# RF TEST REPORT

SIEMIC
A Bureau Veritas Group Company

**Report No.: FCC_RF_SL18120403-SLX-106_DTS Rev_1.0**
**Supersede Report No.: FCC_RF_SL18120403-SLX-106_DTS**

| | | |
|---|---|---|
| Applicant | : | Silex Technology, Inc |
| Product Name | : | SX-PCEAC2 |
| Model No. | : | SX-PCEAC2 |
| Test Standard | : | 47 CFR 15.247 |
| Test Method | : | ANSI C63.10: 2013<br>558074 D01 DTS Meas Guidance v05r01 |
| FCC ID | : | N6C-SXPCEAC2 |
| Dates of test | : | 03/18/2019 – 03/26/2019 |
| Issue Date | : | 04/19/2019 |
| Test Result | : | ☒ Pass ☐ Fail |
| Equipment complied with the specification [X]<br>Equipment did not comply with the specification [ ] | | |

| This Test Report is Issued Under the Authority of: | |
|---|---|
|  |  |
| **Deon Dai** | **Chen Ge** |
| Test Engineer | Engineer Reviewer |

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

ACCREDITED
TESTING CERT # 2742-01

# 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 |

## CONTENTS

# 1 Report Revision History

| Report No. | Report Version | Description | Issue Date |
| --- | --- | --- | --- |
| FCC_RF_SL18120403-SLX-106_DTS | None | Original | 03/28/2019 |
| FCC_RF_SL18120403-SLX-106_DTS Rev_1.0 | Rev_1.0 | Updated per Review | 04/19/2019 |
| | | | |
| | | | |
| | | | |

## 2 Executive Summary

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

| | |
|---|---|
| Company: | Silex Technology, Inc |
| Product: | SX-PCEAC2 |
| Model: | SX-PCEAC2 |

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

## 3 Customer information

| | | |
|---|---|---|
| Applicant Name | : | Silex Technology, Inc. |
| Applicant Address | : | 2-3-1 Hikaridai, Seika-cho, Kyoto 619-0237, Japan |
| Manufacturer Name | : | Silex Technology, Inc. |
| Manufacturer Address | : | 2-3-1 Hikaridai, Seika-cho, Kyoto 619-0237, Japan |

## 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 |
| VCCI Test Site No. | A0133 |

## 5 Modification

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

# 6 EUT Information

## 6.1 EUT Description

| | |
| --- | --- |
| Product Name | SX-PCEAC2 |
| Model No. | SX-PCEAC2 |
| Trade Name | Silex |
| Serial No. | N/A |
| Host Model No. | N/A |
| Input Power | 12V DC 5A |
| Power Adapter Manu/Model | MEAN WELL / GST60A12-ZD |
| Power Adapter SN | EB76A03889 |
| Date of EUT received | 03/14/2019 |
| Equipment Class/ Category | DTS |
| Clock Frequencies | N/A |
| Port/Connectors | N/A |

## 6.2 Radio Description

| Radio Type | 802.11b/g/n-20M | 802.11n -40M |
| --- | --- | --- |
| Operating Frequency | 2412-2462MHz | 2422-2452MHz |
| Modulation | DSSS (CCK, DQPSK, DBPSK) | OFDM (BPSK, QPSK, 16QAM, 64QAM) |
| Channel Spacing | 5MHz | 5MHz |
| Number of Channels | 11 | 7 |
| Antenna Type | Screw Mount Omni-Directional Antenna | |
| Antenna Gain (Peak) | MIMO1: 3.5dBi, MIMO2: 5.5dBi | |
| Antenna Connector Type | RP-SMA Male | |
| Note | - | |

# 7 Supporting Equipment/Software and cabling Description

## 7.1 Supporting Equipment

| Item | Supporting Equipment Description | Model | Serial Number | Manufacturer | Note |
|---|---|---|---|---|---|
| 1 | Laptop | ThinkPad T420s | N/A | Lenovo | - |
| 2 | Console Cable | USB to RJ45 Cable | - | Moyina | - |
| 3 | Control Board | 170-29615 Rev B2 | - | - | - |

## 7.2 Cabling Description

| Name | Connection Start | | Connection Stop | | Length / shielding Info | | Note |
|---|---|---|---|---|---|---|---|
| | From | I/O Port | To | I/O Port | Length (m) | Shielding | |
| Console Cable | EUT | Micro-USB Port | Laptop | USB | 1.8 | Unshielded | - |
| | | | | | | | |

## 7.3 Test Software Description

| Test Item | Software | Description |
|---|---|---|
| RF Testing | Tera Term | Set the EUT to transmit continuously in different test modes |
| | | |
| | | |

# 8 Test Summary

| Test Item | Test standard | | Test Method/Procedure | | Pass / Fail |
|---|---|---|---|---|---|
| Antenna Requirement | FCC | 15.203 | FCC | - | ☒ Pass<br>☐ N/A |
| Restricted Band of Operation | FCC | 15.205 | FCC | ANSI C63.10:2013<br>558074 D01 DTS Meas Guidance v05r01 | ☒ Pass*<br>☐ N/A |
| AC Conducted Emissions | FCC | 15.207(a) | FCC | ANSI C63.10:2013 | ☒ Pass*<br>☐ N/A |

**DTS Band Requirement**

| Test Item | Test standard | | Test Method/Procedure | | Pass / Fail |
|---|---|---|---|---|---|
| 99% Occupied Bandwidth | - | - | - | - | ☒ Pass*<br>☐ N/A |
| 6dB Bandwidth | FCC | 15.247(a)(2) | FCC | 558074 D01 DTS Meas Guidance v05r01 | ☒ Pass*<br>☐ N/A |
| Band Edge and Radiated Spurious Emissions | FCC | 15.247(d) | FCC | ANSI C63.10:2013<br>558074 D01 DTS Meas Guidance v05r01 | ☒ Pass<br>☐ N/A |
| Output Power | FCC | 15.247(b) | FCC | 558074 D01 DTS Meas Guidance v05r01 | ☒ Pass*<br>☐ N/A |
| Antenna Gain > 6 dBi | FCC | 15.247(e) | FCC | - | ☒ Pass*<br>☐ N/A |
| Power Spectral Density | FCC | 15.247(e) | FCC | 558074 D01 DTS Meas Guidance v05r01 | ☒ Pass*<br>☐ N/A |
| RF Exposure requirement | FCC | 15.247(i) | FCC | - | ☒ Pass*<br>☐ N/A |
| Remark | 1. All measurement uncertainties do not take into consideration for all presented test results.<br>2. 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.<br>3. Pass* : Please refer to FCC ID: PPD-QCNFA324 test report no. RF140808E04. | | | | |

# 9 Measurement Uncertainty

| Emissions | | | |
| --- | --- | --- | --- |
| **Test Item** | **Frequency Range** | **Description** | **Uncertainty** |
| AC Conducted Emissions | 150KHz – 30MHz | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 | ±3.5dB |
| RF conducted measurement | 150KHz – 40GHz | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 | ±0.95dB |
| Radiated Spurious Emissions | 30MHz – 1GHz | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | ±6dB |
| Radiated Spurious Emissions | 1GHz – 40GHz | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | ±6dB |

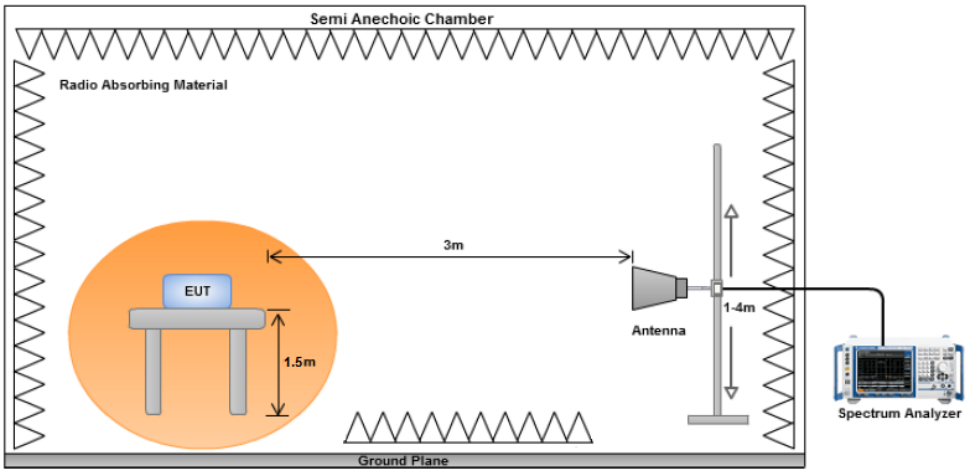
# 10 Measurements, Examination and Derived Results

## 10.1 Antenna Requirement

| Spec | Requirement | Applicable |
| --- | --- | --- |
| §15.203 | 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.<br><br>Antenna requirement must meet at least one of the following:<br><br>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. | ☒ |
| Remark | The EUT uses a RP-SMA Male connector for antenna connection which meet the requirement. | |
| Result | ☒ PASS ☐ FAIL | |

## 10.2 Radiated Spurious Emissions in restricted band

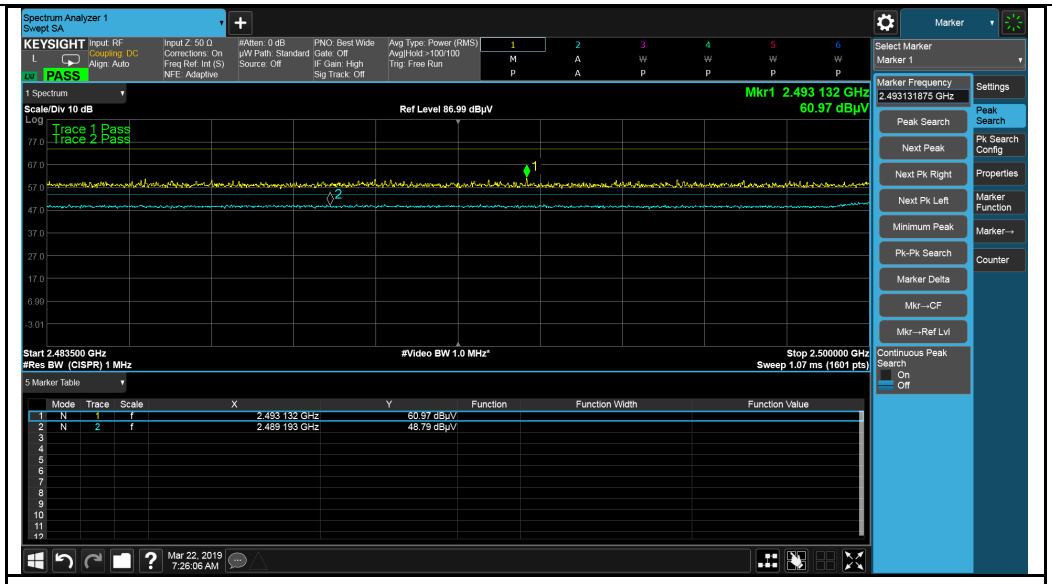
**Requirement(s):**

| Spec | Item | Requirement | Applicable |
|---|---|---|---|
| 47CFR§15.247(d) | a) | For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required<br>☐ 20 dB down ☒ 30 dB down | ☒ |
| | b) | or restricted band, emission must also comply with the radiated emission limits specified in 15.209 | ☒ |
| Test Setup | |  | |
| Procedure | | 1. The EUT was switched on and allowed to warm up to its normal operating condition.<br>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:<br>a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.<br>b. The EUT was then rotated to the direction that gave the maximum emission.<br>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.<br>3. An average measurement was then made for that frequency point.<br>4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured. | |
| Remark | | | |
| Result | | ☒ Pass ☐ Fail | |

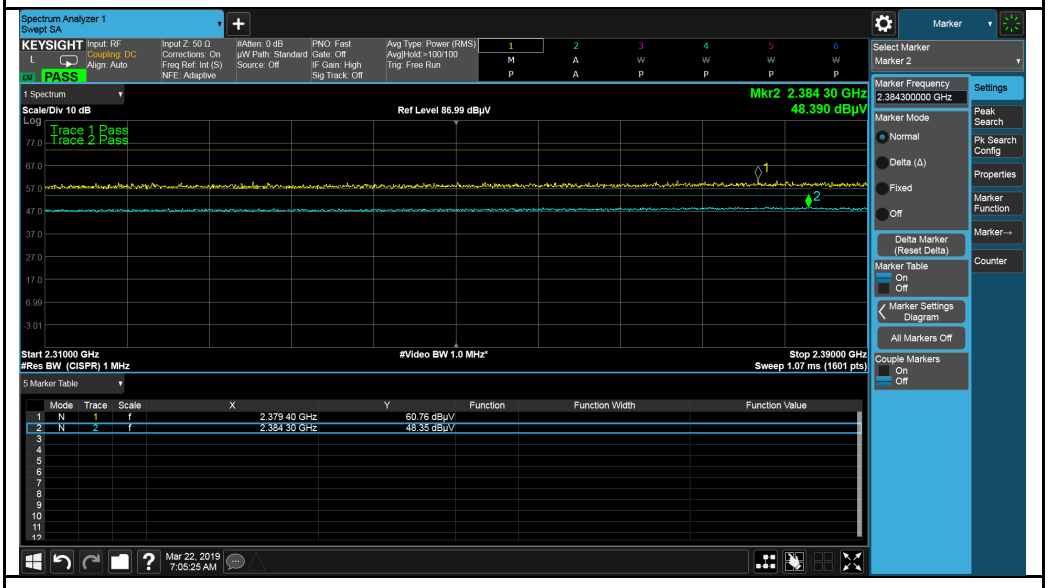
**Test Data** ☐ Yes (See below) ☒ N/A
**Test Plot** ☒ Yes (See below) ☐ N/A

**Test was done by Deon Dai at 10m chamber.**

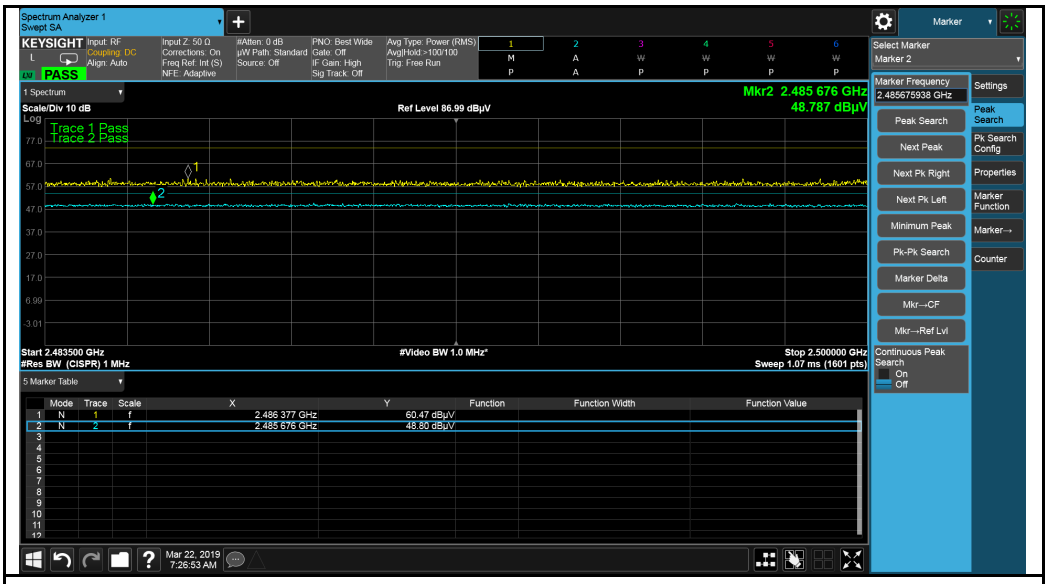
**Restricted Band Measurement Plots:**




**802.11b-2412MHz**

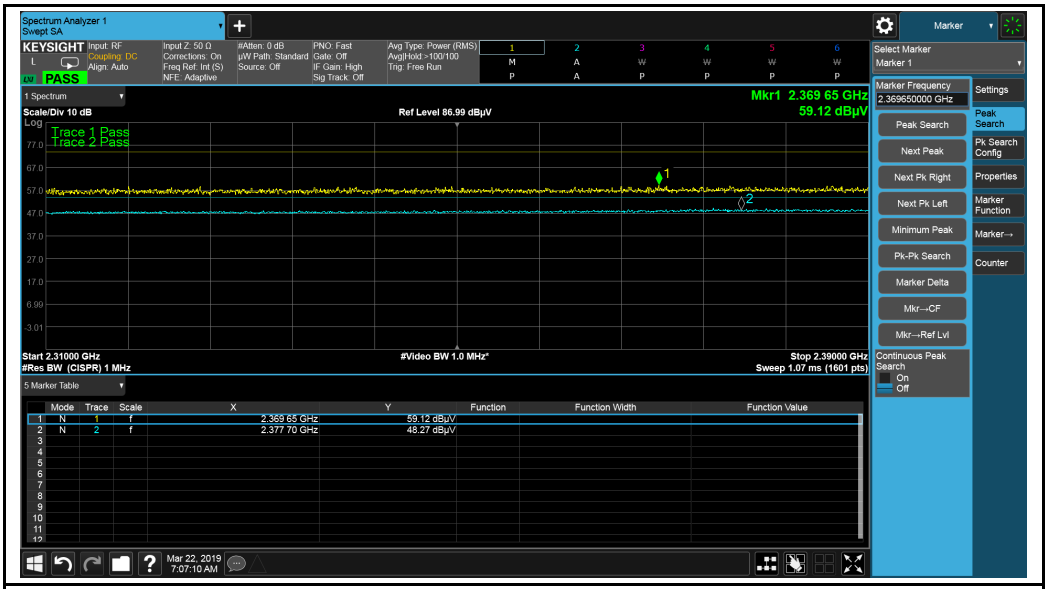



**802.11b-2462MHz**



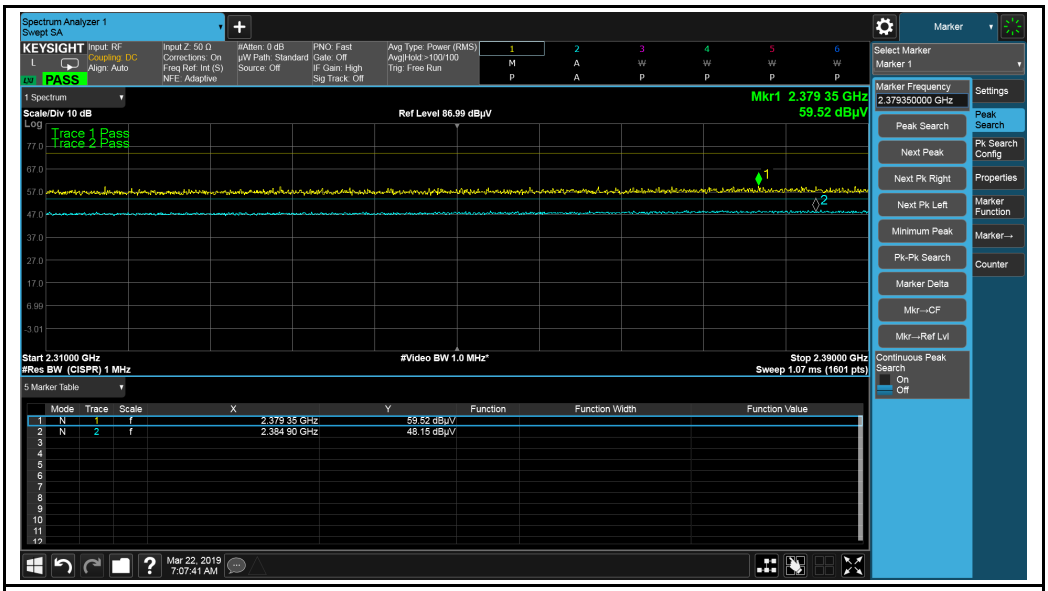

**802.11g-2412MHz**


**802.11g-2462MHz**




802.11n20-2412MHz


802.11n20-2462MHz

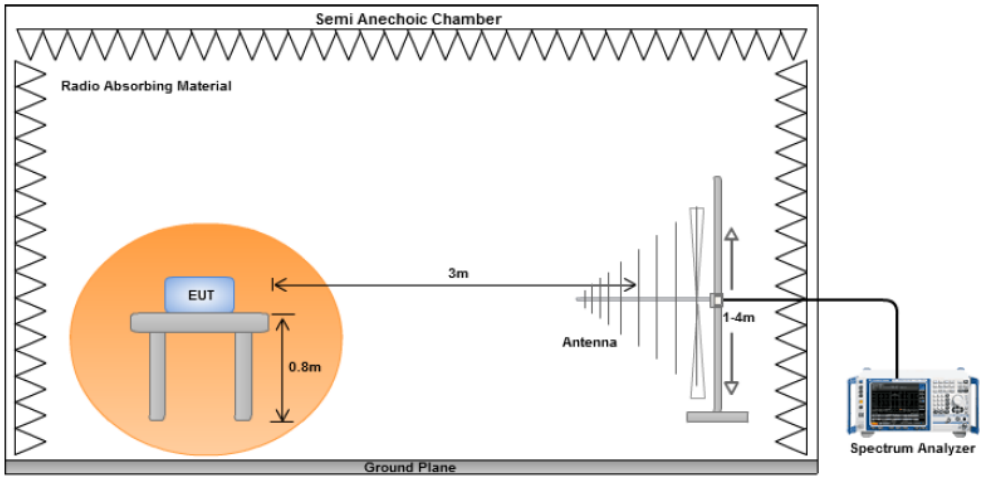



**802.11n40-2422MHz**


**802.11n40-2452MHz**

## 10.3 Radiated Spurious Emissions below 1GHz

**Requirement(s):**

| Spec | Item | Requirement | Applicable |
|---|---|---|---|
| 47CFR§15.247(d) | a) | Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges<br>**Frequency range (MHz) / Field Strength (uV/m)**<br>30 – 88 / 100<br>88 – 216 / 150<br>216 960 / 200<br>Above 960 / 500 | ☒ |
| Test Setup | |  | |
| Procedure | | 1. The EUT was switched on and allowed to warm up to its normal operating condition.<br>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:<br>a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.<br>b. The EUT was then rotated to the direction that gave the maximum emission.<br>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.<br>3. A Quasi-peak measurement was then made for that frequency point.<br>4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured. | |
| Remark | | The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. | |
| Result | | ☒ Pass ☐ Fail | |

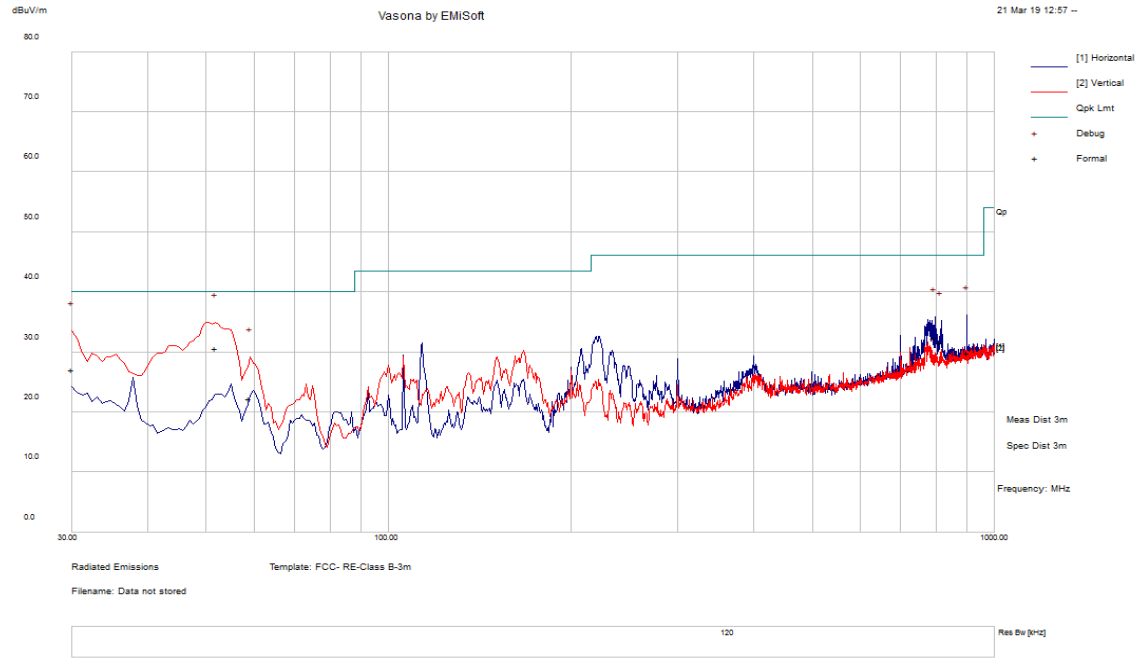
**Test Data** ☒ Yes (See below) ☐ N/A

**Test Plot** ☒ Yes (See below) ☐ N/A

**Test was done by Deon Dai at 10m chamber.**

## Radiated Emission Test Results (Below 1GHz)

| | | | | |
|---|---|---|---|---|
| Test specification | below 1GHz | | | |
| Environmental Conditions: | Temp (°C): | 26 | Result | Pass |
| | Humidity (%) | 47 | | |
| | Atmospheric (mbar): | 1020 | | |
| Mains Power: | 120VAC, 60Hz | | | |
| Tested by: | Deon Dai | | | |
| Test Date: | 03/21/2019 | | | |
| Remarks: | 802.11n20, 2437MHz | | | |

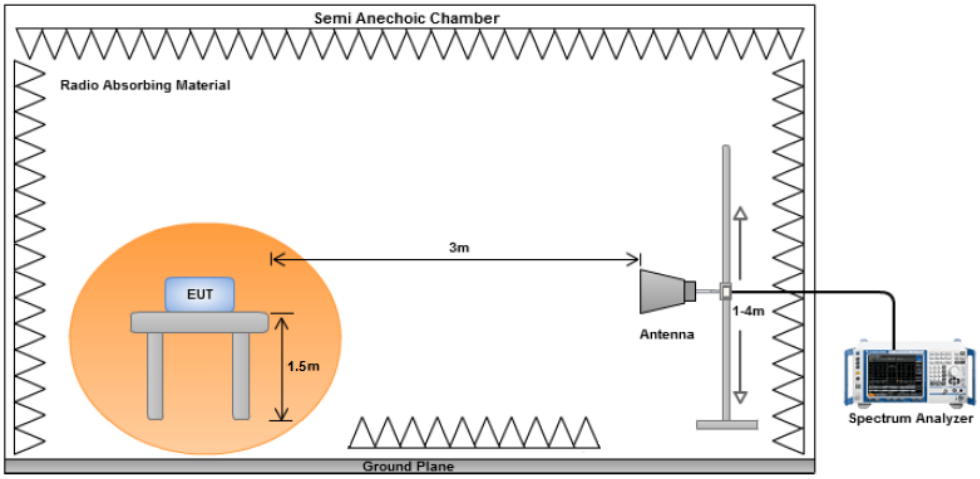



| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 51.88 | 45.99 | 11.46 | -26.7 | 30.75 | Quasi Max | V | 111 | 189 | 40 | -9.25 | Pass |
| 30.01 | 28.17 | 11.12 | -12.1 | 27.19 | Quasi Max | V | 127 | 206 | 40 | -12.81 | Pass |
| 899.99 | 27.3 | 15.95 | -13.29 | 29.97 | Quasi Max | H | 0 | 43 | 46 | -16.03 | Pass |
| 796.74 | 31.24 | 15.47 | -14.28 | 32.44 | Quasi Max | H | 165 | 107 | 46 | -13.57 | Pass |
| 815.90 | 30.4 | 15.51 | -14.26 | 31.65 | Quasi Max | H | 101 | 31 | 46 | -14.35 | Pass |
| 58.92 | 38.04 | 11.5 | -27.26 | 22.28 | Quasi Max | V | 123 | 132 | 40 | -17.72 | Pass |

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

## 10.4 Radiated Spurious Emissions between 1GHz – 25GHz

**Requirement(s):**

| Spec | Item | Requirement | Applicable |
|---|---|---|---|
| 47CFR§15.247(d) | a) | For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required<br>☐ 20 dB down ☒ 30 dB down | ☒ |
| | b) | or restricted band, emission must also comply with the radiated emission limits specified in 15.209 | ☒ |
| Test Setup | |  | |
| Procedure | | 1. The EUT was switched on and allowed to warm up to its normal operating condition.<br>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:<br>a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.<br>b. The EUT was then rotated to the direction that gave the maximum emission.<br>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.<br>3. An average measurement was then made for that frequency point.<br>4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured. | |
| Remark | | | |
| Result | | ☒ Pass ☐ Fail | |

**Test Data** ☒ Yes (See below) ☐ N/A

**Test Plot** ☐ Yes (See below) ☒ N/A

**Test was done by Deon Dai at 3m chamber.**

## Radiated Emission Test Results (Above 1GHz)

**Above 1GHz-25GHz – 802.11b – 2412MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3151.84 | 47.69 | 3.39 | -13.81 | 37.27 | Peak Max | V | 213 | 297 | 74 | -36.73 | Pass |
| 4824.28 | 48.67 | 4.12 | -10.92 | 41.87 | Peak Max | H | 218 | 28 | 74 | -32.13 | Pass |
| 8737.16 | 49.47 | 5.62 | -6.5 | 48.59 | Peak Max | H | 164 | 154 | 74 | -25.41 | Pass |
| 3151.84 | 33.67 | 3.39 | -13.81 | 23.25 | Average Max | V | 213 | 297 | 54 | -30.75 | Pass |
| 4824.28 | 34.59 | 4.12 | -10.92 | 27.79 | Average Max | H | 218 | 28 | 54 | -26.21 | Pass |
| 8737.16 | 35.27 | 5.62 | -6.5 | 34.39 | Average Max | H | 164 | 154 | 54 | -19.61 | Pass |

**Above 1GHz-25GHz- 802.11b - 2437MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3814.07 | 48.19 | 3.64 | -12.94 | 38.89 | Peak Max | V | 207 | 292 | 74 | -35.11 | Pass |
| 4873.81 | 48.35 | 4.17 | -11.01 | 41.51 | Peak Max | V | 224 | 30 | 74 | -32.49 | Pass |
| 8160.90 | 50.42 | 5.38 | -7.09 | 48.71 | Peak Max | H | 164 | 151 | 74 | -25.29 | Pass |
| 3814.07 | 34.15 | 3.64 | -12.94 | 24.85 | Average Max | V | 207 | 292 | 54 | -29.15 | Pass |
| 4873.81 | 34 | 4.17 | -11.01 | 27.16 | Average Max | V | 224 | 30 | 54 | -26.84 | Pass |
| 8160.90 | 36.32 | 5.38 | -7.09 | 34.61 | Average Max | H | 164 | 151 | 54 | -19.39 | Pass |

**Above 1GHz-25GHz – 802.11b – 2462MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3571.19 | 47.14 | 3.58 | -13.61 | 37.11 | Peak Max | V | 206 | 297 | 74 | -36.89 | Pass |
| 4924.05 | 48.27 | 4.22 | -11.11 | 41.38 | Peak Max | H | 216 | 27 | 74 | -32.62 | Pass |
| 8648.39 | 49.6 | 5.59 | -6.66 | 48.53 | Peak Max | V | 161 | 147 | 74 | -25.47 | Pass |
| 3571.19 | 32.53 | 3.58 | -13.61 | 22.5 | Average Max | V | 206 | 297 | 54 | -31.5 | Pass |
| 4924.05 | 33.82 | 4.22 | -11.11 | 26.93 | Average Max | H | 216 | 27 | 54 | -27.07 | Pass |
| 8648.39 | 34.79 | 5.59 | -6.66 | 33.72 | Average Max | V | 161 | 147 | 54 | -20.28 | Pass |

**Above 1GHz-25GHz- 802.11g - 2412MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3589.50 | 46.99 | 3.58 | -13.56 | 37.01 | Peak Max | H | 210 | 296 | 74 | -36.99 | Pass |
| 4824.59 | 48.64 | 4.12 | -10.92 | 41.84 | Peak Max | V | 223 | 27 | 74 | -32.16 | Pass |
| 8760.51 | 49.48 | 5.63 | -6.45 | 48.66 | Peak Max | H | 163 | 154 | 74 | -25.34 | Pass |
| 3589.50 | 32.62 | 3.58 | -13.56 | 22.64 | Average Max | H | 210 | 296 | 54 | -31.36 | Pass |
| 4824.59 | 33.85 | 4.12 | -10.92 | 27.05 | Average Max | V | 223 | 27 | 54 | -26.95 | Pass |
| 8760.51 | 35.28 | 5.63 | -6.45 | 34.46 | Average Max | H | 163 | 154 | 54 | -19.54 | Pass |

**Above 1GHz-25GHz – 802.11g – 2437MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3962.96 | 47.69 | 3.81 | -12.7 | 38.8 | Peak Max | H | 212 | 295 | 74 | -35.2 | Pass |
| 4873.96 | 48.34 | 4.17 | -11.01 | 41.5 | Peak Max | V | 215 | 27 | 74 | -32.5 | Pass |
| 8048.11 | 50.13 | 5.41 | -7.05 | 48.49 | Peak Max | V | 161 | 146 | 74 | -25.51 | Pass |
| 3962.96 | 33.64 | 3.81 | -12.7 | 24.75 | Average Max | H | 212 | 295 | 54 | -29.25 | Pass |
| 4873.96 | 33.77 | 4.17 | -11.01 | 26.93 | Average Max | V | 215 | 27 | 54 | -27.07 | Pass |
| 8048.11 | 36.02 | 5.41 | -7.05 | 34.38 | Average Max | V | 161 | 146 | 54 | -19.62 | Pass |

**Above 1GHz-25GHz- 802.11g - 2462MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3268.37 | 47.91 | 3.48 | -13.75 | 37.64 | Peak Max | H | 205 | 296 | 74 | -36.36 | Pass |
| 4924.31 | 48.25 | 4.22 | -11.11 | 41.36 | Peak Max | V | 223 | 34 | 74 | -32.64 | Pass |
| 8866.53 | 49.79 | 5.63 | -6.19 | 49.23 | Peak Max | V | 168 | 147 | 74 | -24.77 | Pass |
| 3268.37 | 33.3 | 3.48 | -13.75 | 23.03 | Average Max | H | 205 | 296 | 54 | -30.97 | Pass |
| 4924.31 | 34.11 | 4.22 | -11.11 | 27.22 | Average Max | V | 223 | 34 | 54 | -26.78 | Pass |
| 8866.53 | 35.34 | 5.63 | -6.19 | 34.78 | Average Max | V | 168 | 147 | 54 | -19.22 | Pass |

**Above 1GHz-25GHz- 802.11n20 - 2412MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3958.63 | 48.1 | 3.8 | -12.71 | 39.19 | Peak Max | V | 212 | 296 | 74 | -34.81 | Pass |
| 4824.77 | 48.62 | 4.12 | -10.92 | 41.82 | Peak Max | H | 216 | 34 | 74 | -32.18 | Pass |
| 8010.08 | 50.29 | 5.43 | -7.03 | 48.69 | Peak Max | V | 167 | 148 | 74 | -25.31 | Pass |
| 3958.63 | 33.79 | 3.8 | -12.71 | 24.88 | Average Max | V | 212 | 296 | 54 | -29.12 | Pass |
| 4824.77 | 34.51 | 4.12 | -10.92 | 27.71 | Average Max | H | 216 | 34 | 54 | -26.29 | Pass |
| 8010.08 | 35.63 | 5.43 | -7.03 | 34.03 | Average Max | V | 167 | 148 | 54 | -19.97 | Pass |

**Above 1GHz-25GHz – 802.11n20 – 2437MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3510.38 | 47.25 | 3.58 | -13.71 | 37.12 | Peak Max | H | 209 | 297 | 74 | -36.88 | Pass |
| 4873.35 | 48.36 | 4.17 | -11.01 | 41.52 | Peak Max | V | 219 | 28 | 74 | -32.48 | Pass |
| 8009.84 | 50.29 | 5.43 | -7.03 | 48.69 | Peak Max | V | 169 | 145 | 74 | -25.31 | Pass |
| 3510.38 | 32.38 | 3.58 | -13.71 | 22.25 | Average Max | H | 209 | 297 | 54 | -31.75 | Pass |
| 4873.35 | 34.25 | 4.17 | -11.01 | 27.41 | Average Max | V | 219 | 28 | 54 | -26.59 | Pass |
| 8009.84 | 35.57 | 5.43 | -7.03 | 33.97 | Average Max | V | 169 | 145 | 54 | -20.03 | Pass |

**Above 1GHz-25GHz- 802.11n20 - 2462MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3293.35 | 47.41 | 3.49 | -13.74 | 37.16 | Peak Max | V | 207 | 296 | 74 | -36.84 | Pass |
| 4924.26 | 48.25 | 4.22 | -11.11 | 41.36 | Peak Max | V | 224 | 34 | 74 | -32.64 | Pass |
| 8521.71 | 49.52 | 5.54 | -6.84 | 48.22 | Peak Max | H | 165 | 154 | 74 | -25.78 | Pass |
| 3293.35 | 33.33 | 3.49 | -13.74 | 23.08 | Average Max | V | 207 | 296 | 54 | -30.92 | Pass |
| 4924.26 | 33.82 | 4.22 | -11.11 | 26.93 | Average Max | V | 224 | 34 | 54 | -27.07 | Pass |
| 8521.71 | 35.28 | 5.54 | -6.84 | 33.98 | Average Max | H | 165 | 154 | 54 | -20.02 | Pass |

**Above 1GHz-25GHz- 802.11n20 - 2422MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3032.54 | 46.65 | 3.3 | -14.05 | 35.9 | Peak Max | V | 204 | 300 | 74 | -38.1 | Pass |
| 4843.36 | 49.36 | 4.14 | -10.94 | 42.56 | Peak Max | H | 221 | 33 | 74 | -31.44 | Pass |
| 8510.25 | 50.23 | 5.53 | -6.84 | 48.92 | Peak Max | V | 169 | 146 | 74 | -25.08 | Pass |
| 3032.54 | 31.9 | 3.3 | -14.05 | 21.15 | Average Max | V | 204 | 300 | 54 | -32.85 | Pass |
| 4843.36 | 34.84 | 4.14 | -10.94 | 28.04 | Average Max | H | 221 | 33 | 54 | -25.96 | Pass |
| 8510.25 | 36.08 | 5.53 | -6.84 | 34.77 | Average Max | V | 169 | 146 | 54 | -19.23 | Pass |

**Above 1GHz-25GHz – 802.11n20 – 2437MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3550.46 | 47.16 | 3.58 | -13.67 | 37.07 | Peak Max | V | 208 | 298 | 74 | -36.93 | Pass |
| 4873.11 | 48.37 | 4.17 | -11.01 | 41.53 | Peak Max | V | 223 | 32 | 74 | -32.47 | Pass |
| 8004.54 | 50.25 | 5.43 | -7.03 | 48.65 | Peak Max | H | 163 | 153 | 74 | -25.35 | Pass |
| 3550.46 | 33.08 | 3.58 | -13.67 | 22.99 | Average Max | V | 208 | 298 | 54 | -31.01 | Pass |
| 4873.11 | 33.99 | 4.17 | -11.01 | 27.15 | Average Max | V | 223 | 32 | 54 | -26.85 | Pass |
| 8004.54 | 35.58 | 5.43 | -7.03 | 33.98 | Average Max | H | 163 | 153 | 54 | -20.02 | Pass |

**Above 1GHz-25GHz- 802.11n20 - 2452MHz**

| Frequency MHz | Raw dBuV/m | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3884.02 | 47.75 | 3.72 | -12.78 | 38.69 | Peak Max | V | 213 | 298 | 74 | -35.31 | Pass |
| 4904.48 | 48.63 | 4.2 | -11.09 | 41.74 | Peak Max | H | 218 | 31 | 74 | -32.26 | Pass |
| 8298.06 | 50.94 | 5.38 | -7.08 | 49.24 | Peak Max | V | 168 | 149 | 74 | -24.76 | Pass |
| 3884.02 | 33.14 | 3.72 | -12.78 | 24.08 | Average Max | V | 213 | 298 | 54 | -29.92 | Pass |
| 4904.48 | 33.79 | 4.2 | -11.09 | 26.9 | Average Max | H | 218 | 31 | 54 | -27.1 | Pass |
| 8298.06 | 36.72 | 5.38 | -7.08 | 35.02 | Average Max | V | 168 | 149 | 54 | -18.98 | Pass |

# Annex A. TEST INSTRUMENT

| Instrument | Model | Serial # | Cal Date | Cal Cycle | Cal Due | In use |
| --- | --- | --- | --- | --- | --- | --- |
| **Radiated Emissions** | | | | | | |
| Keysight EXA 44GHz Spectrum Analyzer | N9030B(PXA) | MY57140374 | 08/20/2018 | 1 Year | 08/20/2019 | ☑ |
| Bi-Log antenna (30MHz~6GHz) | JB6 | A111717 | 08/12/2018 | 1 Year | 08/12/2019 | ☑ |
| Horn Antenna (1GHz~26GHz) | 3115 | 100059 | 01/26/2019 | 1 Year | 01/26/2020 | ☑ |
| Horn Antenna (26GHz~40GHz) | AH-840 | 101013 | 08/28/2018 | 1 Year | 08/28/2019 | ☑ |
| Pre-Amplifier(0.3MHz-6.5GHz) | LPA-6-30 | 11170602 | 02/06/2019 | 1 Year | 02/06/2020 | ☑ |
| Pre-Amplifier (1-26.5GHz) | 8449B | 3008A00715 | 08/16/2018 | 1 Year | 08/16/2019 | ☑ |
| Pre-Amp (10MHz~50GHz) | RAMP00M50GA | 17032300047 | 02/10/2019 | 1 Year | 02/10/2020 | ☑ |

# 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 | | **Radio & Telecommunications Terminal Equipment:** EN45001 – EN ISO/IEC 17025 |
| | | **Electromagnetic Compatibility:** EN45001 – EN ISO/IEC 17025 |
| Singapore iDA CB(Certification Body) | | Phase I, Phase II |
| Vietnam MIC 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 | | **Radio:** Scope A – All Radio Standard Specification in Category I |
| | | **Telecom:** CS-03 Part I, II, V, VI, VII, VIII |

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