

| EMC Test Report                                                                    |                 |
|------------------------------------------------------------------------------------|-----------------|
| For:                                                                               | Zwift Inc       |
| Product:                                                                           | Play Controller |
| Model:                                                                             | Z003            |
| FCC ID:                                                                            | 2A4DF-Z003      |
|   |                 |
| Project Engineer:                                                                  | Richard Pennell |
|  |                 |
| Approval Signatory:                                                                | Dan Tiroke      |

|                     |         |
|---------------------|---------|
| Document Reference: | 4315 FR |
|---------------------|---------|

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|                  |         |
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## 1.0 OVERVIEW

### 1.1 Introduction

The equipment under test (EUT) as described within this document was submitted for testing as agreed with the customer.

### 1.2 Objective

The purpose of the test was to measure and report the EUT against limits and methods of the requested standards as listed in section 2.0 Test Summary.

### 1.3 Product Modifications

None to sample submitted.

### 1.4 Conclusion

The EUT met the emission requirements of the tests defined in section 2.0 Test Summary.

This report relates to the sample tested and may not represent the entire population. It is valid only for the product identified, either in part or in full, to the standards and/or tests covered in this document.

### 1.5 EMC Test Lab Reference

Eurofins E&E Hursley File: 4315

### 1.6 Test Deviations

None.

## 2.0 TEST SUMMARY

### 2.1 Summary

The EUT, as described and reported within this document, complies with the applied requested sections of the standards listed below.

| The EUT met the <b>emissions</b> test requirements of the following standards: |                                       |                           |        |
|--------------------------------------------------------------------------------|---------------------------------------|---------------------------|--------|
| Description                                                                    | General Standard                      | Referenced Standard       | Status |
| Radiated Emissions                                                             | FCC/CFR 47:Part 15B 15.109 and 15.107 | ANSI C63.4:2014, Class B  | Pass   |
| Conducted Emissions                                                            | FCC/CFR 47:Part 15C 15.247 and 15.209 | ANSI C63.10:2013, Class B |        |

Note(s):

- The highest internal operating frequency declared by the manufacturer is 2480MHz.

### 3.0 EQUIPMENT AND TEST DETAILS

#### 3.1 General

|                              |                                                            |                        |                          |
|------------------------------|------------------------------------------------------------|------------------------|--------------------------|
| <b>Product (EUT):</b>        | Play Controller                                            |                        |                          |
| <b>Models:</b>               | Z003 (right)                                               | <b>Serial Numbers:</b> | AC2DVT300129 (conducted) |
|                              | Z003 (left)                                                |                        | AC2DVT300074 (radiated)  |
|                              |                                                            |                        | AD2DVT300033 (radiated)  |
| <b>Sample Build:</b>         | Production Sample                                          |                        |                          |
| <b>EUT Power:</b>            | Battery Powered<br>110V/60Hz (Charger)                     |                        |                          |
| <b>Customer Test Plan:</b>   | Not Applicable                                             |                        |                          |
| <b>Alternate Models:</b>     | Not Applicable                                             |                        |                          |
| <b>EUT Manufacturer:</b>     | Zwift Inc                                                  |                        |                          |
| <b>Customer Name:</b>        | Zwift Inc                                                  |                        |                          |
| <b>Customer Address:</b>     | 111 W. Ocean Blvd Suite 1800                               |                        |                          |
|                              | Long Beach                                                 |                        |                          |
|                              | CA90802                                                    |                        |                          |
|                              | USA                                                        |                        |                          |
| <b>Test Commissioned By:</b> | Charlie Blackham, Sulis Consultants Limited                |                        |                          |
| <b>Date EUT Received:</b>    | 22 <sup>nd</sup> September 2022                            |                        |                          |
| <b>Test Date(s):</b>         | 22 <sup>nd</sup> September 2022                            |                        |                          |
| <b>EMC Measurement Site:</b> | Eurofins E&E Hursley Limited                               |                        |                          |
|                              | Trafalgar Close, Chandlers Ford, Hampshire, United Kingdom |                        |                          |
| <b>Product Category:</b>     | Radio Equipment and Services                               |                        |                          |

### 3.2 EUT Description

The EUT is a Bluetooth enabled play controller.

### 3.3 Support Equipment

| Description    | Manufacturer | Model          | Serial Number  |
|----------------|--------------|----------------|----------------|
| Tablet         | Samsung      | Not Applicable | Not Applicable |
| Mains – DC PSU | Samsung      | ETA0U83UWE     | SC2HC07BS/A    |

### 3.4 EUT Test Exerciser

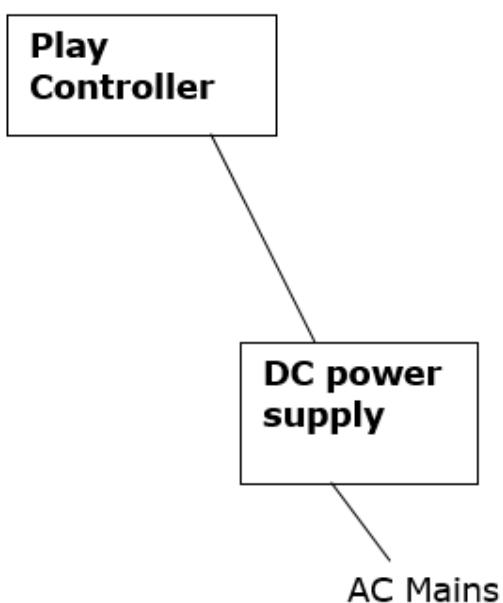
The EUT was powered on and put into testing mode. It was tested in three separate modes:

1. Top Channel; 2480MHz
2. Middle Channel; 2440MHz
3. Bottom Channel; 2402MHz

The EUT was tested in three axes and the worst-case results are shown below.

The Middle Channel was also tested in three different axes to find the worst case axis. Pre-scans were taken of all channels on the worst axis to find the worst case; final testing were performed on the worst case.

### 3.5 EUT Test Configuration #1



## 4.0 TEST RESULTS

### 4.1 Radiated Emissions; Left Controller

#### 4.1.1 Test Parameters

A profile scan was taken using an EMI receiver at a distance of three metres on eight azimuths of the EUT in both the vertical and horizontal polarisation of the field in a semi-anechoic chamber.

Using the pre-scan results as a guide, each emission from the EUT was maximised. Measurements were carried out at a distance of three metres using the specified detector in a CISPR 16-1-4 semi-anechoic chamber. Cable positions were then finally adjusted to produce the maximum emission levels. The worst-case results are reported below.

| Test Equipment          |    |                 |               |               |                           |                      |
|-------------------------|----|-----------------|---------------|---------------|---------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type          | Serial Number | Description               | Calibration Due Date |
| 750                     | 1  | Global          | CISPR16       | 1             | 11 x 7 x 6.2m, chamber    | 14/12/2022           |
| 672                     | 1  | HP              | 8491B         | 4596          | 3dB pad                   | Internal             |
| 788                     | 1  | Rohde & Schwarz | ESW 44        | 101799        | EMI test receiver (44GHz) | 09/08/2023           |
| 877                     | 1  | Huber & Suhner  | SUCOTEST_18A  | 602608/18A    | ST_18A/Nm/Nm/3m           | 19/04/2023           |
| 073                     | 3  | Schwarzbeck     | BBHA9120B     | 237           | Horn Antenna (1-10GHz)    | 20/05/2024           |
| 399                     | 3  | Q-par Angus     | WBH18-40k     | 10300         | Horn Antenna (18-40GHz)   | 18/12/2022           |
| 086a                    | 3  | GORE            | 0K0CQ0CQ120.0 | 05609131      | K' Cable (26.5-40GHz)     | Internal             |
| Test Equipment Software |    |                 |               |               |                           |                      |
| #ID                     | CP | Manufacturer    | Type          |               | Description               | Calibration Due Date |
| 856                     | 0  | Rohde & Schwarz | Software      | 0             | EMC32 v10.50.10           | Not required         |

| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 23.3° Celsius                   |
| Relative Humidity             | 46%                             |
| Atmospheric Pressure          | 1021.4 millibars                |
| <b>Test Date:</b>             | 22 <sup>nd</sup> September 2022 |
| <b>Test Engineer:</b>         | Richard Pennell                 |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

#### 4.1.2 Test Configuration

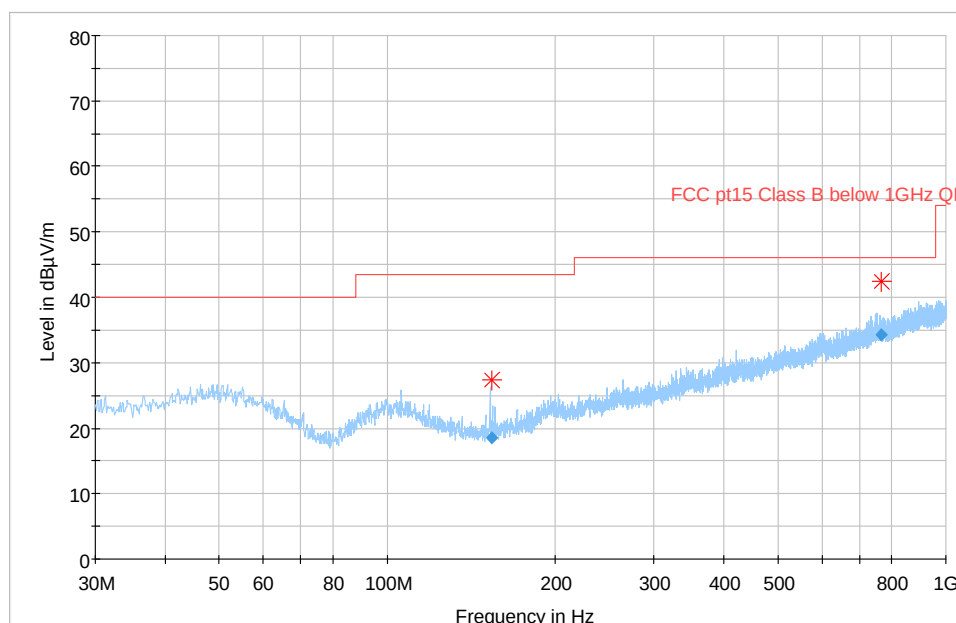
Please refer to EUT Test Configuration #1.

#### 4.1.3 Profile; 30MHz to 1GHz, Tx Power, Left, Middle Channel, Y-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (✱)

30MHz to 1GHz, Tx Power, Left, Middle Channel, Y-Axis



#### 4.1.4 Data; 30MHz to 1GHz, Tx Power, Left, Middle Channel, Y-Axis

| Emission Frequency | Measured Quasi-Peak Value | Class B Specified Quasi-Peak Limit | Pass Margin | Antenna Polarisation | Antenna Height | Turntable Azimuth |        |
|--------------------|---------------------------|------------------------------------|-------------|----------------------|----------------|-------------------|--------|
| MHz                | dBμV/m                    | dBμV/m                             | dB          | H/V                  | cm             | deg               | Status |
| 153.783444         | 18.50                     | 43.50                              | 25.00       | V                    | 162.0          | 103.0             | Pass   |
| 765.916772         | 34.26                     | 46.00                              | 11.74       | V                    | 168.0          | 55.0              | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

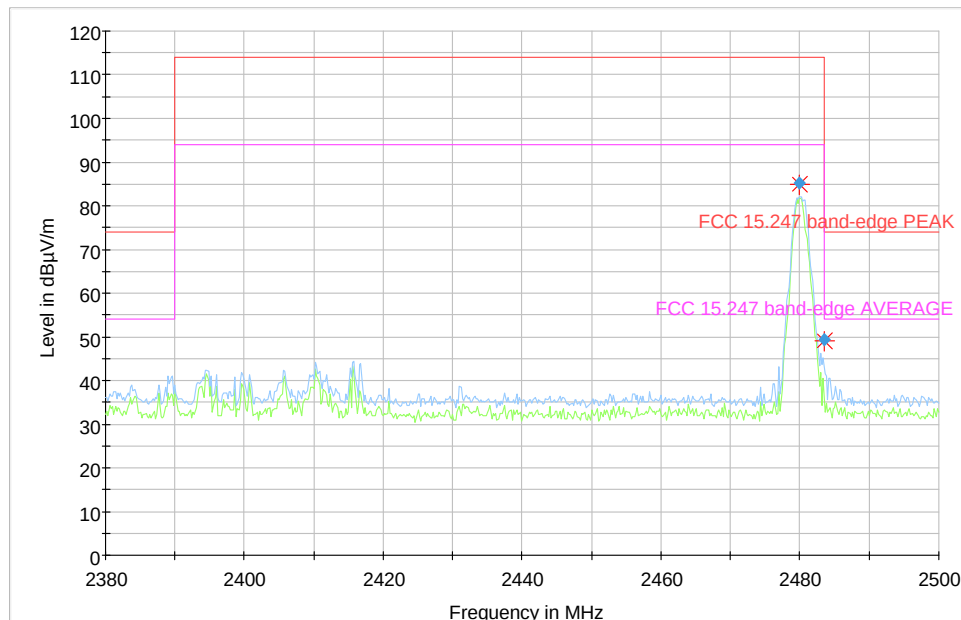
#### 4.1.5 Profile; 2380 to 2500MHz, Tx Power, Left, Top Channel, X-Axis, Band Edge Charging

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left, Top Channel, X-Axis, Band Edge Charging



#### 4.1.6 Data; 2380 to 2500MHz, Tx Power, Left, Top Channel, X-Axis, Band Edge Charging

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2480.000000 | 85.18  | ---           | 94.00         | 8.82   | 105.0  | H   | 188.0   | -7.6  | Pass   |
| 2483.500000 | 49.44  | ---           | 54.00         | 4.56   | 169.0  | H   | 187.0   | -7.6  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

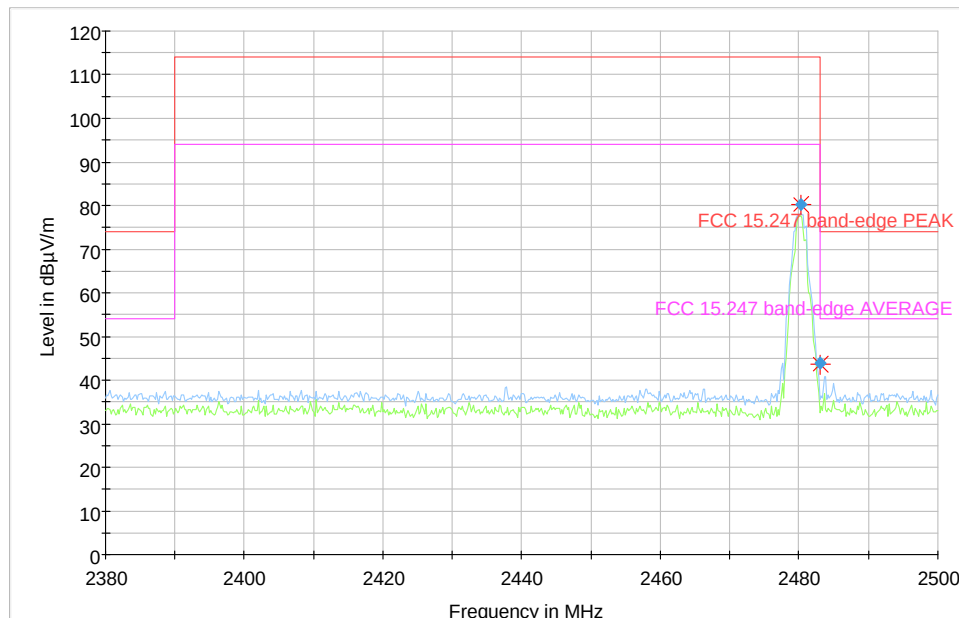
## 4.1.7 Profile; 2380 to 2500MHz, Tx Power, Left, Top Channel, X-Axis, Band Edge

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left, Top Channel, X-Axis, Band Edge



## 4.1.8 Data; 2380 to 2500MHz, Tx Power, Left Controller, Top Channel, X-Axis, Band Edge

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2480.200000 | 80.16  | ---           | 94.00         | 13.84  | 183.0  | V   | 18.0    | -6.6  | Pass   |
| 2483.000000 | 43.95  | ---           | 54.00         | 10.05  | 382.0  | H   | 77.0    | -6.6  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

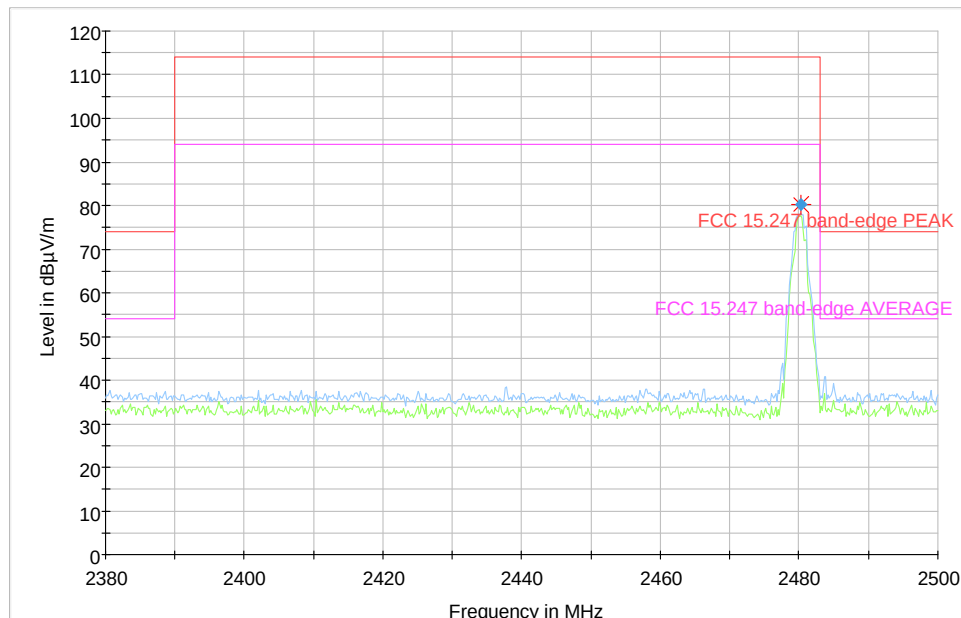
## 4.1.9 Profile; 2380 to 2500MHz, Tx Power, Left Controller, Top Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left Controller, Top Channel, X-Axis



## 4.1.10 Data; 2380 to 2500MHz, Tx Power, Left Controller, Top Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2480.200000 | 80.16  | ---           | 94.00         | 13.84  | 183.0  | V   | 18.0    | -6.6  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

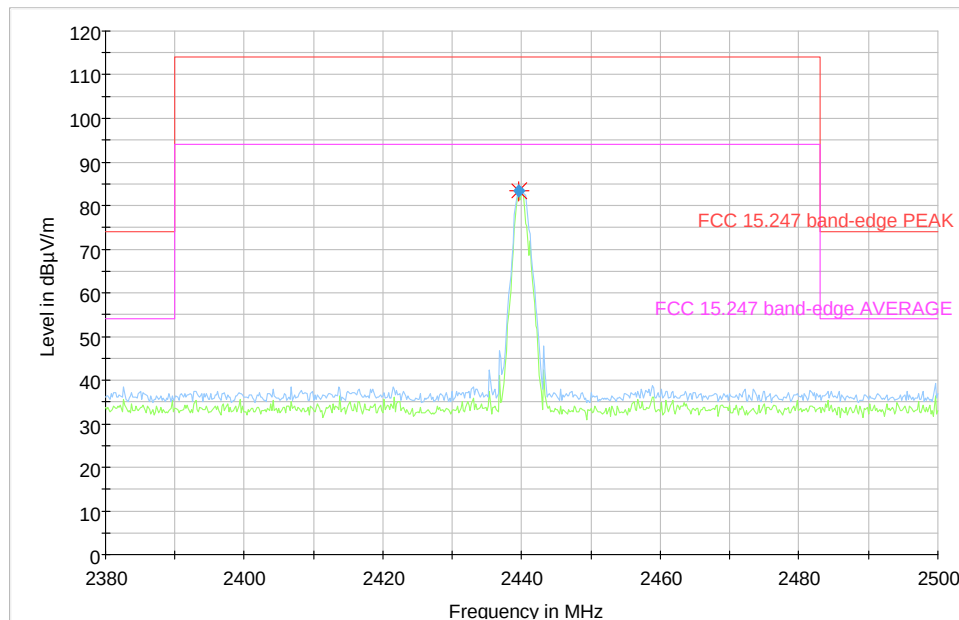
## 4.1.11 Profile; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, X-Axis



## 4.1.12 Data; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2439.600000 | 83.44  | ---           | 94.00         | 10.56  | 200.0  | V   | 14.0    | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

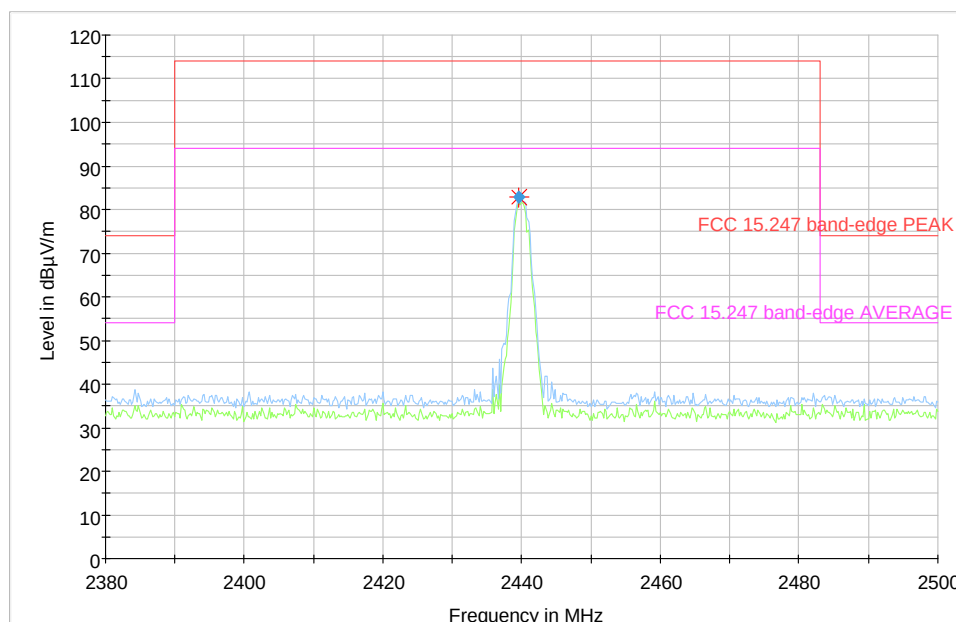
## 4.1.13 Profile; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Y-Axis



## 4.1.14 Data; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2439.600000 | 82.82  | ---           | 94.00         | 11.18  | 214.0  | V   | 215.0   | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

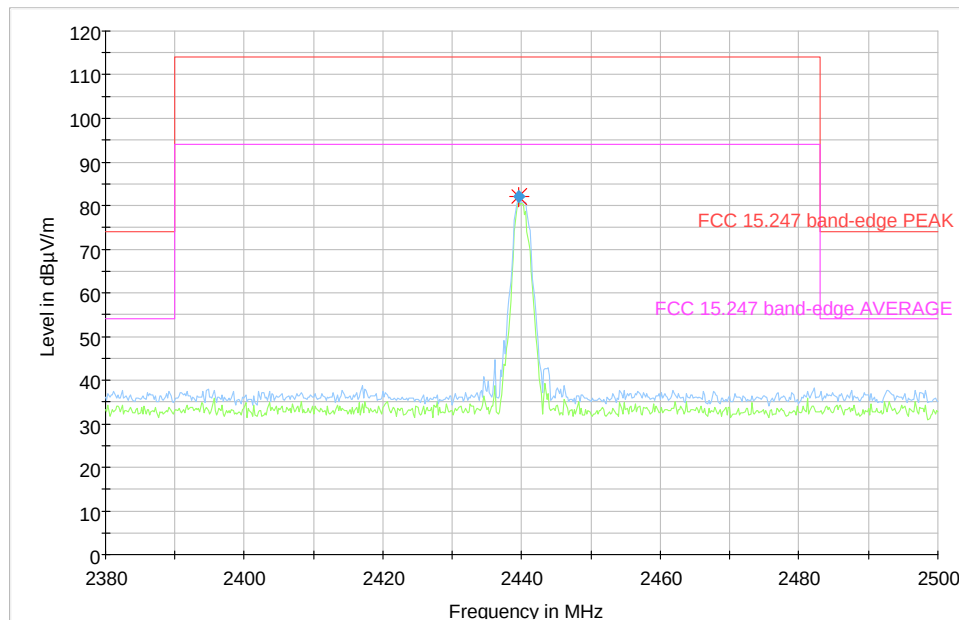
## 4.1.15 Profile; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Z-Axis



## 4.1.16 Data; 2380 to 2500MHz, Tx Power, Left Controller, Middle Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2439.600000 | 82.02  | ---           | 94.00         | 11.98  | 184.0  | H   | 292.0   | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

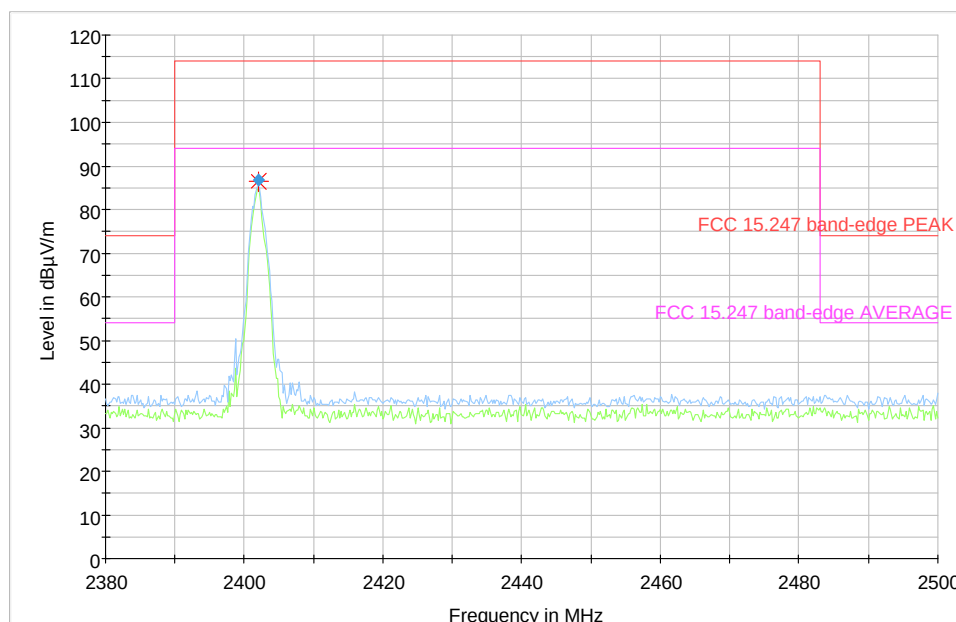
## 4.1.17 Profile; 2380 to 2500MHz, Tx Power, Left Controller, Bottom Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Left Controller, Bottom Channel, X-Axis



## 4.1.18 Data; 2380 to 2500MHz, Tx Power, Left Controller, Bottom Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. | Status |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  |        |
| 2402.000000 | 86.67  | ---           | 94.00         | 7.33   | 202.0  | V   | 8.0     | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

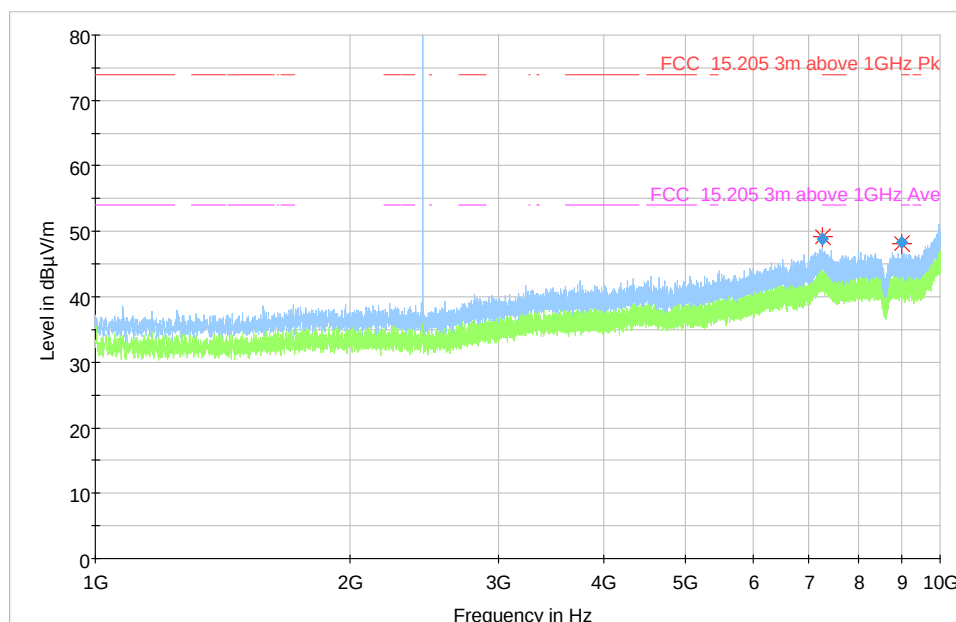
## 4.1.19 Profile; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Left Controller, Middle Channel, X-Axis



## 4.1.20 Data; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7261.750000 | 48.87  | ---           | 54.00         | 5.13   | 381.0  | V   | 244.0   | 5.0   | Pass   |
| 9016.750000 | 48.28  | ---           | 54.00         | 5.72   | 185.0  | V   | 336.0   | 3.0   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

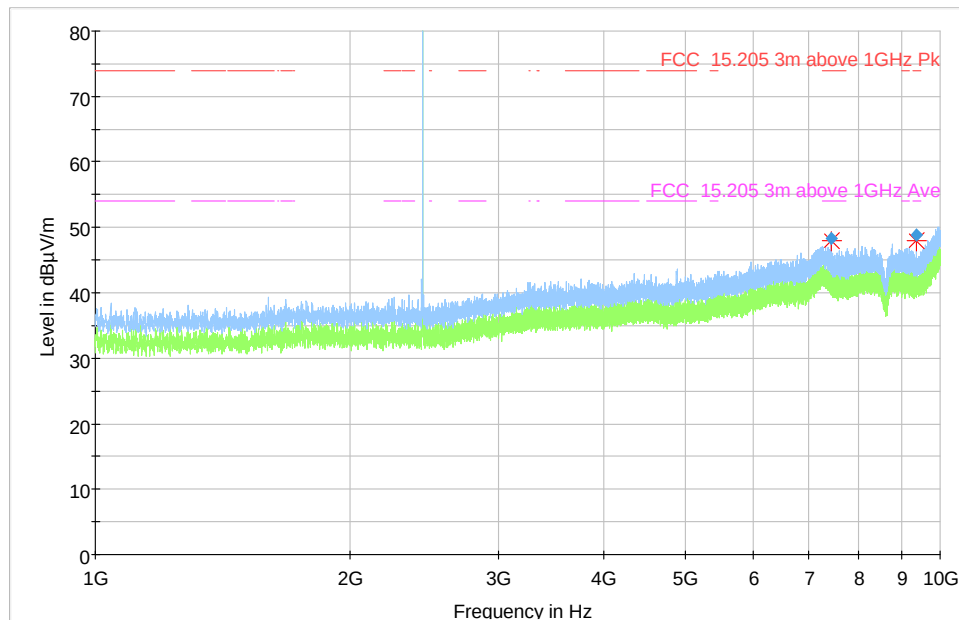
## 4.1.21 Profile; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Left Controller, Middle Channel, Y-Axis



## 4.1.22 Data; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7439.950000 | 48.33  | ---           | 54.00         | 5.67   | 243.0  | V   | 108.0   | 3.6   | Pass   |
| 9386.200000 | 48.79  | ---           | 54.00         | 5.21   | 238.0  | V   | 330.0   | 2.7   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

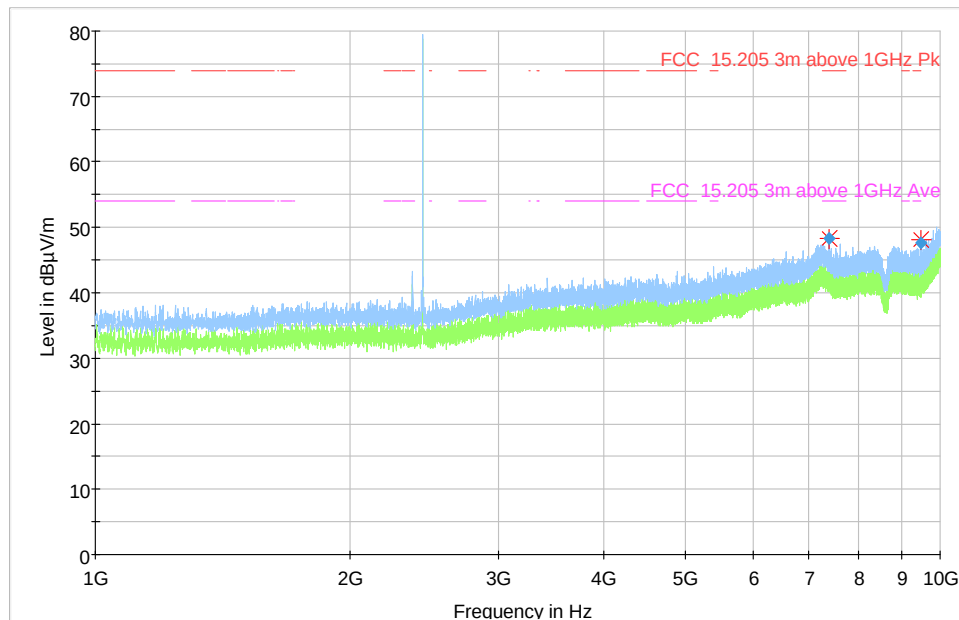
## 4.1.23 Profile; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Left Controller, Middle Channel, Z-Axis



## 4.1.24 Data; 1 to 10GHz, Tx Power, Left Controller, Middle Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7380.100000 | 48.24  | ---           | 54.00         | 5.76   | 187.0  | H   | 225.0   | 4.1   | Pass   |
| 9475.300000 | 47.66  | ---           | 54.00         | 6.34   | 105.0  | H   | 0.0     | 2.7   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

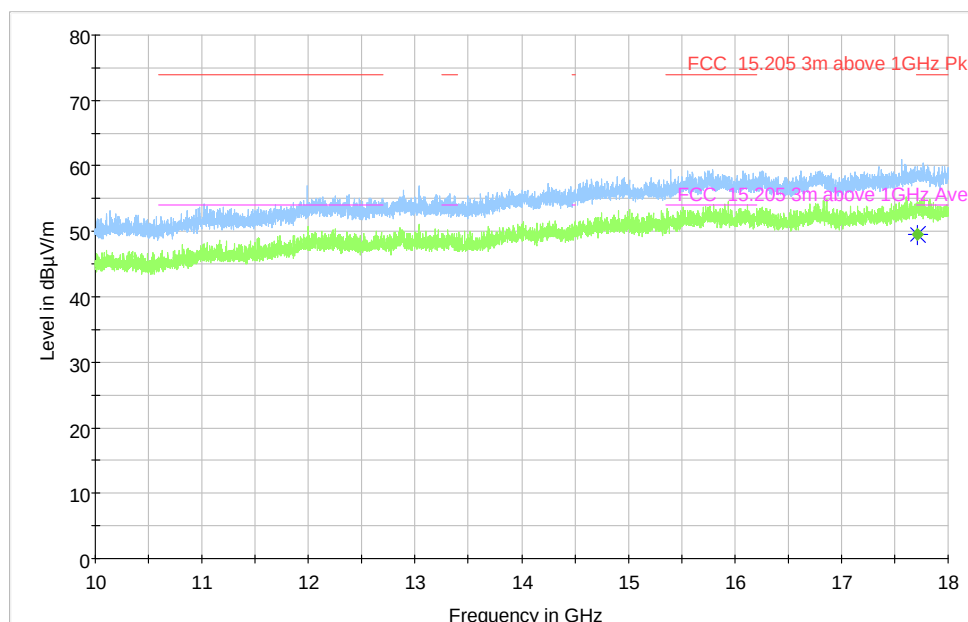
## 4.1.25 Profile; 10 to 18GHz, Tx Power, Left Controller, Top Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Top Channel, X-Axis



## 4.1.26 Data; 10 to 18GHz, Tx Power, Left Controller, Top Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17714.00000 | 49.51  | ---           | 54.00         | 4.49   | 396.0  | V   | 61.0    | 19.1  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

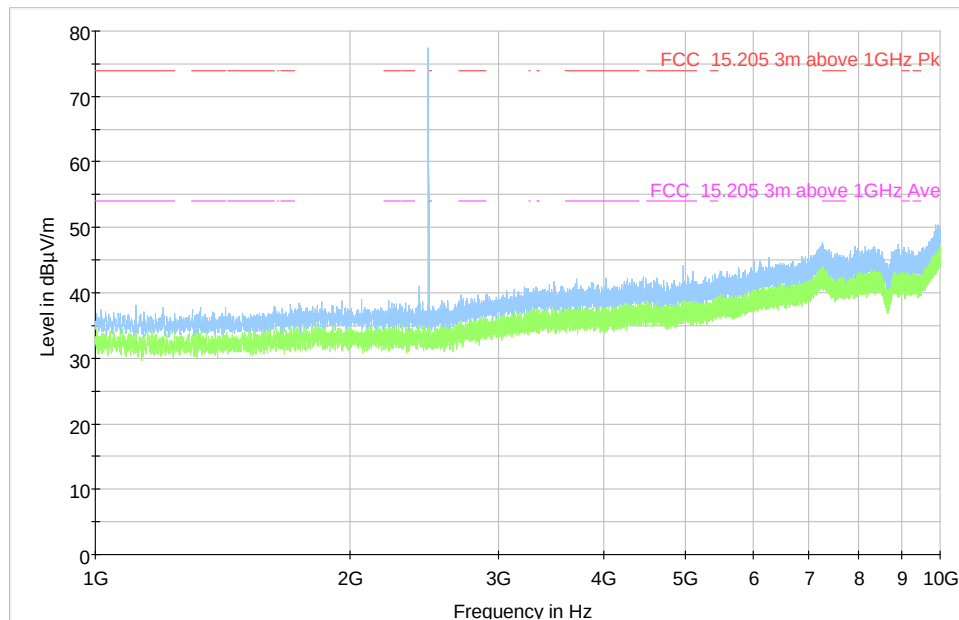
#### 4.1.27 Profile; 10 to 18GHz, Tx Power, Left Controller, Top Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Top Channel, Y-Axis



#### 4.1.28 Data; 10 to 18GHz, Tx Power, Left Controller, Top Channel, Y-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

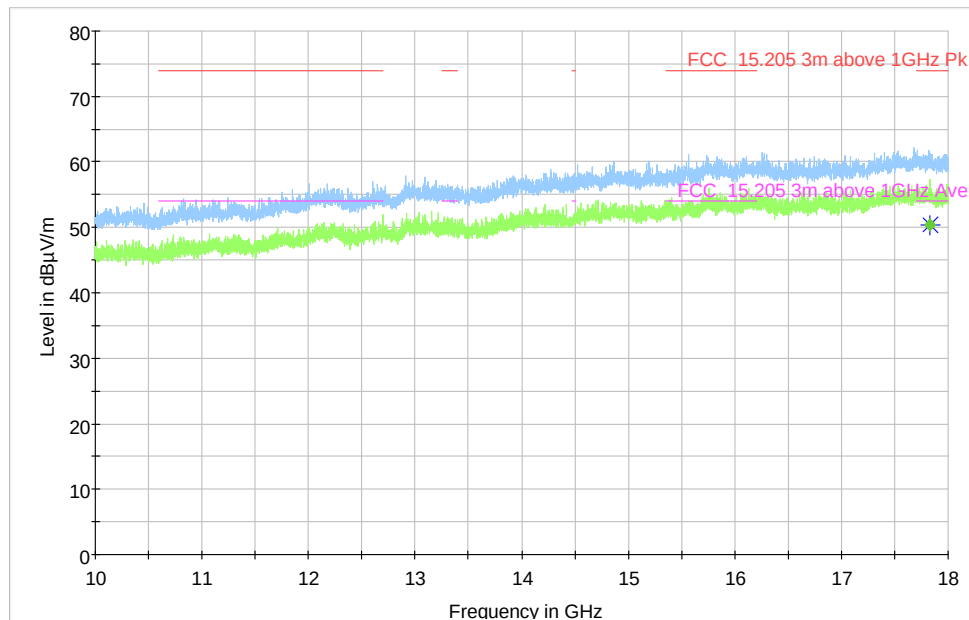
## 4.1.29 Profile; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Middle Channel, X-Axis



## 4.1.30 Data; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17833.00000 | 50.42  | ---           | 54.00         | 3.58   | 118.0  | V   | 36.0    | 19.2  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

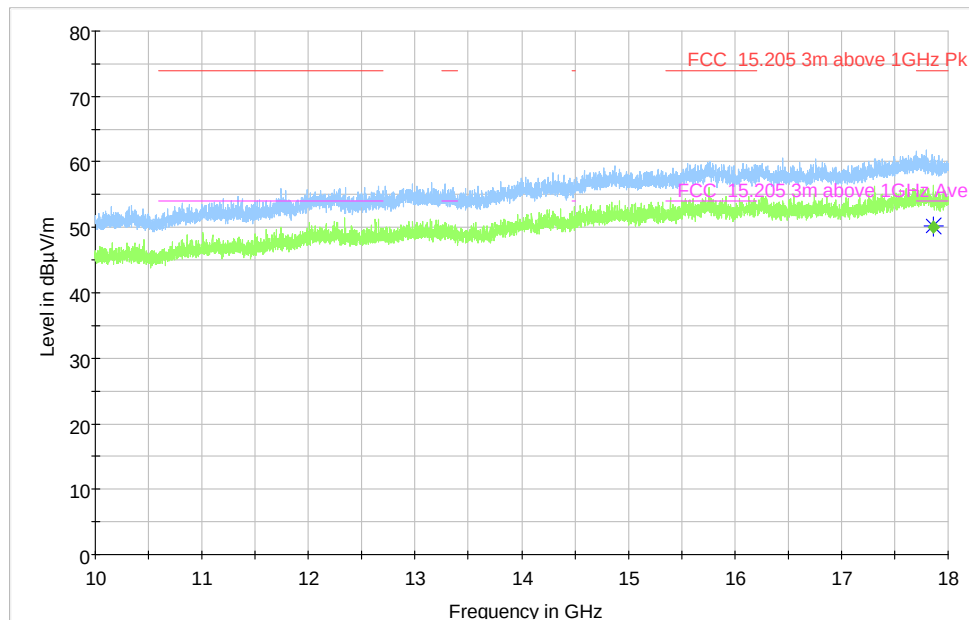
## 4.1.31 Profile; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Middle Channel, Y-Axis



## 4.1.32 Data; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17860.00000 | ---    | 50.09         | 54.00         | 3.91   | 347.0  | H   | 32.0    | 19.2  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

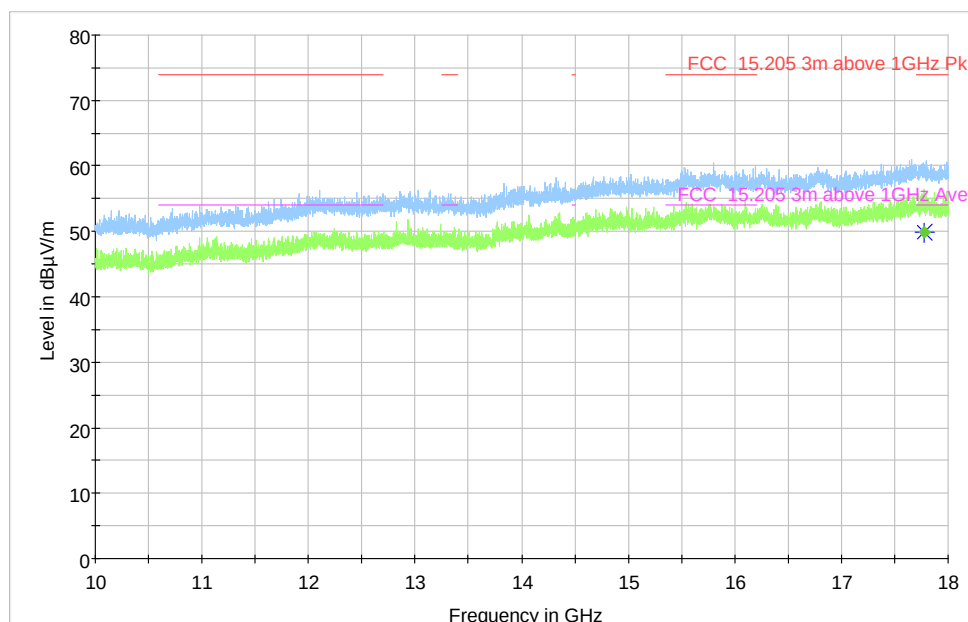
## 4.1.33 Profile; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Middle Channel, Z-Axis



## 4.1.34 Data; 10 to 18GHz, Tx Power, Left Controller, Middle Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17781.00000 | ---    | 49.87         | 54.00         | 4.13   | 171.0  | V   | 22.0    | 19.2  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

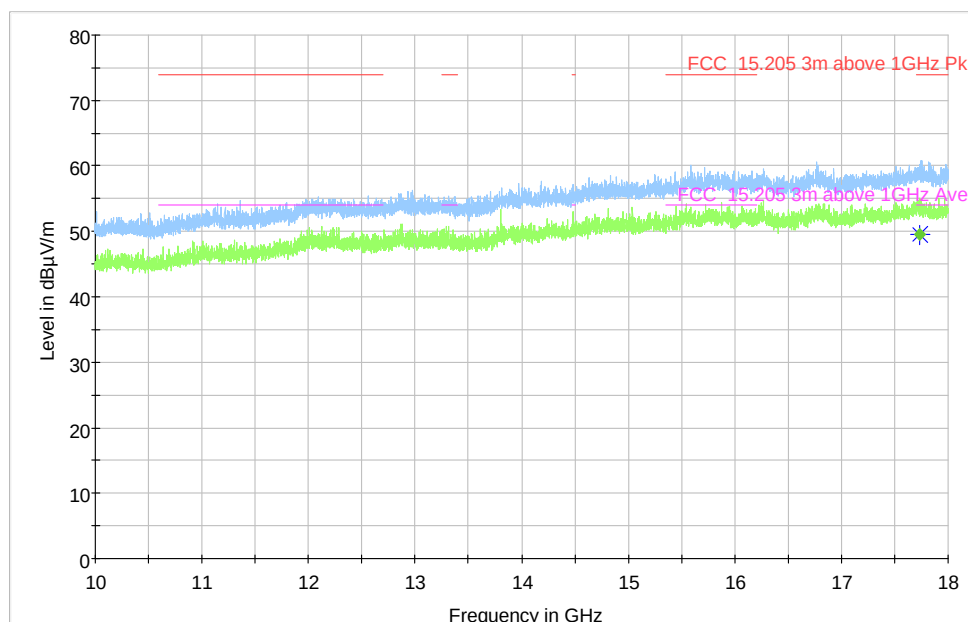
## 4.1.35 Profile; 10 to 18GHz, Tx Power, Left Controller, Bottom Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

10 to 18GHz, Tx Power, Left Controller, Bottom Channel, X-Axis



## 4.1.36 Data; 10 to 18GHz, Tx Power, Left Controller, Bottom Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17737.00000 | ---    | 49.56         | 54.00         | 4.44   | 238.0  | H   | 63.0    | 19.1  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2 Radiated Emissions; Right Controller

### 4.2.1 Test Parameters

A profile scan was taken using an EMI receiver at a distance of three metres on eight azimuths of the EUT in both the vertical and horizontal polarisation of the field in a semi-anechoic chamber.

Using the pre-scan results as a guide, each emission from the EUT was maximised. Measurements were carried out at a distance of three metres using the specified detector in a CISPR 16-1-4 semi-anechoic chamber. Cable positions were then finally adjusted to produce the maximum emission levels. The worst-case results are reported below.

| Test Equipment          |    |                 |               |               |                           |                      |
|-------------------------|----|-----------------|---------------|---------------|---------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type          | Serial Number | Description               | Calibration Due Date |
| 750                     | 1  | Global          | CISPR16       | 1             | 11 x 7 x 6.2m, chamber    | 14/12/2022           |
| 672                     | 1  | HP              | 8491B         | 4596          | 3dB pad                   | Internal             |
| 788                     | 1  | Rohde & Schwarz | ESW 44        | 101799        | EMI test receiver (44GHz) | 09/08/2023           |
| 877                     | 1  | Huber & Suhner  | SUCOTEST_18A  | 602608/18A    | ST_18A/Nm/Nm/3m           | 19/04/2023           |
| 073                     | 3  | Schwarzbeck     | BBHA9120B     | 237           | Horn Antenna (1-10GHz)    | 20/05/2024           |
| 399                     | 3  | Q-par Angus     | WBH18-40k     | 10300         | Horn Antenna (18-40GHz)   | 18/12/2022           |
| 086a                    | 3  | GORE            | OK0CQ0CQ120.0 | 05609131      | K' Cable (26.5-40GHz)     | Internal             |
| Test Equipment Software |    |                 |               |               |                           |                      |
| #ID                     | CP | Manufacturer    | Type          |               | Description               | Calibration Due Date |
| 856                     | 0  | Rohde & Schwarz | Software      | 0             | EMC32 v10.50.10           | Not required         |

| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 23.3° Celsius                   |
| Relative Humidity             | 46%                             |
| Atmospheric Pressure          | 1021.4 millibars                |
| <b>Test Date:</b>             | 22 <sup>nd</sup> September 2022 |
| <b>Test Engineer:</b>         | Richard Pennell                 |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.2.2 Test Configuration

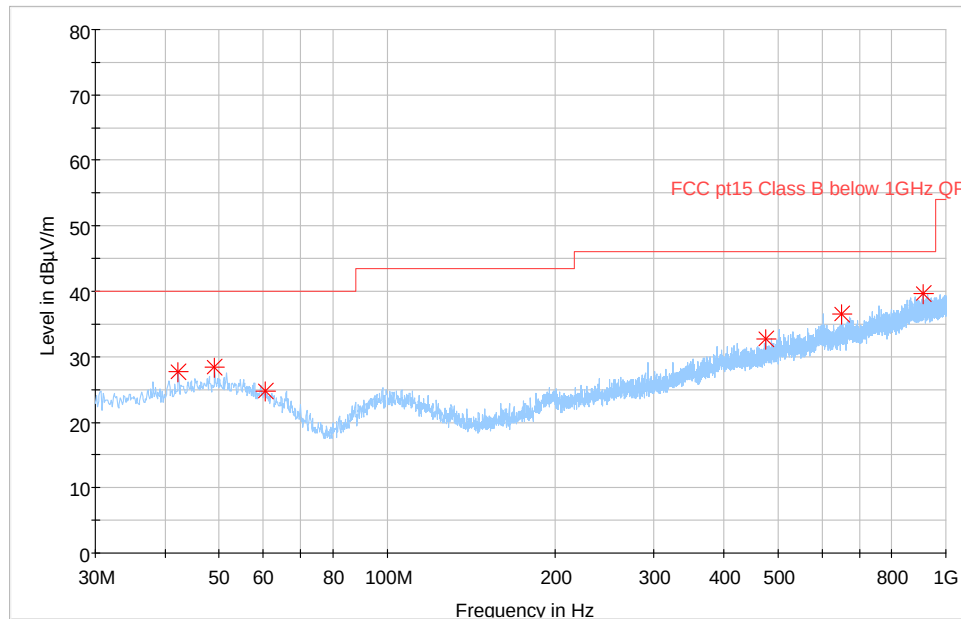
Please refer to EUT Test Configuration #1.

#### 4.2.3 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Top Channel, Z-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Top Channel, Z-Axis



#### 4.2.4 Data; 30MHz to 1GHz, Tx Power, Right Controller, Top Channel, Z-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

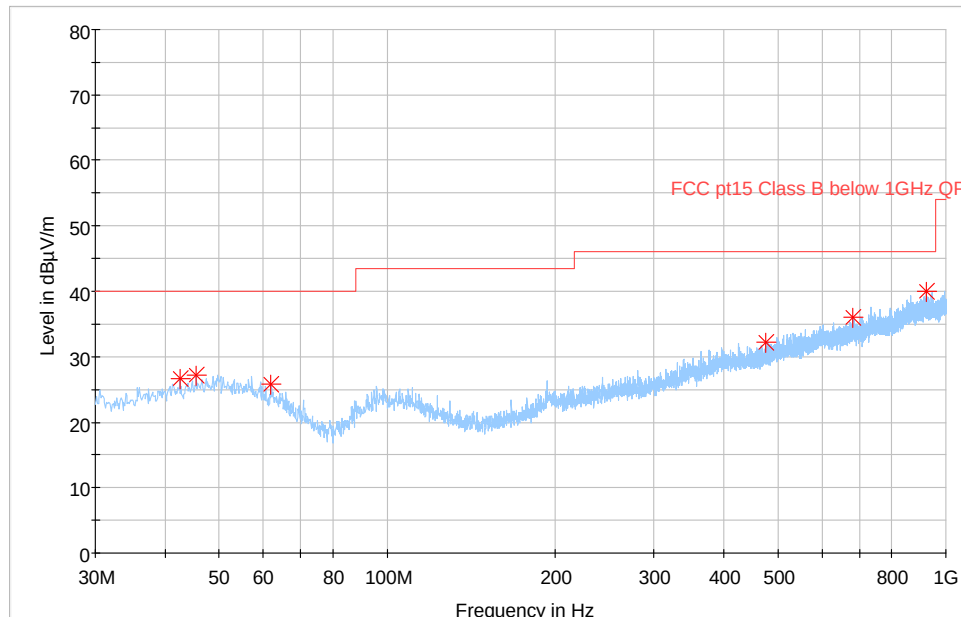
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

#### 4.2.5 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, X-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, X-Axis



#### 4.2.6 Data; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, X-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

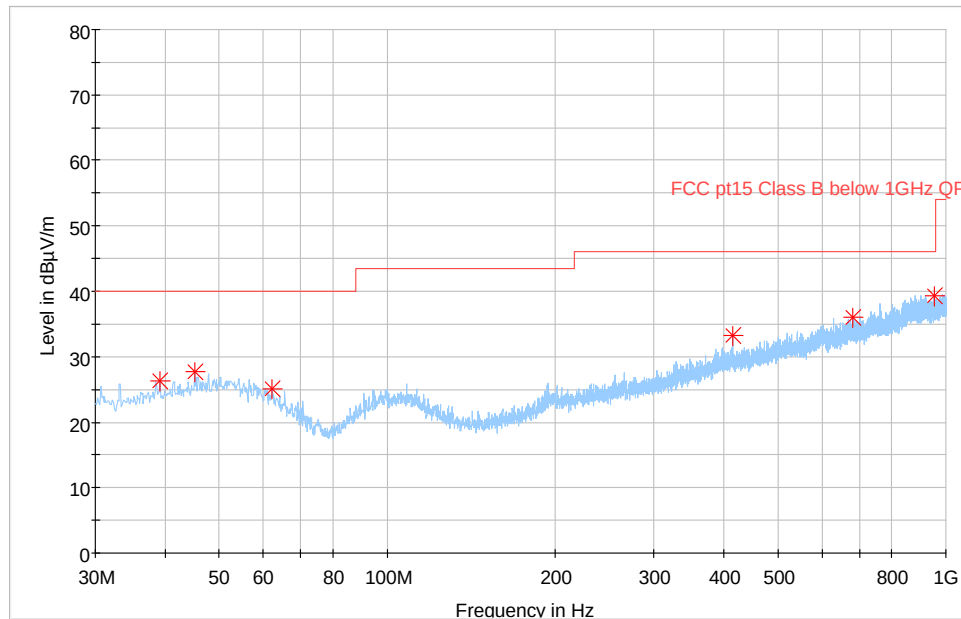
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

#### 4.2.7 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Y-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Y-Axis



#### 4.2.8 Data; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Y-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

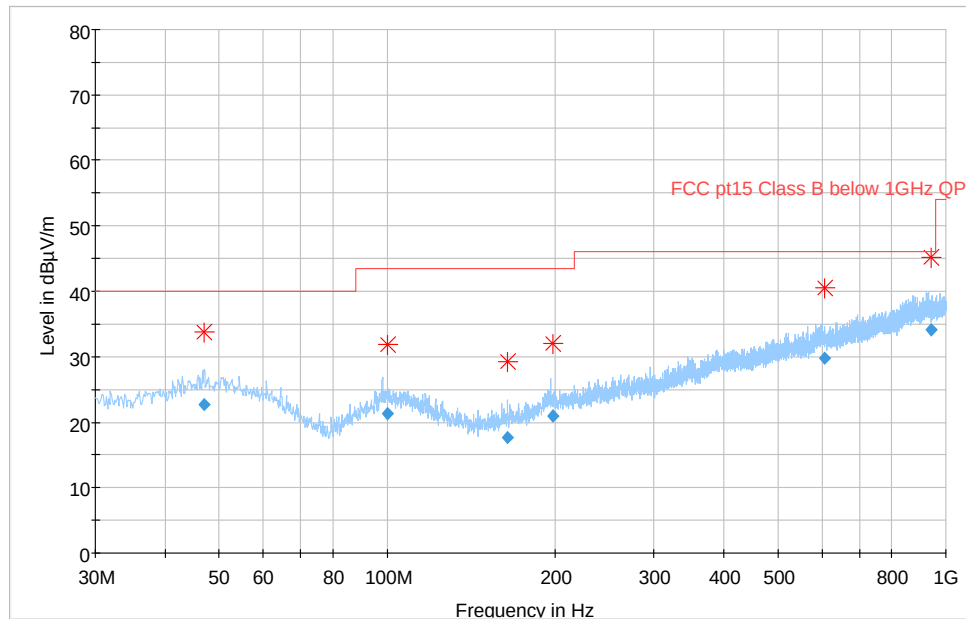
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

#### 4.2.9 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis



#### 4.2.10 Data; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis

| Emission Frequency | Measured Quasi-Peak Value | Class B Specified Quasi-Peak Limit | Pass Margin | Antenna Polarisation | Antenna Height | Turntable Azimuth |        |
|--------------------|---------------------------|------------------------------------|-------------|----------------------|----------------|-------------------|--------|
| MHz                | dBμV/m                    | dBμV/m                             | dB          | H/V                  | cm             | deg               | Status |
| 46.974413          | 22.69                     | 40.00                              | 17.31       | V                    | 109.0          | 311.0             | Pass   |
| 99.980425          | 21.24                     | 43.50                              | 22.26       | V                    | 400.0          | 248.0             | Pass   |
| 164.432104         | 17.72                     | 43.50                              | 25.78       | H                    | 325.0          | 195.0             | Pass   |
| 198.043802         | 20.94                     | 43.50                              | 22.56       | H                    | 278.0          | 100.0             | Pass   |
| 606.419214         | 29.78                     | 46.00                              | 16.22       | H                    | 145.0          | 109.0             | Pass   |
| 940.686321         | 34.09                     | 46.00                              | 11.91       | H                    | 120.0          | 174.0             | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

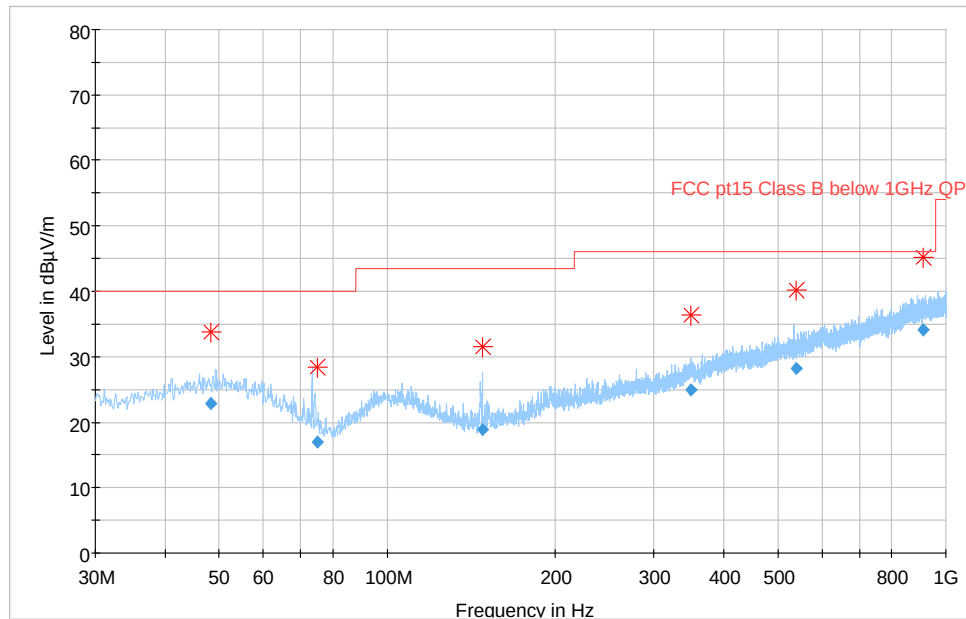
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

#### 4.2.11 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis, Charging

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis, Charging



#### 4.2.12 Data; 30MHz to 1GHz, Tx Power, Right Controller, Middle Channel, Z-Axis, Charging

| Emission Frequency | Measured Quasi-Peak Value | Class B Specified Quasi-Peak Limit | Pass Margin | Antenna Polarisation | Antenna Height | Turntable Azimuth |        |
|--------------------|---------------------------|------------------------------------|-------------|----------------------|----------------|-------------------|--------|
| MHz                | dBμV/m                    | dBμV/m                             | dB          | H/V                  | cm             | deg               | Status |
| 48.372922          | 22.78                     | 40.00                              | 17.22       | H                    | 194.0          | 12.0              | Pass   |
| 74.921834          | 16.94                     | 40.00                              | 23.06       | V                    | 181.0          | 237.0             | Pass   |
| 148.141930         | 18.80                     | 43.50                              | 24.70       | H                    | 326.0          | 110.0             | Pass   |
| 349.387785         | 24.87                     | 46.00                              | 21.13       | H                    | 269.0          | 337.0             | Pass   |
| 539.149384         | 28.24                     | 46.00                              | 17.76       | V                    | 257.0          | 135.0             | Pass   |
| 910.577394         | 34.06                     | 46.00                              | 11.94       | V                    | 214.0          | 138.0             | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

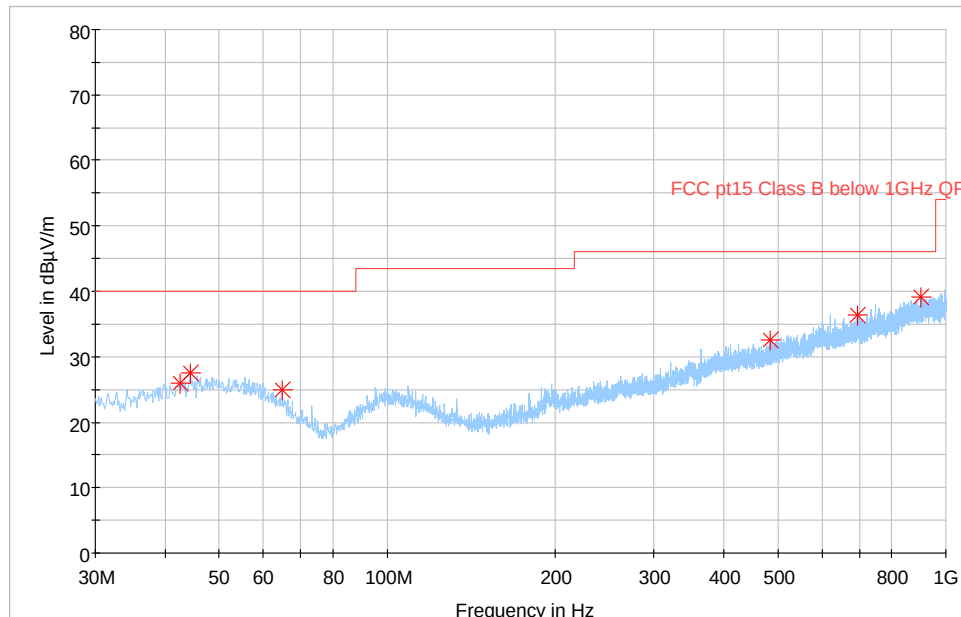
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

#### 4.2.13 Profile; 30MHz to 1GHz, Tx Power, Right Controller, Bottom Channel, Z-Axis

Maximum peak hold trace with quasi-peak values (◆)

Peak measurements (\*)

30MHz to 1GHz, Tx Power, Right Controller, Bottom Channel, Z-Axis



#### 4.2.14 Data; 30MHz to 1GHz, Tx Power, Right Controller, Bottom Channel, Z-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC Class B limits and take into account the correction factor\*. Measurements made according to the ANSI C63.4 test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

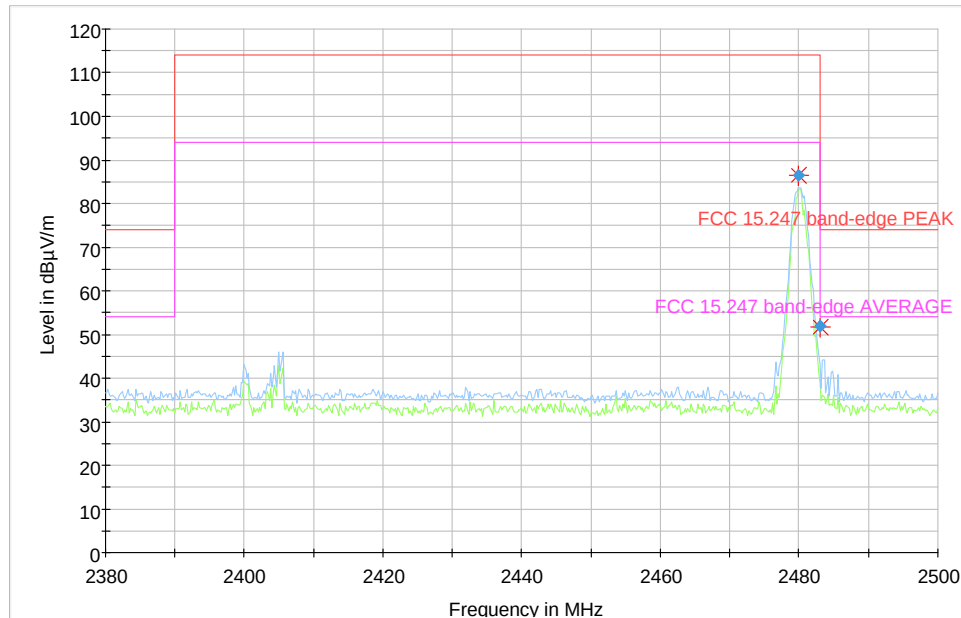
## 4.2.15 Profile; 2380 to 2500MHz, Tx Power, Right Controller, Top Channel, Z-Axis,

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Right Controller, Top Channel, Z-Axis



## 4.2.16 Data; 2380 to 2500MHz, Tx Power, Right Controller, Top Channel, Z-Axis

| Frequency   | Peak   | Average Limit | Peak Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m     | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2480.000000 | 86.59  | 94.00         | ---        | 7.41   | 115.0  | H   | 89.0    | -6.6  | Pass   |
| 2483.000000 | 52.00  | 54.00         | ---        | 2.00   | 118.0  | H   | 92.0    | -6.6  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

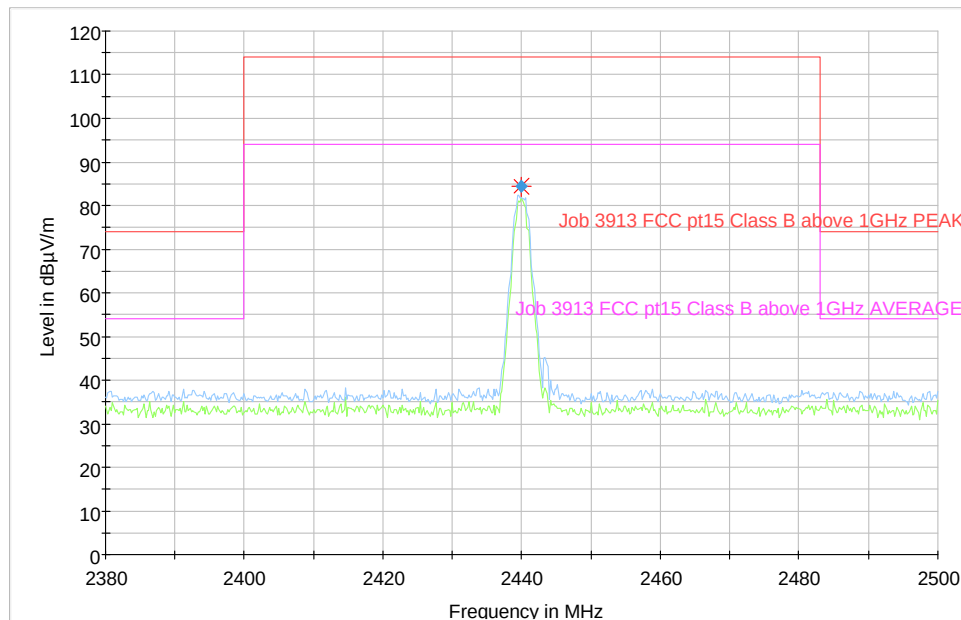
## 4.2.17 Profile; 2380 to 2500MHz, Tx Power, Right Controller, Middle Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Right Controller, Middle Channel, Z-Axis



## 4.2.18 Data; 2380 to 2500MHz, Tx Power, Right Controller, Middle Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2440.000000 | 84.36  | ---           | 94.00         | 9.64   | 288.0  | V   | 327.0   | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

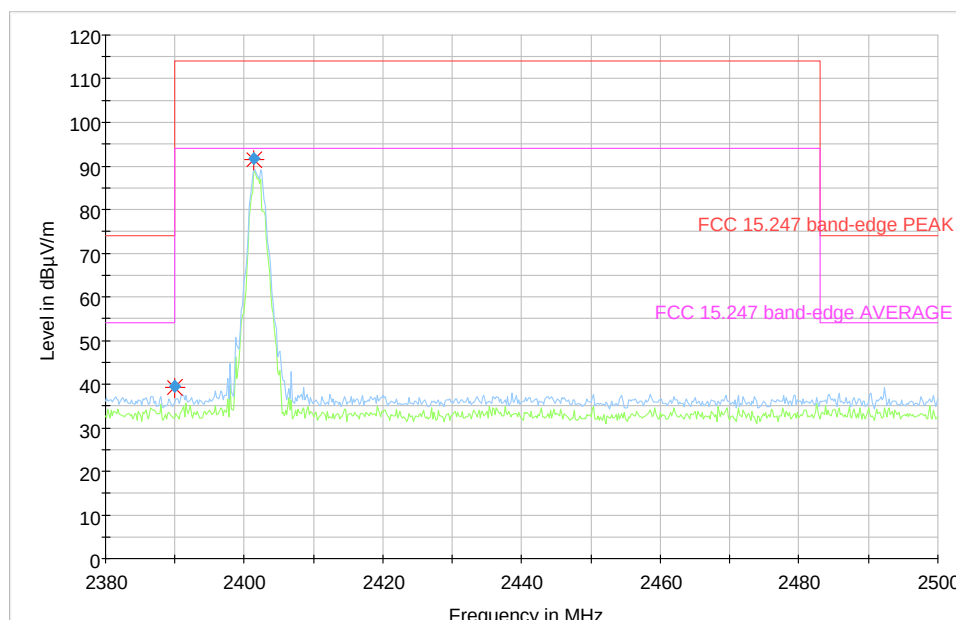
## 4.2.19 Profile; 2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Charging

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Charging



## 4.2.20 Data; 2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Charging

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2390.000000 | 39.55  | ---           | 54.00         | 14.45  | 167.0  | H   | 345.0   | -6.7  | Pass   |
| 2401.400000 | 91.64  | ---           | 94.00         | 2.36   | 231.0  | V   | 107.0   | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

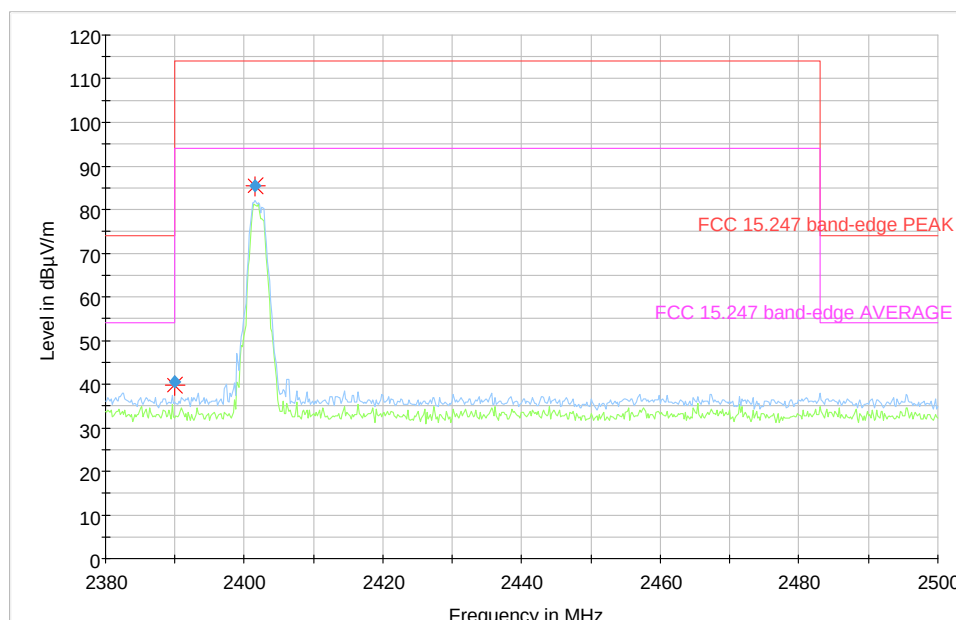
## 4.2.21 Profile; 2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Band Edge

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Band Edge



## 4.2.22 Data; 2380 to 2500MHz, Tx Power, Right Controller, Bottom Channel, Z-Axis, Band Edge

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2390.000000 | 40.49  | ---           | 54.00         | 13.51  | 298.0  | H   | 48.0    | -6.7  | Pass   |
| 2401.600000 | 85.56  | ---           | 94.00         | 8.44   | 261.0  | H   | 158.0   | -6.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

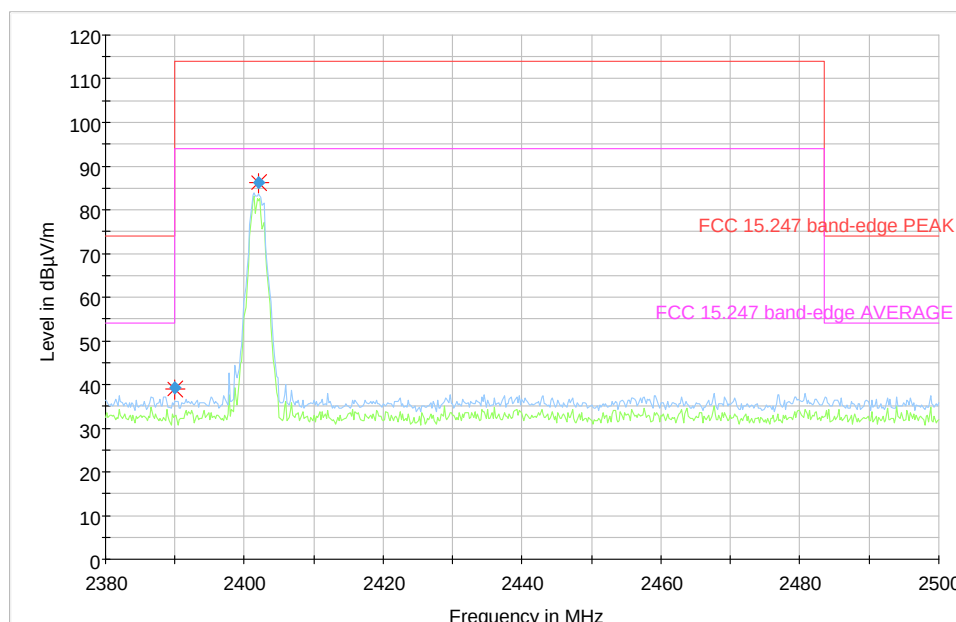
## 4.2.23 Profile; 2380 to 2500MHz, Rx Power, Right Controller, Bottom Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

2380 to 2500MHz, Rx Power, Right Controller, Bottom Channel, Z-Axis



## 4.2.24 Data; 2380 to 2500MHz, Rx Power, Right Controller, Bottom Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Average Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2390.000000 | 39.17  | ---           | 54.00         | 14.83  | 257.0  | H   | 129.0   | -7.7  | Pass   |
| 2402.000000 | 86.34  | ---           | 94.00         | 7.66   | 303.0  | V   | 79.0    | -7.7  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

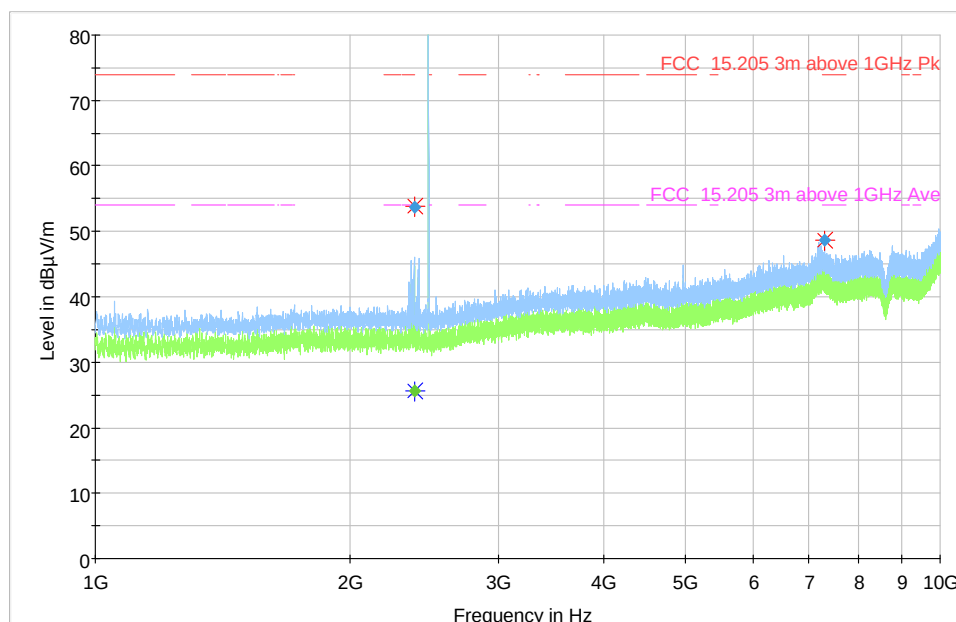
## 4.2.25 Profile; 1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis with Charging Cable

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

## 1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis with Charging Cable



## 4.2.26 Data; 1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis with Charging Cable

| Frequency   | Peak   | CISPR Average | Limit  | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|--------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 2384.650000 | ---    | 25.62         | 54.00  | 28.38  | 100.0  | V   | 290.0   | -6.7  | Pass   |
| 2384.650000 | 53.73  | ---           | 74.00  | 20.27  | 168.0  | V   | 107.0   | -6.7  | Pass   |
| 7301.350000 | 48.60  | ---           | 54.00  | 5.40   | 136.0  | V   | 290.0   | 4.7   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

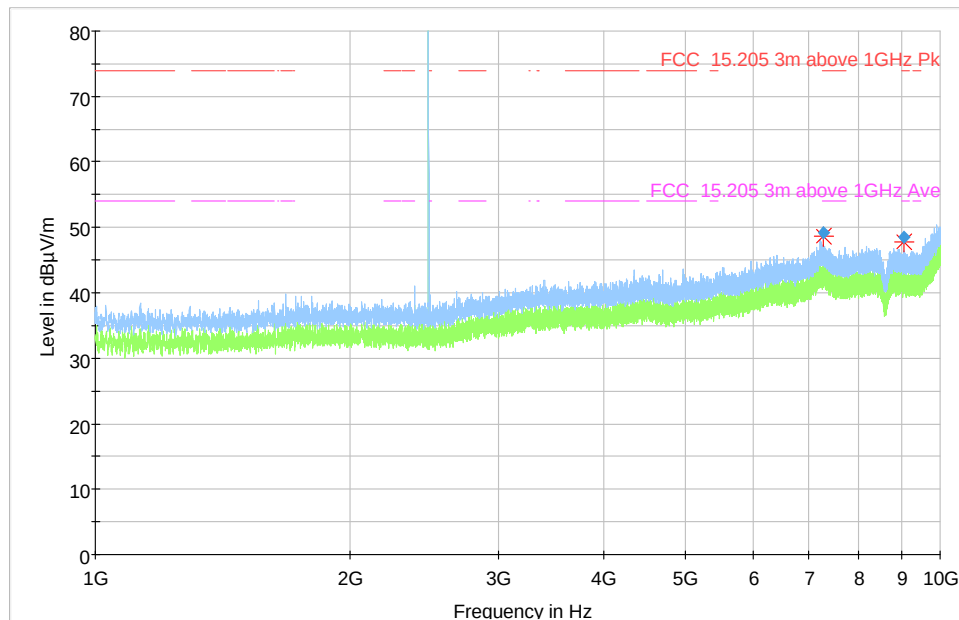
## 4.2.27 Profile; 1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis



## 4.2.28 Data; 1 to 10GHz, Tx Power, Right Controller, Top Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Limit  | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|--------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7277.950000 | 49.24  | ---           | 54.00  | 4.76   | 325.0  | H   | 14.0    | 4.9   | Pass   |
| 9062.650000 | 48.44  | ---           | 54.00  | 5.56   | 126.0  | V   | 151.0   | 2.9   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

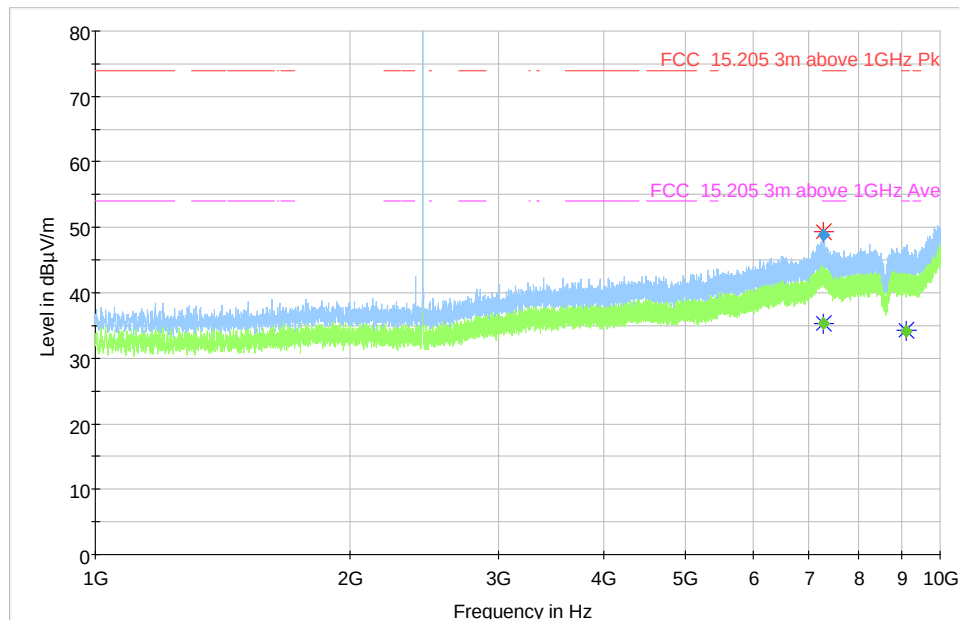
## 4.2.29 Profile; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, X-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Right Controller, Middle Channel, X-Axis



## 4.2.30 Data; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, X-Axis

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7270.750000 | ---    | 35.29         | 54.00         | 18.71  | 368.0  | H   | 339.0   | 4.9   | Pass   |
| 7273.450000 | 48.89  | ---           | 74.00         | 25.11  | 138.0  | V   | 66.0    | 4.9   | Pass   |
| 9105.850000 | ---    | 34.19         | 54.00         | 19.81  | 263.0  | V   | 62.0    | 2.9   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

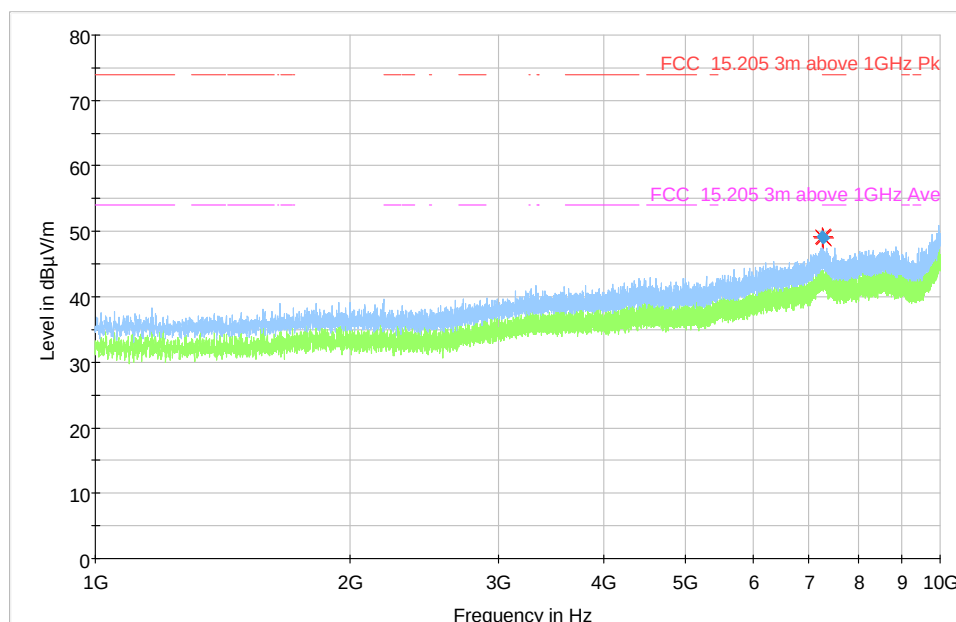
#### 4.2.31 Profile; 1 to 10GHz, Rx Power, Right Controller, Middle Channel, Y-Axis, Charging

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Rx Power, Right Controller, Middle Channel, Y-Axis, Charging



#### 4.2.32 Data; 1 to 10GHz, Rx Power, Right Controller, Middle Channel, Y-Axis, Charging

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7263.550000 | 49.10  | ---           | 54.00         | 4.90   | 196.0  | H   | 68.0    | 5.0   | Pass   |
| 7273.900000 | 48.94  | ---           | 54.00         | 5.06   | 330.0  | V   | 234.0   | 4.9   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

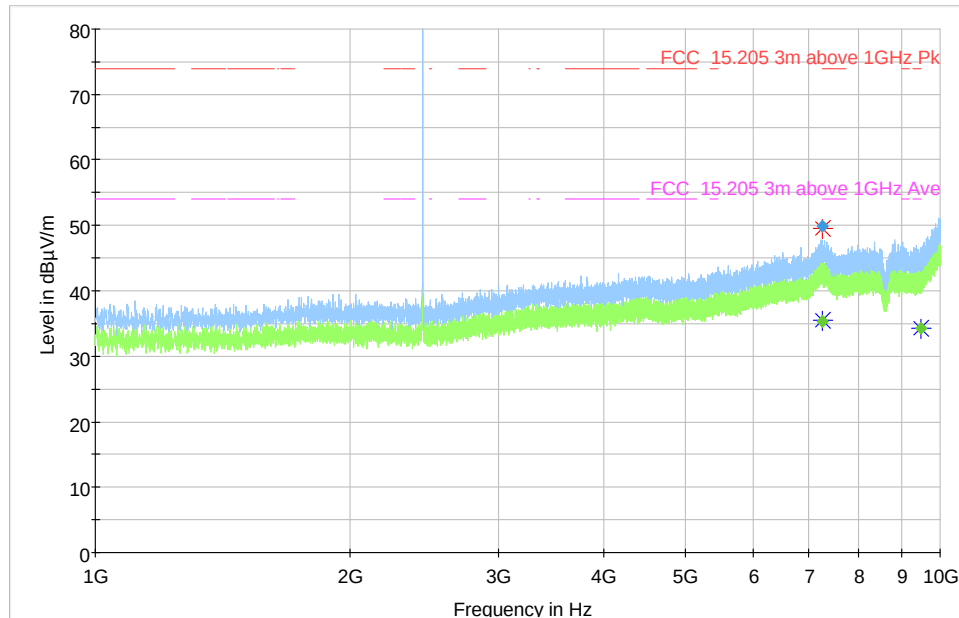
## 4.2.33 Profile; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Right Controller, Middle Channel, Y-Axis



## 4.2.34 Data; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7253.650000 | ---    | 35.39         | 54.00         | 18.61  | 247.0  | H   | 241.0   | 5.0   | Pass   |
| 7262.200000 | 49.83  | ---           | 74.00         | 24.17  | 290.0  | H   | 136.0   | 5.0   | Pass   |
| 9498.700000 | ---    | 34.25         | 54.00         | 19.75  | 193.0  | V   | 114.0   | 2.7   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

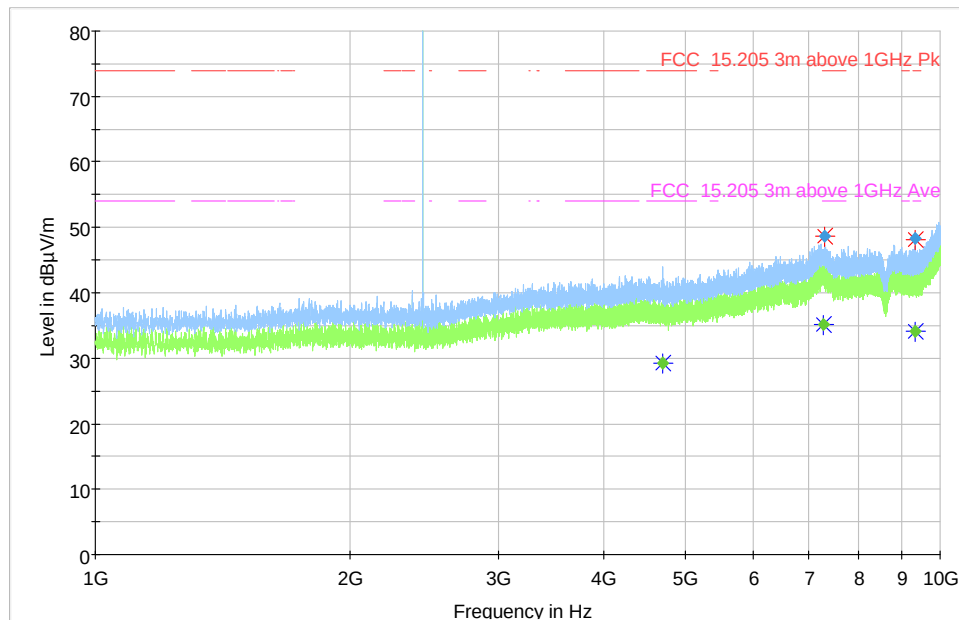
## 4.2.35 Profile; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, Z-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Right Controller, Middle Channel, Z-Axis



## 4.2.36 Data; 1 to 10GHz, Tx Power, Right Controller, Middle Channel, Z-Axis

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 4690.900000 | ---    | 29.19         | 54.00         | 24.81  | 109.0  | H   | 0.0     | -1.4  | Pass   |
| 7283.800000 | ---    | 35.15         | 54.00         | 18.85  | 255.0  | H   | 103.0   | 4.8   | Pass   |
| 7294.150000 | 48.73  | ---           | 74.00         | 25.27  | 354.0  | V   | 357.0   | 4.7   | Pass   |
| 9356.500000 | ---    | 34.17         | 54.00         | 19.83  | 247.0  | V   | 263.0   | 2.6   | Pass   |
| 9356.500000 | 48.37  | ---           | 74.00         | 25.63  | 304.0  | V   | 181.0   | 2.6   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

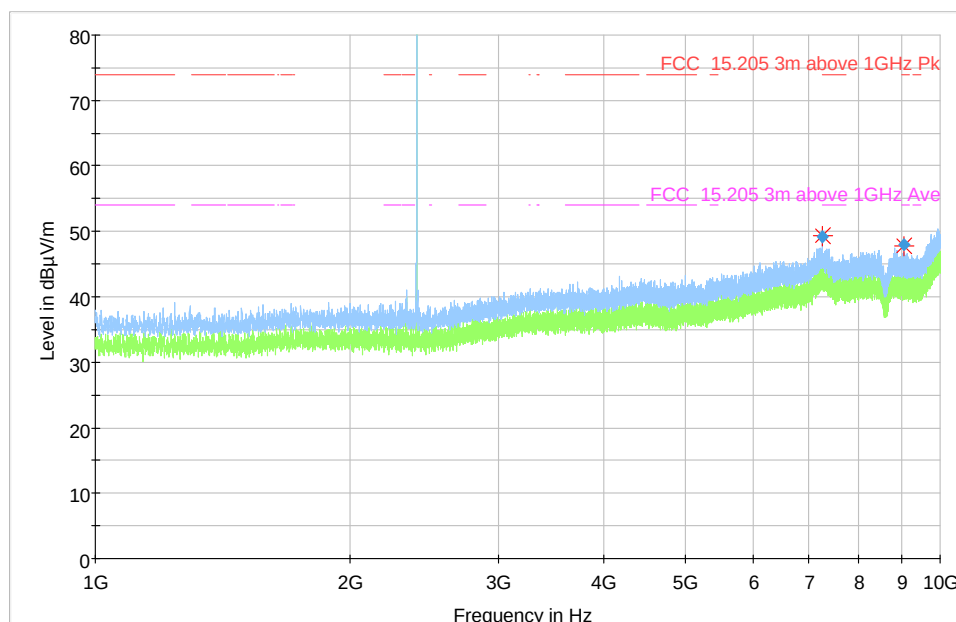
## 4.2.37 Profile; 1 to 10GHz, Tx Power, Right Controller, Bottom Channel, Y-Axis

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 to 10GHz, Tx Power, Right Controller, Bottom Channel, Y-Axis



## 4.2.38 Data; 1 to 10GHz, Tx Power, Right Controller, Bottom Channel, Y-Axis

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 7255.450000 | 49.14  | ---           | 54.00         | 4.86   | 208.0  | V   | 10.0    | 5.0   | Pass   |
| 9064.450000 | 48.04  | ---           | 54.00         | 5.96   | 165.0  | V   | 20.0    | 2.9   | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

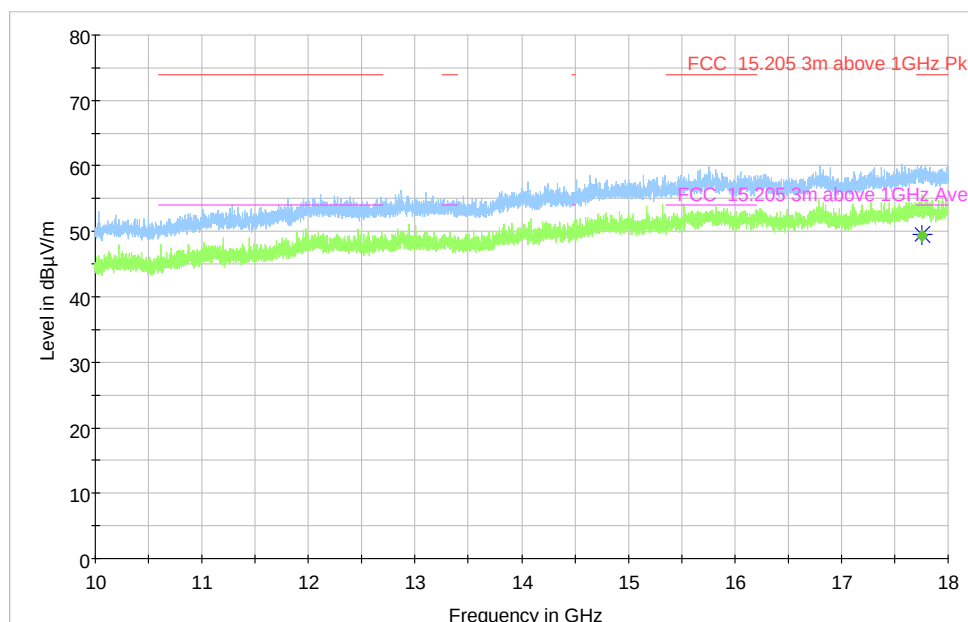
#### 4.2.39 Profile; 10 to 18GHz, Tx Power, Right Controller, Top Channel, Y-Axis with Charging Cable

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

#### 10 to 18GHz, Tx Power, Right Controller, Top Channel, X-Axis with Charging Cable



#### 4.2.40 Data; 10 to 18GHz, Tx Power, Right Controller, Top Channel, X-Axis with Charging Cable

| Frequency   | Peak   | CISPR Average | Class B Limit | Margin | Height | Pol | Azimuth | Corr. |        |
|-------------|--------|---------------|---------------|--------|--------|-----|---------|-------|--------|
| MHz         | dBμV/m | dBμV/m        | dBμV/m        | dB     | cm     | H/V | Deg     | dB/m  | Status |
| 17758.00000 | ---    | 49.42         | 54.00         | 4.58   | 400.0  | V   | 43.0    | 19.1  | Pass   |

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

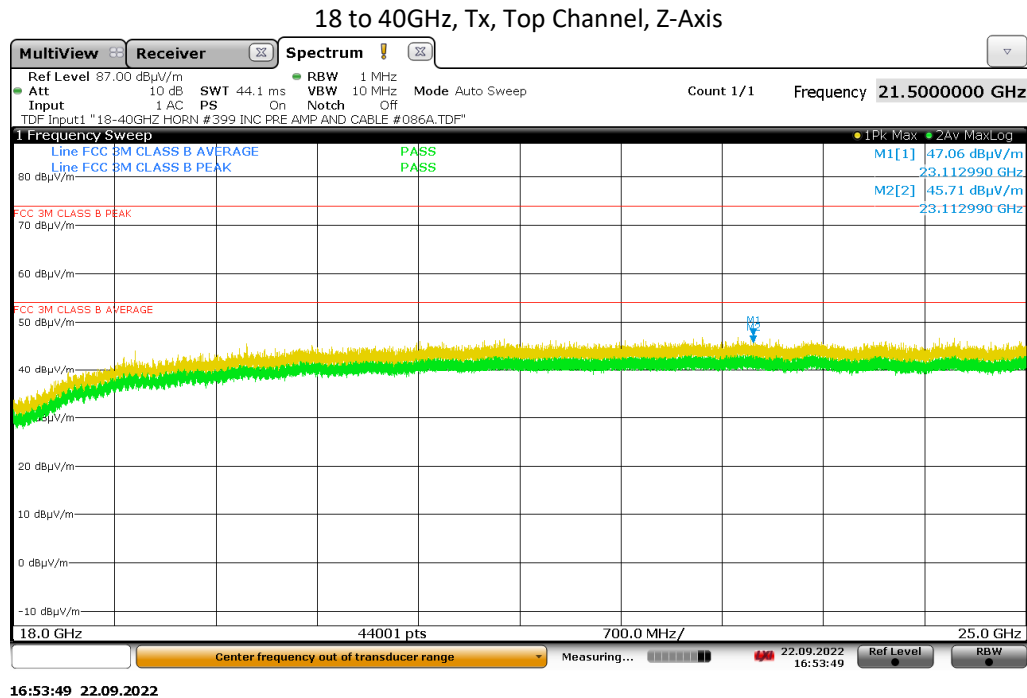
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2.41 Profile; 18 to 40GHz, Tx, Top Channel, Z-Axis

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)



## 4.2.42 Data; 18 to 40GHz, Tx, Top Channel, Z-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

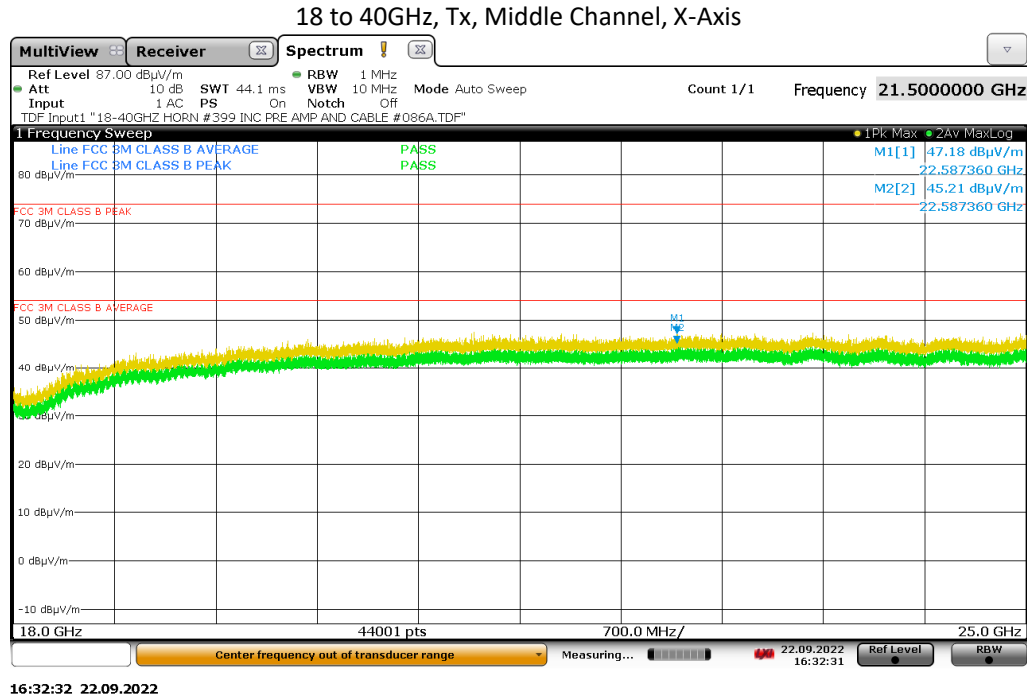
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2.43 Profile; 18 to 40GHz, Tx, Middle Channel, X-Axis

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)



## 4.2.44 Data; 18 to 40GHz, Tx, Middle Channel, X-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

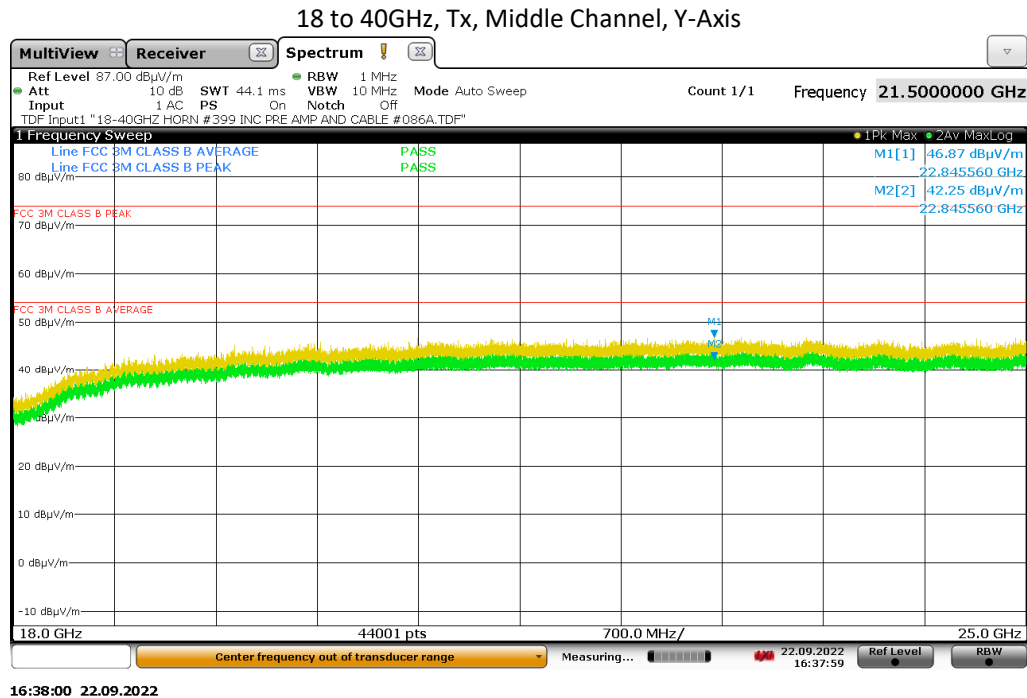
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2.45 Profile; 18 to 40GHz, Tx, Middle Channel, Y-Axis

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)



## 4.2.46 Data; 18 to 40GHz, Tx, Middle Channel, Y-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

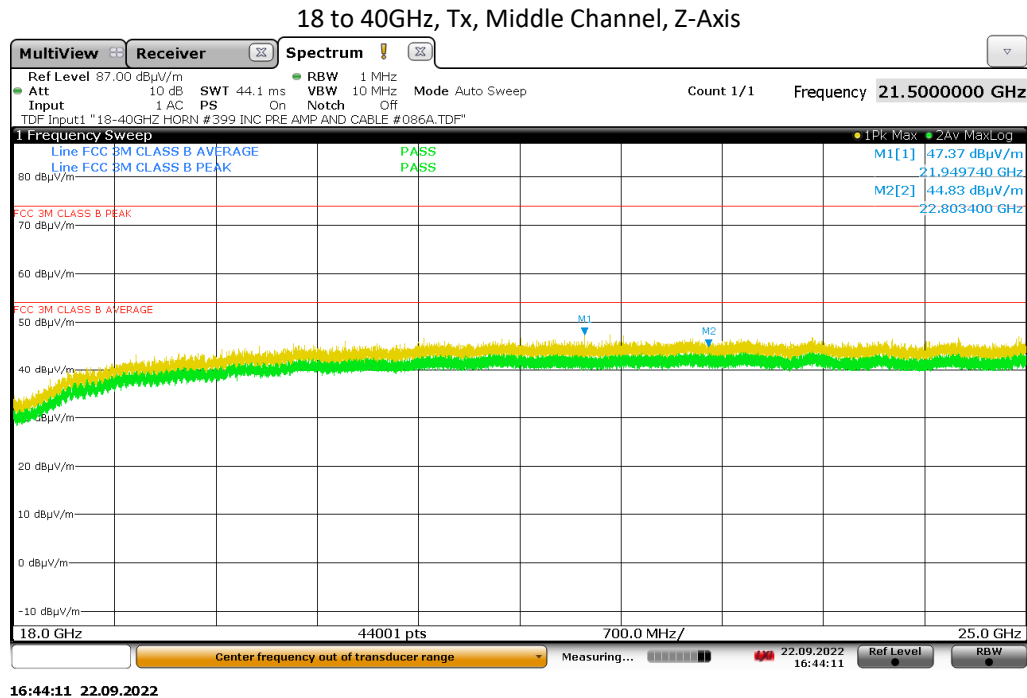
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2.47 Profile; 18 to 40GHz, Tx, Middle Channel, Z-Axis

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)



## 4.2.48 Data; 18 to 40GHz, Tx, Middle Channel, Z-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

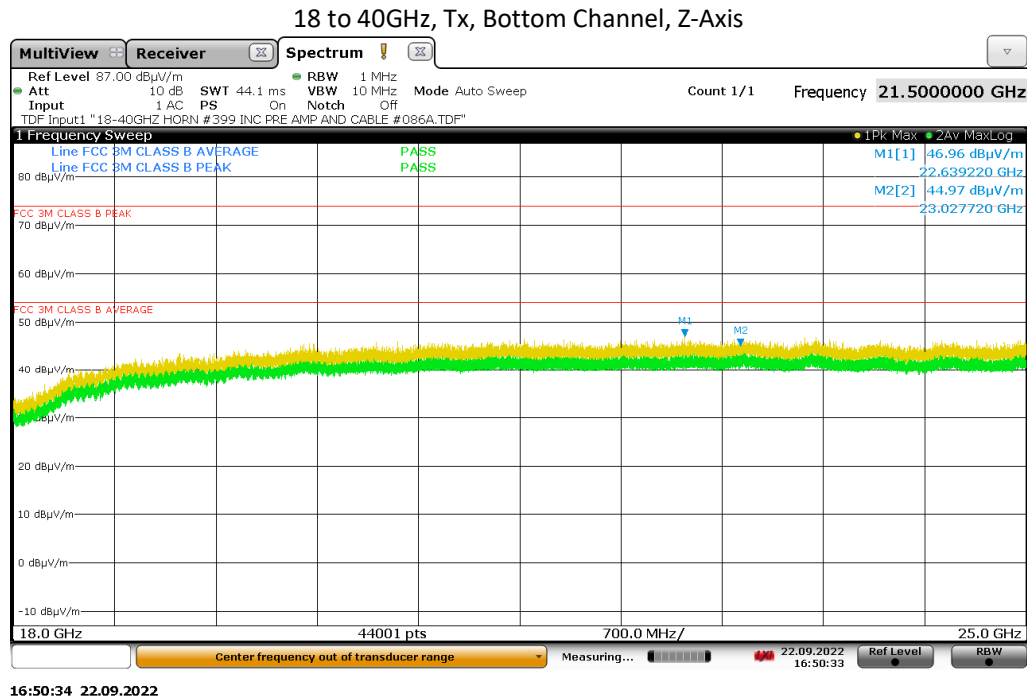
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.2.49 Profile; 18 to 40GHz, Tx, Bottom Channel, Z-Axis

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)



## 4.2.50 Data; 18 to 40GHz, Tx, Bottom Channel, Z-Axis

No measurements were taken based on the max peak data values high margins relative to the limit lines.

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor\*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.

\*Correction factor (dB) = cable and antenna losses as summed positive values (dB) – pre-amp gain where applicable (dB).

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

## 4.3 Conducted Emissions; Top Channel (Charging mode with DC PSU at 115V/60Hz)

### 4.3.1 Test Parameters

A filtered supply was fed to the EUT via a 50Ω/50μH Artificial Mains Network (AMN). The AMN was bonded to a conductive ground plane. Line and neutral phases were measured separately.

An EMI receiver was set to scan between 0.15MHz and 30.0MHz with a 20s measurement time. A CISPR Average and Quasi-Peak trace was generated and compared to the limits and take into account the correction factor. Measurements made according to the test standard and Eurofins Hursley test procedure CON-02.

| Test Equipment          |    |                 |              |               |                                    |                      |
|-------------------------|----|-----------------|--------------|---------------|------------------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type         | Serial Number | Description                        | Calibration Due Date |
| 785                     | 0  | EH              | Ground plane | Neptune       | Ground plane work area             | Not required         |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 482                     | 1  | 0               | Cable BNC    | 0             | Cable BNC                          | 26/10/2022           |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 699                     | 1  | Gauss           | TDEMI30M     | 1506001       | Time domain conducted receiver     | 16/09/2023           |
| Test Equipment Software |    |                 |              |               |                                    |                      |
| #ID                     | CP | Manufacturer    | Type         |               | Description                        | Calibration Due Date |
| 857                     | 0  | Gauss           | Software     | 0             | TDMI 30 v5.00                      | Not required         |

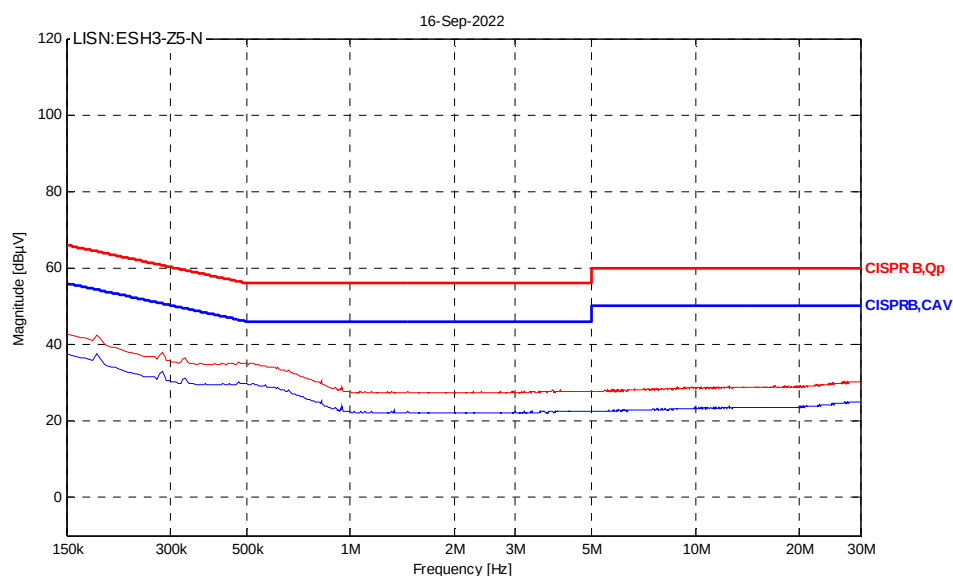
| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 22.4° Celsius                   |
| Relative Humidity             | 43%                             |
| Atmospheric Pressure          | 1020.3 millibars                |
| <b>Test Date:</b>             | 16 <sup>th</sup> September 2022 |
| <b>Test Engineer:</b>         | Rich Beckett                    |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.3.2 Test Configuration

Please refer to EUT Test Configuration #1.

#### 4.3.3 Profile; Mains Neutral, Top Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.3.4 Data; Mains Neutral, Top Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 522.137 kHz             | 35.06    | 56.00         | 20.94  | Pass   |
| 9.973 MHz               | 28.76    | 60.00         | 31.24  | Pass   |
| 12.500 MHz              | 29.14    | 60.00         | 30.86  | Pass   |
| 15.943 MHz              | 29.23    | 60.00         | 30.77  | Pass   |
| 24.998 MHz              | 29.96    | 60.00         | 30.04  | Pass   |
| 29.995 MHz              | 30.27    | 60.00         | 29.73  | Pass   |

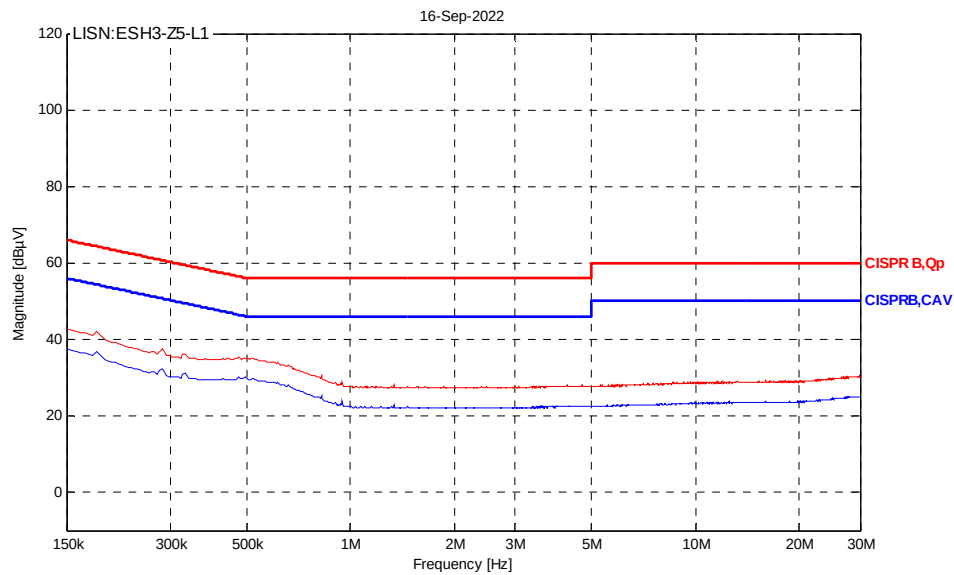
| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 493.526 kHz                | 29.91    | 46.11         | 16.19  | Pass   |
| 9.973 MHz                  | 23.31    | 50.00         | 26.69  | Pass   |
| 12.500 MHz                 | 23.95    | 50.00         | 26.05  | Pass   |
| 15.929 MHz                 | 23.92    | 50.00         | 26.08  | Pass   |
| 24.998 MHz                 | 24.66    | 50.00         | 25.34  | Pass   |
| 29.395 MHz                 | 24.98    | 50.00         | 25.02  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

#### 4.3.5 Profile; Mains Line, Top Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.3.6 Data; Mains Line, Top Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 517.368 kHz             | 35.18    | 56.00         | 20.82  | Pass   |
| 9.987 MHz               | 28.82    | 60.00         | 31.18  | Pass   |
| 12.500 MHz              | 29.11    | 60.00         | 30.89  | Pass   |
| 15.929 MHz              | 29.25    | 60.00         | 30.75  | Pass   |
| 24.998 MHz              | 29.89    | 60.00         | 30.11  | Pass   |
| 29.819 MHz              | 30.34    | 60.00         | 29.66  | Pass   |

| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 517.368 kHz                | 29.87    | 46.00         | 16.13  | Pass   |
| 9.987 MHz                  | 23.38    | 50.00         | 26.62  | Pass   |
| 12.500 MHz                 | 23.98    | 50.00         | 26.02  | Pass   |
| 15.938 MHz                 | 23.90    | 50.00         | 26.10  | Pass   |
| 24.998 MHz                 | 24.66    | 50.00         | 25.34  | Pass   |
| 29.876 MHz                 | 24.98    | 50.00         | 25.02  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 4.4 Conducted Emissions; Middle Channel (Charging mode with DC PSU at 115V/60Hz)

### 4.4.1 Test Parameters

A filtered supply was fed to the EUT via a 50Ω/50μH Artificial Mains Network (AMN). The AMN was bonded to a conductive ground plane. Line and neutral phases were measured separately.

An EMI receiver was set to scan between 0.15MHz and 30.0MHz with a 20s measurement time. A CISPR Average and Quasi-Peak trace was generated and compared to the limits and take into account the correction factor. Measurements made according to the test standard and Eurofins Hursley test procedure CON-02.

| Test Equipment          |    |                 |              |               |                                    |                      |
|-------------------------|----|-----------------|--------------|---------------|------------------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type         | Serial Number | Description                        | Calibration Due Date |
| 785                     | 0  | EH              | Ground plane | Neptune       | Ground plane work area             | Not required         |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 482                     | 1  | 0               | Cable BNC    | 0             | Cable BNC                          | 26/10/2022           |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 699                     | 1  | Gauss           | TDEMI30M     | 1506001       | Time domain conducted receiver     | 16/09/2023           |
| Test Equipment Software |    |                 |              |               |                                    |                      |
| #ID                     | CP | Manufacturer    | Type         |               | Description                        | Calibration Due Date |
| 857                     | 0  | Gauss           | Software     | 0             | TDMI 30 v5.00                      | Not required         |

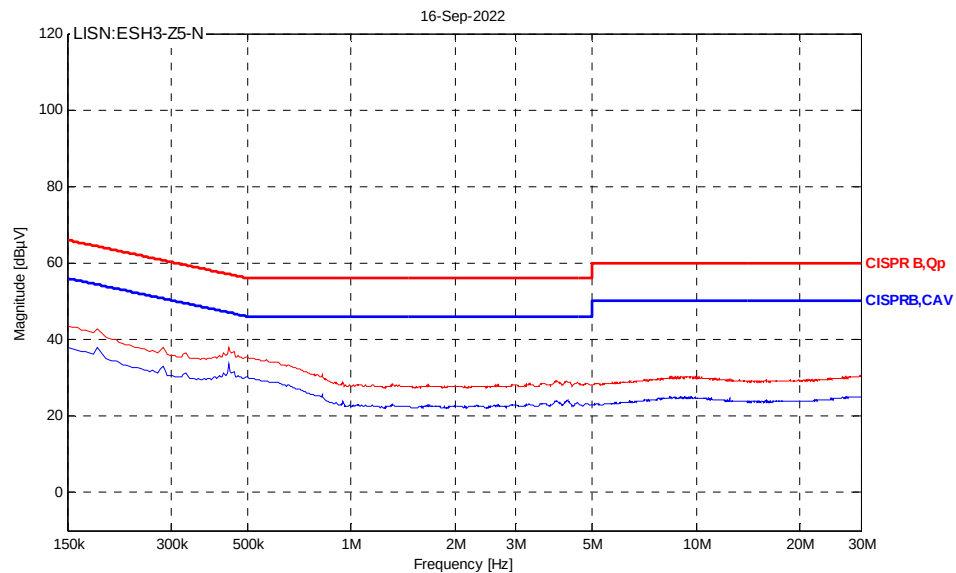
| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 22.4° Celsius                   |
| Relative Humidity             | 43%                             |
| Atmospheric Pressure          | 1020.3 millibars                |
| <b>Test Date:</b>             | 16 <sup>th</sup> September 2022 |
| <b>Test Engineer:</b>         | Rich Beckett                    |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.4.2 Test Configuration

Please refer to EUT Test Configuration #1.

#### 4.4.3 Profile; Mains Neutral, Middle Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.4.4 Data; Mains Neutral, Middle Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 441.074 kHz             | 37.89    | 57.04         | 19.15  | Pass   |
| 8.738 MHz               | 30.21    | 60.00         | 29.79  | Pass   |
| 10.126 MHz              | 30.03    | 60.00         | 29.97  | Pass   |
| 15.991 MHz              | 29.29    | 60.00         | 30.71  | Pass   |
| 24.998 MHz              | 29.92    | 60.00         | 30.08  | Pass   |
| 29.995 MHz              | 30.36    | 60.00         | 29.64  | Pass   |

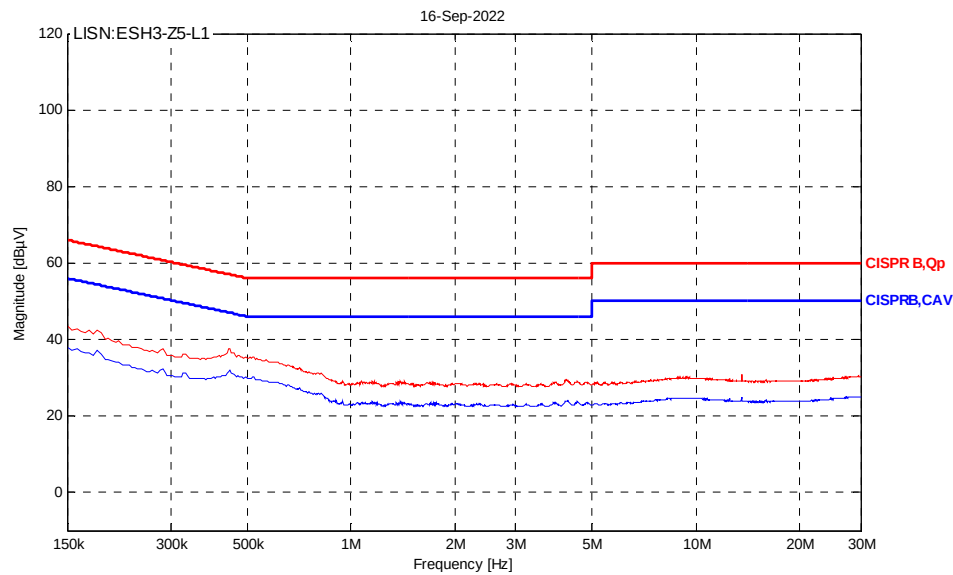
| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 441.074 kHz                | 33.47    | 47.04         | 13.57  | Pass   |
| 8.733 MHz                  | 24.92    | 50.00         | 25.08  | Pass   |
| 10.278 MHz                 | 24.62    | 50.00         | 25.38  | Pass   |
| 15.986 MHz                 | 24.02    | 50.00         | 25.98  | Pass   |
| 24.998 MHz                 | 24.64    | 50.00         | 25.36  | Pass   |
| 29.991 MHz                 | 25.01    | 50.00         | 24.99  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

#### 4.4.5 Profile; Mains Line, Middle Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.4.6 Data; Mains Line, Middle Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 445.843 kHz             | 37.57    | 56.95         | 19.38  | Pass   |
| 9.177 MHz               | 30.14    | 60.00         | 29.86  | Pass   |
| 13.559 MHz              | 30.84    | 60.00         | 29.16  | Pass   |
| 15.943 MHz              | 29.39    | 60.00         | 30.61  | Pass   |
| 24.998 MHz              | 29.96    | 60.00         | 30.04  | Pass   |
| 29.662 MHz              | 30.38    | 60.00         | 29.62  | Pass   |

| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 445.843 kHz                | 31.88    | 46.95         | 15.08  | Pass   |
| 9.177 MHz                  | 24.67    | 50.00         | 25.33  | Pass   |
| 13.559 MHz                 | 24.98    | 50.00         | 25.02  | Pass   |
| 15.996 MHz                 | 24.11    | 50.00         | 25.89  | Pass   |
| 24.998 MHz                 | 24.64    | 50.00         | 25.36  | Pass   |
| 29.571 MHz                 | 24.99    | 50.00         | 25.01  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 4.5 Conducted Emissions; Bottom Channel (Charging mode with DC PSU at 115V/60Hz)

### 4.5.1 Test Parameters

A filtered supply was fed to the EUT via a 50 $\Omega$ /50 $\mu$ H Artificial Mains Network (AMN). The AMN was bonded to a conductive ground plane. Line and neutral phases were measured separately.

An EMI receiver was set to scan between 0.15MHz and 30.0MHz with a 20s measurement time. A CISPR Average and Quasi-Peak trace was generated and compared to the limits and take into account the correction factor. Measurements made according to the test standard and Eurofins Hursley test procedure CON-02.

| Test Equipment          |    |                 |              |               |                                    |                      |
|-------------------------|----|-----------------|--------------|---------------|------------------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type         | Serial Number | Description                        | Calibration Due Date |
| 785                     | 0  | EH              | Ground plane | Neptune       | Ground plane work area             | Not required         |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 482                     | 1  | 0               | Cable BNC    | 0             | Cable BNC                          | 26/10/2022           |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 699                     | 1  | Gauss           | TDEMI30M     | 1506001       | Time domain conducted receiver     | 16/09/2023           |
| Test Equipment Software |    |                 |              |               |                                    |                      |
| #ID                     | CP | Manufacturer    | Type         |               | Description                        | Calibration Due Date |
| 857                     | 0  | Gauss           | Software     | 0             | TDMI 30 v5.00                      | Not required         |

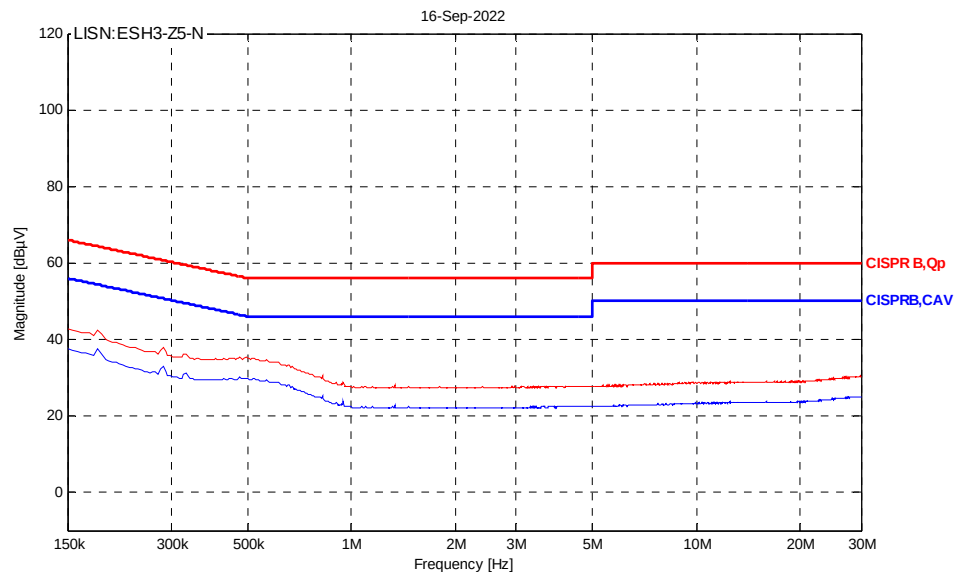
| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 22.4° Celsius                   |
| Relative Humidity             | 43%                             |
| Atmospheric Pressure          | 1020.3 millibars                |
| <b>Test Date:</b>             | 16 <sup>th</sup> September 2022 |
| <b>Test Engineer:</b>         | Rich Beckett                    |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.5.2 Test Configuration

Please refer to EUT Test Configuration #1.

#### 4.5.3 Profile; Mains Neutral, Bottom Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.5.4 Data; Mains Neutral, Bottom Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 493.526 kHz             | 35.23    | 56.11         | 20.88  | Pass   |
| 9.525 MHz               | 28.76    | 60.00         | 31.24  | Pass   |
| 12.500 MHz              | 29.15    | 60.00         | 30.85  | Pass   |
| 15.976 MHz              | 29.19    | 60.00         | 30.81  | Pass   |
| 24.998 MHz              | 29.99    | 60.00         | 30.01  | Pass   |
| 28.865 MHz              | 30.33    | 60.00         | 29.67  | Pass   |

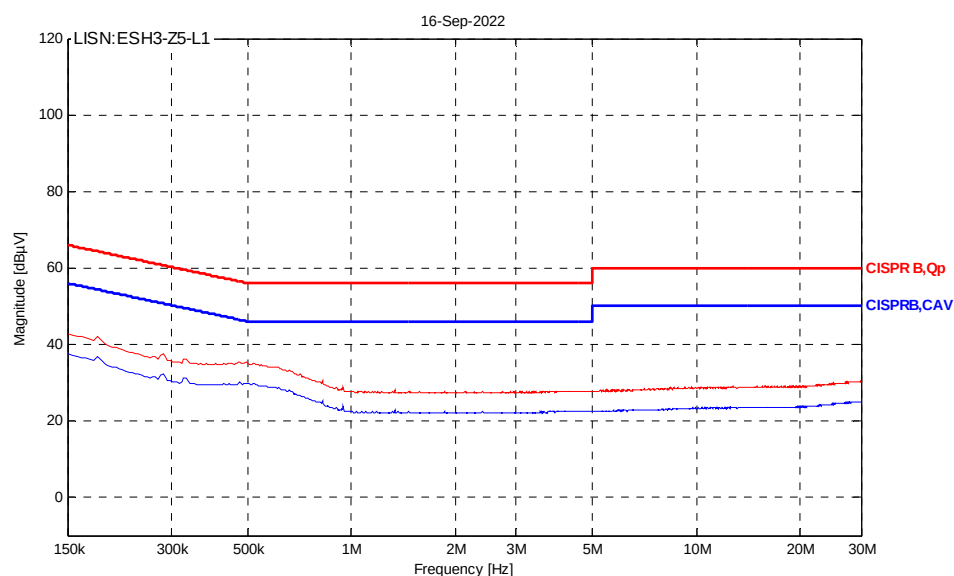
| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 517.368 kHz                | 29.83    | 46.00         | 16.17  | Pass   |
| 9.992 MHz                  | 23.34    | 50.00         | 26.66  | Pass   |
| 12.500 MHz                 | 23.90    | 50.00         | 26.10  | Pass   |
| 15.976 MHz                 | 23.88    | 50.00         | 26.12  | Pass   |
| 24.998 MHz                 | 24.64    | 50.00         | 25.36  | Pass   |
| 29.857 MHz                 | 24.98    | 50.00         | 25.02  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

#### 4.5.5 Profile; Mains Line, Bottom Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.5.6 Data; Mains Line, Bottom Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 517.368 kHz             | 35.16    | 56.00         | 20.84  | Pass   |
| 9.716 MHz               | 28.83    | 60.00         | 31.17  | Pass   |
| 12.500 MHz              | 29.18    | 60.00         | 30.82  | Pass   |
| 15.986 MHz              | 29.19    | 60.00         | 30.81  | Pass   |
| 24.998 MHz              | 30.01    | 60.00         | 29.99  | Pass   |
| 29.752 MHz              | 30.33    | 60.00         | 29.67  | Pass   |

| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 517.368 kHz                | 29.83    | 46.00         | 16.17  | Pass   |
| 9.925 MHz                  | 23.36    | 50.00         | 26.64  | Pass   |
| 12.500 MHz                 | 23.88    | 50.00         | 26.12  | Pass   |
| 15.981 MHz                 | 23.91    | 50.00         | 26.09  | Pass   |
| 24.998 MHz                 | 24.65    | 50.00         | 25.35  | Pass   |
| 29.747 MHz                 | 25.00    | 50.00         | 25.00  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 4.6 Conducted Emissions; RX Channel (Charging mode with DC PSU at 115V/60Hz)

### 4.6.1 Test Parameters

A filtered supply was fed to the EUT via a 50 $\Omega$ /50 $\mu$ H Artificial Mains Network (AMN). The AMN was bonded to a conductive ground plane. Line and neutral phases were measured separately.

An EMI receiver was set to scan between 0.15MHz and 30.0MHz with a 20s measurement time. A CISPR Average and Quasi-Peak trace was generated and compared to the limits and take into account the correction factor. Measurements made according to the test standard and Eurofins Hursley test procedure CON-02.

| Test Equipment          |    |                 |              |               |                                    |                      |
|-------------------------|----|-----------------|--------------|---------------|------------------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type         | Serial Number | Description                        | Calibration Due Date |
| 785                     | 0  | EH              | Ground plane | Neptune       | Ground plane work area             | Not required         |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 482                     | 1  | 0               | Cable BNC    | 0             | Cable BNC                          | 26/10/2022           |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 699                     | 1  | Gauss           | TDEMI30M     | 1506001       | Time domain conducted receiver     | 16/09/2023           |
| Test Equipment Software |    |                 |              |               |                                    |                      |
| #ID                     | CP | Manufacturer    | Type         |               | Description                        | Calibration Due Date |
| 857                     | 0  | Gauss           | Software     | 0             | TDMI 30 v5.00                      | Not required         |

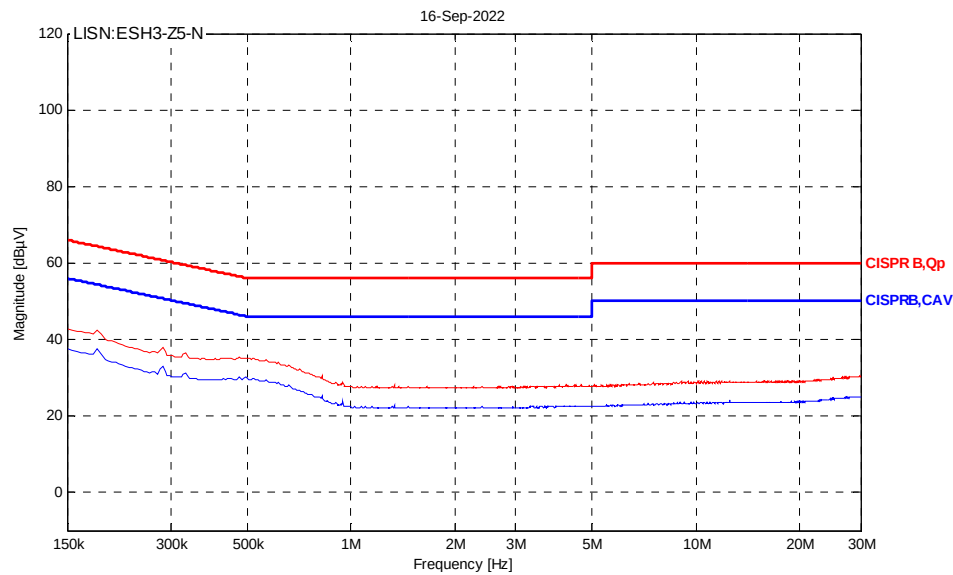
| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 22.4° Celsius                   |
| Relative Humidity             | 43%                             |
| Atmospheric Pressure          | 1020.3 millibars                |
| <b>Test Date:</b>             | 16 <sup>th</sup> September 2022 |
| <b>Test Engineer:</b>         | Rich Beckett                    |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.6.2 Test Configuration

Please refer to EUT Test Configuration #1.

#### 4.6.3 Profile; Mains Neutral, RX Channel (Charging mode with DC PSU at 115V/60Hz)



#### 4.6.4 Data; Mains Neutral, RX Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 517.368 kHz             | 35.11    | 56.00         | 20.89  | Pass   |
| 9.043 MHz               | 28.92    | 60.00         | 31.08  | Pass   |
| 12.500 MHz              | 29.22    | 60.00         | 30.78  | Pass   |
| 15.972 MHz              | 29.19    | 60.00         | 30.81  | Pass   |
| 24.998 MHz              | 29.95    | 60.00         | 30.05  | Pass   |
| 29.876 MHz              | 30.32    | 60.00         | 29.68  | Pass   |

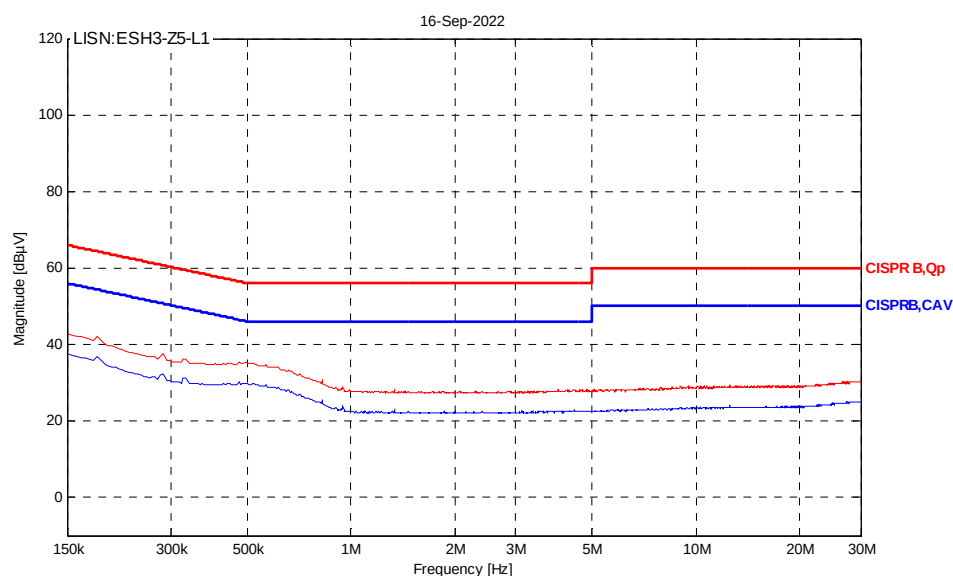
| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 493.526 kHz                | 29.97    | 46.11         | 16.14  | Pass   |
| 9.949 MHz                  | 23.42    | 50.00         | 26.58  | Pass   |
| 12.500 MHz                 | 24.01    | 50.00         | 25.99  | Pass   |
| 15.967 MHz                 | 23.88    | 50.00         | 26.12  | Pass   |
| 24.998 MHz                 | 24.71    | 50.00         | 25.29  | Pass   |
| 29.957 MHz                 | 24.99    | 50.00         | 25.01  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 4.6.5 Profile; Mains Line, RX Channel (Charging mode with DC PSU at 115V/60Hz)



## 4.6.6 Data; Mains Line, RX Channel (Charging mode with DC PSU at 115V/60Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 517.368 kHz             | 35.18    | 56.00         | 20.82  | Pass   |
| 9.019 MHz               | 28.97    | 60.00         | 31.03  | Pass   |
| 12.500 MHz              | 29.37    | 60.00         | 30.63  | Pass   |
| 15.976 MHz              | 29.15    | 60.00         | 30.85  | Pass   |
| 24.998 MHz              | 29.94    | 60.00         | 30.06  | Pass   |
| 29.747 MHz              | 30.32    | 60.00         | 29.68  | Pass   |

| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 517.368 kHz                | 29.85    | 46.00         | 16.15  | Pass   |
| 9.682 MHz                  | 23.47    | 50.00         | 26.53  | Pass   |
| 12.500 MHz                 | 24.06    | 50.00         | 25.94  | Pass   |
| 15.986 MHz                 | 23.85    | 50.00         | 26.15  | Pass   |
| 24.998 MHz                 | 24.62    | 50.00         | 25.38  | Pass   |
| 29.991 MHz                 | 24.98    | 50.00         | 25.02  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 4.7 Conducted Emissions; RX Channel (Charging mode with DC PSU at 230V/50Hz)

### 4.7.1 Test Parameters

A filtered supply was fed to the EUT via a 50Ω/50μH Artificial Mains Network (AMN). The AMN was bonded to a conductive ground plane. Line and neutral phases were measured separately.

An EMI receiver was set to scan between 0.15MHz and 30.0MHz with a 20s measurement time. A CISPR Average and Quasi-Peak trace was generated and compared to the limits and take into account the correction factor. Measurements made according to the test standard and Eurofins Hursley test procedure CON-02.

| Test Equipment          |    |                 |              |               |                                    |                      |
|-------------------------|----|-----------------|--------------|---------------|------------------------------------|----------------------|
| #ID                     | CP | Manufacturer    | Type         | Serial Number | Description                        | Calibration Due Date |
| 785                     | 0  | EH              | Ground plane | Neptune       | Ground plane work area             | Not required         |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 482                     | 1  | 0               | Cable BNC    | 0             | Cable BNC                          | 26/10/2022           |
| 162                     | 1  | Rohde & Schwarz | ESH3 Z5      | 829996/003    | Single phase LISN / AMN ANSI&CISPR | 14/12/2022           |
| 699                     | 1  | Gauss           | TDEMI30M     | 1506001       | Time domain conducted receiver     | 16/09/2023           |
| Test Equipment Software |    |                 |              |               |                                    |                      |
| #ID                     | CP | Manufacturer    | Type         |               | Description                        | Calibration Due Date |
| 857                     | 0  | Gauss           | Software     | 0             | TDMI 30 v5.00                      | Not required         |

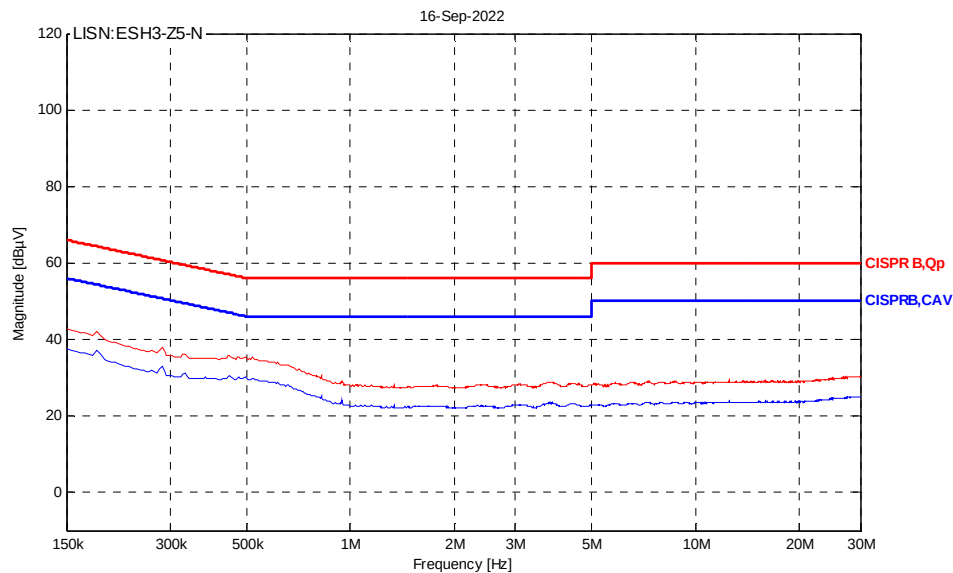
| Environmental Test Conditions |                                 |
|-------------------------------|---------------------------------|
| Temperature                   | 22.4° Celsius                   |
| Relative Humidity             | 43%                             |
| Atmospheric Pressure          | 1020.3 millibars                |
| <b>Test Date:</b>             | 16 <sup>th</sup> September 2022 |
| <b>Test Engineer:</b>         | Rich Beckett                    |

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins Hursley procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for external calibration.

### 4.7.2 Test Configuration

Please refer to EUT Test Configuration #1.

#### 4.7.3 Profile; Mains Neutral, RX Channel (Charging mode with DC PSU at 230V/50Hz)



#### 4.7.4 Data; Mains Neutral, RX Channel (Charging mode with DC PSU at 230V/50Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 517.368 kHz             | 35.21    | 56.00         | 20.79  | Pass   |
| 8.667 MHz               | 29.05    | 60.00         | 30.95  | Pass   |
| 12.500 MHz              | 29.33    | 60.00         | 30.67  | Pass   |
| 15.981 MHz              | 29.35    | 60.00         | 30.65  | Pass   |
| 24.998 MHz              | 29.97    | 60.00         | 30.03  | Pass   |
| 29.271 MHz              | 30.39    | 60.00         | 29.61  | Pass   |

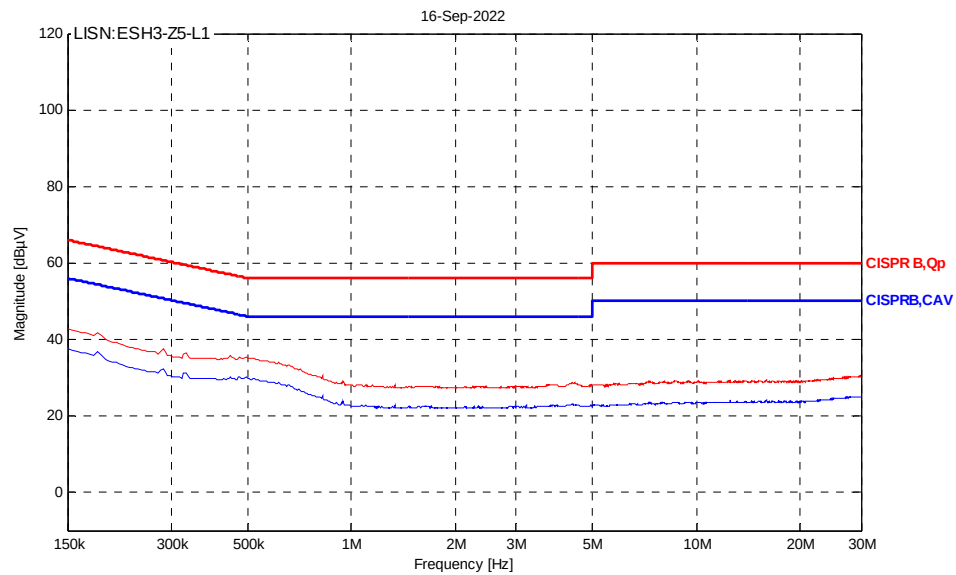
| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 493.526 kHz                | 29.97    | 46.11         | 16.14  | Pass   |
| 8.695 MHz                  | 23.55    | 50.00         | 26.45  | Pass   |
| 12.500 MHz                 | 24.09    | 50.00         | 25.91  | Pass   |
| 15.986 MHz                 | 24.03    | 50.00         | 25.97  | Pass   |
| 24.998 MHz                 | 24.69    | 50.00         | 25.31  | Pass   |
| 29.995 MHz                 | 25.01    | 50.00         | 24.99  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

#### 4.7.5 Profile; Mains Line, RX Channel (Charging mode with DC PSU at 230V/50Hz)



#### 4.7.6 Data; Mains Line, RX Channel (Charging mode with DC PSU at 230V/50Hz)

| Quasi-peak value (dBμV) |          |               |        |        |
|-------------------------|----------|---------------|--------|--------|
| Frequency               | Measured | Class B Limit | Margin | Status |
| 493.526 kHz             | 35.24    | 56.11         | 20.86  | Pass   |
| 8.805 MHz               | 29.24    | 60.00         | 30.76  | Pass   |
| 12.500 MHz              | 29.45    | 60.00         | 30.55  | Pass   |
| 15.981 MHz              | 29.44    | 60.00         | 30.56  | Pass   |
| 24.998 MHz              | 30.02    | 60.00         | 29.98  | Pass   |
| 29.981 MHz              | 30.32    | 60.00         | 29.68  | Pass   |

| CISPR Average value (dBμV) |          |               |        |        |
|----------------------------|----------|---------------|--------|--------|
| Frequency                  | Measured | Class B Limit | Margin | Status |
| 493.526 kHz                | 29.99    | 46.11         | 16.12  | Pass   |
| 8.729 MHz                  | 23.65    | 50.00         | 26.35  | Pass   |
| 12.500 MHz                 | 24.17    | 50.00         | 25.83  | Pass   |
| 15.986 MHz                 | 24.13    | 50.00         | 25.87  | Pass   |
| 24.998 MHz                 | 24.66    | 50.00         | 25.34  | Pass   |
| 29.809 MHz                 | 25.03    | 50.00         | 24.97  | Pass   |

The measured value takes into account the correction factor.

Correction factor (dB) = cable, AMN, and pulse limiter losses as summed positive values (dB)

The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

## 5.0 MEASUREMENT UNCERTAINTIES

### Emissions tests

For all emissions tests, measurement uncertainties have been calculated in line with the requirements of CISPR 16-4-2 to give a confidence level of greater than 95%. In all cases the laboratories calculated uncertainty values (known as U<sub>lab</sub>) are equal to or are less than the expected uncertainty values contained in CISPR 16-4-2 (known as U<sub>cispr</sub>). Below is a list of the laboratories calculated measurement uncertainties:

#### Conducted emissions:

|               |                                                   |
|---------------|---------------------------------------------------|
| Via AMN/LISN: | ±3.27dB (9kHz – 150kHz), ±3.27dB (150kHz – 30MHz) |
| Via AAN/ISN:  | ±5.00dB (150kHz – 30MHz)                          |
| Via CVP:      | ±3.47dB (150kHz – 30MHz)                          |
| Via CP:       | ±2.69dB (150kHz – 30MHz)                          |
| Via 100 Ω:    | ±2.68dB (150kHz – 30MHz)                          |
| Clicks:       | ±2.83dB (150kHz – 30MHz)                          |
| Harmonics:    | ±1.42% (100Hz – 2kHz)                             |
| Flicker:      | ±1.76% (worst case for all parameters)            |

#### Radiated emissions:

|                         |                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| H-Field:                | ±2.84dB (9kHz – 3MHz), ±2.92dB (3MHz – 30MHz)                                                                                                    |
| D = 3.0 m (Horizontal): | ±3.91dB (30MHz – 1GHz SAC), ±3.82dB (30MHz – 1GHz FAC)                                                                                           |
| D = 3.0 m (Vertical):   | ±5.22dB (30MHz – 1GHz SAC), ±3.82dB (30MHz – 1GHz FAC)                                                                                           |
| D = 3.0 m:              | ±5.13dB (1GHz – 6GHz SAC), ±5.15dB (1GHz – 10GHz SAC),<br>±3.64dB (10GHz – 18GHz SAC), ±3.10dB (18GHz – 40GHz SAC),<br>±3.05dB (1GHz – 6GHz FAC) |

#### Radiated spurious emissions (RSE):

|                                                                         |
|-------------------------------------------------------------------------|
| ±1.71dB (30MHz – 1GHz), ±1.81dB (1 – 12.75GHz), ±2.07dB (12.75 – 18GHz) |
|-------------------------------------------------------------------------|

### Immunity tests

For IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-8, IEC 61000-4-9, IEC 61000-4-11 tests, the following applies:

Measurement uncertainty has been calculated or calibrated for the various required parameters to provide a confidence level of 95% (k=2). These parameters have been compared to the basic standard tolerance requirements for each of the various parameters.

In all cases the calculated or calibrated uncertainty meets the basic standard requirements.

For IEC 61000-4-3, IEC 61000-4-6 tests, the following applies:

Measurement uncertainty has been calculated to provide a confidence level of 95%, or k=2, but this has not been applied to the applied test level, therefore the applied test level has an uncertainty of ±50%. This is in accordance with CENELEC and other international guidance.

In the case of Maritime equipment tested to EN/IEC 60945, there is a specific requirement that the applied test level be increased by the calculated measurement uncertainty. This is done by applying a coverage factor of k=1.64, which provides a 95% confidence that the applied test level has been achieved.

### Test Results - Decision Rules

As the decision is generally inherent in the standard for Commercial EMC a simple acceptance rule can be applied. The following statement will be added to EMC quotes and reports. "The Decision Rule is applied on the basis of CISPR16-4-2 and/or EN61000-4-x (TR61000-1-6) These standards provide guidance on how to calculate and apply measurement uncertainty whilst providing maximum uncertainties allowance. Due consideration will also be given to JCGM 106:2012, ILAC-G8:09/2019 and LAB 48. This laboratory has demonstrated by calibrating its equipment and facilities, and calculating its own uncertainties, that it complies with the above requirements and therefore no allowance of uncertainties has been given to the tolerances." Where a result is considered marginal in respect of its proximity to the limit line, for example, the customer would be made aware of situation so that they can make an informed decision on how to proceed.

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## 6.0 ANNEX – CONDUCTED EMISSIONS RESULTS

### 6.1 Summary

| Test                                | Clause           | Requirement   | Result |
|-------------------------------------|------------------|---------------|--------|
| Occupied Bandwidth                  | None             | None          | Pass   |
| Maximum Peak Conducted Output Power | FCC 15.247(b)(3) | 1W            | Pass   |
| Power Spectral Density              | FCC 15.247(c)    | 8 dBm / 3 kHz | Pass   |
| Maximum Antenna Gain                | 15.247(b)(4)(11) | ≤ 6dBi        | Pass   |
| Conducted AC Emissions              | 15.207(a)        | 15.207(a)     | None   |

## 6.2 DTS Bandwidth

### 6.2.1 Measurement method

Test was conducted in accordance with ANSI C63.10 Clause 11.8 Option 1:

- a) Set resolution bandwidth to 100 kHz
- b) Set the video bandwidth to  $\geq 3 \times \text{RBW}$
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 6.2.2 Test Results

| Channel | 6dB DTS Bandwidth (MHz) | Requirement | Status |
|---------|-------------------------|-------------|--------|
| Bottom  | 670.0                   | > 500 kHz   | Pass   |
| Middle  | 850.0                   | > 500 kHz   | Pass   |
| Top     | 860.0                   | > 500 kHz   | Pass   |

Table 6: DTS Bandwidth

## 6.2.3 Profile; DTS Bandwidth

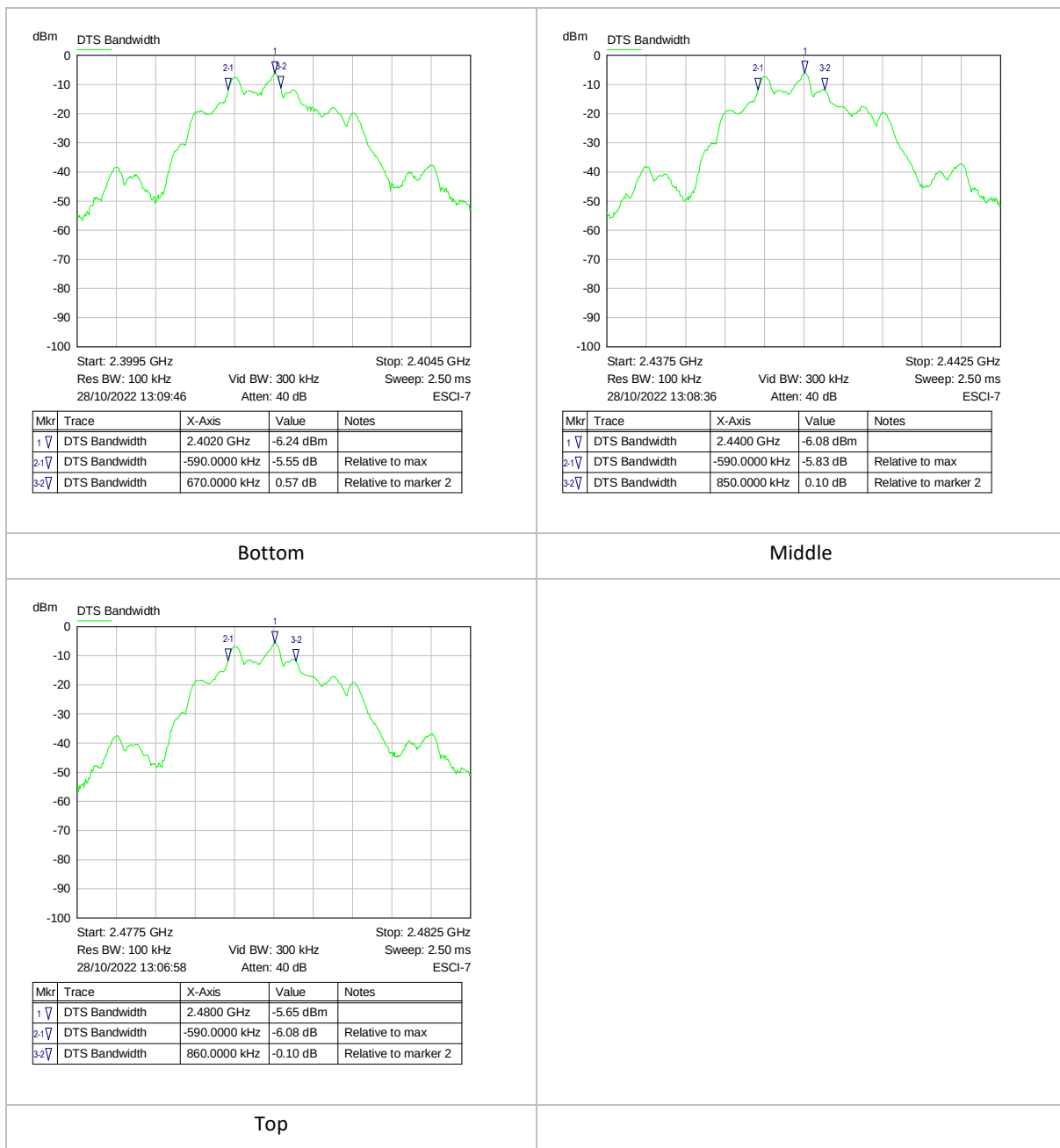


Figure 1: DTS Bandwidth plots

## 6.3 Maximum Peak Conducted Output Power

### 6.3.1 Measurement method

As the analyser could be set  $RBW \geq DTS$  bandwidth, the test was conducted in accordance with ANSI C63.10 Clause 11.9.1.1:

- a) Set the  $RBW \geq DTS$  bandwidth.
- b) Set  $VBW \geq 3 \times RBW$ .
- c) Set  $span \geq 3 \times RBW$ .
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

### 6.3.2 Test Results

| Channel | Channel Power (dBm) | Power (W) | Channel Power (dBm) | Status |
|---------|---------------------|-----------|---------------------|--------|
| Bottom  | -3.82               | 0.00041   | 1.0                 | Pass   |
| Middle  | -3.51               | 0.00045   | 1.0                 | Pass   |
| Top     | -3.24               | 0.00047   | 1.0                 | Pass   |

Table 1: Channel Power

## 6.3.3 Profile; Maximum Peak Conducted Power

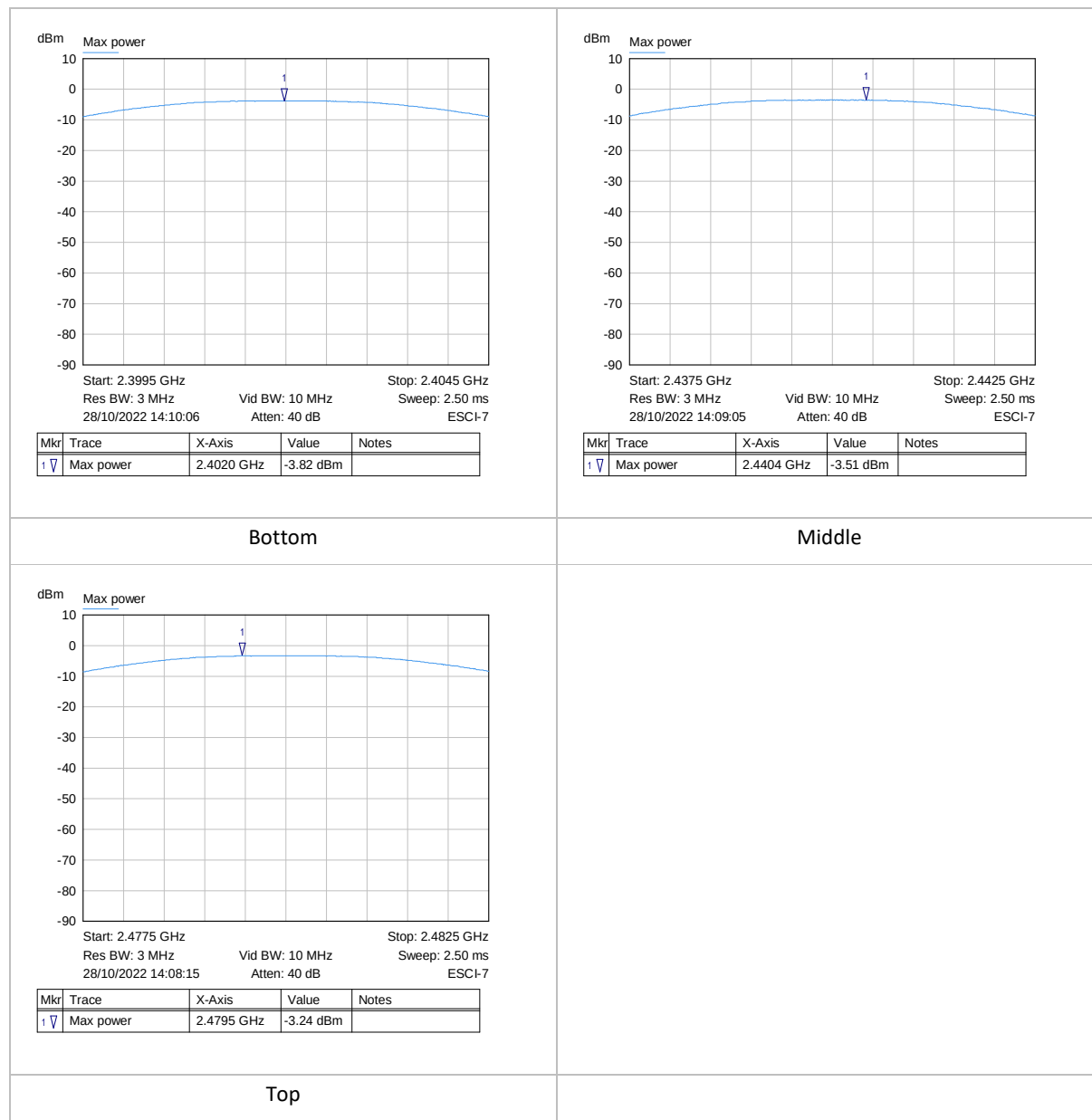


Figure 2: Peak Conducted Power plots

## 6.4 Maximum Power Spectral Density

### 6.4.1 Measurement Method

As conducted power was measured as Maximum Peak Conducted Power, measurement was performed in accordance with ANSI C63.10 Clause 11.10.2:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to  $1.5 \times$  DTS bandwidth.
- c) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times$  RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 6.4.2 Test results

| Channel | Peak Marker reading (dBm) | Limit (dBm/3kHz) | Status |
|---------|---------------------------|------------------|--------|
| Bottom  | -6.24                     | 8.0              | Pass   |
| Middle  | -6.08                     | 8.0              | Pass   |
| Top     | -5.65                     | 8.0              | Pass   |

Table 8: Spectral Density results

## 6.4.3 Profile; Power Spectral Density

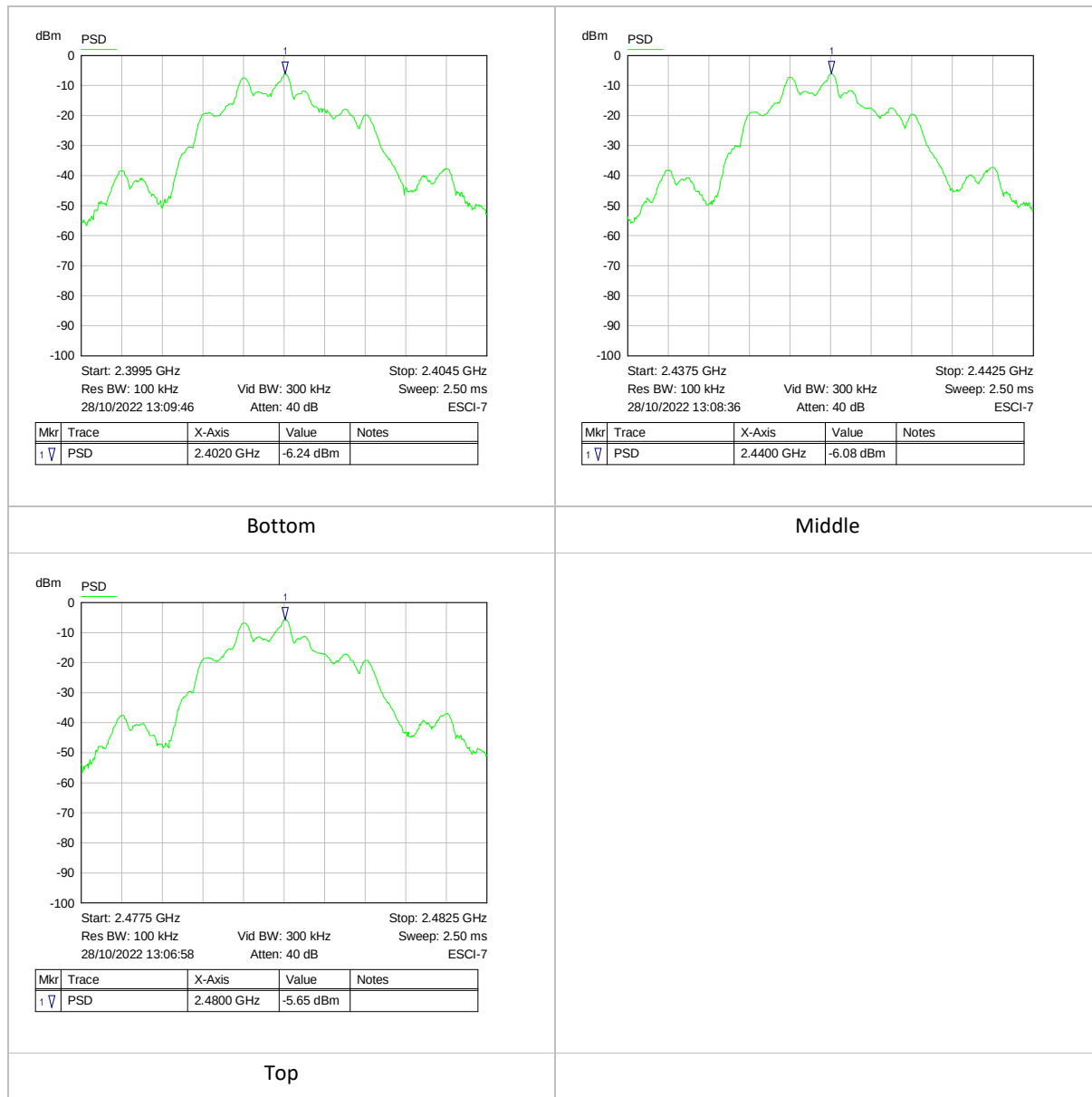


Figure 3: Power Spectral Density plots

## 6.5 Occupied bandwidth

99% occupied bandwidth measured using the inbuilt function in the spectrum analyser

| Channel | Peak limit (dBm) | Average limit (dBm) | Result          |
|---------|------------------|---------------------|-----------------|
| Bottom  | 2.050            | None                | For information |
| Middle  | 2.050            | None                | For information |
| Top     | 2.050            | None                | For information |

Table 2: Occupied Bandwidth

### 6.5.1 Profile; Occupied Bandwidth

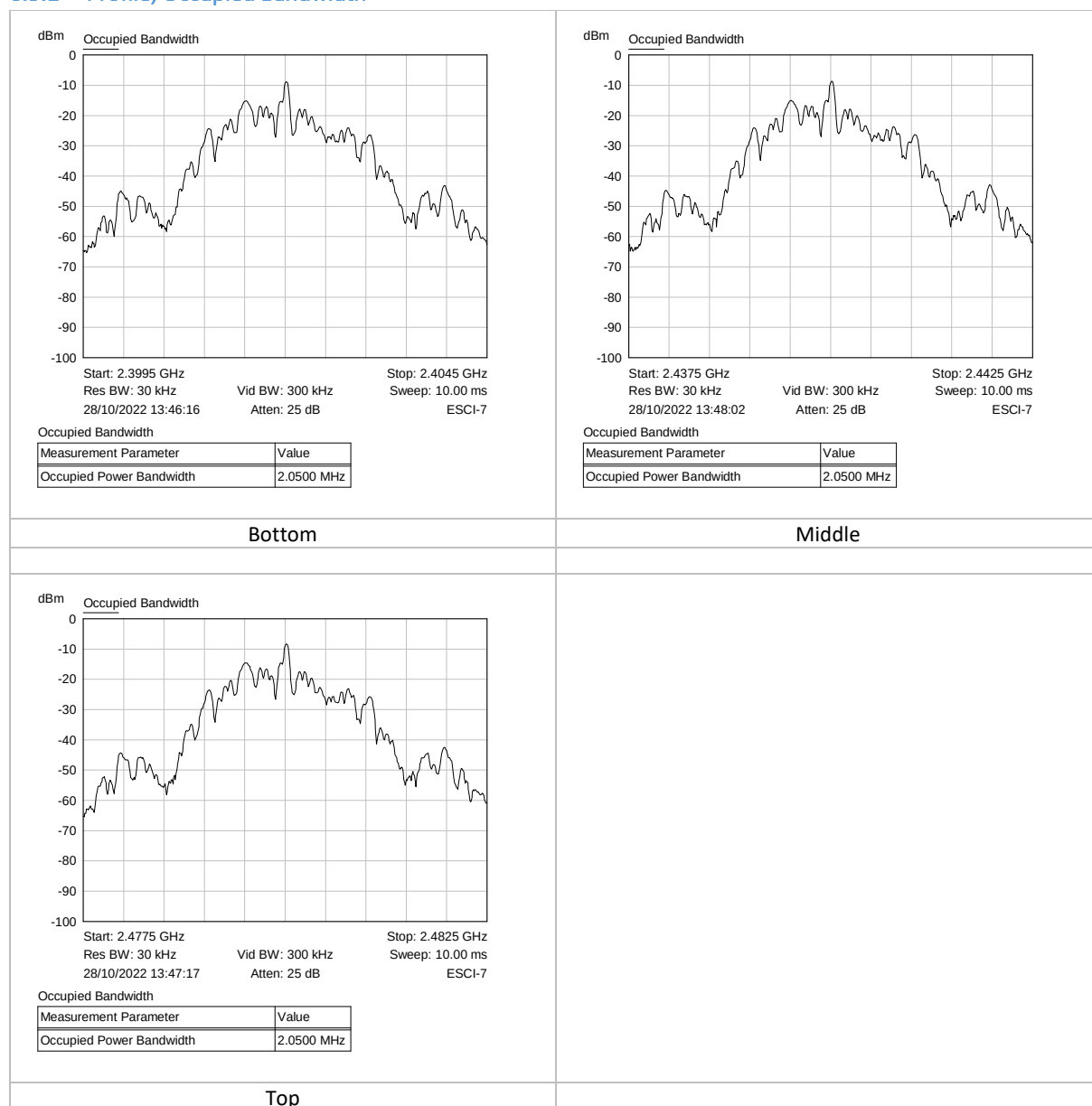


Figure 6: Occupied Bandwidth

## 6.6 Test Equipment

| Description       | Manufacturer    | Name   | Serial Number | Calibration certificate Or Calibration due |
|-------------------|-----------------|--------|---------------|--------------------------------------------|
| Spectrum Analyser | Rohde & Schwarz | ESCI 7 | HEMC #289     | 20/09/2023                                 |

*End of Document*