EMC Test Report	
For:	**MysteryVibe Limited**
Product:	**MysteryVibe**
Model:	**Crescendo 2**
FCC ID:	**2AHVA-6908**
Project Engineer:	**Malcolm Musgrave**
Approval Signatory:	**Andy Coombes**

Document Reference:	**4313 FR**

Issue Number:	**Date:**	**Test Report Revisions History:**
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Contents

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: 4313

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 **emissions** 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	Pass

Note(s):

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

3.0 EQUIPMENT AND TEST DETAILS

3.1 General

Product (EUT):	MysteryVibe		
Model:	Crescendo 2	**Serial Number:**	6908-RD0001
Sample Build:	Production Sample		
EUT Power:	Battery Powered / 115V 60Hz (while charging through USB via PSU)		
Customer Test Plan:	Not Applicable		
Alternate Models:	Not Applicable		
EUT Manufacturer:	MysteryVibe Limited		
Customer Name:	MysteryVibe Limited		
Customer Address:	The Dairy South		
	Shoelands Farm Offices		
	Puttenham		
	Surrey		
	GU10 1HL		
	United Kingdom		
Test Commissioned By:	Charlie Blackham (Sulis Consultants)		
Date EUT Received:	22nd April 2022		
Test Date(s):	22nd April and 1st September 2022		
EMC Measurement Site:	Eurofins E&E Hursley Limited		
	Trafalgar Close, Chandlers Ford, Hampshire, United Kingdom		
Product Category:	Personal Vibrator Toy		

3.2 EUT Description

The EUT is a personal vibrator toy.

3.3 Support Equipment

Description	Manufacturer	Model	Serial Number
PSU	Shenzhen Fujia Appliance Co Ltd	FJ-SW1260502000UN	Not stated
Laptop	Novatech	NSpire Pro	Not stated

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 (Worst Case)

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 compliant 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
893	1	Rohde & Schwarz	ESW 44	103044	EMI test receiver	24/09/2022
053	1	HP	8449B	3008A01394	Pre-amplifier (1.0-26.5GHz) (with #516)	19/10/2022
399	3	Q-par Angus	WBH18-40k	10300	Horn Antenna (18 to 40GHz)	18/09/2022
676	3	Schwarzbeck	BBHA9120C	576	Horn Antenna (2-18GHz)	20/05/2024
762	3	Schwarzbeck	VULB9162	129	30-7000MHz	04/03/2024
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		
Frequency	**Below 1GHz**	**Above 1GHz**
Temperature	22.3° Celsius	24.1° Celsius
Relative Humidity	55%	52%
Atmospheric Pressure	1021.1 millibars	1020.2 millibars
Test Date:	1st September 2022	1st September 2022
Test Engineer:	Malcolm Musgrave	Malcolm Musgrave

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

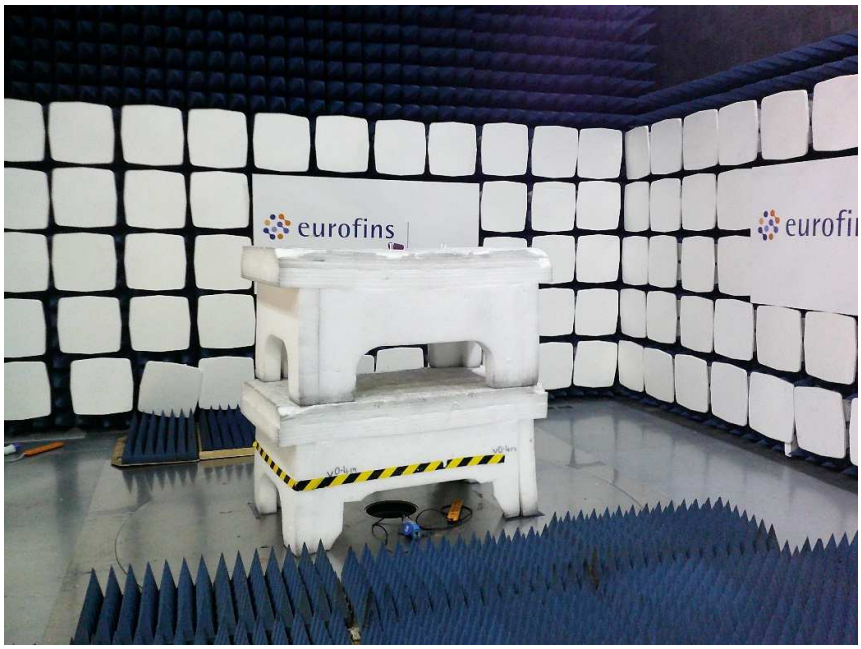
Please refer to EUT Test Configuration #1.

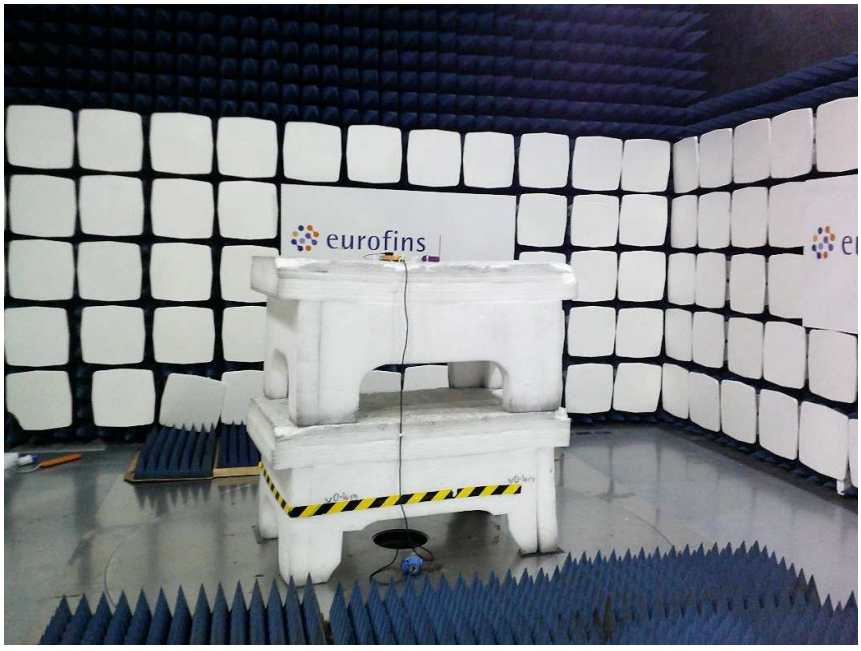
4.1.3 Set-up Photos

Radiated Emissions; Below 1GHz

4.1.4 Set-up Photos (Continued)

Radiated Emissions; Above 1GHz

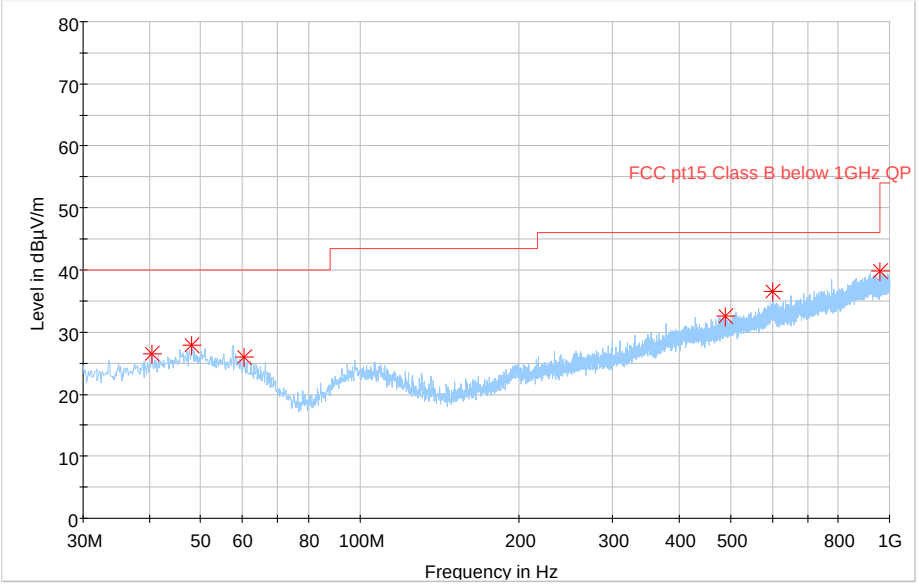




4.1.5 Profile; 30MHz to 1GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side



4.1.6 Data; 30MHz to 1GHz, Tx, Top Channel; 2480MHz, Y-Axis

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

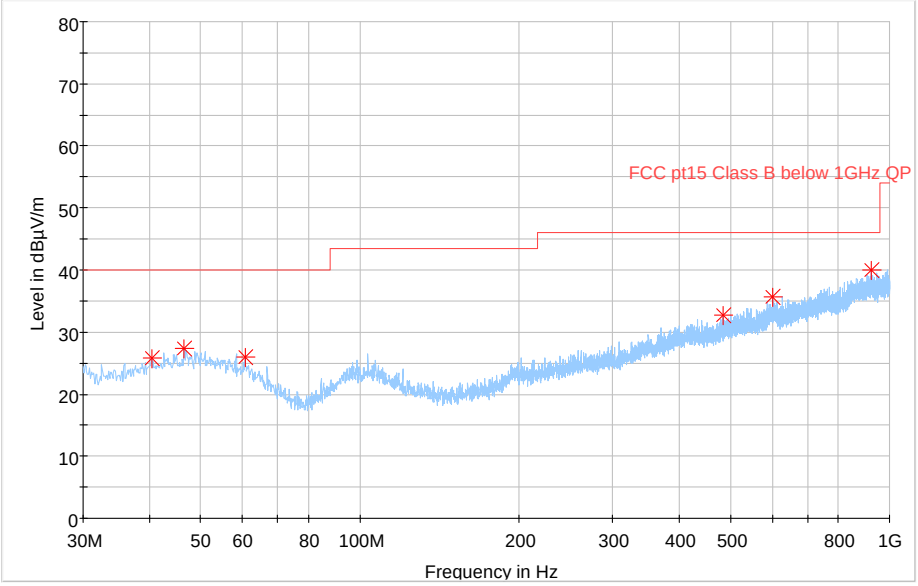
V = Vertical / H = Horizontal

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 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; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat



4.1.8 Data; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat

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

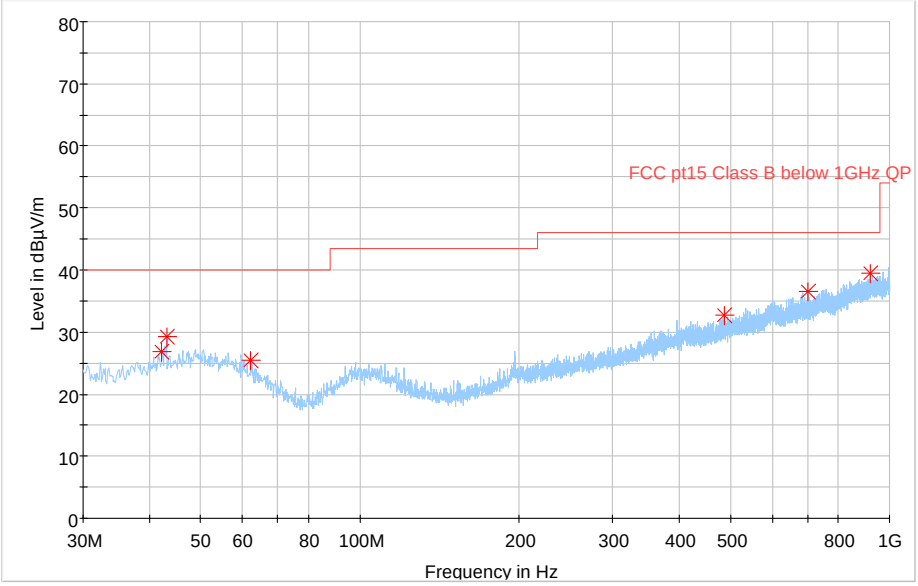
V = Vertical / H = Horizontal

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.

4.1.9 Profile; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side



4.1.10 Data; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, X-Axis, Side

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

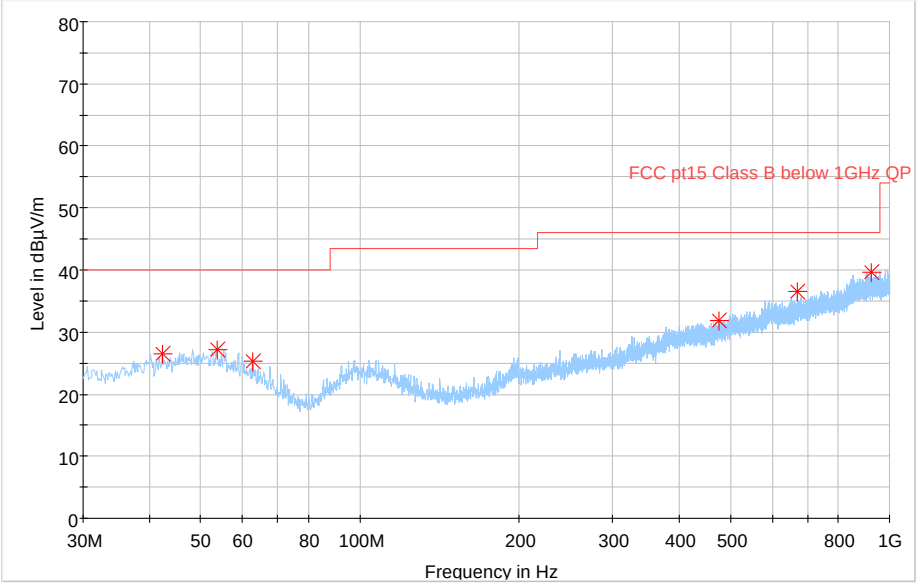
V = Vertical / H = Horizontal

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.

4.1.11 Profile; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End



4.1.12 Data; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End

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

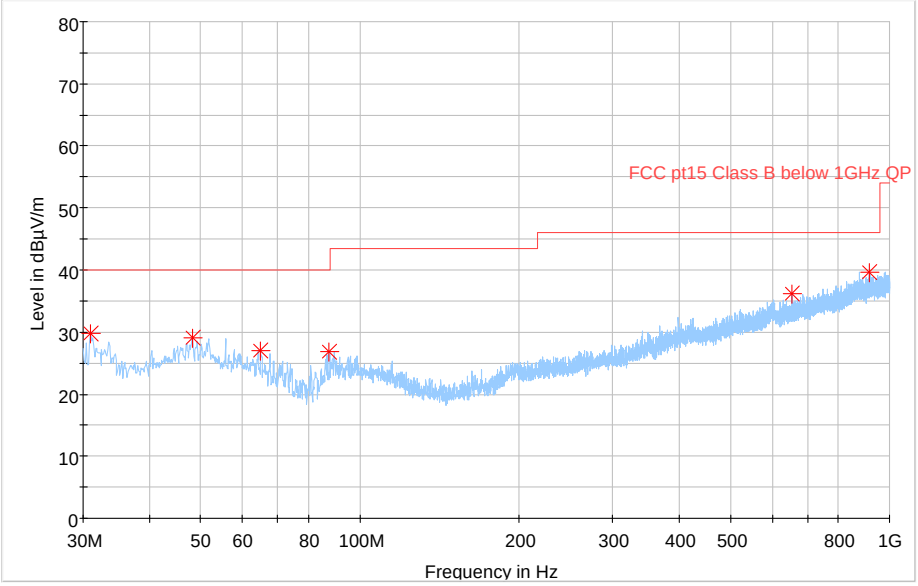
V = Vertical / H = Horizontal

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.

4.1.13 Profile; 30MHz to 1GHz, Receive Middle Channel; 2440MHz, Y-Axis, Side Charging

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Receive Middle Channel; 2440MHz, Y-Axis, Side Charging



4.1.14 Data; 30MHz to 1GHz, Receive Middle Channel; 2440MHz, Y-Axis, Side Charging

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

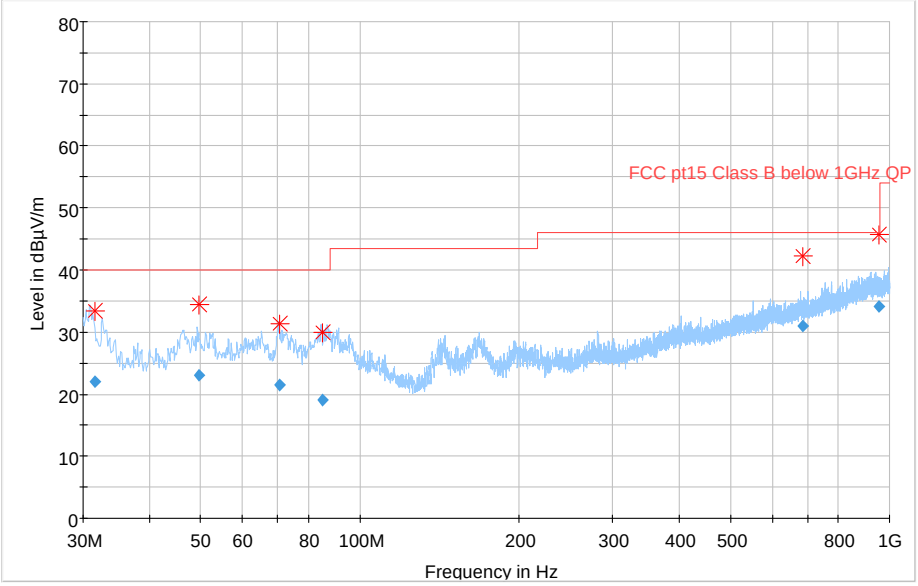
V = Vertical / H = Horizontal

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.

4.1.15 Profile; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side Charging

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side Charging



4.1.16 Data; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side 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
31.607221	21.91	40.00	18.09	V	139.0	227.0	Pass
49.729046	22.95	40.00	17.05	V	337.0	140.0	Pass
70.663686	21.42	40.00	18.58	V	126.0	320.0	Pass
85.031885	19.05	40.00	20.95	V	145.0	281.0	Pass
686.158634	31.02	46.00	14.98	V	143.0	355.0	Pass
955.476112	34.12	46.00	11.88	H	246.0	346.0	Pass

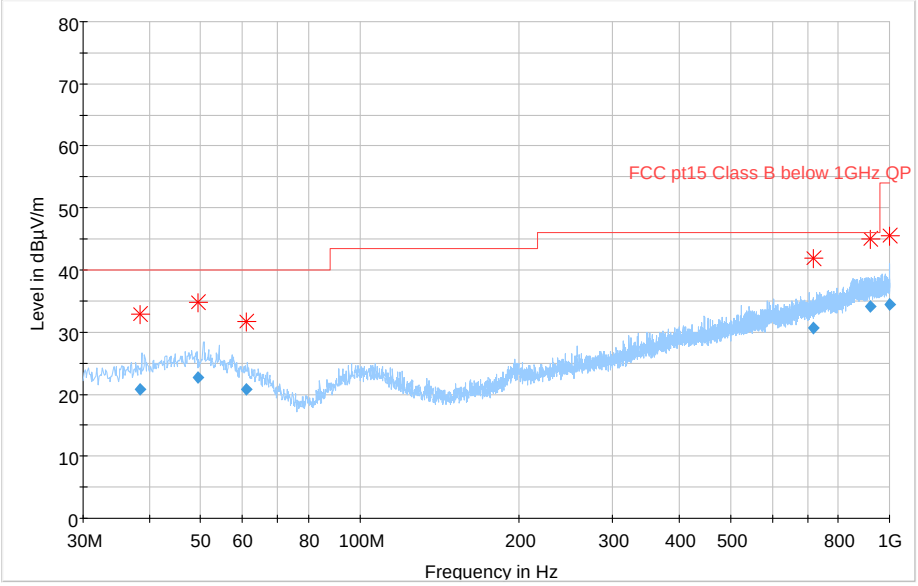
V = Vertical / H = Horizontal

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.

4.1.17 Profile; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side Final

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side Final



4.1.18 Data; 30MHz to 1GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side Final

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
38.485580	20.79	40.00	19.21	V	300.0	169.0	Pass
49.382750	22.62	40.00	17.38	V	250.0	295.0	Pass
61.021151	20.85	40.00	19.15	V	340.0	340.0	Pass
717.676110	30.59	46.00	15.41	H	176.0	322.0	Pass
920.074241	34.12	46.00	11.88	H	254.0	232.0	Pass
998.690857	34.51	54.00	19.49	H	341.0	34.0	Pass

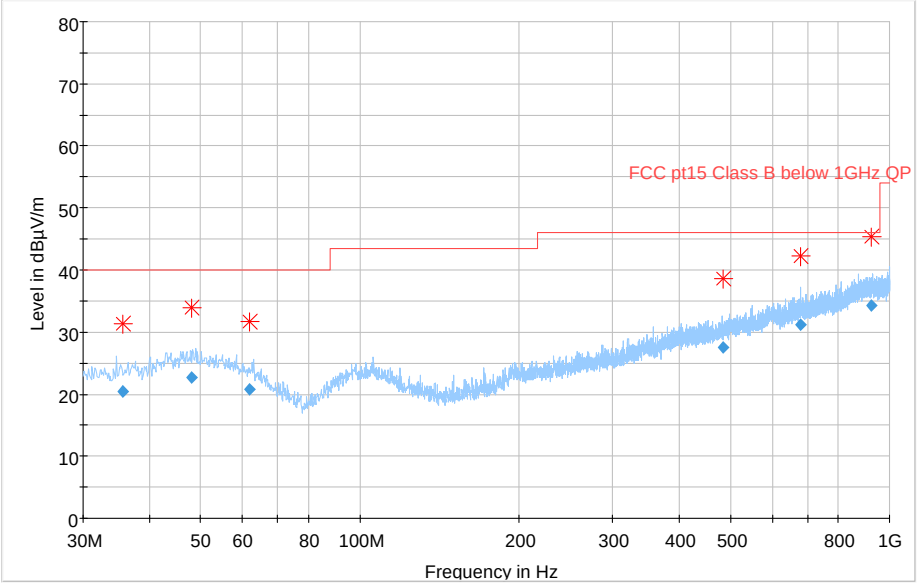
V = Vertical / H = Horizontal

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.

4.1.19 Profile; 30MHz to 1GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Final

Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✳)

30MHz to 1GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Final



4.1.20 Data; 30MHz to 1GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Final

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
35.596750	20.42	40.00	19.58	V	350.0	73.0	Pass
48.147400	22.61	40.00	17.39	H	235.0	153.0	Pass
61.903829	20.73	40.00	19.27	V	184.0	42.0	Pass
484.615938	27.61	46.00	18.39	H	267.0	356.0	Pass
677.153955	31.10	46.00	14.90	H	115.0	215.0	Pass
922.776969	34.32	46.00	11.68	V	276.0	191.0	Pass

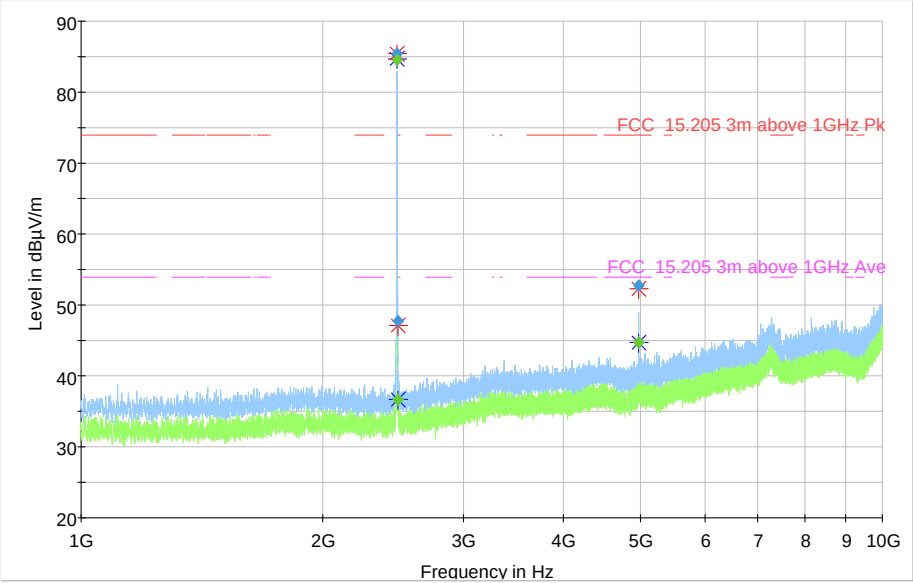
V = Vertical / H = Horizontal

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.

4.1.21 Profile; 1 to 10GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side



4.1.22 Data; 1 to 10GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side

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
2479.600000	85.48	---	94.00	8.52	100.0	H	65.0	-6.6	Pass
2480.050000	---	84.54	94.00	9.46	105.0	H	65.0	-6.6	Pass
2483.500000	47.79	---	74.00	26.21	116.0	H	72.0	-6.6	Pass
2483.500000	---	36.61	54.00	17.39	112.0	H	69.0	-6.6	Pass
4959.550000	52.76	---	74.00	21.24	112.0	V	70.0	-0.6	Pass
4959.550000	---	44.68	54.00	9.32	112.0	V	73.0	-0.6	Pass

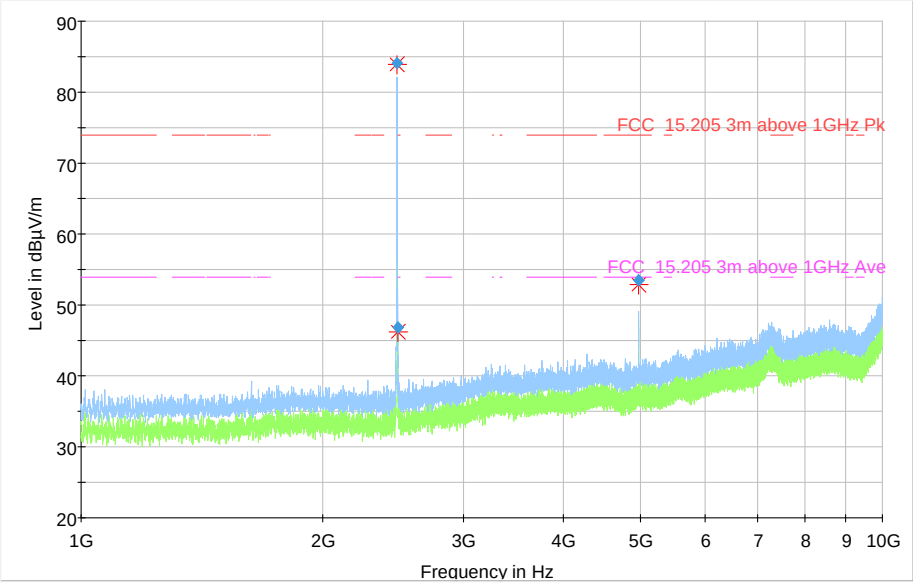
V = Vertical / H = Horizontal

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.

4.1.23 Profile; 1 to 10GHz, Tx, Top Channel; 2480MHz, Y-Axis, Side, Charging

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Top Channel; 2480MHz, Y-Axis, Charging



4.1.24 Data; 1 to 10GHz, Top Channel; 2480MHz, 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
2479.600000	84.07	---	94.00	9.93	100.0	H	78.0	-6.6	Pass
2483.500000	46.75	---	74.00	27.25	105.0	H	75.0	-6.6	Pass
4959.550000	53.52	---	74.00	20.48	119.0	V	110.0	-0.6	Pass

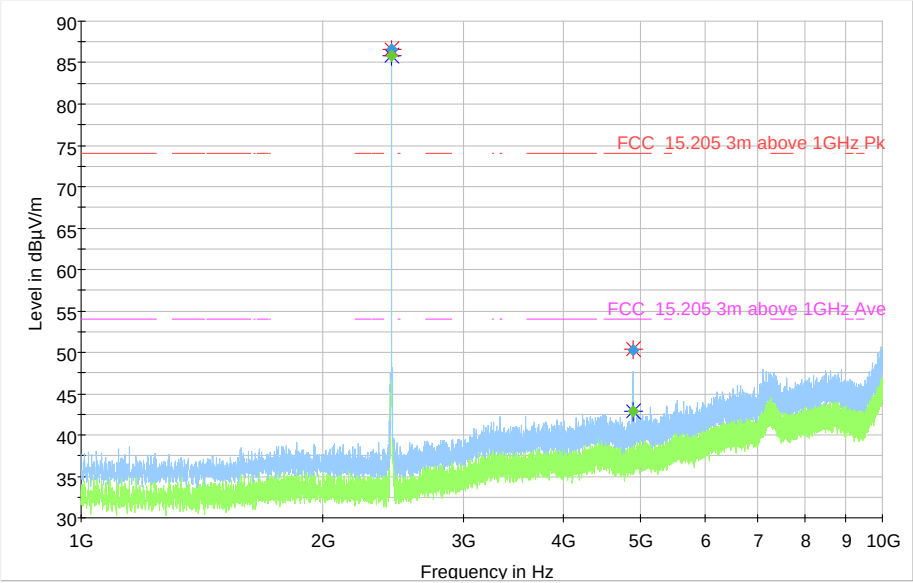
V = Vertical / H = Horizontal

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.

4.1.25 Profile; 1 to 10GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat



4.1.26 Data; 1 to 10GHz, Tx, Middle Channel; 2440MHz, X-Axis, Flat

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
2440.000000	---	85.82	94.00	8.18	153.0	H	54.0	-6.7	Pass
2440.000000	86.58	---	94.00	7.42	155.0	H	57.0	-6.7	Pass
4879.900000	---	42.81	54.00	11.19	109.0	H	7.0	-0.9	Pass
4880.350000	50.31	---	74.00	23.69	123.0	H	8.0	-0.9	Pass

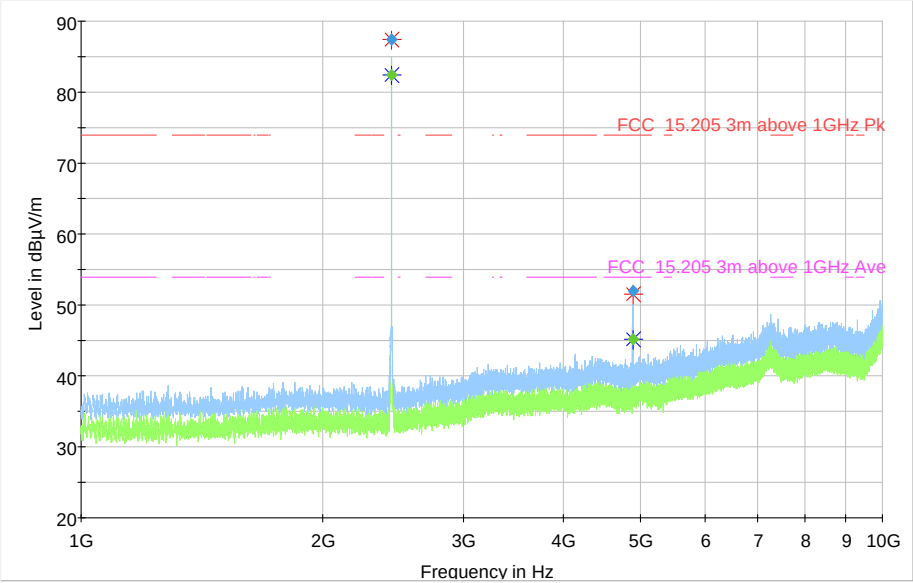
V = Vertical / H = Horizontal

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.

4.1.27 Profile; 1 to 10GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side



4.1.28 Data; 1 to 10GHz, Tx, Middle Channel; 2440MHz, Y-Axis, Side

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
2439.550000	---	82.48	94.00	11.52	100.0	H	70.0	-6.7	Pass
2440.000000	87.47	---	94.00	6.53	100.0	H	70.0	-6.7	Pass
4880.350000	---	45.14	54.00	8.86	159.0	V	52.0	-0.9	Pass
4880.350000	51.95	---	74.00	22.05	116.0	V	91.0	-0.9	Pass

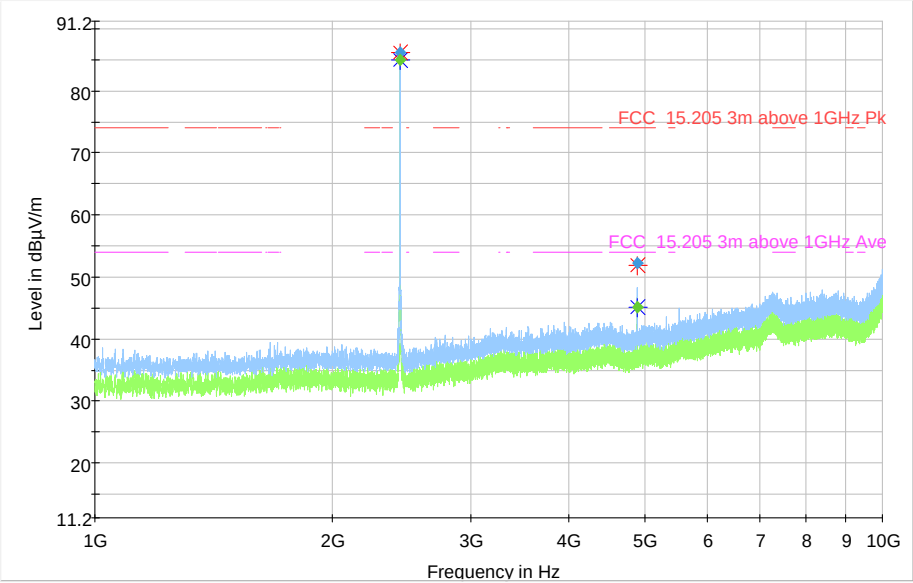
V = Vertical / H = Horizontal

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.

4.1.29 Profile; 1 to 10GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End



4.1.30 Data; 1 to 10GHz, Tx, Middle Channel; 2440MHz, Z-Axis, End

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
2440.000000	---	84.88	94.00	9.12	160.0	V	150.0	-6.7	Pass
2440.000000	86.18	---	94.00	7.82	109.0	V	133.0	-6.7	Pass
4880.350000	---	45.12	54.00	8.88	310.0	H	201.0	-0.9	Pass
4880.350000	52.25	---	74.00	21.75	308.0	H	203.0	-0.9	Pass

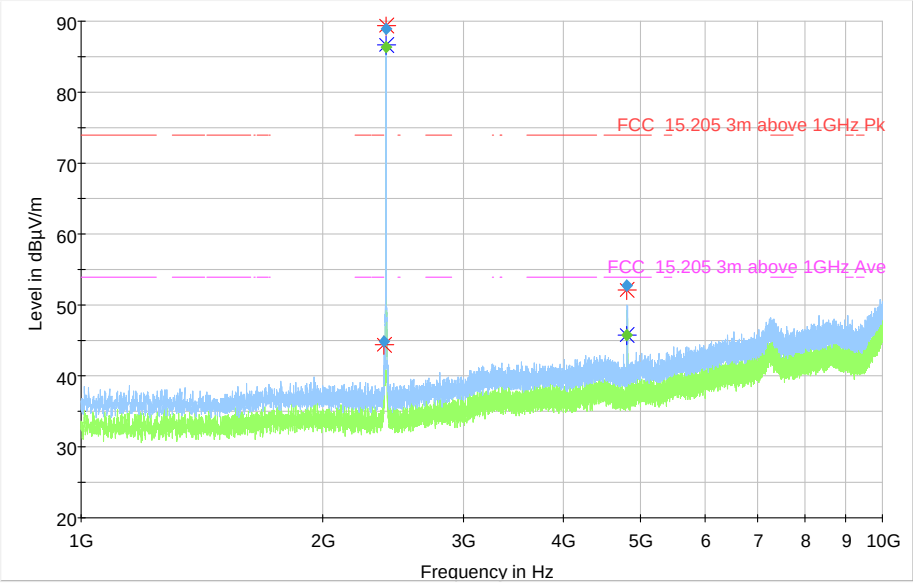
V = Vertical / H = Horizontal

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.

4.1.31 Profile; 1 to 10GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side



4.1.32 Data; 1 to 10GHz, Tx, Bottom Channel; 2402MHz, Y-Axis, Side

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
2390.000000	44.89	---	74.00	29.11	154.0	H	68.0	-6.7	Pass
2401.750000	---	86.35	---	---	105.0	H	64.0	-6.7	Pass
2402.200000	89.01	---	---	---	106.0	H	64.0	-6.7	Pass
4804.300000	52.78	---	74.00	21.22	120.0	V	51.0	-1.2	Pass
4804.300000	---	45.71	54.00	8.29	122.0	V	54.0	-1.2	Pass

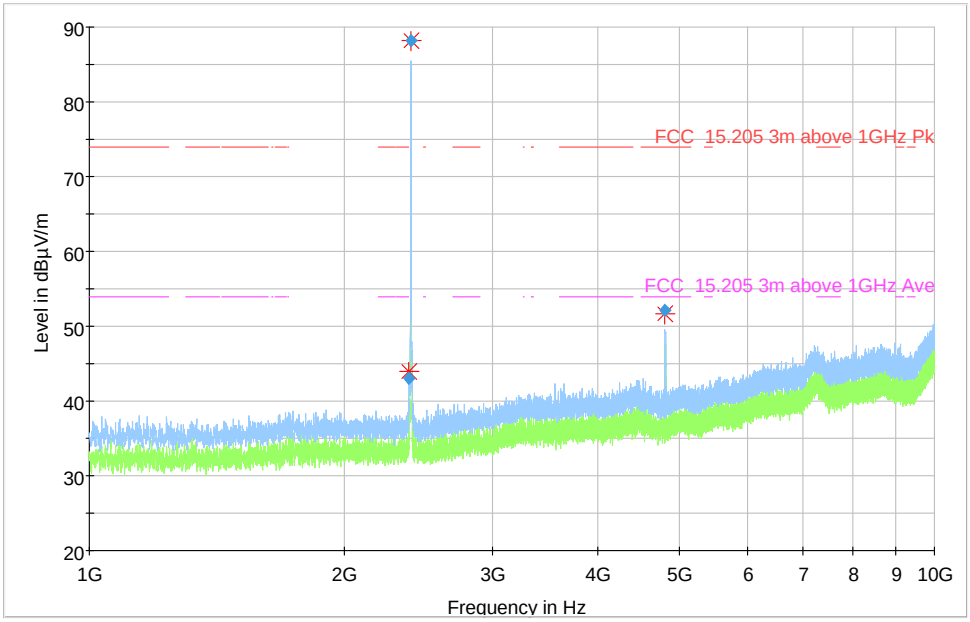
V = Vertical / H = Horizontal

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; 1 to 10GHz, Tx Bottom Channel; 2402MHz, Y-Axis, Side, Charging

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

1 to 10GHz, Tx Bottom Channel; 2402MHz, Y-Axis, Charging



4.1.34 Data; 1 to 10GHz, Bottom Channel; 2402MHz, Y-Axis, Side, 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
2390.000000	43.00	---	74.00	31.00	161.0	V	6.0	-6.7	Pass
2402.200000	88.25	---	---	---	108.0	H	73.0	-6.7	Pass
4803.400000	52.11	---	74.00	21.89	130.0	V	236.0	-1.2	Pass

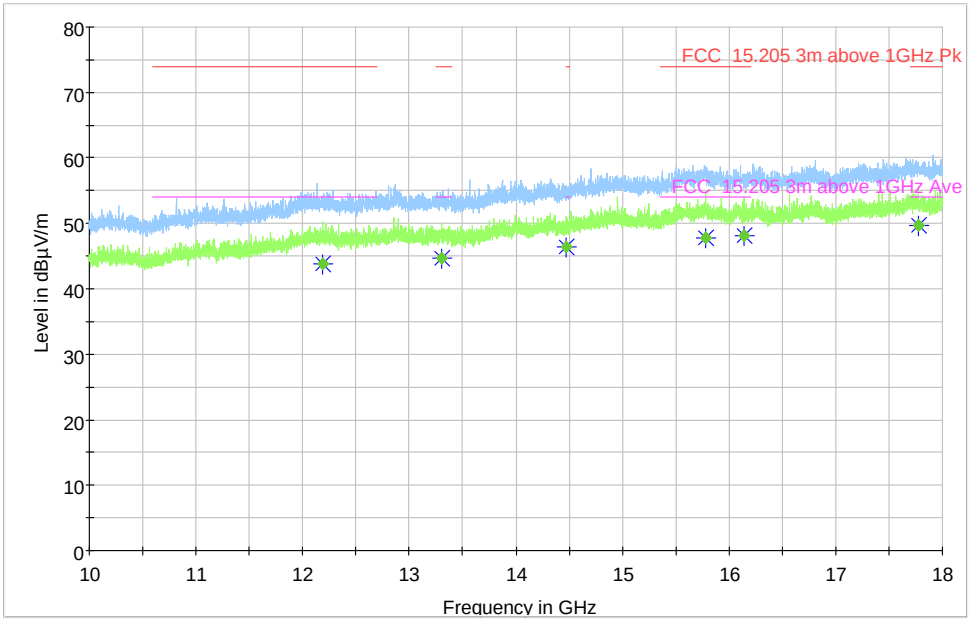
V = Vertical / H = Horizontal

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, Middle Channel; 2440MHz, End Final

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

10 to 18GHz, Tx, Middle Channel; 2440MHz, End Final



4.1.36 Data; 10 to 18GHz, Tx, Middle Channel; 2440MHz, End Final

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
12188.00000	---	43.80	54.00	10.20	163.0	H	14.0	12.6	Pass
13303.00000	---	44.68	54.00	9.32	400.0	V	6.0	14.9	Pass
14478.00000	---	46.33	54.00	7.67	225.0	H	17.0	16.2	Pass
15783.00000	---	47.79	54.00	6.21	180.0	V	357.0	16.8	Pass
16146.00000	---	48.14	54.00	5.86	139.0	V	138.0	17.1	Pass
17775.00000	---	49.67	54.00	4.33	227.0	V	161.0	19.1	Pass

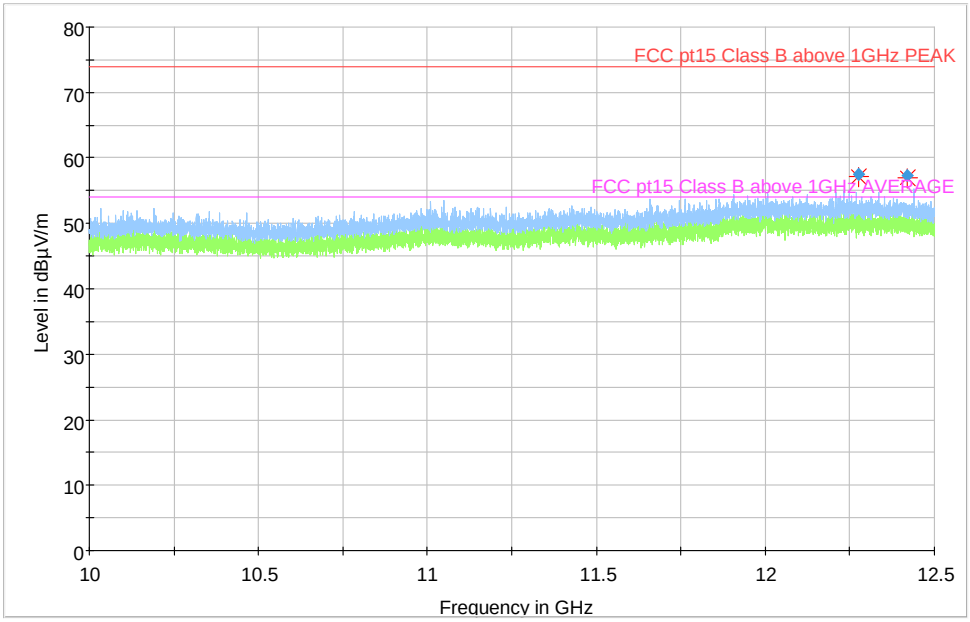
V = Vertical / H = Horizontal

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.

4.1.37 Profile; 10 to 12.5GHz, Rx, Middle Channel; 2440MHz, Side

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

10 to 12.5GHz, Rx, Middle Channel; 2440MHz, Side



4.1.38 Data; 10 to 12.5GHz, Rx, Middle Channel; 2440MHz, Side

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
12274.08590	57.46	---	74.00	16.54	289.0	V	230.0	12.7	Pass
12419.94935	57.39	---	74.00	16.61	370.0	V	188.0	12.9	Pass

V = Vertical / H = Horizontal

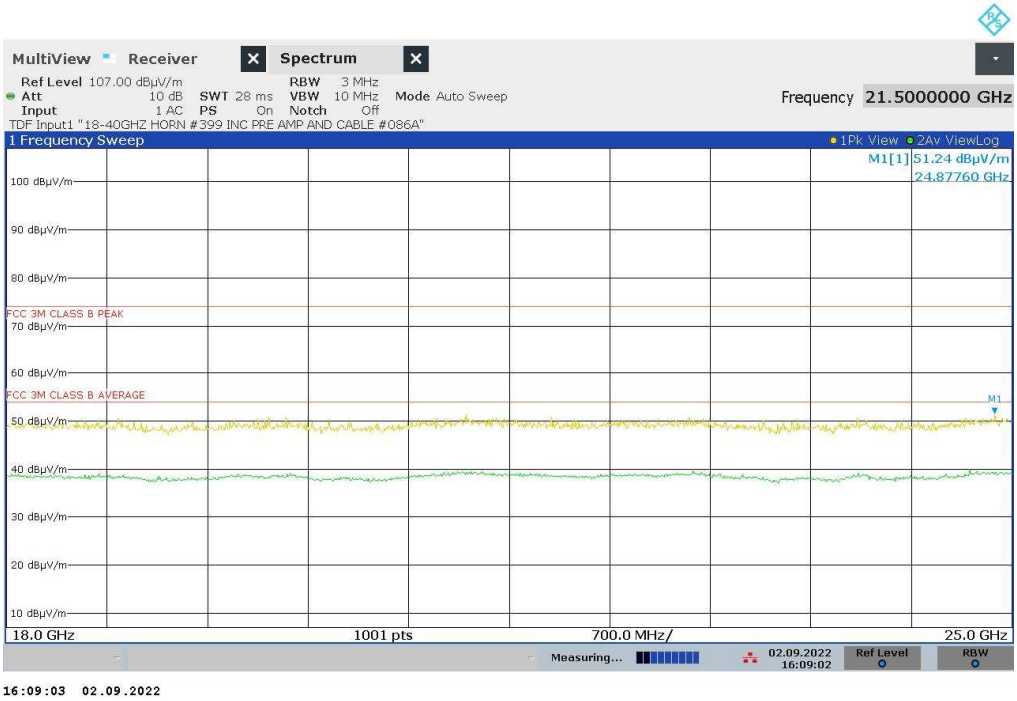
The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.
*Correction factor (dB) = cable and antenna losses as summed positive 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.

4.1.39 Profile; 18 to 25GHz, Tx, Top Channel; 2480MHz, All Three Orientations, 1 Meter Distance

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 to 25GHz, Tx, Top Channel; 2480MHz, All Three Orientations, 1 Meter Distance



4.1.40 Data; 18 to 25GHz, Tx, Top Channel; 2480MHz, All Three Orientations, 1 Meter Distance

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

V = Vertical / H = Horizontal

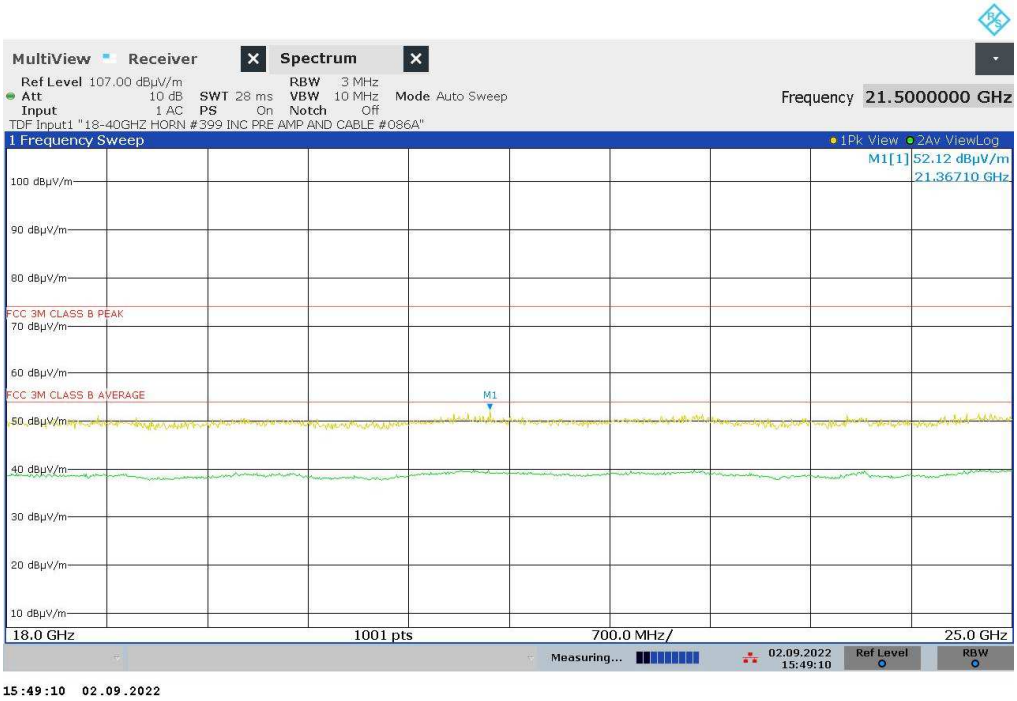
The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.
*Correction factor (dB) = cable and antenna losses as summed positive 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.

4.1.41 Profile; 18 to 25GHz, Tx, Middle Channel; 2440MHz, All Three Orientations, 1 Meter Distance

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 to 25GHz, Tx, Middle Channel; 2440MHz, All Three Orientations, 1 Meter Distance



4.1.42 Data; 18 to 25GHz, Tx, Middle Channel; 2440MHz, All Three Orientations, 1 Meter Distance

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.

4.1.43 Profile; 18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger, All Three Orientations, 1 Meter Distance

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger,
All Three Orientations, 1 Meter Distance

4.1.44 Data; 18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger, All Three Orientations, 1 Meter Distance

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.

4.1.45 Profile; 18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger, Y axis Side Orientation, 3 Meter Distance

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger, Y axis Side Orientation, 3 Meter Distance

4.1.46 Data; 18 to 25GHz, Tx, Middle Channel; 2440MHz, with Charger, Side Orientation, 3 Meter Distance

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

V = Vertical / H = Horizontal

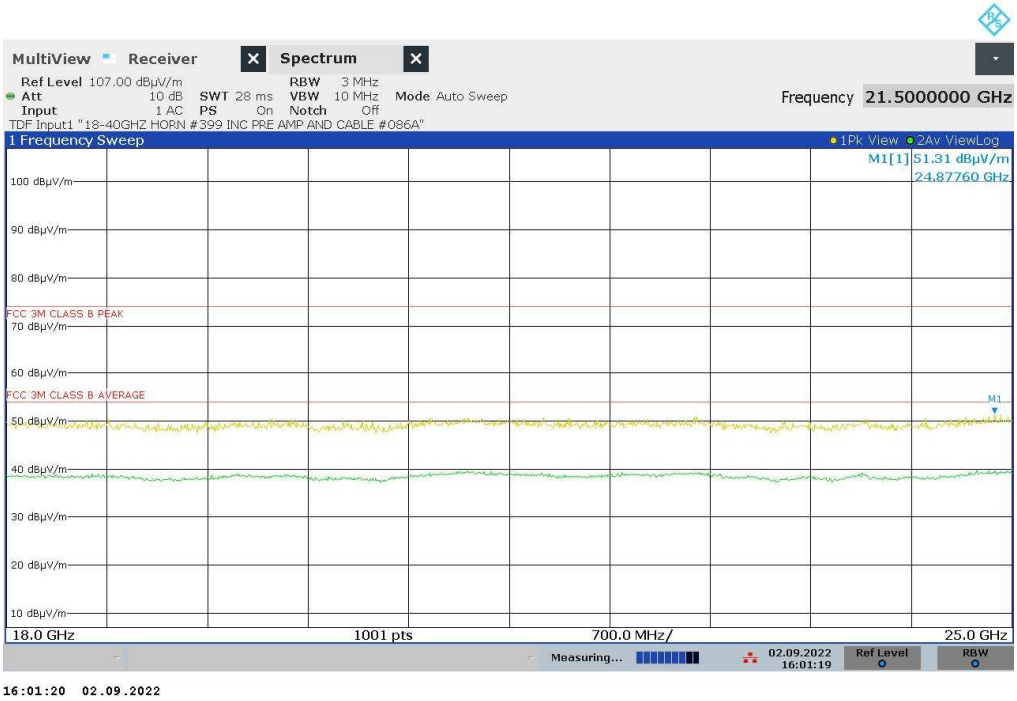
The measurements reported are the highest emissions relative to the FCC 15.205 limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins Hursley test procedure RAD-01.
*Correction factor (dB) = cable and antenna losses as summed positive 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.

4.1.47 Profile; 18 to 25GHz, Tx, Bottom Channel; 2402MHz, All Three Orientations, 1 Meter Distance

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 to 25GHz, Tx, Bottom Channel; 2402MHz, All Three Orientations, 1 Meter Distance



4.1.48 Data; 18 to 25GHz, Tx, Bottom Channel; 2402MHz, All Three Orientations, 1 Meter Distance

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

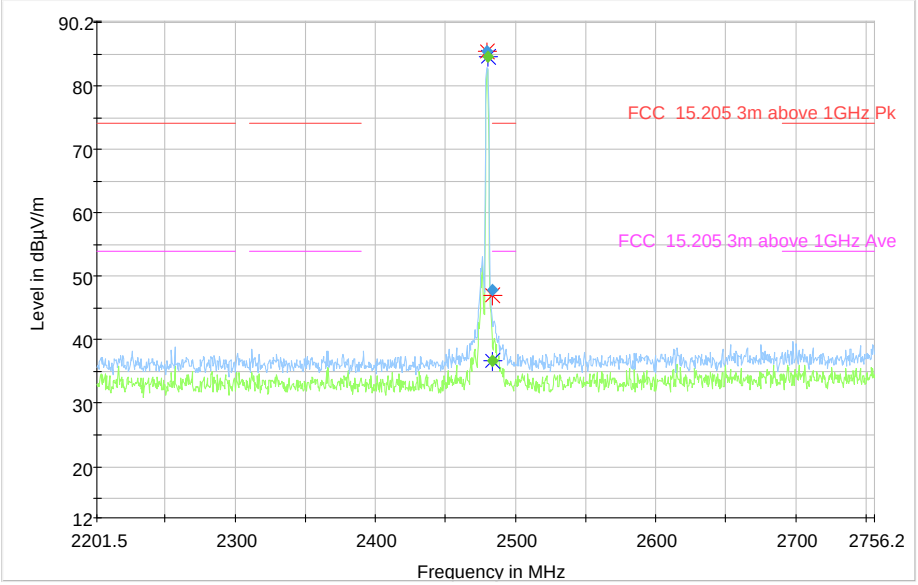
V = Vertical / H = Horizontal

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.

4.1.49 Profile; Band Edge, Tx, Top Channel; 2480MHz, Y-Axis, Side High

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

Band Edge, Tx, Top Channel; 2480MHz, Y-Axis, Side High



4.1.50 Data; Band Edge, Tx, Top Channel; 2480MHz, Y-Axis, Side High

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
2479.600000	85.48	---	---	---	100.0	H	65.0	-6.6	Pass
2480.050000	---	84.54	---	---	105.0	H	65.0	-6.6	Pass
2483.500000	47.79	---	74.00	26.21	116.0	H	72.0	-6.6	Pass
2483.500000	---	36.61	54.00	17.39	112.0	H	69.0	-6.6	Pass
4959.550000	52.76	---	74.00	21.24	112.0	V	70.0	-0.6	Pass
4959.550000	---	44.68	54.00	9.32	112.0	V	73.0	-0.6	Pass

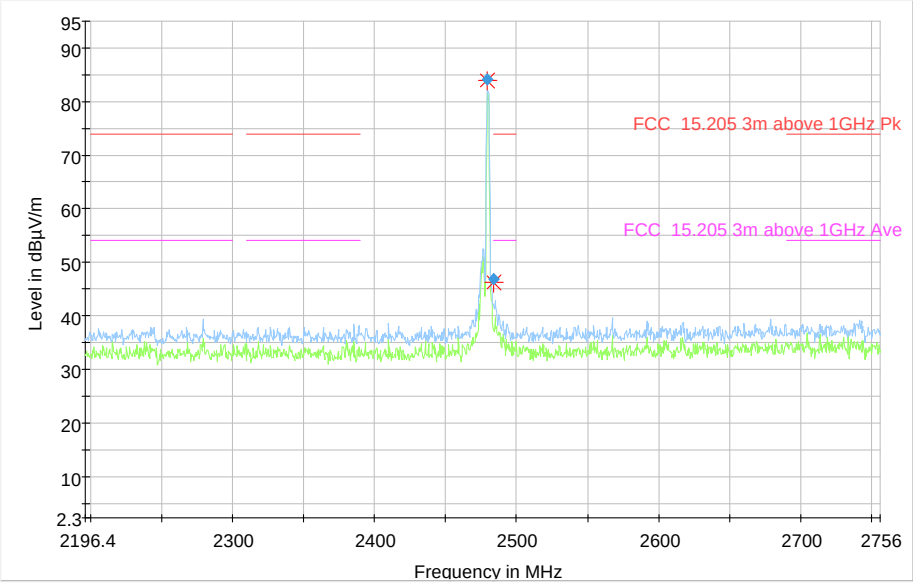
V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.209 and 15.249 limits and take into account the correction factor*. The transmit power met the 15.249 limit when measured with a peak detector, so an average measurement was not required. 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.

4.1.51 Profile; Band Edge, Tx Top Channel; 2480MHz, Y-Axis, Charging, High

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

Band Edge, Tx Top Channel; 2480MHz, Y-Axis, Charging, High



4.1.52 Data; Band Edge, Top Channel; 2480MHz, Y-Axis, Charging, High

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
2479.600000	84.07	---	---	---	100.0	H	78.0	-6.6	Pass
2483.500000	46.75	---	54.00	7.25	105.0	H	75.0	-6.6	Pass
4959.550000	53.52	---	54.00	0.48	119.0	V	110.0	-0.6	Pass

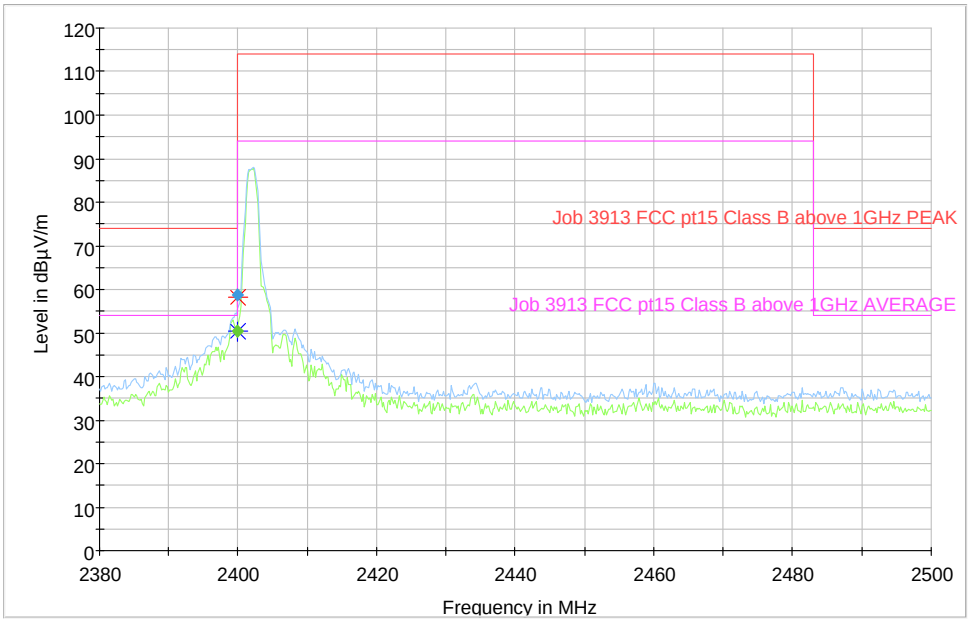
V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.209 and 15.249 limits and take into account the correction factor*. The transmit power met the 15.249 limit when measured with a peak detector, so an average measurement was not required. 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.

4.1.53 Profile; Band Edge, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Low

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

Band Edge, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Low



4.1.54 Data; Band Edge, Tx, Bottom Channel; 2402MHz, Y-Axis, Side Low

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
2400.000000	---	50.40	54.00	3.60	105.0	V	98.0	-7.7	Pass
2400.000000	58.59	---	74.00	15.41	100.0	V	96.0	-7.7	Pass

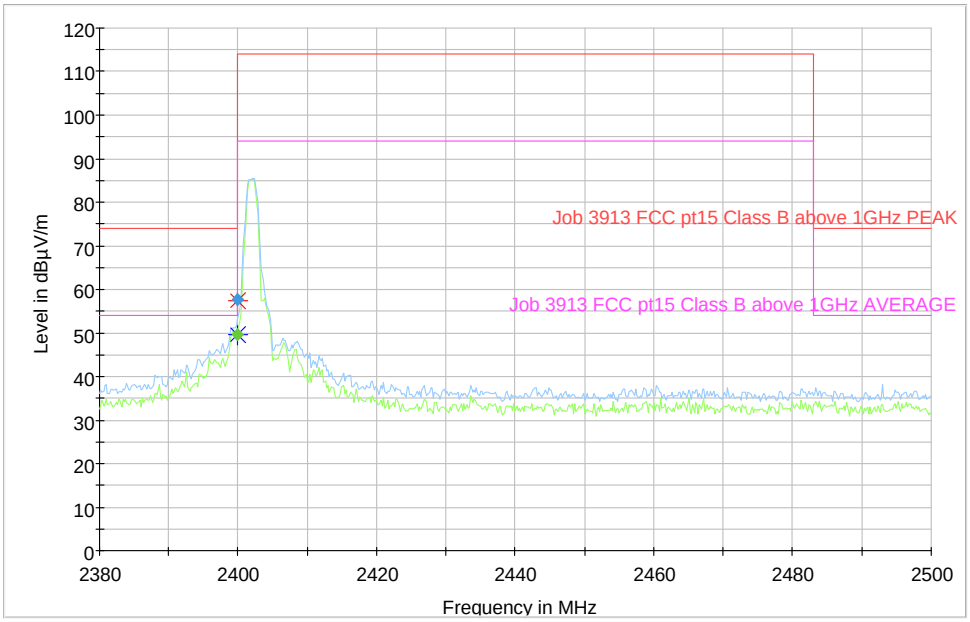
V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.209 and 15.249 limits and take into account the correction factor*. The transmit power met the 15.249 limit when measured with a peak detector, so an average measurement was not required. 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.

4.1.55 Profile; Band Edge, Bottom Channel; 2402MHz, Y-Axis, Charging, Low

Maximum hold trace with peak values (◆)
Peak measurements (✳)
Average measurements (◆)

Band Edge, Bottom Channel; 2402MHz, Y-Axis, Charging, Low



4.1.56 Data; Band Edge, Bottom Channel; 2402MHz, Y-Axis, Charging, Low

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
2400.000000	---	49.59	54.00	4.41	100.0	V	74.0	-7.7	Pass
2400.000000	57.58	---	74.00	16.42	108.0	V	74.0	-7.7	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC 15.209 and 15.249 limits and take into account the correction factor*. The transmit power met the 15.249 limit when measured with a peak detector, so an average measurement was not required. 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 Conducted Emissions (Worst Case)

4.2.1 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
252	1	Rohde & Schwarz	ESH 3 Z2	08970	10dB pulse limiter	27/05/2023
482	1	0	Cable BNC	0	Cable BNC	26/10/2022
674	1	Rohde & Schwarz	ESH3-Z5	838576-018	1 phase LISN ANSI&CISPR	16/09/2023
699	1	Gauss	TDEMI30M	1506001	Time domain conducted receiver	16/09/2023
785	0	EH	Ground plane	Neptune	Ground plane work area	Not required
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	21.3° Celsius
Relative Humidity	37%
Atmospheric Pressure	1006.6 millibars
Test Date:	16th September 2022
Test Engineer:	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.

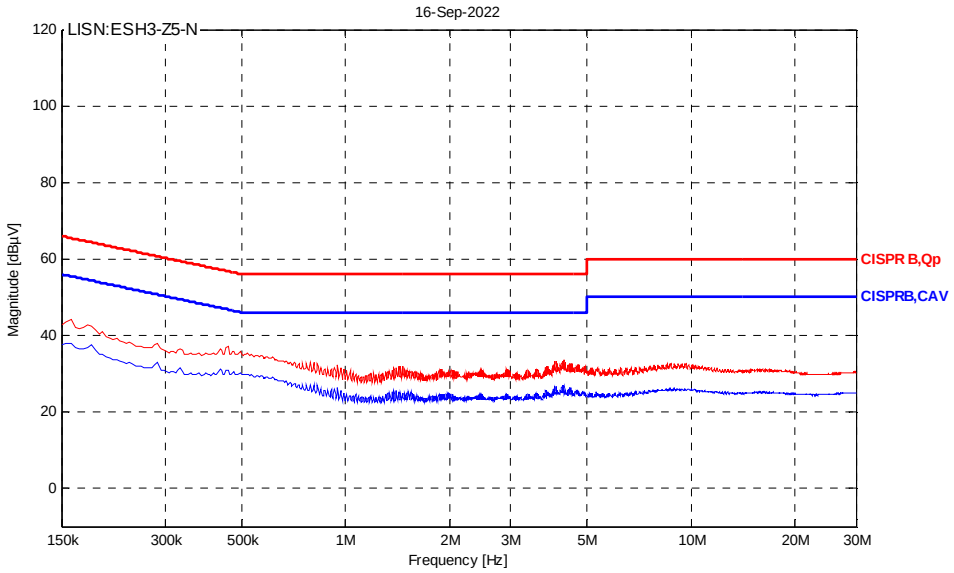
4.2.2 Test Configuration

Please refer to EUT Test Configuration #1.

4.2.3 Set-up Photos

Conducted Emissions

4.2.4 Profile; 115V Mains Neutral, Top Channel; 2480MHz



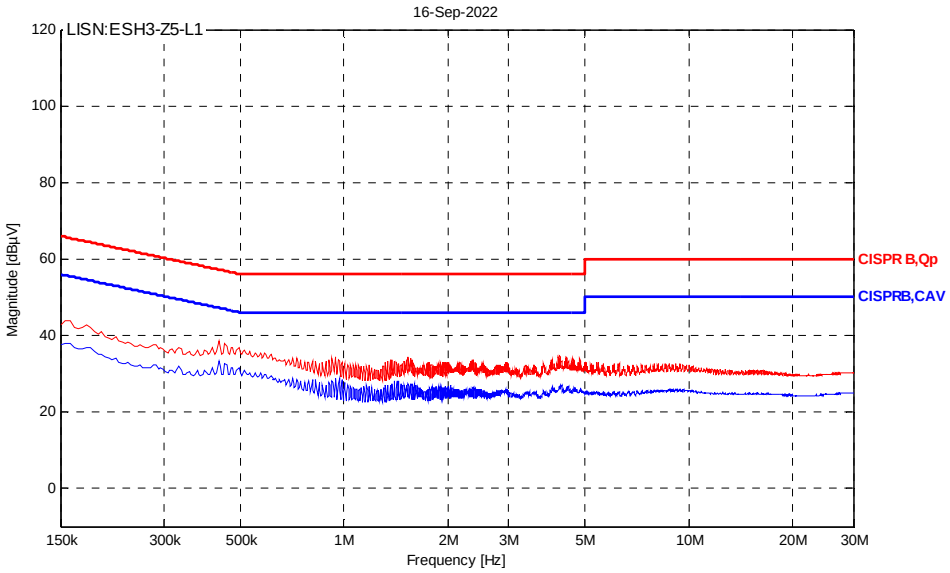
4.2.5 Data; 115V Mains Neutral, Top Channel; 2480MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
455.379 kHz	37.08	56.78	19.70	Pass
9.167 MHz	32.61	60.00	27.39	Pass
10.097 MHz	32.11	60.00	27.89	Pass
16.153 MHz	31.25	60.00	28.75	Pass
20.144 MHz	30.37	60.00	29.63	Pass
29.957 MHz	30.46	60.00	29.54	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
493.526 kHz	30.26	46.11	15.85	Pass
8.700 MHz	26.11	50.00	23.89	Pass
10.283 MHz	25.82	50.00	24.18	Pass
15.686 MHz	25.15	50.00	24.85	Pass
24.998 MHz	24.82	50.00	25.18	Pass
29.361 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).

4.2.6 Profile; 115V Mains Line, Top Channel; 2480MHz



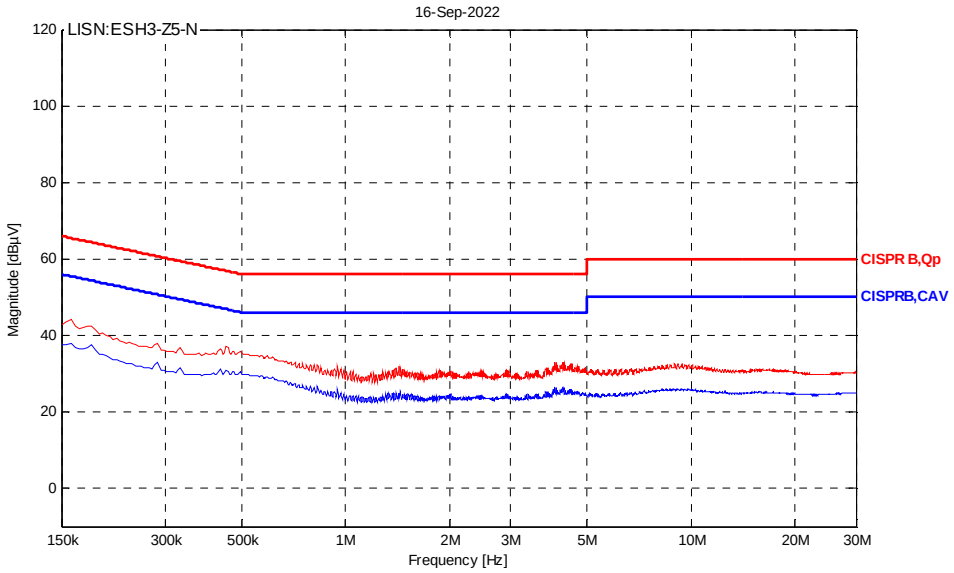
4.2.7 Data; 115V Mains Line, Top Channel; 2480MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
431.538 kHz	38.43	57.22	18.79	Pass
5.443 MHz	32.88	60.00	27.12	Pass
10.254 MHz	31.93	60.00	28.07	Pass
15.900 MHz	30.93	60.00	29.07	Pass
24.998 MHz	30.01	60.00	29.99	Pass
29.399 MHz	30.35	60.00	29.65	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
431.538 kHz	33.14	47.22	14.09	Pass
9.181 MHz	25.91	50.00	24.09	Pass
10.259 MHz	25.53	50.00	24.47	Pass
15.810 MHz	24.90	50.00	25.10	Pass
24.998 MHz	24.74	50.00	25.26	Pass
29.833 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).

4.2.8 Profile; 115V Mains Neutral, Middle Channel; 2440MHz



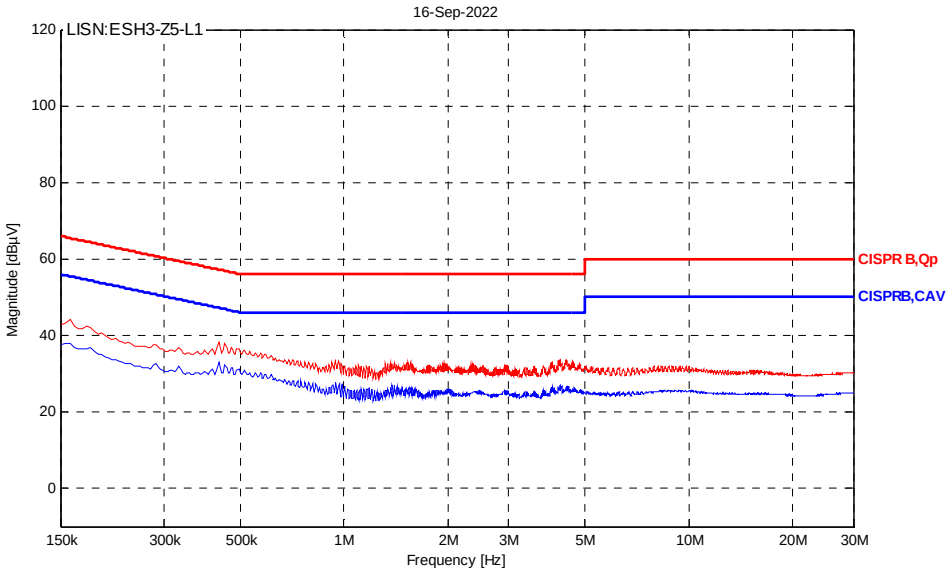
4.2.9 Data; 115V Mains Neutral, Middle Channel; 2440MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.05	56.86	19.81	Pass
8.957 MHz	32.48	60.00	27.52	Pass
10.107 MHz	31.96	60.00	28.04	Pass
16.129 MHz	31.13	60.00	28.87	Pass
20.158 MHz	30.36	60.00	29.64	Pass
29.809 MHz	30.35	60.00	29.65	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
493.526 kHz	30.30	46.11	15.80	Pass
9.391 MHz	26.08	50.00	23.92	Pass
10.264 MHz	25.82	50.00	24.18	Pass
15.733 MHz	25.26	50.00	24.74	Pass
24.998 MHz	24.86	50.00	25.14	Pass
29.733 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).

4.2.10 Profile; 115V Mains Line, Middle Channel; 2440MHz



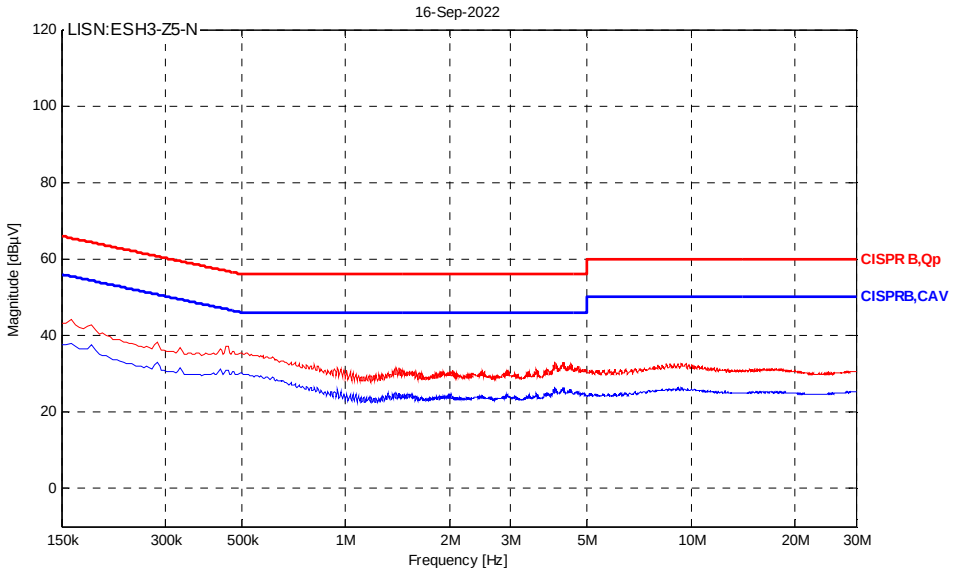
4.2.11 Data; 115V Mains Line, Middle Channel; 2440MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.77	56.86	19.10	Pass
8.972 MHz	32.04	60.00	27.96	Pass
10.250 MHz	31.53	60.00	28.47	Pass
15.242 MHz	30.82	60.00	29.18	Pass
24.998 MHz	30.04	60.00	29.96	Pass
29.905 MHz	30.30	60.00	29.70	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
431.538 kHz	32.76	47.22	14.47	Pass
8.938 MHz	25.74	50.00	24.26	Pass
10.269 MHz	25.51	50.00	24.49	Pass
15.757 MHz	24.92	50.00	25.08	Pass
24.998 MHz	24.76	50.00	25.24	Pass
29.943 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).

4.2.12 Profile; 115V Mains Neutral, Bottom Channel; 2402MHz



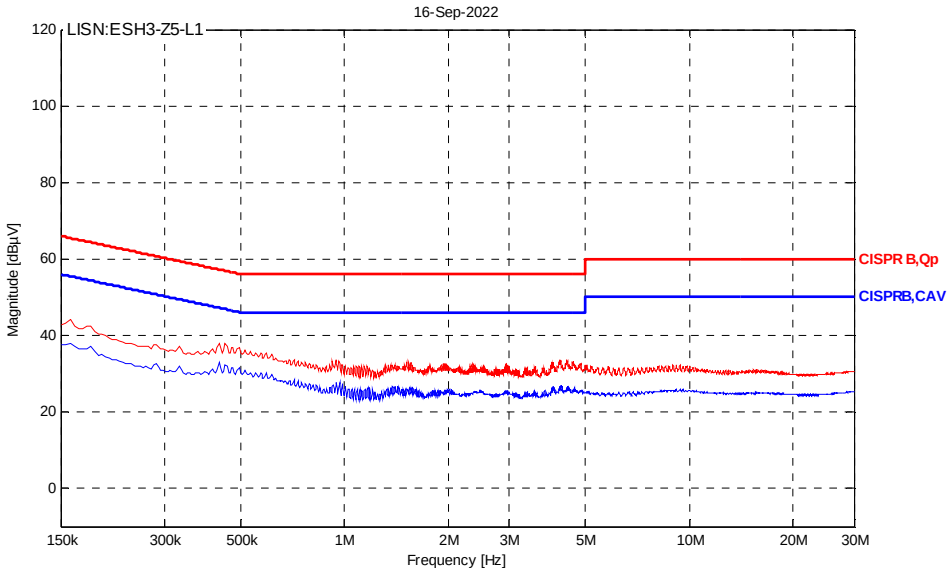
4.2.13 Data; 115V Mains Neutral, Bottom Channel; 2402MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.08	56.86	19.78	Pass
9.167 MHz	32.59	60.00	27.41	Pass
10.283 MHz	32.02	60.00	27.98	Pass
15.433 MHz	31.29	60.00	28.71	Pass
20.154 MHz	30.59	60.00	29.41	Pass
29.991 MHz	30.58	60.00	29.42	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
493.526 kHz	30.21	46.11	15.90	Pass
9.167 MHz	26.13	50.00	23.87	Pass
10.264 MHz	25.90	50.00	24.10	Pass
15.614 MHz	25.33	50.00	24.67	Pass
24.998 MHz	24.98	50.00	25.02	Pass
29.957 MHz	25.33	50.00	24.67	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).

4.2.14 Profile; 115V Mains Line, Bottom Channel; 2402MHz



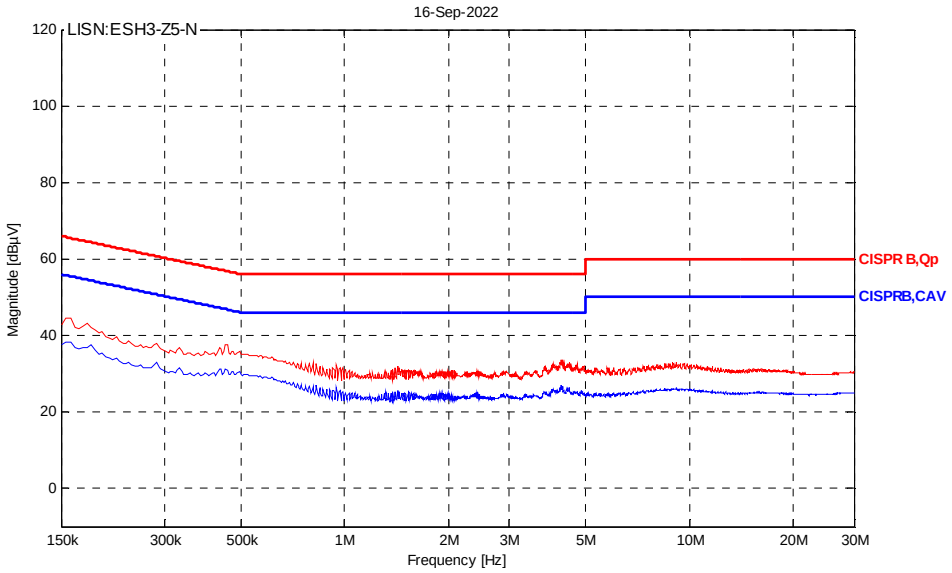
4.2.15 Data; 115V Mains Line, Bottom Channel; 2402MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.89	56.86	18.97	Pass
9.382 MHz	32.10	60.00	27.90	Pass
10.231 MHz	31.58	60.00	28.42	Pass
15.638 MHz	31.02	60.00	28.98	Pass
24.998 MHz	30.10	60.00	29.90	Pass
29.328 MHz	30.57	60.00	29.43	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
431.538 kHz	32.77	47.22	14.45	Pass
9.382 MHz	25.81	50.00	24.19	Pass
10.254 MHz	25.52	50.00	24.48	Pass
15.652 MHz	25.23	50.00	24.77	Pass
24.998 MHz	24.89	50.00	25.11	Pass
29.809 MHz	25.28	50.00	24.72	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).

4.2.16 Profile; 115V Mains Neutral, Standby Mode



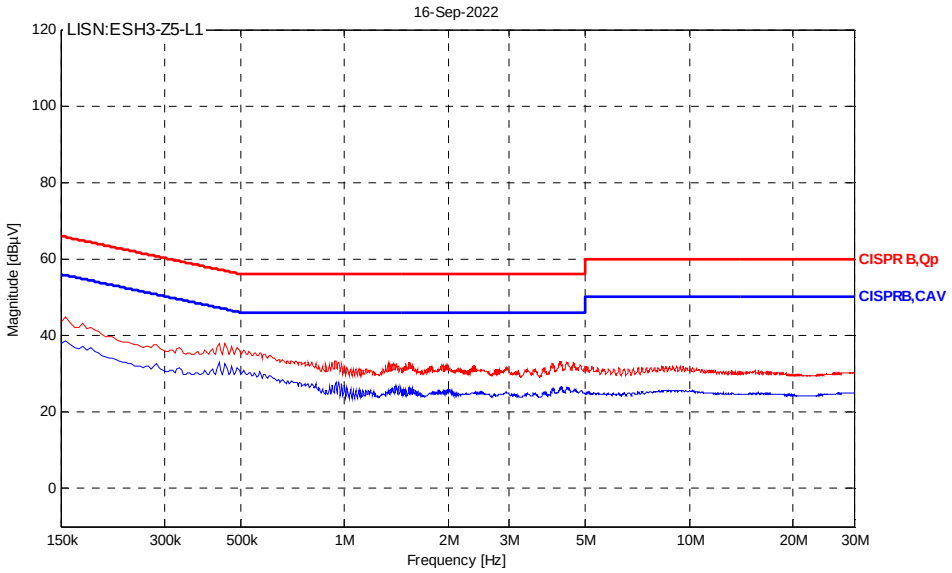
4.2.17 Data; 115V Mains Neutral, Standby Mode

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.57	56.86	19.29	Pass
9.177 MHz	32.81	60.00	27.19	Pass
10.107 MHz	32.27	60.00	27.73	Pass
15.452 MHz	31.19	60.00	28.81	Pass
20.220 MHz	30.37	60.00	29.63	Pass
29.953 MHz	30.37	60.00	29.63	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	31.17	46.86	15.70	Pass
9.172 MHz	26.19	50.00	23.81	Pass
10.283 MHz	25.80	50.00	24.20	Pass
15.862 MHz	25.34	50.00	24.66	Pass
24.998 MHz	24.84	50.00	25.16	Pass
29.976 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).

4.2.18 Profile; 115 V Mains Line, Bottom Channel; 2402MHz



4.2.19 Data; 115V Mains Line, Bottom Channel; 2402MHz

Quasi-peak value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	37.90	56.86	18.96	Pass
9.415 MHz	31.97	60.00	28.03	Pass
10.240 MHz	31.46	60.00	28.54	Pass
15.876 MHz	30.76	60.00	29.24	Pass
24.998 MHz	30.09	60.00	29.91	Pass
29.657 MHz	30.33	60.00	29.67	Pass

CISPR Average value (dBµV)				
Frequency	**Measured**	**Class B Limit**	**Margin**	**Status**
450.611 kHz	32.57	46.86	14.29	Pass
9.630 MHz	25.69	50.00	24.31	Pass
10.240 MHz	25.52	50.00	24.48	Pass
15.862 MHz	25.09	50.00	24.91	Pass
24.998 MHz	24.77	50.00	25.23	Pass
29.895 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).

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 Ulab) are equal to or are less than the expected uncertainty values contained in CISPR 16-4-2 (known as Ucispr). 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), ±3.64dB (10GHz – 18GHz SAC), ±3.10dB (18GHz – 40GHz SAC). ±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.

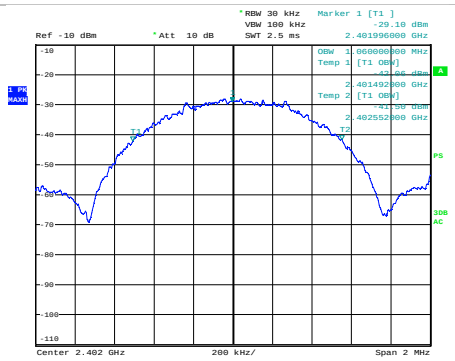
Published 02/08/2022

6.0 Annex – Occupied Bandwidth

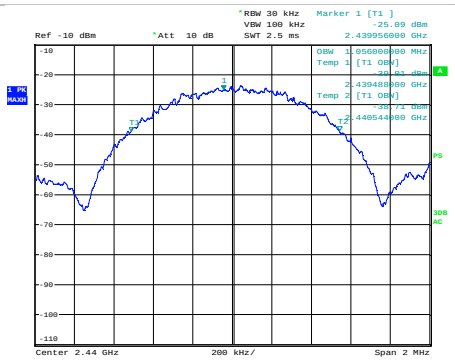
99% occupied bandwidth measured using the inbuilt function in the spectrum analyser.

Channel	Occupied Bandwidth	Requirement	Result
2402	1060	None	For information
2440	1056	None	For information
24180	1056	None	For information

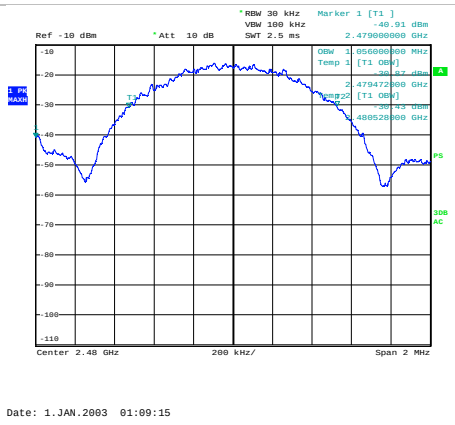
6.1.1 Profile; Occupied Bandwidth



Bottom Channel; 2402MHz



Middle Channel; 2440MHz



Top Channel; 2480MHz

Occupied Bandwidth

6.1.2 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