

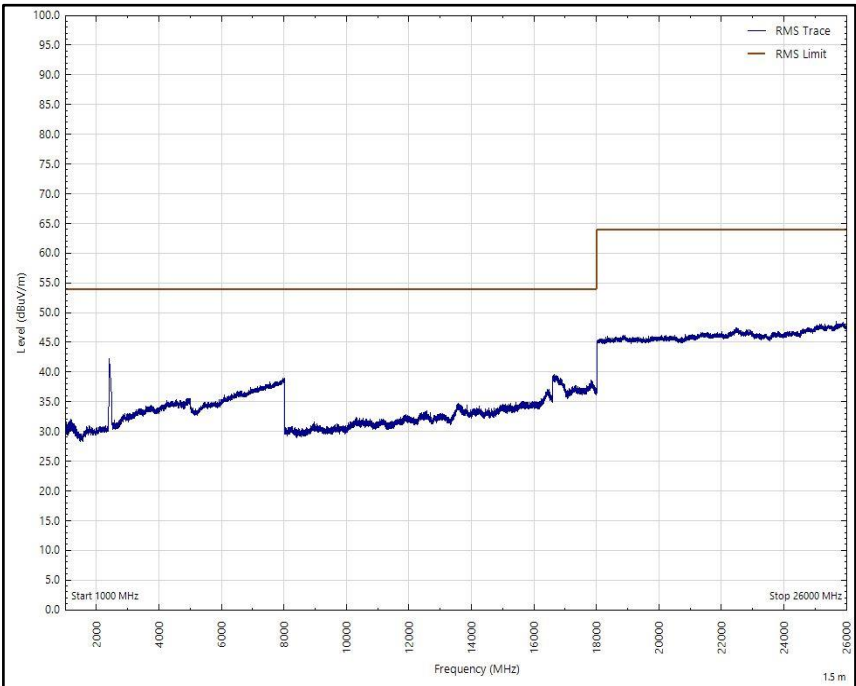


Figure 82 - 2437 MHz (CH6), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal (rms)

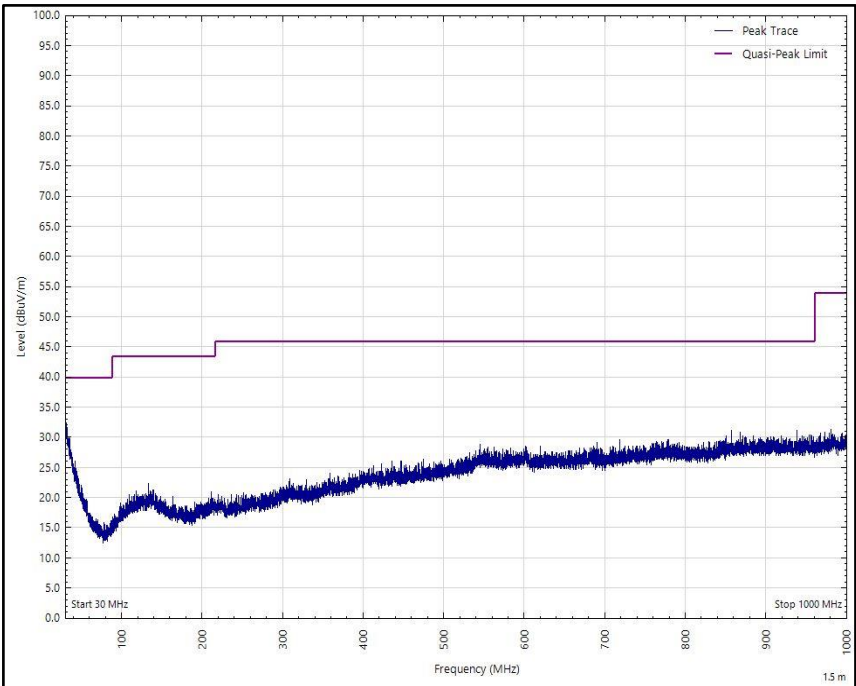


Figure 83 - 2437 MHz (CH6), 802.11b, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

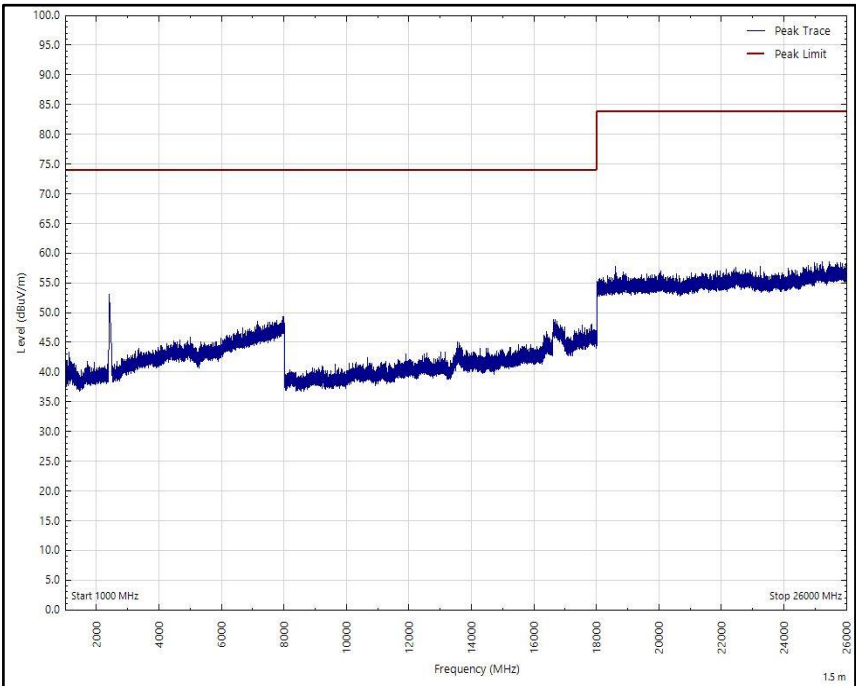


Figure 84 - 2437 MHz (CH6), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical (Peak)

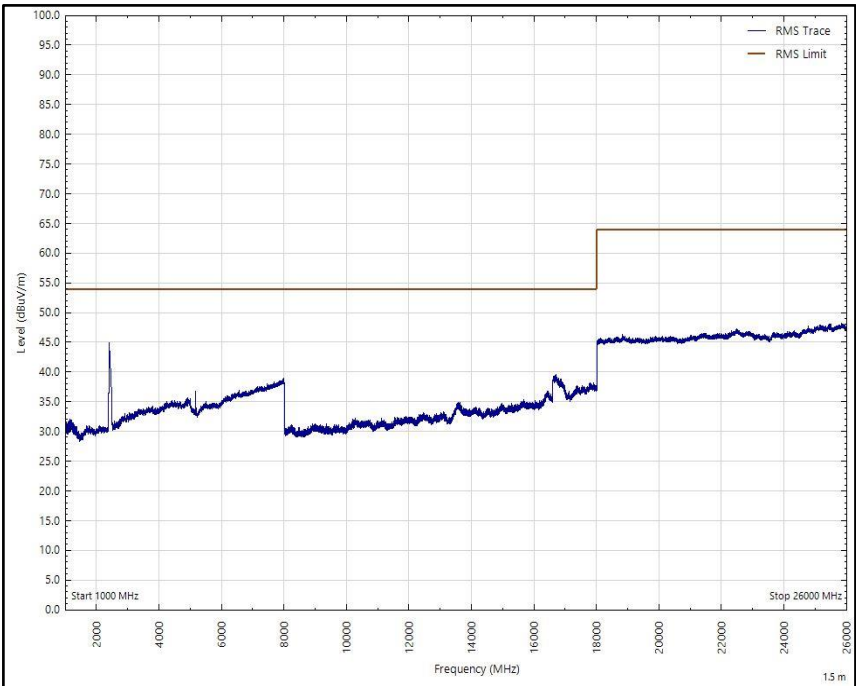


Figure 85 - 2437 MHz (CH6), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical (rms)



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

Table 29 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

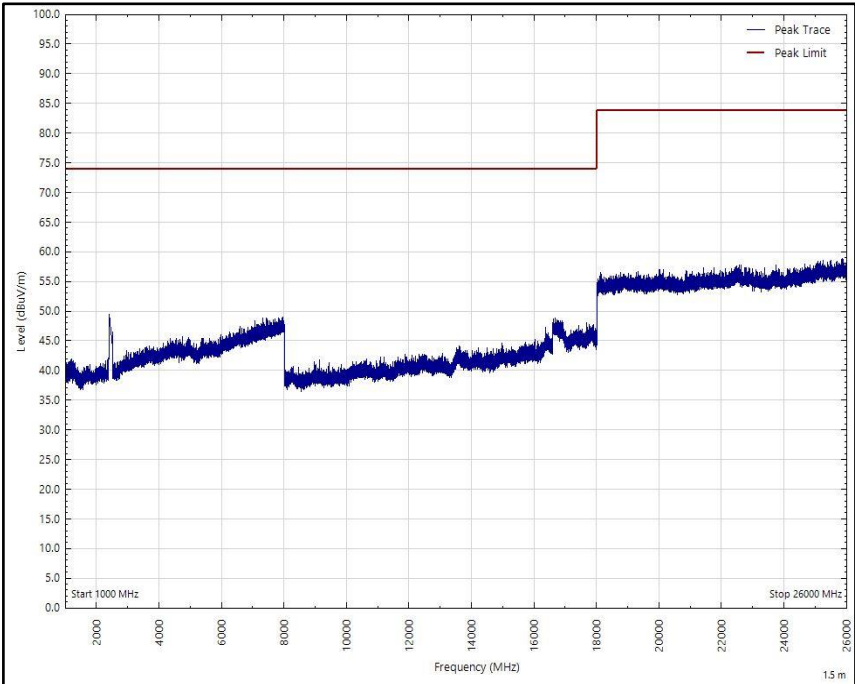


Figure 86 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

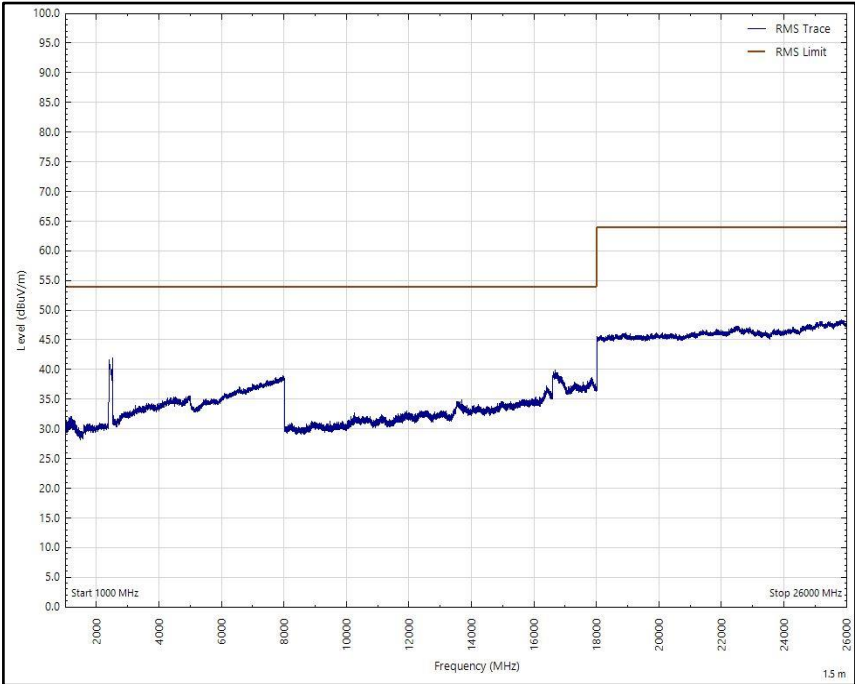


Figure 87 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Horizontal (rms)

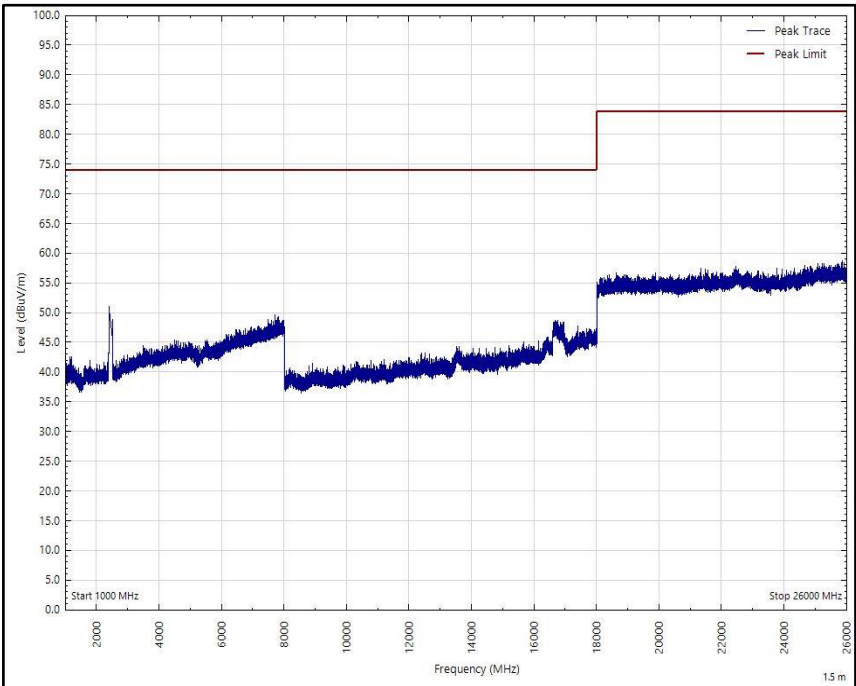


Figure 88 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical (Peak)

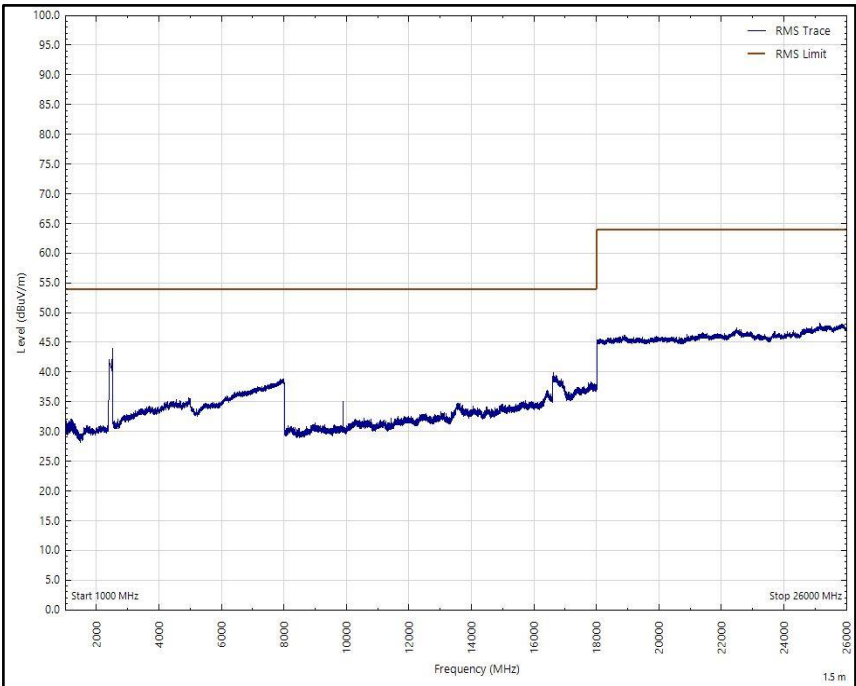


Figure 89 - 2472 MHz (CH13), 802.11b, Core 1, 1 GHz to 26 GHz, Vertical (rms)

802.11n 20 MHz Bandwidth

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

Table 30 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

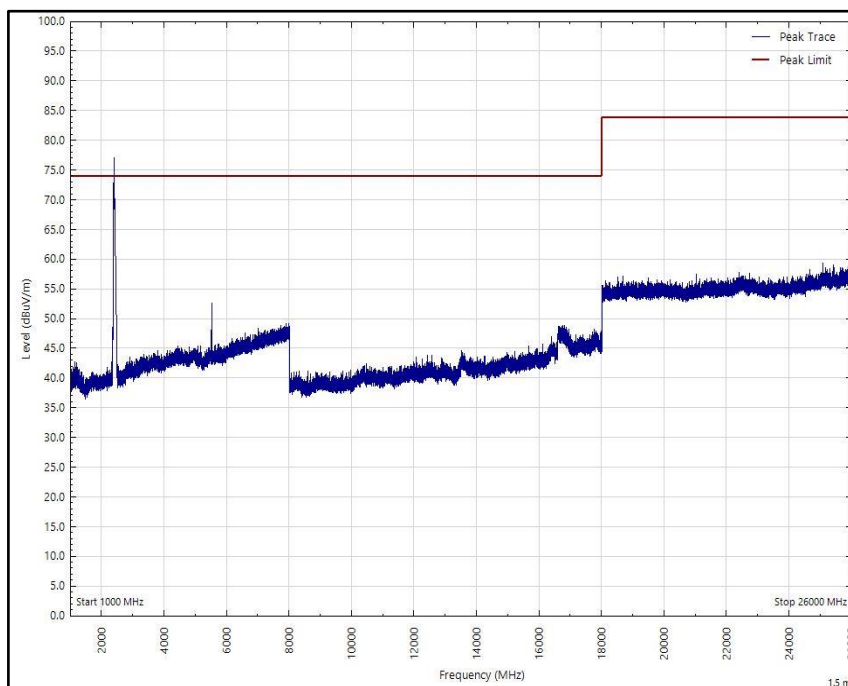


Figure 90 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

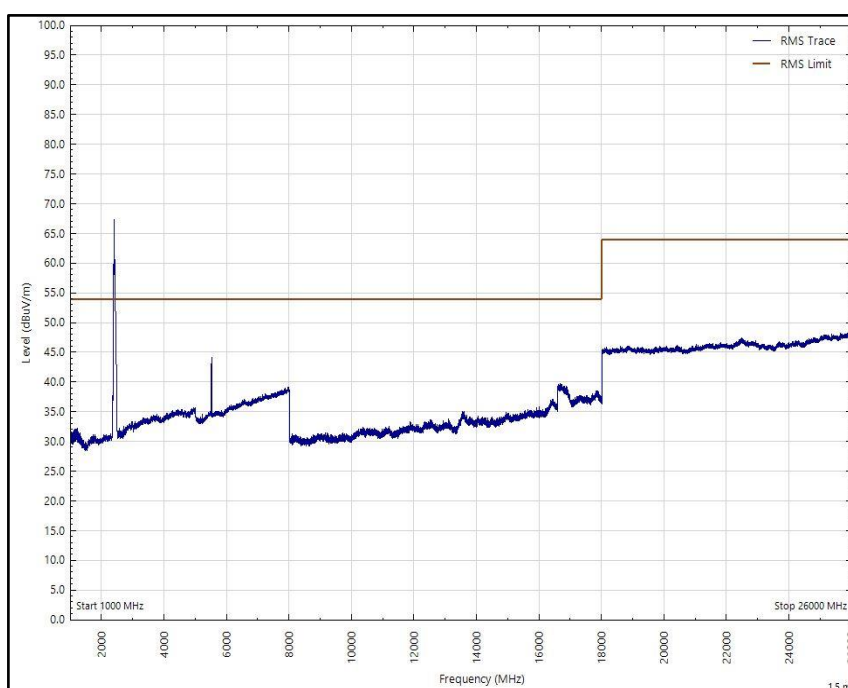


Figure 91 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

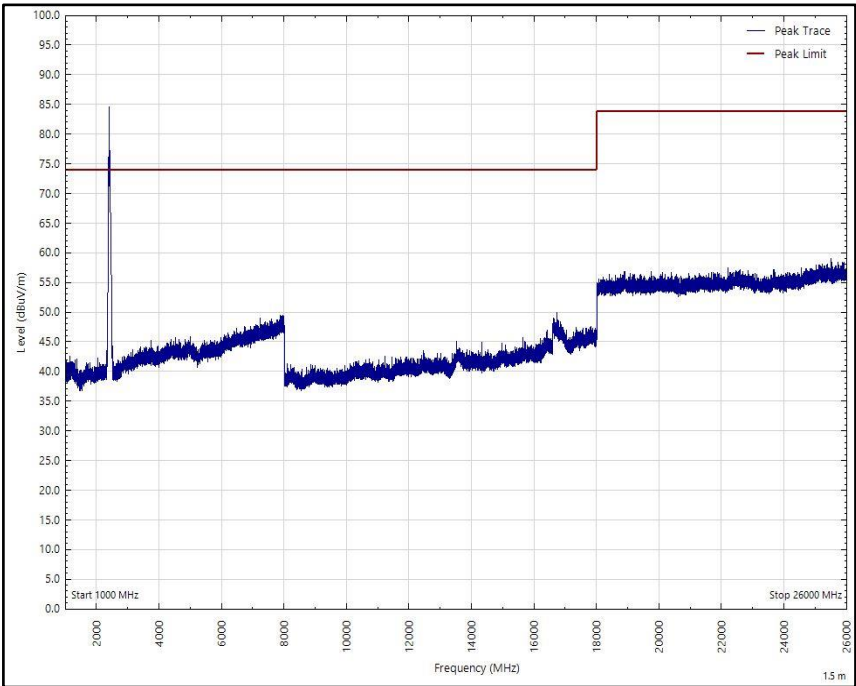


Figure 92 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

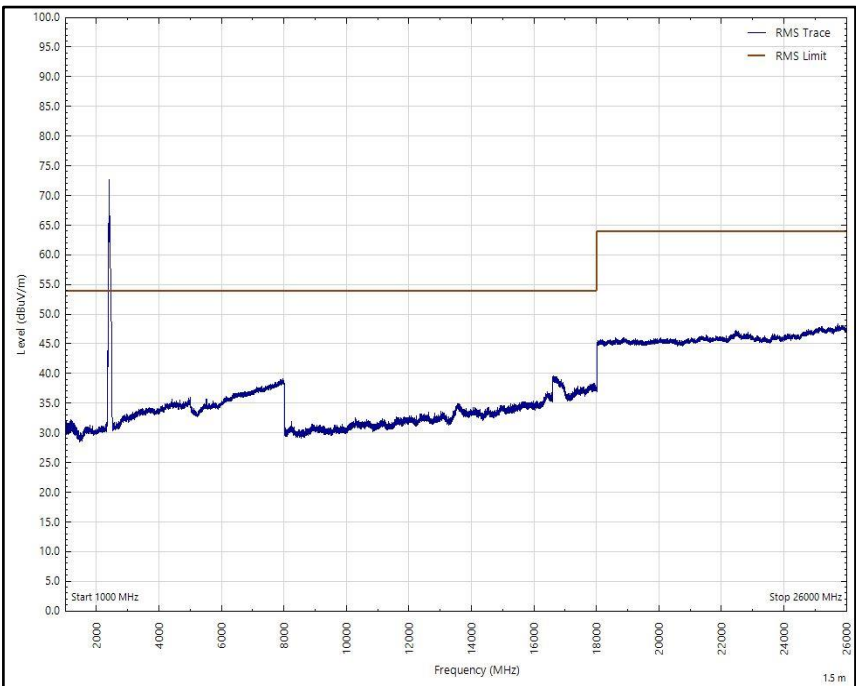


Figure 93 - 2412 MHz (CH1), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)

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

Table 31 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 30 MHz to 26 GHz

*No emissions found within 6 dB of the limit.

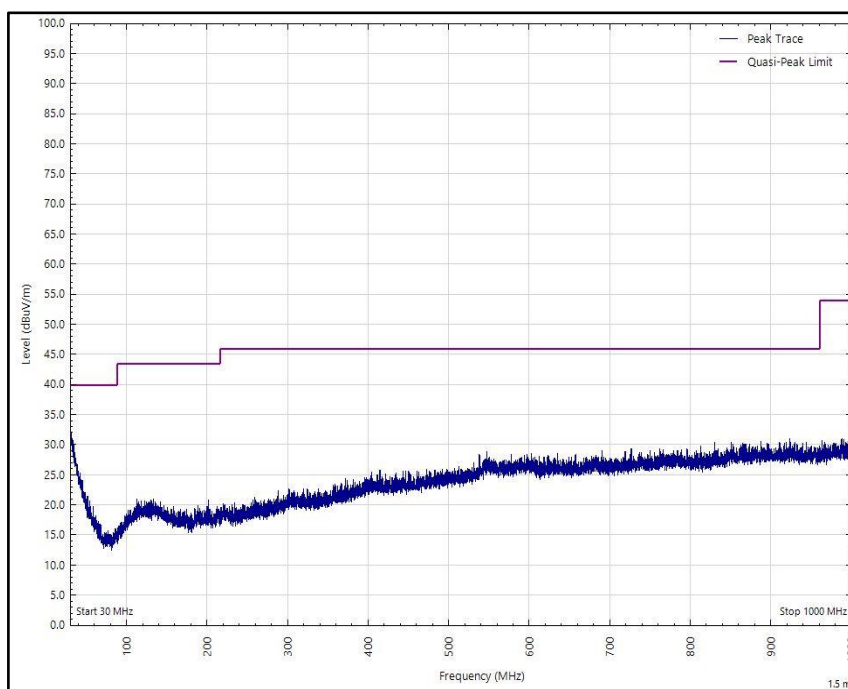


Figure 94 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

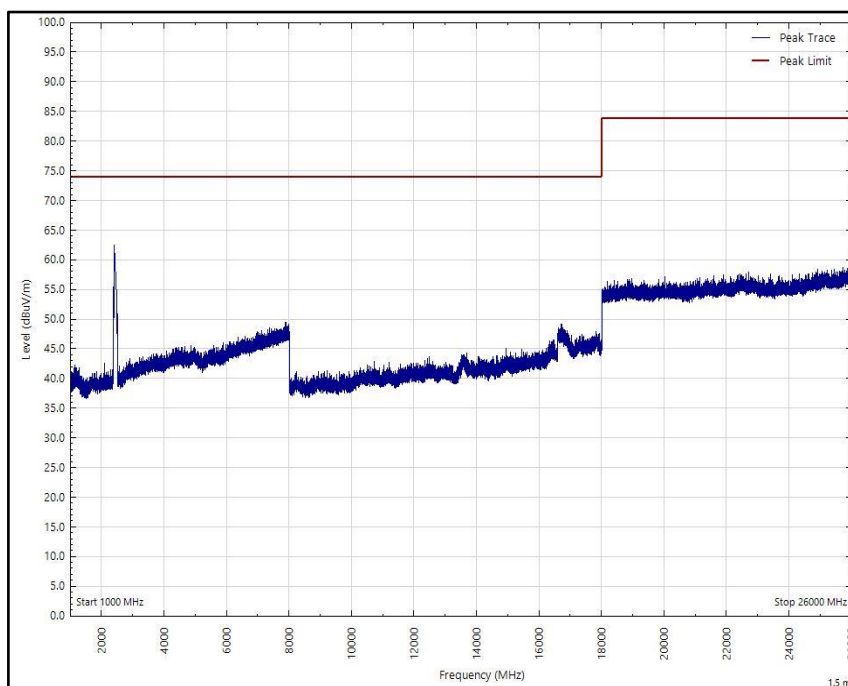


Figure 95 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

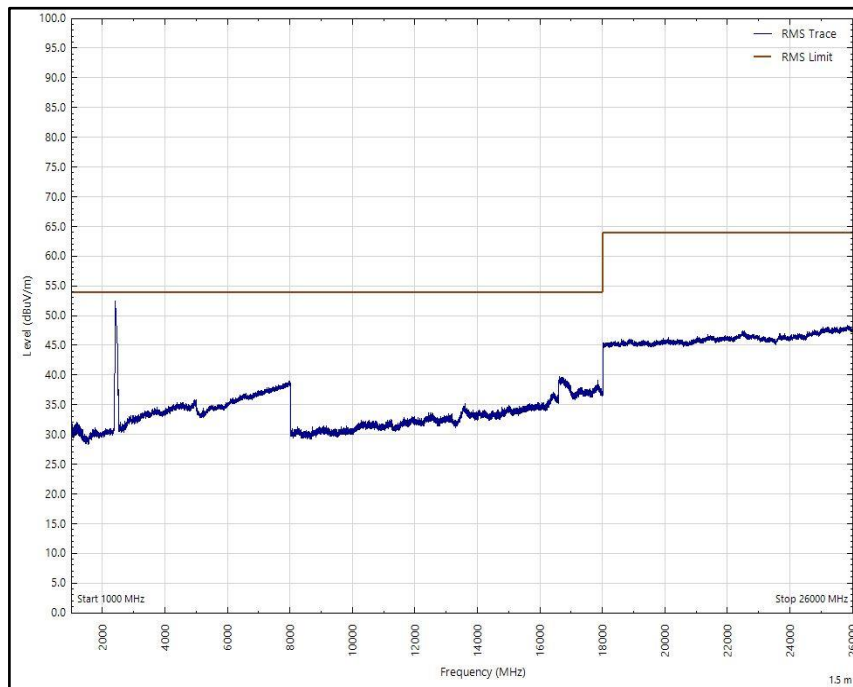


Figure 96 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

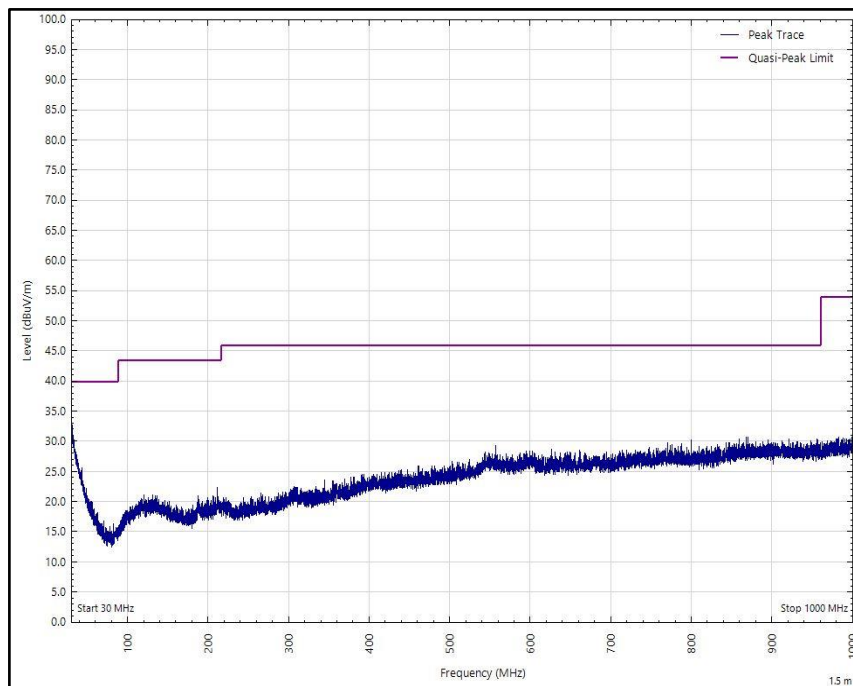


Figure 97 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

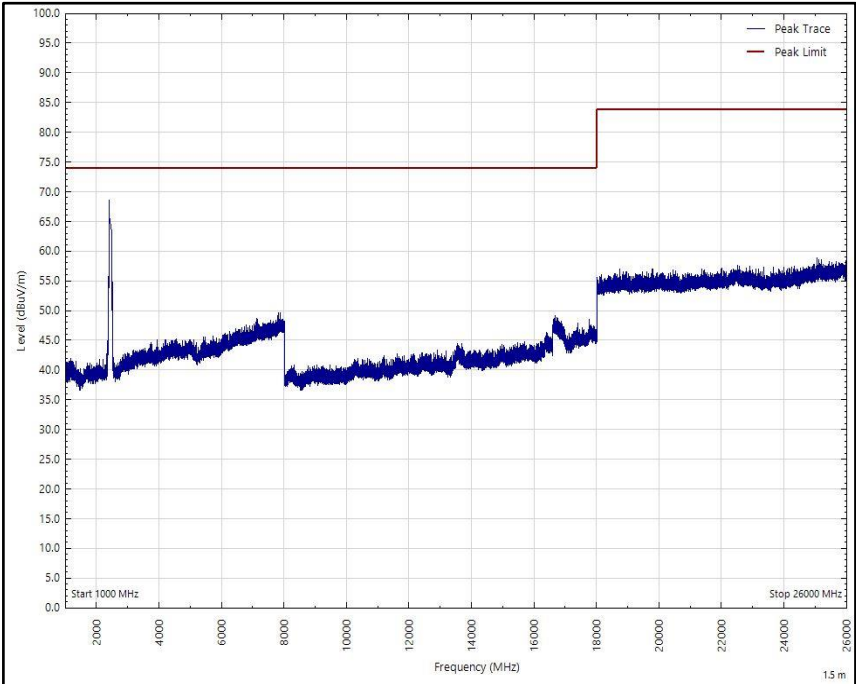


Figure 98 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

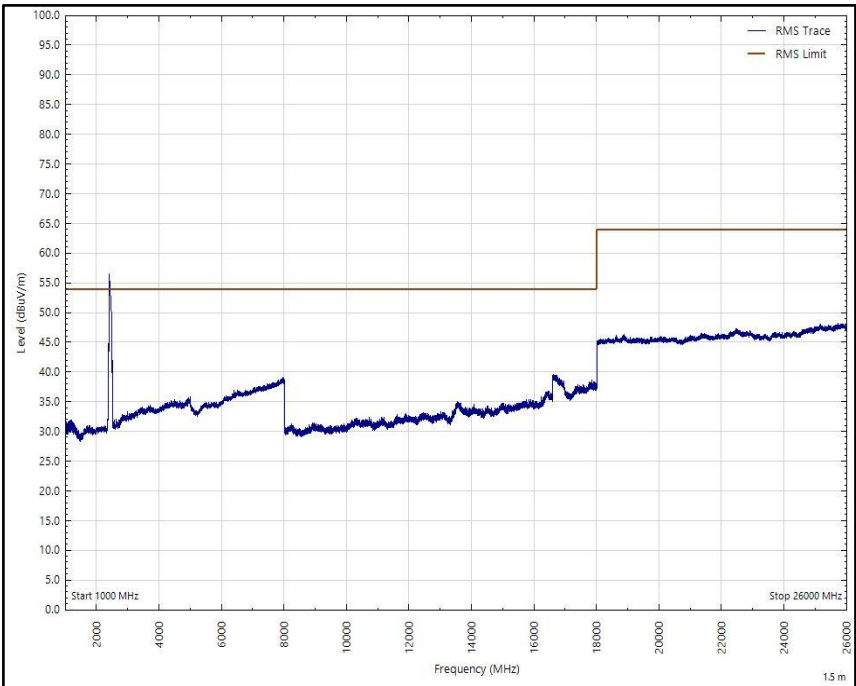


Figure 99 - 2437 MHz (CH6), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)



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

Table 32 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

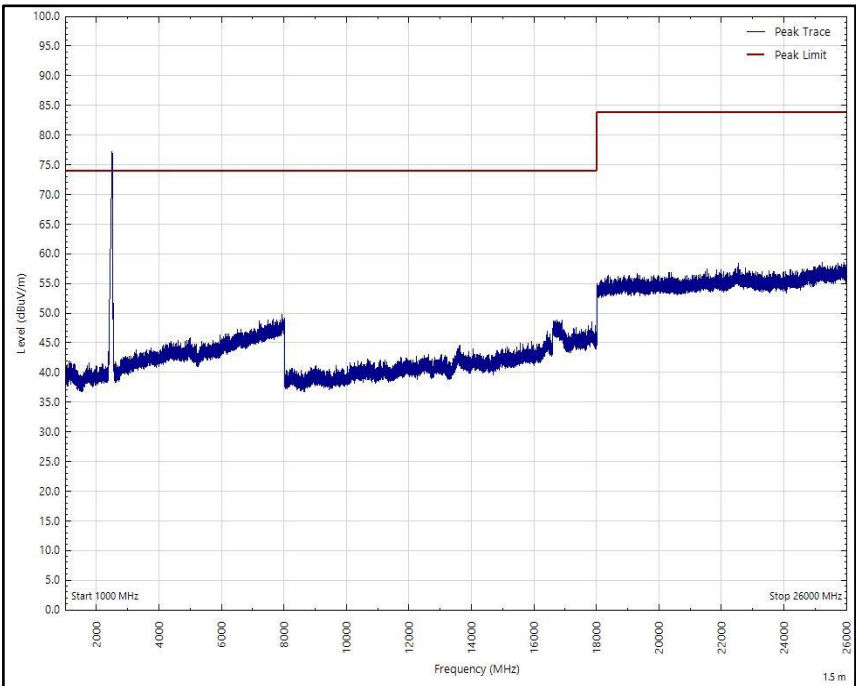


Figure 100 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

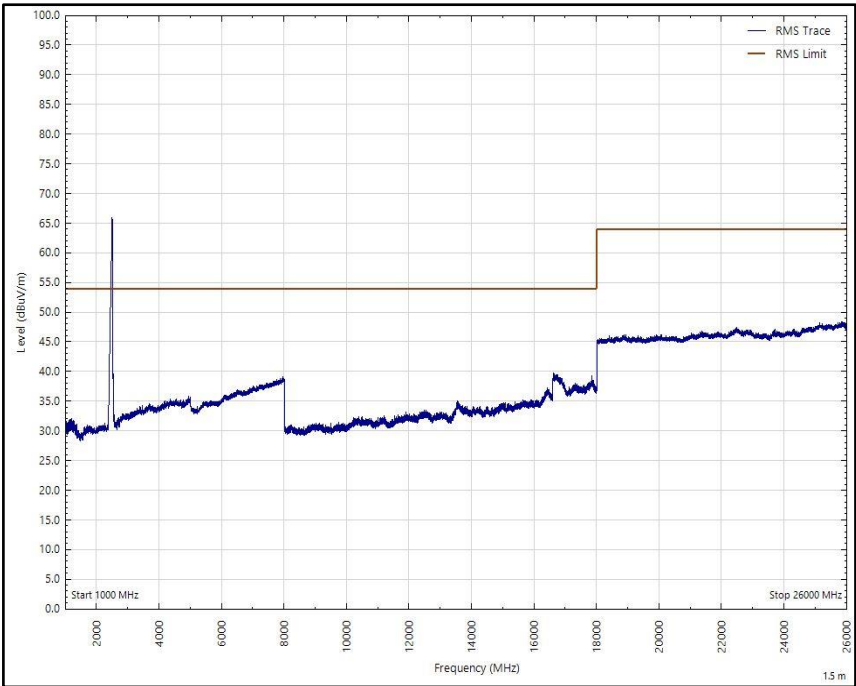


Figure 101 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

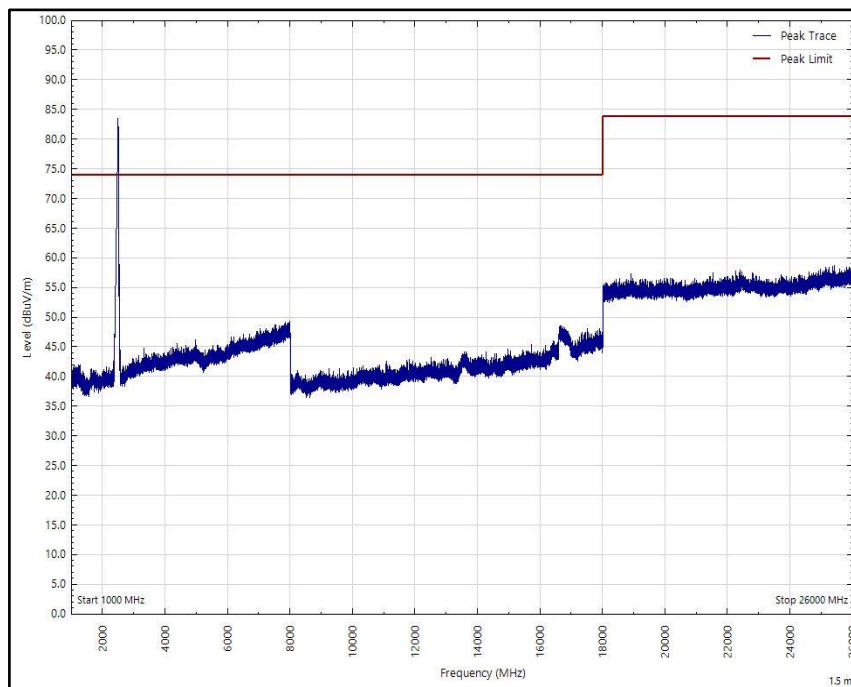


Figure 102 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

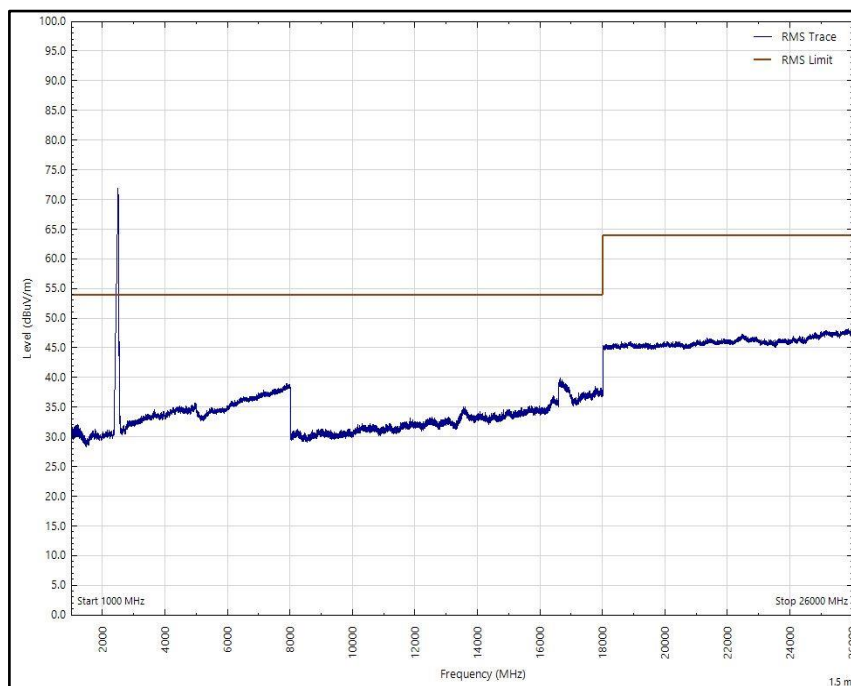


Figure 103 - 2472 MHz (CH13), HT20, CDD, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)



802.11ax 20 MHz Bandwidth

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

Table 33 - 2412 MHz (CH1), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

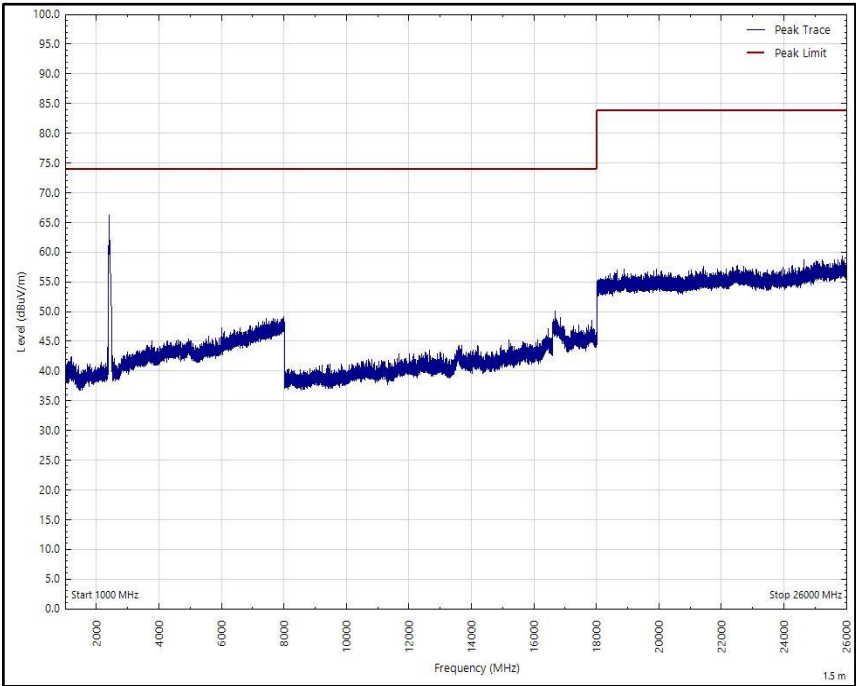


Figure 104 - 2412 MHz (CH1), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

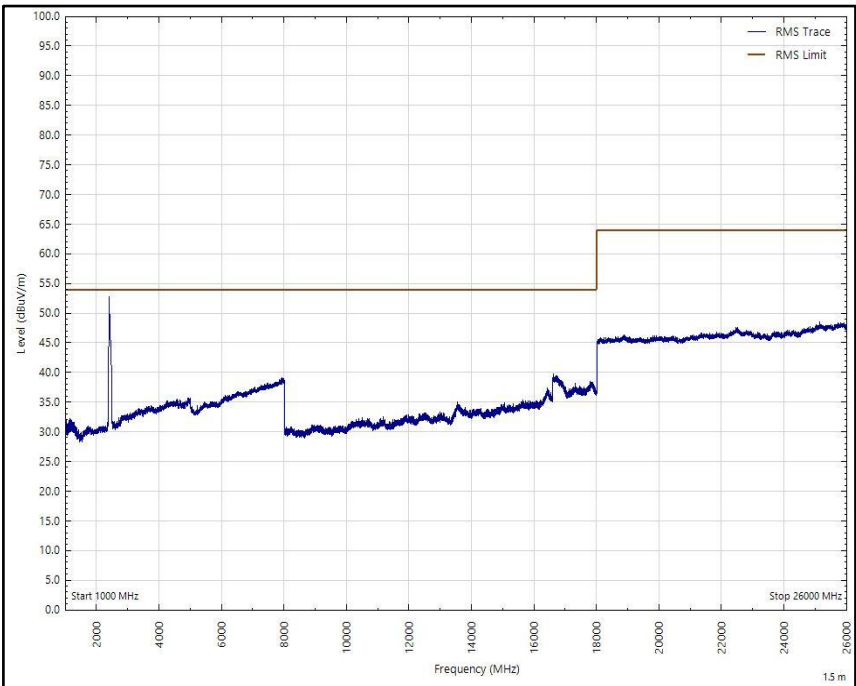




Figure 105 - 2412 MHz (CH1), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

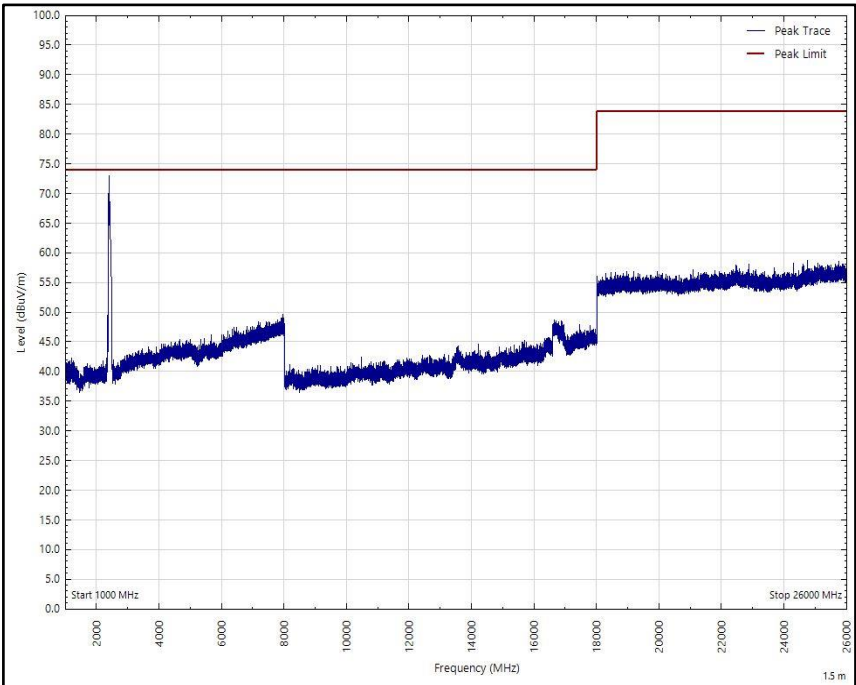


Figure 106 - 2412 MHz (CH1), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

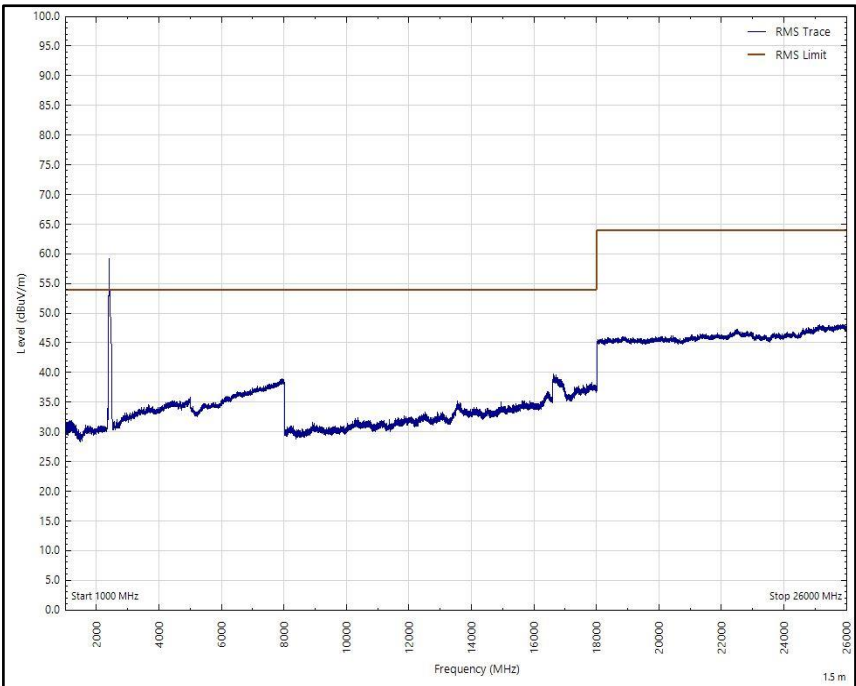


Figure 107 - 2412 MHz (CH1), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)

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

Table 34 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 26 GHz

*No emissions found within 6 dB of the limit.

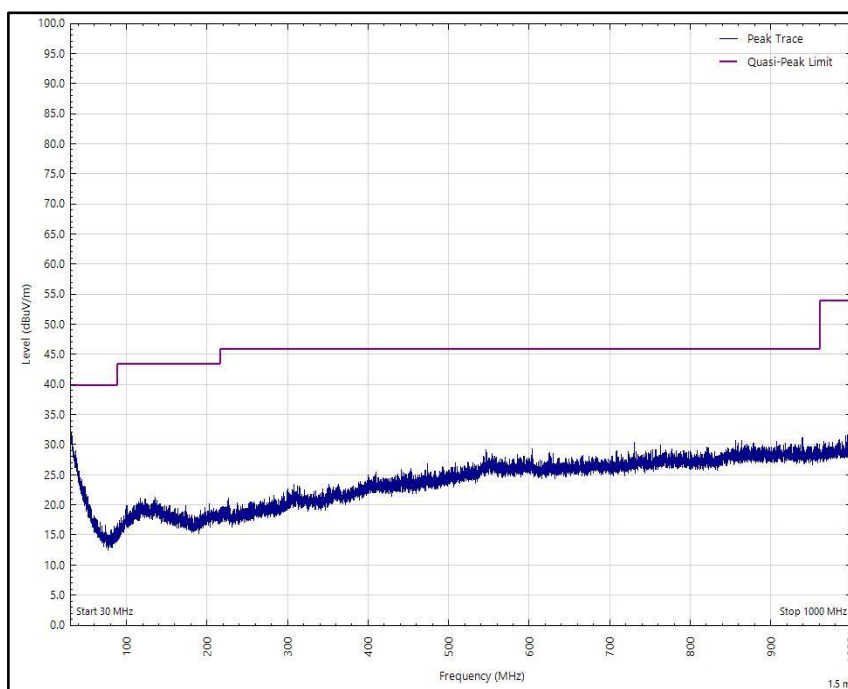


Figure 108 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

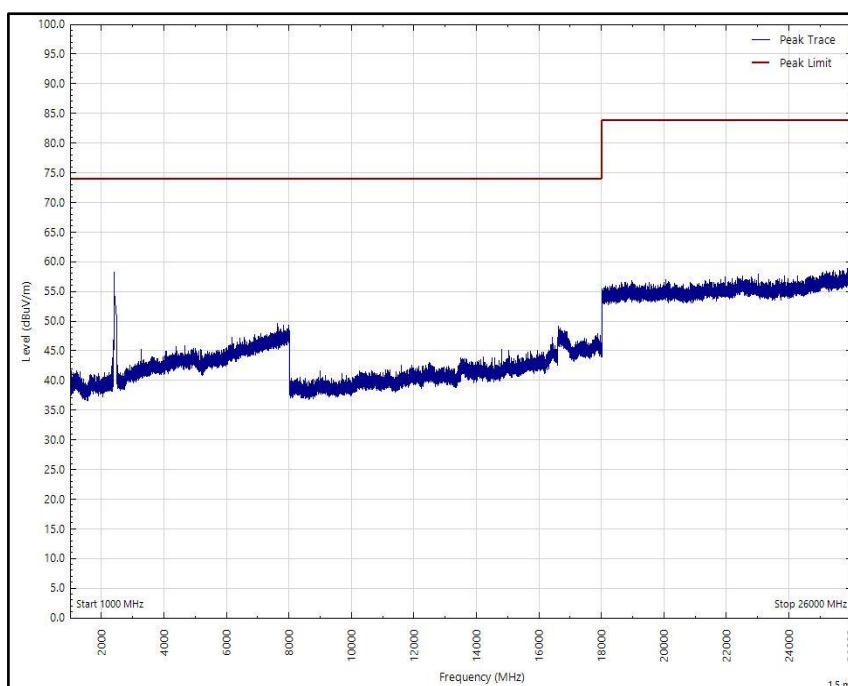


Figure 109 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

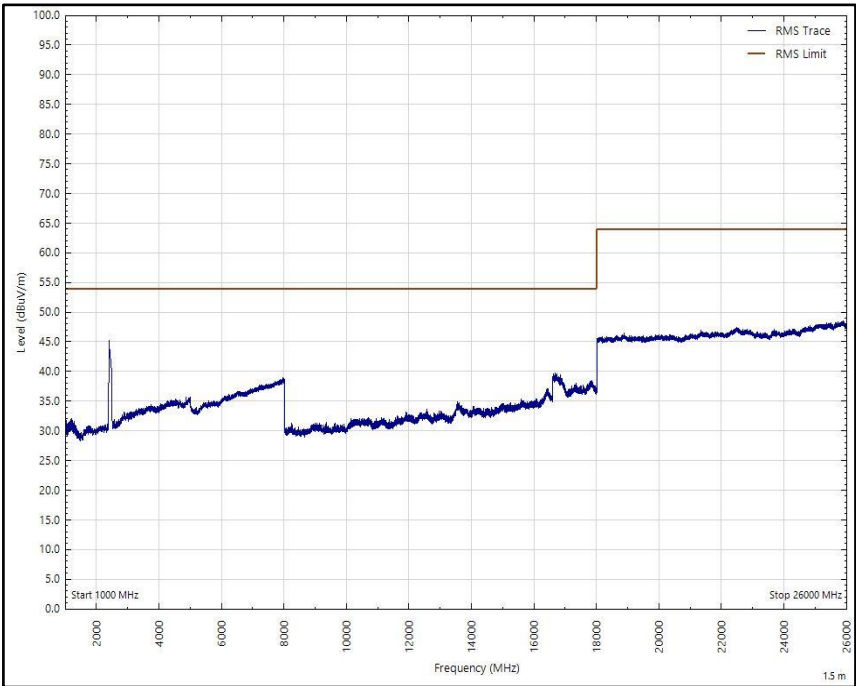


Figure 110 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

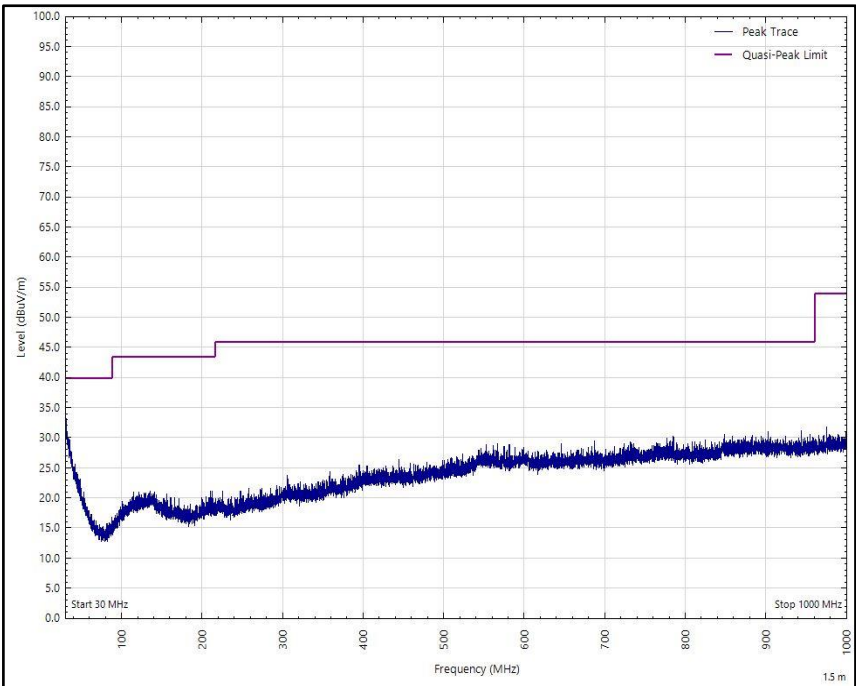


Figure 111 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

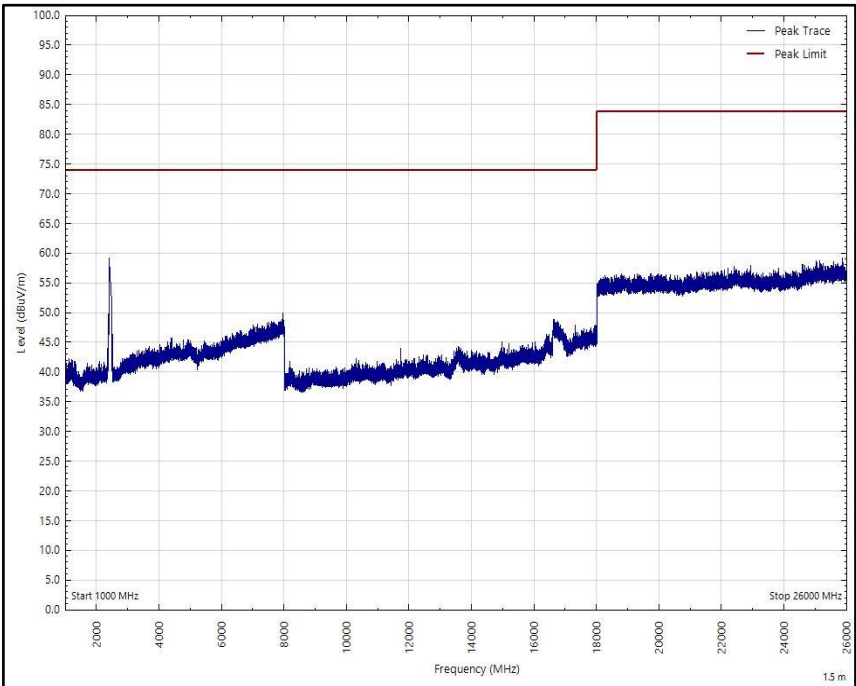


Figure 112 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

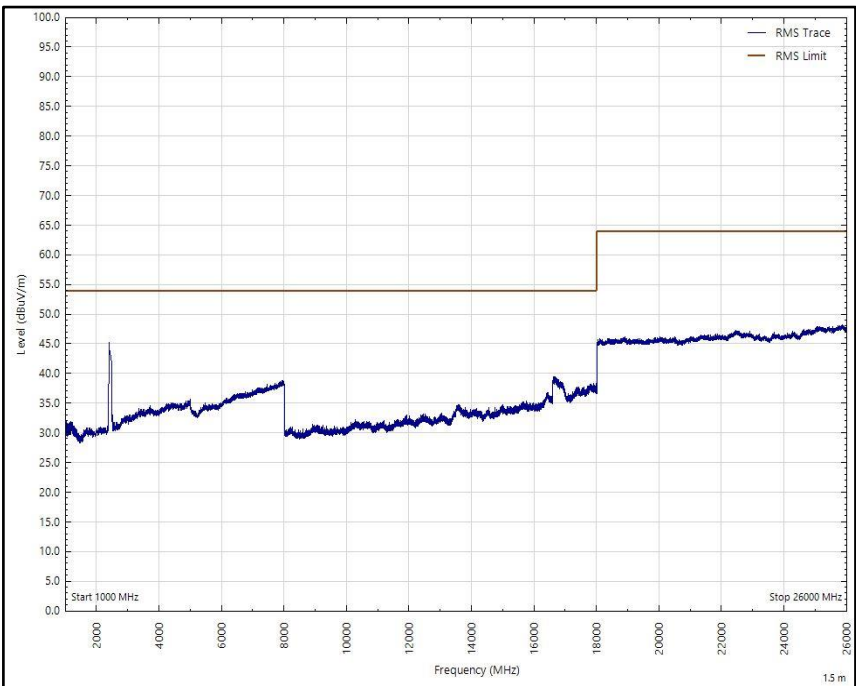


Figure 113 - 2437 MHz (CH6), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)



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

Table 35 - 2472 MHz (CH13), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

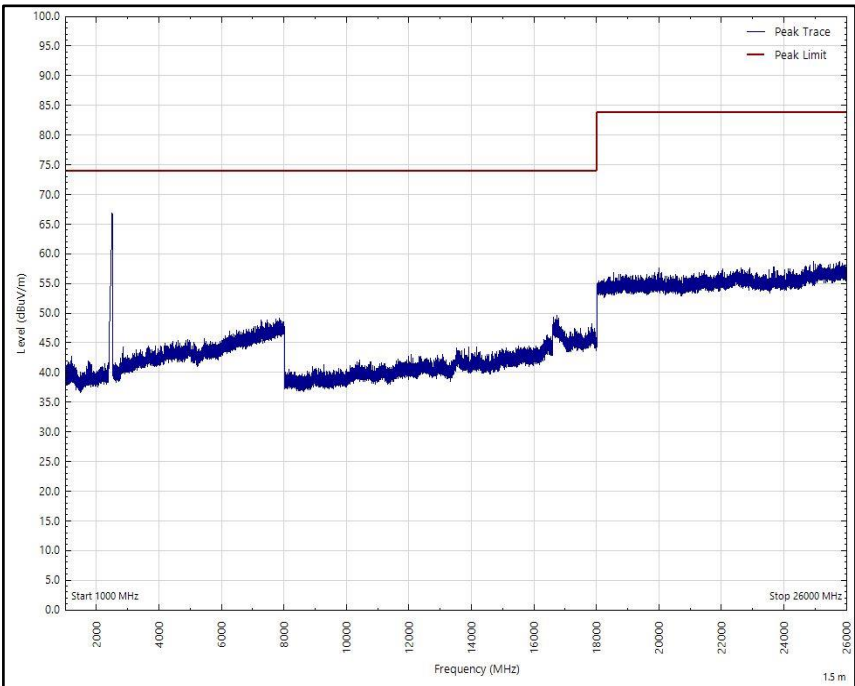


Figure 114 - 2472 MHz (CH13), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (Peak)

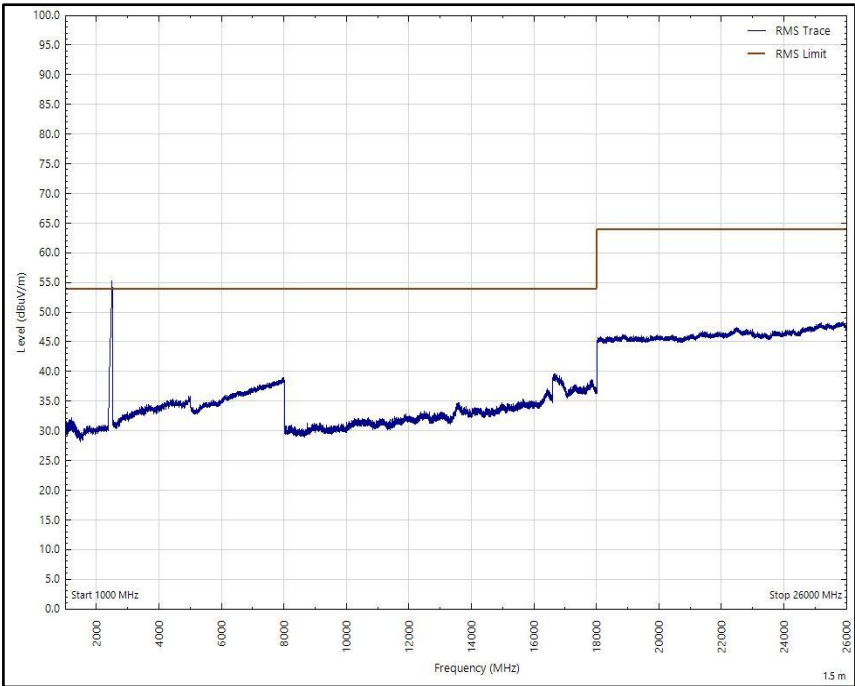


Figure 115 - 2472 MHz (CH13), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal (rms)

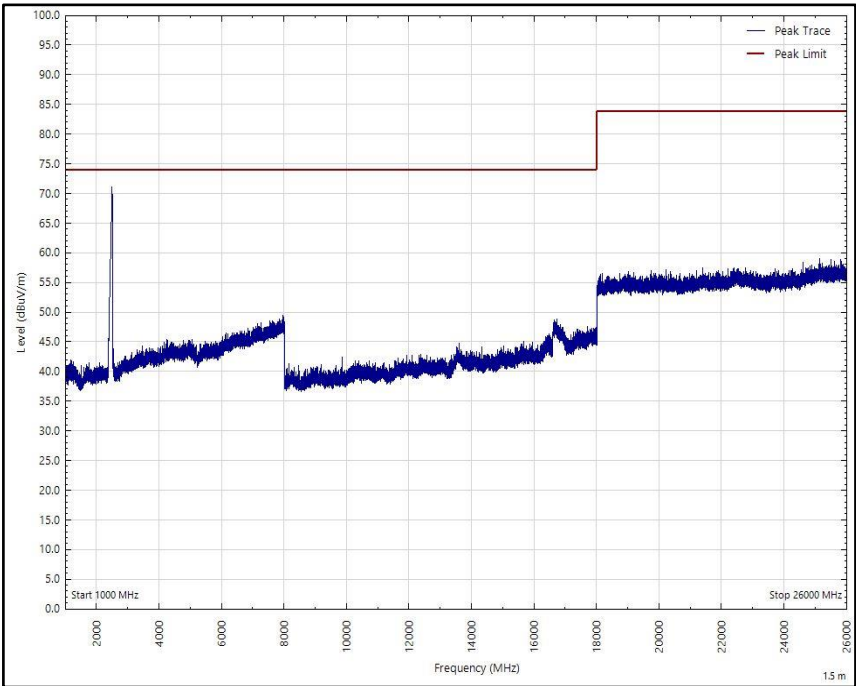


Figure 116 - 2472 MHz (CH13), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (Peak)

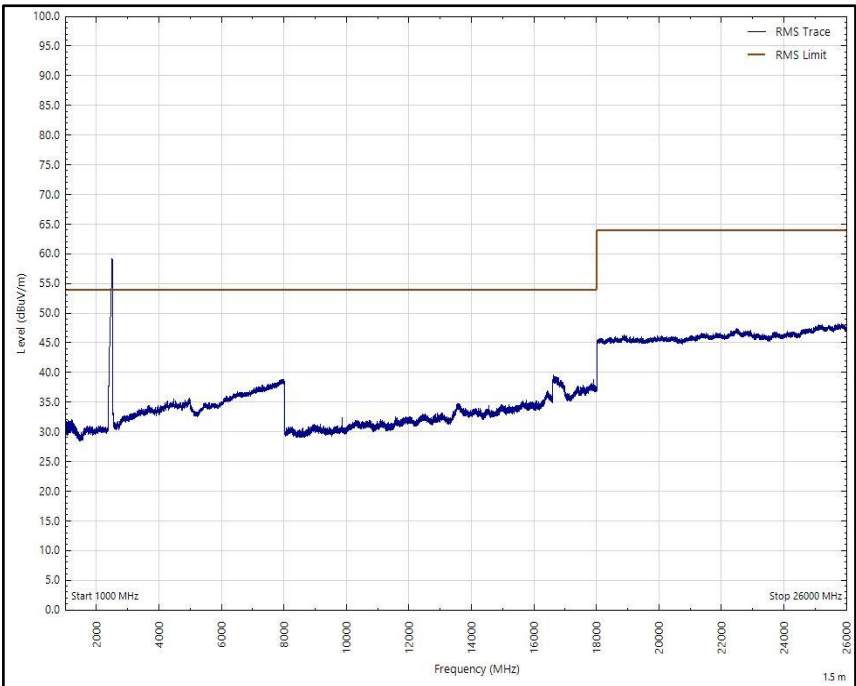


Figure 117 - 2472 MHz (CH13), HE20, RU26-0, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical (rms)



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

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

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

ISED RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.



2.3.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Power Supply Unit	Farnell	LB30-4	158	-	O/P Mon
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	27-Jul-2022
Antenna 18-40GHz (Double Ridge Guide)	Q-Par Angus Ltd	QSH 180K	1511	24	02-Oct-2021
18GHz - 40GHz Pre-Amplifier	Phase One	PSO4-0087	1534	12	18-Feb-2021
Antenna with permanent attenuator (Bilog)	Schaffner	CBL6143	2904	24	28-Nov-2021
8 - 18 GHz pre amp	Wright Technologies	PS06-0061/PS06-0060	4971	6	05-Nov-2020
Band Reject Filter - 2.425 GHz	Wainwright	WRCGV14-2390-2400-2450-2460-50SS	5066	12	01-Oct-2020
Band Reject Filter - 2.4585 GHz	Wainwright	WRCGV14-2423.5-2433.5-2483.5-2493.5-50SS	5068	12	01-Oct-2020
Band Reject Filter - 5.795GHz	Wainwright	WRCJV10-5725-5755-5835-5865-50SS	5070	12	26-Sep-2020
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	28-Nov-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5102	12	06-Oct-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	06-Oct-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	09-Dec-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5105	12	06-Oct-2020
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	10-Mar-2021
DRG Horn Antenna (7.5-18GHz)	Schwarzbeck	HWRD750	5216	12	10-Mar-2021
3 GHz High pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	5220	12	25-Mar-2021
Pre Amp 1 - 26.5 GHz	Agilent Technologies	8449B	5445	12	06-May-2021
1m K-Type Cable	Junkosha	MWX241-01000KMSKMS/A	5512	12	03-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5518	12	01-Apr-2021
8m N Type Cable	Junkosha	MWX221-08000NMSNMS/B	5522	12	24-Mar-2021



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
2m K Type Cable	Junkosha	MWX241-02000KMSKMS/A	5524	12	03-Apr-2021
1200 MHz Low Pass Filter (02)	Mini-Circuits	VLF-1200+	5560	12	23-May-2021
8 - 18 GHz Amplifier	Wright Technologies	APS06-0061	5595	12	25-Aug-2021

Table 36

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



2.4 Authorised Band Edges

2.4.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d)
ISED RSS-247, Clause 5.5, Clause 5.5

2.4.2 Equipment Under Test and Modification State

A2348, S/N: C07D100W02H7 - Modification State 0

2.4.3 Date of Test

10-July-2020 to 10-August-2020

2.4.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.4.

Authorised band edge measurements were performed, with the device operating in SISO and MIMO configurations, across the various modes supported by the device.

Since compliance with the power limits in section 2.1 was shown by RMS averaging across all symbols in the signaling alphabet, a 30 dBc limit rather than 20 dBc limit was applied in accordance with FCC 47 CFR Part 15, Clause 15.247 (d) and ISED RSS-247 section 5.5.

2.4.5 Environmental Conditions

Ambient Temperature 19.7 - 22.2 °C
Relative Humidity 44.9 - 53.5 %

2.4.6 Test Results

2.4 GHz WLAN

Mode	Data Rate /MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11b, Core 1	1 Mbps	-	-	2412	2400	-54.83
802.11g, Core 1	6 Mbps	-	-	2412	2400	-46.81
802.11n HT20, Core 1	MCS7	-	-	2412	2400	-38.24
802.11ax HE20, Core 1	MCS7	SU	-	2412	2400	-44.00
802.11ax HE20, Core 1	MCS7	26	0	2412	2400	-50.86

Table 37 - SISO Authorised Band Edge Results

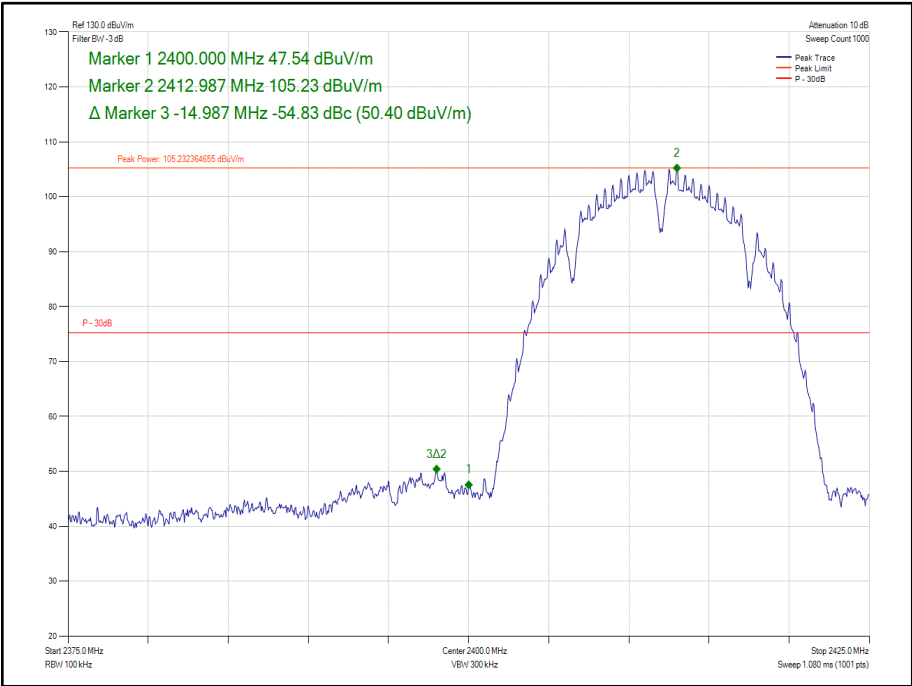


Figure 118 - 802.11b, Core 1 - 2412 MHz
Band Edge Frequency 2400 MHz

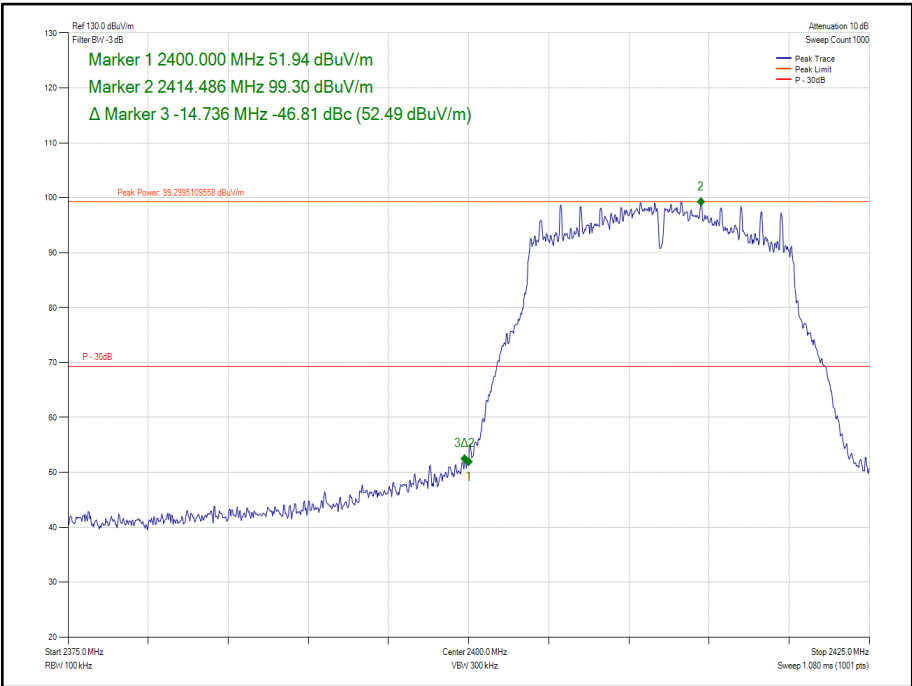


Figure 119- 802.11g, Core 1 - 2412 MHz
Band Edge Frequency 2400 MHz

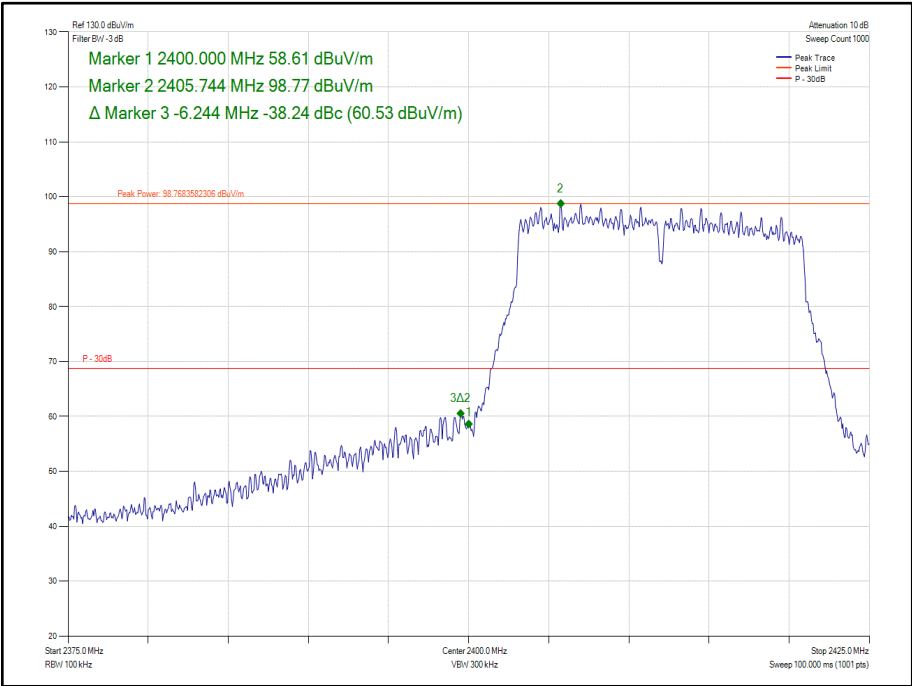


Figure 120- 802.11n HT20, Core 1 - 2412 MHz
Band Edge Frequency 2400 MHz

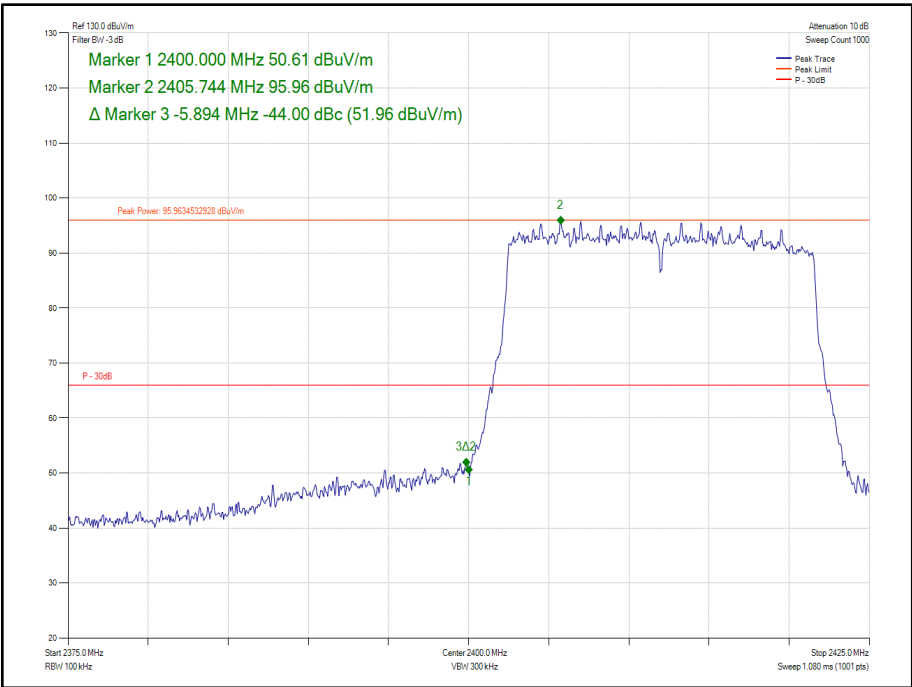


Figure 121- 802.11ax HE20, Core 1, SU - 2412 MHz
Band Edge Frequency 2400 MHz

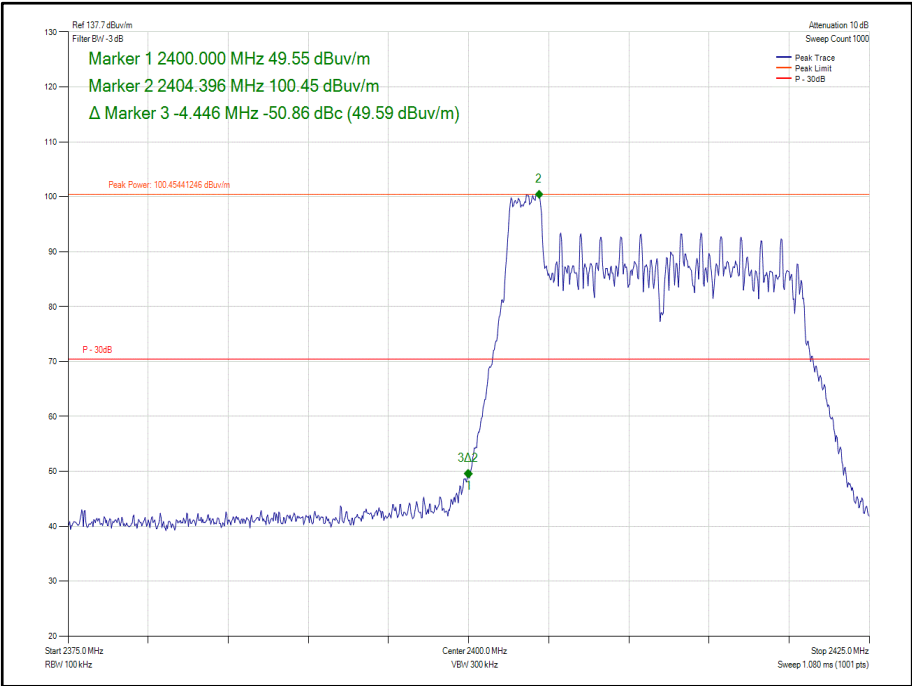
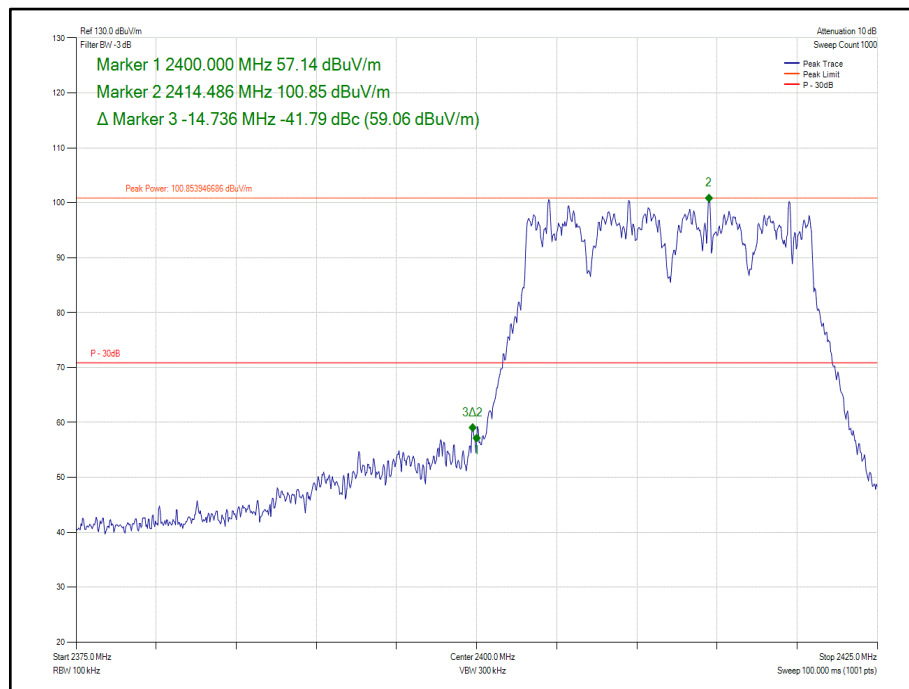


Figure 122- 802.11ax HE20, Core 1, 26-0 - 2412 MHz
Band Edge Frequency 2400 MHz

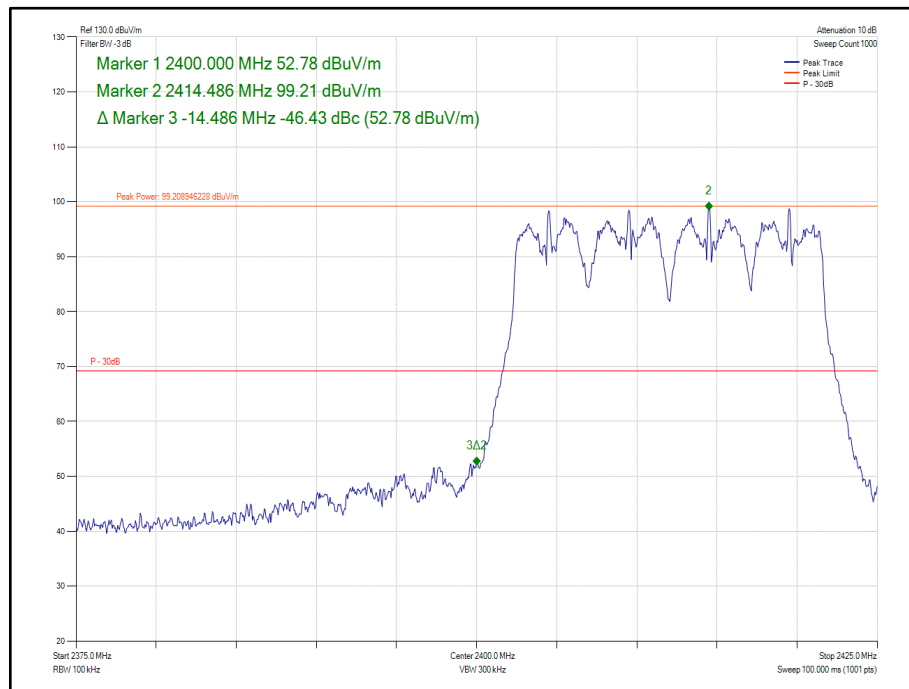


Mode	Data Rate /MCS	Resource size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11n HT20, Cores 0-1	MCS7	-	-	2412	2400	-41.79
802.11ax HE20, Cores 0 -1	MCS7	SU	-	2412	2400	-46.43
802.11ax HE20, Cores 0 -1	MCS7	26	0	2412	2400	-51.38

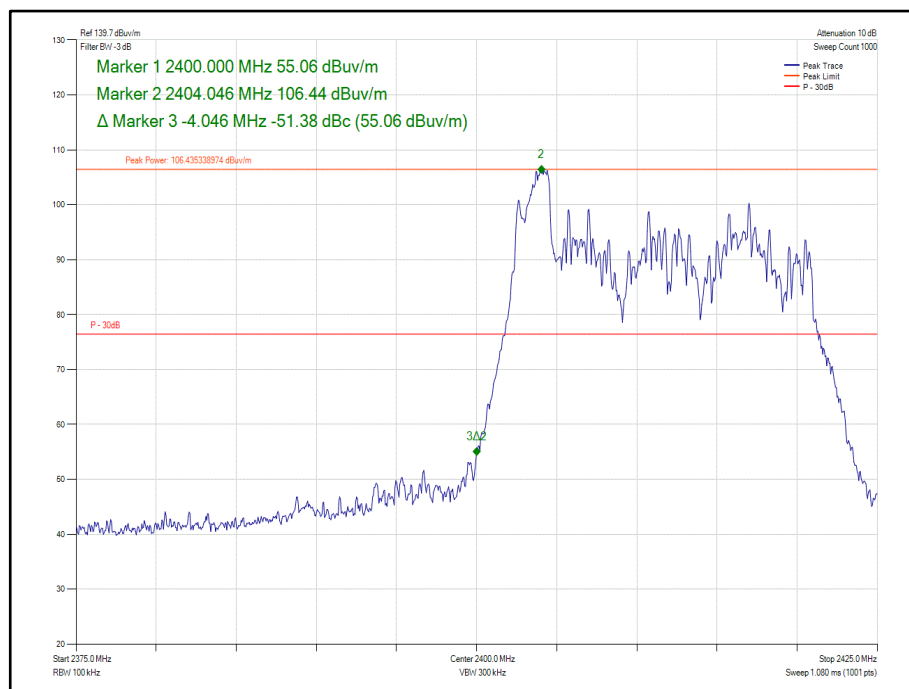
Table 38 - MIMO 2TX Authorised Band Edge Results



**Figure 123 - 802.11n HT20, Cores 0-1 - 2412 MHz
Band Edge Frequency 2400 MHz**



**Figure 124- 802.11ax HE20, Cores 0-1, SU - 2412 MHz
Band Edge Frequency 2400 MHz**



**Figure 125- 802.11ax HE20, Cores 0-1, 26-0 - 2412 MHz
Band Edge Frequency 2400 MHz**



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

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

ISED RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.



2.4.7 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 Due
Power Supply Unit	Farnell	LB30-4	158	-	O/P Mon
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
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
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	10-Mar-2021
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	17-Mar-2021
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5494	12	14-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5517	12	01-Apr-2021
8m N-Type Cable	Junkosha	MWX221-08000NMSNMS/B	5520	12	24-Mar-2021
EMI Test Receiver	Rohde & Schwarz	ESW44	5527	12	06-Feb-2021

Table 39

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.5 Restricted Band Edges

2.5.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.205
ISED RSS-GEN, Clause 8.10

2.5.2 Equipment Under Test and Modification State

A2348, S/N: C07D100W02H7 - Modification State 0

2.5.3 Date of Test

10-July-2020 to 10-August-2020

2.5.4 Test Method

Testing was performed in accordance with ANSI C63.10, clause 6.10.5 and 11.12.1.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 4.1.4.2.5. These are shown for information purposes and were used to determine the worst-case measurement point. Final average measurements were then taken in accordance with ANSI C63.10, clause 4.1.4.2.2 to obtain the measurement result recorded in the test results tables.

Where duty cycle corrections were required for average results, these are included in the result tables but are not shown on the plots.

The following conversion can be applied to convert from dB μ V/m to μ V/m:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$.

Restricted band edge measurements were performed, with the device operating in SISO and MIMO configurations, across the various modes supported by the device.

2.5.5 Environmental Conditions

Ambient Temperature	19.7 - 22.2 °C
Relative Humidity	44.9 - 53.5 %



2.5.6 Test Results

2.4 GHz WLAN

Mode	Data Rate /MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11b, Core 1	1 Mbps	-	-	2412	2390.0	55.66	44.88
802.11b, Core 1	1 Mbps	-	-	2462	2483.5	54.31	43.65
802.11b, Core 1	1 Mbps	-	-	2467	2483.5	55.21	45.49
802.11b, Core 1	1 Mbps	-	-	2472	2483.5	55.00	44.04
802.11g, Core 1	6 Mbps	-	-	2412	2390.0	56.53	44.30
802.11g, Core 1	6 Mbps	-	-	2462	2483.5	55.16	44.75
802.11g, Core 1	6 Mbps	-	-	2467	2483.5	60.06	44.13
802.11g, Core 1	6 Mbps	-	-	2472	2483.5	59.55	44.86
802.11n HT20, Core 1	MCS7	-	-	2412	2390.0	62.74	45.78
802.11n HT20, Core 1	MCS7	-	-	2462	2483.5	62.44	47.05
802.11n HT20, Core 1	MCS7	-	-	2467	2483.5	55.09	44.57
802.11n HT20, Core 1	MCS7	-	-	2472	2483.5	62.76	46.76
802.11ax HE20, Core 1	MCS7	SU	-	2412	2400	66.21	46.83
802.11ax HE20, Core 1	MCS7	26	0	2412	2400	54.00	43.78
802.11ax HE20, Core 1	MCS7	SU	-	2462	2483.5	58.51	45.88
802.11ax HE20, Core 1	MCS7	26	8	2462	2483.5	54.31	43.71
802.11ax HE20, Core 1	MCS7	SU	-	2467	2483.5	54.38	44.06
802.11ax HE20, Core 1	MCS7	26	8	2467	2483.5	54.05	43.15
802.11ax HE20, Core 1	MCS7	SU	-	2472	2483.5	62.88	45.00
802.11ax HE20, Core 1	MCS7	26	8	2472	2483.5	68.54	48.18

Table 40 - SISO Restricted Band Edge Results

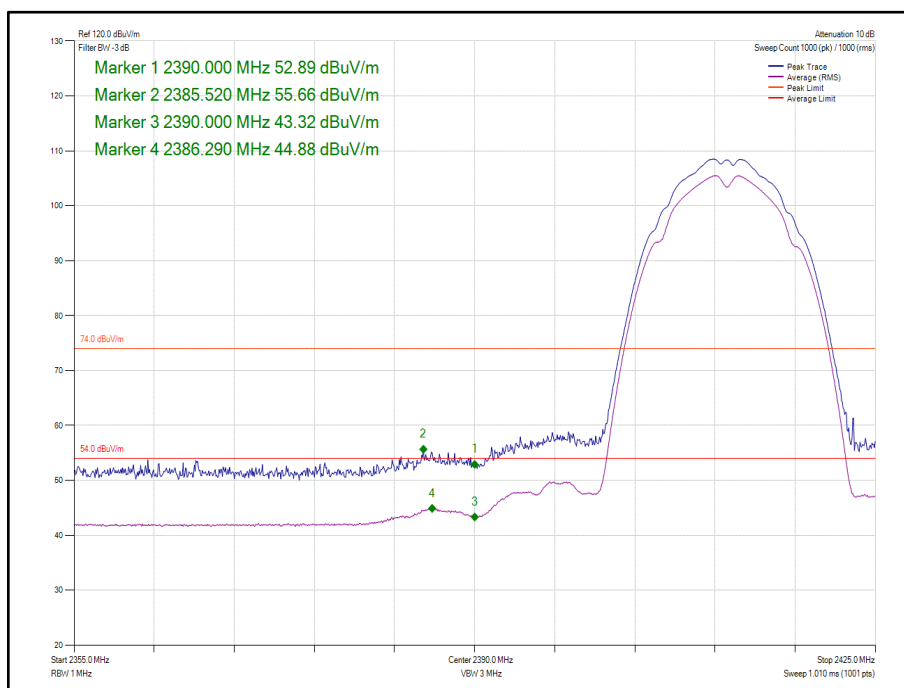


Figure 126 - 802.11b, Core 1 - 2412 MHz, Band Edge Frequency 2390.0 MHz

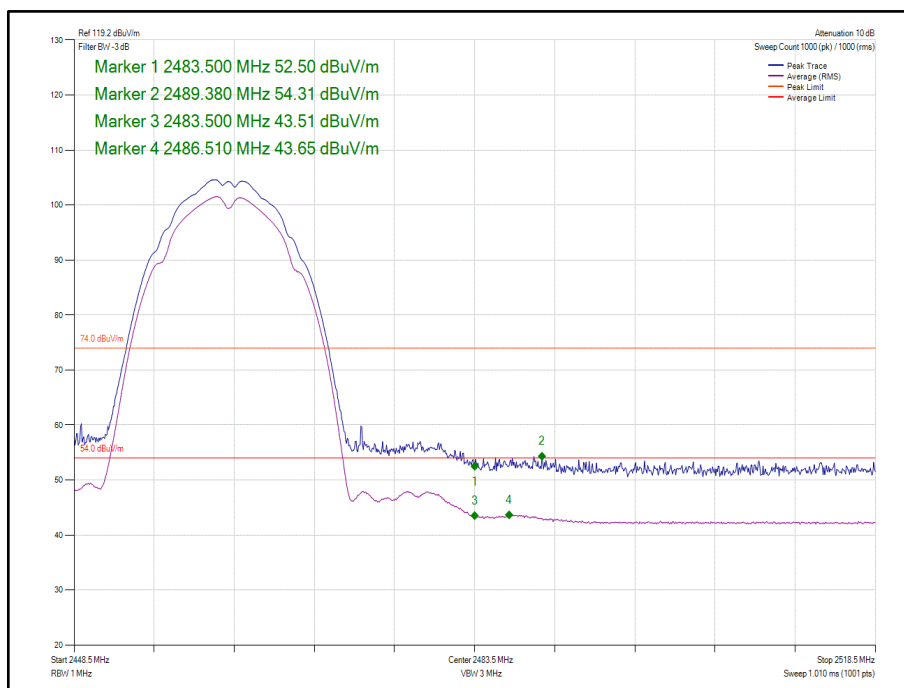


Figure 127 - 802.11b, Core 1 - 2462 MHz, Band Edge Frequency 2483.5 MHz

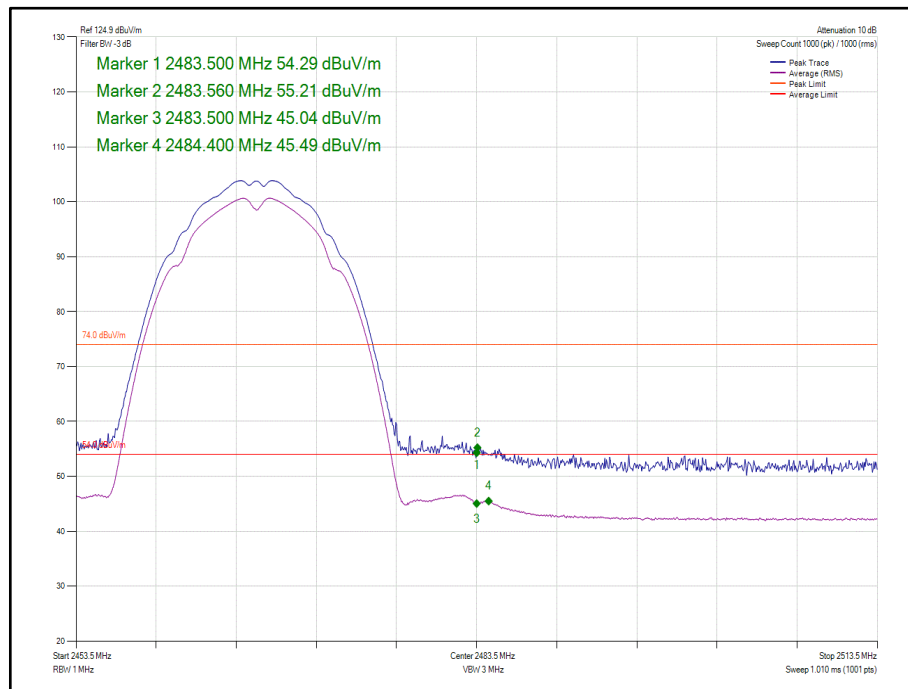


Figure 128 - 802.11b, Core 1 - 2467 MHz, Band Edge Frequency 2483.5 MHz

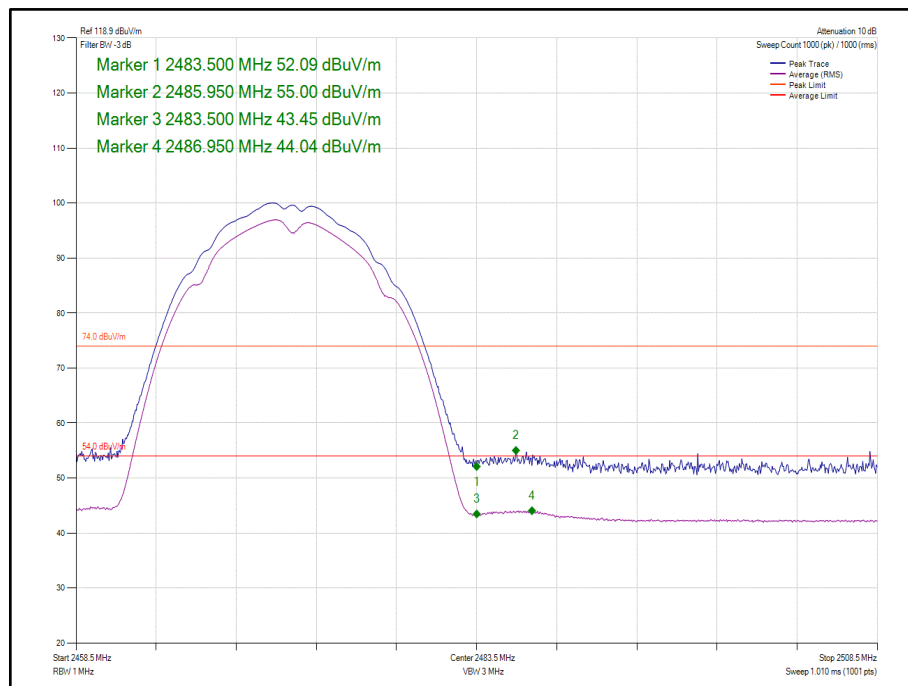


Figure 129 - 802.11b, Core 1 - 2472 MHz, Band Edge Frequency 2483.5 MHz

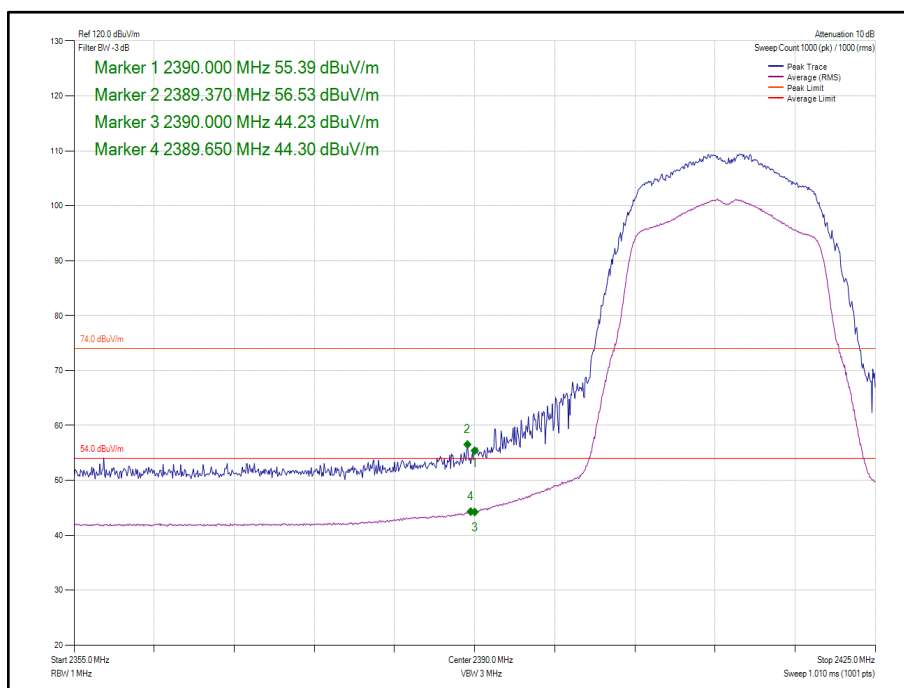


Figure 130 - 802.11g, Core 1 - 2412 MHz, Band Edge Frequency 2390.0 MHz

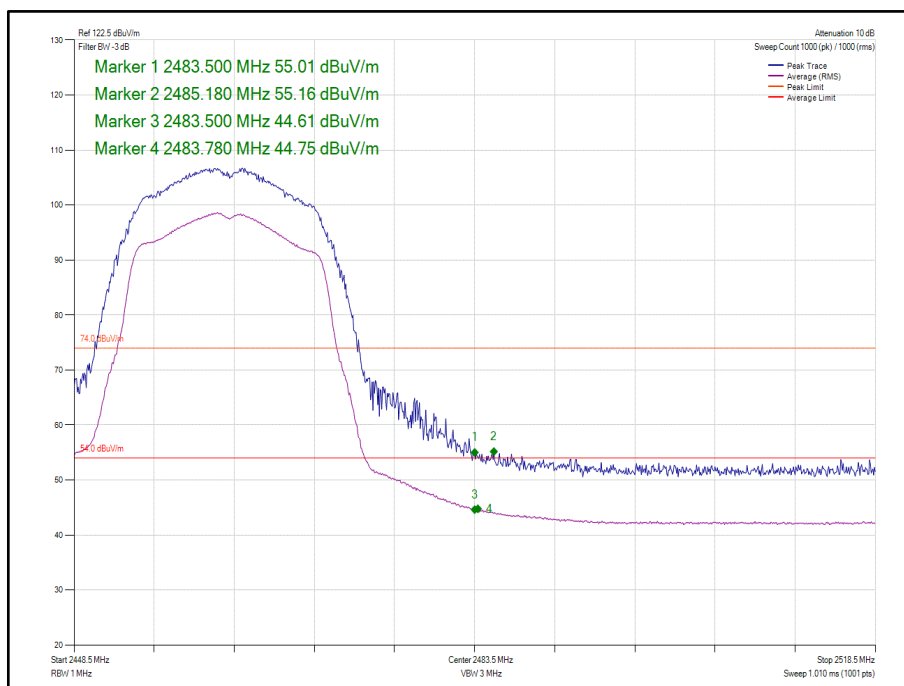


Figure 131 - 802.11g, Core 1 - 2462 MHz, Band Edge Frequency 2483.5 MHz

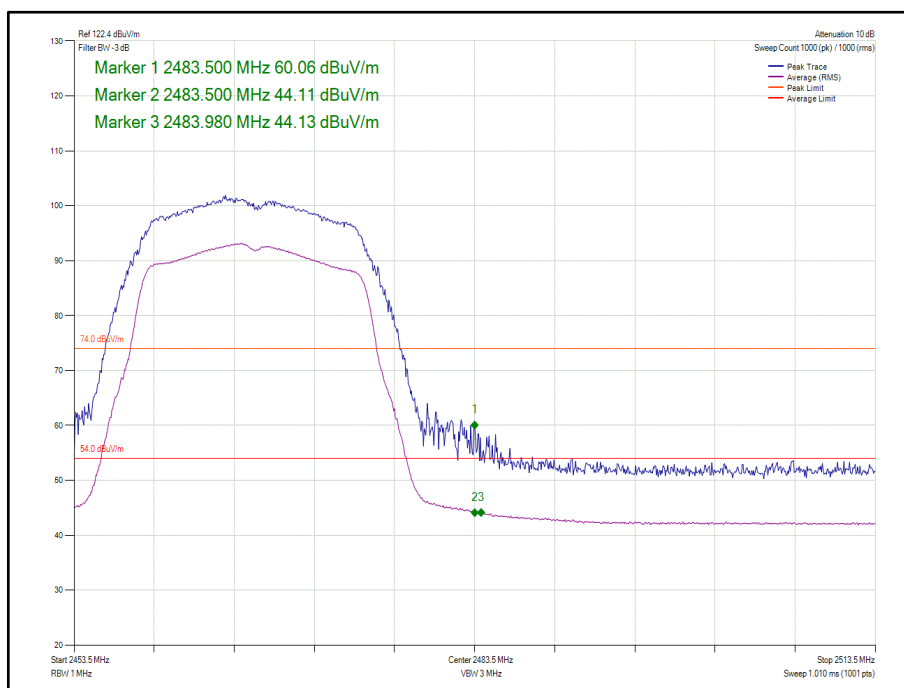


Figure 132 - 802.11g, Core 1 - 2467 MHz, Band Edge Frequency 2483.5 MHz

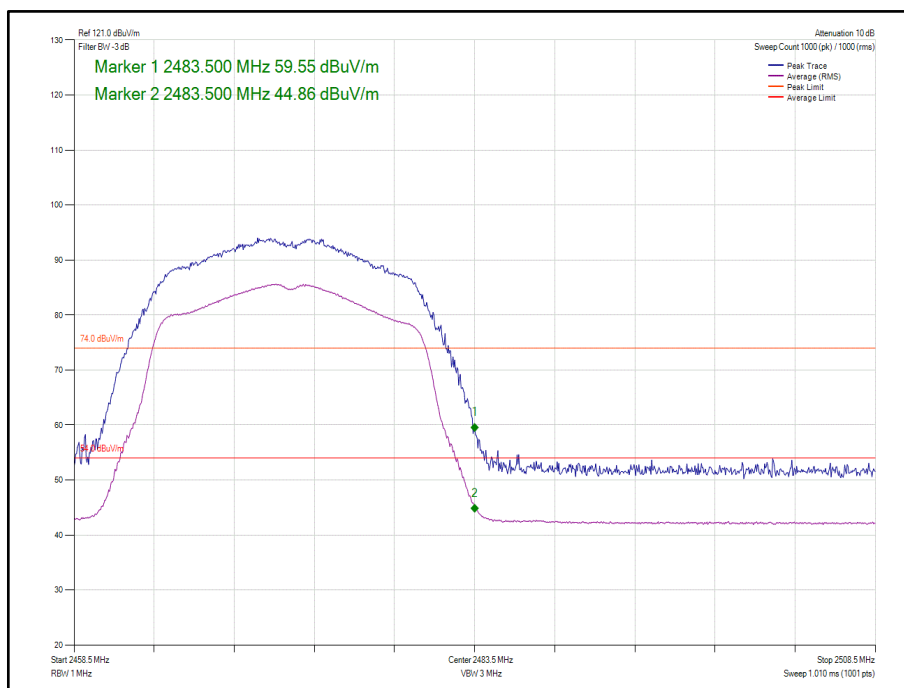


Figure 133 - 802.11g, Core 1 - 2472 MHz, Band Edge Frequency 2483.5 MHz

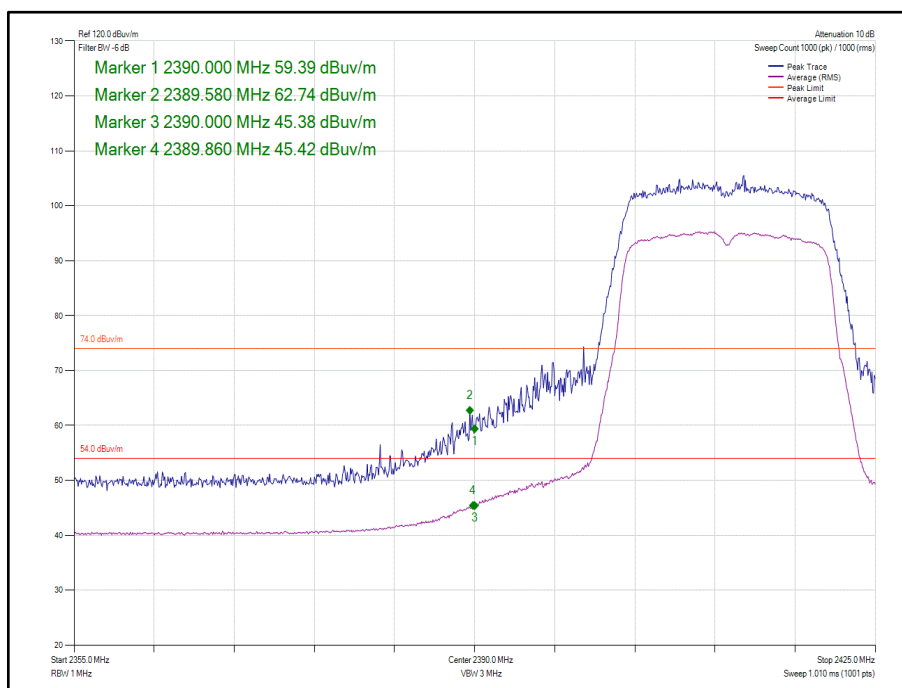


Figure 134 - 802.11n, HT20, Core 1 - 2412 MHz, Band Edge Frequency 2390 MHz

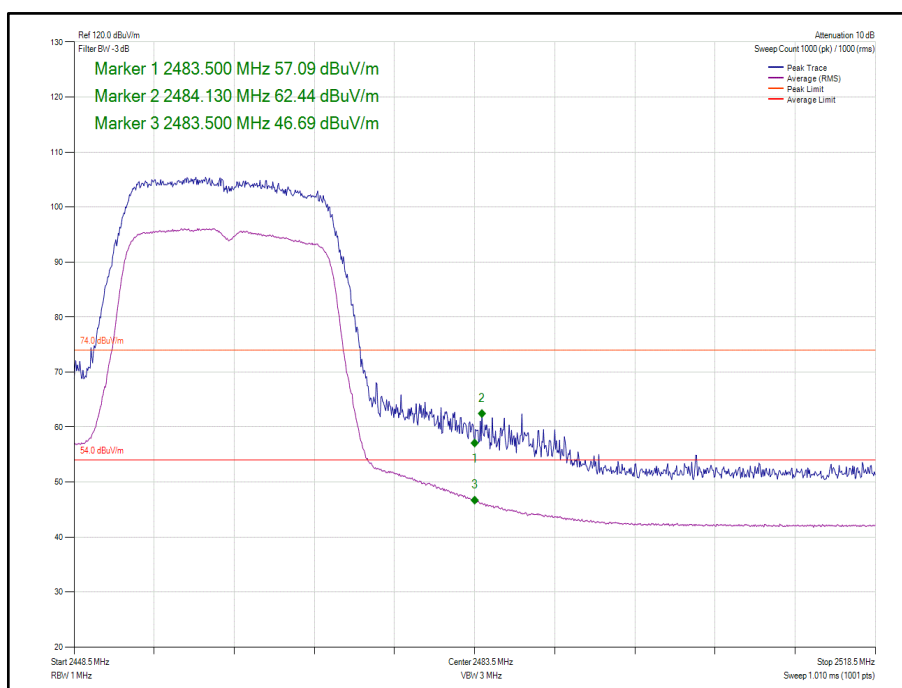


Figure 135 - 802.11n HT20, Core 1 - 2462 MHz, Band Edge Frequency 2483.5 MHz

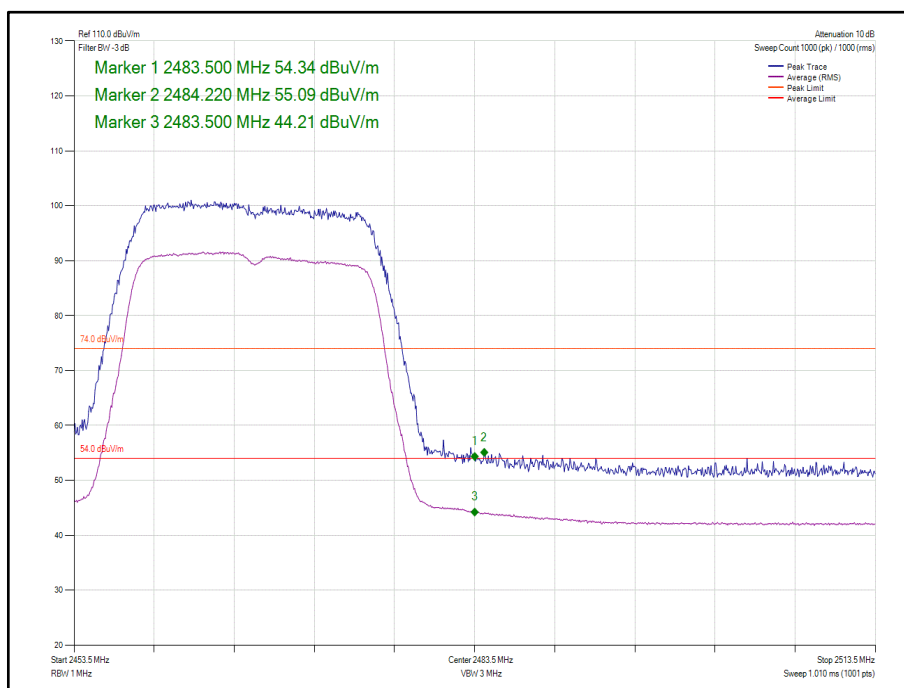


Figure 136 - 802.11n HT20, Core 1 - 2467 MHz, Band Edge Frequency 2483.5 MHz

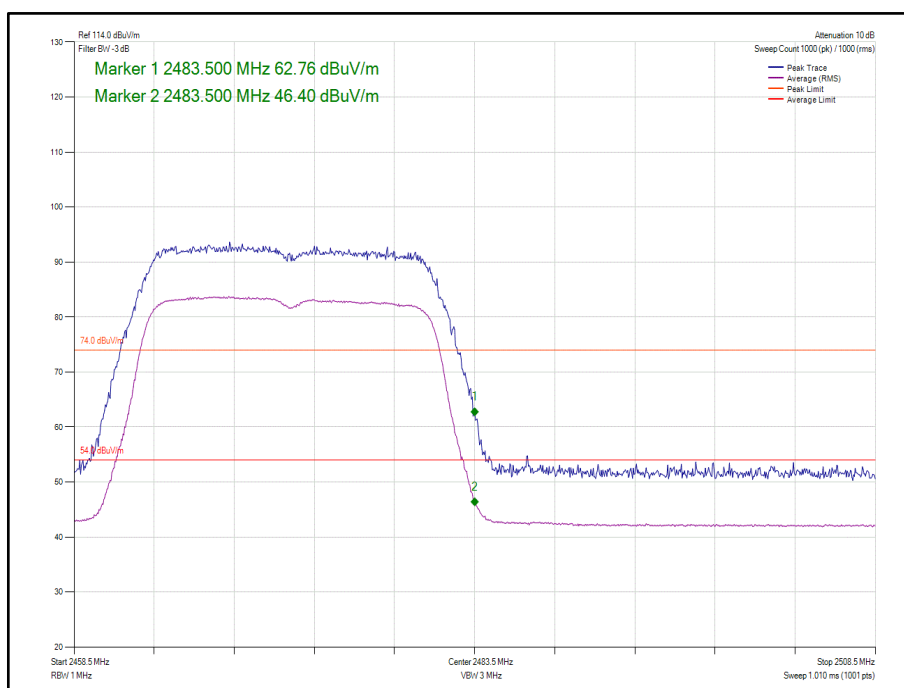


Figure 137 - 802.11n HT20, Core 1 - 2472 MHz, Band Edge Frequency 2483.5 MHz

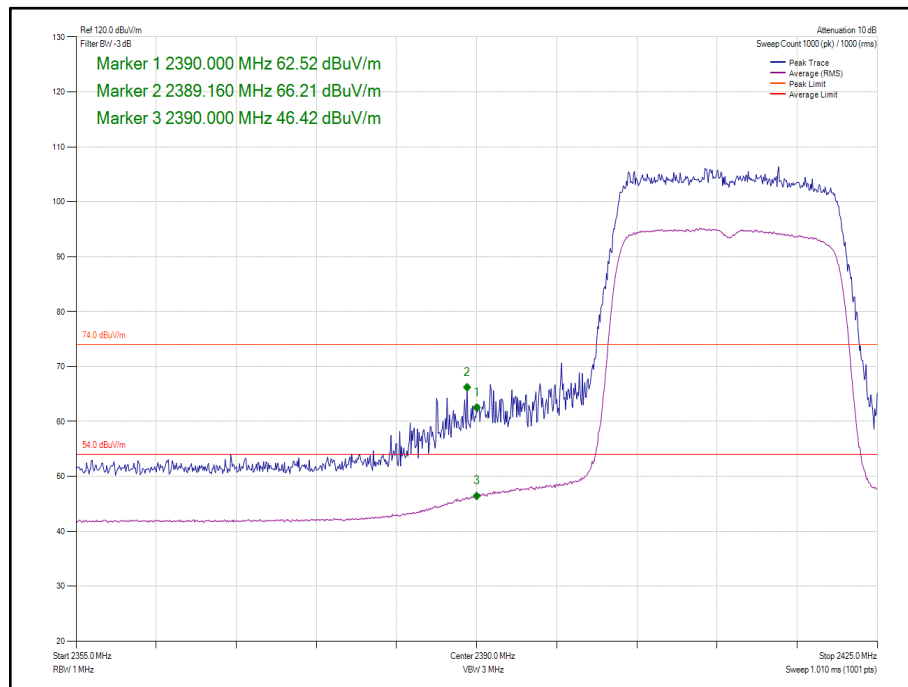


Figure 138 - 802.11ax HE20, Core 1, SU - 2412 MHz, Band Edge Frequency 2390 MHz

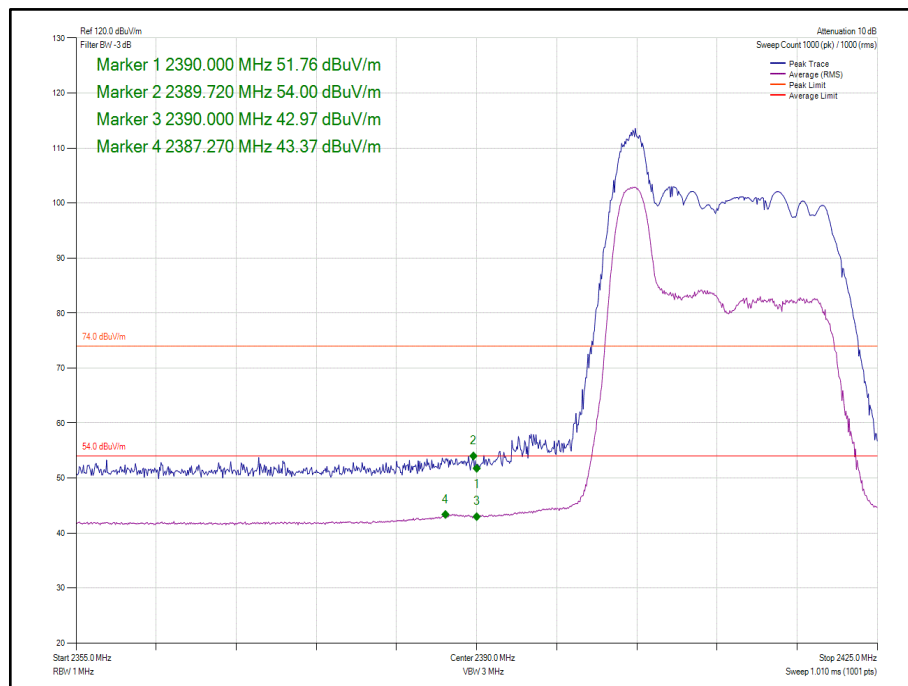


Figure 139 - 802.11ax HE20, Core 1, 26-0 - 2412 MHz, Band Edge Frequency 2390 MHz

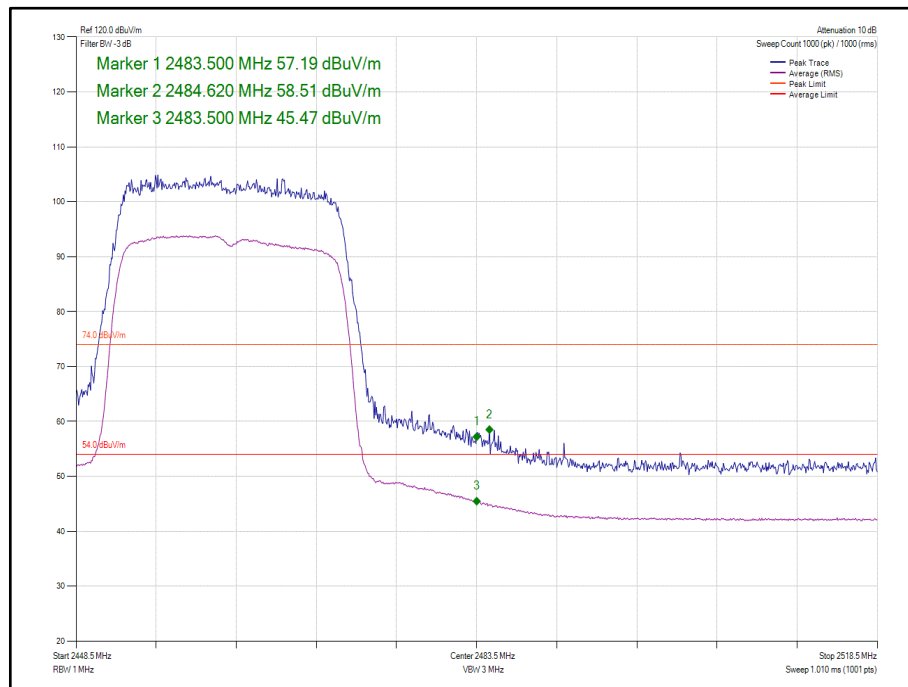


Figure 140 - 802.11ax HE20, Core 1, SU - 2462 MHz, Band Edge Frequency 2483.5 MHz

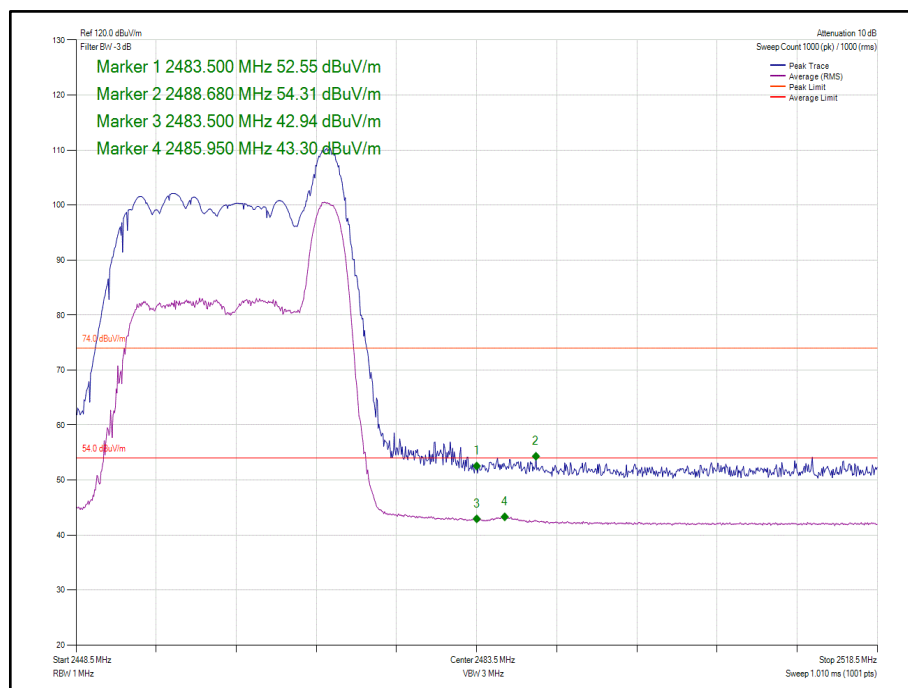


Figure 141 - 802.11ax HE20, Core 1, 26-8 - 2462 MHz, Band Edge Frequency 2483.5 MHz

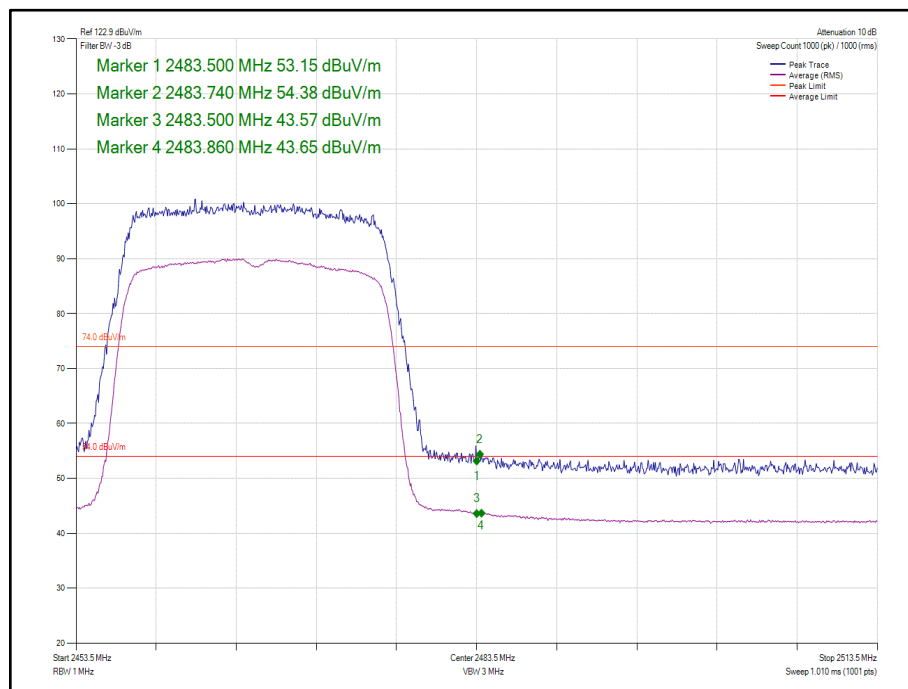


Figure 142 - 802.11ax HE20, Core 1, SU - 2467 MHz, Band Edge Frequency 2483.5 MHz

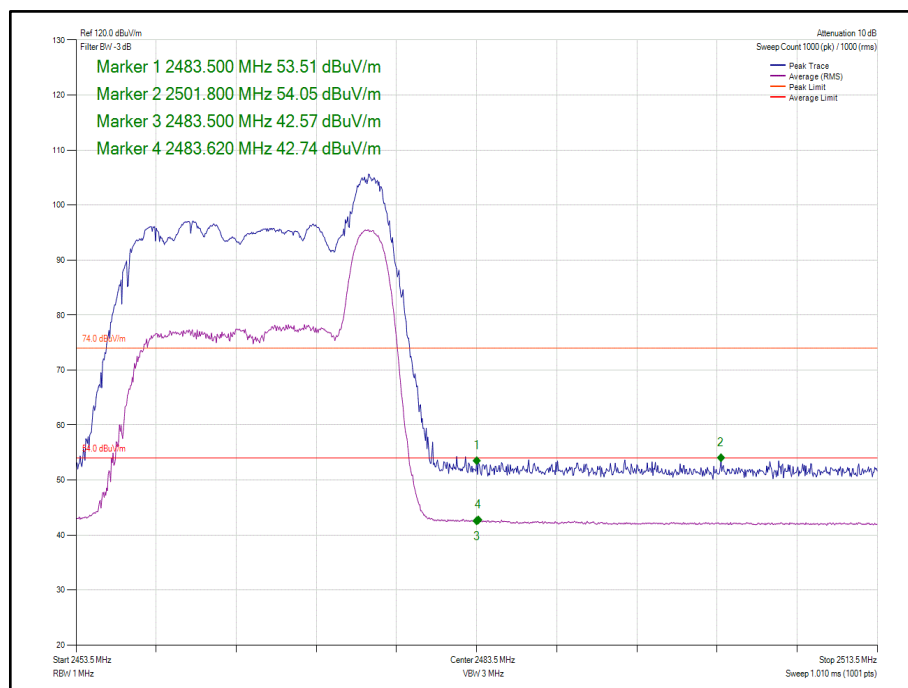


Figure 143 - 802.11ax HE20, Core 1, 26-8 - 2467 MHz, Band Edge Frequency 2483.5 MHz

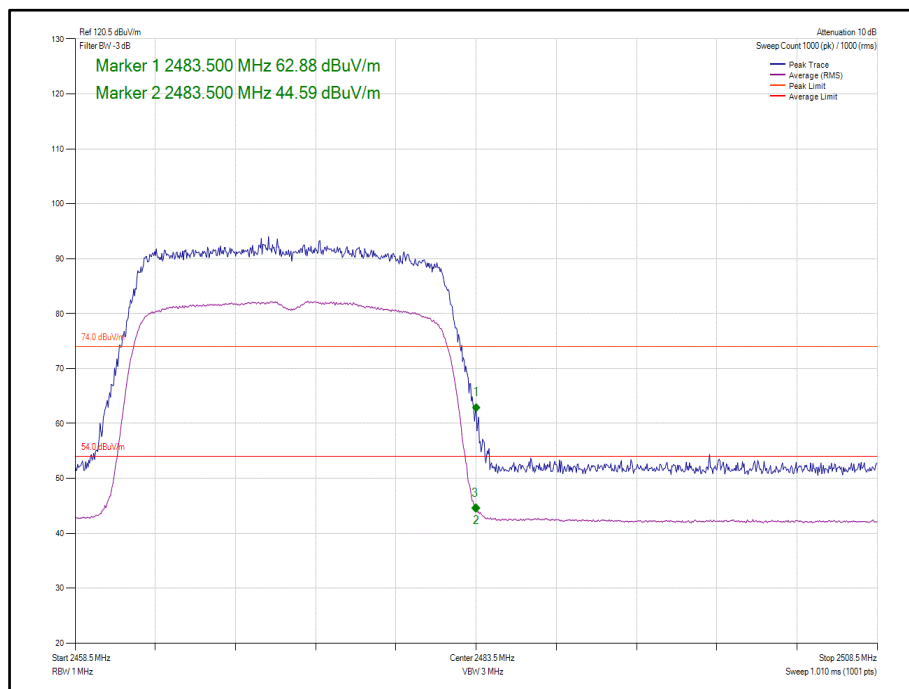


Figure 144 - 802.11ax HE20, Core 1, SU - 2472 MHz, Band Edge Frequency 2483.5 MHz

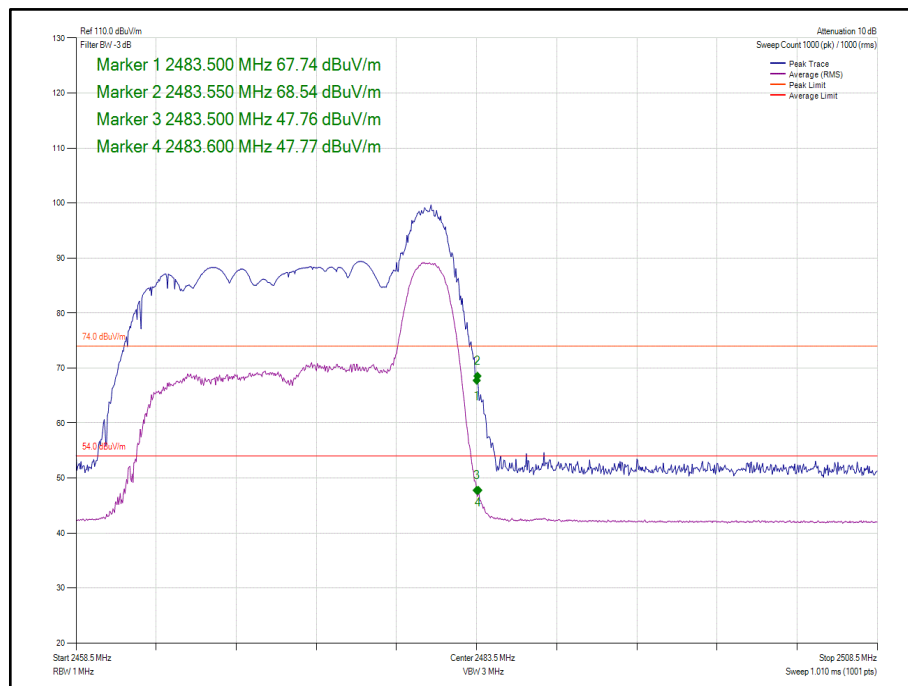


Figure 145 - 802.11ax HE20, Core 1, 26-8 - 2472 MHz, Band Edge Frequency 2483.5 MHz



Mode	Data Rate/MCS	Resource Size	Resource Index	TX Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11n HT20, Core 0-1	MCS7	-	-	2412	2390.0	63.67	48.49
802.11n HT20, Core 0-1	MCS7	-	-	2462	2483.5	65.59	50.89
802.11n HT20, Core 0-1	MCS7	-	-	2467	2483.5	59.89	48.55
802.11n HT20, Core 0-1	MCS7	-	-	2472	2483.5	62.42	48.72
802.11ax HE20, Core 0-1	MCS7	SU	-	2412	2400	59.52	46.06
802.11ax HE20, Core 0-1	MCS7	26	0	2412	2400	58.75	47.10
802.11ax HE20, Core 0-1	MCS7	SU	-	2462	2483.5	67.80	50.86
802.11ax HE20, Core 0-1	MCS7	26	8	2462	2483.5	59.75	49.09
802.11ax HE20, Core 0-1	MCS7	SU	-	2467	2483.5	58.63	47.35
802.11ax HE20, Core 0-1	MCS7	26	8	2467	2483.5	57.90	46.06
802.11ax HE20, Core 0-1	MCS7	SU	-	2472	2483.5	65.97	48.83
802.11ax HE20, Core 0-1	MCS7	26	8	2472	2483.5	69.59	49.08

Table 41 – MIMO 2TX Restricted Band Edge Results

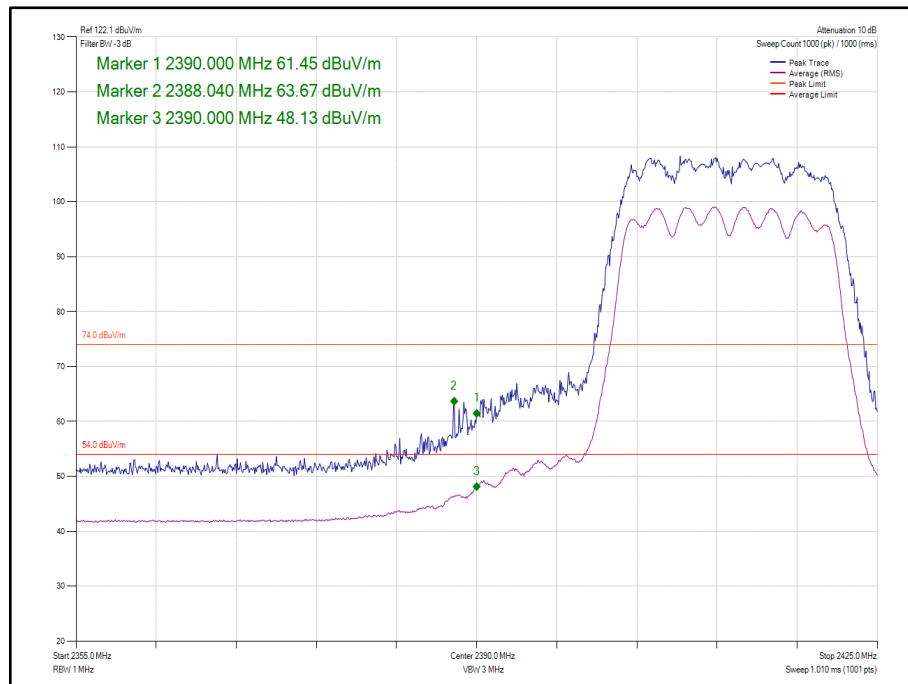


Figure 146 - 802.11n HT20, Core 0-1 - 2412 MHz, Band Edge Frequency 2390 MHz

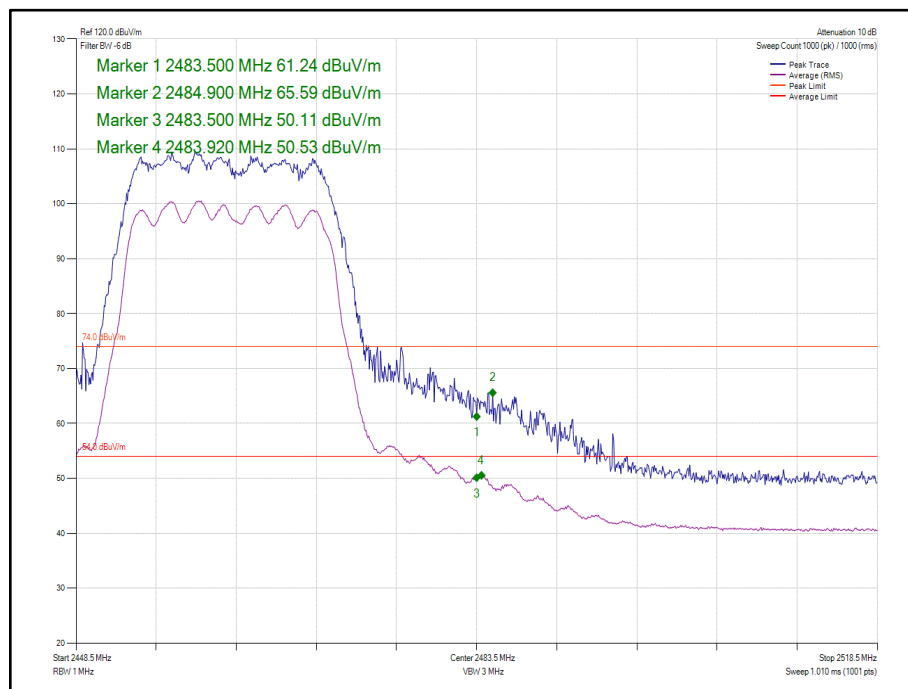


Figure 147 - 802.11n HT20, Core 0-1 - 2462 MHz, Band Edge Frequency 2483.5 MHz

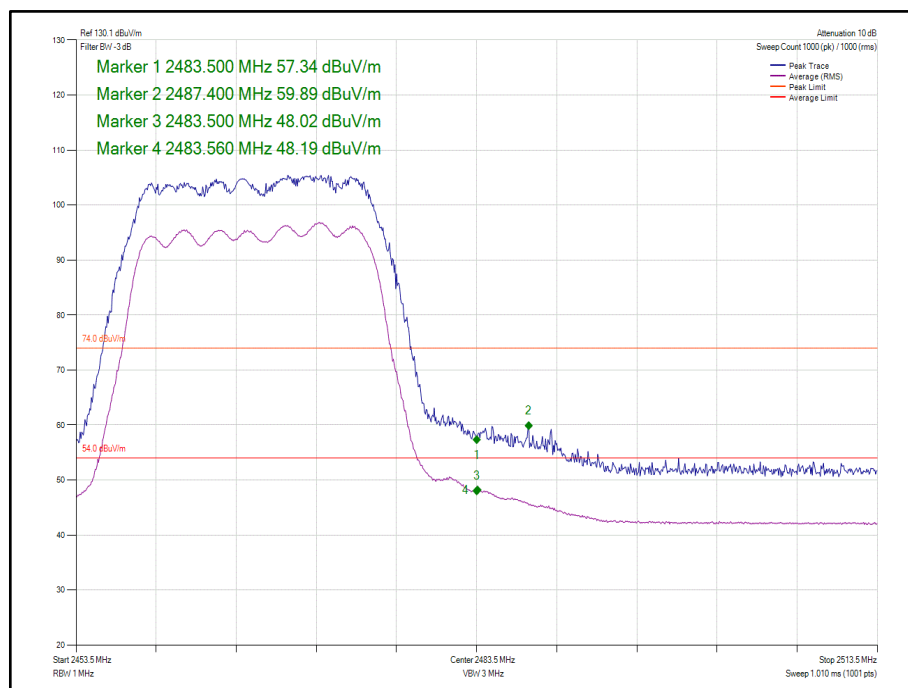


Figure 148 - 802.11n HT20, Core 0-1 - 2467 MHz, Band Edge Frequency 2483.5 MHz

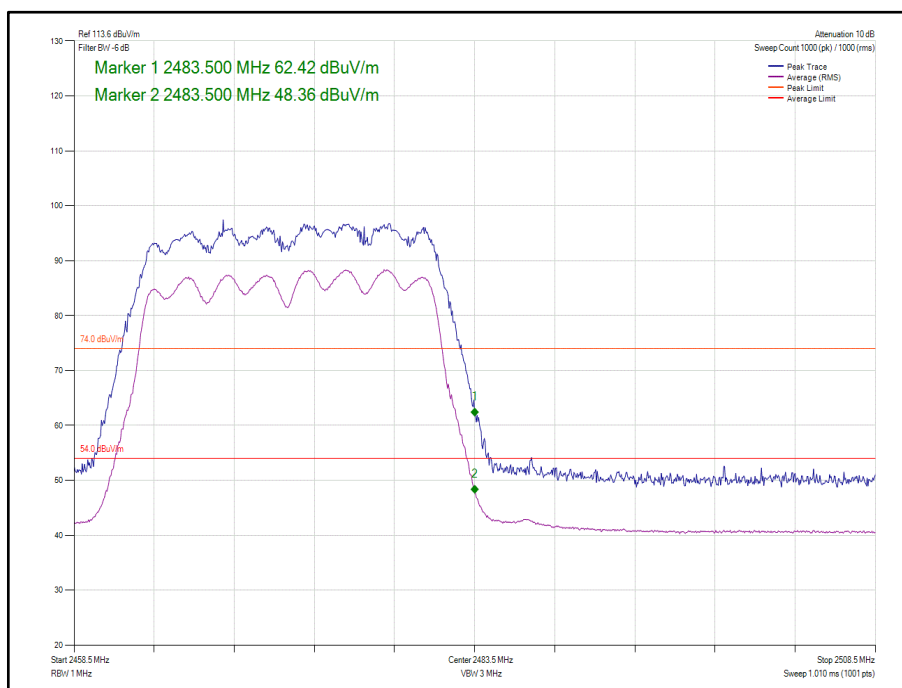


Figure 149 - 802.11n HT20, Core 0-1 - 2472 MHz, Band Edge Frequency 2483.5 MHz

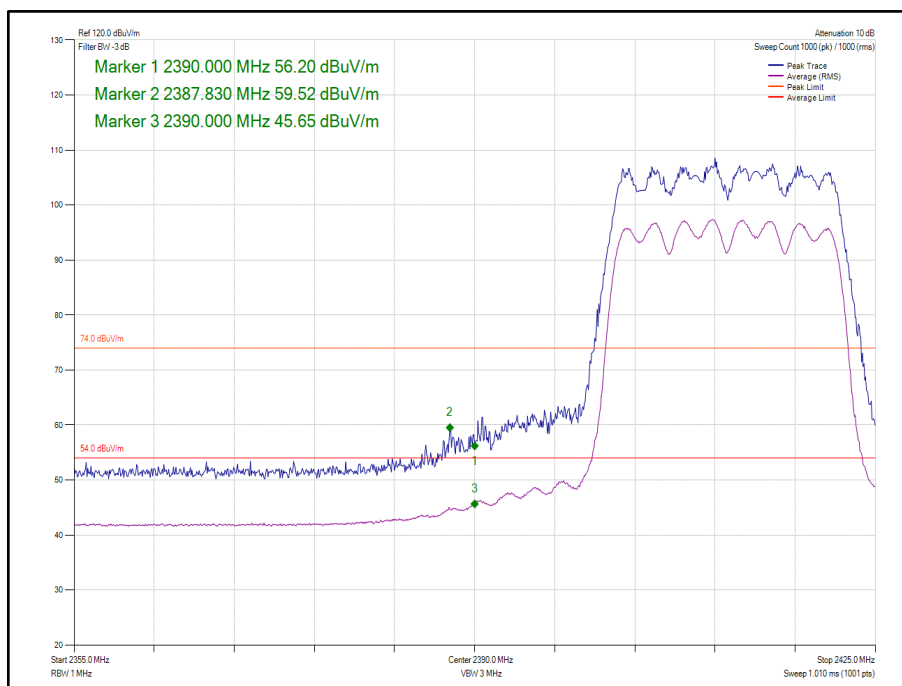


Figure 150 - 802.11ax HE20, Core 0-1, SU - 2412 MHz, Band Edge Frequency 2390 MHz

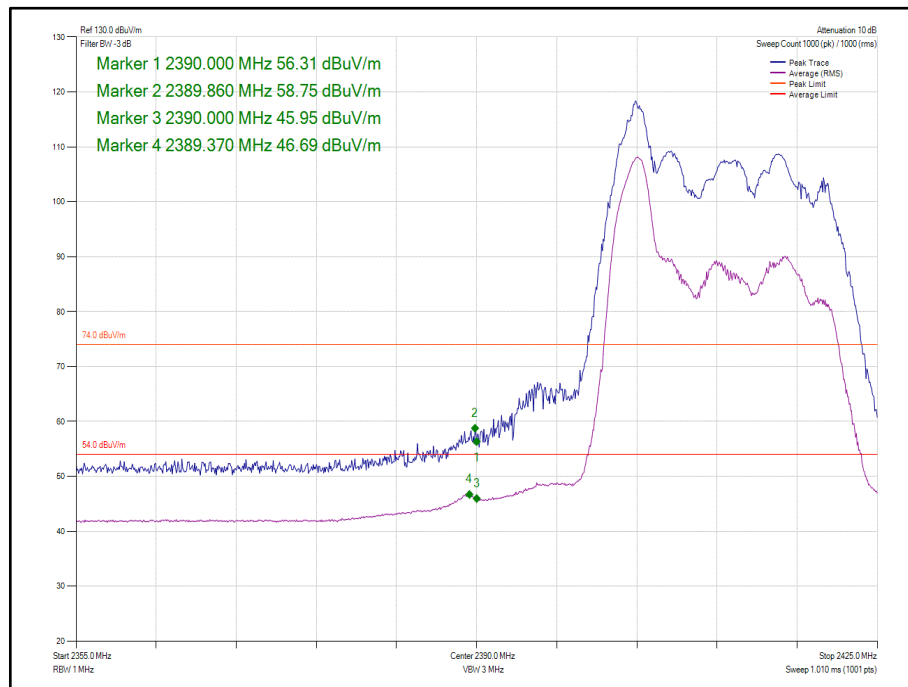


Figure 151 - 802.11ax HE20, Core 0-1, 26-0 - 2412 MHz, Band Edge Frequency 2390 MHz

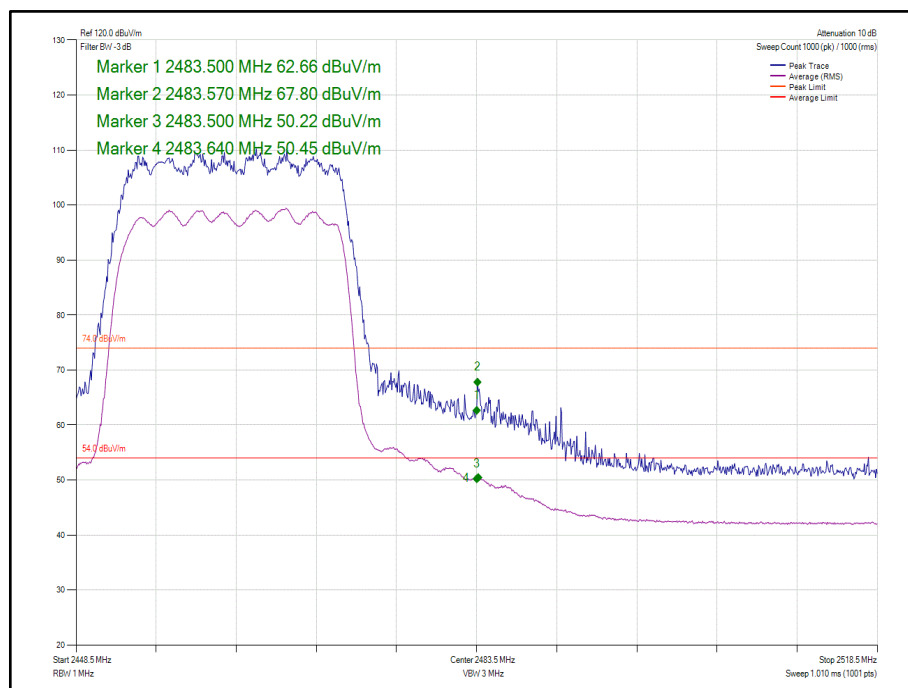


Figure 152 - 802.11ax HE20, Core 0-1, SU - 2462 MHz, Band Edge Frequency 2483.5 MHz

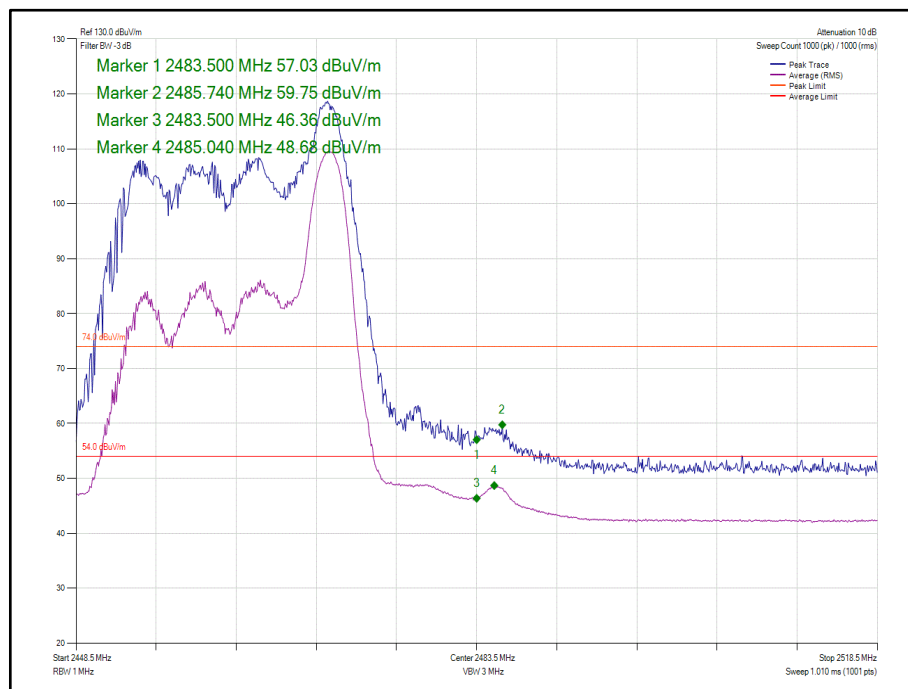


Figure 153 - 802.11ax HE20, Core 0-1, 26-8 - 2462 MHz, Band Edge Frequency 2483.5 MHz

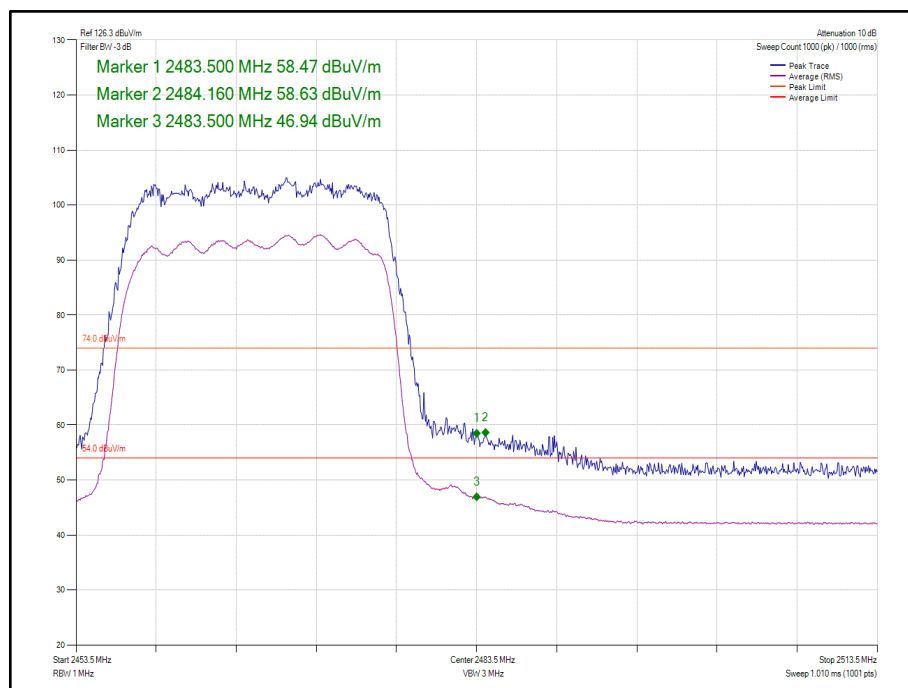


Figure 154 - 802.11ax HE20, Core 0-1, SU - 2467 MHz, Band Edge Frequency 2483.5 MHz

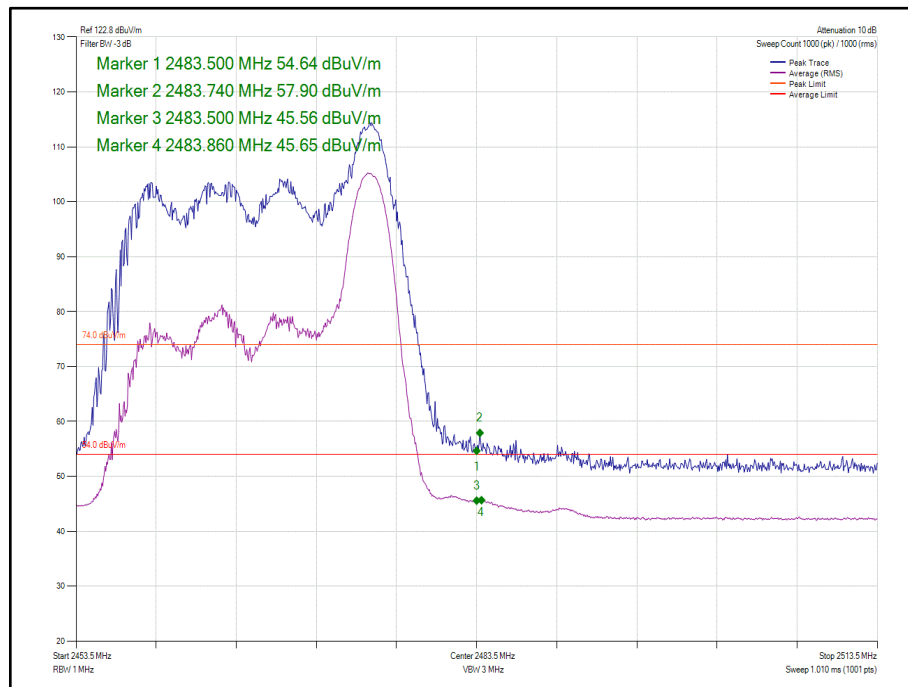


Figure 155 - 802.11ax HE20, Core 0-1, 26-8 - 2467 MHz, Band Edge Frequency 2483.5 MHz

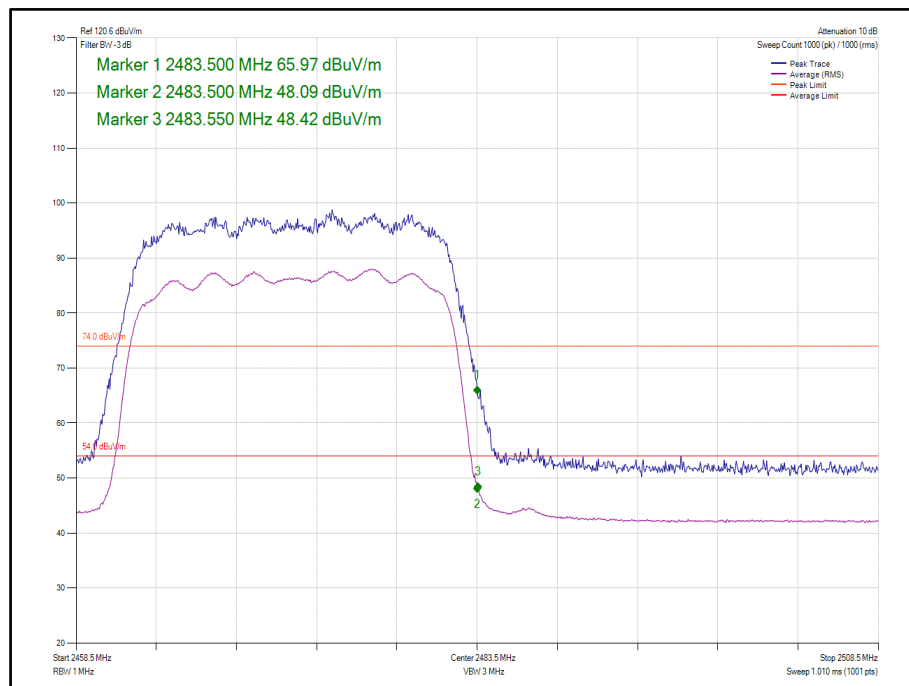


Figure 156 - 802.11ax HE20, Core 0-1, SU - 2472 MHz, Band Edge Frequency 2483.5 MHz

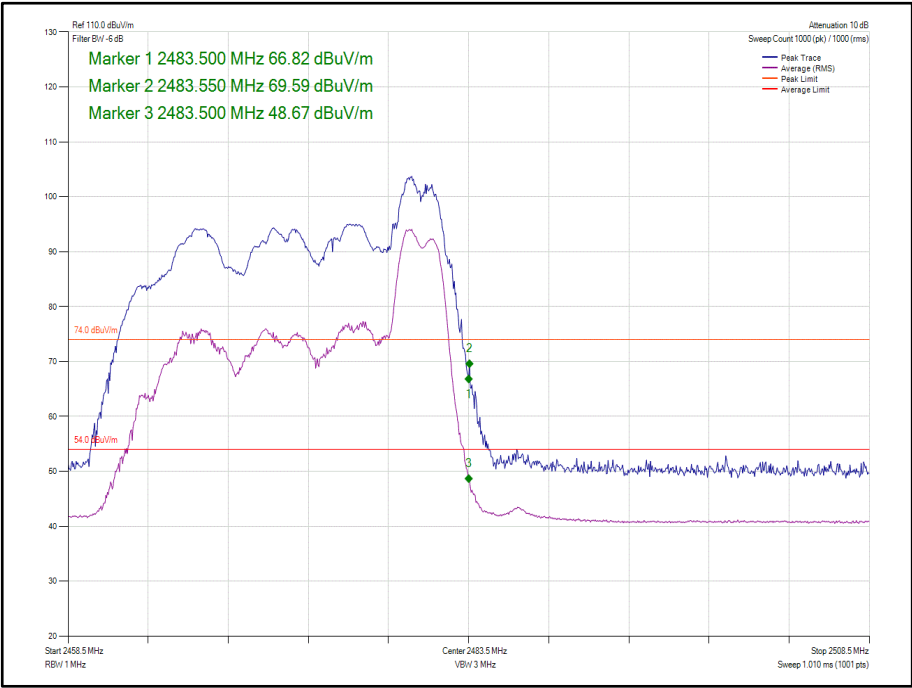


Figure 157 - 802.11ax HE20, Core 0-1, 26-8 - 2472 MHz, Band Edge Frequency 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 42

ISED RSS-GEN, Limit Clause 8.9

Frequency (MHz)	Field Strength (µV/m at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960*	500

Table 43

*Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.



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 Due
Power Supply Unit	Farnell	LB30-4	158	-	O/P Mon
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
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
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	10-Mar-2021
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	17-Mar-2021
Attenuator 5W 10dB DC-18GHz	Aaren	AT40A-4041-D18-10	5494	12	14-Apr-2021
2m SMA Cable	Junkosha	MWX221-02000AMSAMS/A	5517	12	01-Apr-2021
8m N-Type Cable	Junkosha	MWX221-08000NMSNMS/B	5520	12	24-Mar-2021
EMI Test Receiver	Rohde & Schwarz	ESW44	5527	12	06-Feb-2021

Table 44

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.6 Power Spectral Density

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e)
ISED RSS-247, Clause 5.2
ISED RSS-GEN, Clause 6.12

2.6.2 Equipment Under Test and Modification State

A2348, S/N: C07D100D02DH - Modification State 0

2.6.3 Date of Test

19-August-2020 to 09-September-2020

2.6.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.10.3 (AVG PSD-1) or 11.10.5 (AVG PSD-2).

Where the EUT duty cycle was $< 98\%$ and repeatable within 2%, the spectrum analyser was set to trace (power) averaging and a duty cycle correction was added as calculated in the result tables below (Method AVG PSD-2). Where the duty cycle was $\geq 98\%$ the spectrum analyser was set to trace (power) averaging and no duty cycle correction made (Method AVG PSD-1).

The output power was verified as being the same from each transmit core (within negligible tolerances), but the antenna gains were not identical. Therefore, the modes reported here for SISO or 2x2 MIMO operation are those giving the highest EIRP and/or lowest conducted limit based on the combination of antennas giving highest total directional gain.

MIMO output port summing was performed in accordance with KDB 662911 D01. For the CDD results the Directional Gain was calculated in accordance with the equation given in clause F)2)f)(ii) summed for a single spatial stream.

2.6.5 Environmental Conditions

Ambient Temperature	21.2 - 23.8 °C
Relative Humidity	43.3 - 70.8 %



2.6.6 Test Results

2.4 GHz WLAN

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-1.77	0.72	-9.59
Duty Cycle Correction (dB)	N/A SA-1	N/A SA-1	N/A SA-1
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-1.77	0.72	-9.59

Table 45 - 802.11b / 1 Mbps / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-5.14	-0.11	-18.45
Duty Cycle Correction (dB)	N/A SA-1	N/A SA-1	N/A SA-1
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-5.14	-0.11	-18.45

Table 46 - 802.11g / 6 Mbps / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-6.01	0.00	-18.71
Duty Cycle Correction (dB)	0.35	0.35	0.37
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-5.66	0.35	-18.34

Table 47 - 802.11n / HT20 MCS7 / SISO / Core 1



Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-8.62	-0.62	-19.34
Conducted PSD Core 1 (dBm/30kHz)	-8.98	-0.57	-19.06
Duty Cycle Correction (dB)	0.35	0.35	0.37
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-5.43	2.76	-15.82

Table 48 - 802.11n / HT20 MCS7 / MIMO CDD / Cores 0+1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-7.79	-1.86	-20.82
Duty Cycle Correction (dB)	0.40	0.40	0.42
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-7.39	-1.46	-20.40

Table 49 - 802.11ax / HE20 MCS7x1 / SU / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-3.84	-3.91	-15.04
Duty Cycle Correction (dB)	0.37	0.37	0.38
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-3.47	-3.54	-14.66

Table 50 - 802.11ax / HE20 MCS7x1 / RU 26-0 / SISO / Core 1



Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-3.99	-4.20	-15.26
Duty Cycle Correction (dB)	0.37	0.37	0.38
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-3.62	-3.83	-14.88

Table 51 - 802.11ax / HE20 MCS7x1 / RU 26-8 / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-3.75	-3.17	-16.96
Duty Cycle Correction (dB)	0.39	0.39	0.40
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-3.36	-2.78	-16.56

Table 52 - 802.11ax / HE20 MCS7x1 / RU 52-37 / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-4.15	-3.44	-17.61
Duty Cycle Correction (dB)	0.39	0.39	0.40
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-3.76	-3.04	-17.21

Table 53 - 802.11ax / HE20 MCS7x1 / RU 52-40 / SISO / Core 1



Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-6.78	-2.96	-20.33
Duty Cycle Correction (dB)	0.21	0.21	0.21
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-6.57	-2.75	-20.11

Table 54 - 802.11ax / HE20 MCS7x1 / RU 106-53 / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Raw Conducted PSD (dBm/30kHz)	-6.77	-2.85	-19.96
Duty Cycle Correction (dB)	0.21	0.21	0.21
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-6.56	-2.65	-19.75

Table 55 - 802.11ax / HE20 MCS7x1 / RU 106-54 / SISO / Core 1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-10.34	-0.55	-21.66
Conducted PSD Core 1 (dBm/30kHz)	-11.06	-1.33	-21.69
Duty Cycle Correction (dB)	0.40	0.40	0.42
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-7.27	2.48	-18.25

Table 56 - 802.11ax / HE20 MCS7x1 / SU / MIMO CDD / Cores 0+1



Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-5.10	-3.52	-16.71
Conducted PSD Core 1 (dBm/30kHz)	-4.85	-4.24	-16.48
Duty Cycle Correction (dB)	0.37	0.37	0.38
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-1.59	-0.48	-13.20

Table 57 - 802.11ax / HE20 MCS7x1 / RU 26-0 / MIMO CDD / Cores 0+1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-4.71	-3.90	-16.39
Conducted PSD Core 1 (dBm/30kHz)	-4.77	-4.00	-16.57
Duty Cycle Correction (dB)	0.37	0.37	0.38
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-1.36	-0.57	-13.09

Table 58 - 802.11ax / HE20 MCS7x1 / RU 26-8 / MIMO CDD / Cores 0+1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-7.25	-2.70	-18.69
Conducted PSD Core 1 (dBm/30kHz)	-6.90	-3.05	-18.81
Duty Cycle Correction (dB)	0.39	0.39	0.40
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-3.67	0.53	-15.34

Table 59 - 802.11ax / HE20 MCS7x1 / RU 52-37 / MIMO CDD / Cores 0+1



Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-7.39	-3.41	-18.15
Conducted PSD Core 1 (dBm/30kHz)	-7.41	-3.65	-18.80
Duty Cycle Correction (dB)	0.39	0.39	0.40
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-4.00	-0.12	-15.05

Table 60 - 802.11ax / HE20 MCS7x1 / RU 52-40 / MIMO CDD / Cores 0+1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-10.43	-2.96	-20.69
Conducted PSD Core 1 (dBm/30kHz)	-9.82	-2.80	-20.76
Duty Cycle Correction (dB)	0.21	0.21	0.21
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-6.90	0.34	-17.50

Table 61 - 802.11ax / HE20 MCS7x1 / RU 106-53 / MIMO CDD / Cores 0+1

Channel	Bottom	Middle	Top
Frequency (MHz)	2412	2442	2472
Conducted PSD Core 0 (dBm/30kHz)	-9.69	-2.60	-20.26
Conducted PSD Core 1 (dBm/30kHz)	-9.83	-2.65	-20.57
Duty Cycle Correction (dB)	0.21	0.21	0.21
15.247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
RSS-247 Conducted PSD Limit (dBm/3kHz)	8.00	8.00	8.00
Conducted PSD Result (dBm/30kHz)	-6.54	0.59	-17.19

Table 62 - 802.11ax / HE20 MCS7x1 / RU 106-54 / MIMO CDD / Cores 0+1

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

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

ISED RSS-247, Limit Clause 5.2(b)

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



2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Attenuator (10dB, 1W)	Sealectro	60-674-1010-89	1224	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	08-Nov-2020
Hygrometer	Rotronic	I-1000	3220	12	25-Sep-2020
1800-6000 MHz Power Splitter	Mini-Circuits	ZN2PD-63-S+	4055	-	O/P Mon
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	08-Nov-2020
2 metre SMA Cable	Florida Labs	SMS-235SP-78.8-SMS	4517	12	22-Jun-2021
Power splitter - 2 port	Mini-Circuits	ZN2PD-63-S+	4743	12	23-Sep-2020
EXA	Keysight Technologies	N9010B	4968	24	23-Dec-2021
Power Splitter, 4 way	Mini-Circuits	ZN4PD1-63-S+	5236	-	O/P Mon
3.5 mm 1m Cable	Junkosha	MWX221-01000DMS	5418	12	22-Jun-2021
3.5 mm 2m Cable	Junkosha	MWX221-02000DMS	5425	12	22-Jun-2021
Attenuator 2W 10dB DC-10GHz	Telegartner	J01156A0031	5579	-	O/P Mon
Attenuator 2W 10dB DC-10GHz	Telegartner	J01156A0031	5580	-	O/P Mon

Table 63

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
Emission Bandwidth	± 279.049 kHz
Maximum Conducted Output Power	± 3.2 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Power Spectral Density	± 3.2 dB

Table 64

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.