2.4 GHz WLAN - 802.11g

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Data Rate/MCS with the Highest Power	6 Mbps	2412	2390	68.64	51.84
Data Rate/MCS with the Highest Power	6 Mbps	2462	2483.5	68.84	52.08
Data Rate/MCS with the Widest Bandwidth	54 Mbps	2412	2390	68.84	51.87
Data Rate/MCS with the Widest Bandwidth	54 Mbps	2462	2483.5	68.91	47.99

Table 26 - Restricted Band Edge Results

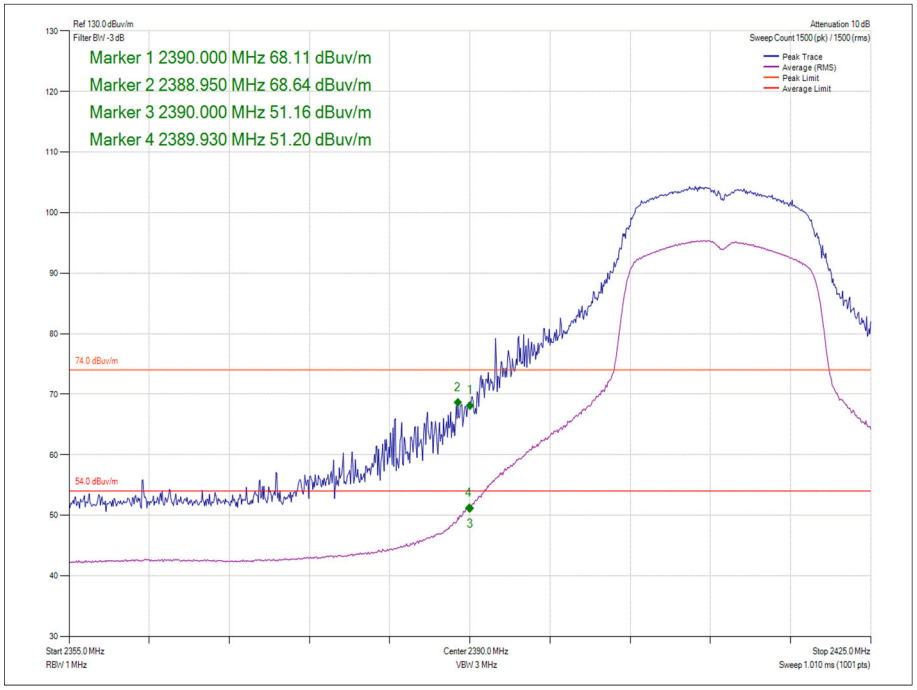

Figure 25 - Data Rate/MCS with the Highest Power - 6 Mbps 2412 MHz - Band Edge Frequency 2390 MHz

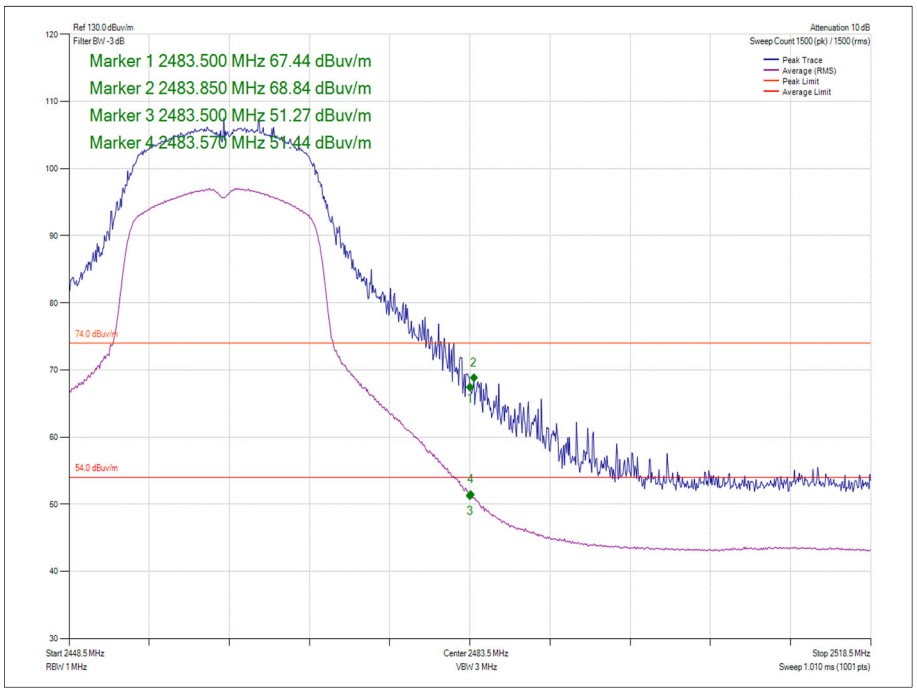

Figure 26 - Data Rate/MCS with the Highest Power - 6 Mbps
2462 MHz - Band Edge Frequency 2483.5 MHz

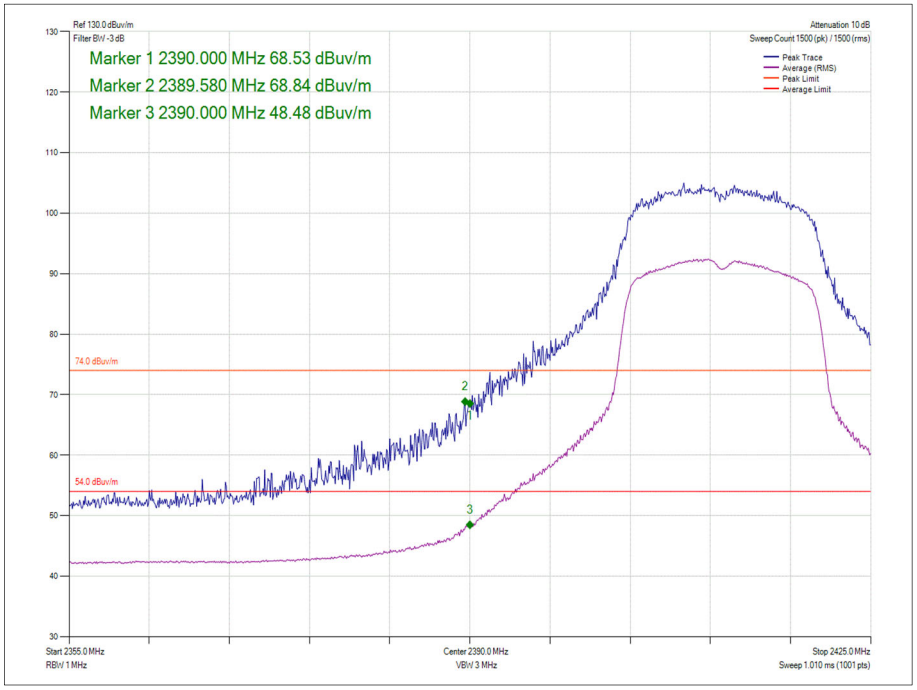

Figure 27 - Data Rate/MCS with the Widest Bandwidth - 54 Mbps
2412 MHz - Band Edge Frequency 2390 MHz

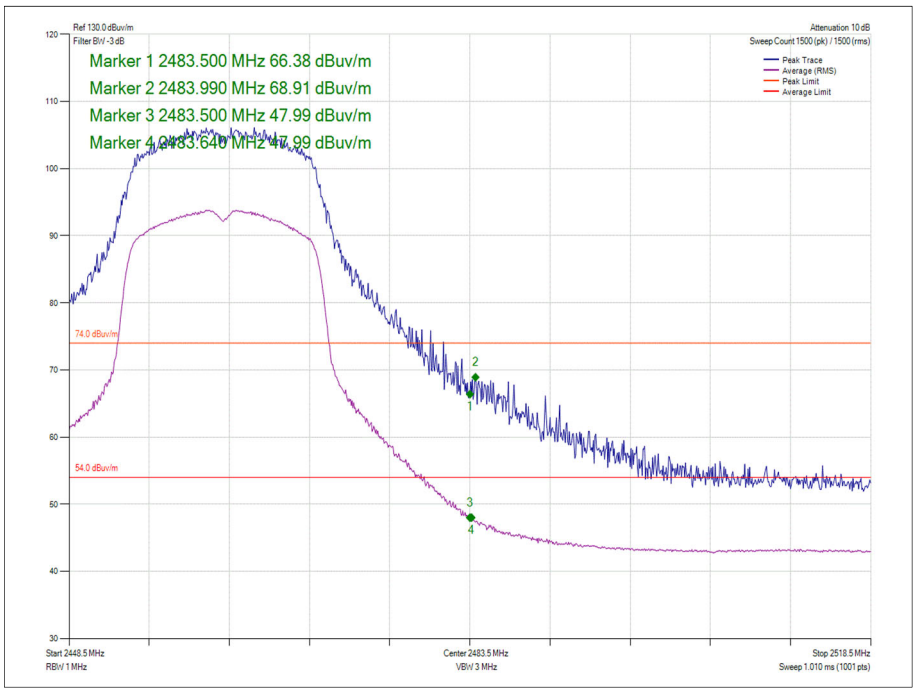

Figure 28 - Data Rate/MCS with the Widest Bandwidth - 54 Mbps 2462 MHz - Band Edge Frequency 2483.5 MHz

2.4 GHz WLAN - 802.11n 20 MHz Bandwidth

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Data Rate/MCS with the Highest Power	MCS0	2412	2390	69.22	50.62
Data Rate/MCS with the Highest Power	MCS0	2462	2483.5	70.11	51.61
Data Rate/MCS with the Widest Bandwidth	MCS6	2412	2390	68.94	51.09
Data Rate/MCS with the Widest Bandwidth	MCS6	2462	2483.5	67.66	47.55

Table 27 - Restricted Band Edge Results

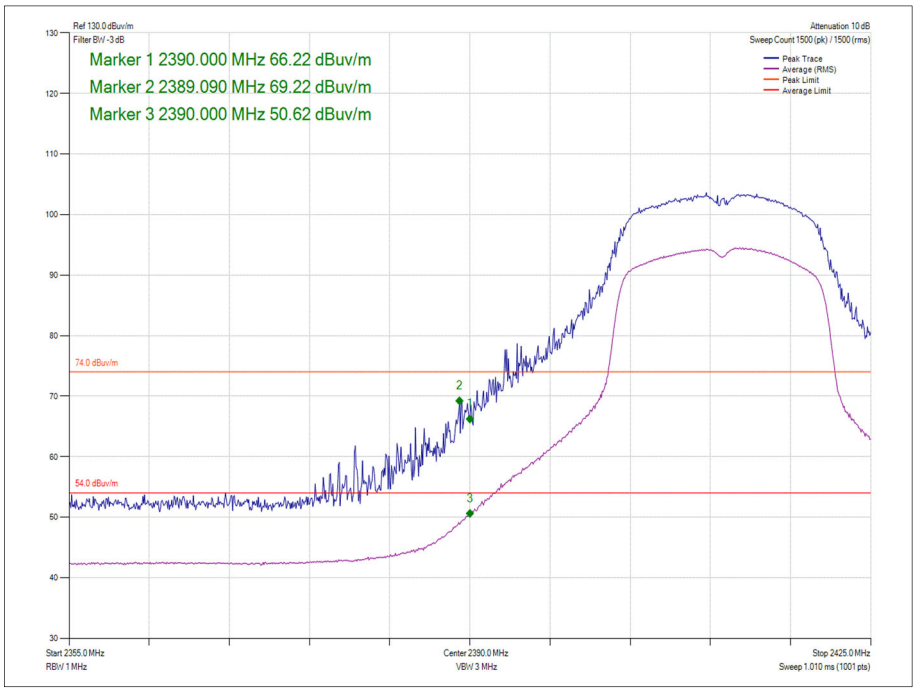

Figure 29 - Data Rate/MCS with the Highest Power - MCS0 2412 MHz - Band Edge Frequency 2390 MHz

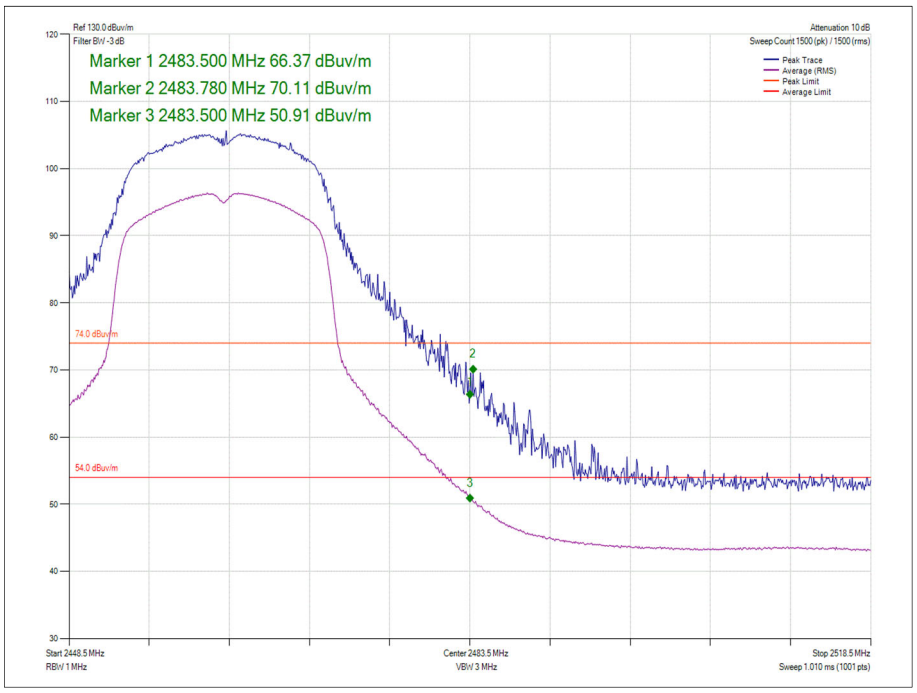

Figure 30 - Data Rate/MCS with the Highest Power - MCS0
2462 MHz - Band Edge Frequency 2483.5 MHz

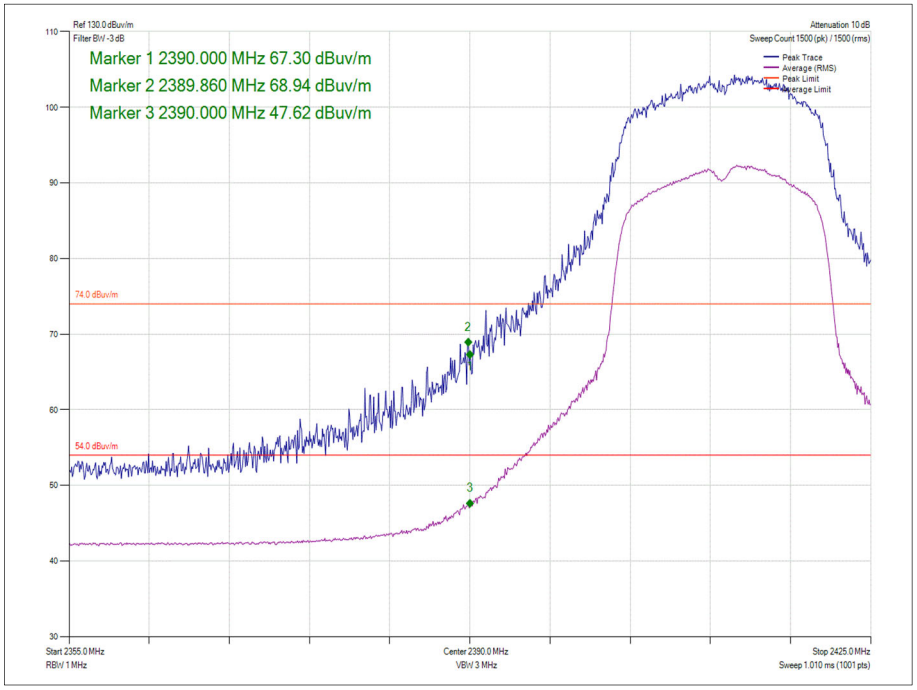

Figure 31 - Data Rate/MCS with the Widest Bandwidth - MCS6
2412 MHz - Band Edge Frequency 2390 MHz

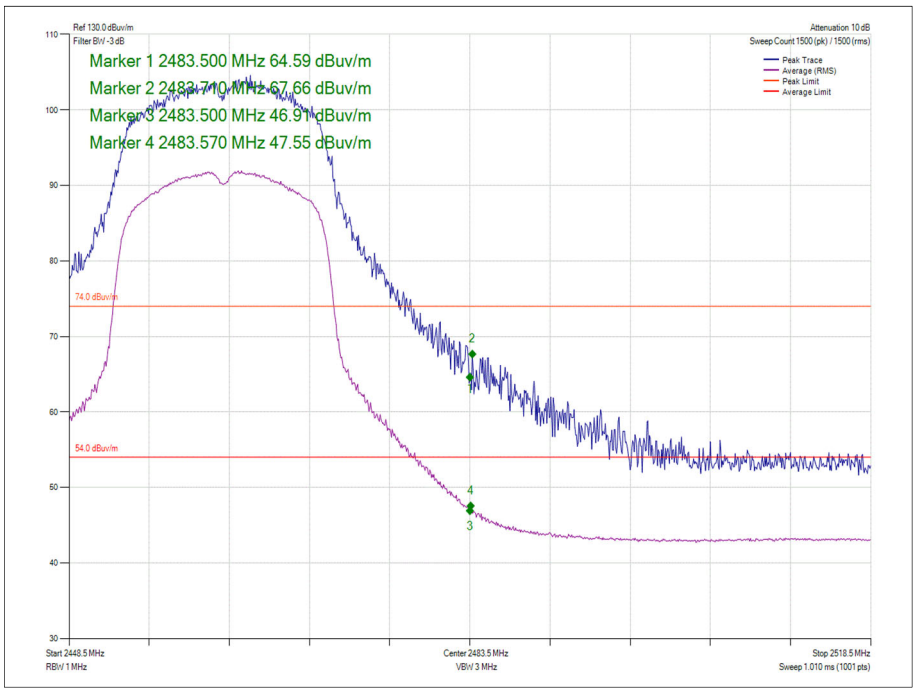

Figure 32 - Data Rate/MCS with the Widest Bandwidth - MCS6 2462 MHz - Band Edge Frequency 2483.5 MHz

2.4 GHz WLAN - 802.11n 40 MHz Bandwidth

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Data Rate/MCS with the Highest Power	MCS0	2422	2390	71.03	51.64
Data Rate/MCS with the Highest Power	MCS0	2452	2483.5	68.37	49.98
Data Rate/MCS with the Widest Bandwidth	MCS4	2412	2390	63.90	51.57
Data Rate/MCS with the Widest Bandwidth	MCS4	2452	2483.5	64.70	51.99

Table 28 - Restricted Band Edge Results

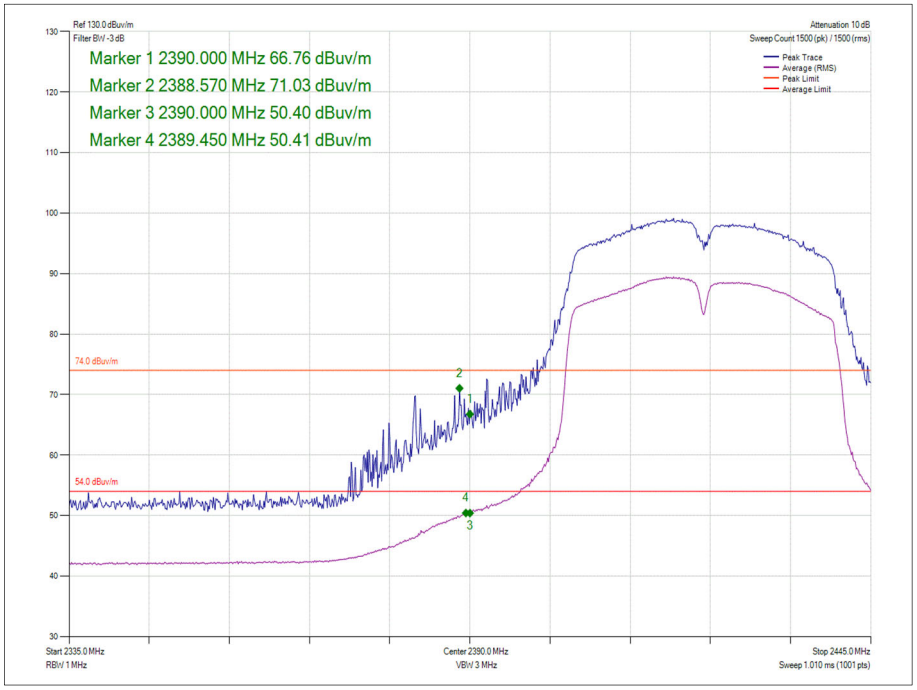

Figure 33 - Data Rate/MCS with the Highest Power - MCS0
2422 MHz - Band Edge Frequency 2390 MHz

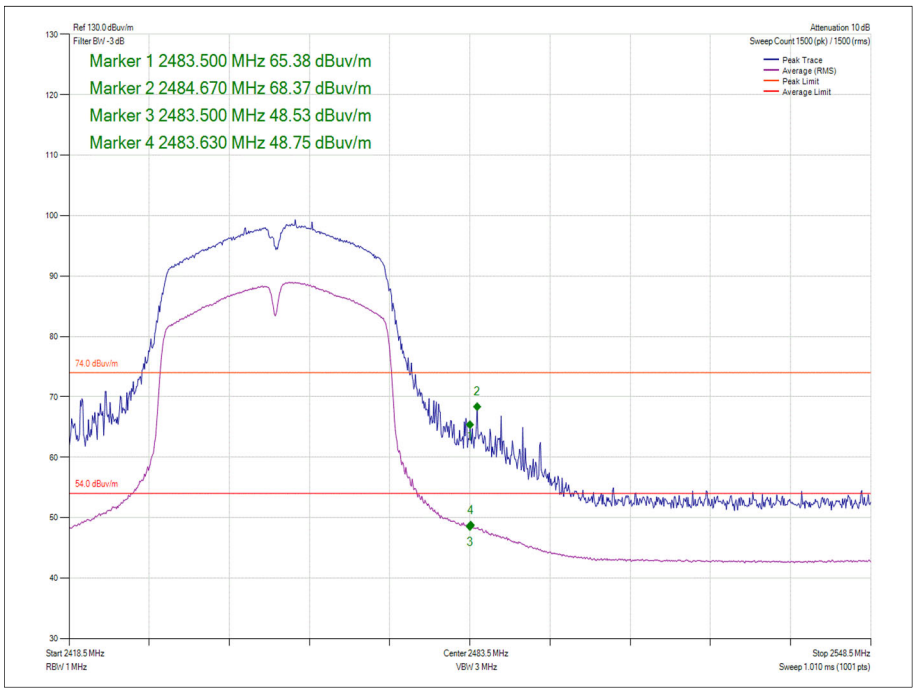

Figure 34 - Data Rate/MCS with the Highest Power - MCS0
2452 MHz - Band Edge Frequency 2483.5 MHz

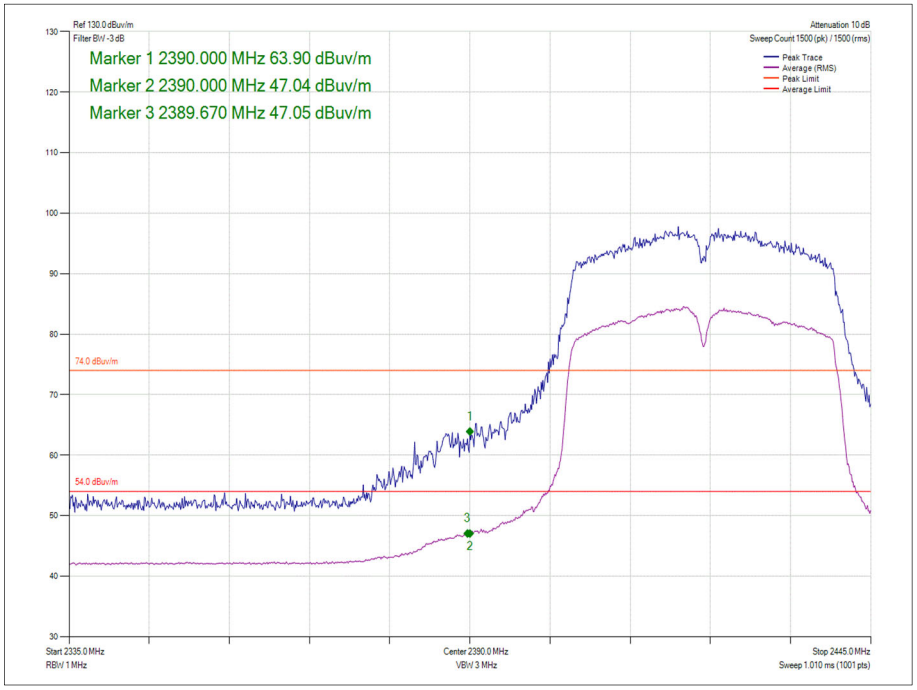

Figure 35 - Data Rate/MCS with the Widest Bandwidth - MCS4
2422 MHz - Band Edge Frequency 2390 MHz

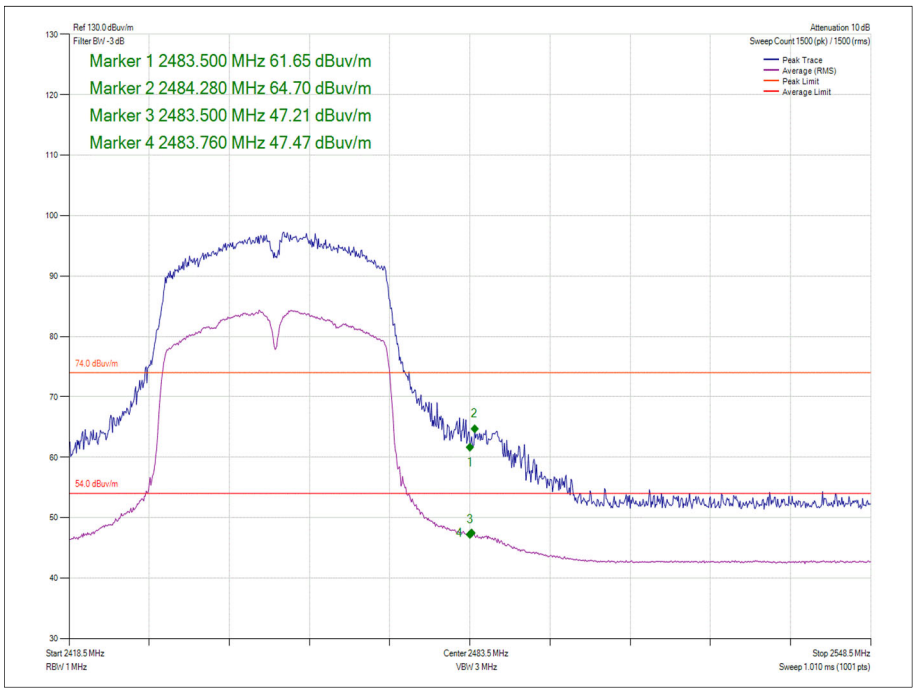

Figure 36 - Data Rate/MCS with the Widest Bandwidth - MCS4 2452 MHz - Band Edge Frequency 2483.5 MHz

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 29

ISEDC RSS-GEN, Limit Clause 8.9

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

Table 30

*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
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygromer	Rotronic	A1	2677	12	20-Feb-2020
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	09-Jun-2020
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	11-Mar-2020
Hygrometer	Rotronic	HP21	4989	12	02-May-2020
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
8 Meter Cable	Teledyne	PR90-088-8MTR	5212	12	30-Aug-2020
EMI Test Receiver	Rohde & Schwarz	ESW44	5382	12	08-Oct-2020

Table 31

TU - Traceability Unscheduled

2.6 Spurious Radiated Emissions

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d) and 15.205
ISEDC RSS-247, Clause 5.5
ISEDC RSS-GEN, Clause 6.13

2.6.2 Equipment Under Test and Modification State

SC2124, S/N: 1PR001909GM18R8 - Modification State 0

2.6.3 Date of Test

12-February-2020 to 17-February-2020

2.6.4 Test Method

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

The EUT was placed on the non-conducting platform in a manner typical of a normal installation. For an EUT which could reasonable be used in multiple planes, pre-scans were performed with the EUT orientated in X, Y and Z planes with reference to the ground plane.

Ports on the EUT were terminated with loads as described in ANSI C63.4 clause 6.2.4. For EUTs with multiple connectors of the same type, additional interconnecting cables were connected, and pre-scans performed to determine whether the level of the emissions were increased by >2 dB. 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.

The plots shown are the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (74/54 dBuV/m) when compared to 20 dBc outside restricted bands. 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).

At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB. Where formal measurements have been necessary, the results have been presented in the emissions table.

Note: The power setting of the DUT that this test was performed at differs from those used in section 2.1 of the present document. The manufacturer and test laboratory hold these values on record.

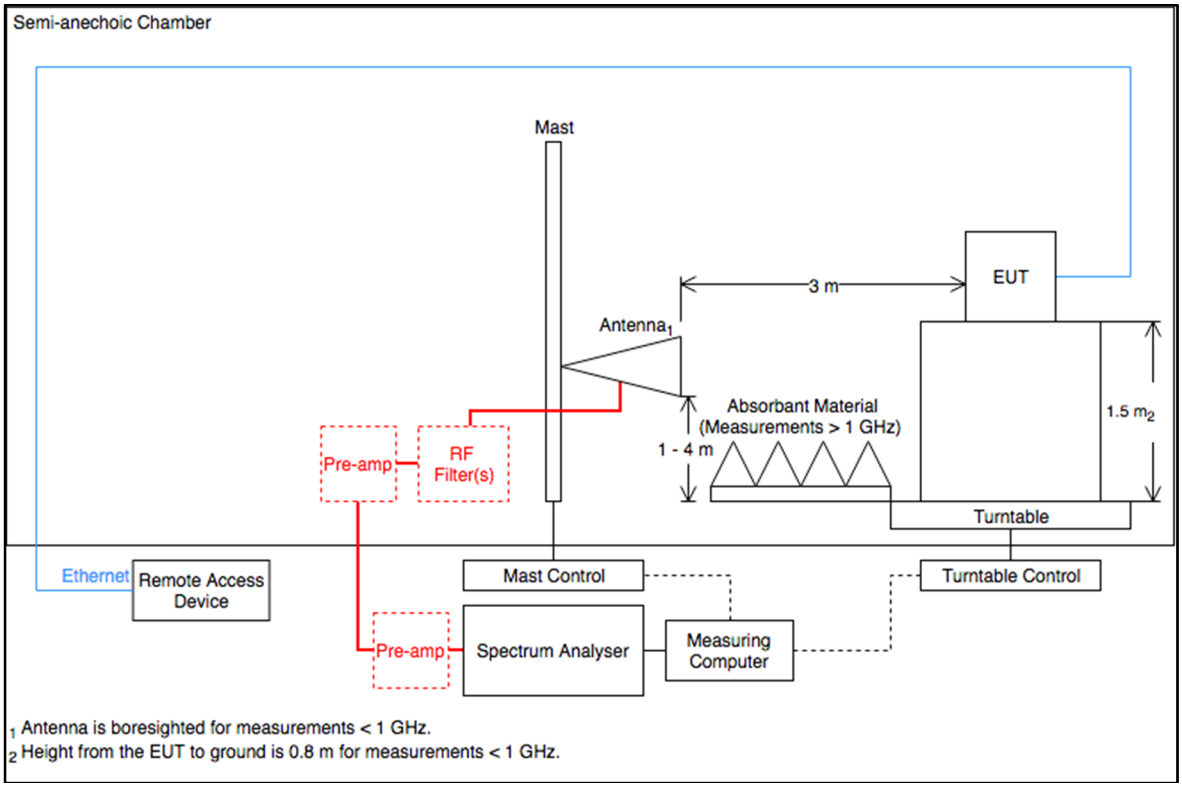

Figure 37 - Setup Diagram

2.6.5 Environmental Conditions

Ambient Temperature	17.6 - 19.7 °C
Relative Humidity	33.1 - 49.2 %

2.6.6 Test Results

2.4 GHz WLAN - 802.11b

Testing was performed on the configurations and Data Rate which resulted in the highest conducted output power and highest power spectral density as stated in ANSI C63.10, clause 5.6.2.2 (b). The Data Rate used during testing was 1 Mbps.

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

Table 32 - 2412 MHz, 30 MHz to 1 GHz - Emission Results

*No emissions were detected within 10 dB of the limit.

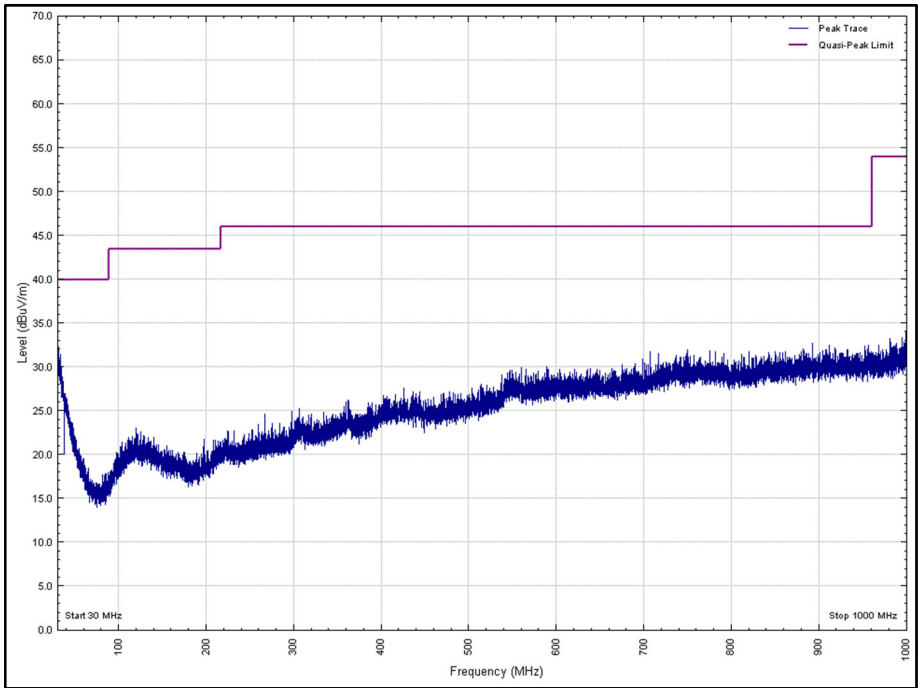

Figure 38 - 30 MHz to 1 GHz, 2412 MHz, Vertical, EUT Orientation X

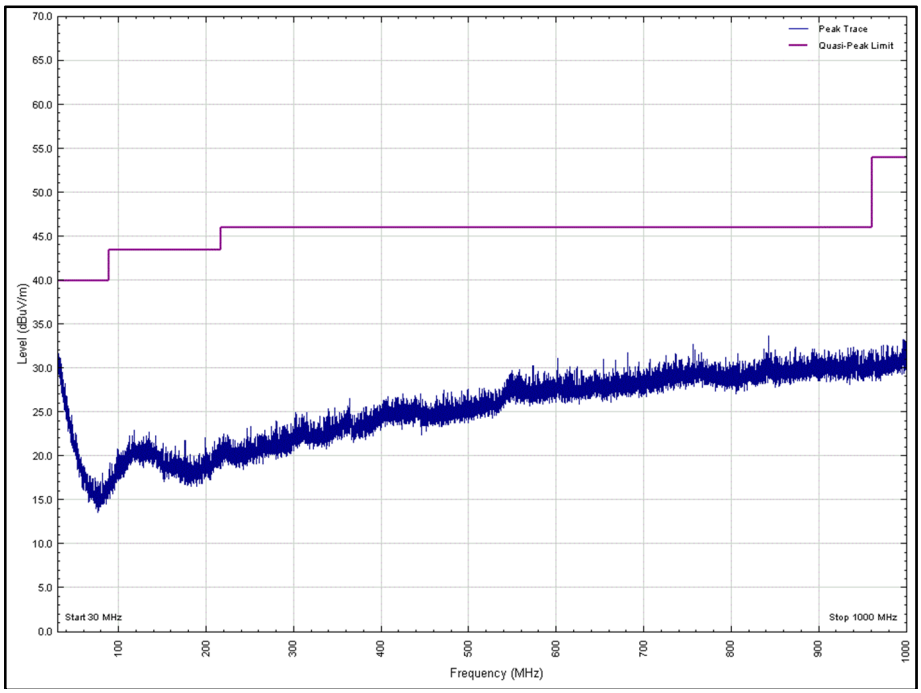

Figure 39 - 30 MHz to 1 GHz, 2412 MHz, Horizontal, EUT Orientation X

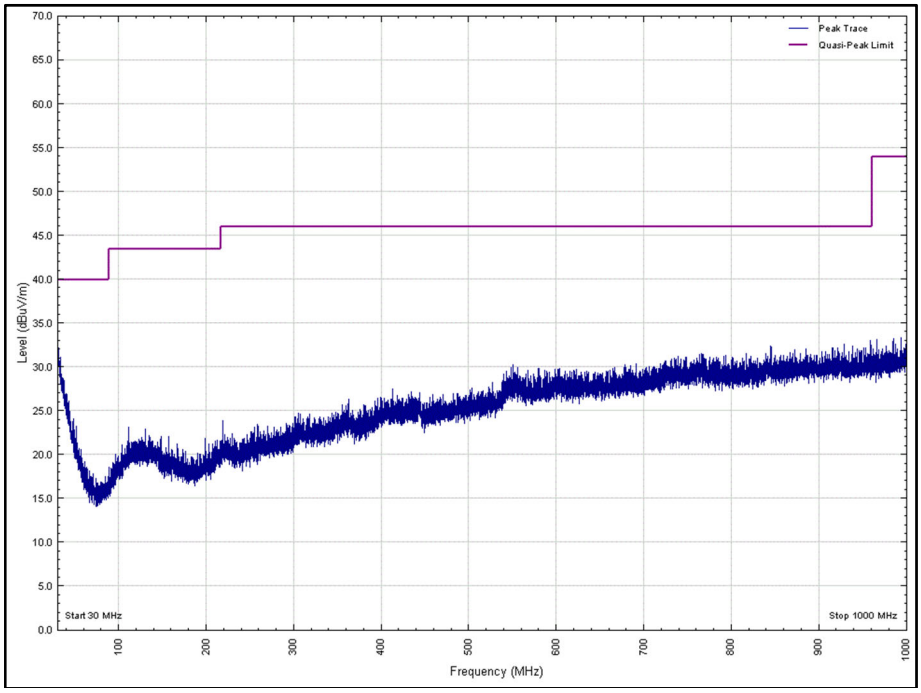

Figure 40 - 30 MHz to 1 GHz, 2412 MHz, Vertical, EUT Orientation Y

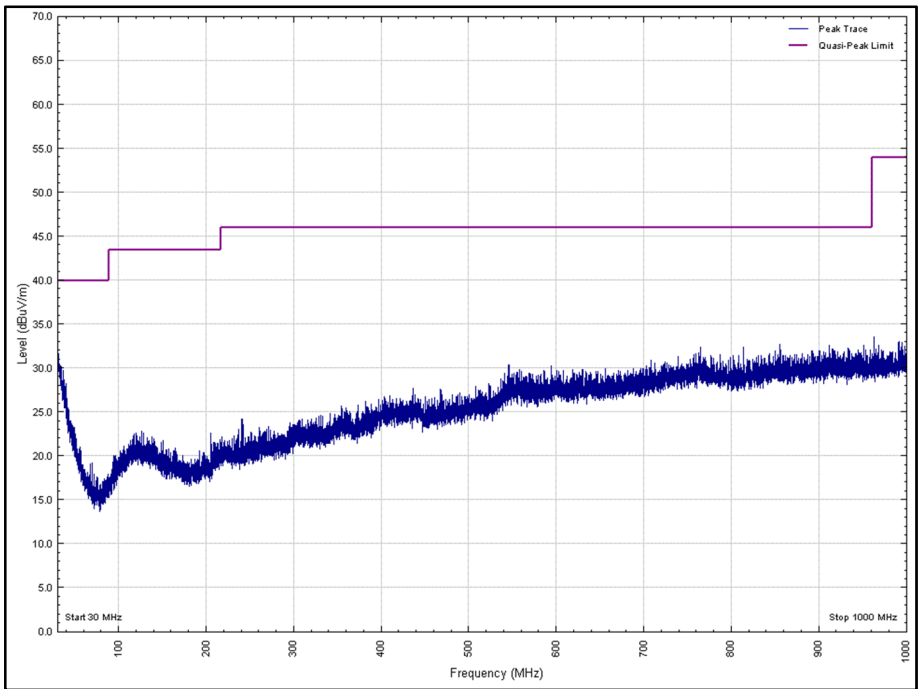

Figure 41 - 30 MHz to 1 GHz, 2412 MHz, Horizontal, EUT Orientation Y

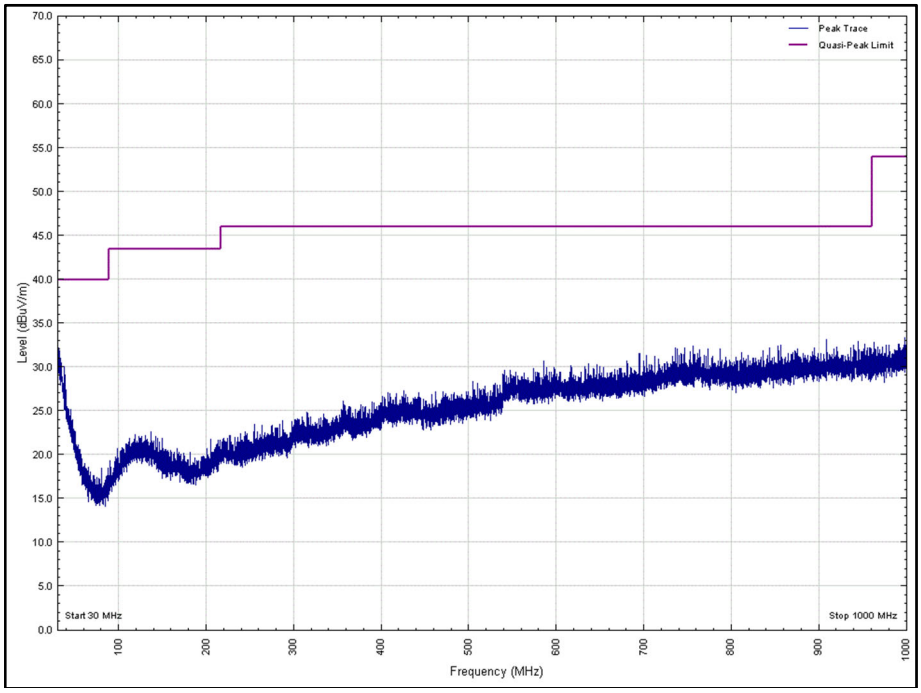

Figure 42 - 30 MHz to 1 GHz, 2412 MHz, Vertical, EUT Orientation Z

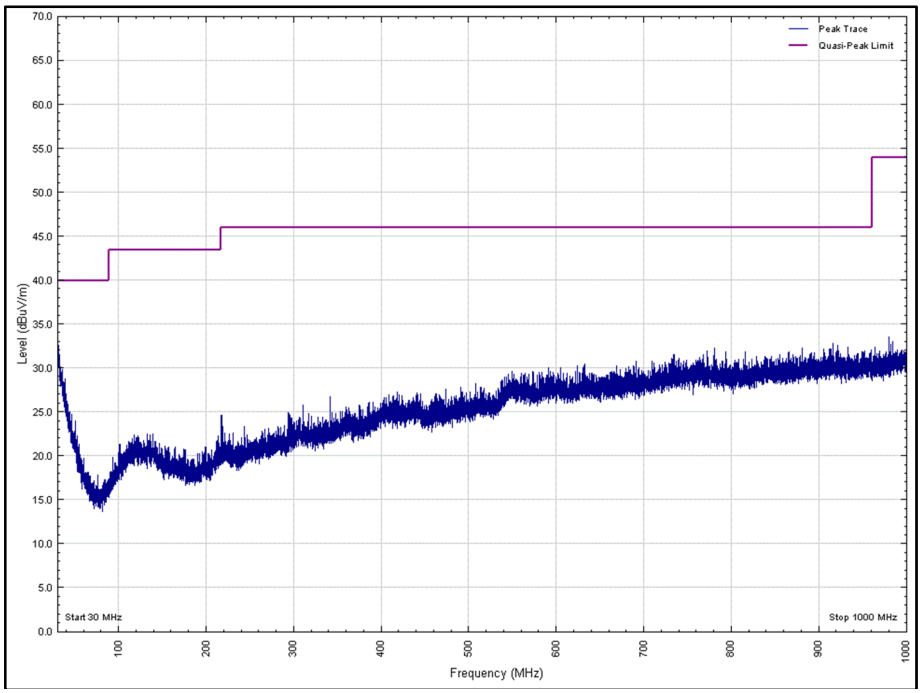

Figure 43 - 30 MHz to 1 GHz, 2412 MHz, Horizontal, EUT Orientation Z

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

Table 33 - 2412 MHz - 1 GHz to 25 GHz Emissions Results

*No emissions were detected within 10 dB of the limit.

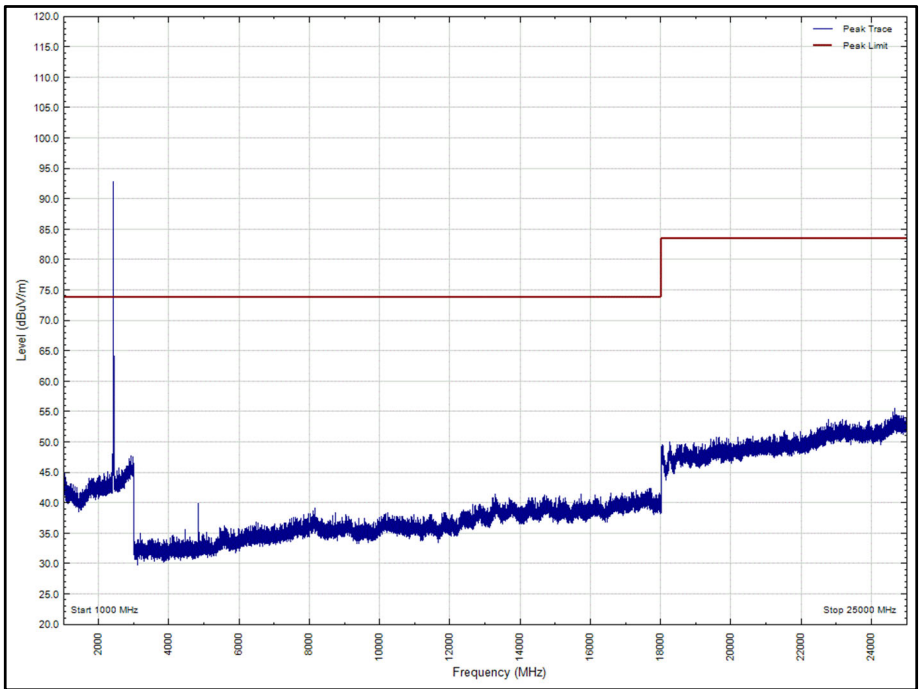

Figure 44 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: X, Peak

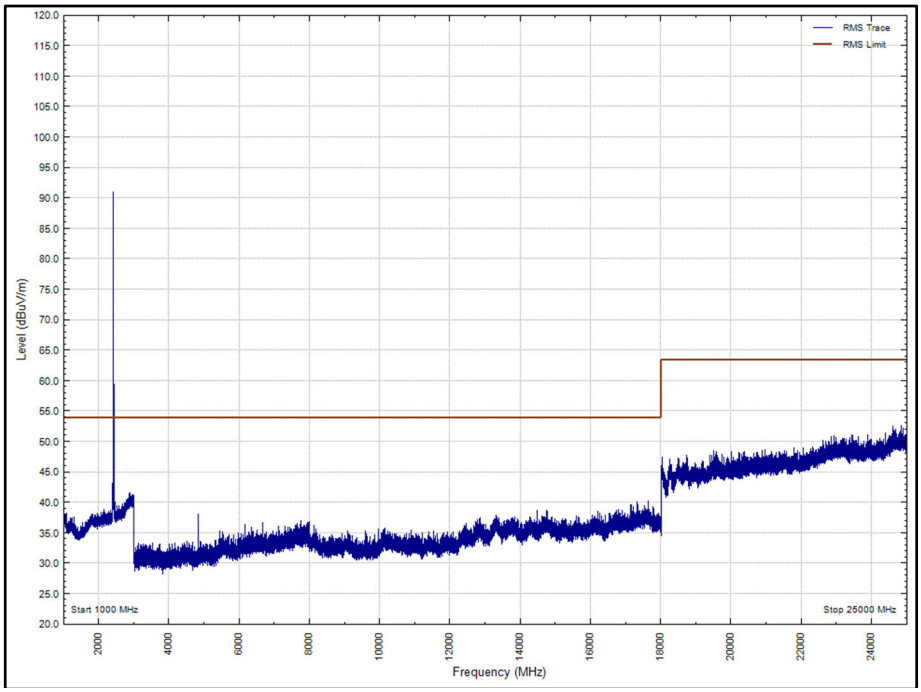

Figure 45 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: X, Average

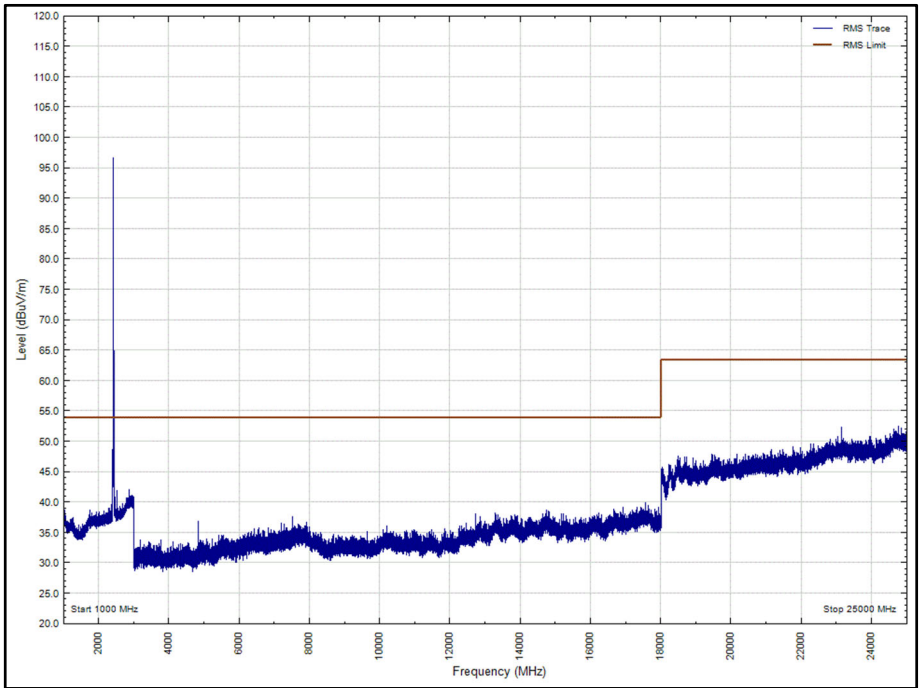

Figure 46 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: X, Peak

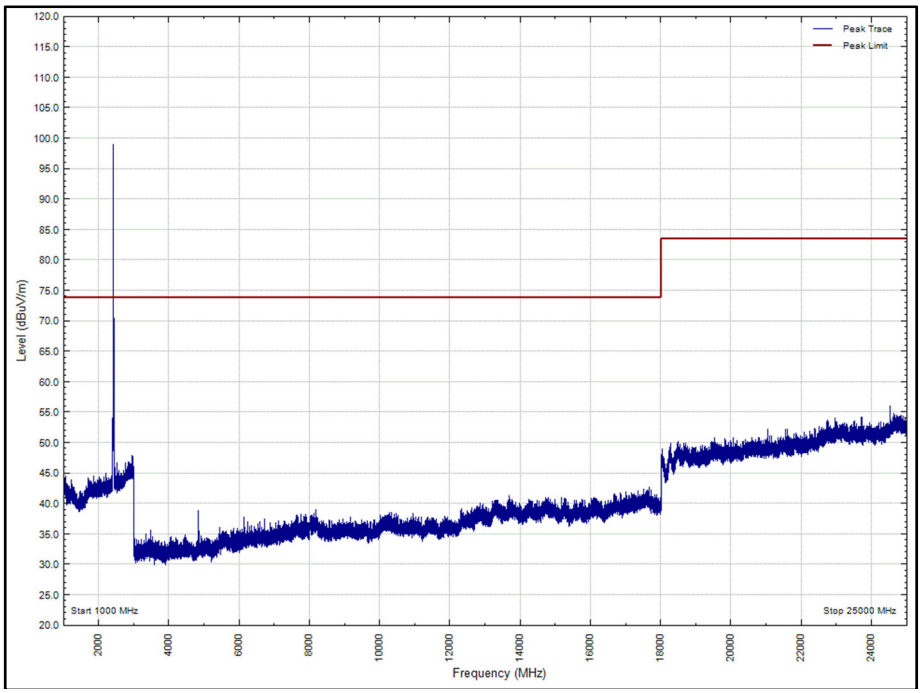

Figure 47 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: X, Average

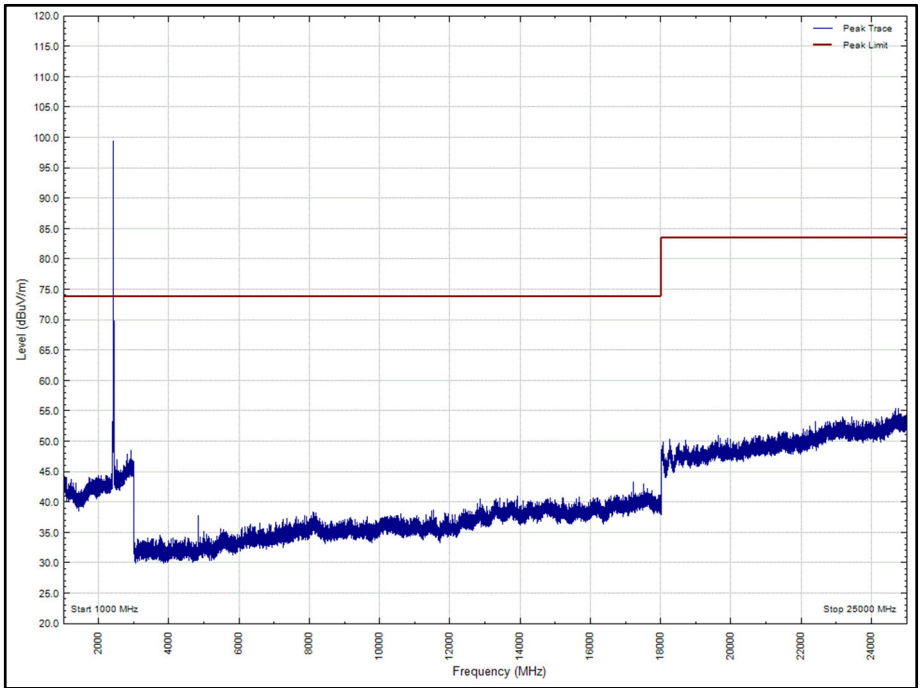

Figure 48 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: Y, Peak

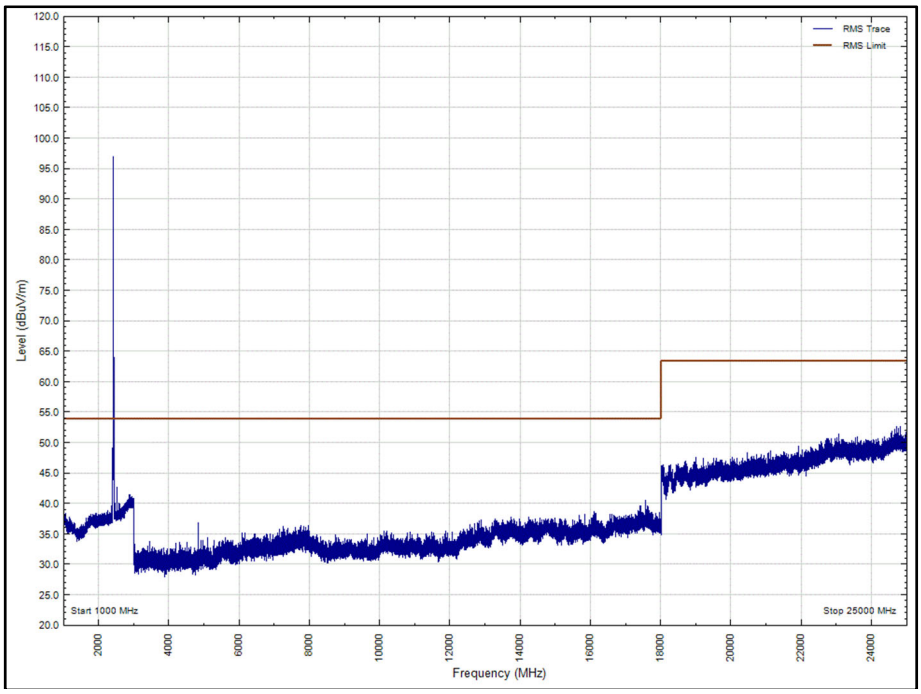

Figure 49 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: Y, Average

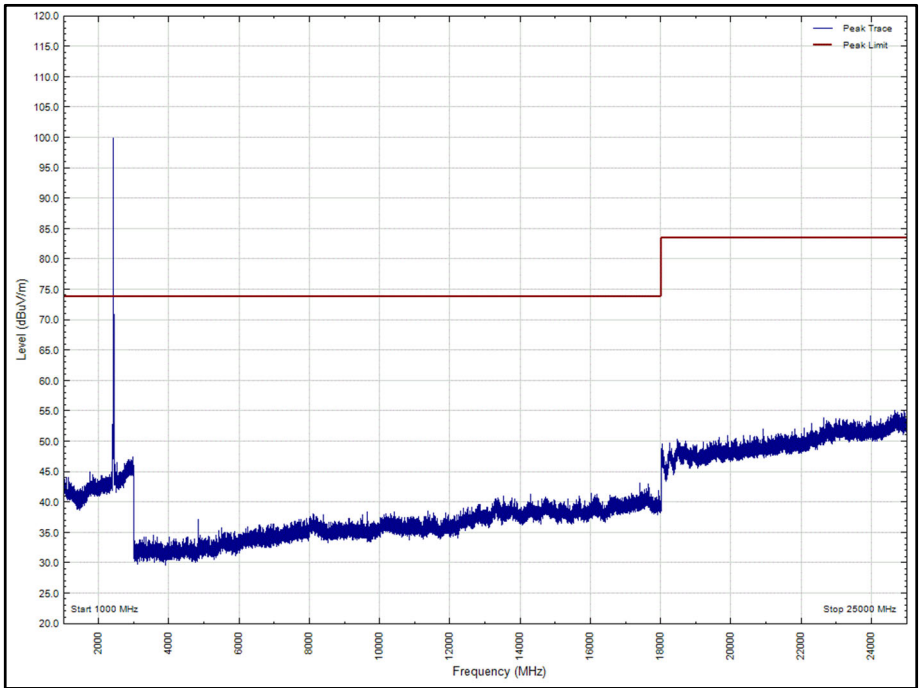

Figure 50 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: Y, Peak

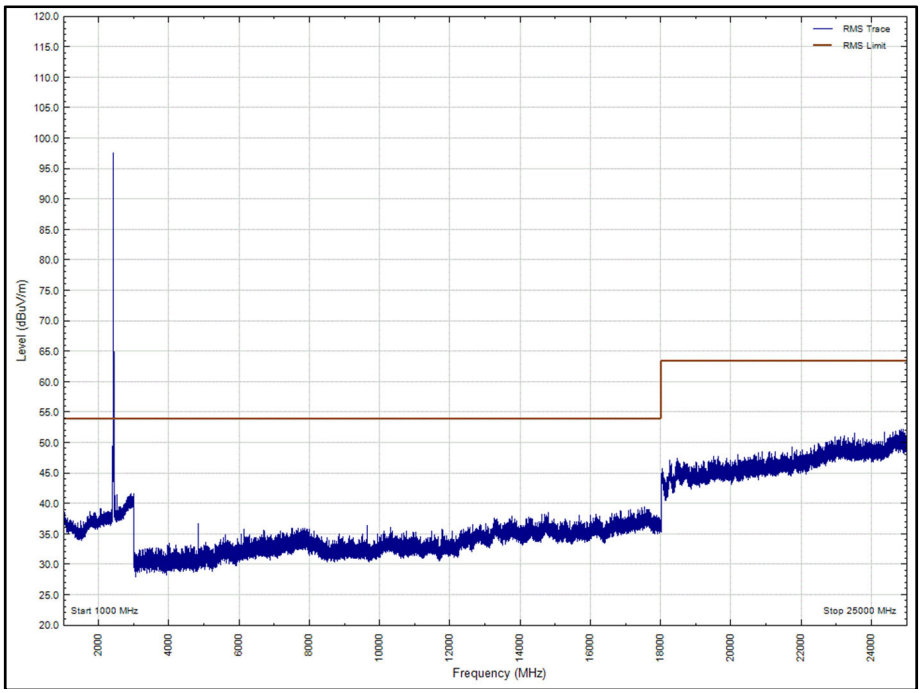

Figure 51 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: Y, Average

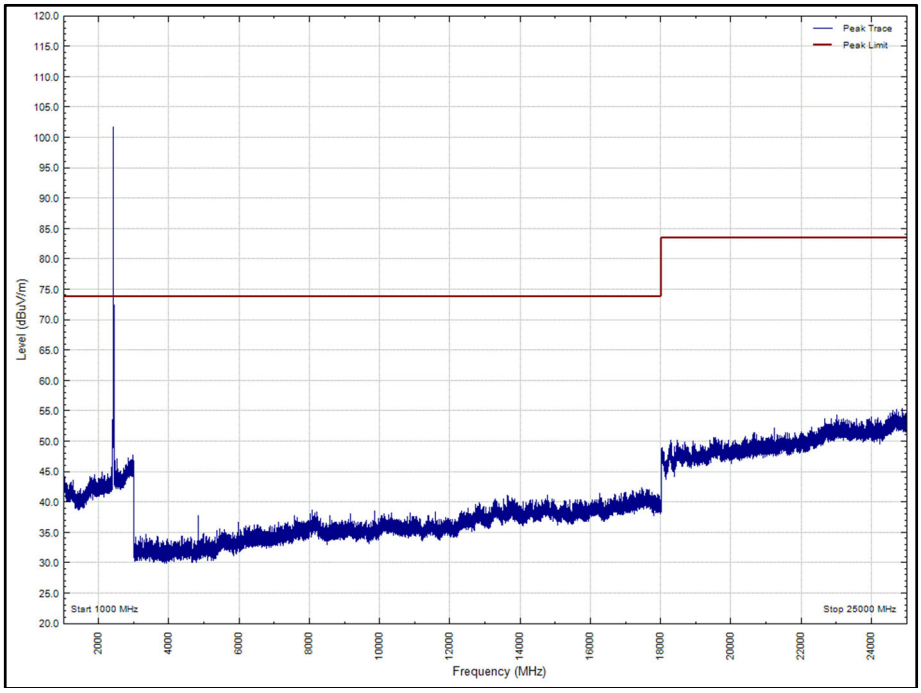

Figure 52 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: Z, Peak

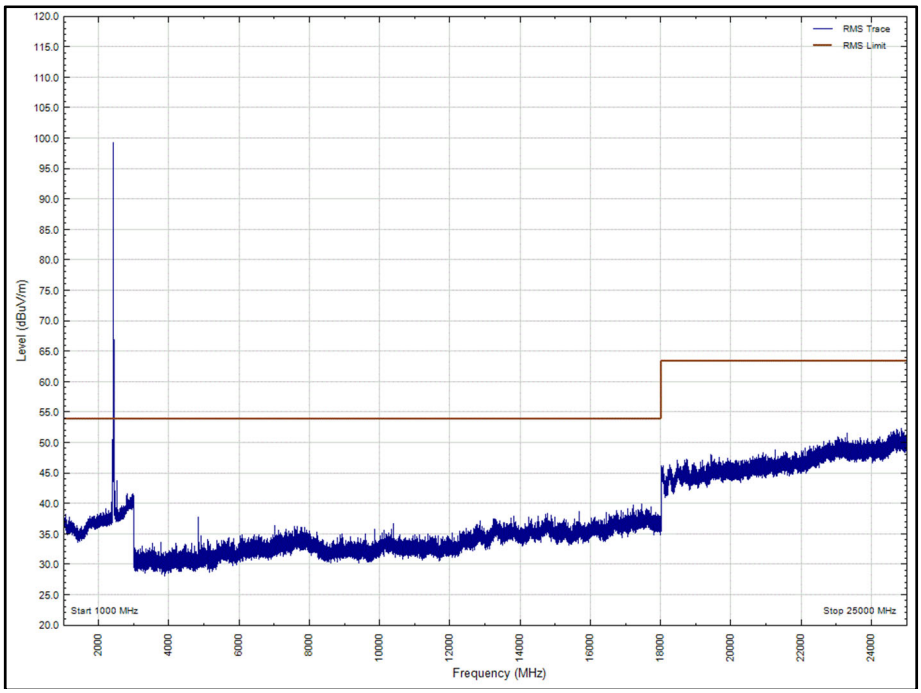

Figure 53 - 2412 MHz - 1 GHz to 25 GHz, Vertical, EUT Orientation: Z, Average

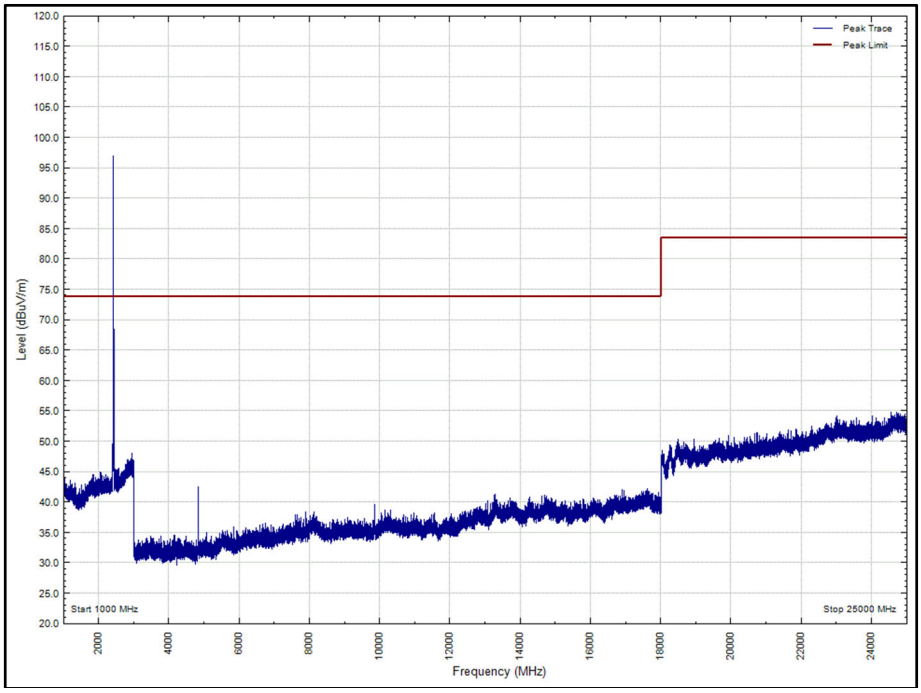

Figure 54 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: Z, Peak

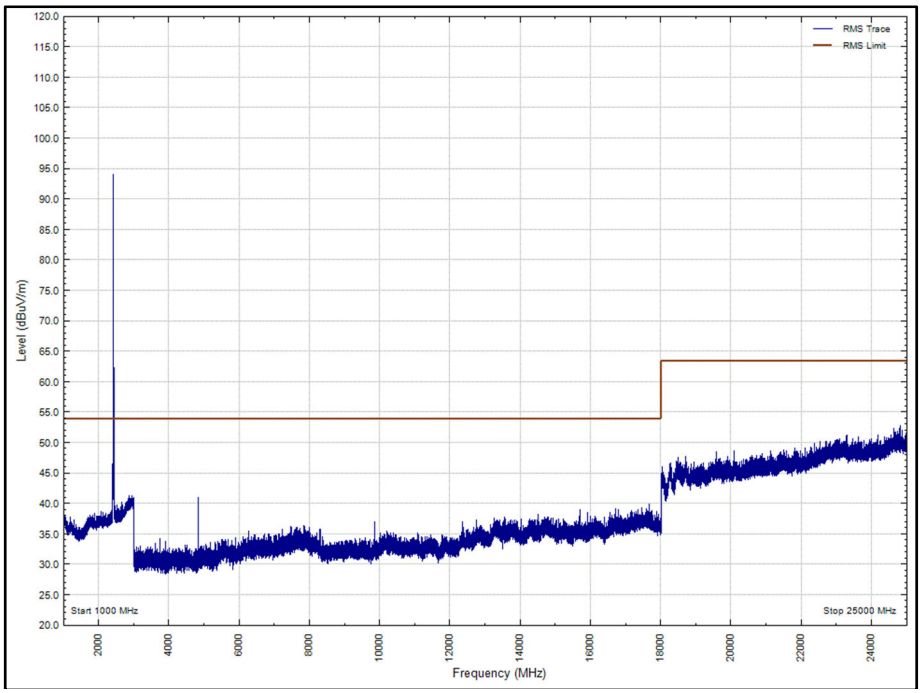

Figure 55 - 2412 MHz - 1 GHz to 25 GHz, Horizontal, EUT Orientation: Z, Average

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

Table 34 - Radiated Emissions Results, 30 MHz to 1 GHz - 2437 MHz

*No emissions were detected within 10 dB of the limit.

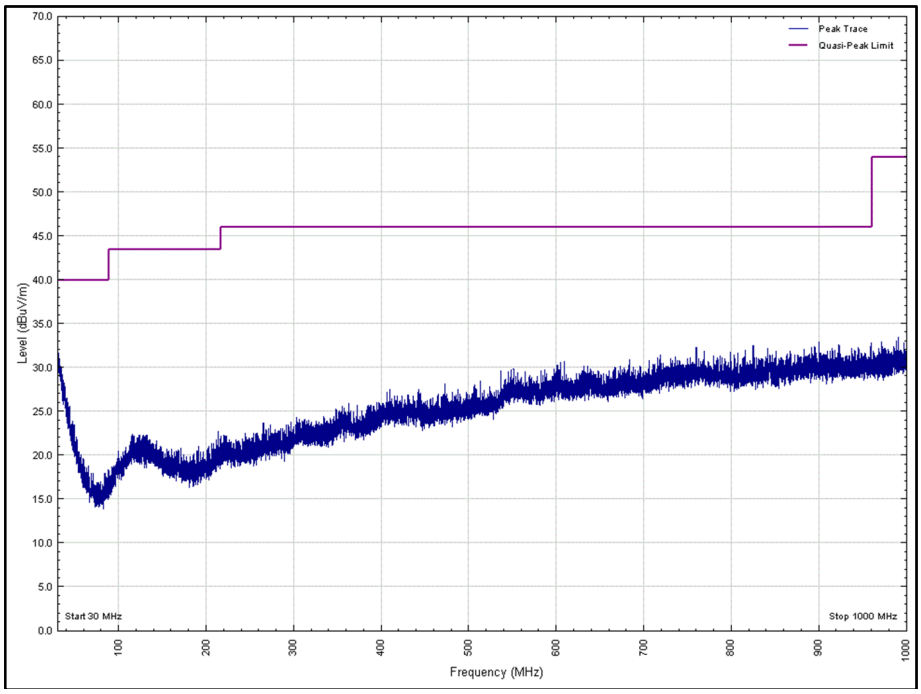

Figure 56 - 30 MHz to 1 GHz, 2437 MHz, Vertical, EUT Orientation X

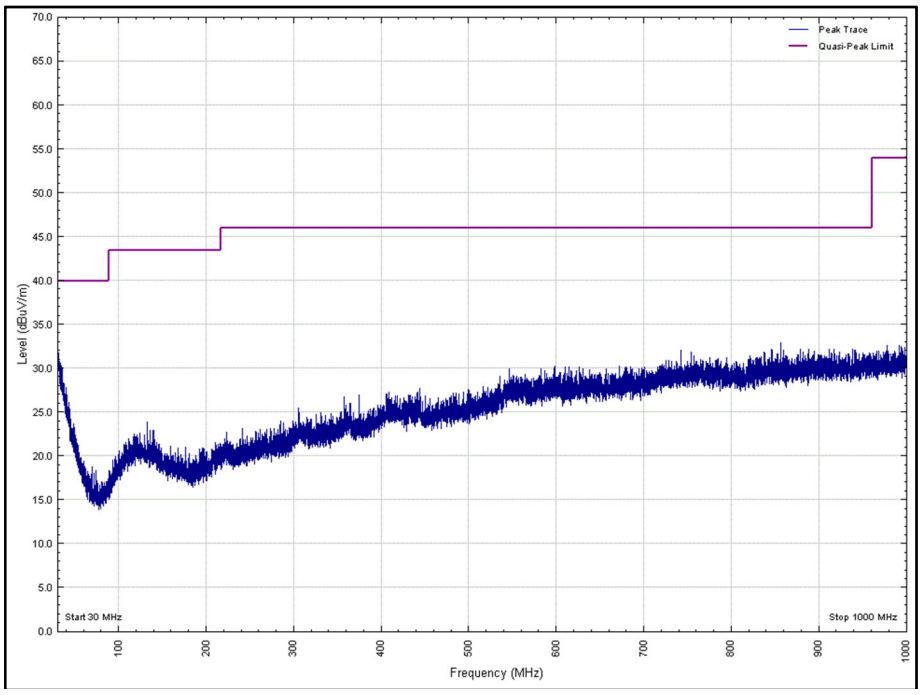

Figure 57 - 30 MHz to 1 GHz, 2437 MHz, Horizontal, EUT Orientation X