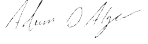


# TR3812 C - LoRa FHSS

|                              |                                                                              |
|------------------------------|------------------------------------------------------------------------------|
| <b>Equipment Under Test:</b> | Sentrius™ RS262 Sensor                                                       |
| <b>Requirement(s):</b>       | eCFR 47 Part 15.247   RSS-247                                                |
| <b>Test Date(s):</b>         | 01/14/2025-04/14/2025                                                        |
| <b>Prepared for:</b>         | Ezurio<br>Attn: Brian Petted<br>W66 N220 Commerce Ct.<br>Cedarburg, WI 53012 |

|                                                                                                |                  |
|------------------------------------------------------------------------------------------------|------------------|
| <b>Report Issued by:</b> Adam Alger, Sr. Manager, EMC Laboratory                               |                  |
| Signature:  | Date: 04/15/2025 |
| <b>Report Reviewed by:</b> Dylan Rosenfeldt, EMC Engineer II                                   |                  |
| Signature:  | Date: 04/15/2025 |
| <b>Report Constructed by:</b> Adam Alger, Sr. Manager, EMC Laboratory                          |                  |
| Signature:  | Date: 04/13/2025 |

*This test report may not be reproduced, except in full, without approval of Ezurio*

|                              |                            |                              |
|------------------------------|----------------------------|------------------------------|
| Company: Ezurio              | Page <b>1</b> of <b>34</b> | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |                            | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |                            | Serial: Eng. Sample          |

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## Ezurio Test Services in Review

The Ezurio laboratory located at W66 N220 Commerce Court Cedarburg, Wisconsin, 53012 USA is recognized through the following organizations:



### A2LA – American Association for Laboratory Accreditation

*Accreditation based on ISO/IEC 17025:2017 with Electrical (EMC) Scope*

*A2LA Certificate Number: 1255.01*

*Scope of accreditation includes all test methods listed herein unless otherwise noted*



### Federal Communications Commission (FCC) – USA

*Accredited Test Firm Registration Number: 953492*

*Recognition of two 3 meter Semi-Anechoic Chambers*



### Innovation, Science and Economic Development Canada

*Accredited U.S. Identification Number: US0218*

*Recognition of two 3 meter Semi-Anechoic Chambers*

|                              |              |                              |
|------------------------------|--------------|------------------------------|
| Company: Ezurio              | Page 3 of 34 | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |              | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |              | Serial: Eng. Sample          |

# 1 TEST REPORT SUMMARY

During **01/14/2025-04/14/2025** the Equipment Under Test (EUT), **Sentrius™ RS262 Sensor**, as provided by **Ezurio** was tested to the following requirements:

## FCC 15.247 | RSS-247 – FHSS LoRa

| Requirements                                                           | Description                        | Method      | Compliant |
|------------------------------------------------------------------------|------------------------------------|-------------|-----------|
| 15.247(a)(1)(i)<br>RSS-247 Clause 5.1 (c)                              | 20 dB and 99% Occupied Bandwidth   | ANSI C63.10 | Yes       |
| 15.247(b)(2)<br>RSS-247 Clause 5.4 (a)                                 | RF Output Power                    | ANSI C63.10 | Yes       |
| 15.247(d)<br>15.209<br>RSS-247 Clause 5.5<br>RSS-GEN Clause 8.9 / 8.10 | Out-of-band Emissions 30-25000 MHz | ANSI C63.10 | Yes       |
| 15.247 (a)(1)(i)<br>RSS-247 Clause 5.1 (c)                             | Frequency Hopping Systems          | ANSI C63.10 | Yes       |
| 2.1055(d)<br>RSS-GEN 6.11                                              | Frequency Stability                | ANSI C63.10 | Reported  |
| 15.31 (k)<br>RSS-247                                                   | Simultaneous Transmission          | ANSI C63.10 | Yes       |

### Notice:

The results relate only to the item tested as configured and described in this report. Any additional configurations, modes of operation, or modifications made to the equipment under test after the specified test date(s) are at the decision of the client and may not apply to the data seen in this test report.

The decision rule for Pass / Fail assessment to the specification or standard listed in this test report has been agreed upon by the client and laboratory to be as follows:

| Measurement Type      | Rule                           |
|-----------------------|--------------------------------|
| Emissions – Amplitude | 1 dB below specified limit     |
| Emissions – Frequency | 1% less than the specification |
| Immunity              | Tested at specified level      |

## 2 CLIENT INFORMATION

|                       |                                              |
|-----------------------|----------------------------------------------|
| <b>Company Name</b>   | Ezurio                                       |
| <b>Contact Person</b> | Brian Petted                                 |
| <b>Address</b>        | W66 N220 Commerce Ct.<br>Cedarburg, WI 53012 |

### 2.1 Equipment Under Test (EUT) Information

*The following information has been supplied by the client*

|                      |                        |
|----------------------|------------------------|
| <b>Product Name</b>  | Sentrius™ RS262 Sensor |
| <b>Model Number</b>  | RS262-EXT, RS262-INT   |
| <b>Serial Number</b> | Eng Sample             |
| <b>FCC ID</b>        | SQG-RS262              |
| <b>IC ID</b>         | 3147A-RS262            |

### 2.2 Product Description

The RS262 is a device with LoRa and Bluetooth Low Energy v5.4. Two versions; external sensor temperature / humidity version and internal temperature / humidity sensor version.

### 2.3 Modifications Incorporated for Compliance

None noted at time of test

### 2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

### 2.5 EUT Information

Battery 3.0 VDC nominal, 3.2 VDC maximum

Device programmed for test modes using Simplicity Studio v5, Bluetooth NCP Commander, RF Regulatory Test and TeraTerm serial AT commands for LoRa. BLE and LoRa can simultaneously transmit.

## 2.6 Antenna Information

| Manufacturer | Frequency Range (MHz) | Dimension (mm)    | Type                                    | Peak Gain (dBi) |
|--------------|-----------------------|-------------------|-----------------------------------------|-----------------|
| Ezurio       | 902-928               | 85.0 x 42.0 x 1.5 | PCBA Monopole Antenna (Loaded Stub "L") | +0.9            |
| Ezurio       | 2402-2480             | 85.0 x 42.0 x 1.5 | PCB Trace Antenna                       | +1.8            |

## 2.7 Test Channels

| Channel | Frequency (MHz) | Power Index | Channel Bandwidth (kHz) | Spreading Factor | Data Rate (bits/sec) |
|---------|-----------------|-------------|-------------------------|------------------|----------------------|
| 0       | 902.3           | 22          | 125                     | SF 10            | 980                  |
| 31      | 908.5           | 22          | 125                     | SF 10            | 980                  |
| 63      | 914.9           | 22          | 125                     | SF 10            | 980                  |

### 3 REFERENCES

| Publication         | Edition | Date | AMD 1 | AMD 2 |
|---------------------|---------|------|-------|-------|
| FCC eCFR 47 Part 15 | -       | 2025 | -     | -     |
| ANSI C63.10         | -       | 2020 | -     | -     |
| RSS-247             | 3       | 2023 | -     | -     |
| RSS-GEN             | 5       | 2018 | 2019  | 2021  |

## 4 UNCERTAINTY SUMMARY

Using the guidance of the following publications the calculated measurement uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of  $k = 2$ .

### References

CISPR 16-4-1

CISPR 16-4-2

CISPR 32

ANSI C63.23

A2LA P103

A2LA P103c

ETSI TR 100-028

| Measurement Type            | Configuration                 | Uncertainty $\pm$ |
|-----------------------------|-------------------------------|-------------------|
| Radiated Emissions          | Biconical Antenna             | 5.0 dB            |
| Radiated Emissions          | Log Periodic Antenna          | 5.3 dB            |
| Radiated Emissions          | Horn Antenna                  | 4.7 dB            |
| AC Line Conducted Emissions | Artificial Mains Network      | 3.4 dB            |
| Telecom Conducted Emissions | Asymmetric Artificial Network | 4.9 dB            |
| Disturbance Power Emissions | Absorbing Clamp               | 4.1 dB            |
| Radiated Immunity           | 3 Volts/meter                 | 2.2 dB            |
| Conducted Immunity          | CDN/EM/BCI                    | 2.4/3.5/3.4 dB    |
| EFT Burst/Surge             | Peak pulse voltage            | 164 volts         |
| ESD Immunity                | 15 kV level                   | 1377 Volts        |

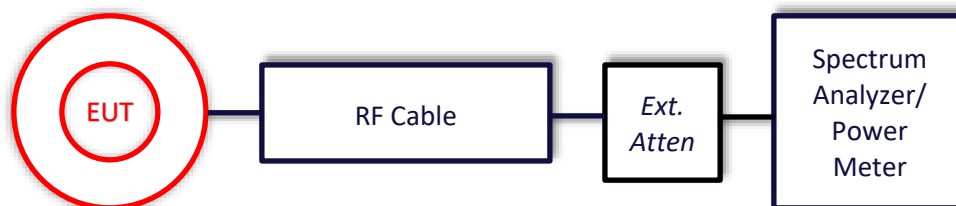
| Parameter                                  | ETSI U.C. $\pm$    | U.C. $\pm$            |
|--------------------------------------------|--------------------|-----------------------|
| Radio Frequency, from F0                   | $1 \times 10^{-7}$ | $0.55 \times 10^{-7}$ |
| Occupied Channel Bandwidth                 | 5 %                | 2 %                   |
| RF conducted Power (Power Meter)           | 1.5 dB             | 1.2 dB                |
| RF conducted emissions (Spectrum Analyzer) | 3.0 dB             | 1.7 dB                |
| All emissions, radiated                    | 6.0 dB             | 5.3 dB                |
| Temperature                                | 1° C               | 0.65° C               |
| Humidity                                   | 5 %                | 2.9 %                 |
| Supply voltages                            | 3 %                | 1 %                   |

## 5 TEST DATA

### 5.1 Antenna Port Conducted Emissions

|                                   |                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description of Measurement</b> | <p>The direct measurement of emissions at the antenna port of the EUT is achieved by use of a RF connection to a spectrum analyzer or power meter.</p> <p>The cable and attenuator factors are loaded into the analyzer or power meter allowing for direct measurement readings without the need for further corrections.</p> |
| <b>Example Calculations</b>       | <p>Measurement (dBm) + Cable factor (dB) + External Attenuator (dB) = Corrected Reading (dBm)</p> <p>Margin (dB) = Limit (dBm) – Corrected Reading (dBm)</p>                                                                                                                                                                  |

#### Block Diagram



#### Instrumentation

| Asset #      | Description             | Manufacturer       | Model #   | Serial #   | Date      | Due Date  | Status              |
|--------------|-------------------------|--------------------|-----------|------------|-----------|-----------|---------------------|
| AA<br>960172 | Cable                   | A.H. Systems, Inc. | SAC-26G-1 | 387        | 1/28/2025 | 1/28/2026 | Active Verification |
| EE<br>960085 | Analyzer - EMI Receiver | Agilent            | N9038A    | MY51210148 | 4/9/2024  | 4/9/2025  | Active Calibration  |
| EE<br>960087 | Analyzer - Spectrum     | Agilent            | N9010A    | MY53400296 | 4/10/2024 | 4/10/2025 | Active Calibration  |

### 5.1.1.1 20 dB and 99% Occupied Bandwidth

|                    |                                            |                 |                   |
|--------------------|--------------------------------------------|-----------------|-------------------|
| <b>Operator</b>    | Dylan Rosenfeldt                           | <b>QA</b>       | Anthony Smith     |
| <b>Temperature</b> | 21.3°C                                     | <b>R.H. %</b>   | 27.8%             |
| <b>Test Date</b>   | 2/25/2025                                  | <b>Location</b> | RF Bench          |
| <b>Requirement</b> | 15.247 (a)(1)(i)<br>RSS-247 Clause 5.1 (c) | <b>Method</b>   | ANSI C63.10 6.9.3 |

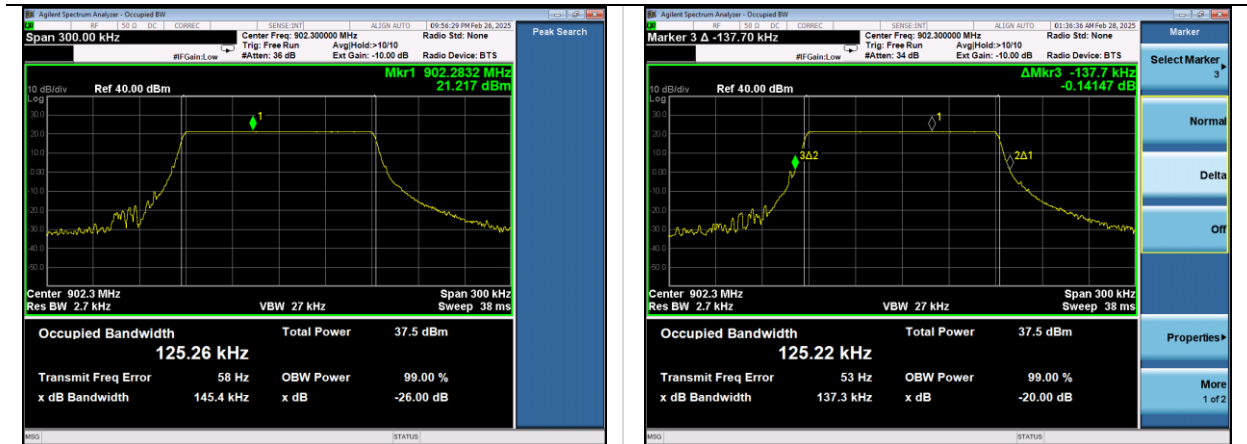
### Test Parameters

|                    |                 |                 |              |
|--------------------|-----------------|-----------------|--------------|
| <b>Frequency</b>   | 902.3-914.9 MHz | <b>Setup</b>    | Antenna Port |
| <b>RBW</b>         | 2.7 kHz         | <b>VBW</b>      | 27 kHz       |
| <b>Detector(s)</b> | Peak            | <b>Settings</b> | Max Hold     |

### Table

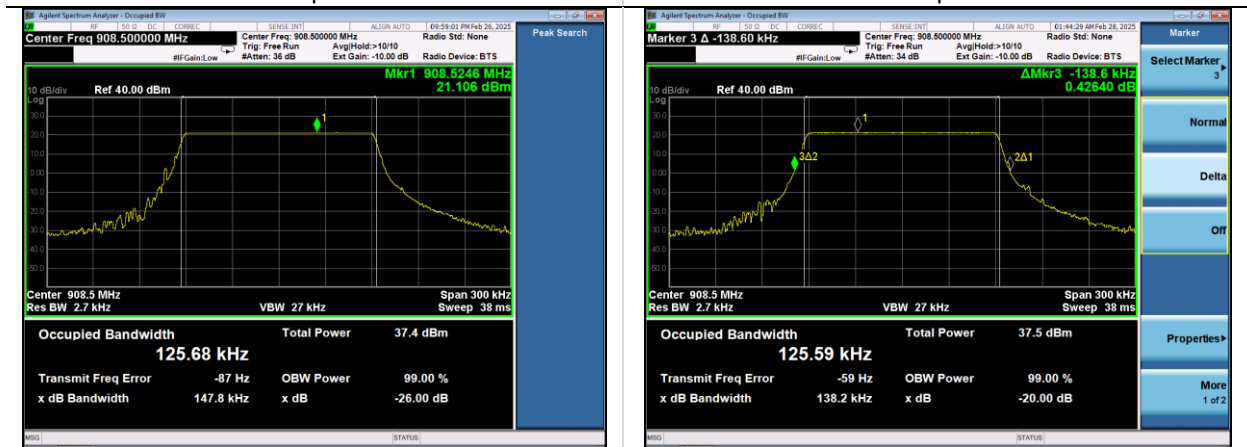
| Channel | Freq (MHz) | 99% OBW (kHz) | 20dB BW (kHz) |
|---------|------------|---------------|---------------|
| 0       | 902.3      | 125           | 137           |
| 31      | 908.5      | 126           | 138           |
| 63      | 914.9      | 125           | 137           |

## Plots



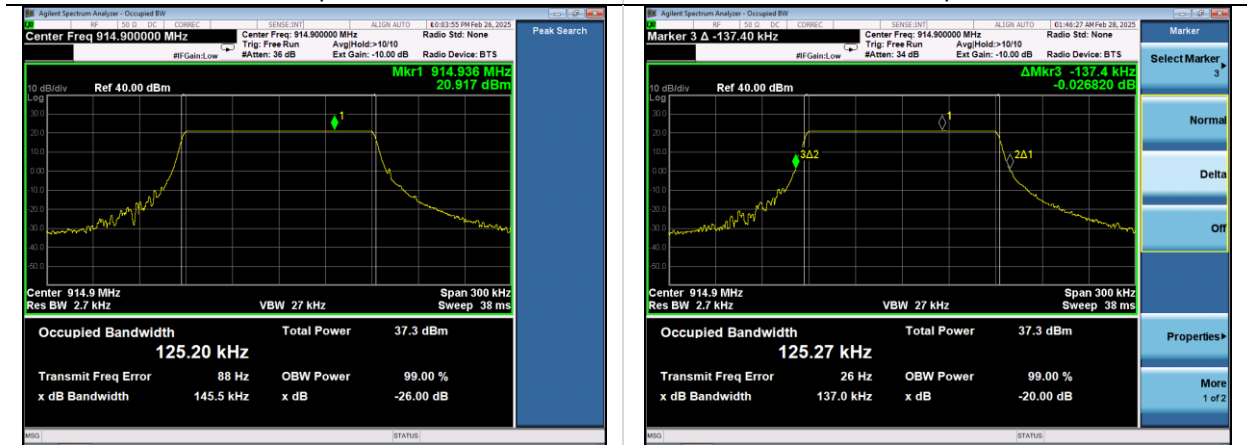
Channel 0 | 99% OBW

Channel 0 | 20 dB BW



Channel 31 | 99% OBW

Channel 31 | 20 dB BW



Channel 63 | 99% OBW

Channel 63 | 20 dB BW

### 5.1.2 RF Output Power

|                    |                                         |                 |                   |
|--------------------|-----------------------------------------|-----------------|-------------------|
| <b>Operator</b>    | Dylan Rosenfeldt                        | <b>QA</b>       | Anthony Smith     |
| <b>Temperature</b> | 21.6°C                                  | <b>R.H. %</b>   | 25.3%             |
| <b>Test Date</b>   | 4/1/2025                                | <b>Location</b> | RF Bench          |
| <b>Requirement</b> | 15.247 (b)(2)<br>RSS-247 Clause 5.4 (a) | <b>Method</b>   | ANSI C63.10 7.8.5 |

**Limit:** The maximum peak conducted output power of the intentional radiator shall not exceed 1 Watt.

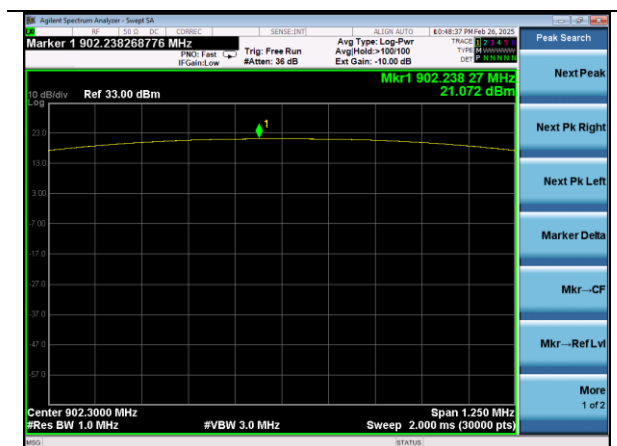
#### Test Parameters

|                    |                 |                 |              |
|--------------------|-----------------|-----------------|--------------|
| <b>Frequency</b>   | 902.3-914.9 MHz | <b>Setup</b>    | Antenna Port |
| <b>RBW</b>         | 1 MHz           | <b>VBW</b>      | 3 MHz        |
| <b>Detector(s)</b> | Peak            | <b>Settings</b> | Max Hold     |

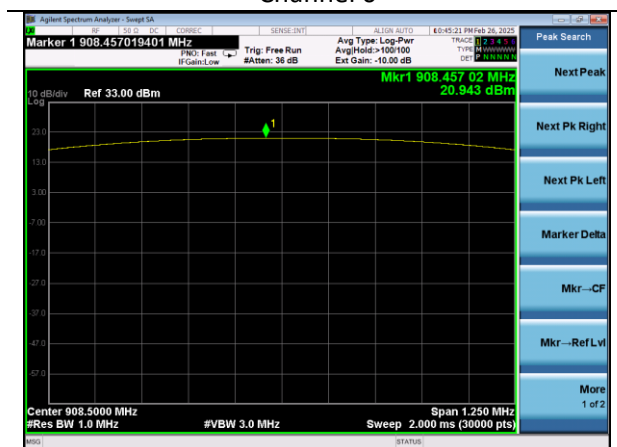
#### Table

| Channel | Frequency (MHz) | Peak Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-------------------------|-------------|-------------|
| 0       | 902.3           | 21.1                    | 30          | 8.9         |
| 31      | 908.5           | 20.9                    | 30          | 9.1         |
| 63      | 914.9           | 20.8                    | 30          | 9.2         |

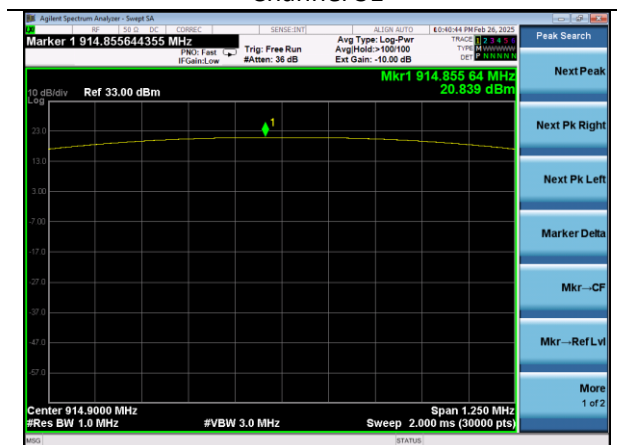
## Plots



Channel 0



Channel 31



Channel 63

|                              |               |                              |
|------------------------------|---------------|------------------------------|
| Company: Ezurio              | Page 13 of 34 | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |               | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |               | Serial: Eng. Sample          |

### 5.1.3 Frequency Hopping Systems

|                    |                                            |                 |                 |
|--------------------|--------------------------------------------|-----------------|-----------------|
| <b>Operator</b>    | Dylan Rosenfeldt                           | <b>QA</b>       | Anthony Smith   |
| <b>Temperature</b> | 21.3°C                                     | <b>R.H. %</b>   | 28.1%           |
| <b>Test Date</b>   | 2/26/2025                                  | <b>Location</b> | RF Bench        |
| <b>Requirement</b> | 15.247 (a)(1)(i)<br>RSS-247 Clause 5.1 (c) | <b>Method</b>   | ANSI C63.10 7.8 |

#### Limits:

Channels: At least 50 channels

Separation: Greater than the 20 dB bandwidth

Dwell time: 0.4 seconds within a 20 second period

#### Test Parameters

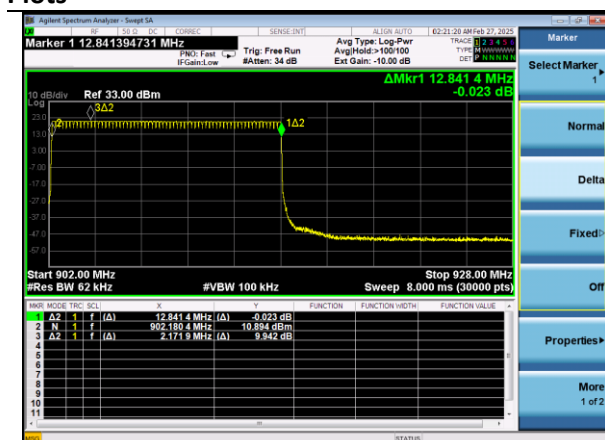
|                  |                 |                    |      |
|------------------|-----------------|--------------------|------|
| <b>Frequency</b> | 902.3-914.9 MHz | <b>Detector(s)</b> | Peak |
|------------------|-----------------|--------------------|------|

#### Table

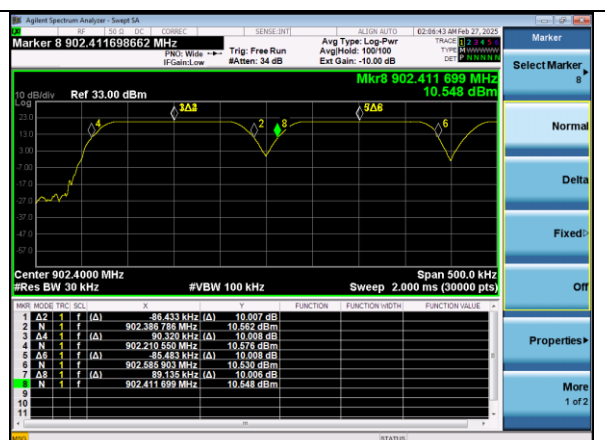
| Channel | Frequency (kHz) | Frequency separation (kHz) | Limit / 20dB BW (kHz) | Margin (kHz) |
|---------|-----------------|----------------------------|-----------------------|--------------|
| 0 & 1   | 902.4           | 200.1                      | 138.0                 | 62.1         |

| Channel | Frequency (kHz) | Dwell time (ms) | Hops / 20 seconds | Average Occupancy Time (ms) | Limit (ms) | Margin (ms) |
|---------|-----------------|-----------------|-------------------|-----------------------------|------------|-------------|
| 0       | 902.3           | 370.8           | 1.0               | 370.8                       | 400        | 29.2        |

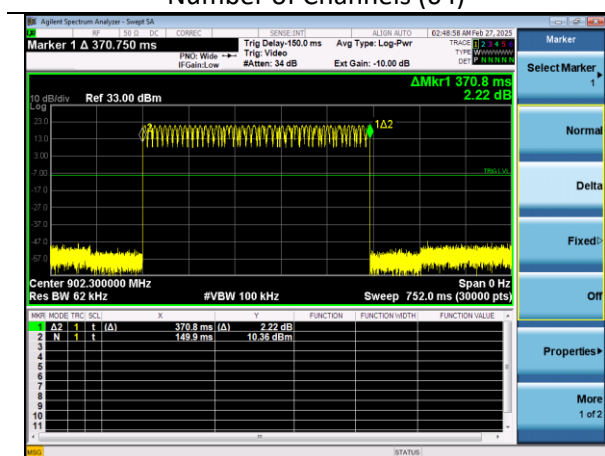
## Plots



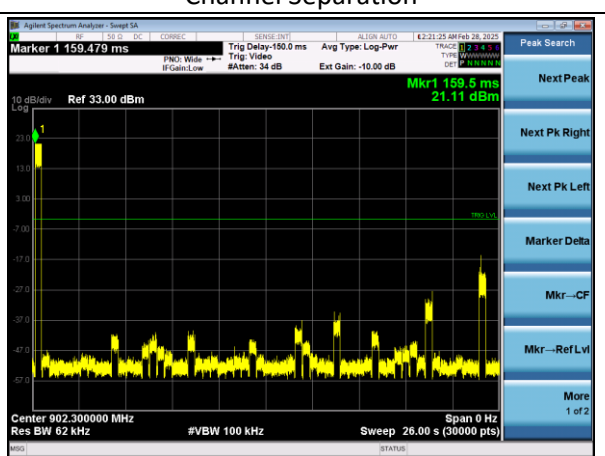
Number of Channels (64)



Channel Separation



Dwell Time



Number of Hops

#### 5.1.4 Spurious Emissions

|                    |                                 |                 |                    |
|--------------------|---------------------------------|-----------------|--------------------|
| <b>Operator</b>    | Dylan Rosenfeldt                | <b>QA</b>       | Anthony Smith      |
| <b>Temperature</b> | 21.2°C                          | <b>R.H. %</b>   | 25.8%              |
| <b>Test Date</b>   | 4/1/2025                        | <b>Location</b> | RF Conducted Bench |
| <b>Requirement</b> | 15.247(d)<br>RSS-247 Clause 5.5 | <b>Method</b>   | ANSI C63.10 7.8.7  |

**Limits:** 20 dBc

#### Reference Level

Channel 0, 20.6 dBm/100 kHz

20.6 dBm-20 dB = 0.6 dBm limit

#### Test Parameters

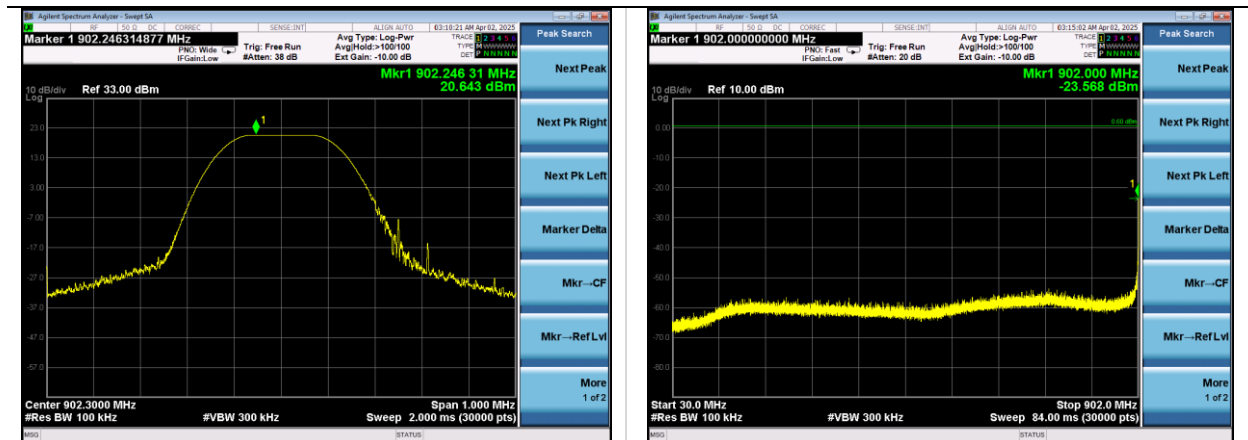
|                    |              |              |              |
|--------------------|--------------|--------------|--------------|
| <b>Frequency</b>   | 30-25000 MHz | <b>Setup</b> | Antenna Port |
| <b>RBW</b>         | 100 kHz      | <b>VBW</b>   | 300 kHz      |
| <b>Detector(s)</b> | Peak         |              |              |

#### Table

| Channel | Frequency (MHz) | Measurement (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-------------------|-------------|-------------|
| 0       | 902.0           | -23.6             | 0.6         | 24.2        |
| 0       | 1804.6          | -23.3             | 0.6         | 23.9        |
| 31      | 1817.1          | -23.9             | 0.6         | 24.5        |
| 63      | 1829.8          | -24.5             | 0.6         | 25.1        |

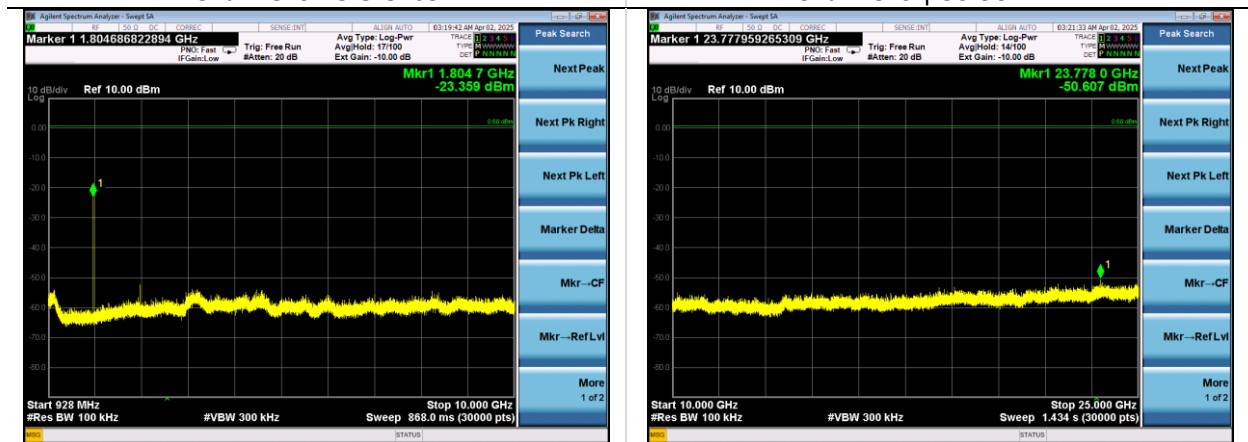
**Note:** All other emissions at least 20 dB below limit

## Plots



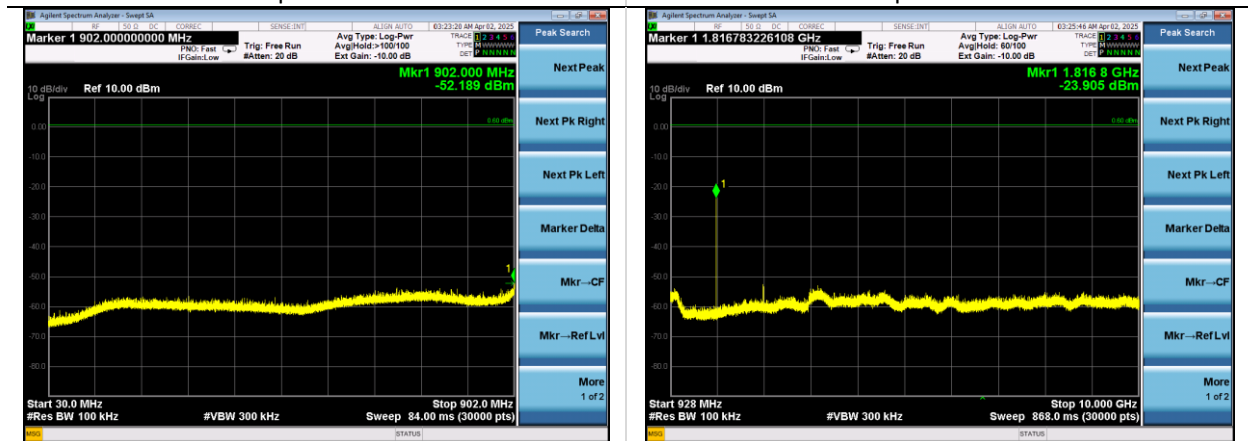
Channel 0 Reference

Channel 0 | 30-902 MHz



Channel 0 | 928-10000 MHz

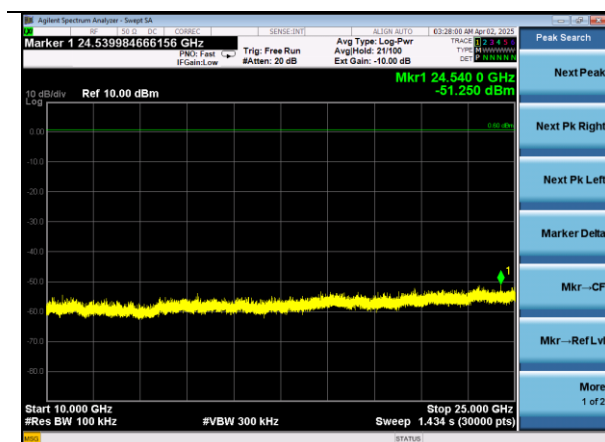
Channel 31 | 10000-25000 MHz



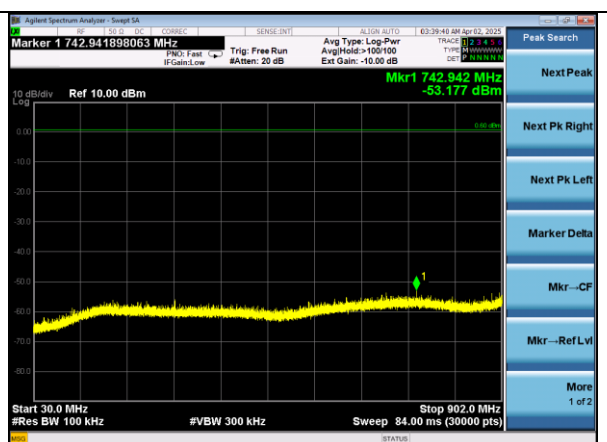
Channel 31 | 30-902 MHz

Channel 31 | 928-10000 MHz

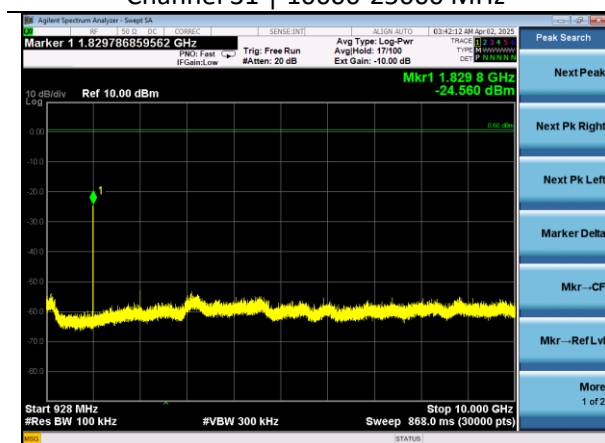
|                              |               |                              |
|------------------------------|---------------|------------------------------|
| Company: Ezurio              | Page 17 of 34 | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |               | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |               | Serial: Eng. Sample          |



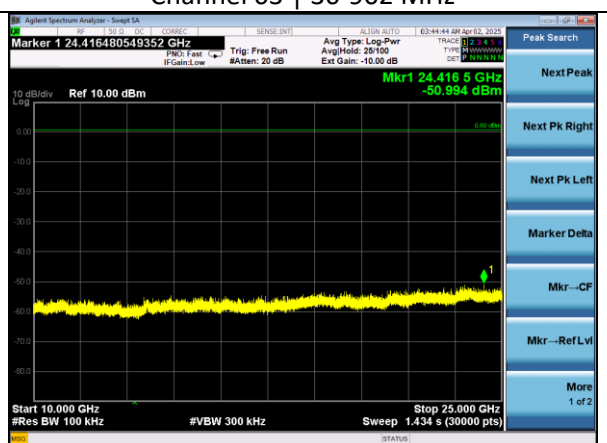
Channel 31 | 10000-25000 MHz



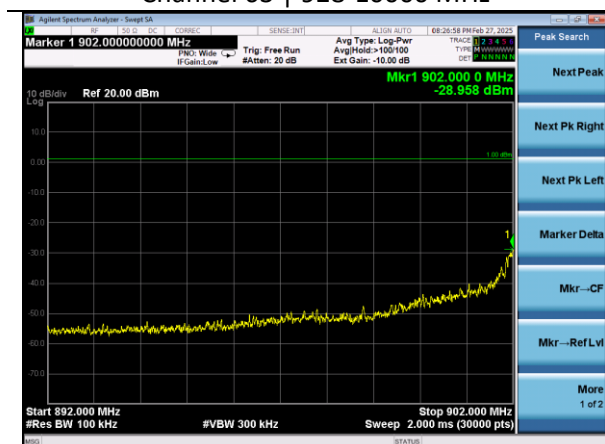
Channel 63 | 30-902 MHz



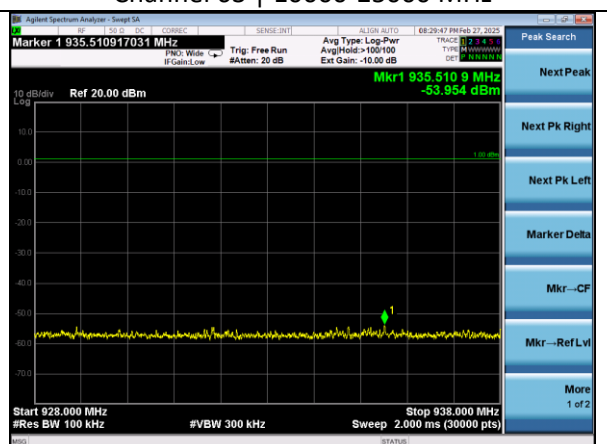
Channel 63 | 928-10000 MHz



Channel 63 | 10000-25000 MHz



Hopping 892-902 MHz



Hopping 928-938 MHz

|                              |               |                              |
|------------------------------|---------------|------------------------------|
| Company: Ezurio              |               | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS | Page 18 of 34 | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |               | Serial: Eng. Sample          |

### 5.1.5 Frequency Stability

|                    |                                  |                 |                   |
|--------------------|----------------------------------|-----------------|-------------------|
| <b>Operator</b>    | Dylan Rosenfeldt                 | <b>QA</b>       | Adam Alger        |
| <b>Temperature</b> | 21.6°C                           | <b>R.H. %</b>   | 29.20%            |
| <b>Test Date</b>   | 2/27/2025                        | <b>Location</b> | RF Bench          |
| <b>Requirement</b> | 2.1055(d)<br>RSS-GEN Clause 6.11 | <b>Method</b>   | ANSI C63.10 6.8.2 |

### Test Parameters

|                    |                 |                 |                              |
|--------------------|-----------------|-----------------|------------------------------|
| <b>Frequency</b>   | 902.3-914.9 MHz | <b>Voltage</b>  | 3.2 VDC, 3.0 VDC, and 2.6VDC |
| <b>Detector(s)</b> | Peak            | <b>Settings</b> | Max Hold                     |

### Table

| Frequency (Hz) | Voltage | Channel |
|----------------|---------|---------|
| 902299960      | 3.2     | 0       |
| 902299952      | 3.0     | 0       |
| 902299934      | 2.6     | 0       |
| 908499962      | 3.2     | 31      |
| 908499949      | 3.0     | 31      |
| 908499928      | 2.6     | 31      |
| 914899954      | 3.2     | 63      |
| 914899948      | 3.0     | 63      |
| 914899929      | 2.6     | 63      |

## 5.2 Radiated Emissions

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description of Measurement</b> | <p>The frequency spectrum is investigated for intentional and / or unintentional signals emanating from the EUT by use of a standardized test site and measurement antenna.</p> <p>The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed allowing the data to be gathered and reported as corrected values.</p> <p>The maximum emissions from the EUT are determined by turn-table azimuth rotation (360°) and scanning of the measurement antenna. Maximized levels are noted at degree values of azimuth, measurement antenna height, and measurement antenna polarity.</p> |
| <b>Example Calculations</b>       | <p>Measurement (dBμV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBμV/m)</p> <p>Margin (dB) = Limit (dBμV/m) - Corrected Reading (dBμV/m)</p> <p>Example at 4000 MHz:<br/> Reading = 40 dBμV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBμV/m<br/> Average Limit = 20 log (500) = 54 dBμV/m<br/> Margin = 54 dBμV/m - 50.8 dBμV/m = 3.2 dB</p>                                                                                                                                                                                                                                                                                                                             |

### Block Diagram



## Instrumentation

| Asset #   | Description                   | Manufacturer        | Model #     | Serial #   | Date       | Due Date   | Status              |
|-----------|-------------------------------|---------------------|-------------|------------|------------|------------|---------------------|
| AA 960007 | Antenna - Double Ridge Horn   | EMCO                | 3115        | 9311-4138  | 11/19/2024 | 11/19/2025 | Active Calibration  |
| AA 960150 | Antenna - Biconical           | ETS Lindgren        | 3110B       | 0003-3346  | 12/9/2024  | 12/9/2025  | Active Calibration  |
| AA 960154 | Filter - High Pass 2.4 GHz    | KWM                 | HPF-L-14186 | 7272-02    | 4/10/2024  | 4/10/2025  | Calibration         |
| AA 960158 | Antenna - Double Ridge Horn   | ETS Lindgren        | 3117        | 109300     | 2/21/2025  | 2/21/2026  | Active Calibration  |
| AA 960163 | Antenna - Log Periodic        | A.H. Systems, Inc.  | SAS-512-2   | 500        | 12/11/2024 | 12/11/2025 | Active Calibration  |
| AA 960194 | Antenna - Biconical           | A.H. Systems, Inc.  | SAS-540     | 780        | 12/9/2024  | 12/9/2025  | Active Calibration  |
| AA 960195 | Antenna - Log Periodic        | A.H. Systems, Inc.  | SAS-512-2   | 557        | 11/22/2024 | 11/23/2025 | Active Calibration  |
| AA 960209 | Antenna - Low Noise Amplifier | Mini-Circuits       | ZVA-213X-S+ | 037101808  | 11/19/2024 | 11/19/2025 | Active Calibration  |
| EE 960085 | Analyzer - EMI Receiver       | Agilent             | N9038A      | MY51210148 | 4/9/2024   | 4/9/2025   | Active Calibration  |
| EE 960087 | Analyzer - Spectrum           | Agilent             | N9010A      | MY53400296 | 4/10/2024  | 4/10/2025  | Active Calibration  |
| EE 960203 | Analyzer - EMI Receiver       | Keysight            | N9038A      | MY56400072 | 4/10/2024  | 4/10/2025  | Active Calibration  |
| LSC-300   | Cable                         | Chamber 3 Emissions | -           | -          | 1/24/2025  | 1/24/2026  | Active Verification |
| LSC-500   | Cable                         | Chamber 5 Emissions | -           | -          | 1/27/2025  | 1/27/2026  | Active Verification |

## 15.209 Limits:

| Frequency (MHz) | Quasi-Peak Limit (dBμV/m) | Average Limit (dBμV/m) | Peak Limit (dBμV/m) |
|-----------------|---------------------------|------------------------|---------------------|
| 30-88           | 40.0                      | -                      | -                   |
| 88-216          | 43.5                      | -                      | -                   |
| 216-960         | 46.0                      | -                      | -                   |
| 960-1000        | 54.0                      | -                      | -                   |
| 1000-40000      | -                         | 54.0                   | 74.0                |

### 5.2.1 Spurious Radiated Emissions in the Restricted Bands – External Sensor

|                    |                                                                 |                 |                       |
|--------------------|-----------------------------------------------------------------|-----------------|-----------------------|
| <b>Operator</b>    | Jonathan Dilley                                                 | <b>QA</b>       | Adam Alger            |
| <b>Temperature</b> | 22-25°C                                                         | <b>R.H. %</b>   | 11-35%                |
| <b>Test Date</b>   | 1/22-4/3 2025                                                   | <b>Location</b> | Chamber 3   Chamber 5 |
| <b>Requirement</b> | 15.247 (d)   15.209<br>RSS-247 Clause 5.5<br>RSS-GEN Clause 8.9 | <b>Method</b>   | ANSI C63.10           |

#### Test Parameters

|                    |                                          |                     |                                                      |
|--------------------|------------------------------------------|---------------------|------------------------------------------------------|
| <b>Frequency</b>   | 30-25000 MHz                             | <b>Distance</b>     | 3 m                                                  |
| <b>Detector(s)</b> | Peak Trace<br>Quasi-Peak and Peak final  | <b>Table height</b> | <1000 MHz – 80 cm<br>>1000MHz – 150 cm               |
| <b>RBW</b>         | <1000 MHz – 120 kHz<br>>1000 MHz – 1 MHz | <b>VBW</b>          | <1000 MHz – 1.2 MHz<br>>1000 MHz – 3 MHz (10 Hz Avg) |

#### Radiated Spurious – 30-25000 MHz

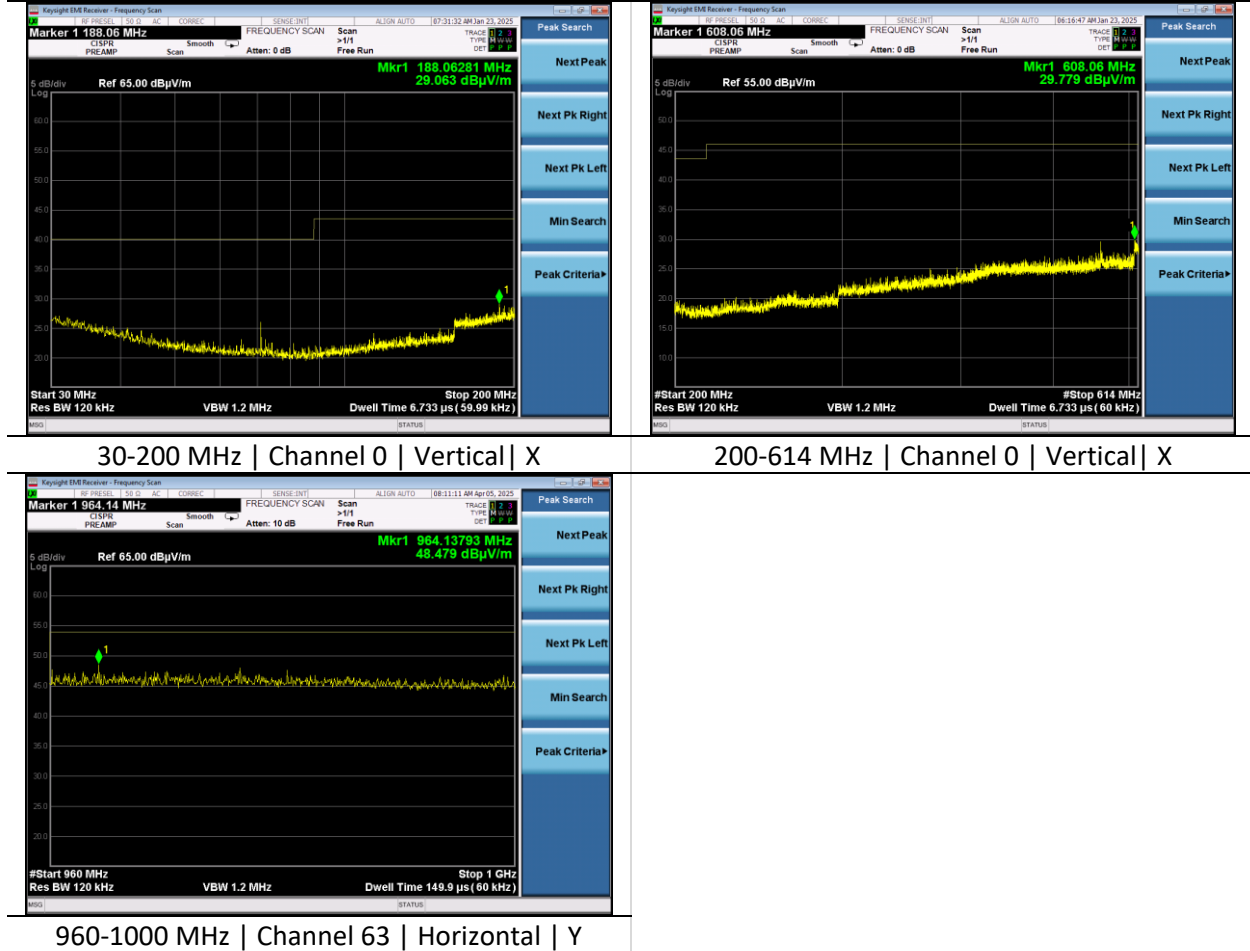
| Frequency (MHz) | EUT Orientation | Antenna Polarity | Height (cm) | Azimuth (degree) | Quasi-Peak Reading (dBμV/m) | Quasi-Peak Limit (dBμV/m) | Quasi-Peak Margin (dB) |
|-----------------|-----------------|------------------|-------------|------------------|-----------------------------|---------------------------|------------------------|
| 608.4           | X               | Horizontal       | 100         | 0                | 23.9                        | 46.0                      | 22.1                   |
| 606.2           | X               | Vertical         | 100         | 0                | 23.9                        | 46.0                      | 22.1                   |
| 189.8           | X               | Horizontal       | 100         | 0                | 21.8                        | 43.5                      | 21.7                   |
| 107.8           | X               | Vertical         | 100         | 0                | 19.3                        | 43.5                      | 24.2                   |
| 964.1           | Y               | Vertical         | 100         | 113              | 42.3                        | 54.0                      | 11.7                   |

**Note:** No Emissions present from EUT. Noise floor recorded.

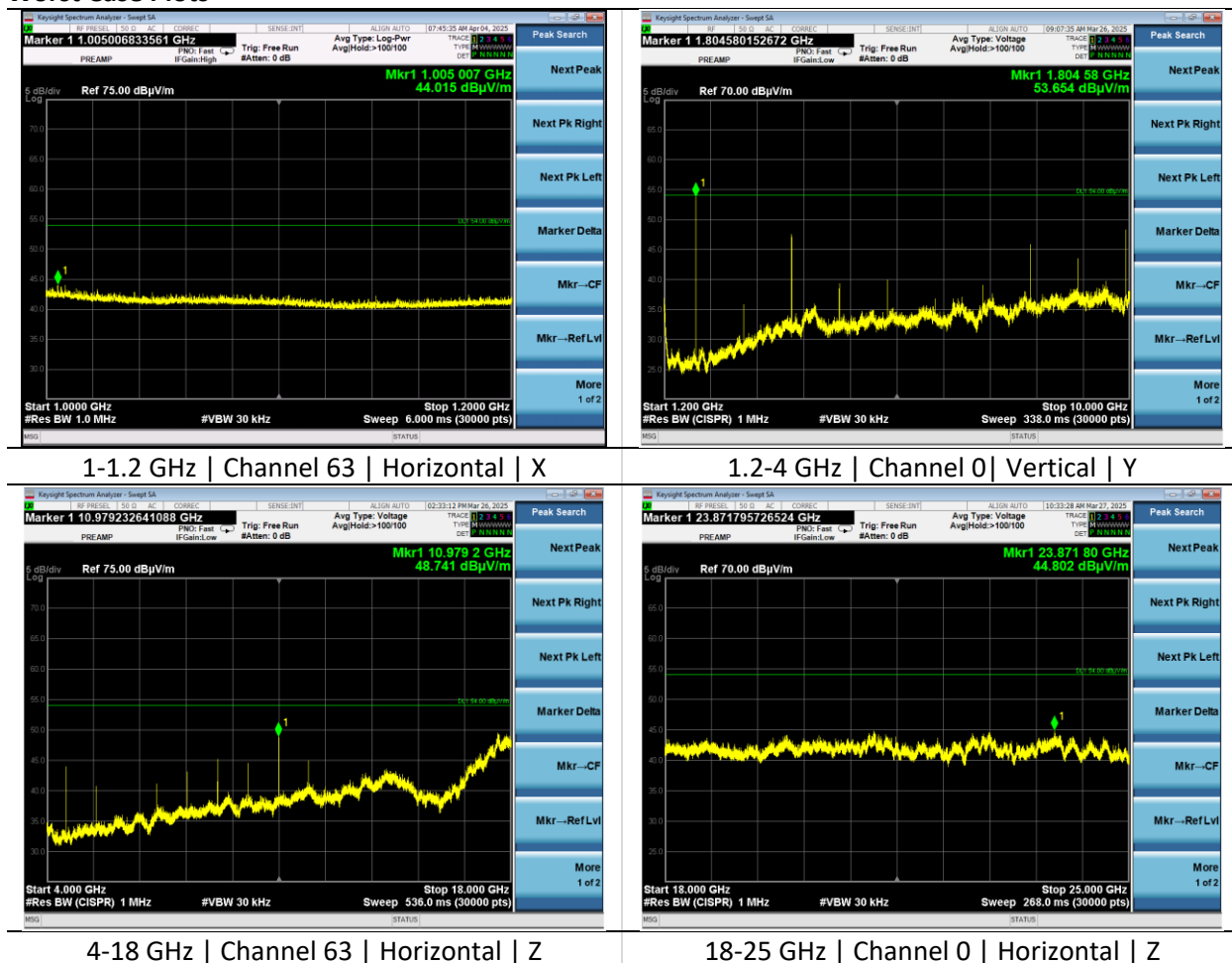
| Frequency (MHz) | EUT Orientation | Antenna Polarity | Height (cm) | Azimuth (degree) | Average Reading (dBμV/m) | Average Limit (dBμV/m) | Average Margin (dB) | Peak Reading (dBμV/m) | Peak Limit (dBμV/m) | Peak Margin (dB) | Channel |
|-----------------|-----------------|------------------|-------------|------------------|--------------------------|------------------------|---------------------|-----------------------|---------------------|------------------|---------|
| 3609.4          | X               | Horizontal       | 130         | 156              | 48.2                     | 54.0                   | 5.8                 | 50.7                  | 74.0                | 23.3             | low     |
| 3609.3          | X               | Vertical         | 212         | 209              | 47.8                     | 54.0                   | 6.2                 | 50.5                  | 74.0                | 23.5             | low     |
| 3609.3          | Y               | Vertical         | 235         | 348              | 48.8                     | 54.0                   | 5.2                 | 51.8                  | 74.0                | 22.2             | low     |
| 3609.3          | Y               | Horizontal       | 113         | 131              | 46.4                     | 54.0                   | 7.6                 | 49.5                  | 74.0                | 24.5             | low     |
| 3609.3          | Z               | Horizontal       | 133         | 224              | 51.4                     | 54.0                   | 2.6                 | 53.2                  | 74.0                | 20.8             | low     |
| 3609.3          | Z               | Vertical         | 112         | 112              | 48.7                     | 54.0                   | 5.3                 | 51.0                  | 74.0                | 23.0             | low     |
| 3634.0          | Z               | Horizontal       | 132         | 211              | 51.0                     | 54.0                   | 3.0                 | 53.0                  | 74.0                | 21.0             | med     |
| 3659.6          | Z               | Horizontal       | 182         | 217              | 51.6                     | 54.0                   | 2.4                 | 53.5                  | 74.0                | 20.5             | High    |
| 10979.4         | X               | Vertical         | 221         | 220              | 43.9                     | 54.0                   | 10.1                | 50.7                  | 74.0                | 23.3             | High    |
| 10979.3         | X               | Horizontal       | 191         | 180              | 40.1                     | 54.0                   | 13.9                | 49.2                  | 74.0                | 24.8             | High    |
| 10979.1         | Y               | Horizontal       | 153         | 61               | 40.0                     | 54.0                   | 14.0                | 48.8                  | 74.0                | 25.2             | High    |
| 10979.2         | Y               | Vertical         | 203         | 13               | 43.3                     | 54.0                   | 10.7                | 50.8                  | 74.0                | 23.2             | High    |
| 10979.1         | Z               | Vertical         | 177         | 87               | 39.4                     | 54.0                   | 14.6                | 48.4                  | 74.0                | 25.6             | High    |
| 10979.0         | Z               | Horizontal       | 166         | 74               | 45.5                     | 54.0                   | 8.5                 | 52.0                  | 74.0                | 22.0             | High    |
| 10827.8         | Z               | Horizontal       | 150         | 72               | 47.3                     | 54.0                   | 6.7                 | 52.8                  | 74.0                | 21.2             | Low     |
| 10902.1         | Z               | Horizontal       | 168         | 76               | 47.1                     | 54.0                   | 6.9                 | 52.8                  | 74.0                | 21.2             | Mid     |

**Note:** No other emissions found in restricted bands. No new frequencies or amplitude differences found in simultaneous transmit mode.

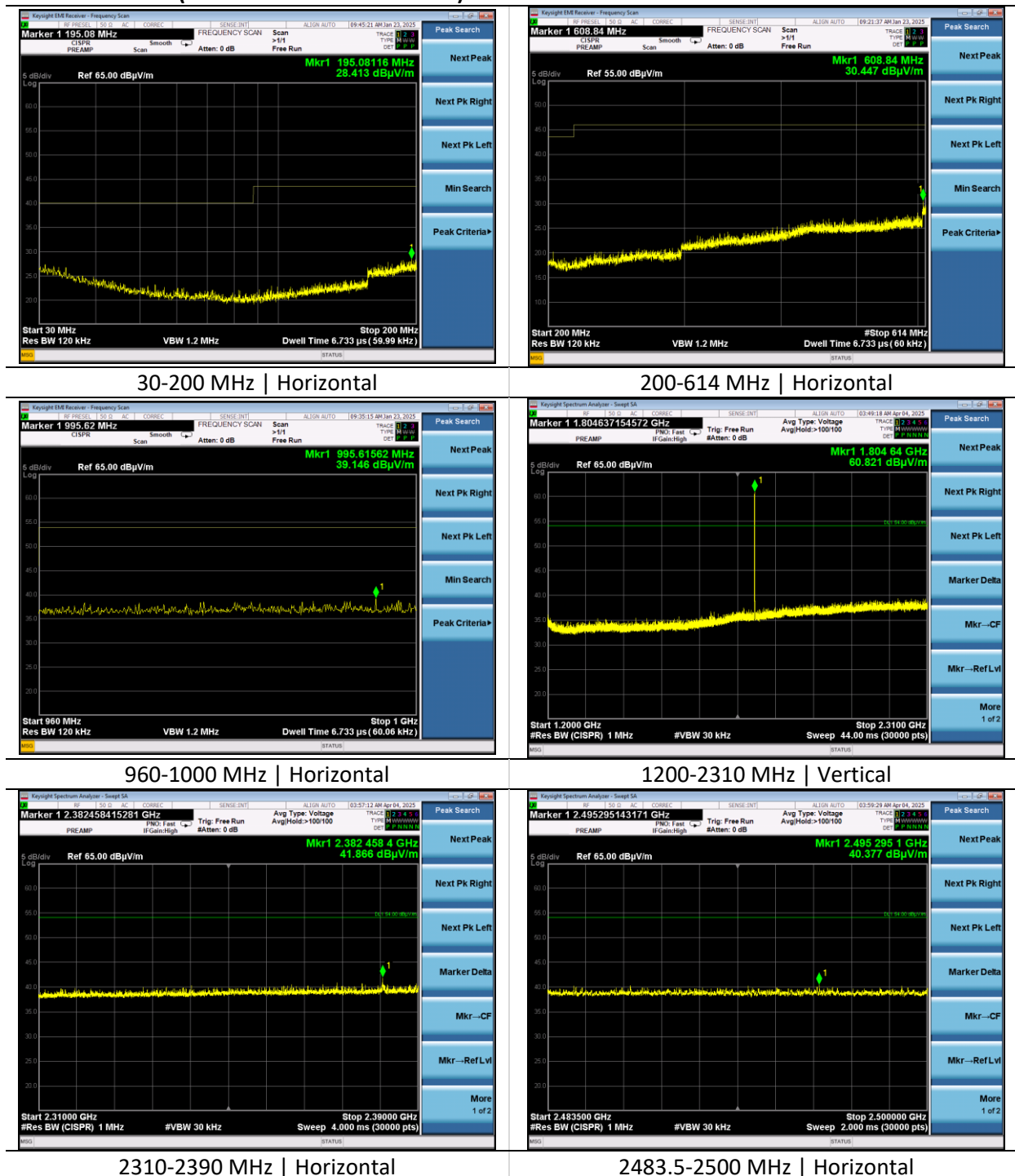
## Worst Case Plots



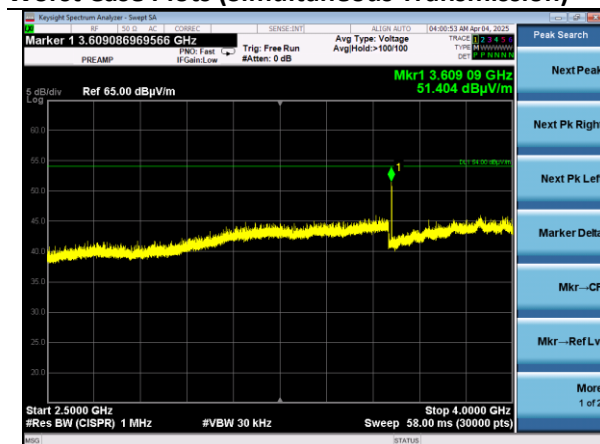
## Worst Case Plots



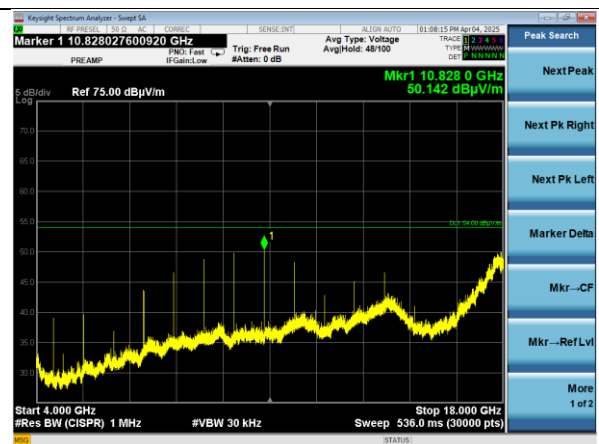
## Worst Case Plots (Simultaneous Transmission)



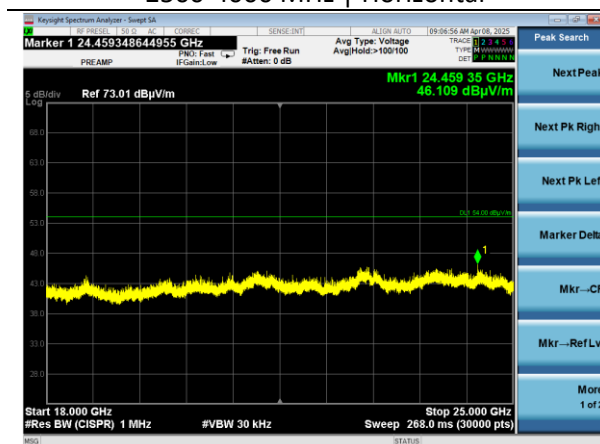
## Worst Case Plots (Simultaneous Transmission)



2500-4000 MHz | Horizontal



4000-18000 MHz | Horizontal



18000-25000 MHz | Horizontal

|                              |               |                              |
|------------------------------|---------------|------------------------------|
| Company: Ezurio              | Page 27 of 34 | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |               | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |               | Serial: Eng. Sample          |

## 5.2.2 Spurious Radiated Emissions in the Restricted Bands – Internal Sensor

|                    |                                                                 |                 |                       |
|--------------------|-----------------------------------------------------------------|-----------------|-----------------------|
| <b>Operator</b>    | Jonathan Dilley                                                 | <b>QA</b>       | Adam Alger            |
| <b>Temperature</b> | 22-25°C                                                         | <b>R.H. %</b>   | 11-35%                |
| <b>Test Date</b>   | 1/22-4/3 2025                                                   | <b>Location</b> | Chamber 3   Chamber 5 |
| <b>Requirement</b> | 15.247 (d)   15.209<br>RSS-247 Clause 5.5<br>RSS-GEN Clause 8.9 | <b>Method</b>   | ANSI C63.10           |

### Test Parameters

|                    |                                          |                     |                                                      |
|--------------------|------------------------------------------|---------------------|------------------------------------------------------|
| <b>Frequency</b>   | 30-25000 MHz                             | <b>Distance</b>     | 3 m                                                  |
| <b>Detector(s)</b> | Peak Trace<br>Quasi-Peak and Peak final  | <b>Table height</b> | <1000 MHz – 80 cm<br>>1000MHz – 150 cm               |
| <b>RBW</b>         | <1000 MHz – 120 kHz<br>>1000 MHz – 1 MHz | <b>VBW</b>          | <1000 MHz – 1.2 MHz<br>>1000 MHz – 3 MHz (10 Hz Avg) |

### Radiated Spurious – 30-25000 MHz

| Frequency (MHz) | Antenna Polarity | Height (cm) | Azimuth (degree) | Quasi-Peak Reading (dBμV/m) | Quasi-Peak Limit (dBμV/m) | Quasi-Peak Margin (dB) |
|-----------------|------------------|-------------|------------------|-----------------------------|---------------------------|------------------------|
| 602.6           | Horizontal       | 100         | 0                | 24.3                        | 46.0                      | 21.8                   |
| 212.7           | Horizontal       | 100         | 0                | 14.1                        | 43.5                      | 29.4                   |
| 609.7           | Vertical         | 100         | 0                | 26.6                        | 46.0                      | 19.4                   |
| 31.3            | Vertical         | 100         | 0                | 25.2                        | 40.0                      | 14.8                   |
| 985.1           | Vertical         | 100         | 124              | 41.9                        | 54.0                      | 12.1                   |

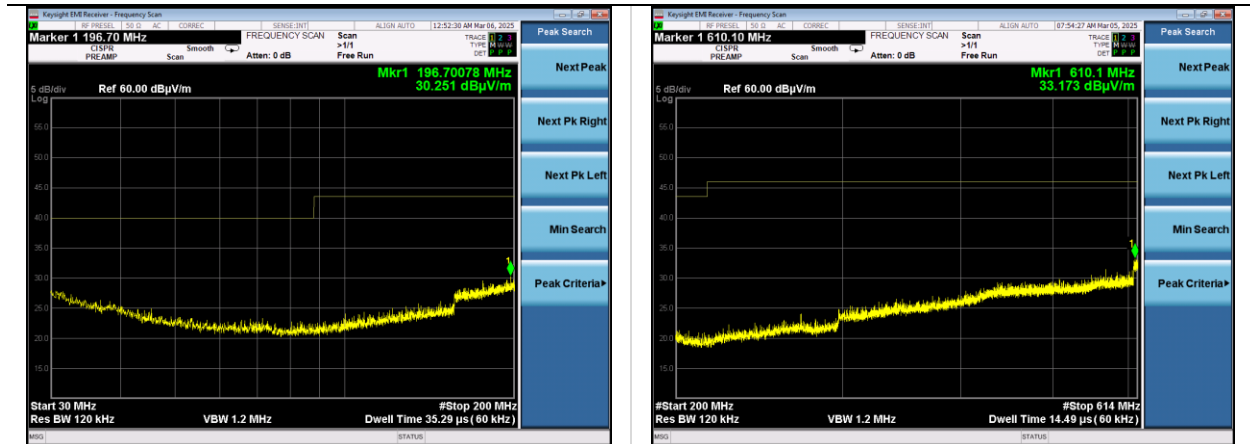
**Note:** No Emissions present from EUT. Noise floor recorded.

| Frequency (MHz) | EUT Orientation | Antenna Polarity | Height (cm) | Azimuth (degree) | Average Reading (dBμV/m) | Average Limit (dBμV/m) | Average Margin (dB) | Peak Reading (dBμV/m) | Peak Limit (dBμV/m) | Peak Margin (dB) | Channel |
|-----------------|-----------------|------------------|-------------|------------------|--------------------------|------------------------|---------------------|-----------------------|---------------------|------------------|---------|
| 4511.6          | Y               | Vertical         | 105         | 43               | 40.6                     | 54.0                   | 13.4                | 46.1                  | 74.0                | 27.9             | low     |
| 4511.6          | Y               | Horizontal       | 154         | 36               | 45.8                     | 54.0                   | 8.2                 | 49.0                  | 74.0                | 25.0             | low     |
| 4511.3          | Z               | Horizontal       | 205         | 260              | 45.7                     | 54.0                   | 8.3                 | 48.8                  | 74.0                | 25.2             | low     |
| 4511.7          | Z               | Vertical         | 208         | 150              | 41.0                     | 54.0                   | 13.0                | 46.5                  | 74.0                | 27.5             | low     |
| 4511.5          | X               | Vertical         | 198         | 27               | 44.0                     | 54.0                   | 10.0                | 47.6                  | 74.0                | 26.4             | low     |
| 4511.6          | X               | Horizontal       | 224         | 51               | 43.2                     | 54.0                   | 10.8                | 47.2                  | 74.0                | 26.8             | low     |
| 4542.7          | Y               | Horizontal       | 100         | 34               | 46.4                     | 54.0                   | 7.6                 | 49.6                  | 74.0                | 24.4             | mid     |
| 4574.7          | Y               | Horizontal       | 146         | 299              | 45.1                     | 54.0                   | 8.9                 | 48.7                  | 74.0                | 25.3             | high    |
| 9023.0          | Y               | Vertical         | 161         | 34               | 45.4                     | 54.0                   | 8.6                 | 51.4                  | 74.0                | 22.6             | low     |
| 9023.1          | Y               | Horizontal       | 168         | 325              | 40.9                     | 54.0                   | 13.1                | 48.7                  | 74.0                | 25.3             | low     |
| 9023.0          | Z               | Horizontal       | 186         | 336              | 46.6                     | 54.0                   | 7.4                 | 52.0                  | 74.0                | 22.0             | low     |
| 9023.0          | Z               | Vertical         | 100         | 39               | 40.5                     | 54.0                   | 13.5                | 47.9                  | 74.0                | 26.1             | low     |
| 9023.1          | X               | Vertical         | 250         | 180              | 42.7                     | 54.0                   | 11.3                | 49.7                  | 74.0                | 24.3             | low     |
| 9023.1          | X               | Horizontal       | 245         | 305              | 42.8                     | 54.0                   | 11.2                | 49.6                  | 74.0                | 24.4             | low     |
| 9085.4          | Z               | Horizontal       | 176         | 344              | 45.2                     | 54.0                   | 8.8                 | 51.0                  | 74.0                | 23.0             | mid     |
| 9149.1          | Z               | Horizontal       | 189         | 347              | 43.5                     | 54.0                   | 10.5                | 50.2                  | 74.0                | 23.8             | high    |
| 11729.4         | Y               | Vertical         | 250         | 73               | 45.4                     | 54.0                   | 8.6                 | 52.7                  | 74.0                | 21.3             | low     |
| 11729.9         | Y               | Horizontal       | 122         | 350              | 44.7                     | 54.0                   | 9.3                 | 52.3                  | 74.0                | 21.7             | low     |
| 11730.0         | Z               | Horizontal       | 186         | 80               | 46.4                     | 54.0                   | 7.6                 | 53.1                  | 74.0                | 20.9             | low     |
| 11729.8         | Z               | Vertical         | 110         | 0                | 42.7                     | 54.0                   | 11.3                | 51.0                  | 74.0                | 23.0             | low     |
| 11729.8         | X               | Vertical         | 232         | 179              | 45.4                     | 54.0                   | 8.6                 | 52.4                  | 74.0                | 21.6             | low     |
| 11729.9         | X               | Horizontal       | 244         | 282              | 46.0                     | 54.0                   | 8.0                 | 52.6                  | 74.0                | 21.4             | low     |
| 11810.9         | Z               | Horizontal       | 164         | 75               | 45.0                     | 54.0                   | 9.0                 | 52.4                  | 74.0                | 21.6             | mid     |
| 11893.7         | Z               | Horizontal       | 168         | 80               | 43.1                     | 54.0                   | 10.9                | 51.2                  | 74.0                | 22.8             | high    |
| 3609.3          | Y               | Vertical         | 150         | 252              | 44.8                     | 54.0                   | 9.2                 | 48.6                  | 74.0                | 25.4             | low     |
| 3609.3          | Y               | Horizontal       | 103         | 137              | 46.1                     | 54.0                   | 7.9                 | 49.1                  | 74.0                | 24.9             | low     |
| 3609.4          | Z               | Horizontal       | 181         | 287              | 49.6                     | 54.0                   | 4.4                 | 51.8                  | 74.0                | 22.2             | low     |
| 3609.3          | Z               | Vertical         | 100         | 108              | 44.7                     | 54.0                   | 9.3                 | 48.0                  | 74.0                | 26.0             | low     |
| 3609.4          | X               | Vertical         | 222         | 156              | 46.0                     | 54.0                   | 8.0                 | 48.9                  | 74.0                | 25.1             | low     |
| 3609.2          | X               | Horizontal       | 207         | 0                | 49.0                     | 54.0                   | 5.0                 | 51.5                  | 74.0                | 22.5             | low     |
| 3634.1          | Z               | Horizontal       | 184         | 341              | 48.4                     | 54.0                   | 5.6                 | 50.8                  | 74.0                | 23.2             | mid     |
| 3659.7          | Z               | Horizontal       | 179         | 338              | 49.5                     | 54.0                   | 4.5                 | 51.9                  | 74.0                | 22.1             | high    |

**Note:** No other emissions found in restricted bands. No new frequencies or amplitude differences found in simultaneous transmit mode.

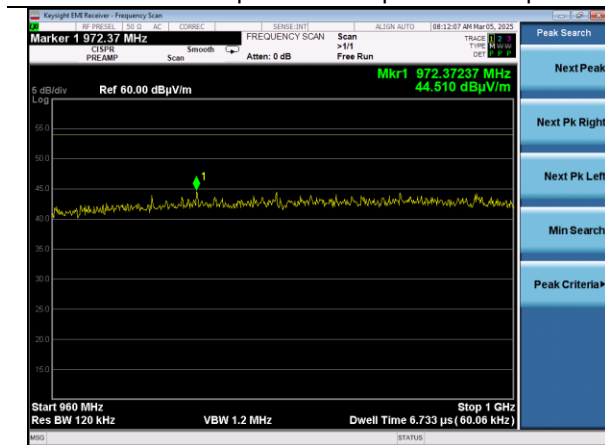
|                              |               |                              |
|------------------------------|---------------|------------------------------|
| Company: Ezurio              | Page 29 of 34 | Name: Sentrius™ RS262 Sensor |
| Report: TR3812 C - LoRa FHSS |               | Model: RS262-EXT, RS262-INT  |
| Job: C-3812                  |               | Serial: Eng. Sample          |

## Worst Case Plots



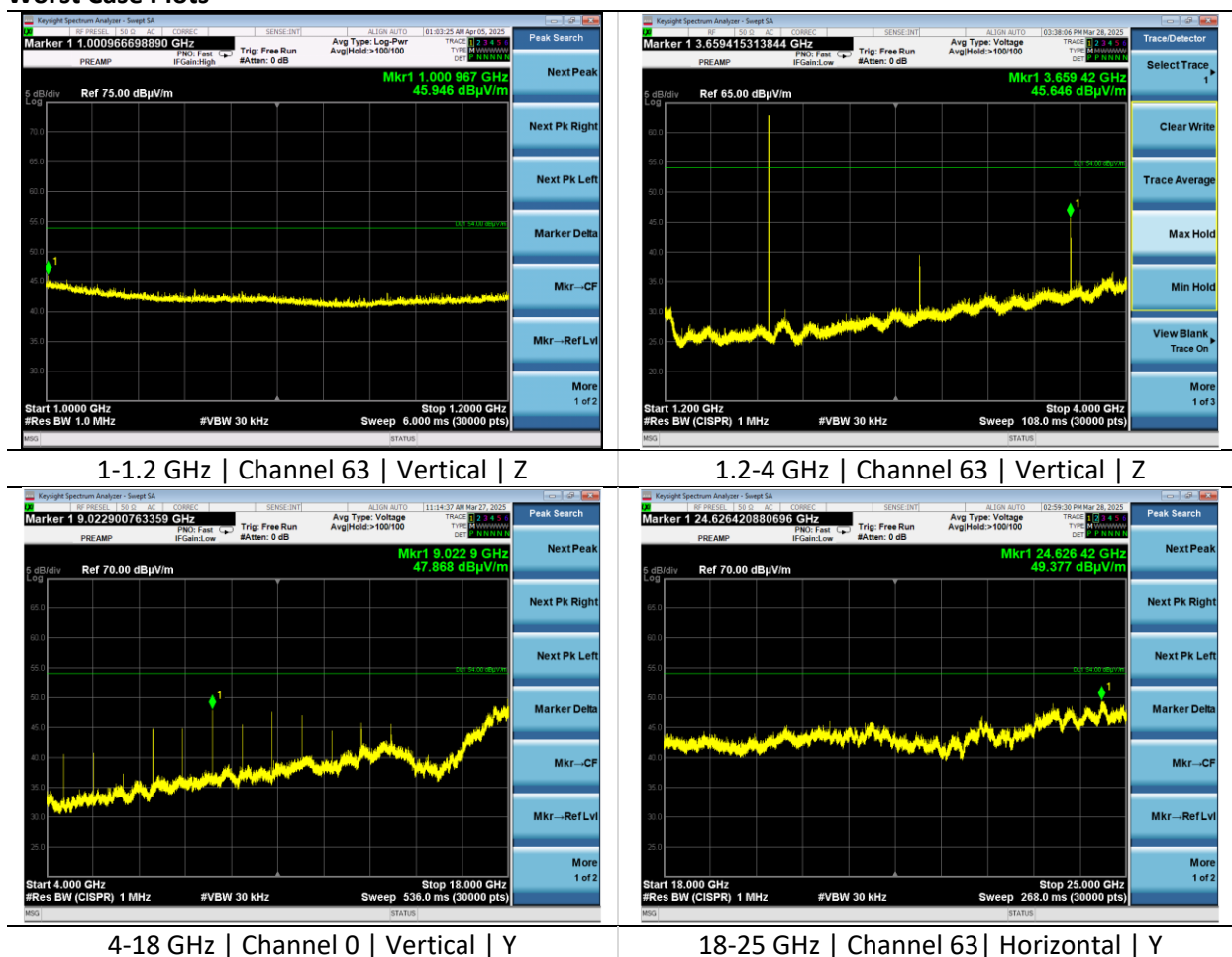
30-200 MHz | Channel 0 | Horizontal | Y

200-614 MHz | Channel 0 | Vertical | Y

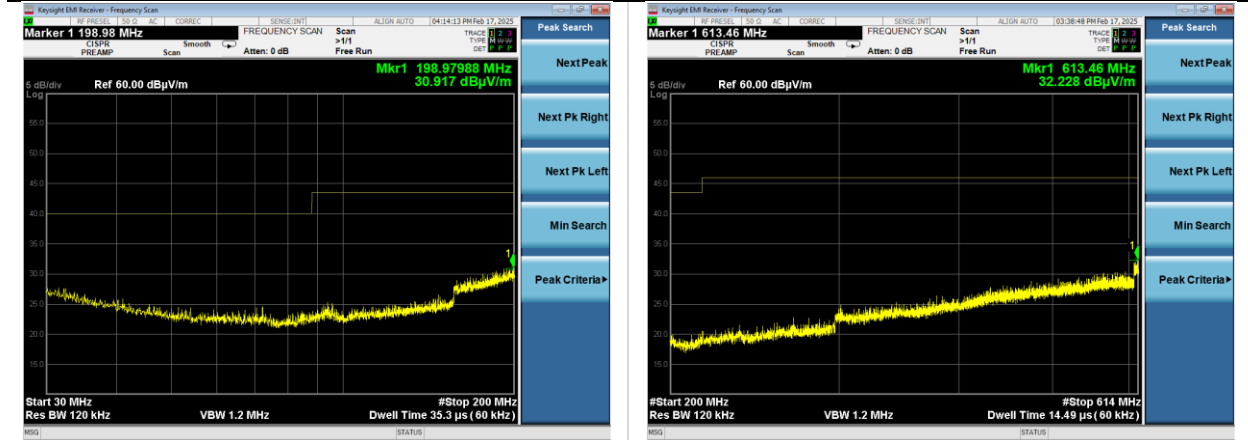


960-1000 MHz | Channel 63 | Vertical | Y

## Worst Case Plots

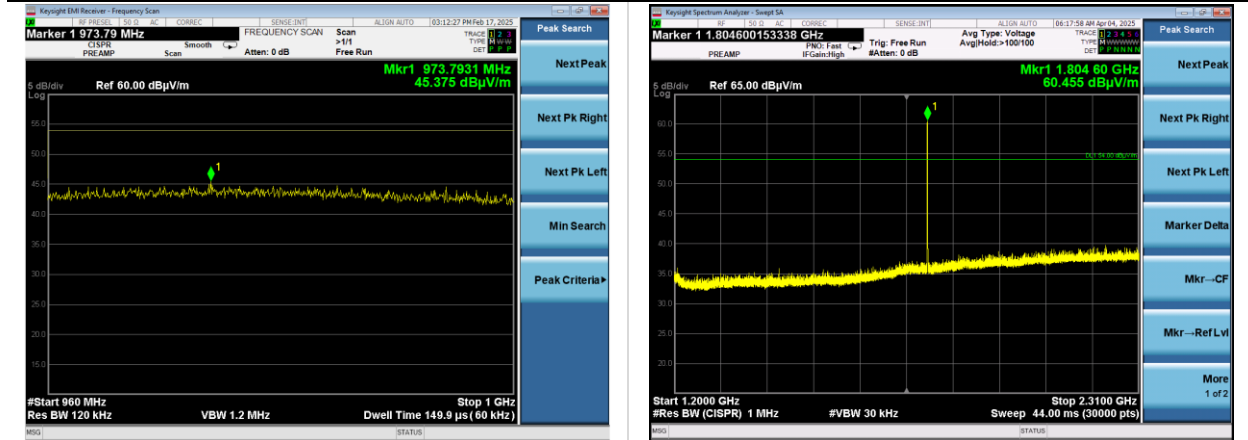


## Worst Case Plots (Simultaneous Transmission)



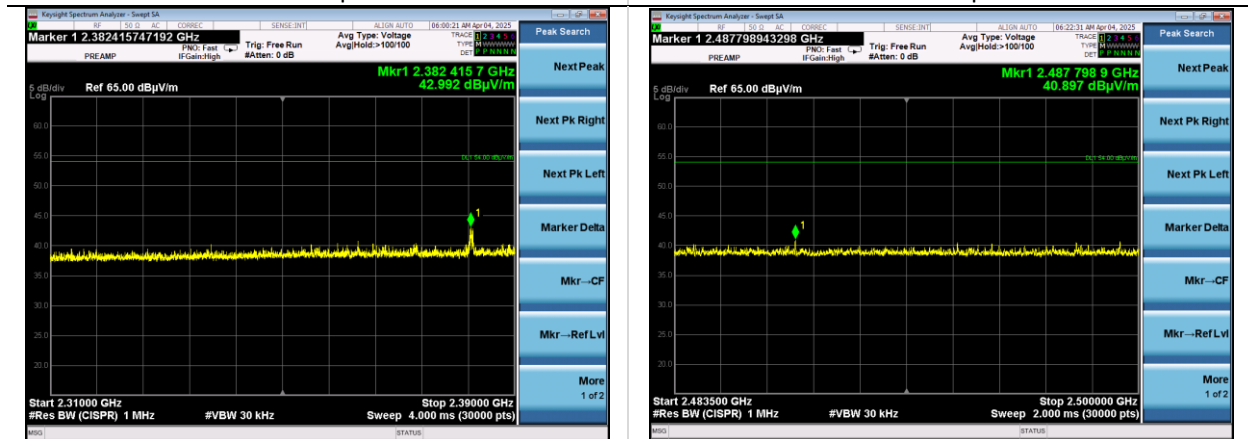
30-200 MHz | Horizontal

200-614 MHz | Horizontal



960-1000 MHz | Horizontal

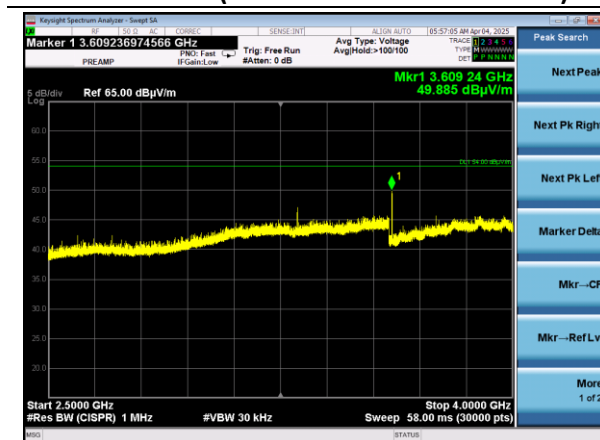
1200-2310 MHz | Horizontal



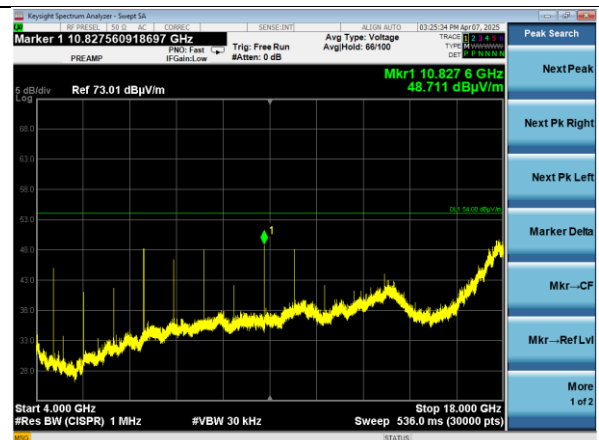
2310-2390 MHz | Horizontal

2483.5-2500 MHz | Horizontal

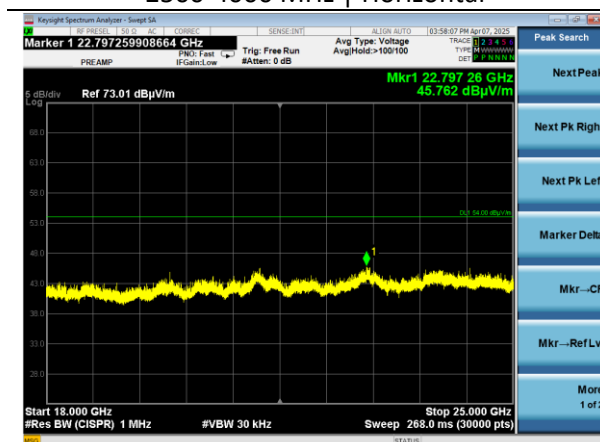
## Worst Case Plots (Simultaneous Transmission)



2500-4000 MHz | Horizontal



4000-18000 MHz | Horizontal



18000-25000 MHz | Horizontal

Company: Ezurio

Report: TR3812 C - LoRa FHSS

Job: C-3812

Name: Sentrius™ RS262 Sensor

Model: RS262-EXT, RS262-INT

Serial: Eng. Sample

## 6 REVISION HISTORY

| Version | Date       | Notes         | Person     |
|---------|------------|---------------|------------|
| 0       | 04/14/2025 | Initial Draft | Adam Alger |
| 1       | 04/15/2025 | Final Draft   | Adam Alger |

**END OF REPORT**