EMC TEST REPORT
No. 2439 FR

Issue#2: 30th March 2021

FCC Test Report

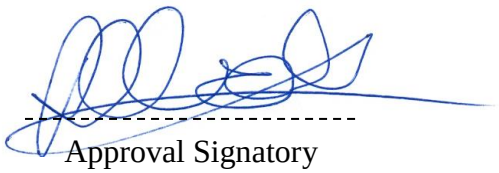
for

Mysteryvibe Limited

MysteryVibe
Model: Remote

FCC ID: 2AHVA-6905

Project Engineer: R. Pennell



Approval Signatory

Approved signatories: A. R. Coombes ☑ D. Tiroke ☐

The above named are authorised Eurofins Hursley signatories.

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Document History:
Issue#1: 10th February 2021 was withdrawn and replaced by Issue#2: 30th March 2021 updated with editorial corrections.

1.0 DECLARATION

1.1 FCC Part 15B and 15C Declaration Statement

The Equipment Under Test (EUT), as described and reported within this document, complies with the selected sections of part 15B and 15C of the CFR 47:2017 FCC rules. The equipment complies with 15.107 and 15.109 of the CFR 47 FCC rules in accordance with ANSI C63.4-2014. The equipment complies with 15.205, 15.209 and 15.247 of the CFR 47 FCC rules in accordance with ANSI C63.10-2013.

- CONDUCTED EMISSIONS - Power Line, from 0.15 MHz to 30.0 MHz
- RADIATED EMISSIONS - Airborne, from 30 MHz to 25 GHz

The highest internal operating frequency declared by the manufacturer is a clock rate of 2480 MHz in Bluetooth radio.

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 relevant electromagnetic requirements necessary for compliance.

Eurofins Hursley is recognised by the Federal Communications Commissions (FCC) as an EMI laboratory, outside of the USA, for the measurement of radiated emissions at three metres.

1.2 Product Modifications

None to sample submitted.

1.3 EMC Test Lab Reference

Eurofins Hursley file: 2439 & 2672.
Sulis test plan ref: SC_MV_TP03_A.

1.4 EUT Manufacturer

Trade name:	Mysteryvibe Limited
Company name:	Mysteryvibe Limited
Company address:	Wework 10 York Road London SE1 7ND United Kingdom
Manufacturing address:	As above.
Test commissioned by:	Mr Charlie Blackham (Sulis Consultants)

2.0 EUT DESCRIPTION

2.1 Identity

Product (EUT): MysteryVibe
Model: Remote
Serial numbers: MVR2012000002 (Conducted measurements)
MVR2012000006 (Radiated measurements)

Product build level: Production sample

Product power: Internal battery and charger

2.2 EUT Description

The EUT is a remote control for a personal vibrator toy.

The device operates inside the 2400 – 2483.5 MHz band:

- 79 channels with centre frequencies on 1 MHz spacing from 2402 to 2480 MHz inclusive
- The device includes a rechargeable LiIon battery.
- The product is designed for portable use but the radio does operate whilst the device is being charged

The following test frequencies were used to cover the full band of operation of the device:

Test mode	Description
2402	Continuous transmit on 2402 MHz
2440	Continuous transmit on 2440 MHz
2480	Continuous transmit on 2480 MHz

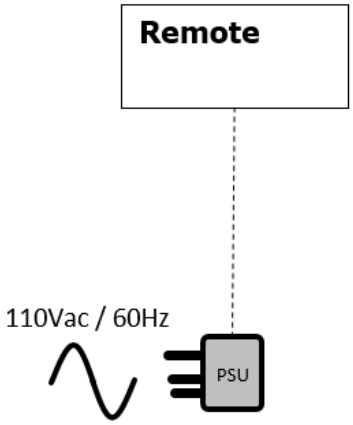
2.3 EUT Support Equipment

No support equipment.

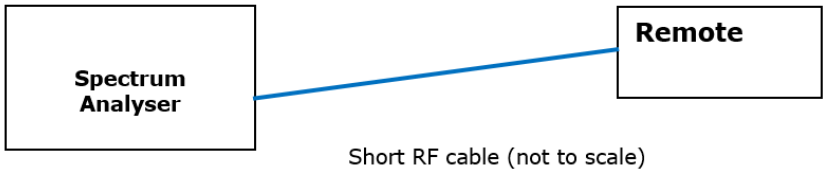
2.4 EUT Test Exerciser

The EUT was put into test mode which was used to select one of three radio channels, Bottom 2402 MHz, Middle 2440 MHz and Top 2480 MHz each with modulation. Each different radio channel was tested in different orientations, i.e. flat, side and vertical.

2.5 EUT Test Configurations



Test configuration for radiated measurements



Test Configuration for conducted measurements

2.6 Supported Antennas

The EUT supports operation with the following antennas:

Antenna type	Type	Gain
Internal	Integral PCB trace	4.33 dBi

EUT Antenna configurations

Note: USB cable and charger only fitted for FCC part 15B measurements.

3.0 MEASUREMENT PROCEDURE AND INSTRUMENTATION

3.1 EMI Site Address & Test Date

EMI Company Offices:	Eurofins Hursley Trafalgar House, Trafalgar Close, Chandlers Ford, Hampshire
Test Dates:	4th and 5th January 2021
Designation Number:	UK2006
Test Firm Registration:	458658

3.2 General Operating Conditions

Testing was performed according to the procedures in ANSI C63.4-2014 and ANSI C63.10-2013.

Final radiated testing was performed at a EUT to antenna distance of three metres in a FCC registered chamber measurement facility.

3.3 Environmental Ambient

Temperature	13.2 to 19.1°Celsius
Relative Humidity	35 to 49%
Atmospheric Pressure	1020.3 to 1020.7 millibars

4.0 CONDUCTED EMISSIONS

Test Configuration

A filtered 110V/60Hz supply was fed to the EUT via a 50Ω/50µH Line Impedance Stabilisation Network (LISN). The LISN was directly bonded to a conductive ground plane.

Test Measurement

The worst-case emissions were identified on both the neutral and phase(s) with a spectrum analyser set to scan from 0.15 MHz to 30.0 MHz.

The worst-case peaks were then identified and measured using an RF receiver using a quasi-peak detector and compared to the frequency range and limits of CISPR 22 as specified by ANSI C63.4-2014.

The worst-case results are presented in this report.

Test instrumentation used in the conducted test was as follows:

#ID	CP	Manufacturer	Type	Serial Nø	Description	Calibration due date
699	2	Gauss	TDEMI30M	1506001	Time Domain Conducted Receiver	12/09/2021
674	1	Rohde & Schwarz	ESH3-Z5	838576-018	1 phase LISN ANSI&CISPR	15/09/2021
252	1	Rohde & Schwarz	ESH 3 Z2	08970	10dB pulse limiter	25/05/2021
285	1	Huber+Suhner	BNC Cable	0	Cable	Internal
785	0	EH	Ground plane area	0	0	Not Required

CP = Interval period [year] prescribed for external calibrations

Note: 'Calibration due date' means that the instrument is certified with a UKAS or traceable calibration certificate.
'Internal' means internally calibrated using Eurofins Hursley procedures
'Not required' means the asset does not require calibration

4.1 EMC Test Software

The following table shows the current EMC test equipment software used by Eurofins Hursley:

ID	Manufacturer	Description
856	Rohde & Schwarz	EMC32 Version 10.50.10
857	Gauss	TDMI 30 Version 5.00
858	Ametek	Compliance 5 Immunity Version 5.26.48
859	EMC Partner	HARCS Version 4.22
860	Frankonia	Hurbert IEC1000-4-6 Version 1.3.0
861	Schaffner	Win 2110 Version 1.27.0.3
862	EMC Partner	TEMA3000 Version 4.4.2
863	EFH	ProfilaMil Version 2.8.1
864	AFJ	CL55C Version 1.00

4.2 Conducted Emissions

A filtered supply was fed to the EUT via a 50 Ω 50 µH 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 CISPR Class B limits. Measurements made according to the FFC Rules and Eurofins Hursley test procedure CON-02.

4.2.1 Data; Mains Neutral

Quasi-peak value (dBµV)				
Frequency	Measured	Limit	Margin	Status
503.063 kHz	35.16	56.00	20.84	Pass
9.978 MHz	27.73	60.00	32.27	Pass
12.500 MHz	28.73	60.00	31.27	Pass
19.939 MHz	28.04	60.00	31.96	Pass
24.998 MHz	29.11	60.00	30.89	Pass
29.685 MHz	29.18	60.00	30.82	Pass

Average value (dBµV)				
Frequency	Measured	Limit	Margin	Status
503.063 kHz	29.84	46.00	16.16	Pass
10.011 MHz	22.43	50.00	27.57	Pass
12.500 MHz	23.55	50.00	26.45	Pass
19.867 MHz	22.71	50.00	27.29	Pass
24.998 MHz	23.91	50.00	26.09	Pass
29.953 MHz	23.91	50.00	26.09	Pass

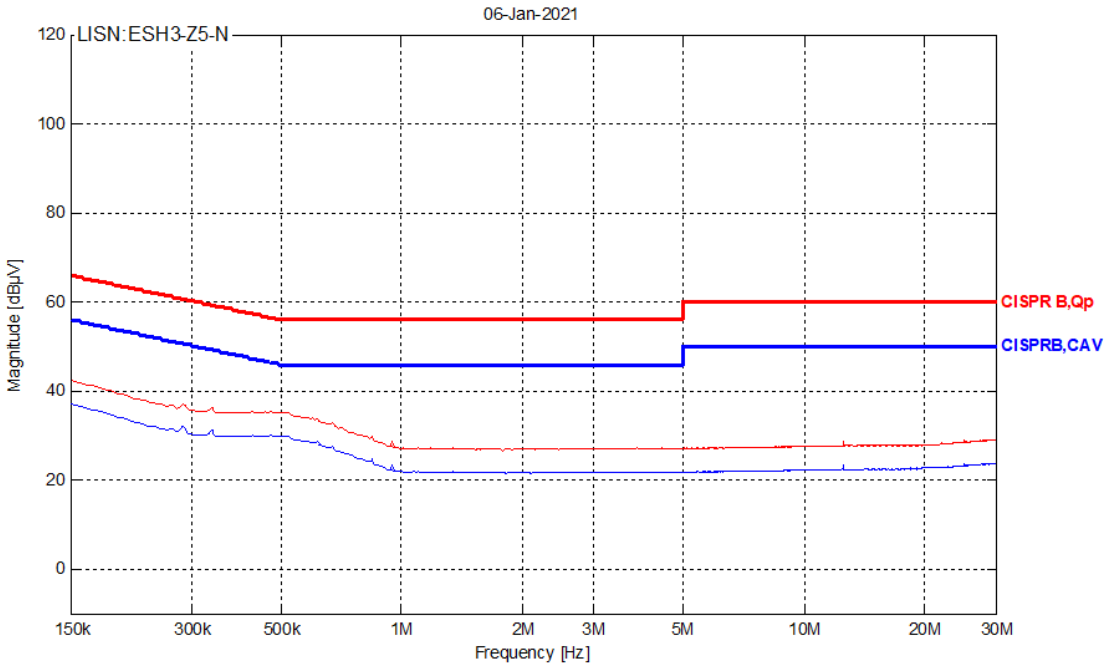
4.2.2 Data; Mains Line

Quasi-peak value (dBµV)				
Frequency	Measured	Limit	Margin	Status
503.063 kHz	35.15	56.00	20.85	Pass
9.992 MHz	27.77	60.00	32.23	Pass
12.500 MHz	28.72	60.00	31.28	Pass
18.260 MHz	28.16	60.00	31.84	Pass
24.998 MHz	29.08	60.00	30.92	Pass
29.671 MHz	29.21	60.00	30.79	Pass

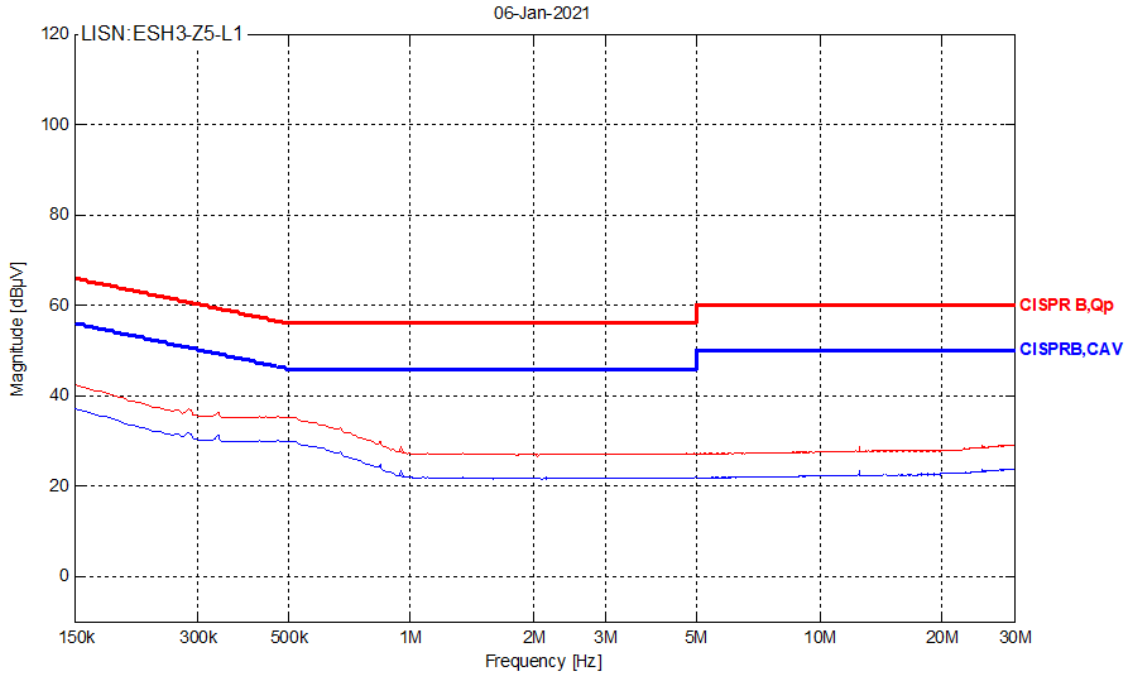
Average value (dBµV)				
Frequency	Measured	Limit	Margin	Status
503.063 kHz	29.86	46.00	16.14	Pass
9.902 MHz	22.47	50.00	27.53	Pass
12.500 MHz	23.61	50.00	26.39	Pass
18.752 MHz	22.73	50.00	27.27	Pass
24.998 MHz	23.82	50.00	26.18	Pass
29.709 MHz	23.86	50.00	26.14	Pass

4.2.3 Profiles;

Shown here is the mains-neutral plot.



Shown here is the mains-line plot.



5.0 RADIATED EMISSIONS

Initial Scan

Radiated profile scans were taken on eight azimuths between 30.0 MHz and 25.0 GHz in both the vertical and horizontal polarities of the antennae in a semi-anechoic chamber. The worst case resulting data obtained from these scans was used to determine subsequent measurement for final measurement evaluation.

Final Measurements

The EUT was then measured at three metres in the chamber using the pre-scan results as a guide. Emissions from the EUT were maximised by revolving the system on the turntable and moving the antennae in height and azimuth. Cable and system component positions had been investigated for maximum emissions, and the system under test represented the worst-case configuration. The EUT was tested in 3 axis and the highest values obtained are presented in this report.

The instrumentation used in the CISPR 16-1-4 compliant semi-anechoic chamber was as below:

#ID	CP	Manufacturer	Type	Serial Nø	Description	Calibration due date
021	1	Rohde & Schwarz	ESIB	100192	Test receiver (40GHz)	12/08/2021
250	1	HP	8449B	3008A01077	Pre-amplifier (1.0-26.5GHz)	26/02/2021
456	1	Rohde & Schwarz	ESCI7	1144573407	EMI Test Receiver	26/08/2021
466	3	Schwarzbeck	BBHA 9120 571	571	1-10GHz Horn	28/02/2022
676	3	Schwarzbeck	BBHA 9120 C	576	2-18GHz Horn	17/08/2021
750	1	Global	CISPR16 chamber	1	11 x 7 x 6.2m	11/11/2021
761	3	Schwarzbeck	VULB9162	128	Trilog Broadband Antenna 30-7000MHz	02/03/2023
761a	3	Schwarzbeck	DGA 9552N	0	6dB attenuator for #761	02/03/2023
779	3	Steatite	QWH-SL-18-40-K-SG	17504	18-40GHz wideband horn antenna	11/05/2021

CP = Interval period [year] prescribed for external calibrations

Note: 'Calibration due date' means that the instrument is certified with a UKAS or traceable calibration certificate.
'Internal' means internally calibrated using Eurofins Hursley procedures
'Not required' means the asset does not require calibration

5.1 EMC Test Software

The following table shows the current EMC test equipment software used by Eurofins Hursley:

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859	EMC Partner	HARCS Version 4.22
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861	Schaffner	Win 2110 Version 1.27.0.3
862	EMC Partner	TEMA3000 Version 4.4.2
863	EFH	ProfilaMil Version 2.8.1
864	AFJ	CL55C Version 1.00

5.2 Radiated Emissions; 30 to 1000 MHz

Radiated emissions pre-scan profile measurements were taken at a distance of three metres on eight azimuths of the EUT in both horizontal and vertical antenna polarities in a semi-anechoic chamber for FCC measurements.

Using the pre-scan results as a guide, each emission from the EUT was maximised. Measurements were carried out a distance of three metres in a CISPR 16-1-4 compliant semi-anechoic chamber. Cable positions were then finally adjusted to produce the maximum emission levels. The EUT was tested in 3 axis and the worst-case results are shown below.

The measurements were taken at a distance of three metres.

5.2.1 Data; Orientation 1 (Back), Bottom Channel with Charger

Emission frequency	Measured quasi-peak value	Class B specified quasi-peak limit	Pass Margin	Antenna polarity	Antenna height	Turntable azimuth	
MHz	dBµV/m	dBµV/m	dB	H/V	cm	deg	Status
38.245000	26.06	40.00	13.94	V	368.0	150.0	Pass
110.873750	25.73	43.50	17.77	H	167.0	39.0	Pass
405.026250	29.69	46.00	16.31	H	349.0	62.0	Pass
407.451250	29.65	46.00	16.35	V	229.0	117.0	Pass
612.242500	35.06	46.00	10.94	V	385.0	97.0	Pass
973.810000	40.18	54.00	13.82	H	394.0	45.0	Pass

V = Vertical / H = Horizontal

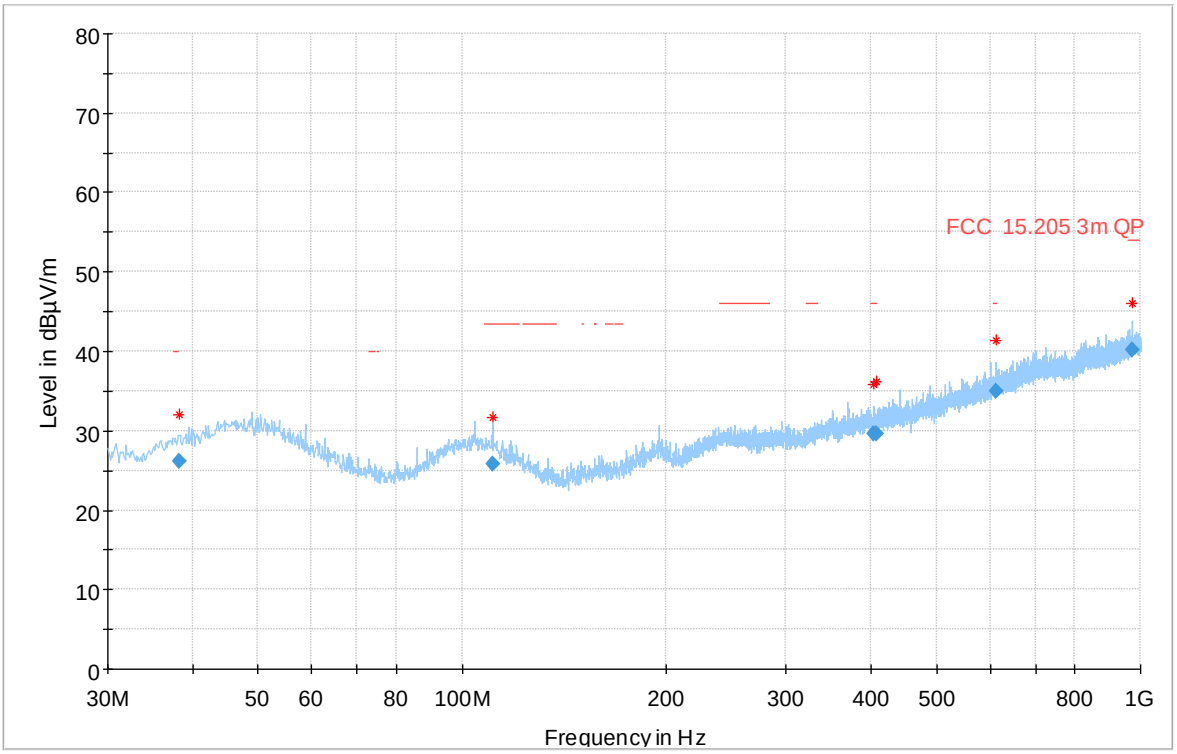
The emission measurements taken were relative to the FCC Class B limit and take into account the antenna and cable loss factors.

TEST ENGINEER: Richard Pennell

5.2.2 Profile; Orientation 1 (Back), Bottom Channel with Charger

Max hold trace with quasi-peak values (◆)

Peak measurements are shown in red (✳)



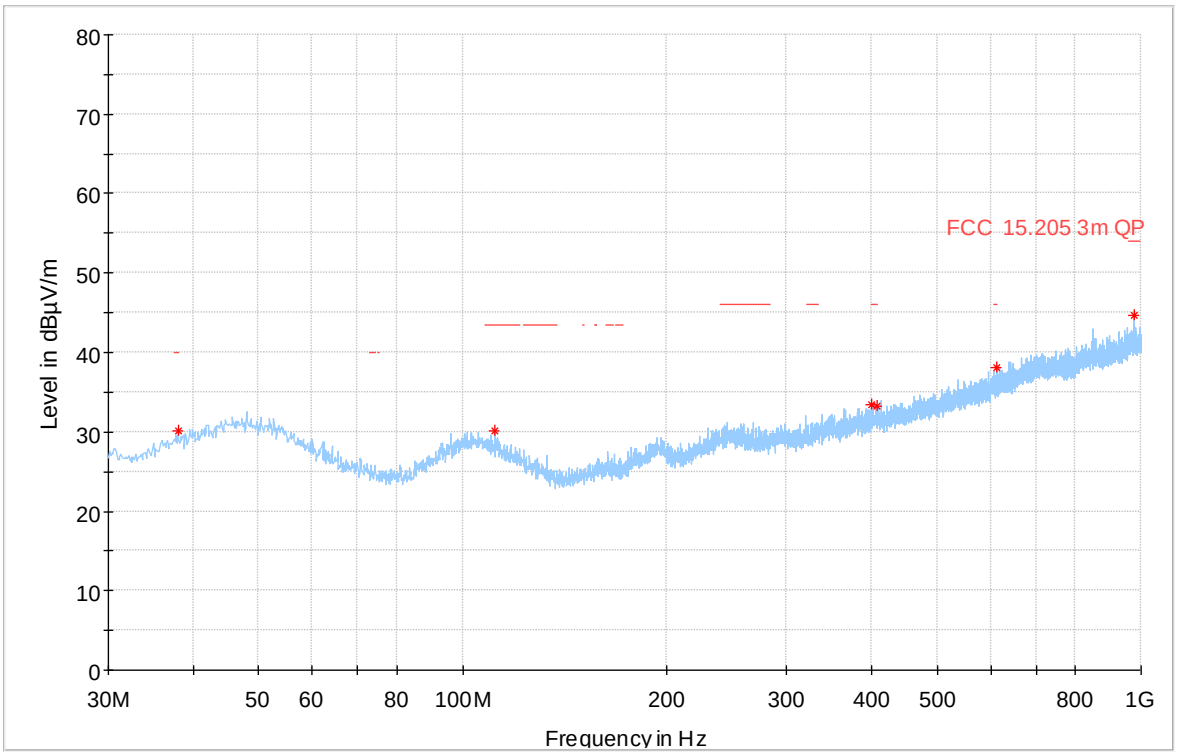
5.2.3 Data; Orientation 1 (Back), Bottom Channel 2402 MHz

Emission frequency	Measured quasi-peak value	Class B specified quasi-peak limit	Pass Margin	Antenna polarity	Antenna height	Turntable azimuth	
MHz	dBµV/m	dBµV/m	dB	H/V	m	deg	Status
No significant peaks found within the specified limit. There were no frequencies found within the laboratory's ±12dB criterion and so no further measurements were necessary.							Pass

V = Vertical / H = Horizontal

5.2.4 Profile; Orientation 1 (Back), Bottom Channel 2402 MHz

Peak measurements are shown in red (✳)



TEST ENGINEER: Richard Pennell

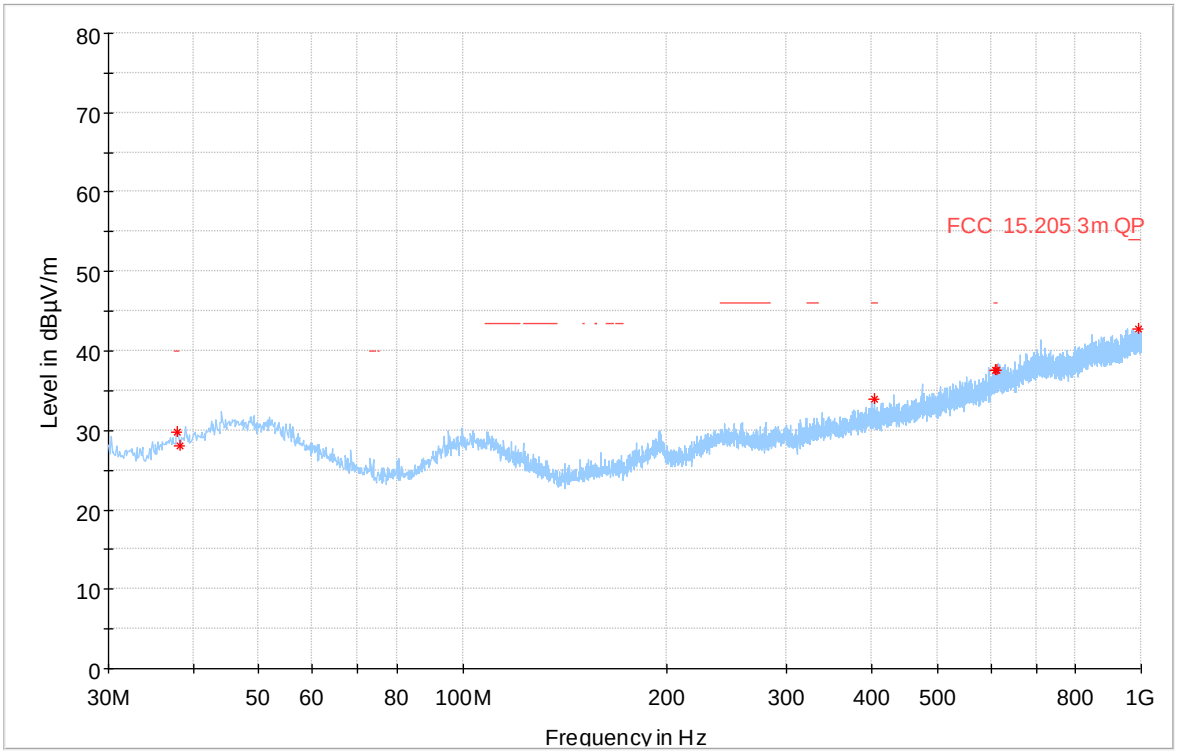
5.2.5 Data; Orientation 2 (Side), Middle Channel 2440 MHz

Emission frequency	Measured quasi-peak value	Class B specified quasi-peak limit	Pass Margin	Antenna polarity	Antenna height	Turntable azimuth	
MHz	dBµV/m	dBµV/m	dB	H/V	m	deg	Status
No significant peaks found within the specified limit. There were no frequencies found within the laboratory's ±12dB criterion and so no further measurements were necessary.							Pass

V = Vertical / H = Horizontal

5.2.6 Profile; Orientation 2 (Side), Middle Channel 2440 MHz

Peak measurements are shown in red (✳)



TEST ENGINEER: Richard Pennell

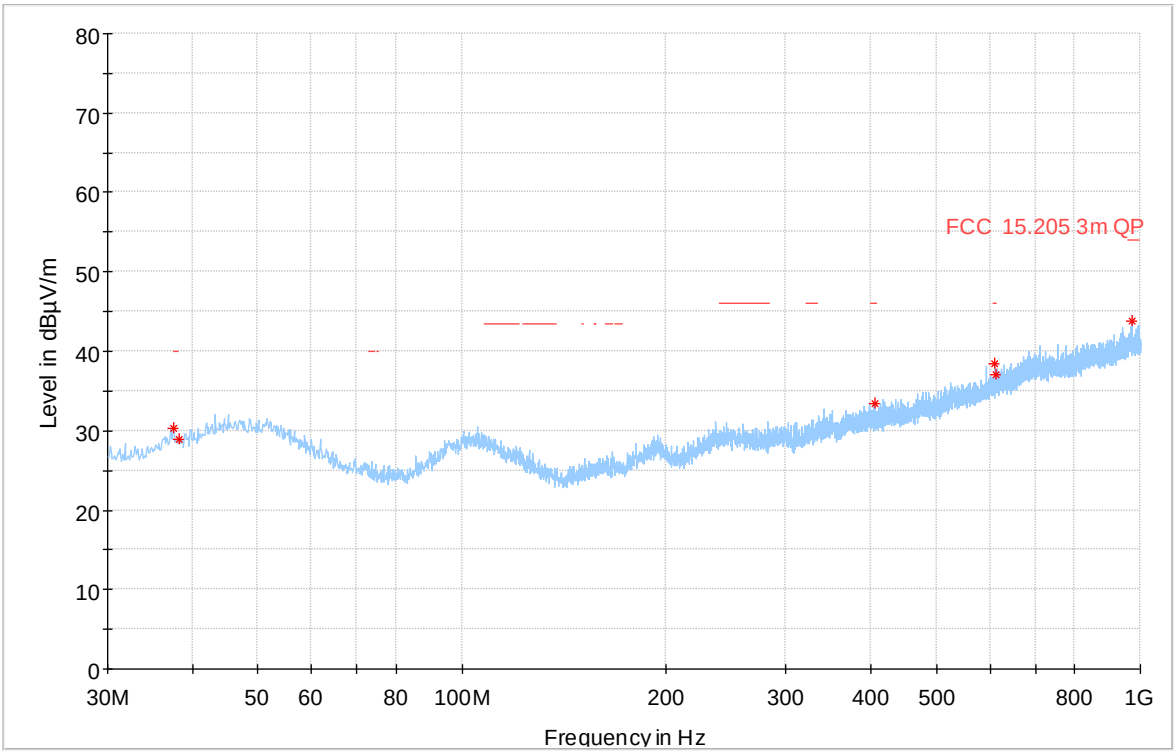
5.2.7 Data; Orientation 3 (Base), Top Channel 2480 MHz

Emission frequency	Measured quasi-peak value	Class B specified quasi-peak limit	Pass Margin	Antenna polarity	Antenna height	Turntable azimuth	
MHz	dBµV/m	dBµV/m	dB	H/V	m	deg	Status
No significant peaks found within the specified limit. There were no frequencies found within the laboratory's ±12dB criterion and so no further measurements were necessary.							Pass

V = Vertical / H = Horizontal

5.2.8 Profile; Orientation 3 (Base), Top Channel 2480 MHz

Peak measurements are shown in red (✳)



TEST ENGINEER: Richard Pennell

5.3 Radiated Emissions; 1.0 to 26.0 GHz

Radiated emissions pre-scan profile measurements were taken at a distance of three metres with the EUT turned through 360º, with both horizontal and vertical antennae polarities in a semi-anechoic chamber. This pre-scan profile was made from 1.0 to 26.0 GHz and evaluated against the FCC Class B limit.

5.3.1 Data; Orientation 1 (Back), Bottom Channel with Charger

Frequency	Peak	CISPR Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBµV/m	dBµV/m	dBµV/m	dB	cm	H/V	Deg	dB/m	Status
7637.274549	---	34.28	54.00	19.72	328.0	H	0.0	1.9	Pass
9026.052104	---	35.06	54.00	18.94	277.0	V	83.0	2.5	Pass
13398.79759	---	44.71	54.00	9.29	100.0	V	222.0	13.1	Pass
14488.97795	---	46.13	54.00	7.87	100.0	V	115.0	14.0	Pass
15643.28657	60.38	---	74.00	13.62	314.0	H	333.0	13.5	Pass
15803.60721	---	46.85	54.00	7.15	333.0	H	53.0	13.7	Pass
16140.28056	---	47.07	54.00	6.93	106.0	V	325.0	13.9	Pass

V = Vertical / H = Horizontal

The emission measurements taken were relative to the FCC Class B limit and take into account the antenna and cable loss factors. Measurements made are according to the FCC test standard and Eurofins Hursley test procedure RHF-01.

TEST ENGINEER: Richard Pennell

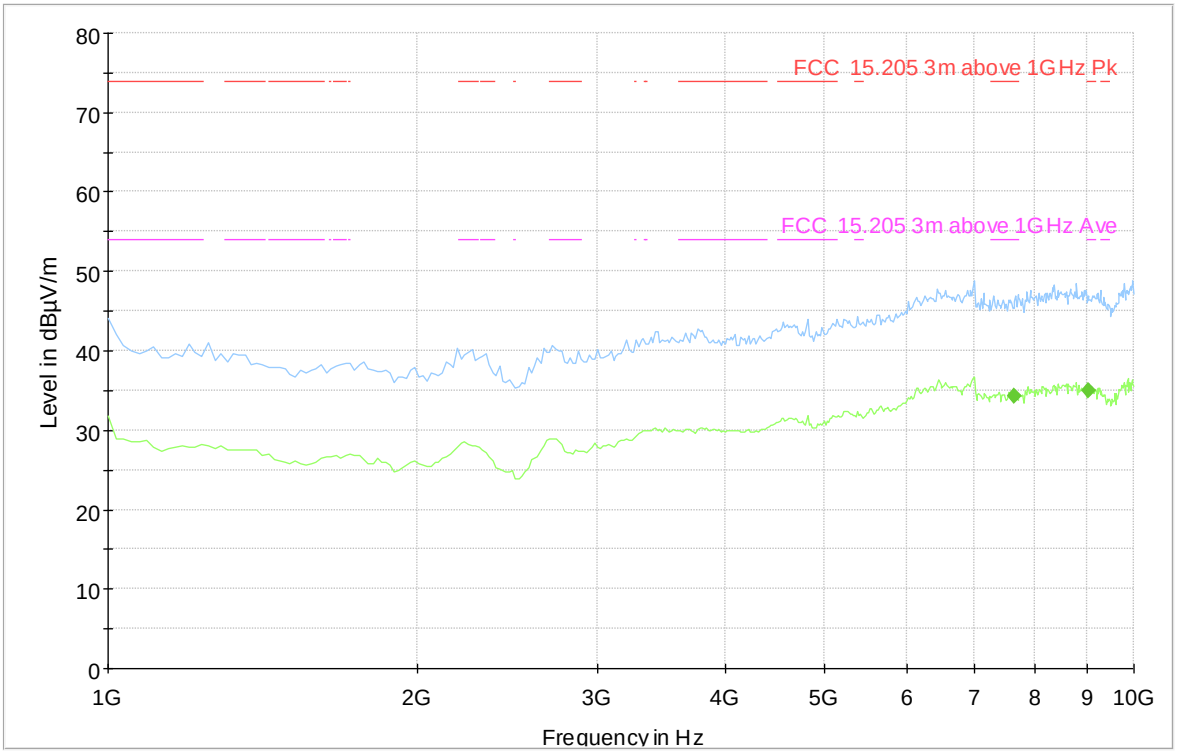
5.3.2 Profiles; Orientation 1 (Back), Bottom Channel with Charger

Max hold trace with peak values (◆)

Peak measurements are shown in red (✳)

Max hold trace with average values (◆)

1.0 to 10.0 GHz



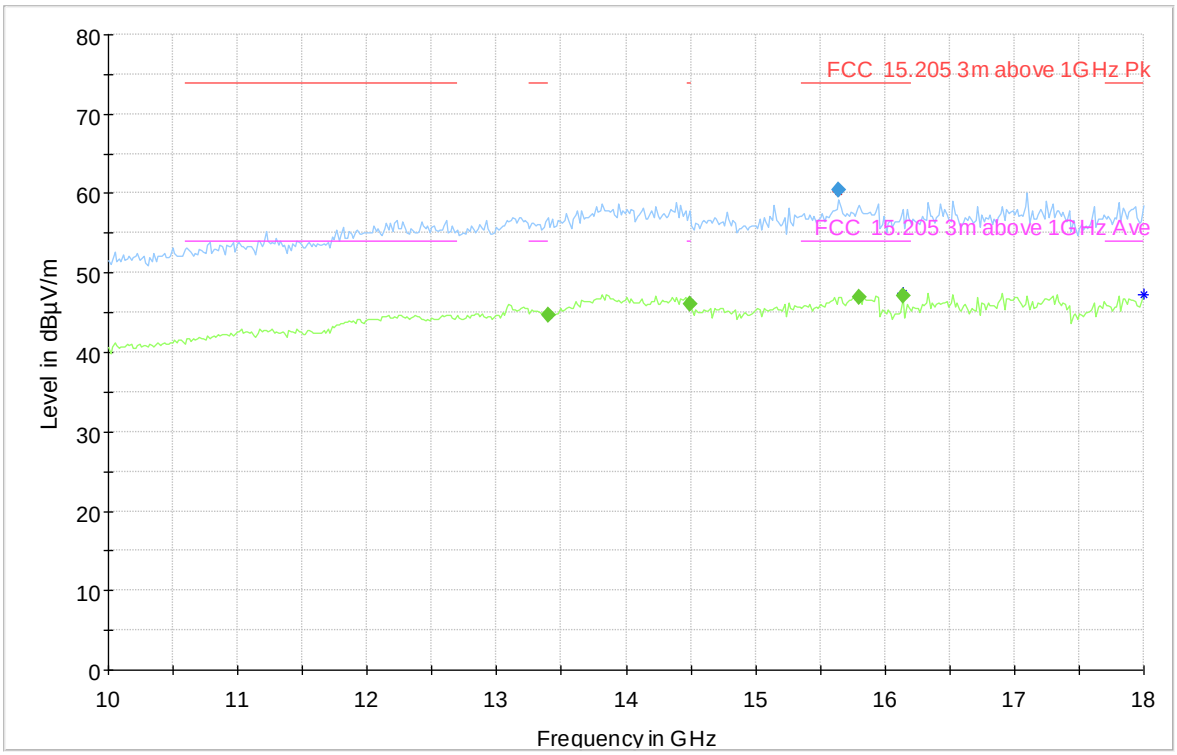
Profiles; Orientation 1 (Back), Bottom Channel with Charger (continued)

Max hold trace with peak values (◆)

Peak measurements are shown in red (✳)

Max hold trace with average values (◆)

10.0 to 18.0 GHz

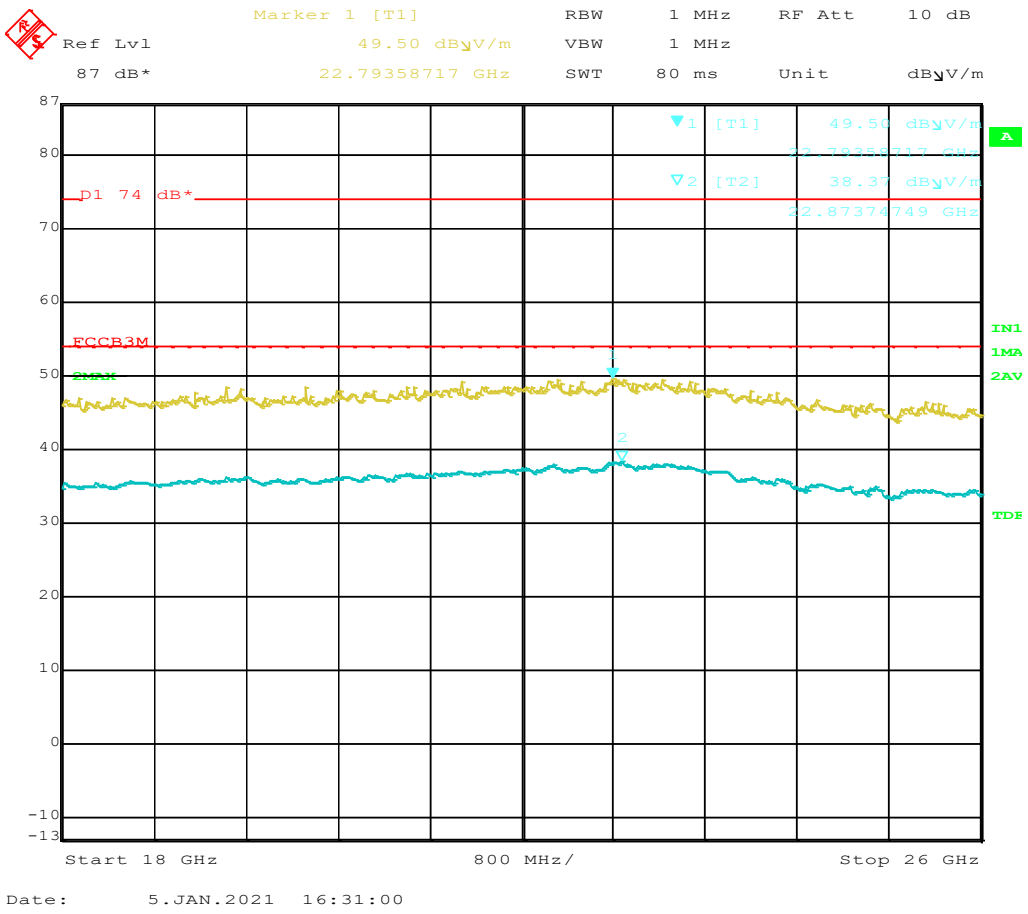


Profiles; Orientation 1 (Back), Bottom Channel with Charger (continued)

Max hold trace with peak values (▼)

Max hold trace with average values (▽)

18.0 to 26.0 GHz



Radiated emissions (continued)

5.3.3 Data; Orientation 1 (Back), Bottom Channel 2402 MHz

Frequency	Peak	CISPR Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBµV/m	dBµV/m	dBµV/m	dB	cm	H/V	Deg	dB/m	Status
7384.769539	---	33.79	54.00	20.21	174.0	V	0.0	1.7	Pass
7601.202405	---	33.91	54.00	20.09	339.0	H	83.0	1.9	Pass
9026.052104	---	34.89	54.00	19.11	315.0	V	45.0	2.5	Pass

V = Vertical / H = Horizontal

The emission measurements taken were relative to the FCC Class B limit and take into account the antenna and cable loss factors. Measurements made are according to the FCC test standard and Eurofins Hursley test procedure RHF-01.

TEST ENGINEER: Richard Pennell

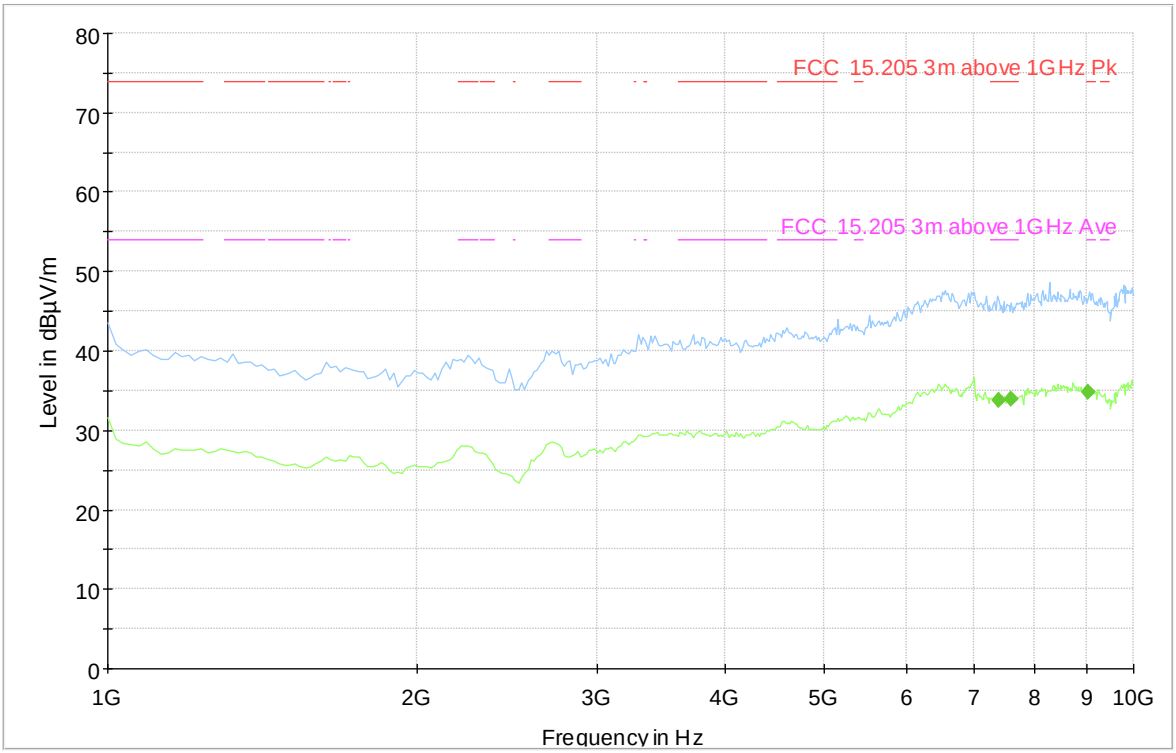
5.3.4 Profiles; Orientation 1 (Back), Bottom Channel 2402 MHz

Max hold trace with peak values (◆)

Peak measurements are shown in red (✳)

Max hold trace with average values (◆)

1.0 to 10.0 GHz



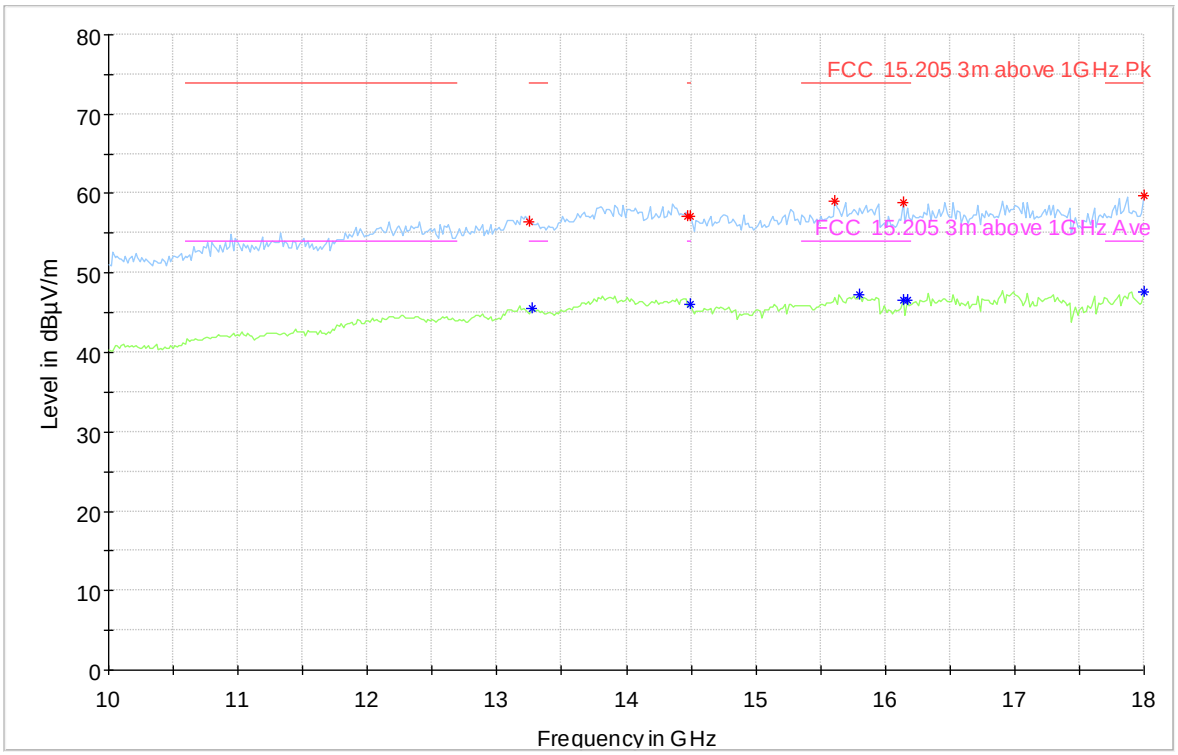
Profiles; Orientation 1 (Back), Bottom Channel 2402 MHz (continued)

Max hold trace with peak values (🔷)

Peak measurements are shown in red (✳)

Max hold trace with average values (🔶)

10.0 to 18.0 GHz

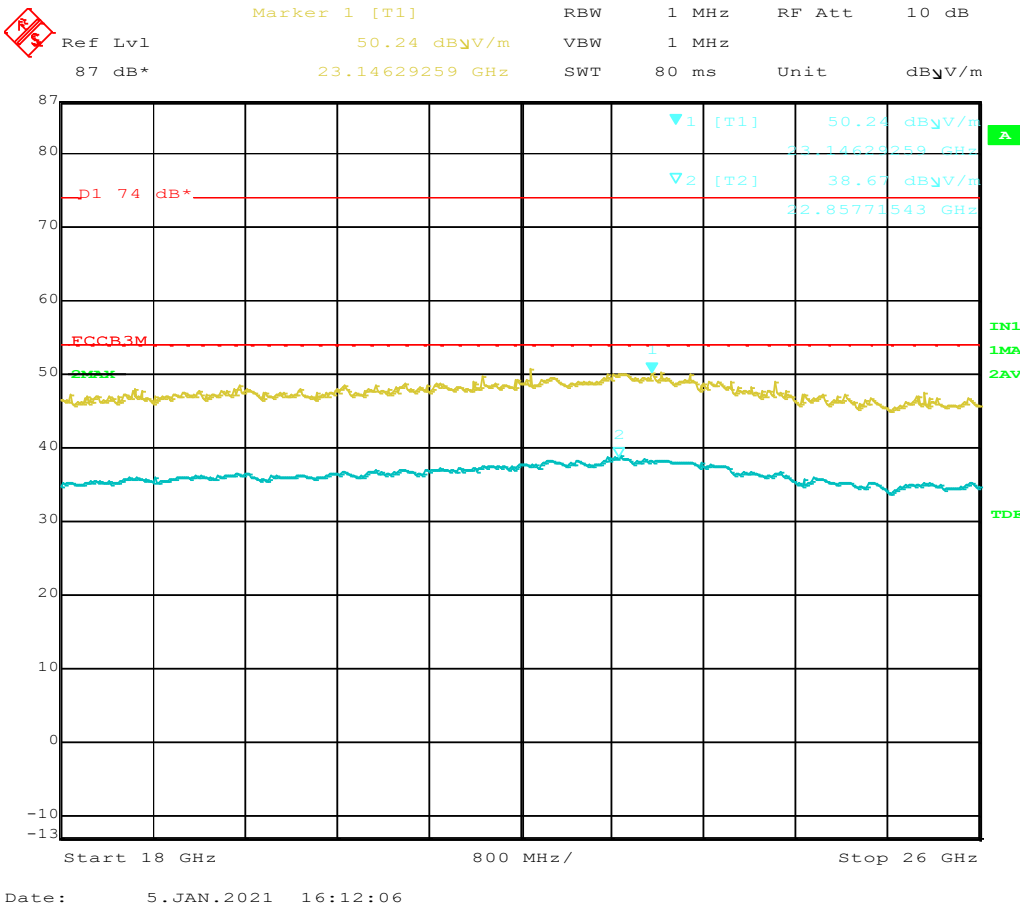


Profiles; Orientation 1 (Back), Bottom Channel 2402 MHz (continued)

Max hold trace with peak values (▼)

Max hold trace with average values (▽)

18.0 to 26.0 GHz



Radiated emissions (continued)

5.3.5 Data; Orientation 2 (Side), Middle Channel 2440 MHz

Frequency	Peak	CISPR Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBµV/m	dBµV/m	dBµV/m	dB	cm	H/V	Deg	dB/m	Status
No significant peaks found within the specified limit. There were no frequencies found within the laboratory's ±12dB criterion and so no further measurements were necessary.									Pass

V = Vertical / H = Horizontal

The emission measurements taken were relative to the FCC Class B limit and take into account the antenna and cable loss factors. Measurements made are according to the FCC test standard and Eurofins Hursley test procedure RHF-01.

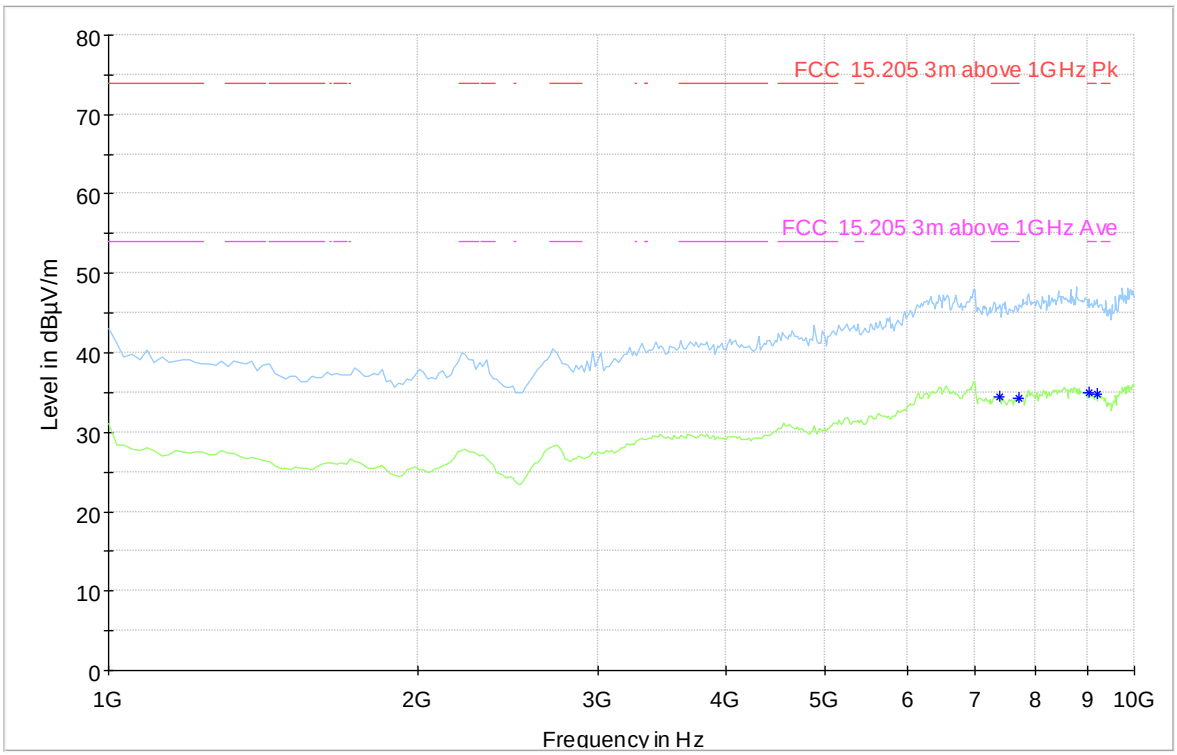
TEST ENGINEER: Richard Pennell

5.3.6 Profiles; Orientation 2 (Side), Middle Channel 2440 MHz

Max hold trace with peak values (◆)

Max hold trace with average values (◆)

1.0 to 10.0 GHz

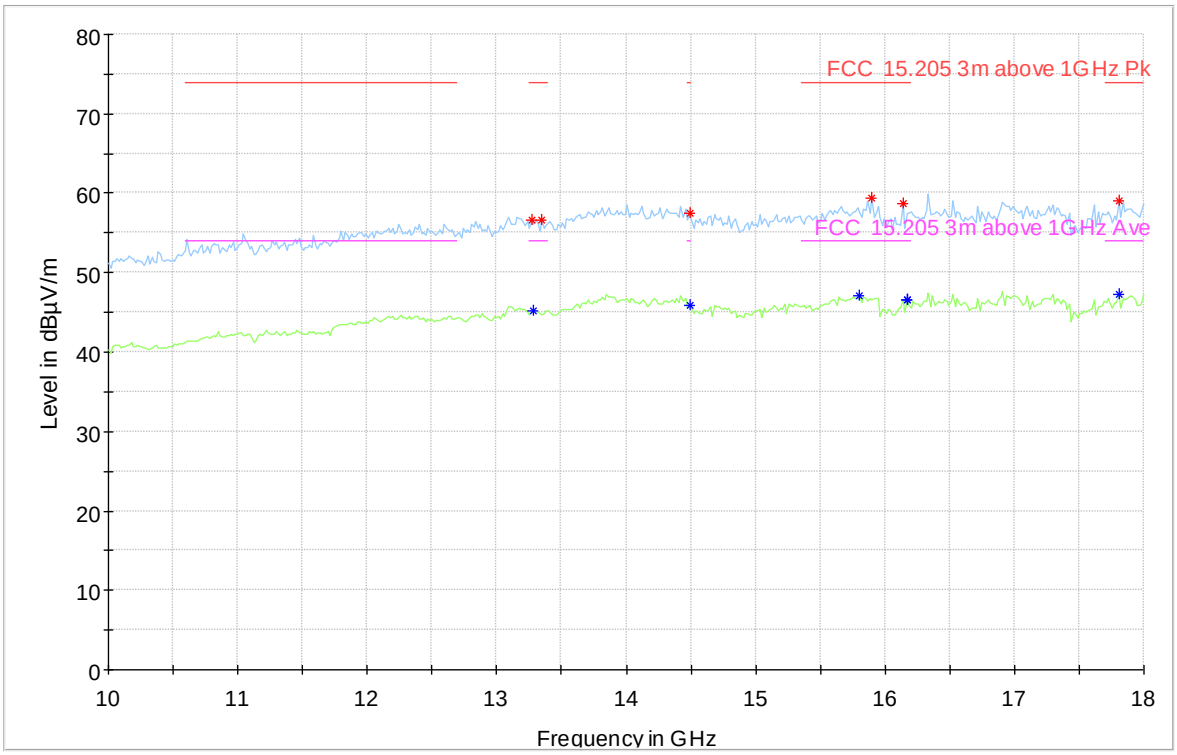


Profiles; Orientation 2 (Side), Middle Channel 2440 MHz (continued)

Max hold trace with peak values (◆)

Max hold trace with average values (◆)

10.0 to 18.0 GHz

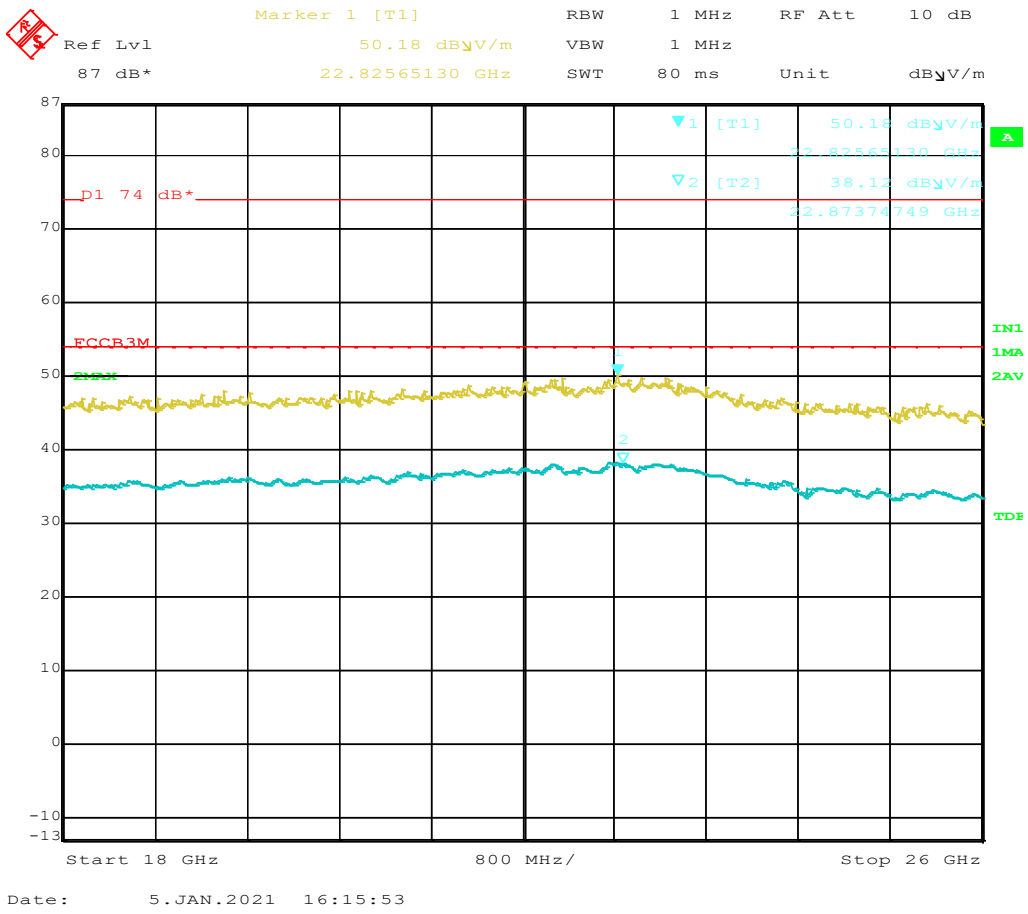


Profiles; Orientation 2 (Side), Middle Channel 2440 MHz (continued)

Max hold trace with peak values (▼)

Max hold trace with average values (▽)

18.0 to 26.0 GHz



Radiated emissions (continued)

5.3.7 Data; Orientation 3 (Base), Top Channel 2480 MHz

Frequency	Peak	CISPR Average	Limit	Margin	Height	Pol	Azimuth	Corr.	
MHz	dBµV/m	dBµV/m	dBµV/m	dB	cm	H/V	Deg	dB/m	Status
No significant peaks found within the specified limit. There were no frequencies found within the laboratory's ±12dB criterion and so no further measurements were necessary.									Pass

V = Vertical / H = Horizontal

The emission measurements taken were relative to the FCC Class B limit and take into account the antenna and cable loss factors. Measurements made are according to the FCC test standard and Eurofins Hursley test procedure RHF-01.

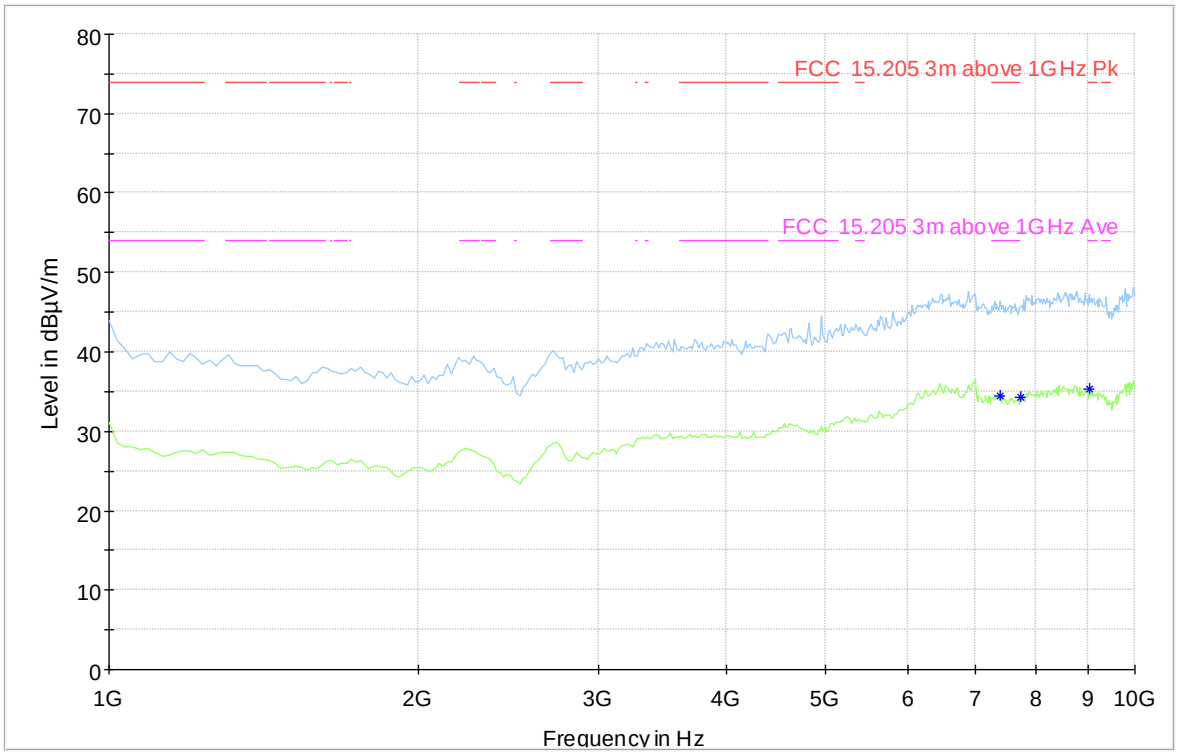
TEST ENGINEER: Richard Pennell

5.3.8 Profiles; Orientation 3 (Base), Top Channel 2480 MHz

Max hold trace with peak values (◆)

Max hold trace with average values (◆)

1.0 to 10.0 GHz

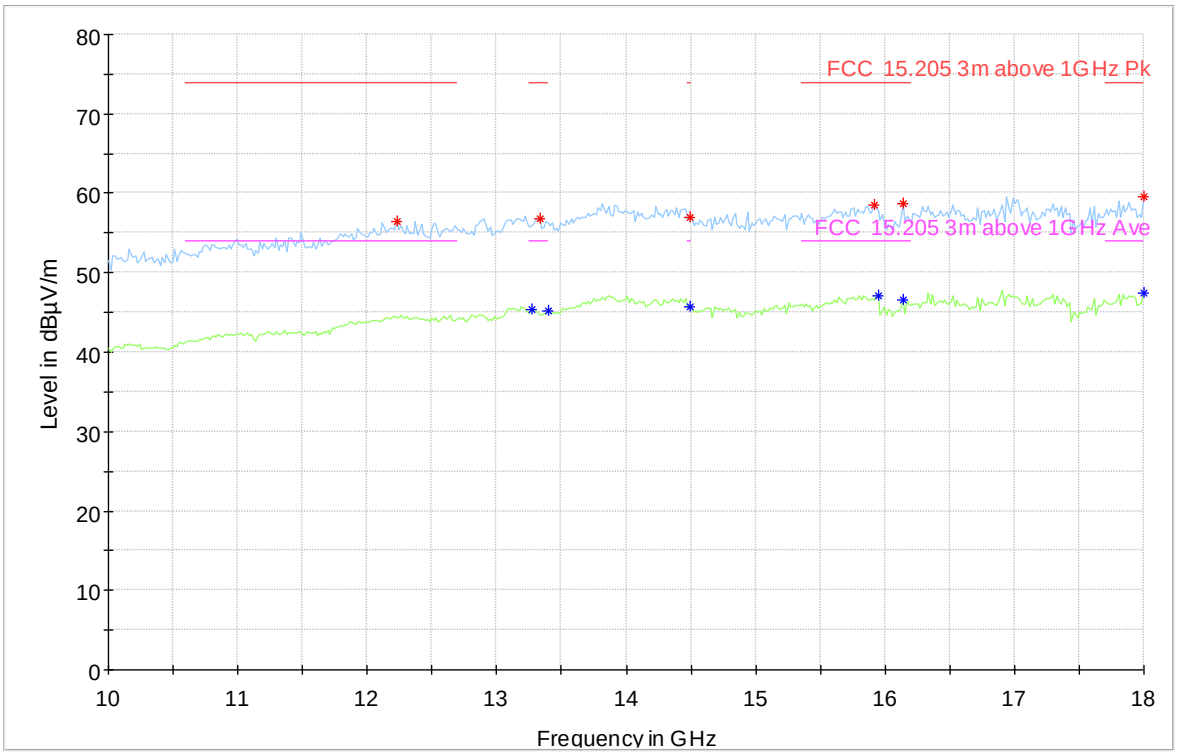


Profiles; Orientation 3 (Base), Top Channel 2480 MHz (continued)

Max hold trace with peak values (◆)

Max hold trace with average values (◆)

10.0 to 18.0 GHz

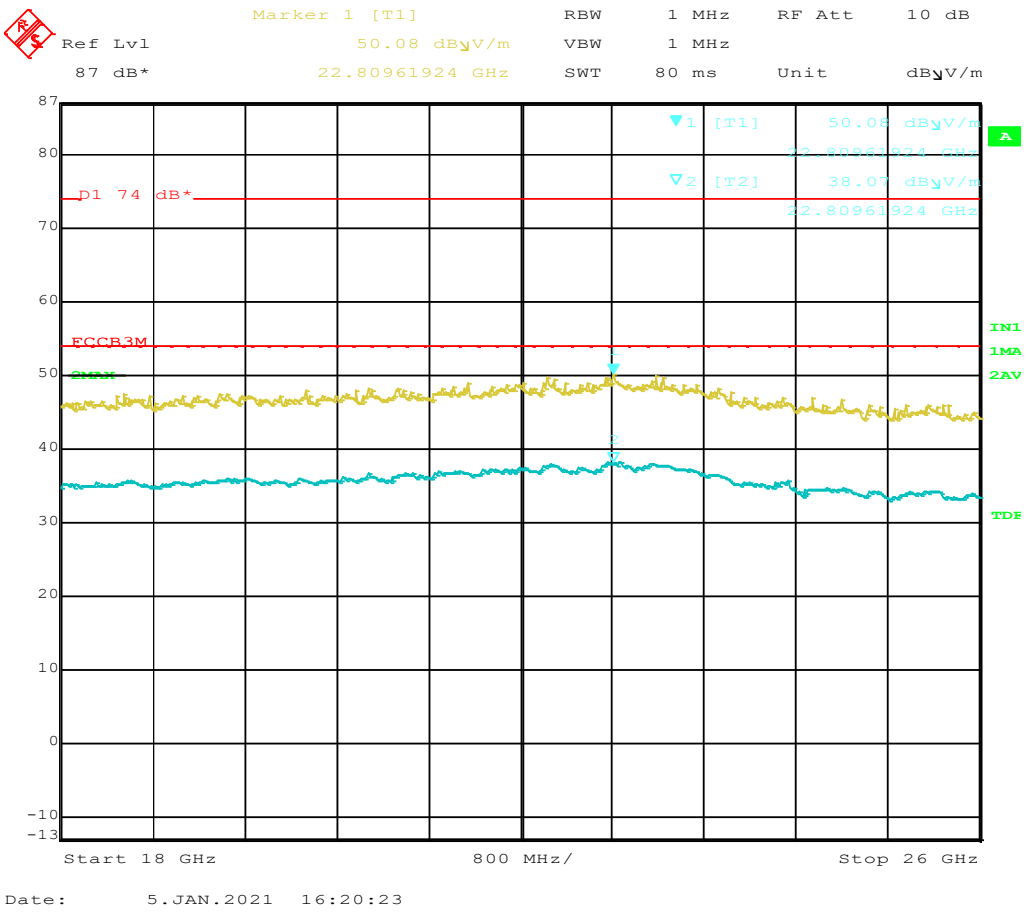


Profiles; Orientation 3 (Base), Top Channel 2480 MHz (continued)

Max hold trace with peak values (▼)

Max hold trace with average values (▽)

18.0 to 26.0 GHz



6.0 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)

7.0 ANNEX – CONDUCTED RF MEASUREMENTS

7.1 Measurement Uncertainty

The uncertainty gives a 95% confidence interval in the measurement. expanded uncertainty (K=2) for the frequency range 10 MHz to 25 GHz is as follows: < ± 1.73 dB.

Test	Clause	Limit / Requirement	Result
6dB bandwidth	15.247(a)(2)	> 500 kHz	Pass
Occupied bandwidth		None	Noted
Max peak conducted TX power	15.247(b)(3)	1 W	Pass
Power Spectral Density	15.247(e)	8dBm / 3 kHz	Pass
Out of Band Emissions Non-restricted bands: Radiated with antenna	15.247(d)	-20 dBc (peak power)	Pass
Max antenna gain	15.247(b)(4)	≤ 6dBi	Pass

Table 1: Summary of test results

7.2 Test equipment

Description	Manufacturer	Name	Serial Number	Calibration certificate
Spectrum Analyser	Rohde & Schwarz	ESCI7	#289	Due 10/09/21
Spectrum Analyser	Rohde & Schwarz	ESIB40	#021	Due 11/08/21

8.0 DTS BANDWIDTH

8.1 Measurement method

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

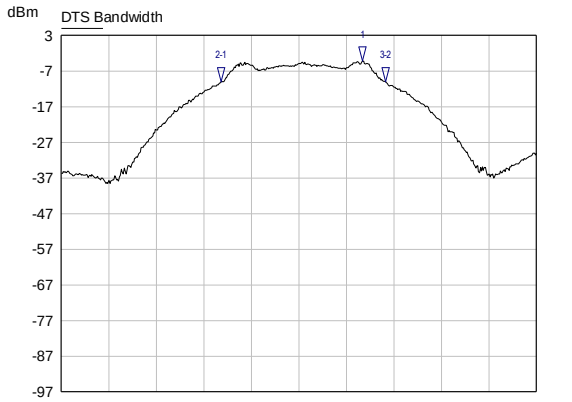
a) Set resolution bandwidth to 100 kHz
b) Set the video bandwidth to ≥ 3 x RBW
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude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

8.1.1 Test results

Channel	6dB DTS Bandwidth (kHz)	Requirement	Result
2402	692	> 500 kHz	Pass
2440	660	> 500 kHz	Pass
2480	676	> 500 kHz	Pass

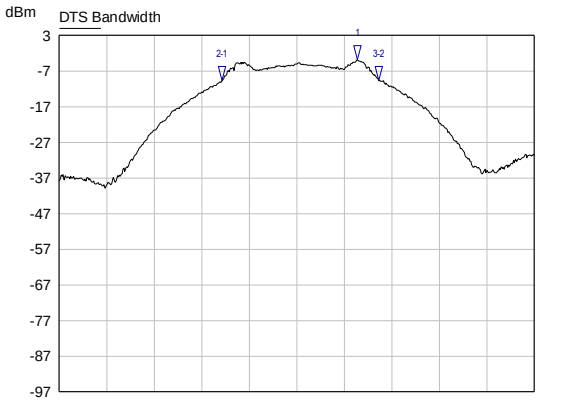
Table 2: DTS Bandwidth

8.1.2 DTS Bandwidth plots



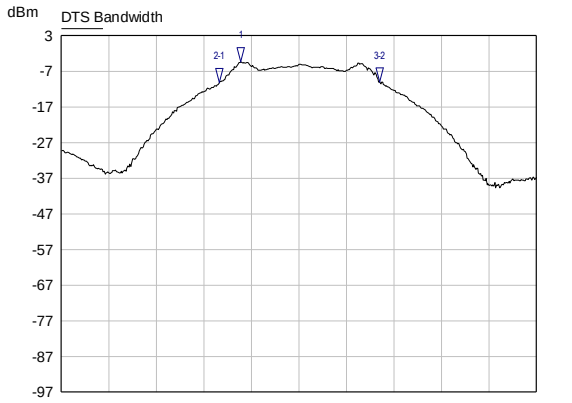
Mkr	Trace	X-Axis	Value	Notes
1	DTS Bandwidth	2.4023 GHz	-4.13 dBm	Peak
2-1	DTS Bandwidth	-596.0000 kHz	-5.86 dB	-6dB (left)
3-2	DTS Bandwidth	692.0000 kHz	0.03 dB	Relative to marker 2

2402



Mkr	Trace	X-Axis	Value	Notes
1	DTS Bandwidth	2.4403 GHz	-3.89 dBm	Peak
2-1	DTS Bandwidth	-572.0000 kHz	-5.81 dB	-6dB (left)
3-2	DTS Bandwidth	660.0000 kHz	-0.00 dB	Relative to marker 2

2440



Mkr	Trace	X-Axis	Value	Notes
1	DTS Bandwidth	2.4798 GHz	-4.27 dBm	Peak
2-1	DTS Bandwidth	-92.0000 kHz	-5.87 dB	-6dB (left)
3-2	DTS Bandwidth	676.0000 kHz	0.10 dB	Relative to marker 2

2480

Figure 1: DTS Bandwidth plots

9.0 OCCUPIED BANDWIDTH

Test was conducted in accordance with ANSI C63-10 clause 6.9 and the 99% occupied bandwidth measured automatically by the analyser:

Channel	Occupied Bandwidth (kHz)	Requirement	Result
2402	1069	None	For information
2440	1070	None	For information
2480	1058	None	For information

Table 3: Occupied Bandwidth

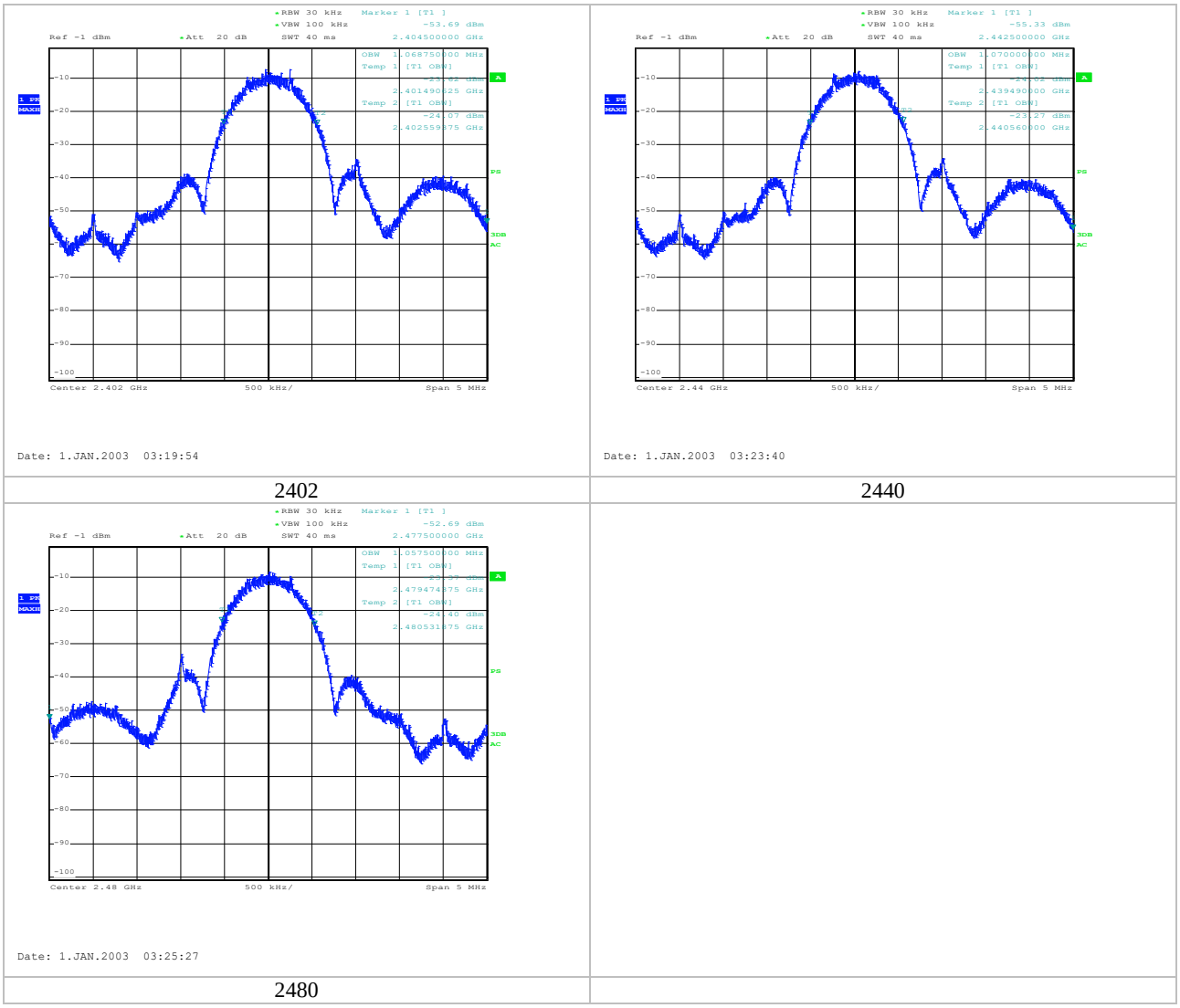


Figure 2: Occupied Bandwidth

10.0 MAXIMUM PEAK CONDUCTED OUTPUT POWER

10.1 Measurement method

Test was conducted in accordance with ANSI C63-10 clause 11.9:

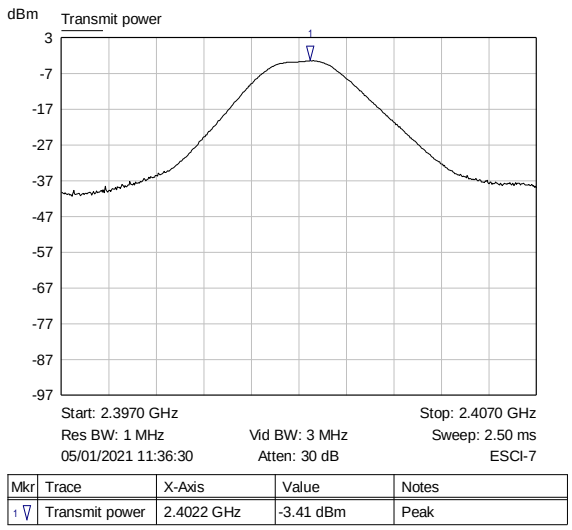
a) Set the RBW ≥ DTS bandwidth.
b) Set VBW ≥ 3 x RBW.
c) Set span ≥ 3 x RBW
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

10.1.1 Test result

Channel (MHz)	Channel Power (dBm)	Limit (dBm)	Result
2402	-3.41	30.0	Pass
2440	-3.59	30.0	Pass
2480	-3.79	30.0	Pass

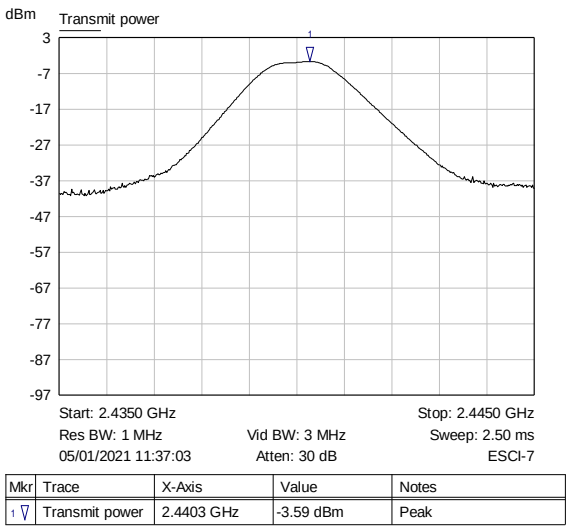
Table 4: R Power

10.1.2 Peak Conducted Power plots



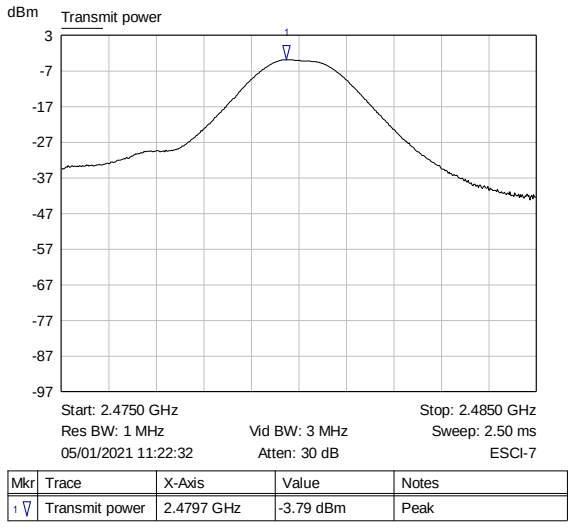
Mkr	Trace	X-Axis	Value	Notes
1	Transmit power	2.4022 GHz	-3.41 dBm	Peak

2402



Mkr	Trace	X-Axis	Value	Notes
1	Transmit power	2.4403 GHz	-3.59 dBm	Peak

2440



Mkr	Trace	X-Axis	Value	Notes
1	Transmit power	2.4797 GHz	-3.79 dBm	Peak

2480

Figure 3: Peak Conducted Power plots

11.0 POWER SPECTRAL DENSITY

11.1 Measurement method

Test was conducted in accordance with ANSI C63.10 Clause 11.10.2:

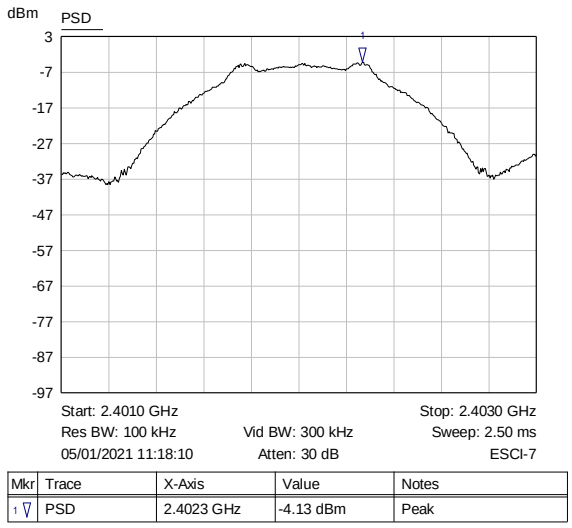
a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to ≥ 1.5 x DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3 x RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak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

11.1.1 Test results

Channel	Power Spectral Density	Requirement	Result
2402	-4.13	< 8 dBm	Pass
2440	-3.89	< 8 dBm	Pass
2480	-4.27	< 8 dBm	Pass

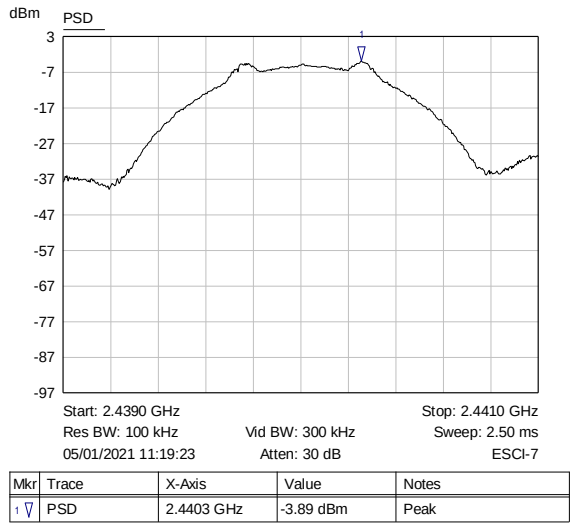
Table 5: DTS Bandwidth

11.1.2 Power Spectral Density plots



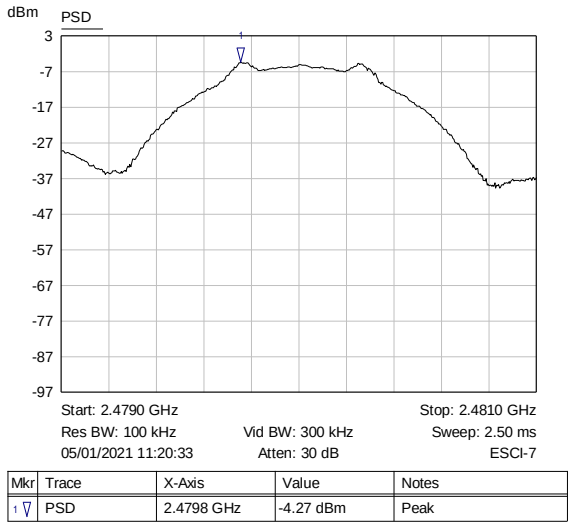
Mkr	Trace	X-Axis	Value	Notes
1	PSD	2.4023 GHz	-4.13 dBm	Peak

2402



Mkr	Trace	X-Axis	Value	Notes
1	PSD	2.4403 GHz	-3.89 dBm	Peak

2440



Mkr	Trace	X-Axis	Value	Notes
1	PSD	2.4798 GHz	-4.27 dBm	Peak

2480

Figure 4: Power Spectral Density plots

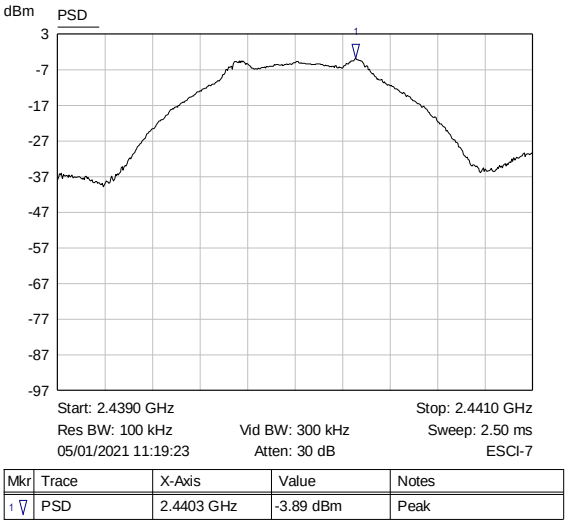
12.0 EMISSIONS IN NON-RESTRICTED BANDS

12.1 Measurement method – reference level

Test was conducted in accordance with ANSI C63-10 clause 11.11:

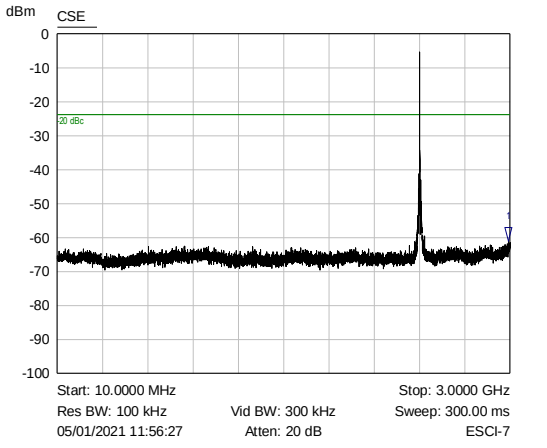
12.2 Test result – reference level

The highest emissions found was channel 2440



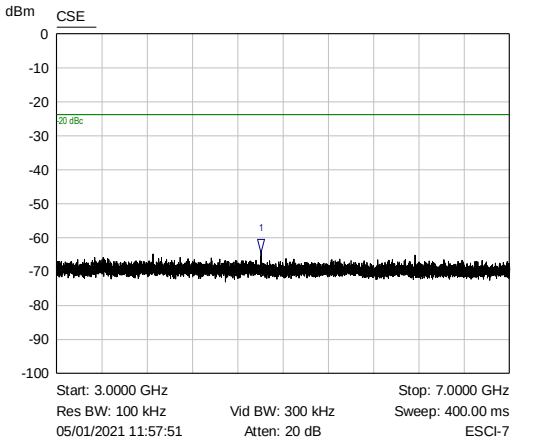
Mkr	Trace	X-Axis	Value	Notes
1	PSD	2.4403 GHz	-3.89 dBm	Peak

2440



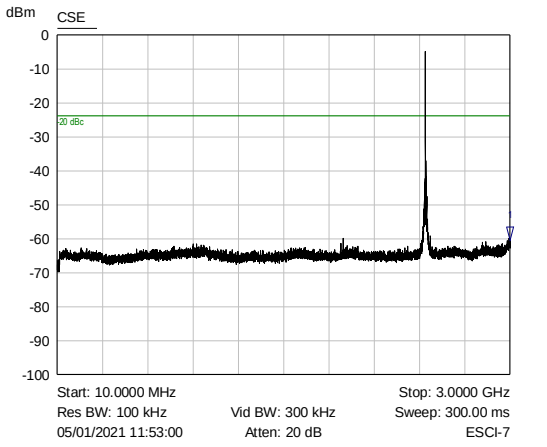
Mkr	Trace	X-Axis	Value	Notes
1	CSE	2.9888 GHz	-60.98 dBm	

2402: 10 – 3000 MHz



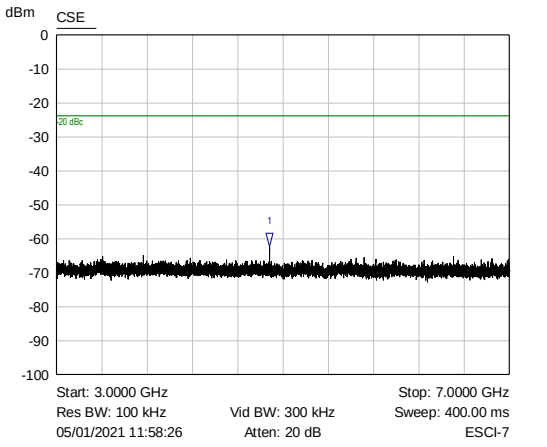
Mkr	Trace	X-Axis	Value	Notes
1	CSE	4.8045 GHz	-64.48 dBm	

2402: 3-7 GHz



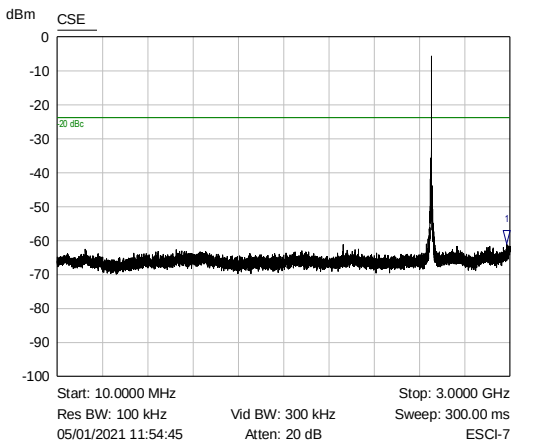
Mkr	Trace	X-Axis	Value	Notes
1	CSE	3.0000 GHz	-60.58 dBm	

2440: 10 – 3000 MHz



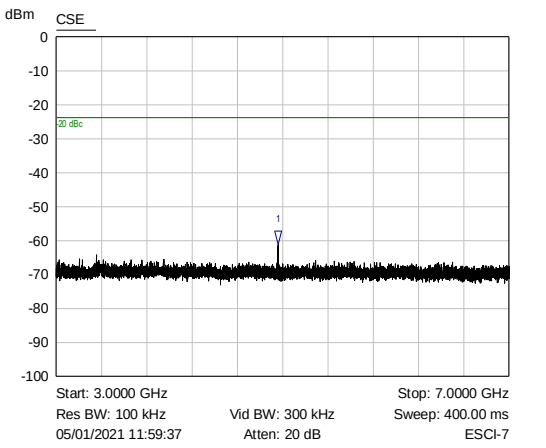
Mkr	Trace	X-Axis	Value	Notes
1	CSE	4.8805 GHz	-62.33 dBm	

2440: 3-7 GHz



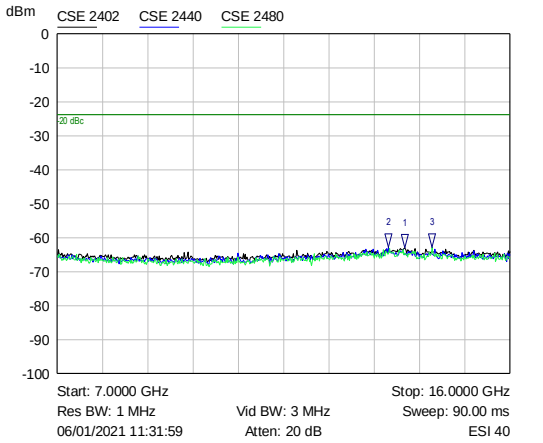
Mkr	Trace	X-Axis	Value	Notes
1	CSE	2.9794 GHz	-60.93 dBm	

2480: 10 – 3000 MHz



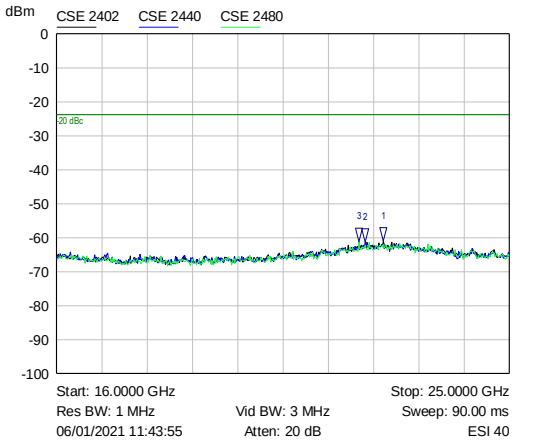
Mkr	Trace	X-Axis	Value	Notes
1	CSE	4.9605 GHz	-61.20 dBm	

2480: 3-7 GHz



Mkr	Trace	X-Axis	Value	Notes
1	CSE 2402	13.9078 GHz	-63.04 dBm	
2	CSE 2440	13.5832 GHz	-62.82 dBm	
3	CSE 2480	14.4489 GHz	-62.77 dBm	

7-16 GHz all 3 channels



Mkr	Trace	X-Axis	Value	Notes
1	CSE 2402	22.4930 GHz	-61.07 dBm	
2	CSE 2440	22.1323 GHz	-61.33 dBm	
3	CSE 2480	22.0060 GHz	-61.15 dBm	

16-25 GHz all 3 channels

13.0 PHOTO LOG (EXAMPLES)

Emissions:

Conducted emissions

Photo Log Continued

Emissions:

Radiated emissions; Idle Charging Mode

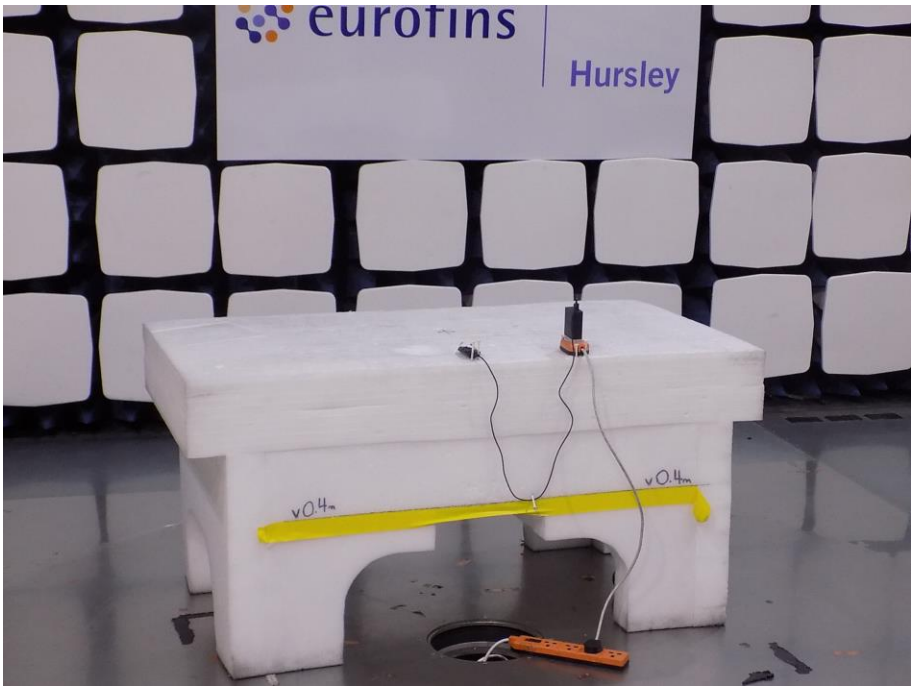


Photo Log Continued

Emissions:

Radiated emissions; Idle Mode

Emissions:

Radiated emissions; Position 1 Mode

Photo Log Continued

Emissions:

Radiated emissions; Position 2 Mode

Emissions:

Radiated emissions; Position 3 Mode

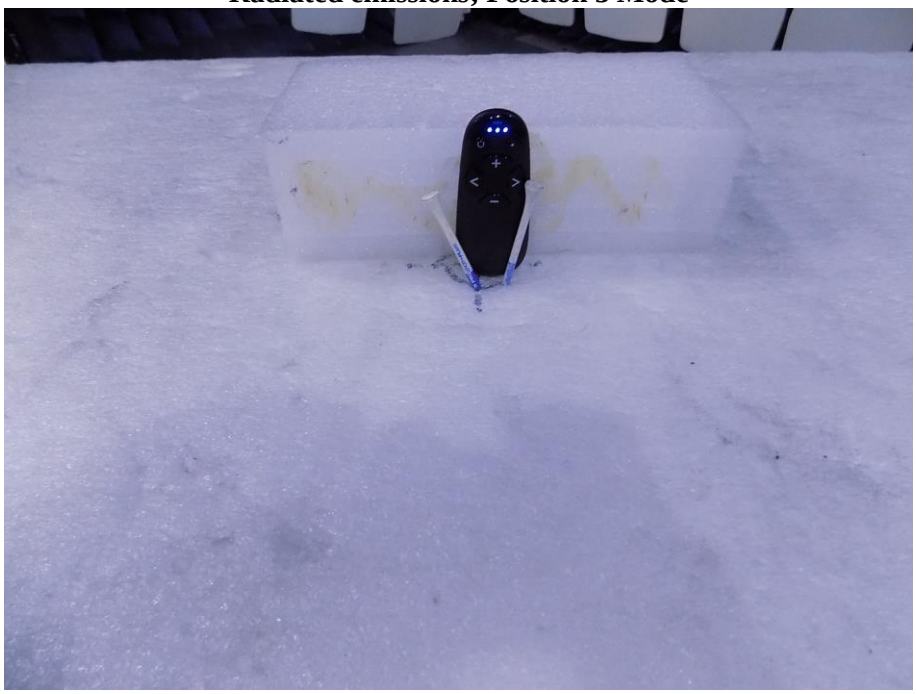
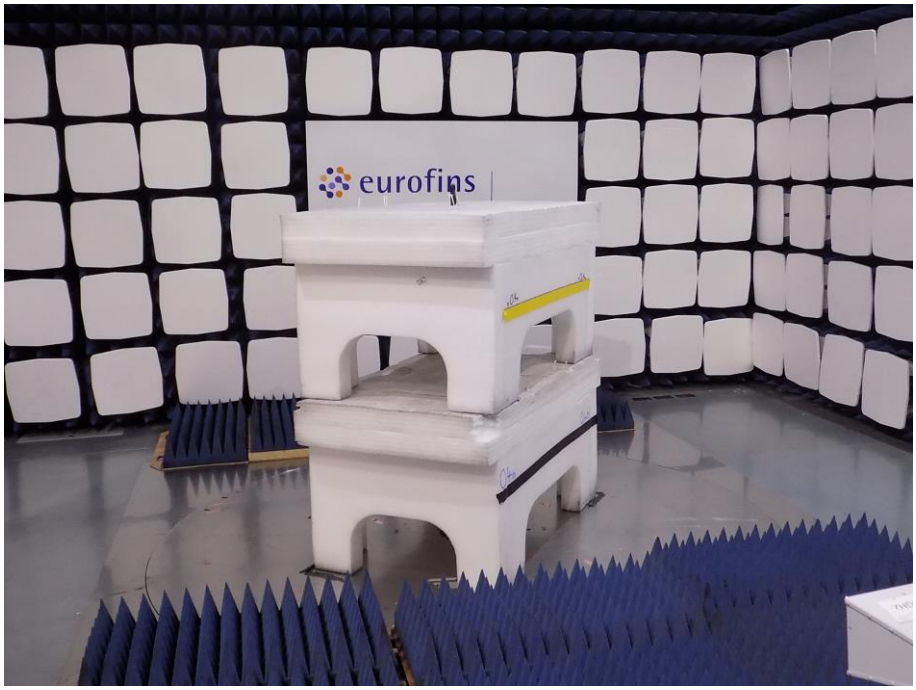
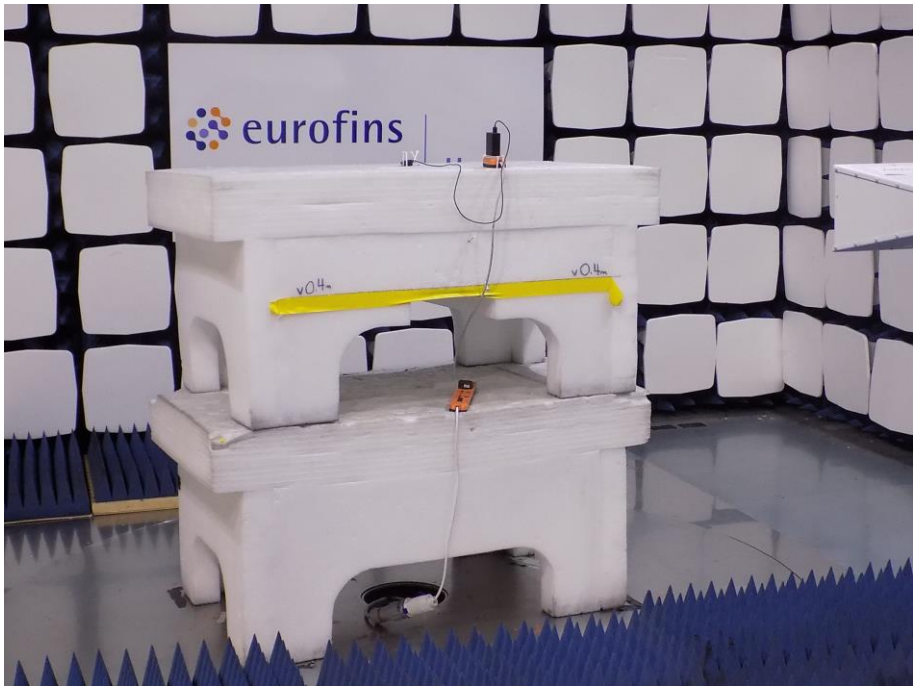


Photo Log Continued

Emissions:

Radiated emissions; above 1GHz





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