

# Test Report

|                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product</b>                                                                                                                                                                                                                                                                                                                                                                                    | <b>Wireless Module</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Name and address of the applicant</b>                                                                                                                                                                                                                                                                                                                                                          | <b>Cisco Systems Norway AS<br/>Philip Pedersens vei 1<br/>1366 Lysaker, NORWAY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Name and address of the manufacturer</b>                                                                                                                                                                                                                                                                                                                                                       | <b>Cisco Systems, Inc.<br/>170 West Tasman Drive<br/>San Jose, CA 95134, USA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Model</b>                                                                                                                                                                                                                                                                                                                                                                                      | <b>LBEE5XV2EA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Trademark</b>                                                                                                                                                                                                                                                                                                                                                                                  | <b>CISCO</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Additional information</b>                                                                                                                                                                                                                                                                                                                                                                     | <b>Bluetooth LE, Bluetooth Classic, WiFi 6E</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Tested according to</b>                                                                                                                                                                                                                                                                                                                                                                        | <b>Parts of FCC Part 15.247<br/>Frequency Hopping Transmitters / Digital Transmission Systems<br/>Parts of Industry Canada RSS-247, Issue 3<br/>Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and<br/>Licence-Exempt Local Area Network (LE-LAN) Devices</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Order number</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>PRJ0039024</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Tested in period</b>                                                                                                                                                                                                                                                                                                                                                                           | <b>2023-09-19 to 2023-10-02 and 2023-12-07</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Issue date</b>                                                                                                                                                                                                                                                                                                                                                                                 | <b>2023-12-14</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Name and address of the testing laboratory</b>                                                                                                                                                                                                                                                                                                                                                 | <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;"> <br/> Nemko Scandinavia AS<br/> Instituttveien 6<br/> 2007 Kjeller, Norway<br/> www.nemko.com </div> <div style="text-align: center;"> CAB Number:<br/> FCC: NO0001<br/> ISED: NO0470<br/> ISED No: 2040D-1 </div> <div style="text-align: center;"> <br/>  </div> </div> <p style="text-align: center; color: red; font-weight: bold;">An accredited technical test executed under the Norwegian accreditation scheme</p> |
| <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <br/> Prepared by [Frode Sveinsen] </div> <div style="text-align: center;"> <br/> Approved by [Jan G Eriksen] </div> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| This report was originally distributed electronically with digital signatures. For more information, please contact Nemko Scandinavia AS.                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Revision history

| Revision | Date       | Comment       | Sign |
|----------|------------|---------------|------|
| A        | 2023-12-14 | First edition | FS   |
|          |            |               |      |

## GENERAL REMARKS

This report applies only to the sample(s) tested. It is the manufacturer's responsibility to ensure the additional production units of this product are manufactured with identical electrical and mechanical components. The manufacturer is solely responsible for any modifications to the product that could result in non-compliance with the relevant regulations.

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Opinions expressed within this report regarding general assessments and qualifications for PASS or FAIL to the standards limits and requirements, are not part of the current accreditation. Neither are opinions expressed regarding model variants covered by the testing of this report.

## CALIBRATION

All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Between calibrations all test set-ups are controlled and verified on a regular basis by periodic checks to ensure, with 95% confidence, that the instruments remain within the calibrated levels.

## MEASUREMENT UNCERTAINTY

Measurement uncertainties are calculated or considered for all instruments and instrument set-ups used during these tests. Uncertainty figures are found in a separate clause in this report.

## 1 INFORMATION

### 1.1 Test Item

|                                  |                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------|
| Name                             | Cisco                                                                                                |
| Model No.                        | LBEE5XV2EA                                                                                           |
| FCC ID                           | LDKXV2EA2797                                                                                         |
| ISED ID                          | 2461N-XV2EA2797                                                                                      |
| Serial number                    | /                                                                                                    |
| Hardware identity and/or version | 1.0                                                                                                  |
| Software identity and/or version | 1.1.1.1<br>1.1.2.1<br>1.1.1.2<br>1.1.2.2                                                             |
| Frequency Range                  | 2402 – 2480 MHz                                                                                      |
| Number of Channels               | 40                                                                                                   |
| Operating Modes                  | Bluetooth Low Energy <input checked="" type="checkbox"/> 1Mb <input checked="" type="checkbox"/> 2Mb |
| Type of Modulation               | GFSK                                                                                                 |
| Conducted Output Power           | 0.74 mW                                                                                              |
| Antenna Connector                | Internal U-FL                                                                                        |
| Number of Antennas               | 1                                                                                                    |
| Diversity or Smart Antennas      | No                                                                                                   |
| Power Supply                     | Powered from Host                                                                                    |
| Antennas                         | Amphenol Model OCF608-15-000-R                                                                       |

### Description of Test Item

The tested EUT is a module with WiFi and Bluetooth.

This report covers additional tests for use with the specified antennas.

All radiated tests were performed with the module installed in host model TTC60-36 and verified on TTC60-35.

### 1.2 Hosts Used During Testing

|                                  |                                                                                                        |
|----------------------------------|--------------------------------------------------------------------------------------------------------|
| Name                             | Cisco                                                                                                  |
| Model No.                        | TTC60-35<br>TTC60-36                                                                                   |
| Serial number                    | TTC60-35: WZS2731L008<br>TTC60-36: WZS2731M00N                                                         |
| Hardware identity and/or version | DV1                                                                                                    |
| Software identity and/or version | CE 11.9.0 / s01845-2.58.0.0                                                                            |
| Antenna Connector                | Internal U-FL                                                                                          |
| Power Supply                     | Mains (120V 60Hz AC)                                                                                   |
| Rating                           | TTC60-35: 100-240V <sub>AC</sub> 50/60Hz 3.0-1.5A<br>TTC60-36: 100-240V <sub>AC</sub> 50/60Hz 4.0-2.0A |

### 1.3 Normal test condition

|                      |             |
|----------------------|-------------|
| Temperature:         | 20 - 24 °C  |
| Relative humidity:   | 20 - 50 %   |
| Normal test voltage: | 120 V 60 Hz |

The values are the limit registered during the test period.

The EUT was powered from the AC Power Source.

### 1.4 Test Engineers

Frode Sveinsen

Jørn Gustavsen (Power Line Conducted)

### 1.5 Antenna Requirement

|                                                          |                              |                                        |
|----------------------------------------------------------|------------------------------|----------------------------------------|
| Does the EUT have detachable antenna(s)?                 | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| If detachable, is the antenna connector(s) non-standard? | <input type="checkbox"/> YES | <input type="checkbox"/> NO            |
| The EUT have internal antennas.                          |                              |                                        |

Requirement: FCC 15.203, 15.204

### 1.6 EUT Operating Modes

|                                |                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------|
| Description of operating modes | All tests were performed with the EUT set to transmit continuously at the selected channel. |
| Additional information         | The EUT was transmitting bursts at the selected channel and with the selected output power. |

### 1.7 Comments

The measurements were done with the EUT powered by 120 V AC. It was checked that power variations between 85% and 115% did not have any influence on the measurements.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

The tests were conducted for demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247 and ISED RSS-247 Issue 3 and RSS-GEN Issue 5.

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were performed in a semi-anechoic chamber.

A description of the test facility is on file with the FCC and ISED.

|                                                                |                                                     |
|----------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> New Submission                        | <input checked="" type="checkbox"/> Production Unit |
| <input checked="" type="checkbox"/> Class II Permissive Change | <input type="checkbox"/> Pre-production Unit        |
| DTS Equipment Code                                             | <input type="checkbox"/> Family Listing             |

### 2.2 Test Summary

| Name of test                           | FCC Part 15 reference               | RSS-247 Issue 3,<br>RSS-GEN Issue 5<br>reference | ANSI C63.10-2013<br>Reference             | Result    |
|----------------------------------------|-------------------------------------|--------------------------------------------------|-------------------------------------------|-----------|
| Supply Voltage Variations              | 15.31(e)                            | 6.11 (RSS-GEN)                                   | 5.13                                      | Complies  |
| Antenna Requirement                    | 15.203                              | 6.8 (RSS-GEN)                                    | 5.8                                       | Complies  |
| Power Line Conducted Emission          | 15.107(a)<br>15.207(a)              | 7.2 / 8.8 (RSS-GEN)                              | 6.2                                       | Complies  |
| Occupied Bandwidth (99% BW)            | N/A                                 | 6.7 (RSS-GEN)                                    | 6.9.3                                     | Complies* |
| DTS Bandwidth                          | 15.247(a)(2)                        | 5.2 (1) (RSS-247)                                | 11.8 Option 2                             | Complies* |
| Peak Power Output                      | 15.247(b)                           | 5.4 (RSS-247)                                    | 11.9.1.1                                  | Complies* |
| Power Spectral Density                 | 15.247(d)                           | 5.2 (2) (RSS-247)                                | 11.10.2 PKPSD (DTS)                       | Complies* |
| Spurious Emissions (Antenna Conducted) | 15.247(c)                           | 5.5 (RSS-247)                                    | 6.7<br>11.11 (DTS)                        | Complies* |
| Spurious Emissions (Radiated)          | 15.247(c)<br>15.109(a)<br>15.209(a) | 5.5 (RSS-247)<br>7.3 (RSS-GEN)<br>8.9 (RSS-GEN)  | 6.3, 6.5, 6.6, 6.10<br>11.12, 11.13 (DTS) | Complies  |

\*Covered by SGS Test report No. TERF2211002257ER

### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

FCC Part 15.207

ISED RSS-GEN Issue 5, Clause 7.2 / 8.8

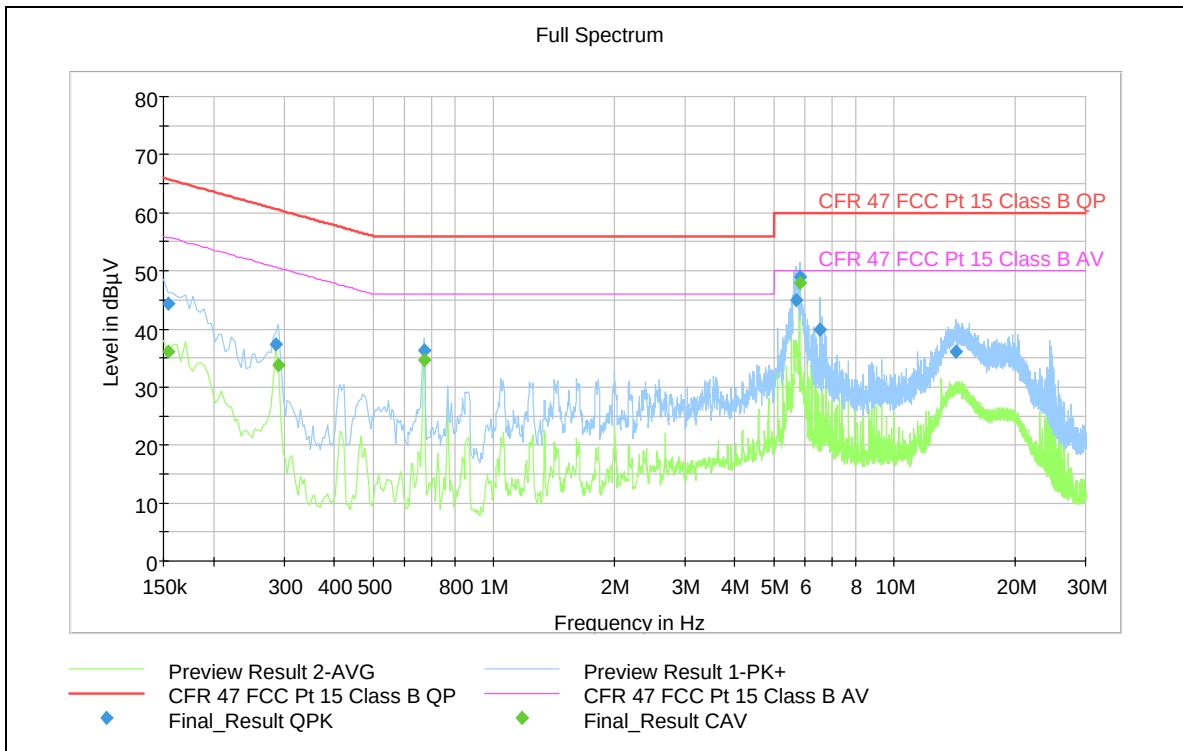
Measurement procedure: ANSI C63.4-2014 using 50  $\mu$ H/50 ohms LISN

Test Results: Complies

Measurement Data: 120V 60Hz, See attached plots

Highest measured value (L1 and N)

| Frequency (MHz) | QuasiPeak (dB $\mu$ V) | CAverage (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Filter | Corr. (dB) |
|-----------------|------------------------|-----------------------|--------------------|-------------|-----------------|-----------------|------|--------|------------|
| 0.154000        | ---                    | 36.04                 | 55.78              | 19.74       | 15000.0         | 9.000           | L1   | OFF    | 9.7        |
| 0.154000        | 44.31                  | ---                   | 65.78              | 21.47       | 15000.0         | 9.000           | L1   | OFF    | 9.7        |
| 0.286000        | 37.46                  | ---                   | 60.64              | 23.18       | 15000.0         | 9.000           | L1   | OFF    | 9.7        |
| 0.290000        | ---                    | 33.79                 | 50.52              | 16.74       | 15000.0         | 9.000           | L1   | OFF    | 9.7        |
| 0.670000        | ---                    | 34.72                 | 46.00              | 11.28       | 15000.0         | 9.000           | N    | OFF    | 9.6        |
| 0.670000        | 36.33                  | ---                   | 56.00              | 19.67       | 15000.0         | 9.000           | N    | OFF    | 9.6        |
| 5.690000        | 44.92                  | ---                   | 60.00              | 15.08       | 15000.0         | 9.000           | L1   | OFF    | 9.8        |
| 5.798000        | 48.89                  | ---                   | 60.00              | 11.11       | 15000.0         | 9.000           | L1   | OFF    | 9.8        |
| 5.798000        | ---                    | 47.84                 | 50.00              | 2.16        | 15000.0         | 9.000           | L1   | OFF    | 9.8        |
| 6.510000        | 39.81                  | ---                   | 60.00              | 20.19       | 15000.0         | 9.000           | N    | OFF    | 9.6        |
| 14.234000       | 36.09                  | ---                   | 60.00              | 23.91       | 15000.0         | 9.000           | N    | OFF    | 9.7        |



## 3.2 Radiated Emissions, Band Edge

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3 / 8.9

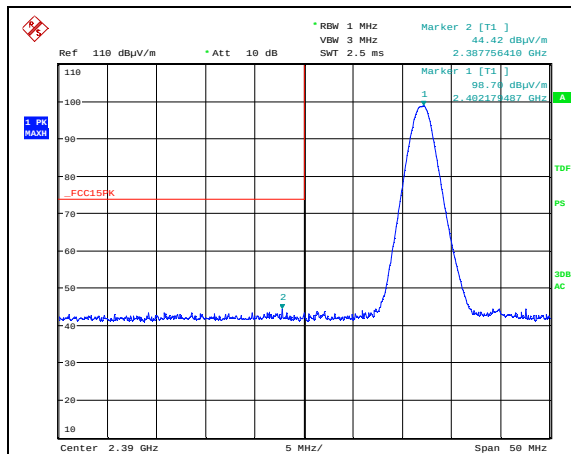
Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

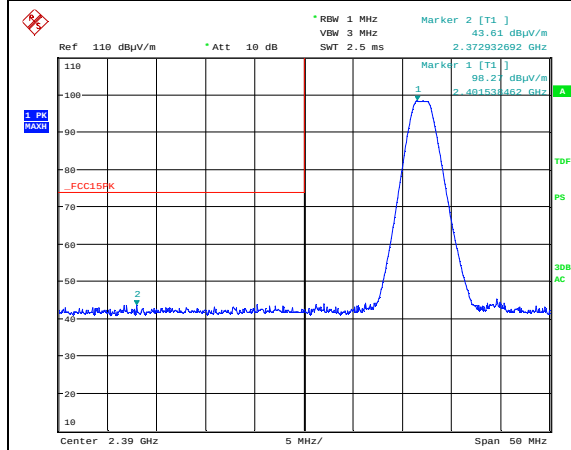
| CF (MHz) | Band Edge (MHz) | Modulation and Bitrate | Measured field strength (dBμV/m) |         | Limit (dBμV/m) |    | Margin (dB) |      |
|----------|-----------------|------------------------|----------------------------------|---------|----------------|----|-------------|------|
|          |                 |                        | Peak                             | Average | Pk             | Av | Pk          | Av   |
| 2402     | 2390            | GFSK, 1Mb              | 44.4                             | 31.3    | 74             | 54 | 29.6        | 22.7 |
|          | 2390            | GFSK, 2Mb              | 43.6                             | 31.2    | 74             | 54 | 30.4        | 22.8 |
| 2480     | 2483.5          | GFSK, 1Mb              | 56.5                             | 49.9    | 74             | 54 | 17.5        | 4.1  |
|          | 2483.5          | GFSK, 2Mb              | 59.6                             | 50.1    | 74             | 54 | 14.4        | 3.9  |

See attached plots.



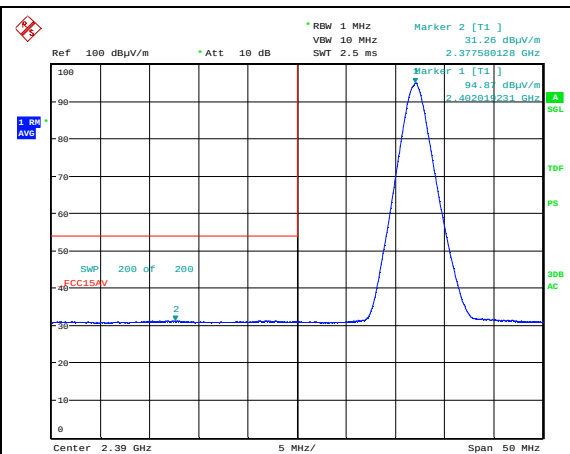
Date: 29.NOV.2023 18:13:29

### Lower Band Edge, 2402 MHz, 1Mb, Peak



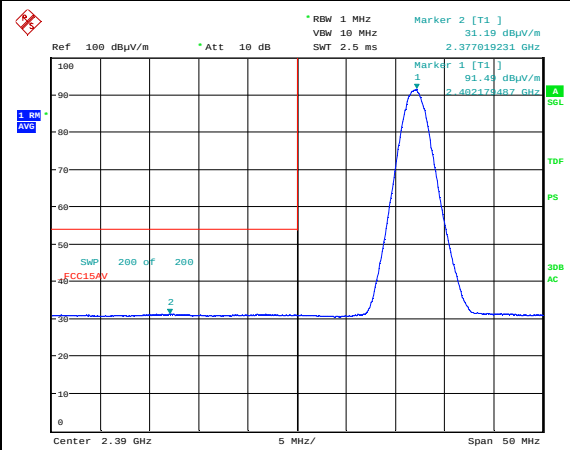
Date: 29.NOV.2023 18:17:39

### Lower Band Edge, 2402 MHz, 2Mb, Peak



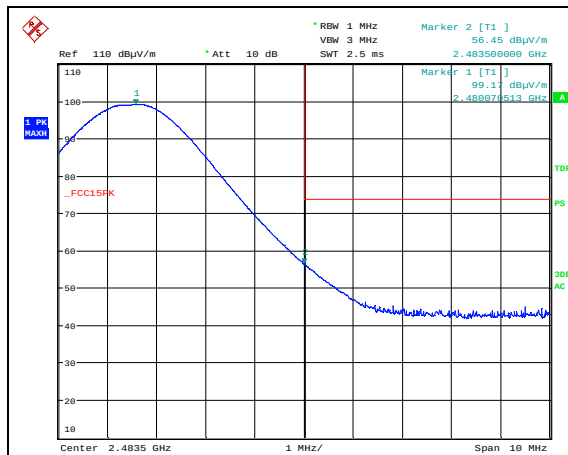
Date: 29.NOV.2023 18:14:29

### Av



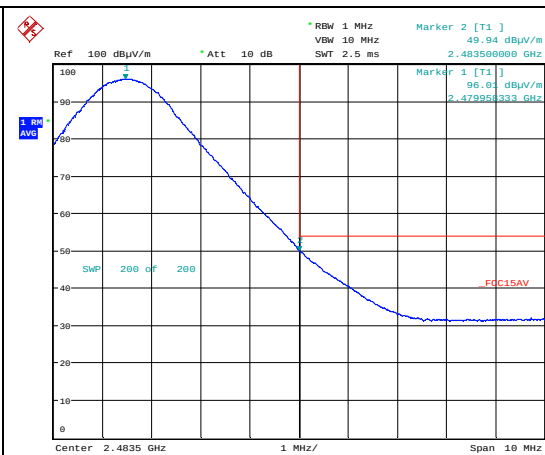
Date: 29.NOV.2023 18:18:00

### Av



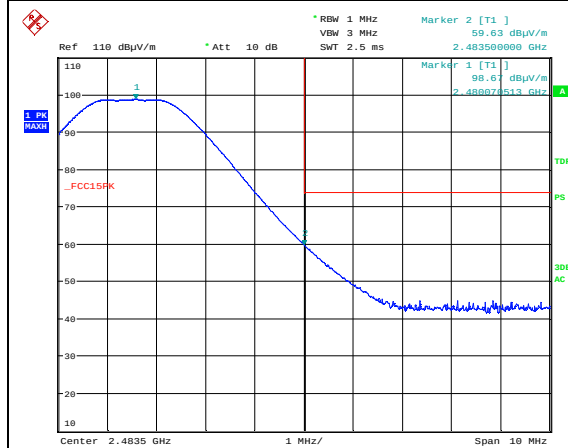
Date: 29.NOV.2023 17:56:58

Upper Band Edge, 2480 MHz, 1Mb, Peak



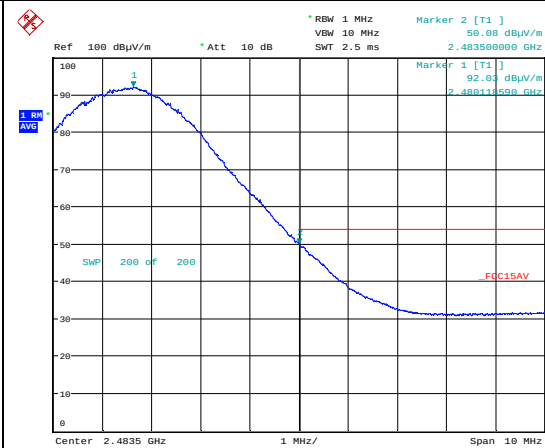
Date: 29.NOV.2023 17:55:33

Av



Date: 29.NOV.2023 17:59:18

Upper Band Edge, 2480 MHz, 2Mb, Peak



Date: 29.NOV.2023 17:59:40

Av

### 3.3 Radiated Emissions, 30 – 1000 MHz.

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

#### Measurement Data:

Detector: Quasi-Peak

Measuring distance 3m

Tested in test mode with EUT transmitting

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|
| 73.223374       | 36.04              | 40.00          | 3.96        | 15000.0         | 120.000         | 300.0       | V   | 335.0         | -17.7        |

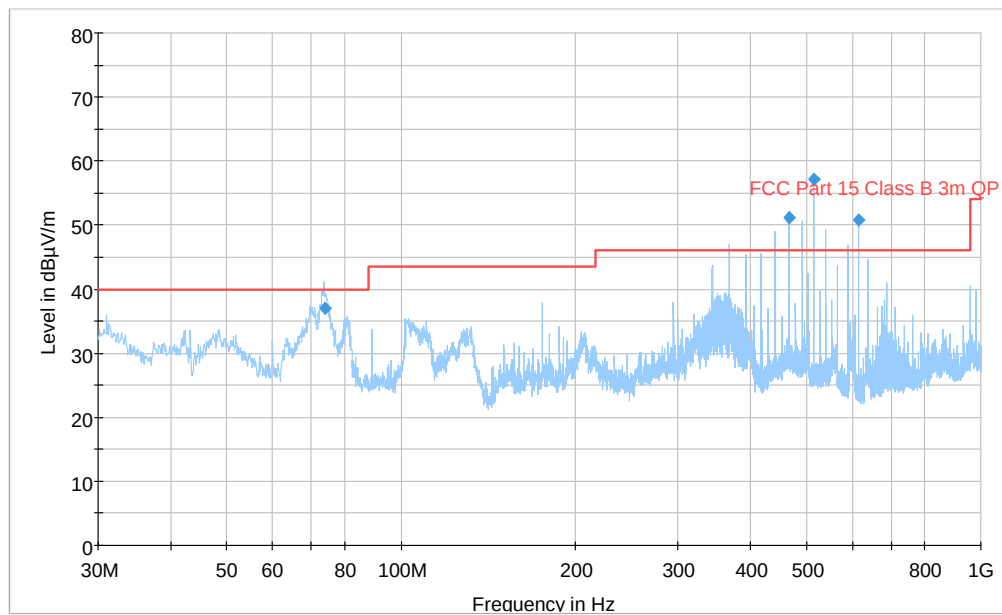
Only frequencies in Restricted Band are listed above.

See attached plots.

#### Requirements/Limit

| FCC                                       | Part 15.209 @ frequencies defined in §15.205                     |             |
|-------------------------------------------|------------------------------------------------------------------|-------------|
| ISED                                      | RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10 |             |
| Frequency                                 | Radiated emission limit @3 meters                                |             |
| 30 – 88 MHz                               | 100 μV/m                                                         | 40.0 dBμV/m |
| 88 – 216 MHz                              | 150 μV/m                                                         | 43.5 dBμV/m |
| 216 – 960 MHz                             | 200 μV/m                                                         | 46.0 dBμV/m |
| 960 – 1000 MHz                            | 500 μV/m                                                         | 54.0 dBμV/m |
| Limits above are with Quasi Peak Detector |                                                                  |             |

Full Spectrum



Radiated Emissions, 30-1000 MHz, GFSK

### 3.4 Radiated Emissions, 1 – 26 GHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

Measuring distance: 3m (1 – 18 GHz)  
1m (18 – 26 GHz)

RBW/VBW = 1MHz/3MHz

| Carrier Frequency (MHz) | Measured Frequency (GHz) | Mode | Measured Emissions (dBµV/m) |         | Limit (dBµV/m) |    | Margin (dB) |      |
|-------------------------|--------------------------|------|-----------------------------|---------|----------------|----|-------------|------|
|                         |                          |      | Peak                        | Average | Pk             | Av | Pk          | Av   |
| 2402                    | 4804                     | 1Mb  | 56.8                        | 50.3    | 74             | 54 | 17.2        | 3.7  |
|                         |                          | 2Mb  | 56.8                        | 45.6    | 74             | 54 | 17.2        | 8.4  |
| 2440                    | 4880                     | 1Mb  | 54.5                        | 46.8    | 74             | 54 | 19.5        | 7.2  |
|                         |                          | 2Mb  | 54.0                        | 42.2    | 74             | 54 | 20.0        | 11.8 |
| 2480                    | 4960                     | 1Mb  | 50.9                        | 41.1    | 74             | 54 | 23.1        | 12.9 |
|                         |                          | 2Mb  | 51.3                        | 38.3    | 74             | 54 | 22.7        | 15.7 |
| Any                     | 2971*                    | Any  | 65.5                        | /       | N/A            | /  | N/A         | /    |
| Any                     | 5941*                    | Any  | 65.1                        | /       | N/A            | /  | N/A         | /    |
| Any                     | Any other                | Any  | < 56                        | < 46    | 74             | 54 | > 18        | > 8  |

\*Not in a Restricted Band

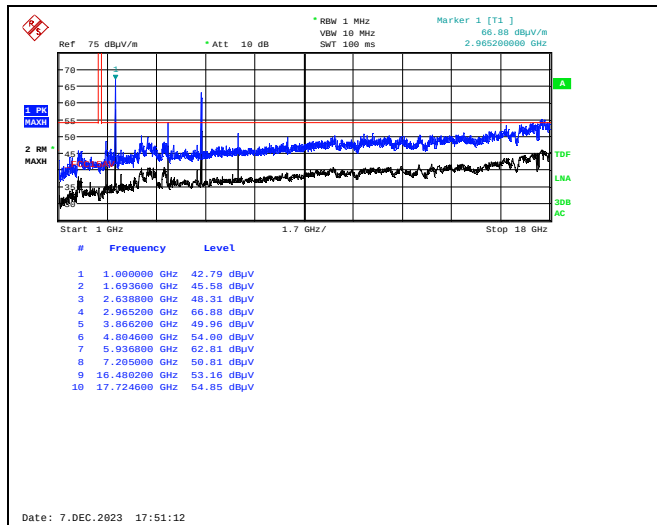
A Band Reject Filter was used for measurements from 1 GHz to 18 GHz

Antenna factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".

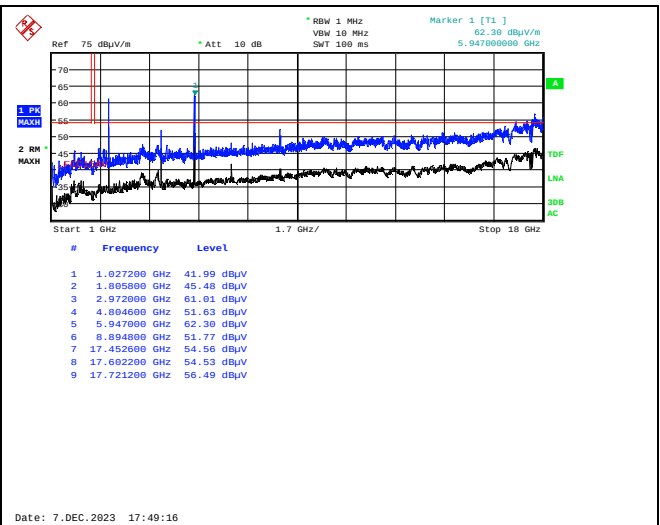
See plots.

#### Requirements/Limit

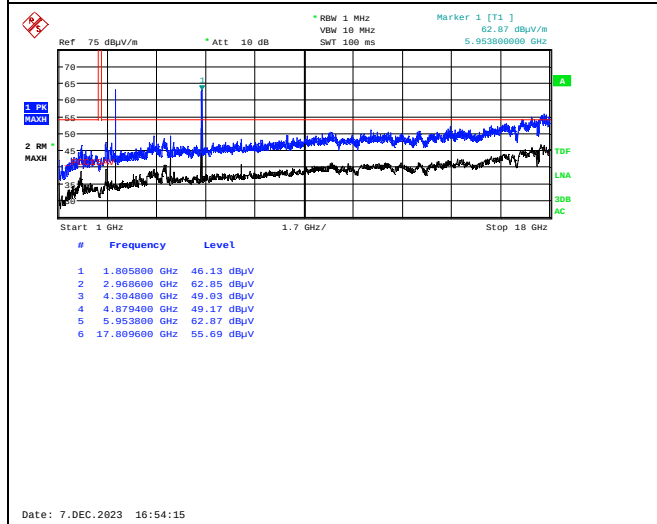
|            |                                                                  |               |
|------------|------------------------------------------------------------------|---------------|
| FCC        | Part 15.209 @ frequencies defined in §15.205                     |               |
| ISED       | RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10 |               |
|            | Radiated emission limit @3 meters                                |               |
| Frequency  | Average Detector                                                 | Peak Detector |
| 1 – 26 GHz | 54.0 dBµV/m                                                      | 74.0 dBµV/m   |



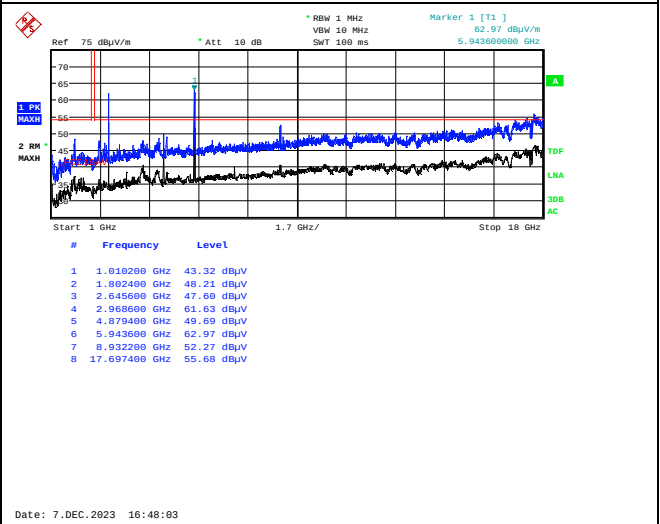
Radiated Emissions 1 - 18 GHz, 2402 MHz, 1M, HP



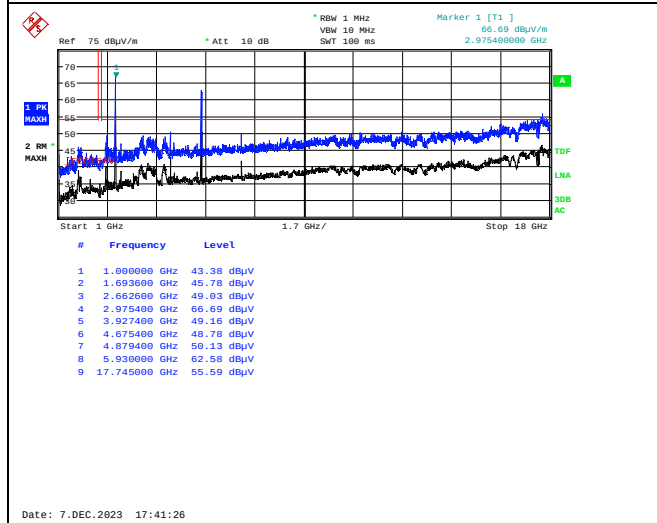
VP



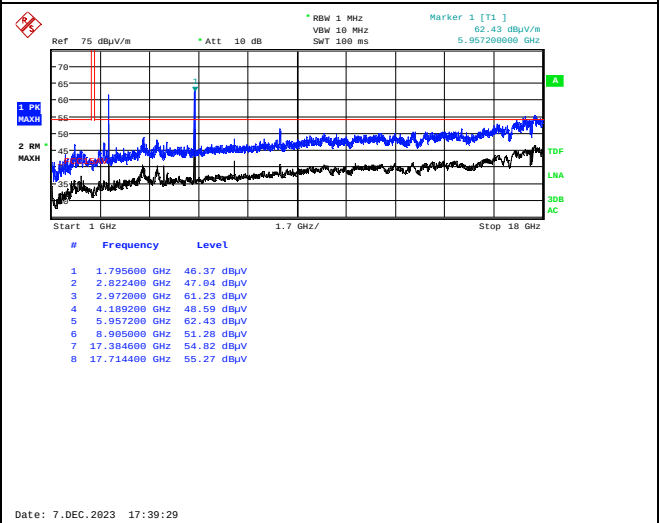
Radiated Emissions 1 - 18 GHz, 2440 MHz, 1M, HP



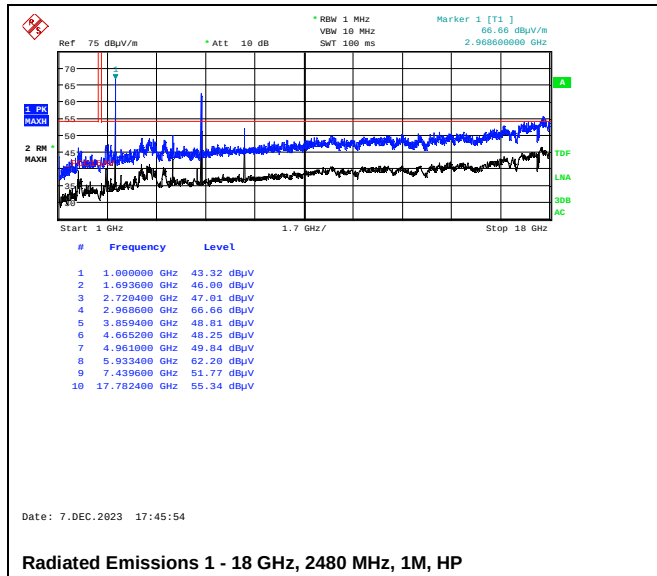
VP



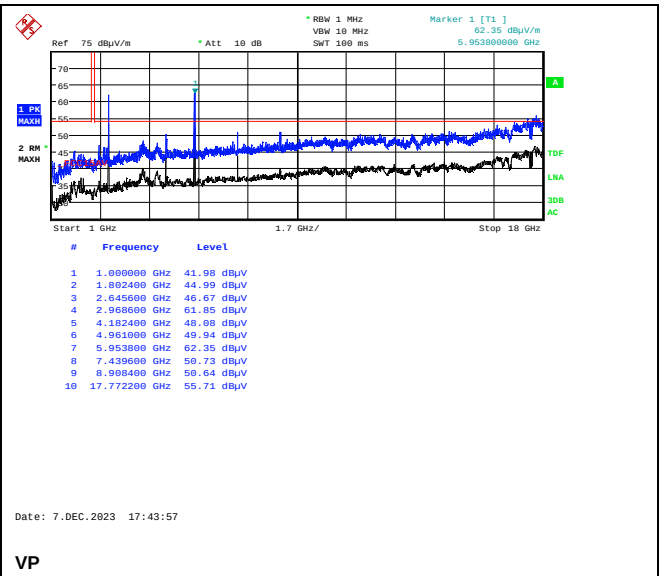
Radiated Emissions 1 - 18 GHz, 2440 MHz, 2M, HP



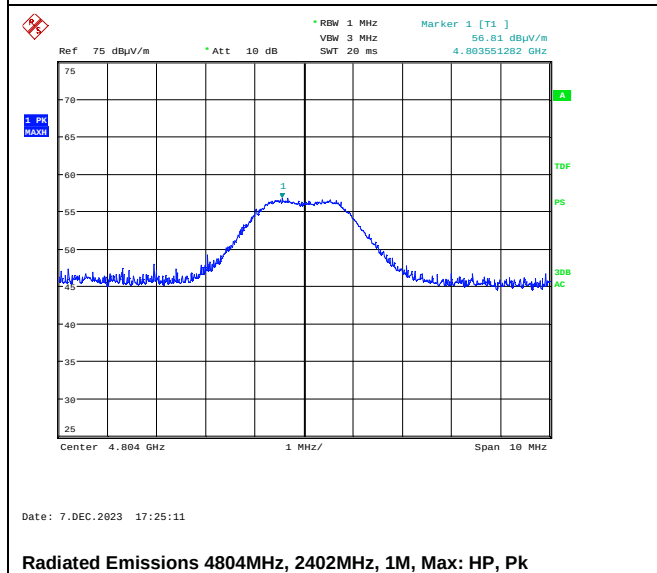
VP



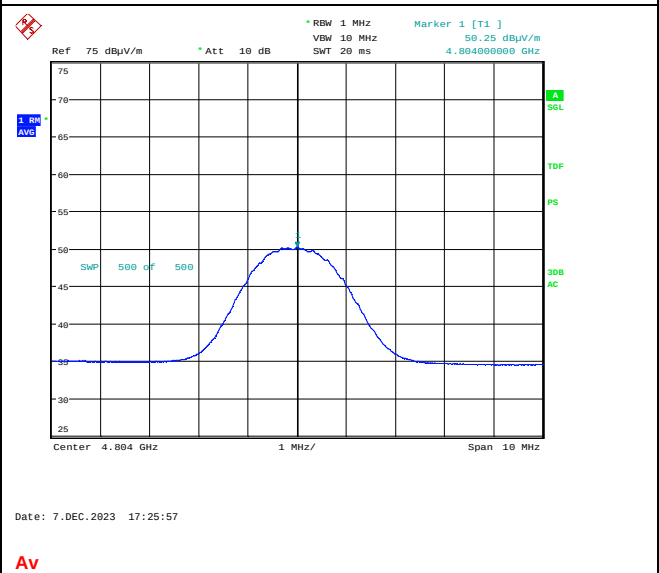
Radiated Emissions 1 - 18 GHz, 2480 MHz, 1M, HP



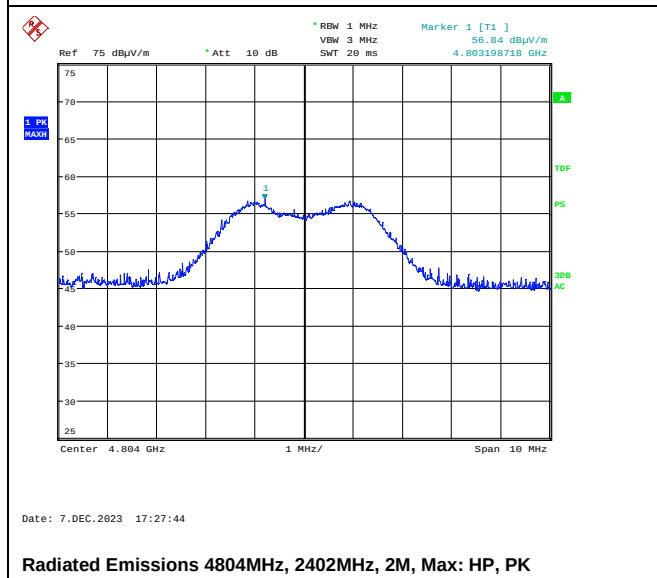
VP



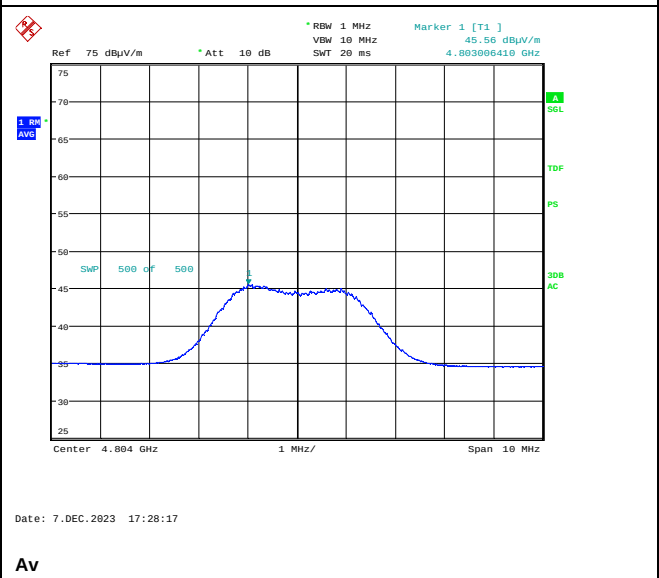
Radiated Emissions 4804MHz, 2402MHz, 1M, Max: HP, Pk



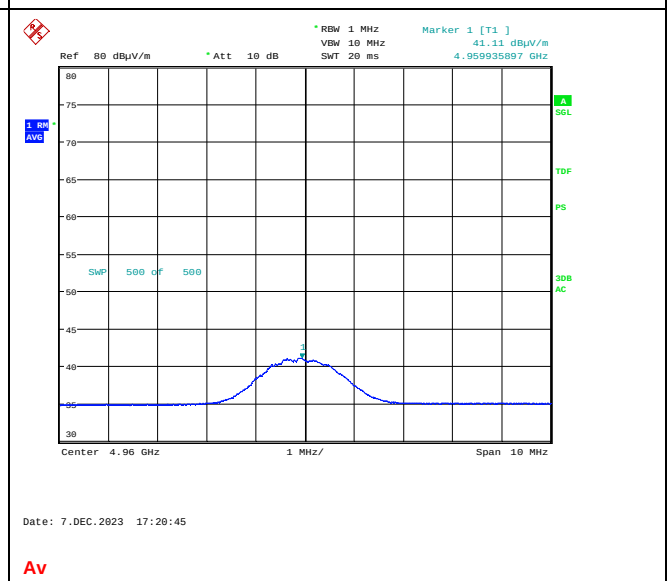
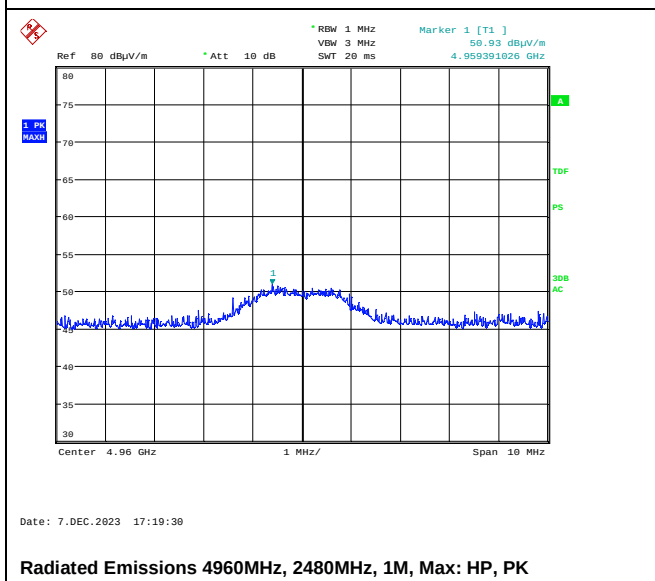
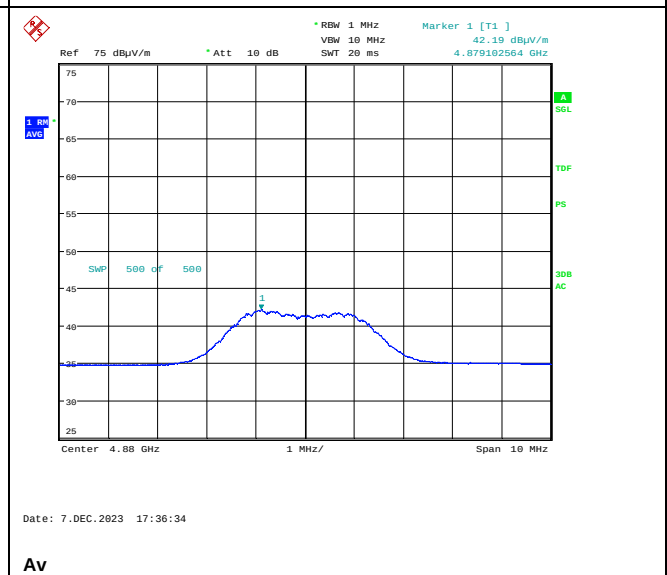
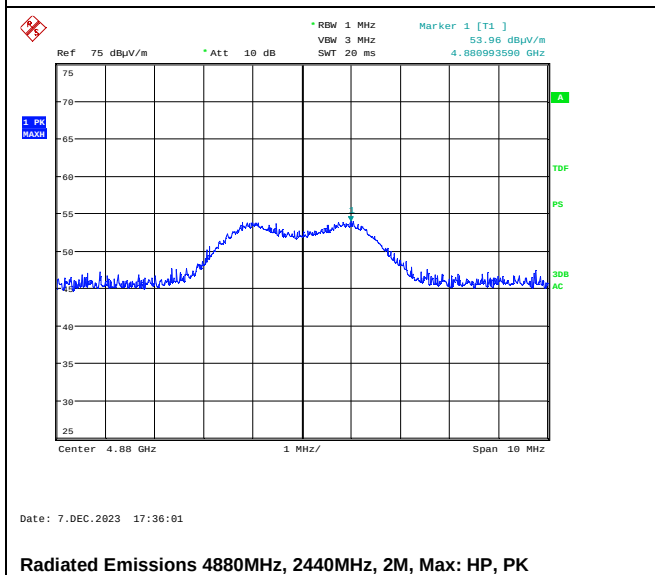
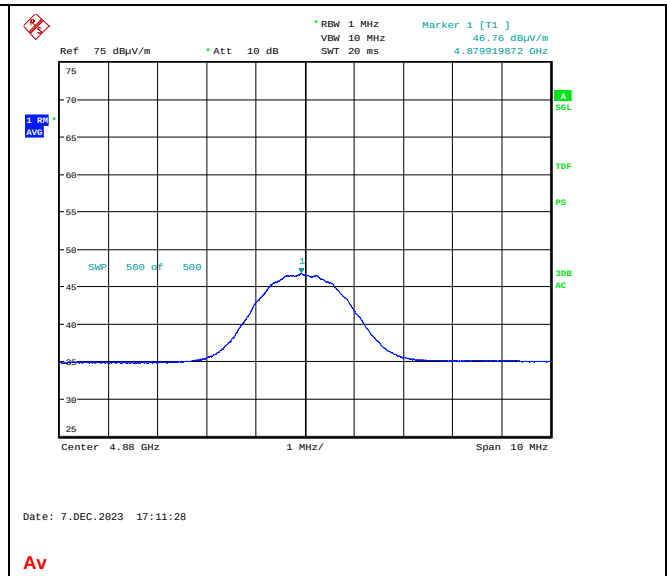
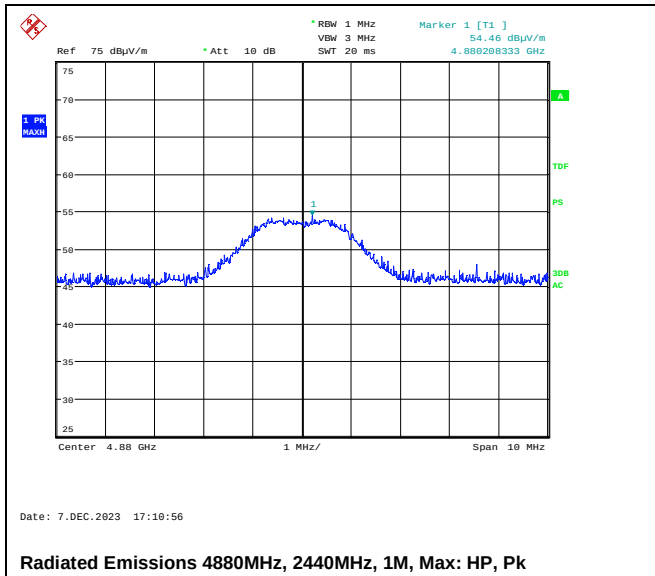
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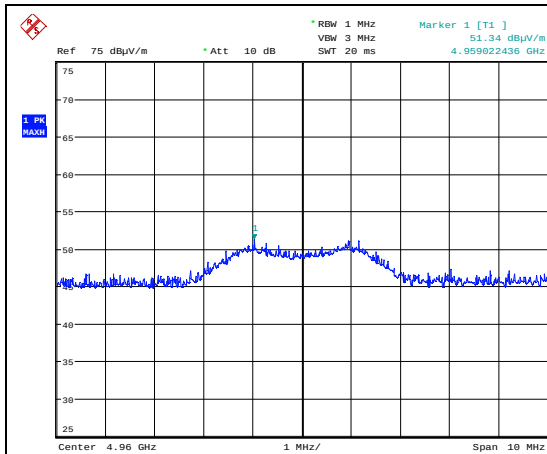


Radiated Emissions 4804MHz, 2402MHz, 2M, Max: HP, Pk



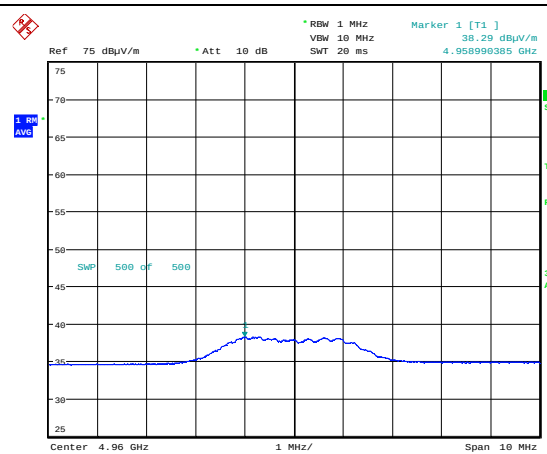
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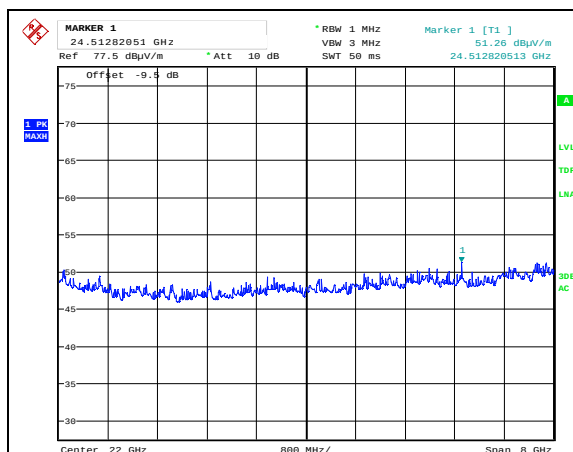
Date: 7.DEC.2023 17:32:03

Radiated Emissions 4960MHz, 2480MHz, 2M, Max: HP, PK



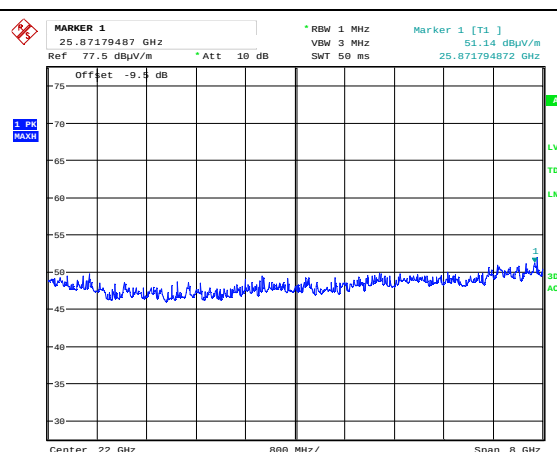
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Av



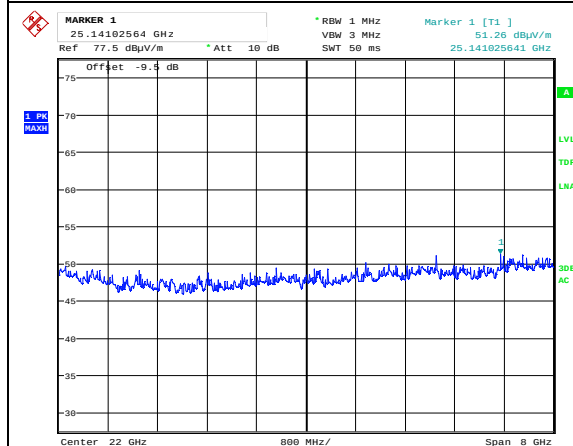
Date: 2.OCT.2023 12:09:29

Radiated Emissions 18 - 26 GHz, 2440 MHz, 1M, HP, @1m



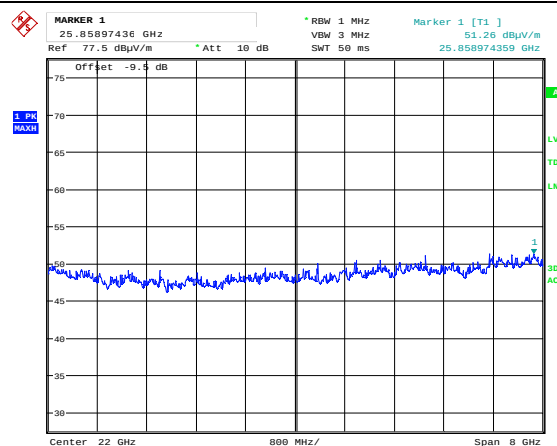
Date: 2.OCT.2023 12:07:18

VP, @1m



Date: 2.OCT.2023 12:11:54

Radiated Emissions 18 - 26 GHz, 2440 MHz, 2M, HP, @1m



Date: 2.OCT.2023 12:16:22

VP, @1m

## 4 Measurement Uncertainty

| Measurement Uncertainty Values   |           |                |
|----------------------------------|-----------|----------------|
| Test Item                        |           | Uncertainty    |
| Output Power                     |           | ±0.5 dB        |
| Power Spectral Density           |           | ±0.5 dB        |
| Out of Band Emissions, Conducted | < 3.6 GHz | ±0.6 dB        |
|                                  | > 3.6 GHz | ±0.9 dB        |
| Spurious Emissions, Radiated     | < 1 GHz   | ±2.5 dB        |
|                                  | > 1 GHz   | ±2.2 dB        |
| Emission Bandwidth               |           | ±4 %           |
| Power Line Conducted Emissions   |           | +2.9 / -4.1 dB |
| Spectrum Mask Measurements       | Frequency | ±5 %           |
|                                  | Amplitude | ±1.0 dB        |
| Frequency Error                  |           | ±0.6 ppm       |
| Temperature Uncertainty          |           | ±1 °C          |

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

## 5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

| No. | Model number  | Description                  | Manufacturer       | Ref. no. | Cal. date          | Cal. Due           |
|-----|---------------|------------------------------|--------------------|----------|--------------------|--------------------|
| 1   | FSW43         | Spectrum Analyzer            | Rohde & Schwarz    | LR 1690  | 2023-01            | 2024-01            |
| 2   | ESU40         | Measuring Receiver           | Rohde & Schwarz    | LR 1639  | 2023-01            | 2024-01            |
| 3   | 6810.17B      | Attenuator                   | Suhner             | LR 1669  | 2023-05            | 2024-05            |
| 4   | NO324415      | Band Reject Filter (2.4 GHz) | Microwave Circuits | LR 1760  | COU                |                    |
| 5   | VULB 9163     | BiLog Antenna                | Schwarzbech        | LR 1616  | 2021-05            | 2024-05            |
| 6   | 310           | Pre-amplifier                | Sonoma Inst.       | LR 1686  | 2023-08            | 2024-08            |
| 7   | 3117-PA       | Horn Antenna +PreAmp         | EMCO               | LR 1717  | 2023-08            | 2024-08            |
| 8   | L01G18G1      | LowPass Filter (1 GHz)       | Microwave Circuits | LR 1768  | COU                |                    |
| 9   | 8449B         | Pre-amplifier                | Hewlett Packard    | LR 1322  | 2023-08            | 2024-08            |
| 10  | 3115          | Horn Antenna                 | EMCO               | LR 1226  | 2022-11            | 2027-11            |
| 11  | 638           | Antenna Horn                 | Narda              | LR 1480  | N/A                |                    |
| 12  | 6812B         | AC Power Source              | Agilent            | LR 1515  | 2022-11            | 2024-11            |
| 13  | Model 87V     | Multimeter                   | Fluke              | LR 1600  | 2022-03            | 2024-03            |
| 14  | ENV216        | Two Line V-Network           | Rohde & Schwarz    | LR 1665  | 2021-12            | 2023-12            |
| 15  | ESCI3         | Measuring Receiver           | Rohde & Schwarz    | N-4259   | 2021-10<br>2023-11 | 2023-10<br>2025-11 |
| 16  | ST18/SMA/N/36 | RF Cable                     | Suhner             | LR 1627  | COU                |                    |

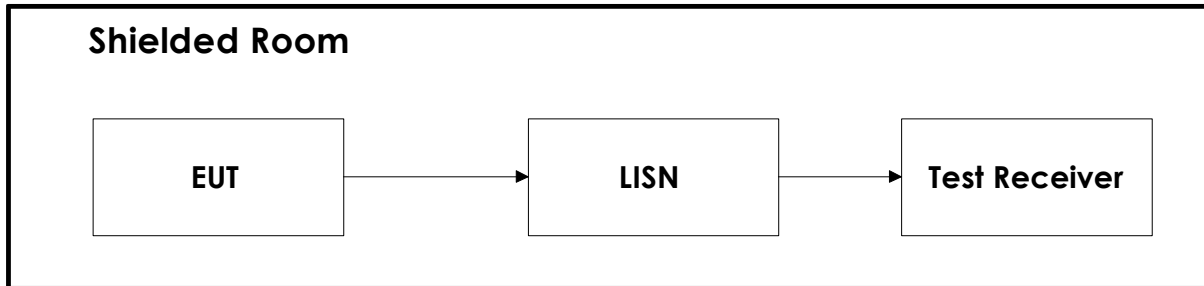
Note: COU – calibrate on use; N/A – Not Applicable

The software listed below has been used for one or more tests.

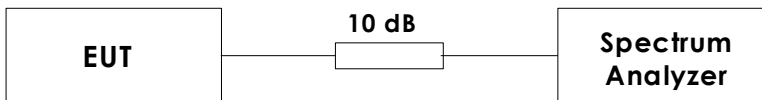
| No. | Manufacturer    | Name   | Version  | Comment                                    |
|-----|-----------------|--------|----------|--------------------------------------------|
| 1   | Rohde & Schwarz | EMC32  | 10.50.40 | EMC test software                          |
| 2   | Nemko AS        | RSPlot | 1.0.8.0  | Screen capture from R&S Spectrum Analyzers |

## 6 BLOCK DIAGRAM

### 6.1 Power Line Conducted Emission

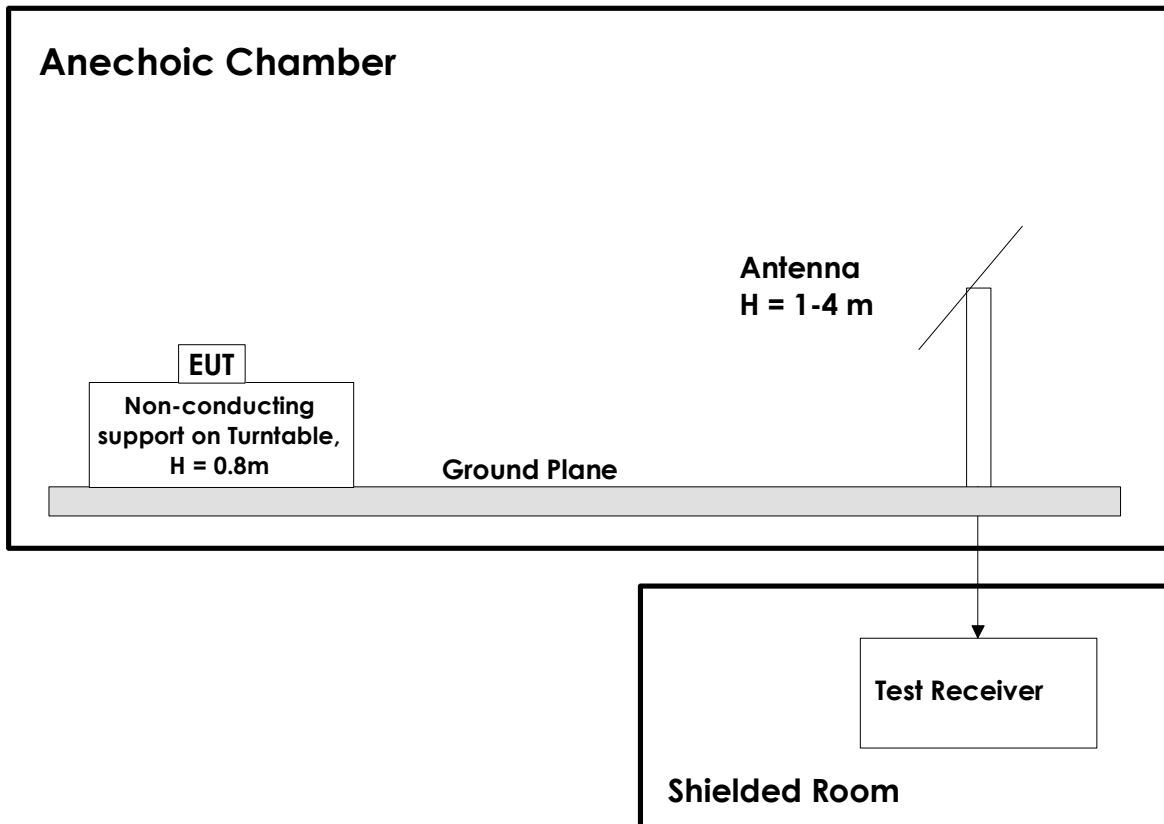


### 6.2 Conducted Tests



This test set-up is used for all Conducted tests.  
For Frequency Stability test the EUT was placed in a climatic chamber.

### 6.3 Test Site Radiated Emission



This test setup is used for all radiated emissions tests. For frequencies below 30 MHz the measuring distance is 10m, for all other frequencies it is 3m or 1m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna. For measurements above 18 GHz the test receiver is moved inside the anechoic chamber and located next to the antenna to minimize the cable loss. All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers. A pre-amplifier is used for all measurements above 30 MHz, and High-Pass or Band-Pass filter is used for all harmonics.