FCC Test Report

Apple Inc
Model: A3401

In accordance with FCC 47 CFR Part 15 (2.4 GHz Bluetooth, 2.4 GHz WLAN, 5 GHz WLAN, 6 GHz WLAN, Narrowband and Thread)

TUV SUD Limited
Digitally signed by TUV SUD Limited
Date: 2024.10.16 10:19:23 +01'00'

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FCC ID: BCGA3401

COMMERCIAL-IN-CONFIDENCE

Document 75961394-74 Issue 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Steve Marshall	Senior Engineer	Authorised Signatory	09 October 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. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Report Generation	Rachael Watkins	09 October 2024	

FCC Accreditation
553713/UK2026 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 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	09-October-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
Start of Test	06-September-2024
Finish of Test	27-September-2024
Name of Engineer(s)	Thomas Randall, Ian Hart, Vineeth Nagaraj, Manohar Thota, Elliot Callender, Akhil Rajendran Bhaskaran Nair, Morsalin Hossain 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 is shown below.

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

Table 2

1.4 Product Information

1.4.1 Technical Description

The equipment under test (EUT) was a portable laptop 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: A3401			
Serial Number	Hardware Version	Software Version	Firmware
JVJC362FKV	REV1.0	24A32191s	23.30.16

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: A3401, Serial Number: JVJC362FKV			
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)	Thomas Randall, Ian Hart, Vineeth Nagaraj, Manohar Thota, Elliot Callender, Akhil Rajendran Bhaskaran Nair	UKAS
Configuration and Mode: 6 GHz WLAN and 2.4 GHz Bluetooth		
Radiated Spurious Emissions (Simultaneous Transmission)	Vineeth Nagaraj, Manohar Thota, Morsalin Hossain	UKAS
Configuration and Mode: 2.4 GHz WLAN and Narrowband		
Radiated Spurious Emissions (Simultaneous Transmission)	Vineeth Nagaraj, Manohar Thota and Morsalin Hossain	UKAS
Configuration and Mode: 5 GHz WLAN and Thread		
Radiated Spurious Emissions (Simultaneous Transmission)	Manohar Thota, Morsalin Hossain, Ian Hart, Elliot Callender, Akhil Rajendran Bhaskaran Nair	UKAS
Configuration and Mode: 6 GHz WLAN and Thread		
Radiated Spurious Emissions (Simultaneous Transmission)	Tony Baby, Ian Hart, Morsalin Hossain, Manohar Thota, Elliot Callender	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)

2.1.2 Equipment Under Test and Modification State

A3401, S/N: JVJC362FKV - Modification State 0

2.1.3 Date of Test

06-September-2024 to 27-September-2024

2.1.4 Test Method

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

Ports on the EUT were terminated with loads as described in ANSI C63.4 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

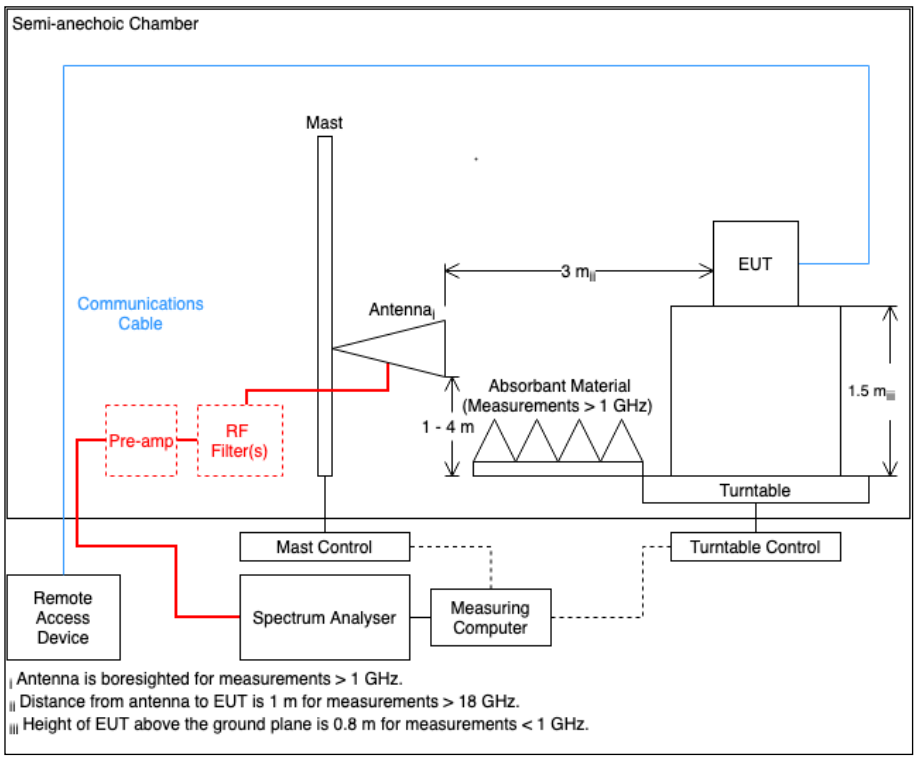

Figure 1

2.1.6 Environmental Conditions

Ambient Temperature	21.8 - 24.4 °C
Relative Humidity	41.6 - 52.6 %

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
30.007	26.87	40.00	-13.13	Q-Peak	304	106	Vertical
88.511	14.29	43.50	-29.21	Q-Peak	187	120	Vertical
111.132	17.19	43.50	-26.31	Q-Peak	260	123	Vertical
111.359	17.98	43.50	-25.52	Q-Peak	350	364	Horizontal
300.840	23.86	46.00	-22.14	Q-Peak	350	240	Vertical
300.865	25.67	46.00	-20.33	Q-Peak	254	106	Horizontal
2381.787	33.97	54.00	-20.03	CISPR Avg	24	276	Vertical
2387.518	31.46	54.00	-22.54	CISPR Avg	59	370	Horizontal
2484.344	31.33	54.00	-22.67	CISPR Avg	62	390	Horizontal
2487.140	35.47	54.00	-18.53	CISPR Avg	31	290	Vertical
2797.723	37.76	54.00	-16.24	RMS	335	299	Vertical
4881.643	39.82	54.00	-14.18	CISPR Avg	57	394	Horizontal
4882.188	45.72	54.00	-8.28	CISPR Avg	22	266	Vertical
4882.287	58.72	74.00	-15.28	Peak	19	275	Vertical
5132.142	58.08	74.00	-15.92	Peak	357	287	Vertical
5141.806	39.18	54.00	-14.82	RMS	334	393	Horizontal
5146.993	46.03	54.00	-7.97	RMS	335	281	Vertical
5351.564	47.17	54.00	-6.83	RMS	360	297	Vertical
5360.355	59.70	74.00	-14.30	Peak	344	280	Vertical
5458.661	41.02	54.00	-12.98	RMS	292	351	Horizontal

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

No other emissions found within 10 dB of the limit.

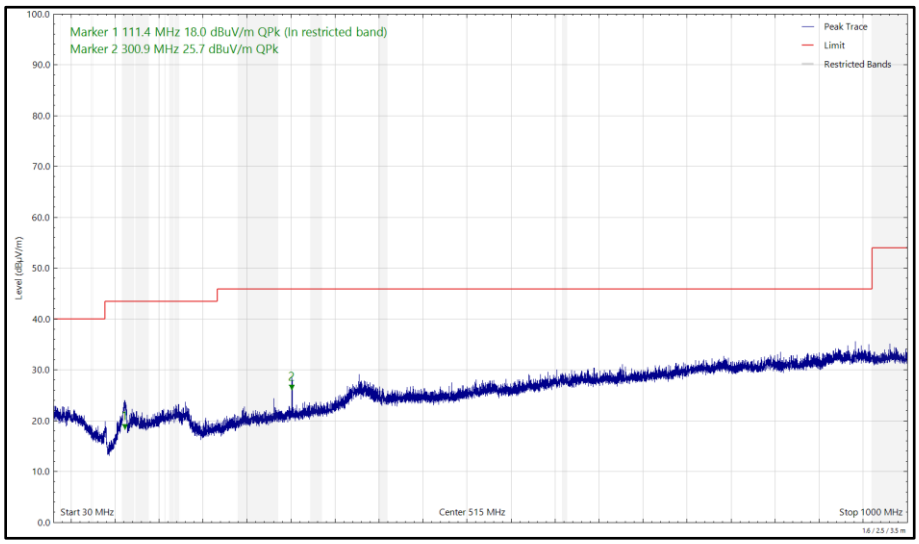

Figure 2 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

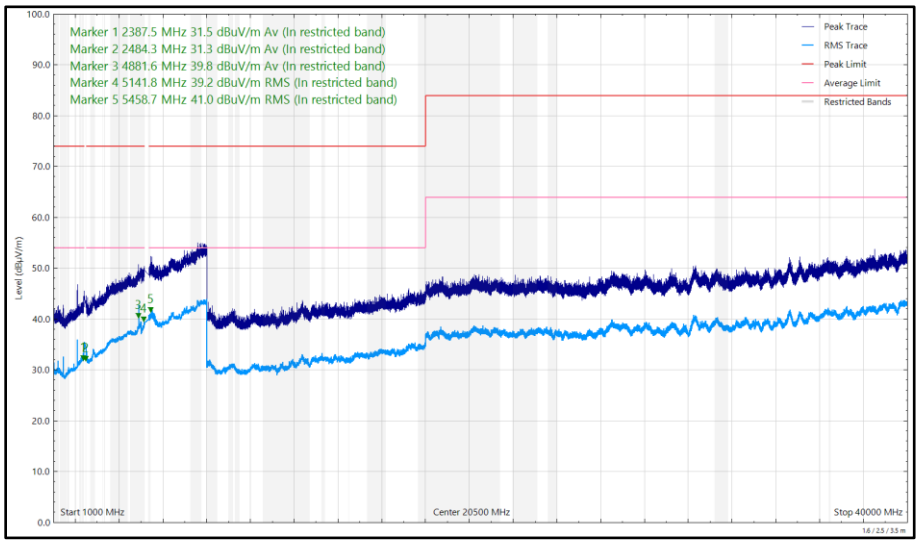

Figure 3 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

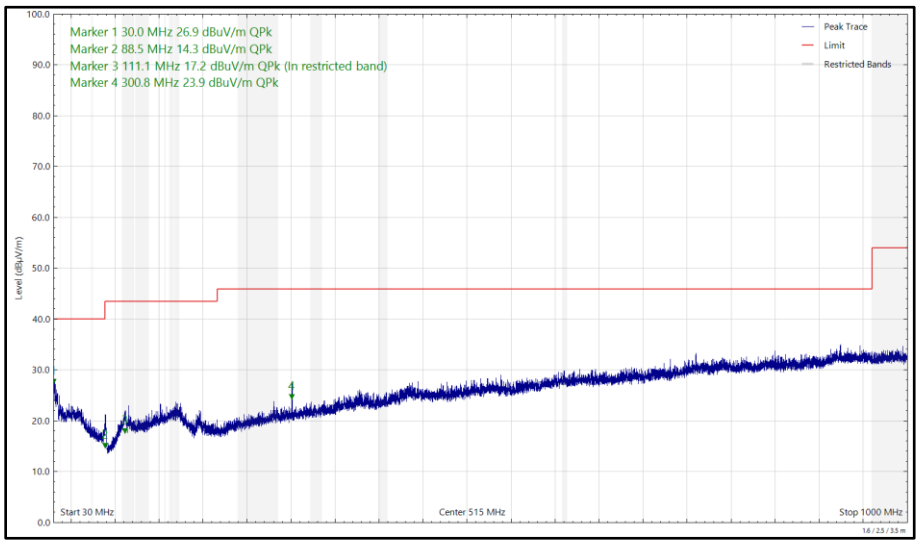

Figure 4 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

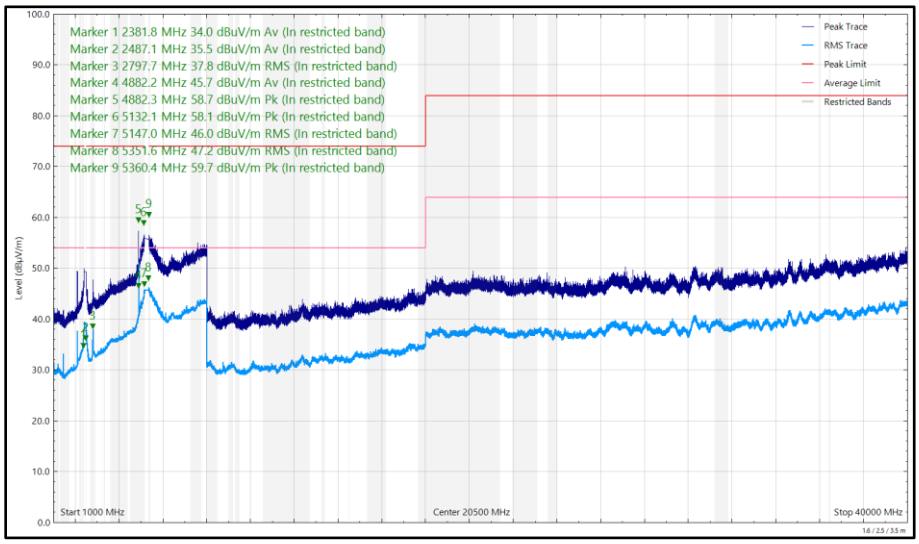

Figure 5 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.010	26.00	40.00	-14.00	Q-Peak	350	106	Vertical
31.817	15.48	40.00	-24.52	Q-Peak	359	130	Horizontal
111.060	19.74	43.50	-23.76	Q-Peak	182	285	Horizontal
116.509	14.61	43.50	-28.89	Q-Peak	11	107	Vertical
169.218	12.88	43.50	-30.62	Q-Peak	336	108	Horizontal
169.943	13.66	43.50	-29.84	Q-Peak	3	106	Vertical
300.836	24.18	46.00	-21.82	Q-Peak	72	100	Horizontal
300.852	24.77	46.00	-21.23	Q-Peak	10	241	Vertical
2389.262	31.29	54.00	-22.71	CISPR Avg	58	376	Horizontal
2389.391	35.07	54.00	-18.93	CISPR Avg	6	308	Vertical
2485.233	34.60	54.00	-19.40	CISPR Avg	360	300	Vertical
2485.601	32.11	54.00	-21.89	CISPR Avg	54	381	Horizontal
4881.888	43.86	54.00	-10.14	CISPR Avg	21	279	Vertical
4882.078	56.86	74.00	-17.14	Peak	20	257	Vertical
4882.223	39.30	54.00	-14.70	CISPR Avg	55	347	Horizontal
5443.023	58.23	74.00	-15.77	Peak	360	289	Vertical
5451.772	46.53	54.00	-7.47	RMS	5	297	Vertical
5457.854	40.99	54.00	-13.01	RMS	295	355	Horizontal

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

No other emissions found within 10 dB of the limit.

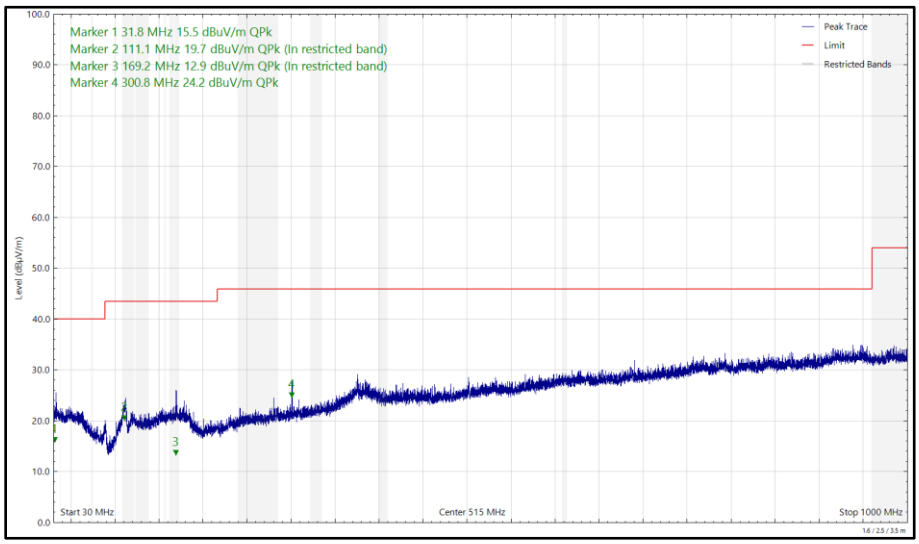

Figure 6 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

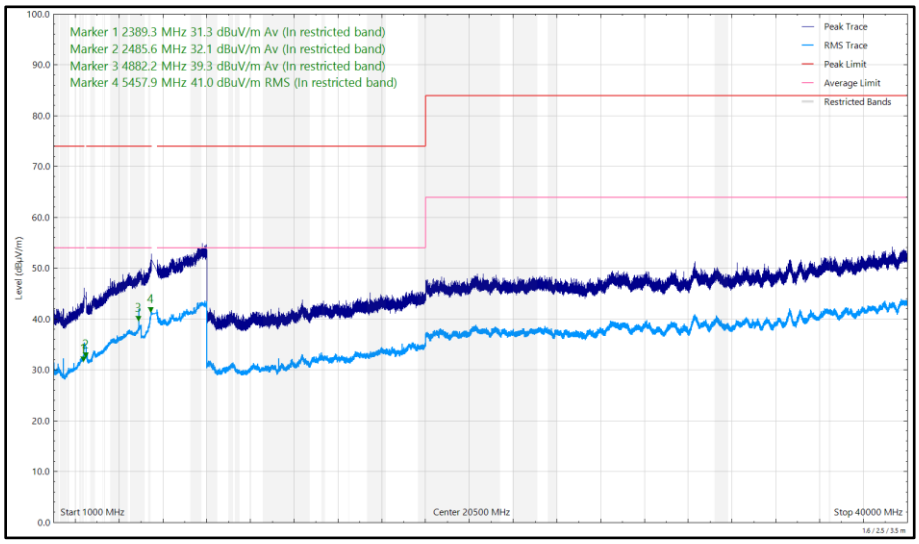

Figure 7 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

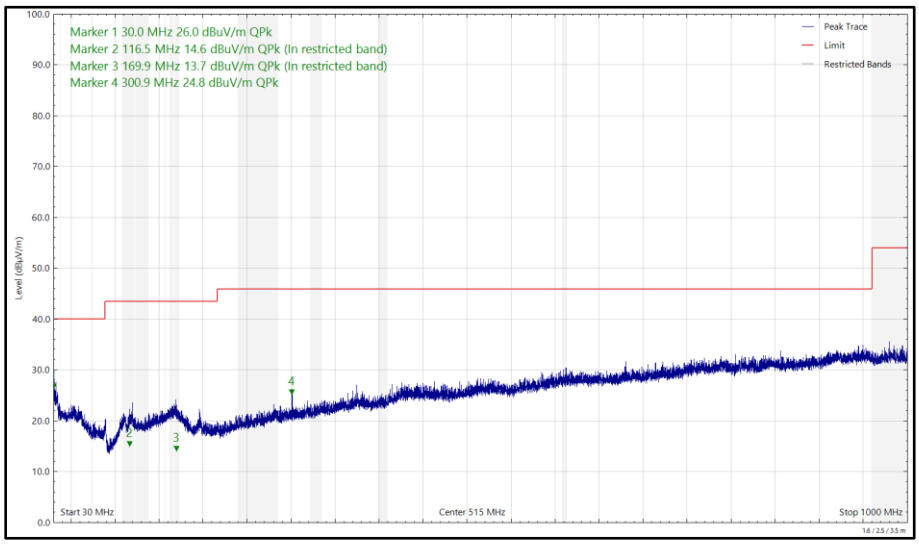

Figure 8 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

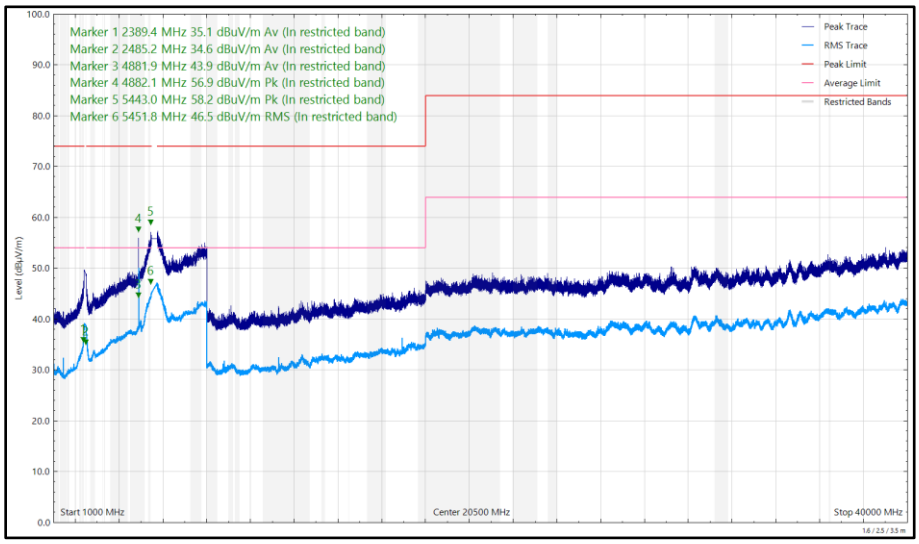

Figure 9 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.073	26.56	40.00	-13.44	Q-Peak	331	100	Vertical
31.900	16.82	40.00	-23.18	Q-Peak	53	102	Horizontal
88.842	14.94	43.50	-28.56	Q-Peak	180	129	Vertical
111.435	19.46	43.50	-24.04	Q-Peak	167	249	Horizontal
118.016	13.39	43.50	-30.11	Q-Peak	30	112	Vertical
169.285	13.71	43.50	-29.79	Q-Peak	354	170	Horizontal
300.854	24.66	46.00	-21.34	Q-Peak	0	240	Vertical
300.861	23.58	46.00	-22.42	Q-Peak	256	150	Horizontal
2379.151	33.29	54.00	-20.71	CISPR Avg	0	335	Vertical
2386.081	31.30	54.00	-22.70	CISPR Avg	52	393	Horizontal
2484.511	34.60	54.00	-19.40	CISPR Avg	352	367	Vertical
2486.409	31.83	54.00	-22.17	CISPR Avg	55	383	Horizontal
4881.788	58.50	74.00	-15.50	CISPR Avg	18	251	Vertical
4881.788	45.50	54.00	-8.50	CISPR Avg	18	251	Vertical
4882.352	38.24	54.00	-15.76	CISPR Avg	56	383	Horizontal
5448.477	56.10	74.00	-17.90	Peak	0	305	Vertical
5451.477	40.02	54.00	-13.98	RMS	295	400	Horizontal
5459.671	44.65	54.00	-9.35	RMS	0	295	Vertical

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

No other emissions found within 10 dB of the limit.

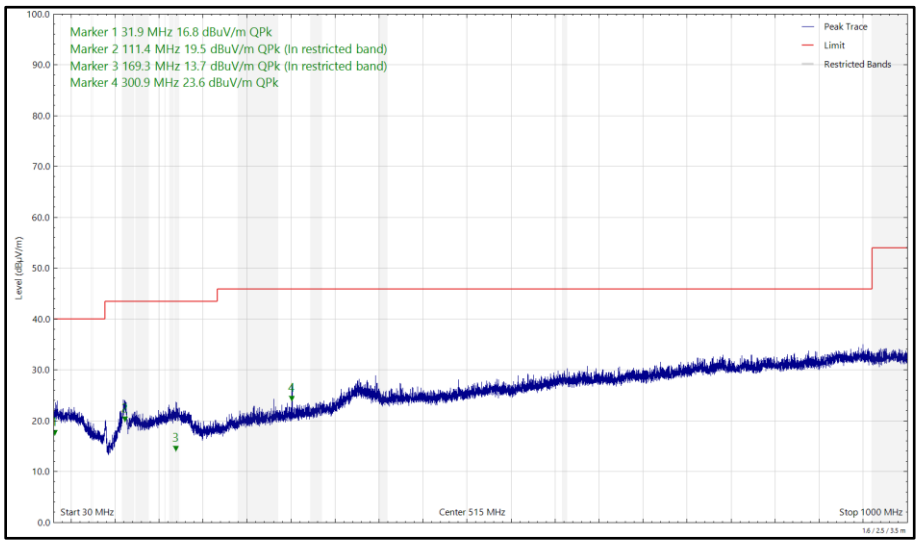

Figure 10 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

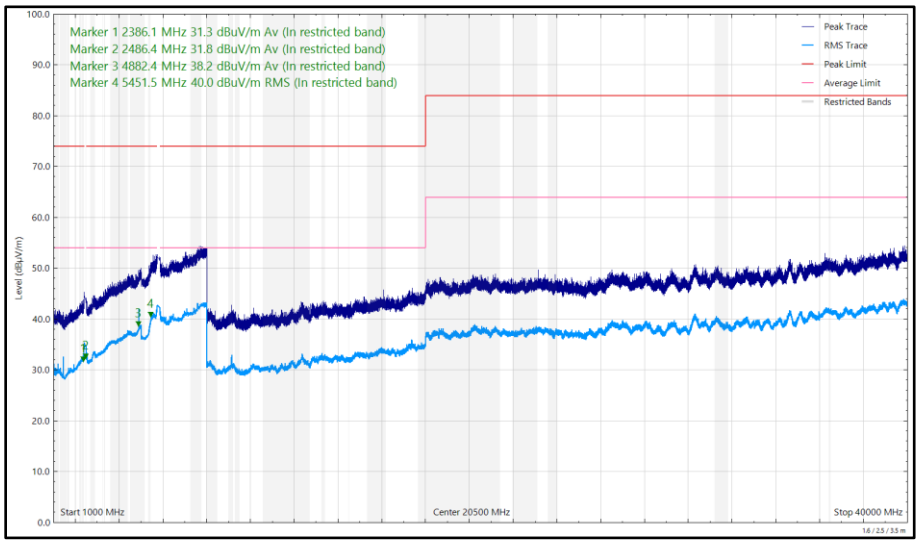

Figure 11 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

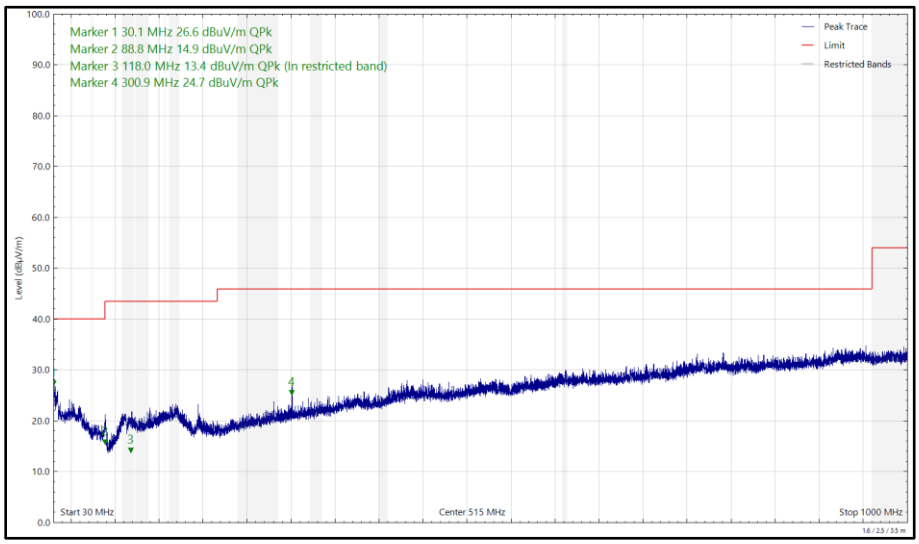

Figure 12 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

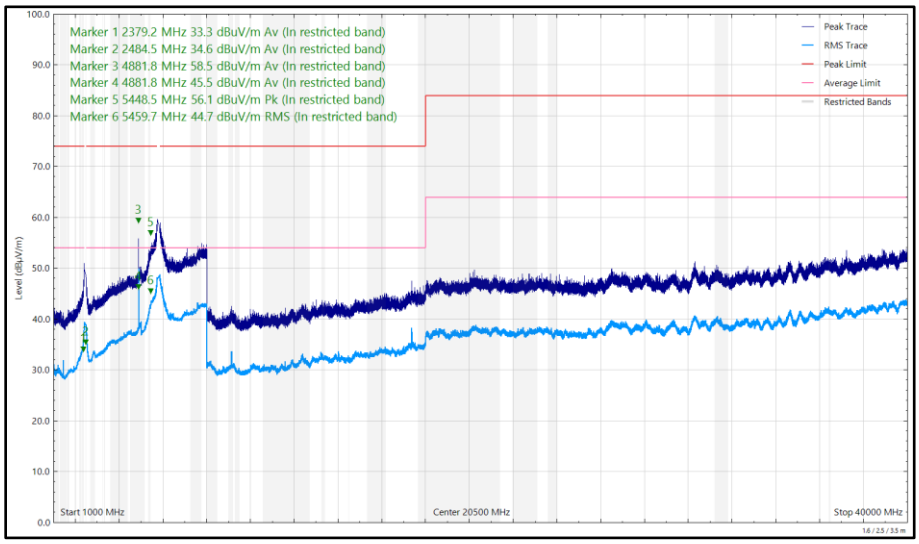

Figure 13 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.053	26.19	40.00	-13.81	Q-Peak	300	100	Vertical
110.373	21.24	43.50	-22.26	Q-Peak	178	286	Horizontal
110.804	15.94	43.50	-27.56	Q-Peak	265	252	Vertical
170.176	16.59	43.50	-26.91	Q-Peak	358	100	Vertical
173.183	14.77	43.50	-28.73	Q-Peak	0	262	Horizontal
300.836	23.92	46.00	-22.08	Q-Peak	351	255	Vertical
300.845	26.02	46.00	-19.98	Q-Peak	289	120	Horizontal
4880.978	34.20	54.00	-19.80	CISPR Avg	328	370	Horizontal
4881.868	45.11	54.00	-8.89	CISPR Avg	360	279	Vertical
4882.213	54.32	74.00	-19.68	Peak	0	264	Vertical
5141.565	39.24	54.00	-14.76	RMS	56	387	Horizontal
5146.366	58.85	74.00	-15.15	Peak	0	286	Vertical
5149.344	45.87	54.00	-8.13	RMS	334	246	Vertical
5353.143	46.97	54.00	-7.03	RMS	339	284	Vertical
5364.197	58.68	74.00	-15.32	Peak	360	306	Vertical
5459.526	40.92	54.00	-13.08	RMS	291	394	Horizontal

Table 9 - 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.

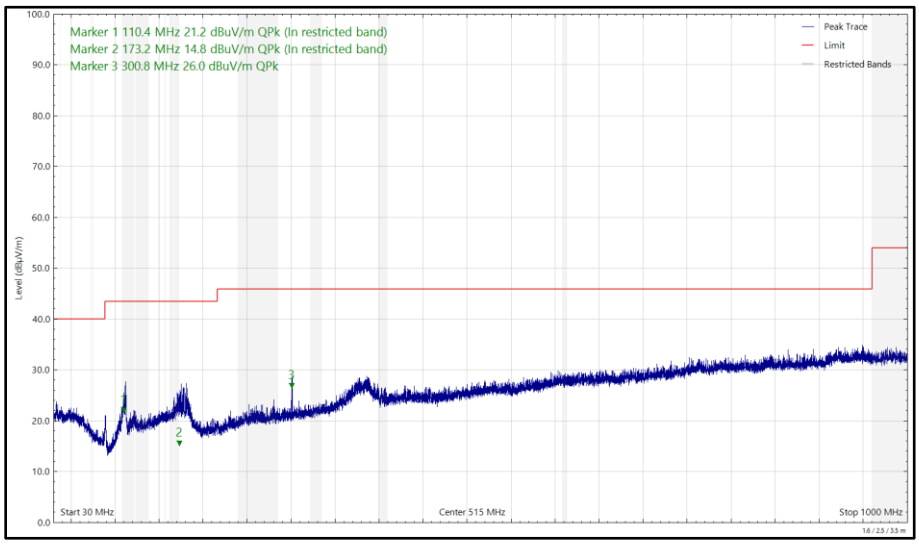

Figure 14 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

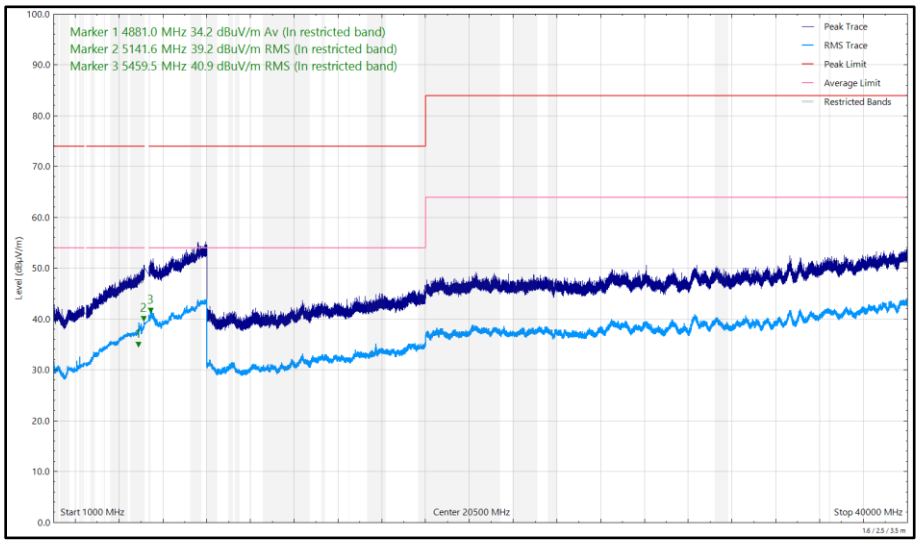

Figure 15 - U-NII-1 – 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

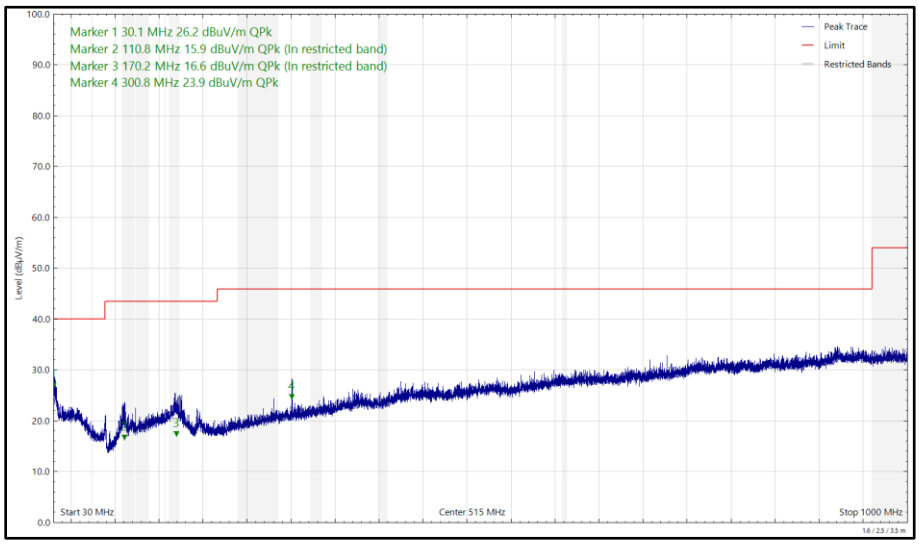

Figure 16 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

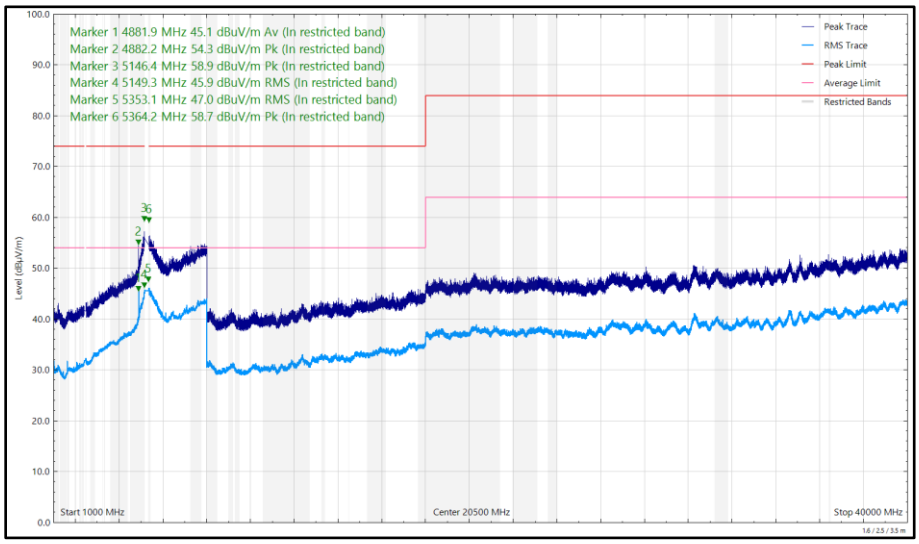

Figure 17 - U-NII-1 - 5240 MHz (CH48), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.001	25.76	40.00	-14.24	Q-Peak	267	105	Vertical
31.898	17.31	40.00	-22.69	Q-Peak	278	100	Horizontal
109.388	14.76	43.50	-28.74	Q-Peak	243	110	Vertical
110.264	20.42	43.50	-23.08	Q-Peak	169	279	Horizontal
170.602	16.24	43.50	-27.26	Q-Peak	355	100	Vertical
175.281	15.80	43.50	-27.70	Q-Peak	159	169	Horizontal
300.853	25.45	46.00	-20.55	Q-Peak	350	241	Vertical
300.858	26.22	46.00	-19.78	Q-Peak	267	100	Horizontal
4881.798	43.38	54.00	-10.62	CISPR Avg	0	291	Vertical
5458.755	41.17	54.00	-12.83	RMS	290	344	Horizontal
5458.970	57.55	74.00	-16.45	Peak	350	296	Vertical
5459.585	45.95	54.00	-8.05	RMS	358	305	Vertical

Table 10 - 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.

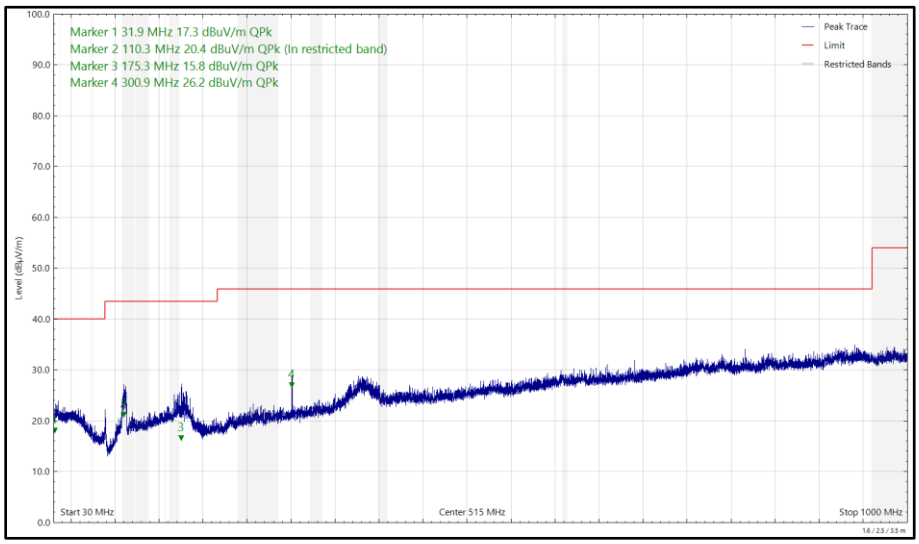

Figure 18 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

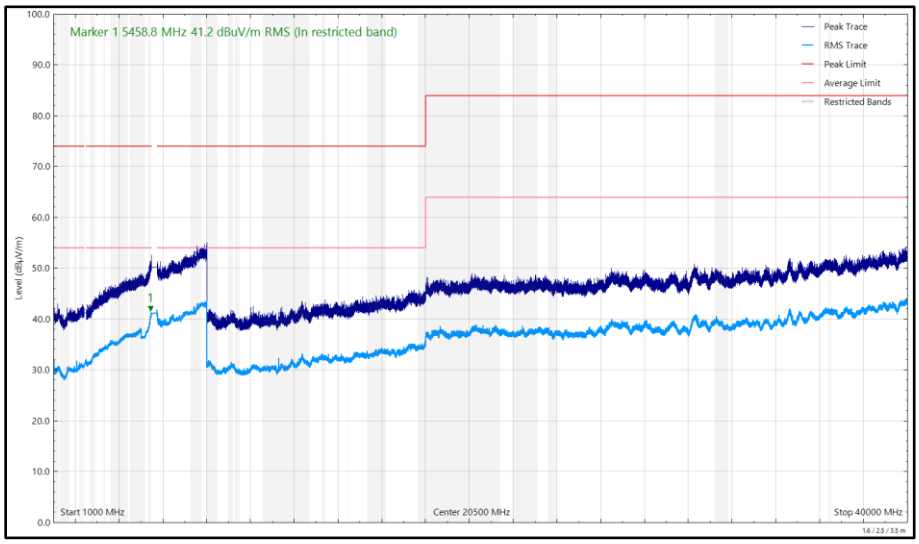

Figure 19 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

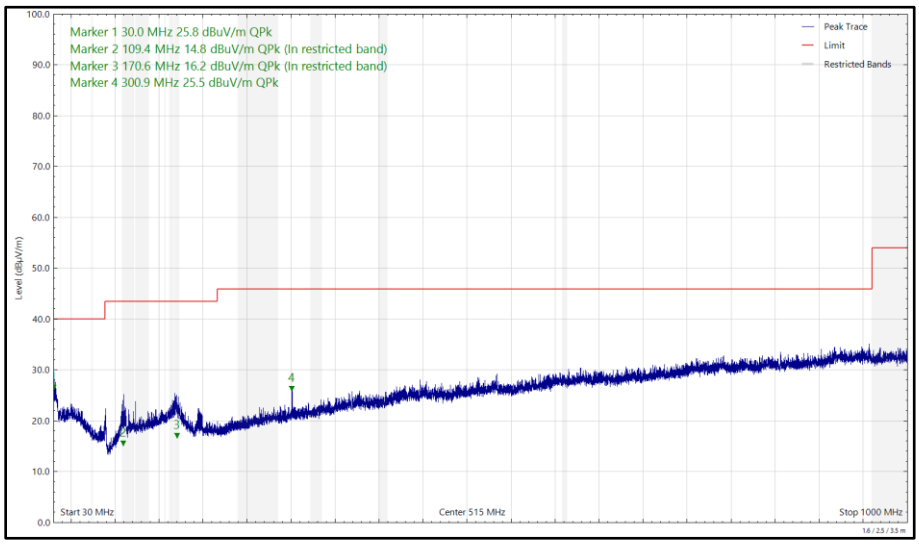

Figure 20 - U-NII-2C – 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

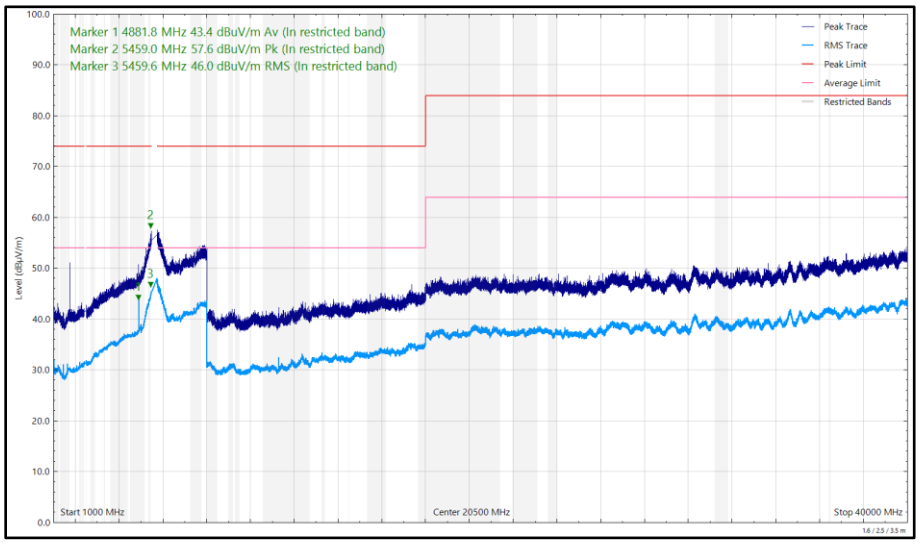

Figure 21 - U-NII-2C - 5640 MHz (CH128), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.014	24.60	40.00	-15.40	Q-Peak	356	119	Vertical
32.054	17.53	40.00	-22.47	Q-Peak	120	100	Horizontal
110.344	14.36	43.50	-29.14	Q-Peak	1	346	Horizontal
110.672	15.23	43.50	-28.27	Q-Peak	246	132	Vertical
169.257	14.89	43.50	-28.61	Q-Peak	360	104	Vertical
171.009	15.05	43.50	-28.45	Q-Peak	351	182	Horizontal
300.842	23.39	46.00	-22.61	Q-Peak	360	268	Vertical
300.861	23.24	46.00	-22.76	Q-Peak	234	119	Horizontal
4882.008	39.39	54.00	-14.61	CISPR Avg	334	258	Vertical
5446.015	57.13	74.00	-16.87	Peak	0	317	Vertical
5453.102	39.96	54.00	-14.04	RMS	288	337	Horizontal
5459.764	44.28	54.00	-9.72	RMS	1	303	Vertical

Table 11 - 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.

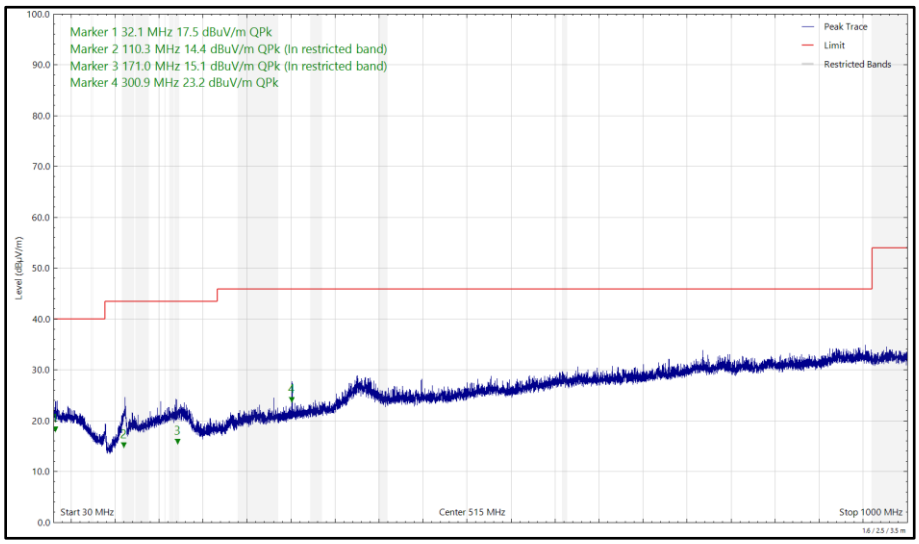

Figure 22 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

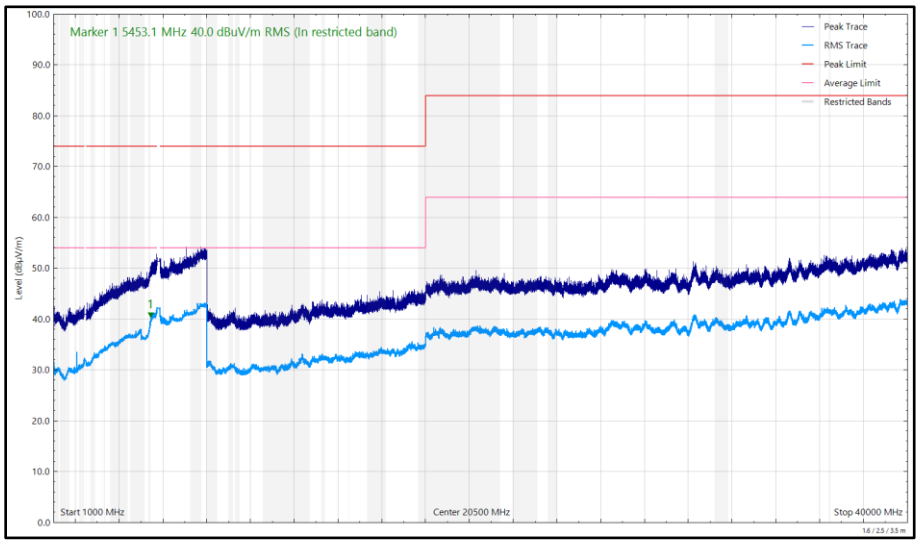

Figure 23 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

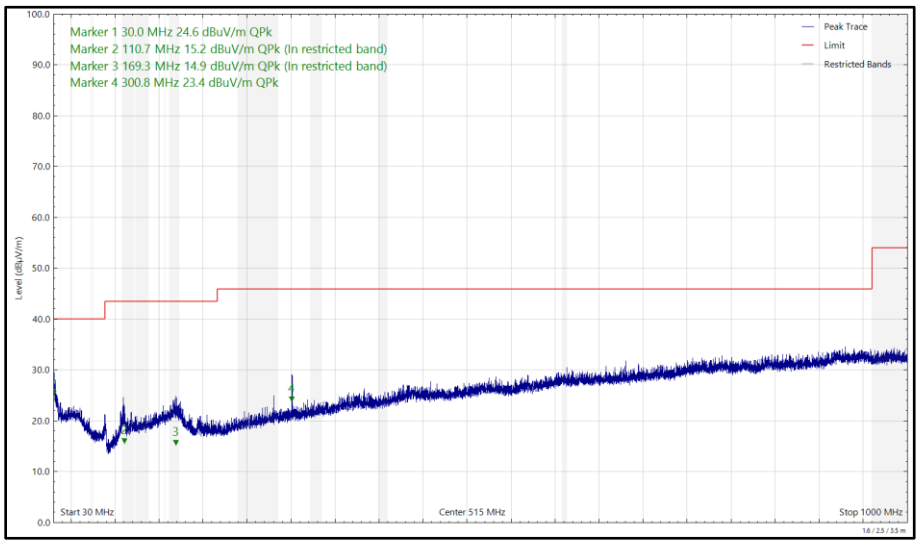

Figure 24 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

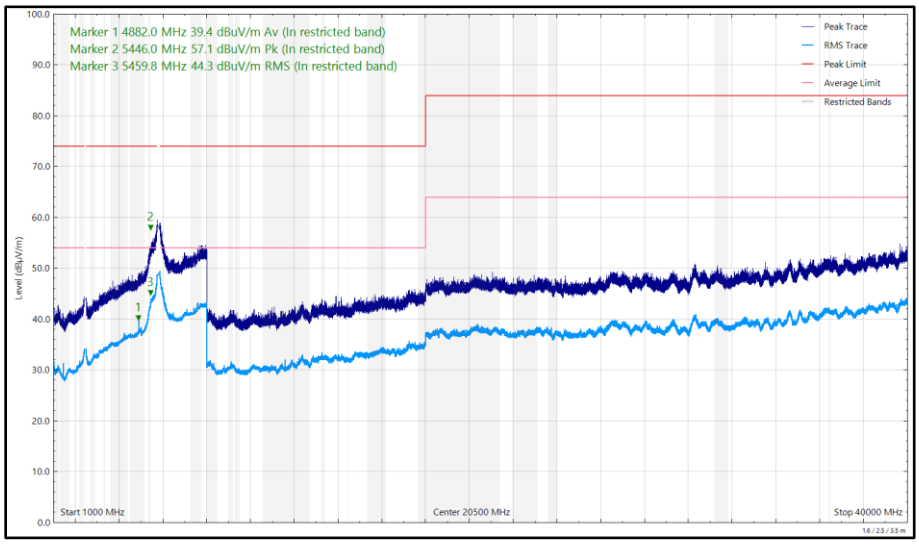

Figure 25 - U-NII-3 - 5785 MHz (CH157), HT20, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15

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)	-20 dBc
Part 15.407 (b)	-27 dBm e.i.r.p
Part 15.209	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
30.000	24.73	40.00	-15.27	Q-Peak	301	100	Vertical
30.445	11.59	40.00	-28.41	Q-Peak	168	400	Horizontal
138.474	9.47	43.50	-34.03	Q-Peak	11	202	Horizontal
153.851	10.40	43.50	-33.10	Q-Peak	351	400	Vertical
168.430	14.43	43.50	-29.07	Q-Peak	360	103	Vertical
172.963	13.59	43.50	-29.91	Q-Peak	345	241	Horizontal
402.919	18.98	46.00	-27.02	Q-Peak	0	110	Horizontal
2389.109	30.79	54.00	-23.21	CISPR Avg	56	373	Horizontal
2389.239	32.59	54.00	-21.41	CISPR Avg	350	366	Vertical
2483.536	34.10	54.00	-19.90	CISPR Avg	25	352	Vertical
2487.376	30.66	54.00	-23.34	CISPR Avg	48	386	Horizontal
4200.075	33.90	54.00	-20.10	RMS	245	166	Vertical
4881.923	36.11	54.00	-17.89	CISPR Avg	6	398	Vertical
5458.907	39.30	54.00	-14.70	RMS	359	309	Vertical
7322.418	43.20	54.00	-10.80	CISPR Avg	342	295	Vertical
7322.829	56.41	74.00	-17.59	Peak	340	300	Vertical
7323.480	41.62	54.00	-12.38	CISPR Avg	299	389	Horizontal
8233.360	38.97	54.00	-15.03	RMS	38	244	Vertical
8233.375	36.77	54.00	-17.23	RMS	89	325	Horizontal

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

No other emissions found within 10 dB of the limit.

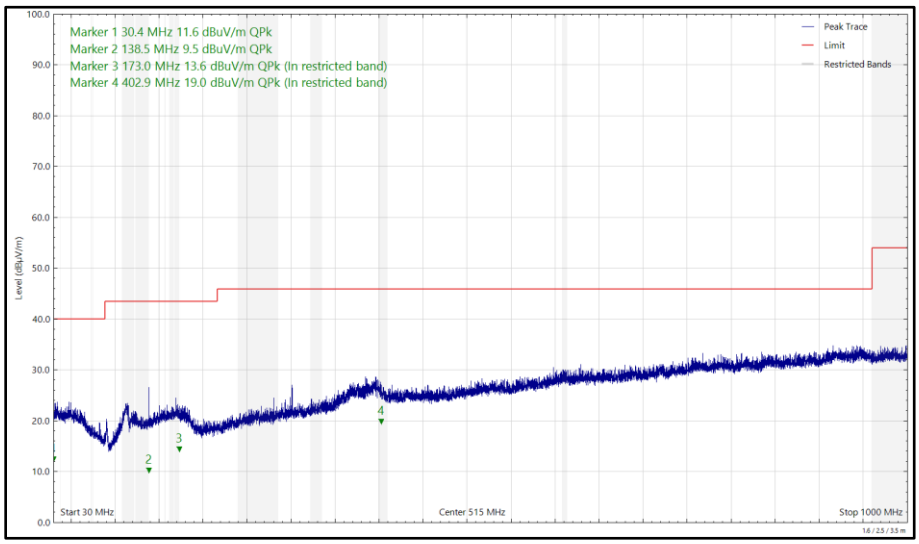

Figure 26 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

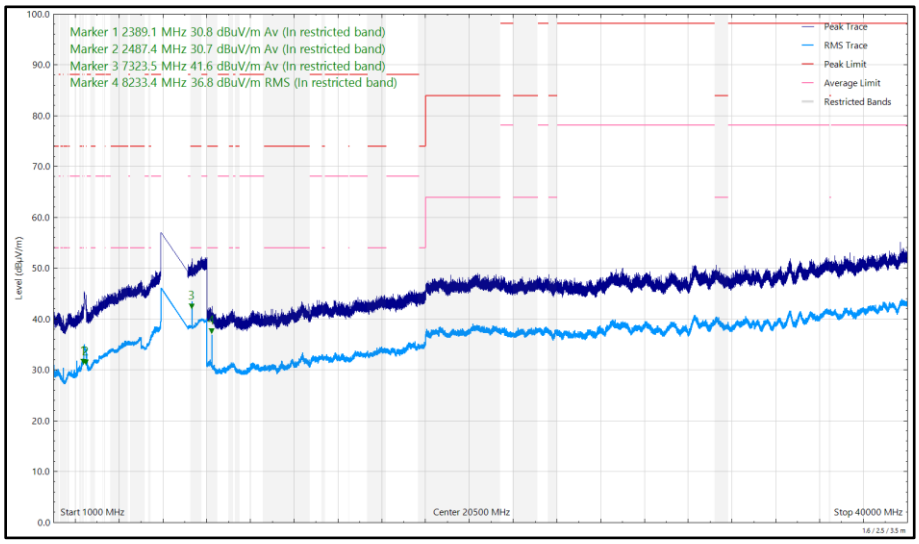

Figure 27 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

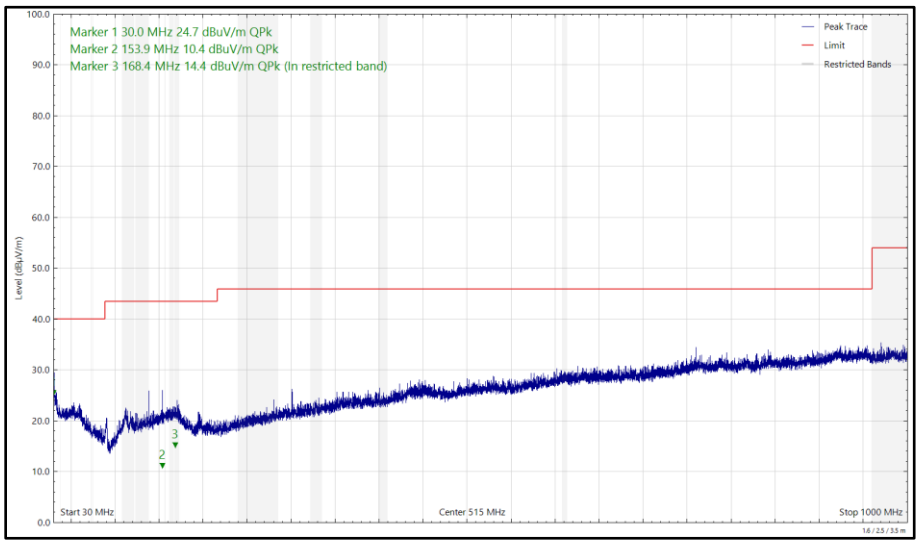

Figure 28 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

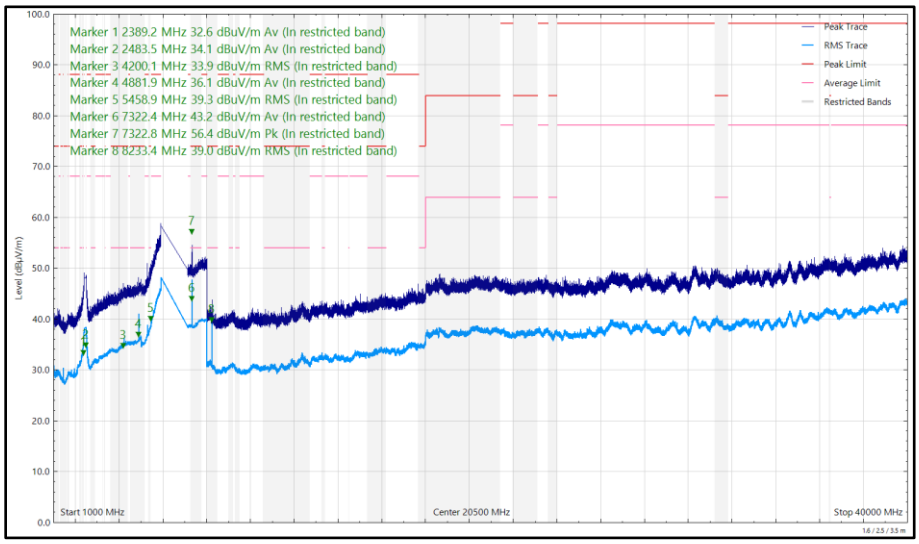

Figure 29 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.089	24.14	40.00	-15.86	Q-Peak	176	135	Vertical
111.674	14.77	43.50	-28.73	Q-Peak	284	348	Vertical
112.404	20.85	43.50	-22.65	Q-Peak	170	278	Horizontal
169.570	16.65	43.50	-26.85	Q-Peak	358	100	Vertical
171.489	17.17	43.50	-26.33	Q-Peak	338	258	Horizontal
402.284	19.09	46.00	-26.91	Q-Peak	3	104	Horizontal
4200.100	33.90	54.00	-20.10	RMS	33	118	Vertical
4881.953	38.47	54.00	-15.53	CISPR Avg	3	390	Vertical
5451.697	39.38	54.00	-14.62	RMS	3	304	Vertical
5453.108	35.53	54.00	-18.47	RMS	244	319	Horizontal
7322.709	37.55	54.00	-16.45	CISPR Avg	20	200	Vertical
7323.043	35.97	54.00	-18.03	CISPR Avg	298	397	Horizontal
8233.325	36.72	54.00	-17.28	RMS	100	336	Horizontal
8233.335	38.91	54.00	-15.09	RMS	57	271	Vertical

Table 14 - 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.

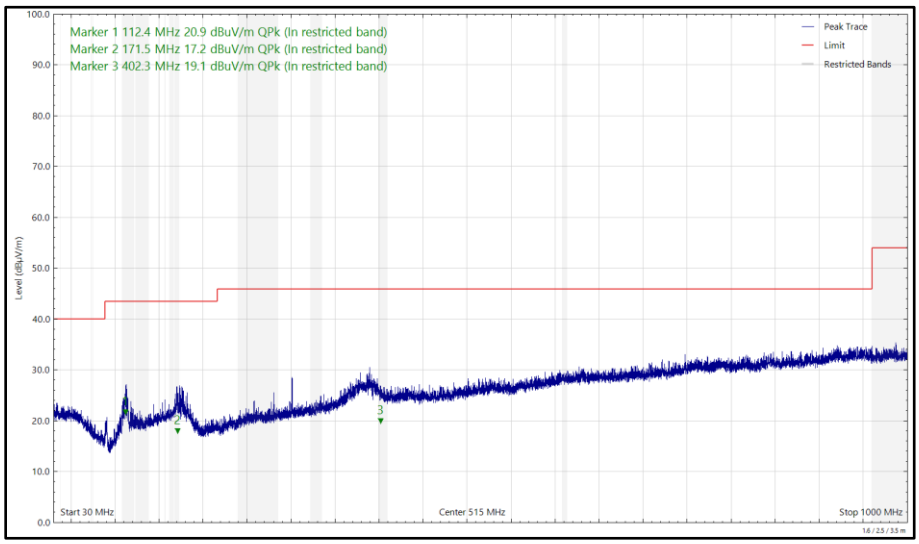

Figure 30 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

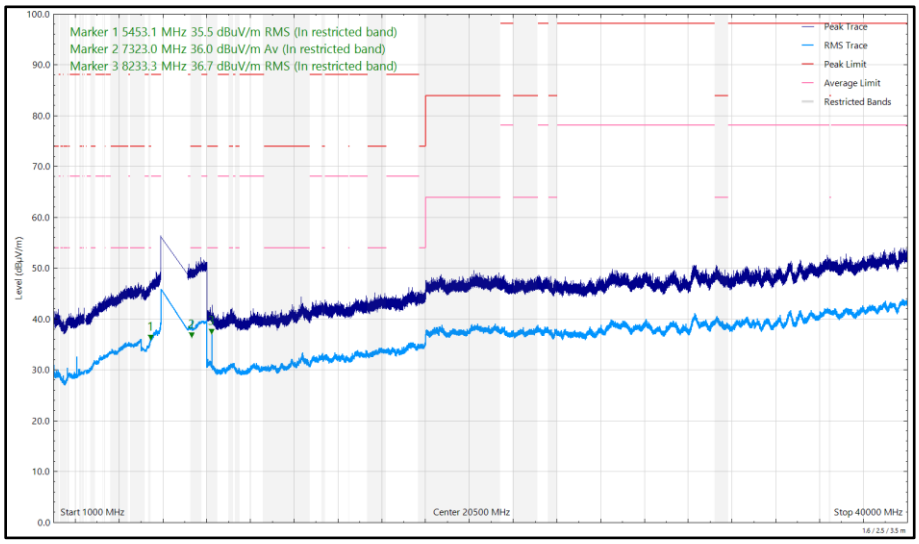

Figure 31 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

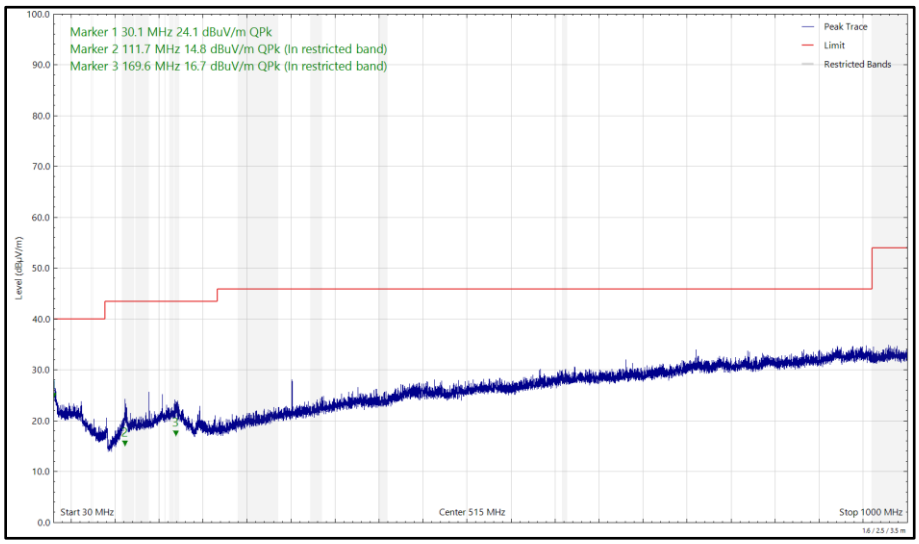

Figure 32 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

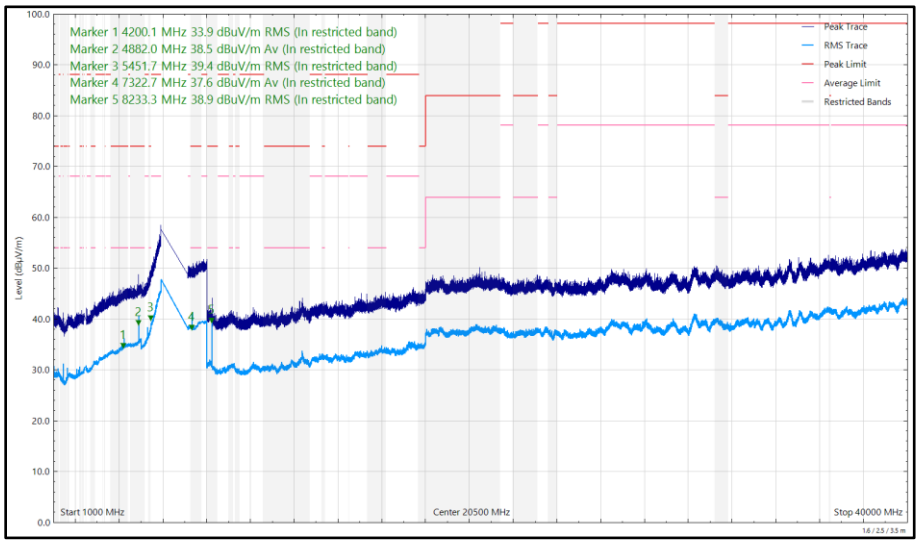

Figure 33 - 6175 MHz (CH45), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.011	24.54	40.00	-15.46	Q-Peak	92	104	Vertical
112.490	14.75	43.50	-28.75	Q-Peak	356	105	Vertical
113.547	19.56	43.50	-23.94	Q-Peak	177	270	Horizontal
138.486	9.14	43.50	-34.36	Q-Peak	218	368	Vertical
170.996	15.44	43.50	-28.06	Q-Peak	350	110	Vertical
171.796	15.42	43.50	-28.08	Q-Peak	3	271	Horizontal
405.310	18.26	46.00	-27.74	Q-Peak	2	100	Horizontal
4205.134	33.86	54.00	-20.14	RMS	248	153	Vertical
4876.594	31.38	54.00	-22.62	CISPR Avg	167	351	Horizontal
4881.708	39.96	54.00	-14.04	CISPR Avg	360	282	Vertical
5435.086	35.22	54.00	-18.78	RMS	51	362	Horizontal
5455.931	36.88	54.00	-17.12	RMS	350	317	Vertical
7322.654	37.94	54.00	-16.06	CISPR Avg	70	393	Horizontal
7322.789	39.39	54.00	-14.61	CISPR Avg	14	268	Vertical

Table 15 - 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.

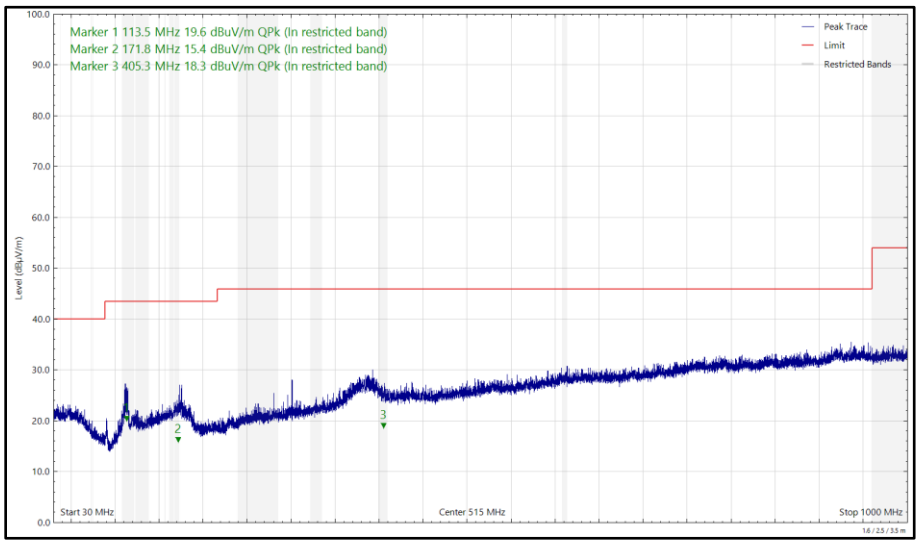

Figure 34 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

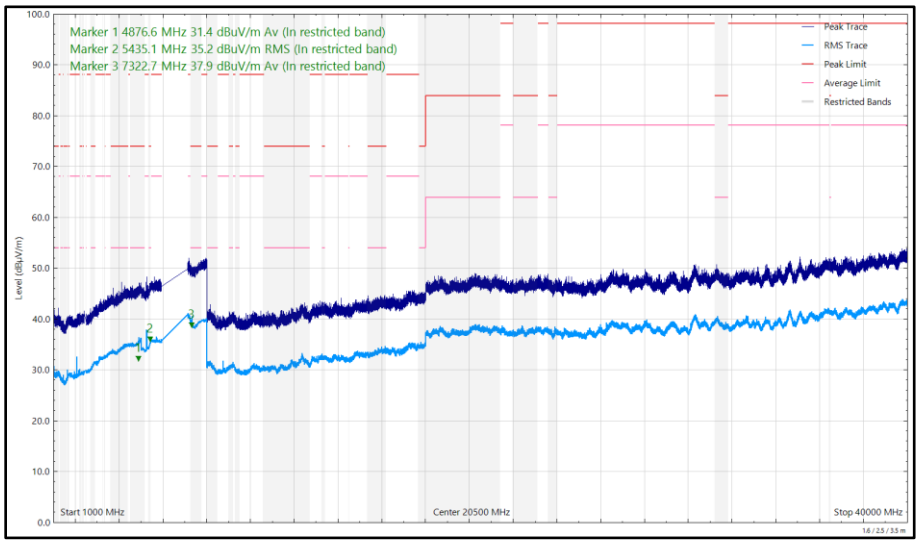

Figure 35 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Horizontal

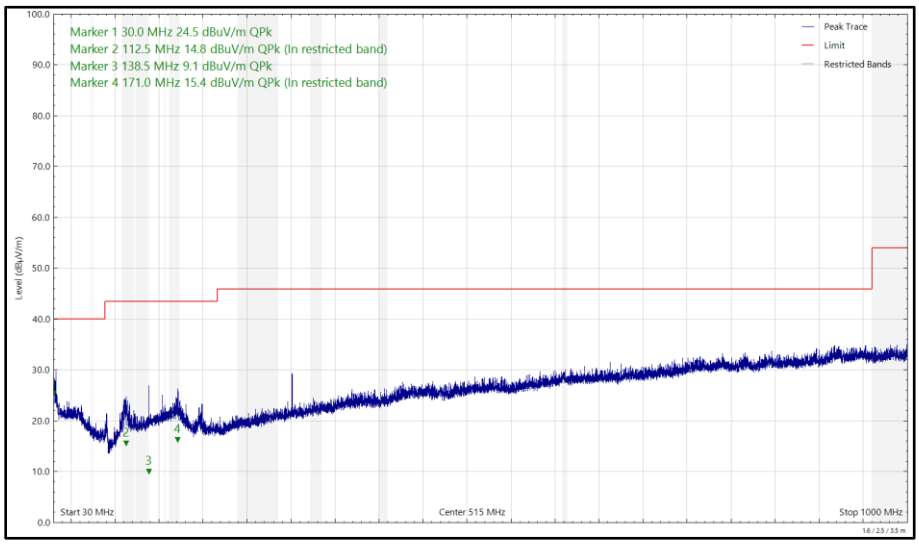

Figure 36 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

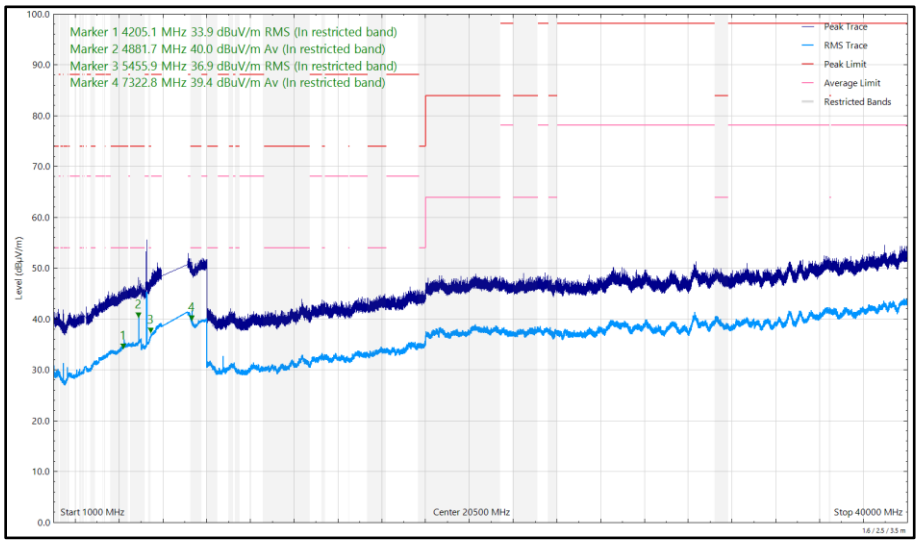

Figure 37 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), DH5, iPA, Core 2, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.053	24.14	40.00	-15.86	Q-Peak	289	113	Vertical
111.373	18.11	43.50	-25.39	Q-Peak	350	294	Horizontal
2382.554	31.01	54.00	-22.99	CISPR Avg	53	400	Horizontal
2389.059	34.64	54.00	-19.36	CISPR Avg	360	313	Vertical
2484.826	35.91	54.00	-18.09	CISPR Avg	21	329	Vertical
2487.576	31.25	54.00	-22.75	CISPR Avg	56	375	Horizontal
4211.928	34.27	54.00	-19.73	RMS	27	391	Vertical
4881.676	36.33	54.00	-17.67	CISPR Avg	5	329	Vertical
5458.935	35.17	54.00	-18.83	RMS	350	151	Horizontal
5459.954	37.11	54.00	-16.89	RMS	2	299	Vertical
7322.295	56.09	74.00	-17.91	Peak	344	240	Vertical
7322.440	42.41	54.00	-11.59	CISPR Avg	341	259	Vertical
7323.417	41.91	54.00	-12.09	CISPR Avg	298	400	Horizontal

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

No other emissions found within 10 dB of the limit.

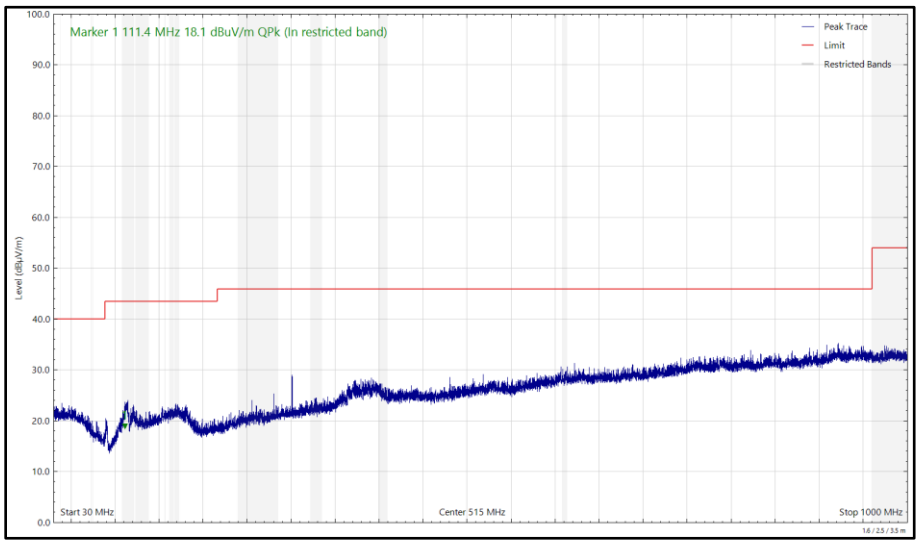

Figure 38 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

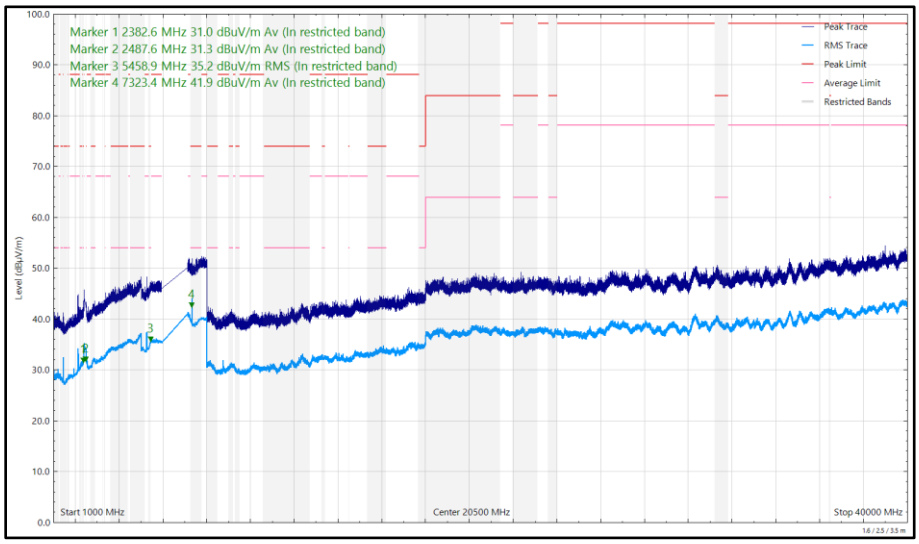

Figure 39 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Horizontal

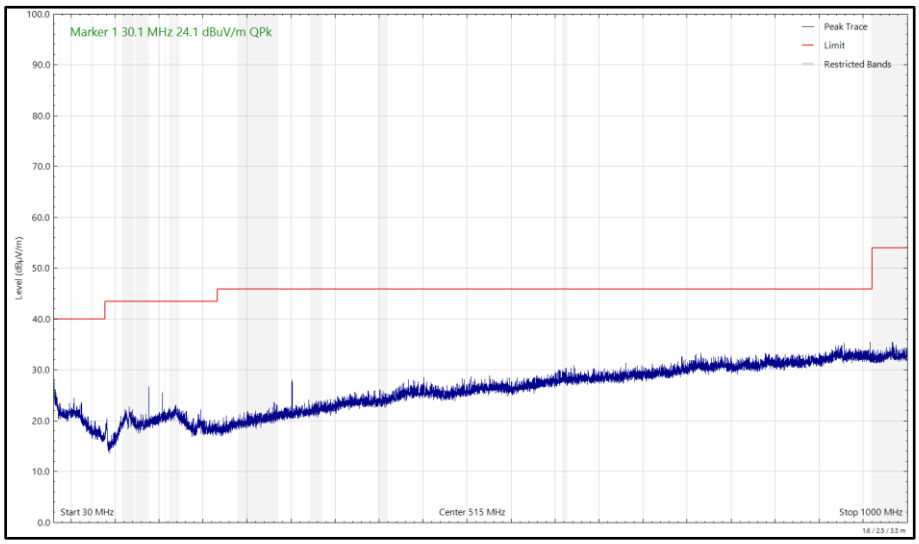

Figure 40 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

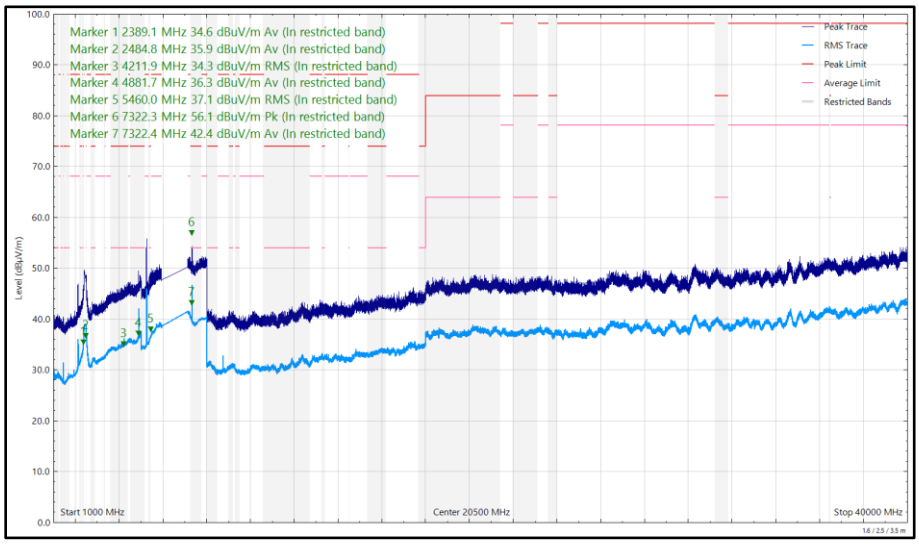

Figure 41 - 6995 MHz (CH209), HE20, SU, CDD, Core 0 + Core 1 and 2441 MHz (CH39), 2DH5, ePA, Core 0 + Core 1, 1 GHz to 40 GHz, Vertical

FCC 47 CFR Part 15

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)	-20 dBc
Part 15.407 (b)	Peak: -7 dBm/MHz e.i.r.p, Average: -27 dBm/MHz e.i.r.p.
Part 15.209	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
30.089	25.80	40.00	-14.20	Q-Peak	247	103	Vertical
114.035	17.64	43.50	-25.86	Q-Peak	0	254	Horizontal
279.982	19.81	46.00	-26.19	Q-Peak	72	102	Horizontal
2388.689	57.47	74.00	-16.53	Peak	358	306	Vertical
2389.966	41.67	54.00	-12.33	RMS	350	275	Vertical
2389.993	36.21	54.00	-17.79	RMS	48	400	Horizontal
2483.525	41.69	54.00	-12.31	RMS	302	370	Horizontal
2483.655	46.55	54.00	-7.45	RMS	14	317	Vertical
2484.024	63.39	74.00	-10.61	Peak	9	338	Vertical

Table 18 - 2442MHz (CH7), HT20, Core 0 and 5204MHz (CH5204), DH5, ePA, Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

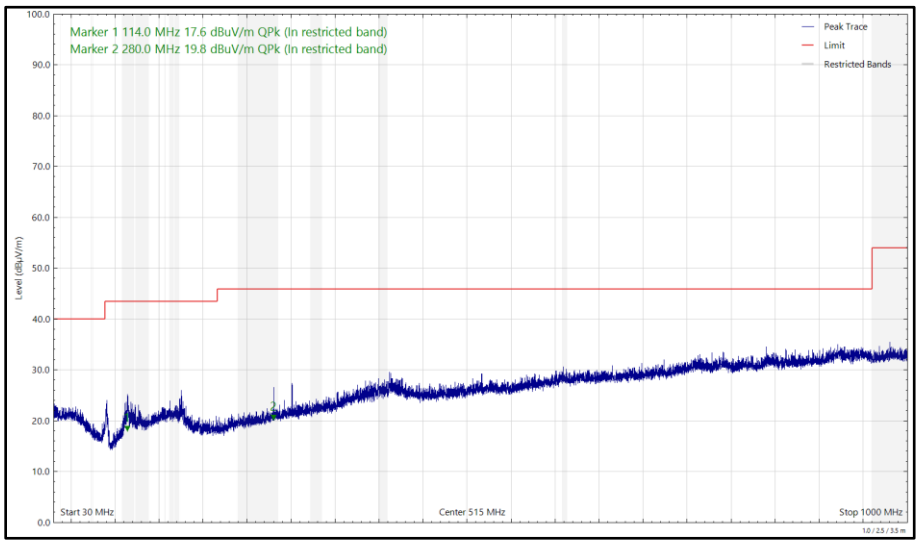

Figure 42 - 2442MHz (CH7), HT20, Core 0 and 5204MHz (CH5204), DH5, ePA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

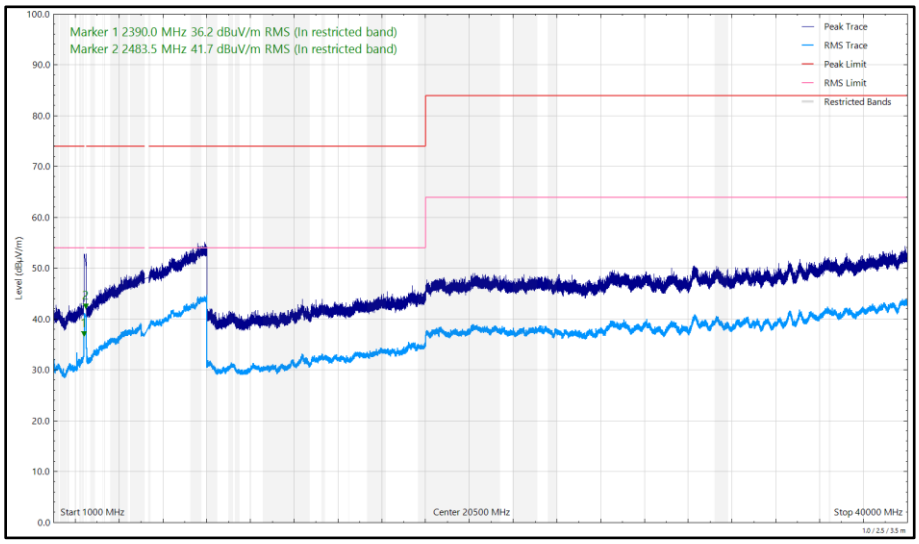

Figure 43 - 2442MHz (CH7), HT20, Core 0 and 5204MHz (CH5204), DH5, ePA, Core 1, 1 GHz to 40 GHz, Horizontal

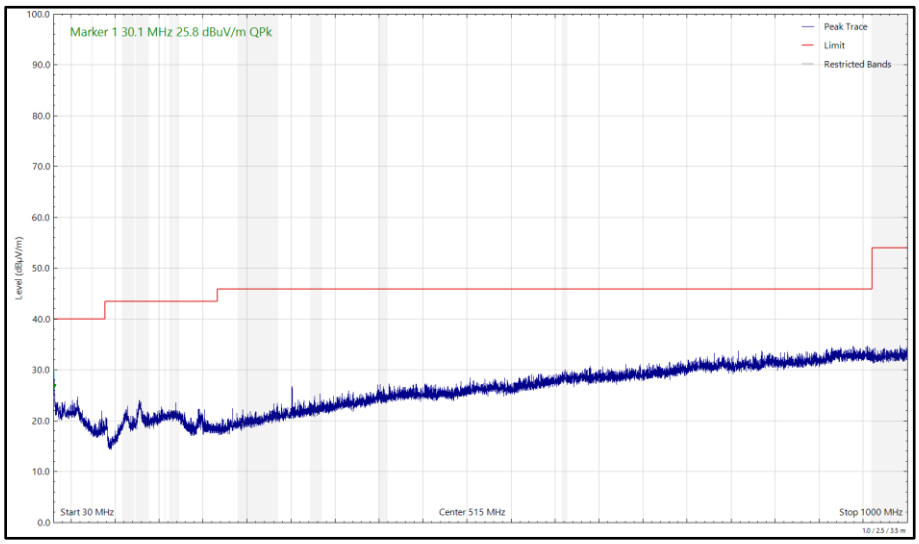

Figure 44 - 2442MHz (CH7), HT20, Core 0 and 5204MHz (CH5204), DH5, ePA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

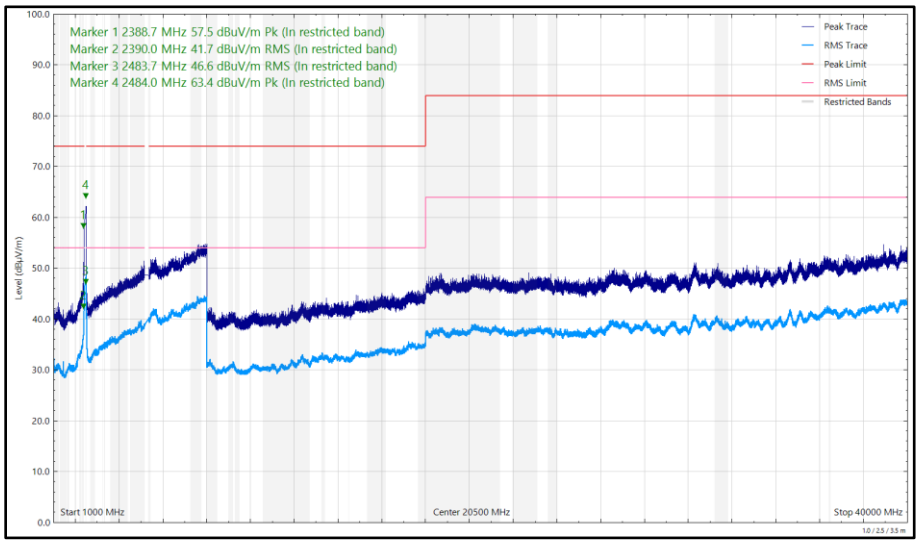

Figure 45 - 2442MHz (CH7), HT20, Core 0 and 5204MHz (CH5204), DH5, ePA, Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
112.924	19.06	43.50	-24.44	Q-Peak	7	108	Vertical
174.642	15.83	43.50	-27.67	Q-Peak	75	155	Horizontal
280.010	21.77	46.00	-24.23	Q-Peak	92	126	Horizontal
2389.617	56.71	74.00	-17.29	Peak	2	363	Vertical
2389.891	36.52	54.00	-17.48	RMS	50	369	Horizontal
2389.964	41.08	54.00	-12.92	RMS	10	335	Vertical
2399.726	60.95	74.00	-13.05	Peak	343	291	Vertical
2483.584	40.46	54.00	-13.54	RMS	39	389	Horizontal
2483.801	46.36	54.00	-7.64	RMS	10	334	Vertical
2484.133	62.49	74.00	-11.51	Peak	15	310	Vertical
2501.152	57.08	74.00	-16.92	Peak	356	385	Vertical
5374.590	43.91	54.00	-10.09	RMS	0	340	Vertical

Table 19 - 2442MHz (CH7), HT20, Core 0 and 5788MHz (CH5788), DH5, ePA, Core 1, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

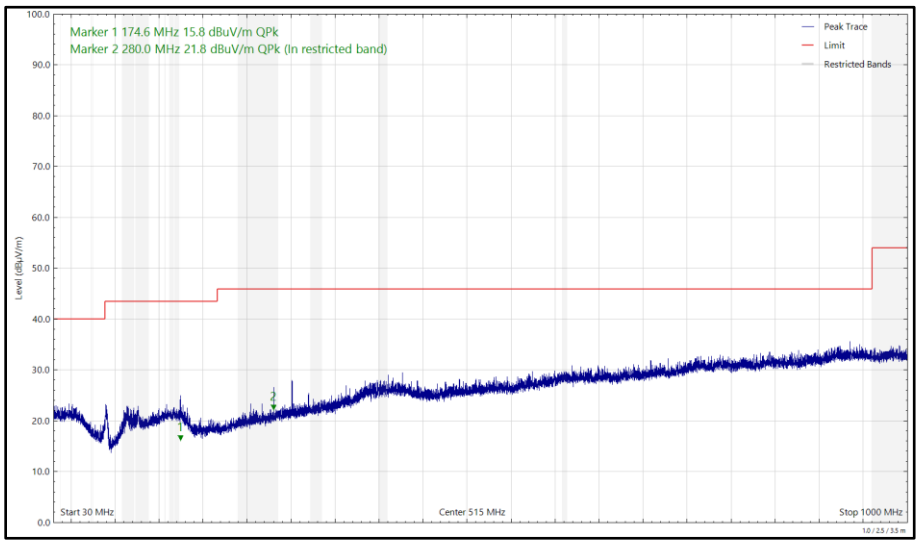

Figure 46 - 2442MHz (CH7), HT20, Core 0 and 5788MHz (CH5788), DH5, ePA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

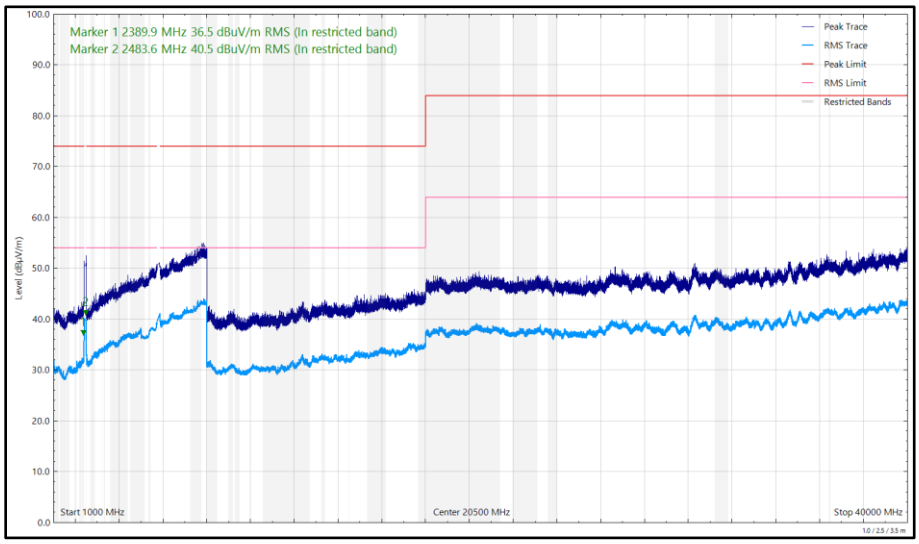

Figure 47 - 2442MHz (CH7), HT20, Core 0 and 5788MHz (CH5788), DH5, ePA, Core 1, 1 GHz to 40 GHz, Horizontal

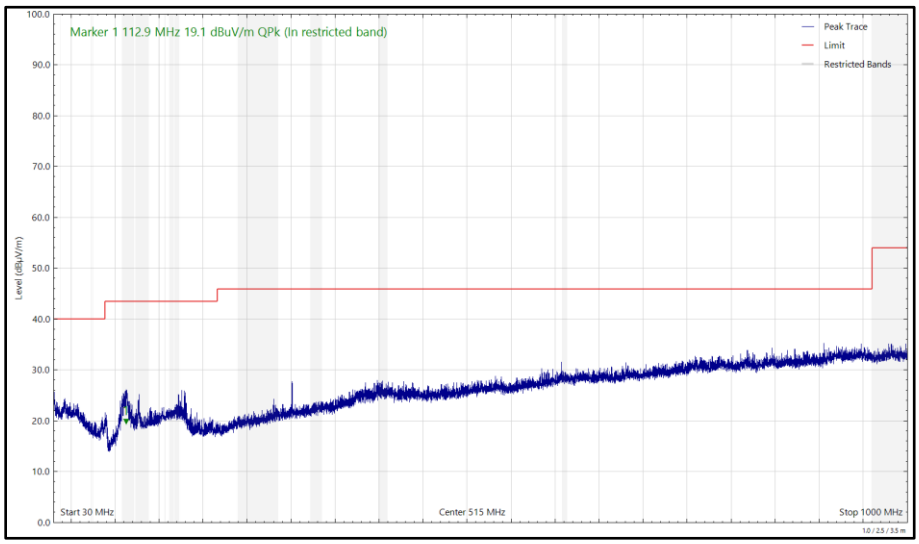

Figure 48 - 2442MHz (CH7), HT20, Core 0 and 5788MHz (CH5788), DH5, ePA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

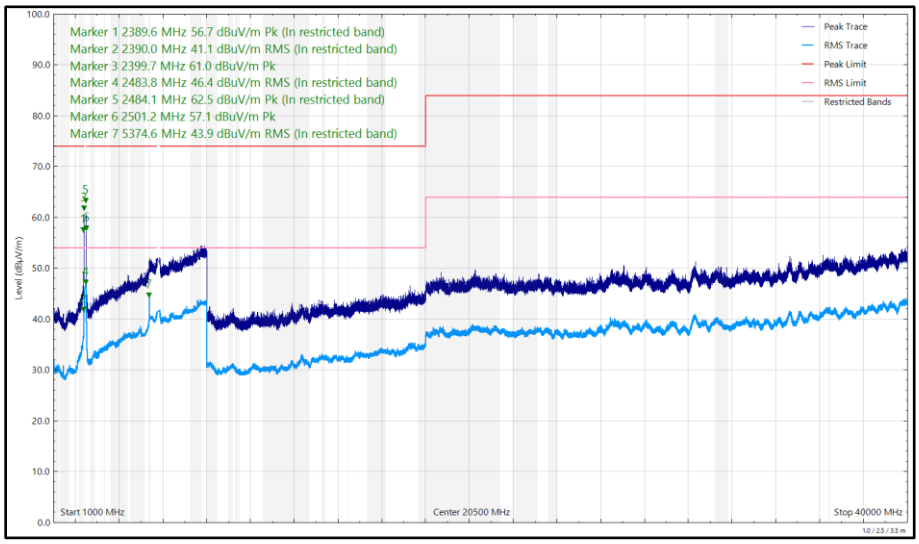

Figure 49 - 2442MHz (CH7), HT20, Core 0 and 5788MHz (CH5788), DH5, ePA, Core 1, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.243	21.32	40.00	-18.68	Q-Peak	40	104	Vertical
112.549	19.25	43.50	-24.25	Q-Peak	0	115	Vertical
279.997	21.89	46.00	-24.11	Q-Peak	112	114	Horizontal
2389.935	36.10	54.00	-17.90	RMS	43	376	Horizontal
2389.972	38.37	54.00	-15.63	RMS	16	305	Vertical
2483.509	45.97	54.00	-8.03	RMS	47	396	Vertical
2483.576	42.25	54.00	-11.75	RMS	54	392	Horizontal
2484.506	59.99	74.00	-14.01	Peak	54	398	Horizontal
2484.685	64.90	74.00	-9.10	Peak	39	386	Vertical
4883.468	37.27	54.00	-16.73	RMS	0	100	Vertical

Table 20 - 2442MHz (CH7), HT20, Core 1 and 5204MHz (CH5204), DH5, ePA, Core 0, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.

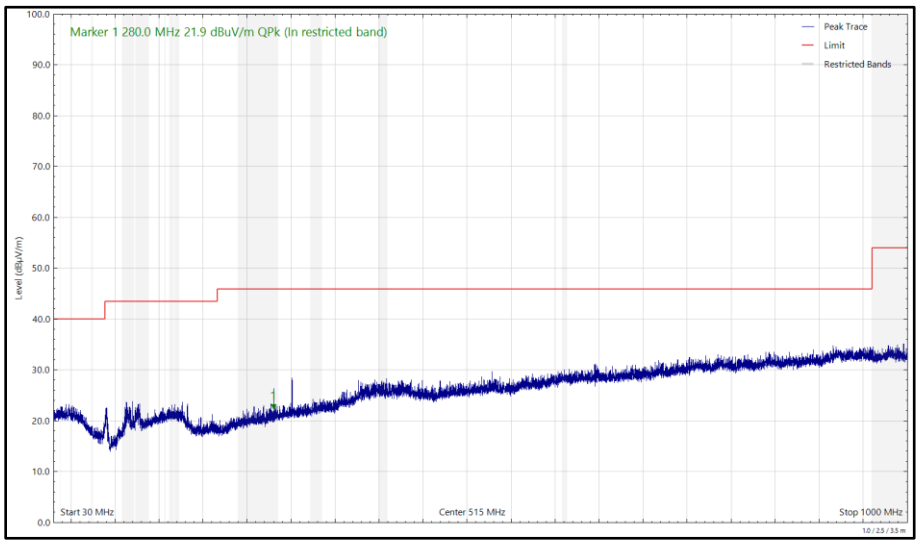

Figure 50 - 2442MHz (CH7), HT20, Core 1 and 5204MHz (CH5204), DH5, ePA, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

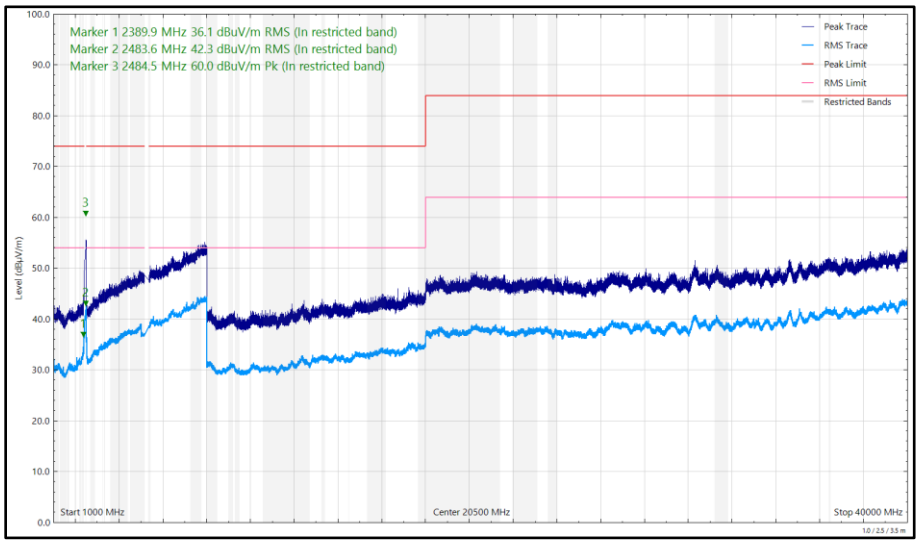

Figure 51 - 2442MHz (CH7), HT20, Core 1 and 5204MHz (CH5204), DH5, ePA, Core 0, 1 GHz to 40 GHz, Horizontal

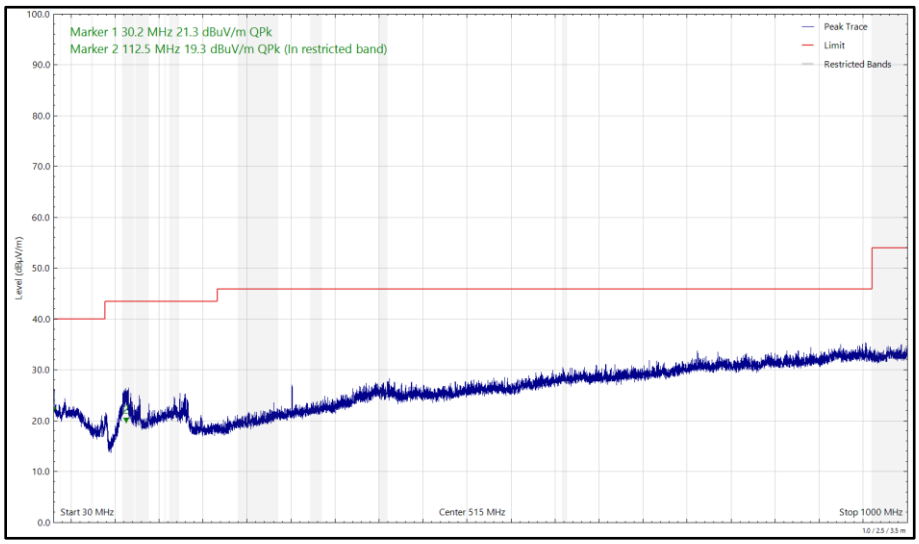

Figure 52 - 2442MHz (CH7), HT20, Core 1 and 5204MHz (CH5204), DH5, ePA, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

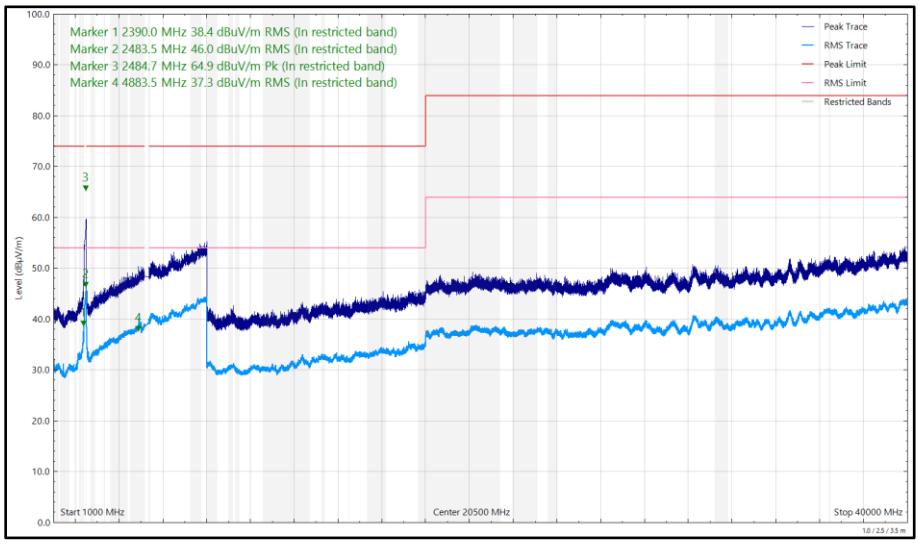

Figure 53 - 2442MHz (CH7), HT20, Core 1 and 5204MHz (CH5204), DH5, ePA, Core 0, 1 GHz to 40 GHz, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.033	21.64	40.00	-18.36	Q-Peak	0	110	Vertical
111.541	19.00	43.50	-24.50	Q-Peak	4	100	Vertical
280.000	21.43	46.00	-24.57	Q-Peak	66	115	Horizontal
2389.754	38.68	54.00	-15.32	RMS	37	393	Vertical
2389.827	36.56	54.00	-17.44	RMS	52	380	Horizontal
2483.504	45.72	54.00	-8.28	RMS	43	396	Vertical
2483.634	41.35	54.00	-12.65	RMS	57	389	Horizontal
2485.026	58.95	74.00	-15.05	Peak	57	387	Horizontal
2485.968	63.84	74.00	-10.16	Peak	41	389	Vertical
4883.022	38.73	54.00	-15.27	RMS	7	282	Vertical
5374.541	37.05	54.00	-16.95	RMS	58	295	Horizontal
5374.576	40.19	54.00	-13.81	RMS	356	226	Vertical

Table 21 - 2442MHz (CH7), HT20, Core 1 and 5788MHz (CH5788), DH5, ePA, Core 0, 30 MHz to 40 GHz

No other emissions found within 10 dB of the limit.