |
| 8.266373        | 25.26      | 9.36            | 0.19         | 34.8         | Average          | Neutral      | 50           | -15.2       | Pass      |
| 0.523862        | 21.28      | 9.33            | 0.03         | 30.64        | Average          | Neutral      | 46           | -15.36      | Pass      |
| 8.322565        | 24.83      | 9.36            | 0.19         | 34.37        | Average          | Neutral      | 50           | -15.63      | Pass      |
| 8.95886         | 22.1       | 9.36            | 0.21         | 31.67        | Average          | Neutral      | 50           | -18.33      | Pass      |

| Test specification:       | Conducted Emissions |      |         |        |
|---------------------------|---------------------|------|---------|--------|
| Environmental Conditions: | Temp(°C):           | 18   | Result: |        |
|                           | Humidity (%):       | 45   |         | X Pass |
|                           | Atmospheric(mbar):  | 1019 |         |        |
| Mains Power:              | 120V 50Hz           |      |         |        |
| Tested by:                | John Plotner        |      |         | Fail   |
| Test Date:                | December 3, 2018    |      |         |        |
| Remarks:                  | Line                |      |         |        |

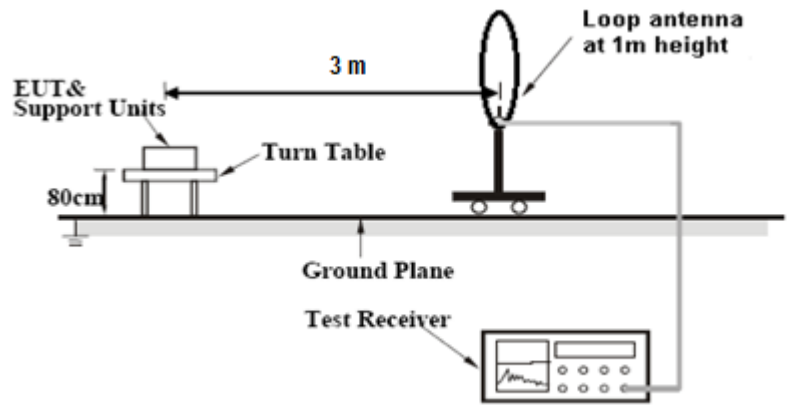


| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line/Neutral | Limit (dBuV) | Margin (dB) | Pass/Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|--------------|--------------|-------------|-----------|
| 8.379493        | 47.55      | 9.36            | 0.17         | 57.07        | Quasi Peak       | Live         | 60           | -2.93       | Pass      |
| 8.439725        | 43.97      | 9.36            | 0.17         | 53.49        | Quasi Peak       | Live         | 60           | -6.51       | Pass      |
| 8.787008        | 43.15      | 9.36            | 0.18         | 52.69        | Quasi Peak       | Live         | 60           | -7.31       | Pass      |
| 8.033206        | 43.1       | 9.36            | 0.15         | 52.61        | Quasi Peak       | Live         | 60           | -7.39       | Pass      |
| 8.843084        | 42.64      | 9.36            | 0.18         | 52.17        | Quasi Peak       | Live         | 60           | -7.83       | Pass      |
| 0.52114         | 37.04      | 9.33            | 0.04         | 46.41        | Quasi Peak       | Live         | 56           | -9.59       | Pass      |
| 8.379493        | 28.28      | 9.36            | 0.17         | 37.8         | Average          | Live         | 50           | -12.2       | Pass      |
| 8.033206        | 26.69      | 9.36            | 0.15         | 36.2         | Average          | Live         | 50           | -13.8       | Pass      |
| 0.882056        | 22.29      | 9.33            | 0.04         | 31.65        | Average          | Live         | 46           | -14.35      | Pass      |
| 0.52114         | 22.18      | 9.33            | 0.04         | 31.55        | Average          | Live         | 46           | -14.45      | Pass      |
| 8.843084        | 25.51      | 9.36            | 0.18         | 35.05        | Average          | Live         | 50           | -14.95      | Pass      |
| 8.787008        | 23.73      | 9.36            | 0.18         | 33.27        | Average          | Live         | 50           | -16.73      | Pass      |

### 10.3 Radiated Measurements

#### 10.3.1 Radiated Measurements below 30MHz

##### Requirement(s):

| Spec                            | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Applicable                                                                                |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| 47 CFR §15.209<br>RSS Gen (6.6) | <p>Operation within the band below 30 MHz</p> <p>(a) The field strength of any emissions within the band 0.009-0.490 MHz shall not exceed 2400/F(kHz) microvolts/meter at 300 meters.</p> <p>(b) Within the bands 0.490- 1.705 MHz, the field strength of any emissions shall not exceed 24000/F(kHz) microvolts/meter at 30 meters.</p> <p>(c) Within the bands 1.705- 30.0 MHz the field strength of any emissions shall not exceed 30 microvolts/meter at 30 meters.</p> | <input checked="" type="checkbox"/>                                                       |
| Test Setup                      |                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                           |
| 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 center 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>                                                  |                                                                                           |
| Test Date                       | 12/04/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Environmental conditions                                                                  |
|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Temperature 22°C</p> <p>Relative Humidity 40%</p> <p>Atmospheric Pressure 1026mbar</p> |
| Remark                          | <p>Distance correction = <math>60 \cdot \log(300/10) = 88.62</math>.</p> <p>Limit: <math>2400/58 = 41.38 \mu\text{V/m}</math> @300m, which is 32.33dBuV/m.</p> <p>Limit @10m: <math>33.33+88.62 = 121.95 \text{dBuV/m}</math>.</p>                                                                                                                                                                                                                                          |                                                                                           |
| Result                          | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                           |

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

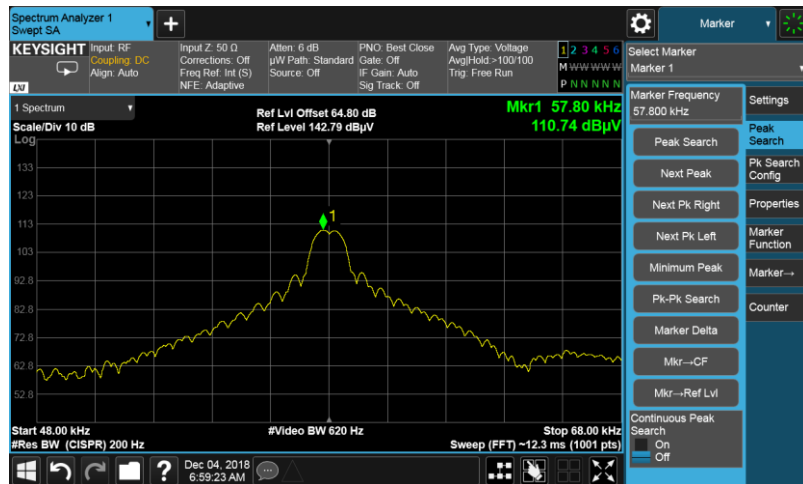
Test Plot    ☒ Yes (See below)      ☐ N/A

Test was done by Gary Chou at Open-Site.

|                     |                                                   |  |         |                                                                           |
|---------------------|---------------------------------------------------|--|---------|---------------------------------------------------------------------------|
| Test specification: | Radiated Spurious Emissions                       |  |         |                                                                           |
| Mains Power:        | 120 VAC,60 Hz                                     |  | Result: | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |
| Tested by:          | Gary Chou                                         |  |         |                                                                           |
| Test Date:          | 12/04/2018                                        |  |         |                                                                           |
| Remarks:            | 58kHz f= 100kHz – 30MHz, loop antenna at 0 degree |  |         |                                                                           |

| Frequency<br>kHz | Level<br>dBuV/m | Measurement<br>Type | Pol<br>(0/90) | Hgt<br>cm | Limit<br>dBuV/m | Margin<br>dB | Pass<br>/Fail |
|------------------|-----------------|---------------------|---------------|-----------|-----------------|--------------|---------------|
| 58               | 110.74          | Peak                | 0             | 100       | 121.95          | -11.21       | Pass          |
| 116              | 74.66           | Peak                | 0             | 100       | 115.85          | -41.19       | Pass          |
| 174              | 65.77           | Peak                | 0             | 100       | 112.33          | -46.56       | Pass          |
| 232              | 67.77           | Peak                | 0             | 100       | 109.83          | -42.06       | Pass          |

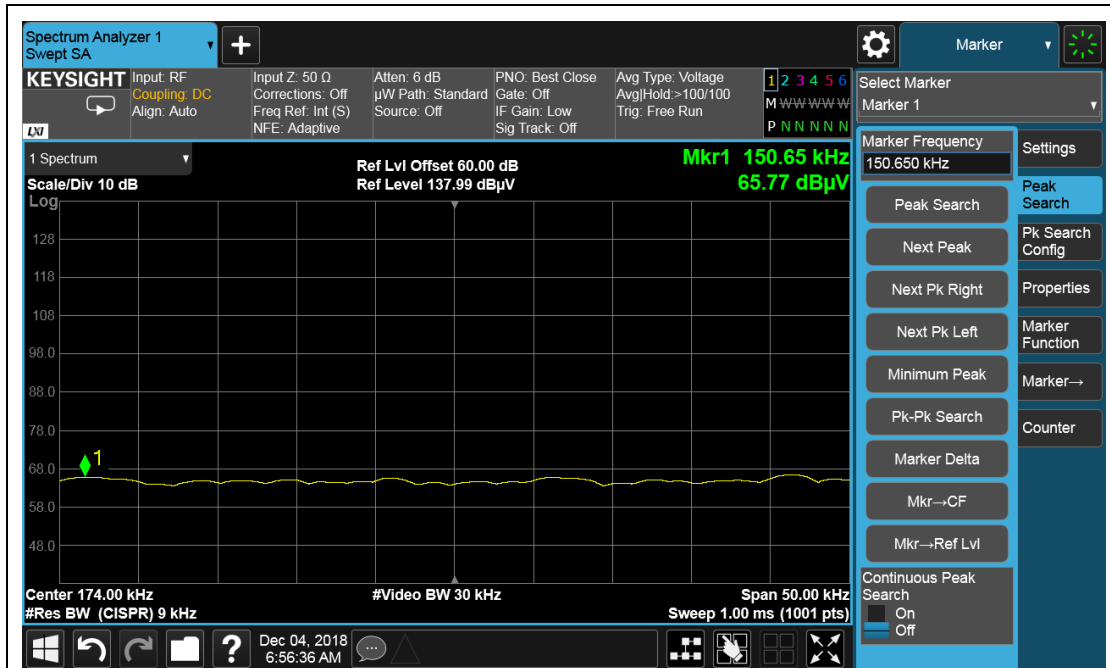
Testing is done at 10m distance.



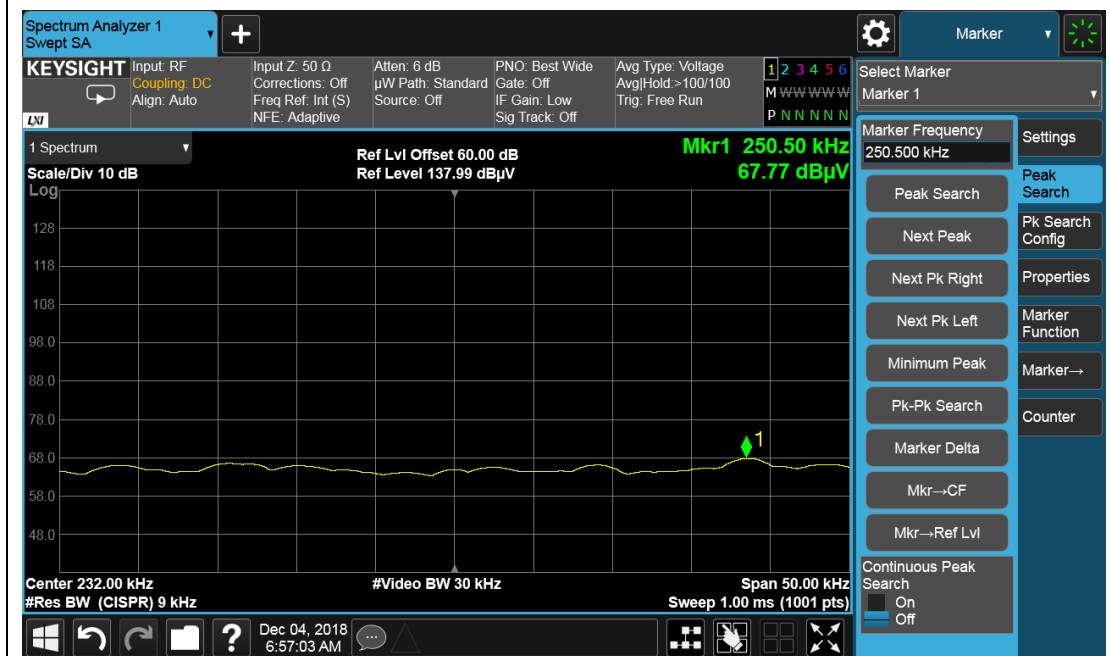
**Fundamental – 58kHz**



**2<sup>nd</sup> harmonic – 116kHz**



3<sup>rd</sup> harmonic – 174kHz

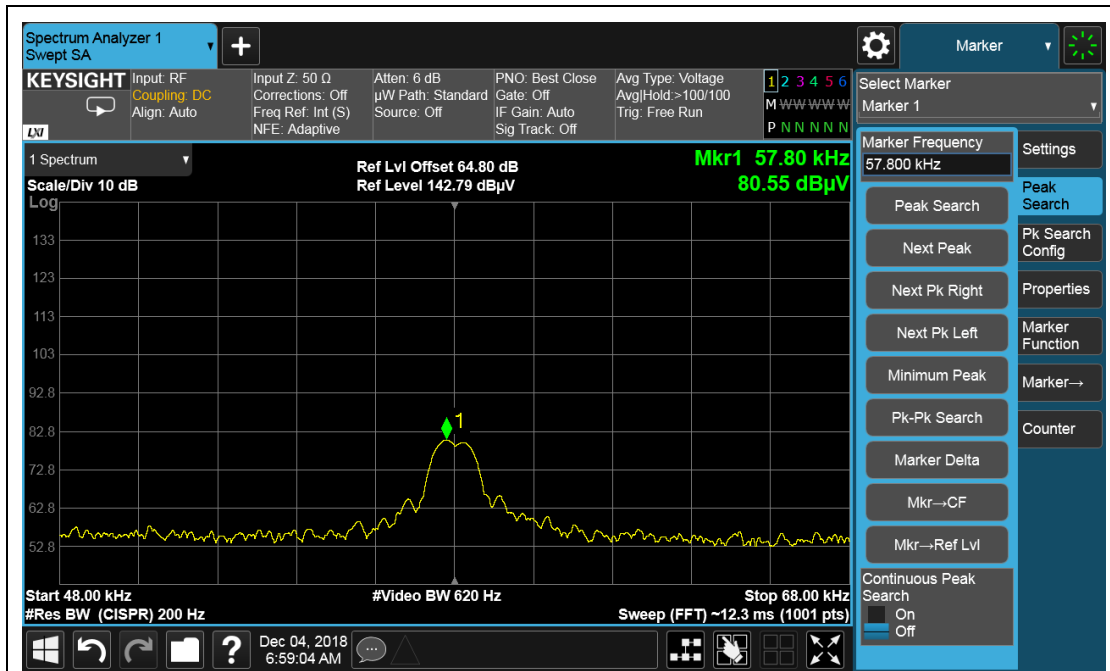


4<sup>th</sup> harmonic – 232kHz

|                     |                                                    |  |         |                                                                           |
|---------------------|----------------------------------------------------|--|---------|---------------------------------------------------------------------------|
| Test specification: | Radiated Spurious Emissions                        |  |         |                                                                           |
| Mains Power:        | 120 VAC,60 Hz                                      |  | Result: | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |
| Tested by:          | Gary Chou                                          |  |         |                                                                           |
| Test Date:          | 12/04/2018                                         |  |         |                                                                           |
| Remarks:            | 58KHz f= 100kHz – 30MHz, loop antenna at 90 degree |  |         |                                                                           |

| Frequency<br>kHz | Level<br>dBuV/m | Measurement<br>Type | Pol<br>(0/90) | Hgt<br>cm | Limit<br>dBuV/m | Margin<br>dB | Pass<br>/Fail |
|------------------|-----------------|---------------------|---------------|-----------|-----------------|--------------|---------------|
| 58               | 80.55           | Peak                | 0             | 100       | 121.88          | -41.33       | Pass          |
| 116              | 79.20           | Peak                | 0             | 100       | 115.85          | -36.65       | Pass          |
| 174              | 67.48           | Peak                | 0             | 100       | 112.33          | -44.85       | Pass          |
| 232              | 65.99           | Peak                | 0             | 100       | 109.83          | -43.84       | Pass          |

Testing is done at 10m distance.



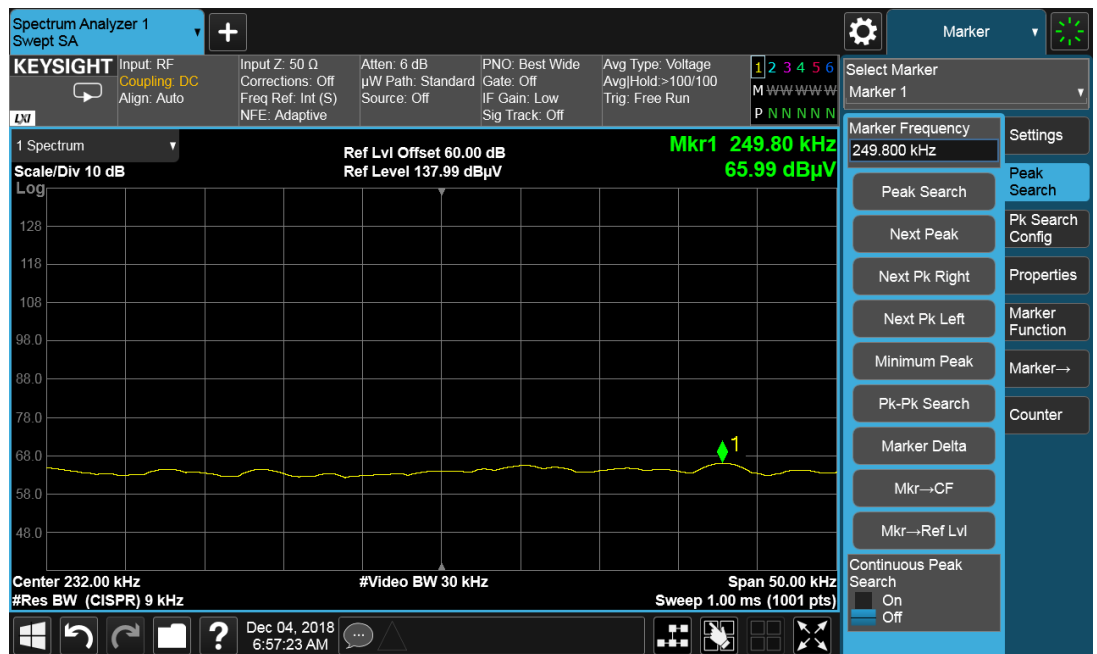
Fundamental – 58kHz



2<sup>nd</sup> harmonic – 116kHz



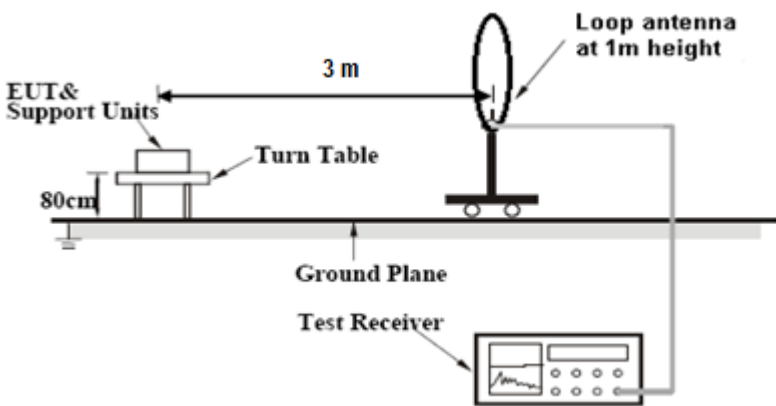
3<sup>rd</sup> harmonic – 174kHz



4<sup>th</sup> harmonic – 232kHz

### 10.3.2 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 analyser 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               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                               |                          |             |      |  |                   |     |  |                      |          |
| Procedure                | <ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>To measure conducted, a SMA cable was used to replace the EUT antenna. To measure radiated, an external antenna was used to detect EUT transmission signal.</li> <li>Measurement of the 99% Occupied Bandwidth of EUT transmission signal and make record.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                               |                          |             |      |  |                   |     |  |                      |          |
| Test Date                | 12/04/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <table border="1"> <tr> <td>Environmental conditions</td> <td>Temperature</td> <td>22°C</td> </tr> <tr> <td></td> <td>Relative Humidity</td> <td>39%</td> </tr> <tr> <td></td> <td>Atmospheric Pressure</td> <td>1025mbar</td> </tr> </table> | Environmental conditions | Temperature | 22°C |  | Relative Humidity | 39% |  | Atmospheric Pressure | 1025mbar |
| Environmental conditions | Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 22°C                                                                                                                                                                                                                                          |                          |             |      |  |                   |     |  |                      |          |
|                          | Relative Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 39%                                                                                                                                                                                                                                           |                          |             |      |  |                   |     |  |                      |          |
|                          | Atmospheric Pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1025mbar                                                                                                                                                                                                                                      |                          |             |      |  |                   |     |  |                      |          |
| Remark                   | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                               |                          |             |      |  |                   |     |  |                      |          |
| Result                   | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                               |                          |             |      |  |                   |     |  |                      |          |

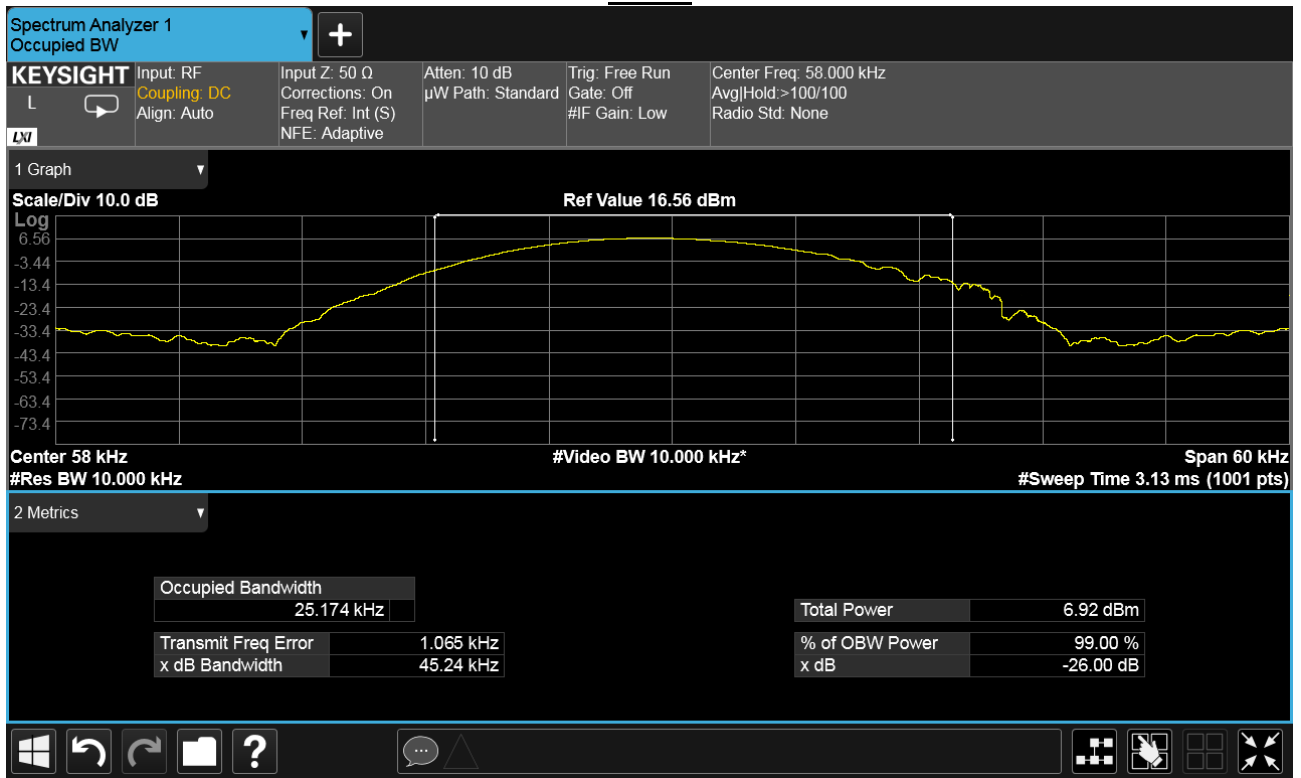
Test Data    ☐ Yes (See below)      ☒ N/A

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

Test was done by Gary Chou at open site.

## Test results:

**58 kHz**



| Frequency (kHz) | Occupied Bandwidth (kHz) |
|-----------------|--------------------------|
| 58              | 25.17                    |

## Annex A. TEST INSTRUMENT

| Instrument                          | Model     | Serial # | Cal Date   | Cal Cycle | Cal Due    | In use                              |
|-------------------------------------|-----------|----------|------------|-----------|------------|-------------------------------------|
| <b>Radiated Emissions</b>           |           |          |            |           |            |                                     |
| Spectrum Analyzer                   | N9030B    | 10SL0289 | 09/06/2018 | 1 Year    | 09/06/2019 | <input checked="" type="checkbox"/> |
| ETS-Lingren Loop Antenna            | 6512      | 00049120 | 07/14/2018 | 1 Year    | 07/14/2019 | <input checked="" type="checkbox"/> |
| Bi-Log antenna (30MHz~2GHz)         | JB6       | A111717  | 10/05/2018 | 1 Year    | 10/05/2019 | <input checked="" type="checkbox"/> |
| Horn Antenna (1-26.5GHz)            | 3115      | 10SL0059 | 11/09/2018 | 1 Year    | 11/09/2019 | <input checked="" type="checkbox"/> |
|                                     |           |          |            |           |            |                                     |
| EMI Test Receiver                   | ESIB 40   | 100179   | 09/06/2018 | 1 Year    | 09/06/2019 |                                     |
| Transient Limiter (9 kHz - 100 MHz) | EM-7600-5 | 106      | 07/14/2018 | 1 Year    | 07/14/2019 | <input checked="" type="checkbox"/> |
| LISN                                | 3816/2NM  | 214372   | 10/05/2018 | 1 Year    | 10/05/2019 | <input checked="" type="checkbox"/> |
| LISN                                | 3810/2NM  | 34169    | 11/09/2018 | 1 Year    | 11/09/2019 | <input checked="" type="checkbox"/> |

## Annex A. SIEMIC Accreditation

| Accreditations                          | Document                                                                            | Scope / Remark                                                                                                                                                            |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO 17025 (A2LA)                        |    | Please see the documents for the detailed scope                                                                                                                           |
| ISO Guide 65 (A2LA)                     |    | Please see the documents for the detailed scope                                                                                                                           |
| TCB Designation                         |                                                                                     | <a href="#">A1</a> , <a href="#">A2</a> , <a href="#">A3</a> , <a href="#">A4</a> , <a href="#">B1</a> , <a href="#">B2</a> , <a href="#">B3</a> , <a href="#">B4</a> , C |
| FCC DoC Accreditation                   |    | FCC Declaration of Conformity Accreditation                                                                                                                               |
| FCC Site Registration                   |    | 3 meter site                                                                                                                                                              |
| FCC Site Registration                   |    | 10 meter site                                                                                                                                                             |
| IC Site Registration                    |    | 3 meter site                                                                                                                                                              |
| IC Site Registration                    |    | 10 meter site                                                                                                                                                             |
| EU NB                                   |    | <b>Radio Equipment: EN45011:</b><br>EN ISO/IEC 17065                                                                                                                      |
|                                         |  | <b>Electromagnetic Compatibility:</b><br>EN45011 – EN ISO/IEC 17065                                                                                                       |
| Singapore iDA<br>CB(Certification Body) |  | <a href="#">Phase I</a> , <a href="#">Phase II</a>                                                                                                                        |
| Vietnam MIC<br>CAB Accreditation        |  | Please see the document for the detailed scope                                                                                                                            |
| Hong Kong OFCA                          |  | <b>(Phase II)</b> OFCA Foreign Certification Body for Radio and Telecom                                                                                                   |
|                                         |  | <b>(Phase I)</b> 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>Radiocommunications:</b> AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771</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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |