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

Table 746 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 40 GHz

*No emissions found within 10 dB of the limit.

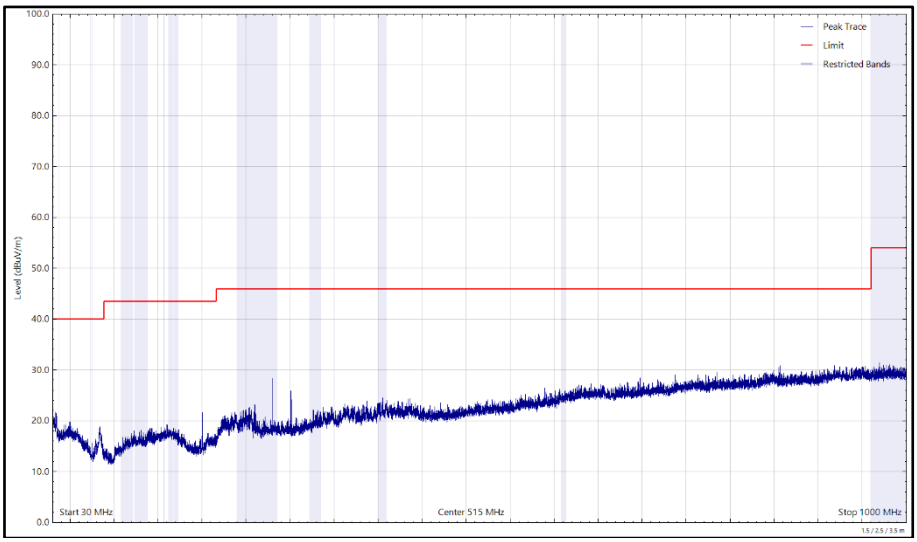

Figure 371 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

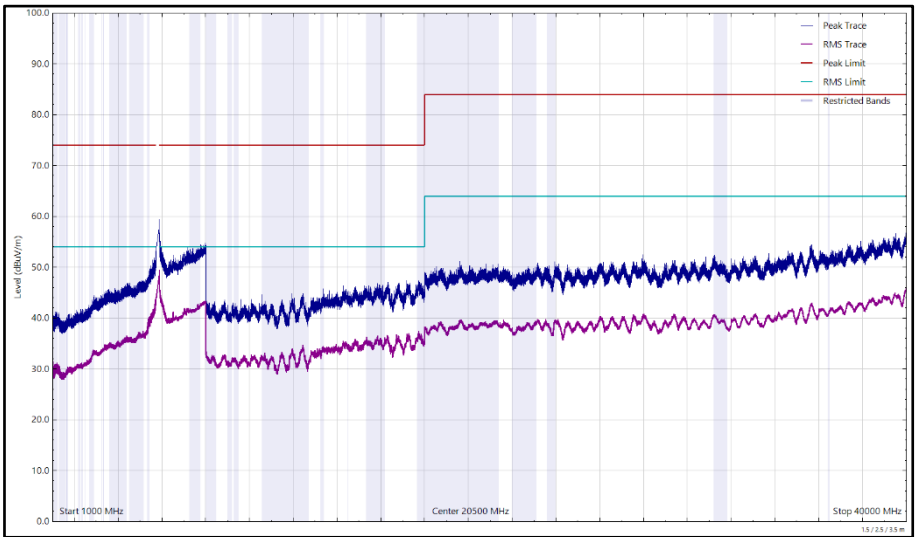

Figure 372 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal

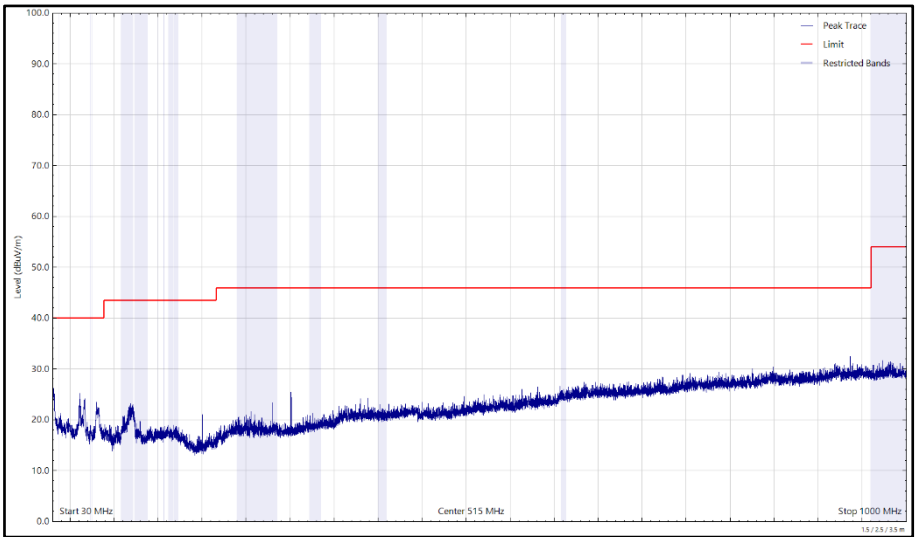

Figure 373 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

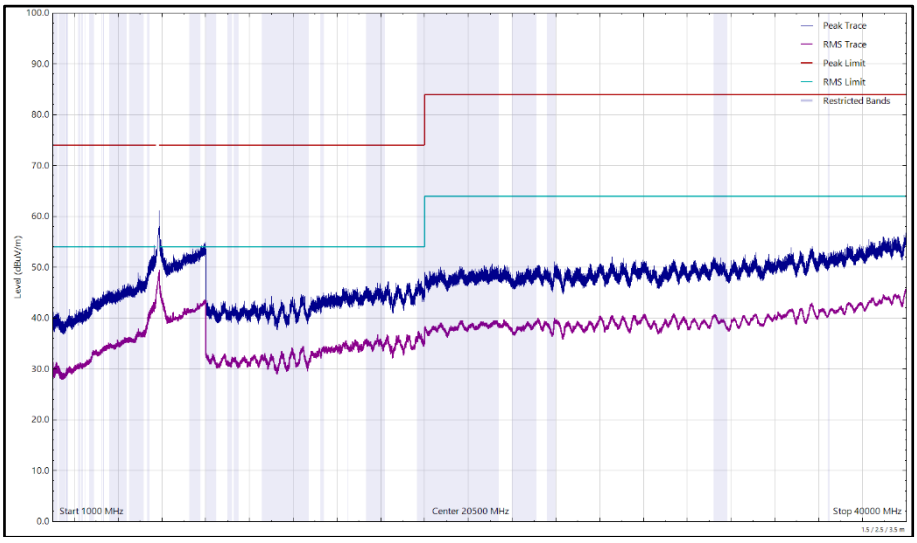

Figure 374 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.996	27.52	46.00	-18.48	Q-Peak	97	121	Horizontal
300.828	24.18	46.00	-21.82	Peak	351	165	Vertical

Table 747 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

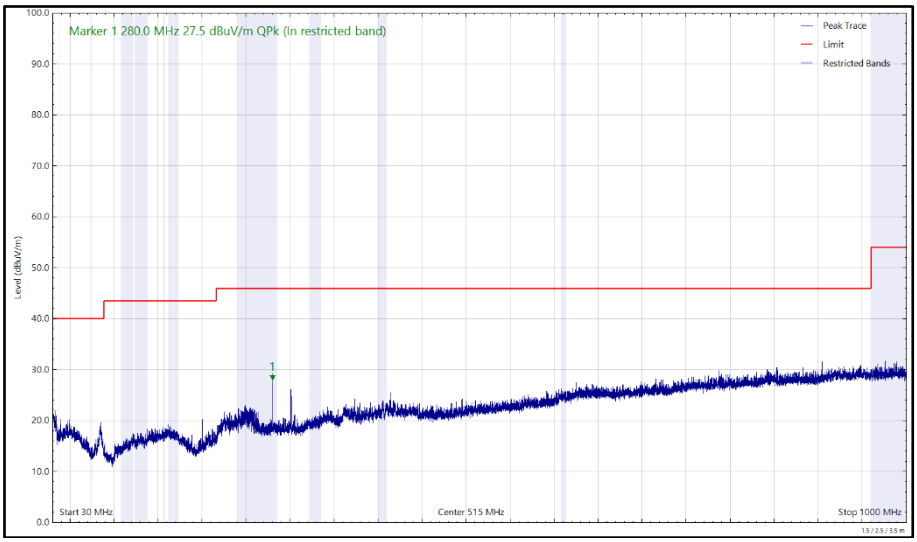

Figure 375 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

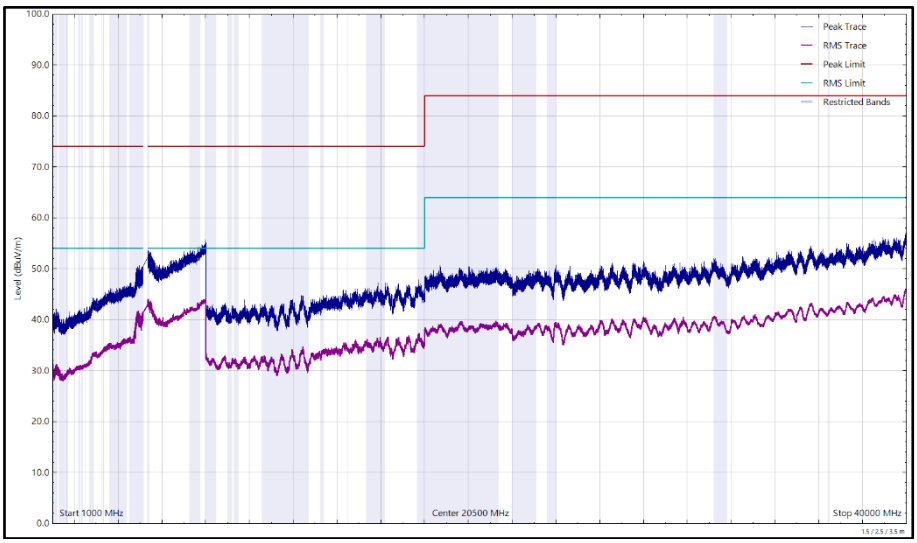

Figure 376 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

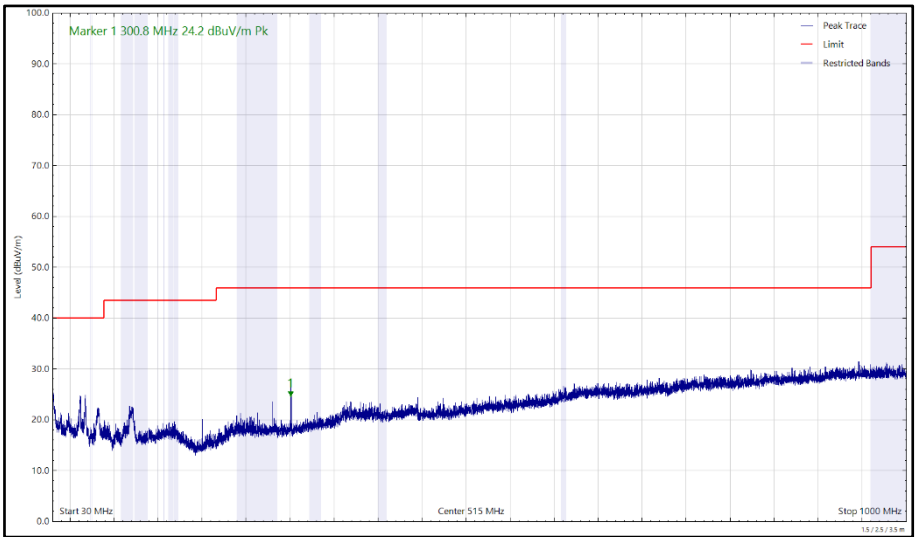

Figure 377 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

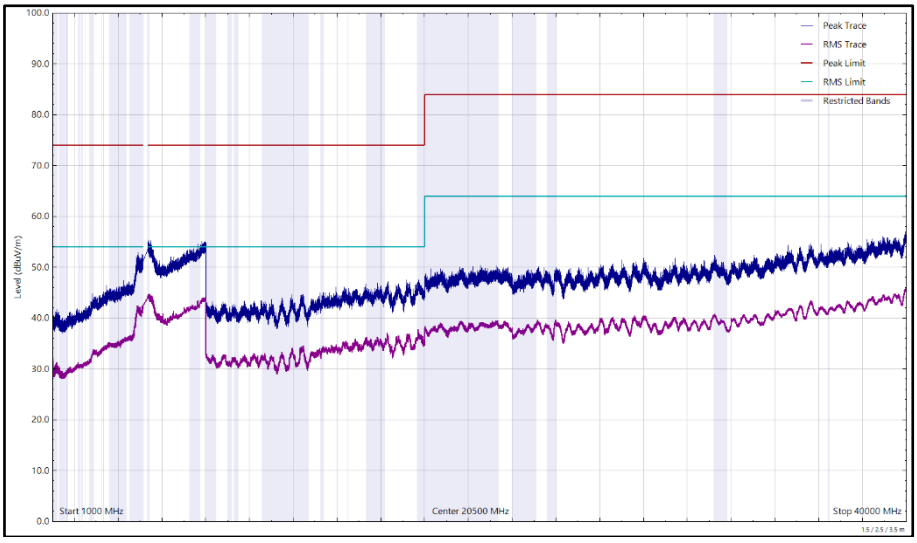

Figure 378 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

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

Table 748 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

*No emissions found within 10 dB of the limit.

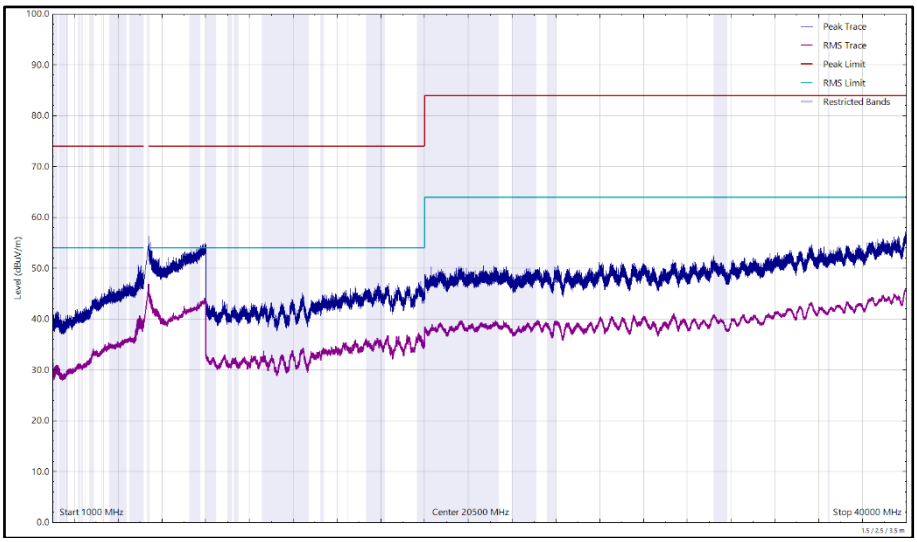

Figure 379 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

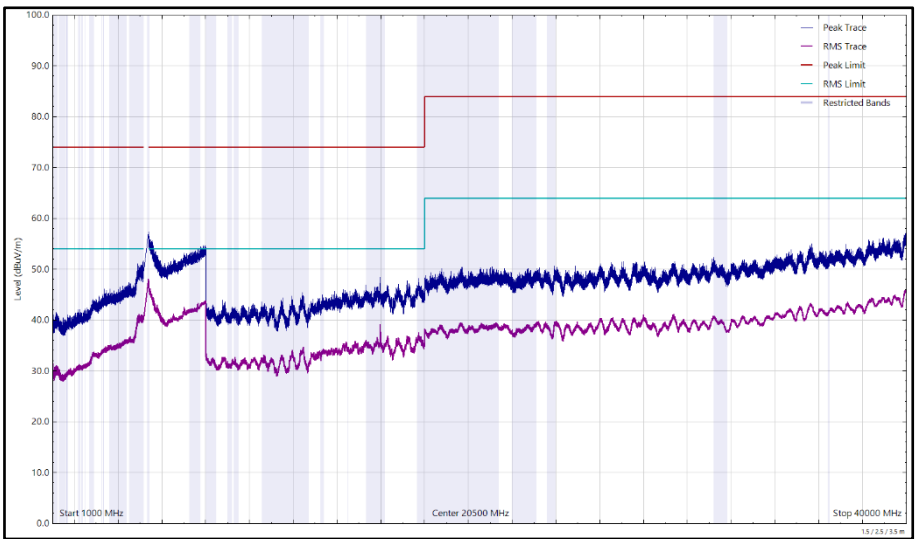

Figure 380 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

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

Table 749 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

*No emissions found within 10 dB of the limit.

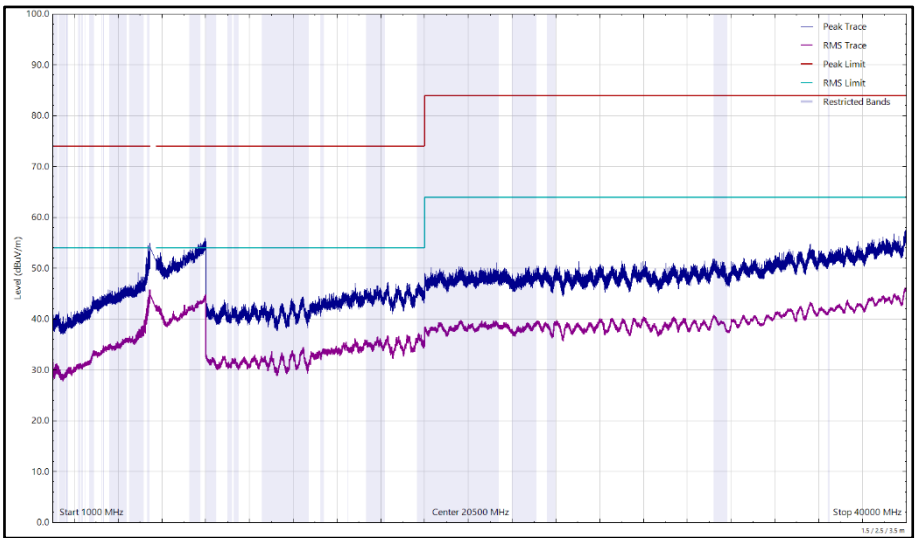

Figure 381 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

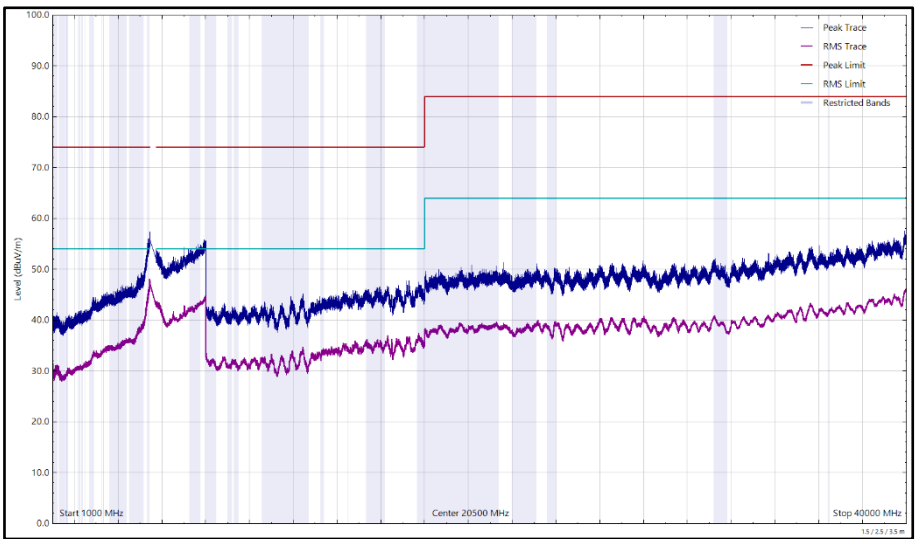

Figure 382 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

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

Table 750 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

*No emissions found within 10 dB of the limit.

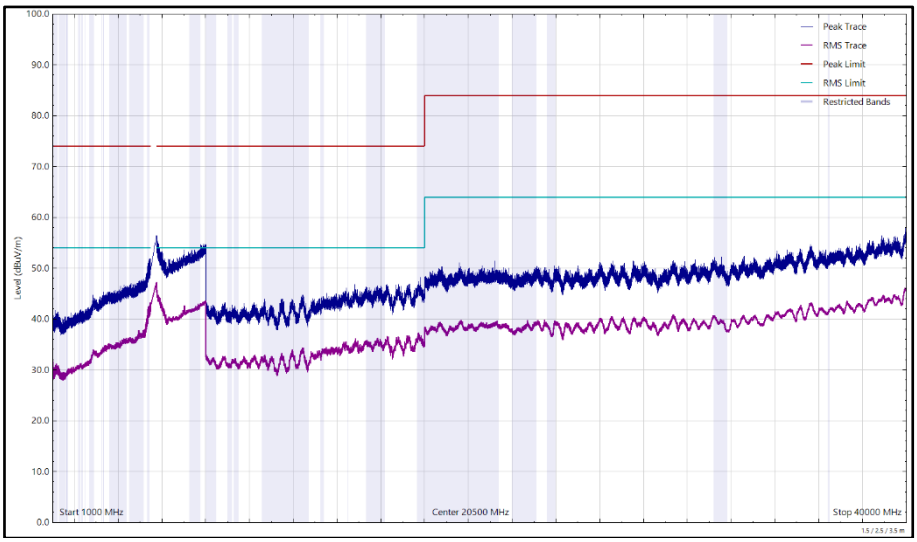

Figure 383 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

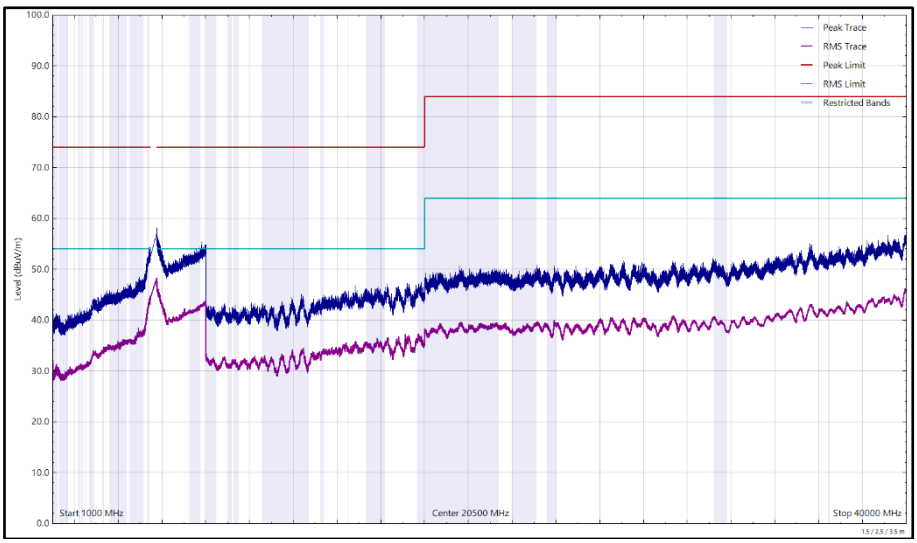

Figure 384 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

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

Table 751 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

*No emissions found within 10 dB of the limit.

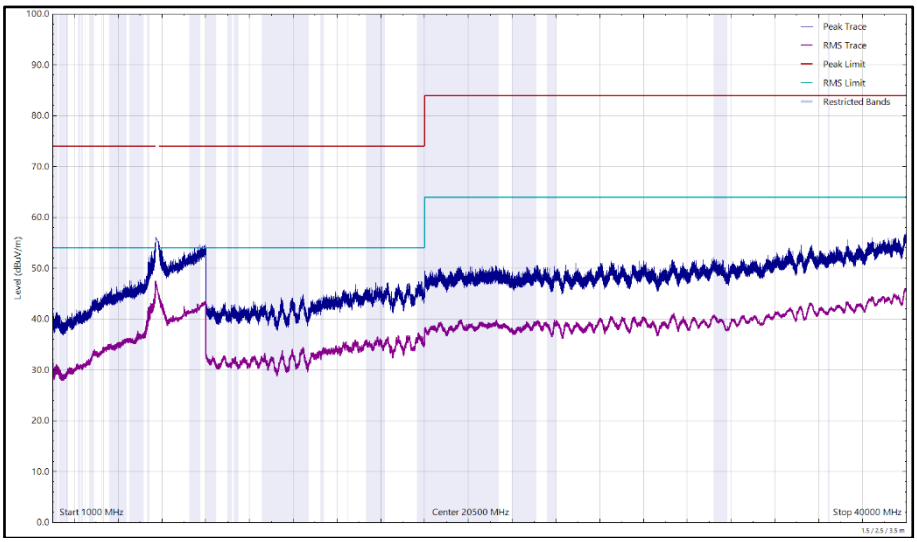

Figure 385 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

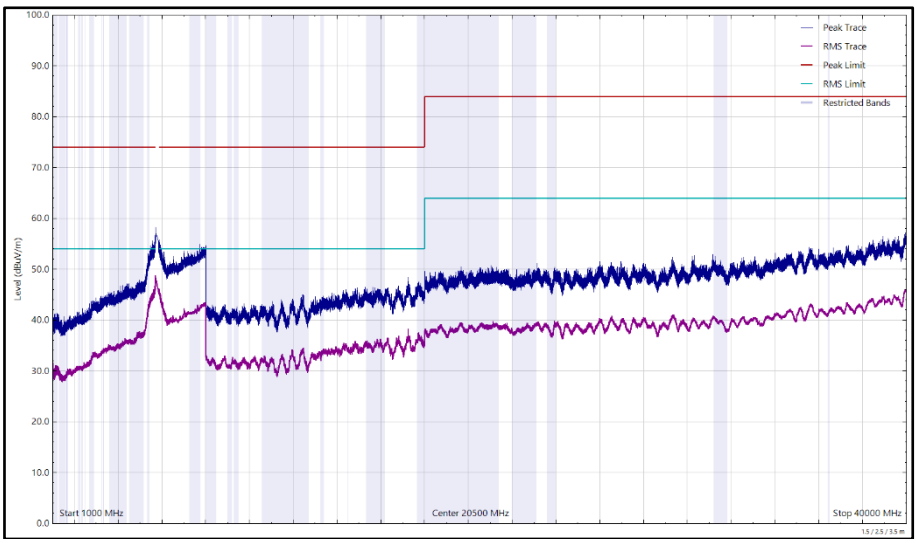

Figure 386 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

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

Table 752 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

*No emissions found within 10 dB of the limit.

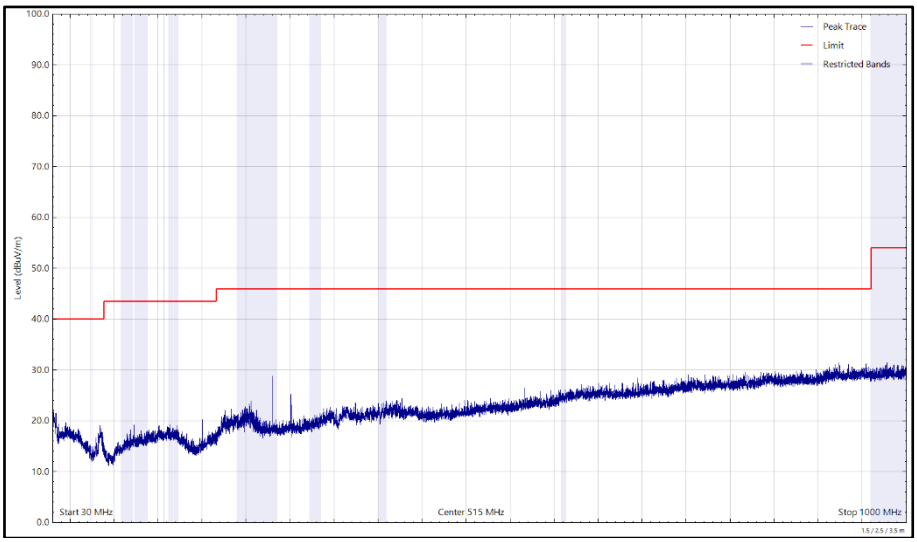

Figure 387 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

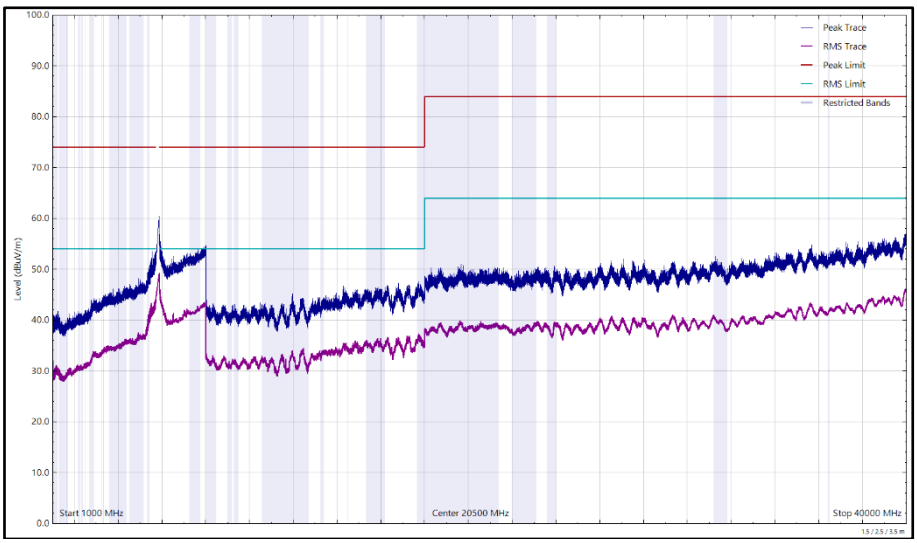

Figure 388 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

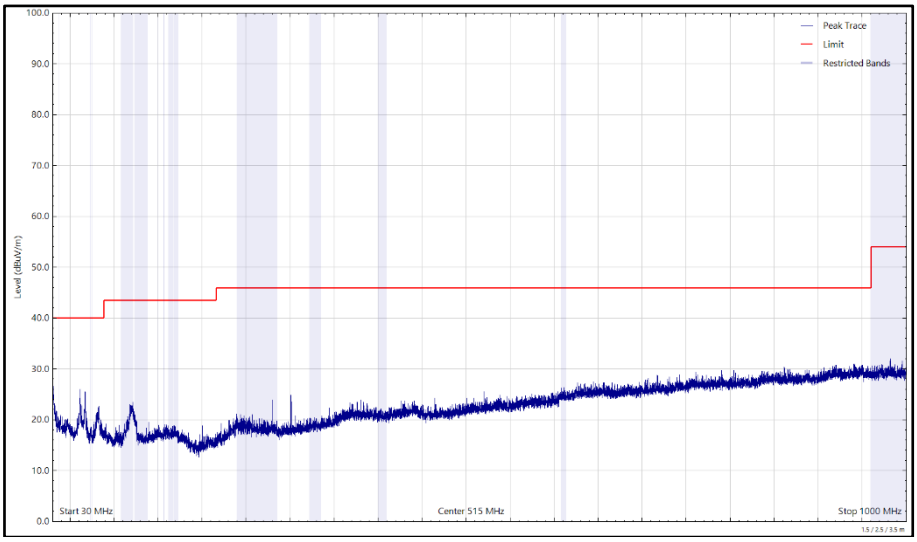

Figure 389 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

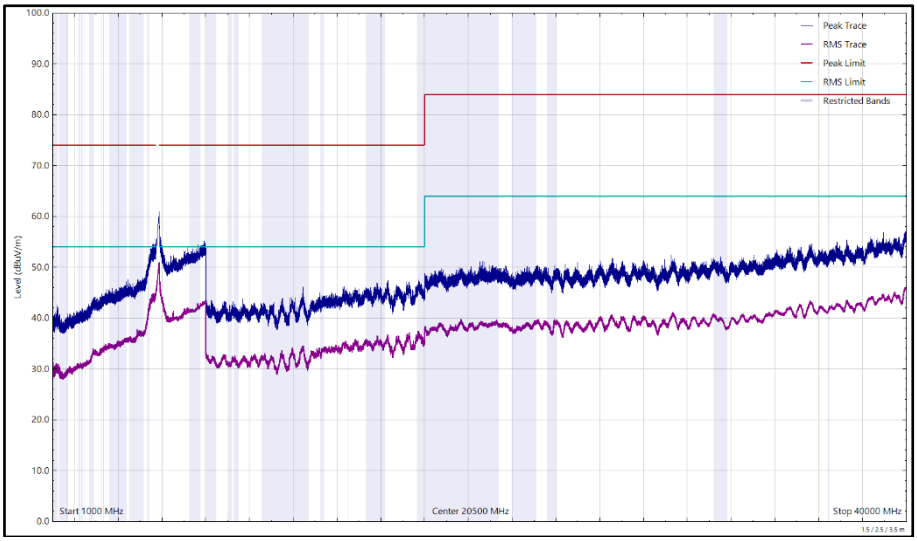

Figure 390 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
300.844	23.99	46.00	-22.01	Peak	348	167	Vertical
15514.566	44.48	54.00	-9.52	RMS	171	124	Vertical

Table 753 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

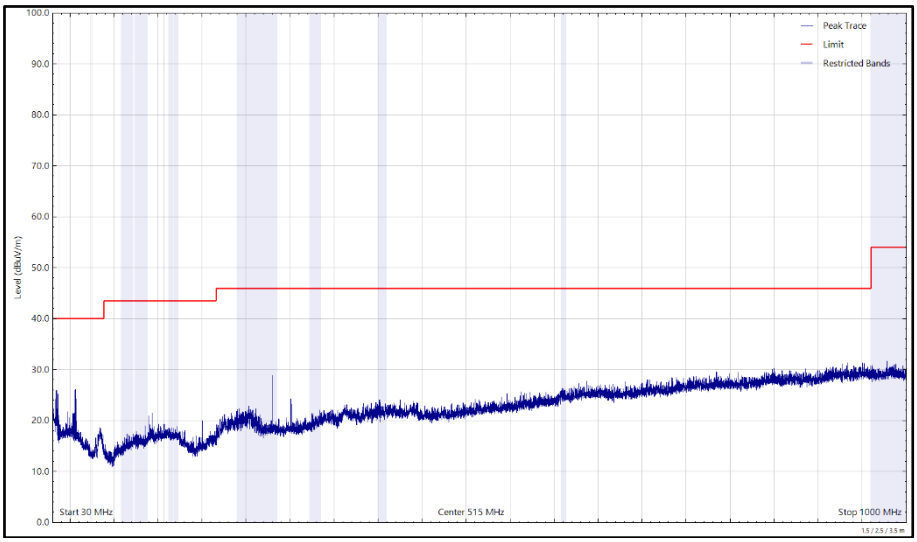

Figure 391 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

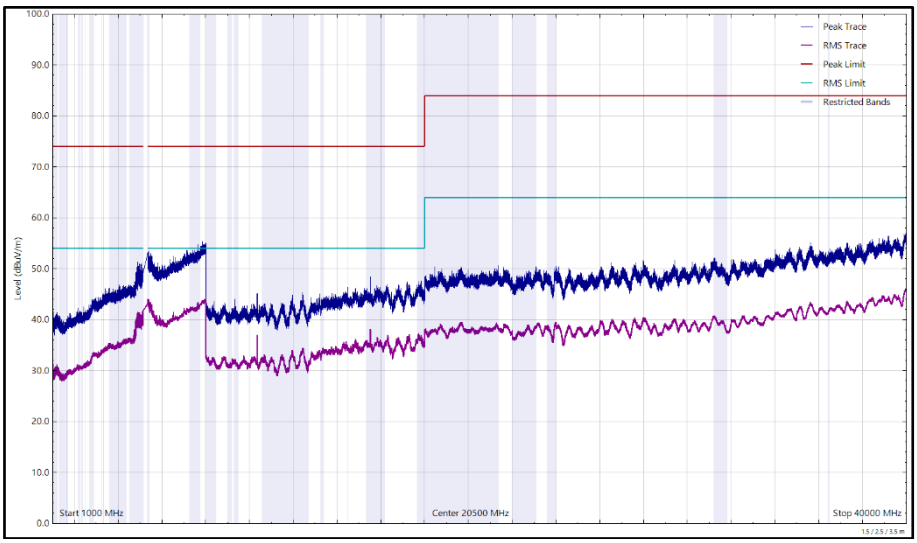

Figure 392 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

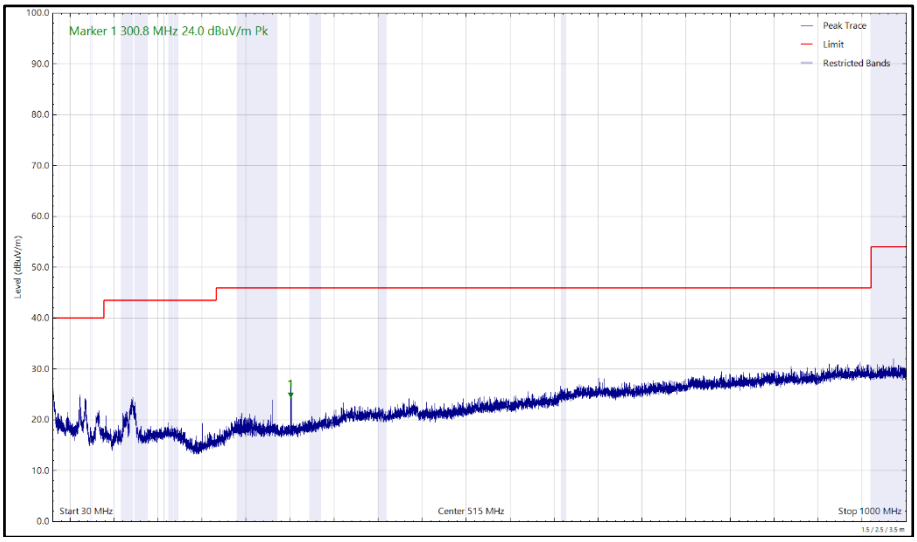

Figure 393 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

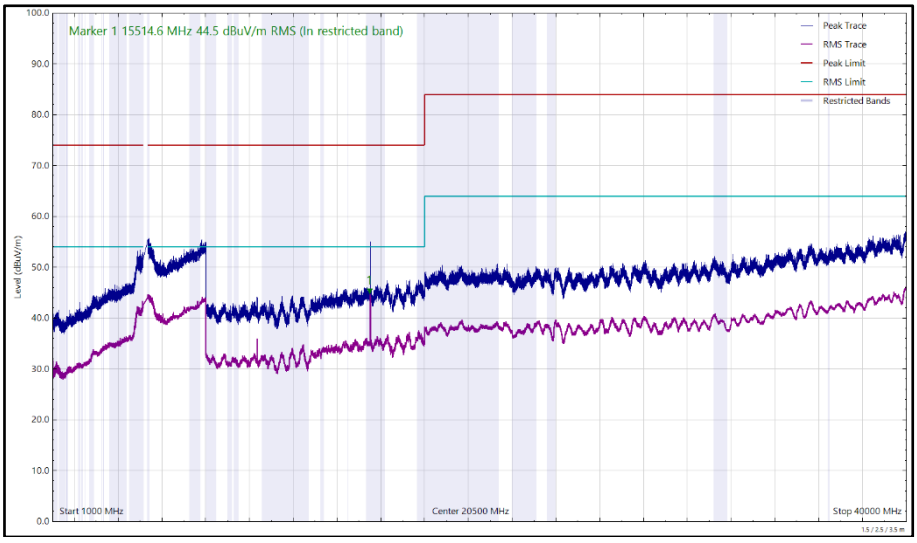

Figure 394 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
10616.262	43.13	74.00	-30.87	Peak	6	110	Horizontal
10622.595	30.84	54.00	-23.16	RMS	6	110	Horizontal
15936.901	42.02	54.00	-11.98	RMS	203	110	Vertical
15939.049	55.57	74.00	-18.43	Peak	203	110	Vertical

Table 754 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

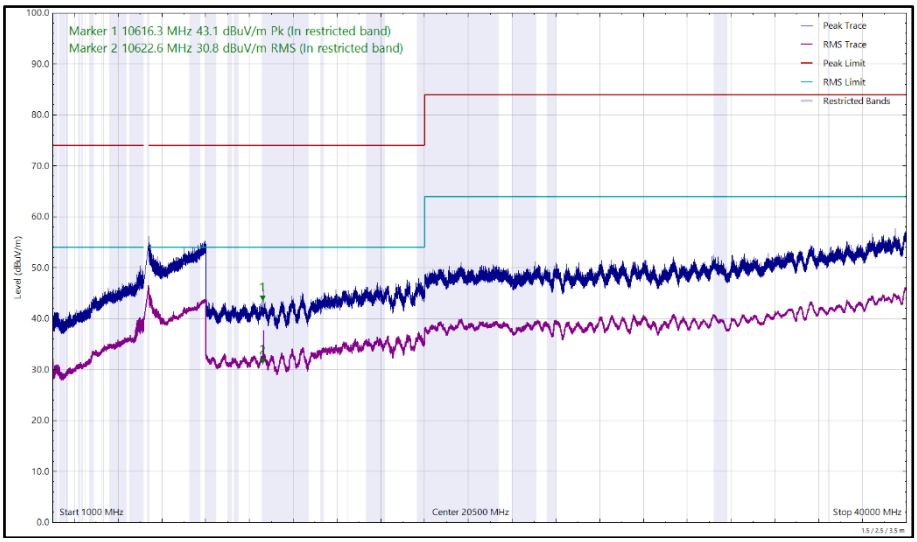

Figure 395 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

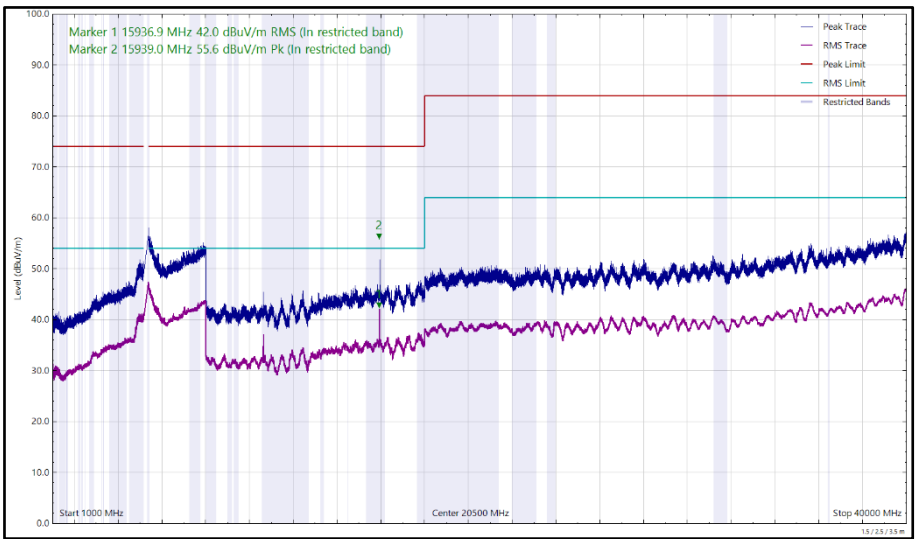

Figure 396 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
16476.963	56.31	74.00	-17.69	Peak	209	132	Vertical
16477.280	42.83	54.00	-11.17	RMS	209	132	Vertical

Table 755 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

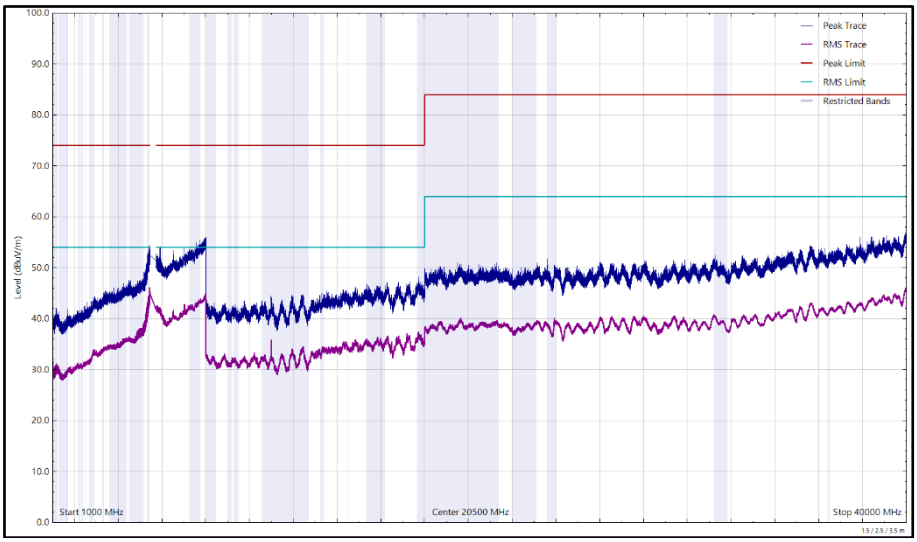

Figure 397 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

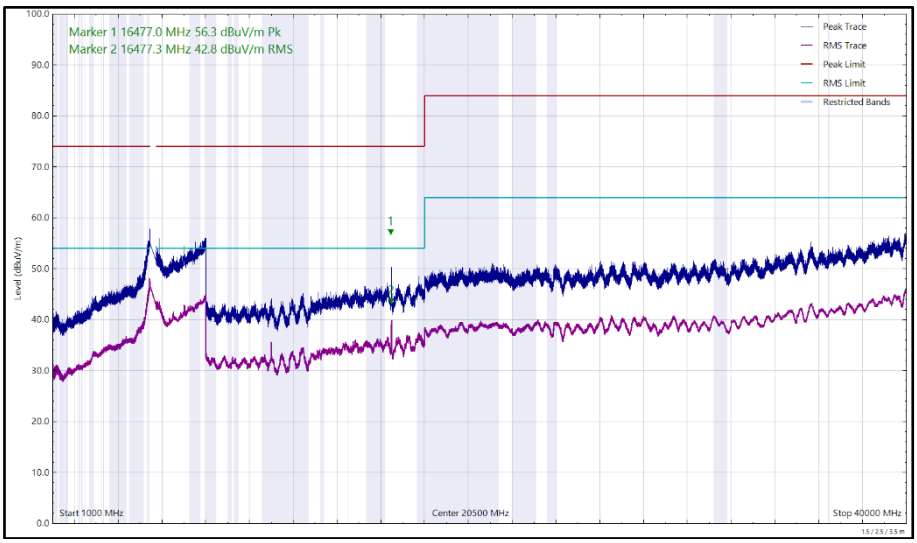

Figure 398 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
17075.933	53.58	74.00	-20.42	Peak	209	104	Vertical
17077.520	39.78	54.00	-14.22	RMS	209	104	Vertical

Table 756 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

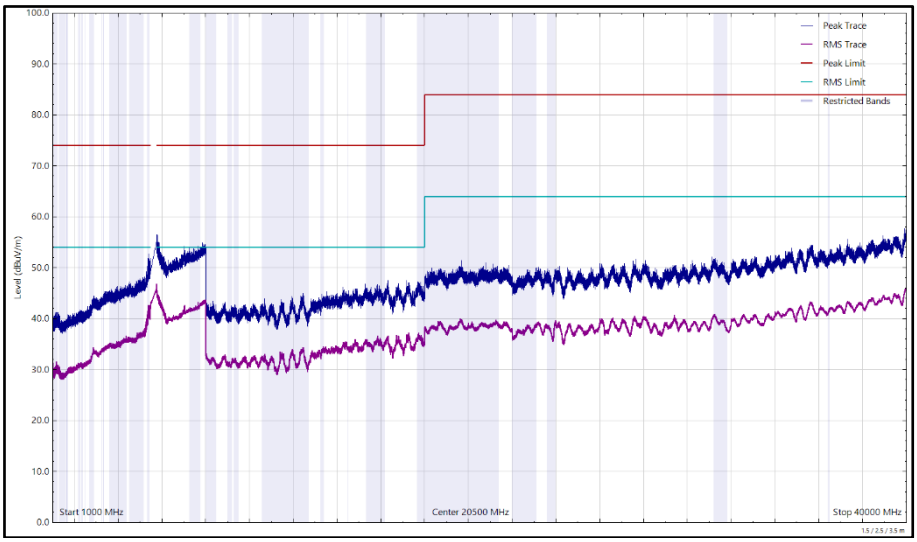

Figure 399 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

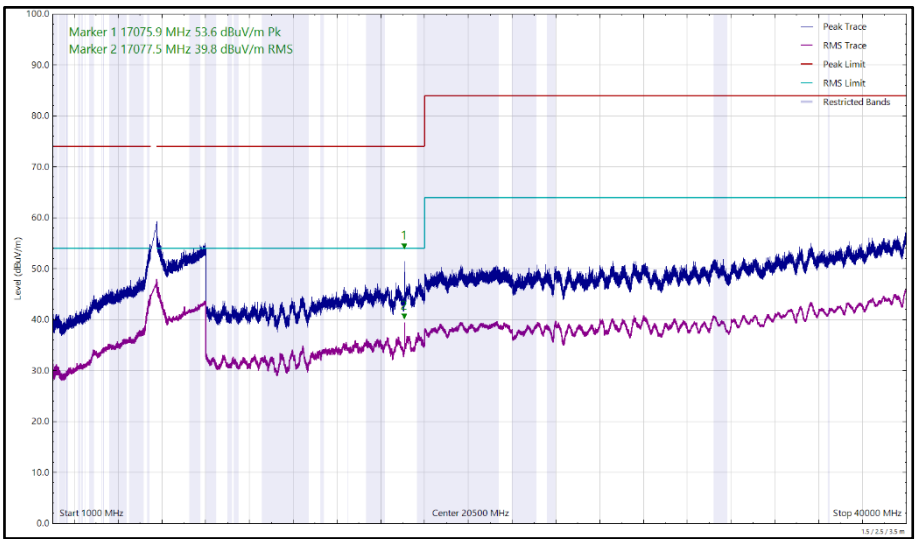

Figure 400 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
17210.204	41.56	54.00	-12.44	RMS	207	101	Vertical
17210.731	55.53	74.00	-18.47	Peak	207	101	Vertical

Table 757 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

No other emissions found within 10 dB of the limit.

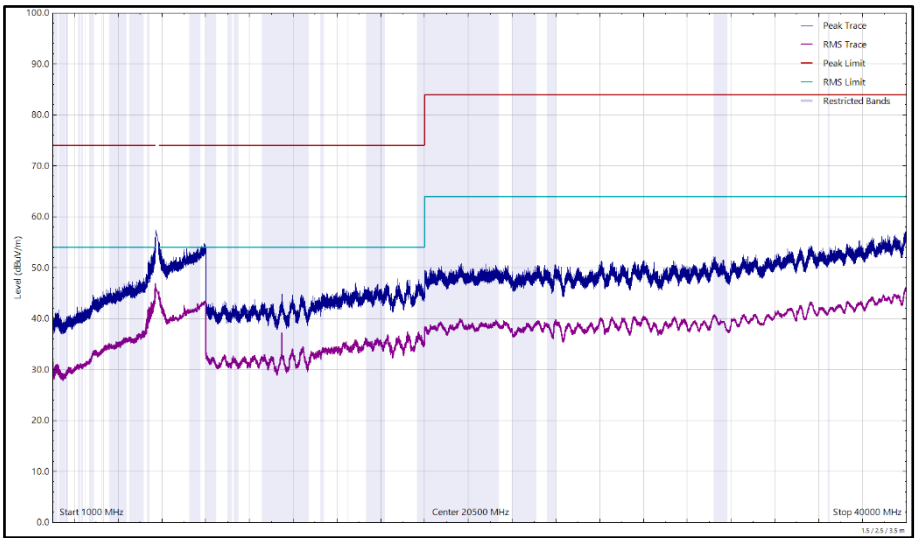

Figure 401 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

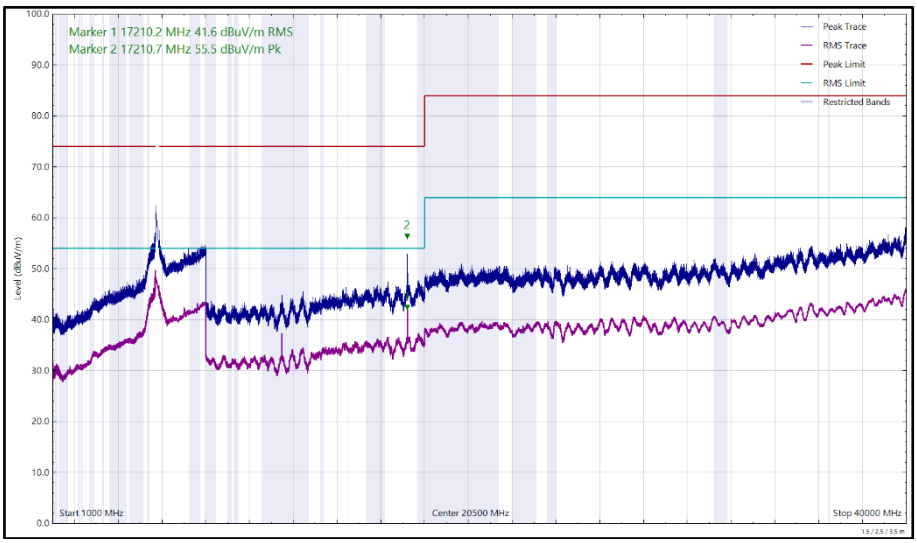

Figure 402 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.992	30.17	46.00	-15.83	Peak	107	100	Horizontal
300.891	21.77	46.00	-24.23	Peak	295	106	Horizontal
11600.336	31.82	54.00	-22.18	RMS	5	170	Horizontal
11602.403	43.79	74.00	-30.21	Peak	5	170	Horizontal

Table 758 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

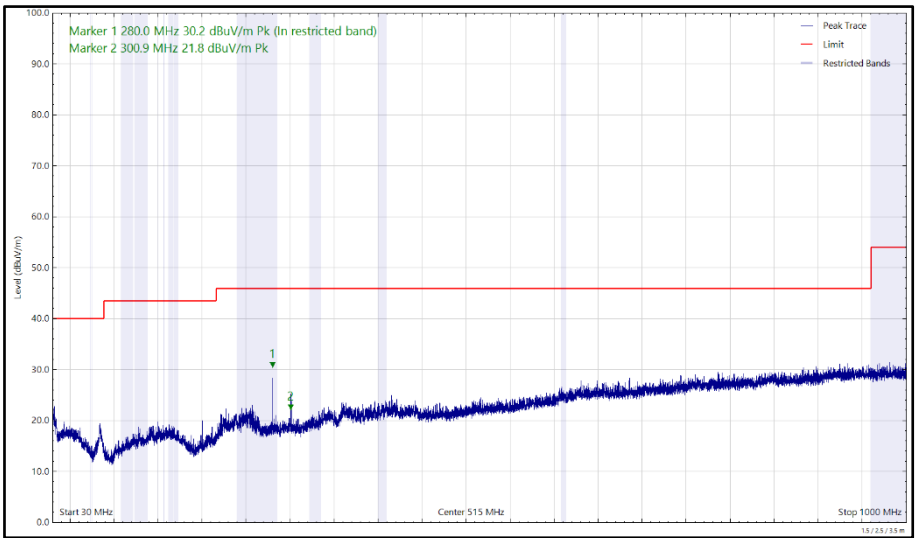

Figure 403 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

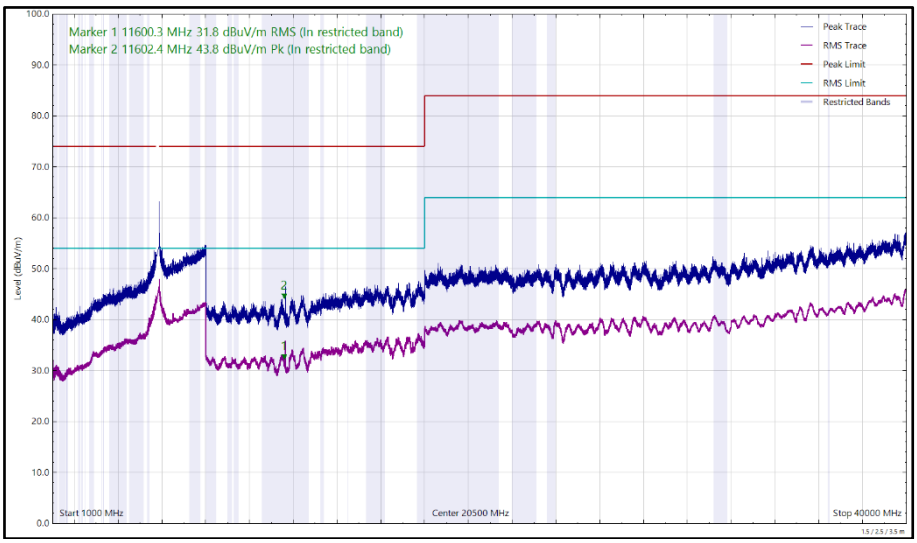

Figure 404 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

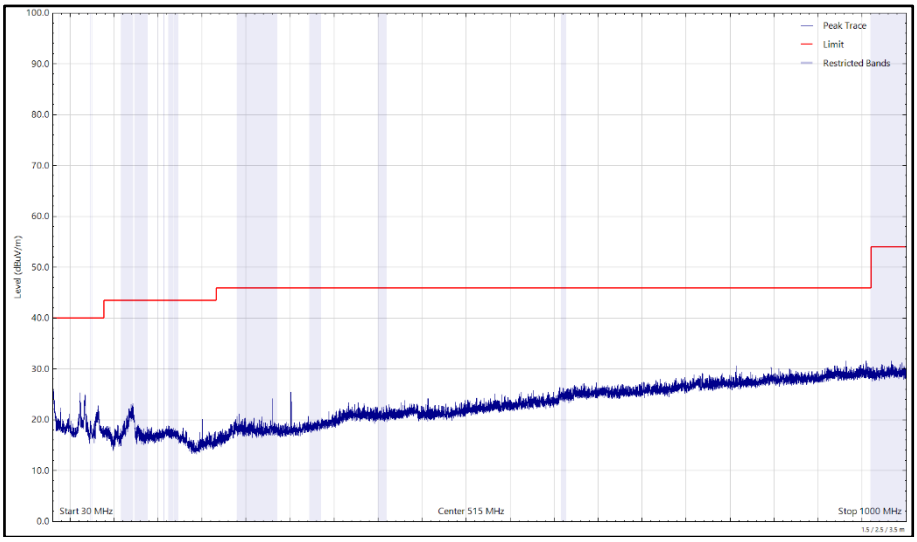

Figure 405 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

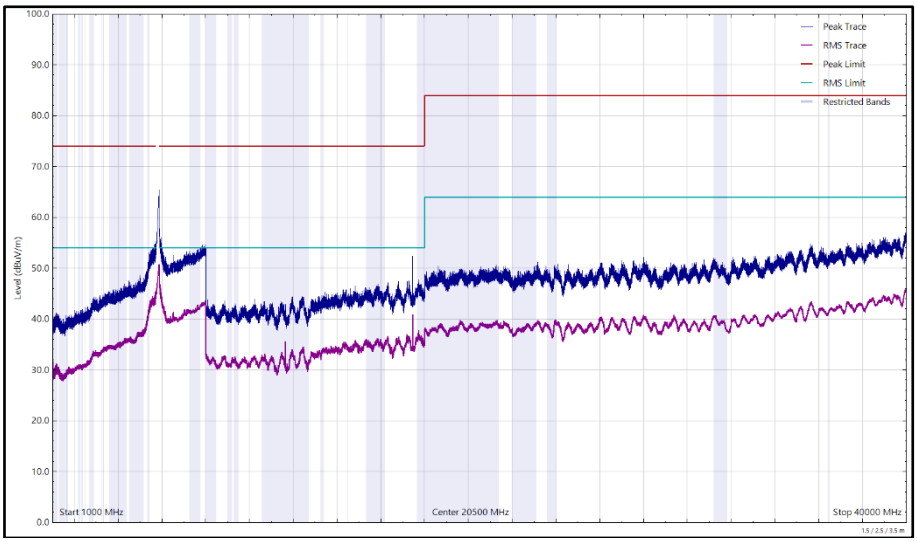

Figure 406 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15, Limit Clause 15.407(b)(1)(2)(3)(4)

Emissions not falling within the restricted bands listed in FCC 47 CFR Part 15.209:

For transmitters operating in the 5.15-5.25 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.25-5.35 GHz band: ≤-27 dBm/MHz outside 5150-5350 MHz.

For transmitters operating in the 5.47-5.725 GHz band: ≤-27 dBm/MHz outside 5470-5725 MHz

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Emissions within the restricted bands listed in FCC 47 CFR Part 15.209:

Frequency (MHz)	Field Strength (µV/m)at 3m	Field Strength Limit (dBµV/m) at 3m
30 to 88	100	40.00
88 to 216	150	43.52
216 to 960	200	46.02
Above 960	500	53.98

Table 759 - Radiated Emissions Limit Table (FCC)

ISED RSS-247, Limit Clause 6.2.1.2, 6.2.2.2, 6.2.3.2 and 6.2.4.2 and ISED RSS-GEN, Limit Clause 8.9

Emissions not falling within the restricted bands listed in ISED RSS-GEN, Clause 8.10:

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB.

For transmitters with operating frequencies in the bands 5250-5350 MHz and 5470-5725 MHz, all emissions outside the band 5250-5350 MHz and 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;

b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;

c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and

d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

Emissions falling within the restricted bands listed in ISED RSS-GEN, Clause 8.10:

Frequency (MHz)	Field Strength (µV/m)at 3m	Field Strength Limit (dBµV/m) at 3m
30 to 88	100	40.00
88 to 216	150	43.52
216 to 960	200	46.02
Above 960	500	53.98

Table 760 - Radiated Emissions Limit Table (ISED)

2.6.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 16.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Emissions Software	TUV SUD	EmX V3.1.4	5125	-	Software
Cable (18GHz)	Junkosha	MWX221-04000NMSNMS/B	5262	12	04-Aug-2023
Cable (18 GHz)	Junkosha	MWX221-04000NMSNMS/B	5263	12	24-Jan-2023
Test Receiver	Rohde & Schwarz	ESW44	5914	12	21-Feb-2023
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5935	12	14-May-2023
DRG Horn Antenna (7.5-18GHz)	Schwarzbeck	HWRD750	5940	12	29-May-2023
TRILOG Super Broadband Test Antenna	Schwarzbeck	VULB 9168	5942	24	03-Feb-2024
1500W (300V 12A) AC Power Supply	iTech	IT7324	5957	-	O/P Mon
3m Semi-Anechoic Chamber	Schaffner	RF Chamber 16	5972	36	24-May-2025
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5973	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5974	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5975	-	TU
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	6018	12	06-Jun-2023
Cable (SMA to SMA 3m)	Junkosha	MWX221-03000AMSAMS/A	6021	12	06-Jun-2023
Cable (N to N 3m)	Junkosha	MWX221-03000NMSNMS/A	6025	12	05-Jun-2023
Cable (SMA to SMA 6m)	Junkosha	MWX221-06000AMSAMS/B	6026	12	07-Jun-2023
Cable (N to N 6m)	Junkosha	MWX221-06000NMSNMS/B	6027	12	05-Jun-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6142	12	26-Jun-2023
Digital Multimeter	Fluke	115	6146	12	16-Jun-2023
Humidity & Temperature meter	R.S Components	1364	6148	12	17-Jun-2023
Double Ridge Active Horn Antenna (18-40 GHz)	Com-Power	AHA-840	6188	24	02-Jun-2024
SAC Switch Unit	TUV SUD	SSU002	6190	12	08-Aug-2023
8GHz Highpass Filter	Wainwright	WHKX 7150 8000 18000 50SS	6196	12	15-Jul-2023
Pre Amp 8 - 18 GHz	Wright Technologies	APS06 0061	6200	12	19-Jul-2023
Attenuator 4dB	Pasternack	PE7074-4	6204	24	16-Jul-2024
Cable (SMA to SMA 20cm)	TUV SUD	MH-FH 8-18	6220	12	10-Aug-2023

Table 761

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

2.7 Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

2.7.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (h)(2)(iii)(iv)
ISED RSS-247, Clause 6.3.2(c)(d)(e)

2.7.2 Equipment Under Test and Modification State

A2780, S/N: D33YNXDVT4 - Modification State 0
A2780, S/N: CY9HXKDF2L - Modification State 0

2.7.3 Date of Test

10-October-2022 to 10-November-2022

2.7.4 Test Method

5 GHz WLAN

This test was performed in accordance with FCC KDB 905462 D02, clause 7.8.3.

The EUT was configured to run iPerf, transmitting UDP to the client laptop. The channel loading was set to >17% by adjusting the bandwidth specified in the iPerf UDP transfer.

Radar Pulse Type 0 was then transmitted, and the Spectrum monitored. The transmissions from the UUT were observed for a period of 12 seconds after the final injected Radar Pulse.

It was checked that all transmissions stopped within the 10 second period defined from the point of the end of the final Radar pulse + 10 seconds. In addition, the aggregate on time during the first 200ms and the following 9.8 seconds of the Channel Move Time was computed by the Aeroflex DFS Software.

The markers on the trace data correspond to the following time periods:

Red - End Of Radar Burst, (T0)
Purple - End Of 200ms Period, (T0 + 200 ms)
Orange - End Of Channel Move Time, (T0 + 10 seconds)

To verify the non-occupancy period, the PXI digitiser was replaced with a Spectrum Analyser. The external trigger from the Aeroflex DFS test system was used to trigger a 30-minute sweep from the moment the radar burst sequence was injected. It was verified that no transmissions occurred on the test channel during this time period.

5 GHz WLAN - Client to Client

This test was performed in accordance with FCC KDB 905462 D02, clause 7.8.3.

A computer was connected via an Ethernet cable to the Master device and the FCC defined audio/video file was streamed from the Client device using a Media Player.

Radar Pulse Type 0 was then transmitted, and the Spectrum monitored. The transmissions from the UUT were observed for a period of 12 seconds after the final injected Radar Pulse.

It was checked that all transmissions stopped within the 10 second period defined from the point of the end of the final Radar pulse + 10 seconds. In addition, the aggregate on time during the first 200ms and the following 9.8 seconds of the Channel Move Time was computed by the Aeroflex DFS Software.

The markers on the trace data correspond to the following time periods:

Red - End Of Radar Burst, (T0)
Purple - End Of 200ms Period, (T0 + 200 ms)
Orange - End Of Channel Move Time, (T0 + 10 seconds)

To verify the non-occupancy period, the PXI digitiser was replaced with a Spectrum Analyser. The external trigger from the Aeroflex DFS test system was used to trigger a 30-minute sweep from the moment the radar burst sequence was injected. It was verified that no transmissions occurred on the test channel during this time period.

2.7.5 Environmental Conditions

Ambient Temperature	22.9 - 23.6 °C
Relative Humidity	33.1 - 40.3 %

2.7.6 Test Results

5 GHz WLAN - 802.11ac VHT160

The equipment was set up as shown in the diagram below. The EUT was configured to run iPerf, transmitting UDP to the client laptop. The channel loading was set to >17% by adjusting the bandwidth specified in the iPerf UDP transfer. To calibrate the level of the radar at the input to the companion device, the companion device was replaced by the spectrum analyser and the output of the PXI RF generator adjusted to give -62 dBm.

Radar Type	Pulse Width (µs)	PRI (µs)	Number of Pulses
0	1	1428	18

Table 762 - Radar Pulse Type 0 Characteristics

Manufacturer	Model	Serial Number	FCC ID
ASUS	GT-AXE11000	M8IG0X400285XVN	MSQ-RTAXJF00

Table 763 - Details of Master Device used to support testing

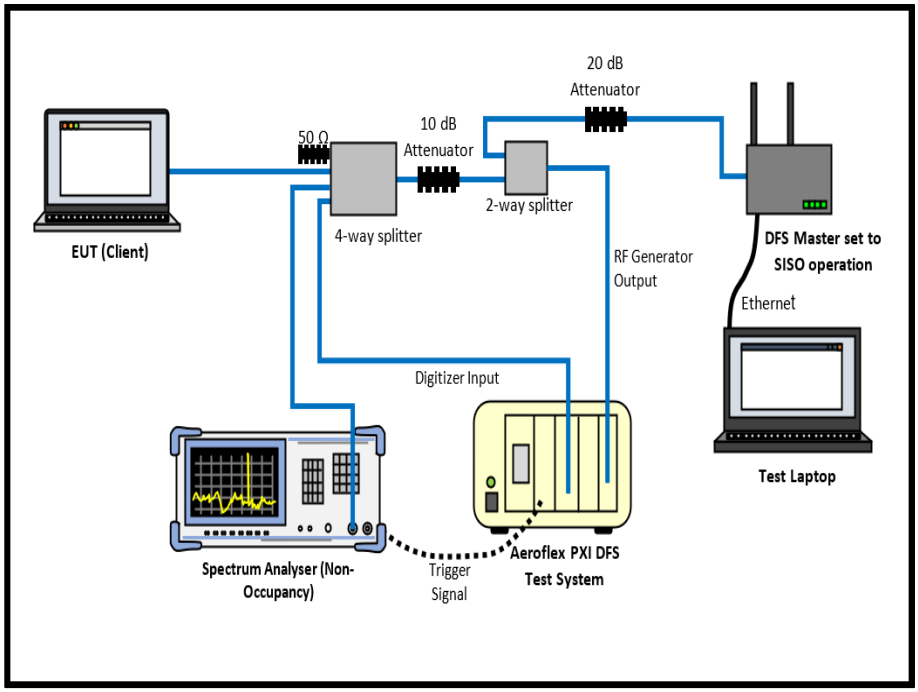

Figure 407 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master

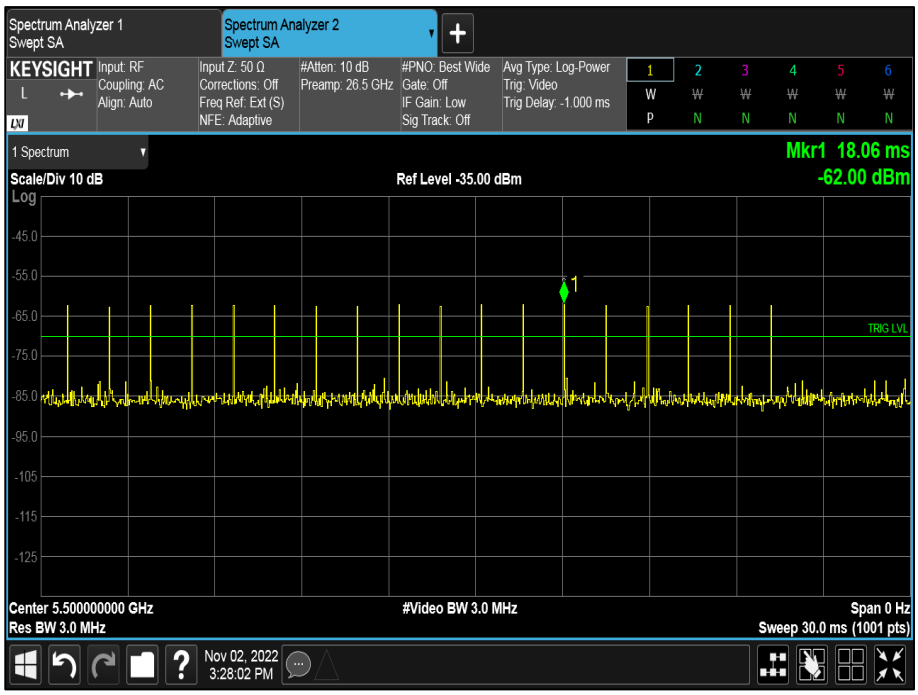

Figure 408 - Verification of Radar Type 0

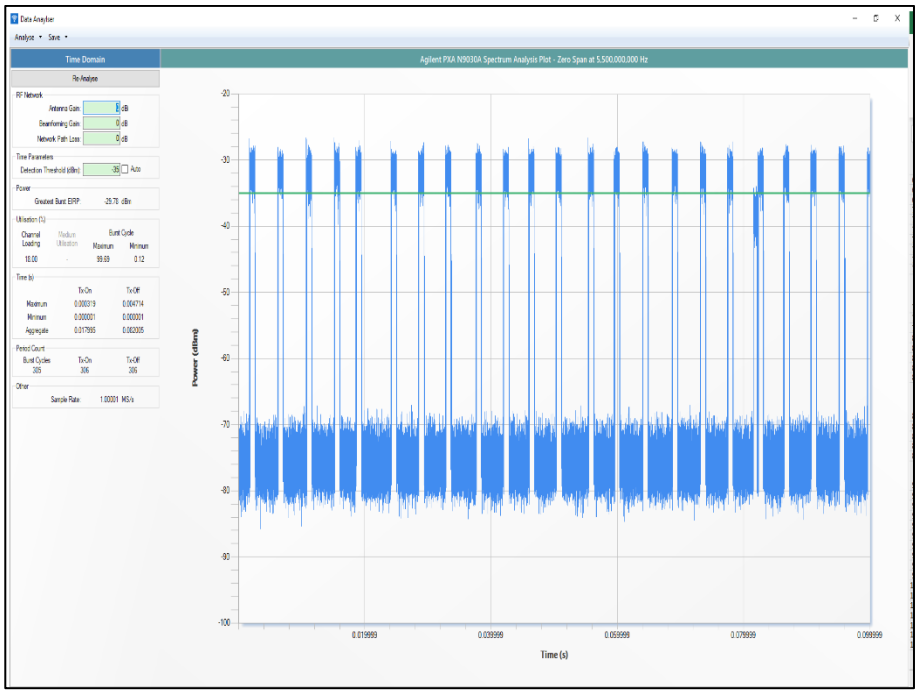

Figure 409 - Channel Loading

The channel loading was 18.00%

Maximum Transmit Power	Value (Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

Table 764 - DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Test Parameter	Result
Test Channel	CH114 (5570 MHz), Control CH100 (5500 MHz)
Channel Move Time	0.910 s
Channel Closing Time (Aggregate Time During 200 ms)	13.615 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	4.585 ms
Channel Closing Time (Aggregate Time During 10 s)	18.200 ms
Transmission Observed During Non-Occupancy Period	No

Table 765 - In-Service Monitoring Test Results

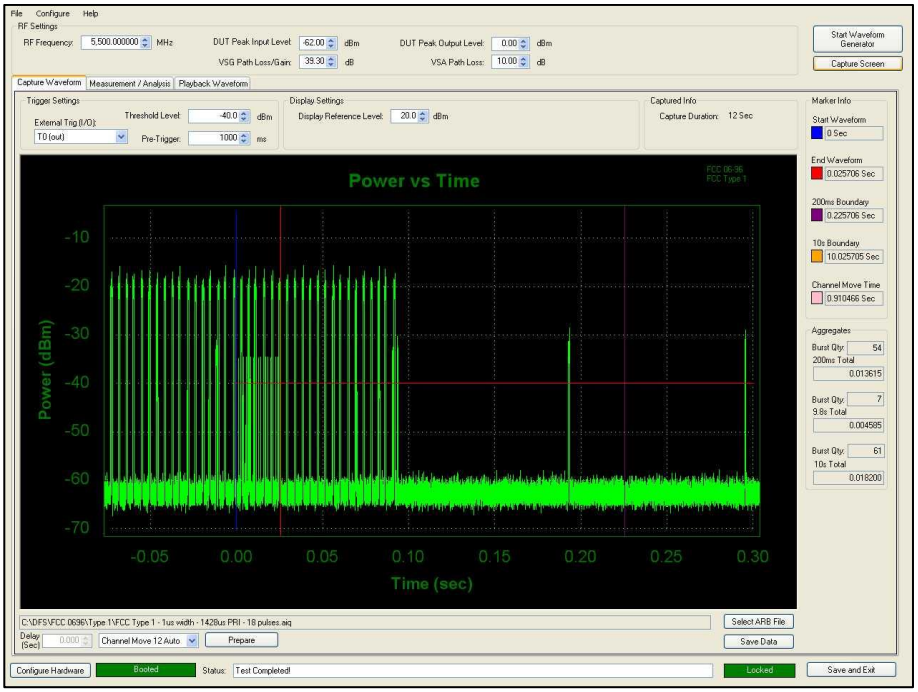

Figure 410 - First 200 ms of Channel Shutdown Period

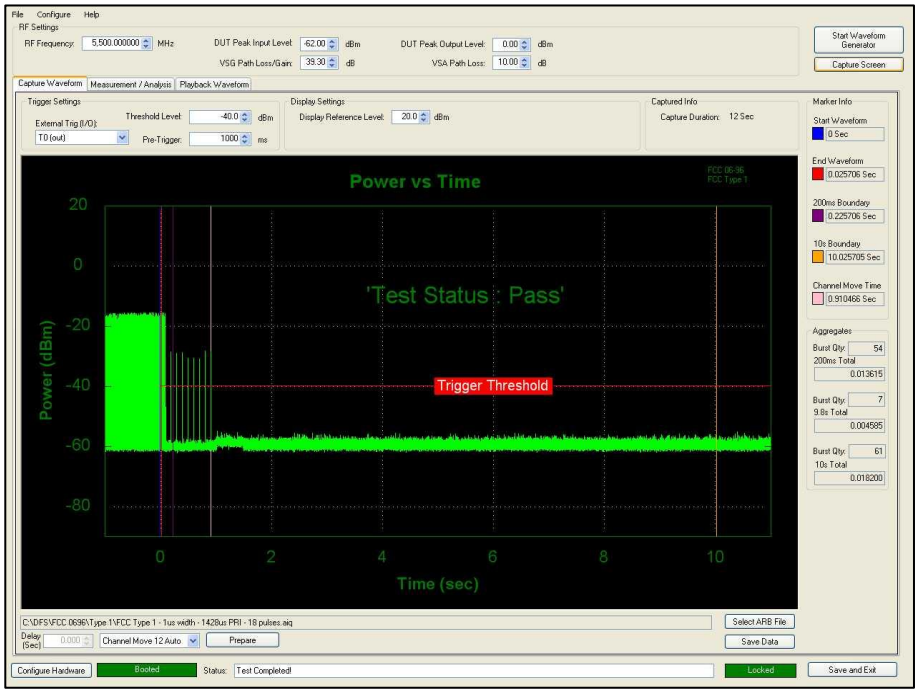

Figure 411 - First 12 s of Channel Shutdown Period

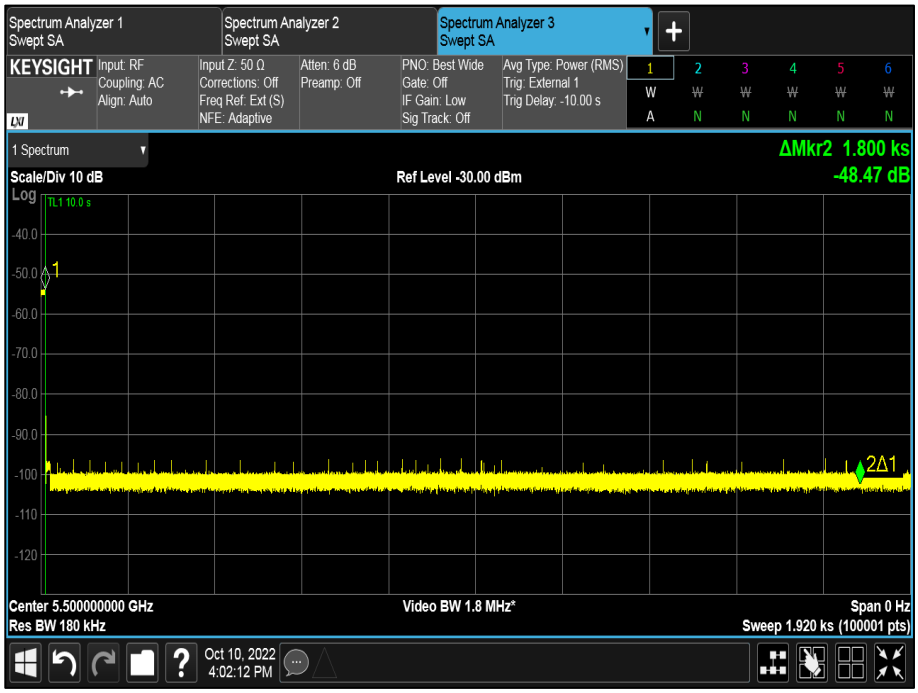

Figure 412 - 30 minute Non-Occupancy Period

5 GHz WLAN - Client to Client - 802.11ac VHT160

The equipment was set up as shown in the diagram below. A computer was connected via an Ethernet cable to the Master device and the FCC defined audio/video file was streamed from the Client device using a Media Player. To calibrate the level of the radar at the input to the companion device, the companion device was replaced by the spectrum analyser and the output of the PXI RF generator adjusted to give -62 dBm.

Radar Type	Pulse Width (µs)	PRI (µs)	Number of Pulses
0	1	1428	18

Table 766 - Radar Pulse Type 0 Characteristics

Manufacturer	Model	Serial Number	FCC ID
ASUS	GT-AXE11000	M8IG0X400285XVN	MSQ-RTAXJF00

Table 767 - Details of Master Device used to support testing

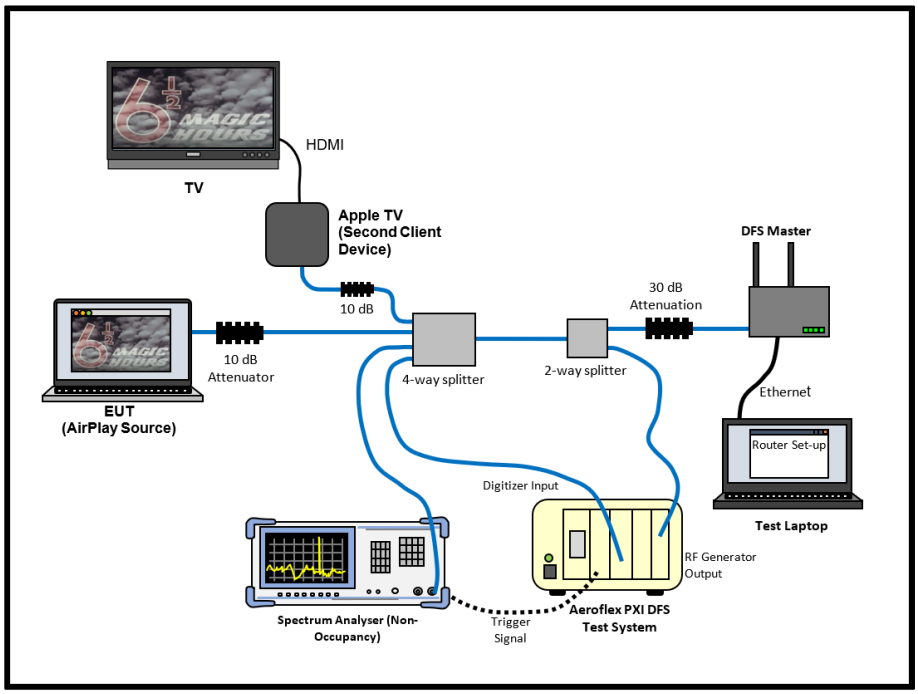

Figure 413 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master

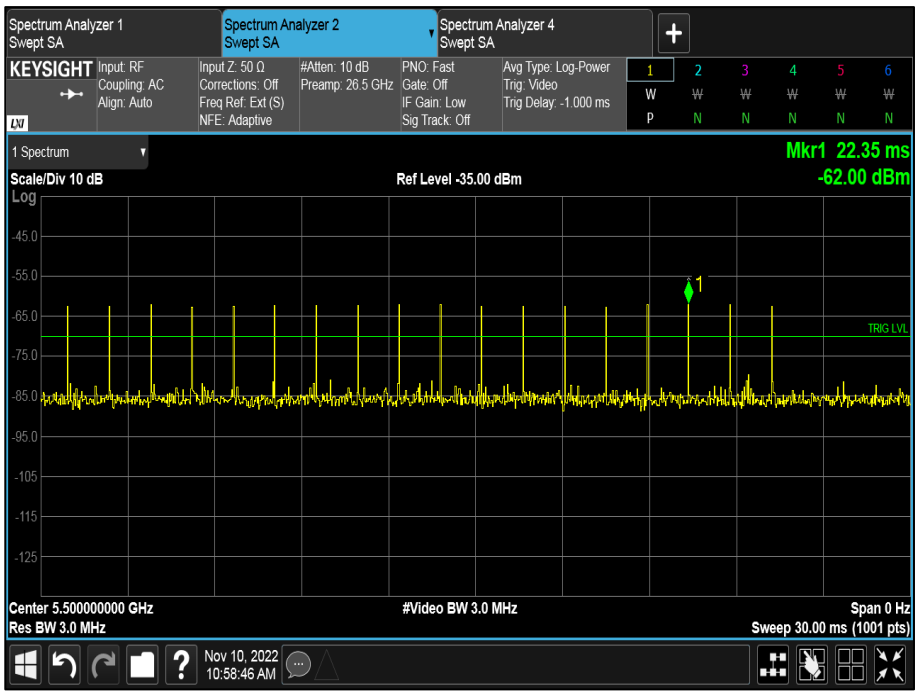

Figure 414 - Verification of Radar Type 0

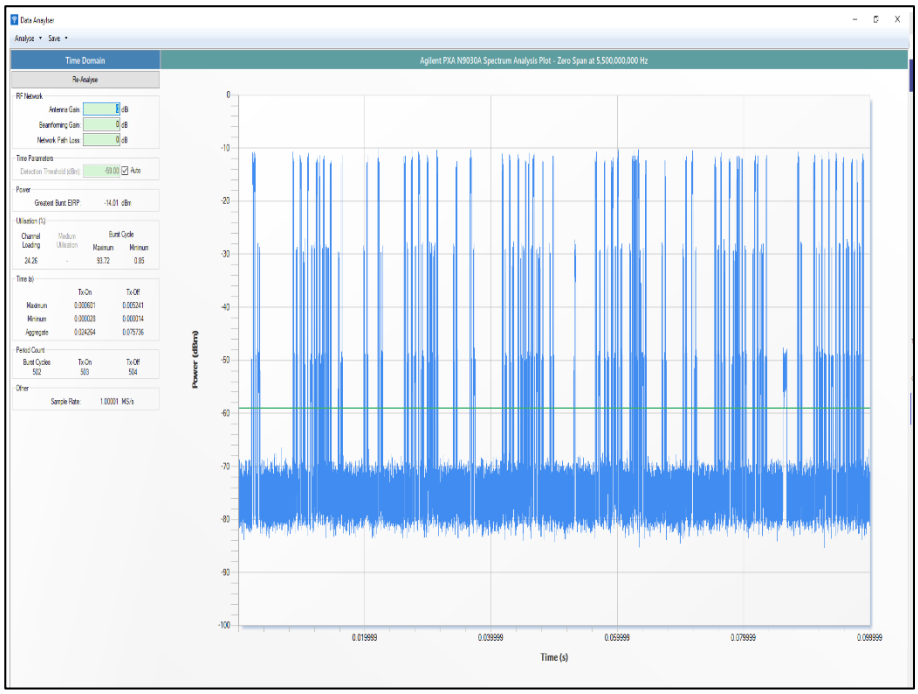

Figure 415 - Channel Loading

The channel loading was 24.26%

Maximum Transmit Power	Value (Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

Table 768 - DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Test Parameter	Result
Test Channel	CH114 (5570 MHz), Control CH100 (5500 MHz)
Channel Move Time	0.839 s
Channel Closing Time (Aggregate Time During 200 ms)	5.579 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	4.401 ms
Channel Closing Time (Aggregate Time During 10 s)	9.980 ms
Transmission Observed During Non-Occupancy Period	No

Table 769 - In-Service Monitoring Test Results

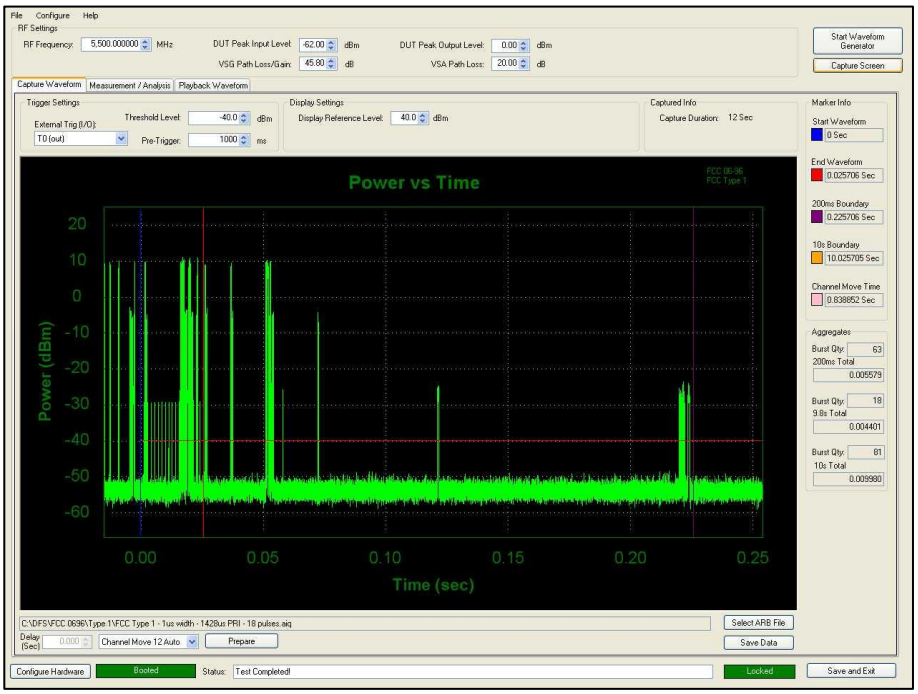

Figure 416 - First 200 ms of Channel Shutdown Period

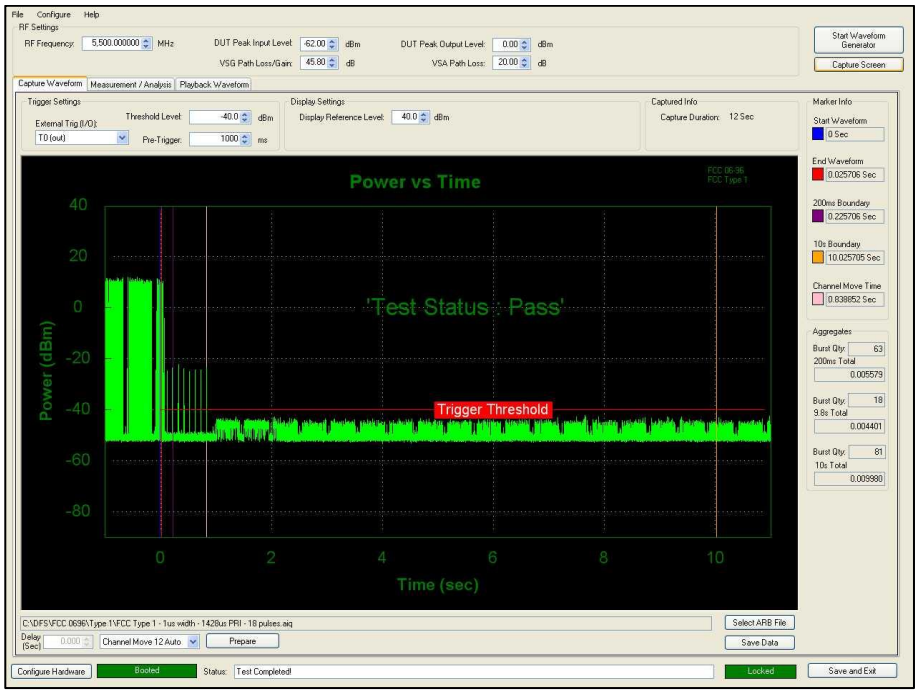

Figure 417 - First 12 s of Channel Shutdown Period

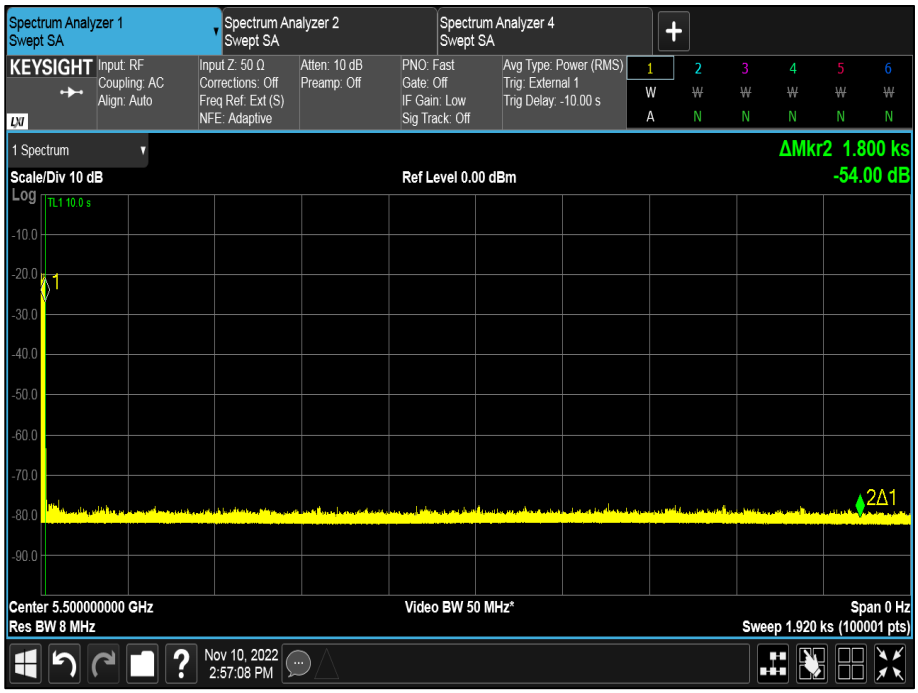

Figure 418 - 30 minute Non-Occupancy Period

FCC 47 CFR Part 15, Limit Clause 15.407 (h)(2)(iii)

Channel Move Time	<10 seconds
Channel Closing Time (Aggregate Time During 200ms)	<200 ms
Channel Closing Time (Aggregate Time During +200ms to 10s)	<60 ms

Table 770 - Channel Move Time and Channel Closing Transmission Time Limit

FCC 47 CFR Part 15, Limit Clause 15.407 (h)(2)(iv)

Non-occupancy Period	> 30 minutes

Table 771 - Non-Occupancy Limit

ISED RSS-247, Limit Clause 6.3.2

Devices shall comply with the following requirements, however, the requirement for in-service monitoring does not apply to slave devices without radar detection.

In-service monitoring: an LE-LAN device shall be able to monitor the operating channel to check that a co-channel radar has not moved or started operation within range of the LE-LAN device. During in-service monitoring, the LE-LAN radar detection function continuously searches for radar signals between normal LE-LAN transmissions.

Channel availability check time: the device shall check whether there is a radar system already operating on the channel before it initiates a transmission on a channel and when it moves to a channel. The device may start using the channel if no radar signal with a power level greater than the interference threshold value specified in Section 6.3.1 above is detected within 60 seconds. This requirement only applies in the master operational mode.

Channel move time: after a radar signal is detected, the device shall cease all transmissions on the operating channel within 10 seconds.

Channel closing transmission time: is comprised of 200 ms starting at the beginning of the channel move time plus any additional intermittent control signals required to facilitate a channel move (an aggregate of 60 ms) over the remaining 10-second period of the channel move time.

Non-occupancy period: a channel that has been flagged as containing a radar signal, either by a channel availability check or in-service monitoring, is subject to a 30-minute non-occupancy period where the channel cannot be used by the LE-LAN device. The non-occupancy period starts from the time that the radar signal is detected.

2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Broadband Resistive Power Divider	Weinschel	1506A	601	12	14-Jul-2023
Hygrometer	Rotronic	I-1000	3068	12	21-Sep-2023
Hygrometer	Rotronic	I-1000	3220	12	05-Nov-2022
PXI RF Digitizer	Aeroflex	3035	4012	24	12-Nov-2022
PXI RF Synthesizer	Aeroflex	3010	4013	24	12-Nov-2022
PXI RF Synthesizer	Aeroflex	3011	4014	24	12-Nov-2022
PXI Digital RF Signal Generator	Aeroflex	3025	4015	24	12-Nov-2022
1800-6000 MHz Power Splitter	Mini-Circuits	ZN2PD-63-S+	4055	-	O/P Mon
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	01-Feb-2023
Power splitter - 2 port	Mini-Circuits	ZN2PD-63-S+	4742	12	05-Jan-2023
Power splitter - 4 port	Mini-Circuits	ZN4PD1-63-S+	4744	12	26-Oct-2022
EXA	Keysight Technologies	N9010B	4969	24	07-Feb-2024
Cable (40 GHz)	Rosenberger	LU1-001-2000	5020	12	27-Jan-2023
Cable (18 GHz)	Rosenberger	LU7-071-1000	5100	12	23-Oct-2023
Power Splitter, 4 way	Mini-Circuits	ZN4PD1-63-S+	5236	-	O/P Mon
3.5 mm 1m Cable	Junkosha	MWX221-01000DMS	5419	12	24-Jul-2023
3.5 mm 1m Cable	Junkosha	MWX221-01000DMS	5420	12	23-Oct-2023
Cable (sma-sma, 2 m)	Junkosha	MWX221-02000DMS	5428	12	20-Oct-2022
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5495	12	11-Oct-2022
Attenuator 5W 20dB DC-18GHz	Aaren	AT40A-4041-D18-20	5498	12	16-May-2023
Attenuator 5W 30dB DC-18GHz	Aaren	AT40A-4041-D18-30	5504	12	21-Apr-2023
Wireless Cable & Fibre Router - AC 1900, Dual-band	Asus	RT-AC68U	5815	-	TU
WiFi 6E Tri-Band Gaming Router	Asus	GT-AXE110000	5926	-	TU

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Coaxial Fixed Attenuator DC-18GHz 5W 10dB	RF-Lambda	RFS5G18B10SMP	6175	12	17-Jul-2023
Coaxial Fixed Attenuator DC-18GHz 5W 10dB	RF-Lambda	RFS5G18B10SMP	6177	12	17-Jul-2023
Coaxial Fixed Attenuator DC-18GHz 5W 10dB	RF-Lambda	RFS5G18B10SMP	6181	12	17-Jul-2023
Coaxial Fixed Attenuator DC-18GHz 5W 10dB	RF-Lambda	RFS5G18B10SMP	6182	12	17-Jul-2023

Table 772

TU – Traceability Unscheduled
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	± 6.3 dB
Emission Bandwidth	± 3.914 MHz
Maximum Conducted Output Power	± 1.38 dB
Maximum Conducted Power Spectral Density	± 1.49 dB
Authorised Band Edges	± 6.3 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period	Time: ± 0.47 % Power: ± 1.29 dB

Table 773

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.