

EMC Test Report	
For:	Senceive Limited
Product:	Camera Hub
Model:	FM3C-LTE
FCC ID:	2AMFBFM3CH
	
Project Engineer:	Graeme Lawler
	
Approval Signatory:	Dan Tiroke

Document Reference:	H5975 FR
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2	30 th April 2025	Updated with editorial corrections
3	16 th May 2025	Updated with new AC Line Conducted Emissions Results

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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 Electrical & Electronic UK Ltd File Ref: H5975

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 (Clause)	Referenced Standard	Status
Radiated Emissions	FCC/CFR 47: Part 15C 15.247(d) 15.205(a) 15.209(a)	ANSI C63.10: 2013 clause 6.4 6.5 6.6	Pass
6dB (DTS) Bandwidth	15.247(a)(2)	ANSI C63.10: 2013 clause 11.8	Pass
Occupied Bandwidth	FCC 15.215(c)	ANSI C63.10: 2013 clause 6.9.3	Pass
Max Peak Conducted TX Power	15.247(b)(3)	ANSI C63.10: 2013 clause 11.9.1.1	Pass
Power Spectral Density	15.247(e)	ANSI C63.10: 2013 clause 11.10.2	Pass
Restricted Band Edge	15.247(d) 15.205(a) 15.209(a)	ANSI C63.10: 2013 clause 6.10.5	Pass
Authorised Band Edge	15.247(d)	ANSI C63.10: 2013 clause 6.10.4	Pass
Antenna gain	15.203 15.247(b)(4)	None	Pass
AC Mains Conducted Emissions	15.207	ANSI C63.10: 2013 clause 6.2	Pass

Note(s):

- The highest internal operating frequency declared by the manufacturer is 2470 MHz.

3.0 EQUIPMENT AND TEST DETAILS

3.1 General

Product (EUT):	Manufacturer:	Model:	Serial Number:
Camera Hub	Senceive Limited	FM3C-LTE	021BC50AAE00076A
Mains-DC PSU	XP Power	VEC40US24	11-22080002-47100
Sample Build:	Production Sample		
EUT Power:	Battery Powered (via Mains-DC PSU)		
Customer Test Plan:	SC_SEN_TP30_A		
Alternate Models:	Not Applicable		
EUT Manufacturer:	Senceive Limited		
Company Name:	Senceive Limited		
Company Address:	Scorpio House Rockingham Drive Linford Wood Milton Keynes MK14 6LY United Kingdom		
Test Commissioned By:	Charlie Blackham, Sulis Consultants Limited		
Date EUT Received:	7 th February 2025		
Test Date(s):	7 th to 10 th and 28 th February 2025		
EMC Measurement Site:	Eurofins Electrical & Electronic UK Ltd Hursley Laboratory Trafalgar Close, Chandlers Ford, Hampshire, United Kingdom		
Product Category:	IT and Multimedia Electrical Equipment		

3.2 EUT Description

The EUT is a camera hub to monitor railway trackside locations.

3.3 Support Equipment

Description	Manufacturer	Model	Serial Number
Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.4 EUT Test Exerciser

The device operates inside the 2400 – 2483.5 MHz band with one channel bandwidth on one modulation rate, OQPSK.

Lowest frequency is 32.768 kHz.

Highest frequency is 2470 MHz.

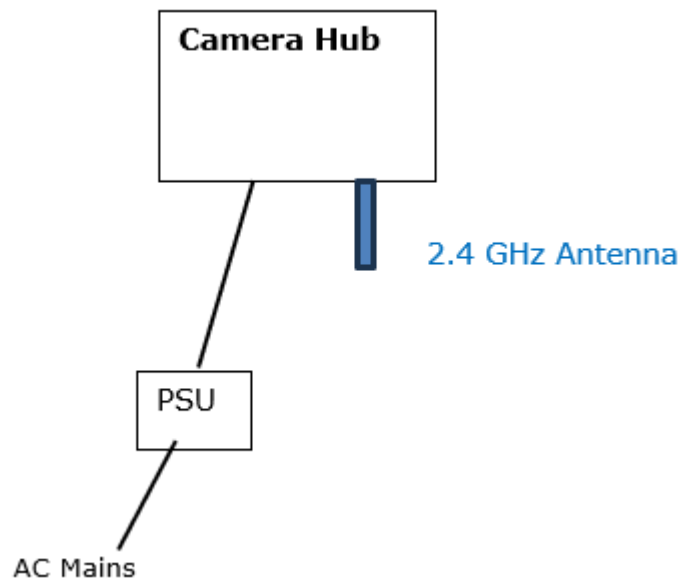
The product supports operation on the following channels:

- 2405 MHz
- 2410 MHz
- 2415 MHz
- 2420 MHz
- 2425 MHz
- 2430 MHz
- 2435 MHz
- 2440 MHz
- 2445 MHz
- 2450 MHz
- 2455 MHz
- 2460 MHz
- 2465 MHz
- 2470 MHz

The unit is set to operate with a test waveform with 100% duty cycle as follows:

Bottom Channel	2405 MHz
Middle Channel	2440 MHz
Top Channel	2470 MHz

3.5 EUT Test Configuration #1



3.6 EUT Ports

Port	Type	Length	Shielded
Enclosure	Not Applicable	Not Applicable	Not Applicable
Mains	110 V 60 Hz	< 3 m	No

3.7 Support Antennas

The EUT supports operation with the following antennas:

Antenna Type	Declared Antenna Gain
External	+3.4 dBi in 2.4 GHz frequency band

4.0 TEST RESULTS

4.1 Radiated Emissions; 15.247(d) (9 kHz to 30 MHz)

4.1.1 Test Parameters

A profile scan was taken using a Spectrum Analyser at a distance of three metres on a 360-degree rotation of the EUT in both the vertical and horizontal polarisation of the antenna within 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. Antenna and turntable 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	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
181	0	Solar Elect	9142-1N	932401	Current Injection Probe	Not Required
493	2	-	Cable BNC	-	Cable BNC	06/12/2025
047	3	Rohde & Schwarz	HFH2-Z2	879021/22	Loop Antenna (9kHz - 30MHz)	15/12/2025
607	1	Rohde & Schwarz	SMT-03	834665/001	Signal Generator (9kHz - 3.3GHz)	Not Required
285	1	Huber & Suhner	Cable BNC	-	Cable BNC	31/07/2025
741	0	California instruments	MX45	55282	3 phase voltage/ frequency supply	Not Required
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
856	0	Rohde & Schwarz	Software	0	EMC32 v11.30.0	Not required
Environmental Test Conditions						
Frequency	Below 1 GHz		Above 1 GHz		Above 1 GHz	
Temperature	18.7° Celsius		18.7° Celsius		21.5° Celsius	
Relative Humidity	37 %		37 %		33 %	
Atmospheric Pressure	1027.9 millibars		1027.9 millibars		1026.1 millibars	
Test Dates:	7 th February 2025		7 th February 2025		10 th February 2025	
Test Engineer:	Graeme Lawler		Graeme Lawler		Graeme Lawler	

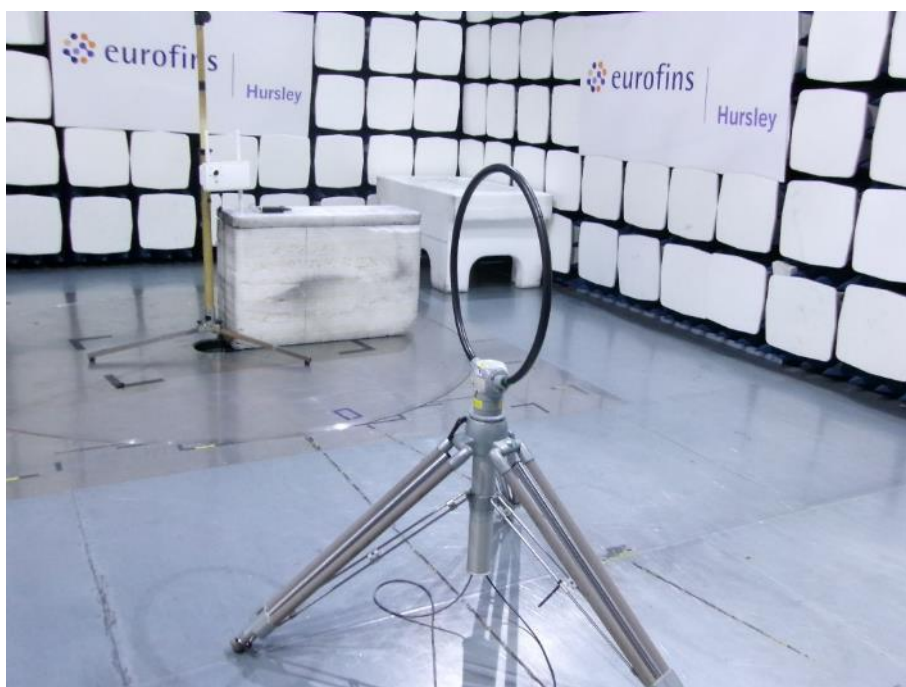
Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for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

4.1.2 Test Configuration

Please refer to EUT Test Configuration #1.

4.1.3 Set-up Photos

Radiated Emissions (9 kHz to 30 MHz)

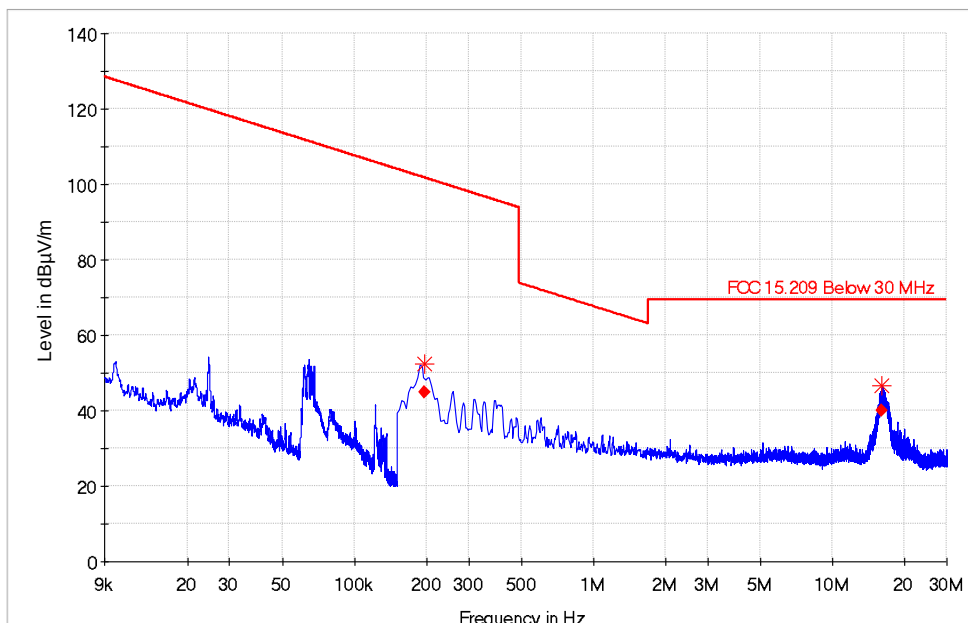


4.1.4 Profile; 9 kHz to 30 MHz, 15.247(d) 2405 MHz, Bottom Channel

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

Peak measurements (✱)

9 kHz to 30 MHz



4.1.5 Data; 9 kHz to 30 MHz, 15.247(d) 2405 MHz, Bottom Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBμV/m	dBμV/m	dB	H/V	cm	deg	Status
0.195815	44.75	101.76	57.02	V	150.0	47.0	Pass
16.102590	40.12	69.50	29.38	H	150.0	1.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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).

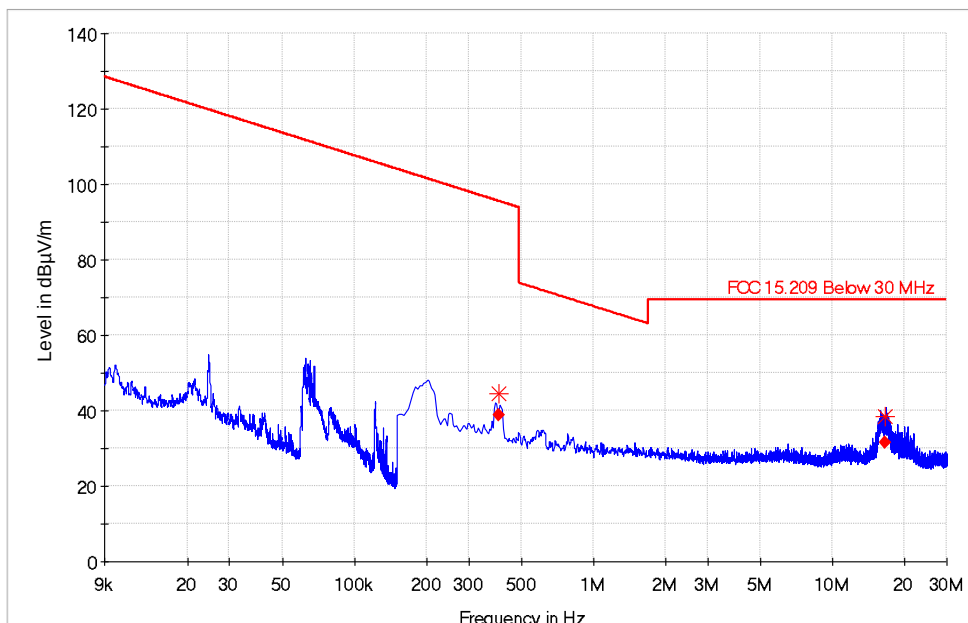
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

4.1.6 Profile; 9 kHz to 30 MHz, 15.247(d), 2440 MHz, Middle Channel

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

Peak measurements (✱)

9 kHz to 30 MHz



4.1.7 Data; 9 kHz to 30 MHz, 15.247(d), 2440 MHz, Middle Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBμV/m	dBμV/m	dB	H/V	cm	deg	Status
0.401823	38.71	95.52	56.81	V	150.0	358.0	Pass
16.623835	31.38	69.50	38.12	H	150.0	70.0	Pass

V = Vertical / H = Horizontal

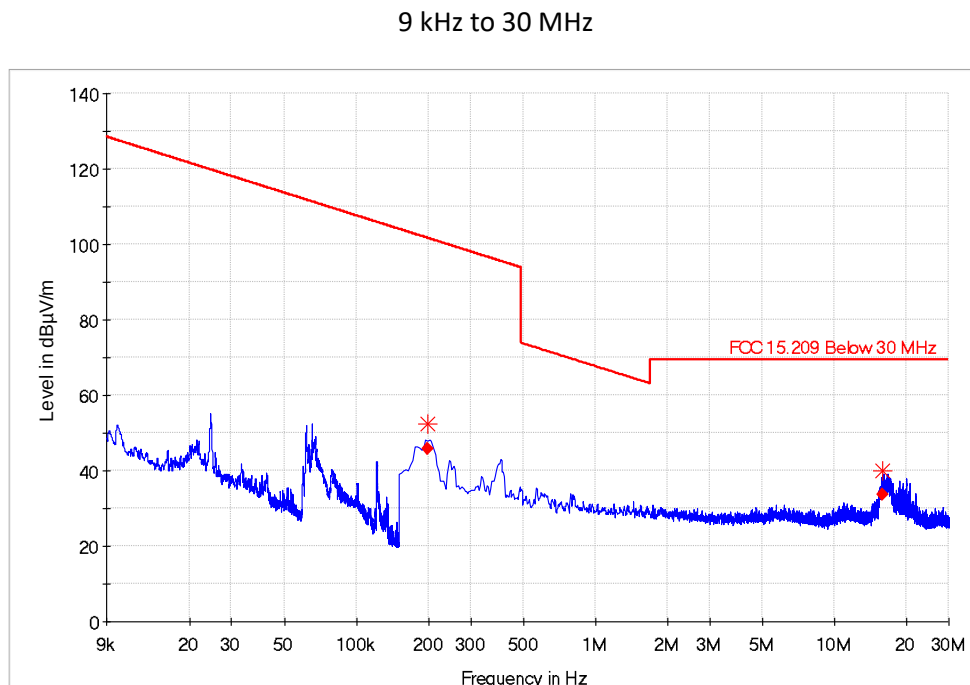
The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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.

4.1.8 Profile; 9 kHz to 30 MHz, 15.247(d), 2470 MHz, Top Channel
Maximum peak hold trace with quasi-peak values (◆)
Peak measurements (✱)



4.1.9 Data; 9 kHz to 30 MHz, 15.247(d), 2470 MHz, Top Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBµV/m	dBµV/m	dB	H/V	cm	deg	Status
0.198134	45.61	101.66	56.05	V	150.0	25.0	Pass
15.929562	33.58	69.50	35.92	H	150.0	55.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.
*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; 15.247(d) (30 MHz to 1 GHz)

4.2.1 Test Parameters

A profile scan was taken using a Spectrum Analyser at a distance of three metres on a 360-degree rotation of the EUT in both the vertical and horizontal polarisation of the antenna within 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. Antenna and turntable 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	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
821	0	York EMC	CNE	542	Comparison Noise Emitter	Not Required
762	3	Schwarzbeck	VULB9162	129	Trilog Broadband Antenna (30MHz - 7 GHz)	12/03/2027
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
741	0	California instruments	MX45	55282	3 phase voltage/ frequency supply	Not Required
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
856	0	Rohde & Schwarz	Software	0	EMC32 v11.30.0	Not required
Environmental Test Conditions						
Frequency	Below 1 GHz		Above 1 GHz		Above 1 GHz	
Temperature	18.7° Celsius		18.7° Celsius		21.5° Celsius	
Relative Humidity	37 %		37 %		33 %	
Atmospheric Pressure	1027.9 millibars		1027.9 millibars		1026.1 millibars	
Test Dates:	7 th February 2025		7 th February 2025		10 th February 2025	
Test Engineer:	Graeme Lawler		Graeme Lawler		Graeme Lawler	

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK 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

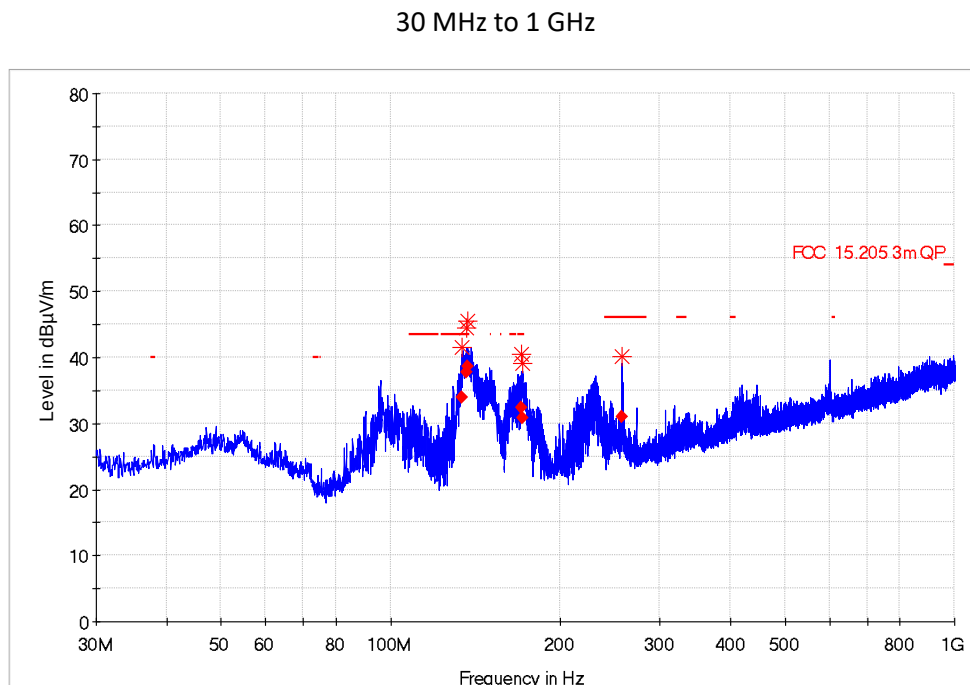
Radiated Emissions (30 MHz to 1 GHz)



4.2.4 Profile; 30 MHz to 1 GHz, 15.247(d) 2405 MHz, Bottom Channel

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

Peak measurements (✱)



4.2.5 Data; 30 MHz to 1 GHz, 15.247(d) 2405 MHz, Bottom Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBμV/m	dBμV/m	dB	H/V	cm	deg	Status
133.658426	33.88	43.50	9.62	V	195.0	258.0	Pass
135.939140	37.72	43.50	5.78	V	135.0	226.0	Pass
136.517500	38.63	43.50	4.87	V	118.0	228.0	Pass
170.493114	32.40	43.50	11.10	V	112.0	262.0	Pass
171.317500	30.78	43.50	12.72	V	125.0	296.0	Pass
257.379096	30.92	46.00	15.08	H	142.0	53.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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).

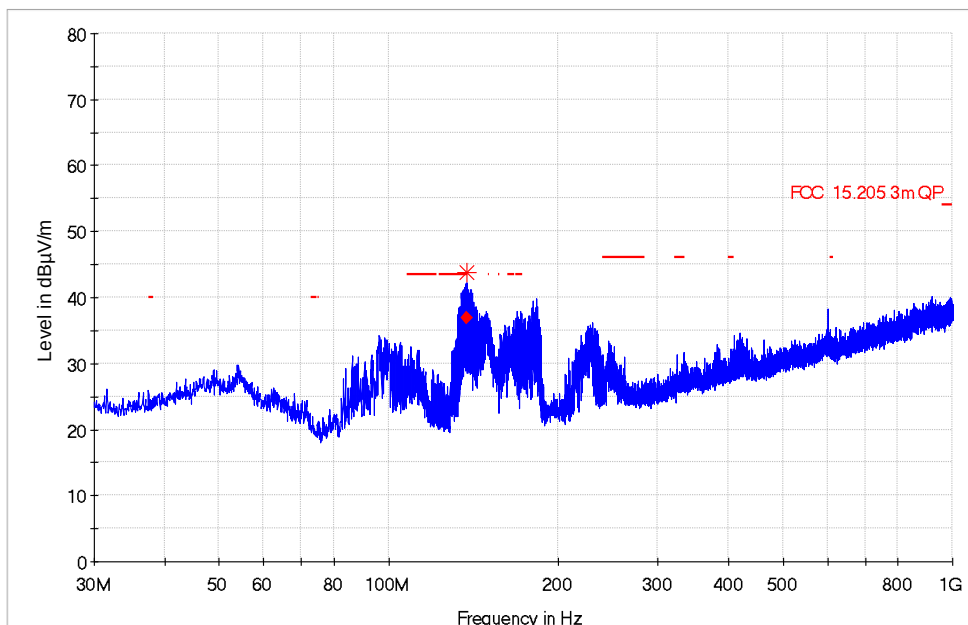
Note: Path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

4.2.6 Profile; 30 MHz to 1 GHz, 15.247(d), 2440 MHz, Middle Channel

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

Peak measurements (✱)

30 MHz to 1 GHz



4.2.7 Data; 30 MHz to 1 GHz, 15.247(d), 2440 MHz, Middle Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBμV/m	dBμV/m	dB	H/V	cm	deg	Status
137.487386	36.92	43.50	6.58	V	144.0	237.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

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

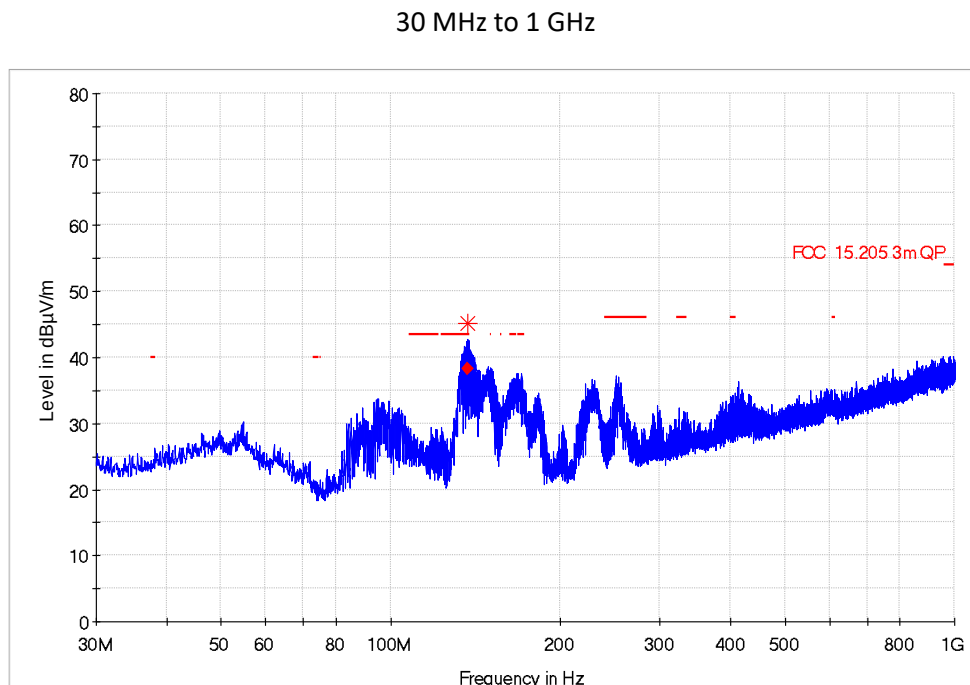
The recorded measured value (dB) = measured receiver value (dB) + correction factor (dB).

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

4.2.8 Profile; 30 MHz to 1 GHz, 15.247(d), 2470 MHz, Top Channel

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

Peak measurements (✱)



4.2.9 Data; 30 MHz to 1 GHz, 15.247(d), 2470 MHz, Top Channel

Emission Frequency	Measured Quasi-Peak Value	Specified Quasi-Peak Limit	Pass Margin	Antenna Polarisation	Antenna Height	Turntable Azimuth	
MHz	dBμV/m	dBμV/m	dB	H/V	cm	deg	Status
136.898780	38.26	43.50	5.24	V	100.0	226.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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 Radiated Emissions; 15.247(d) (1 GHz to 18 GHz)

4.3.1 Test Parameters

A profile scan was taken using a Spectrum Analyser at a distance of three metres on a 360-degree rotation of the EUT in both the vertical and horizontal polarisation of the antenna within 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. Antenna and turntable 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	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
822	0	York EMC	BP01	CGE03C	Comparison Noise Emitter	Not Required
823	0	York EMC	1.5 to 7GHz	CNE 6507	High Frequency Comparison Noise Emitter	Not Required
250	1	HP	8449B	3008A01077	Pre-Amplifier (1GHz - 26.5GHz)	05/03/2025
516	1	Sucoflex	Cable N-Type	-	Cable N-Type (for #150)	05/03/2025
951	1	Wainwright Instruments	WHKX12-2580-3000-18000-80SS	SN16	Highpass Filter (3GHz)	11/06/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
952	3	Schwarzbeck	HWRD 750	66	Horn Antenna (7GHz - 18GHz)	21/06/2026
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
741	0	California instruments	MX45	55282	3 phase voltage/ frequency supply	Not Required
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
856	0	Rohde & Schwarz	Software	0	EMC32 v11.30.0	Not required
Environmental Test Conditions						
Frequency		Above 1 GHz		Above 1 GHz		
Temperature		18.7° Celsius		21.5° Celsius		
Relative Humidity		37 %		33 %		
Atmospheric Pressure		1027.9 millibars		1026.1 millibars		
Test Dates:		7 th February 2025		10 th February 2025		
Test Engineer:		Graeme Lawler		Graeme Lawler		

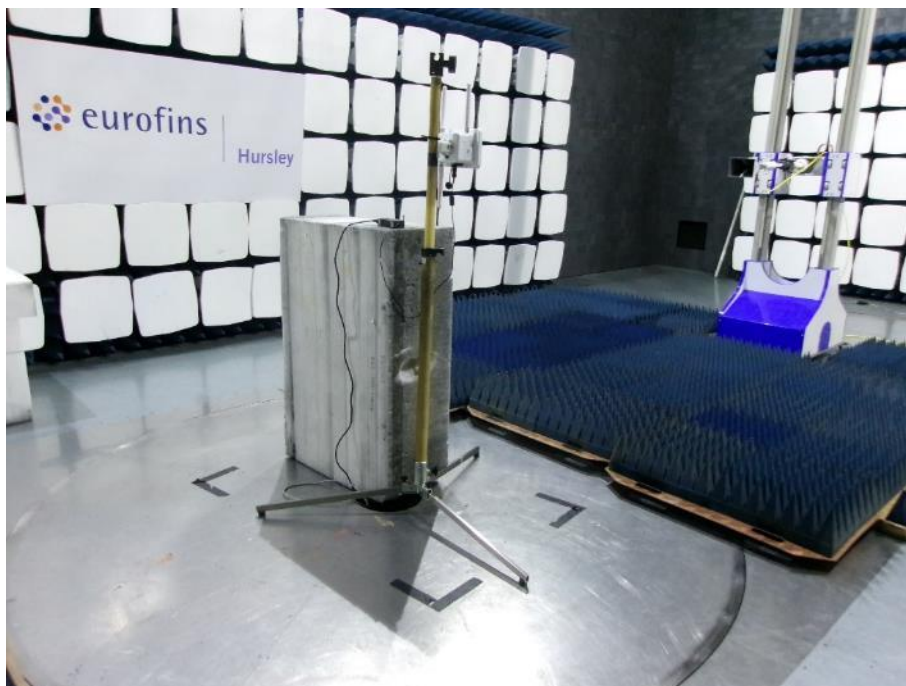
Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for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

4.3.2 Test Configuration

Please refer to EUT Test Configuration #1.

4.3.3 Set-up Photos

Radiated Emissions (1 GHz to 18 GHz)



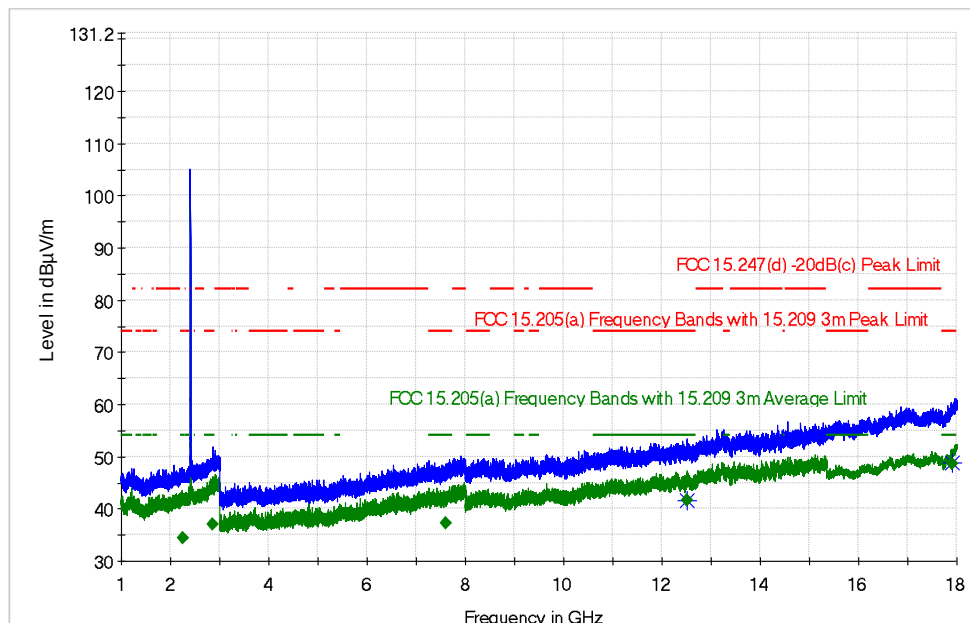
4.3.4 Profile; 1 GHz to 18 GHz, 15.247(d) 2405 MHz, Bottom Channel

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 GHz to 18 GHz



4.3.5 Data; 1 GHz to 18 GHz, 15.247(d) 2405 MHz, Bottom Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	(dBμV/	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
2250.265000	---	34.37	54.00	19.63	243.0	H	0.0	31.7	Pass
2855.680000	---	36.96	54.00	17.04	285.0	V	165.0	33.6	Pass
4809.220000	---	38.46	54.00	15.54	108.0	H	329.0	-1.0	Pass
7594.756000	---	37.25	54.00	16.75	187.0	H	24.0	4.0	Pass
12515.75000	---	41.62	54.00	12.38	390.0	V	8.0	8.5	Pass
17904.89814	---	48.73	54.00	5.27	151.0	V	334.0	15.0	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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.

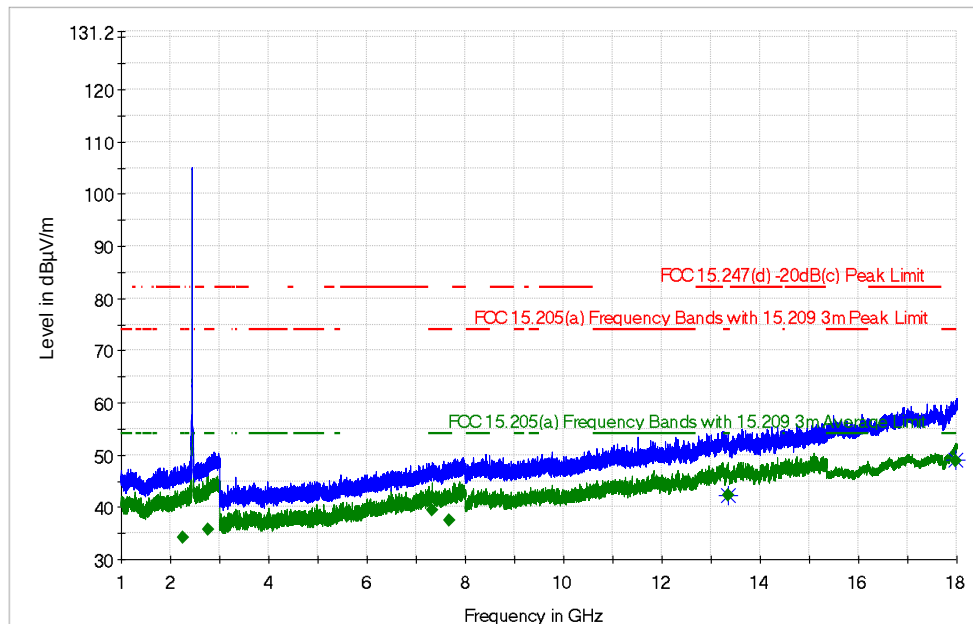
4.3.6 Profile; 1 GHz to 18 GHz, 15.247(d), 2440 MHz, Middle Channel

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 GHz to 18 GHz



4.3.7 Data; 1 GHz to 18 GHz, 15.247(d), 2440 MHz, Middle Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	dBμV/m	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
2265.870000	---	34.16	54.00	19.84	357.0	H	282.0	31.6	Pass
2767.320000	---	35.67	54.00	18.33	369.0	V	79.0	32.8	Pass
7318.036000	---	39.43	54.00	14.57	154.0	V	301.0	3.9	Pass
7684.072000	---	37.43	54.00	16.57	121.0	V	36.0	4.3	Pass
13359.62437	---	42.31	54.00	11.70	250.0	H	28.0	11.0	Pass
17972.38888	---	48.93	54.00	5.07	303.0	H	356.0	15.3	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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.

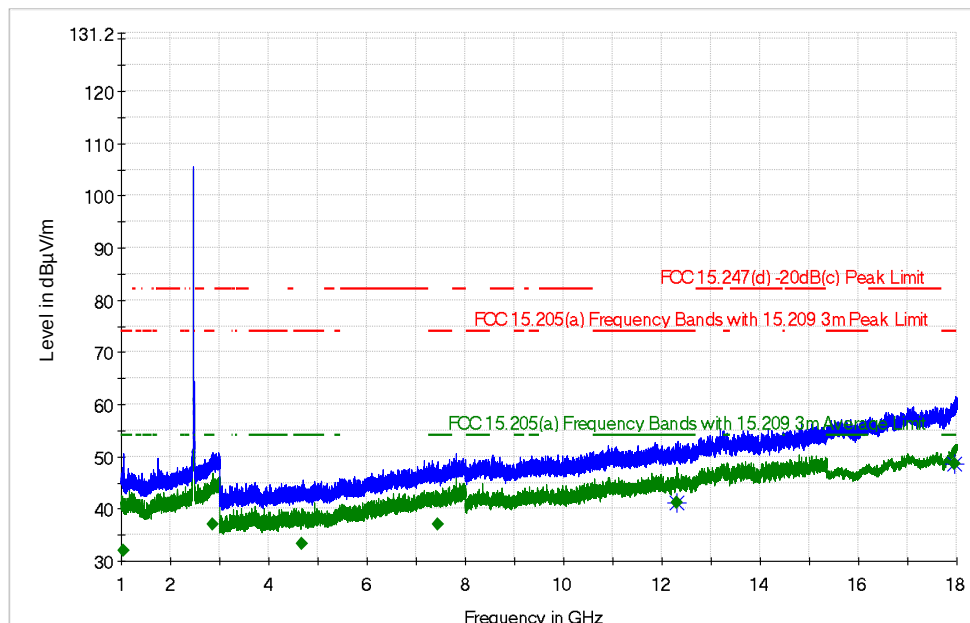
4.3.8 Profile; 1 GHz to 18 GHz, 15.247(d), 2470 MHz, Top Channel

Maximum hold trace with peak values (◆)

Peak measurements (✱)

Average measurements (◆)

1 GHz to 18 GHz



4.3.9 Data; 1 GHz to 18 GHz, 15.247(d), 2470 MHz, Top Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	dBμV/m	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
1040.990000	---	31.89	54.00	22.11	151.0	V	0.0	31.4	Pass
2854.860000	---	36.98	54.00	17.02	195.0	V	59.0	33.6	Pass
4679.122000	---	33.22	54.00	20.78	237.0	H	29.0	-0.9	Pass
7431.600000	---	37.10	54.00	16.90	297.0	V	106.0	3.9	Pass
12309.34562	---	41.20	54.00	12.80	164.0	V	211.0	8.0	Pass
17959.45555	---	48.69	54.00	5.31	317.0	H	3.0	15.3	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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.

4.4 Radiated Emissions; 15.247(d) (18 GHz to 25 GHz)

4.4.1 Test Parameters

A profile scan was taken using a Spectrum Analyser at a measurement distance of 0.1m. The test antenna was swept over all faces of the EUT while observing the spectral display with peak and RMS detectors both with a max hold trace.

A reference level offset of -29.54dB has been entered into the Spectrum Analyser to account for the reduced measurement distance.

Using the profile 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. Antenna and turntable 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	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
399	3	Q-par Angus	WBH18-40k	10300	Horn Antenna (18GHz - 40GHz)	27/02/2026
741	0	California instruments	MX45	55282	3 phase voltage/ frequency supply	Not Required
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
856	0	Rohde & Schwarz	Software	0	EMC32 v11.30.0	Not required
Environmental Test Conditions						
Frequency		Above 1 GHz				
Temperature		21.5° Celsius				
Relative Humidity		33 %				
Atmospheric Pressure		1026.1 millibars				
Test Dates:		10 th February 2025				
Test Engineer:		Graeme Lawler				

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK 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

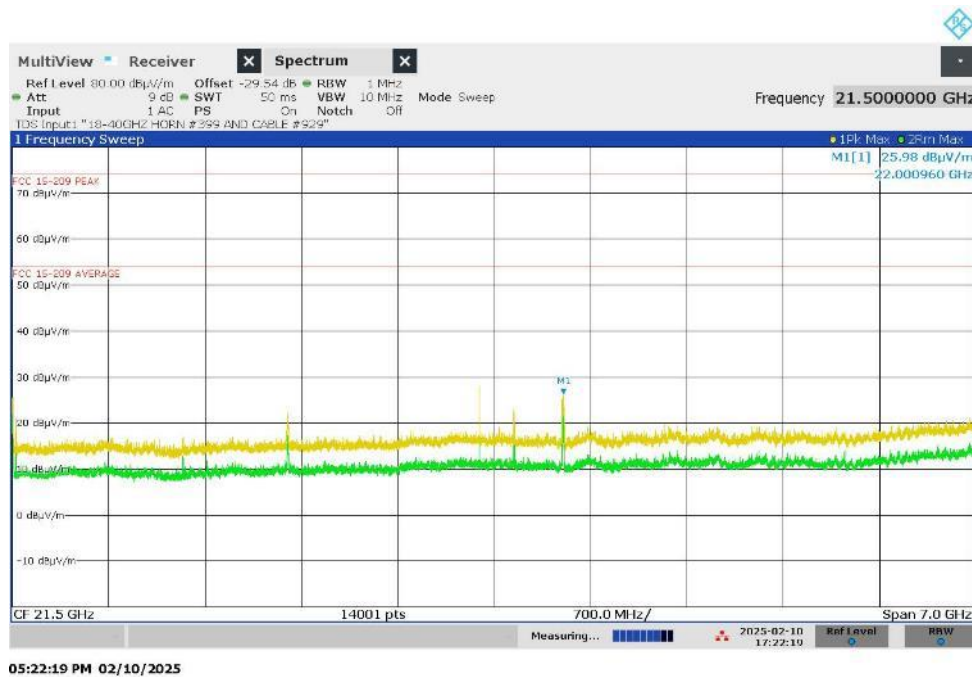
Please refer to EUT Test Configuration #1.

4.4.3 Profile; 18 GHz to 25 GHz, 15.247(d) 2405 MHz, Bottom Channel

Maximum hold trace with peak values (▽)

Maximum hold trace with average values (▼)

18 GHz to 25 GHz



4.4.4 Data; 18 GHz to 25 GHz, 15.247(d) 2405 MHz, Bottom Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	dBμV/m	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
---	---	---	---	---	---	---	---	---	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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).

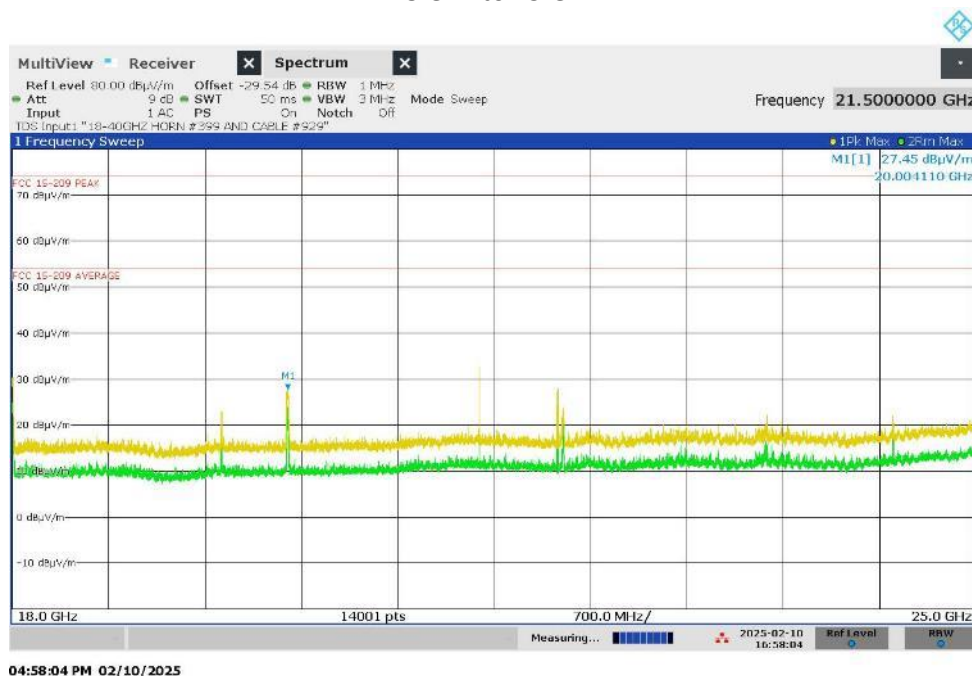
Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

4.4.5 Profile; 18 GHz to 25 GHz, 15.247(d), 2440 MHz, Middle Channel

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)

18 GHz to 25 GHz



4.4.6 Data; 18 GHz to 25 GHz, 15.247(d), 2440 MHz, Middle Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	dBμV/m	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
---	---	---	---	---	---	---	---	---	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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).

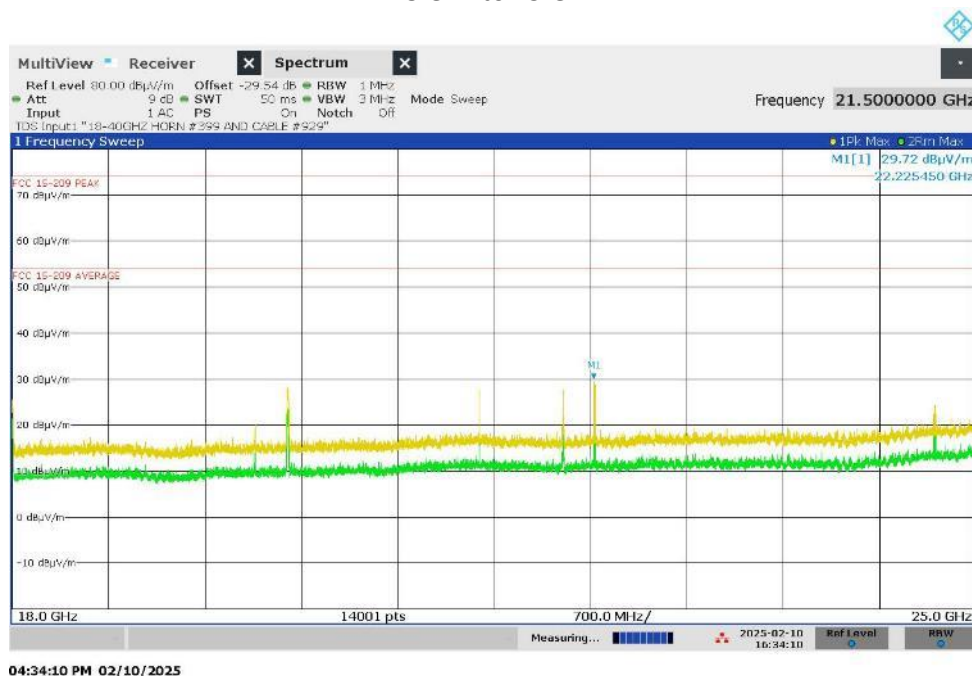
Note: path losses are factored into the limit value, and given by the test standard. Chamber calibration data contributes to the measurement uncertainty figure.

4.4.7 Profile; 18 GHz to 25 GHz, 15.247(d), 2470 MHz, Top Channel

Maximum hold trace with peak values (▼)

Maximum hold trace with average values (▼)

18 GHz to 25 GHz



4.4.8 Data; 18 GHz to 25 GHz, 15.247(d), 2470 MHz, Top Channel

Frequency	Peak	RMS Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBμV/m	dBμV/m	dBμV/m	dB	cm	H/V	Deg	dB/m	Status
---	---	---	---	---	---	---	---	---	Pass

V = Vertical / H = Horizontal

The measurements reported are the highest emissions relative to the FCC/CISPR limits and take into account the correction factor*. Measurements made according to the CISPR test standard and Eurofins E&E UK test procedure RAD-03.

*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.

4.5 Conducted Emissions; Charging Mode

4.5.1 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 0.15 MHz and 30.0 MHz 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 E&E UK test procedure CON-03.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
785	0	Eurofins E&E	Ground plane	Neptune	Ground Plane Work Area	Not Required
126	0	Schaffner	NSG1007	55090	Power source (5kW)	Not Required
162	1	Rohde & Schwarz	ESH3-Z5	829996/003	Single Phase LISN ANSI & CISPR	03/12/2025
482	1	---	Cable BNC	---	Cable BNC	11/02/2026
158	1	Rohde & Schwarz	ESH3-Z2	357881052	Pulse Limiter (BNC)	12/12/2025
699	1	Gauss	TDEMI30M	1506001	Time Domain Conducted Receiver	28/10/2025
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	22.2° Celsius
Relative Humidity	38 %
Atmospheric Pressure	1026.8 millibars
Test Date:	15 th May 2025
Test Engineer:	Graeme Lawler

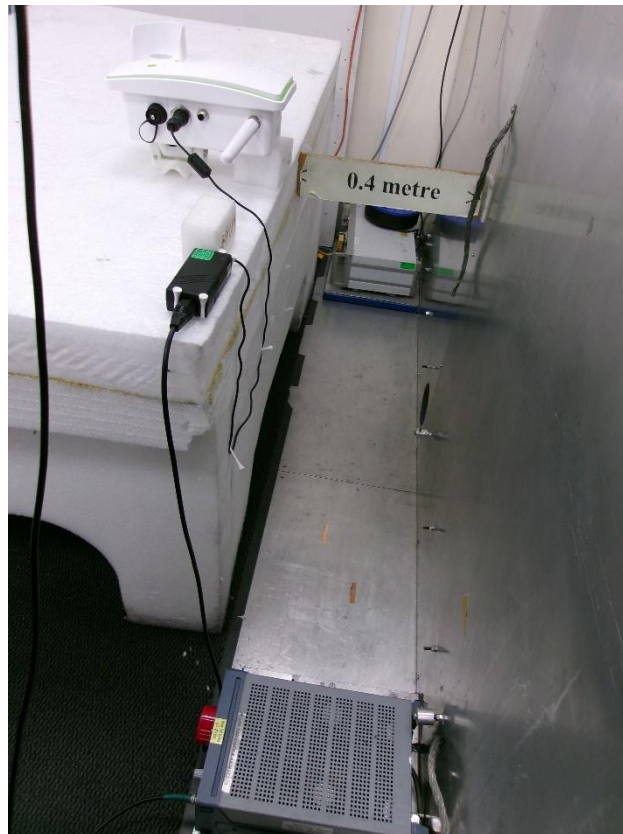
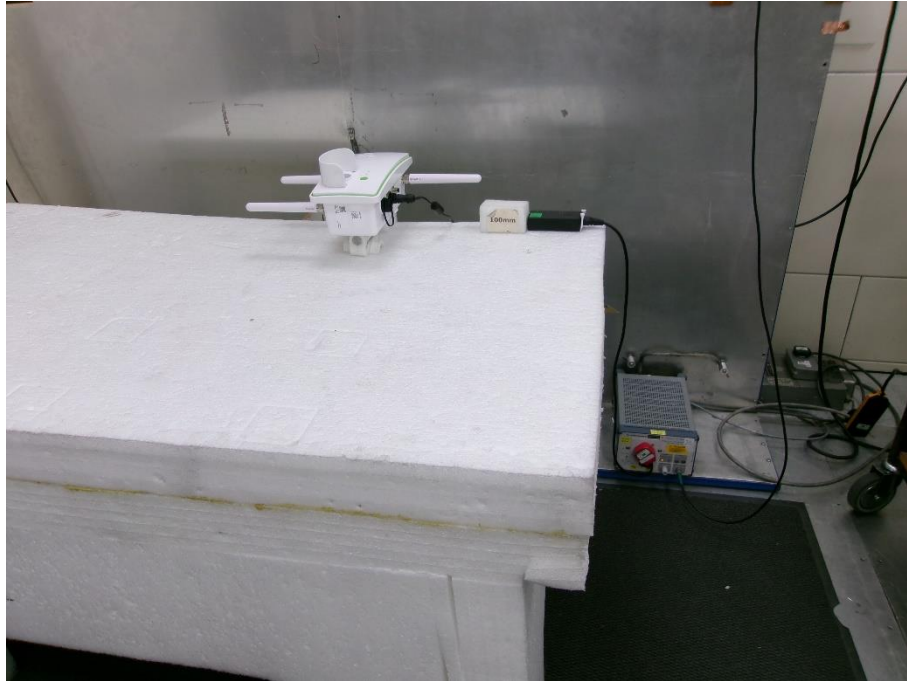
Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for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

4.5.2 Test Configuration

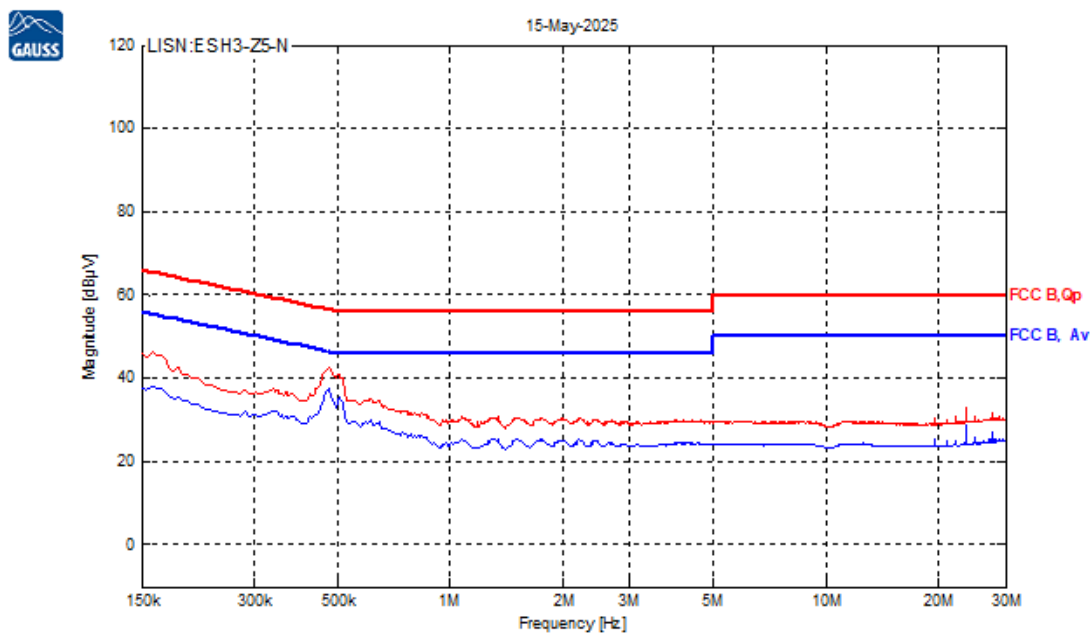
Please refer to EUT Test Configuration #1.

4.5.3 Set-up Photos

Conducted Emissions



4.5.4 Profile; Mains Neutral



4.5.5 Data; Mains Neutral

Quasi-peak value (dBμV)				
Frequency	Measured	Limit	Margin	Status
474.453 kHz	42.54	56.44	13.89	Pass
4.156 MHz	29.94	56.00	26.06	Pass
8.714 MHz	29.63	60.00	30.37	Pass
11.313 MHz	29.64	60.00	30.36	Pass
12.500 MHz	29.60	60.00	30.40	Pass
15.161 MHz	29.15	60.00	30.85	Pass
19.453 MHz	30.45	60.00	29.55	Pass
23.615 MHz	32.92	60.00	27.08	Pass
25.008 MHz	30.87	60.00	29.13	Pass
27.788 MHz	31.76	60.00	28.24	Pass

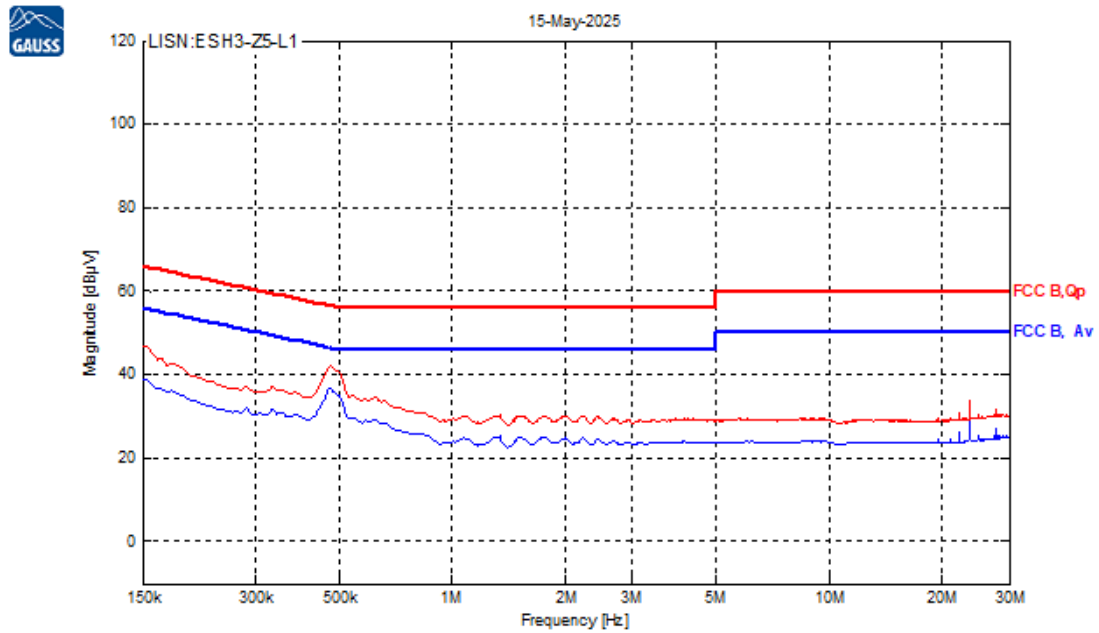
CISPR Average value (dBμV)				
Frequency	Measured	Limit	Margin	Status
474.453 kHz	37.32	46.44	9.12	Pass
4.141 MHz	24.64	46.00	21.36	Pass
8.585 MHz	24.30	50.00	25.70	Pass
11.313 MHz	24.30	50.00	25.70	Pass
12.500 MHz	24.39	50.00	25.61	Pass
15.290 MHz	23.81	50.00	26.19	Pass
19.453 MHz	25.67	50.00	24.33	Pass
23.615 MHz	28.78	50.00	21.22	Pass
25.008 MHz	25.92	50.00	24.08	Pass
27.788 MHz	27.07	50.00	22.93	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).

4.5.6 Profile; Mains Line



4.5.7 Data; Mains Line

Quasi-peak value (dBμV)				
Frequency	Measured	Limit	Margin	Status
474.453 kHz	41.89	56.44	14.55	Pass
4.117 MHz	29.44	56.00	26.56	Pass
8.867 MHz	29.43	60.00	30.57	Pass
9.501 MHz	29.43	60.00	30.57	Pass
12.500 MHz	29.47	60.00	30.53	Pass
15.123 MHz	29.00	60.00	31.00	Pass
20.850 MHz	29.85	60.00	30.15	Pass
23.634 MHz	33.67	60.00	26.33	Pass
25.027 MHz	30.63	60.00	29.37	Pass
27.807 MHz	31.71	60.00	28.29	Pass

CISPR Average value (dBμV)				
Frequency	Measured	Limit	Margin	Status
474.453 kHz	36.71	46.44	9.73	Pass
4.117 MHz	24.07	46.00	21.93	Pass
9.058 MHz	24.12	50.00	25.88	Pass
9.520 MHz	24.14	50.00	25.86	Pass
12.500 MHz	24.21	50.00	25.79	Pass
15.295 MHz	23.74	50.00	26.26	Pass
20.850 MHz	24.74	50.00	25.26	Pass
23.634 MHz	30.30	50.00	19.70	Pass
25.027 MHz	25.55	50.00	24.45	Pass
27.807 MHz	26.91	50.00	23.09	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 99% Occupied Bandwidth

4.6.1 Test Parameters

This testing was performed with the EUT located within a semi-anechoic chamber. No maximisation of the wanted signal is required as relative measurements are performed for bandwidth tests.

Testing was performed in accordance with ANSI C63.10: 2013 Clause 6.9.3.

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

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
750	1	Global	CISPR16	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
No software used for this testing.						

Environmental Test Conditions	
Temperature	21.5° Celsius
Relative Humidity	33 %
Atmospheric Pressure	1026.1 millibars
Test Date:	10 th February 2025
Test Engineer:	Graeme Lawler

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 Set-up Photo

Occupied Bandwidth



4.6.4 Profile; 99% Occupied Bandwidth, 2470MHz, Top Channel



4.6.5 Data; 99% Occupied Bandwidth, 2470MHz, Top Channel

99% Occupied Bandwidth	Result
2.355658 MHz	Pass

4.6.6 Profile; 99% Occupied Bandwidth, 2440MHz, Middle Channel



4.6.7 Data; 99% Occupied Bandwidth, 2440MHz, Middle Channel

99% Occupied Bandwidth	Result
2.3585100 MHz	Pass

4.6.8 Profile; 99% Occupied Bandwidth, 2405MHz, Bottom Channel



4.6.9 Data; 99% Occupied Bandwidth, 2405MHz, Bottom Channel

99% Occupied Bandwidth	Result
2.341721 MHz	Pass

4.7 DTS Bandwidth

4.7.1 Test Parameters

This testing was performed with the EUT located within a semi-anechoic chamber. No maximisation of the wanted signal is required as relative measurements are performed for bandwidth tests.

Testing was performed in accordance with ANSI C63.10: 2013 Clause 11.8.2.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
750	1	Global	CISPR16	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
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	18.7° Celsius	21.5° Celsius
Relative Humidity	37 %	33 %
Atmospheric Pressure	1027.9 millibars	1026.1 millibars
Test Date:	7 th February 2025	10 th February 2025
Test Engineer:	Graeme Lawler	Graeme Lawler

Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK 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

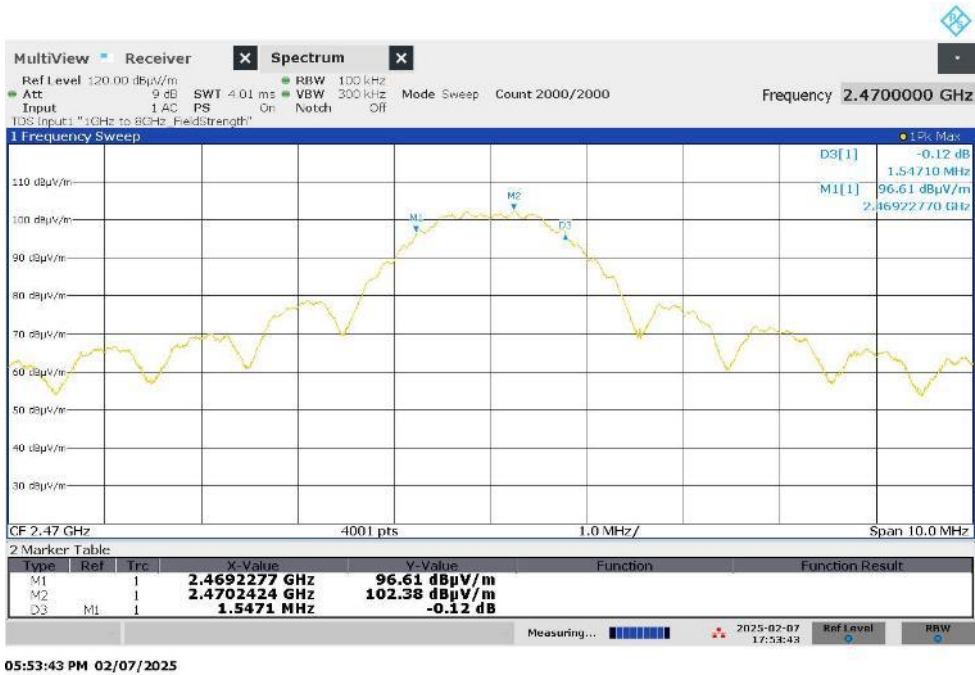
Please refer to EUT Test Configuration #1.

4.7.3 Setup Photo

DTS Bandwidth



4.7.4 Profile; DTS Bandwidth, 2470MHz, Top Channel



4.7.5 Data; DTS Bandwidth, 2470MHz, Top Channel

DTS Bandwidth (MHz)	Requirement	Status
1.547100	> 500 kHz	Pass

4.7.6 Profile; DTS Bandwidth, 2440MHz, Middle Channel



4.7.7 Data; DTS Bandwidth, 2440MHz, Middle Channel

DTS Bandwidth (MHz)	Requirement	Status
1.5696000	> 500 kHz	Pass

4.7.8 Profile; DTS Bandwidth, 2405MHz, Bottom Channel



4.7.9 Data; DTS Bandwidth, 2405MHz, Bottom Channel

Channel	DTS Bandwidth (MHz)	Requirement	Status
Bottom	1.562100	> 500 kHz	Pass

4.8 Maximum Peak Conducted Output Power

4.8.1 Test Parameters

Testing was performed in accordance with ANSI C63.10: 2013 clause 11.9.1.1.

The measurement path loss was entered into the Spectrum Analyser as a positive Reference Level Offset.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
365	1	Rhophase	Cable N_Type	-	Cable N-Type (3m) (18GHz)	17/01/2026
647	1	TFA	Weather Station	Saturn	Weather Station	05/11/2025
456	1	Rohde & Schwarz	ESCI7	1144573407	EMI Test Receiver	04/10/2025
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
No software used for this testing.						

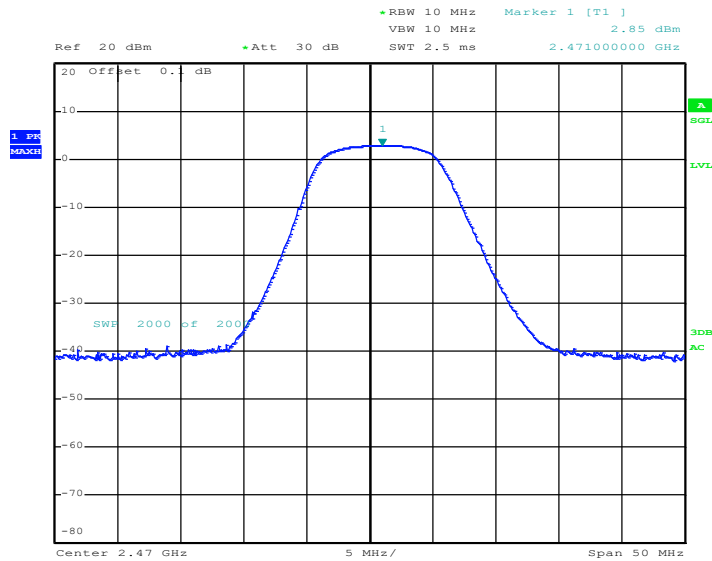
Environmental Test Conditions	
Temperature	21.6° Celsius
Relative Humidity	50 %
Atmospheric Pressure	1029.7 millibars
Test Date:	28 th February 2025
Test Engineer:	Graeme Lawler

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

4.8.2 Test Configuration

Please refer to EUT Test Configuration #1.

4.8.4 Profile; Maximum Peak Conducted Output Power, 2470MHz, Top Channel

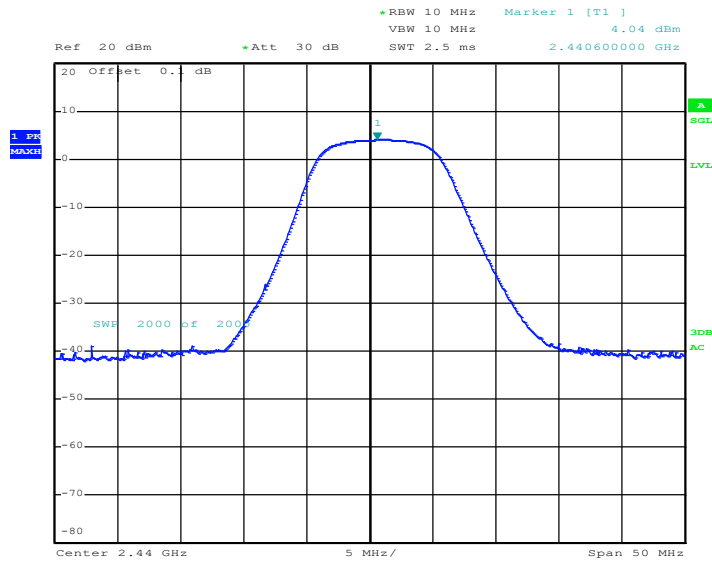


Date: 28.FEB.2025 15:15:09

4.8.5 Data; Maximum Peak Conducted Output Power, 2470MHz, Top Channel

Power (W)	Channel Power (dBm)	Status
0.001928	2.85	Pass

4.8.6 Profile; Maximum Peak Conducted Output Power, 2440MHz, Middle Channel



Date: 28.FEB.2025 15:18:19

4.8.7 Data; Maximum Peak Conducted Output Power, 2440MHz, Middle Channel

Power (W)	Channel Power (dBm)	Status
0.002535	4.04	Pass

4.9 Maximum Peak Power Spectral Density

4.9.1 Test Parameters

This testing was performed with the EUT located within a semi-anechoic chamber.

The Spectrum Analyser was tuned to the wanted signal at a measurement distance of three metres. A 360-degree rotation of the EUT and height search from 1m to 4m was performed to determine the point of maximum wanted signal field strength.

Testing was performed in accordance with ANSI C63.10: 2013 clause 11.10.2.

The spectral density limit specified in FCC 15.247(e) has been converted to field strength in accordance with ANSI C63.10 Annex G.2.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
750	1	Global	CISPR16	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
Test Equipment Software						
#ID	CP	Manufacturer	Type		Description	Calibration Due Date
---	---	---	---	---	---	---

Environmental Test Conditions		
Temperature	18.7° Celsius	21.5° Celsius
Relative Humidity	37 %	33 %
Atmospheric Pressure	1027.9 millibars	1026.1 millibars
Test Date:	7 th February 2025	10 th February 2025
Test Engineer:	Graeme Lawler	Graeme Lawler

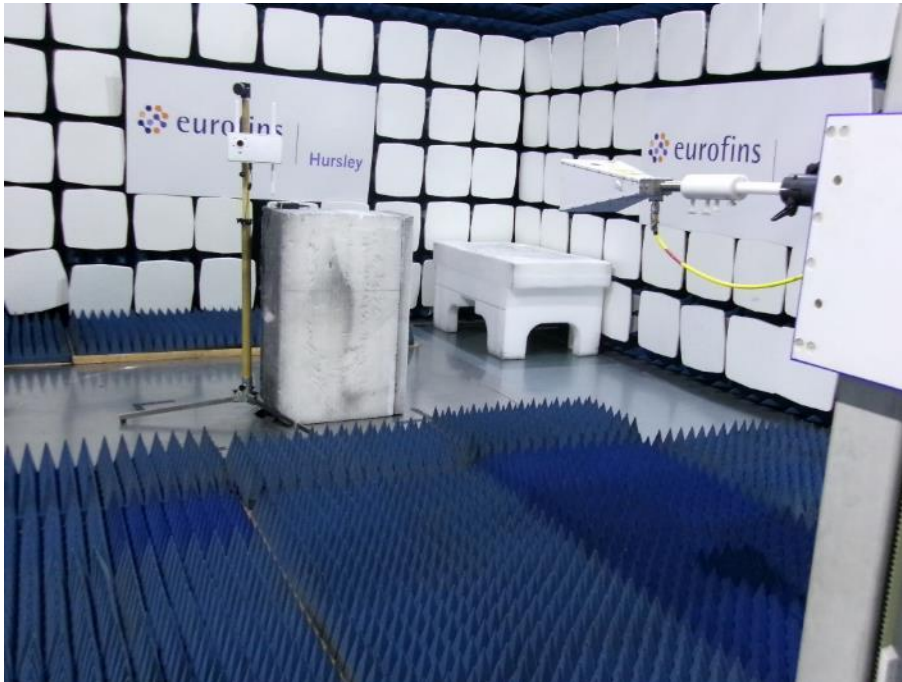
Note: "Calibration due date" means the instrument is certified within UKAS or traceable calibration certificate. "Internal" means the instrument is calibrated using Eurofins E&E UK procedures. "Not required" means the asset does not require calibration. "CP" is the interval period [year] prescribed for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

4.9.2 Test Configuration

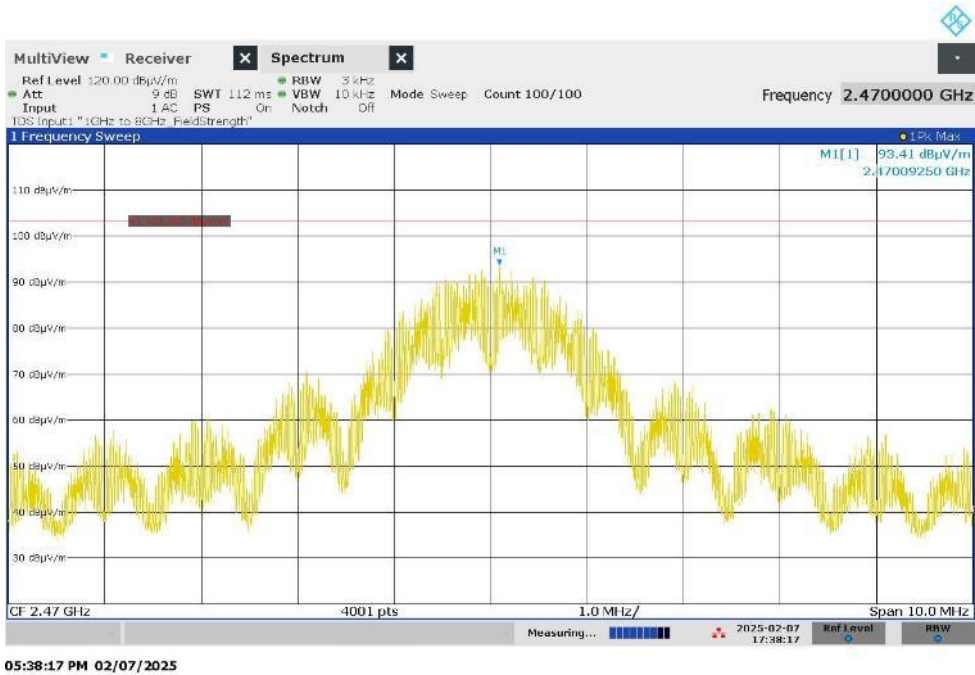
Please refer to EUT Test Configuration #1.

4.9.3 Setup Photo

Maximum Peak Power Spectral Density



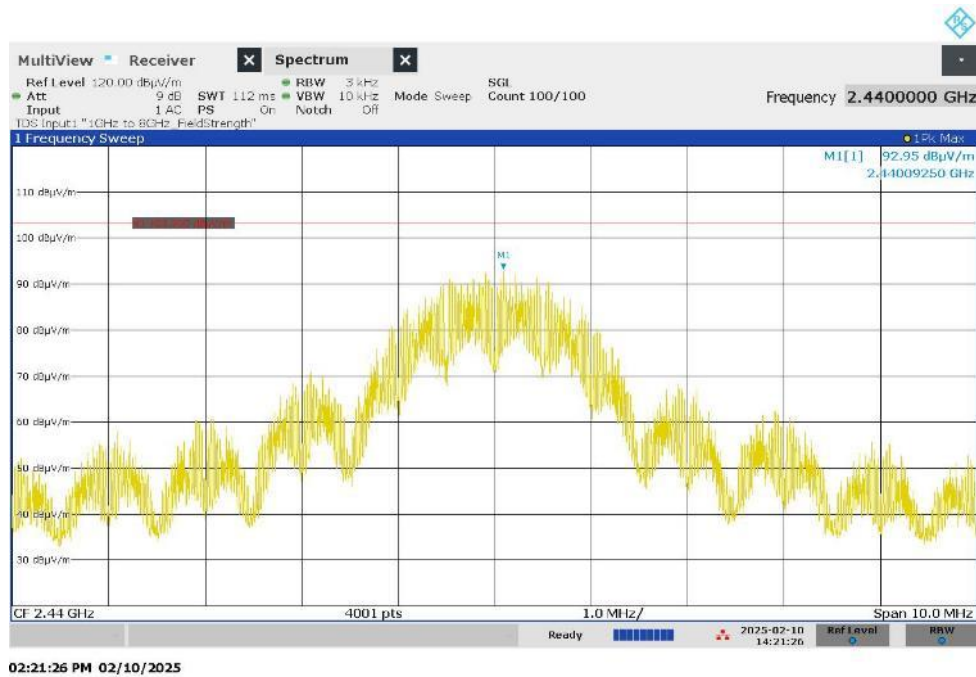
4.9.4 Profile; Maximum Peak Power Spectral Density, 2470MHz, Top Channel



4.9.5 Data; Maximum Peak Power Spectral Density, 2470MHz, Top Channel

Peak Marker reading (dBm)	Limit (dBm/3 kHz)	Status
-1.79	8.00	Pass

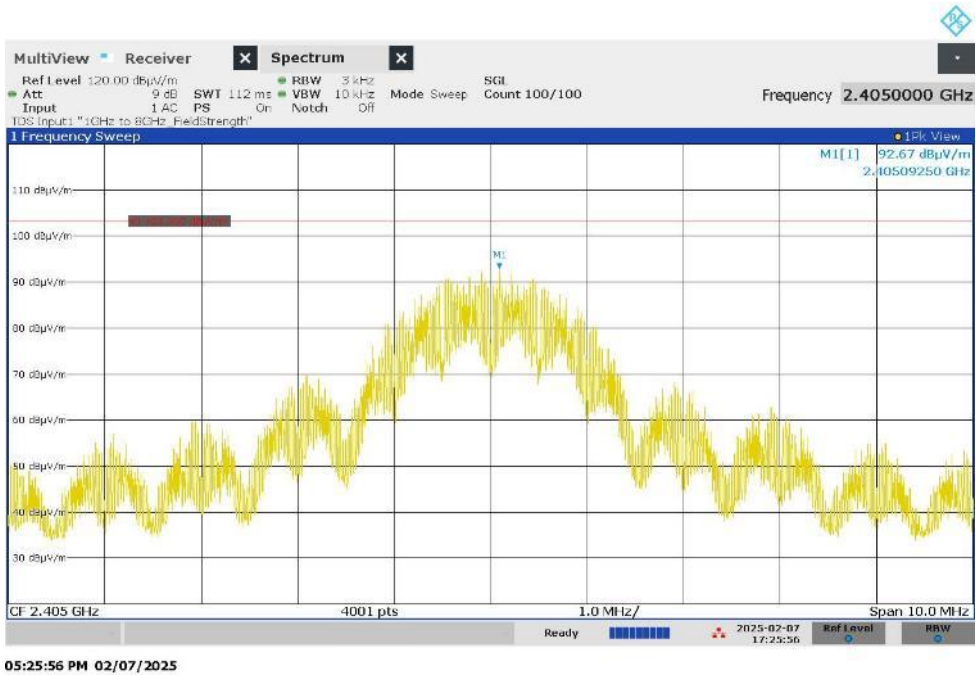
4.9.6 Profile; Maximum Peak Power Spectral Density, 2440MHz, Middle Channel



4.9.7 Data; Maximum Peak Power Spectral Density, 2440MHz, Middle Channel

Peak Marker reading (dBm)	Limit (dBm/3 kHz)	Status
-2.25	8.00	Pass

4.9.8 Profile; Maximum Peak Power Spectral Density, 2405MHz, Bottom Channel



4.9.9 Data; Maximum Peak Power Spectral Density, 2405MHz, Bottom Channel

Peak Marker reading (dBm)	Limit (dBm/3 kHz)	Status
-2.53	8.00	Pass

4.10 Restricted Band Edge

4.10.1 Test Parameters

This testing was performed with the EUT located within the semi-anechoic chamber.

The Spectrum Analyser was tuned to the wanted signal at a measurement distance of three metres. A 360-degree rotation of the EUT and height search from 1m to 4m was performed to determine the point of maximum wanted signal field strength.

Testing was performed in accordance with ANSI C63.10: 2013 clause 6.10.5.

The duty cycle of the wanted signal was found to be greater than 98% therefore average measurements were performed in accordance with ANSI C63.10 clause 11.12.2.5.1.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
750	1	Global	CISPR16	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
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	18.7° Celsius	21.5° Celsius
Relative Humidity	37 %	33 %
Atmospheric Pressure	1027.9 millibars	1026.1 millibars
Test Date:	7 th February 2025	10 th February 2025
Test Engineer:	Graeme Lawler	Graeme Lawler

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

4.10.2 Test Configuration

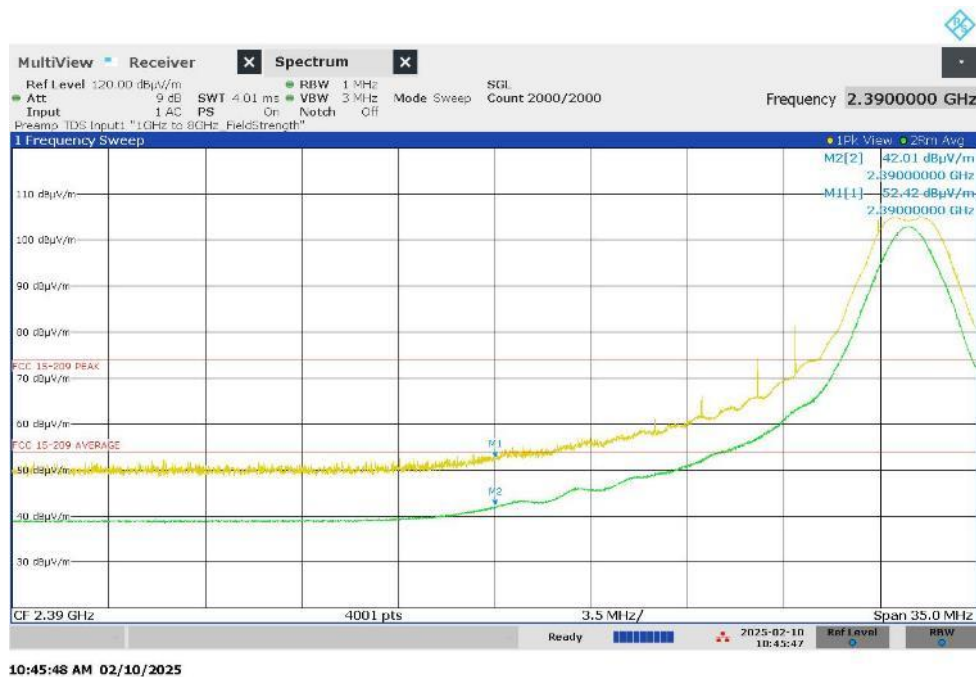
Please refer to EUT Test Configuration #1.

4.10.3 Set-up Photo

Restricted Band Edge



4.10.4 Profile; Restricted Band Edge, 2405MHz, Bottom Channel

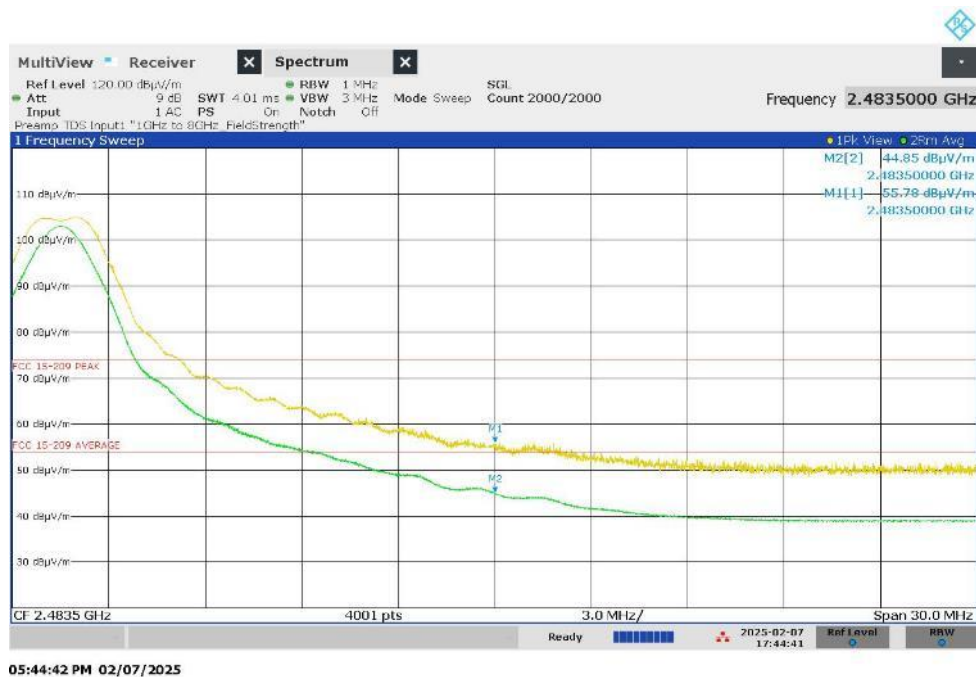


4.10.5 Data; Restricted Band Edge, 2405MHz, Bottom Channel

Band Edge Frequency MHz	Detector	Average Level Recorded on Plot dBuV/m	DCCF*	Corrected Average Level dBuV/m	Result dBuV/m	Limit dBuV/m	Margin dB	Result
2390	Peak	N/A	N/A	N/A	52.42	74.0	21.58	Pass
2390	RMS	42.01	N/A	N/A	42.01	54.0	11.99	Pass

*For DTS devices where the Fundamental Duty Cycle (D) <98%, a Duty Cycle Correction Factor (DCCF) has been determined i.a.w ANSI C63.10: 2013 clause 11.12.2.5.2 i) 1) and added to the average level recorded on the profile plot. This final value is recorded in the result column in the above table.

4.10.6 Profile; Restricted Band Edge, 2470MHz, Top Channel



4.10.7 Data; Restricted Band Edge, 2470MHz, Top Channel

Band Edge Frequency MHz	Detector	Average Level Recorded on Plot dBuV/m	DCCF*	Corrected Average Level dBuV/m	Result dBuV/m	Limit dBuV/m	Margin dB	Result
2483.5	Peak	N/A	N/A	N/A	55.78	74.0	18.22	Pass
2483.5	RMS	44.85	N/A	N/A	44.85	54.0	9.15	Pass

*For DTS devices where the Fundamental Duty Cycle (D) <98%, a Duty Cycle Correction Factor (DCCF) has been determined i.a.w ANSI C63.10 clause 11.12.2.5.2 i) 1) and added to the average level recorded on the profile plot. This final value is recorded in the result column in the above table.

4.11 Authorised Band Edge

4.11.1 Test Parameters

This testing was performed with the EUT located within the semi-anechoic chamber.

The Spectrum Analyser was tuned to the wanted signal at a measurement distance of three metres. A 360-degree rotation of the EUT and height search from 1m to 4m was performed to determine the point of maximum wanted signal field strength.

Testing was performed in accordance with ANSI C63.10: 2013 clause 6.10.4.

Test Equipment						
#ID	CP	Manufacturer	Type	Serial Number	Description	Calibration Due Date
750	1	Global	CISPR16	-	11 x 7 x 6.2m, Chamber (Jupiter)	20/12/2025
788	1	Rohde & Schwarz	ESW44	101799	EMI Test Receiver (44GHz)	05/09/2025
877	1	Huber & Suhner	SUCOTEST_18A	602608/18A	ST_18A/Nm/Nm (3m)	08/11/2025
466	3	Schwarzbeck	BBHA9120B	571	Horn Antenna (1GHz - 10GHz)	04/08/2025
644	1	Intelliconnect	Cable SMA to N-Type	15072	SMA to N-Type Cable 10m	16/04/2025
652	1	TFA	Weather Station	Jupiter	Weather Station	05/11/2025
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	18.7° Celsius	21.5° Celsius
Relative Humidity	37 %	33 %
Atmospheric Pressure	1027.9 millibars	1026.1 millibars
Test Date:	7 th February 2025	10 th February 2025
Test Engineer:	Graeme Lawler	Graeme Lawler

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

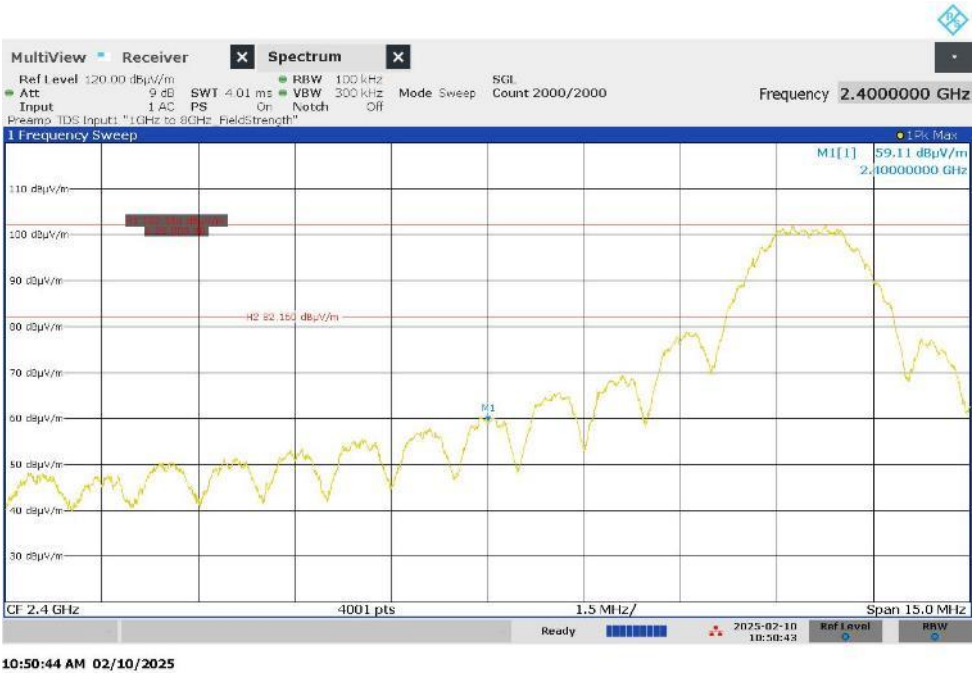
4.11.2 Test Configuration

Please refer to EUT Test Configuration #1.

4.11.3 Setup Photo



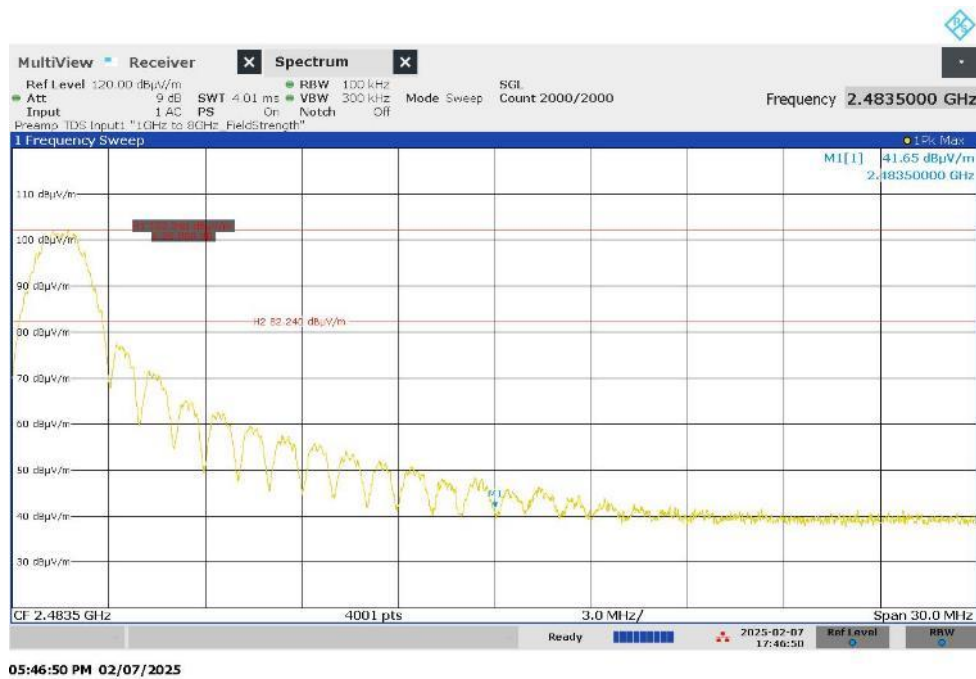
4.11.4 Profile; Authorised Band Edge, 2405MHz, Bottom Channel



4.11.5 Data; Authorised Band Edge, 2405MHz, Bottom Channel

Band Edge Frequency MHz	Detector	Result dBuV/m	Limit dBuV/m	Margin dB	Result
2400	Peak	59.11	82.16	23.05	Pass

4.11.6 Profile; Authorised Band Edge, 2470MHz, Top Channel



4.11.7 Data; Authorised Band Edge, 2470MHz, Top Channel

Band Edge Frequency MHz	Detector	Result dBuV/m	Limit dBuV/m	Margin dB	Result
2400	Peak	41.65	82.24	40.59	Pass

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_{lab}) are equal to or are less than the expected uncertainty values contained in CISPR 16-4-2 (known as U_{cispr}).

Below is a list of the laboratories calculated measurement uncertainties:

Conducted emissions:

Via AMN/USN:	±3.27 dB (9 kHz – 150 kHz), ±3.27 dB (150 kHz – 30 MHz)
Via AAN/ISN:	±5.00 dB (150 kHz – 30 MHz)
Via CVP:	±3.47 dB (150 kHz – 30 MHz)
Via CP:	±2.69 dB (150 kHz – 30 MHz)
Via 100 Ω:	±2.68 dB (150 kHz – 30 MHz)
Clicks:	±2.79 dB (150 kHz – 30 MHz)
Harmonics:	±1.50 % (100 Hz – 2 kHz)
Flicker:	±1.24 % (worst case for all parameters)

Radiated emissions:

H-Field:	±2.84 dB (9 kHz – 3 MHz), ±2.92 dB (3 MHz – 30 MHz)
D = 3.0 m (Horizontal):	±4.02 dB (30 MHz – 1 GHz SAC), ±3.82 dB (30 MHz – 1 GHz FAC)
D = 3.0 m (Vertical):	±3.92 dB (30 MHz – 1 GHz SAC), ±3.82 dB (30 MHz – 1 GHz FAC)
D = 3.0 m:	±5.04 dB (1 GHz – 6 GHz SAC), ±5.16 dB (1 GHz – 10 GHz SAC), ±3.64 dB (10 GHz – 18 GHz SAC), ±3.15 dB (18 GHz – 40 GHz SAC), ±3.05 dB (1 GHz – 6 GHz FAC)

Radiated spurious emissions (RSE): ±1.71 dB (30 MHz – 1 GHz), ±1.81 dB (1 – 12.75 GHz),
±2.07 dB (12.75 – 18 GHz)

Conducted RF Measurements:

±3.11 dB (30 MHz – 40 GHz)

Immunity Tests

Radiated Fields in Close Proximity (EN 61000-4-39): ±1.93 dB (30 kHz & 134.2 kHz)

Radiated Fields in Close Proximity (EN 61000-4-39): ± 2.02 dB (13.56 MHz)

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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