



# **TEST REPORT**

**Report Number:** 14014404-E3

**Applicant :** Schneider Electric Industries SAS  
31 rue Pierre Mendes France  
38050 - Grenoble Cedex 9, France

**Model :** 33102

**Brand :** Schneider Electric Industries SAS

**FCC ID :** 2AH7L-BCMW-V1

**IC :** 21522-BCMW-V1

**EUT Description :** Wireless Circuit Breaker Communication Module

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C: 2022  
ISED RSS-247 ISSUE 2: 2017  
ISED RSS-GEN ISSUE 5 + A2:2021

**Date Of Issue:**  
2023-01-31

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## REPORT REVISION HISTORY

| Rev. | Issue Date | Revisions                                             | Revised By    |
|------|------------|-------------------------------------------------------|---------------|
| V1   | 2022-07-25 | Initial Issue                                         | Charles Moody |
| V2   | 2022-08-17 | Revised EUT description                               | Brian Kiewra  |
| V3   | 2022-08-23 | Correcting units in section 10.3 and limits in 11.1.1 | Charles Moody |
| V4   | 2022-10-04 | Revised power                                         | Brian Kiewra  |
| V5   | 2022-11-22 | Revised section 6.2 and corrected formatting issue    | Brian Kiewra  |
| V6   | 2022-12-09 | Added 10dB attenuator to Section 8                    | Brian Kiewra  |
| V7   | 2023-01-31 | Revised Antenna Gain                                  | Charles Moody |

## TABLE OF CONTENTS

|                                                            |           |
|------------------------------------------------------------|-----------|
| <b>REPORT REVISION HISTORY .....</b>                       | <b>2</b>  |
| <b>TABLE OF CONTENTS .....</b>                             | <b>3</b>  |
| <b>1. ATTESTATION OF TEST RESULTS .....</b>                | <b>5</b>  |
| <b>2. TEST RESULTS SUMMARY .....</b>                       | <b>6</b>  |
| <b>3. TEST METHODOLOGY .....</b>                           | <b>6</b>  |
| <b>4. FACILITIES AND ACCREDITATION .....</b>               | <b>6</b>  |
| <b>5. DECISION RULES AND MEASUREMENT UNCERTAINTY .....</b> | <b>7</b>  |
| 5.1. METROLOGICAL TRACEABILITY .....                       | 7         |
| 5.2. DECISION RULES .....                                  | 7         |
| 5.3. MEASUREMENT UNCERTAINTY .....                         | 7         |
| 5.4. SAMPLE CALCULATION .....                              | 8         |
| <b>6. EQUIPMENT UNDER TEST .....</b>                       | <b>9</b>  |
| 6.1. EUT DESCRIPTION .....                                 | 9         |
| 6.2. MAXIMUM OUTPUT POWER .....                            | 9         |
| 6.3. DESCRIPTION OF AVAILABLE ANTENNAS .....               | 9         |
| 6.4. SOFTWARE AND FIRMWARE .....                           | 9         |
| 6.5. WORST-CASE CONFIGURATION AND MODE .....               | 9         |
| 6.6. DESCRIPTION OF TEST SETUP .....                       | 10        |
| <b>7. MEASUREMENT METHOD .....</b>                         | <b>11</b> |
| <b>8. TEST AND MEASUREMENT EQUIPMENT .....</b>             | <b>12</b> |
| <b>9. ANTENNA PORT TEST RESULTS .....</b>                  | <b>15</b> |
| 9.1. ON TIME AND DUTY CYCLE .....                          | 15        |
| 9.2. 99% BANDWIDTH .....                                   | 16        |
| 9.2.1. Zigbee (250kbps) .....                              | 16        |
| 9.3. 6 dB BANDWIDTH .....                                  | 17        |
| 9.3.1. Zigbee (250kbps) .....                              | 17        |
| 9.4. OUTPUT POWER .....                                    | 18        |
| 9.4.1. Zigbee (250kbps) .....                              | 18        |
| 9.5. AVERAGE POWER .....                                   | 19        |
| 9.5.1. Zigbee (250kbps) .....                              | 19        |
| 9.6. POWER SPECTRAL DENSITY .....                          | 20        |
| 9.6.1. Zigbee (250kbps) .....                              | 20        |

|         |                                         |    |
|---------|-----------------------------------------|----|
| 9.7.    | CONDUCTED SPURIOUS EMISSIONS.....       | 21 |
| 9.7.1.  | Zigbee (250kbps).....                   | 22 |
| 10.     | RADIATED TEST RESULTS .....             | 23 |
| 10.1.   | LIMITS AND PROCEDURE.....               | 23 |
| 10.2.   | TRANSMITTER ABOVE 1 GHz.....            | 25 |
| 10.2.1. | Zigbee (250kbps) .....                  | 25 |
| 10.3.   | WORST CASE BELOW 30MHZ.....             | 35 |
| 10.4.   | WORST CASE BELOW 1 GHZ.....             | 37 |
| 10.5.   | WORST CASE 18-26 GHZ.....               | 39 |
| 11.     | AC POWER LINE CONDUCTED EMISSIONS ..... | 41 |
| 11.1.1. | AC Power Line Norm.....                 | 42 |
| 12.     | SETUP PHOTOS .....                      | 44 |

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Schneider Electric Industries SAS  
31 rue Pierre Mendes France  
38050 - Grenoble Cedex 9, France

**EUT DESCRIPTION:** Wireless Circuit Breaker Communication Module

**MODEL:** 33102

**BRAND:** Schneider Electric Industries SAS

**SERIAL NUMBER:** Non-Serialized

**SAMPLE RECEIPT DATE:** 2022-07-05

**DATE TESTED:** 2022-07-06 – 2022-07-11

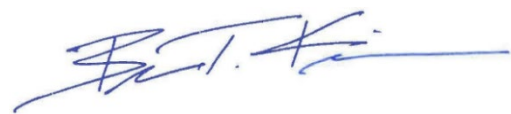
| APPLICABLE STANDARDS      |                    |
|---------------------------|--------------------|
| STANDARD                  | TEST RESULTS       |
| CFR 47 Part 15 Subpart C  | Refer to Section 2 |
| ISED RSS-247 Issue 2      | Refer to Section 2 |
| ISED RSS-GEN Issue 5 + A2 | Refer to Section 2 |

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the U.S. government.

Approved & Released For  
UL LLC By:



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Project Engineer  
Consumer, Medical, and IT Segment  
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Prepared By:



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Electrical Engineer  
Consumer, Medical, and IT Segment  
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## 2. TEST RESULTS SUMMARY

This report contains data provided by the applicant which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

| FCC Clause     | ISED Clause       | Requirement                           | Result                  | Comment                              |
|----------------|-------------------|---------------------------------------|-------------------------|--------------------------------------|
| See Comment    |                   | Duty Cycle                            | Reporting purposes only | ANSI C63.10 Section 11.6.            |
| -              | RSS-GEN 6.7       | 99% OBW                               | Reporting purposes only | ANSI C63.10 Section 6.9.3.           |
| 15.247 (a) (2) | RSS-247 5.2 (a)   | 6dB BW                                | Complies                | None.                                |
| 15.247 (b) (3) | RSS-247 5.4 (d)   | Output Power                          | Complies                | None.                                |
| See Comment    |                   | Average power                         | Reporting purposes only | Per ANSI C63.10, Section 11.9.2.3.2. |
| 15.247 (e)     | RSS-247 5.2 (b)   | PSD                                   | Complies                | None.                                |
| 15.247 (d)     | RSS-247 5.5       | Conducted Spurious Emissions          | Complies                | None.                                |
| 15.209, 15.205 | RSS-GEN 8.9, 8.10 | Radiated Emissions                    | Complies                | None.                                |
| 15.207 (a)     | RSS-Gen 8.8       | AC Power Lines Conducted Measurements | Complies                | None                                 |

## 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A2, and RSS-247 Issue 2.

## 4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, Certificate Number 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

|                                     | Address                                                                           | ISED CABID | ISED Company Number | FCC Registration |
|-------------------------------------|-----------------------------------------------------------------------------------|------------|---------------------|------------------|
| <input checked="" type="checkbox"/> | Building<br>2800 Suite Perimeter Park Dr. Suite B<br>Morrisville, NC 27560, U.S.A | US0067     | 27265               | 825374           |

## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                                | U <sub>Lab</sub>            |
|------------------------------------------|-----------------------------|
| Radio Frequency (Spectrum Analyzer)      | 141.2 Hz                    |
| Occupied Channel Bandwidth               | 1.22%                       |
| RF output power, conducted               | 1.3 dB (PK)<br>0.45 dB (AV) |
| Power Spectral Density, conducted        | 2.47 dB                     |
| Unwanted Emissions, conducted            | 1.94 dB                     |
| All emissions, radiated                  | 6.01 dB                     |
| Conducted Emissions (0.150-30MHz) - LISN | 3.40 dB                     |
| Temperature                              | 0.57°C                      |
| Humidity                                 | 3.39%                       |
| DC Supply voltages                       | 1.70%                       |

Uncertainty figures are valid to a confidence level of 95%.

## **5.4. SAMPLE CALCULATION**

### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

### **MAINS CONDUCTED EMISSIONS**

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The EUT is a Breaker monitoring, alarming, and ERMS accessory

### 6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

| Frequency Range (MHz) | Mode   | Output Power (dBm) | Output Power (mW) |
|-----------------------|--------|--------------------|-------------------|
| 2405-2480             | Zigbee | 1.09               | 1.29              |

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

The radio utilizes a PCB antenna, with a maximum gain of 0.61 dBi.

### 6.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was v0.0.3.

### 6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz and above 18GHz were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in its only orthogonal orientation. As provided by the manufacturer, the EUT only operates in one orientation. Therefore, all final radiated testing was performed with the EUT in that defined orientation.

All testing performed at higher power setting than what power was measured. Manufacturer will set the device to operate at the lower power setting at which power was measured.

## 6.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |                    |             |               |        |
|------------------------|--------------------|-------------|---------------|--------|
| Description            | Manufacturer       | Model       | Serial Number | FCC ID |
| Laptop                 | Lenovo             | T14S        | PC26TDYM      | -      |
| AC to DC Power Supply  | Schneider Electric | ABLM1A24025 | IB215103243   | -      |

### I/O CABLES

| I/O Cable List |          |                      |                |            |                  |                                     |
|----------------|----------|----------------------|----------------|------------|------------------|-------------------------------------|
| Cable No.      | Port     | # of Identical Ports | Connector Type | Cable Type | Cable Length (m) | Remarks                             |
| 1              | DC Power | 1                    | 6-Pin Plug     | Power      | <3m              | Used to connect EUT to power supply |

### TEST SETUP

The EUT is controlled using an over-the-air communication between the support laptop and the device. This allows for a wireless control of the UCE

### SETUP DIAGRAMS

Please refer to 14014404-EP1 for setup diagrams

## 7. MEASUREMENT METHOD

On time and Duty Cycle: ANSI C63.10 subclause 11.6

6 dB BW: ANSI C63.10 Subclause -11.8.1

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Radiated emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5

General Radiated Spurious Emissions: ANSI C63.10-2013, Section 6.3 to 6.6

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2.

## 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

### Test Equipment Used - Wireless Conducted Measurement Equipment

| Equipment ID | Description                              | Manufacturer | Model Number     | Last Cal.  | Next Cal.  |
|--------------|------------------------------------------|--------------|------------------|------------|------------|
|              | <b>Conducted Room 2</b>                  |              |                  |            |            |
| HI0096       | Environmental Meter                      | Fisherbrand  | 14-650-118       | 2021-09-21 | 2022-09-22 |
| PWM003       | RF Power Meter                           | Keysight     | N1911A           | 2021-08-30 | 2022-08-30 |
| PWS005       | Peak and Avg Power Sensor, 50MHz – 18GHz | Keysight     | N1921A           | 2022-06-15 | 2023-06-15 |
| SA0027       | Spectrum Analyzer                        | Keysight     | N9030A           | 2022-05-24 | 2023-05-24 |
| -            | 10dB Attenuator                          | CentricRF    | C18S2-10         | 2022-05-03 | 2023-05-03 |
| SOFTEMI      | Antenna Port Software                    | UL           | Version 2022.5.4 |            |            |

### Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

| Equipment ID  | Description                                   | Manufacturer        | Model Number              | Last Cal.  | Next Cal.  |
|---------------|-----------------------------------------------|---------------------|---------------------------|------------|------------|
| CBL087        | Coax cable, RG223, N-male to BNC-male, 20-ft. | Pasternack          | PE3W06143-240             | 2022-04-05 | 2023-04-05 |
| s/n 210701941 | Environmental Meter                           | Fisher Scientific   | 15-077-963                | 2021-08-16 | 2023-08-16 |
| LISN003       | LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A    | Fischer Custom Com. | FCC-LISN-50/250-25-2-01   | 2021-08-16 | 2022-08-16 |
| 75141         | EMI Test Receiver 9kHz-7GHz                   | Rohde & Schwarz     | ESCI 7                    | 2021-08-17 | 2022-08-17 |
| ATA222        | Transient Limiter, 0.009-100MHz               | Electro-Metrics     | EM-7600                   | 2022-04-05 | 2023-04-05 |
| PS214         | AC Power Source                               | Elgar               | CW2501M (s/n 1523A02396)  | NA         | NA         |
| SOFTEMI       | EMI Software                                  | UL                  | Version 9.5 (18 Oct 2021) |            |            |

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

| Equip. ID     | Description                                       | Manufacturer/Brand   | Model Number              | Last Cal.  | Next Cal.  |
|---------------|---------------------------------------------------|----------------------|---------------------------|------------|------------|
|               | <b>30-1000 MHz</b>                                |                      |                           |            |            |
| AT0081        | Hybrid Broadband Antenna                          | Sunol Sciences Corp. | JB3                       | 2021-12-08 | 2022-12-08 |
|               | <b>1-18 GHz</b>                                   |                      |                           |            |            |
| AT0067        | Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz | ETS Lindgren         | 3117                      | 2022-05-24 | 2023-05-24 |
|               | <b>Gain-Loss Chains</b>                           |                      |                           |            |            |
| C4-SAC02      | Gain-loss string: 25-1000MHz                      | Various              | Various                   | 2022-05-20 | 2023-05-20 |
| C4-SAC03      | Gain-loss string: 1-18GHz                         | Various              | Various                   | 2022-05-20 | 2023-05-20 |
|               | <b>Receiver &amp; Software</b>                    |                      |                           |            |            |
| 206496        | Spectrum Analyzer                                 | Rohde & Schwarz      | ESW44                     | 2022-02-15 | 2023-02-15 |
| SOFTEMI       | EMI Software                                      | UL                   | Version 9.5 (18 Oct 2021) |            |            |
|               | <b>Additional Equipment used</b>                  |                      |                           |            |            |
| s/n 210701942 | Environmental Meter                               | Fisher Scientific    | 15-077-963                | 2021-8-16  | 2023-08-16 |

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

| Equip. ID     | Description                                       | Manufacturer/Brand   | Model Number              | Last Cal.  | Next Cal.  |
|---------------|---------------------------------------------------|----------------------|---------------------------|------------|------------|
|               | <b>0.009-30MHz</b>                                |                      |                           |            |            |
| AT0079        | Active Loop Antenna                               | ETS-Lindgren         | 6502                      | 2021-08-19 | 2022-08-19 |
|               | <b>30-1000 MHz</b>                                |                      |                           |            |            |
| AT0073        | Hybrid Broadband Antenna                          | Sunol Sciences Corp. | JB3                       | 2021-08-30 | 2022-08-30 |
|               | <b>1-18 GHz</b>                                   |                      |                           |            |            |
| 206211        | Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz | ETS Lindgren         | 3117                      | 2022-03-21 | 2023-03-21 |
|               | <b>18-40 GHz</b>                                  |                      |                           |            |            |
| AT0063        | Horn Antenna, 18-26.5GHz                          | ARA                  | MWH-1826/B                | 2021-11-04 | 2022-11-04 |
|               | <b>Gain-Loss Chains</b>                           |                      |                           |            |            |
| C2-SAC01      | Gain-loss string: 0.009-30MHz                     | Various              | Various                   | 2022-05-10 | 2023-05-10 |
| C2-SAC02      | Gain-loss string: 25-1000MHz                      | Various              | Various                   | 2022-05-10 | 2023-05-10 |
| C2-SAC03      | Gain-loss string: 1-18GHz                         | Various              | Various                   | 2022-05-10 | 2023-05-10 |
| C2-SAC04      | Gain-loss string: 18-40GHz                        | Various              | Various                   | 2022-05-10 | 2023-05-10 |
|               | <b>Receiver &amp; Software</b>                    |                      |                           |            |            |
| 197955        | Spectrum Analyzer                                 | Rohde & Schwarz      | ESW44                     | 2022-03-08 | 2023-03-08 |
| SOFTEMI       | EMI Software                                      | UL                   | Version 9.5 (18 Oct 2021) |            |            |
|               | <b>Additional Equipment used</b>                  |                      |                           |            |            |
| s/n 181474409 | Environmental Meter                               | Fisher Scientific    | 15-077-963                | 2021-09-27 | 2022-09-27 |

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

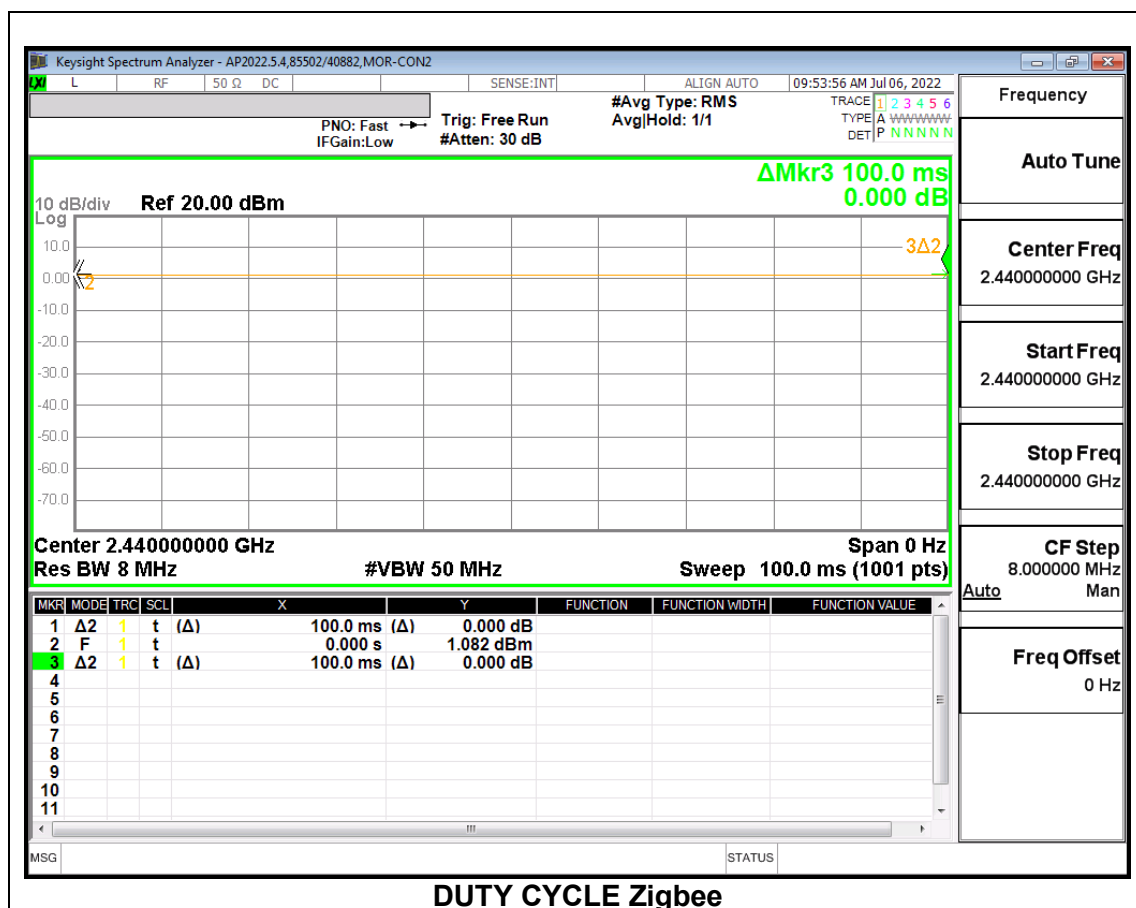
#### PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

#### ON TIME AND DUTY CYCLE RESULTS

| Mode        | ON Time<br>B<br>(msec) | Period<br>(msec) | Duty Cycle<br>x<br>(linear) | Duty<br>Cycle<br>(%) | Duty Cycle<br>Correction Factor<br>(dB) | 1/B<br>Minimum VBW<br>(kHz) |
|-------------|------------------------|------------------|-----------------------------|----------------------|-----------------------------------------|-----------------------------|
| 2.4GHz Band |                        |                  |                             |                      |                                         |                             |
| BLE         | 100.000                | 100.000          | 1.000                       | 100.00               | 0.00                                    | 0.010                       |

#### DUTY CYCLE PLOTS



## 9.2. 99% BANDWIDTH

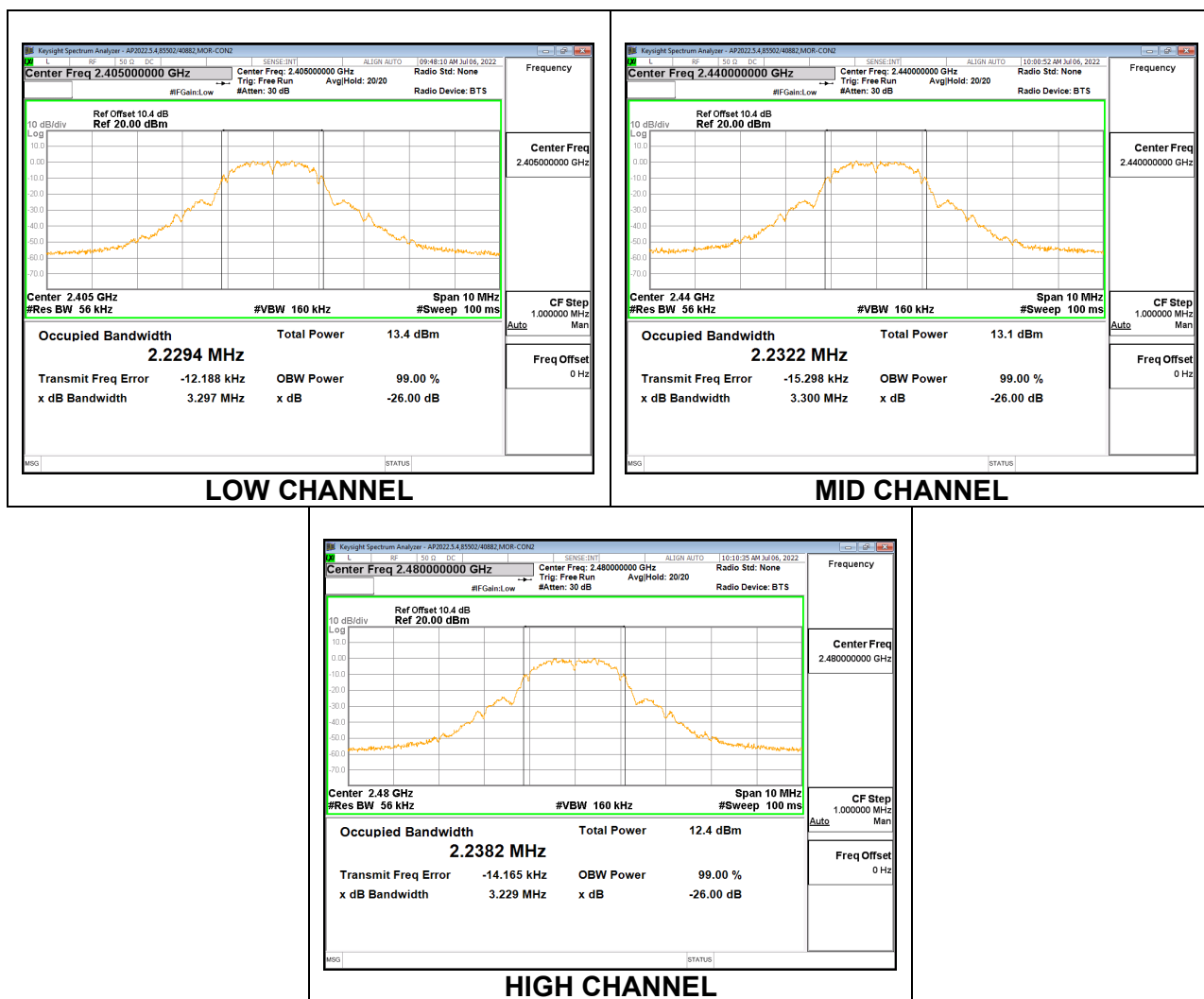
### LIMITS

None; for reporting purposes only.

### RESULTS

#### 9.2.1. Zigbee (250kbps)

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---------|-----------------|---------------------|
| Low     | 2405            | 2.2294              |
| Middle  | 2440            | 2.2322              |
| High    | 2480            | 2.2382              |



### 9.3. 6 dB BANDWIDTH

#### LIMITS

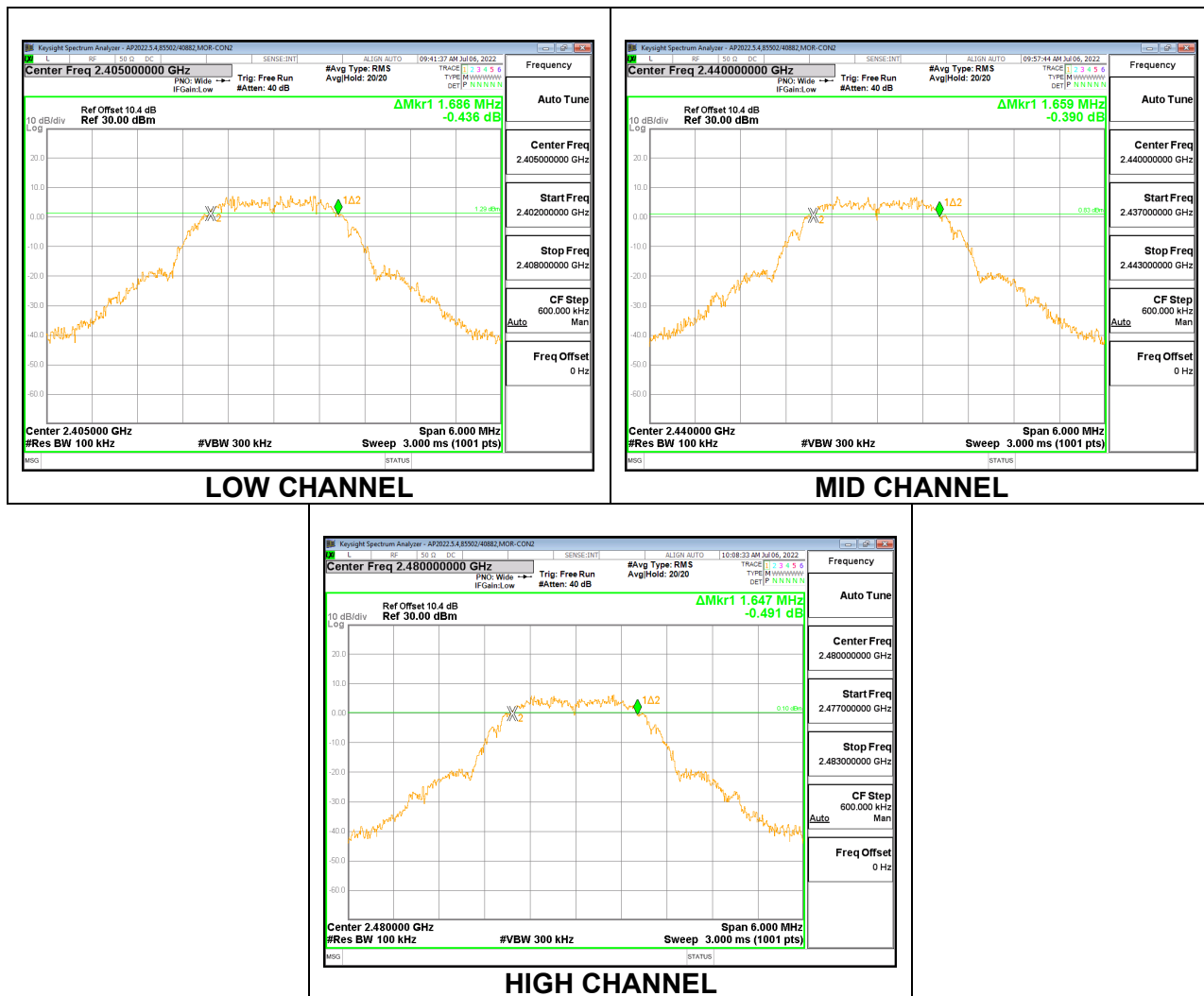
FCC §15.247 (a) (2)  
RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

#### RESULTS

##### 9.3.1. Zigbee (250kbps)

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---------|-----------------|----------------------|---------------------|
| Low     | 2405            | 1.6860               | 0.5                 |
| Middle  | 2440            | 1.6590               | 0.5                 |
| High    | 2480            | 1.6470               | 0.5                 |



## 9.4. OUTPUT POWER

### LIMITS

FCC §15.247 (b) (3)  
RSS-247 5.4 (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

### TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.4 dB (including 9.65 dB pad and 0.75 dB cable) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 9.65 dB attenuator connected to a power meter via wideband average power sensor. Peak output power was read directly from power meter.

### RESULTS

#### 9.4.1. Zigbee (250kbps)

|                   |             |
|-------------------|-------------|
| <b>Tested By:</b> | 85502/40882 |
| <b>Date:</b>      | 2022-07-06  |

| Channel | Frequency<br>(MHz) | Peak Power<br>Reading<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) |
|---------|--------------------|--------------------------------|----------------|----------------|
| Low     | 2405               | 1.09                           | 30             | -28.910        |
| Middle  | 2440               | 0.54                           | 30             | -29.460        |
| High    | 2480               | -0.24                          | 30             | -30.240        |

## 9.5. AVERAGE POWER

### LIMITS

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a gated average power meter.

The cable assembly insertion loss of 10.4 dB (including 9.65 dB pad and 0.75 dB cable) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 9.65 dB attenuator connected to a power meter via wideband average power sensor. Average output power was read directly from power meter.

### RESULTS

#### 9.5.1. Zigbee (250kbps)

|            |             |
|------------|-------------|
| Tested By: | 85502/40882 |
| Date:      | 2022-07-06  |

| Channel | Frequency<br>(MHz) | AV power<br>(dBm) |
|---------|--------------------|-------------------|
| Low     | 2405               | 0.85              |
| Middle  | 2440               | 0.26              |
| High    | 2480               | -0.55             |

## 9.6. POWER SPECTRAL DENSITY

### LIMITS

FCC §15.247 (e)

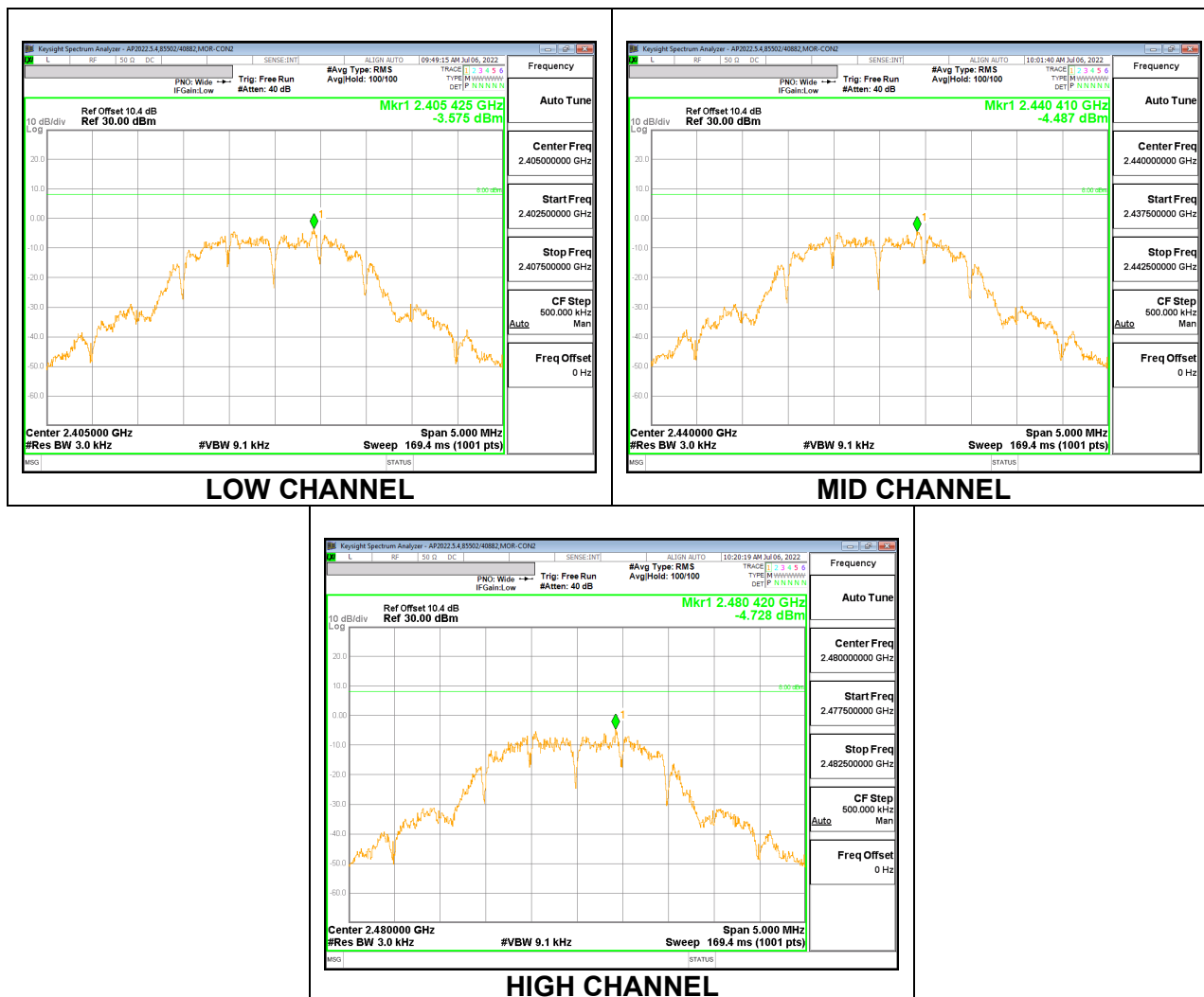
RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### RESULTS

#### 9.6.1. Zigbee (250kbps)

| Channel | Frequency (MHz) | PSD (dBm/3kHz) | Limit (dBm/3kHz) | Margin (dB) |
|---------|-----------------|----------------|------------------|-------------|
| Low     | 2405            | -3.575         | 8                | -11.58      |
| Middle  | 2440            | -4.487         | 8                | -12.49      |
| High    | 2480            | -4.728         | 8                | -12.73      |



## **9.7. CONDUCTED SPURIOUS EMISSIONS**

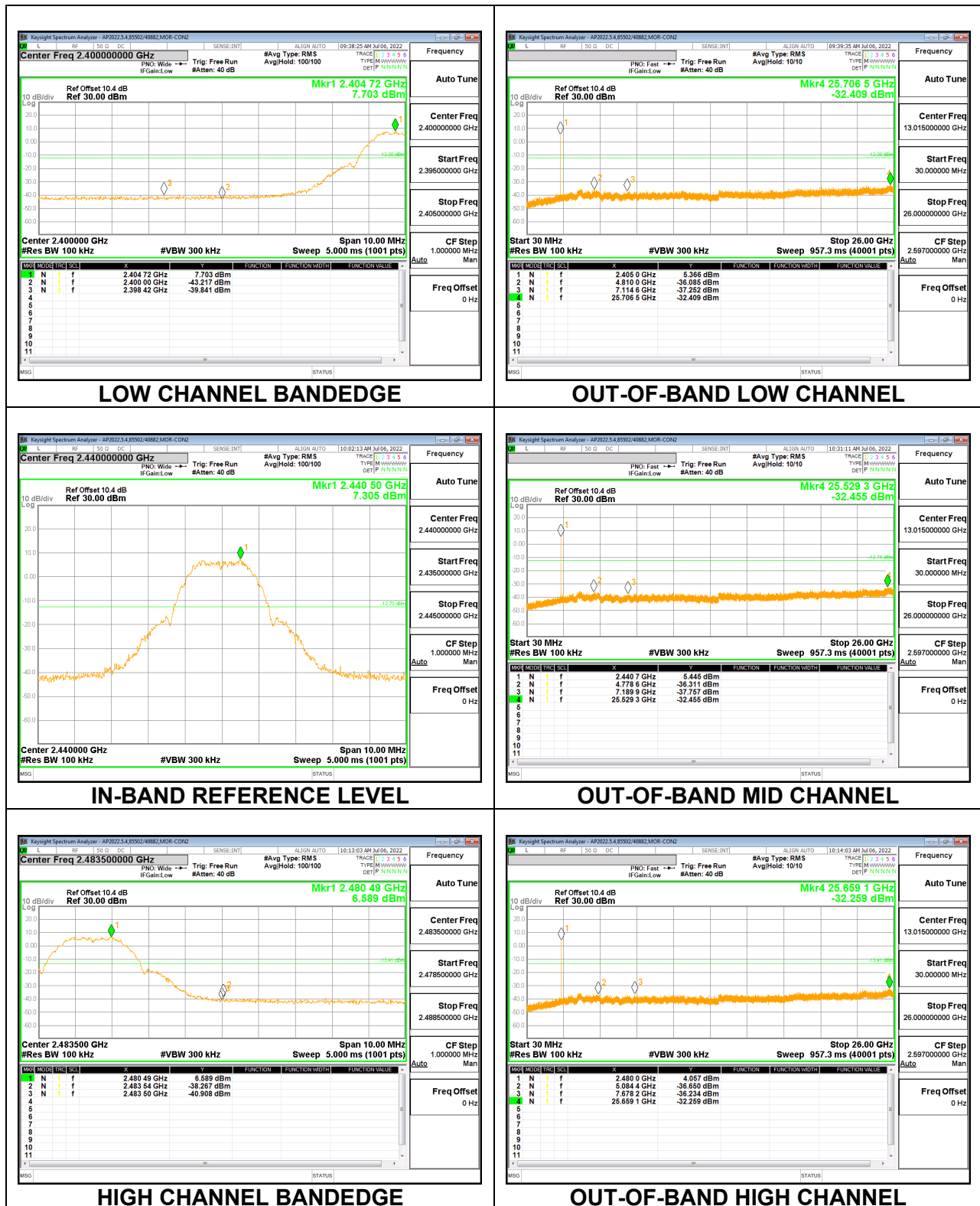
### **LIMITS**

FCC §15.247 (d)  
RSS-247 5.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is -20 dBc.

### **RESULTS**

### 9.7.1. Zigbee (250kbps)



## 10. RADIATED TEST RESULTS

### 10.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|-----------------------|------------------------------------|--------------------------------------|
| 0.009-0.490           | 2400/F(kHz) @ 300 m                | -                                    |
| 0.490-1.705           | 24000/F(kHz) @ 30 m                | -                                    |
| 1.705 - 30            | 30 @ 30m                           | -                                    |
| 30 - 88               | 100                                | 40                                   |
| 88 - 216              | 150                                | 43.5                                 |
| 216 - 960             | 200                                | 46                                   |
| Above 960             | 500                                | 54                                   |

RSS-GEN, Section 8.9 and 8.10.

| Frequency Range (MHz) | Field Strength Limit (uA/m) at 3 m | Field Strength Limit (dBuA/m) at 3 m |
|-----------------------|------------------------------------|--------------------------------------|
| 0.009-0.490           | 6.37/F(kHz) @ 300 m                | -                                    |
| 0.490-1.705           | 6.37/F(kHz) @ 30 m                 | -                                    |
| 1.705 - 30            | .08 @ 30m                          | -                                    |
| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
| 30 - 88               | 100                                | 40                                   |
| 88 - 216              | 150                                | 43.5                                 |
| 216 - 960             | 200                                | 46                                   |
| Above 960             | 500                                | 54                                   |

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements. Linear Voltage Averaging was used.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

**KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification**

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

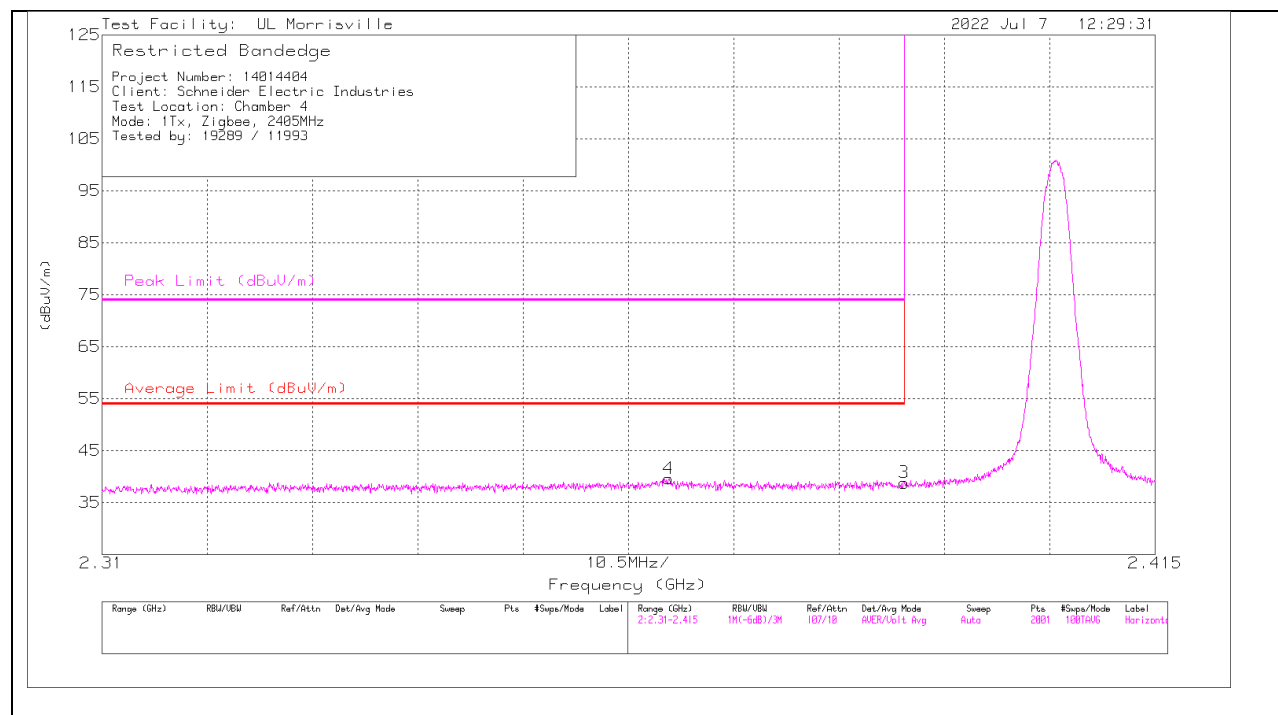
## 10.2. TRANSMITTER ABOVE 1 GHz

### 10.2.1. Zigbee (250kbps)

#### Antenna 1

#### BANDEDGE (LOW CHANNEL)

#### HORIZONTAL RESULT



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * ** 2.38996    | 31.41                | Pk  | 32.2          | -13.6          | 50.01                      | -                      | -           | 74                  | -23.99         | 40             | 356         | H        |
| 2      | * ** 2.33672    | 33.73                | Pk  | 32.1          | -13.8          | 52.03                      | -                      | -           | 74                  | -21.97         | 40             | 356         | H        |
| 3      | * ** 2.38996    | 20.19                | ADV | 32.2          | -13.6          | 38.79                      | 54                     | -15.21      | -                   | -              | 40             | 356         | H        |
| 4      | * ** 2.36649    | 20.96                | ADV | 32.2          | -13.6          | 39.56                      | 54                     | -14.44      | -                   | -              | 40             | 356         | H        |

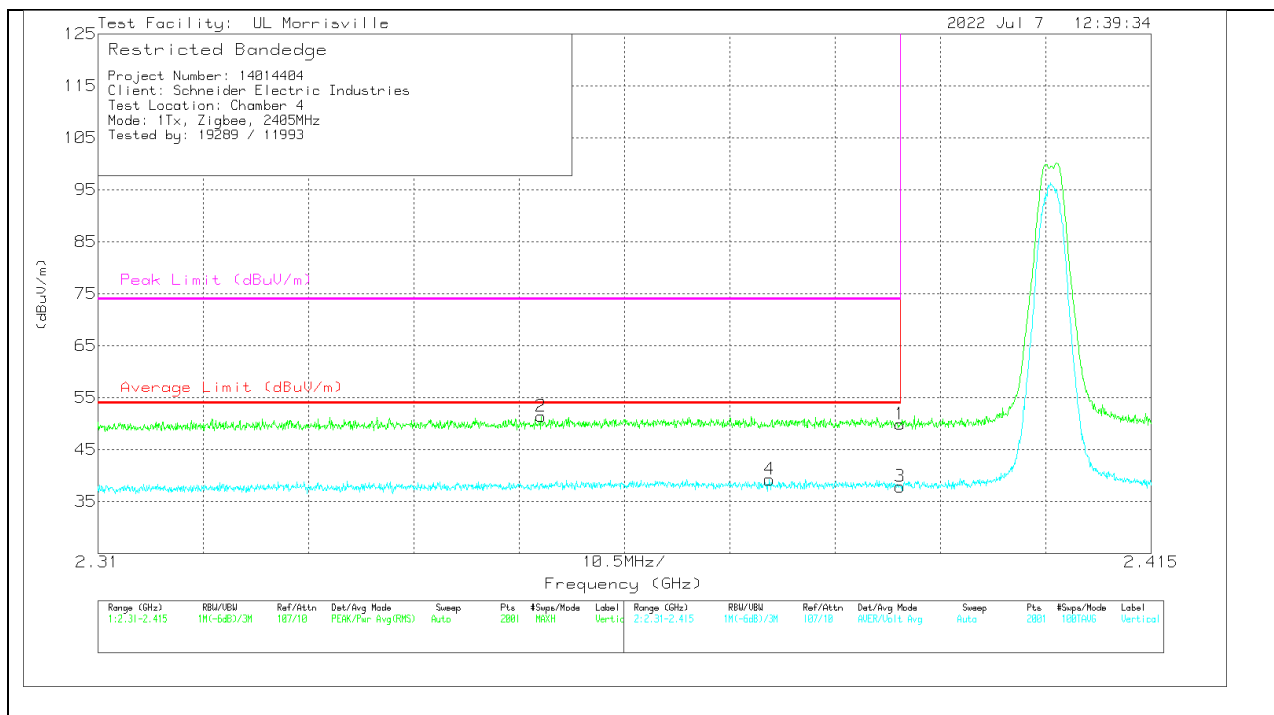
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

## VERTICAL RESULT



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | *** 2.38996     | 31.3                 | Pk  | 32.2          | -13.6          | 49.9                       | -                      | -           | 74                  | -24.1          | 277            | 152         | V        |
| 2      | *** 2.35421     | 33.08                | Pk  | 32.1          | -13.8          | 51.38                      | -                      | -           | 74                  | -22.62         | 277            | 152         | V        |
| 3      | *** 2.38996     | 19.26                | ADV | 32.2          | -13.6          | 37.86                      | 54                     | -16.14      | -                   | -              | 277            | 152         | V        |
| 4      | *** 2.37694     | 20.75                | ADV | 32.2          | -13.7          | 39.25                      | 54                     | -14.75      | -                   | -              | 277            | 152         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

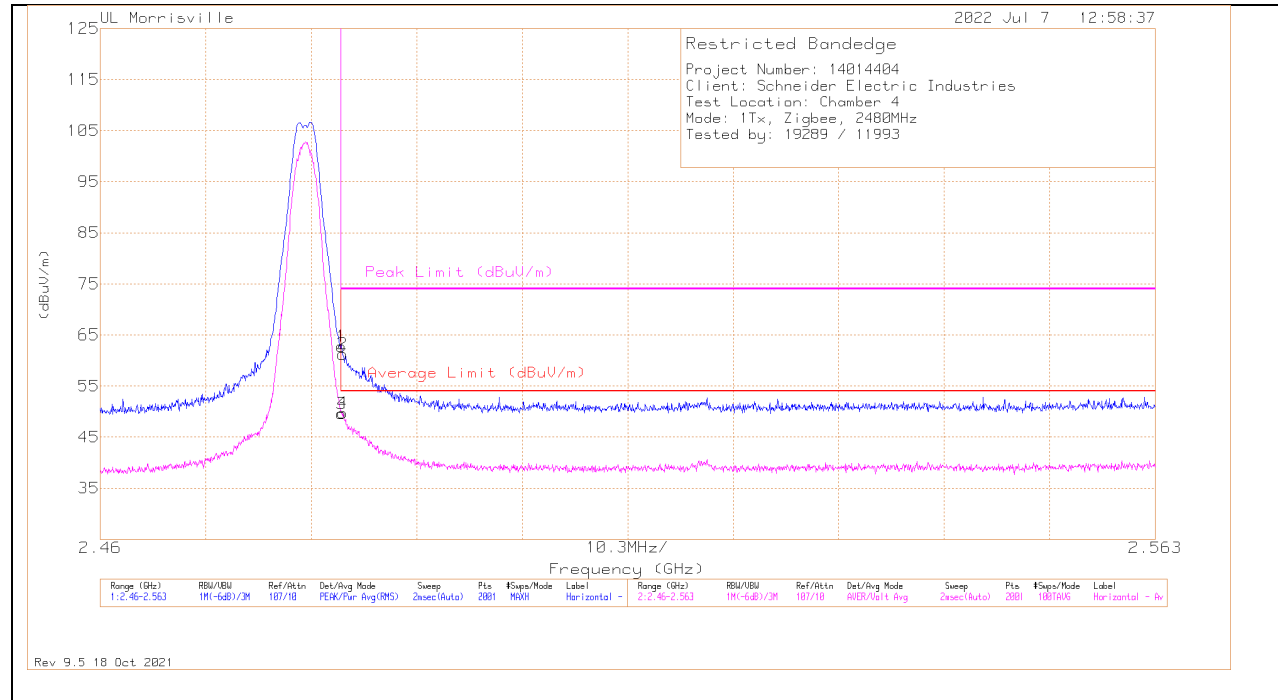
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

**BANDEDGE (HIGH CHANNEL)**

**HORIZONTAL RESULT**



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * ** 2.48354    | 43.88                | Pk  | 32.6          | -13.7          | 62.78                      | -                      | -           | 74                  | -11.22         | 28             | 121         | H        |
| 2      | * ** 2.48369    | 42.35                | Pk  | 32.6          | -13.7          | 61.25                      | -                      | -           | 74                  | -12.75         | 28             | 121         | H        |
| 3      | * ** 2.48354    | 30.7                 | ADV | 32.6          | -13.7          | 49.6                       | 54                     | -4.4        | -                   | -              | 28             | 121         | H        |
| 4      | * ** 2.48369    | 30.81                | ADV | 32.6          | -13.7          | 49.71                      | 54                     | -4.29       | -                   | -              | 28             | 121         | H        |

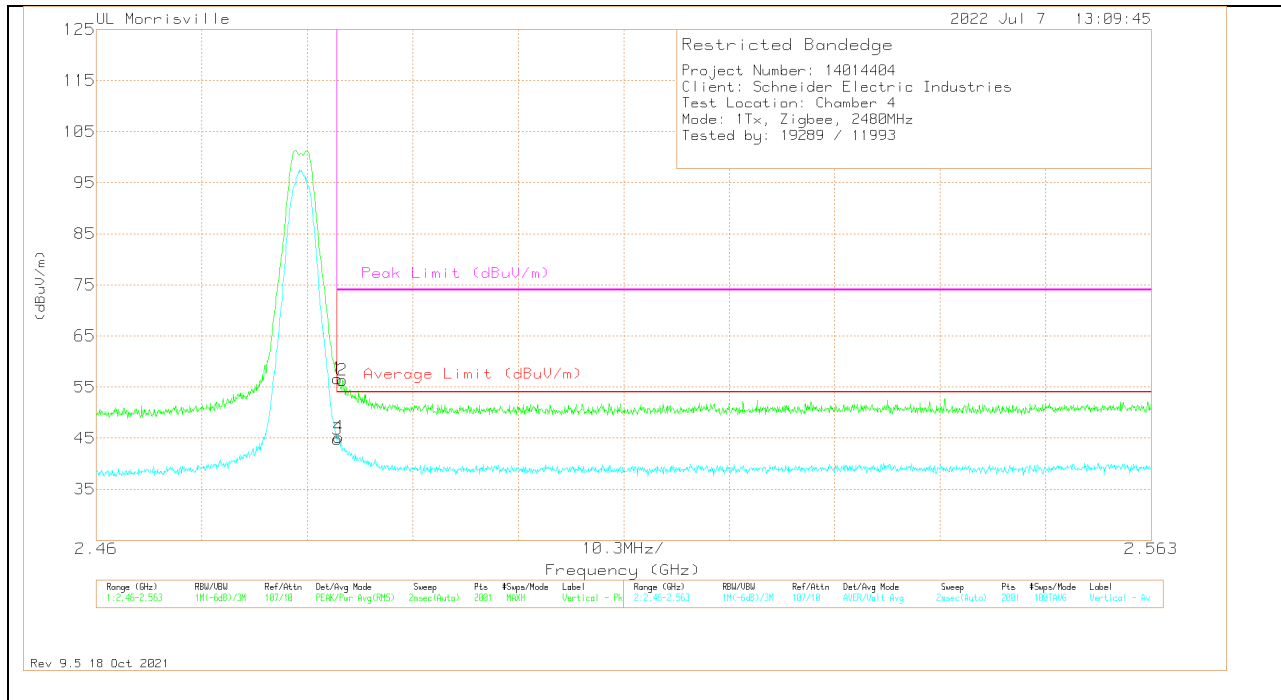
\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

## VERTICAL RESULT



| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|------------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * ** 2.48354    | 37.75                | Pk  | 32.6          | -13.7          | 56.65                      | -                      | -           | 74                  | -17.35         | 104            | 100         | V        |
| 2      | * ** 2.48405    | 37.44                | Pk  | 32.6          | -13.7          | 56.34                      | -                      | -           | 74                  | -17.66         | 104            | 100         | V        |
| 3      | * ** 2.48354    | 25.89                | ADV | 32.6          | -13.7          | 44.79                      | 54                     | -9.21       | -                   | -              | 104            | 100         | V        |
| 4      | * ** 2.48369    | 26.32                | ADV | 32.6          | -13.7          | 45.22                      | 54                     | -8.78       | -                   | -              | 104            | 100         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

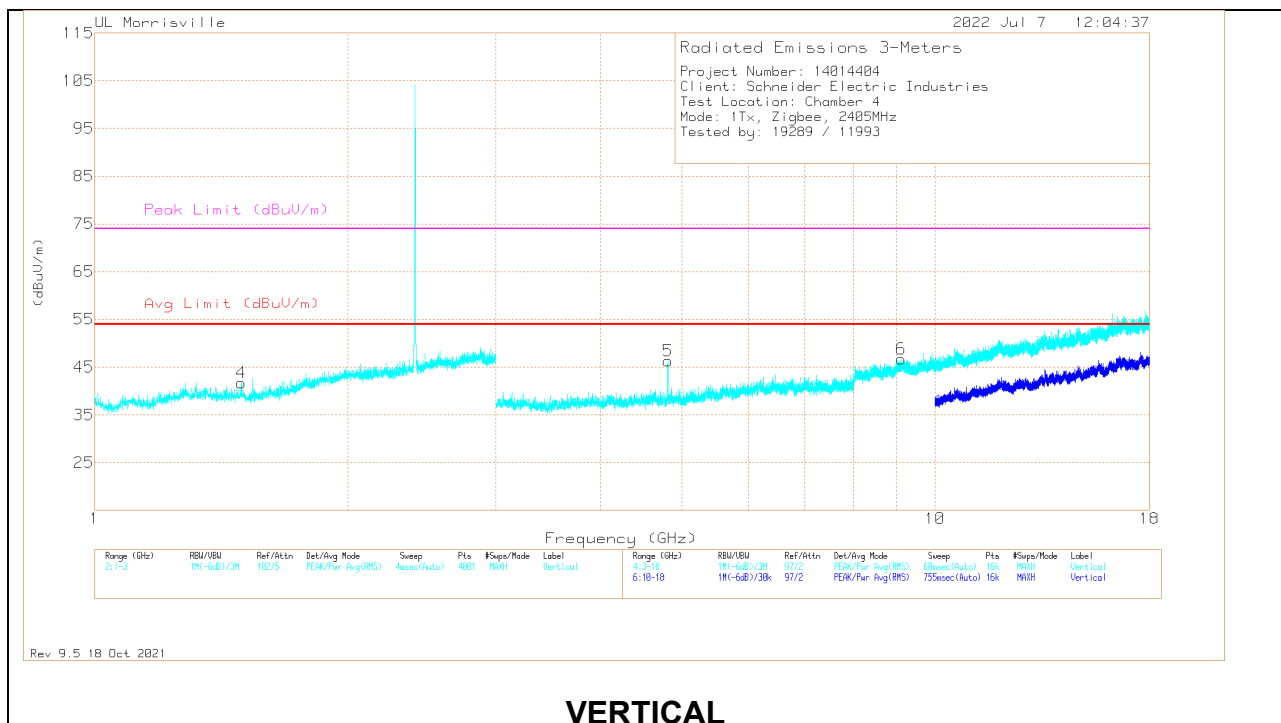
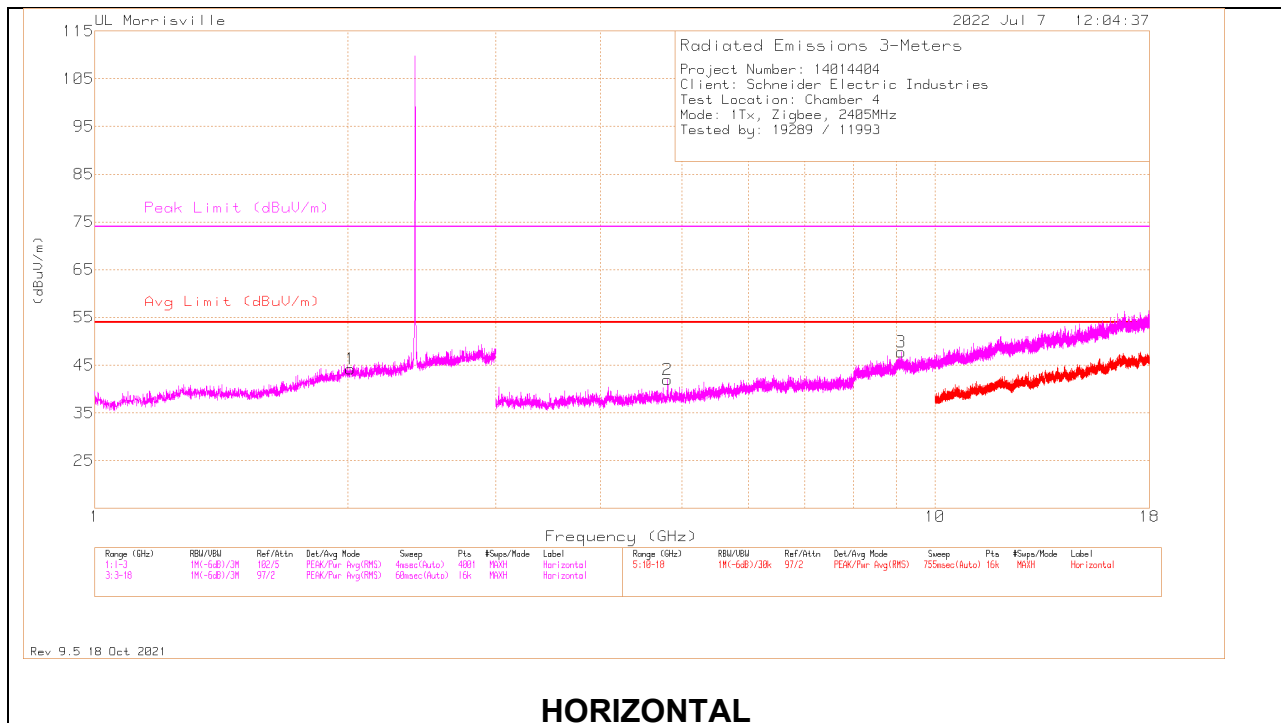
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

ADV - Linear Voltage Average

## HARMONICS AND SPURIOUS EMISSIONS

### LOW CHANNEL RESULTS



## RADIATED EMISSIONS

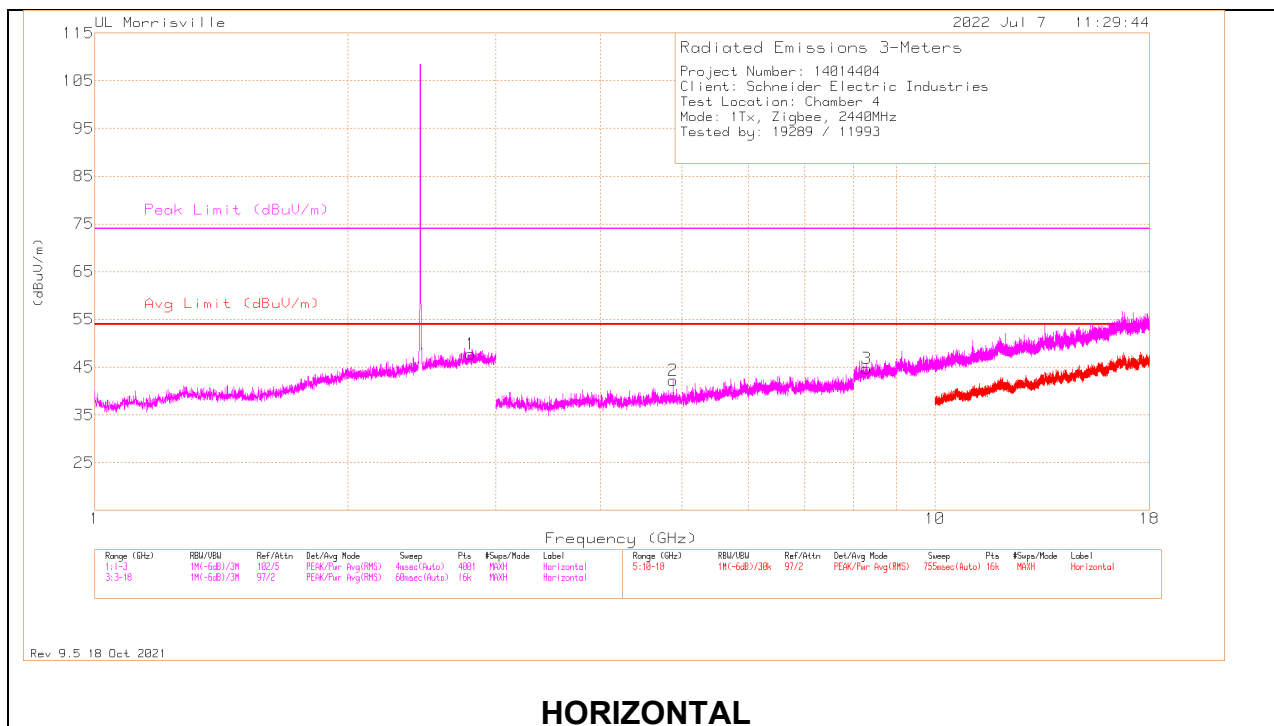
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | ** 2.015        | 26.5                 | Pk  | 31.9          | -14.2          | 44.2                       | 54                 | -9.8        | 74                  | -29.8          | 0-360          | 100         | H        |
| 4      | *** 1.4955      | 28.27                | Pk  | 28.4          | -15            | 41.67                      | 54                 | -12.33      | 74                  | -32.33         | 0-360          | 200         | V        |
| 2      | * ** 4.80844    | 39.63                | Pk  | 34.1          | -31.8          | 41.93                      | 54                 | -12.07      | 74                  | -32.07         | 0-360          | 100         | H        |
| 3      | * ** 9.11531    | 37.14                | Pk  | 36.2          | -25.6          | 47.74                      | 54                 | -6.26       | 74                  | -26.26         | 0-360          | 100         | H        |
| 5      | * ** 4.81125    | 43.98                | Pk  | 34.1          | -31.8          | 46.28                      | 54                 | -7.72       | 74                  | -27.72         | 0-360          | 200         | V        |
| 6      | *** 9.11625     | 36.1                 | Pk  | 36.2          | -25.6          | 46.7                       | 54                 | -7.3        | 74                  | -27.3          | 0-360          | 200         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

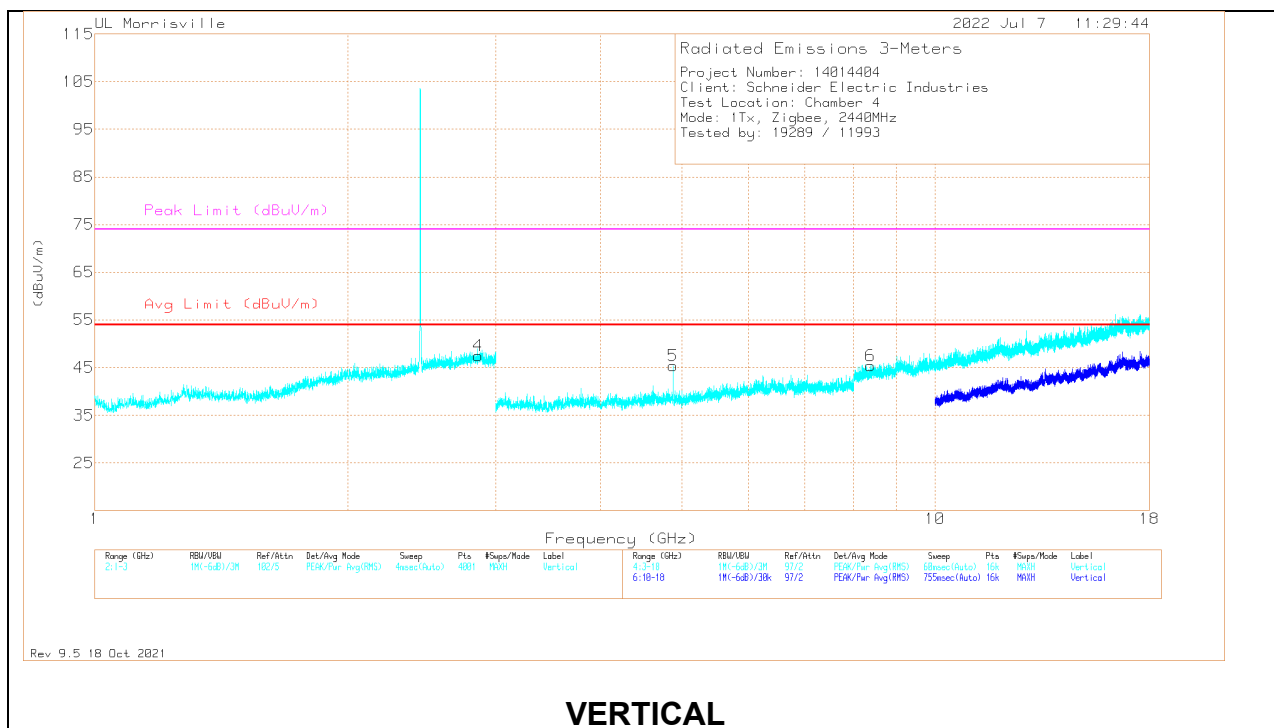
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

## MID CHANNEL RESULTS



## HORIZONTAL



## VERTICAL

## RADIATED EMISSIONS

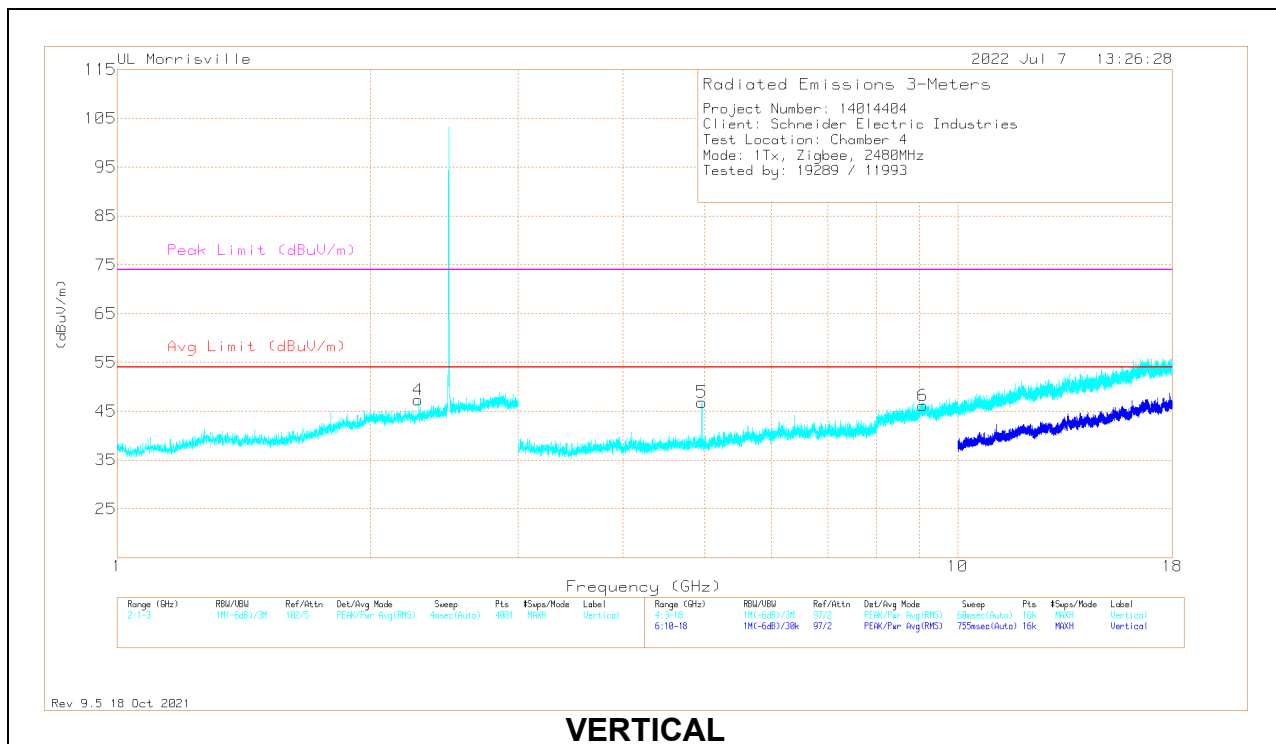
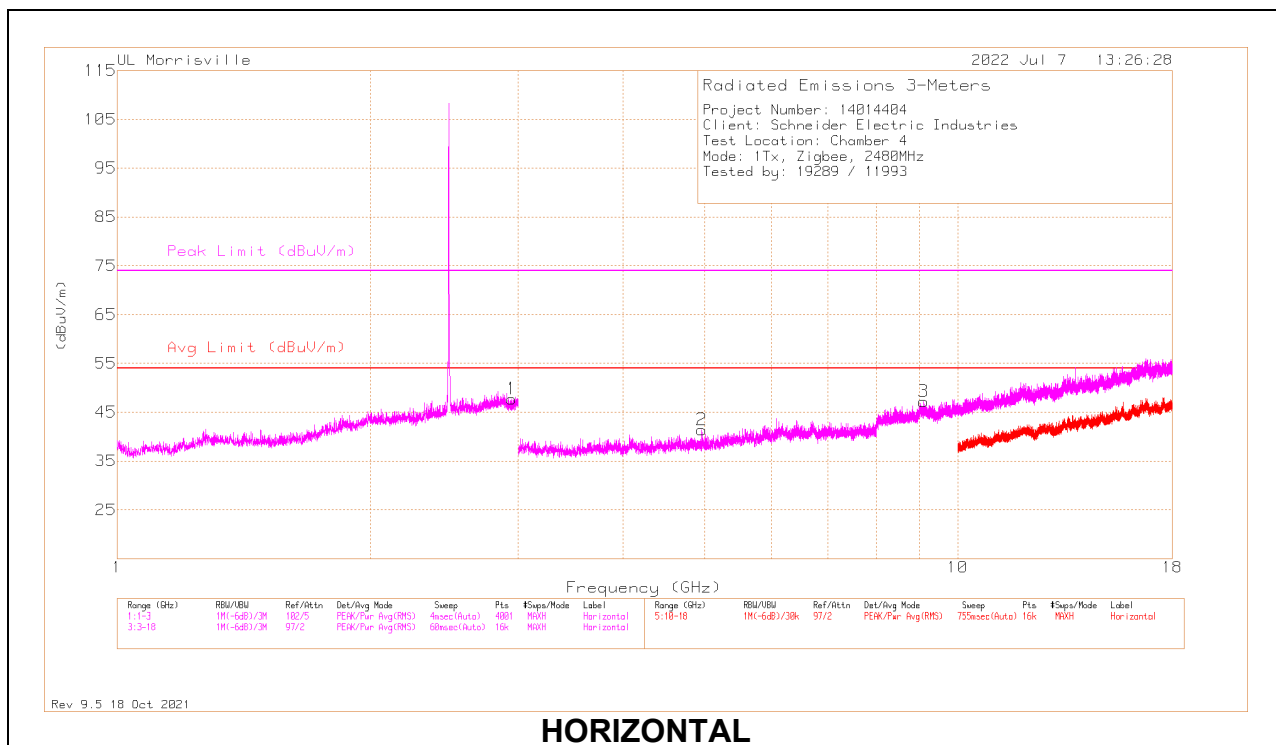
| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 1      | * ** 2.801      | 28.17                | Pk  | 32.6          | -13            | 47.77                      | 54                 | -6.23       | 74                  | -26.23         | 0-360          | 100         | H        |
| 4      | * ** 2.858      | 27.66                | Pk  | 32.6          | -12.8          | 47.46                      | 54                 | -6.54       | 74                  | -26.54         | 0-360          | 200         | V        |
| 2      | * ** 4.88063    | 40.19                | Pk  | 34            | -31.9          | 42.29                      | 54                 | -11.71      | 74                  | -31.71         | 0-360          | 100         | H        |
| 3      | * ** 8.3025     | 35.99                | Pk  | 35.7          | -27            | 44.69                      | 54                 | -9.31       | 74                  | -29.31         | 0-360          | 100         | H        |
| 5      | * ** 4.87875    | 43.34                | Pk  | 34            | -31.9          | 45.44                      | 54                 | -8.56       | 74                  | -28.56         | 0-360          | 200         | V        |
| 6      | * ** 8.3775     | 36.74                | Pk  | 35.7          | -27.1          | 45.34                      | 54                 | -8.66       | 74                  | -28.66         | 0-360          | 200         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

## HIGH CHANNEL RESULTS



## RADIATED EMISSIONS

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0067 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|--------------------|-------------|---------------------|----------------|----------------|-------------|----------|
| 4      | * ** 2.281      | 29.21                | Pk  | 32            | -13.9          | 47.31                      | 54                 | -6.69       | 74                  | -26.69         | 0-360          | 200         | V        |
| 2      | * ** 4.96031    | 39.01                | Pk  | 34            | -31.6          | 41.41                      | 54                 | -12.59      | 74                  | -32.59         | 0-360          | 100         | H        |
| 3      | * ** 9.10781    | 36.62                | Pk  | 36.2          | -25.6          | 47.22                      | 54                 | -6.78       | 74                  | -26.78         | 0-360          | 100         | H        |
| 5      | * ** 4.96125    | 44.44                | Pk  | 34            | -31.6          | 46.84                      | 54                 | -7.16       | 74                  | -27.16         | 0-360          | 200         | V        |
| 6      | * ** 9.08625    | 35.34                | Pk  | 36.2          | -25.4          | 46.14                      | 54                 | -7.86       | 74                  | -27.86         | 0-360          | 200         | V        |
| 1      | 2.9465          | 27.65                | Pk  | 32.7          | -12.6          | 47.75                      | -                  | -           | -                   | -              | 0-360          | 100         | H        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

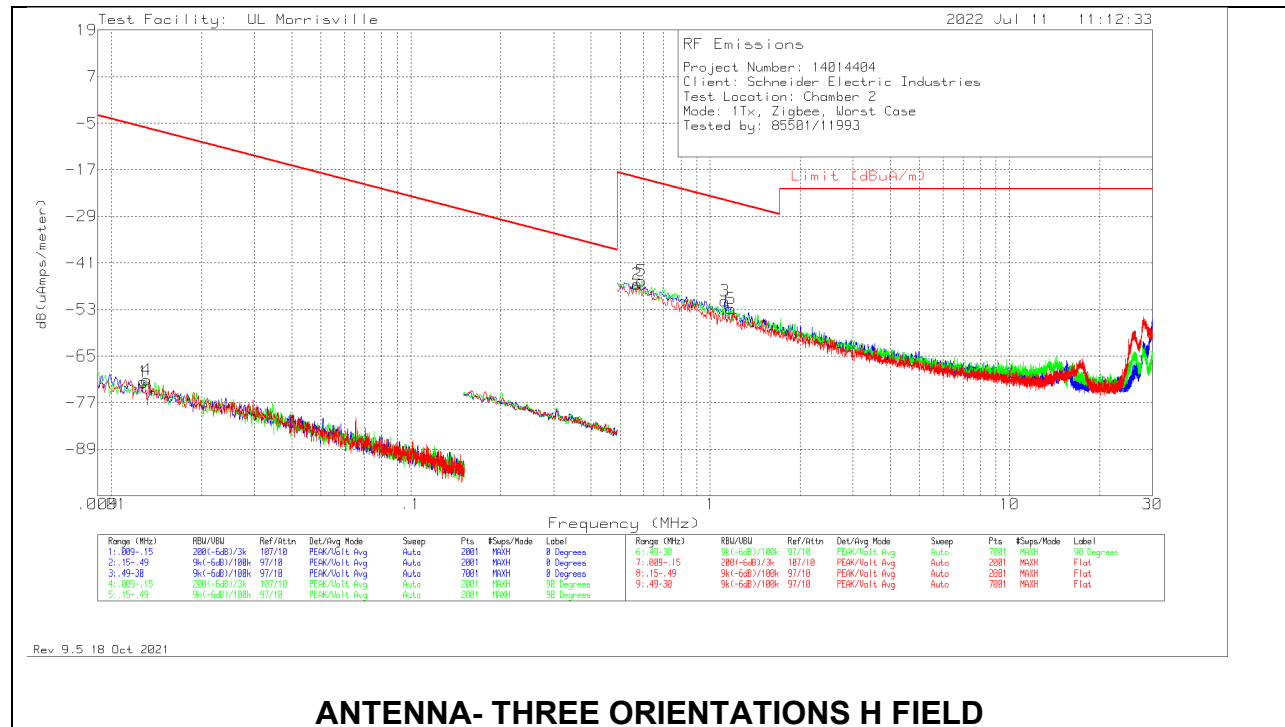
\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

### 10.3. WORST CASE BELOW 30MHZ

#### SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were  $40 \cdot \log(\text{test distance} / \text{specification distance})$ .

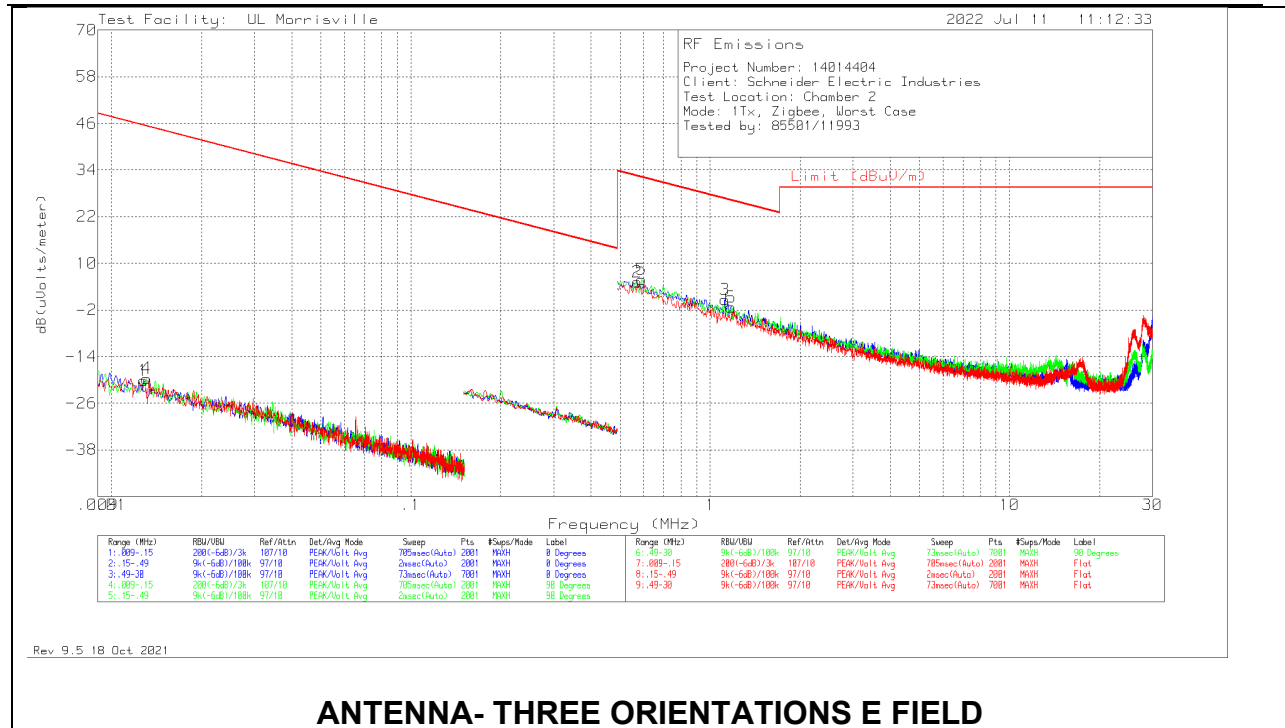


#### ANTENNA- THREE ORIENTATIONS H FIELD

#### Below 30MHz Data H FIELD

| Marker | Frequency (MHz) | Meter Reading (dBuA) | Det | AT0079 (dB/m) | Gain/Loss (dB) | Dist. Corr. Factor (dB) | Corrected Reading dB(uAmps/meter) | QP/AV Limit (dBuA/m) | PK Limit (dBuA/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Loop Angle |
|--------|-----------------|----------------------|-----|---------------|----------------|-------------------------|-----------------------------------|----------------------|-------------------|-------------|----------------|-------------|------------|
| 1      | .01276          | 42.49                | Pk  | -34.3         | .1             | -80                     | -71.71                            | -6.01                | 13.99             | -65.7       | 0-360          | 102         | 0 degs     |
| 4      | .01312          | 43.21                | Pk  | -34.4         | .1             | -80                     | -71.09                            | -6.25                | 13.75             | -64.84      | 0-360          | 102         | 90 degs    |
| 2      | .5701           | 33.81                | Pk  | -40.3         | .1             | -40                     | -46.39                            | -19.02               | -                 | -27.37      | 0-360          | 102         | 0 degs     |
| 5      | .59118          | 34.39                | Pk  | -40.3         | .2             | -40                     | -45.71                            | -19.33               | -                 | -26.38      | 0-360          | 102         | 90 degs    |
| 3      | 1.11818         | 29.2                 | Pk  | -40.2         | .2             | -40                     | -50.8                             | -24.87               | -                 | -25.93      | 0-360          | 102         | 0 degs     |
| 6      | 1.17299         | 27.3                 | Pk  | -40.2         | .2             | -40                     | -52.7                             | -25.28               | -                 | -27.42      | 0-360          | 102         | 90 degs    |

Pk - Peak detector



## ANTENNA- THREE ORIENTATIONS E FIELD

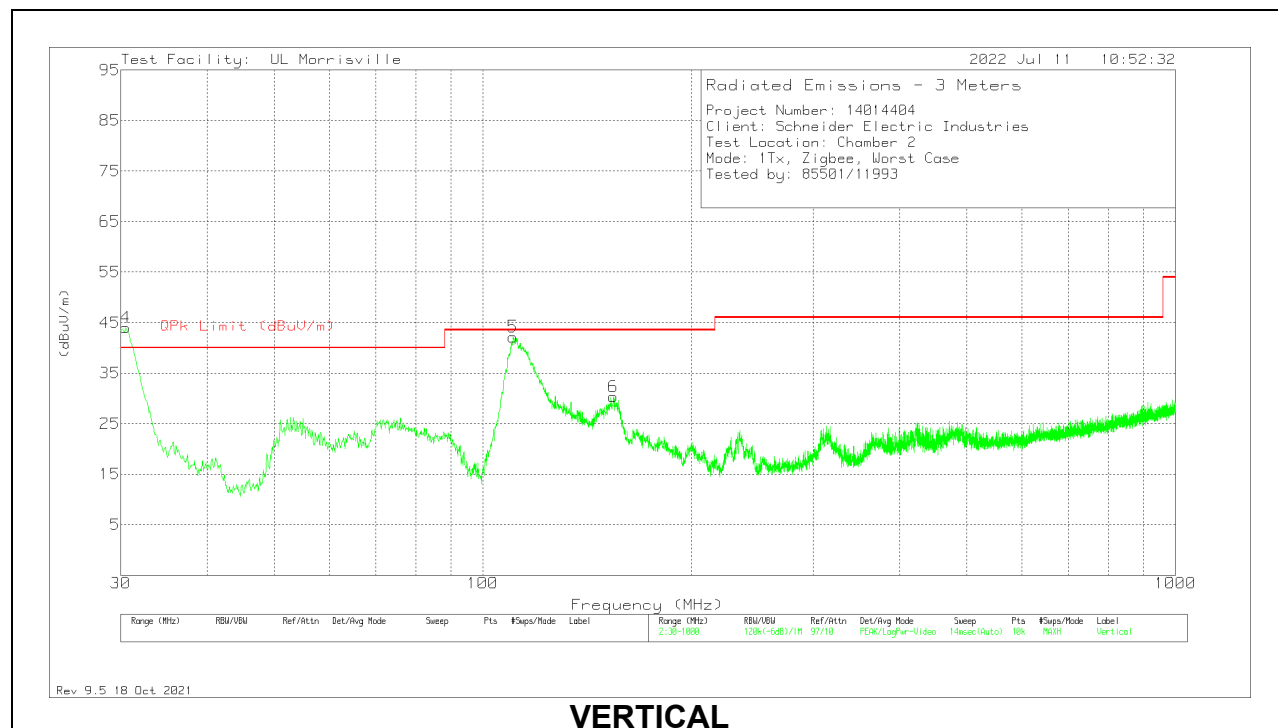
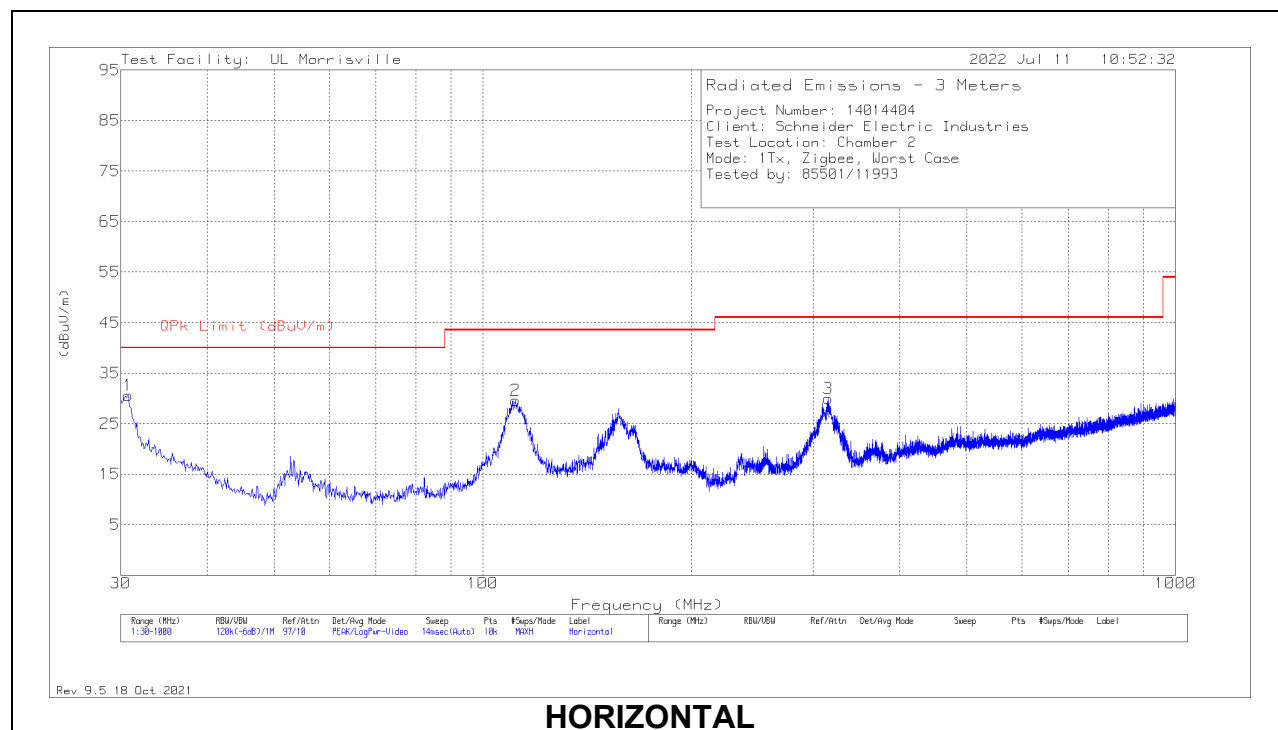
### Below 30MHz Data E FIELD

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AT0079 (dB/m) | Gain/Loss (dB) | Dist. Corr. Factor (dB) | Corrected Reading dB(uVolts/meter) | QP/AV Limit (dBuV/m) | Pk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Loop Angle |
|--------|-----------------|----------------------|-----|---------------|----------------|-------------------------|------------------------------------|----------------------|-------------------|-------------|----------------|-------------|------------|
| 1      | .01276          | 42.49                | Pk  | 17.2          | .1             | -80                     | -20.21                             | 45.49                | 65.49             | -65.7       | 0-360          | 102         | 0 degs     |
| 4      | .01312          | 43.21                | Pk  | 17.1          | .1             | -80                     | -19.59                             | 45.25                | 65.25             | -64.84      | 0-360          | 102         | 90 degs    |
| 2      | .5701           | 33.81                | Pk  | 11.2          | .1             | -40                     | 5.11                               | 32.48                | -                 | -27.37      | 0-360          | 102         | 0 degs     |
| 5      | .59118          | 34.39                | Pk  | 11.2          | .2             | -40                     | 5.79                               | 32.17                | -                 | -26.38      | 0-360          | 102         | 90 degs    |
| 3      | 1.11818         | 29.2                 | Pk  | 11.3          | .2             | -40                     | .7                                 | 26.63                | -                 | -25.93      | 0-360          | 102         | 0 degs     |
| 6      | 1.17299         | 27.3                 | Pk  | 11.3          | .2             | -40                     | -1.2                               | 26.22                | -                 | -27.42      | 0-360          | 102         | 90 degs    |

Pk - Peak detector

## 10.4. WORST CASE BELOW 1 GHZ

### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



## Below 1GHz Data

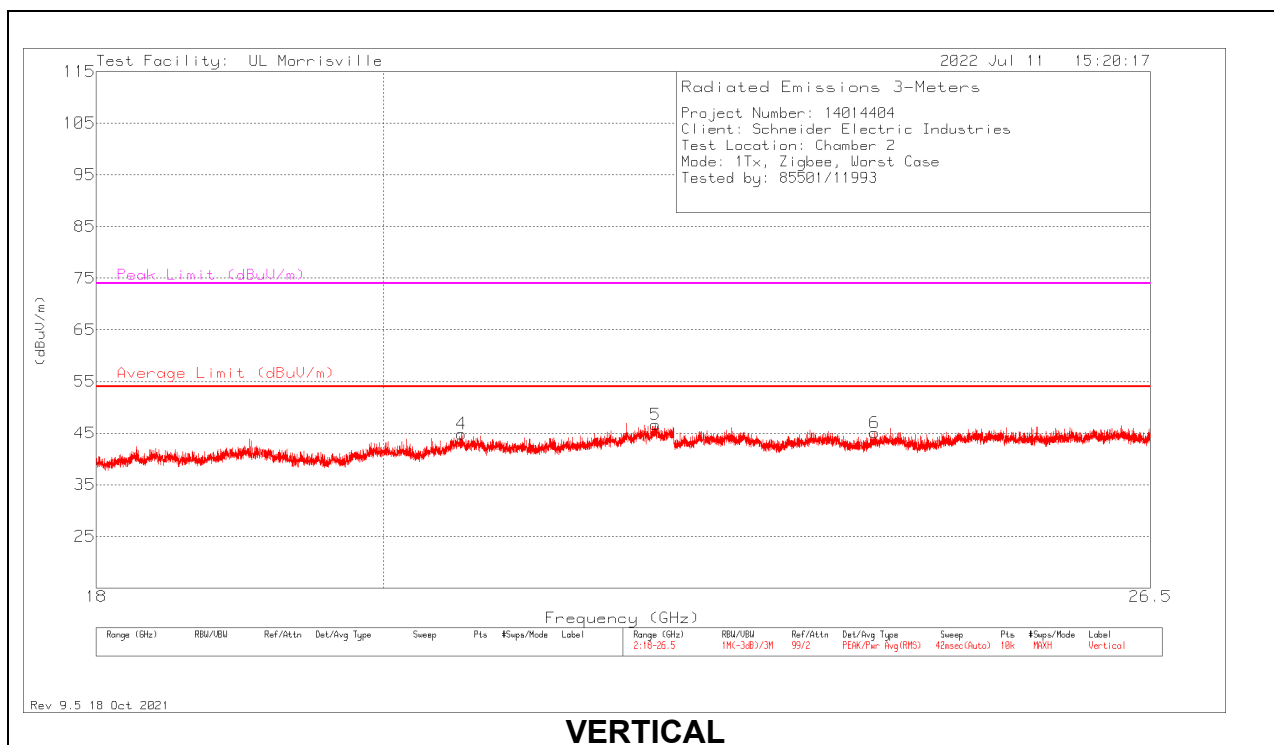
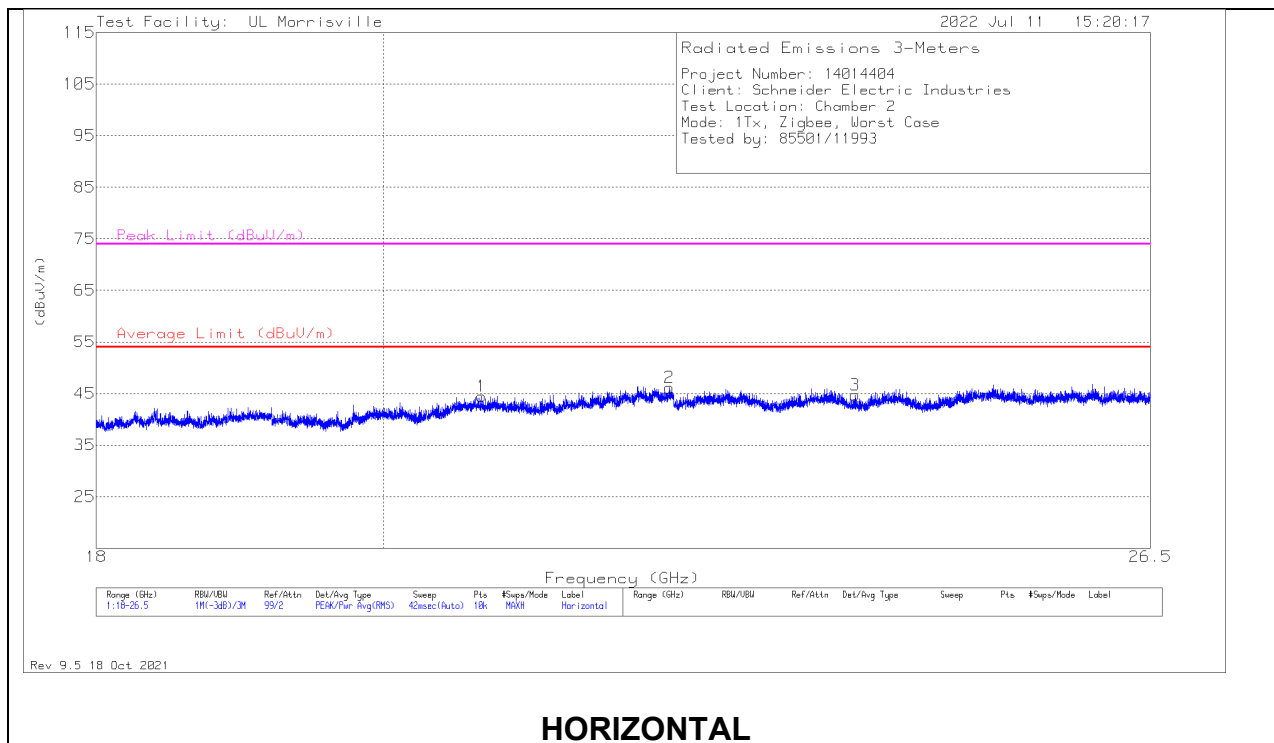
| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AT0073 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|--------------------|-------------|----------------|-------------|----------|
| 4      | 30.7123         | 44.21                | Qp  | 26.4          | -31.5          | 39.11                      | 40                 | -.89        | 204            | 100         | V        |
| 1      | 30.776          | 35.74                | Pk  | 26.3          | -31.4          | 30.64                      | 40                 | -9.36       | 0-360          | 299         | H        |
| 5      | 110.7878        | 51.18                | Qp  | 19            | -30.6          | 39.58                      | 43.52              | -3.94       | 168            | 103         | V        |
| 2      | 111.383         | 40.98                | Pk  | 19            | -30.4          | 29.58                      | 43.52              | -13.94      | 0-360          | 299         | H        |
| 6      | 154.354         | 41.95                | Pk  | 18.5          | -30.1          | 30.35                      | 43.52              | -13.17      | 0-360          | 101         | V        |
| 3      | 315.18          | 38.8                 | Pk  | 19.9          | -28.7          | 30                         | 46.02              | -16.02      | 0-360          | 101         | H        |

Pk - Peak detector

Qp - Quasi-Peak detector

## 10.5. WORST CASE 18-26 GHZ

### SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



## 18 – 26GHz Data

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AT0063 (dB/m) | Gain/Loss (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|-----------------|----------------------|-----|---------------|----------------|----------------------------|------------------------|-------------|---------------------|-------------|----------------|-------------|----------|
| 1      | * ** 20.73248   | 49.14                | Pk  | 33.9          | -38.6          | 44.44                      | 54                     | -9.56       | 74                  | -29.56      | 0-360          | 101         | H        |
| 2      | * ** 22.21218   | 47.63                | Pk  | 36.8          | -38.3          | 46.13                      | 54                     | -7.87       | 74                  | -27.87      | 0-360          | 250         | H        |
| 3      | * ** 23.78112   | 47.38                | Pk  | 34.9          | -37.6          | 44.68                      | 54                     | -9.32       | 74                  | -29.32      | 0-360          | 300         | H        |
| 4      | * ** 20.58204   | 49.33                | Pk  | 33.9          | -38.4          | 44.83                      | 54                     | -9.17       | 74                  | -29.17      | 0-360          | 150         | V        |
| 5      | * ** 22.10169   | 47.75                | Pk  | 37.1          | -38.2          | 46.65                      | 54                     | -7.35       | 74                  | -27.35      | 0-360          | 200         | V        |
| 6      | * ** 23.9511    | 47.66                | Pk  | 34.9          | -37.5          | 45.06                      | 54                     | -8.94       | 74                  | -28.94      | 0-360          | 150         | V        |

\* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

\*\* - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

## 11. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

| Frequency of Emission (MHz) | Conducted Limit (dBuV) |                       |
|-----------------------------|------------------------|-----------------------|
|                             | Quasi-peak             | Average               |
| 0.15-0.5                    | 66 to 56 <sup>*</sup>  | 56 to 46 <sup>*</sup> |
| 0.5-5                       | 56                     | 46                    |
| 5-30                        | 60                     | 50                    |

<sup>\*</sup> Decreases with the logarithm of the frequency.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

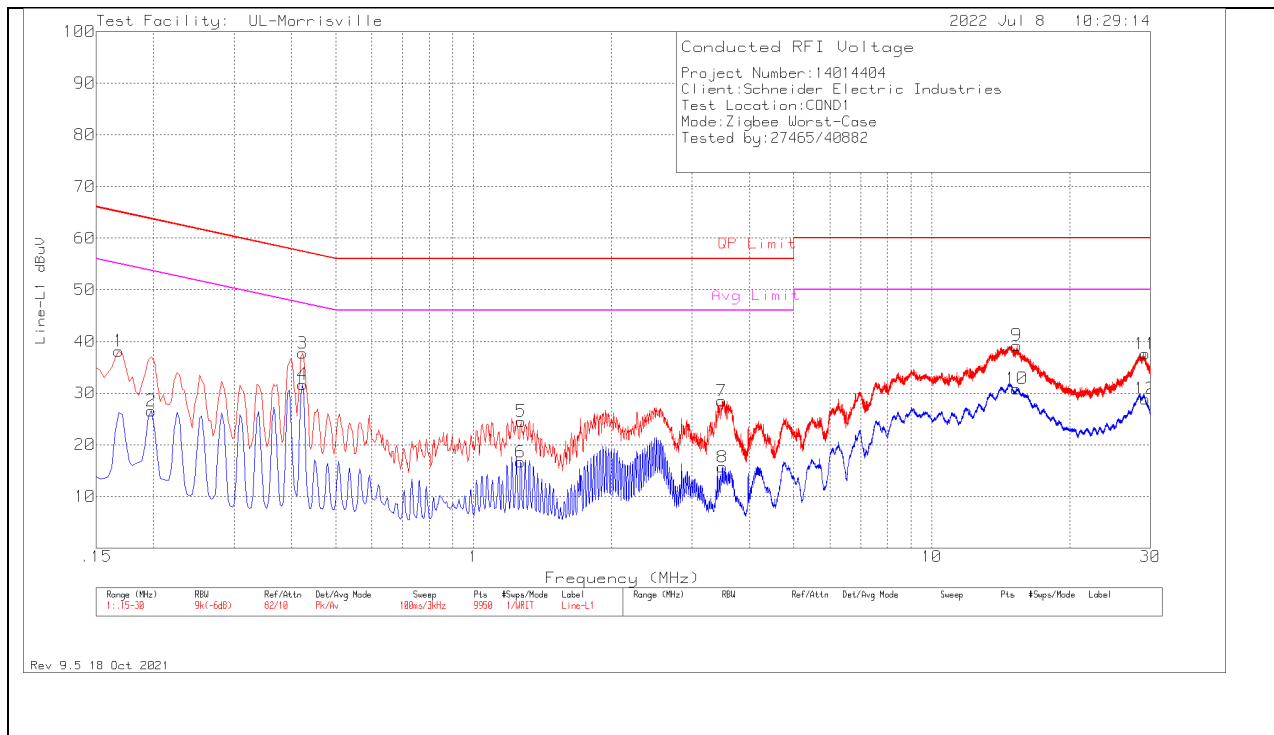
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both lines.

### RESULTS

## 11.1.1. AC Power Line Norm

### LINE 1 RESULTS

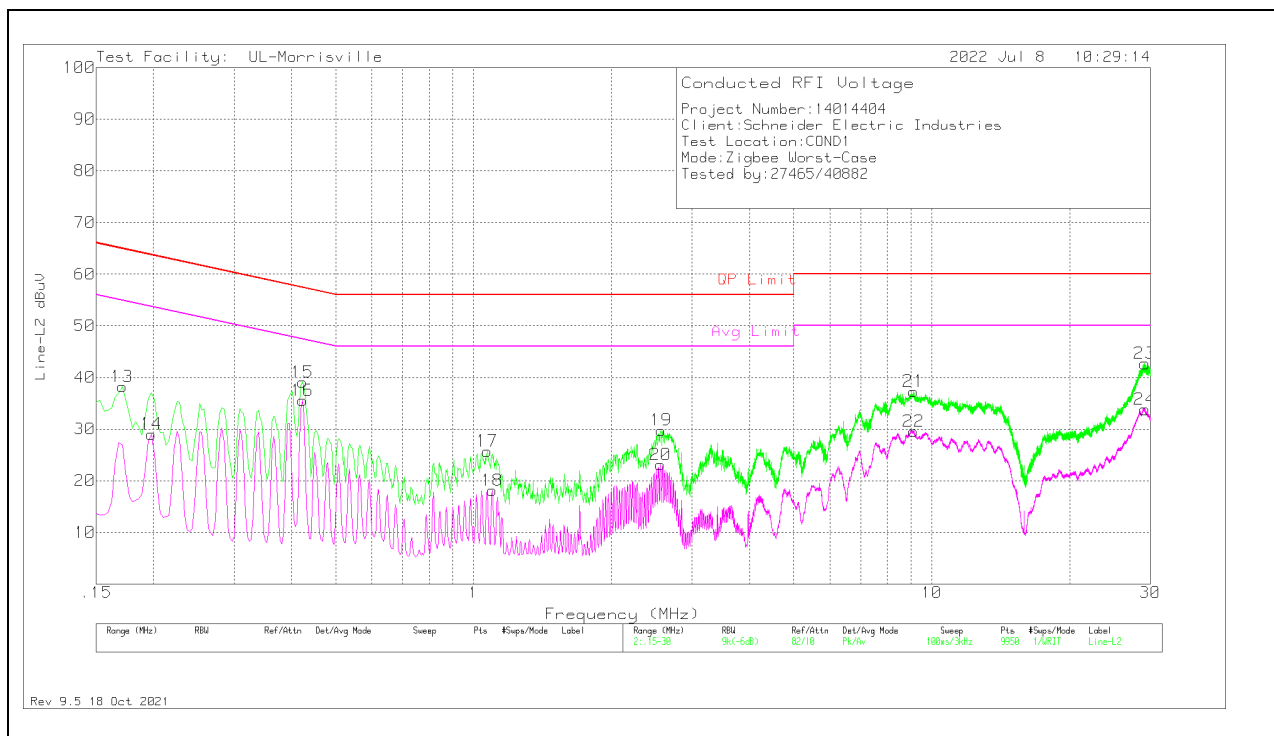


| Range 1: Line-L1 .15 - 30MHz |                 |                      |     |               |                  |                        |          |             |           |             |
|------------------------------|-----------------|----------------------|-----|---------------|------------------|------------------------|----------|-------------|-----------|-------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN VCF (dB) | Cbl/Limiter (dB) | Corrected Reading dBuV | QP Limit | Margin (dB) | Avg Limit | Margin (dB) |
| 1                            | .168            | 28.13                | Pk  | .2            | 9.8              | 38.13                  | 65.06    | -26.93      | 55.06     | -16.93      |
| 2                            | .198            | 16.57                | Av  | .2            | 9.8              | 26.57                  | 63.69    | -37.12      | 53.69     | -27.12      |
| 3                            | .423            | 27.84                | Pk  | .1            | 9.8              | 37.74                  | 57.39    | -19.65      | 47.39     | -9.65       |
| 4                            | .423            | 21.78                | Av  | .1            | 9.8              | 31.68                  | 57.39    | -25.71      | 47.39     | -15.71      |
| 6                            | 1.266           | 6.87                 | Av  | 0             | 9.8              | 16.67                  | 56       | -39.33      | 46        | -29.33      |
| 5                            | 1.269           | 14.71                | Pk  | 0             | 9.8              | 24.51                  | 56       | -31.49      | 46        | -21.49      |
| 7                            | 3.48            | 18.58                | Pk  | 0             | 9.9              | 28.48                  | 56       | -27.52      | 46        | -17.52      |
| 8                            | 3.492           | 5.77                 | Av  | 0             | 9.9              | 15.67                  | 56       | -40.33      | 46        | -30.33      |
| 10                           | 15.33           | 20.66                | Av  | .1            | 10.1             | 30.86                  | 60       | -29.14      | 50        | -19.14      |
| 9                            | 15.336          | 29.05                | Pk  | .1            | 10.1             | 39.25                  | 60       | -20.75      | 50        | -10.75      |
| 12                           | 29.229          | 18.41                | Av  | .3            | 10.2             | 28.91                  | 60       | -31.09      | 50        | -21.09      |
| 11                           | 29.241          | 27.12                | Pk  | .3            | 10.2             | 37.62                  | 60       | -22.38      | 50        | -12.38      |

Pk - Peak detector

Av - Average detection

## LINE 2 RESULTS



| Range 2: Line-L2 .15 - 30MHz |                 |                      |     |               |                  |                        |          |             |           |             |
|------------------------------|-----------------|----------------------|-----|---------------|------------------|------------------------|----------|-------------|-----------|-------------|
| Marker                       | Frequency (MHz) | Meter Reading (dBuV) | Det | LISN VCF (dB) | Cbl/Limiter (dB) | Corrected Reading dBuV | QP Limit | Margin (dB) | Avg Limit | Margin (dB) |
| 13                           | .171            | 28.22                | Pk  | .2            | 9.8              | 38.22                  | 64.91    | -26.69      | 54.91     | -16.69      |
| 14                           | .198            | 19                   | Av  | .2            | 9.8              | 29                     | 63.69    | -34.69      | 53.69     | -24.69      |
| 15                           | .423            | 29.16                | Pk  | .1            | 9.8              | 39.06                  | 57.39    | -18.33      | 47.39     | -8.33       |
| 16                           | .423            | 25.64                | Av  | .1            | 9.8              | 35.54                  | 57.39    | -21.85      | 47.39     | -11.85      |
| 17                           | 1.071           | 15.9                 | Pk  | 0             | 9.8              | 25.7                   | 56       | -30.3       | 46        | -20.3       |
| 18                           | 1.098           | 8.32                 | Av  | 0             | 9.8              | 18.12                  | 56       | -37.88      | 46        | -27.88      |
| 20                           | 2.559           | 13.3                 | Av  | 0             | 9.8              | 23.1                   | 56       | -32.9       | 46        | -22.9       |
| 19                           | 2.565           | 19.96                | Pk  | 0             | 9.8              | 29.76                  | 56       | -26.24      | 46        | -16.24      |
| 21                           | 9.123           | 27.18                | Pk  | .1            | 10               | 37.28                  | 60       | -22.72      | 50        | -12.72      |
| 22                           | 9.123           | 19.48                | Av  | .1            | 10               | 29.58                  | 60       | -30.42      | 50        | -20.42      |
| 23                           | 29.19           | 32.19                | Pk  | .3            | 10.2             | 42.69                  | 60       | -17.31      | 50        | -7.31       |
| 24                           | 29.202          | 23.31                | Av  | .3            | 10.2             | 33.81                  | 60       | -26.19      | 50        | -16.19      |

Pk - Peak detector

Av - Average detection

## **12. SETUP PHOTOS**

Please refer to 14014404-EP1 for setup photos

## **END OF TEST REPORT**