

160 MHz Bandwidth (2TX MIMO)

Mode	Data Rate/ MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBuV/m)
802.11ac VHT160 CDD, Cores 0-1	MCS 8x1	-	-	5570	5470	63.58
802.11ac VHT160 SDM, Cores 0-1	MCS 8x2	-	-	5570	5470	63.55
802.11ax HE160 CDD, Cores 0-1	MCS 4x1	SU	-	5570	5470	63.61
802.11ax HE160 CDD, Cores 0-1	MCS 11x1	52	37	5570	5470	63.70
802.11ax HE160 SDM, Cores 0-1	MCS 4x2	SU	-	5570	5470	63.58
802.11ax HE160 SDM, Cores 0-1	MCS 11x2	52	37	5570	5470	60.23
802.11ac VHT160 CDD, Cores 0-1	MCS 4x1	-	-	5570	5725	63.60
802.11ac VHT160 SDM, Cores 0-1	MCS 4x2	-	-	5570	5725	63.49
802.11ax HE160 CDD, Cores 0-1	MCS 2x1	SU	-	5570	5725	63.33
802.11ax HE160 CDD, Cores 0-1	MCS 11x1	52	52	5570	5725	63.40
802.11ax HE160 SDM, Cores 0-1	MCS 11x2	SU	-	5570	5725	63.37
802.11ax HE160 SDM, Cores 0-1	MCS 11x2	52	52	5570	5725	63.27

Table 676 - MIMO 2TX Authorised Band Edge Results



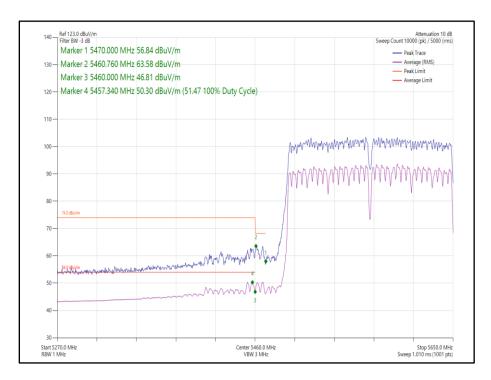


Figure 330 - 802.11ac VHT160 CDD, Cores 0-1 - 5570 MHz Band Edge Frequency 5470 MHz

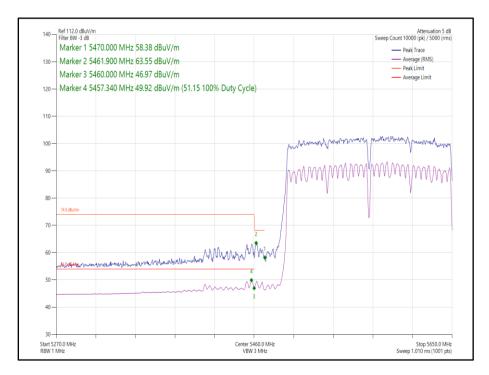


Figure 331 - 802.11ac VHT160 SDM, Cores 0-1 - 5570 MHz Band Edge Frequency 5470 MHz



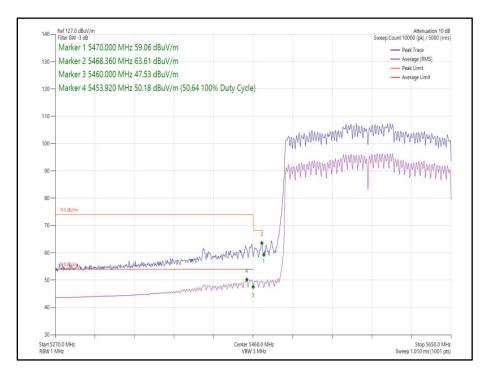


Figure 332 - 802.11ax HE160 CDD, Cores 0-1, SU - 5570 MHz Band Edge Frequency 5470 MHz

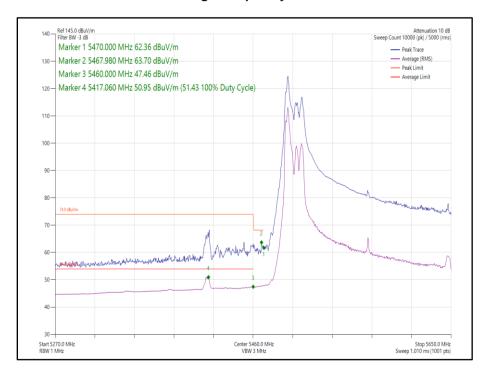


Figure 333 - 802.11ax HE160 CDD, Cores 0-1, 52-37- 5570 MHz Band Edge Frequency 5470 MHz



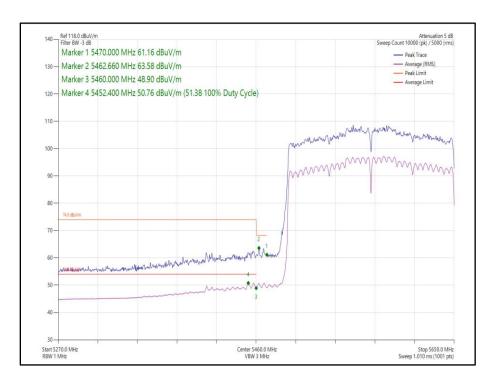


Figure 334 - 802.11ax HE160 SDM, Cores 0-1, SU - 5570 MHz Band Edge Frequency 5470 MHz

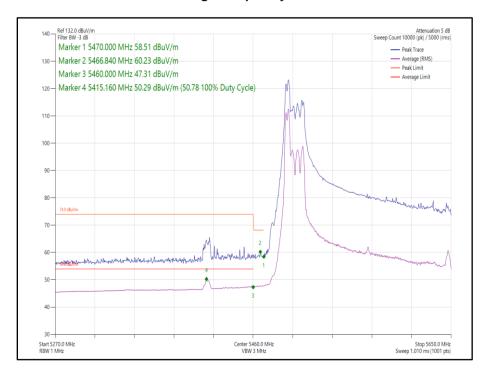


Figure 335 - 802.11ax HE160 SDM, Cores 0-1, 52-37 - 5570 MHz Band Edge Frequency 5470 MHz



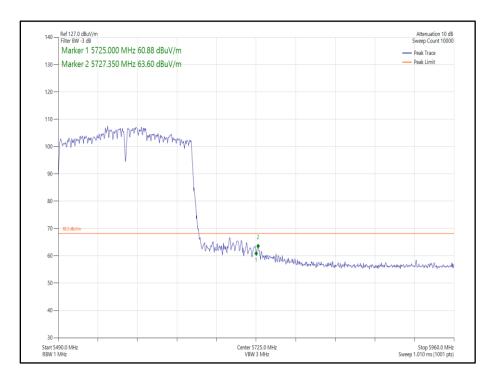


Figure 336 - 802.11ac VHT160 CDD, Cores 0-1 - 5570 MHz Band Edge Frequency 5725 MHz

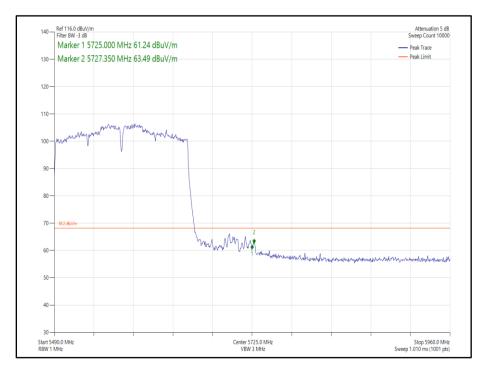


Figure 337 - 802.11ac VHT160 SDM, Cores 0-1 - 5570 MHz Band Edge Frequency 5725 MHz



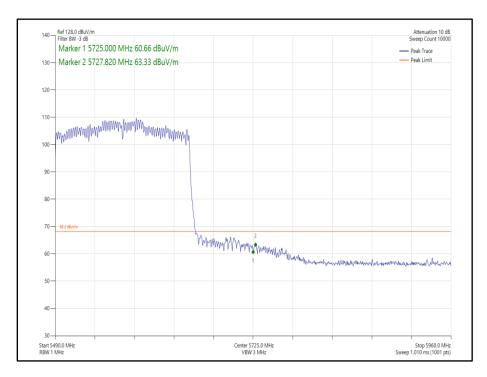


Figure 338 - 802.11ax HE160 CDD, Cores 0-1, SU - 5570 MHz Band Edge Frequency 5725 MHz

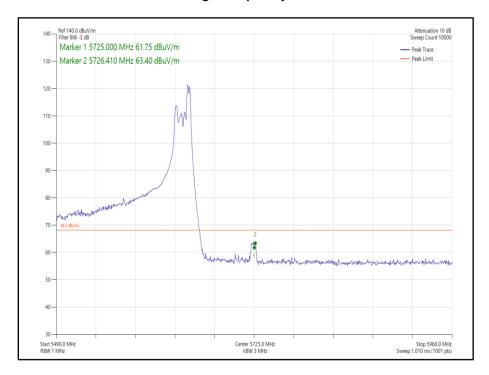


Figure 339 - 802.11ax HE160 CDD, Cores 0-1, 52-52- 5570 MHz Band Edge Frequency 5725 MHz



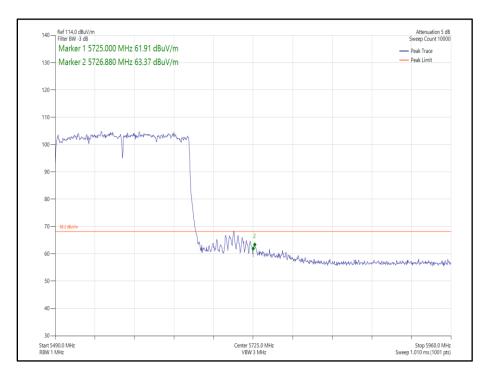


Figure 340 - 802.11ax HE160 SDM, Cores 0-1, SU - 5570 MHz Band Edge Frequency 5725 MHz

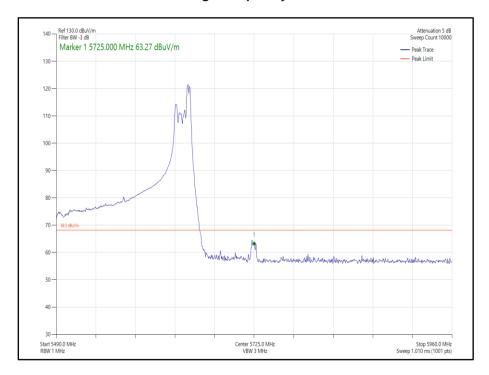


Figure 341 - 802.11ax HE160 SDM, Cores 0-1, 52-52 - 5570 MHz Band Edge Frequency 5725 MHz



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

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.

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

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.



2.5.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Screened Room (5)	Rainford	Rainford	1545	36	15-Apr-2024
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
Antenna (DRG 1- 10.5GHz)	Schwarzbeck	BBHA9120B	4848	12	28-May-2023
Preamplifier (30dB 1GHz to 18GHz)	Schwarzbeck	BBV 9718 C	5261	12	08-Apr-2023
Attenuator 5W 10dB DC- 18GHz	Aaren	AT40A-4041-D18- 10	5492	12	11-Apr-2023
Cable (SMA to SMA 1m)	Junkosha	MWX221- 01000AMSAMS/A	5513	12	12-Apr-2023
Cable (SMA to SMA, 2 m)	Junkosha	MWX221- 02000AMSAMS/A	5517	12	12-Apr-2023
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221- 08000NMSNMS/B	5520	0	24-Mar-2023
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB 40	5604	12	22-Sep-2022

Table 677

TU - Traceability Unscheduled



2.6 Spurious Radiated Emissions

2.6.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.209 and 15.407 (b) ISED RSS-247, Clause 6.2 ISED RSS-GEN. Clause 6.13 and 8.9

2.6.2 Equipment Under Test and Modification State

A2779, S/N: JM67M9K770 - Modification State 0

2.6.3 Date of Test

24-September-2022 to 04-October-2022

2.6.4 Test Method

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

Tests were performed in HT20 CDD in 2TX MIMO mode, with measurements undertaken from 30 MHz to 40 GHz, on channel 36 (5180 MHz) and channel 165 (5825 MHz).

All testing was performed using the lowest data rate/modulation scheme. For the purpose of this testing, spurious emissions were limited to 1 GHz to 40 GHz on all other test channels.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 12.7.7.2 with max-hold trace to characterize the EUT. Where emissions were detected, final average measurements were taken in accordance with ANSI C63.10, clause 4.1.4.2.2.

The plots shown are the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (54/74 dBuV/m @ 3 m and 64/84 dBuV/m @ 1m) when compared to -27 dBm/MHz EIRP outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10dB 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 $dB\mu V/m$ to $\mu V/m$: $10^{(Field Strength in }dB\mu V/m/20)$.

EIRP was converted to field strength at 3m using the following formula:

Field Strength (dBµV/m at 3 m) = EIRP (dBm) + 95.2 dB



2.6.5 Test Setup Diagram

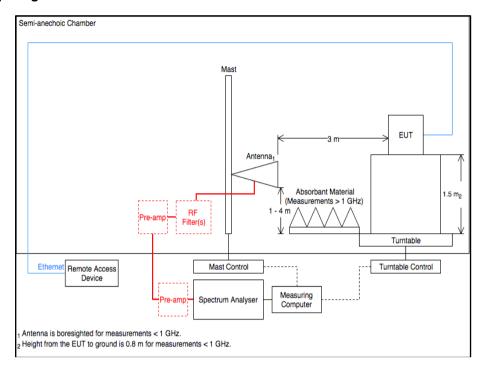


Figure 342

2.6.6 Environmental Conditions

Ambient Temperature 22.3 - 23.1 °C Relative Humidity 46.7 - 52.0 %



2.6.7 Test Results

5 GHz WLAN

Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
280.004	26.64	46.00	-19.36	Q-Peak	72	105	Horizontal

Table 678 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 0, 30 MHz to 40 GHz

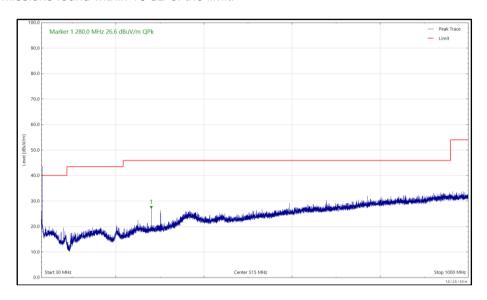


Figure 343 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

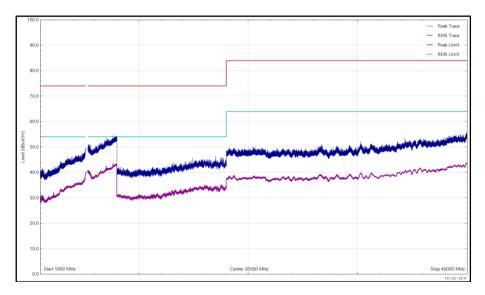


Figure 344 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal



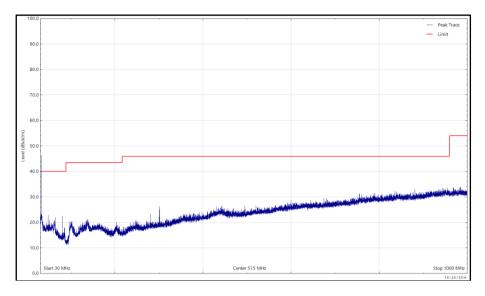


Figure 345 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

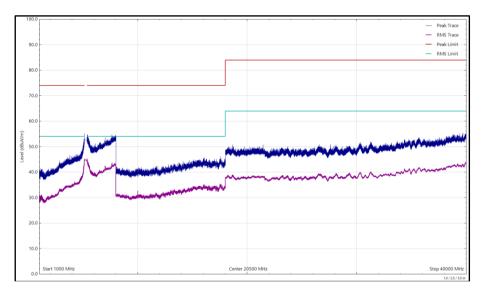


Figure 346 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.994	25.96	46.00	-20.04	Q-Peak	102	110	Horizontal

Table 679 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 1, 30 MHz to 40 GHz

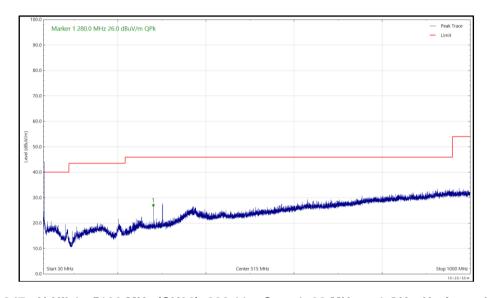


Figure 347 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

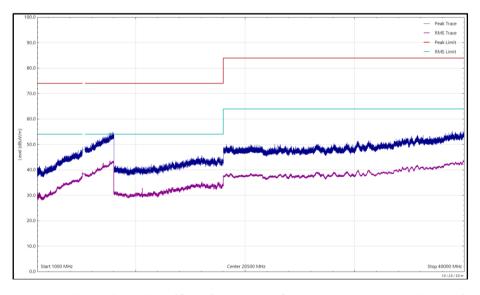


Figure 348 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal



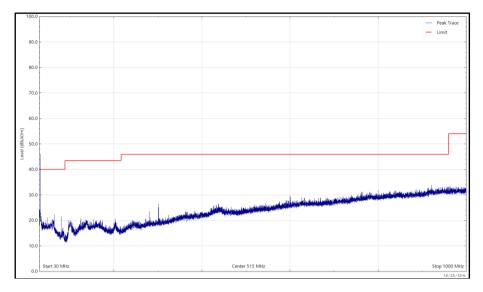


Figure 349 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

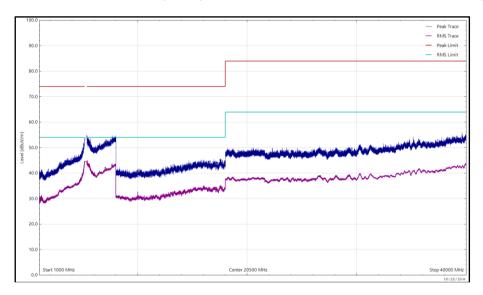


Figure 350 - U-NII-1 - 5180 MHz (CH36), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.988	22.25	46.00	-23.75	Q-Peak	350	110	Vertical
279.997	26.78	46.00	-19.22	Q-Peak	68	100	Horizontal

Table 680 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 40 GHz

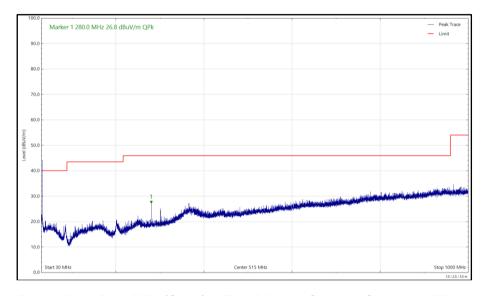


Figure 351 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

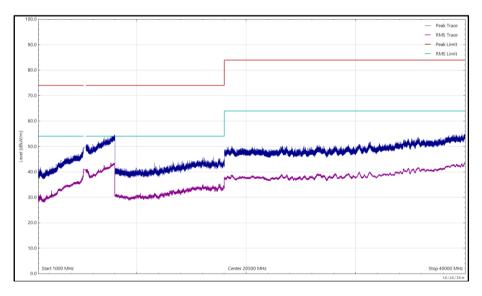


Figure 352 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal



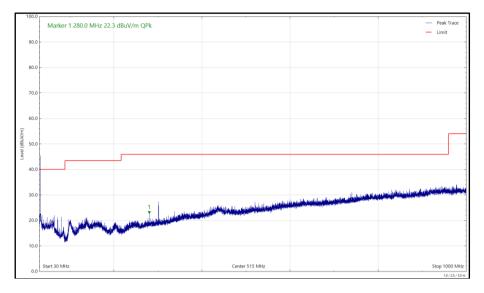


Figure 353 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

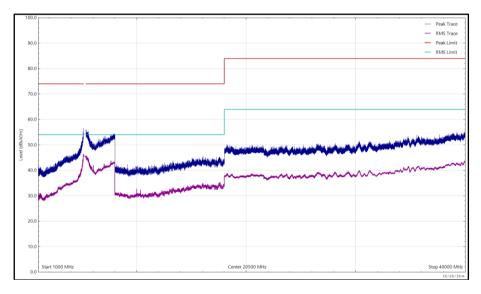


Figure 354 - U-NII-1 - 5180 MHz (CH36), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.988	26.77	46.00	-19.23	Q-Peak	87	110	Horizontal

Table 681 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

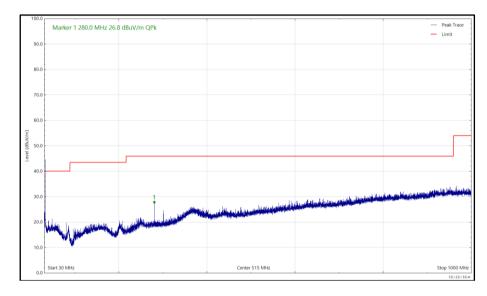


Figure 355 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

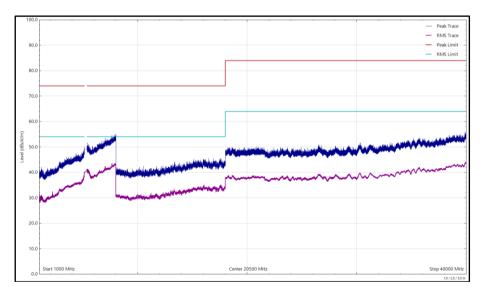


Figure 356 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal



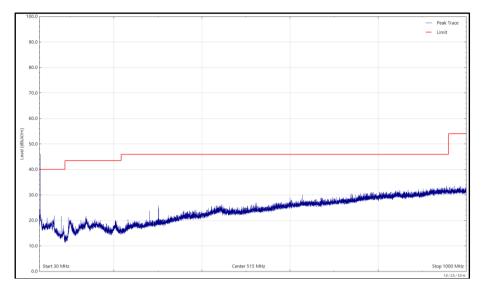


Figure 357 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

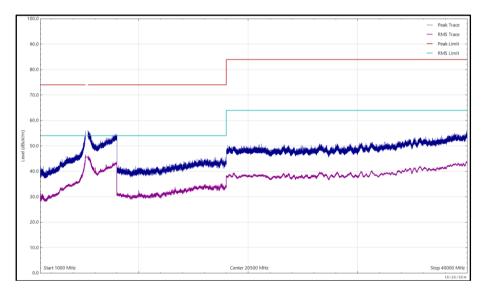


Figure 358 - U-NII-1 - 5180 MHz (CH36), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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

Table 682 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 0, 1 GHz to 40 GHz

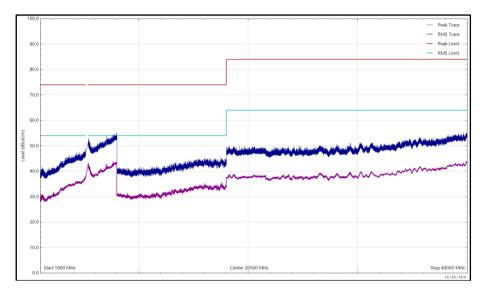


Figure 359 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal

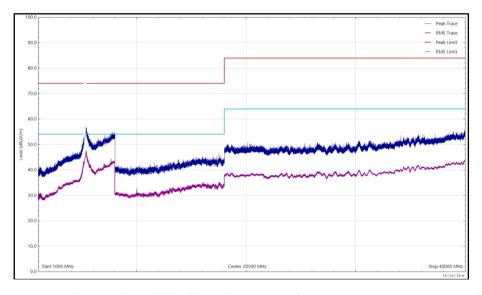


Figure 360 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



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

Table 683 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 1, 1 GHz to 40 GHz

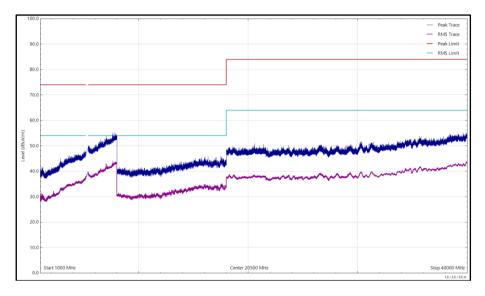


Figure 361 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal

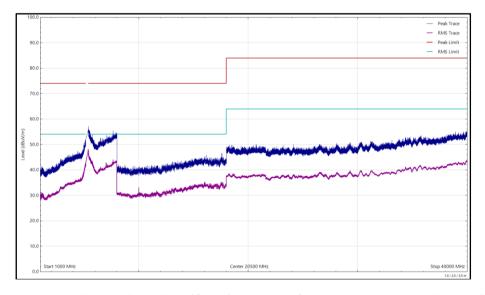


Figure 362 - U-NII-2A - 5320 MHz (CH64), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



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

Table 684 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

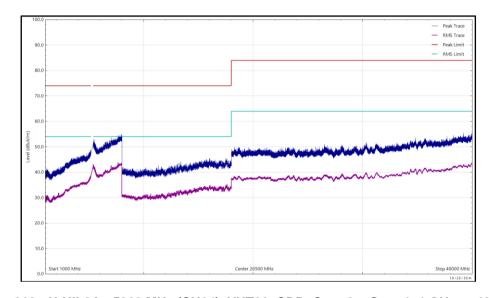


Figure 363 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

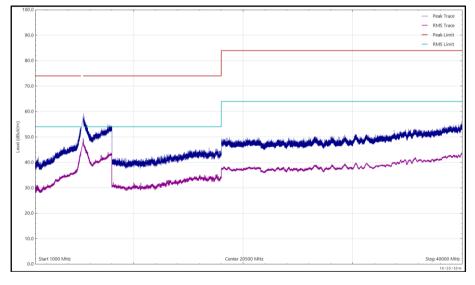


Figure 364 - U-NII-2A - 5320 MHz (CH64), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
10625.438	34.83	54.00	-19.17	RMS	190	138	Vertical

Table 685 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

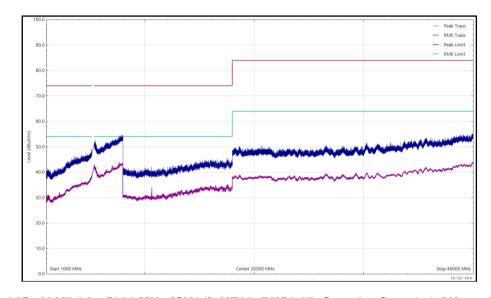


Figure 365 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

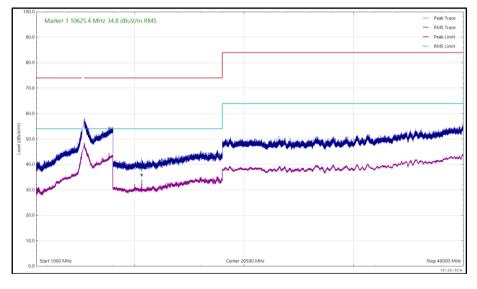


Figure 366 - U-NII-2A - 5320 MHz (CH64), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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

Table 686 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 0, 1 GHz to 40 GHz

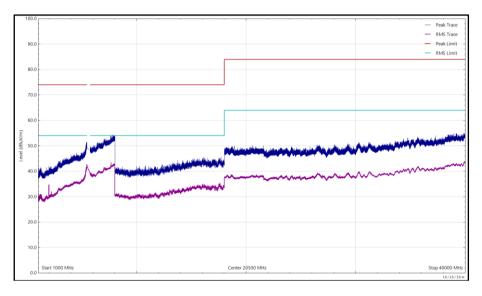


Figure 367 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal

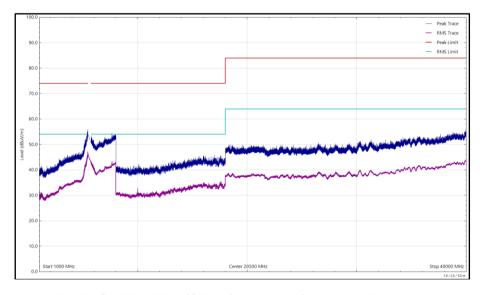


Figure 368 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



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

Table 687 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 1, 1 GHz to 40 GHz

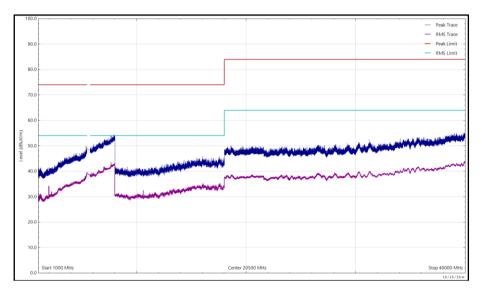


Figure 369 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal

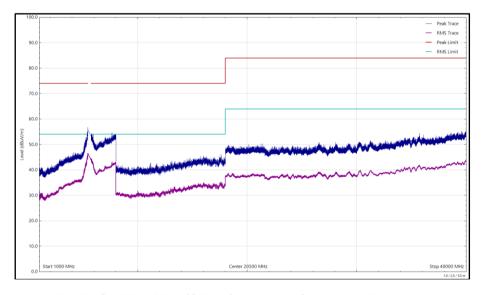


Figure 370 - U-NII-2C - 5500 MHz (CH100), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



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

Table 688 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

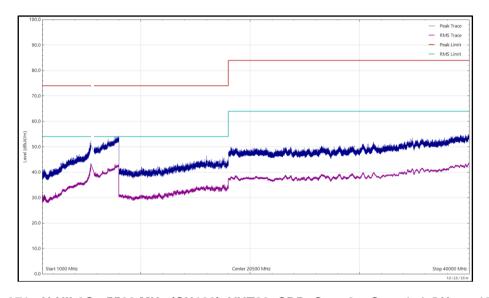


Figure 371 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

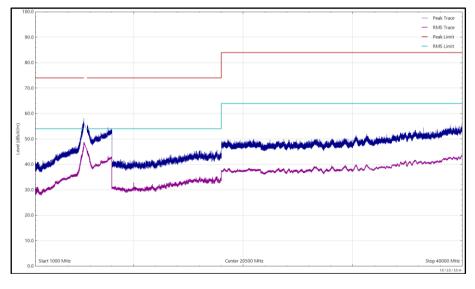


Figure 372 - U-NII-2C - 5500 MHz (CH100), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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

Table 689 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

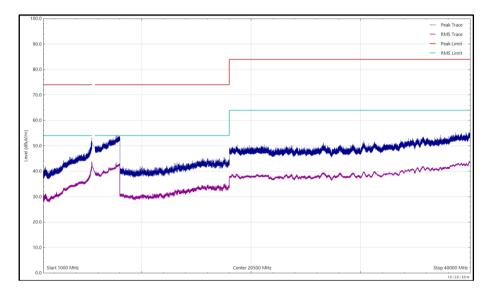


Figure 373 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

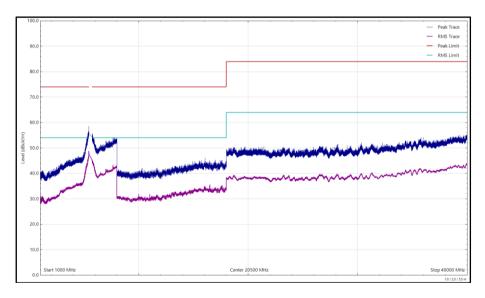


Figure 374 - U-NII-2C - 5500 MHz (CH100), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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

Table 690 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 0, 1 GHz to 40 GHz

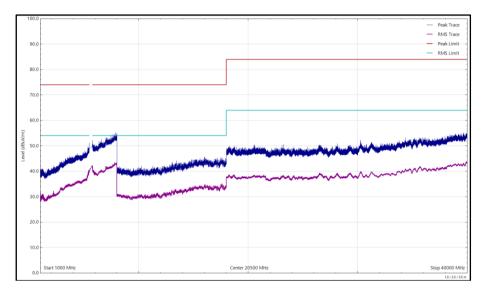


Figure 375 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal

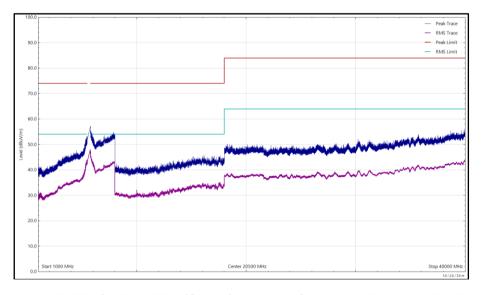


Figure 376 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



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

Table 691 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 1, 1 GHz to 40 GHz

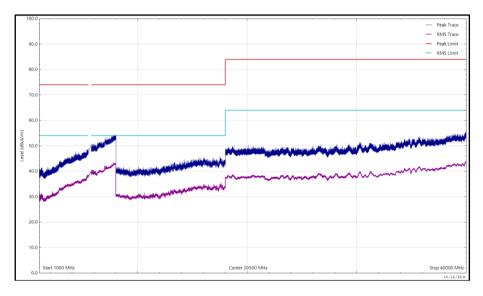


Figure 377 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal

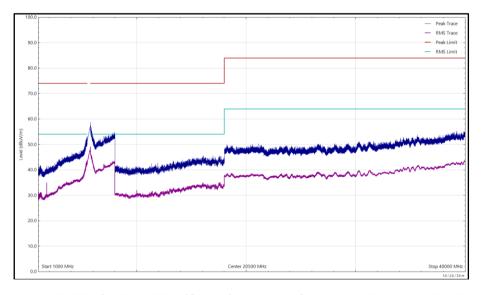


Figure 378 - U-NII-2C - 5700 MHz (CH140), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



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

Table 692 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

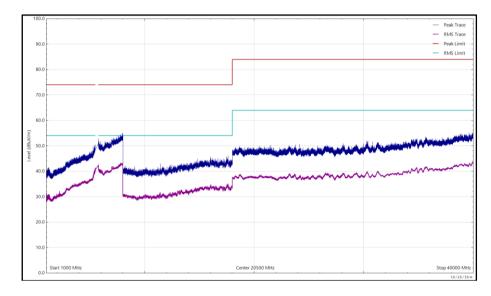


Figure 379 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

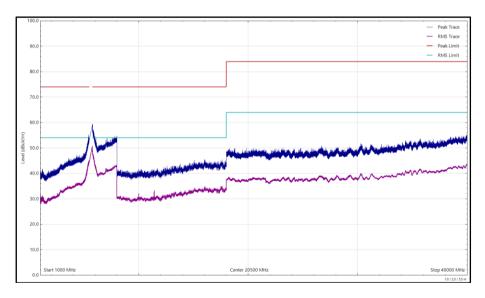


Figure 380 - U-NII-2C - 5700 MHz (CH140), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11385.093	37.69	54.00	-16.31	RMS	68	248	Vertical
11385.153	35.48	54.00	-18.52	RMS	205	442	Horizontal

Table 693 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz

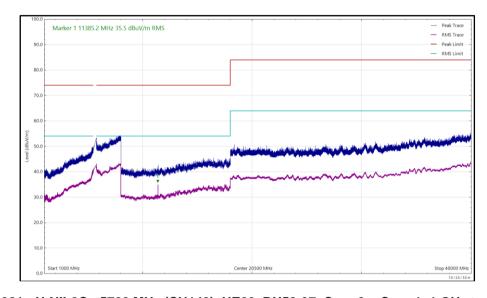


Figure 381 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

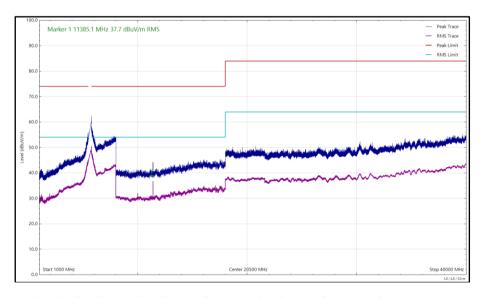


Figure 382 - U-NII-2C - 5700 MHz (CH140), HE20, RU52-37, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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

Table 694 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 0, 1 GHz to 40 GHz

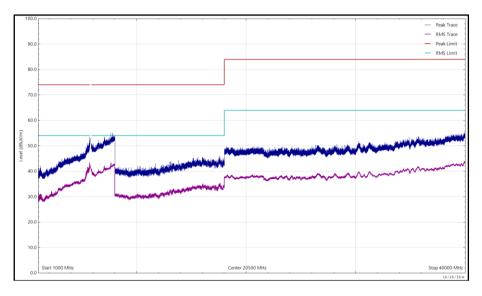


Figure 383 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal

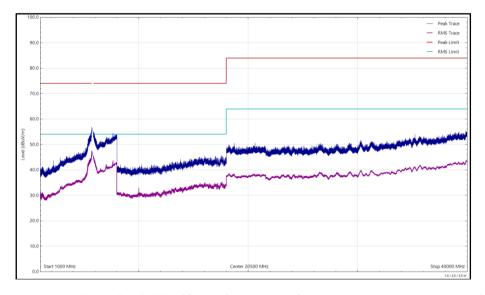


Figure 384 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



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

Table 695 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 1, 1 GHz to 40 GHz

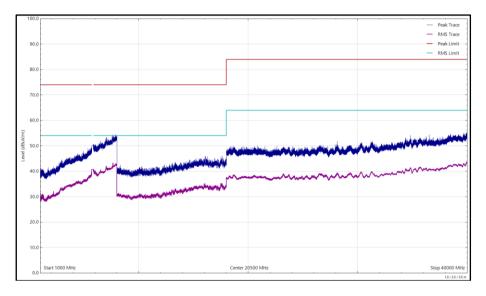


Figure 385 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal

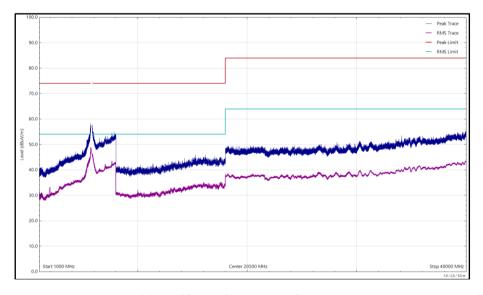


Figure 386 - U-NII-3 - 5745 MHz (CH149), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



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

Table 696 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz

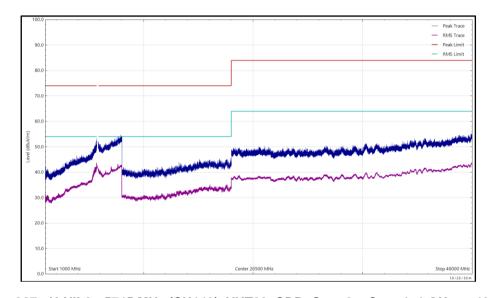


Figure 387 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

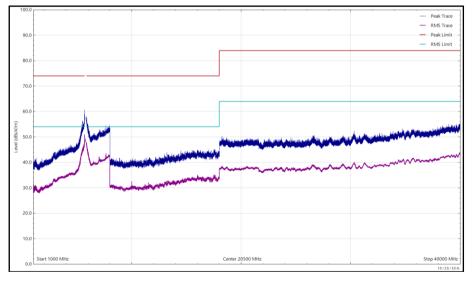


Figure 388 - U-NII-3 - 5745 MHz (CH149), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
11472.757	34.56	54.00	-19.44	RMS	179	194	Vertical

Table 697 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz

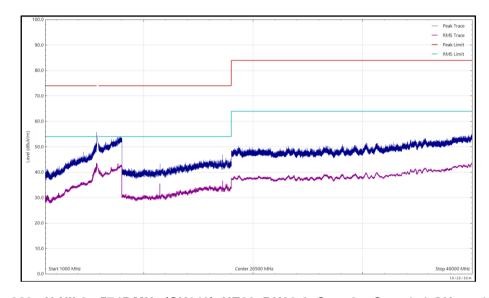


Figure 389 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

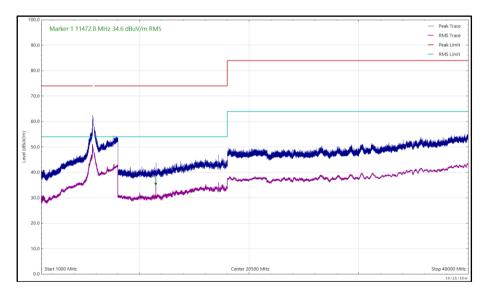


Figure 390 - U-NII-3 - 5745 MHz (CH149), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.991	26.22	46.00	-19.78	Q-Peak	61	100	Horizontal
280.011	22.31	46.00	-23.69	Q-Peak	360	110	Vertical

Table 698 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 0, 30 MHz to 40 GHz

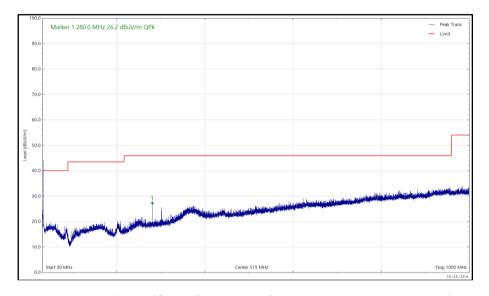


Figure 391 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

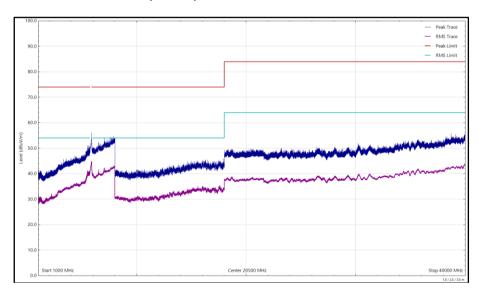


Figure 392 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 0, 1 GHz to 40 GHz, Horizontal



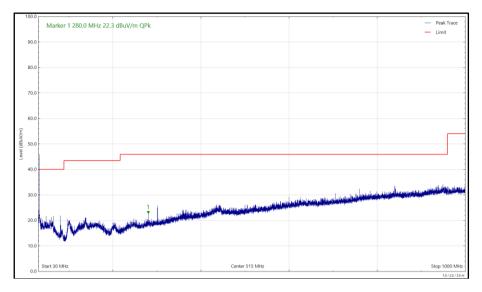


Figure 393 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

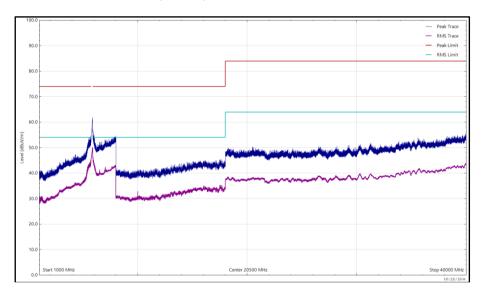


Figure 394 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 0, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.987	26.58	46.00	-19.42	Q-Peak	71	102	Horizontal

Table 699 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

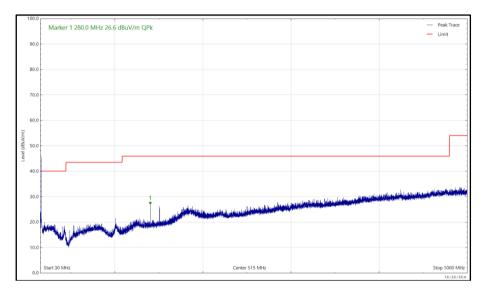


Figure 395 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

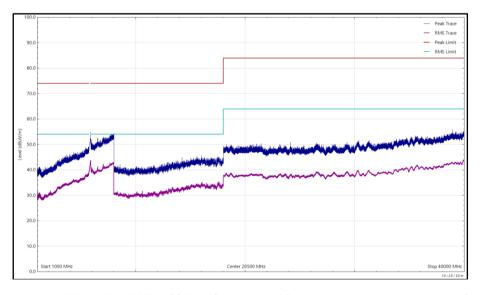


Figure 396 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 1 GHz to 40 GHz, Horizontal



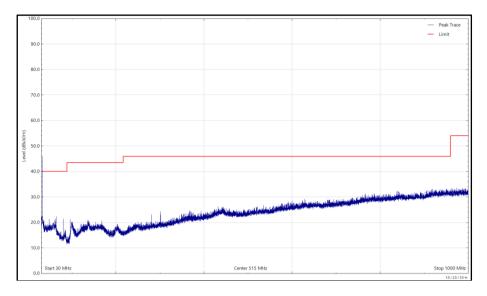


Figure 397 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

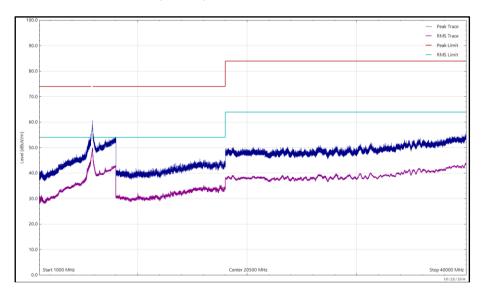


Figure 398 - U-NII-3 - 5825 MHz (CH165), 802.11a, Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.972	18.53	46.00	-27.47	Q-Peak	360	110	Vertical
280.004	26.99	46.00	-19.01	Q-Peak	78	108	Horizontal

Table 700 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

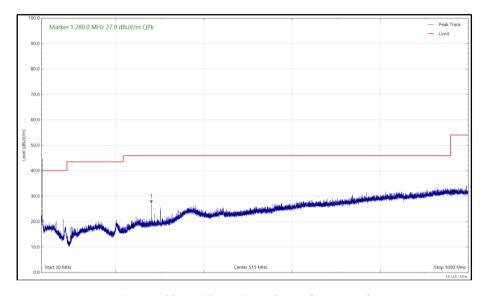


Figure 399 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

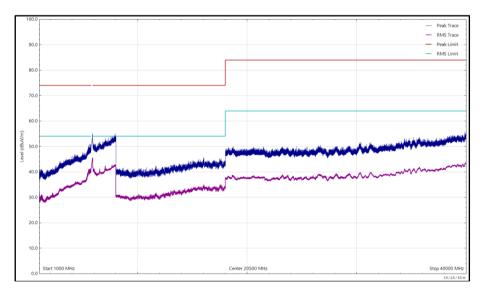


Figure 400 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal



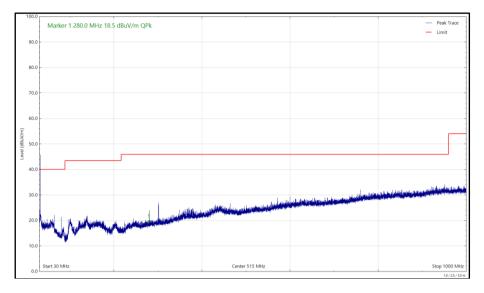


Figure 401 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

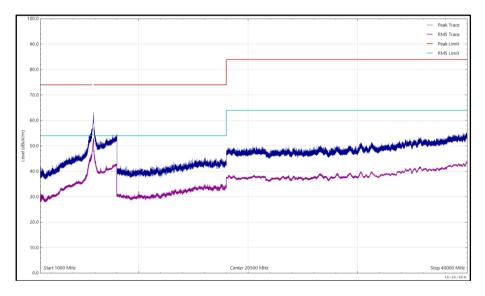


Figure 402 - U-NII-3 - 5825 MHz (CH165), VHT20, CDD, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



Frequency (MHz)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.994	27.45	46.00	-18.55	Q-Peak	78	100	Horizontal

Table 701 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

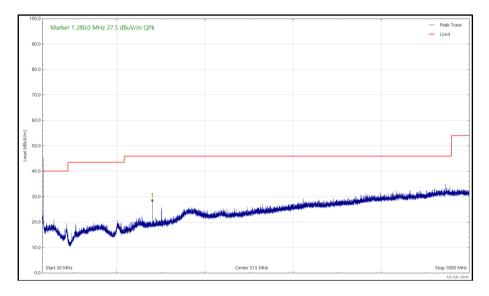


Figure 403 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

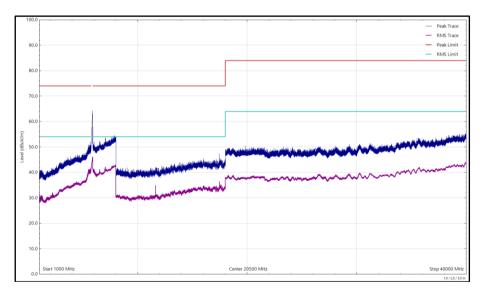


Figure 404 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal



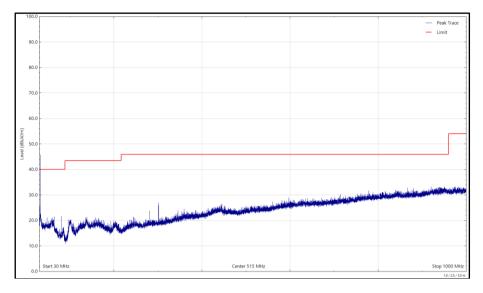


Figure 405 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

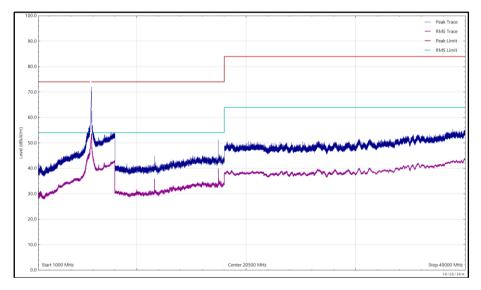


Figure 406 - U-NII-3 - 5825 MHz (CH165), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical



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 702 - 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 703 - Radiated Emissions Limit Table (ISED)

2.6.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 15.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
EMI Test Receiver	Rohde & Schwarz	ESW44	5911	12	24-Feb-2023
Cable (K Type 2m)	Junkosha	MWX241- 02000KMSKMS/B	5937	12	14-May-2023
DRG Horn Antenna (7.5- 18GHz)	Schwarzbeck	HWRD750	5939	12	29-May-2023
TRILOG Super Broadband Test Antenna	Schwarzbeck	VULB 9168	5944	24	03-Feb-2024
1500W (300V 12A) AC Power Supply	iTech	IT7324	5956	-	O/P Mon
5m Semi-Anechoic Chamber (Dual-Axis)	Albatross Projects	RF Chamber 15	5963	36	28-Apr-2025



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
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	5996	12	06-Jun-2023
Cable (N to N 1m)	Junkosha	MWX221- 01000NMSNMS/B	5999	12	05-Jun-2023
Cable (N to N 7m)	Junkosha	MWX221- 07000NMSNMS/B	6005	12	05-Jun-2023
Cable (N to N 8m)	Junkosha	MWX221- 08000NMSNMS/A	6006	12	05-Jun-2023
Cable (SMA to SMA 1m)	Junkosha	MWX221- 01000AMSAMS/A	6007	12	06-Jun-2023
Cable (SMA to SMA 6.5m)	Junkosha	MWX221- 06500AMSAMS/B	6014	12	07-Jun-2023
Cable (SMA to SMA 1m)	Junkosha	MWX221- 01000AMSAMS/B	6019	12	07-Jun-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6140	12	21-Jun-2023
Digital Multimeter	Fluke	115	6147	12	16-Jun-2023
Humidity & Temperature meter	R.S Components	1364	6150	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	SSU003	6191	12	15-Jul-2023
8GHz Highpass Filter	Wainwright	WHKX 7150 8000 18000 50SS	6195	12	15-Jul-2023
Pre Amp 8 - 18 GHz	Wright Technologies	APS06 0061	6198	12	19-Jul-2023
Attenuator 4dB	Pasternack	PE7074-4	6203	24	16-Jul-2024
Cable (SMA to SMA 20cm)	TUV SUD	MH-FH 8-18	6214	12	25-Jul-2023

Table 704

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

A2779, S/N: G9H0GW0F4V - Modification State 0

2.7.3 Date of Test

03-November-2022 to 08-November-2022

2.7.4 Test Method

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.

2.7.5 Environmental Conditions

Ambient Temperature 22.6 - 23.1 °C Relative Humidity 43.3 - 46.2 %



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 705 - Radar Pulse Type 0 Characteristics

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

Table 706 - Details of Master Device used to support testing

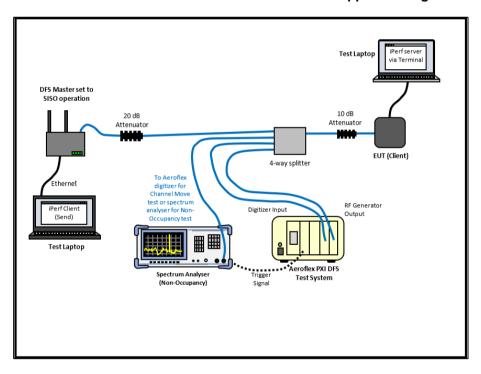


Figure 407 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master





Figure 408 - Verification of Radar Type 0

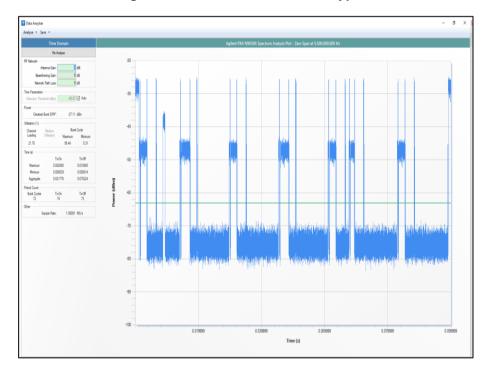


Figure 409 - Channel Loading

The channel loading was 17.45%



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 707 - 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	0.755 s
Channel Closing Time (Aggregate Time During 200 ms)	1.590 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	4.248 ms
Channel Closing Time (Aggregate Time During 10 s)	5.838 ms
Transmission Observed During Non-Occupancy Period	No

Table 708 - In-Service Monitoring Test Results

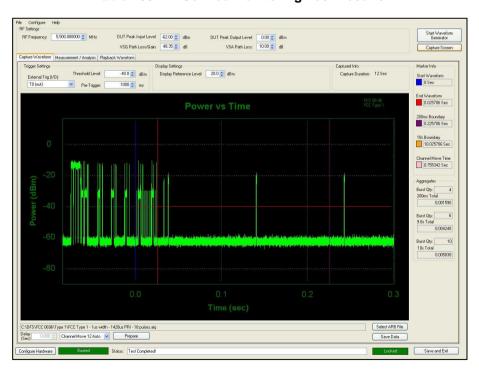


Figure 410 - First 200 ms of Channel Shutdown Period



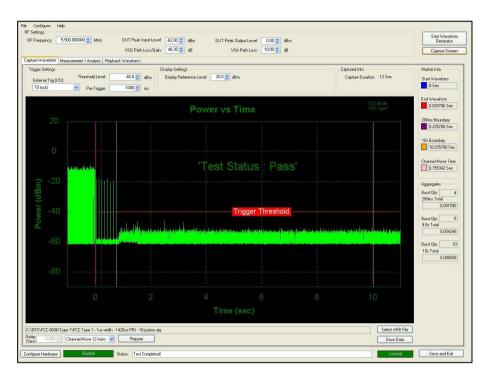


Figure 411 - First 12 s of Channel Shutdown Period



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 709 - Radar Pulse Type 0 Characteristics

Manufacturer	Model	Serial Number	FCC ID
ASUS	GT0AXE11000	M8IG0X400285XVN	MSQ-RTAXJF00

Table 710 - Details of Master Device used to support testing

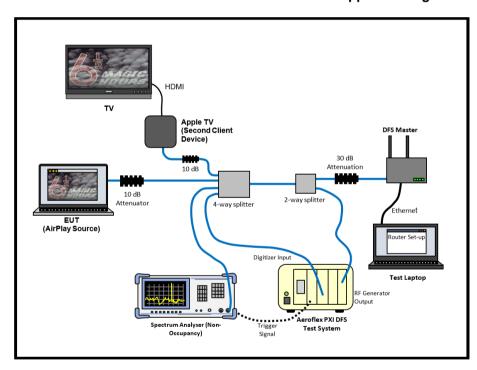


Figure 413 - Test Equipment Setup Diagram for Client without Radar Detection with Injection at the Master





Figure 414 - Verification of Radar Type 0

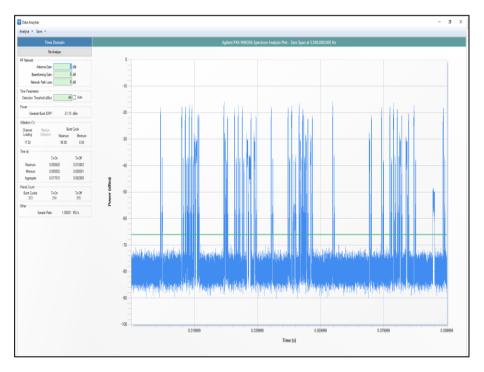


Figure 415 - Channel Loading

The channel loading was 17.02%



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 711 - 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	0.805 s
Channel Closing Time (Aggregate Time During 200 ms)	10.472 ms
Channel Closing Time (Aggregate Time During 200 ms to 10 s)	5.346 ms
Channel Closing Time (Aggregate Time During 10 s)	15.818 ms
Transmission Observed During Non-Occupancy Period	No

Table 712 - In-Service Monitoring Test Results

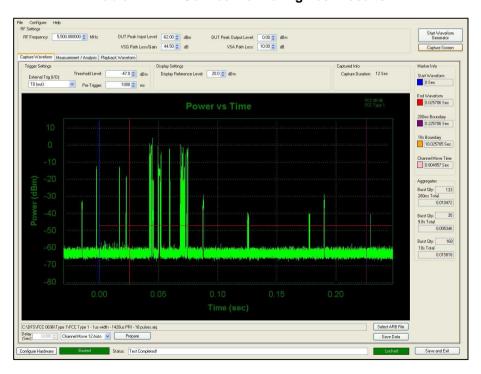


Figure 416 - First 200 ms of Channel Shutdown Period



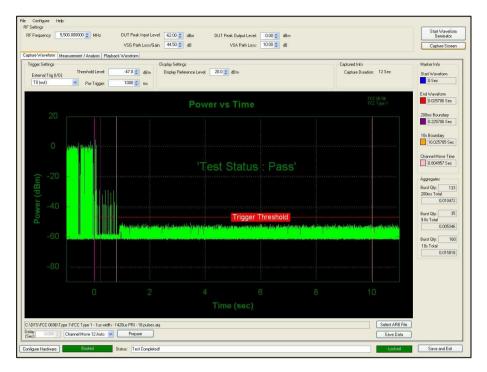


Figure 417 - First 12 s of Channel Shutdown Period



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 713 - Channel Move Time and Channel Closing Transmission Time Limit

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

Ī	Non-occupancy Period	> 30 minutes
	Non-occupancy i enou	> 50 minutes

Table 714 - 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 inservice 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 Expires
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



Instrument	Manufacturer	Type No	TE No	Calibration Period	Calibration Expires
DVI DE Comthe e c'e e e	Agrafia	2040	4040	(months)	40 Nav. 2000
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
Frequency Standard	Spectracom	SecureSync 1200- 0408-0601	4393	6	01-Feb-2023
Non Conductive Standoff Box	TUV SUD	Non Conductive Standoff Box	4966	-	TU
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
Cable 2.92m	Junkosha	MWX241- 01000KMS	5412	12	24-Jul-2023
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
Attenuator 5W 20dB DC- 18GHz	Aaren	AT40A-4041-D18- 20	5498	12	16-May-2023
Attenuator 2W 10dB DC- 10GHz	Telegartner	J01156A0031	5575	-	O/P Mon
2-Way Power Divider (2 to 8 GHz)	Aaren	AT30A-TE0208-2- AF	5684	12	20-Dec-2022
WiFi 6E Tri-Band Gaming Router	Asus	GT-AXE110000	5926	-	TU
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	6176	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

Table 715

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	± 2.00 MHz
Maximum Conducted Output Power	± 3.2 dB
Maximum Conducted Power Spectral Density	± 3.2 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 716

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.