FCC and ISED Test Report

Apple Inc
Model: A3247

In accordance with FCC 47 CFR Part 15, ISED RSS-247, ISED RSS-248 and ISED RSS-GEN (2.4 GHz Bluetooth, 2.4 GHz WLAN, 5 GHz WLAN, 6 GHz WLAN, Narrowband and Thread)

TUV SUD Limited
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FCC ID: BCGA3247 IC: 579C-A3247

COMMERCIAL-IN-CONFIDENCE

Document 75960488-20 Issue 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Steve Marshall	Senior Engineer	Authorised Signatory	12 August 2024

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15, ISED RSS-247, ISED RSS-248 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Report Generation	Lauren Walters	12 August 2024	

FCC Accreditation
553713/UK2026 Concorde Park, Fareham Test Laboratory

ISED Accreditation
28798/UK0003 Concorde Park, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15: 2023, ISED RSS-247: Issue 3 (2023-08), ISED RSS-248: Issue 2 (2022-12) and ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02) for the tests detailed in section 1.3.

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Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	12-August-2024

Table 1

1.2 Introduction

Applicant	Apple Inc
Manufacturer	Apple Inc
EUT/Sample Identification	Refer to section 1.6
Test Specification/Issue/Date	FCC 47 CFR Part 15: 2023 ISED RSS-247: Issue 3 (2023-08) ISED RSS-248: Issue 2 (2022-12) ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02)
Start of Test	15-June-2024
Finish of Test	13-July-2024
Name of Engineer(s)	Elliot Callender, Ian Hart, Ioan-Alexandru Bogatu, Morsalin Hossain, Thomas Randall and Tony Baby
Related Document(s)	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15, ISED RSS-247, ISED RSS-248 and ISED RSS-GEN is shown below.

Section	Specification Clause				Test Description	Result	Comments/Base Standard
	Part 15	RSS-247	RSS-248	RSS-GEN			
Configuration and Mode: 5 GHz WLAN and 2.4 GHz Bluetooth							
2.1	15.209, 15.247(d) and 15.407(b)	5.5 and 6.2	-	6.13 and 8.9	Radiated Spurious Emissions (Simultaneous Transmission)	Pass	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01
Configuration and Mode: 6 GHz WLAN and 2.4 GHz Bluetooth							
2.1	15.209, 15.247(d) and 15.407(b)	5.5	4.6	6.13 and 8.9	Radiated Spurious Emissions (Simultaneous Transmission)	Pass	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01
Configuration and Mode: 2.4 GHz WLAN and Narrowband							
2.1	15.209, 15.247(d) and 15.407(b)	5.5 and 6.2	-	6.13 and 8.9	Radiated Spurious Emissions (Simultaneous Transmission)	Pass	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01
Configuration and Mode: 5 GHz WLAN and Thread							
2.1	15.209, 15.247(d) and 15.407(b)	5.5 and 6.2	-	6.13 and 8.9	Radiated Spurious Emissions (Simultaneous Transmission)	Pass	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01
Configuration and Mode: 6 GHz WLAN and Thread							
2.1	15.209, 15.247(d) and 15.407(b)	5.5	4.6	6.13 and 8.9	Radiated Spurious Emissions (Simultaneous Transmission)	Pass	ANSI C63.4 (2014) ANSI C63.10 (2020) KDB 789033 D02 v02r01 KDB 987594 D02 v01r01

Table 2

1.4 Product Information

1.4.1 Technical Description

The equipment under test (EUT) was a desktop computer.

1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.6 Identification of the EUT

The table below details identification of the EUT(s) that have been used to carry out the testing within this report.

Model: A3247			
Serial Number	Hardware Version	Software Version	Firmware
KN47NTDQRY	REV1.0	24A81452a	WLAN: 23.30.16 Bluetooth: 22.1.65.459

Table 3

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: A3247, Serial Number: KN47NTDQRY			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 4

1.8 Test Location

TÜV SÜD conducted the following tests at our Concorde Park Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 5 GHz WLAN and 2.4 GHz Bluetooth		
Radiated Spurious Emissions (Simultaneous Transmission)	Elliot Callender, Ian Hart and Ioan-Alexandru Bogatu	UKAS
Configuration and Mode: 6 GHz WLAN and 2.4 GHz Bluetooth		
Radiated Spurious Emissions (Simultaneous Transmission)	Ian Hart, Ioan-Alexandru Bogatu and Morsalin Hossain	UKAS
Configuration and Mode: 2.4 GHz WLAN and Narrowband		
Radiated Spurious Emissions (Simultaneous Transmission)	Elliot Callender, Ian Hart, Ioan-Alexandru Bogatu, Morsalin Hossain, Thomas Randall and Tony Baby	UKAS
Configuration and Mode: 5 GHz WLAN and Thread		
Radiated Spurious Emissions (Simultaneous Transmission)	Elliot Callender, Ian Hart, Ioan-Alexandru Bogatu and Morsalin Hossain	UKAS
Configuration and Mode: 6 GHz WLAN and Thread		
Radiated Spurious Emissions (Simultaneous Transmission)	Elliot Callender, Ioan-Alexandru Bogatu, Morsalin Hossain and Tony Baby	UKAS

Table 5

Office Address:

TÜV SÜD
Concorde Park
Concorde Way
Fareham
Hampshire
PO15 5FG
United Kingdom

2 Test Details

2.1 Radiated Spurious Emissions (Simultaneous Transmission)

2.1.1 Specification Reference

FCC 47 CFR Part 15, Clause 15.209, 15.247(d) and 15.407(b)
ISED RSS-247, Clause 5.5 and 6.2
ISED RSS-248, Clause 4.6
ISED RSS-GEN, Clause 6.13 and 8.9

2.1.2 Equipment Under Test and Modification State

A3247, S/N: KN47NTDQRY - Modification State 0

2.1.3 Date of Test

15-June-2024 to 13-July-2024

2.1.4 Test Method

Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

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 C63.4 clause 6.2.4 for each type of port on the EUT.

For frequencies > 1 GHz, plots for average measurements were taken in accordance with ANSI C63.10, clause 4.1.4.2.5 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, 11.11, 11.12, 12.7.2 or 12.7.3 depending on the nature of the emission measured.

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 non-restricted band limits. 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).

To determine the emission characteristic of the EUT above 18 GHz, the test antenna was swept over all faces of the EUT whilst observing a spectral display. The frequency of any emissions of interest was noted for formal measurement at the correct measurement distance of 1m. This procedure was repeated for all relevant transmit operating channels.

At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.

2.1.5 Example Test Setup Diagram

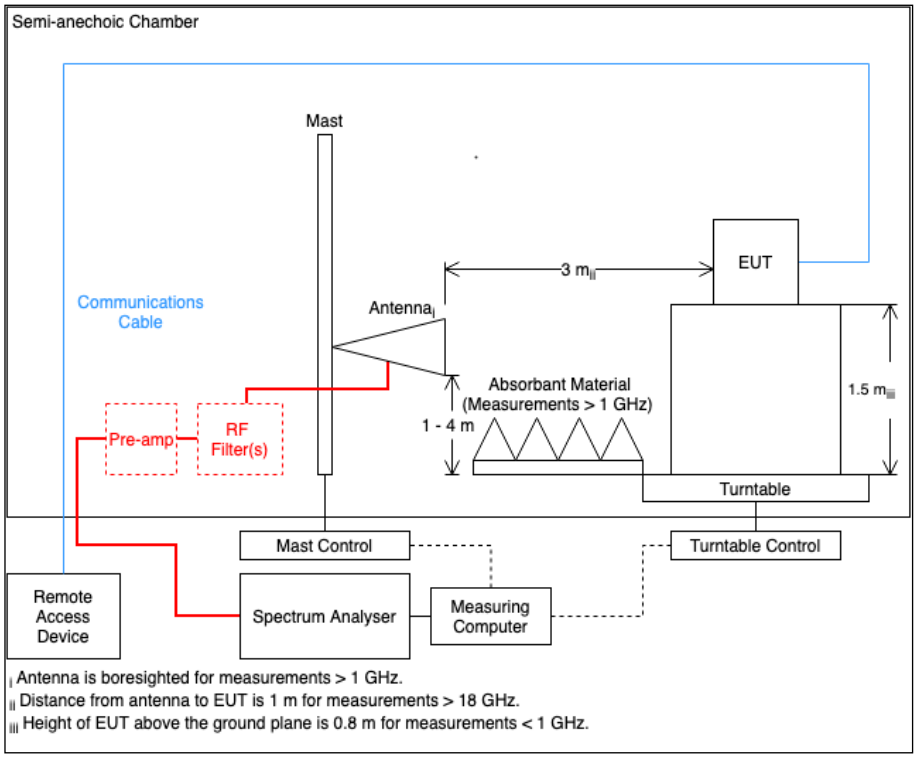

Figure 1

2.1.6 Environmental Conditions

Ambient Temperature	21.1 - 23.6 °C
Relative Humidity	39.8 - 53.2 %

2.1.7 Test Results

5 GHz WLAN and 2.4 GHz Bluetooth

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.218	42.57	54.00	-11.43	CISPR Avg	174	227	Horizontal
5147.033	55.30	74.00	-18.70	Peak	198	225	Horizontal
5149.907	42.23	54.00	-11.77	RMS	27	188	Vertical
5149.947	43.70	54.00	-10.30	RMS	180	208	Horizontal
5358.142	45.02	54.00	-8.98	RMS	197	153	Horizontal
5361.030	42.53	54.00	-11.47	RMS	21	166	Vertical
5386.942	56.80	74.00	-17.20	Peak	198	152	Horizontal
7605.990	43.25	54.00	-10.75	RMS	133	341	Vertical
7611.648	55.38	74.00	-18.62	Peak	316	100	Horizontal
7633.604	54.77	74.00	-19.23	Peak	156	400	Vertical

Table 6 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

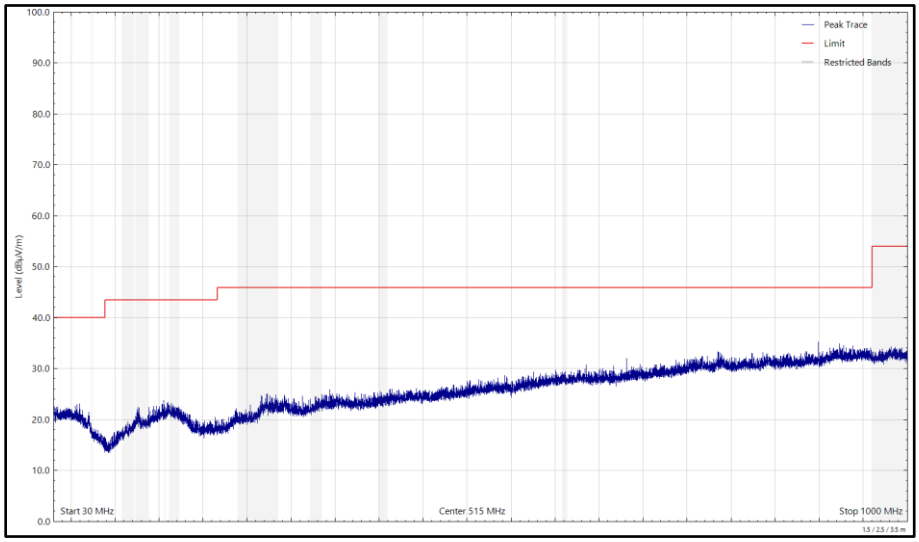

Figure 2 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

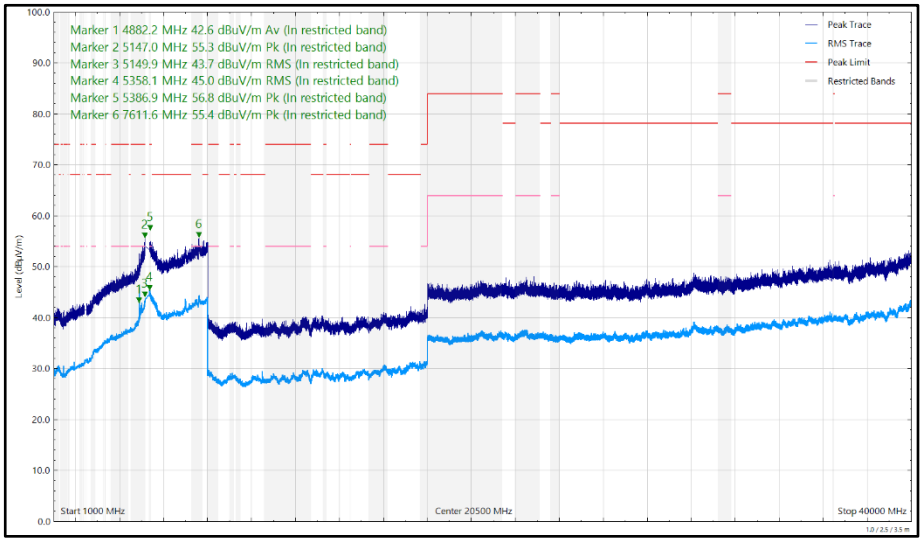

Figure 3 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

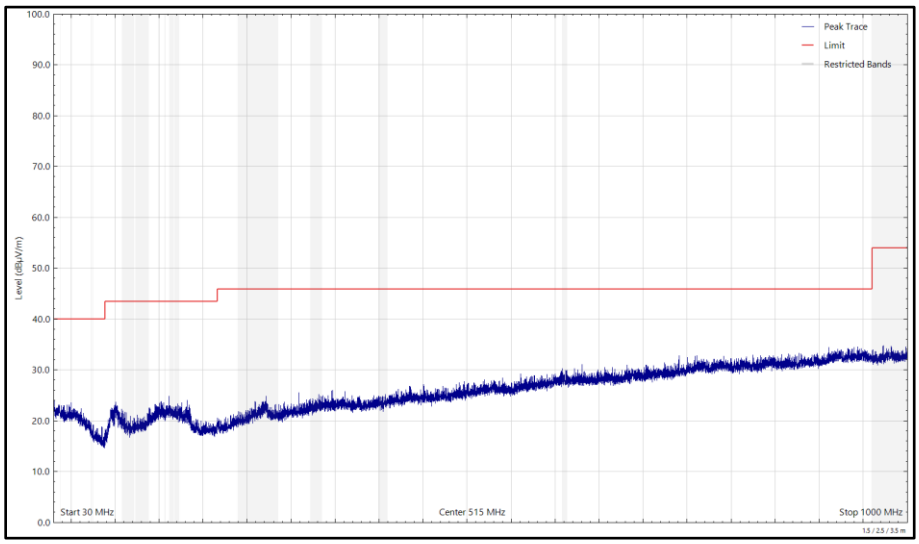

Figure 4 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

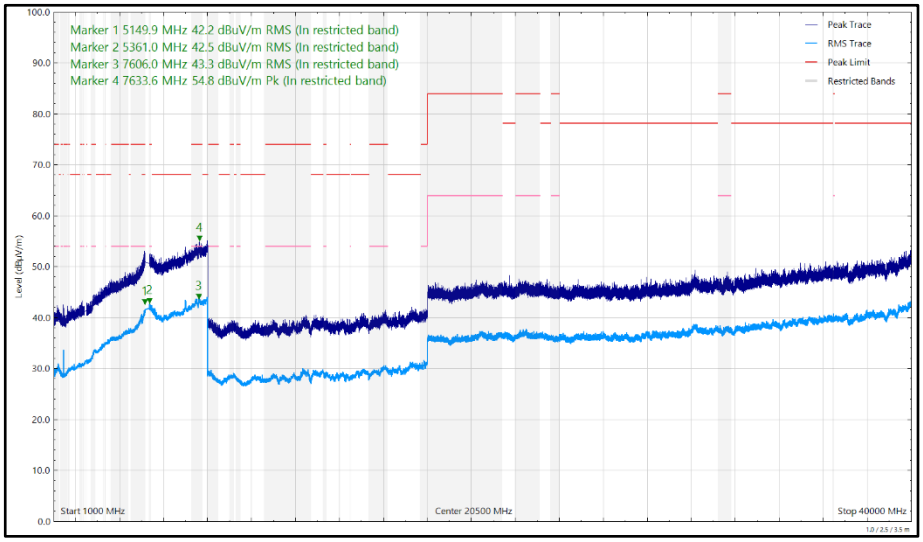

Figure 5 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.397	40.10	54.00	-13.90	CISPR Avg	190	255	Horizontal
5445.047	54.42	74.00	-19.58	Peak	193	212	Horizontal
5454.211	42.66	54.00	-11.34	RMS	203	179	Horizontal
5454.626	41.84	54.00	-12.16	RMS	29	100	Vertical
5756.027	55.36	74.00	-18.64	Peak	185	273	Horizontal
7439.835	42.80	54.00	-11.20	RMS	45	102	Horizontal
7441.326	42.78	54.00	-11.22	RMS	78	259	Vertical
7608.607	55.33	74.00	-18.67	Peak	360	116	Horizontal

Table 7 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

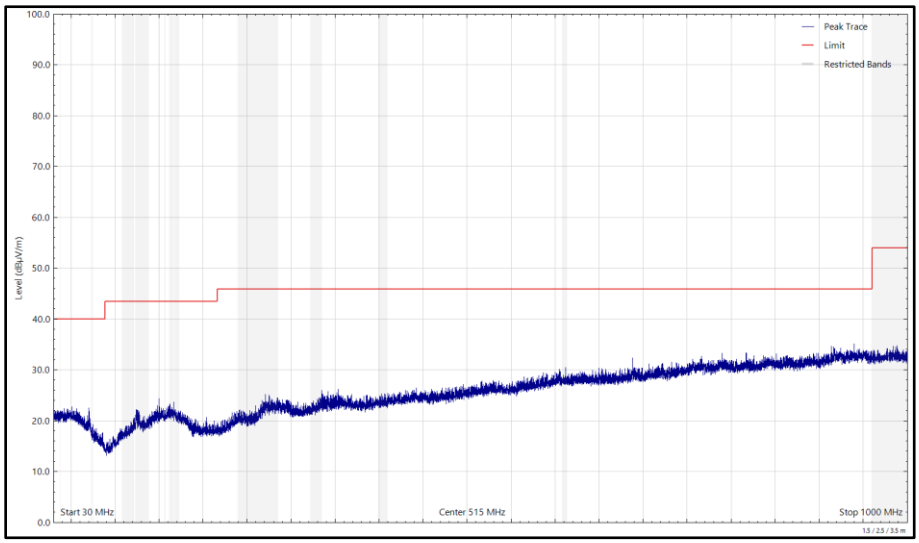

Figure 6 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

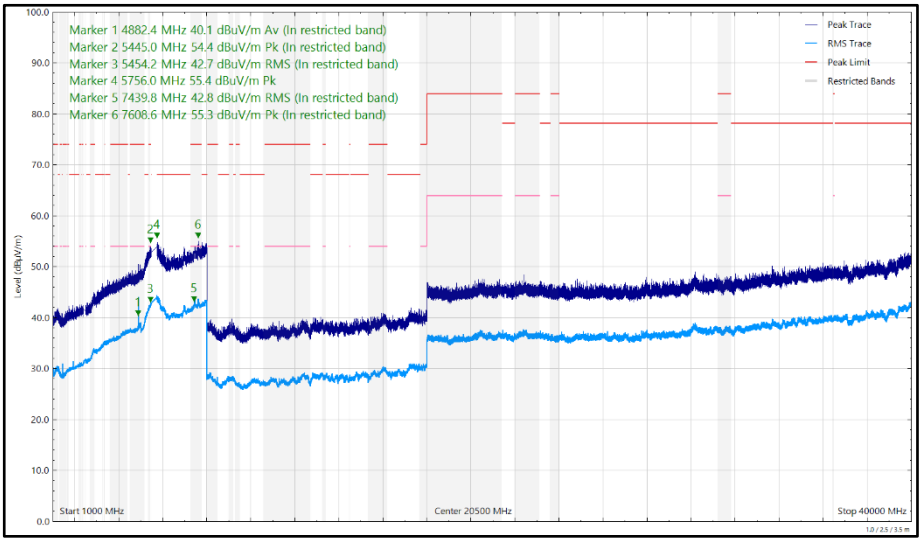

Figure 7 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

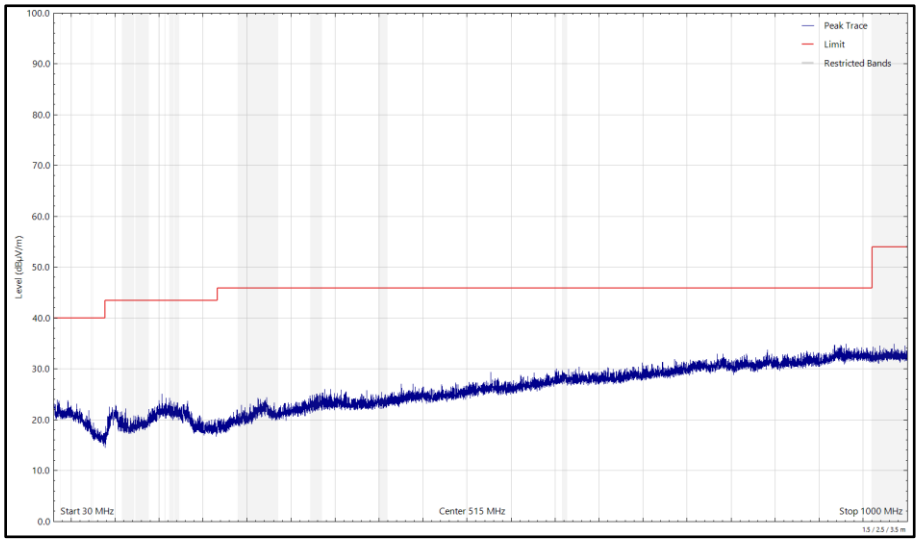

Figure 8 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

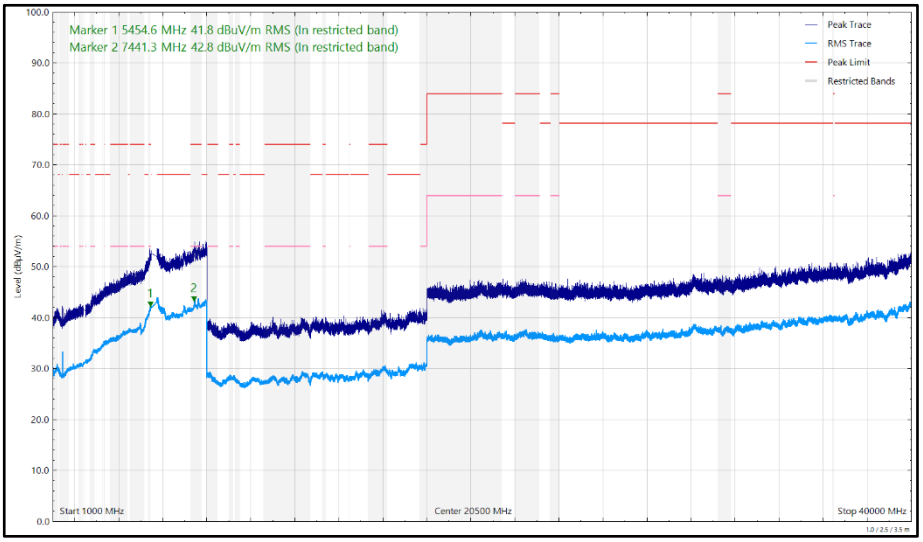

Figure 9 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.382	39.26	54.00	-14.74	CISPR Avg	179	391	Horizontal
5444.136	41.20	54.00	-12.80	RMS	199	100	Horizontal
5451.252	40.42	54.00	-13.58	RMS	31	202	Vertical
5718.341	56.37	74.00	-17.63	Peak	331	146	Vertical
5724.327	57.25	74.00	-16.75	Peak	239	149	Horizontal
5852.707	57.25	74.00	-16.75	Peak	2	160	Vertical
5853.388	57.87	74.00	-16.13	Peak	186	289	Horizontal
7599.781	42.44	54.00	-11.56	RMS	211	400	Vertical
7600.285	42.53	54.00	-11.47	RMS	235	169	Horizontal
7604.224	54.64	74.00	-19.36	Peak	149	169	Vertical
7615.654	54.89	74.00	-19.11	Peak	305	121	Horizontal

Table 8 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

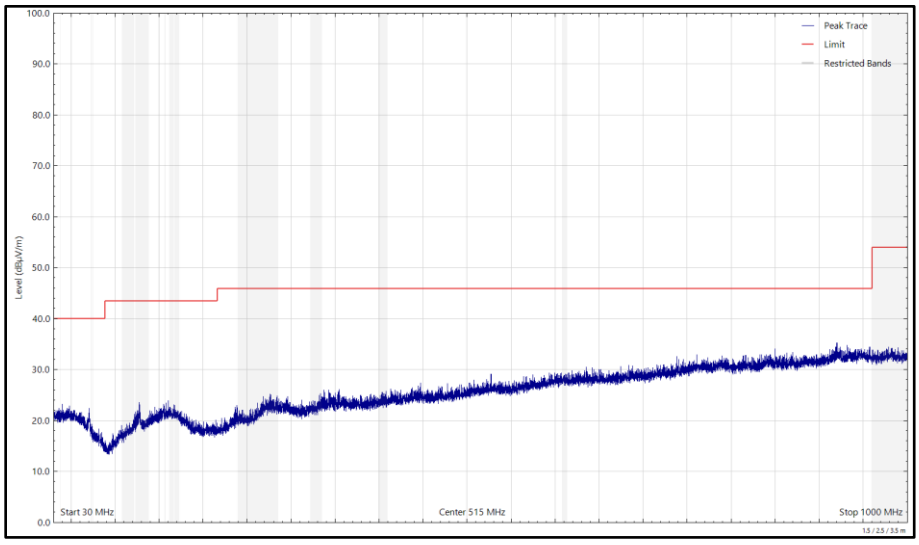

Figure 10 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

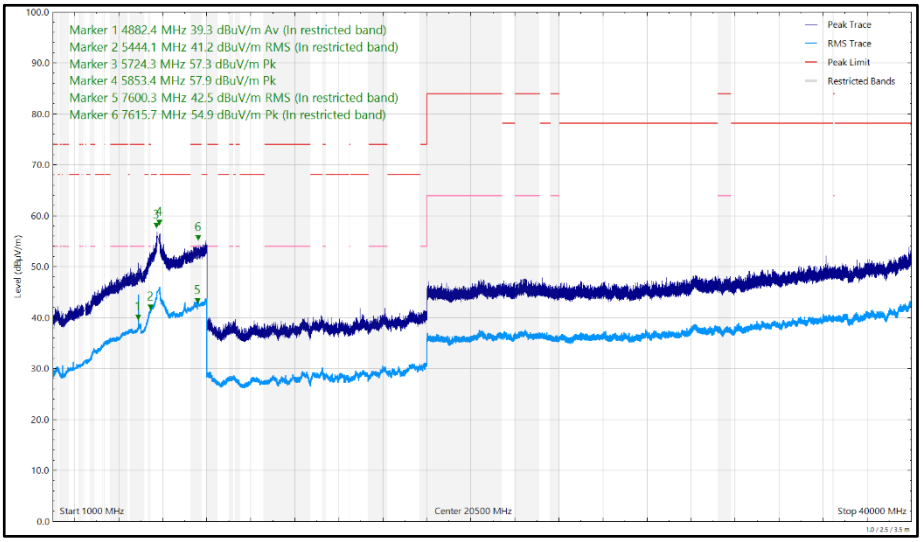

Figure 11 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

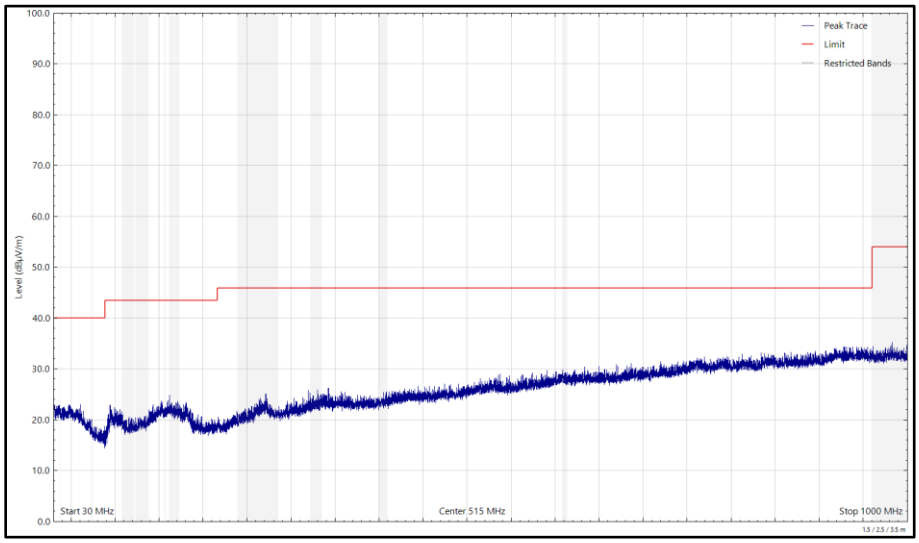

Figure 12 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

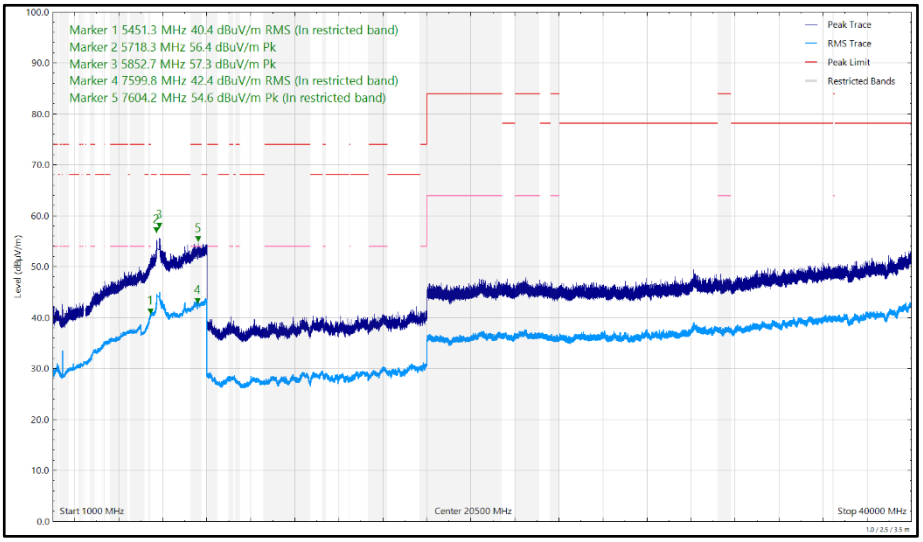

Figure 13 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.057	37.88	54.00	-16.12	CISPR Avg	15	227	Vertical
5145.315	42.28	54.00	-11.72	RMS	23	184	Vertical
5149.640	41.73	54.00	-12.27	RMS	197	142	Horizontal
5360.744	42.51	54.00	-11.49	RMS	193	216	Horizontal
5370.924	54.82	74.00	-19.18	Peak	192	129	Horizontal
5441.708	41.93	54.00	-12.07	RMS	19	161	Vertical
7605.353	55.39	74.00	-18.61	Peak	212	153	Horizontal
7608.145	43.05	54.00	-10.95	RMS	47	116	Vertical
7609.624	43.03	54.00	-10.97	RMS	283	280	Horizontal
7609.888	54.96	74.00	-19.04	Peak	340	348	Vertical

Table 9 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

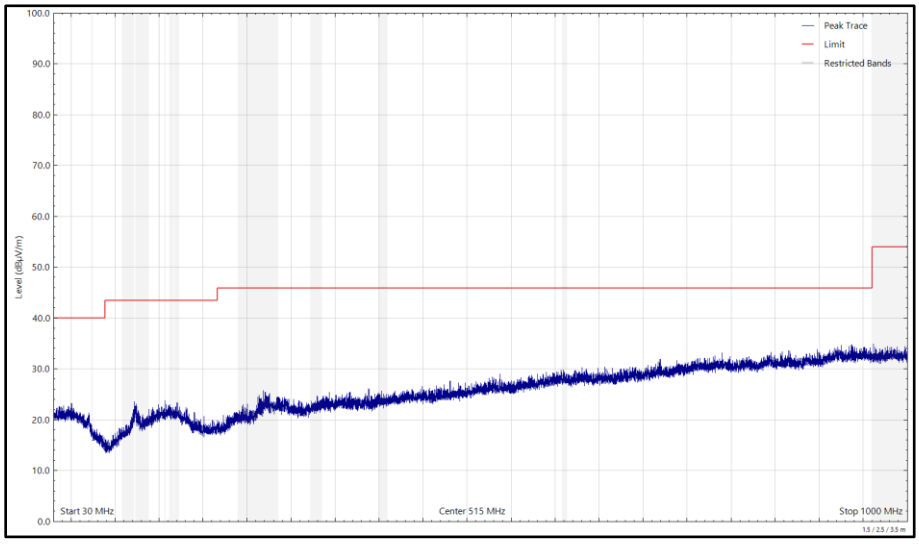

Figure 14 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

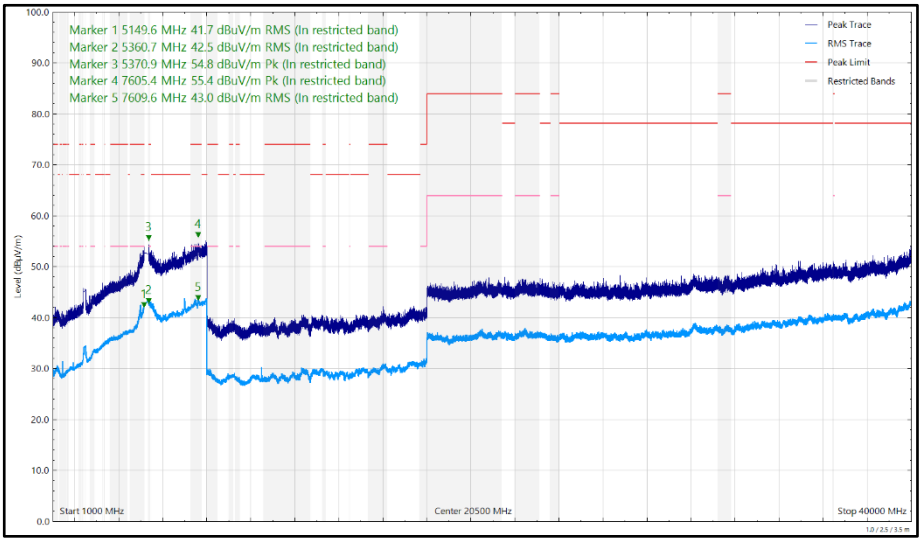

Figure 15 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

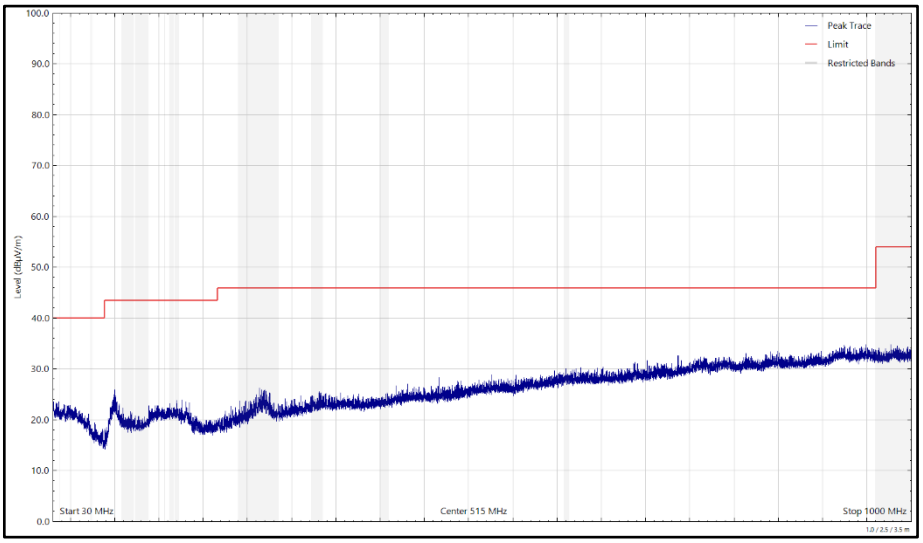

Figure 16 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

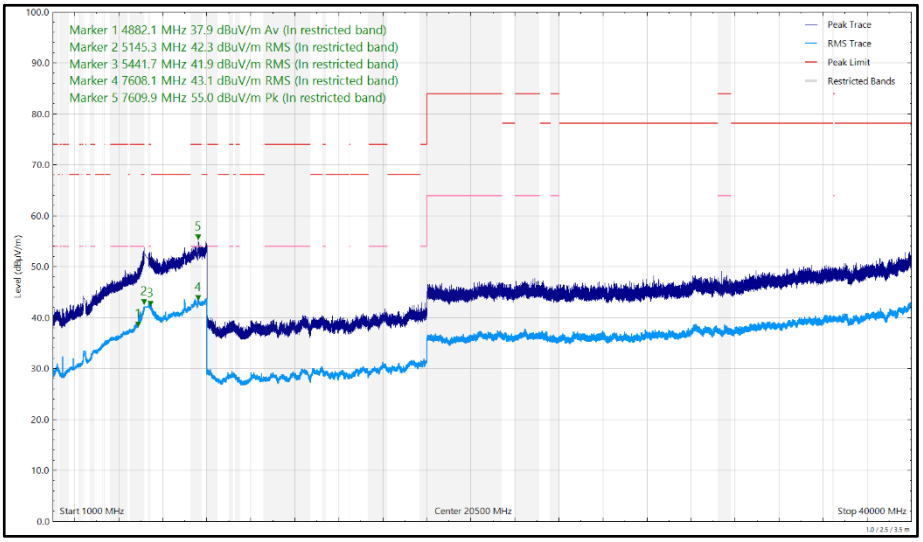

Figure 17 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.168	36.71	54.00	-17.29	CISPR Avg	7	167	Vertical
5455.415	42.11	54.00	-11.89	RMS	29	202	Vertical
5457.545	42.19	54.00	-11.81	RMS	195	225	Horizontal
5464.758	54.21	74.00	-19.79	Peak	193	214	Horizontal
7436.815	54.77	74.00	-19.23	Peak	244	218	Vertical
7443.359	42.66	54.00	-11.34	RMS	350	222	Vertical
7608.486	55.67	74.00	-18.33	Peak	305	388	Horizontal
7611.956	42.74	54.00	-11.26	RMS	136	295	Horizontal

Table 10 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

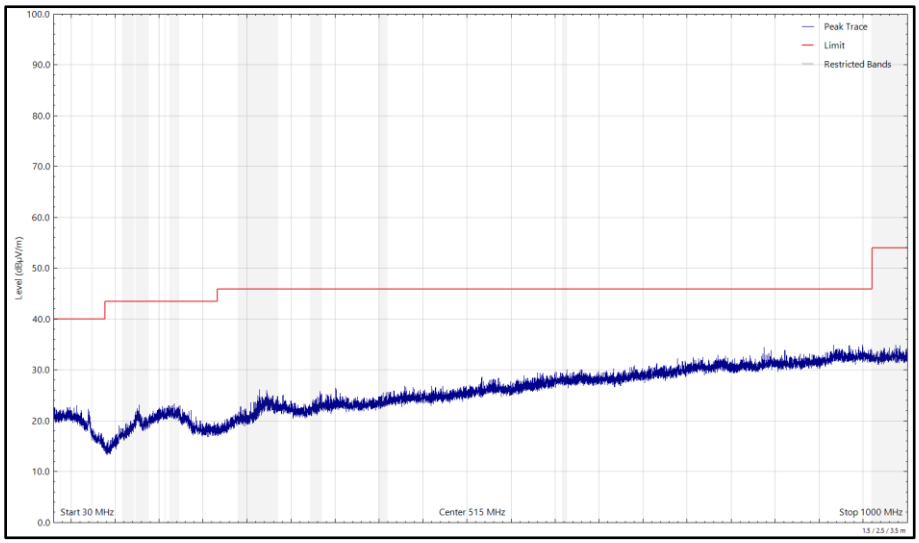

Figure 18 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

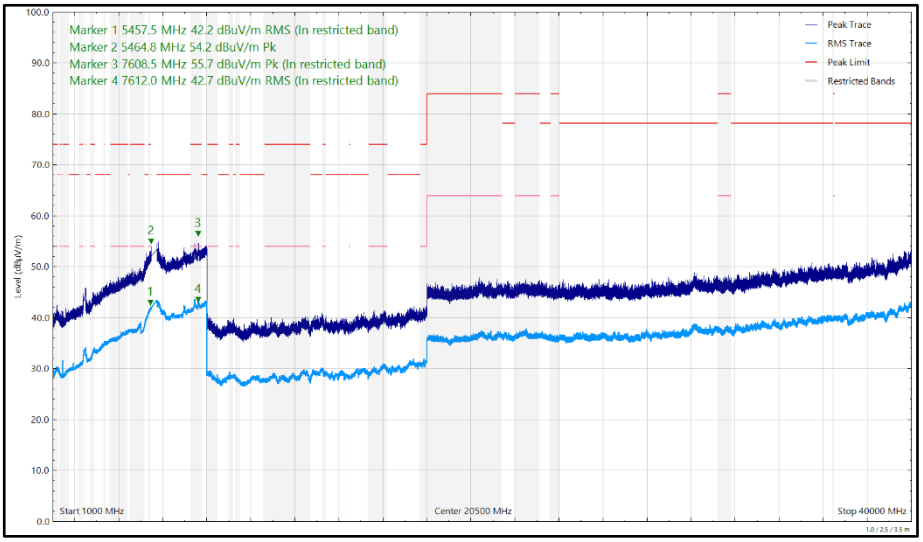

Figure 19 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

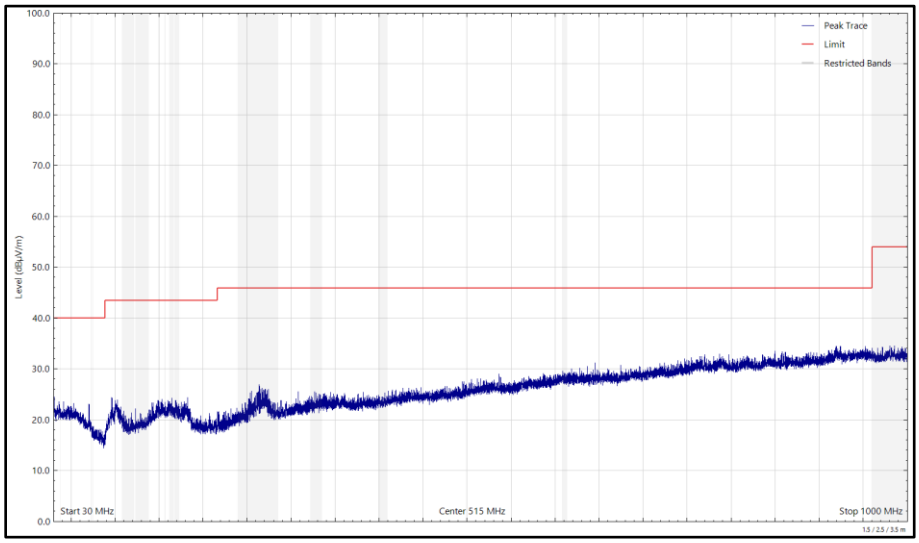

Figure 20 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

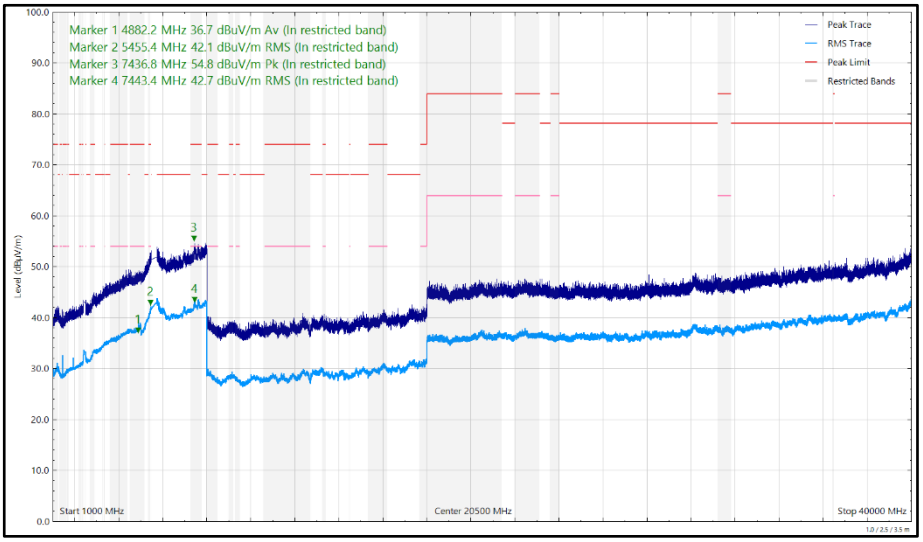

Figure 21 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.772	35.33	54.00	-18.67	CISPR Avg	9	186	Vertical
5449.080	41.52	54.00	-12.48	RMS	207	187	Horizontal
5457.619	40.14	54.00	-13.86	RMS	27	139	Vertical
5721.951	56.47	74.00	-17.53	Peak	189	195	Horizontal
5724.634	54.68	74.00	-19.32	Peak	23	105	Vertical
5850.971	56.84	74.00	-17.16	Peak	169	280	Horizontal
5851.708	54.67	74.00	-19.33	Peak	350	243	Vertical
7436.191	54.08	74.00	-19.92	Peak	150	129	Vertical
7598.432	42.34	54.00	-11.66	RMS	167	361	Horizontal
7602.019	42.32	54.00	-11.68	RMS	10	201	Vertical

Table 11 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

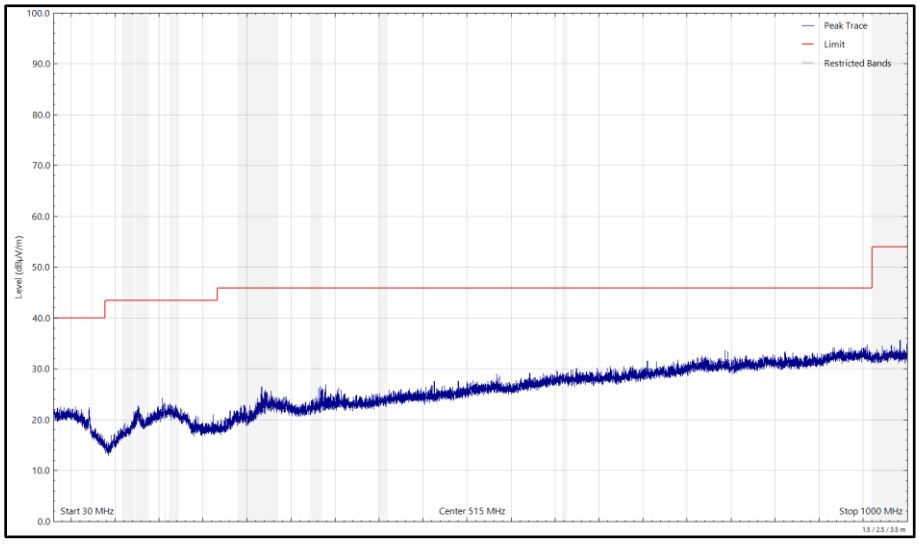

Figure 22 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

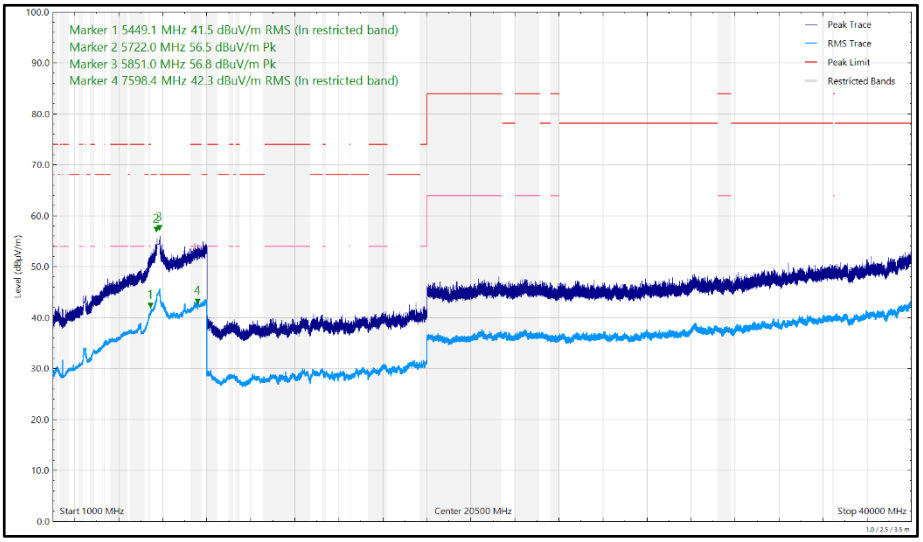

Figure 23 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

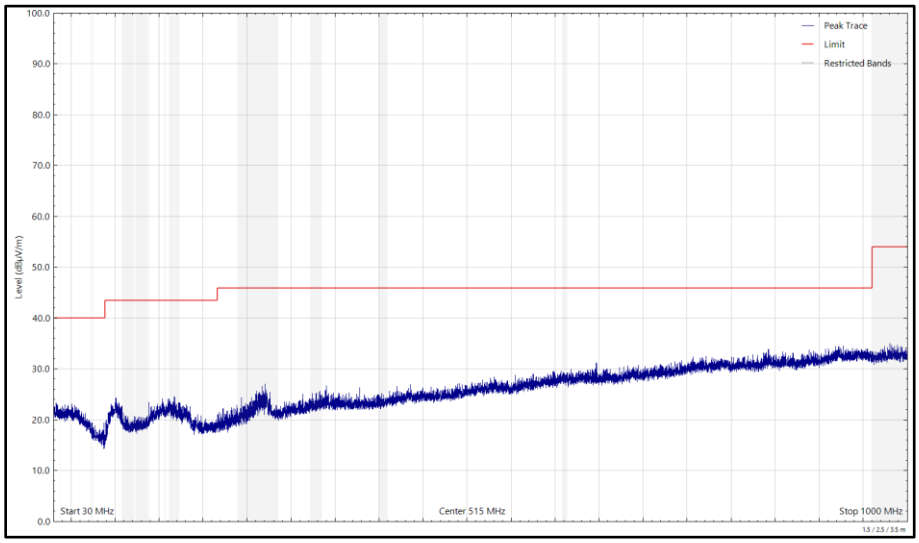

Figure 24 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

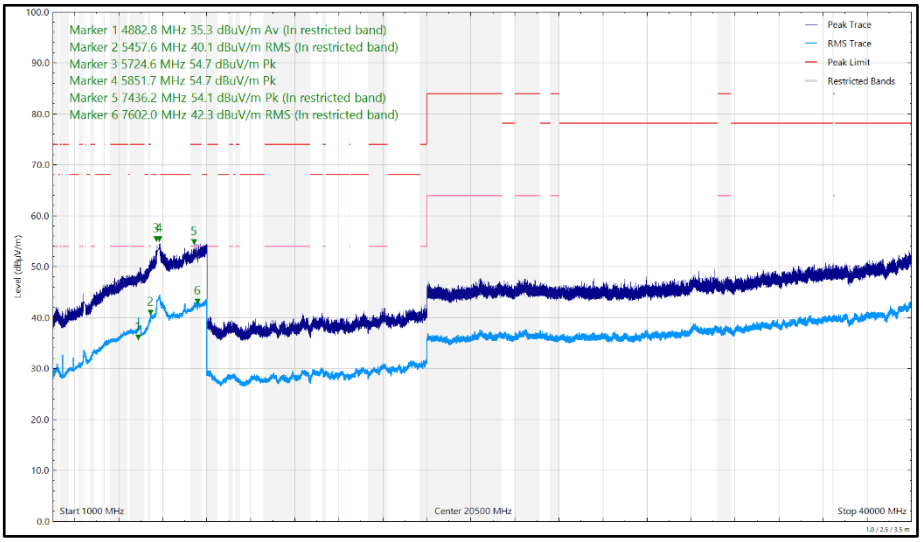

Figure 25 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15, ISED RSS-247 and ISED RSS-GEN

The least stringent limit from the applicable rule parts was used to determine compliance for Radiated Emissions testing of multiple transmission sources.

The least stringent applicable limit was:

Clause	Limit
Part 15 247 (d) / RSS-247 Clause 5.5	-20 dBc
Part 15.407 (b) / RSS-247 Clause 6.2	-27 dBm e.i.r.p
Part 15.209 / RSS-GEN Clause 8.9	Peak: 74 dBµV/m at 3m, Average 54 dBµV/m at 3m (Restricted bands > 1 GHz)

Table 12

6 GHz WLAN and 2.4 GHz Bluetooth

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
7322.620	38.65	54.00	-15.35	CISPR Avg	231	297	Horizontal
7322.503	36.91	54.00	-17.09	CISPR Avg	37	262	Vertical

Table 13 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 40 GHz

*No emissions found within 10 dB of the limit.

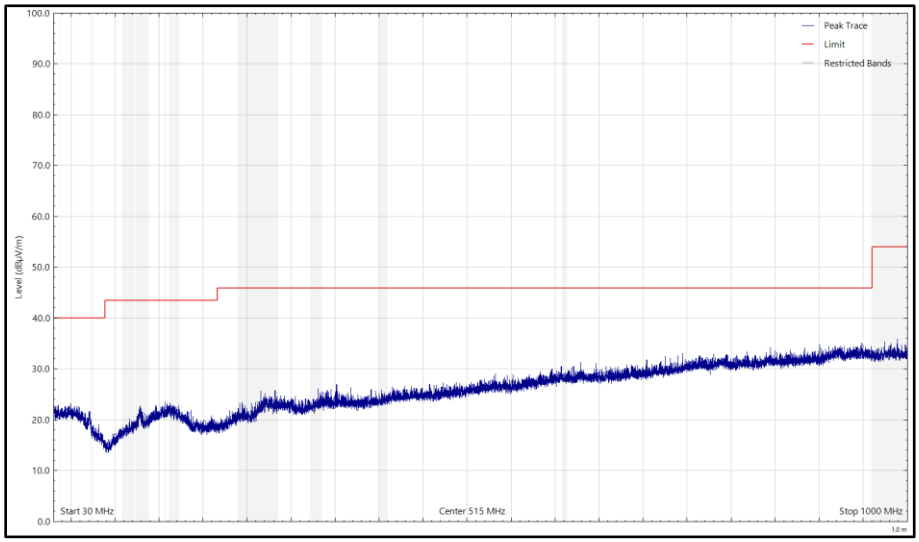

Figure 26 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

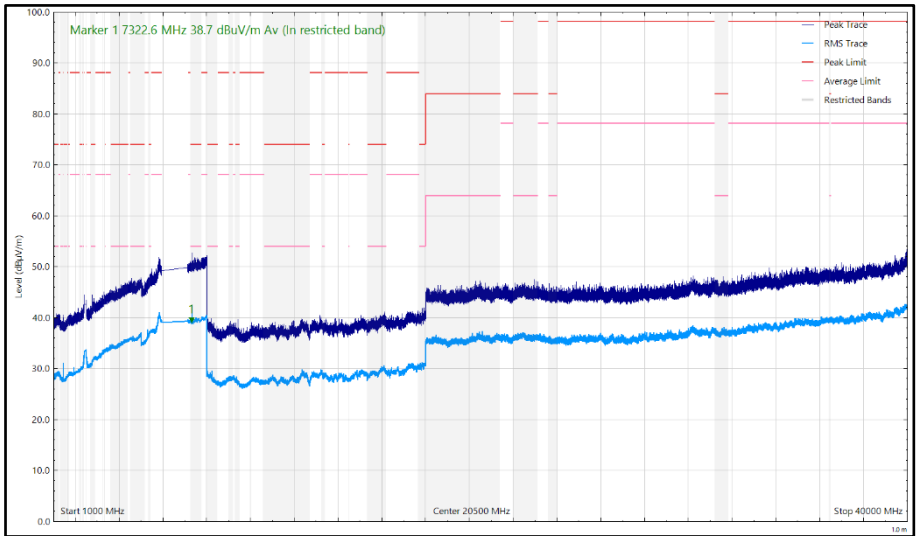

Figure 27 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

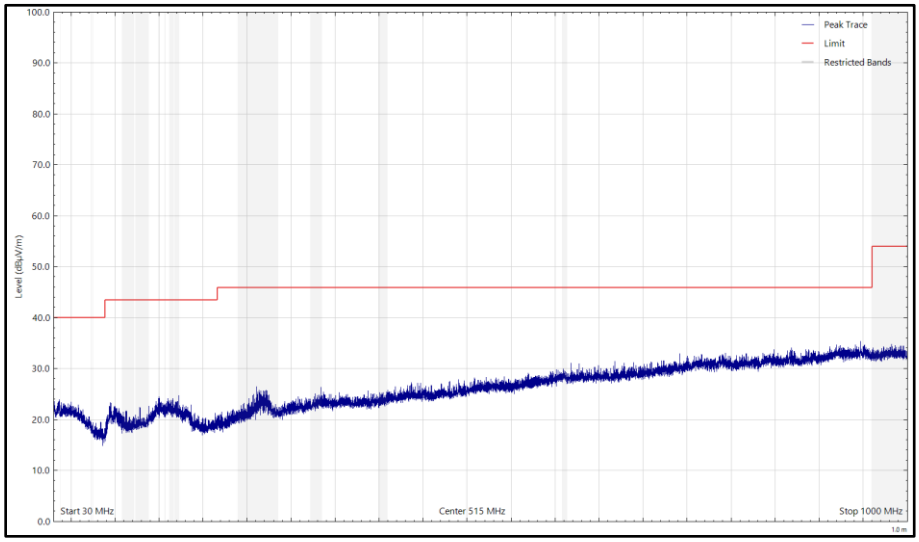

Figure 28 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

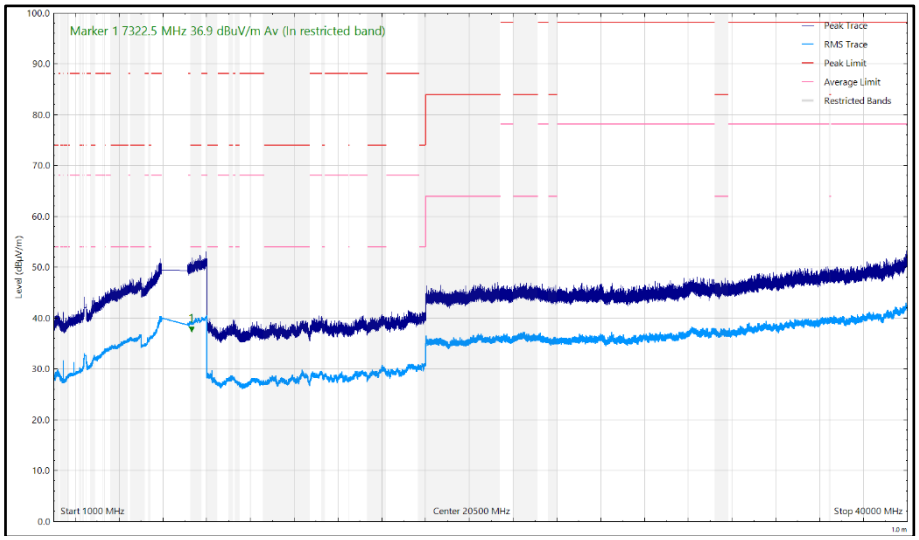

Figure 29 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
7322.572	38.75	54.00	-15.25	CISPR Avg	203	369	Horizontal
7323.446	35.91	54.00	-18.09	CISPR Avg	134	229	Vertical

Table 14 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 40 GHz

*No emissions found within 10 dB of the limit.

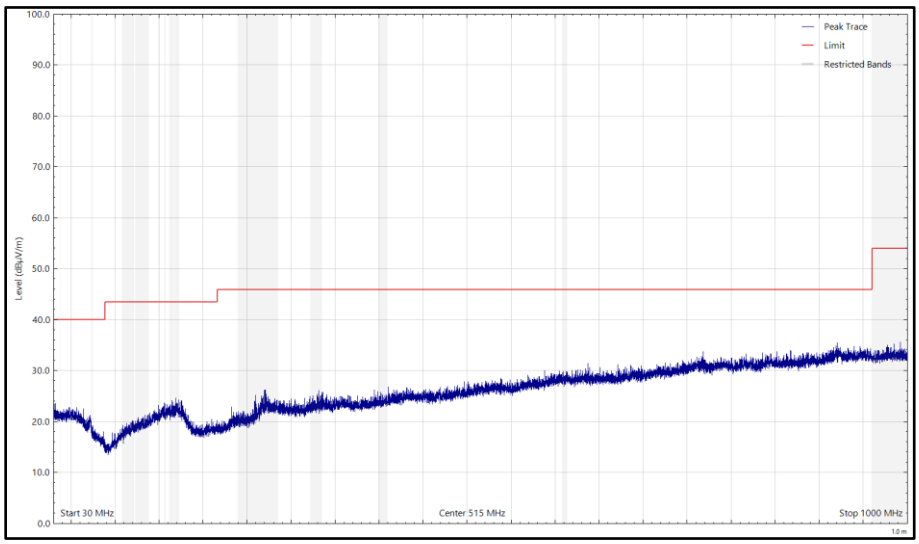

Figure 30 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

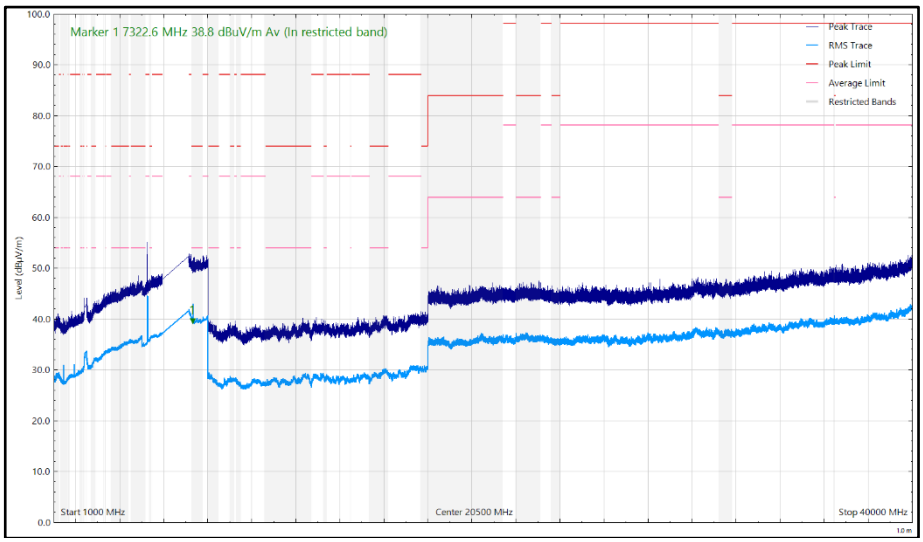

Figure 31 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

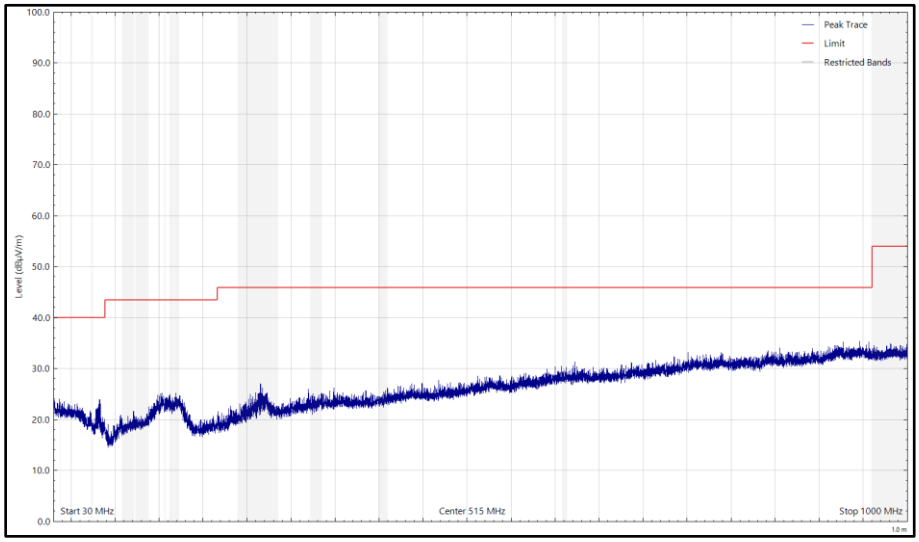

Figure 32 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

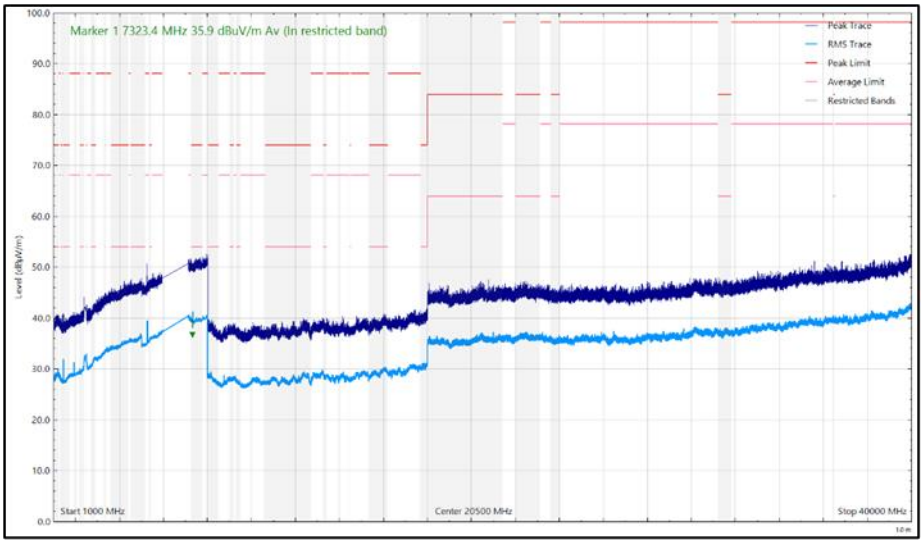

Figure 33 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4881.968	38.81	54.00	-15.19	CISPR Avg	175	180	Horizontal
7320.796	35.80	54.00	-18.20	CISPR Avg	75	209	Horizontal

Table 15 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

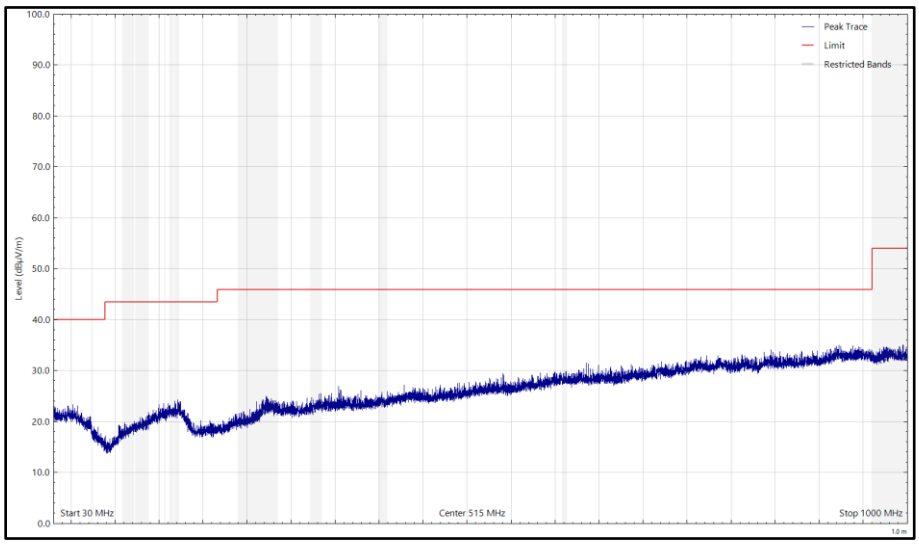

Figure 34 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

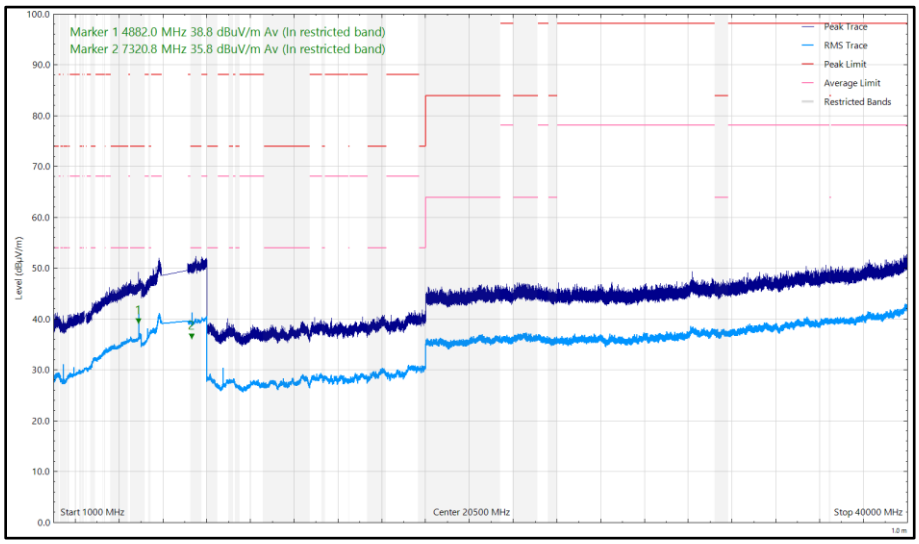

Figure 35 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

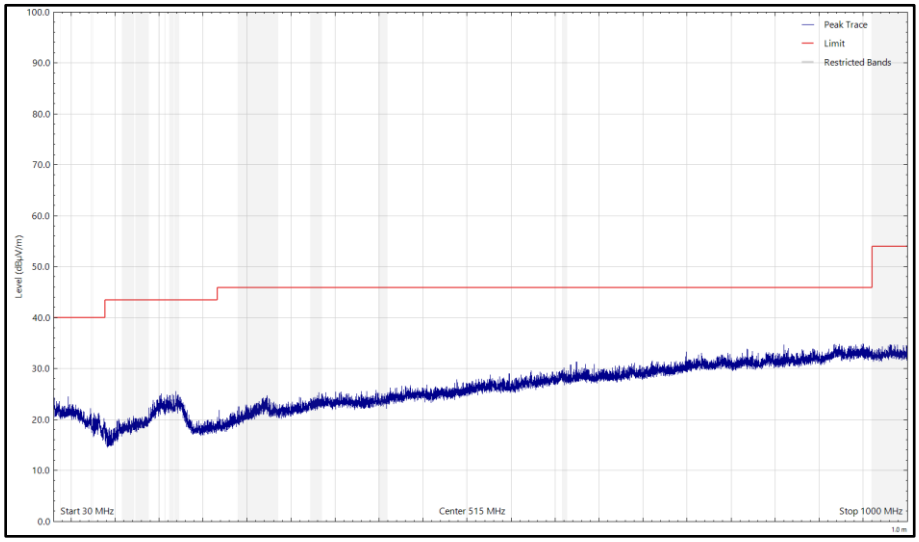

Figure 36 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

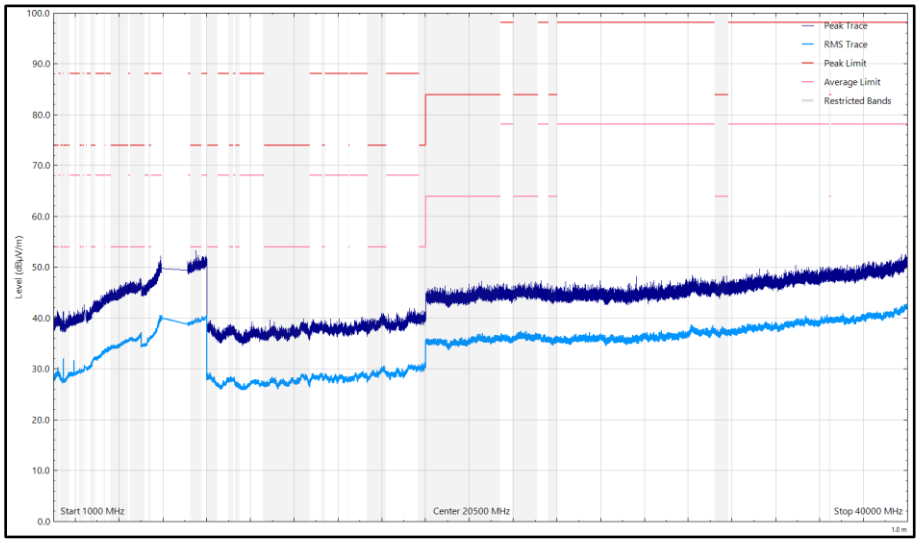

Figure 37 - U-NII-5 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4882.023	39.03	54.00	-14.97	CISPR Avg	179	336	Horizontal
7323.531	37.13	54.00	-16.87	CISPR Avg	250	341	Horizontal

Table 16 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

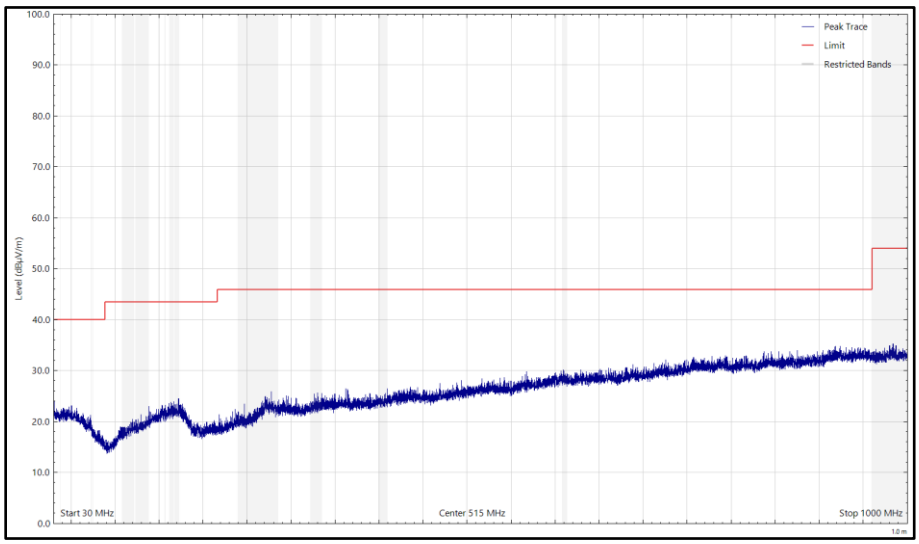

Figure 38 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

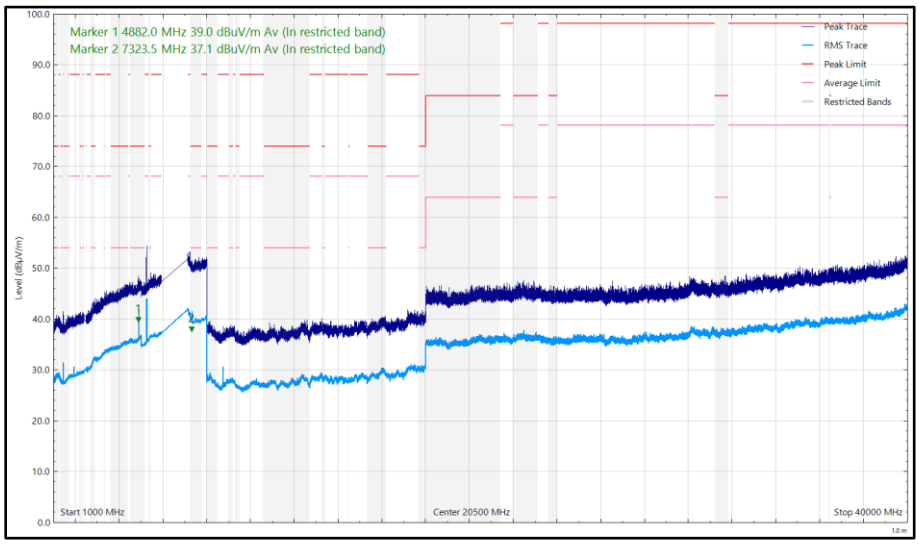

Figure 39 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

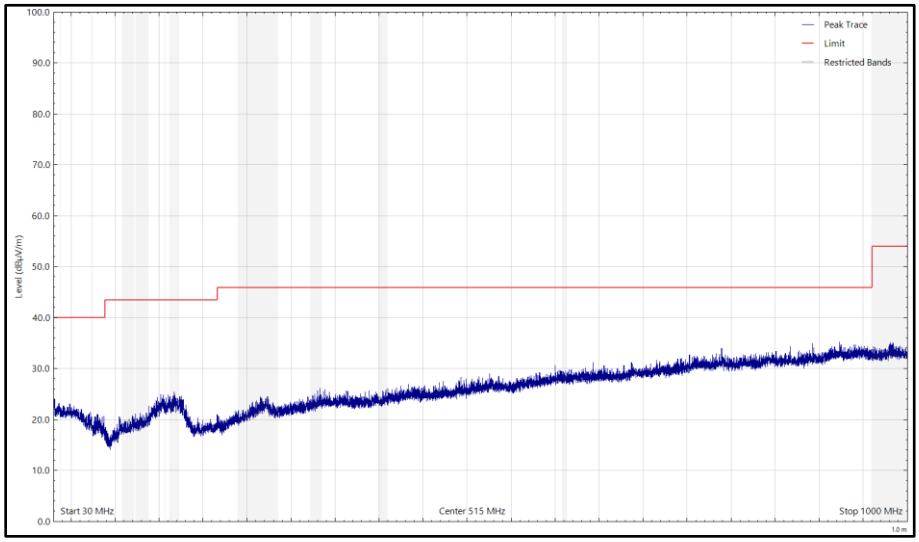

Figure 40 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

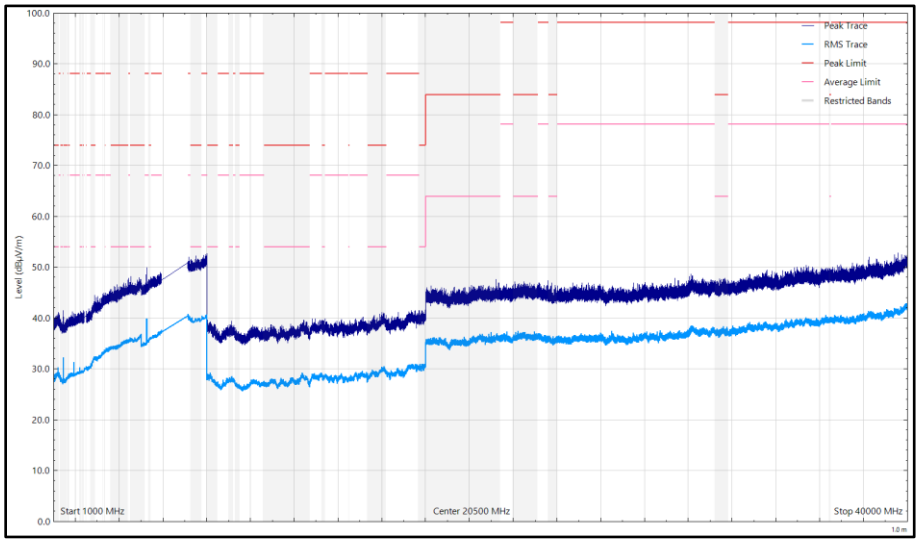

Figure 41 - U-NII-8 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15, ISED RSS-247, ISED RSS-248 and ISED RSS-GEN

The least stringent limit from the applicable rule parts was used to determine compliance for Radiated Emissions testing of multiple transmission sources.

The least stringent applicable limit was:

Clause	Limit
Part 15 247 (d) / RSS-247 Clause 5.5	-20 dBc
Part 15.407 (b) / RSS-248 Clause 4.7.2	Peak: -7 dBm/MHz e.i.r.p, Average: -27 dBm/MHz e.i.r.p.
Part 15.209 / RSS-GEN Clause 8.9	Peak: 74 dBµV/m at 3m, Average 54 dBµV/m at 3m (Restricted bands > 1 GHz)

Table 17

2.4 GHz WLAN and Narrowband

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2388.207	54.82	74.00	-19.18	Peak	71	298	Horizontal
2388.207	40.50	54.00	-13.50	RMS	71	298	Horizontal
2485.321	61.74	74.00	-12.26	Peak	70	286	Horizontal
2485.321	36.09	54.00	-17.91	RMS	70	286	Horizontal

Table 18 - 2442 MHz (CH7), HT20, Core 0 and 5204 MHz, HDR4, ePA, Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

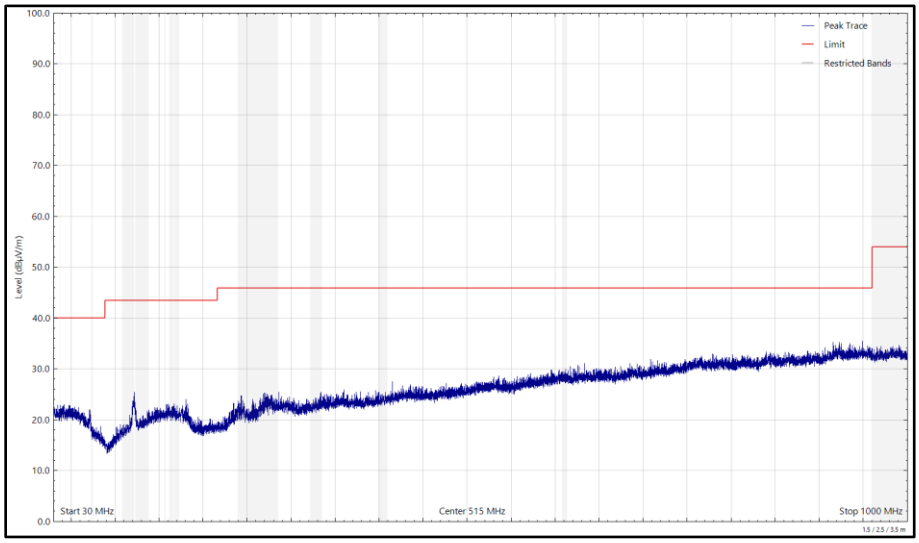

Figure 42 - 2442 MHz (CH7), HT20, Core 0 and 5204 MHz, HDR4, ePA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

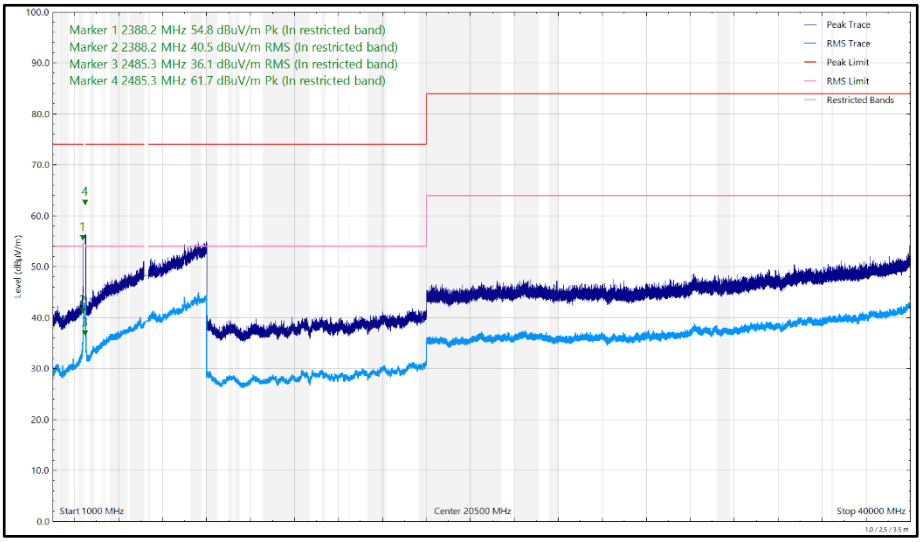

Figure 43 - 2442 MHz (CH7), HT20, Core 0 and 5204 MHz, HDR4, ePA, Core 1, 1 GHz to 40 GHz, Horizontal

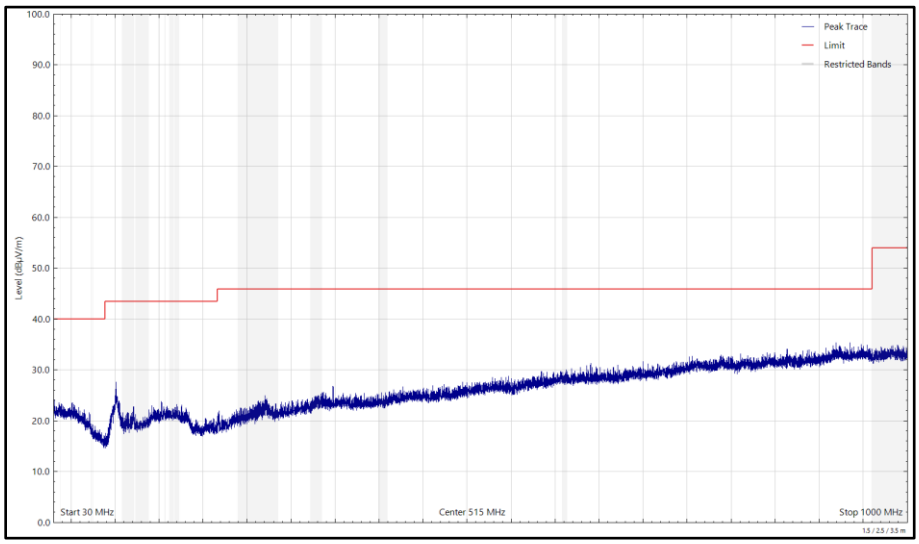

Figure 44 - 2442 MHz (CH7), HT20, Core 0 and 5204 MHz, HDR4, ePA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

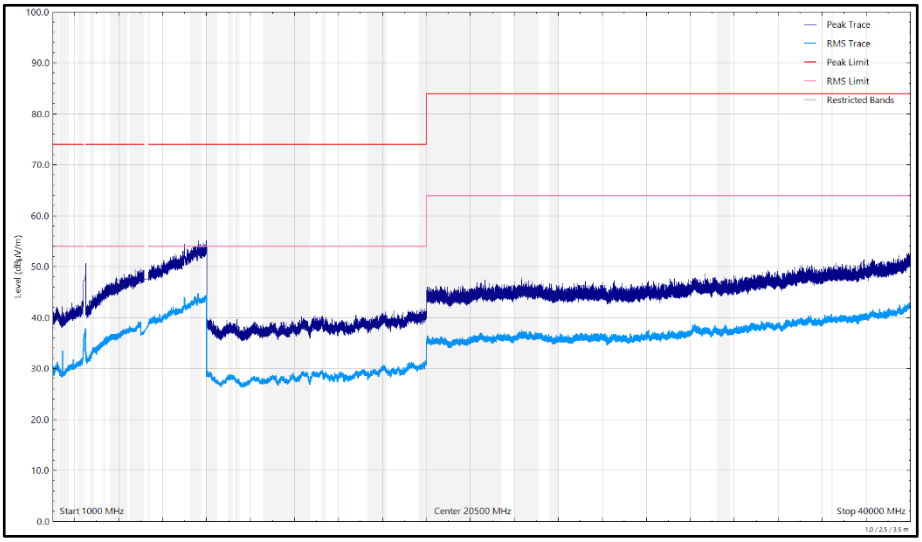

Figure 45 - 2442 MHz (CH7), HT20, Core 0 and 5204 MHz, HDR4, ePA, Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2389.324	39.66	54.00	-14.34	RMS	64	265	Horizontal
2484.039	61.13	74.00	-12.87	Peak	67	280	Horizontal
2484.990	38.09	54.00	-15.91	RMS	144	167	Vertical
5374.507	41.89	54.00	-12.11	RMS	183	279	Horizontal
5374.638	39.55	54.00	-14.45	RMS	194	158	Vertical

Table 19 - 2442 MHz (CH7), HT20, Core 0 and 5788 MHz, HDR4, ePA, Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

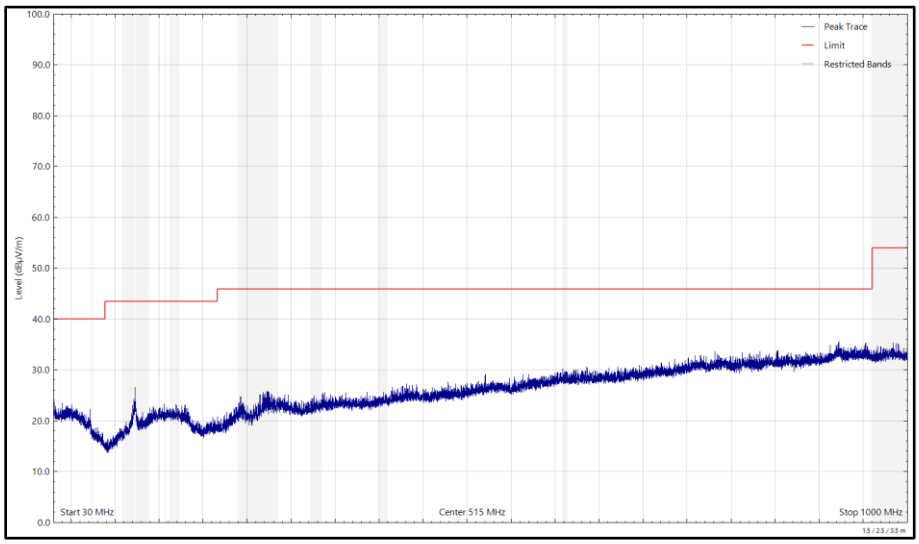

Figure 46 - 2442 MHz (CH7), HT20, Core 0 and 5788 MHz, HDR4, ePA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

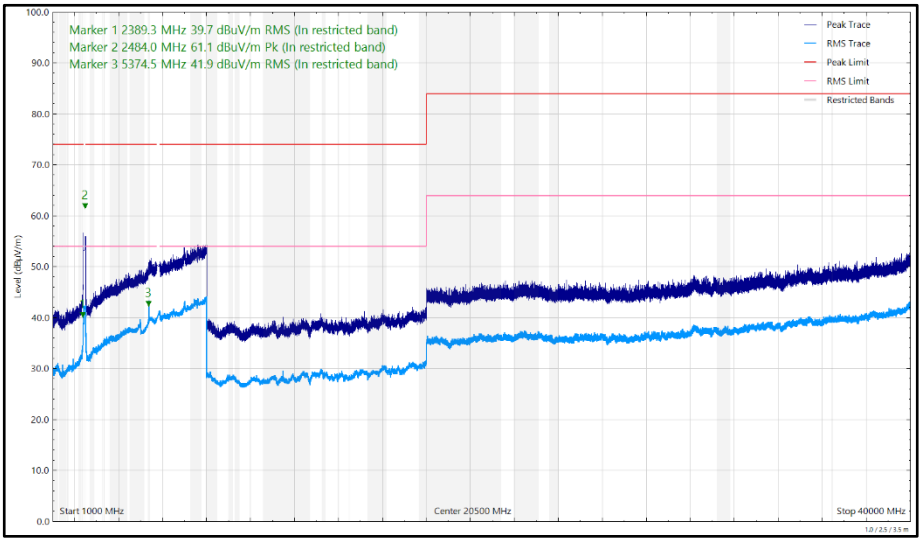

Figure 47 - 2442 MHz (CH7), HT20, Core 0 and 5788 MHz, HDR4, ePA, Core 1, 1 GHz to 40 GHz, Horizontal

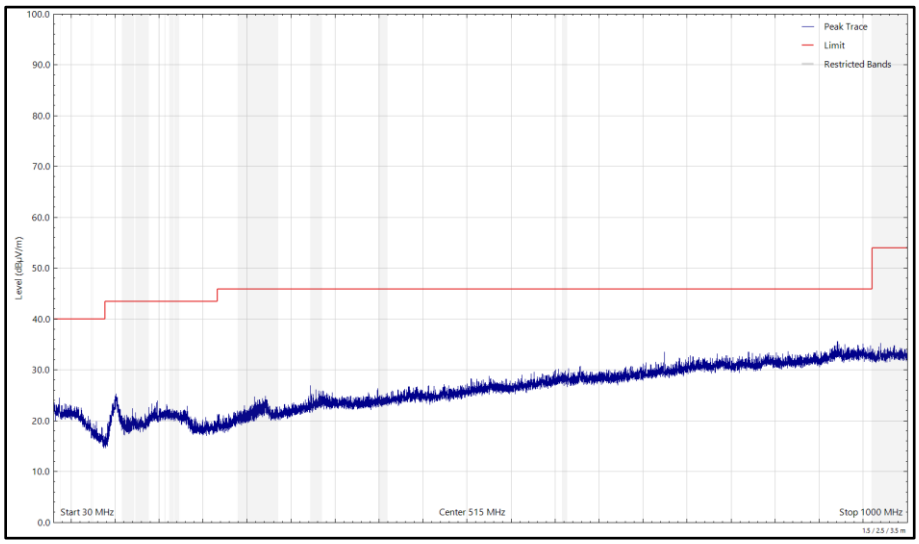

Figure 48 - 2442 MHz (CH7), HT20, Core 0 and 5788 MHz, HDR4, ePA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

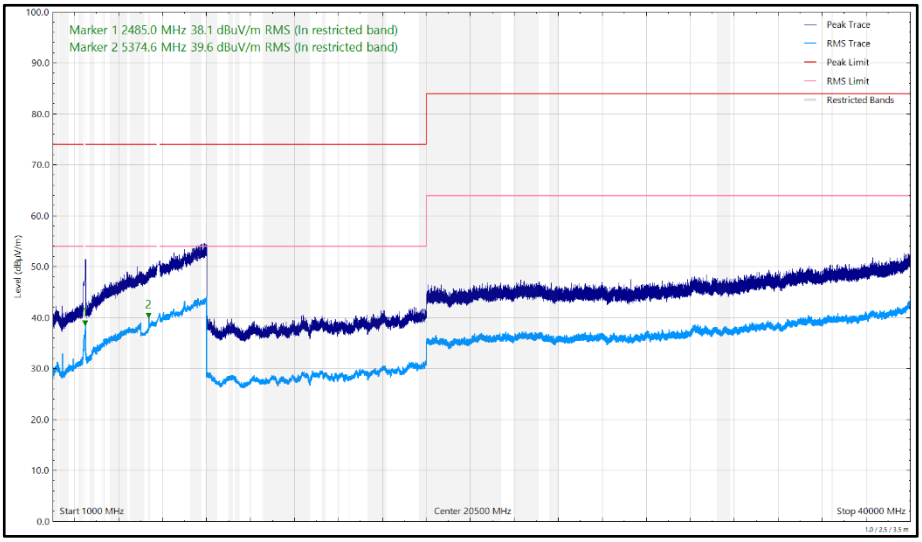

Figure 49 - 2442 MHz (CH7), HT20, Core 0 and 5788 MHz, HDR4, ePA, Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2388.507	38.59	54.00	-15.41	RMS	183	186	Vertical
2389.762	54.46	74.00	-19.54	Peak	123	100	Horizontal
2389.762	39.43	54.00	-14.57	RMS	123	100	Horizontal
2484.056	34.26	54.00	-19.74	RMS	114	100	Horizontal
2484.056	56.39	74.00	-17.61	Peak	114	100	Horizontal
2484.891	57.79	74.00	-16.21	Peak	181	183	Vertical
2484.891	34.98	54.00	-19.02	RMS	181	183	Vertical

Table 20 - 2442 MHz (CH7), HT20, Core 1 and 5204 MHz, HDR4, ePA, Core 0, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

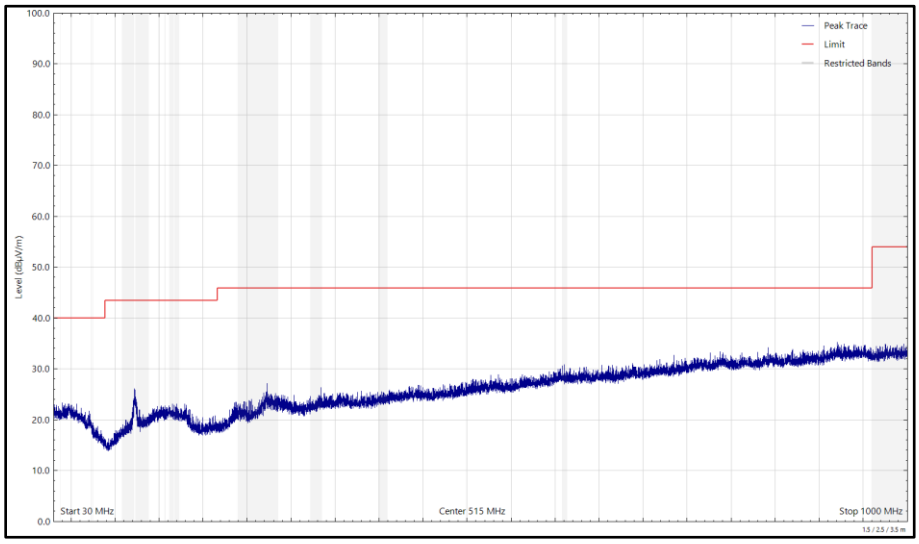

Figure 50 - 2442 MHz (CH7), HT20, Core 1 and 5204 MHz, HDR4, ePA, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

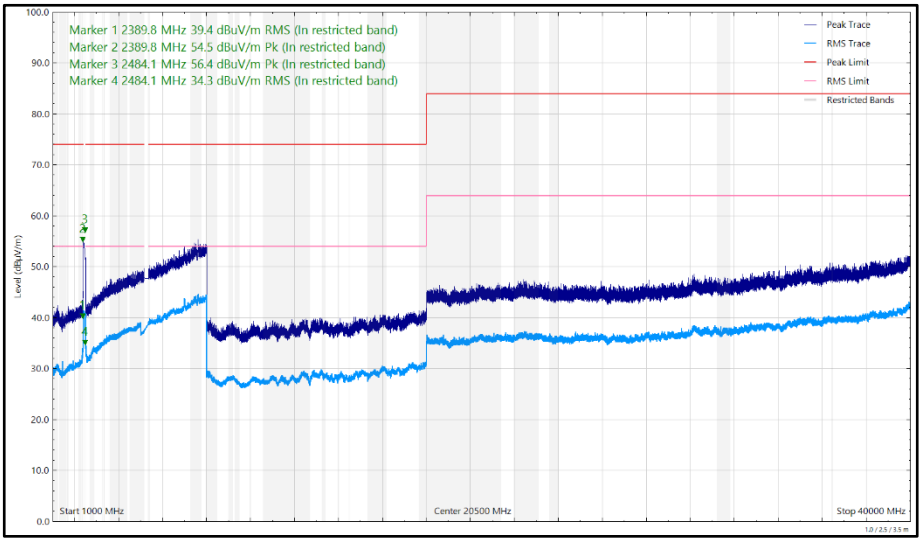

Figure 51 - 2442 MHz (CH7), HT20, Core 1 and 5204 MHz, HDR4, ePA, Core 0, 1 GHz to 40 GHz, Horizontal

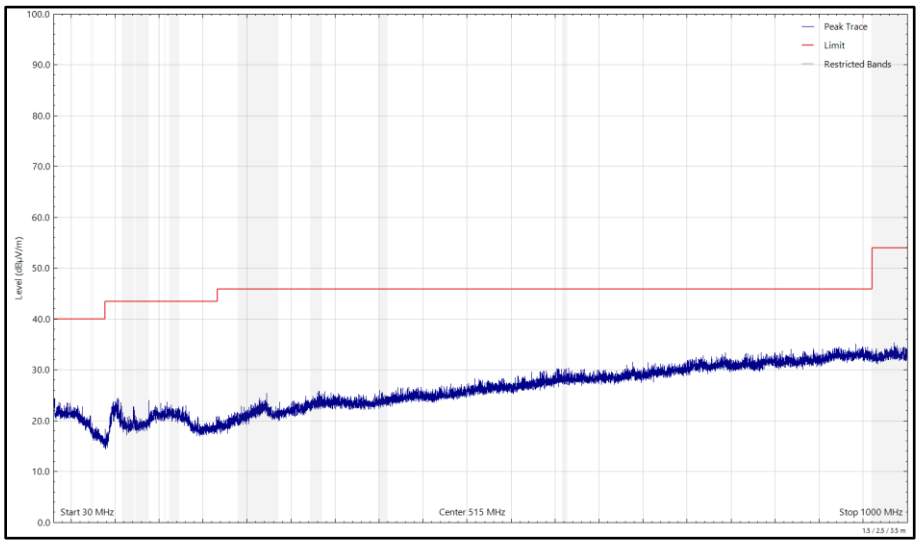

Figure 52 - 2442 MHz (CH7), HT20, Core 1 and 5204 MHz, HDR4, ePA, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

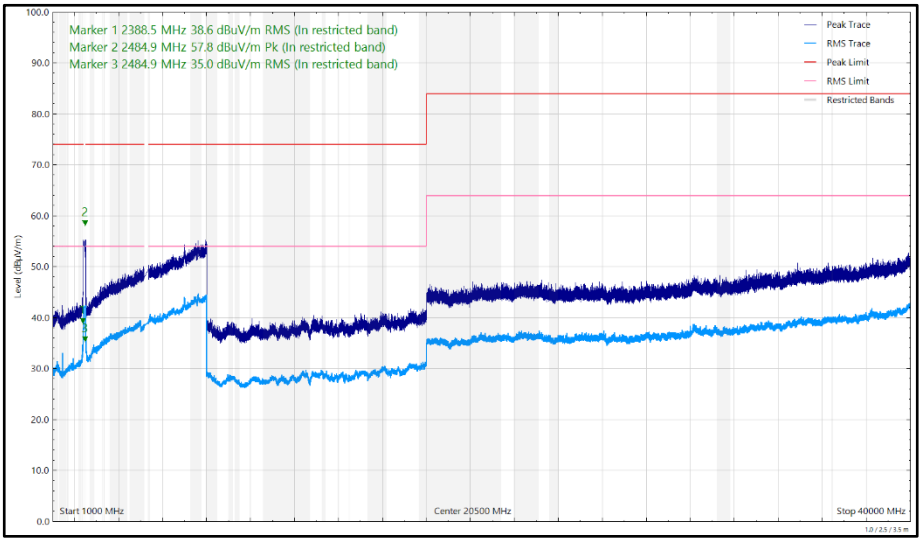

Figure 53 - 2442 MHz (CH7), HT20, Core 1 and 5204 MHz, HDR4, ePA, Core 0, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2388.018	36.25	54.00	-17.75	RMS	165	168	Vertical
2389.378	55.23	74.00	-18.77	Peak	124	102	Horizontal
2389.378	39.05	54.00	-14.95	RMS	124	102	Horizontal
2484.914	54.63	74.00	-19.37	Peak	244	279	Horizontal
2485.687	55.91	74.00	-18.09	Peak	163	162	Vertical
2485.687	40.96	54.00	-13.04	RMS	163	162	Vertical
5374.624	40.79	54.00	-13.21	RMS	15	199	Vertical

Table 21 - 2442 MHz (CH7), HT20, Core 1 and 5788 MHz, HDR4, ePA, Core 0, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

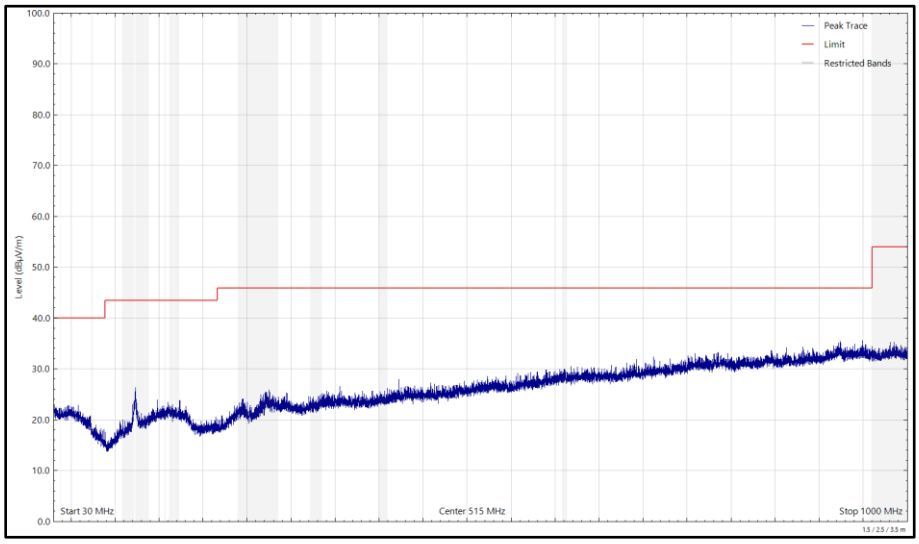

Figure 54 - 2442 MHz (CH7), HT20, Core 1 and 5788 MHz, HDR4, ePA, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

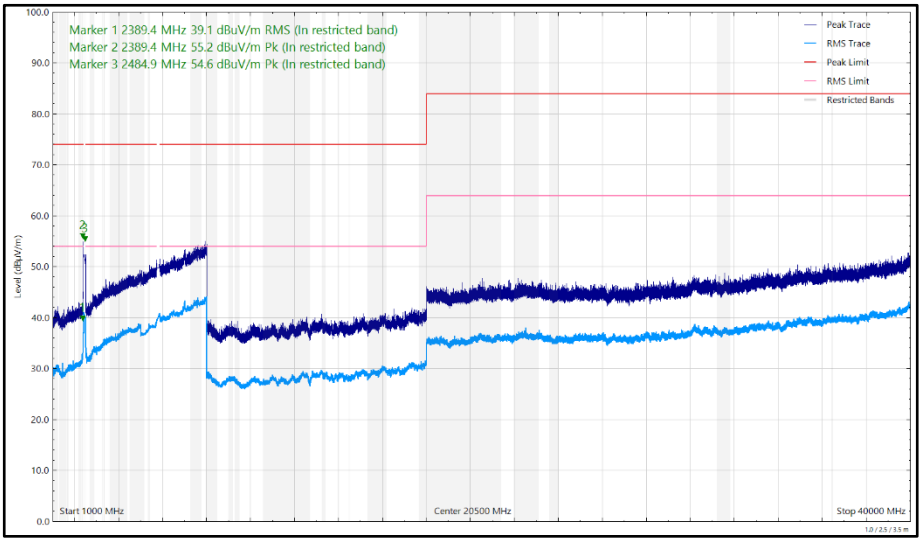

Figure 55 - 2442 MHz (CH7), HT20, Core 1 and 5788 MHz, HDR4, ePA, Core 0, 1 GHz to 40 GHz, Horizontal

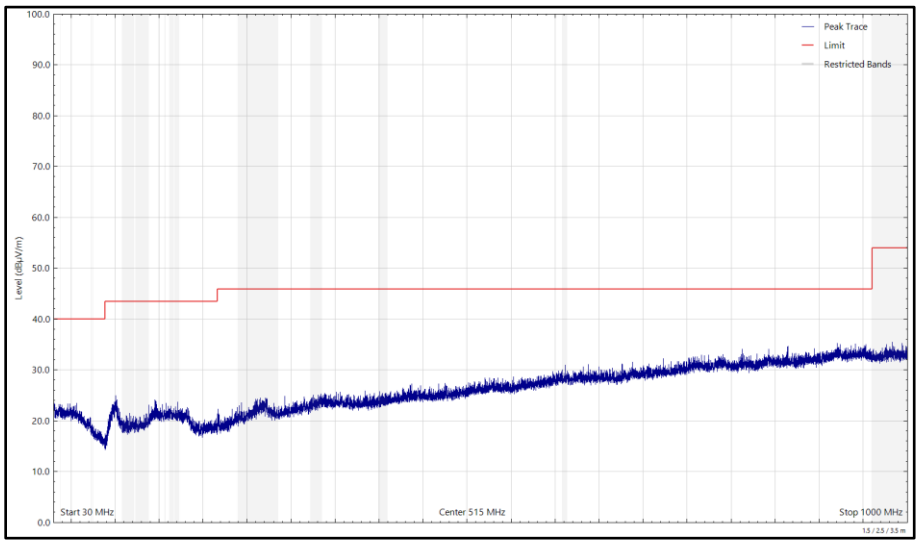

Figure 56 - 2442 MHz (CH7), HT20, Core 1 and 5788 MHz, HDR4, ePA, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

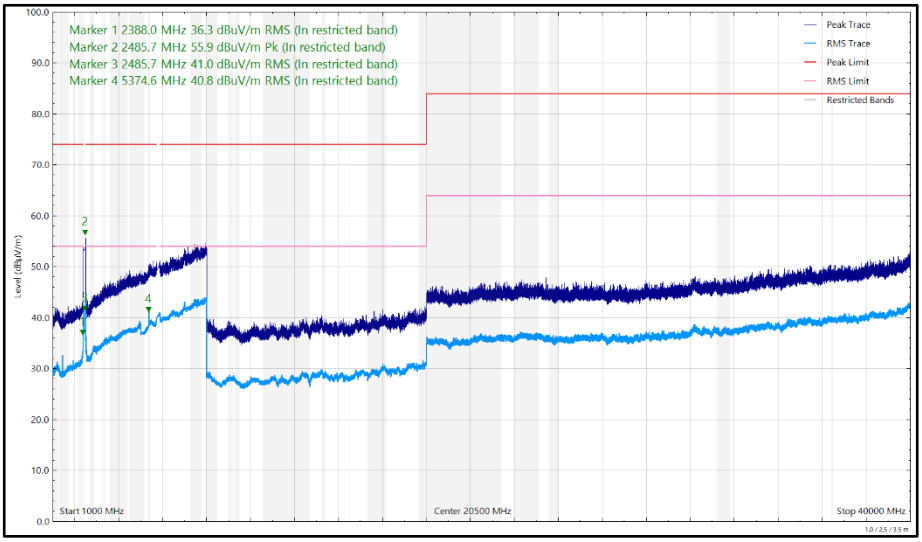

Figure 57 - 2442 MHz (CH7), HT20, Core 1 and 5788 MHz, HDR4, ePA, Core 0, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15, ISED RSS-247 and ISED RSS-GEN

The least stringent limit from the applicable rule parts was used to determine compliance for Radiated Emissions testing of multiple transmission sources.

The least stringent applicable limit was:

Clause	Limit
Part 15 247 (d) / RSS-247 Clause 5.5	30 dBc
Part 15.407 (b) / RSS-247 Clause 4.6.1.2	-27 dBm/MHz e.i.r.p.
Part 15.209 / RSS-GEN Clause 8.9	Peak: 74 dBµV/m at 3m, Average 54 dBµV/m at 3m (Restricted bands > 1 GHz)

Table 22

5 GHz WLAN and Thread

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2373.306	60.61	74.00	-13.39	Peak	84	108	Vertical
2381.626	33.93	54.00	-20.07	RMS	66	100	Horizontal
2388.458	66.16	74.00	-7.84	Peak	66	100	Horizontal
4878.993	41.28	54.00	-12.72	RMS	170	292	Horizontal
4879.038	43.86	54.00	-10.14	RMS	15	162	Vertical
5361.109	44.26	54.00	-9.74	RMS	195	115	Horizontal
5365.926	43.14	54.00	-10.86	RMS	12	182	Vertical
5379.223	56.83	74.00	-17.17	Peak	187	256	Horizontal

Table 23 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 0, ePA, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

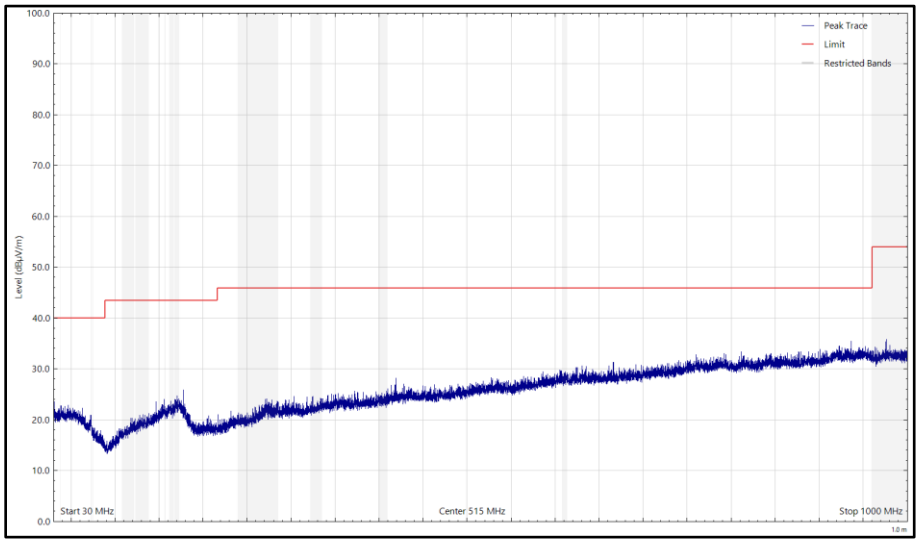

Figure 58 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 0, ePA, 30 MHz to 1 GHz, Horizontal (Peak)

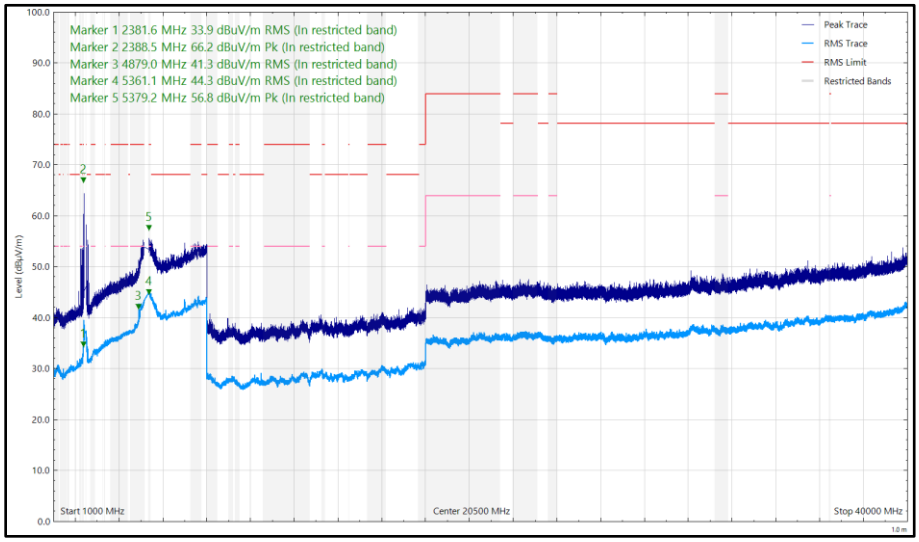

Figure 59 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 0, ePA, 1 GHz to 40 GHz, Horizontal

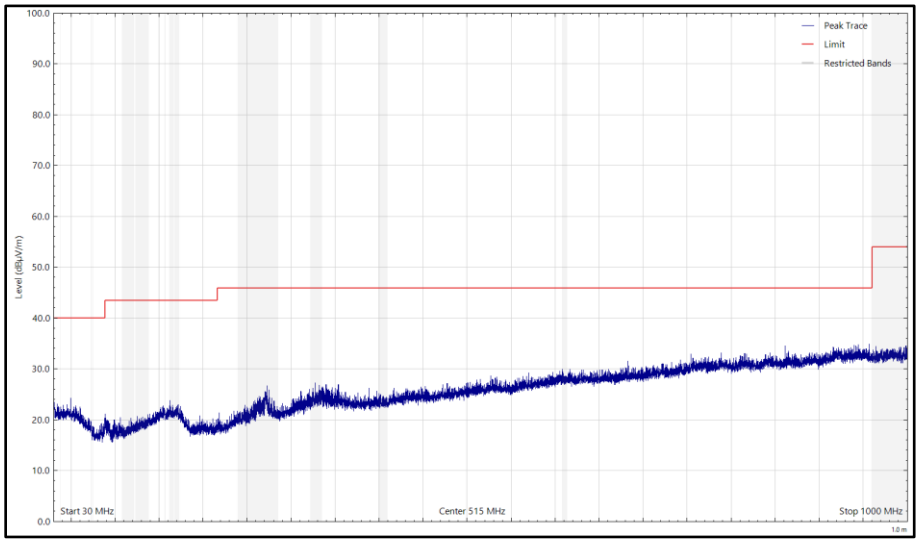

Figure 60 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 0, ePA, 30 MHz to 1 GHz, Vertical (Peak)

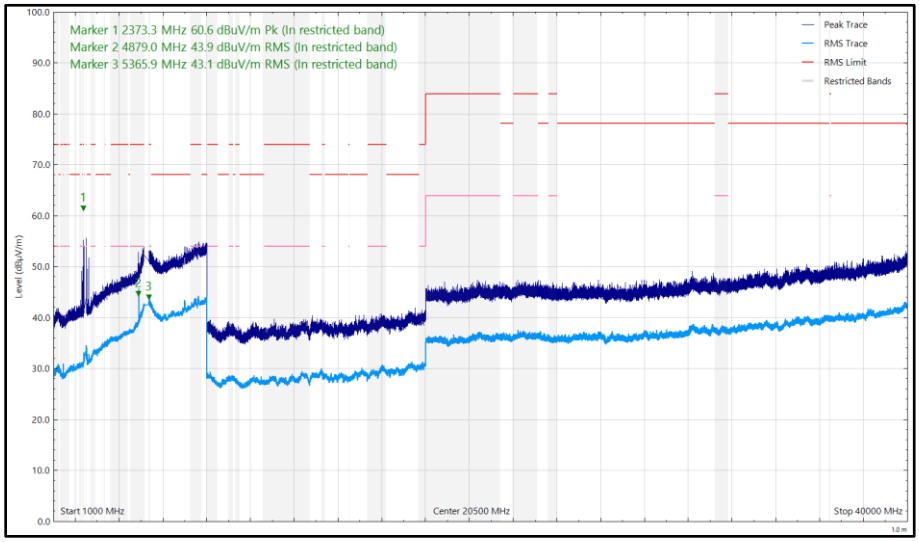

Figure 61 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 0, ePA, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2325.863	55.06	74.00	-18.94	Peak	166	237	Vertical
2380.568	34.18	54.00	-19.82	RMS	169	107	Vertical
2389.420	36.02	54.00	-17.98	RMS	111	100	Horizontal
4879.028	42.35	54.00	-11.65	RMS	167	216	Horizontal
5358.136	43.46	54.00	-10.54	RMS	19	149	Vertical
5360.762	44.32	54.00	-9.68	RMS	215	151	Horizontal

Table 24 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 1, ePA, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

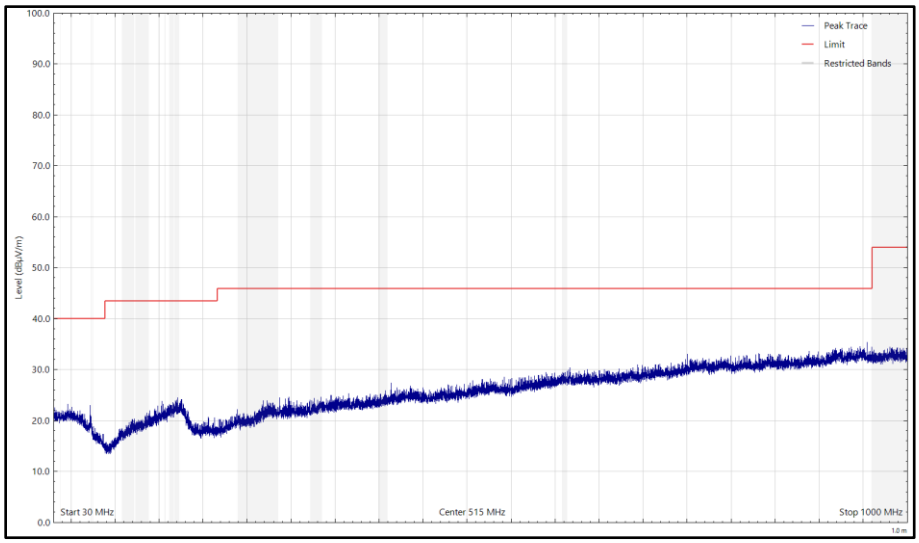

Figure 62 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 1, ePA, 30 MHz to 1 GHz, Horizontal (Peak)

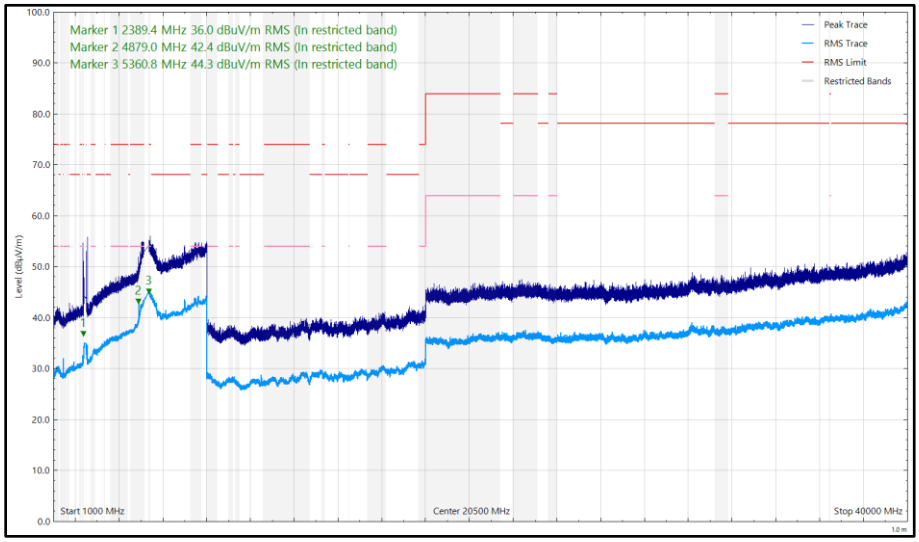

Figure 63 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 1, ePA, 1 GHz to 40 GHz, Horizontal

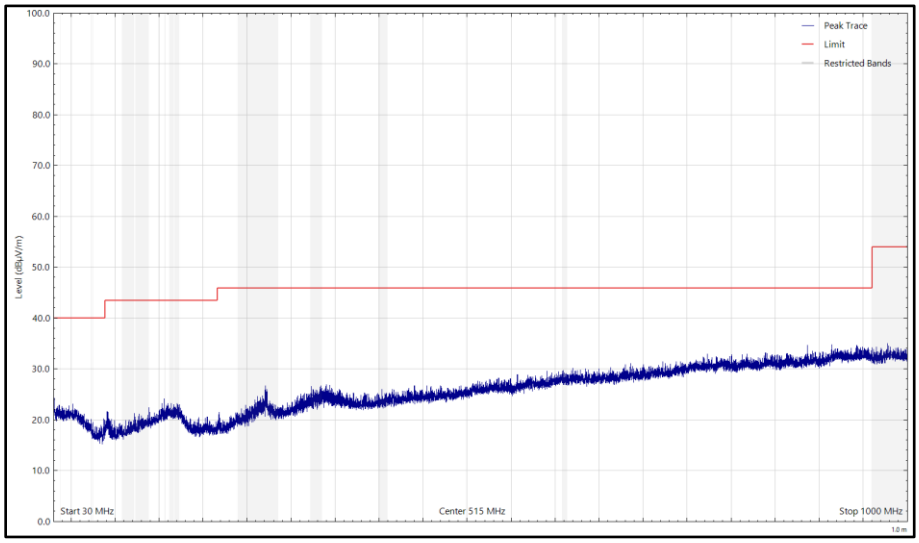

Figure 64 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2440 MHz (CH18), Core 1, ePA, 30 MHz to 1 GHz, Vertical (Peak)