TUV SUD Limited Digitally signed by TUV SUD Limited Date: 2024.10.16 07:56:21 +01'00'

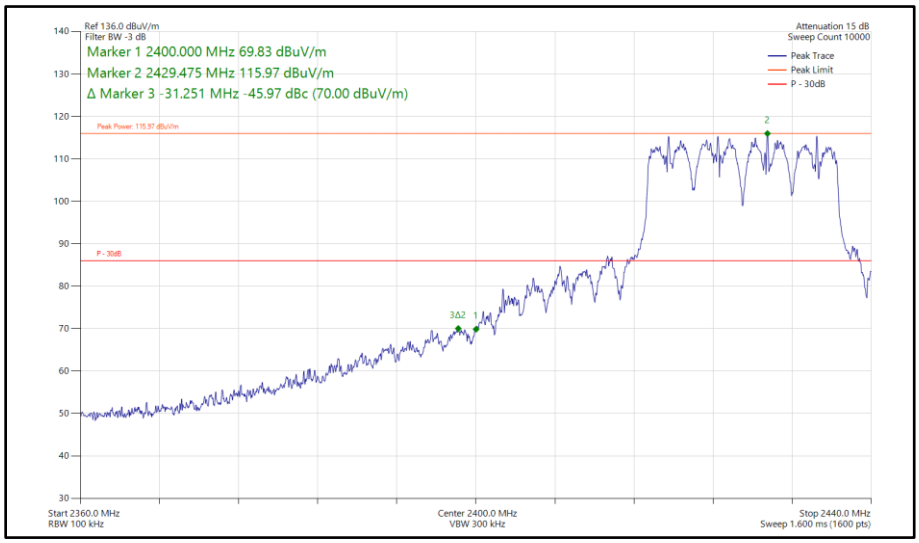

Figure 201 - 802.11ax HE20, SU, CDD, Core 0 - Core 1 - 2427 MHz Band Edge Frequency 2400 MHz

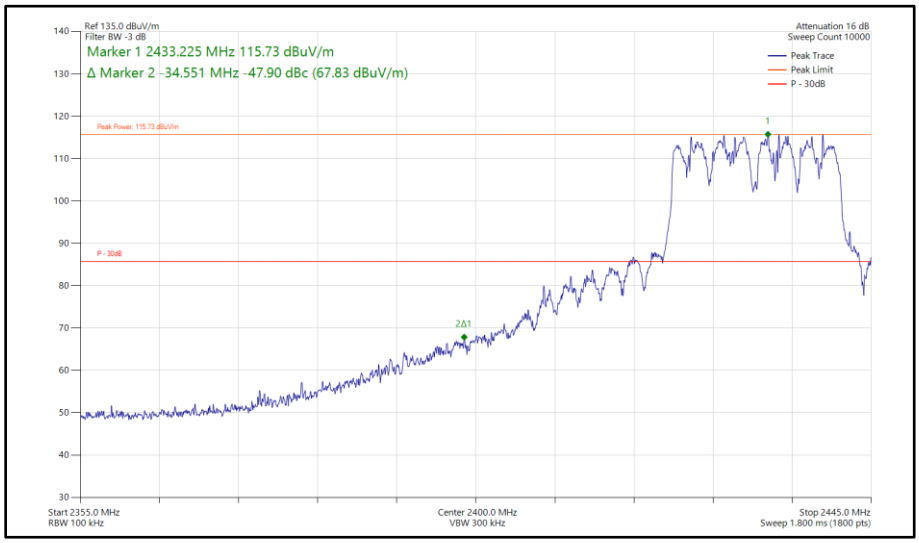

Figure 202 - 802.11ax HE20, SU, CDD, Core 0 - Core 1 - 2432 MHz Band Edge Frequency 2400 MHz

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitter complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB below the fundamental instead of 20 dB.

2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 14 and RF Chamber 15.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Emissions Software	TUV SUD	EmX V3.4.2	5125	-	Software
EMI Test Receiver	Rohde & Schwarz	ESW44	5911	12	11-Sep-2024
Test Receiver	Rohde & Schwarz	ESW44	5914	12	24-May-2025
1500W (300V 12A) AC Power Supply	iTech	IT7324	5955	-	O/P Mon
1500W (300V 12A) AC Power Supply	iTech	IT7324	5956	-	O/P Mon
5m Semi-Anechoic Chamber (Dual-Axis)	Albatross Projects	RF Chamber 14	5958	36	26-Apr-2025
Compact Antenna Mast	Maturo Gmbh	CAM4.0-P	5959	-	TU
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5960	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5961	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5962	-	TU
5m Semi-Anechoic Chamber (Dual-Axis), Chamber 15	Albatross Projects	RF Chamber 15	5963	36	28-Apr-2025
Compact Antenna Mast	Maturo Gmbh	CAM4.0-P	5964	-	TU
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5966	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5967	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5968	-	TU
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	5997	12	14-Sep-2024
Cable (SMA to SMA 4.5m)	Junkosha	MWX221-04500AMSAMS/A	6002	12	14-Sep-2024
Cable (N to N 1m)	Junkosha	MWX221-01000AMSAMS/B	6009	12	20-May-2025
Cable (SMA to SMA 6.5m)	Junkosha	MWX221-06500AMSAMS/B	6014	12	24-Aug-2024
Cable (SMA to SMA 3m)	Junkosha	MWX221-03000AMSAMS/A	6021	12	14-Sep-2024
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6140	12	05-May-2025
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6141	12	05-May-2025
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6142	12	05-May-2025
Digital Multimeter	Fluke	115	6145	12	06-Jun-2025
Digital Multimeter	Fluke	115	6147	12	06-Jun-2025
SAC Switch Unit	TUV SUD	TUV_SSU_001	6190	12	22-Dec-2024
SAC Switch Unit	TUV SUD	TUV_SSU_001	6191	12	18-Dec-2024
Cable (SMA to SMA 3m)	Junkosha	MWX221-03000AMSAMS/A	6316	12	04-Feb-2025
Humidity and Temperature meter	R.S Components	1364	6346	12	06-Mar-2025

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Humidity and Temperature Meter	R.S Components	1364	6486	12	04-Jun-2025
1m Cable	Junkosha	MWX241-01000AMSAMS/B	6740	12	01-Feb-2025
1m Cable	Junkosha	MWX241-01000AMSAMS/B	6741	12	01-Feb-2025
6.5m Cable	Junkosha	MWX221-06500AMSAMS/B	6744	12	01-Feb-2025

Table 57

TU - Traceability Unscheduled
O/P Mon - Output Monitored using calibrated equipment

2.5 Spurious Radiated Emissions

2.5.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.209 and 15.247 (d)

2.5.2 Equipment Under Test and Modification State

A3186, S/N: GQFXQXKN7J - Modification State 0

2.5.3 Date of Test

26-July-2024 to 05-August-2024

2.5.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.3, 6.5 and 6.6.

Ports on the EUT were terminated with loads as described in ANSI C63.10 clause 6.2.3.

The EUT was placed on the non-conducting platform in a manner typical of a normal installation.

In the 30 MHz to 1 GHz range pre-scans were only performed on the mid channel (2442 MHz) only.

For frequencies > 1 GHz, plots for average measurements were taken in accordance with ANSI C63.10, clause 11.12.2.5.2.

The plots shown are the characterisation of the EUT. The limits on the plots represent the most stringent case for restricted bands, (74/54 dBuV/m) when compared to 30 dBc outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10 dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

Above 18 GHz, the measurement distance was reduced to 1 m. The limit line was increased by 20*LOG(3/1) = 9.54 dB.

Where formal measurements have been necessary, the results have been presented in the emissions table.

2.5.5 Example Test Setup Diagram

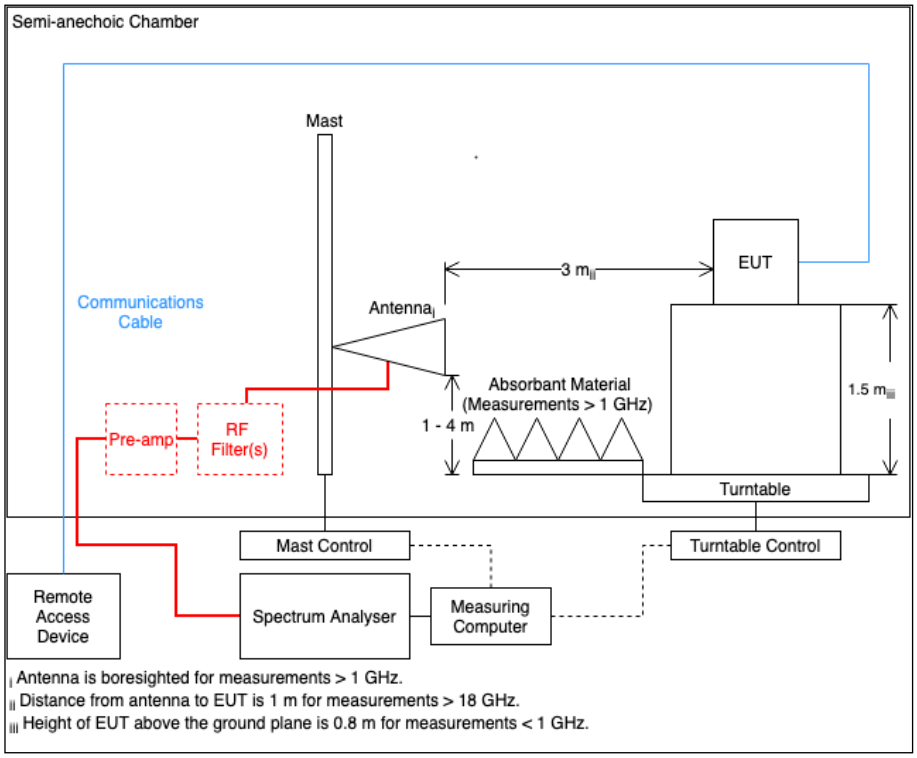

Figure 203

2.5.6 Environmental Conditions

Ambient Temperature	21.4 - 24.5 °C
Relative Humidity	43.6 - 49.2 %

2.5.7 Test Results

2.4 GHz WLAN

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2353.533	35.33	54.00	-18.67	RMS	5	385	Vertical

Table 58 - 2412 MHz (CH1), 802.11b, Core 0, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

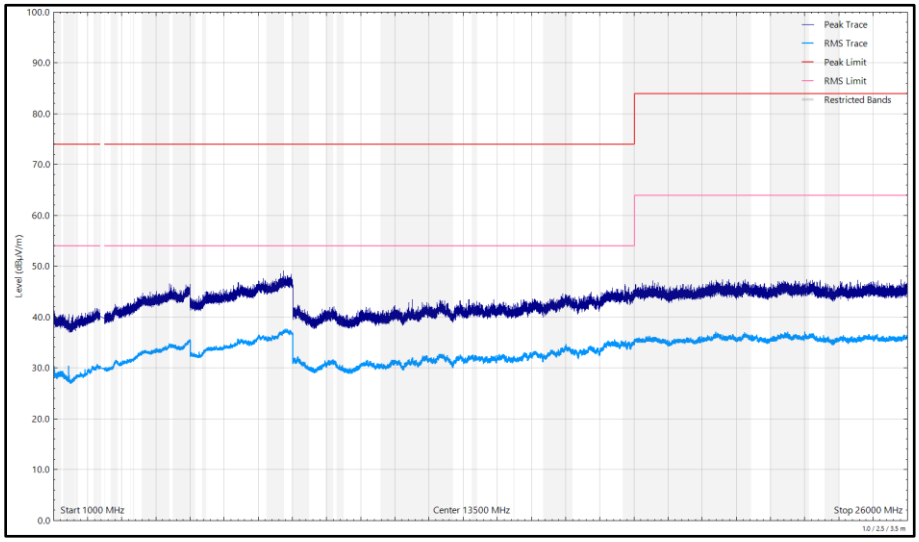

Figure 204 - 2412 MHz (CH1), 802.11b, Core 0, 1 GHz to 26 GHz, Horizontal

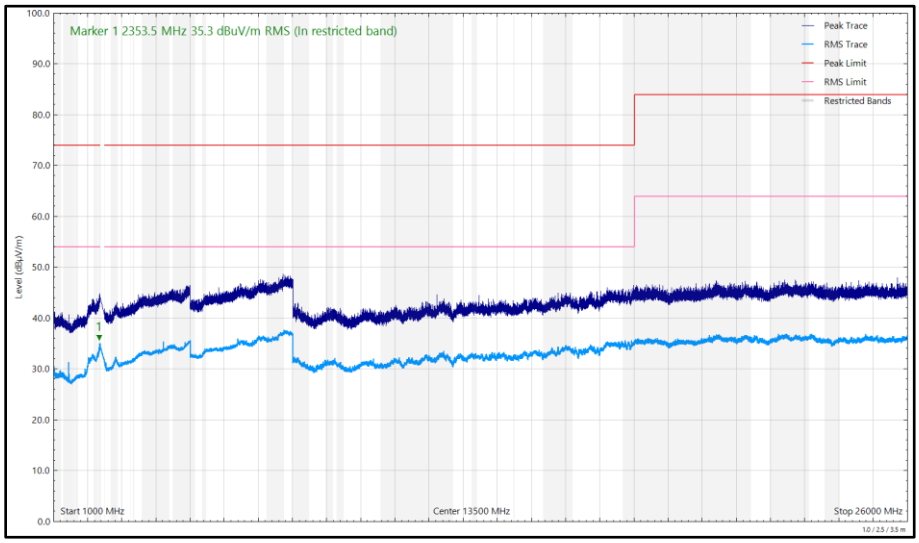

Figure 205 - 2412 MHz (CH1), 802.11b, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.996	35.69	54.00	-18.31	RMS	13	376	Vertical
2483.534	34.94	54.00	-19.06	RMS	29	385	Vertical

Table 59 - 2442 MHz (CH7), 802.11b, Core 0, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

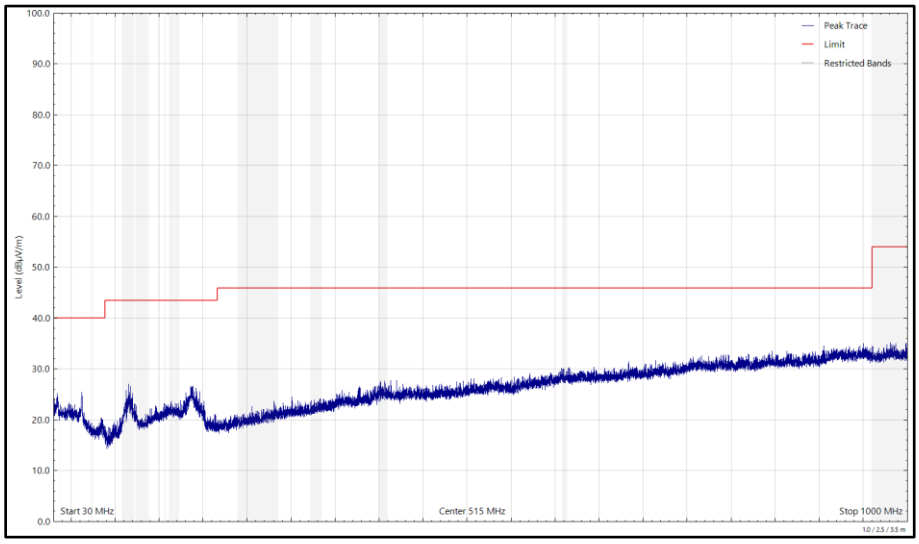

Figure 206 - 2442 MHz (CH7), 802.11b, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

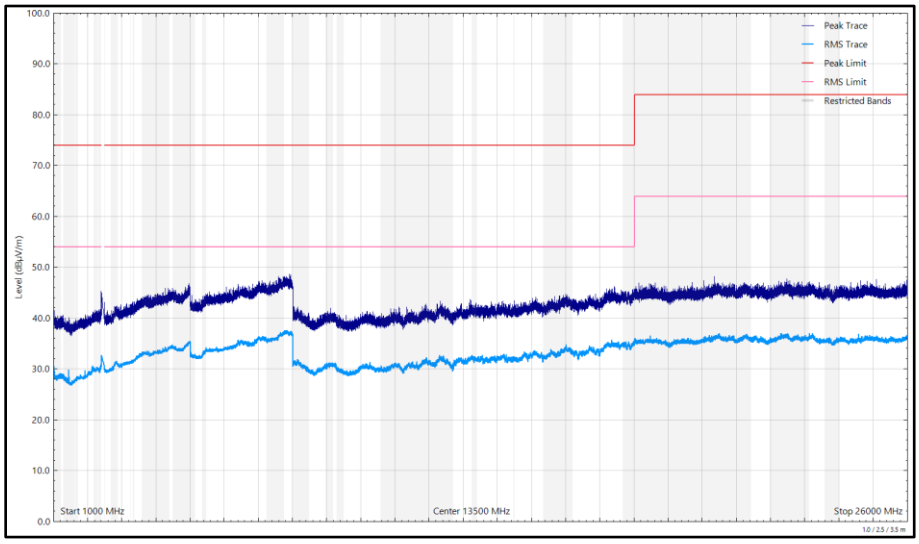

Figure 207 - 2442 MHz (CH7), 802.11b, Core 0, 1 GHz to 26 GHz, Horizontal

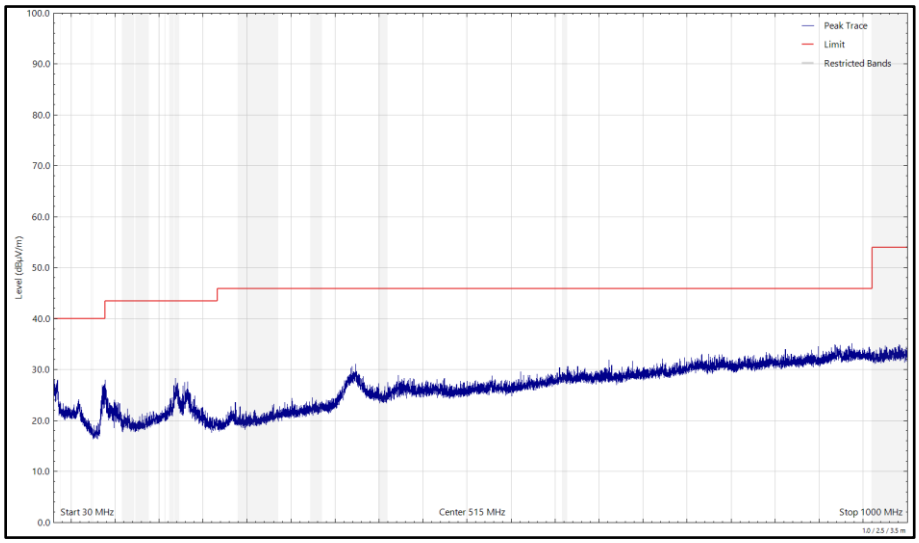

Figure 208 - 2442 MHz (CH7), 802.11b, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

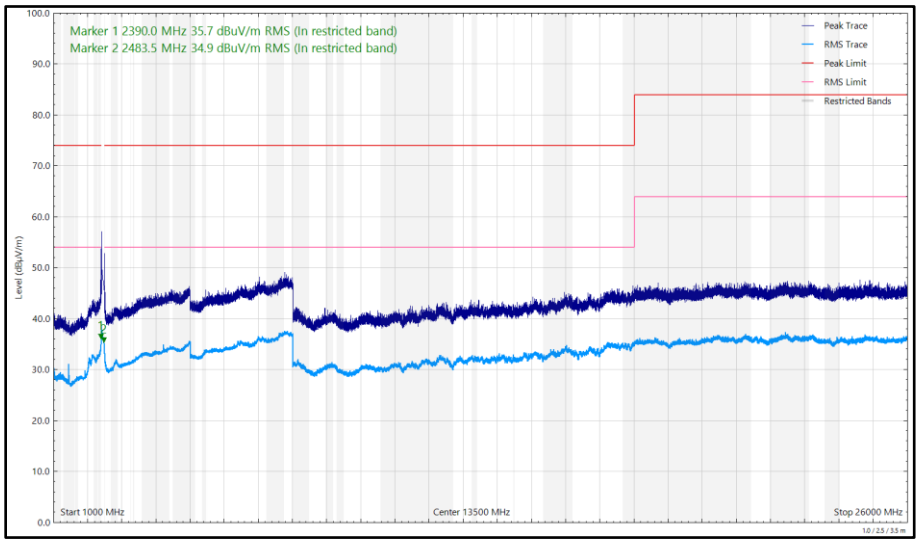

Figure 209 - 2442 MHz (CH7), 802.11b, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 60 - 2472 MHz (CH13), 802.11b, Core 0, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

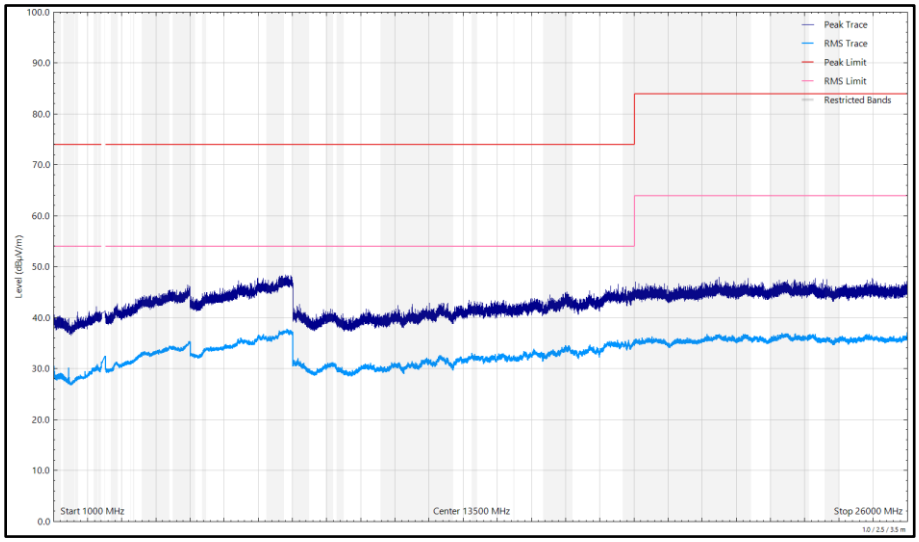

Figure 210 - 2472 MHz (CH13), 802.11b, Core 0, 1 GHz to 26 GHz, Horizontal

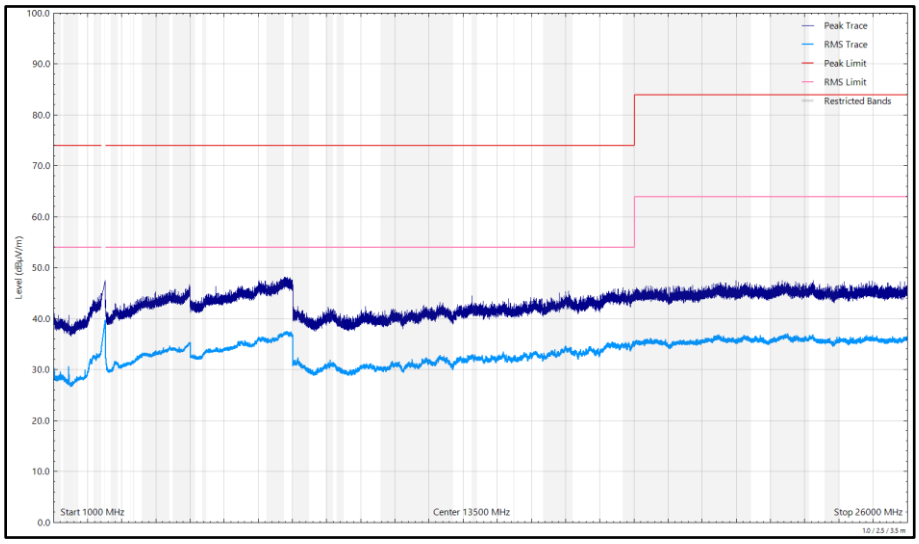

Figure 211 - 2472 MHz (CH13), 802.11b, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 61 - 2412 MHz (CH1), 802.11b, Core 1, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

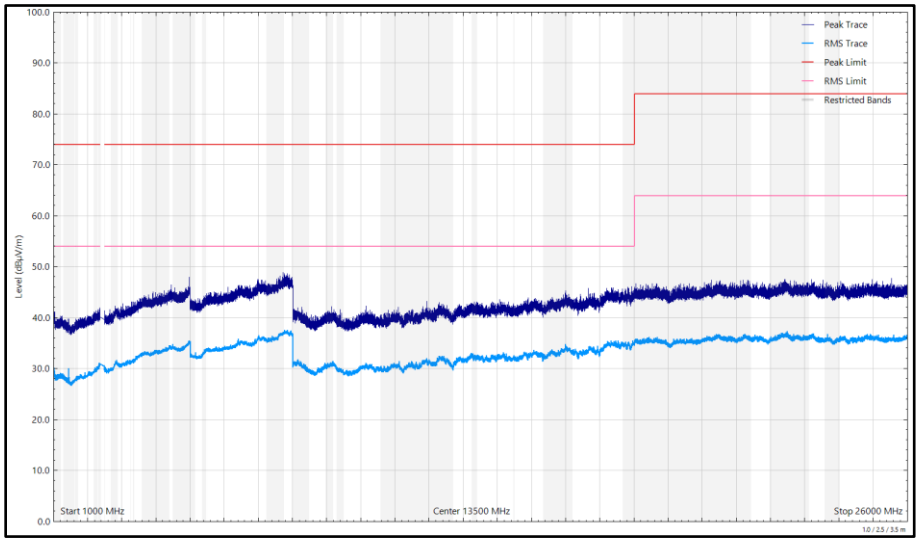

Figure 212 - 2412 MHz (CH1), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal

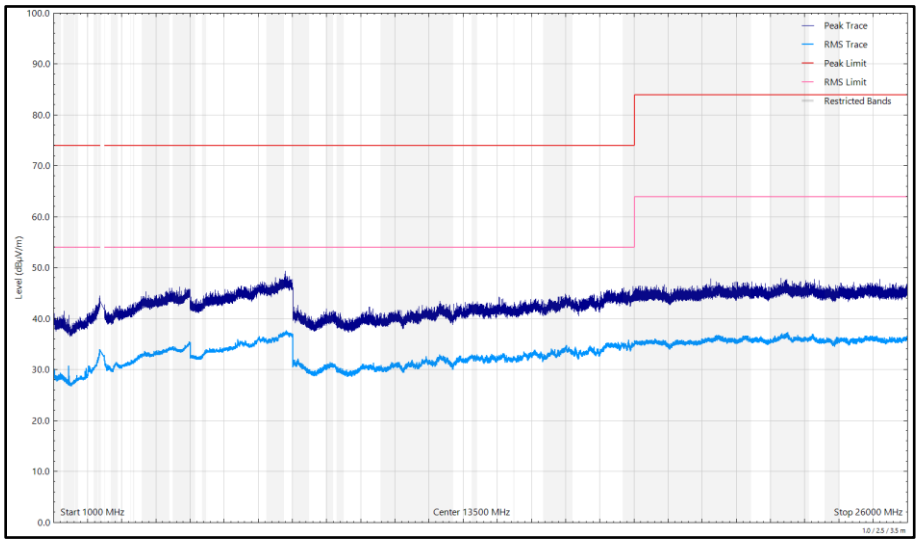

Figure 213 - 2412 MHz (CH1), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.937	35.06	54.00	-18.94	RMS	35	327	Vertical
2483.557	35.87	54.00	-18.13	RMS	42	394	Vertical
2484.161	57.37	74.00	-16.63	Peak	42	400	Vertical

Table 62 - 2442 MHz (CH7), 802.11b, Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

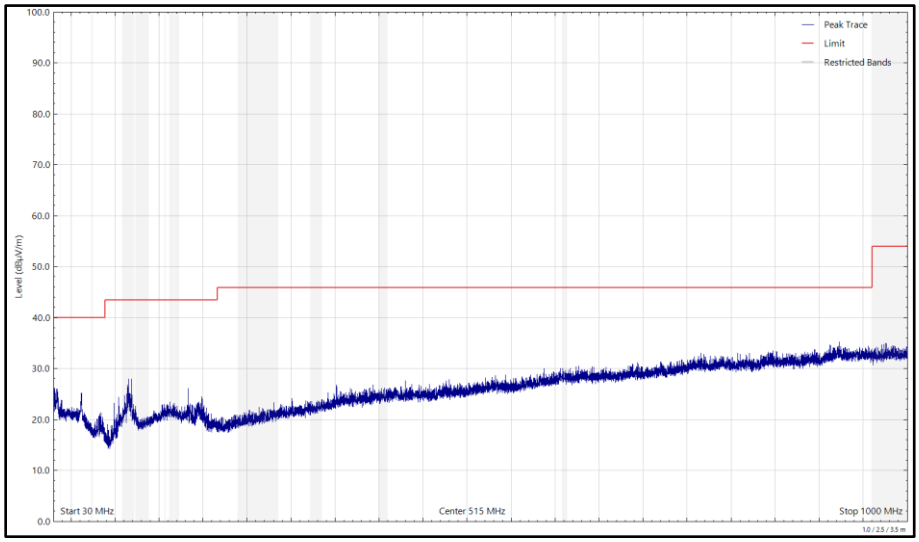

Figure 214 - 2442 MHz (CH7), 802.11b, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

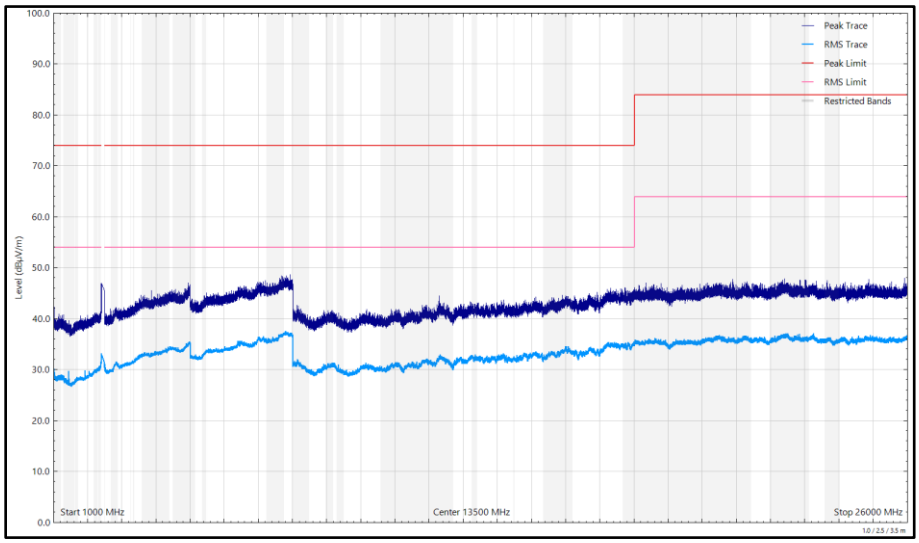

Figure 215 - 2442 MHz (CH7), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal

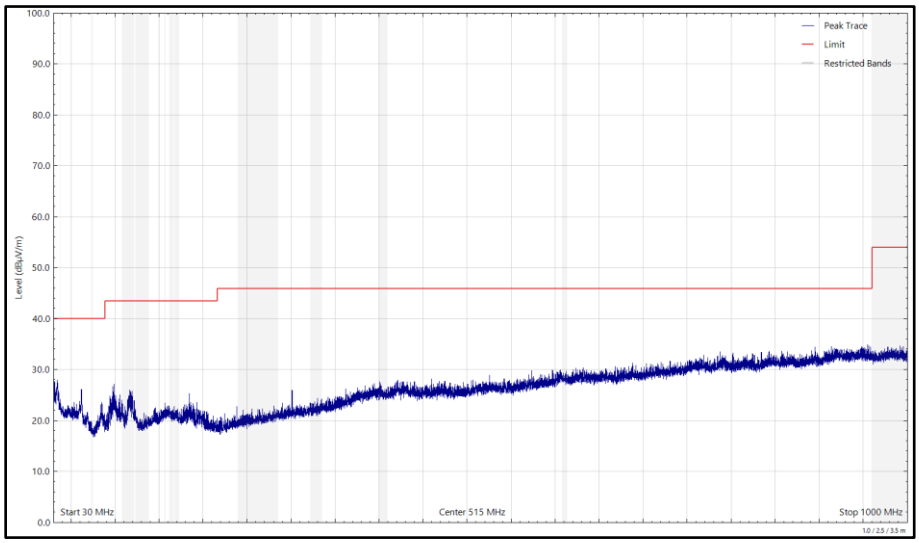

Figure 216 - 2442 MHz (CH7), 802.11b, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

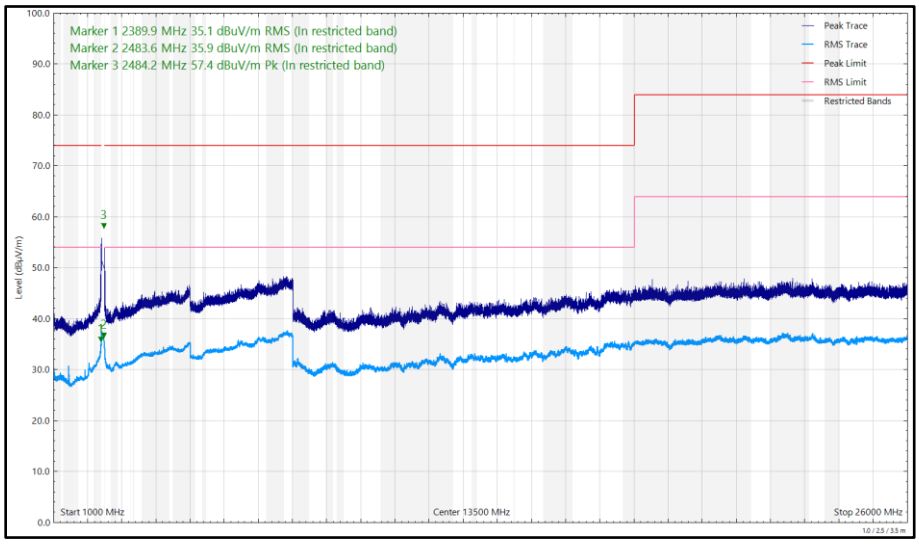

Figure 217 - 2442 MHz (CH7), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 63 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

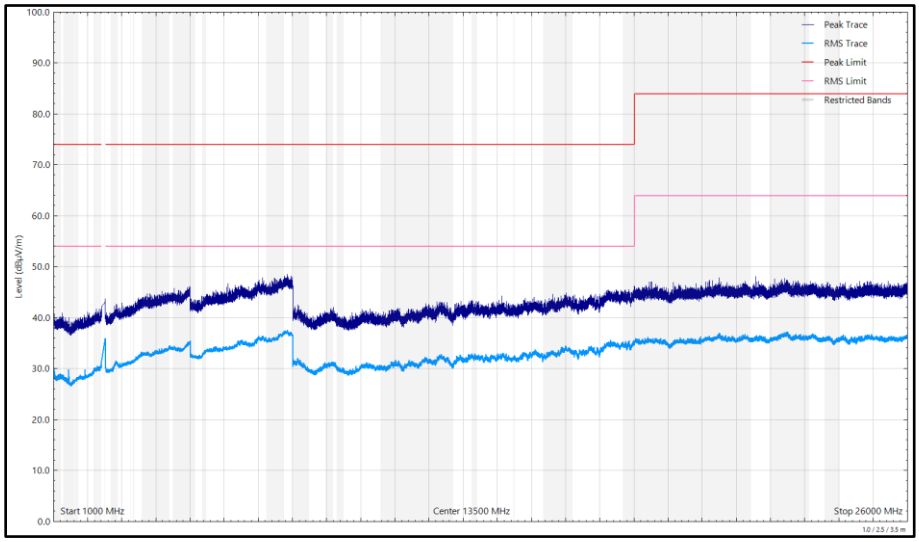

Figure 218 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal

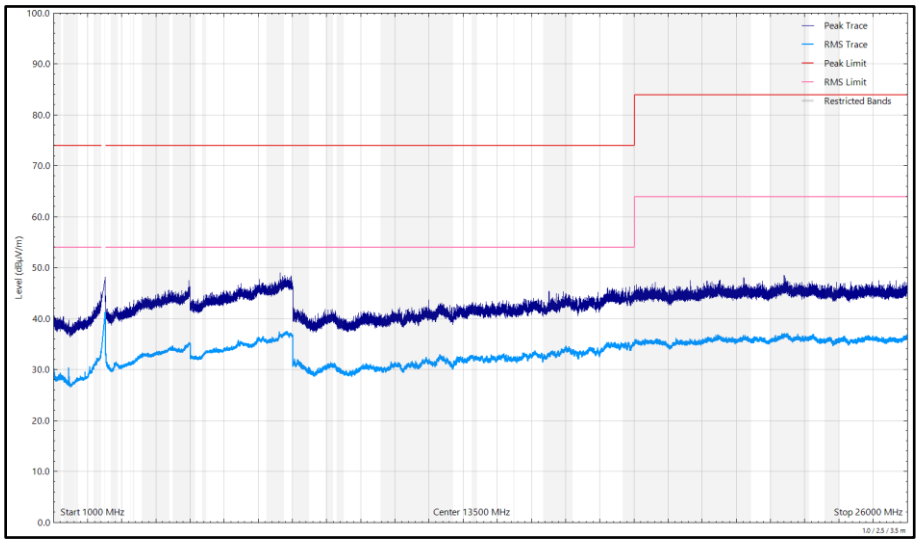

Figure 219 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2354.940	38.73	54.00	-15.27	RMS	14	390	Vertical

Table 64 - 2412 MHz (CH1), 802.11g, Core 0, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

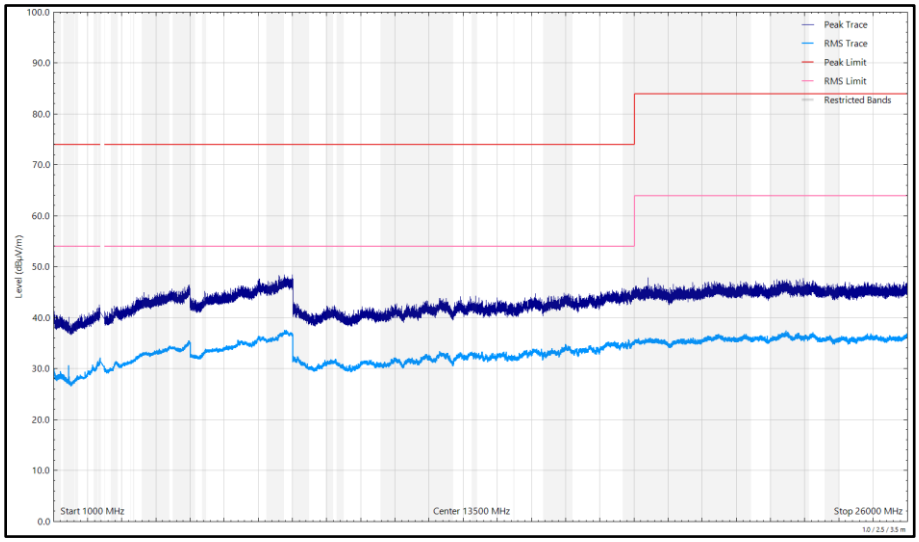

Figure 220 - 2412 MHz (CH1), 802.11g, Core 0, 1 GHz to 26 GHz, Horizontal

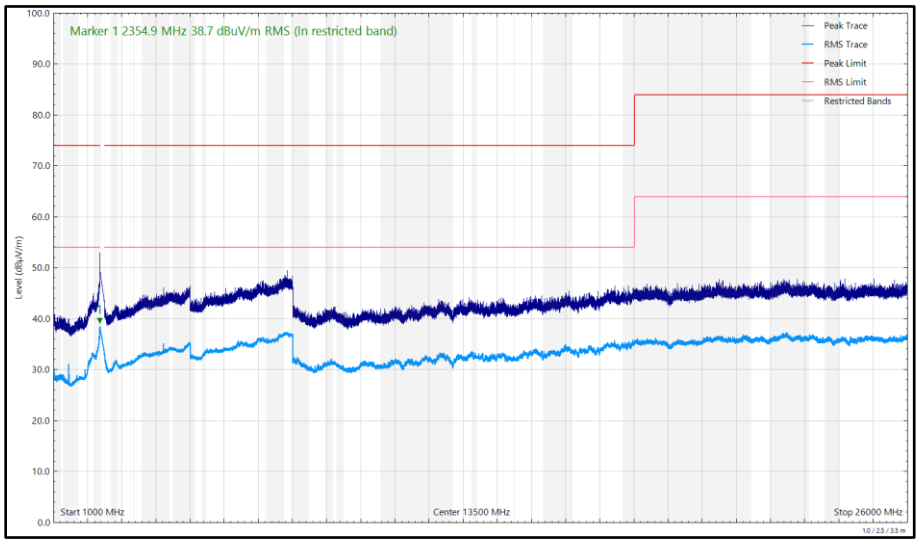

Figure 221 - 2412 MHz (CH1), 802.11g, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
115.811	20.61	43.50	-22.89	Q-Peak	7	113	Vertical
2389.972	40.78	54.00	-13.22	RMS	20	311	Vertical
2389.982	35.21	54.00	-18.79	RMS	56	361	Horizontal
2483.679	37.43	54.00	-16.57	RMS	318	388	Horizontal
2483.714	43.29	54.00	-10.71	RMS	343	282	Vertical
2484.471	59.29	74.00	-14.71	Peak	20	390	Vertical

Table 65 - 2442 MHz (CH7), 802.11g, Core 0, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

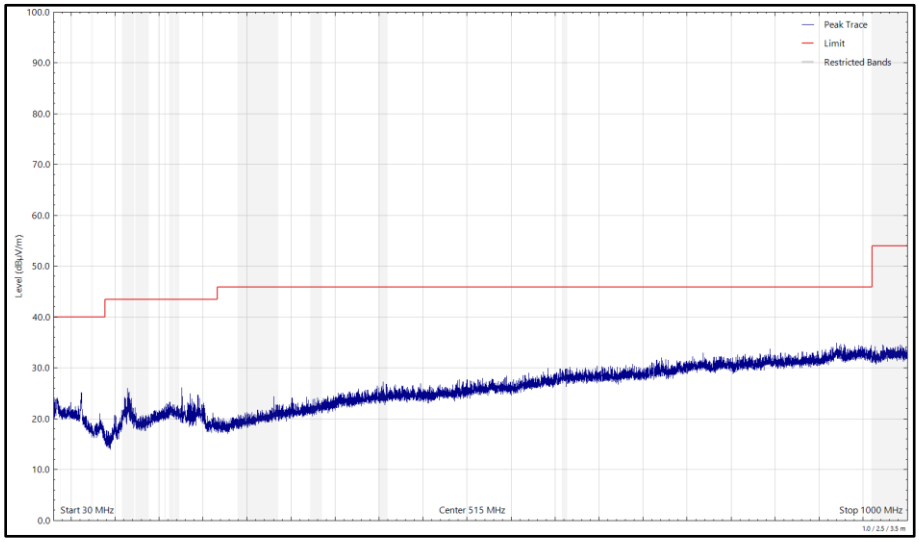

Figure 222 - 2442 MHz (CH7), 802.11g, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

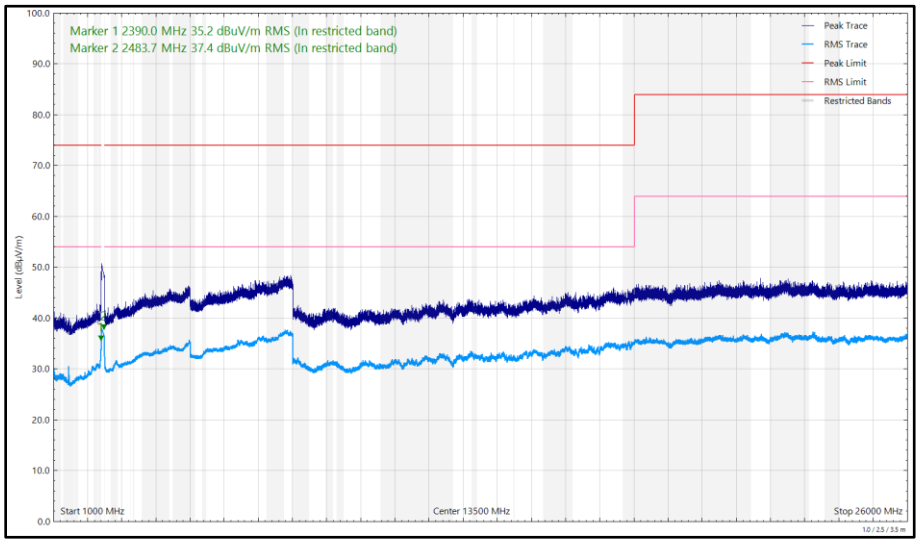

Figure 223 - 2442 MHz (CH7), 802.11g, Core 0, 1 GHz to 26 GHz, Horizontal

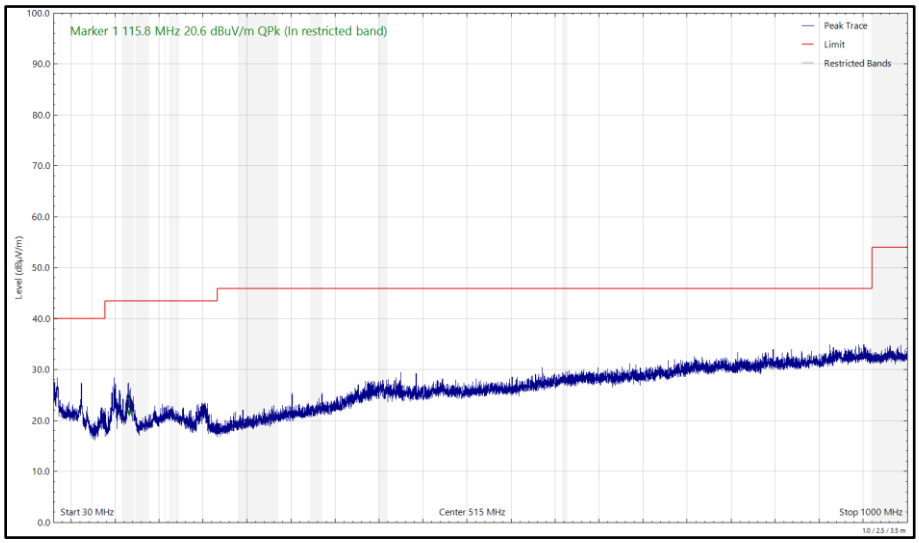

Figure 224 - 2442 MHz (CH7), 802.11g, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

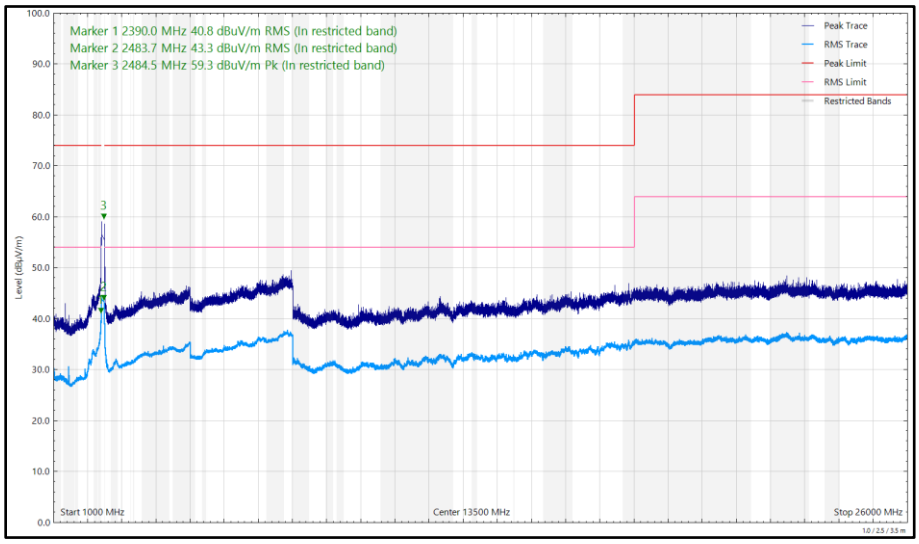

Figure 225 - 2442 MHz (CH7), 802.11g, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.910	37.30	54.00	-16.70	RMS	15	363	Vertical
2508.524	63.37	81.22	-17.85	Peak	10	322	Vertical

Table 66 - 2472 MHz (CH13), 802.11g, Core 0, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

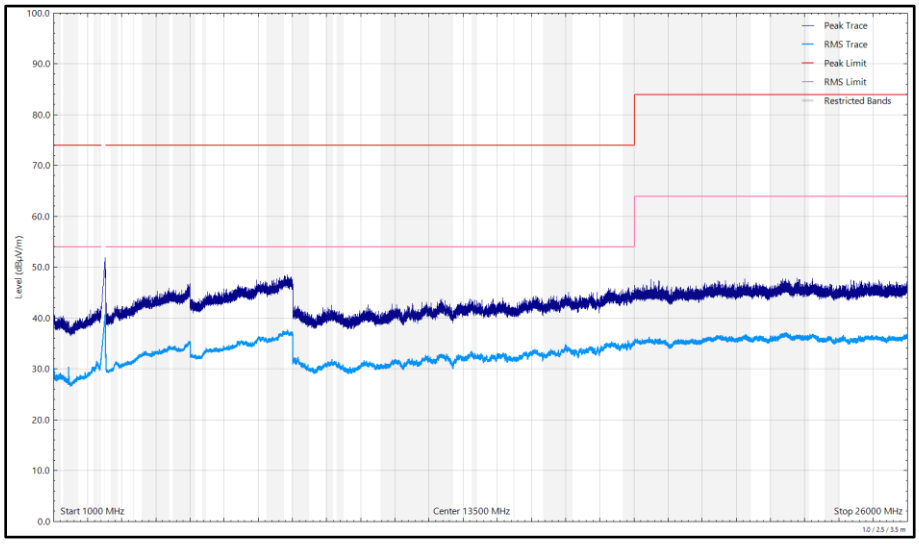

Figure 226 - 2472 MHz (CH13), 802.11g, Core 0, 1 GHz to 26 GHz, Horizontal

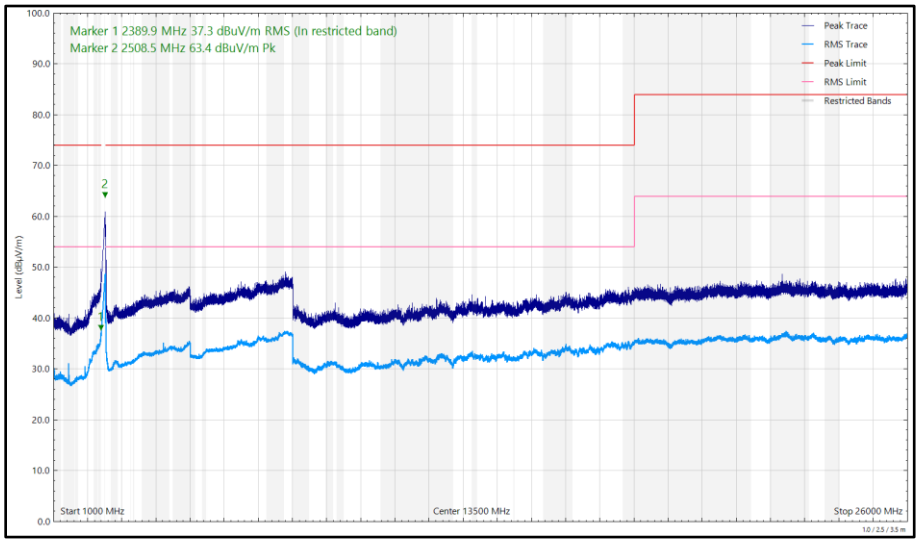

Figure 227 - 2472 MHz (CH13), 802.11g, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2354.881	37.28	54.00	-16.72	RMS	5	392	Vertical
2484.039	35.77	54.00	-18.23	RMS	32	335	Vertical

Table 67 - 2412 MHz (CH1), 802.11g, Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

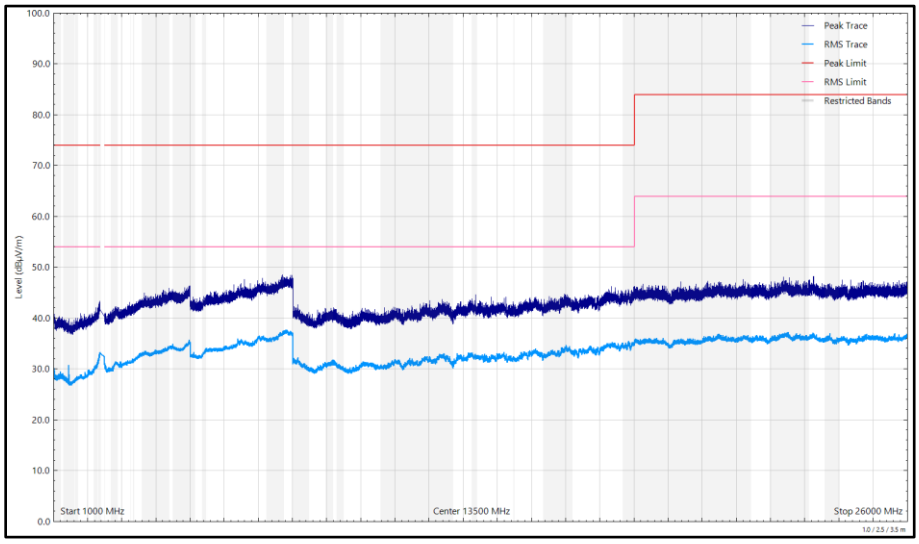

Figure 228 - 2412 MHz (CH1), 802.11g, Core 1, 1 GHz to 26 GHz, Horizontal

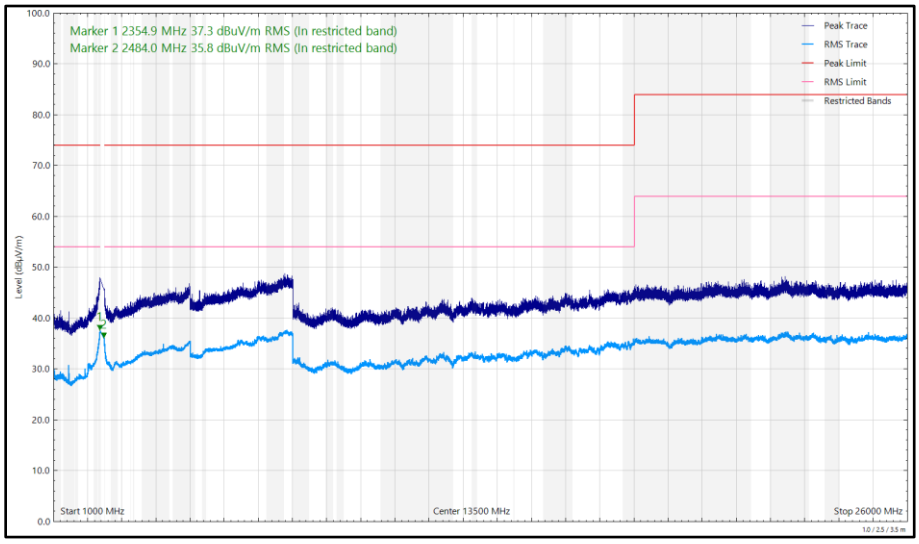

Figure 229 - 2412 MHz (CH1), 802.11g, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
115.796	20.18	43.50	-23.32	Q-Peak	10	119	Vertical
2389.959	36.99	54.00	-17.01	RMS	52	368	Horizontal
2389.975	40.19	54.00	-13.81	RMS	360	370	Vertical
2396.965	62.17	81.22	-19.05	Peak	354	322	Vertical
2483.504	39.88	54.00	-14.12	RMS	51	400	Horizontal
2483.526	44.51	54.00	-9.49	RMS	40	396	Vertical
2484.856	60.69	74.00	-13.31	Peak	37	349	Vertical

Table 68 - 2442 MHz (CH7), 802.11g, Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

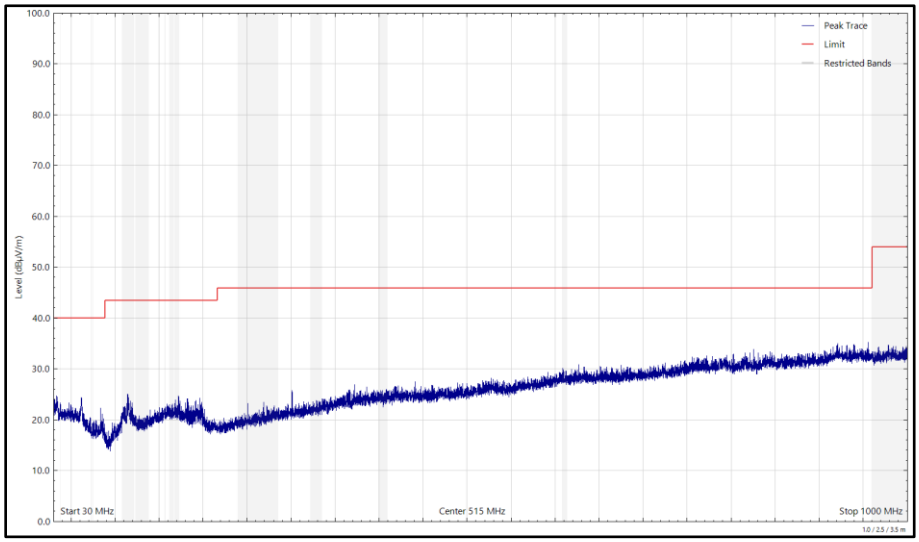

Figure 230 - 2442 MHz (CH7), 802.11g, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

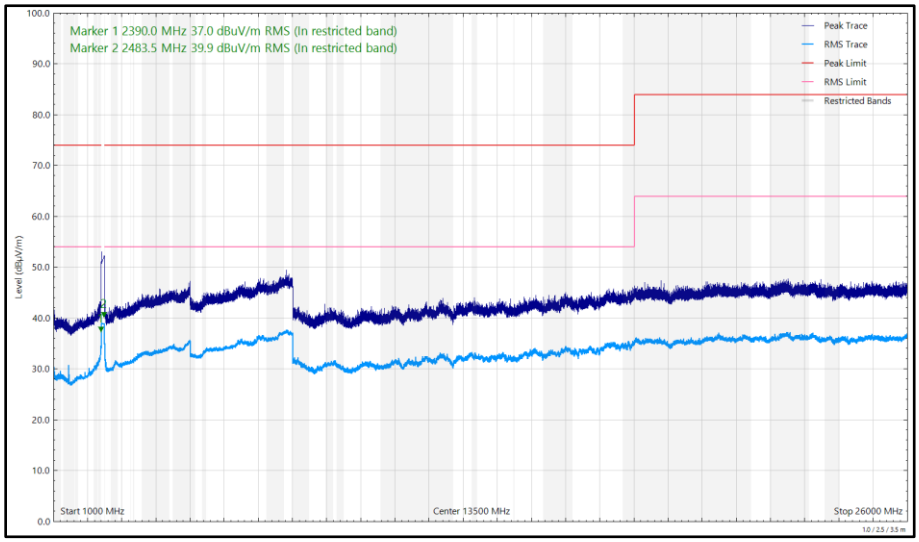

Figure 231 - 2442 MHz (CH7), 802.11g, Core 1, 1 GHz to 26 GHz, Horizontal

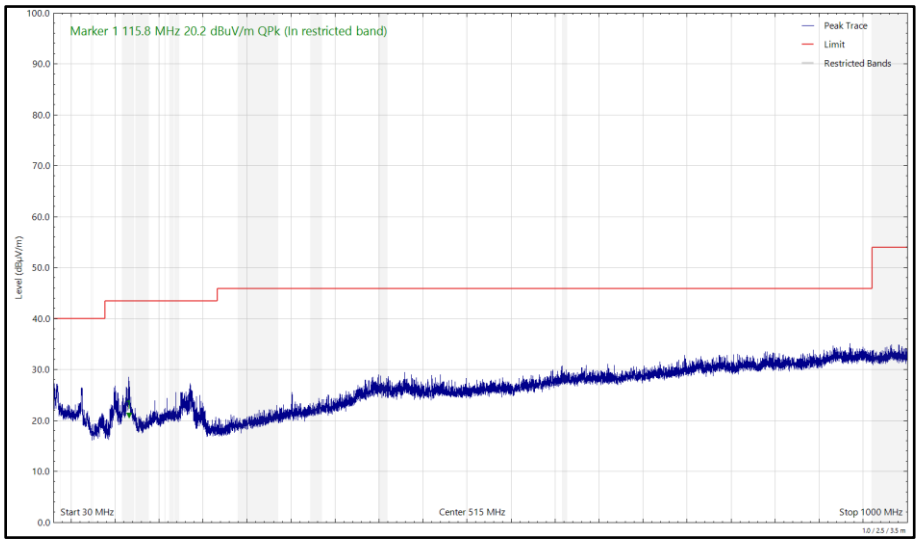

Figure 232 - 2442 MHz (CH7), 802.11g, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

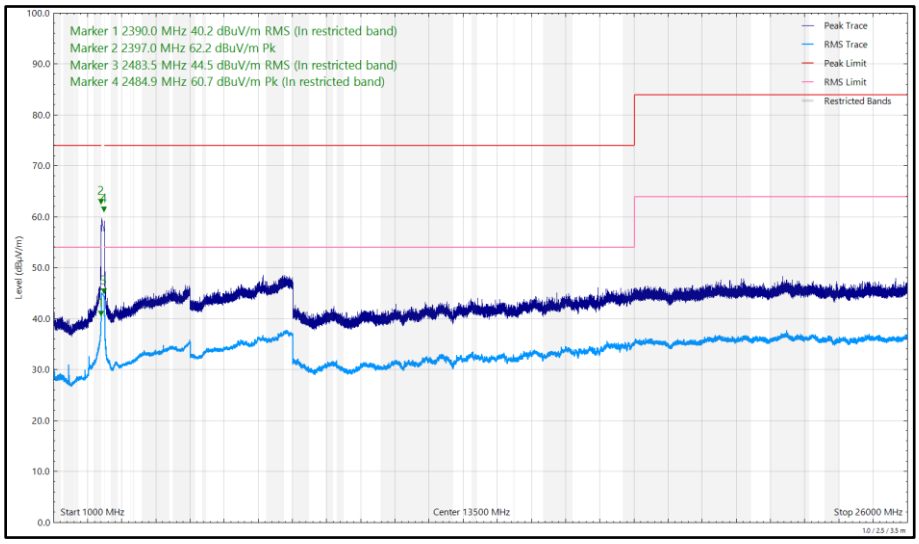

Figure 233 - 2442 MHz (CH7), 802.11g, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.813	35.95	54.00	-18.05	RMS	0	307	Vertical
2508.580	67.88	81.22	-13.34	Peak	43	388	Vertical
2508.923	61.59	81.22	-19.63	Peak	62	387	Horizontal

Table 69 - 2472 MHz (CH13), 802.11g, Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

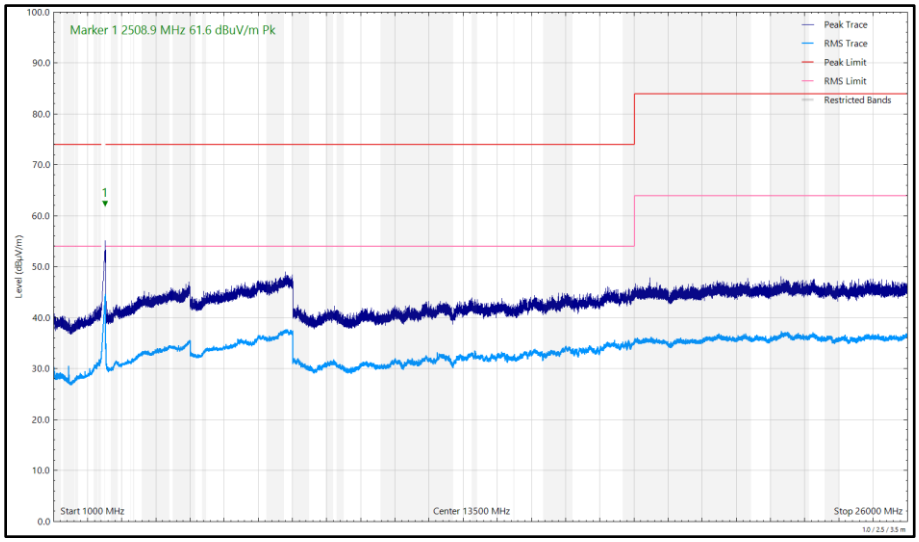

Figure 234 - 2472 MHz (CH13), 802.11g, Core 1, 1 GHz to 26 GHz, Horizontal

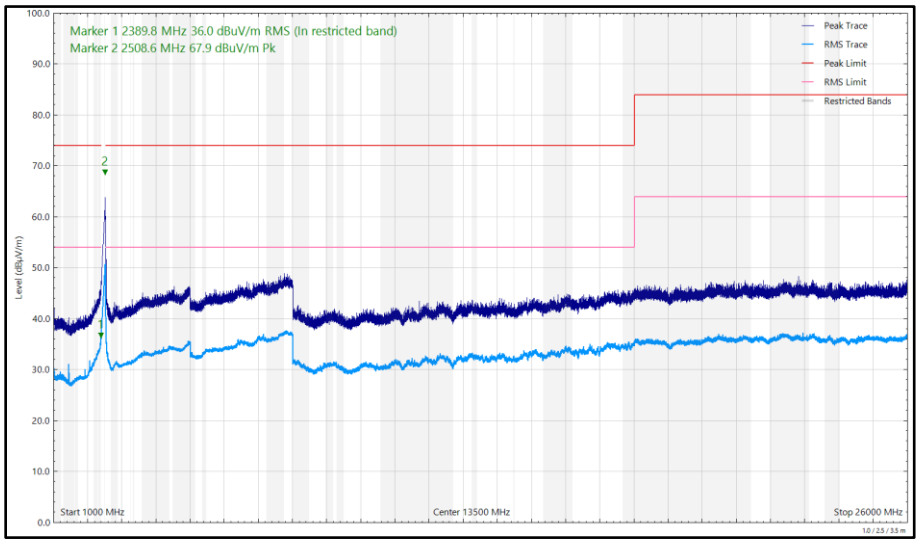

Figure 235 - 2472 MHz (CH13), 802.11g, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2354.237	41.28	54.00	-12.72	RMS	5	379	Vertical
2354.701	36.66	54.00	-17.34	RMS	47	378	Horizontal
2483.672	37.68	54.00	-16.32	RMS	38	394	Vertical

Table 70 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

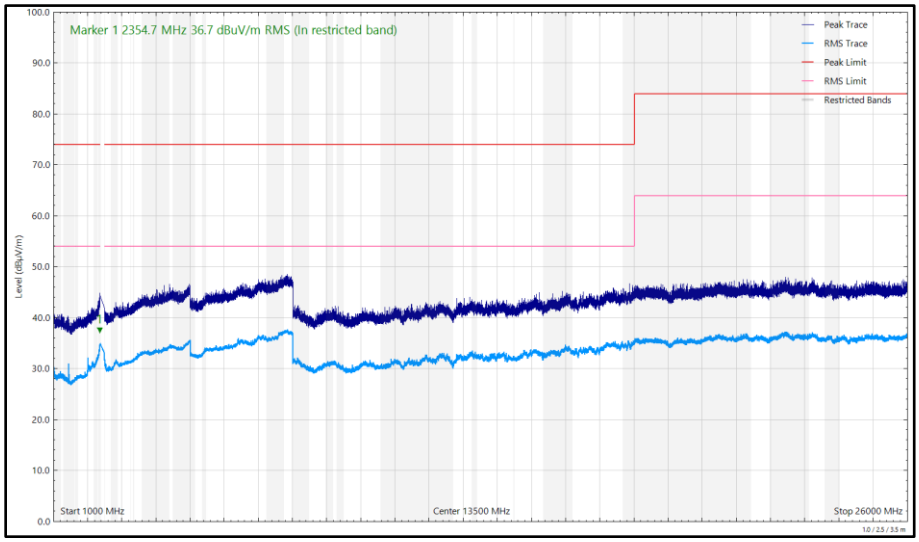

Figure 236 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

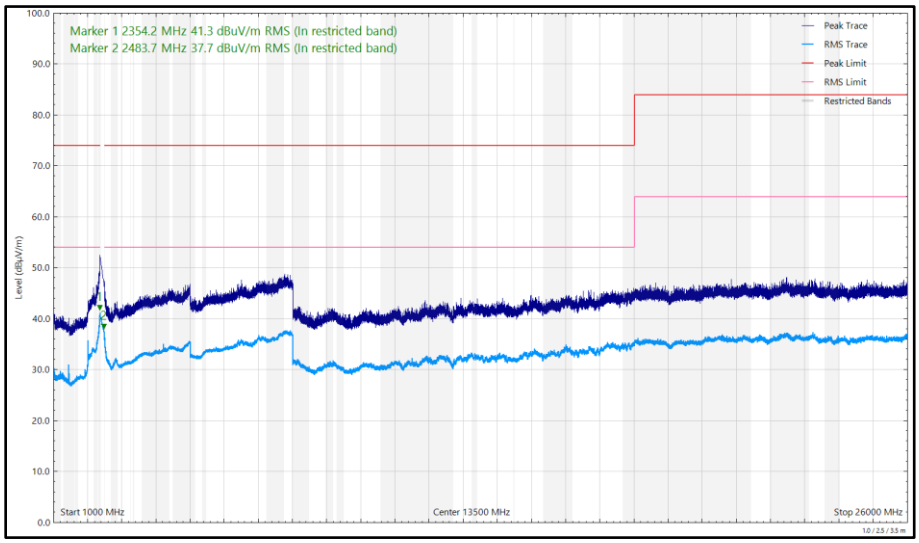

Figure 237 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2386.363	59.13	74.00	-14.87	Peak	350	372	Vertical
2389.869	43.21	54.00	-10.79	RMS	25	381	Vertical
2389.994	38.61	54.00	-15.39	RMS	55	384	Horizontal
2483.534	41.86	54.00	-12.14	RMS	59	390	Horizontal
2483.536	47.28	54.00	-6.72	RMS	36	395	Vertical
2485.063	65.05	74.00	-8.95	Peak	32	325	Vertical

Table 71 - 2442 MHz (CH7), HT20, CDD, Core 0 + Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

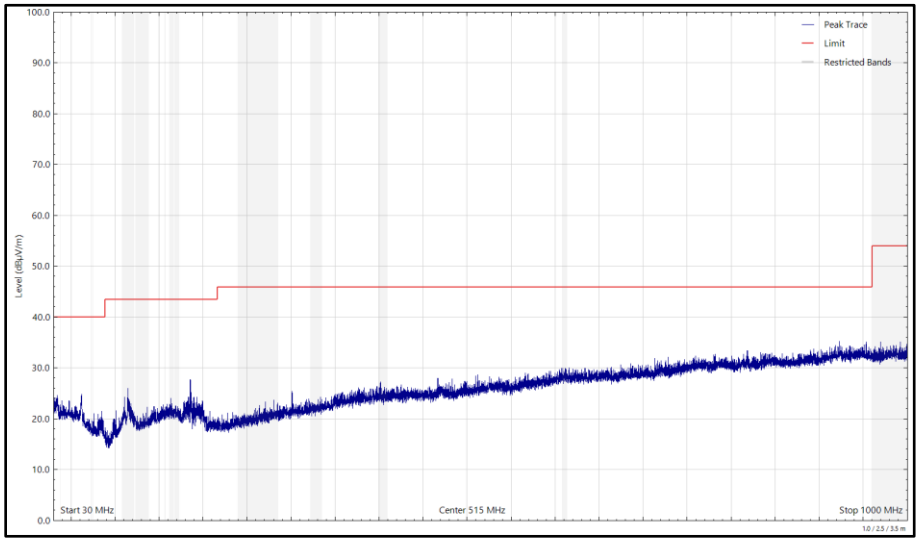

Figure 238 - 2442 MHz (CH7), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

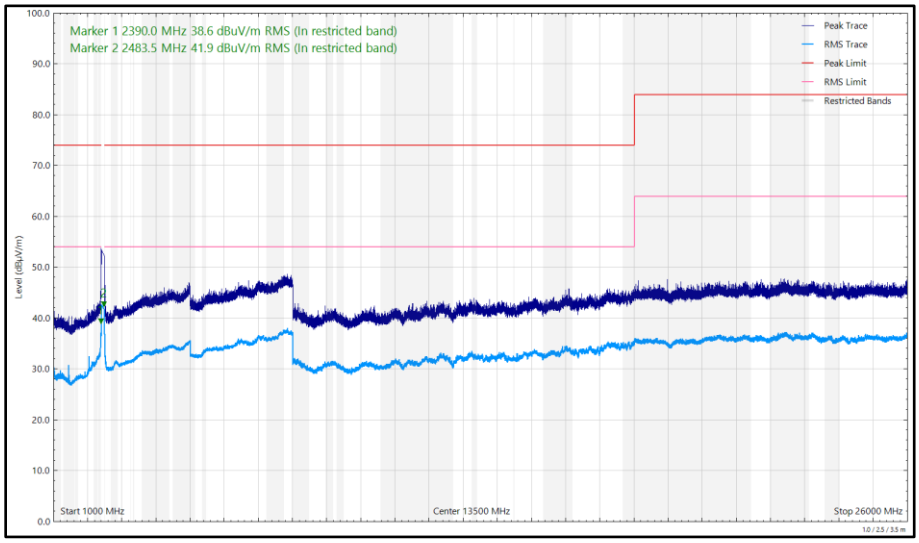

Figure 239 - 2442 MHz (CH7), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

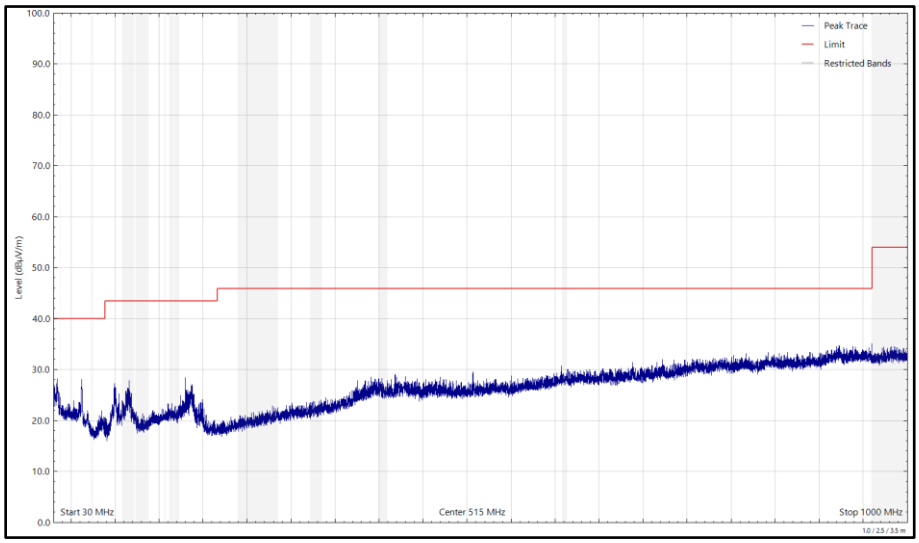

Figure 240 - 2442 MHz (CH7), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

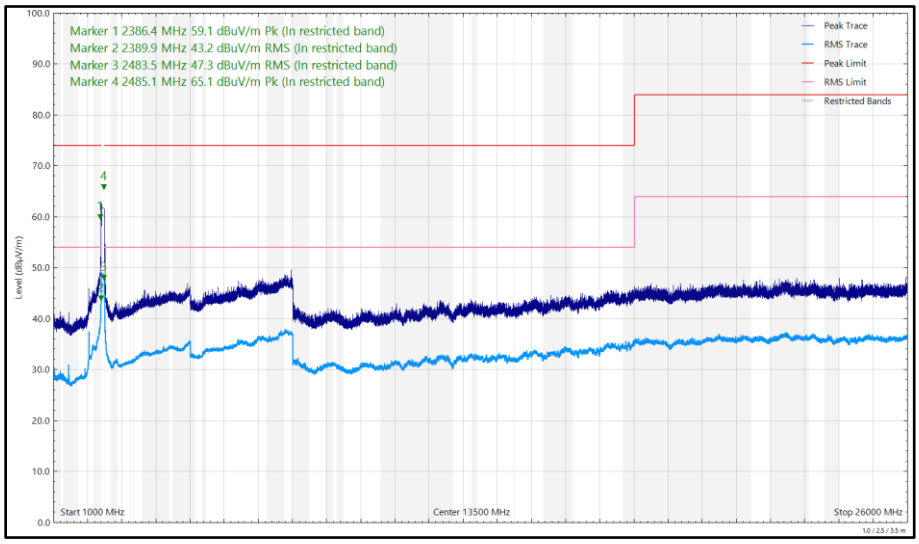

Figure 241 - 2442 MHz (CH7), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.741	38.99	54.00	-15.01	RMS	10	364	Vertical
2508.896	72.87	87.23	-14.36	Peak	32	322	Vertical
4221.791	32.84	54.00	-21.16	RMS	142	208	Vertical

Table 72 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

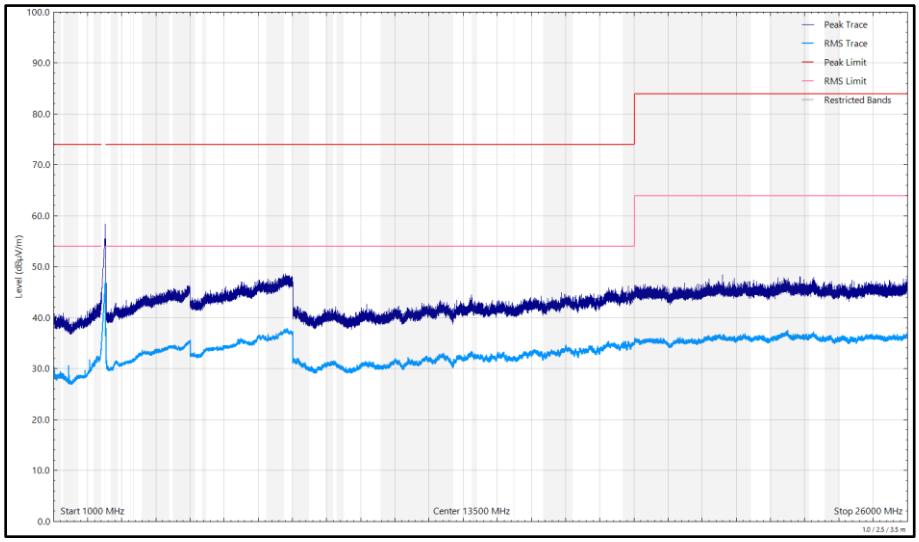

Figure 242 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

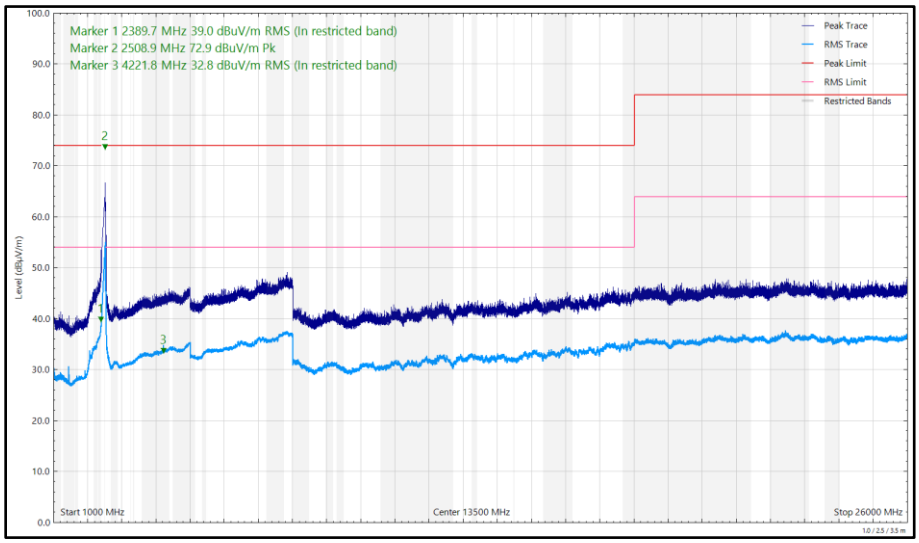

Figure 243 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2354.804	39.94	54.00	-14.06	RMS	33	375	Vertical
2354.871	35.89	54.00	-18.11	RMS	49	392	Horizontal
2354.941	56.36	74.00	-17.64	Peak	10	334	Vertical
2483.612	37.20	54.00	-16.80	RMS	40	390	Vertical

Table 73 - 2412 MHz (CH1), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

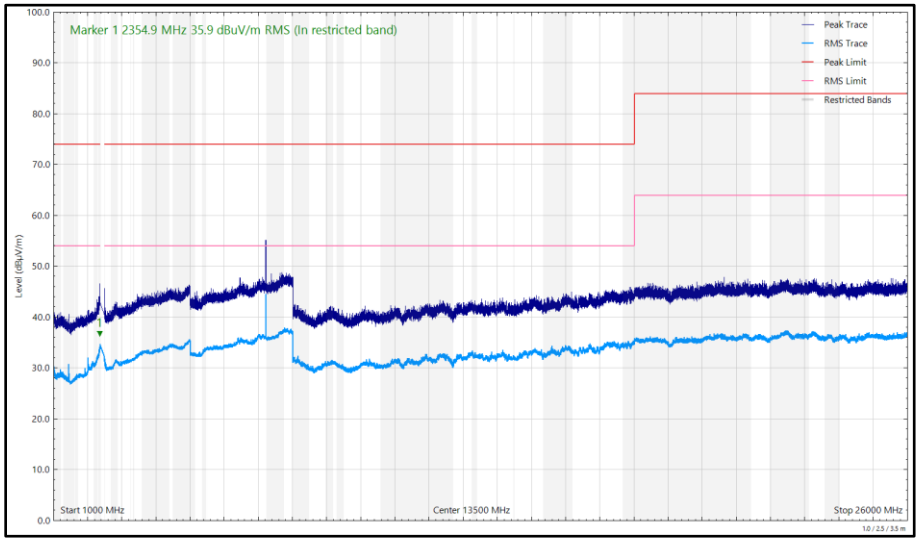

Figure 244 - 2412 MHz (CH1), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

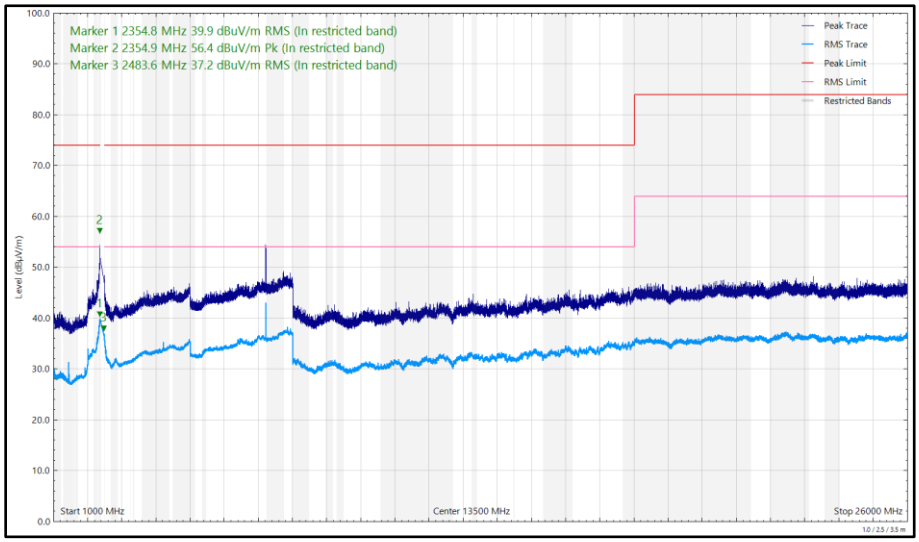

Figure 245 - 2412 MHz (CH1), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2388.417	61.16	74.00	-12.84	Peak	360	361	Vertical
2389.950	36.71	54.00	-17.29	RMS	54	393	Horizontal
2389.994	41.72	54.00	-12.28	RMS	38	371	Vertical
2483.549	41.74	54.00	-12.26	RMS	30	385	Vertical
2483.687	36.74	54.00	-17.26	RMS	57	398	Horizontal
2489.152	56.02	74.00	-17.98	Peak	57	400	Horizontal
2489.736	63.11	74.00	-10.89	Peak	40	383	Vertical
7300.725	45.79	54.00	-8.21	RMS	312	270	Vertical
7300.965	36.87	54.00	-17.13	RMS	47	369	Horizontal
7301.160	57.83	74.00	-16.17	Peak	59	269	Vertical

Table 74 - 2442 MHz (CH7), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

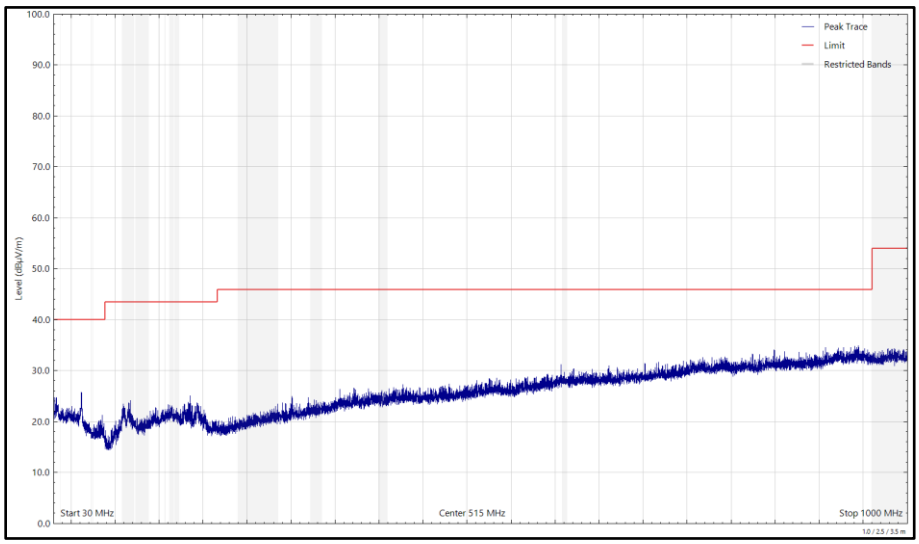

Figure 246 - 2442 MHz (CH7), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

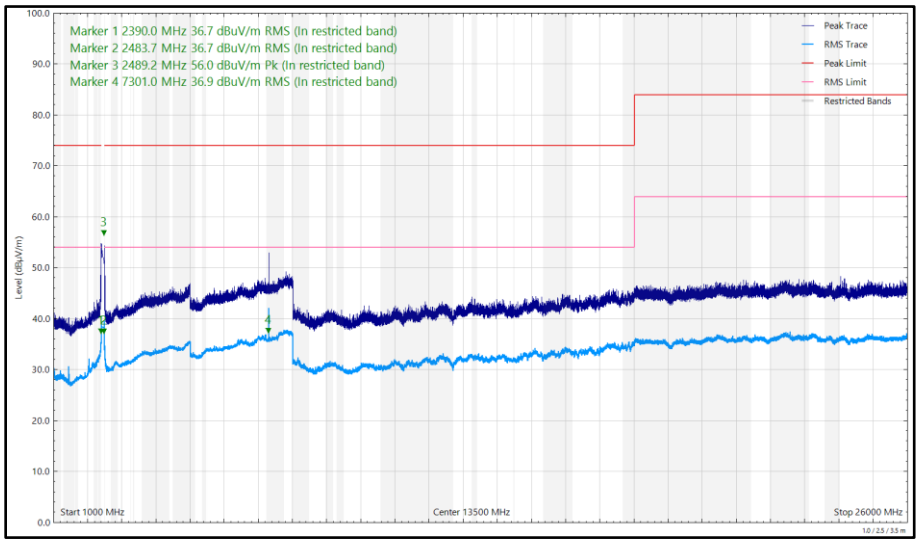

Figure 247 - 2442 MHz (CH7), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

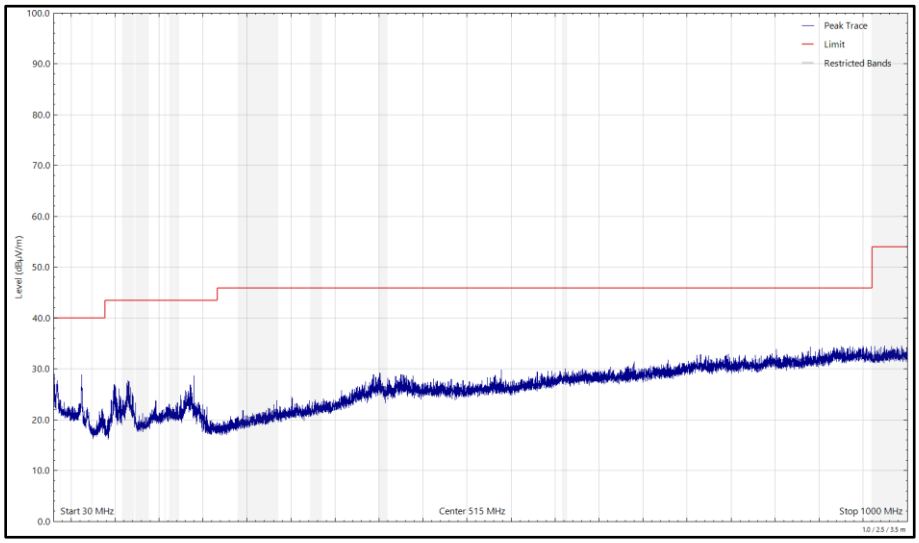

Figure 248 - 2442 MHz (CH7), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

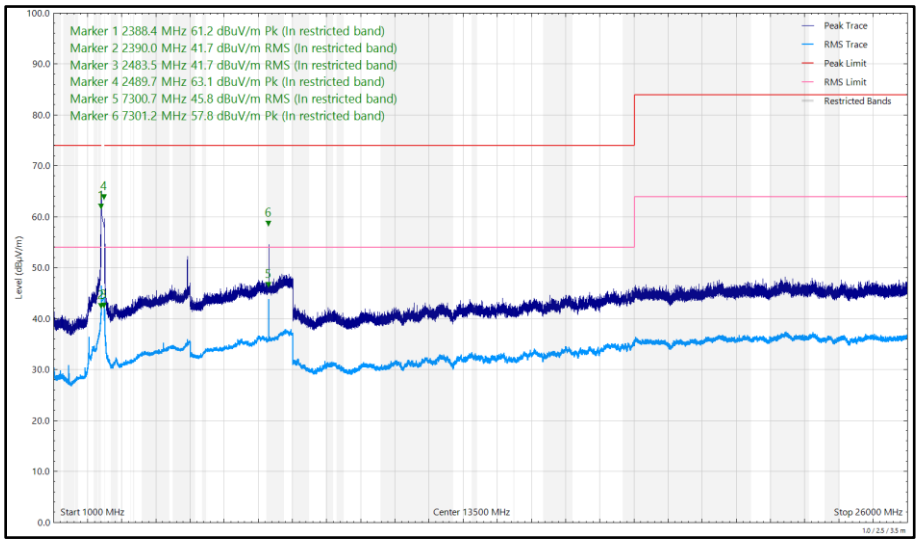

Figure 249 - 2442 MHz (CH7), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.811	38.61	54.00	-15.39	RMS	5	370	Vertical
7391.945	58.67	74.00	-15.33	Peak	313	260	Vertical
7392.205	41.77	54.00	-12.23	RMS	315	265	Vertical
7392.260	39.08	54.00	-14.92	RMS	79	390	Horizontal

Table 75 - 2472 MHz (CH13), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

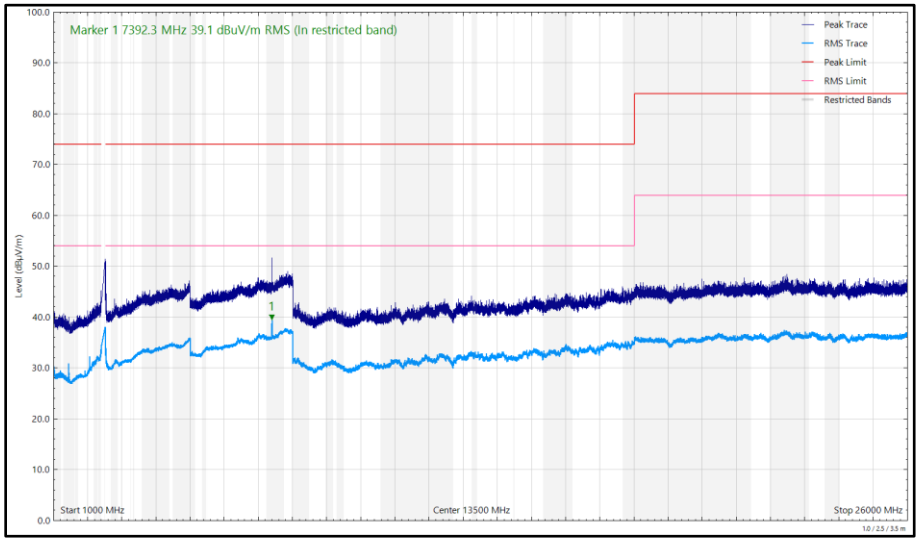

Figure 250 - 2472 MHz (CH13), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

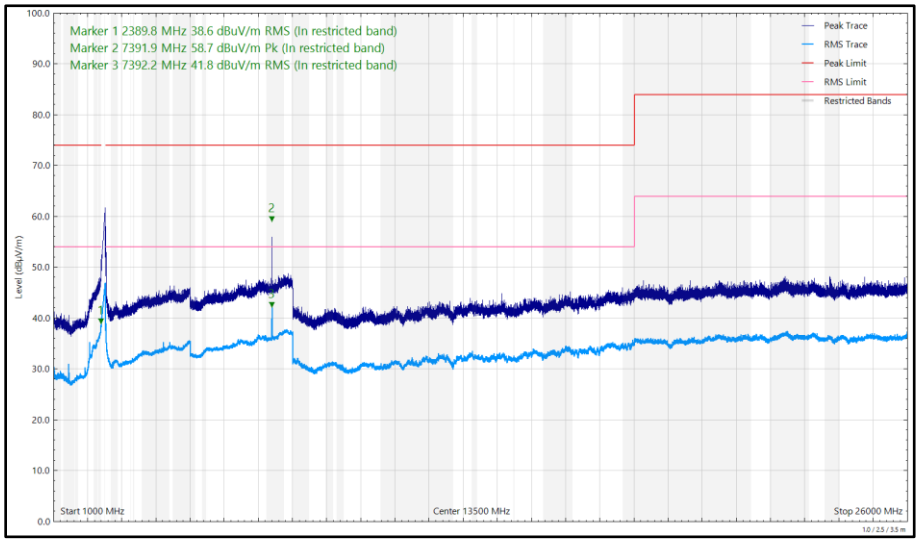

Figure 251 - 2472 MHz (CH13), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

2.5.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
Cable (N to N 1m)	Junkosha	MWX221-01000AMSAMS/B	6009	12	20-May-2025
SAC Switch Unit	TUV SUD	TUV_SSU_001	6144	12	11-Dec-2024
Digital Multimeter	Fluke	115	6145	12	06-Jun-2025
8GHz Highpass Filter	Wainwright	WHKX 7150 8000 18000 50SS	6194	12	23-Apr-2025
Pre Amp 8 - 18 GHz	Wright Technologies	APS06 0061	6200	12	03-Jun-2025
Cable (SMA to SMA 20cm)	TUV SUD	MH-FH 8-18	6215	12	23-Apr-2025
Cable (SMA to SMA 8m)	Junkosha	MWX221-08000AMSAMS/B	6318	12	18-Feb-2025
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	6323	12	04-Feb-2025
EMC Test Receiver	Rohde & Schwarz	ESW44	6333	12	16-Feb-2025
USB Spectrum Analyser	Signal Hound	SA124B	6383	-	TU
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6456	24	10-Feb-2025
DRG Horn Antenna (8-18 GHz)	Schwarzbeck	HWRD750	6458	12	05-May-2025
Humidity and Temperature Meter	R.S Components	1364	6486	12	04-Jun-2025
3m Semi-Anechoic Chamber , Chamber18	Albatross Projects	Chamber 18	6597	36	07-Feb-2026
Double Ridge Active Horn Antenna (18-40 GHz	Com-Power	AHA-840	6771	24	17-Jan-2025
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	6795	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	6796	-	TU
Turntable	Maturo Gmbh	TT1.5SI	6797	-	TU
AC Programmable Power Supply	iTech	IT7324	6812	-	O/P Mon
Broad-Band Horn Antenna 1-10GHz N	Schwarzbeck	BBHA9120B	6825	12	18-Jul-2025

Table 76

TU - Traceability Unscheduled
O/P Mon - Output Monitored using calibrated equipment

2.6 Power Spectral Density

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e)

2.6.2 Equipment Under Test and Modification State

A3186, S/N: LXXD3YHT0L - Modification State 0

2.6.3 Date of Test

29-August-2024

2.6.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.10.5.

Where the EUT duty cycle was < 98 % and repeatable within 2 %, the spectrum analyser was set to trace (power) averaging and a duty cycle correction was added as calculated in the result tables below (Method AVGPSD-2).

MIMO output port summing was performed in accordance with KDB 662911 D01 E)2)b) and F)2)f)ii).

2.6.5 Environmental Conditions

Ambient Temperature	21.3 °C
Relative Humidity	58.3 %

2.6.6 Test Results

2.4 GHz WLAN

SISO

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11b	Duty Cycle (%):	99.4
Data Rate:	1 Mbps	DCCF (dB):	0.02
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	2.41	-	-	2.41	7.70	-5.29
2442	100.0	-	2.31	-	-	2.31	7.70	-5.39
2472	100.0	-	-0.95	-	-	-0.95	7.70	-8.65

Table 77 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	2.41	-	-	2.41	8.00	-5.59
2442	100.0	-	2.31	-	-	2.31	8.00	-5.69
2472	100.0	-	-0.95	-	-	-0.95	8.00	-8.95

Table 78 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11g	Duty Cycle (%):	97.8
Data Rate:	12 Mbps	DCCF (dB):	0.09
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-1.38	-	-	-1.38	7.70	-9.08
2442	100.0	-	4.05	-	-	4.05	7.70	-3.65
2472	100.0	-	-9.78	-	-	-9.78	7.70	-17.48

Table 79 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-1.38	-	-	-1.38	8.00	-9.38
2442	100.0	-	4.05	-	-	4.05	8.00	-3.95
2472	100.0	-	-9.78	-	-	-9.78	8.00	-17.78

Table 80 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	97.0
Modulation Coding Scheme:	MCS2	DCCF (dB):	0.13
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-2.76	-	-	-2.76	7.70	-10.46
2442	100.0	-	4.45	-	-	4.45	7.70	-3.25
2472	100.0	-	-10.54	-	-	-10.54	7.70	-18.24

Table 81 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-2.76	-	-	-2.76	8.00	-10.76
2442	100.0	-	4.45	-	-	4.45	8.00	-3.55
2472	100.0	-	-10.54	-	-	-10.54	8.00	-18.54

Table 82 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	96.3
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.16
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-4.38	-	-	-4.38	7.70	-12.08
2442	100.0	-	2.64	-	-	2.64	7.70	-5.06
2472	100.0	-	-13.07	-	-	-13.07	7.70	-20.77

Table 83 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-4.38	-	-	-4.38	8.00	-12.38
2442	100.0	-	2.64	-	-	2.64	8.00	-5.36
2472	100.0	-	-13.07	-	-	-13.07	8.00	-21.07

Table 84 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	96.6
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.15
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	1.95	-	-	1.95	7.70	-5.75
2442	100.0	-	1.84	-	-	1.84	7.70	-5.86
2472	100.0	-	-18.06	-	-	-18.06	7.70	-25.76

Table 85 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	1.95	-	-	1.95	8.00	-6.05
2442	100.0	-	1.84	-	-	1.84	8.00	-6.16
2472	100.0	-	-18.06	-	-	-18.06	8.00	-26.06

Table 86 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU52	Duty Cycle (%):	96.5
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.15
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	2.28	-	-	2.28	7.70	-5.42
2442	100.0	-	2.33	-	-	2.33	7.70	-5.37
2472	100.0	-	-18.11	-	-	-18.11	7.70	-25.81

Table 87 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	2.28	-	-	2.28	8.00	-5.72
2442	100.0	-	2.33	-	-	2.33	8.00	-5.67
2472	100.0	-	-18.11	-	-	-18.11	8.00	-26.11

Table 88 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	-		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU106	Duty Cycle (%):	98.0
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.09
Antenna Configuration:	SISO	Peak Antenna Gain (dBi):	6.30
Active Port(s):	B (Core 1)	Active Chain(s):	1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-1.13	-	-	-1.13	7.70	-8.83
2442	100.0	-	2.20	-	-	2.20	7.70	-5.50
2472	100.0	-	-19.08	-	-	-19.08	7.70	-26.78

Table 89 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-	-1.13	-	-	-1.13	8.00	-9.13
2442	100.0	-	2.20	-	-	2.20	8.00	-5.80
2472	100.0	-	-19.08	-	-	-19.08	8.00	-27.08

Table 90 - ISEDC Maximum Power Spectral Density Results

MIMO CDD:

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	662911 D01 v02r01 E)2)b)		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11n HT20	Duty Cycle (%):	96.5
Modulation Coding Scheme:	MCS2	DCCF (dB):	0.15
Antenna Configuration:	MIMO CDD	Peak Antenna Gain (dBi):	7.94
Active Port(s):	A+B (Core 0 + Core 1)	Active Chain(s):	0+1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-4.19	-3.87	-	-	-1.02	6.06	-7.08
2437	51.0	1.42	1.18	-	-	4.31	6.06	-1.75
2472	100.0	-11.00	-11.80	-	-	-8.37	6.06	-14.43

Table 91 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-4.19	-3.87	-	-	-1.02	8.00	-9.02
2442	51.0	1.42	1.18	-	-	4.31	8.00	-3.69
2472	100.0	-11.00	-11.80	-	-	-8.37	8.00	-16.37

Table 92 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	662911 D01 v02r01 E)2)b)		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 SU	Duty Cycle (%):	95.8
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.19
Antenna Configuration:	MIMO CDD	Peak Antenna Gain (dBi):	7.94
Active Port(s):	A+B (Core 0 + Core 1)	Active Chain(s):	0+1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-7.12	-7.36	-	-	-4.22	6.06	-10.28
2437	51.0	-0.23	-0.65	-	-	2.58	6.06	-3.48
2472	100.0	-13.61	-14.08	-	-	-10.82	6.06	-16.88

Table 93 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-7.12	-7.36	-	-	-4.22	8.00	-12.22
2442	51.0	-0.23	-0.65	-	-	2.58	8.00	-5.42
2472	100.0	-13.61	-14.08	-	-	-10.82	8.00	-18.82

Table 94 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	662911 D01 v02r01 E)2)b)		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU26	Duty Cycle (%):	96.5
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.15
Antenna Configuration:	MIMO CDD	Peak Antenna Gain (dBi):	7.94
Active Port(s):	A+B (Core 0 + Core 1)	Active Chain(s):	0+1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	51.0	-1.03	-0.83	-	-	2.08	6.06	-3.98
2442	100.0	1.62	1.92	-	-	4.78	6.06	-1.28
2472	100.0	-21.99	-22.73	-	-	-19.33	6.06	-25.39

Table 95 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	51.0	-1.03	-0.83	-	-	2.08	8.00	-5.92
2442	100.0	1.62	1.92	-	-	4.78	8.00	-3.22
2472	100.0	-21.99	-22.73	-	-	-19.33	8.00	-27.33

Table 96 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	662911 D01 v02r01 E)2)b)		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU52	Duty Cycle (%):	96.3
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.16
Antenna Configuration:	MIMO CDD	Peak Antenna Gain (dBi):	7.94
Active Port(s):	A+B (Core 0 + Core 1)	Active Chain(s):	0+1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	0.75	0.83	-	-	3.80	6.06	-2.26
2442	51.0	-0.77	-1.01	-	-	2.12	6.06	-3.94
2472	100.0	-22.15	-22.82	-	-	-19.47	6.06	-25.53

Table 97 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	0.75	0.83	-	-	3.80	8.00	-4.20
2442	51.0	-0.77	-1.01	-	-	2.12	8.00	-5.88
2472	100.0	-22.15	-22.82	-	-	-19.47	8.00	-27.47

Table 98 - ISEDC Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.5
Additional Reference(s):	662911 D01 v02r01 E)2)b)		
Note(s):	DCCF was added to the spectrum analyser reference level offset.		

DUT Configuration			
Mode:	802.11ax HE20 RU106	Duty Cycle (%):	97.8
Modulation Coding Scheme:	MCS2x1	DCCF (dB):	0.10
Antenna Configuration:	MIMO CDD	Peak Antenna Gain (dBi):	7.94
Active Port(s):	A+B (Core 0 + Core 1)	Active Chain(s):	0+1

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-2.37	-2.23	-	-	0.71	6.06	-5.35
2442	100.0	1.89	1.77	-	-	4.84	6.06	-1.22
2472	100.0	-21.85	-22.65	-	-	-19.22	6.06	-25.28

Table 99 - FCC Maximum Power Spectral Density Results

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	∑		
2412	100.0	-2.37	-2.23	-	-	0.71	8.00	-7.29
2442	100.0	1.89	1.77	-	-	4.84	8.00	-3.16
2472	100.0	-21.85	-22.65	-	-	-19.22	8.00	-27.22

Table 100 - ISEDC Maximum Power Spectral Density Results

FCC 47 CFR Part 15, Limit Clause 15.247 (e)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Hygrometer	Rotronic	I-1000	3068	12	07-Nov-2024
AC Programmable Power Supply	iTech	IT7324	5225	-	O/P Mon
MXA Signal Analyser	Keysight Technologies	N9020B	5529	24	13-Dec-2024
Digital Multimeter	Fluke	115	6145	12	06-Jun-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6426	12	07-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6752	12	06-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6753	12	06-Feb-2025

Table 101

O/P Mon - Output Monitored using calibrated equipment

3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Emission Bandwidth	± 530.036 kHz
Maximum Conducted Output Power	± 1.38 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Power Spectral Density	± 1.49 dB

Table 102

Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.