

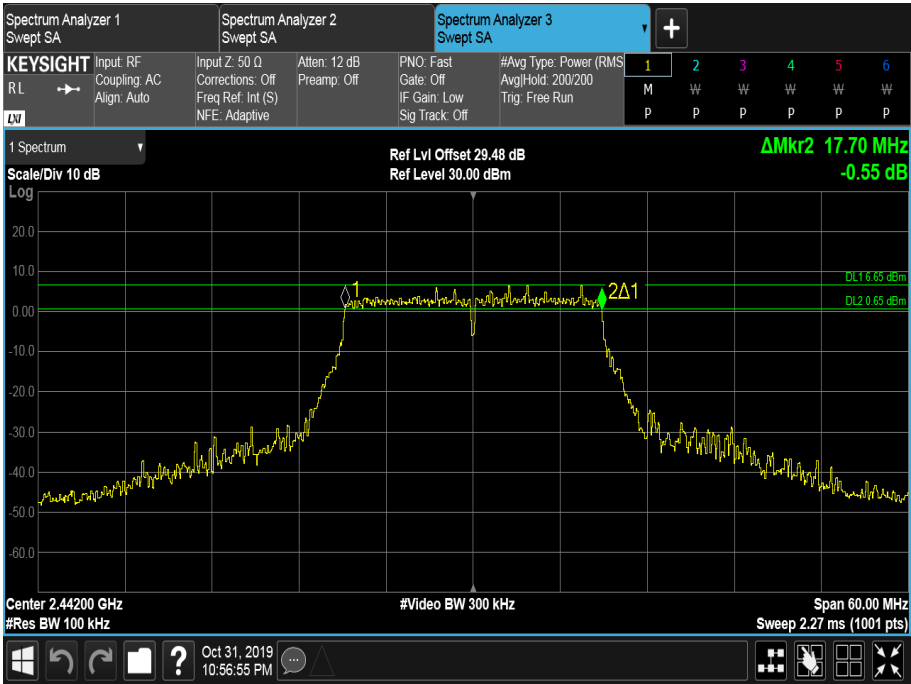


Figure 93 - 2442 MHz - 6 dB DTS Bandwidth

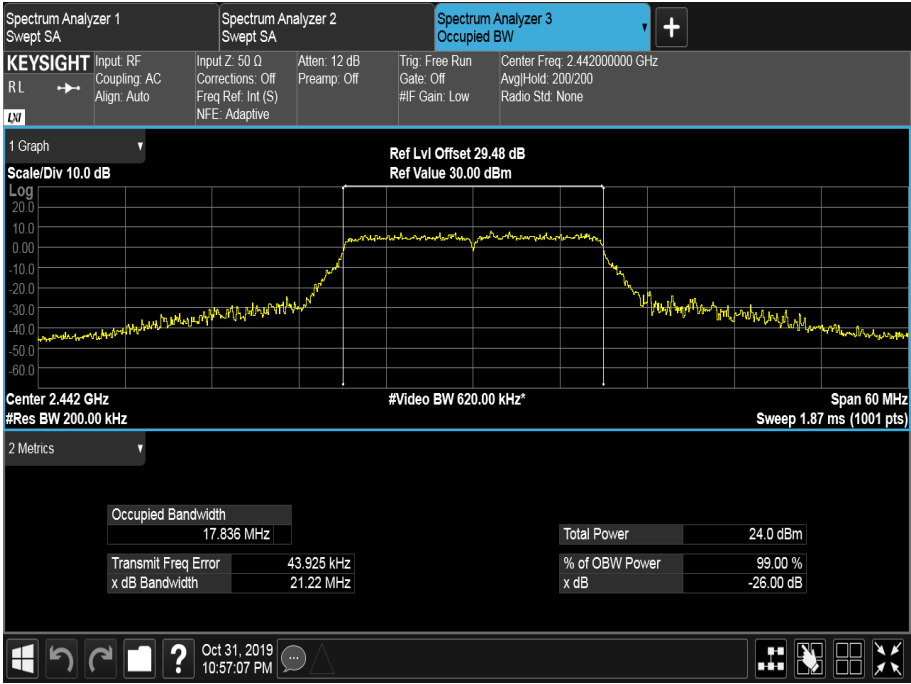


Figure 94 - 2442 MHz - 99% Occupied Bandwidth

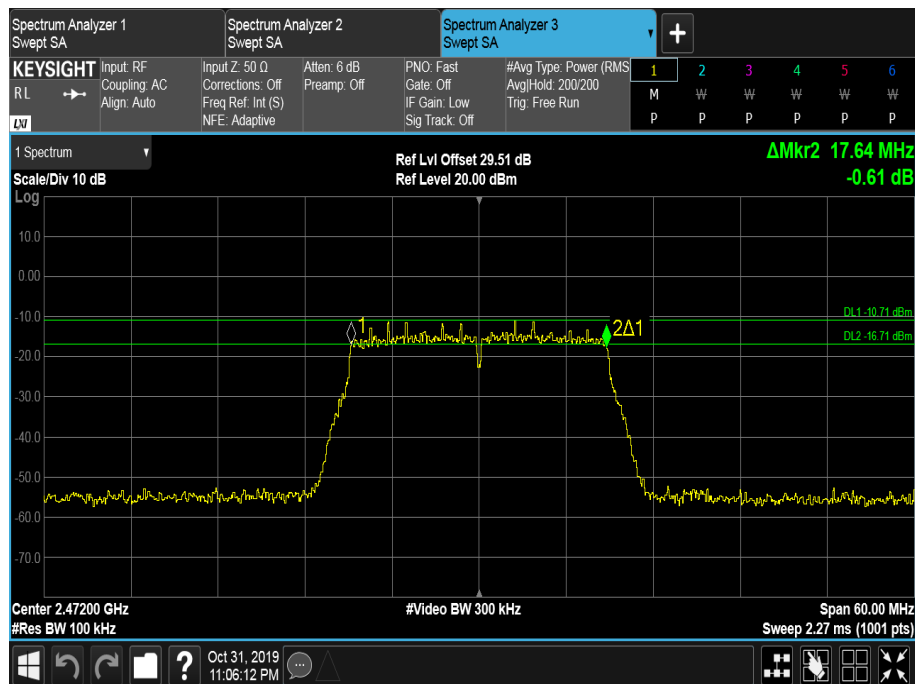


Figure 95 - 2472 MHz - 6 dB DTS Bandwidth

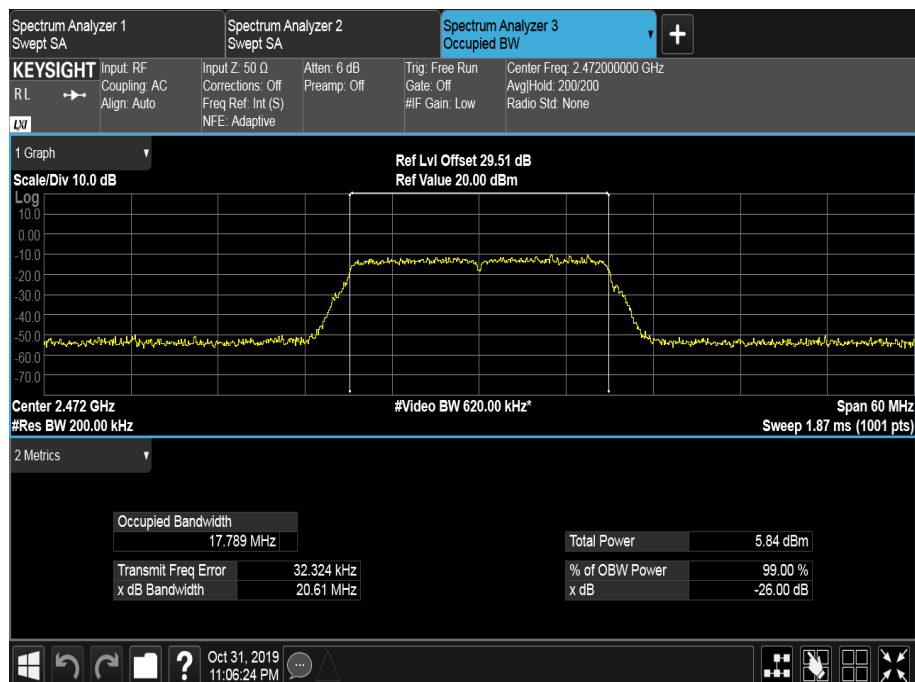


Figure 96 - 2472 MHz - 99% Occupied Bandwidth

FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISDC RSS-247, Clause 5.2(a)

The minimum 6 dB Bandwidth shall be at least 500 kHz.



2.3.7 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
Multimeter	Fluke	79 Series III	611	12	11-Sep-2020
Hygrometer	Rotronic	I-1000	3220	12	25-Sep-2020
1800-6000 MHz Power Splitter	Mini-Circuits	ZN2PD-63-S+	4055	-	O/P Mon
Power splitter - 2 port	Mini-Circuits	ZN2PD-63-S+	4743	12	23-Sep-2020
EXA	Keysight Technologies	N9010B	4968	24	21-Dec-2019
Network Analyser	Keysight Technologies	E5063A	5018	12	20-May-2020
Electronic Calibration Module	Keysight Technologies	85093C	5188	12	21-May-2020
AC Programmable Power Supply	iTech	IT7324	5227	-	O/P Mon
Power Splitter, 4 way	Mini-Circuits	ZN4PD1-63-S+	5235	-	O/P Mon
Power Splitter, 4 way	Mini-Circuits	ZN4PD1-63-S+	5236	-	O/P Mon
10 dB Attenuator	Telegartner	J01156A0031	Not Serialised	-	O/P Mon
10 dB Attenuator	Telegartner	J01156A0031	Not Serialised	-	O/P Mon
10 dB Attenuator	Telegartner	J01156A0031	Not Serialised	-	O/P Mon
10 dB Attenuator	Telegartner	J01156A0031	Not Serialised	-	O/P Mon

Table 58

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

2.4.2 Equipment Under Test and Modification State

A2304, S/N: C02Z1006N5VL - Modification State 0
A2304, S/N: C02Z1007N5VN - Modification State 0

2.4.3 Date of Test

12-August-2019 to 06-November-2019

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 15.247 paragraph (d) and RSS-247 section 5.5.

The measurements displayed within this report, have in some cases been limited to those modes which have been shown to be worst case. Further measurements are held on file by TÜV SÜD and are available if required.

2.4.5 Environmental Conditions

Ambient Temperature 15.8 - 27.0°C
Relative Humidity 35 - 40.3%

2.4.6 Test Results

2.4 GHz WLAN

AUX (SISO)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11b	1 Mbps	2412	2400	-47.58
802.11g	6 Mbps	2412	2400	-42.58
802.11n	MCS0	2412	2400	-47.71

Table 59

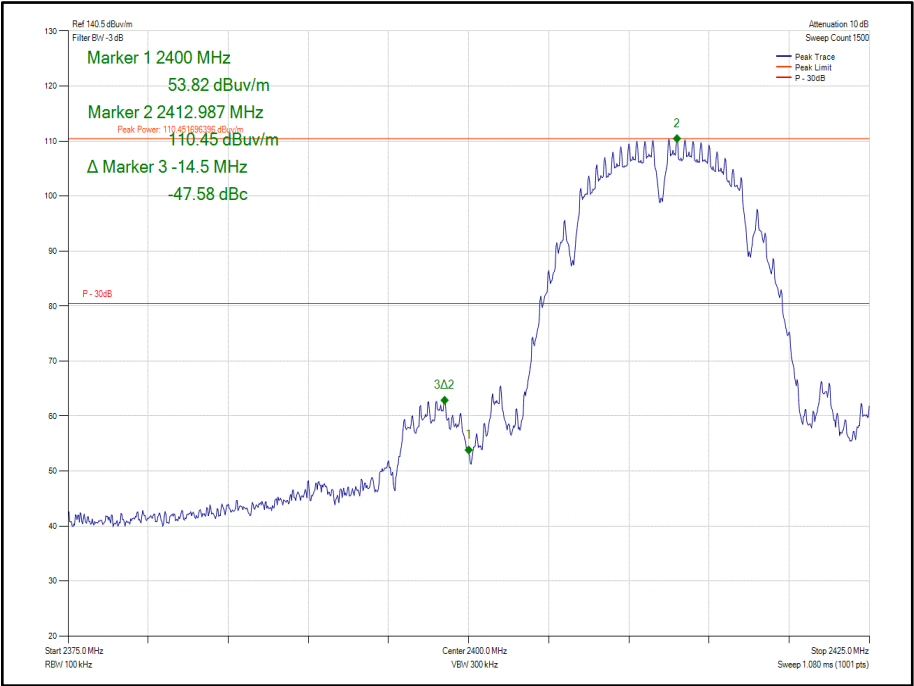


Figure 97 - 802.11b - 2412 MHz
Band Edge Frequency 2400 MHz

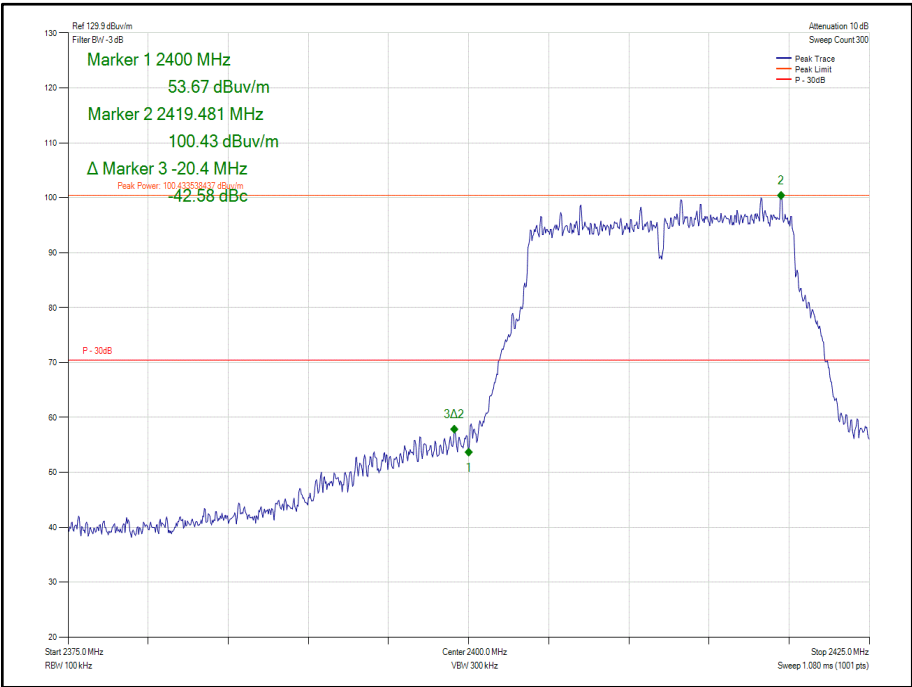


Figure 98 - 802.11g - 2412 MHz
Band Edge Frequency 2400 MHz

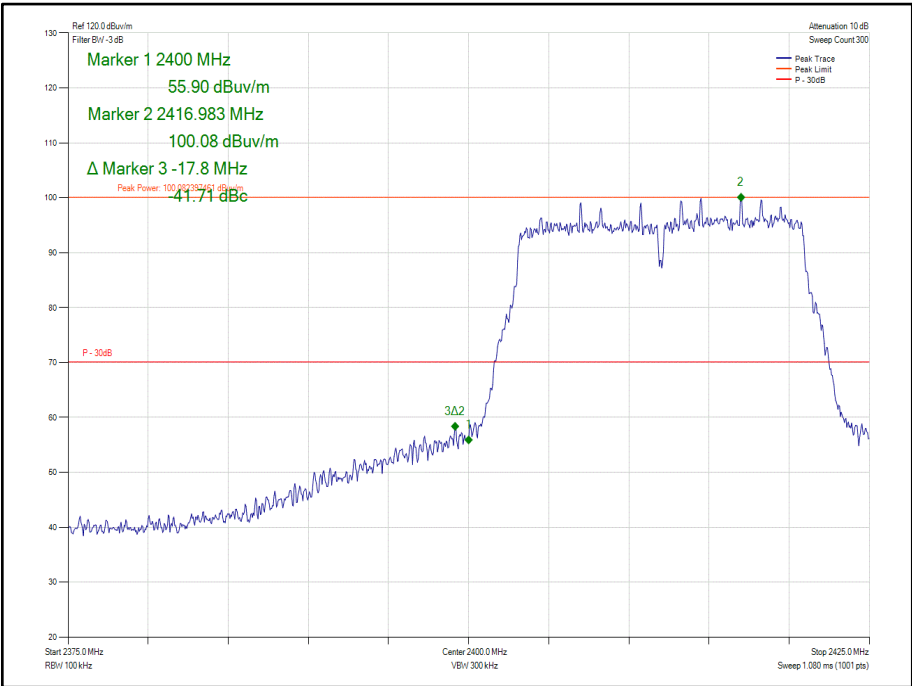
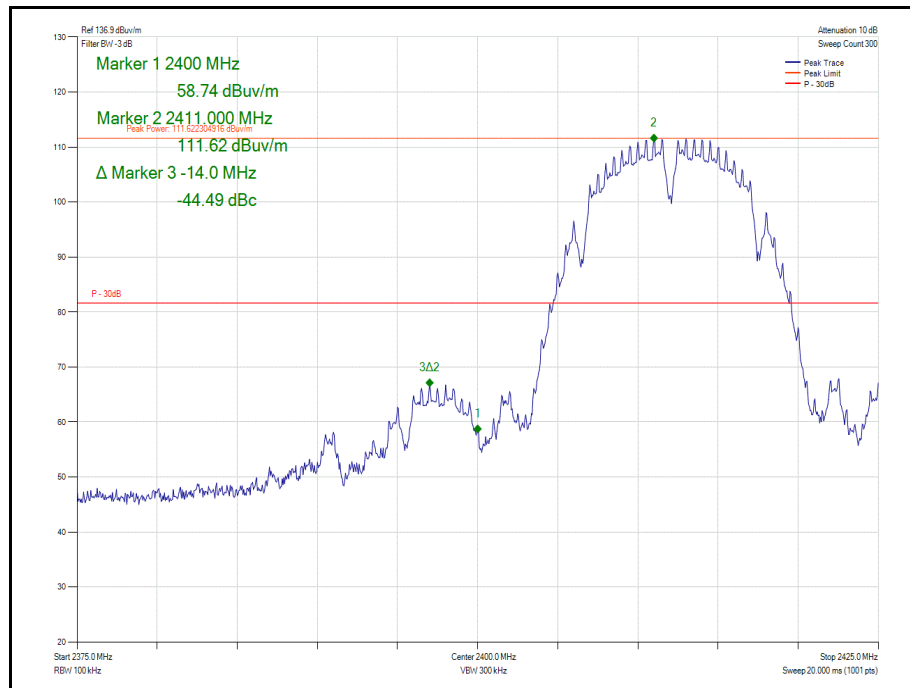


Figure 99 - 802.11n - 2412 MHz
Band Edge Frequency 2400 MHz

Main (SISO)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11b, Core 2	1 Mbps	2412	2400	-44.49
802.11g, Core 2	6 Mbps	2412	2400	-41.31
802.11n, Core 2	MCS0	2412	2400	-41.54

Table 60



**Figure 100 - 802.11b, Core 2 - 2412 MHz
Band Edge Frequency 2400 MHz**

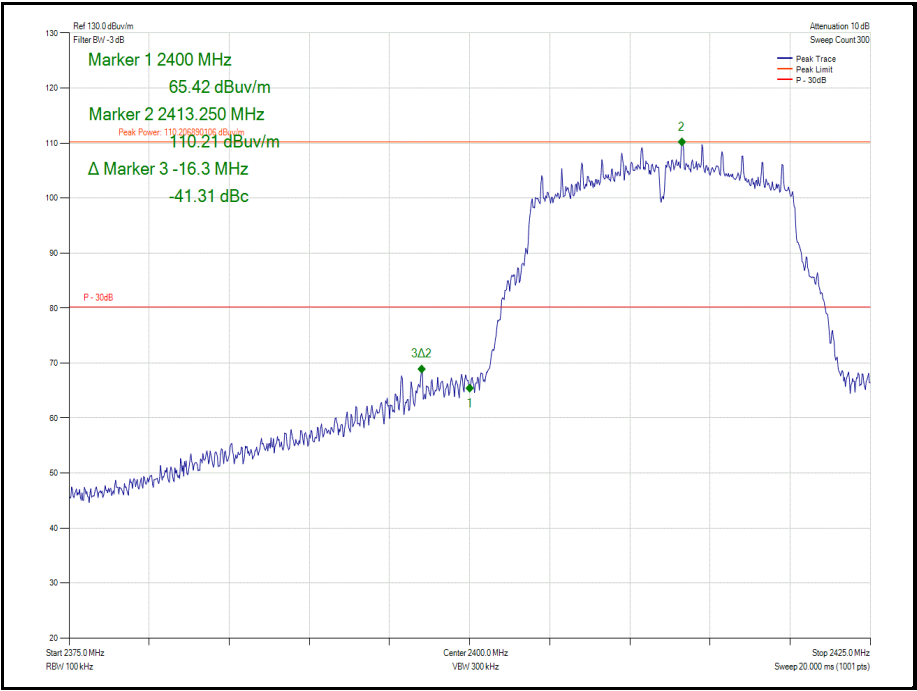


Figure 101 - 802.11g, Core 2 - 2412 MHz
Band Edge Frequency 2400 MHz

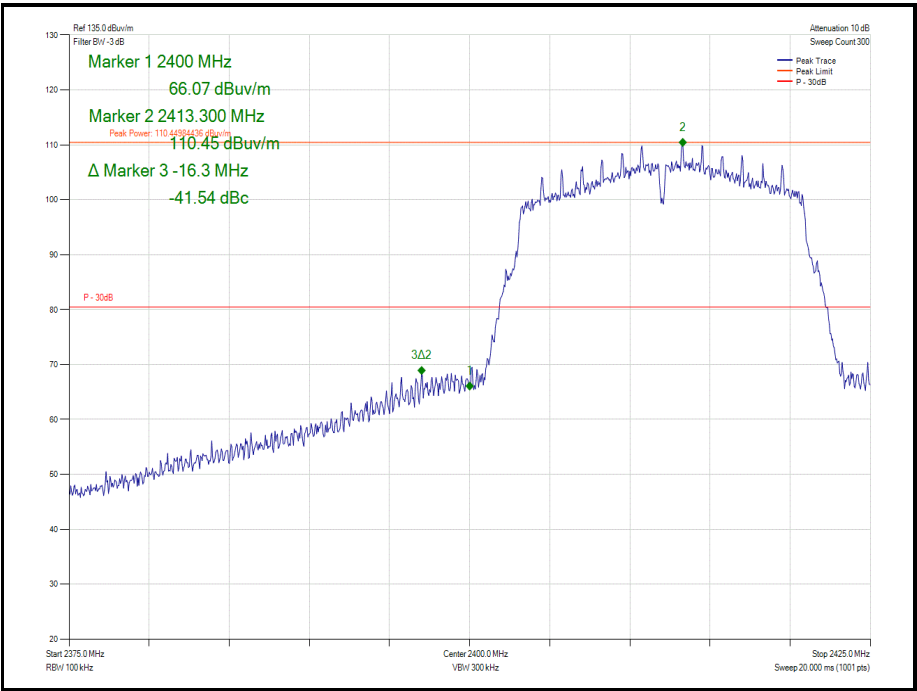


Figure 102 - 802.11n, Core 2 - 2412 MHz
Band Edge Frequency 2400 MHz



Main (MIMO 2Tx)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11b, Core 1-2	1 Mbps	2412	2400	-51.79
802.11n, Core 1-2	MCS0	2412	2400	-47.06

Table 61

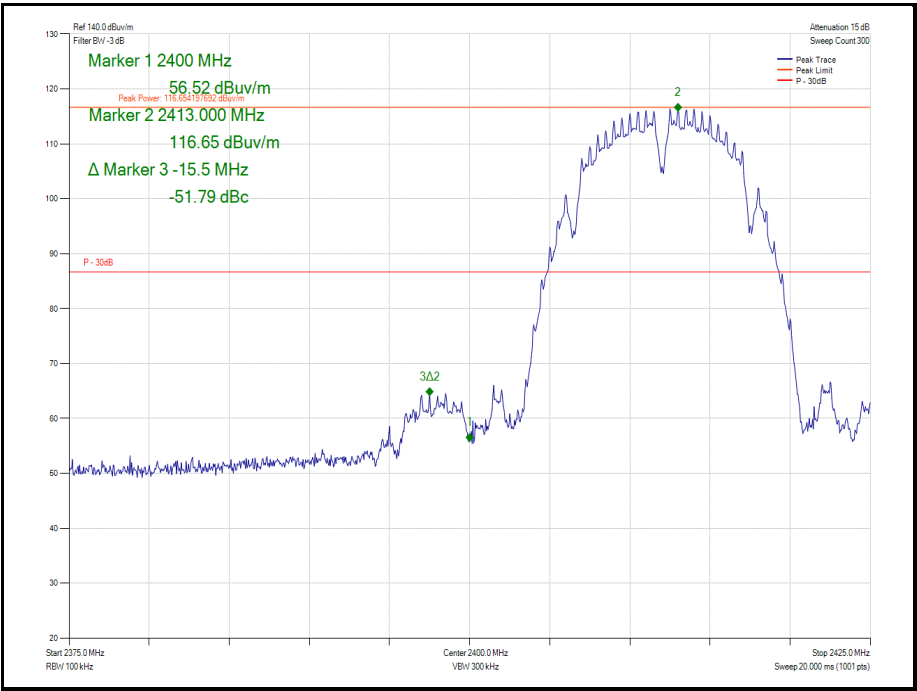


Figure 103 - 802.11b, Core 1-2 - 2412 MHz
Band Edge Frequency 2400 MHz

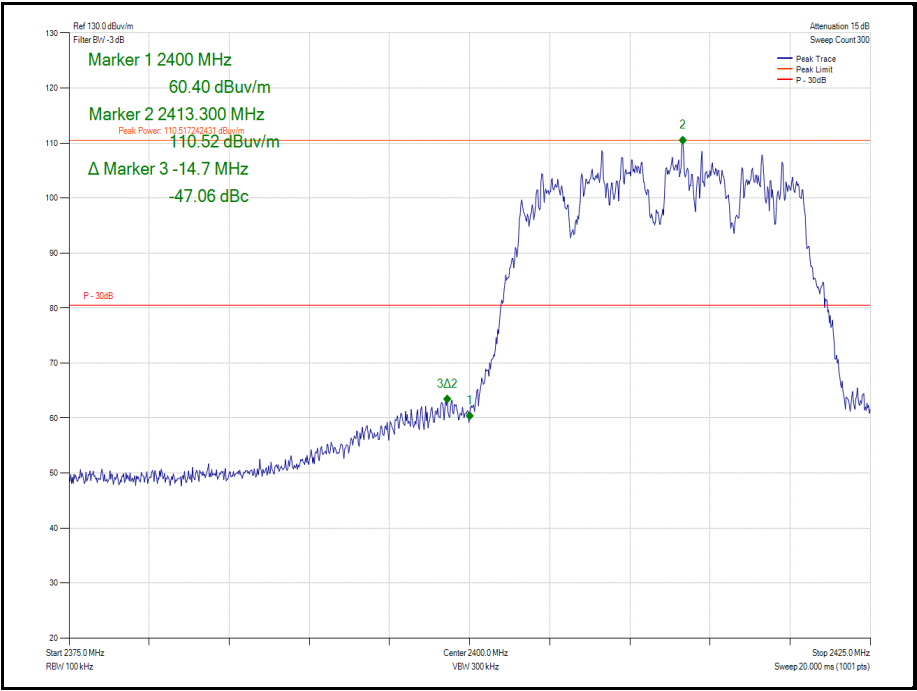


Figure 104 - 802.11n, Core 1-2 - 2412 MHz
Band Edge Frequency 2400 MHz

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
802.11b, Core 0-1-2	1 Mbps	2412	2400	-55.20
802.11n, Core 0-1-2	MCS0	2412	2400	-47.86
TXBF, Core 0-1-2	MCS0	2412	2400	-54.51

Ref 140.0 dBuV/m
Filter BW -3 dB

Attenuation 15 dB
Sweep Count 300

Marker 1 2400 MHz
Peak Power: 119.94 dBuV/m
59.77 dBuV/m

Marker 2 2411.000 MHz
119.94 dBuV/m

Δ Marker 3 -12.5 MHz
-55.20 dBc

P - 30dB

Start 2375.0 MHz
RBW 100 kHz

Center 2400.0 MHz
VBW 300 kHz

Stop 2425.0 MHz
Sweep 20.000 ms (1001 pts)

Legend:
— Peak Trace
— Peak Limit
— P - 30dB

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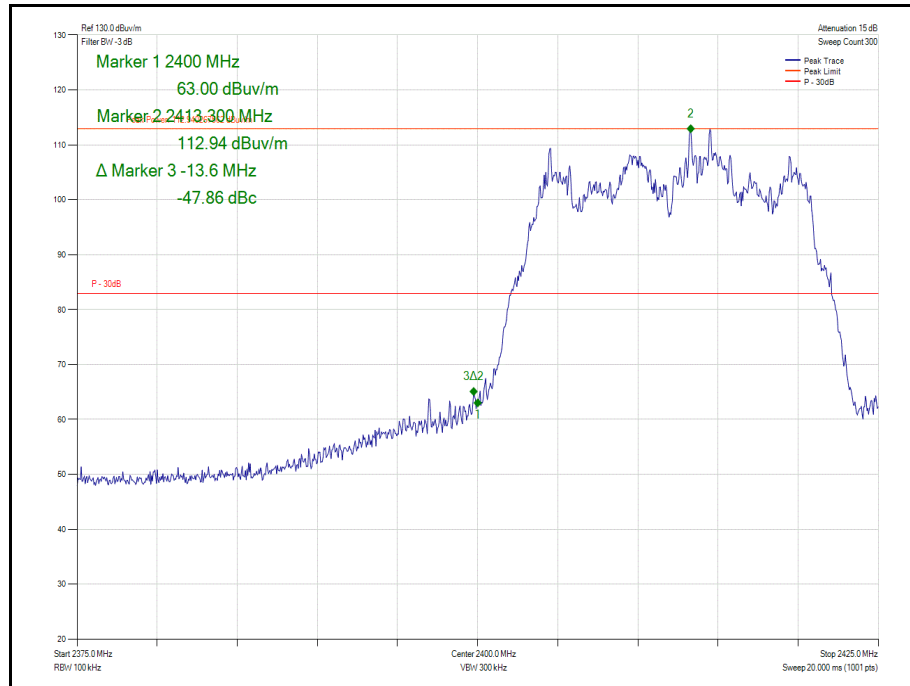


Figure 106 - 802.11n, Core 0-1-2 - 2412 MHz
Band Edge Frequency 2400 MHz

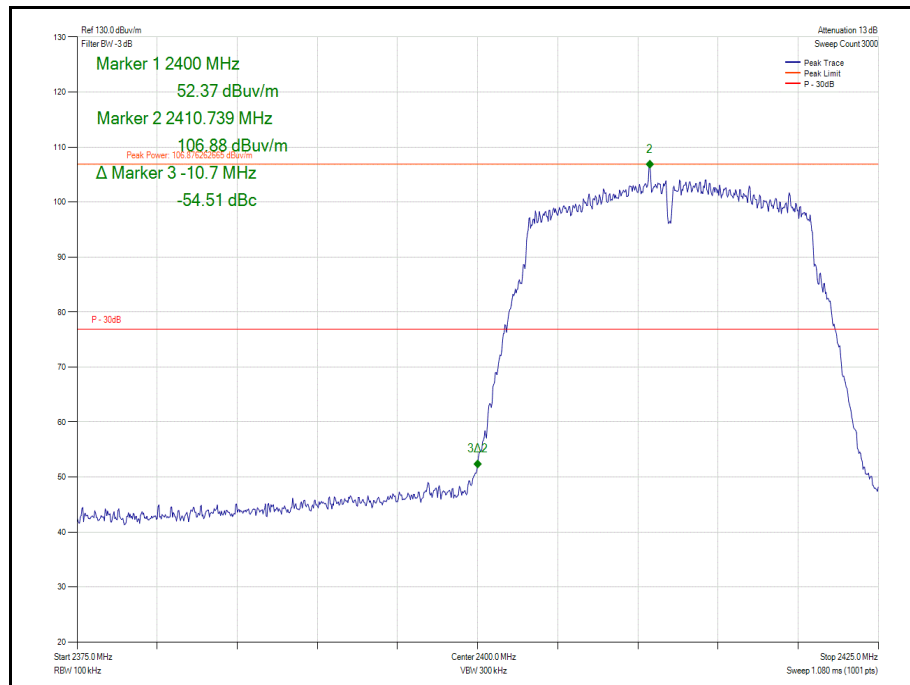


Figure 107 - TXBF, Core 0-1-2 - 2412 MHz
Band Edge Frequency 2400 MHz



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 and RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
10dB/1W SMA Attenuator dc - 18GHz	Sealectro	60-674-1010-89	395	-	O/P Mon
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	0	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
Cable (3.5kW Tx, Nm-Nm, 7m)	Scott Cables	9918-NMNM-7000	4500	6	09-Jul-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-Dec-2019
Mast Controller	Maturo GmbH	NCD	4810	0	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	0	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	11-Nov-2019
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5095	12	04-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	06-Oct-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	05-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5107	12	06-Oct-2020
EmX Emissions Software	TUV SUD	EmX	5125	0	N/A - Software
1.5m 40GHz RF Cable	Scott Cables	KPS-1501-2000-KPS	5127	6	11-Dec-2019
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Mast	Maturo	TAM 4.0-P	5158	0	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	0	TU
Turntable	Maturo	TT 15WF	5160	0	TU
8 Meter Cable	Teledyne	PR90-088-8MTR	5212	12	30/08/2020
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	11-Mar-2020

Table 63

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

A2304, S/N: C02Z1006N5VL - Modification State 0
A2304, S/N: C02Z1007N5VN - Modification State 0

2.5.3 Date of Test

12-August-2019 to 06-November-2019

2.5.4 Test Method

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

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.

The measurements displayed within this report, have been limited to those modes which have been shown to be worst case. Further measurements are held on file by TÜV SÜD, and are available if required

2.5.5 Environmental Conditions

Ambient Temperature	15.8 – 27.0°C
Relative Humidity	35 – 40.3%

2.5.6 Test Results

2.4 GHz WLAN

Aux (SISO)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11b	1 Mbps	2412	2390	58.29	46.88
802.11b	1 Mbps	2462	2483.5	58.54	47.93
802.11b	1 Mbps	2467	2483.5	62.32	49.09
802.11b	1 Mbps	2472	2483.5	60.17	51.42
802.11g	6 Mbps	2412	2390	61.57	46.86
802.11g	6 Mbps	2462	2483.5	63.57	50.32
802.11g	6 Mbps	2467	2483.5	65.46	51.48
802.11g	6 Mbps	2472	2483.5	65.78	48.58
802.11n	MCS0	2412	2390	60.14	49.07
802.11n	MCS0	2462	2483.5	66.15	51.3
802.11n	MCS0	2467	2483.5	63.47	51.45
802.11n	MCS0	2472	2483.5	65.86	49.94

Table 64

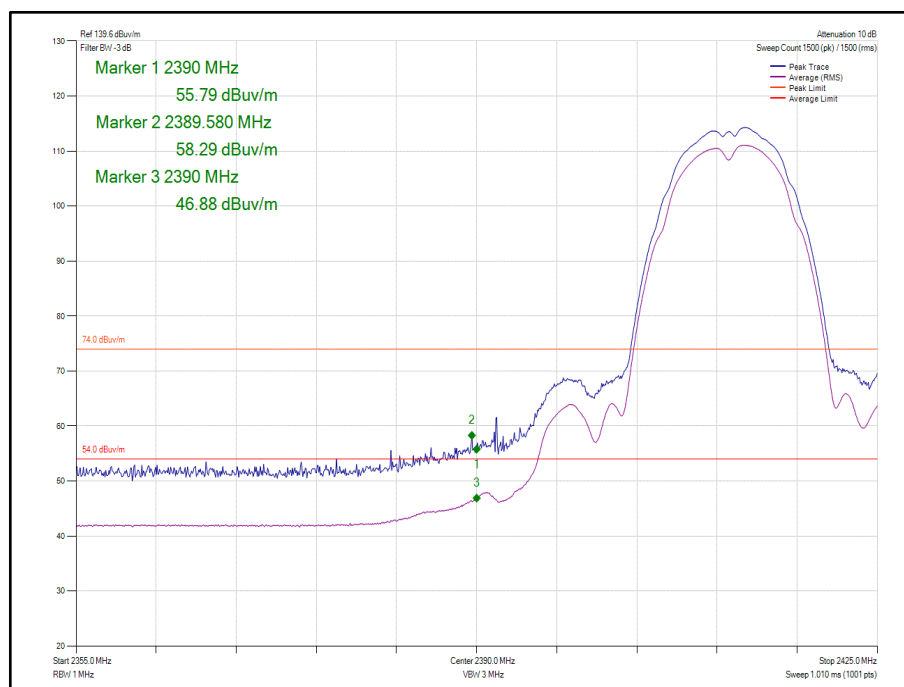
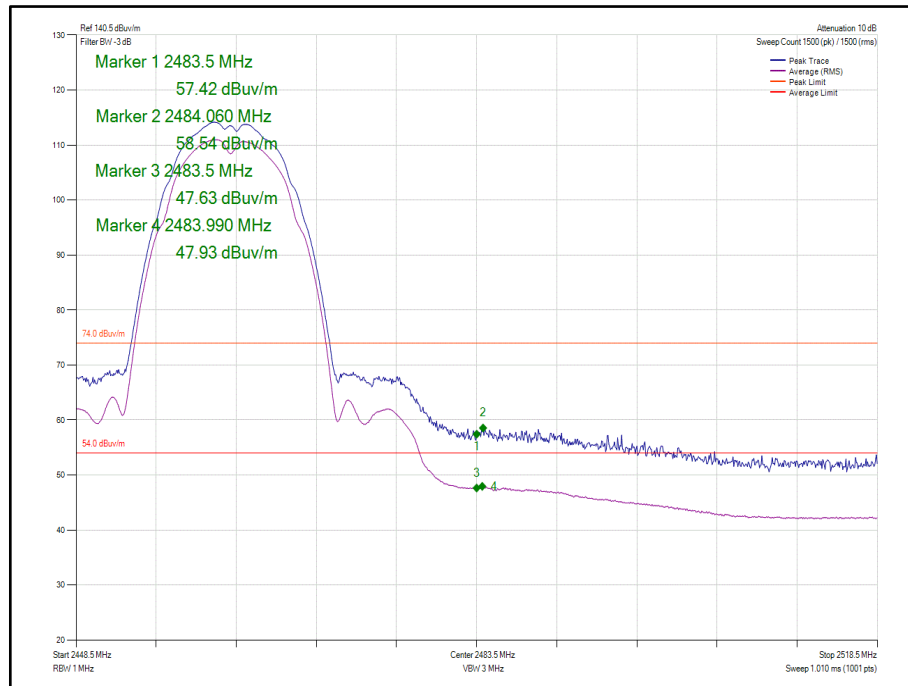
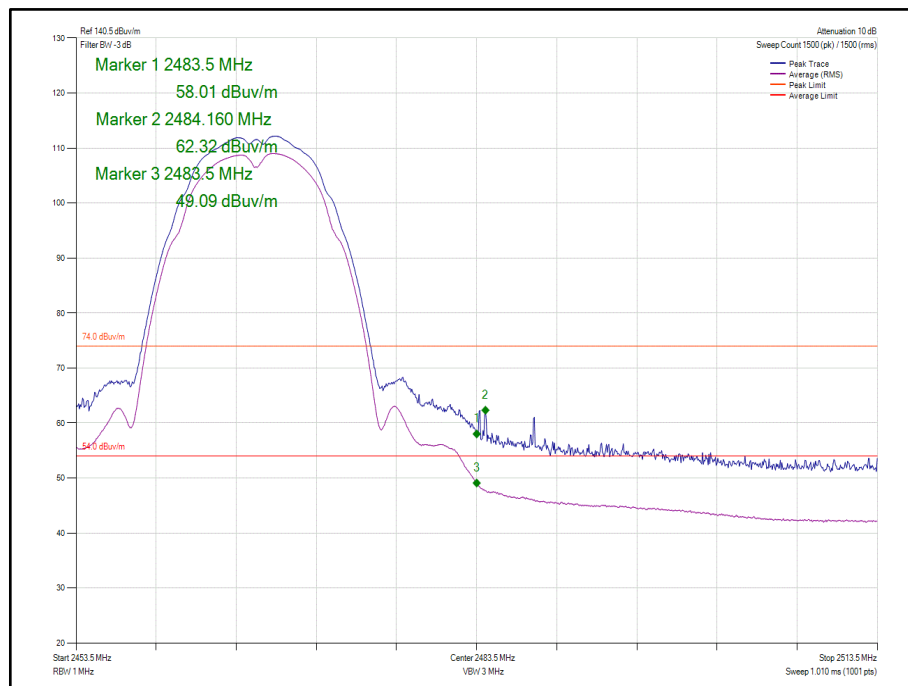


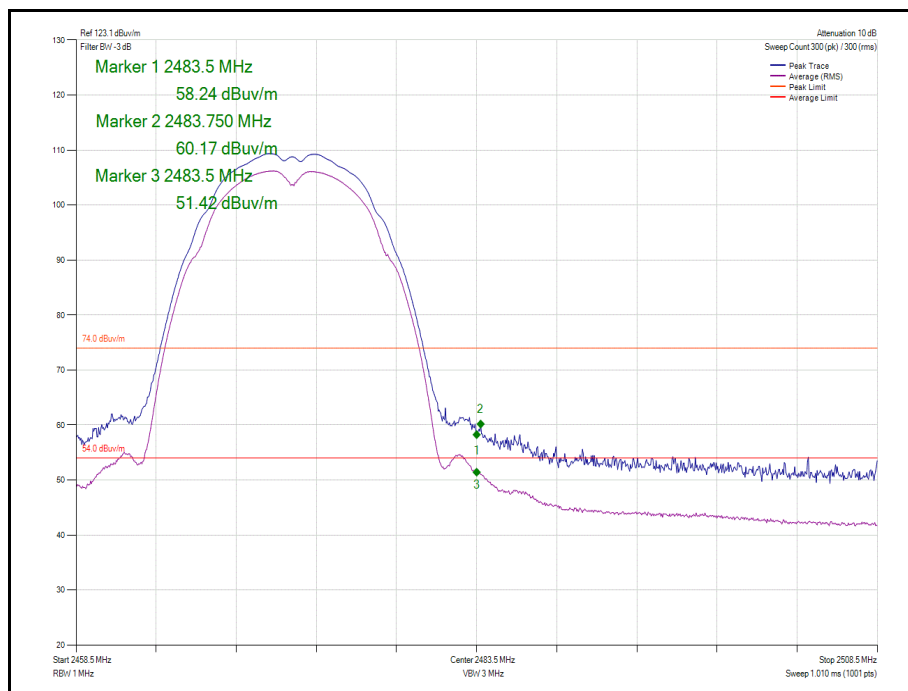
Figure 108 - 802.11b - 2412 MHz
Band Edge Frequency 2390 MHz



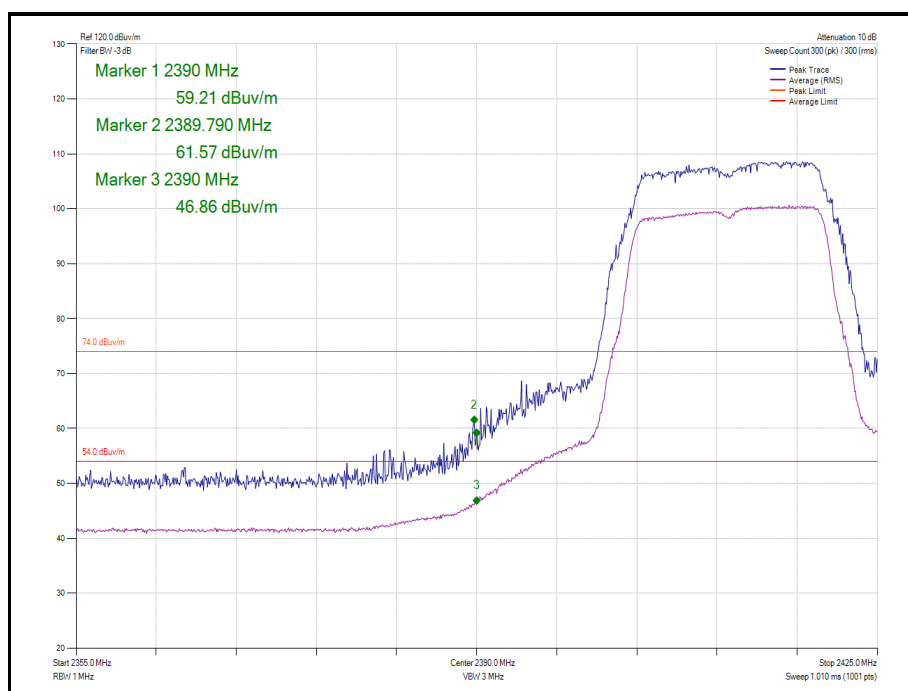
**Figure 109 - 802.11b - 2462 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 110 - 802.11b - 2467 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 111 - 802.11b - 2472 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 112 - 802.11g - 2412 MHz
Band Edge Frequency 2390 MHz**

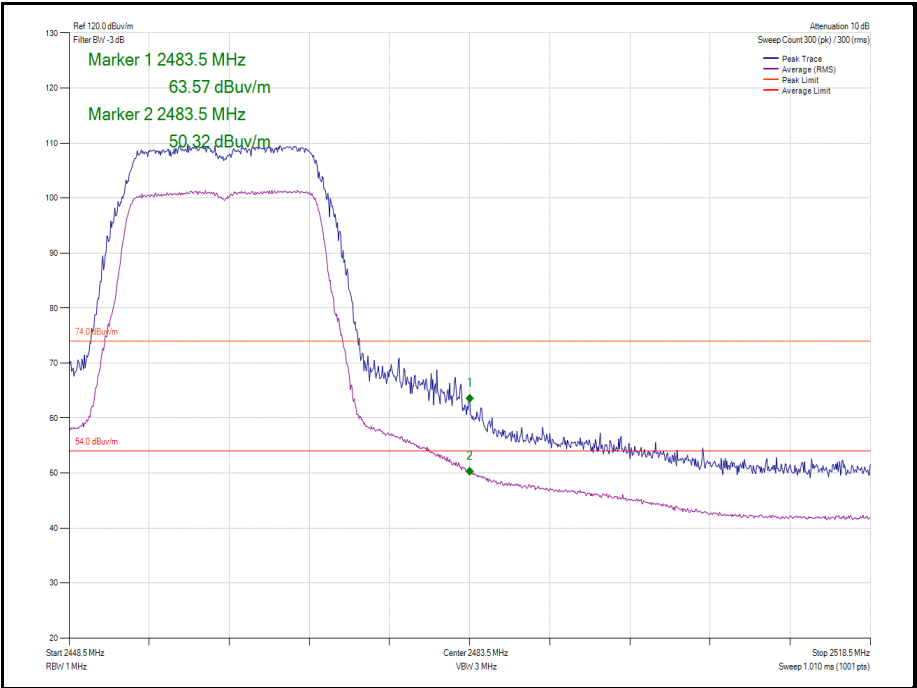


Figure 113 - 802.11g - 2462 MHz
Band Edge Frequency 2483.5 MHz

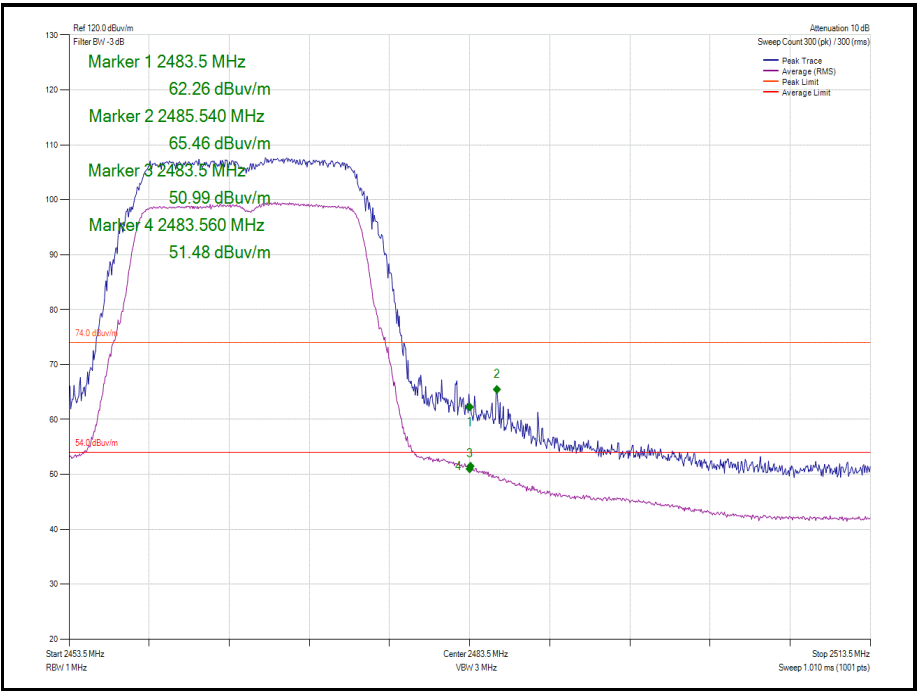
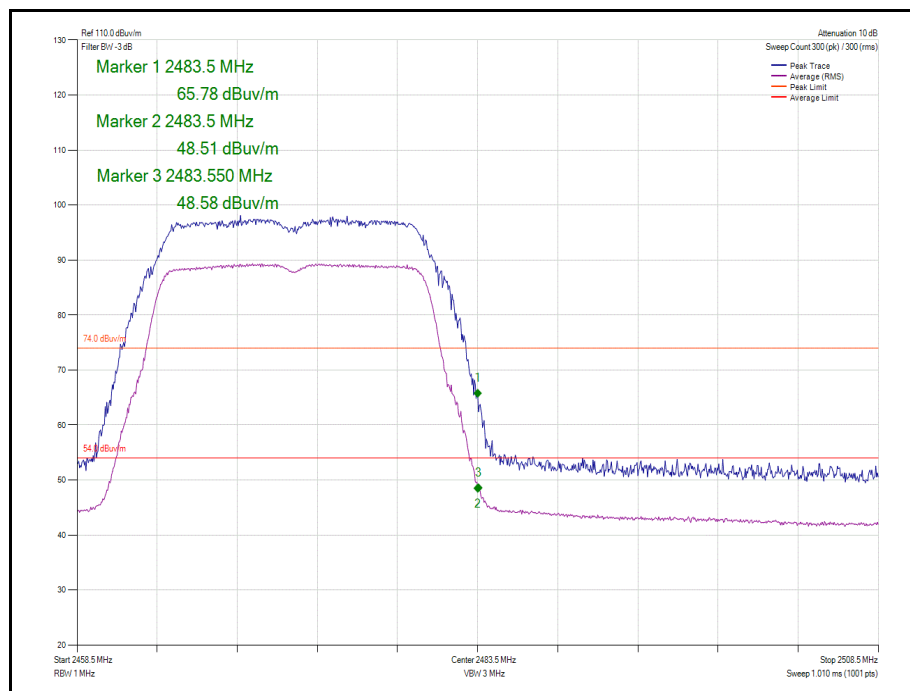
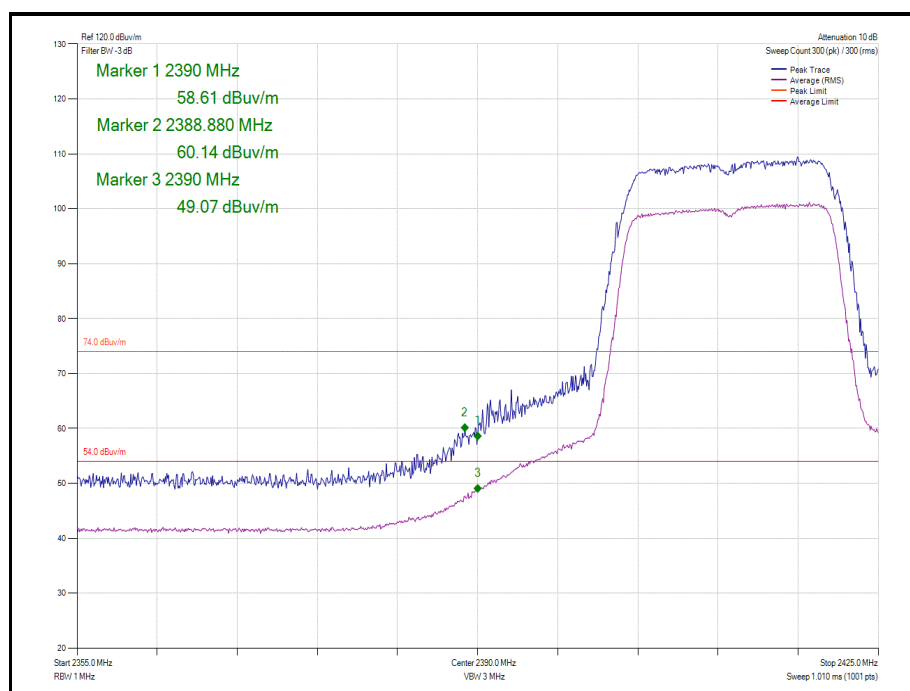


Figure 114 - 802.11g - 2467 MHz
Band Edge Frequency 2483.5 MHz



**Figure 115 - 802.11g - 2472 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 116 - 802.11n - 2412 MHz
Band Edge Frequency 2483.5 MHz**

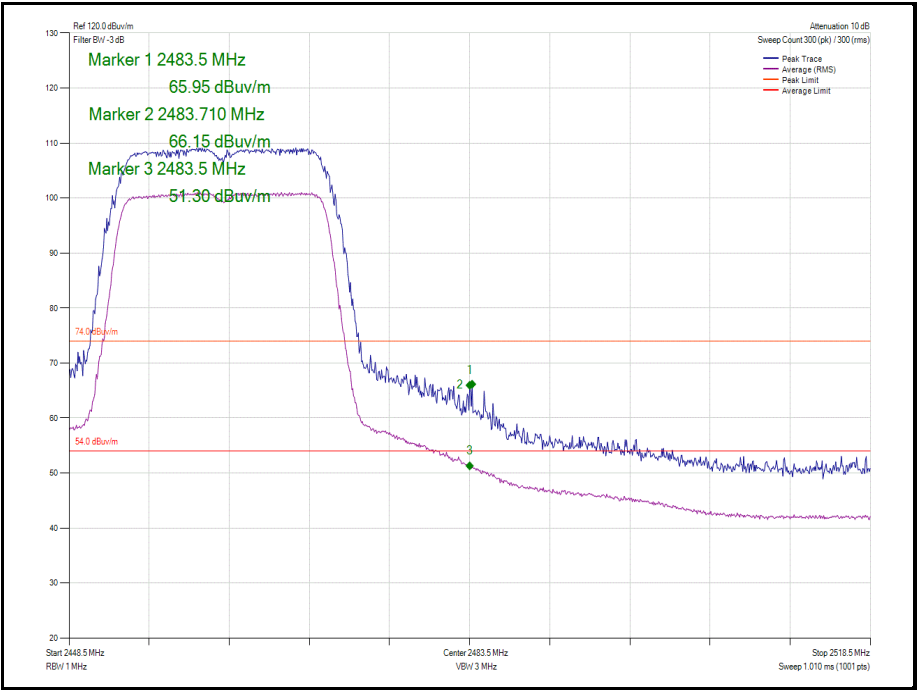


Figure 117 - 802.11n - 2462 MHz
Band Edge Frequency 2483.5 MHz

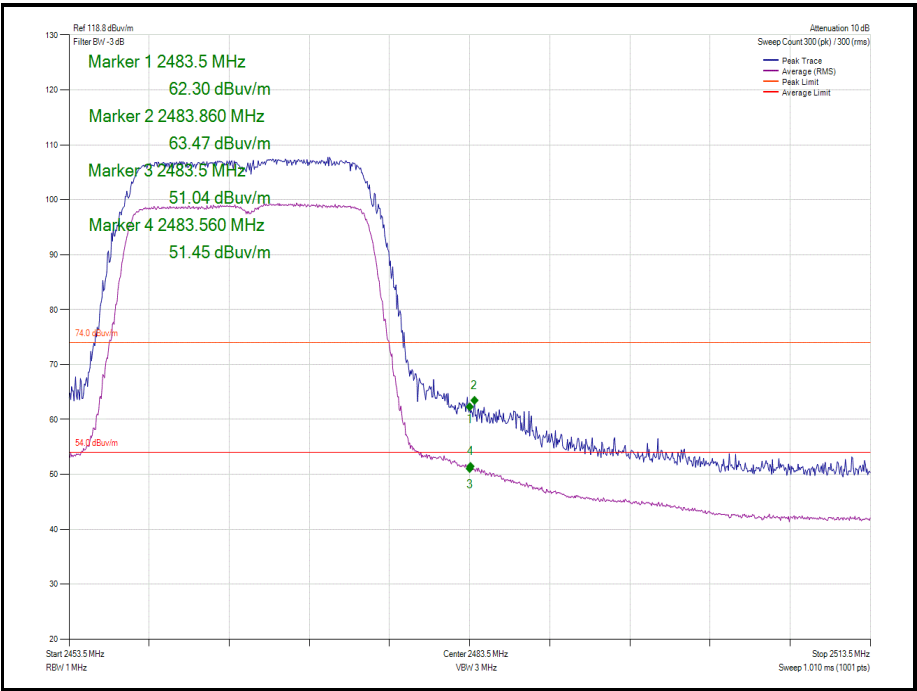


Figure 118 - 802.11n - 2467 MHz
Band Edge Frequency 2483.5 MHz

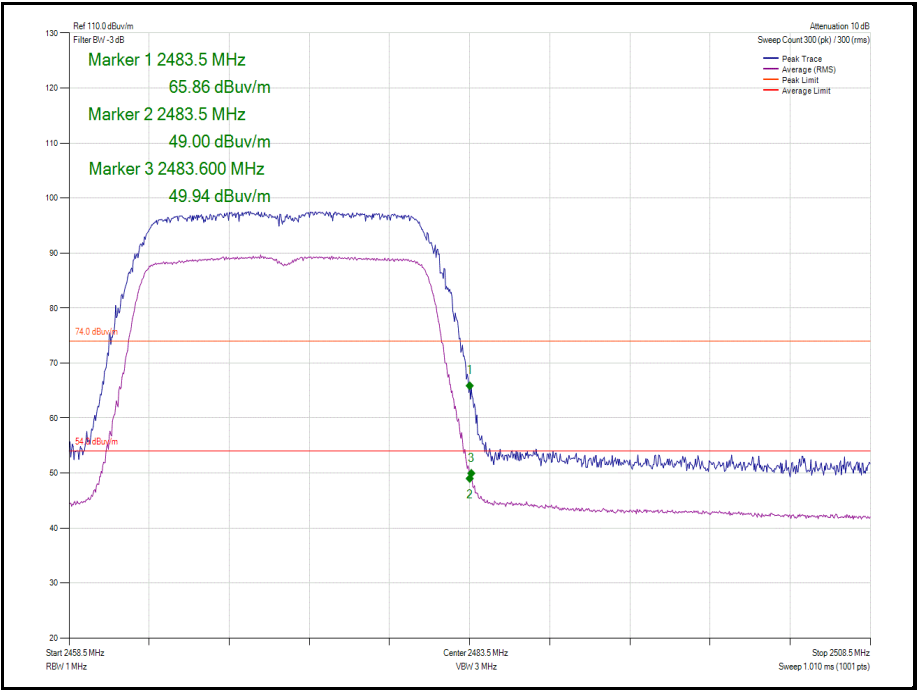
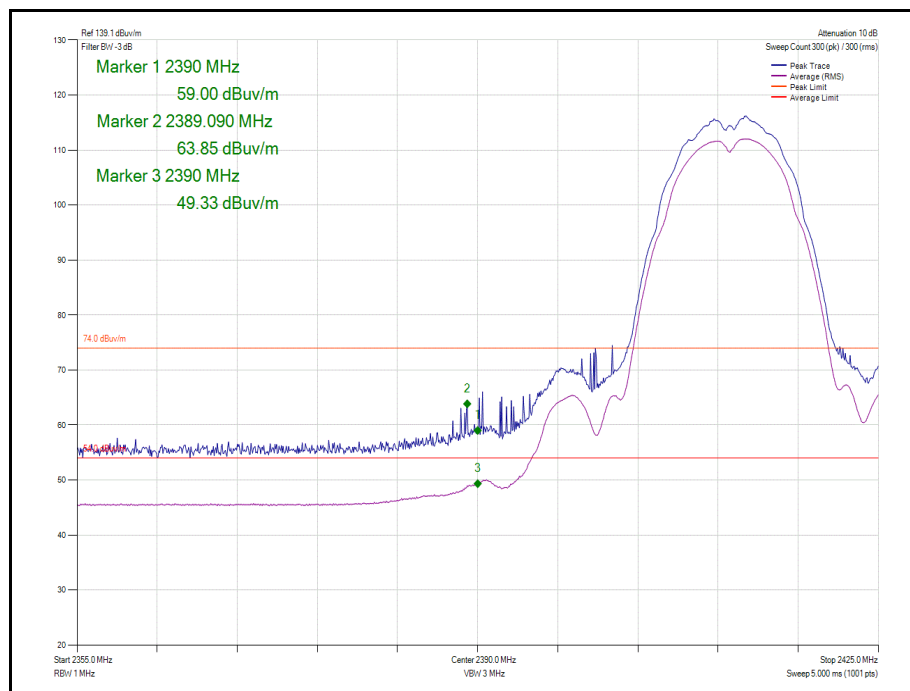


Figure 119 - 802.11n - 2472 MHz
Band Edge Frequency 2483.5 MHz

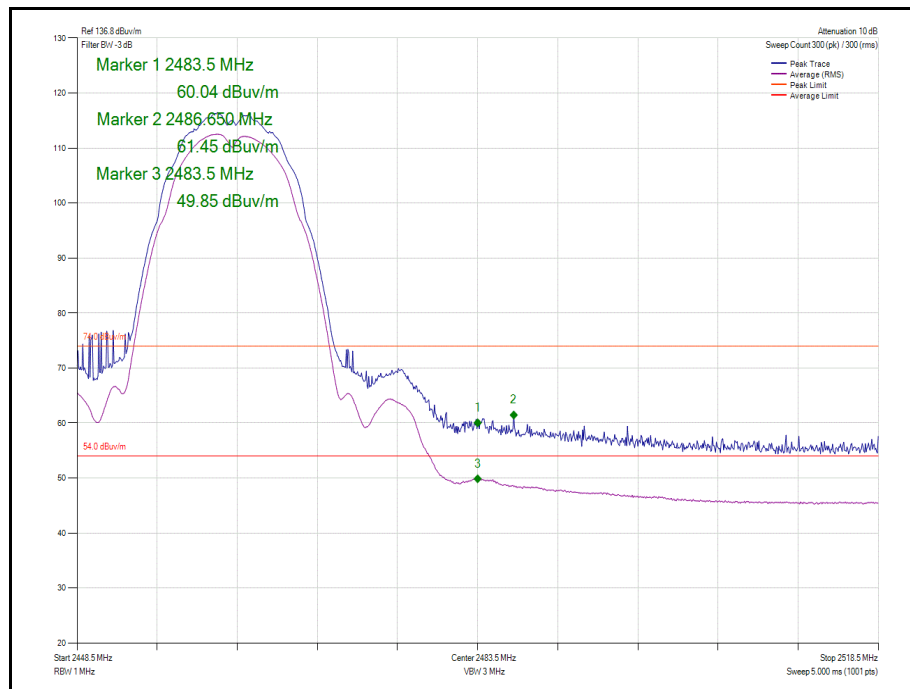
Main (SISO)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11b, Core 2	1 Mbps	2412	2390	63.85	49.33
802.11b, Core 2	1 Mbps	2462	2483.5	61.45	49.85
802.11b, Core 2	1 Mbps	2467	2483.5	60.27	50.14
802.11b, Core 2	1 Mbps	2472	2483.5	64.70	51.27
802.11g, Core 2	6 Mbps	2412	2390	64.31	50.15
802.11g, Core 2	6 Mbps	2462	2483.5	64.00	50.34
802.11g, Core 2	6 Mbps	2467	2483.5	61.74	50.27
802.11g, Core 2	6 Mbps	2472	2483.5	65.94	51.25
802.11n, Core 2	MCS0	2412	2390	66.77	51.01
802.11n, Core 2	MCS0	2462	2483.5	65.64	50.83
802.11n, Core 2	MCS0	2467	2483.5	61.56	50.07
802.11n, Core 2	MCS0	2472	2483.5	66.94	51.34

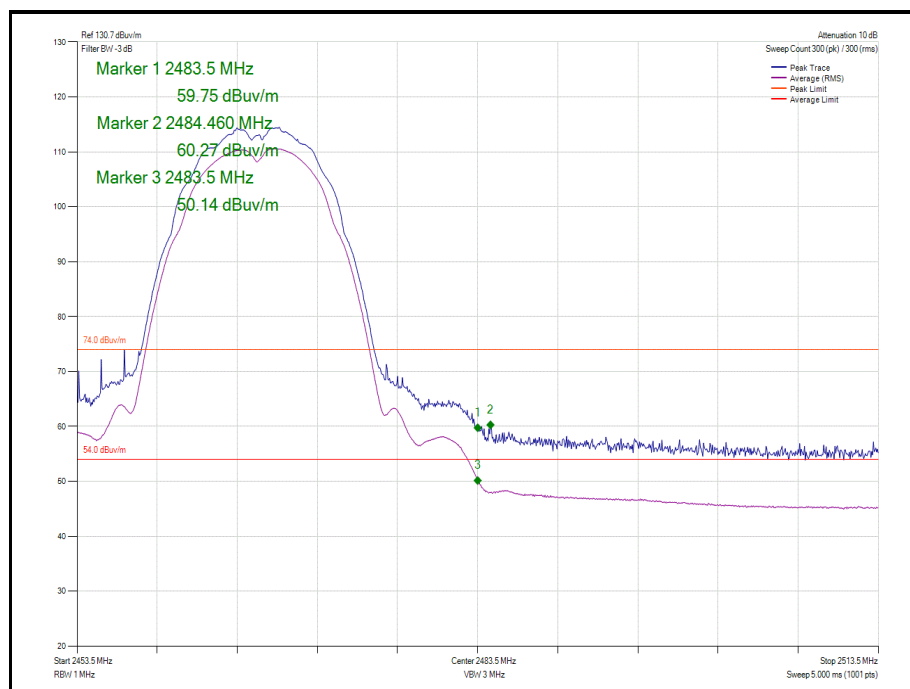
Table 65



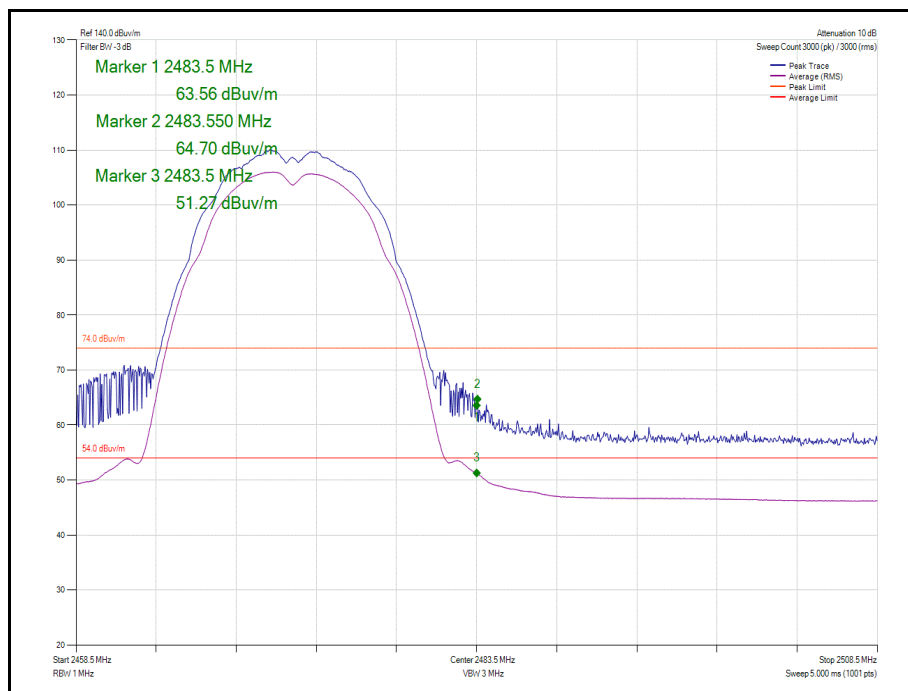
**Figure 120 - 802.11b, Core 2 - 2412 MHz
Band Edge Frequency 2390.0 MHz**



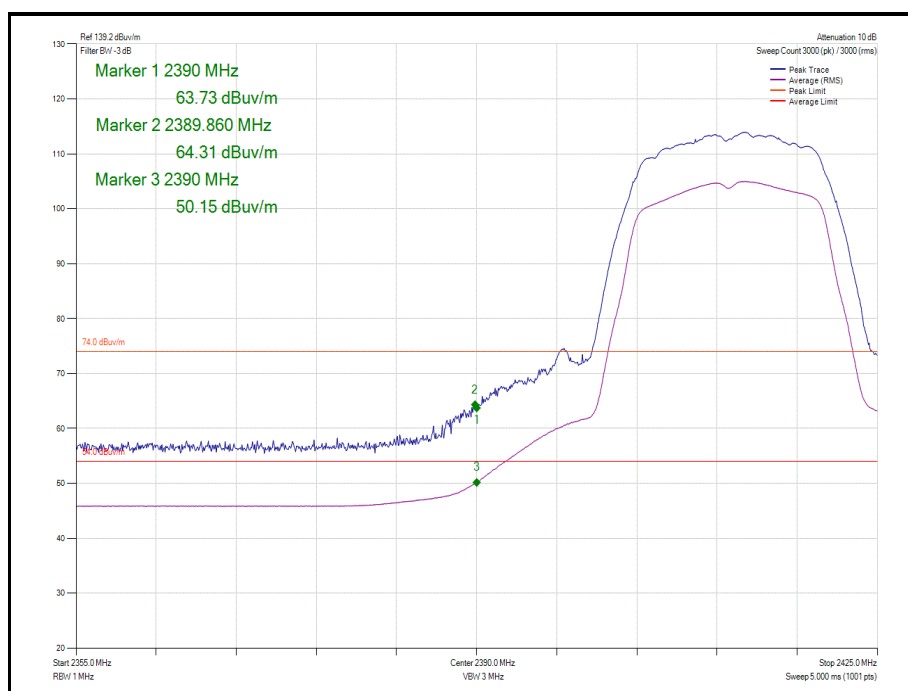
**Figure 121 - 802.11b, Core 2 - 2462 MHz
Band Edge Frequency 2483.5 MHz**



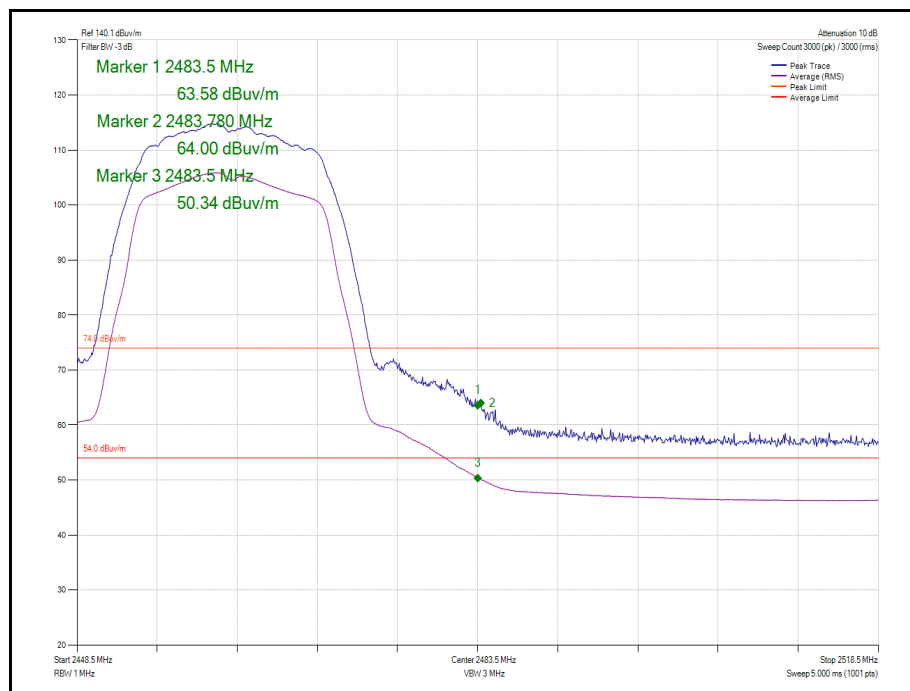
**Figure 122 - 802.11b, Core 2 - 2467 MHz
Band Edge Frequency 2483.5 MHz**



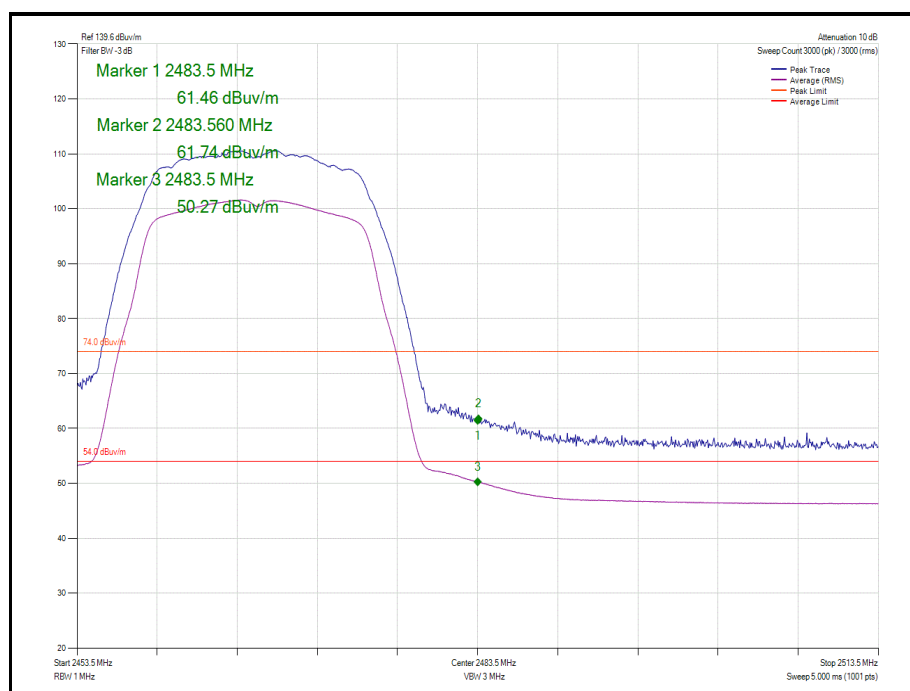
**Figure 123 - 802.11b, Core 2 - 2472 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 124 - 802.11g, Core 2 - 2412 MHz
Band Edge Frequency 2390.0 MHz**



**Figure 125 - 802.11g, Core 2 - 2462 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 126 - 802.11g, Core 2 - 2467 MHz
Band Edge Frequency 2483.5 MHz**

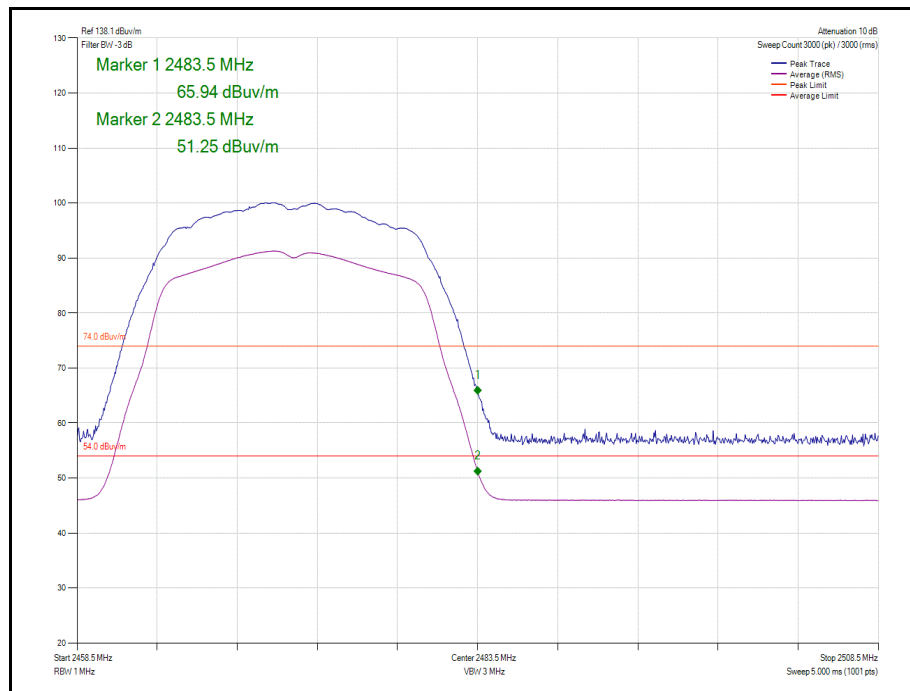


Figure 127 - 802.11g, Core 2 - 2472 MHz
Band Edge Frequency 2483.5 MHz

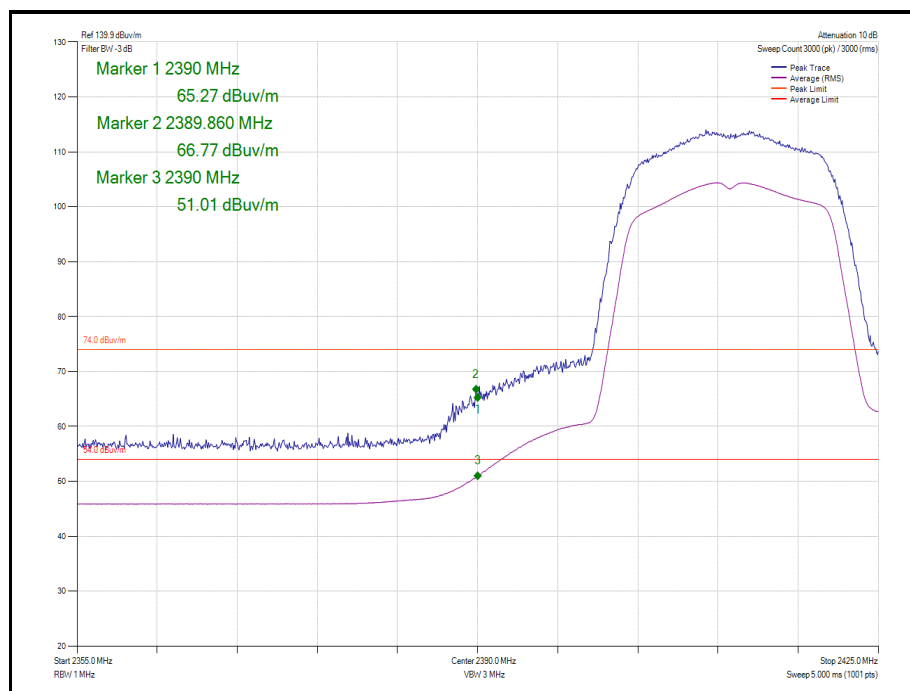


Figure 128 - 802.11n, Core 2 - 2412 MHz
Band Edge Frequency 2390 MHz

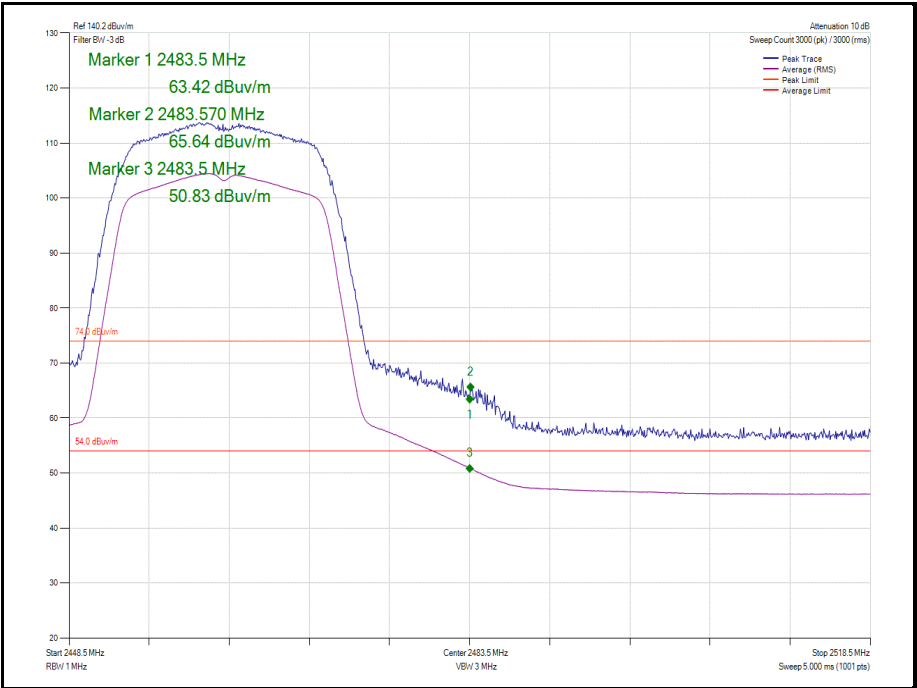


Figure 129 - 802.11n, Core 2 - 2462 MHz
Band Edge Frequency 2483.5 MHz

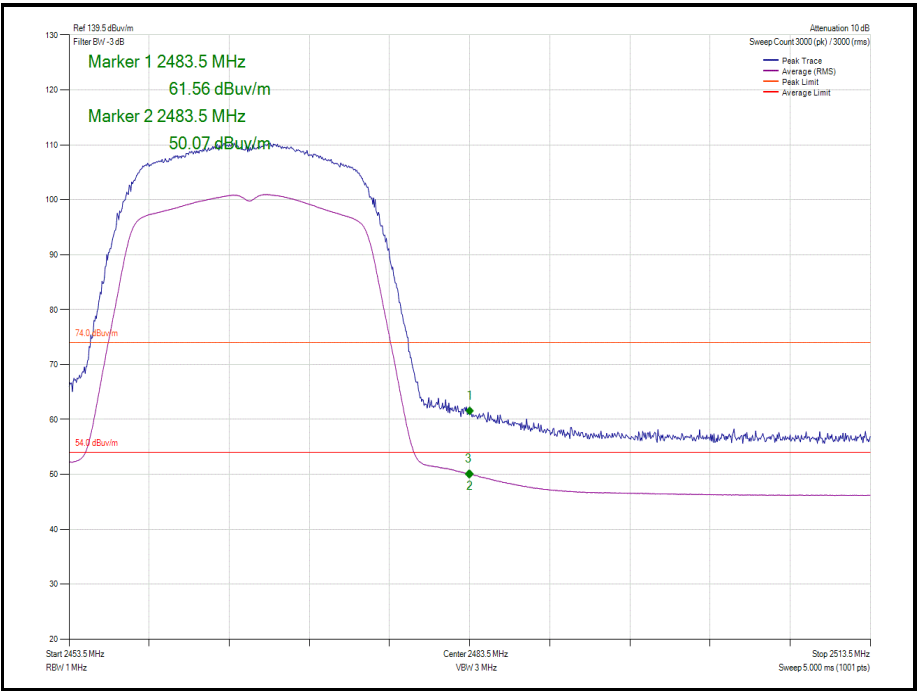


Figure 130 - 802.11n, Core 2 - 2467 MHz
Band Edge Frequency 2483.5 MHz

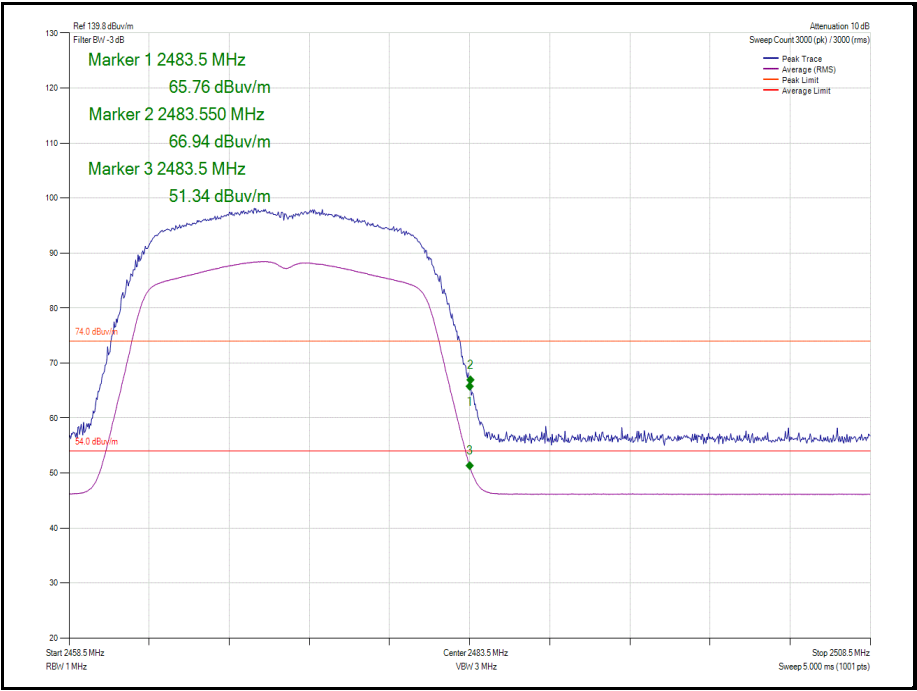
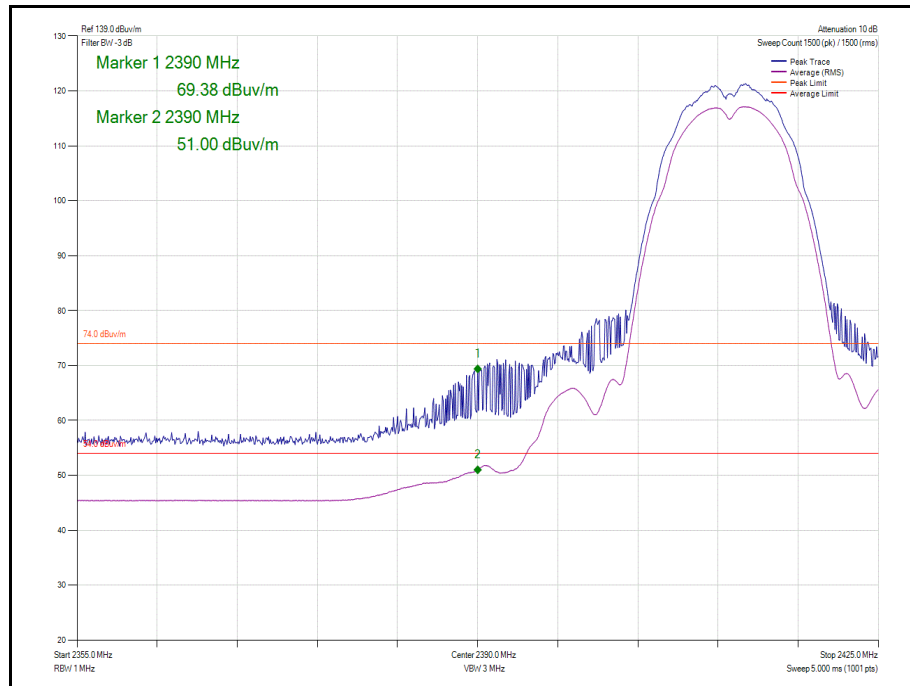


Figure 131 - 802.11n, Core 2 - 2472 MHz
Band Edge Frequency 2483.5 MHz

Main (MIMO 2Tx)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11b, Core 1-2	1 Mbps	2412	2390	69.38	51.00
802.11b, Core 1-2	1 Mbps	2462	2483.5	65.36	51.32
802.11b, Core 1-2	1 Mbps	2467	2483.5	65.41	48.25
802.11b, Core 1-2	1 Mbps	2472	2483.5	65.81	48.92
802.11n, Core 1-2	MCS0	2412	2390	65.30	47.33
802.11n, Core 1-2	MCS0	2462	2483.5	62.08	49.20
802.11n, Core 1-2	MCS0	2467	2483.5	62.81	48.13
802.11n, Core 1-2	MCS0	2472	2483.5	63.71	50.34

Table 66



**Figure 132 - 802.11b, Core 1-2 - 2412 MHz
Band Edge Frequency 2390 MHz**

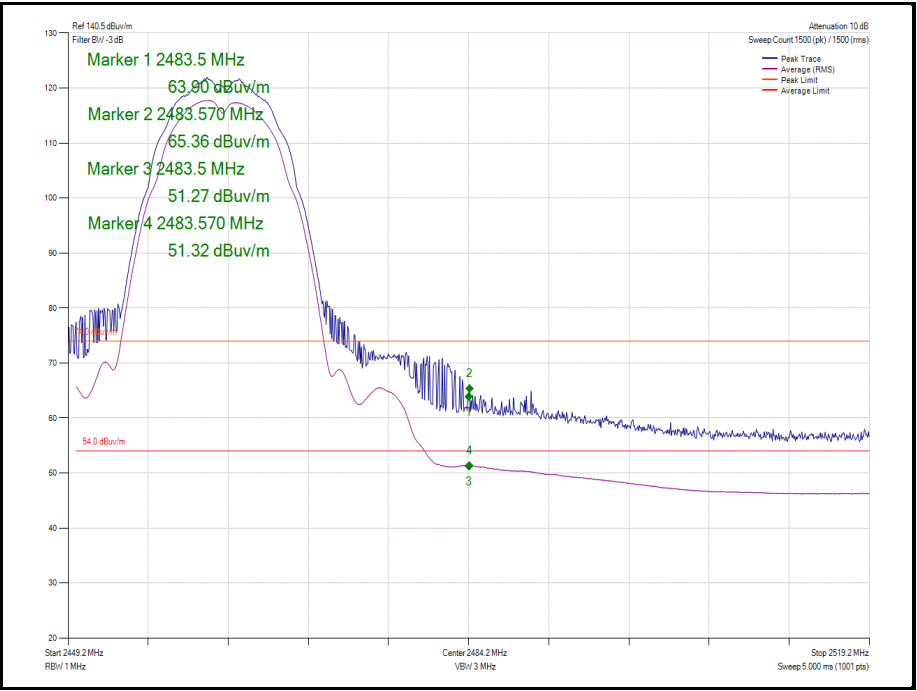


Figure 133 - 802.11b, Core 1-2 - 2462 MHz
Band Edge Frequency 2483.5 MHz

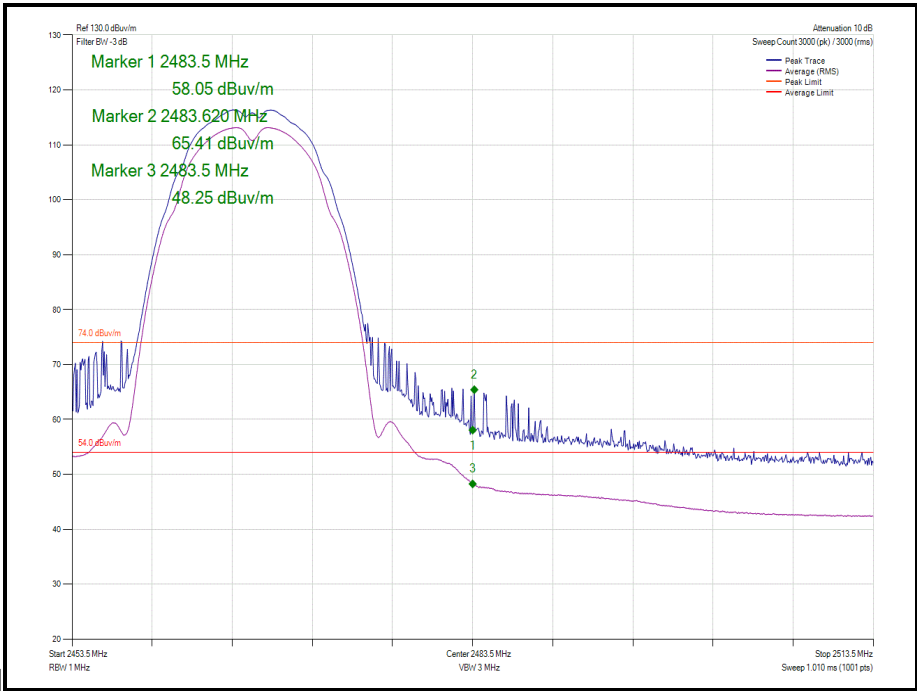
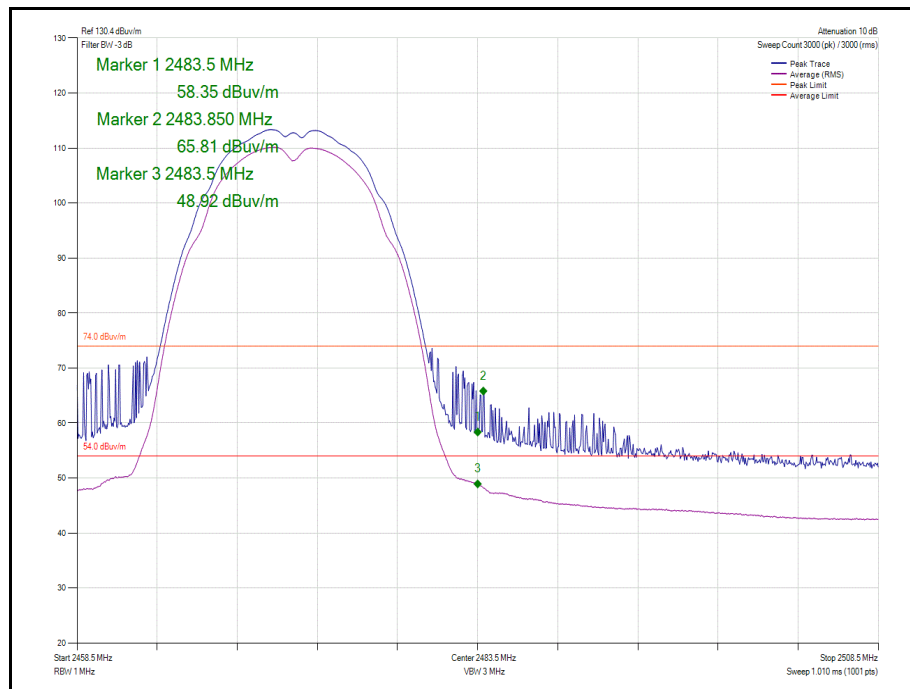
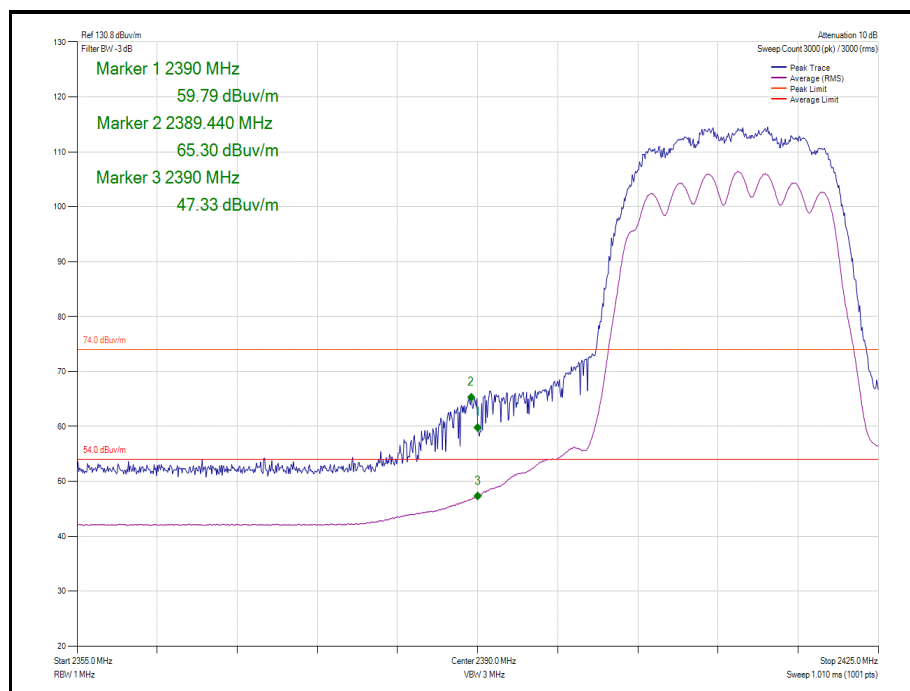


Figure 134 - 802.11b, Core 1-2 - 2467 MHz
Band Edge Frequency 2483.5 MHz



**Figure 135 - 802.11b, Core 1-2 - 2472 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 136 - 802.11n, Core 1-2 - 2412 MHz
Band Edge Frequency 2390 MHz**

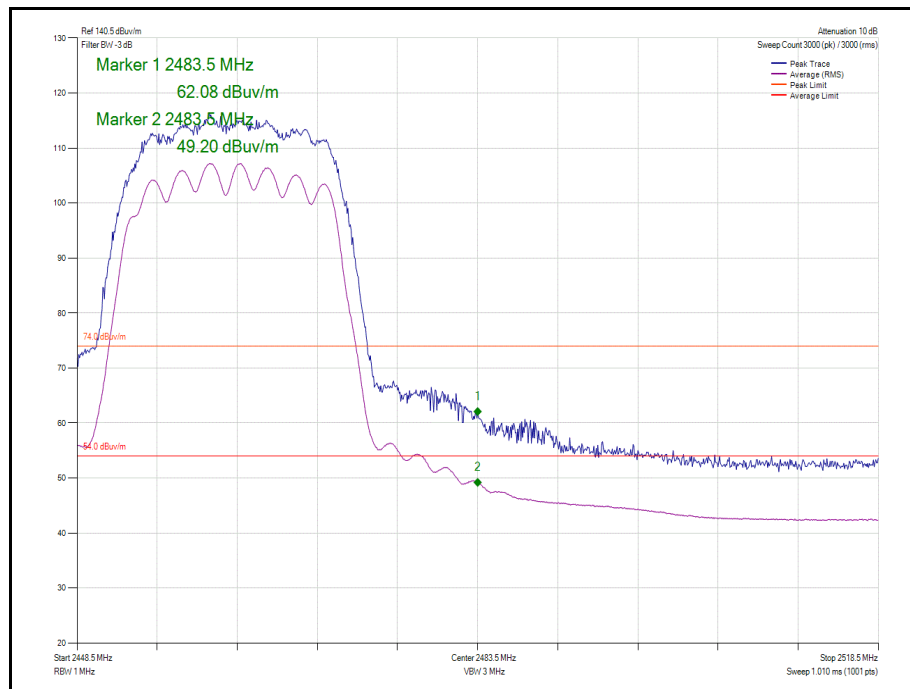


Figure 137

Figure 138 - 802.11n, Core 1-2 - 2462 MHz
Band Edge Frequency 2483.5 MHz

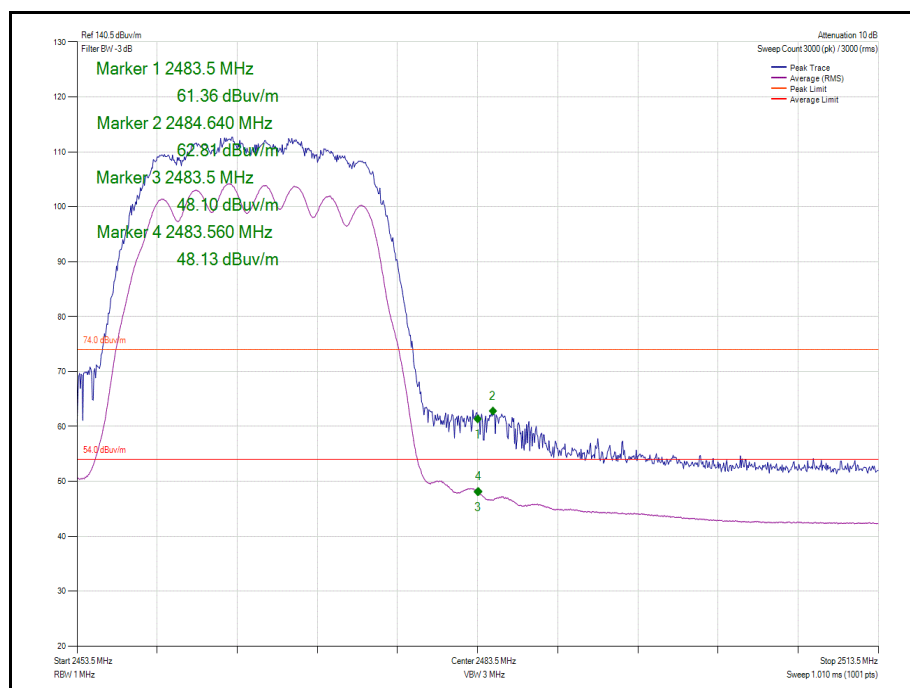


Figure 139 - 802.11n, Core 1-2 - 2467 MHz
Band Edge Frequency 2483.5 MHz

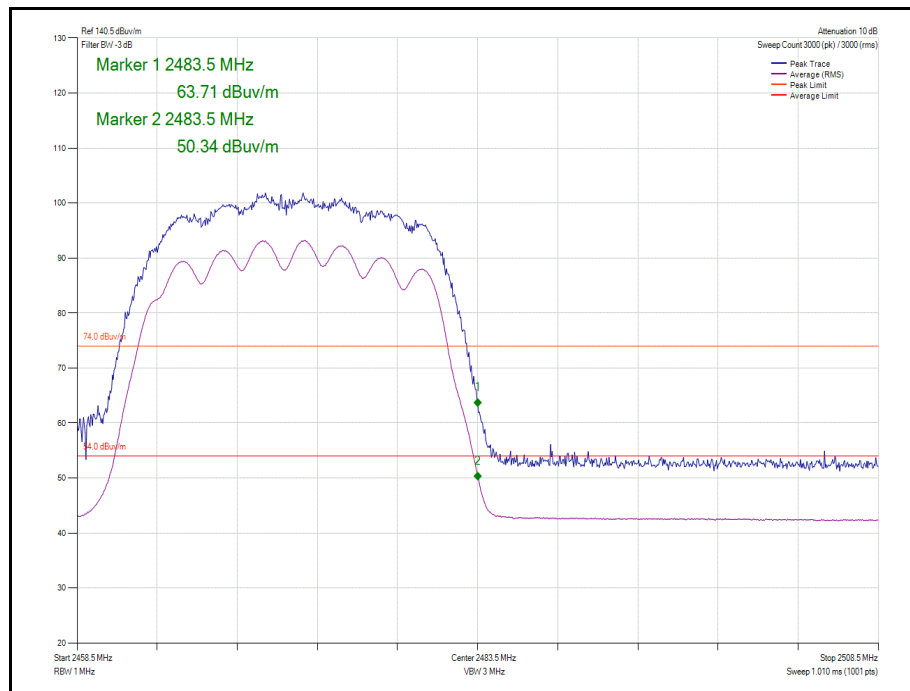


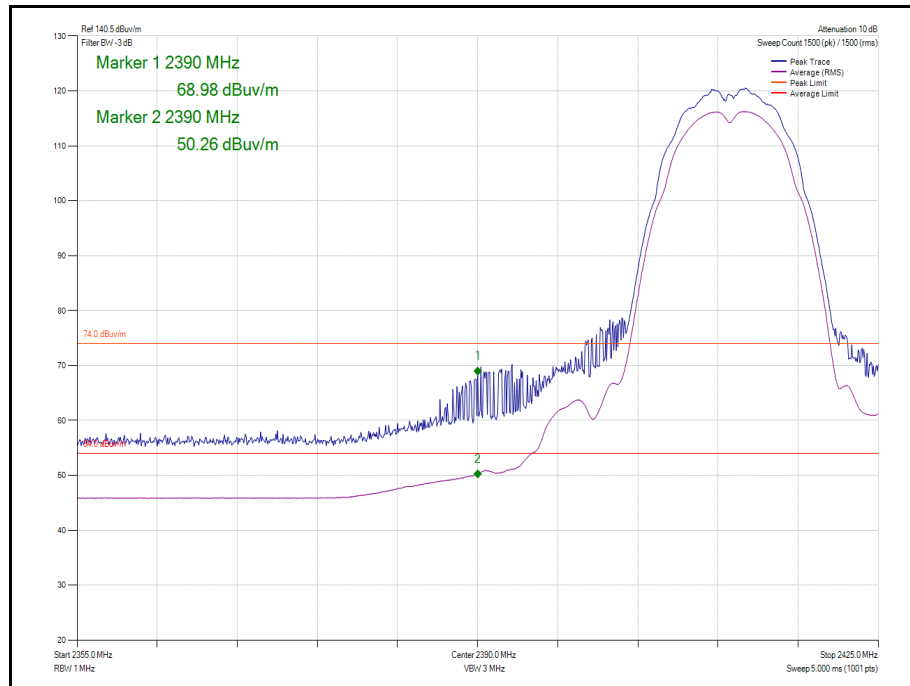
Figure 140

**Figure 141 - 802.11n, Core 1-2 - 2472 MHz
Band Edge Frequency 2483.5 MHz**

Main (MIMO 3Tx)

Mode	Data Rate	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
802.11b, Core 0-1-2	1 Mbps	2412	2390	68.98	50.26
802.11b, Core 0-1-2	1 Mbps	2462	2483.5	62.99	47.63
802.11b, Core 0-1-2	1 Mbps	2467	2483.5	62.41	48.25
802.11b, Core 0-1-2	1 Mbps	2472	2483.5	62.34	48.77
802.11n, Core 0-1-2	MCS0	2412	2390	63.00	46.72
802.11n, Core 0-1-2	MCS0	2462	2483.5	64.16	48.07
802.11n, Core 0-1-2	MCS0	2467	2483.5	63.73	47.86
802.11n, Core 0-1-2	MCS0	2472	2483.5	66.79	51.15

Table 67



**Figure 142 - 802.11b, Core 0-1-2 - 2412 MHz
Band Edge Frequency 2390 MHz**

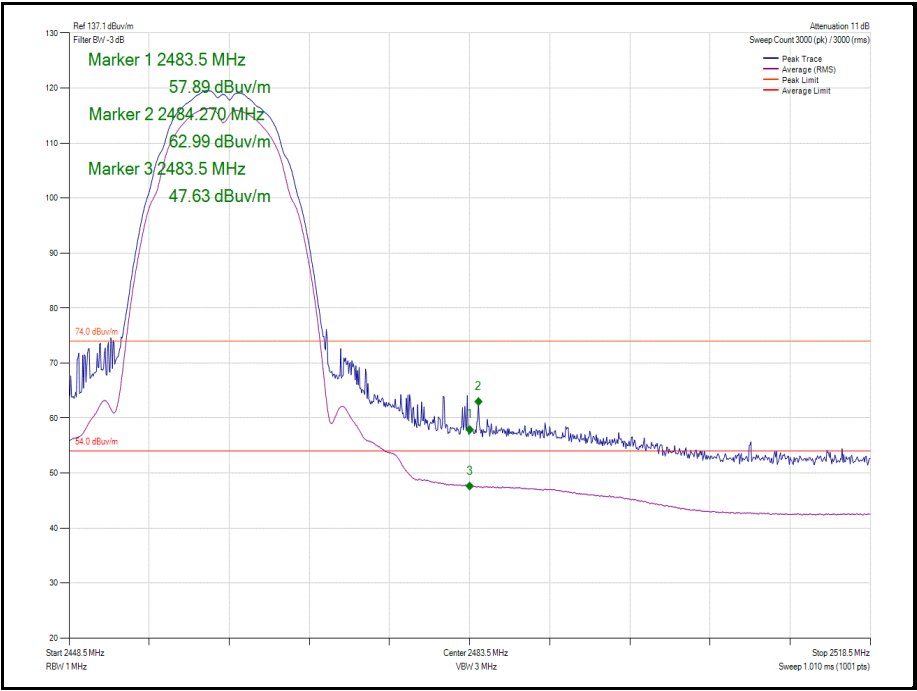


Figure 143 - 802.11b, Core 0-1-2 - 2462 MHz
Band Edge Frequency 2483.5 MHz

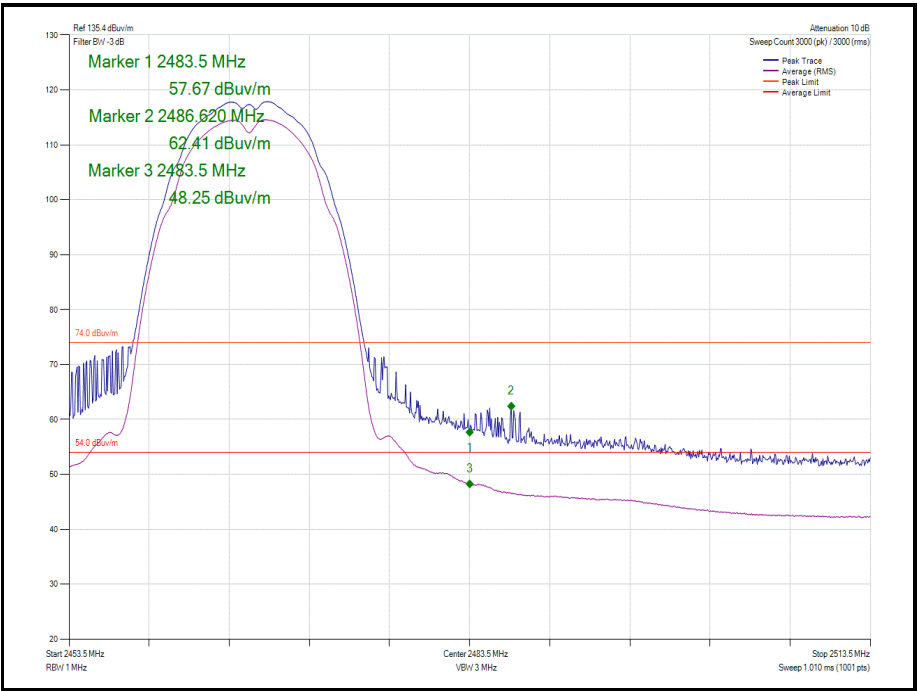
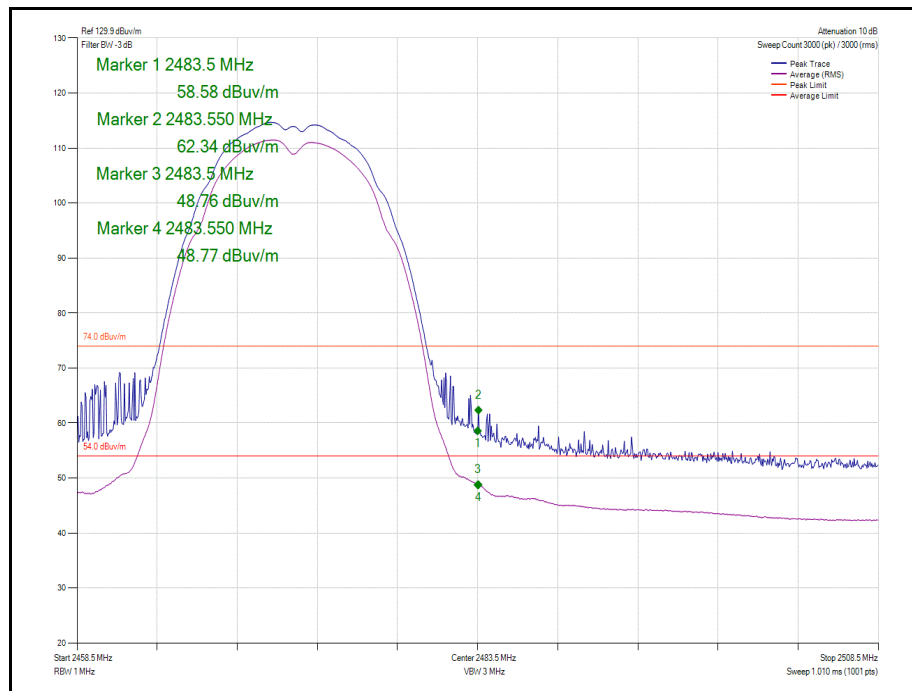
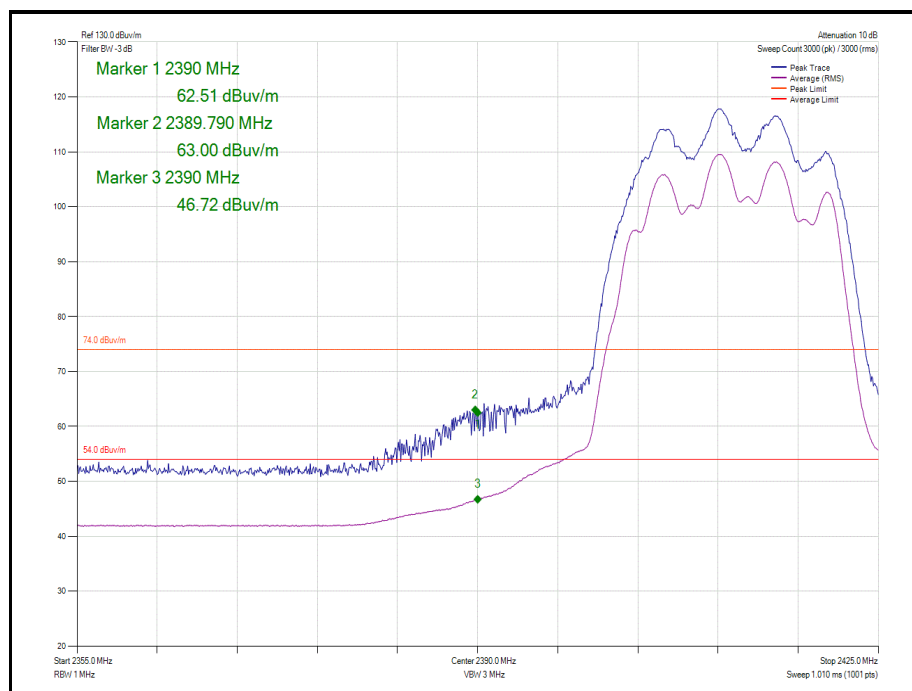


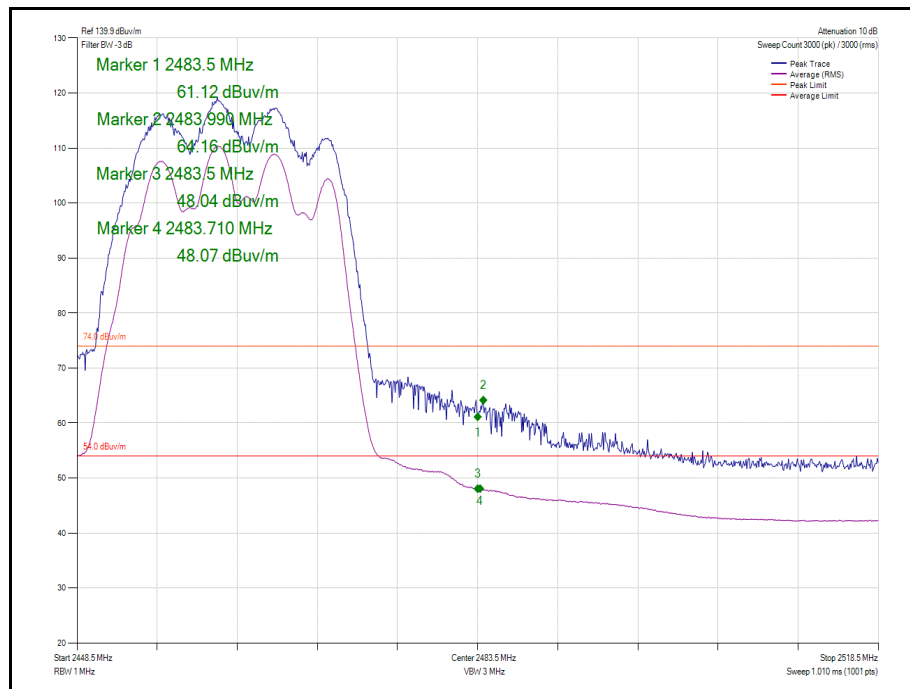
Figure 144 - 802.11b, Core 0-1-2 - 2467 MHz
Band Edge Frequency 2483.5 MHz



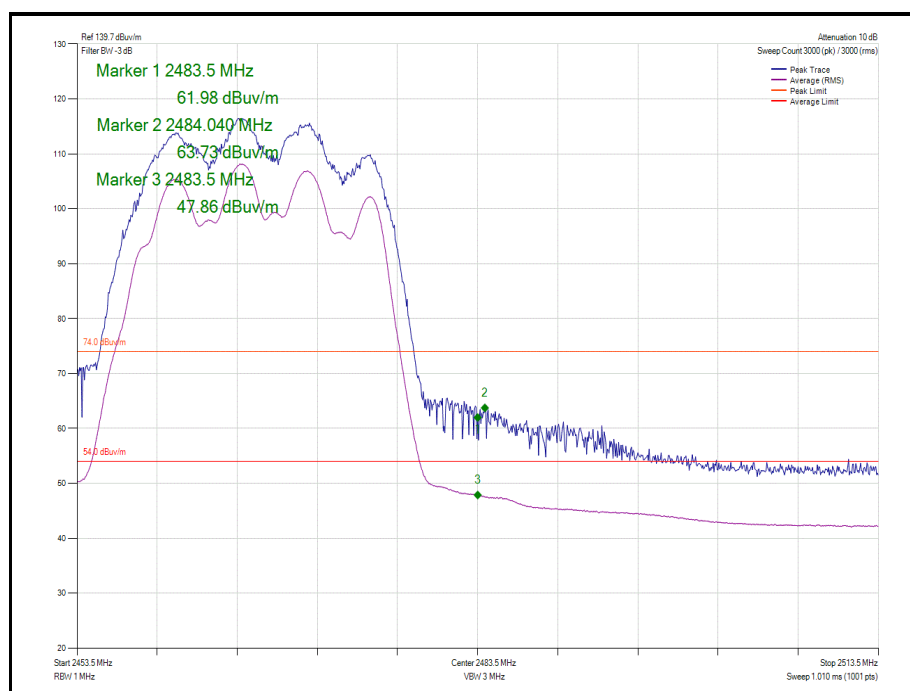
**Figure 145 - 802.11b, Core 0-1-2 - 2472 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 146 - 802.11n, Core 0-1-2 - 2412 MHz
Band Edge Frequency 2390.0 MHz**



**Figure 147 - 802.11n, Core 0-1-2 - 2462 MHz
Band Edge Frequency 2483.5 MHz**



**Figure 148 - 802.11n, Core 0-1-2 - 2467 MHz
Band Edge Frequency 2483.5 MHz**

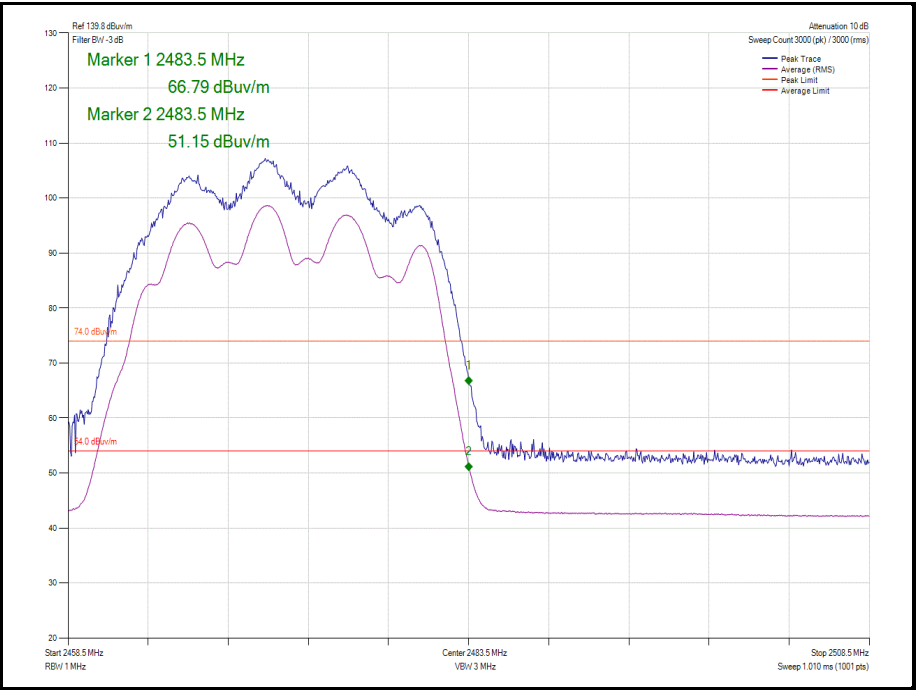


Figure 149 - 802.11n, Core 0-1-2 - 2472 MHz
Band Edge Frequency 2483.5 MHz

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 68

ISED 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 69

*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 and RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
10dB/1W SMA Attenuator dc - 18GHz	Sealectro	60-674-1010-89	395	-	O/P Mon
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
Cable (3.5kW Tx, Nm-Nm, 7m)	Scott Cables	9918-NMNM-7000	4500	6	09-Jul-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-Dec-2019
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
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	11-Nov-2019
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5095	12	04-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	06-Oct-2020
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	05-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5107	12	06-Oct-2020
EmX Emissions Software	TUV SUD	EmX	5125	-	Software
1.5m 40GHz RF Cable	Scott Cables	KPS-1501-2000-KPS	5127	6	11-Dec-2019
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
8 Meter Cable	Teledyne	PR90-088-8MTR	5212	12	30-Aug-2020
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	11-Mar-2020

Table 70

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated Equipment



2.6 Spurious Radiated Emissions

2.6.1 Specification Reference

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

2.6.2 Equipment Under Test and Modification State

A2304, S/N: C02Z1006N5VL - Modification State 0
A2304, S/N: C02Z1007N5VN - Modification State 0

2.6.3 Date of Test

18-October-2019 to 29-October-2019

2.6.4 Test Method

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

In the 30 MHz to 1 GHz range pre-scans were only performed on the main radio mid channel (2442 MHz) and any emissions identified then measured on bottom (2412 MHz) and top (2472 MHz).

The plots shown are the characterization of the EUT. The limits on the plots represent the most stringent case for restricted bands, (54/74 dBuV/m @ 3m and 64/84 dBuV/m @ 1m) when compared to 20 dBc (Peak) and 30 dBc (Average) 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 dBuV/m to uV/m:
 $10^{(\text{Field Strength in dBuV/m} / 20)}$

Spurious Radiated Emissions measurements were performed, with the device operating in MIMO 3TX during tests on the Main Radio, as this was defined as worst case.

The EUT was powered and charging from 120V, 60Hz.

Ports on the device, were connected to suitable accessorise, peripherals and cables, in line with ANSI C63.10, clause 5.10.7.



Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
4884.0	-	44.2	74	54	-	-9.8
7324.3	55.3	48.7-	74	54	-18.7	-5.3-

Table 73 – 2442 MHz - 1000 MHz to 26000 MHz – Radiated

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
4944.0	-	45.5	74	54	-	-8.5
7415.7	54.2	48.1-	74	54	-19.8	-5.9-
9032.6	-	34.1	74	54	-	-19.9

Table 74 - 2472 MHz - 1000 MHz to 26000 MHz – Radiated

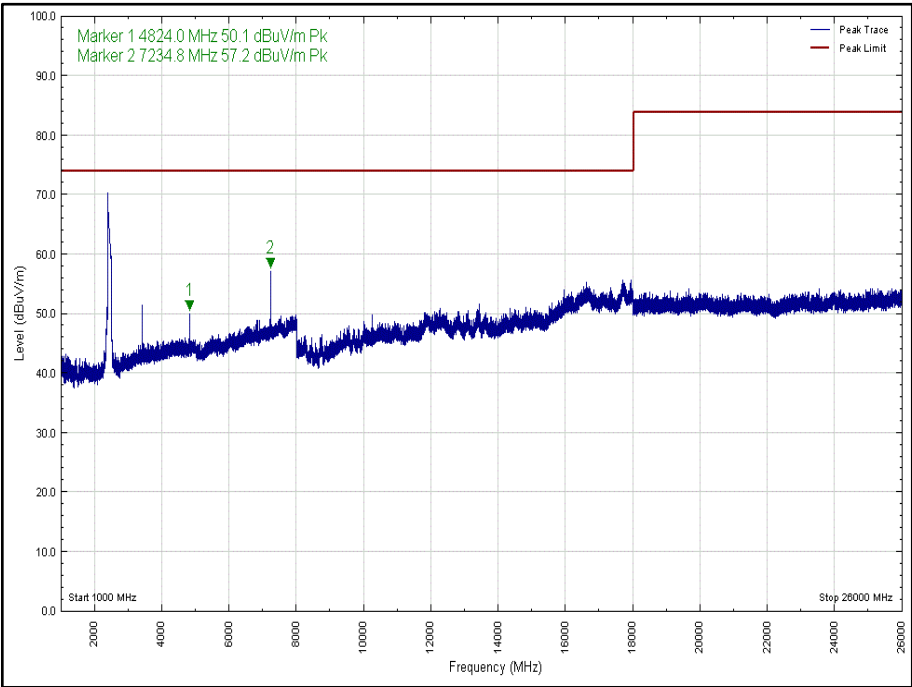


Figure 151 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

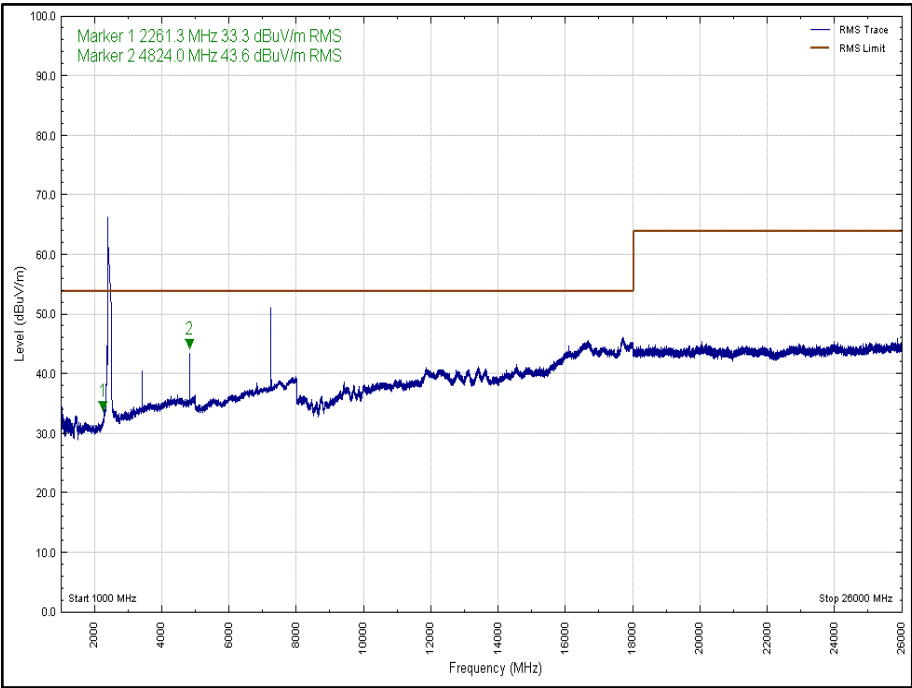


Figure 152 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal - Average

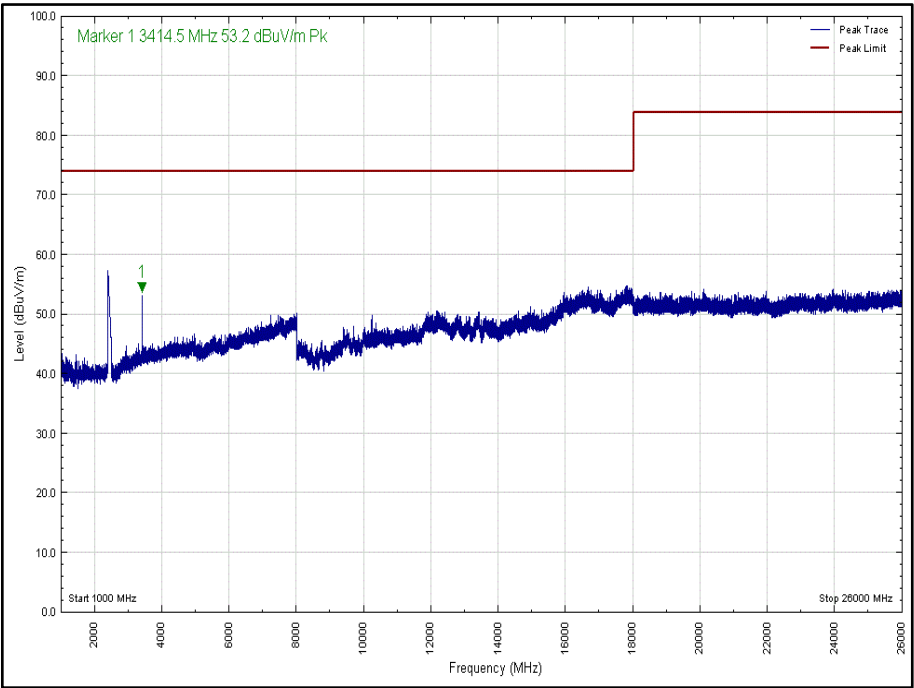


Figure 153 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

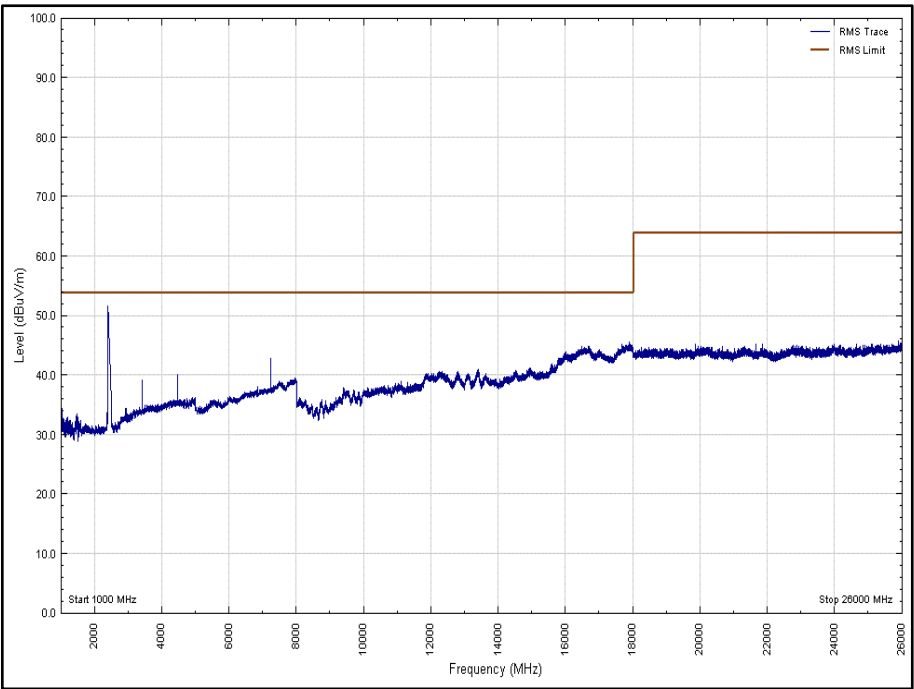


Figure 154 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Average

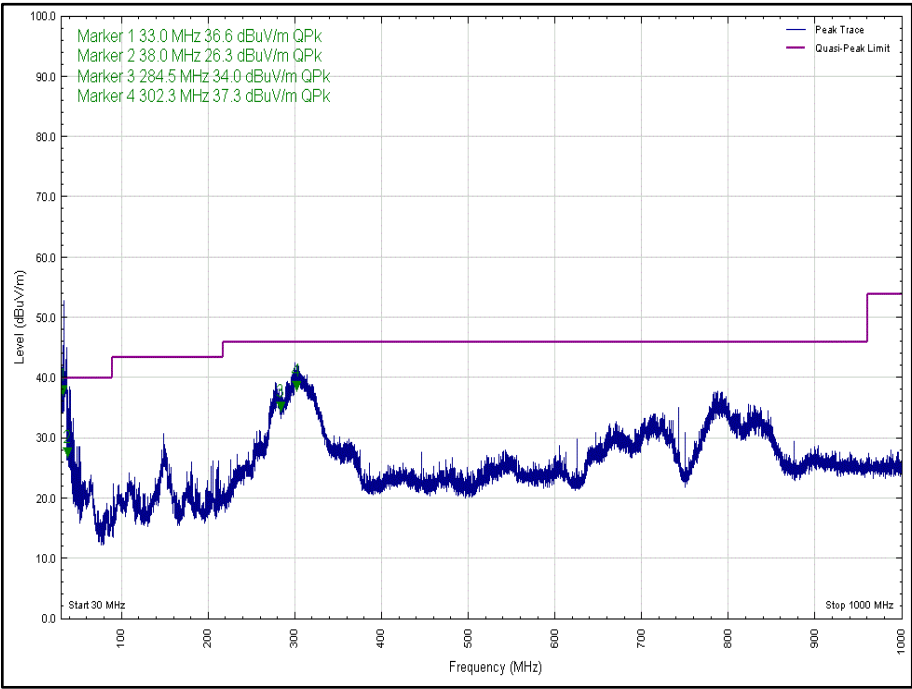


Figure 155 - 2442 MHz – 30 MHz to 1000 MHz, Horizontal – Peak

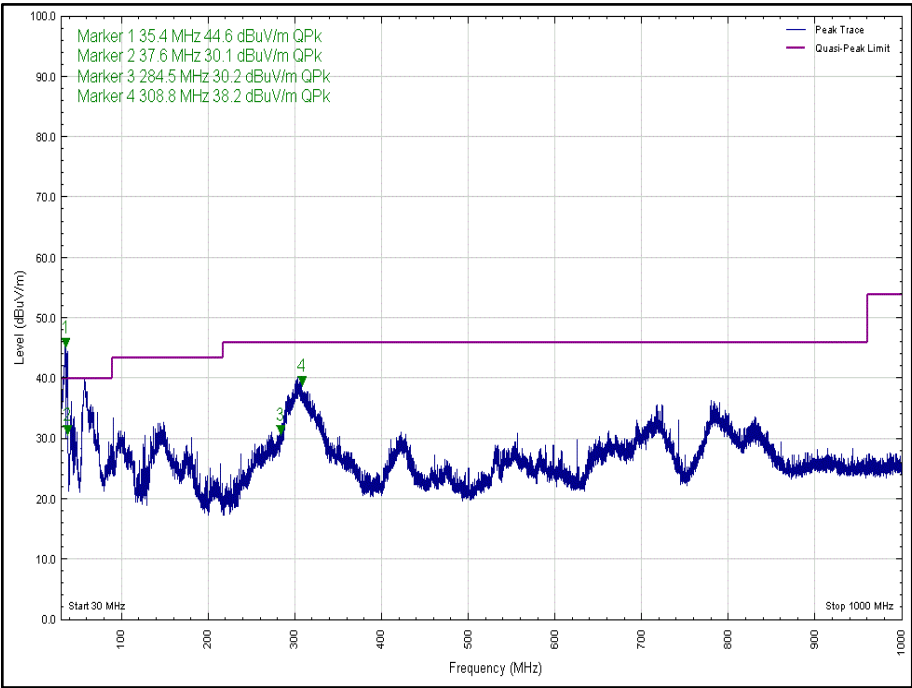


Figure 156 - 2442 MHz – 30MHz to 1000 MHz, Vertical – Peak

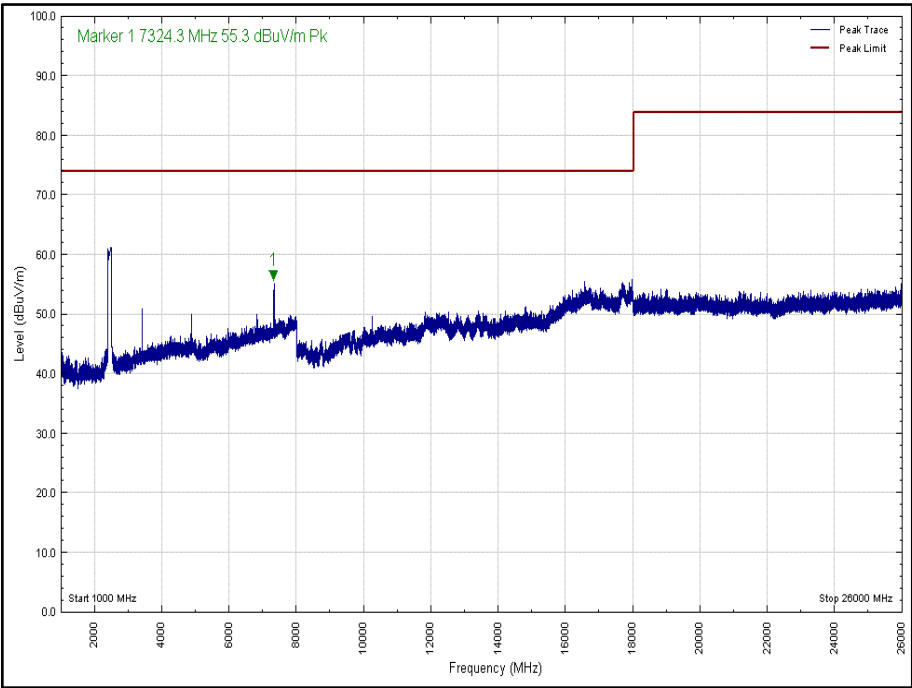


Figure 157 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

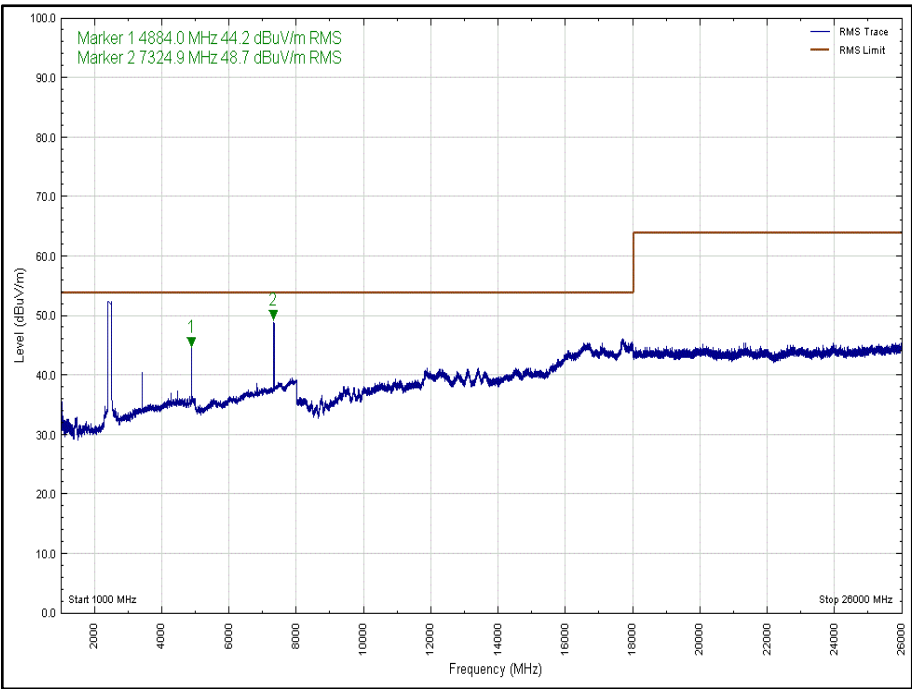


Figure 158 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

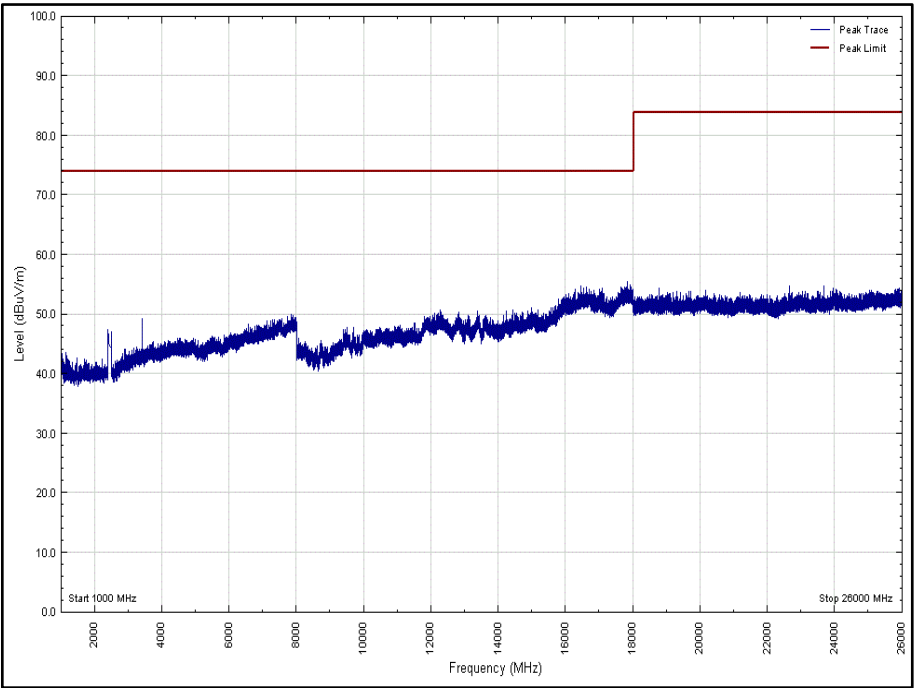


Figure 159 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

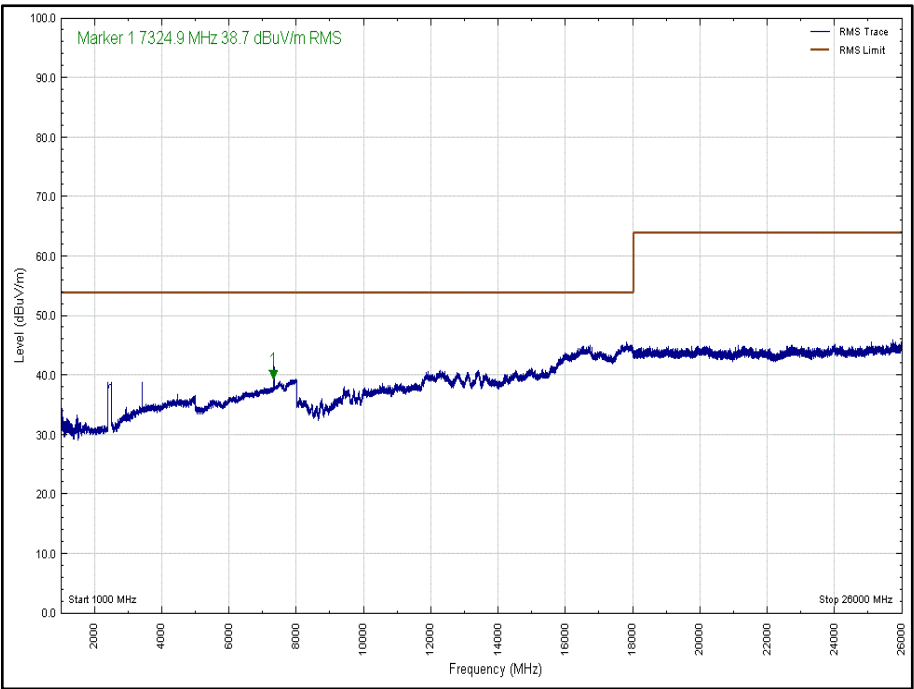


Figure 160 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

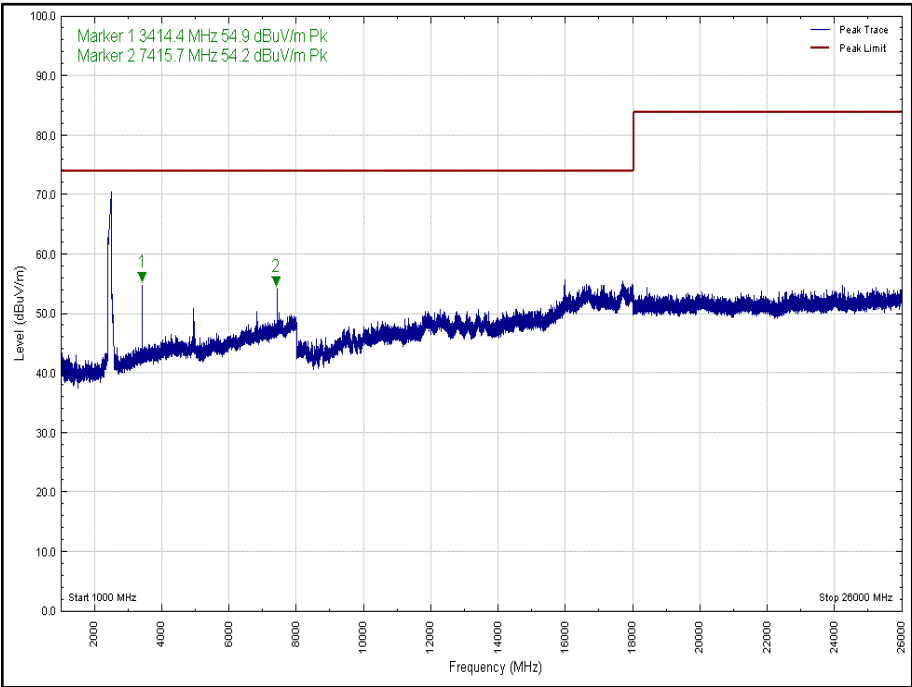


Figure 161 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

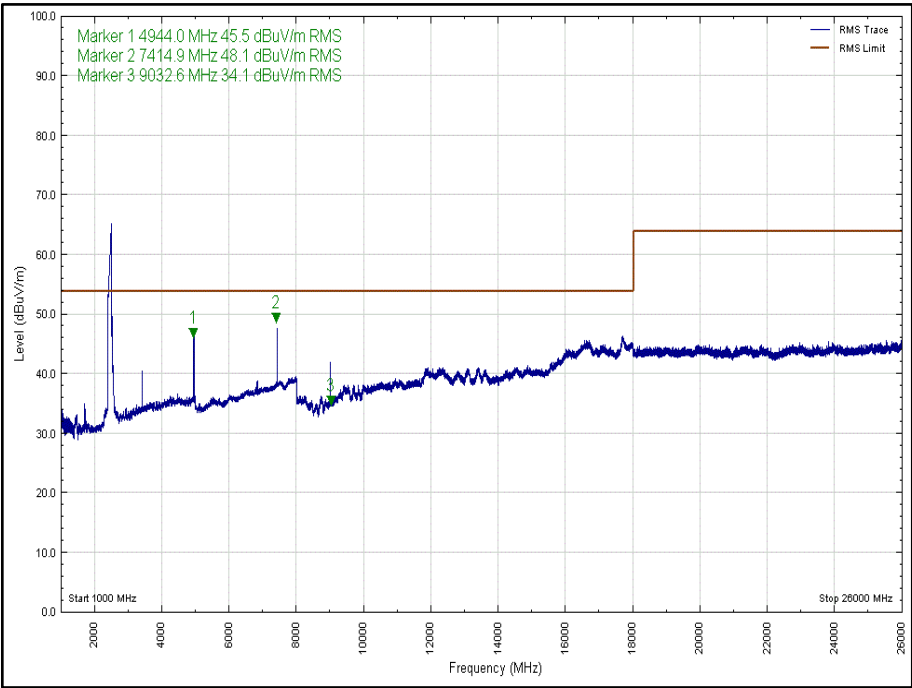


Figure 162 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

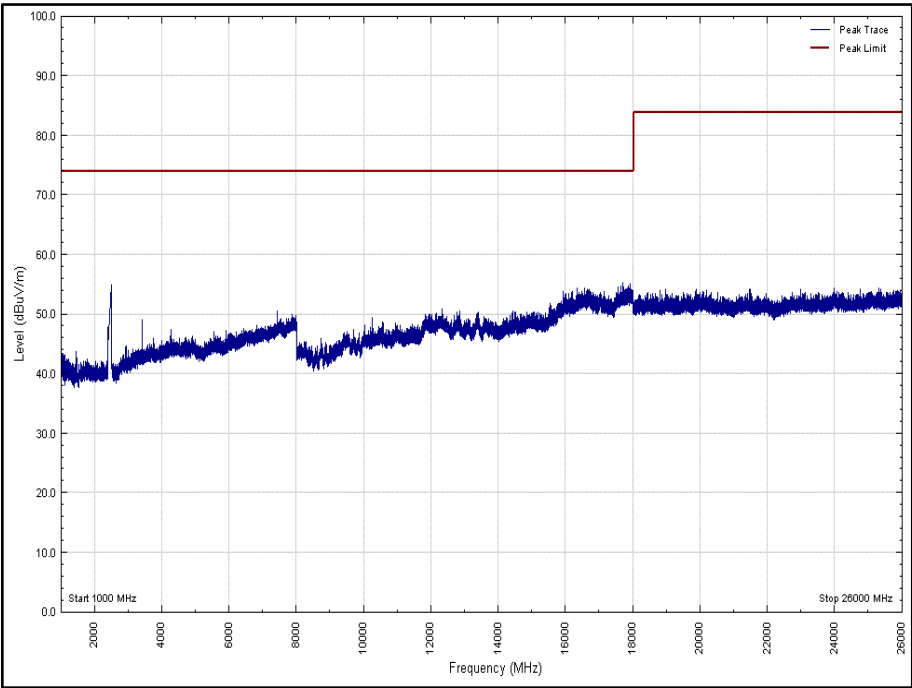


Figure 163 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

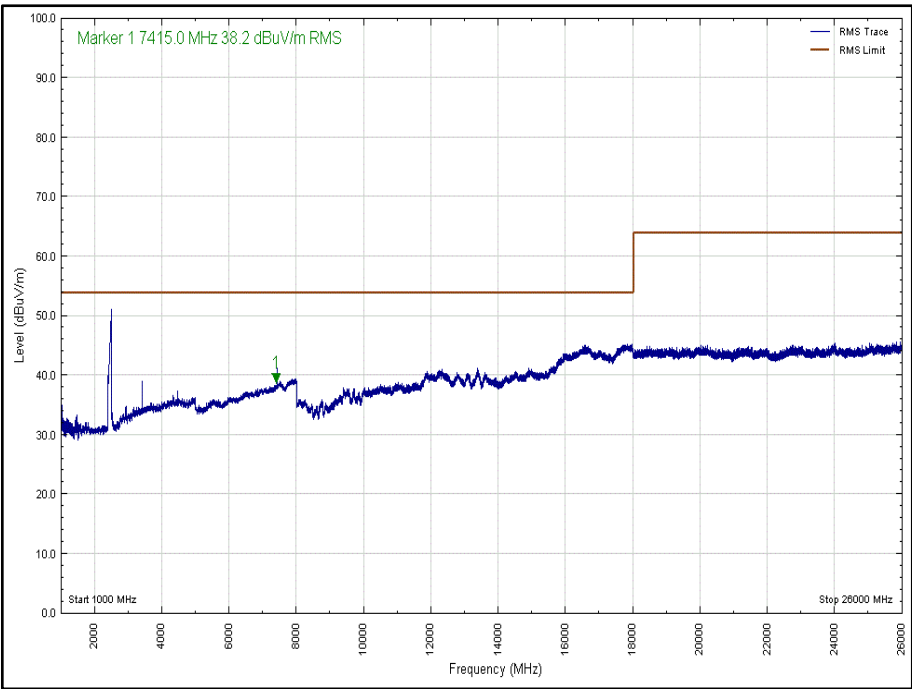


Figure 164 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



802.11g, Main Cores 0-1-2

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
2261.2		34.4	74	54	-	19.6
4259.5	51.3	-	74	54	-22.7	-
17092.8	64.7	-	74	54	-9.3	-

Table 75 – 2412 MHz - 1000 MHz to 26000 MHz – Radiated

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dB)
37.7	23.5	40	-16.5
37.8	28.1	40	-11.9
284.5	31.3	46	-14.9
284.7	33.9	46	-8.7

Table 76 – 2442 MHz - 30 MHz to 1000MHz – Radiated

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
7320.0	55.7	-43.0	74	54	-18.3	-11.0-

Table 77 – 2442 MHz - 1000 MHz to 26000 MHz – Radiated

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
7409.8	55.0	41.5-	74	54	-19.0	--13.0

Table 78 - 2472 MHz - 1000 MHz to 26000 MHz – Radiated

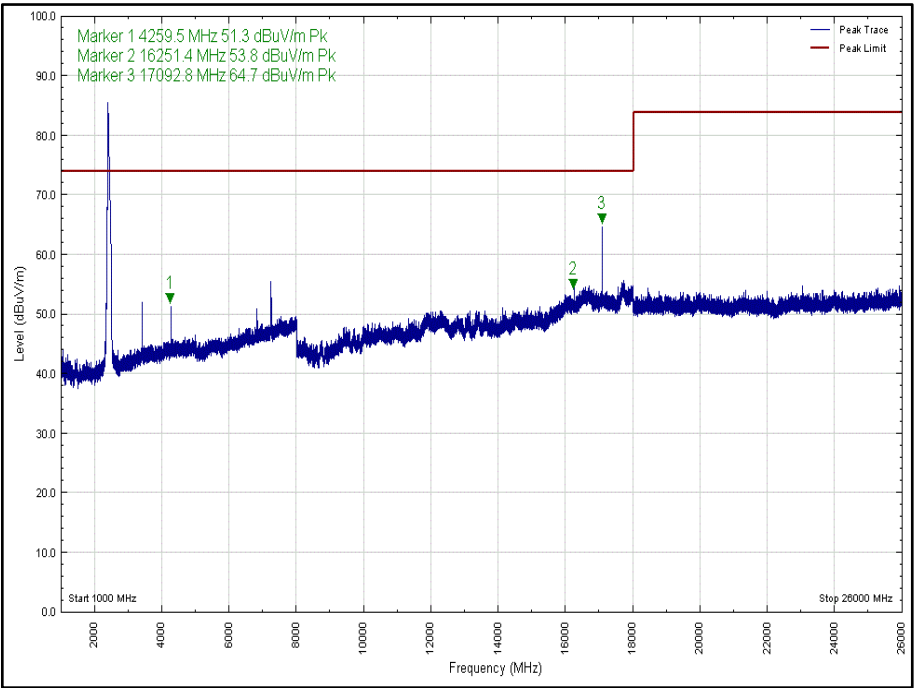


Figure 165 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

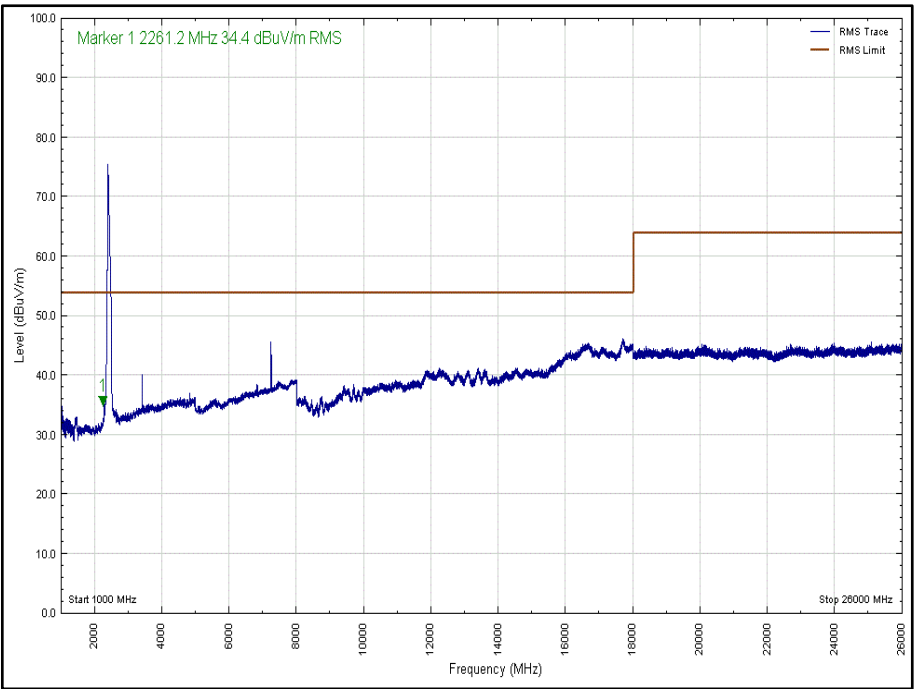


Figure 166 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

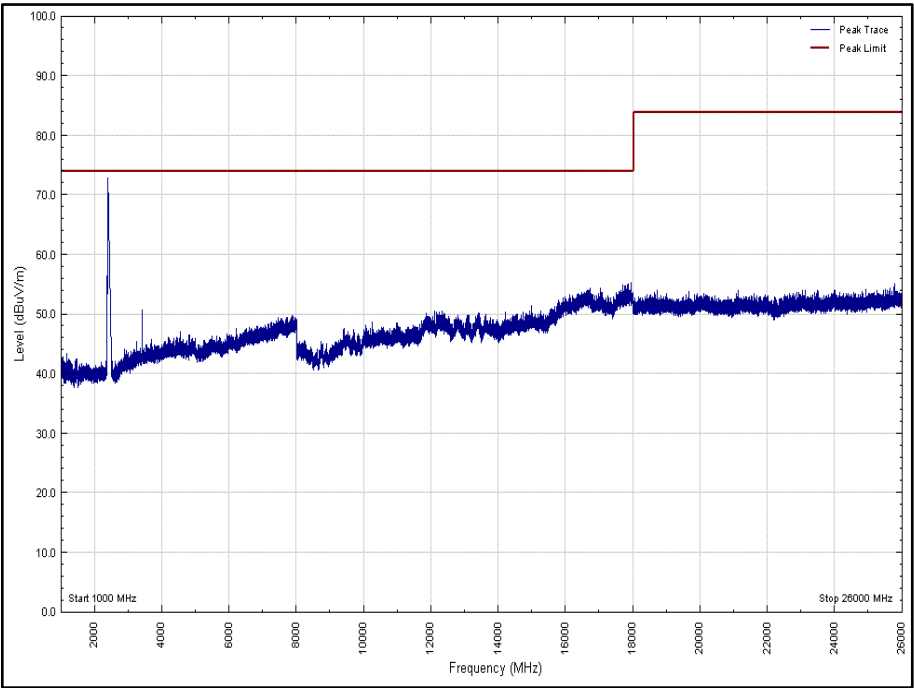


Figure 167 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

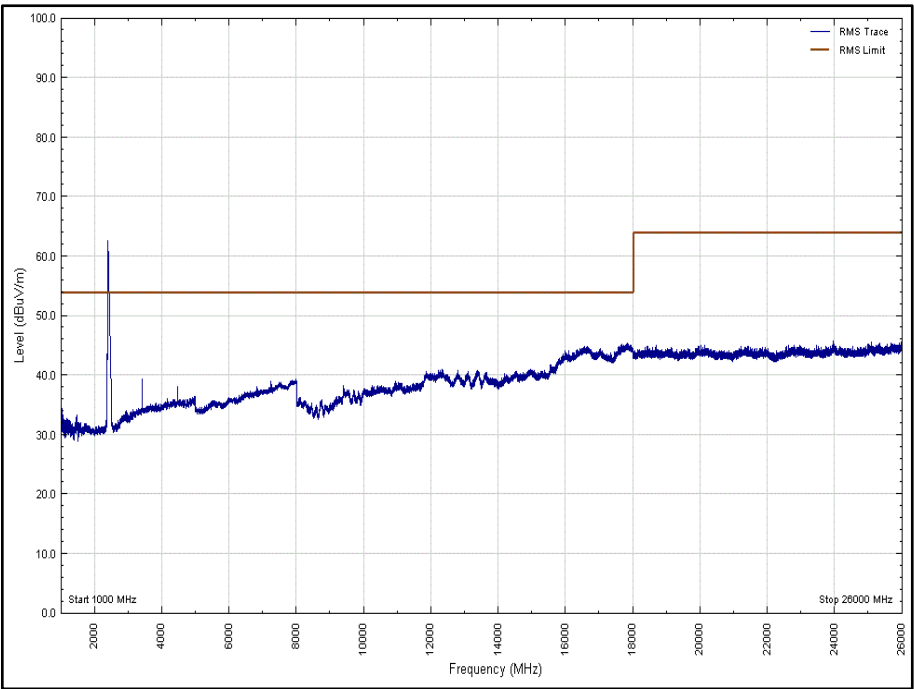


Figure 168 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Average

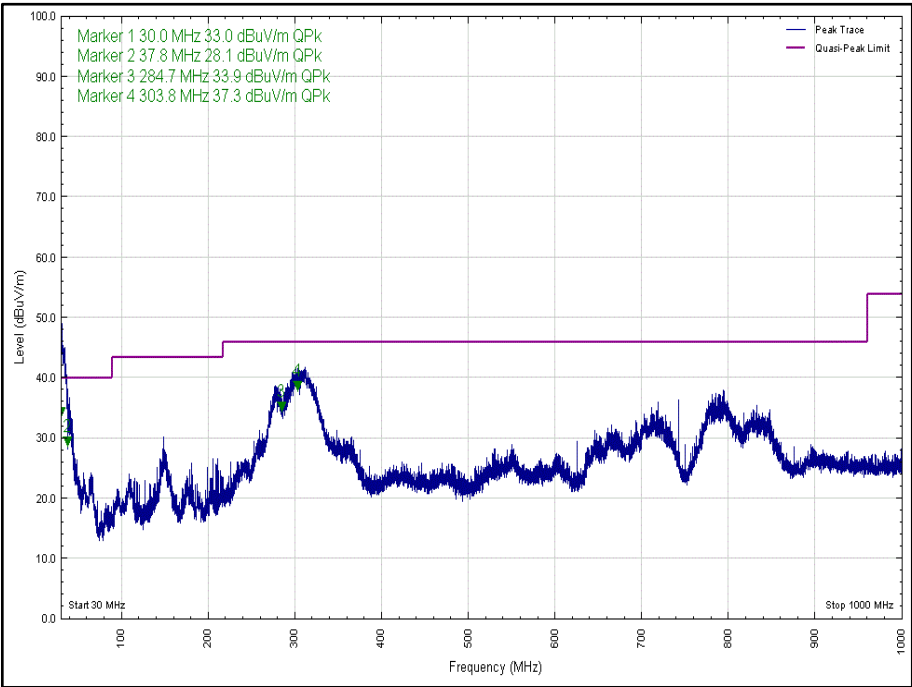


Figure 169 - 2442 MHz – 30 MHz to 1000 MHz, Horizontal – Peak

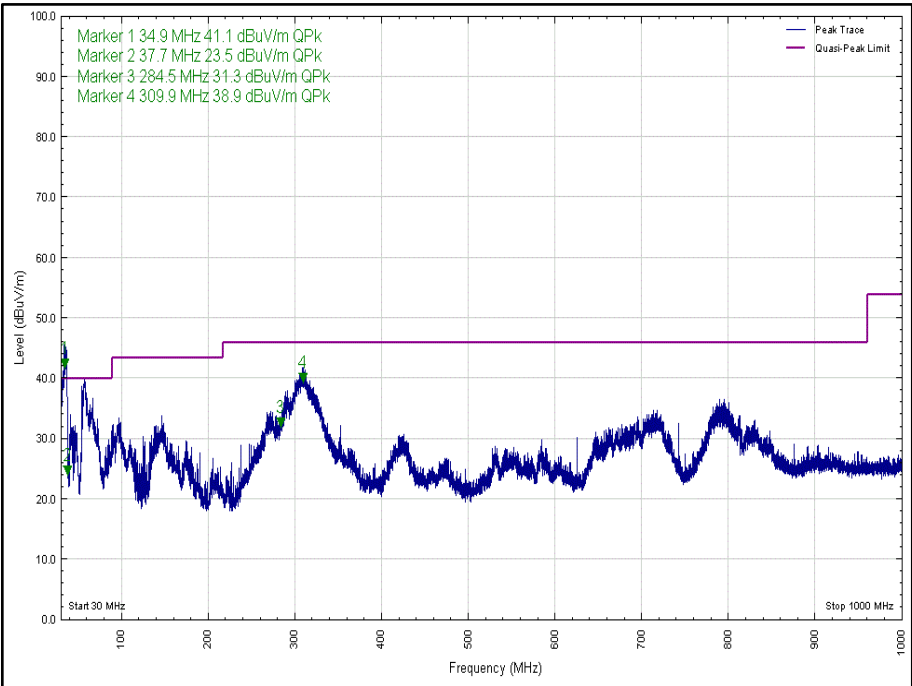


Figure 170 - 2442 MHz – 30MHz to 1000 MHz, Vertical – Peak

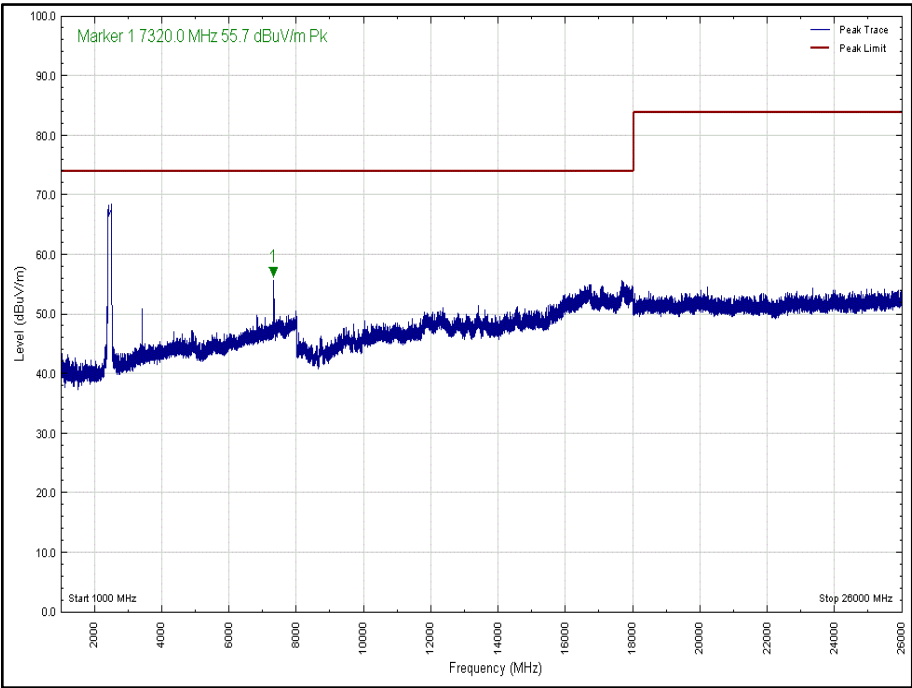


Figure 171 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

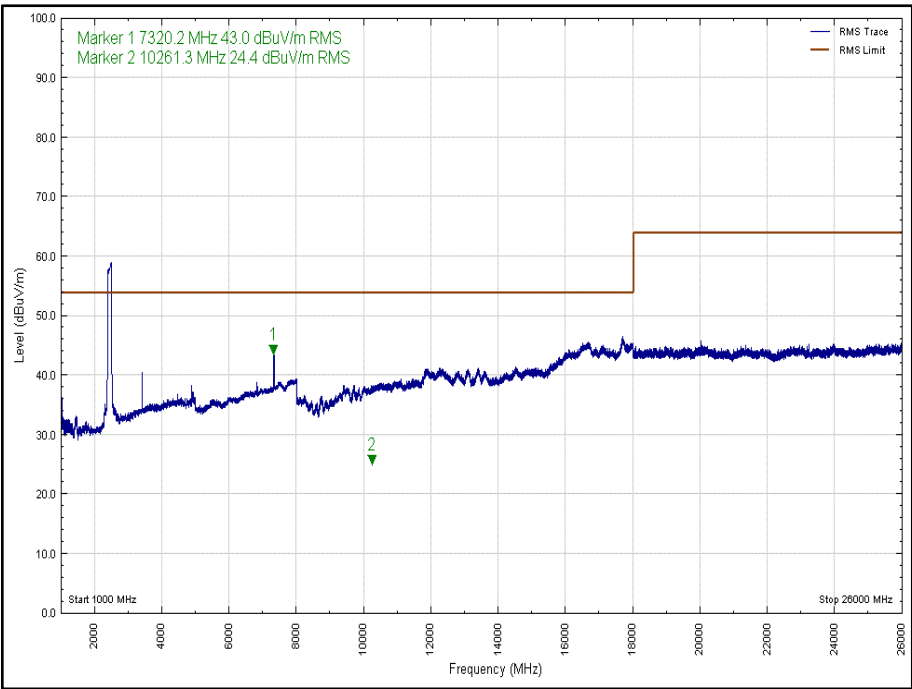


Figure 172 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal - Average

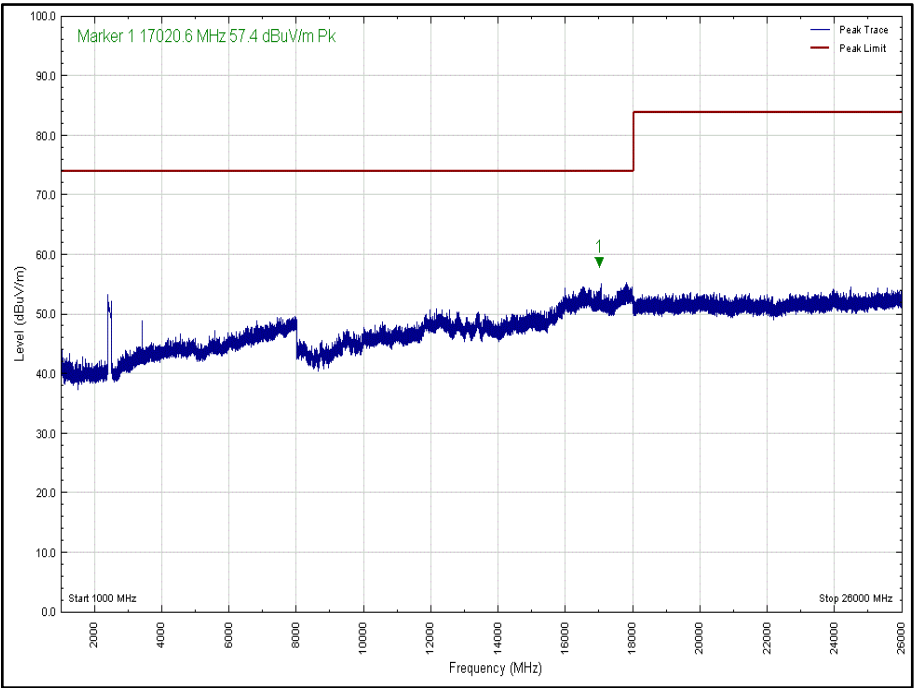


Figure 173 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

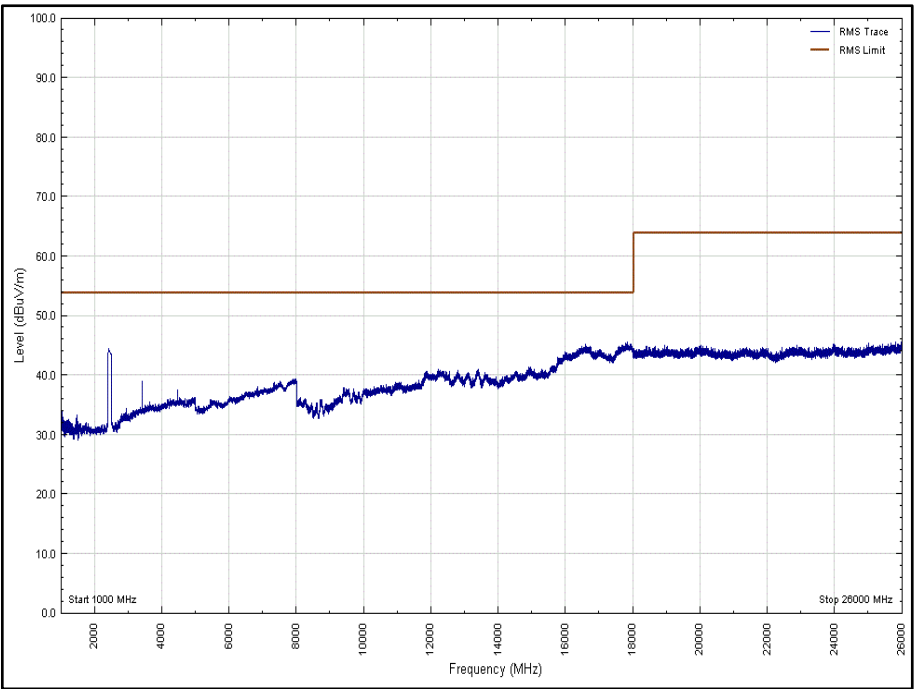


Figure 174 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

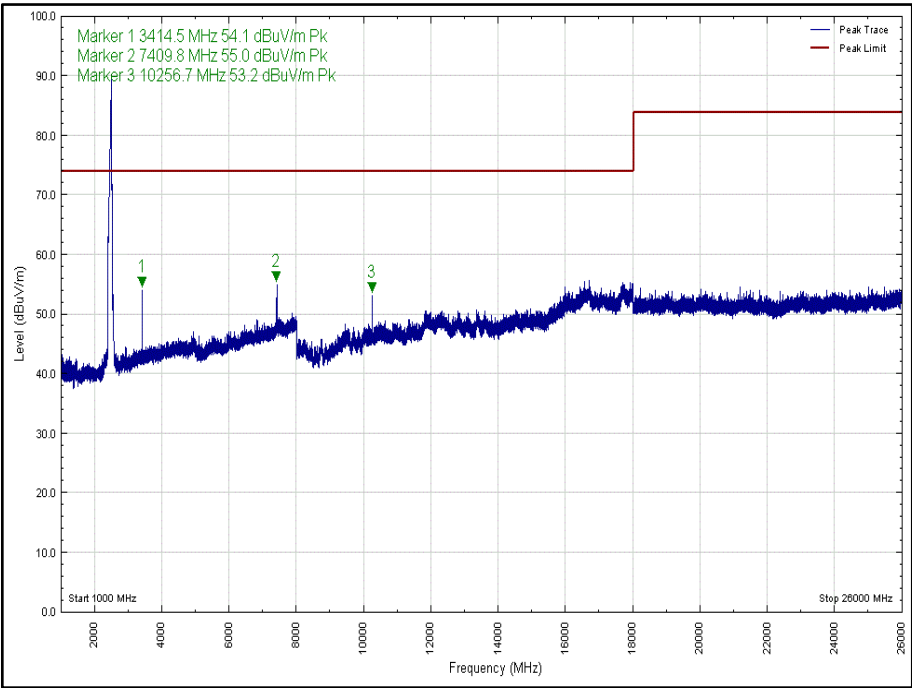


Figure 175 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

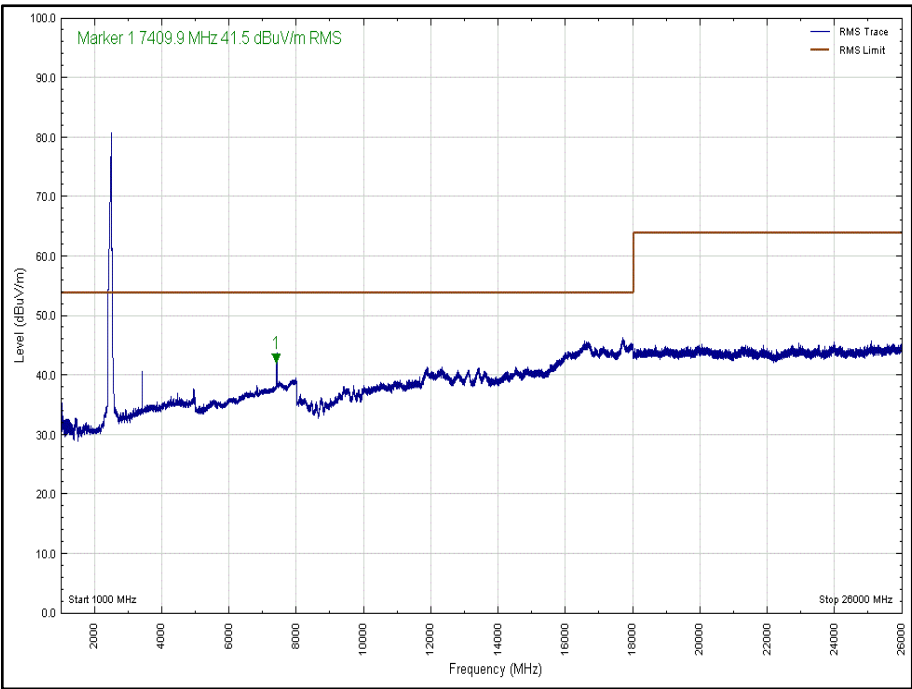


Figure 176 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

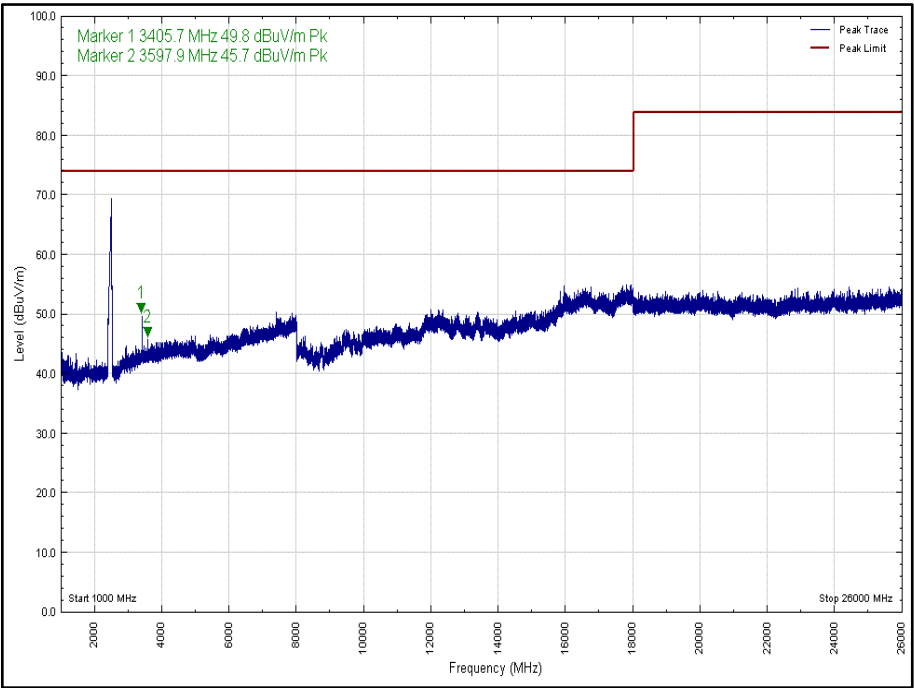


Figure 177 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

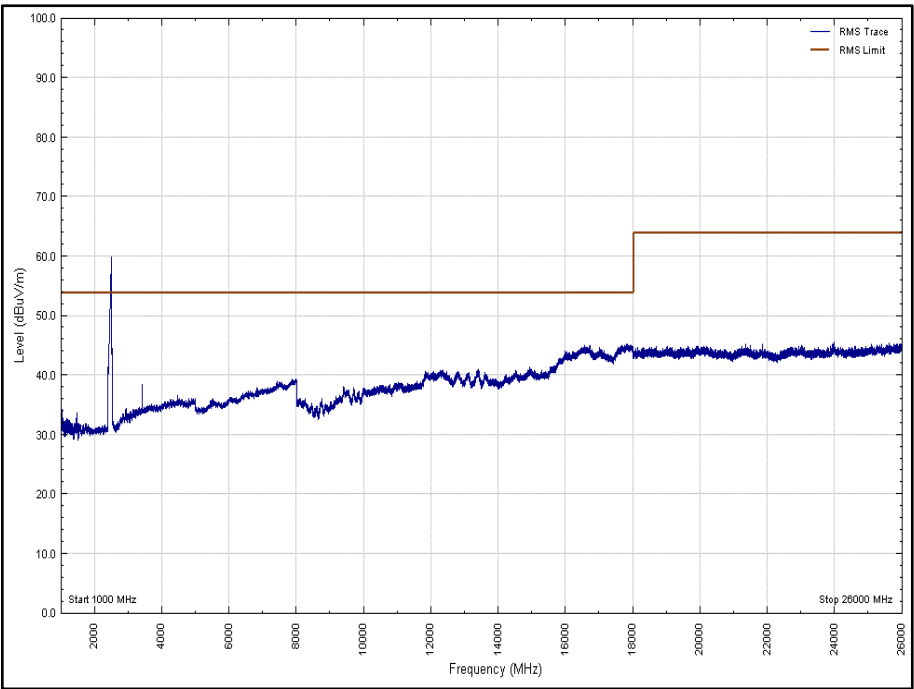


Figure 178 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



802.11n, Main Cores 0-1-2

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
2261.2	-	33.9	74	54	-	-20.1

Table 79 – 2412 MHz - 1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dB)
37.8	32.8	40	-7.2
284.6	29.0	46	-17.0

Table 80 – 2442 MHz - 30 MHz to 1 GHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
7324.9	55.6	41.5	74	54	-18.4	-12.5

Table 81 – 2442 MHz - 1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
7412.9	-	40.7	74	54	-	-13.3
7419.8	55.8	-	74	54	-18.2	-
23100.1	-	40.4	84	64	-	-23.6

Table 82 - 2472 MHz - 1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

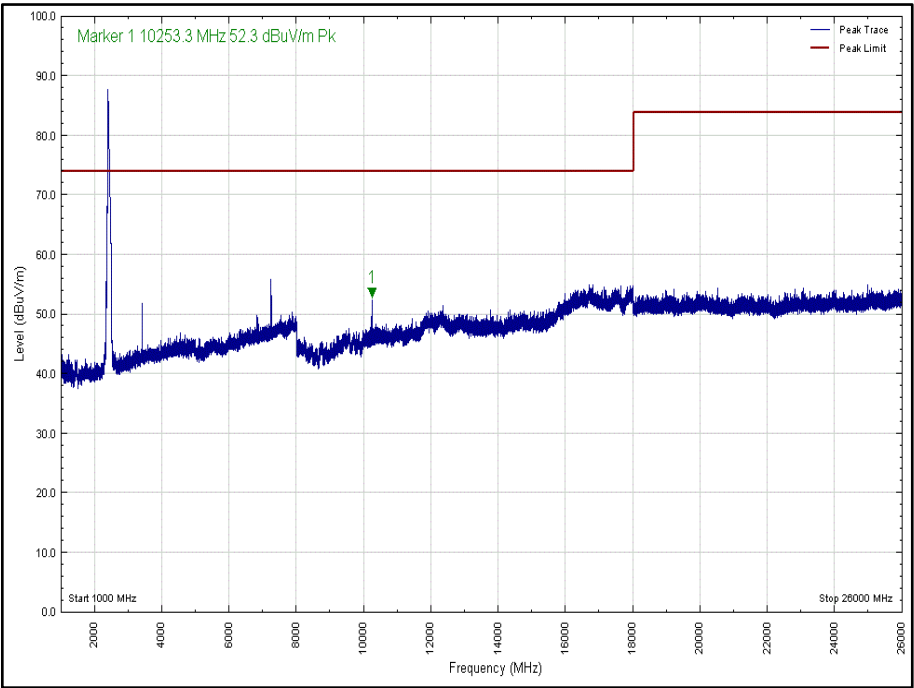


Figure 179 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

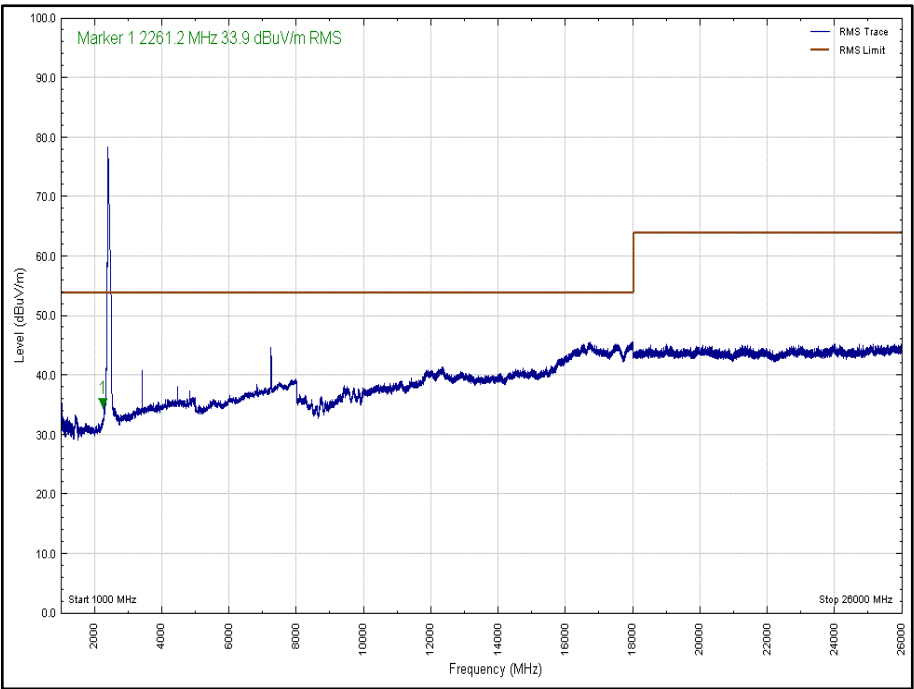


Figure 180 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal - Average

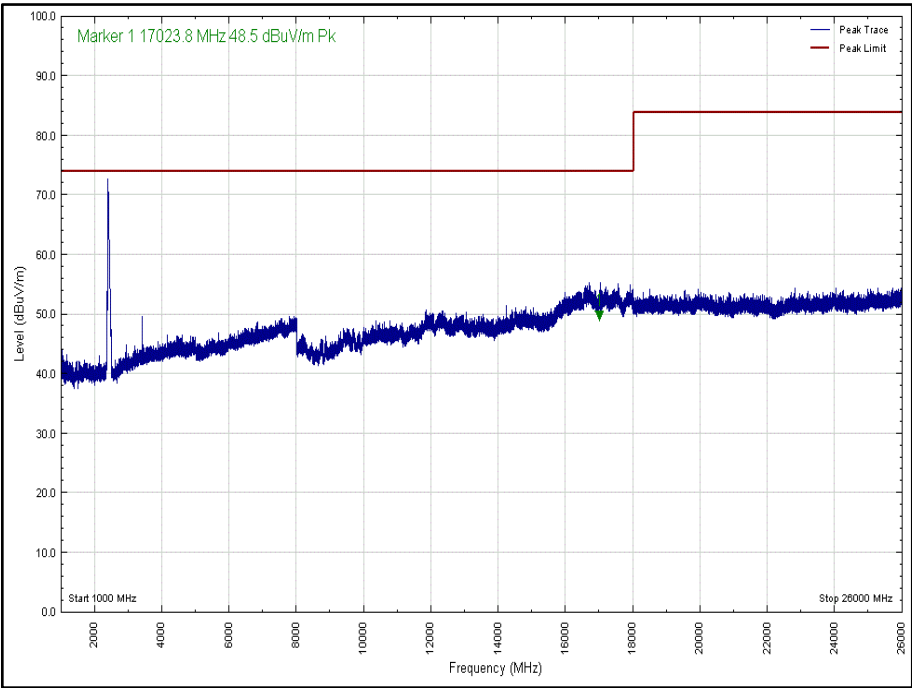


Figure 181 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

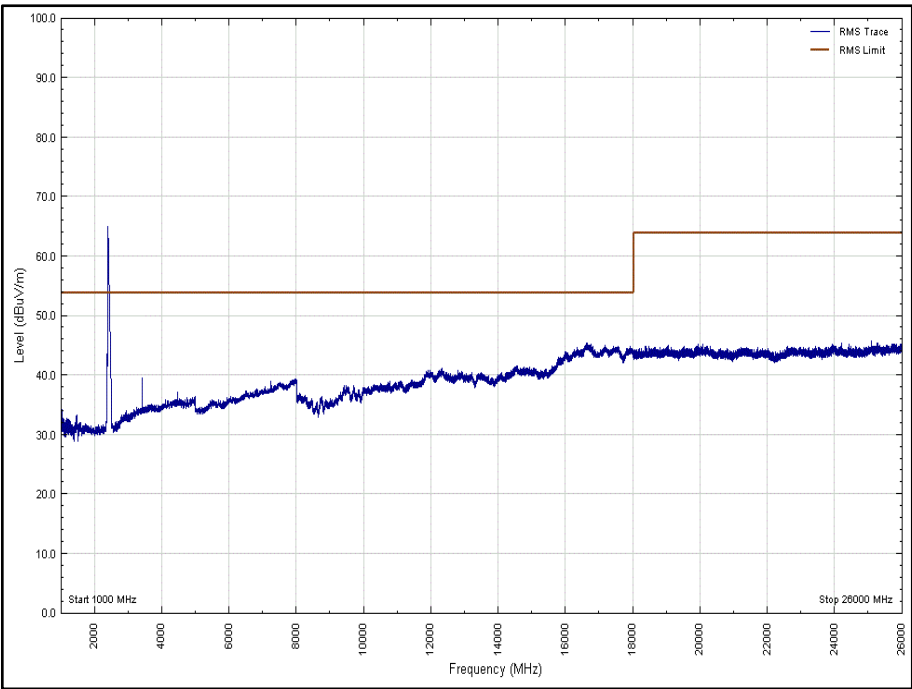


Figure 182 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Average

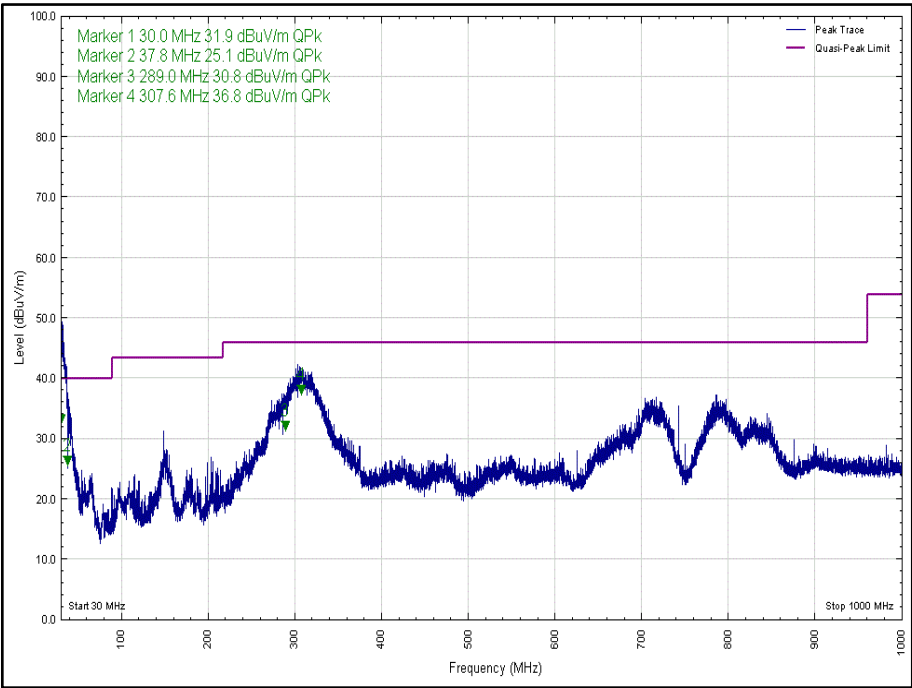


Figure 183 - 2442 MHz – 30 MHz to 1000 MHz, Horizontal – Peak

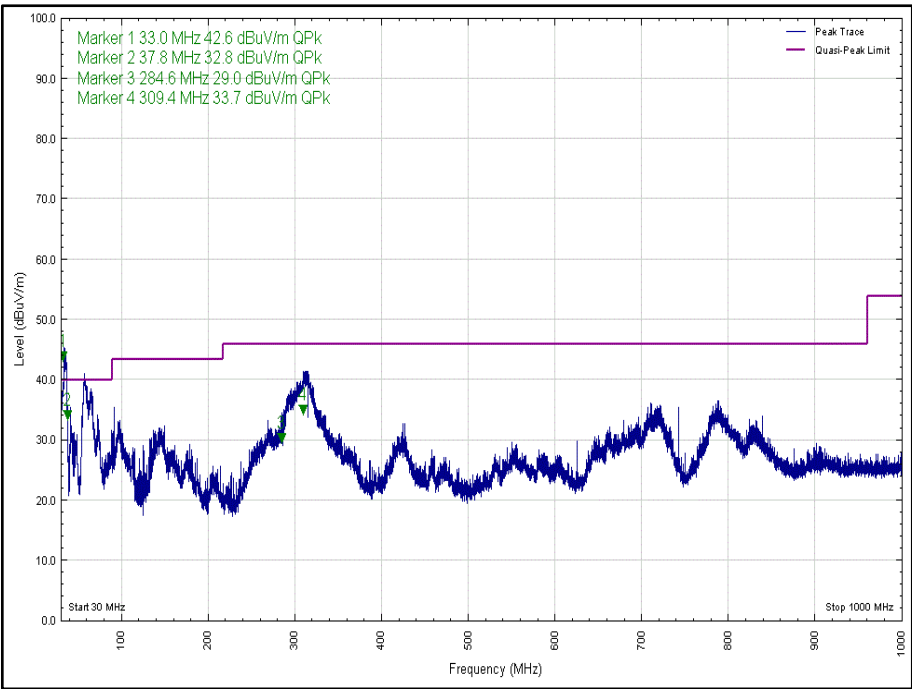


Figure 184 - 2442 MHz – 30MHz to 1000 MHz, Vertical – Peak

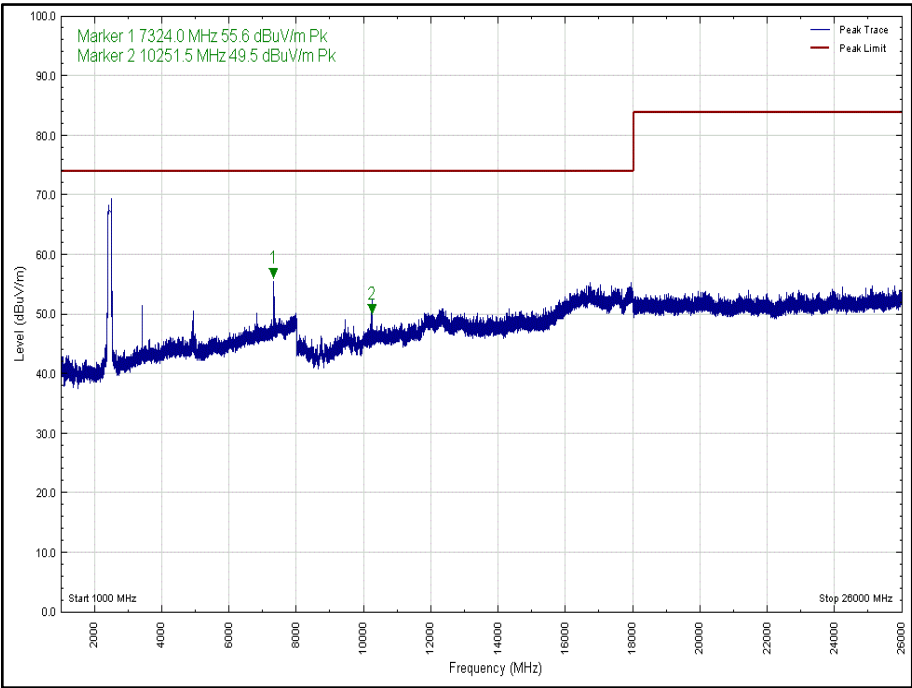


Figure 185 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

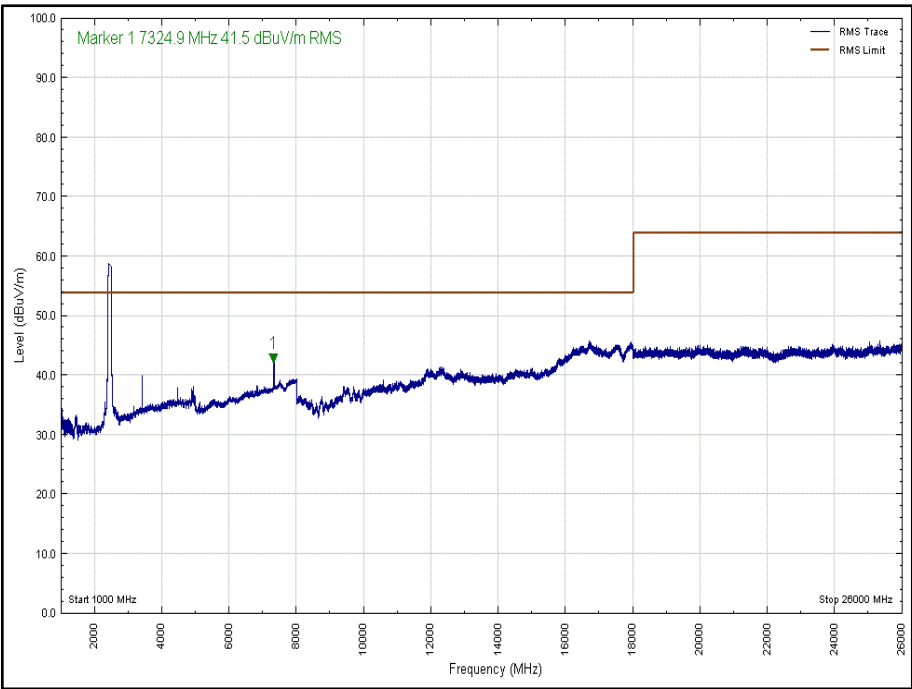


Figure 186 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

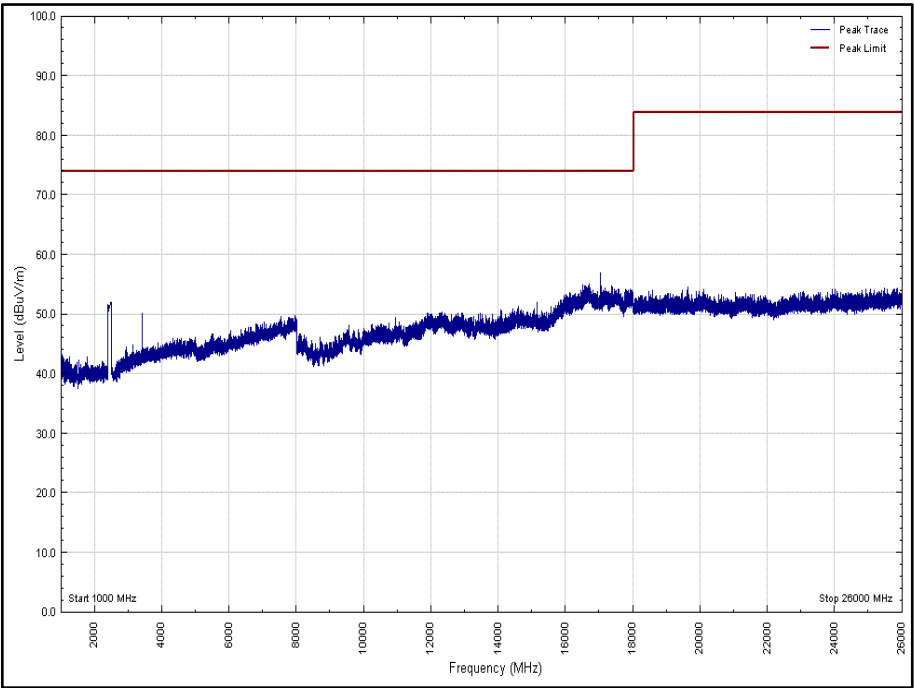


Figure 187 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

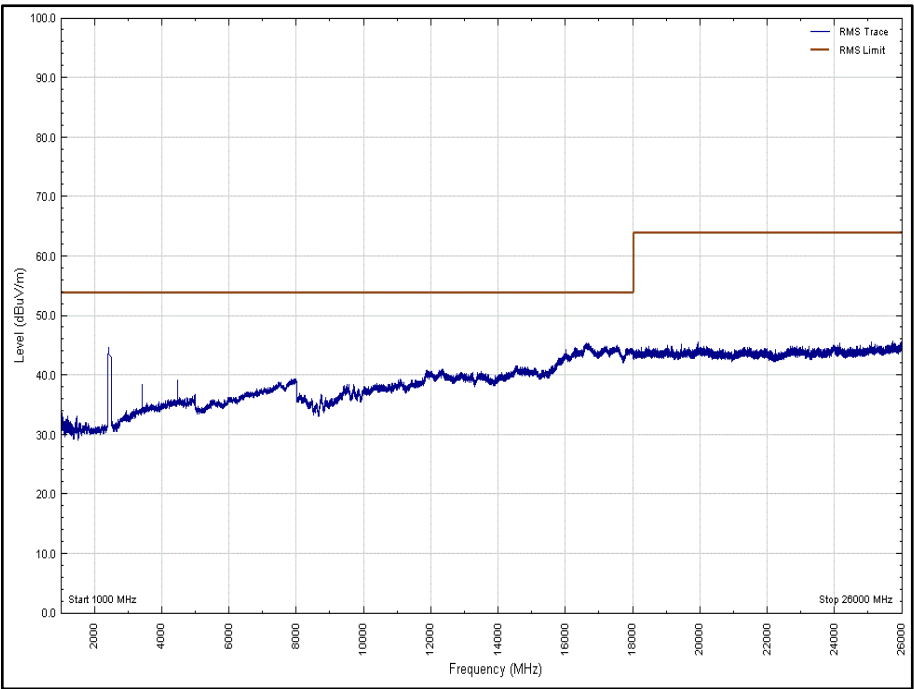


Figure 188 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

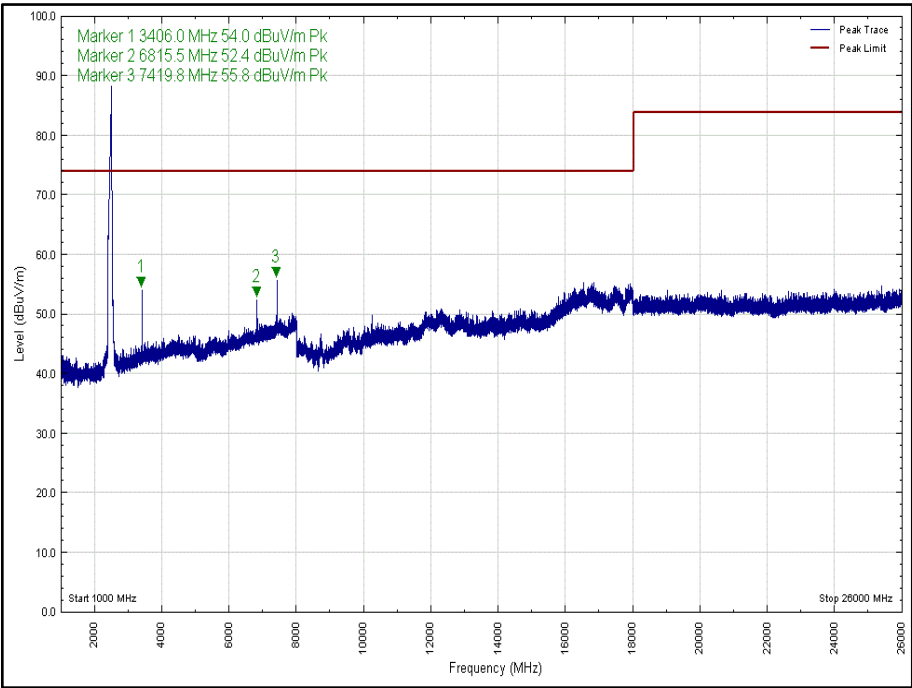


Figure 189 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

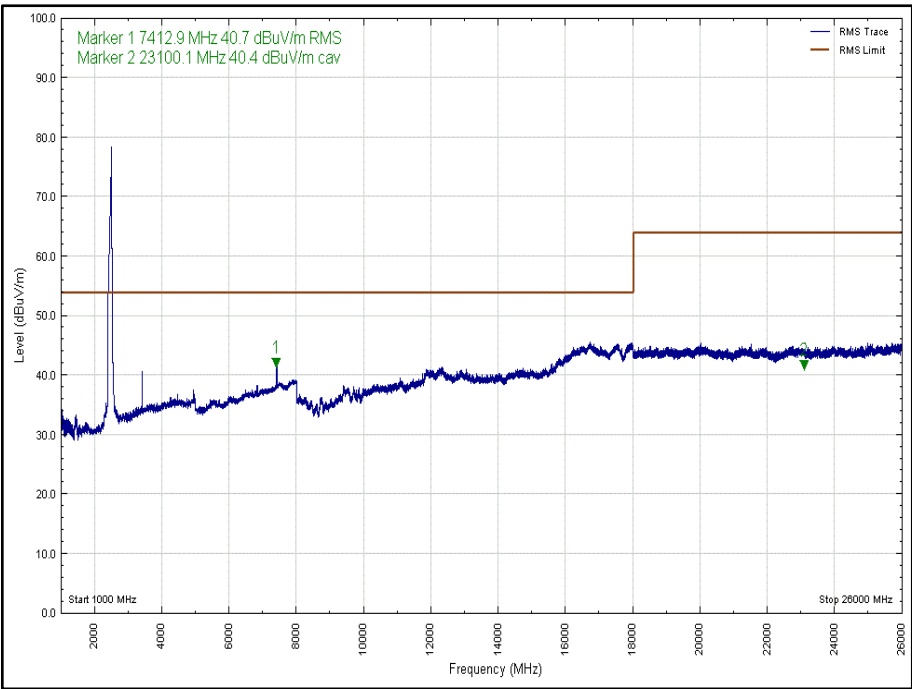


Figure 190 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

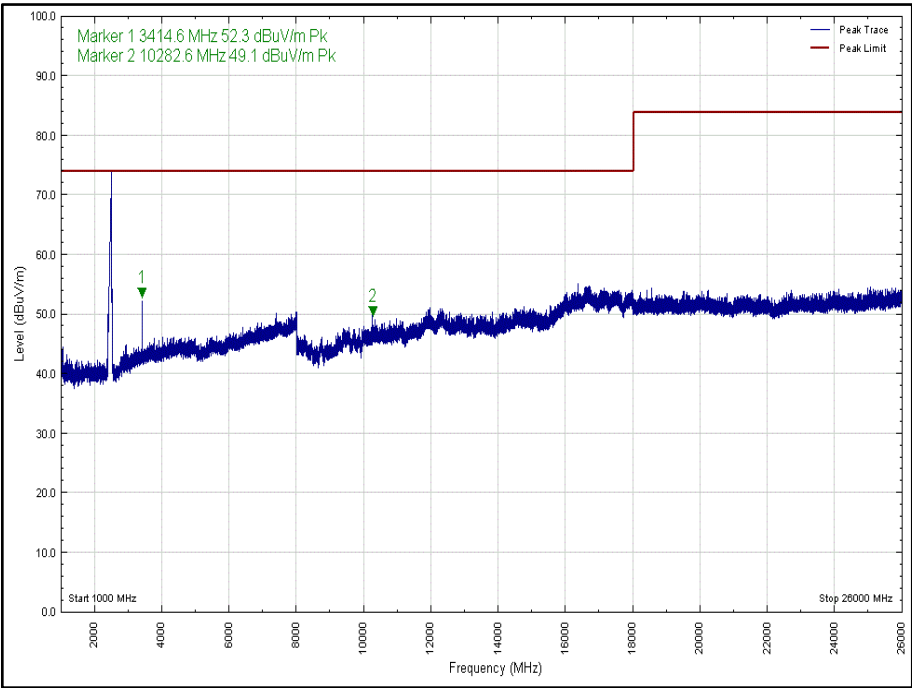


Figure 191 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

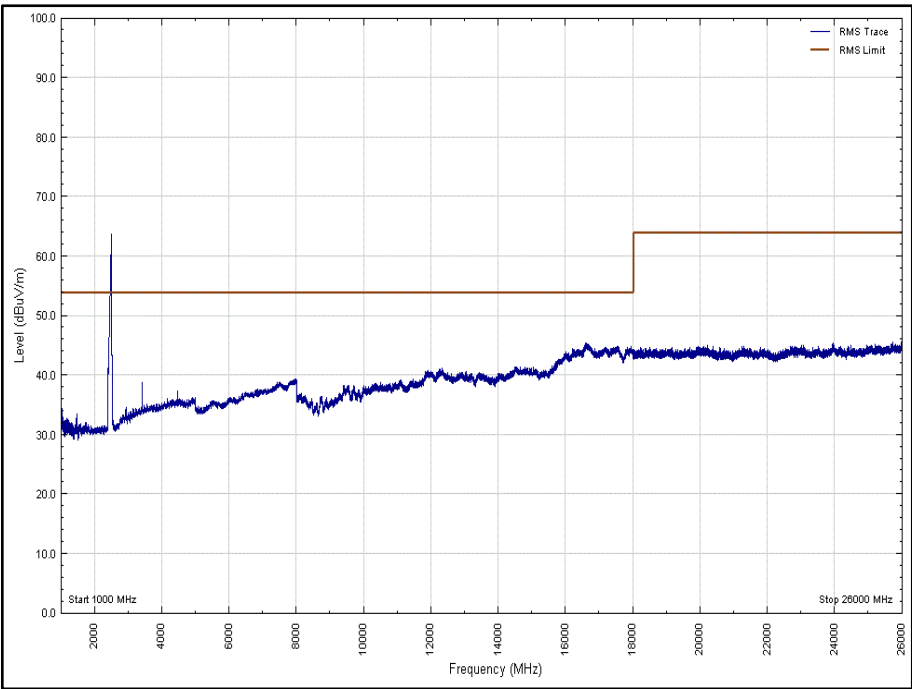


Figure 192 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



802.11b, Aux

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 83 – 2412 MHz - 1000 MHz to 26000 MHz – Radiated

*No emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
2388.7	56.4	-	74	54	-17.6	-
2700.1	-	32.4	74	54	-	-21.6
4883.9	-	37.4	74	54	-	-16.6

Table 84 – 2442 MHz - 1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
10254.9	56.2	-	74	54	-17.8	-
17026.0	58.6	-	74	54	-15.4	-

Table 85 - 2472 MHz - 1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

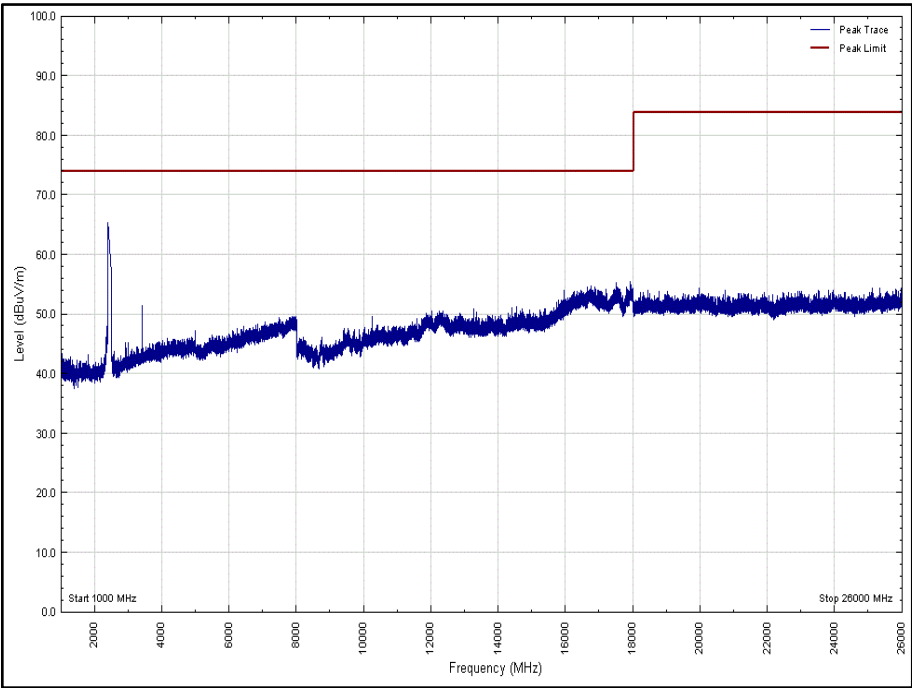


Figure 193 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

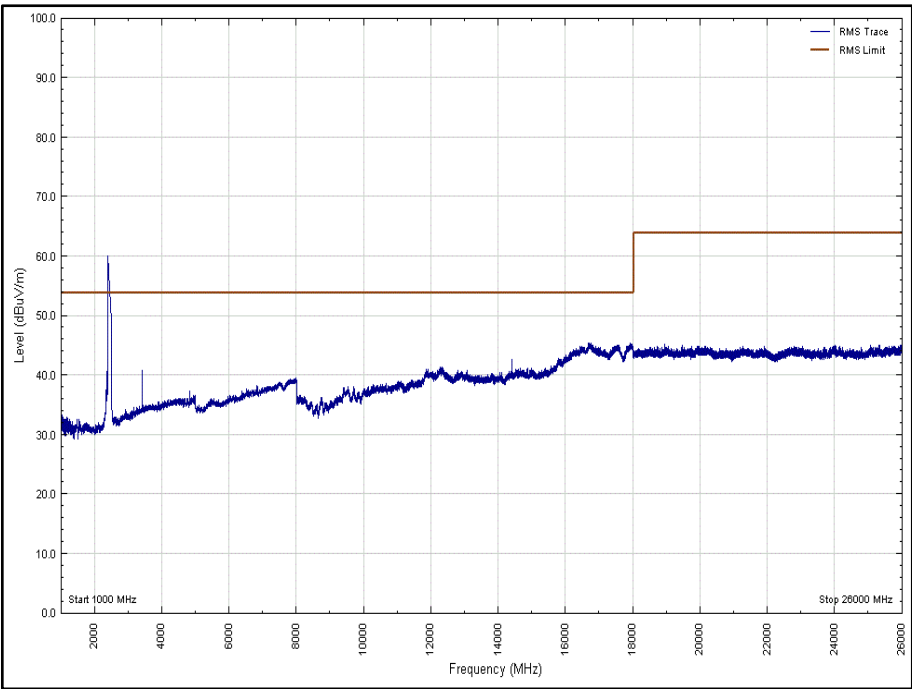


Figure 194 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

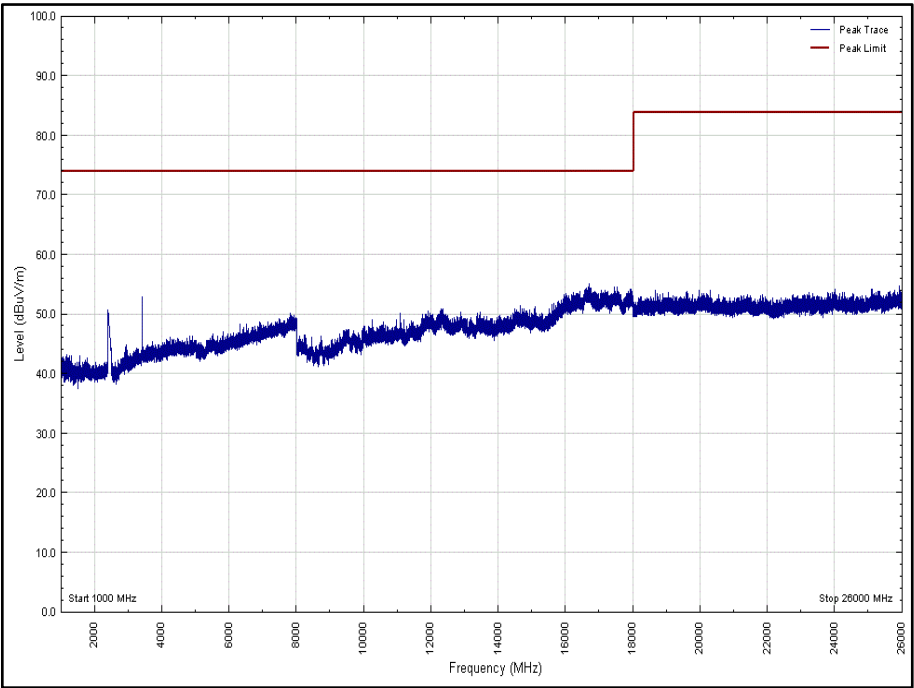


Figure 195 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

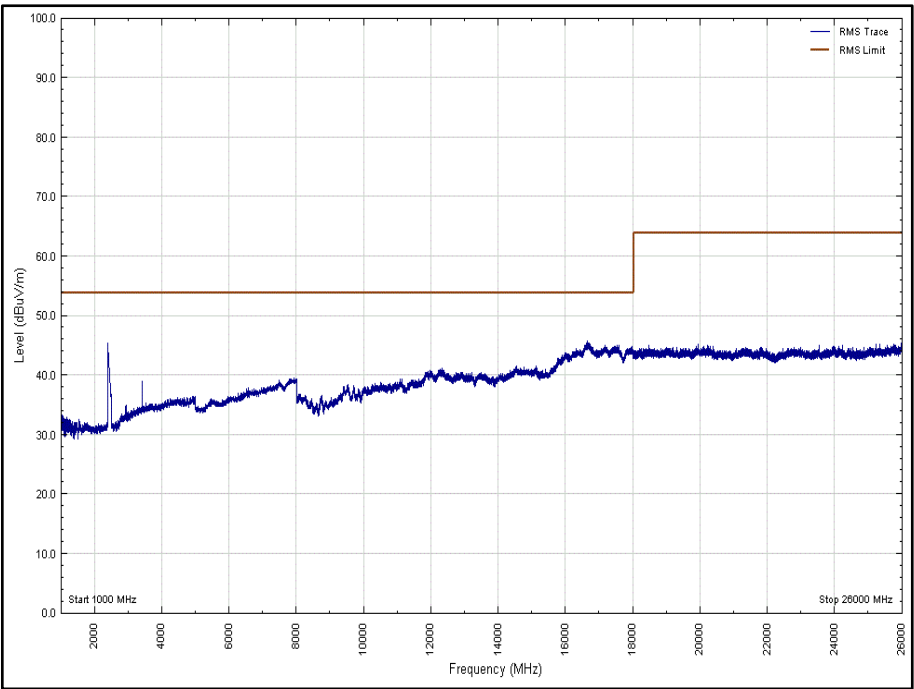


Figure 196 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Average

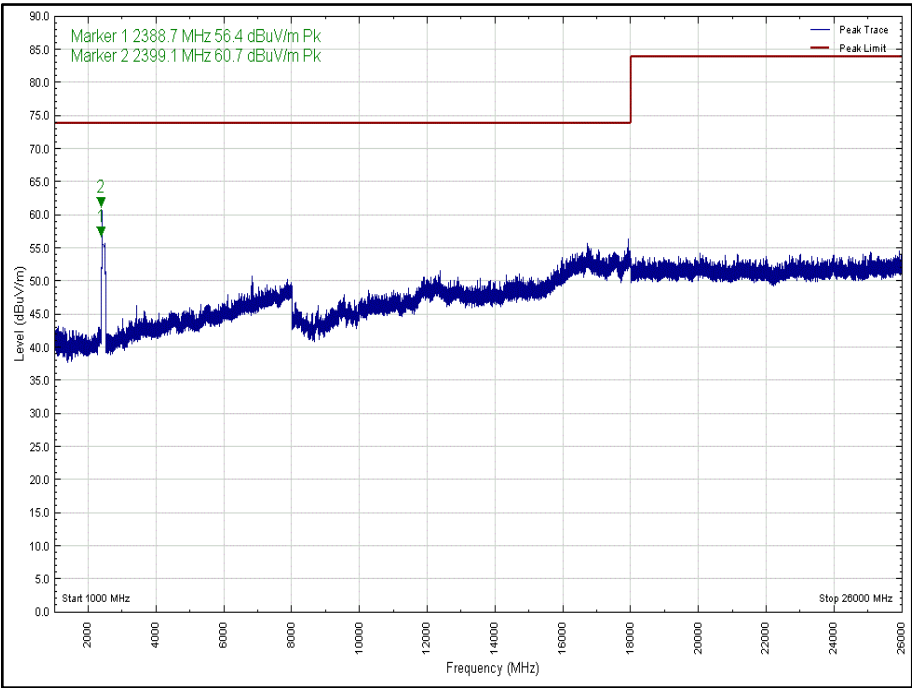


Figure 197 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

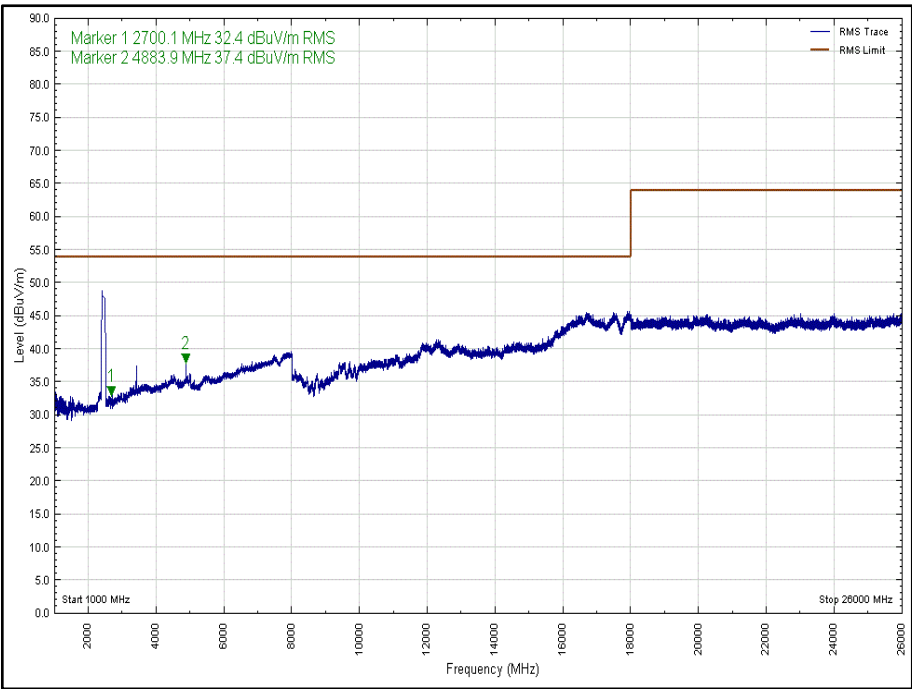


Figure 198 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

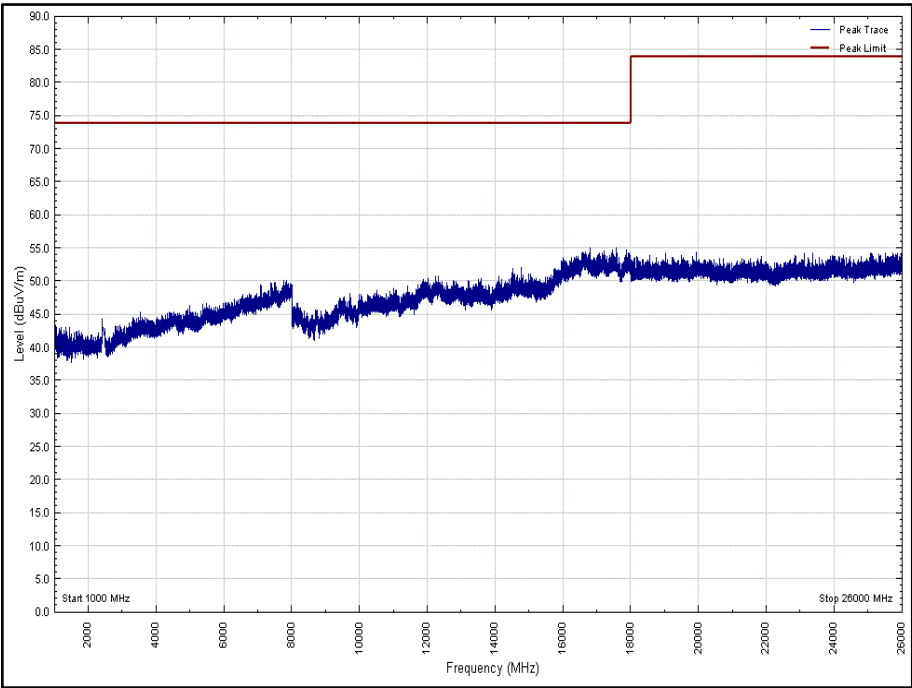


Figure 199 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

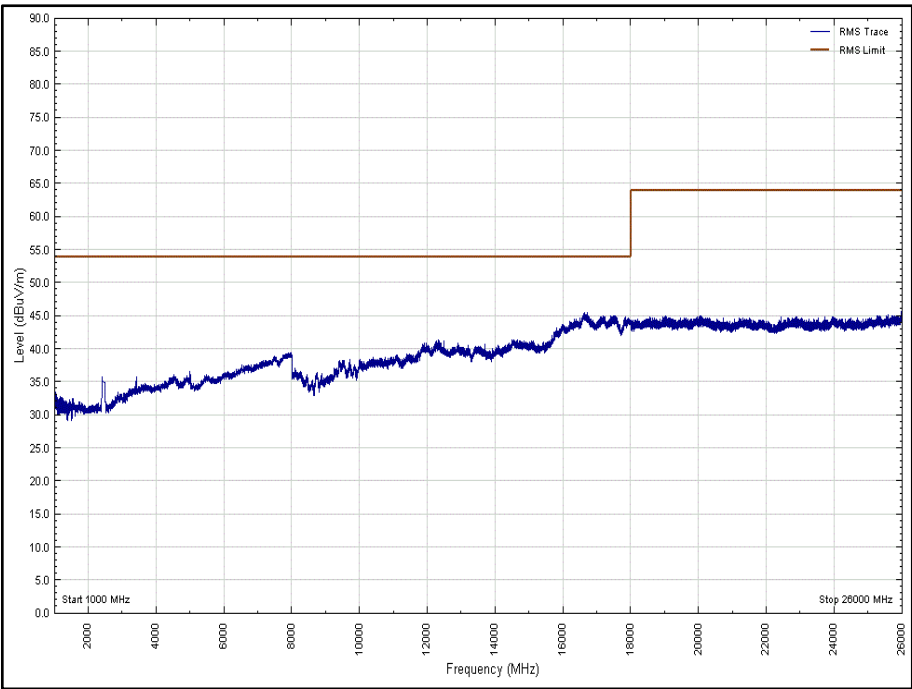


Figure 200 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

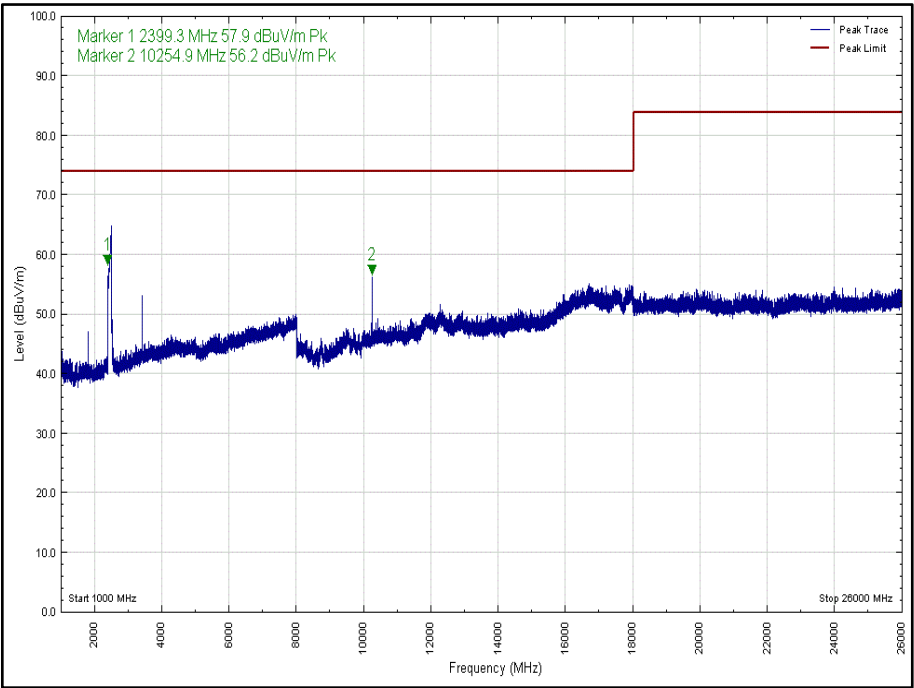


Figure 201 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

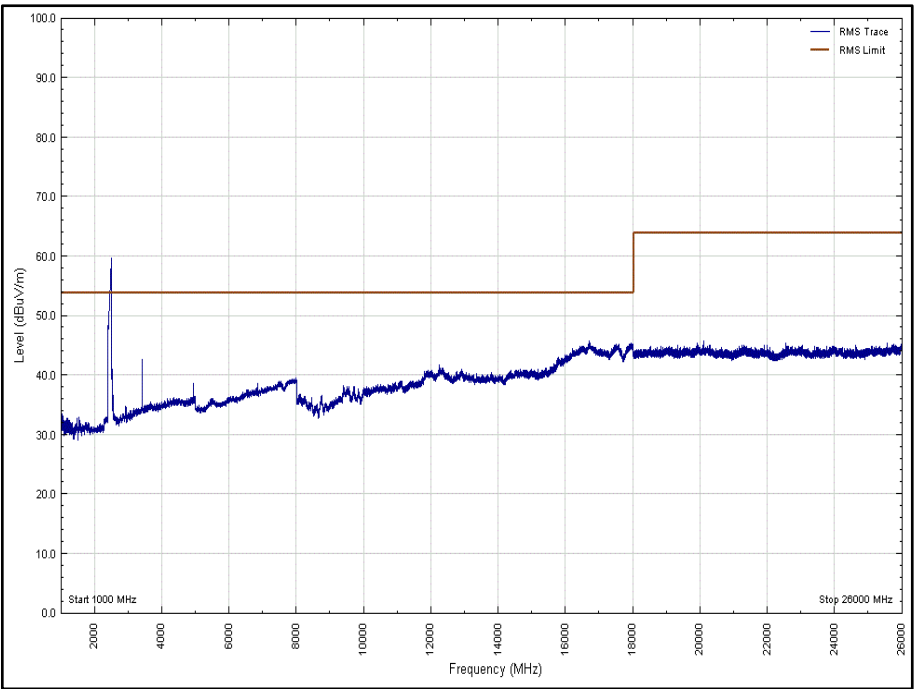


Figure 202 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal - Average

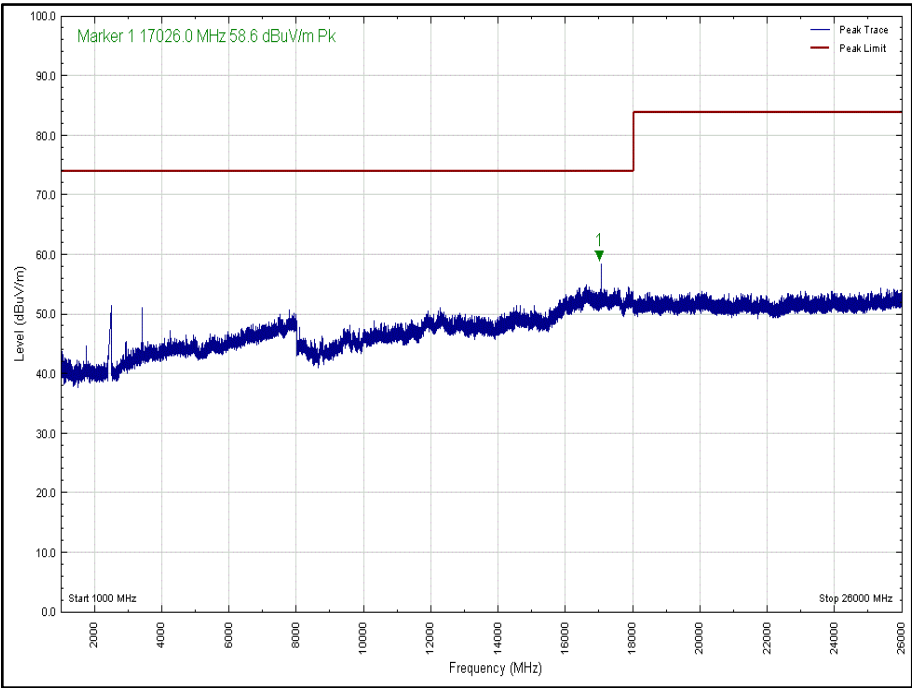


Figure 203 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

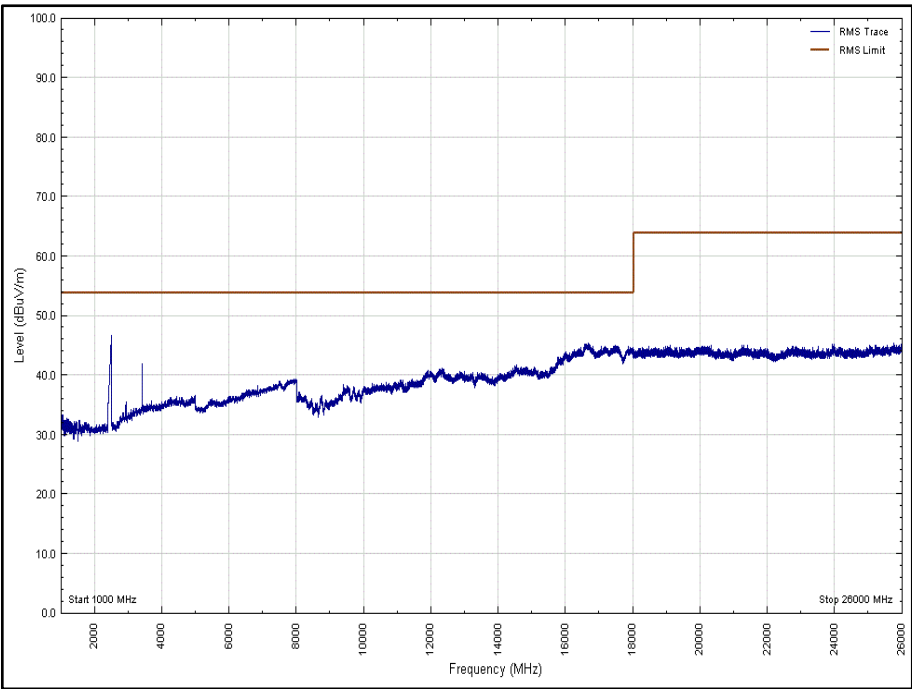


Figure 204 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



802.11g, Aux

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
4193.8	-	34.1	74	54	-	-19.9

Table 86 – 2412 MHz -1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 87 – 2442 MHz -1000 MHz to 26000 MHz – Radiated

*No emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 88 - 2472 MHz -1000 MHz to 26000 MHz – Radiated

*No emissions were detected within 10 dB of the limit

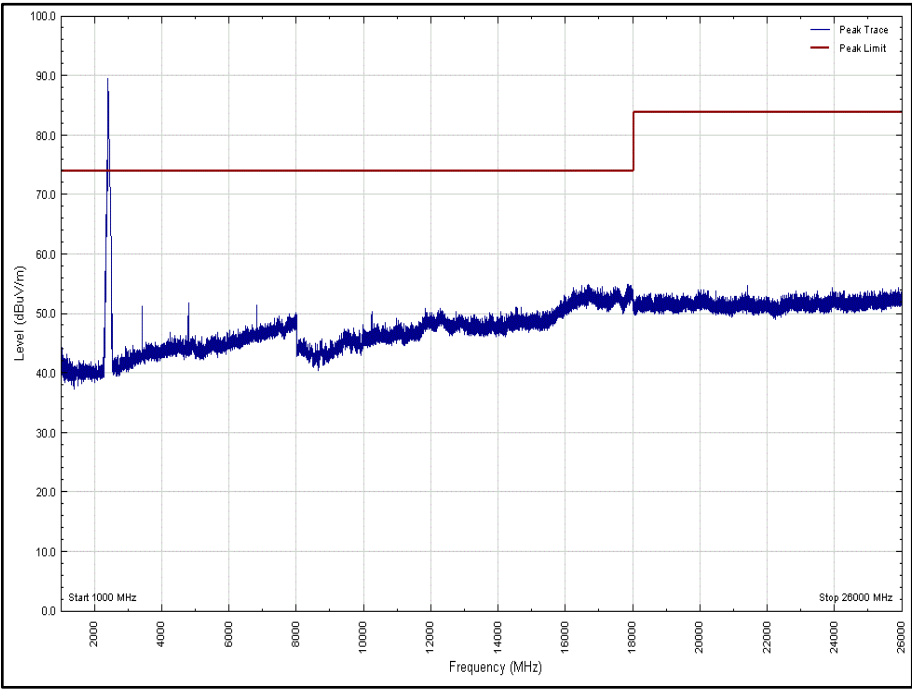


Figure 205 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

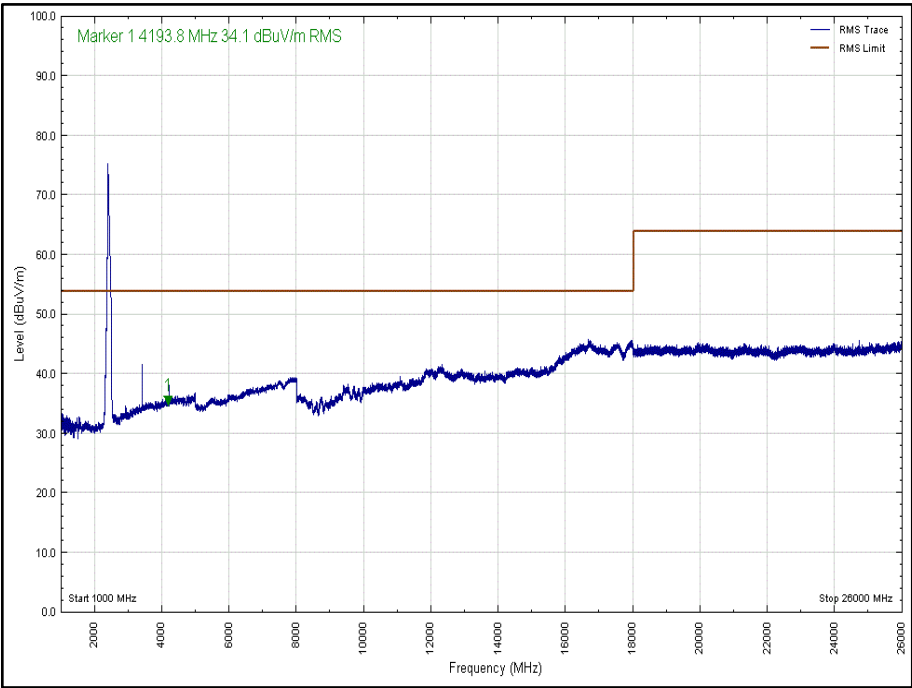


Figure 206 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

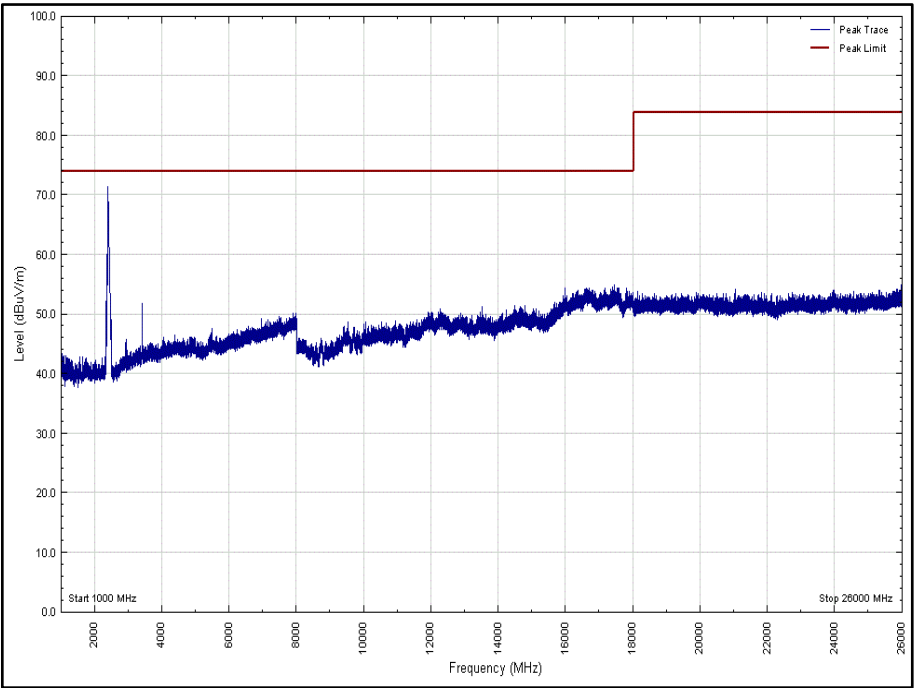


Figure 207 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

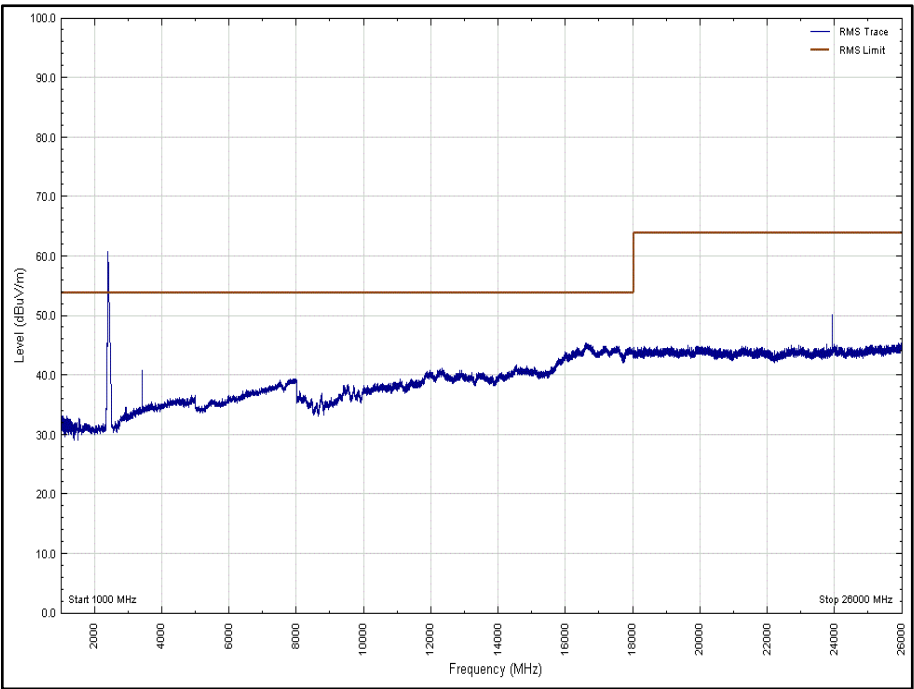


Figure 208 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical - Average

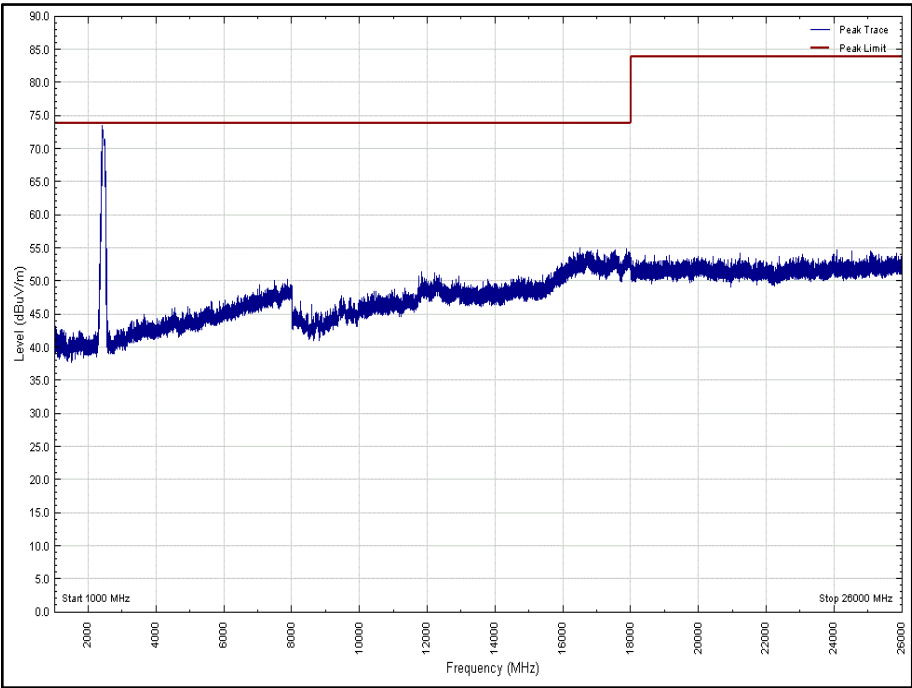


Figure 209 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

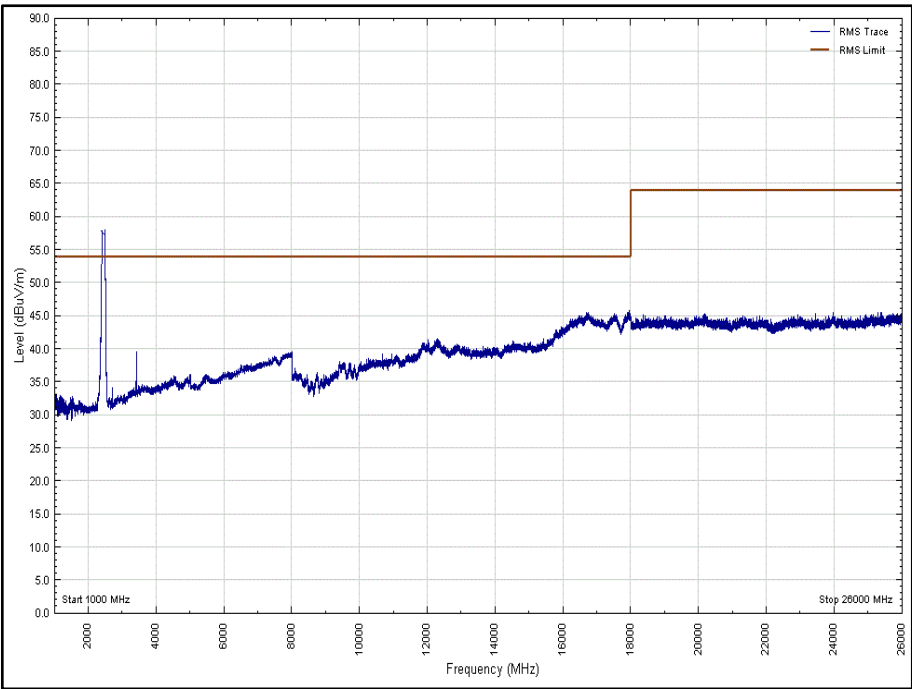


Figure 210 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

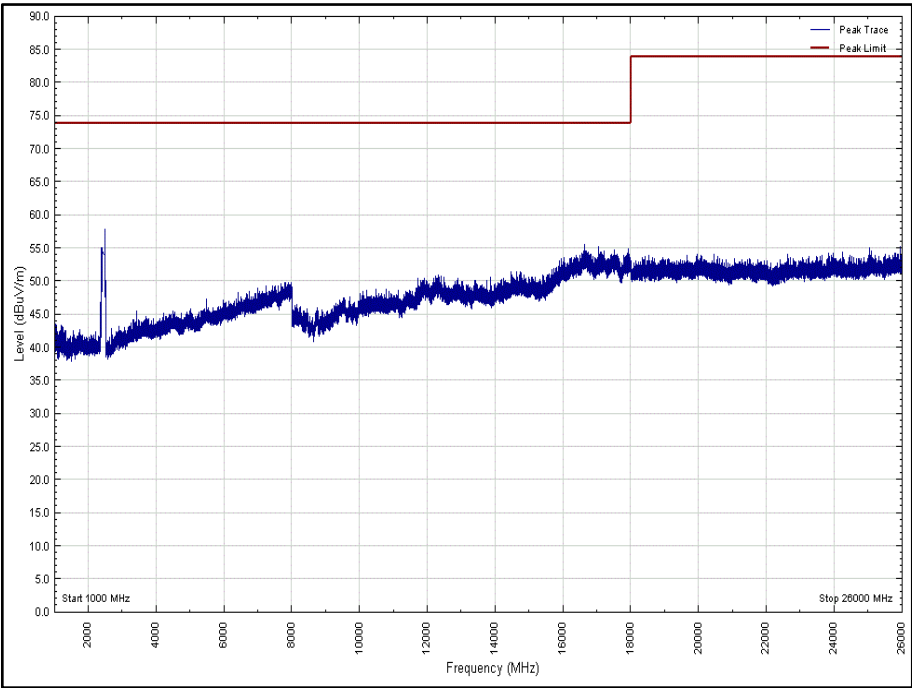


Figure 211 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

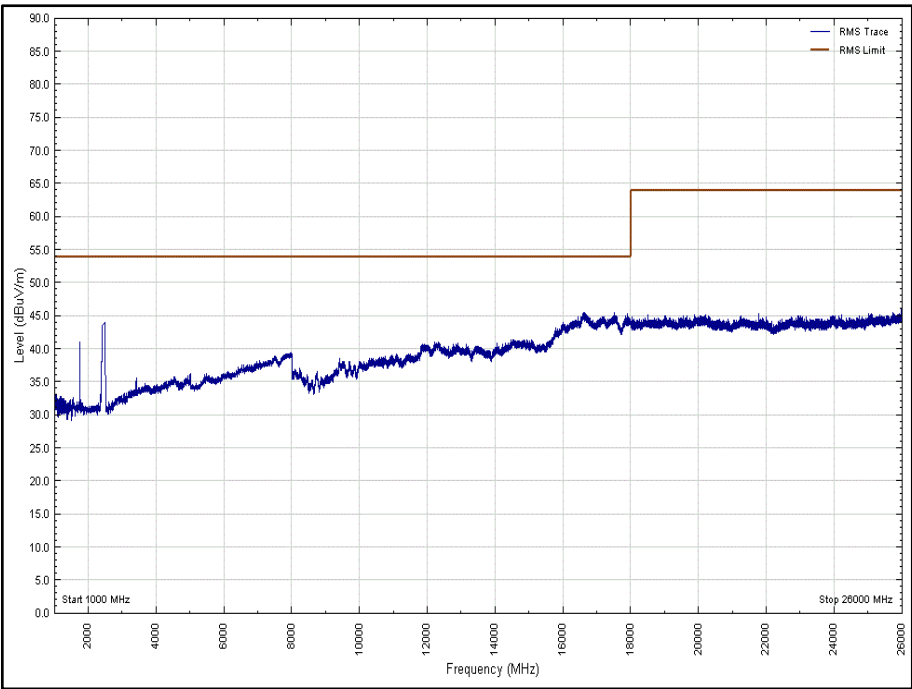


Figure 212 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

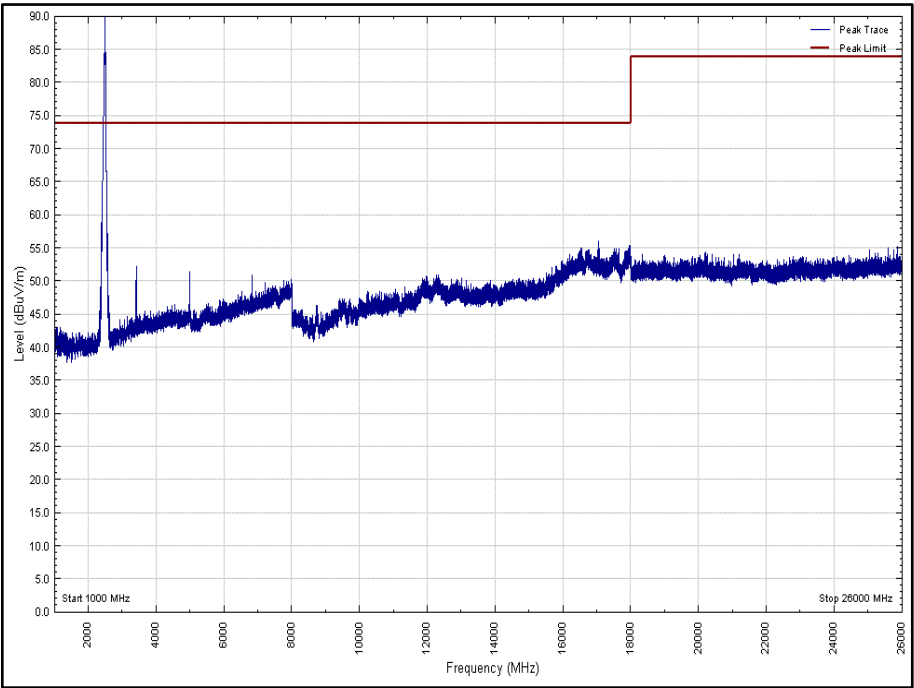


Figure 213 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

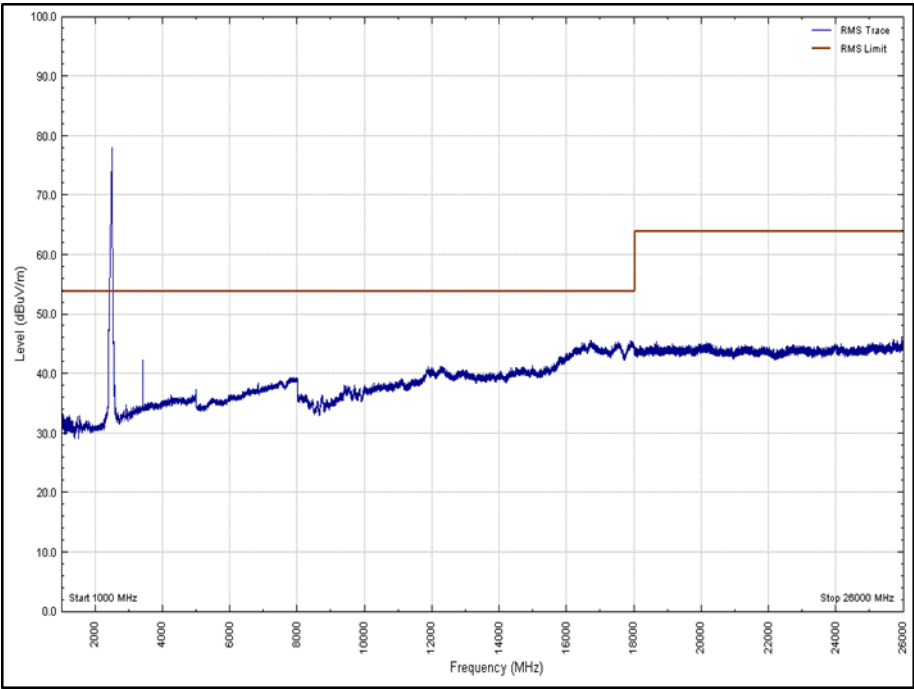


Figure 214 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

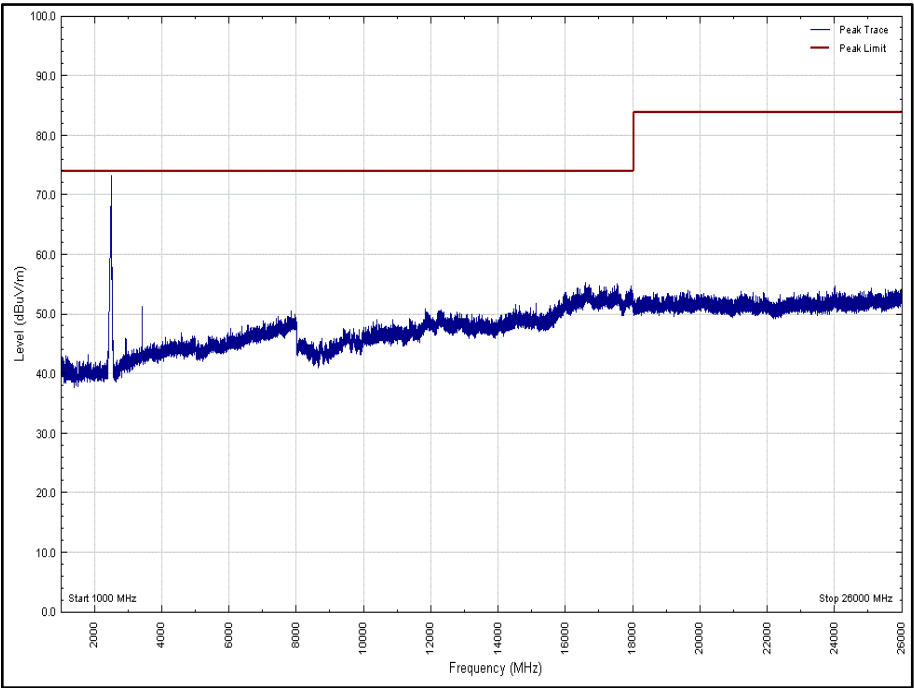


Figure 215 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

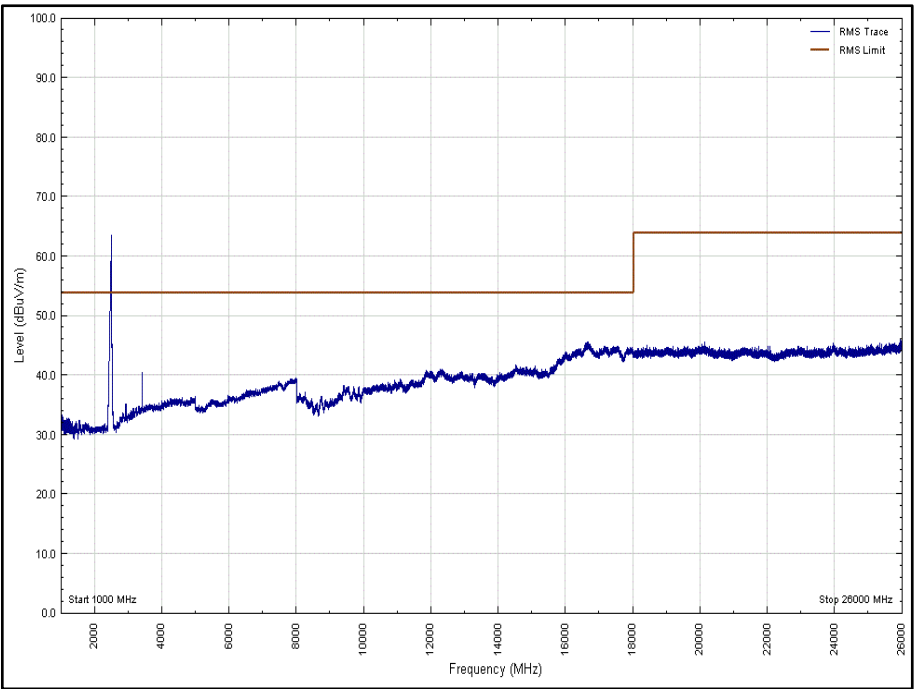


Figure 216 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



802.11n, Aux

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
17028.4	57.9	-	74	54	-16.1	-

Table 89 – 2412 MHz -1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
2700.0	-	33.4	74	54	-	20.6
17095.1	59.1	-	74	54	-14.9	-

Table 90 – 2442 MHz -1000 MHz to 26000 MHz – Radiated

No other emissions were detected within 10 dB of the limit

Frequency (MHz)	Result (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
	Peak	Average	Peak	Average	Peak	Average
*						

Table 91 - 2472 MHz -1000 MHz to 26000 MHz – Radiated

*No emissions were detected within 10 dB of the limit

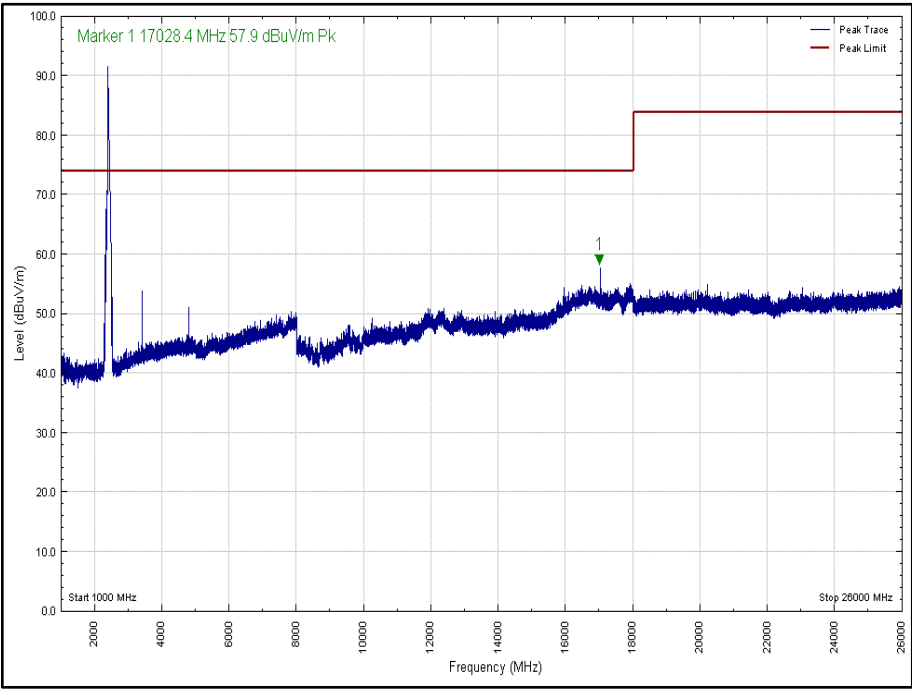


Figure 217 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

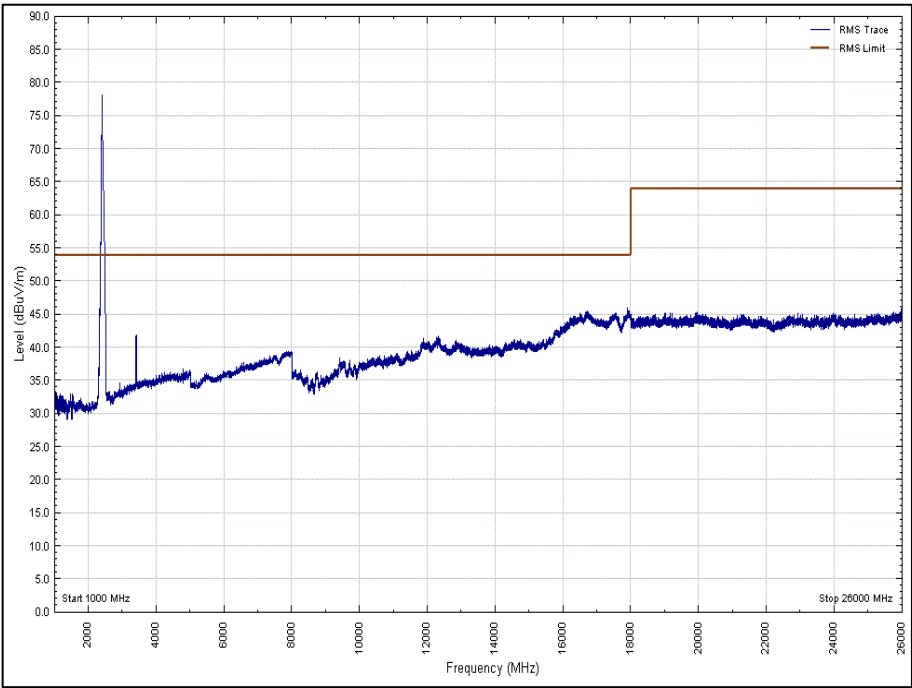


Figure 218 - 2412 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

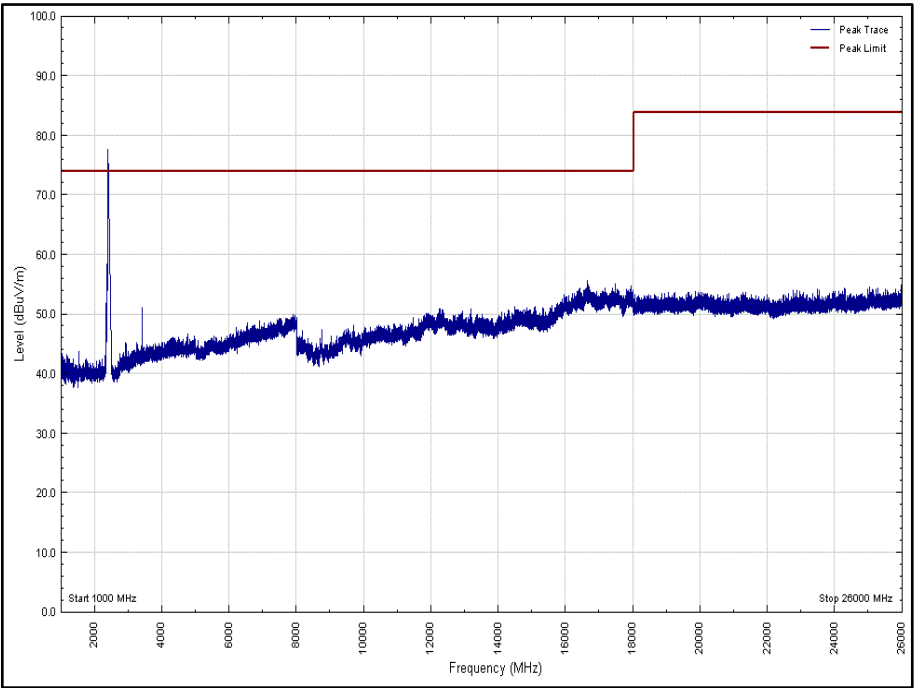


Figure 219 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

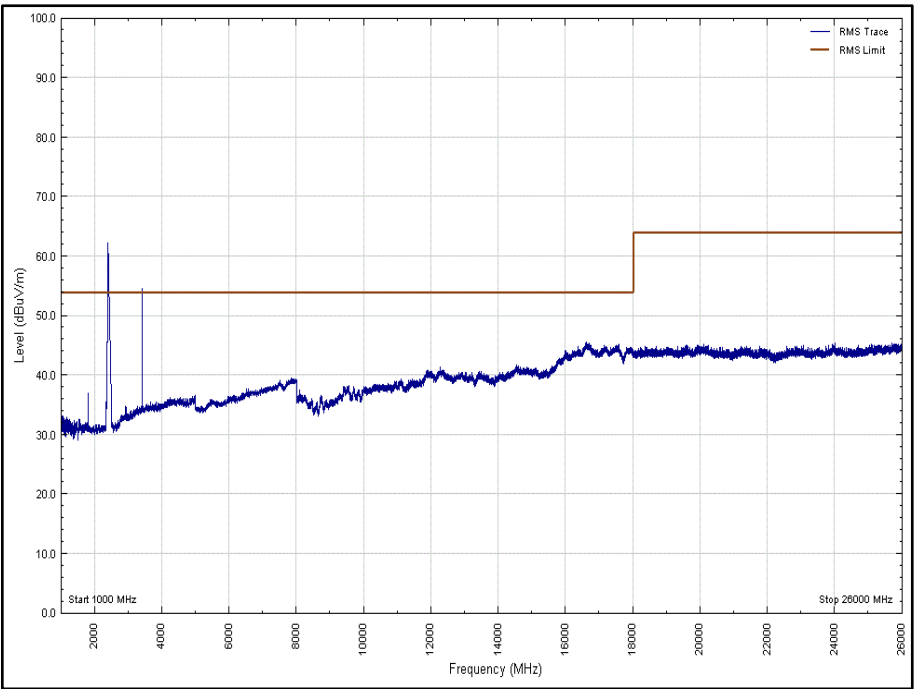


Figure 220 - 2412 MHz - 1000 MHz to 26000 MHz, Vertical – Average

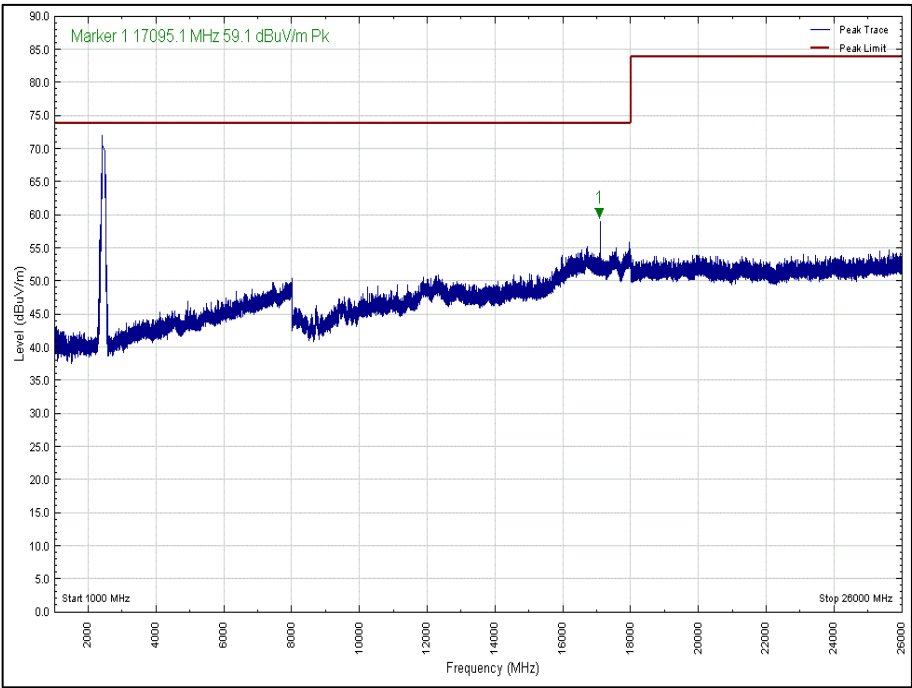


Figure 221 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

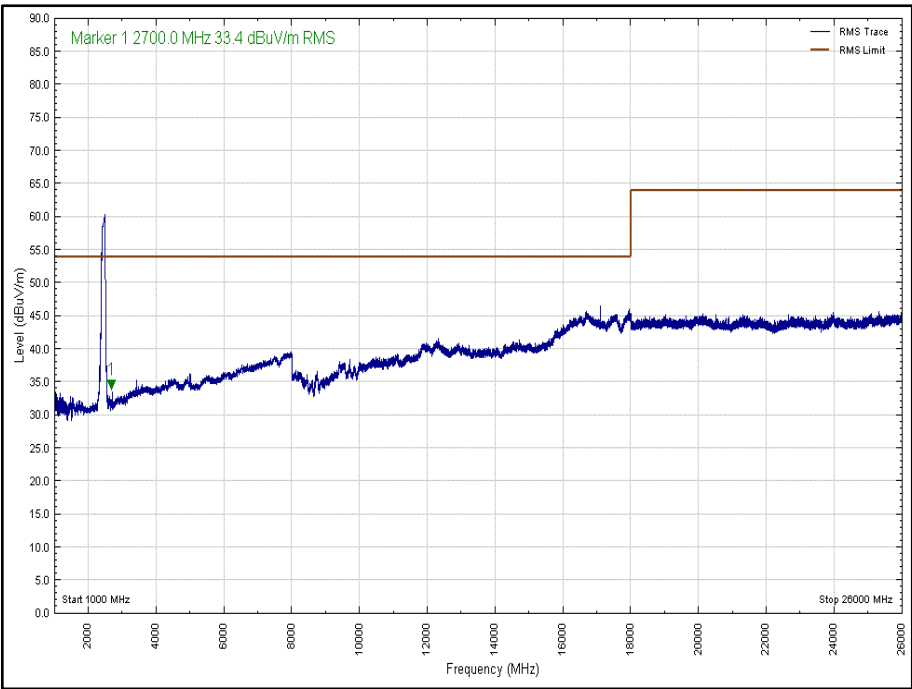


Figure 222 - 2442 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

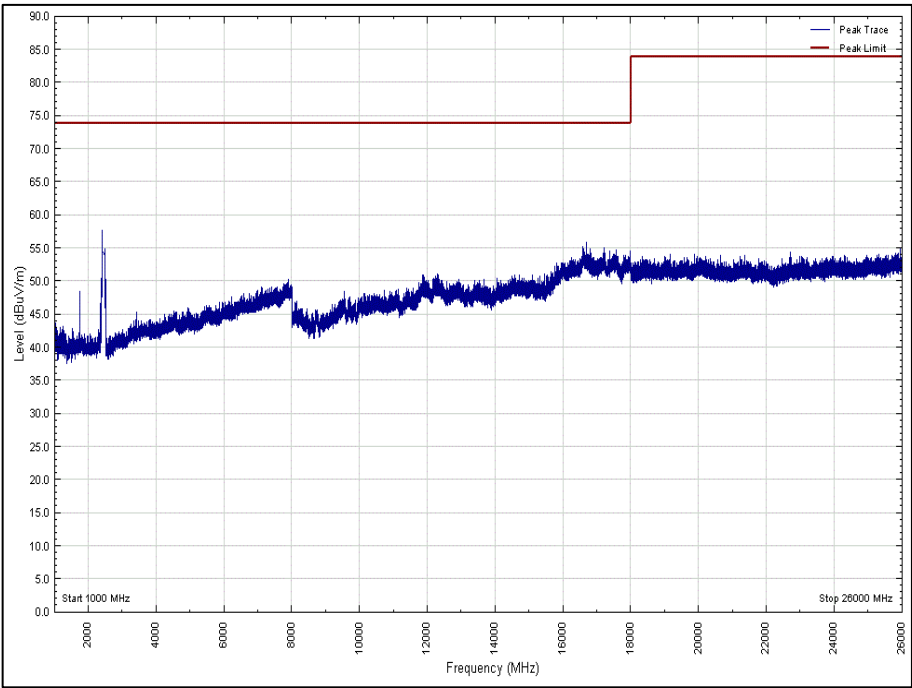


Figure 223 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

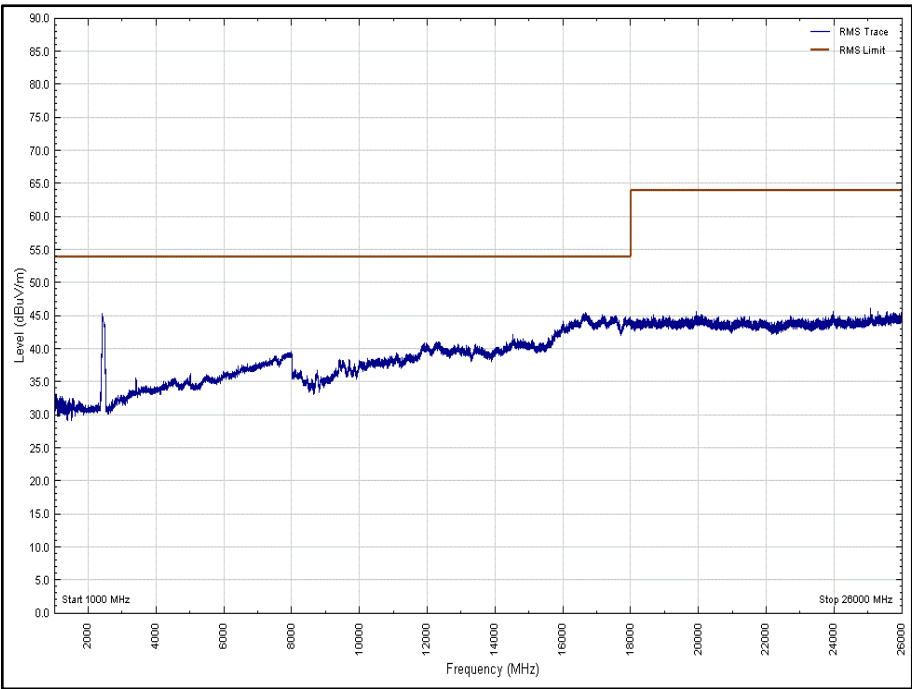


Figure 224 - 2442 MHz - 1000 MHz to 26000 MHz, Vertical – Average

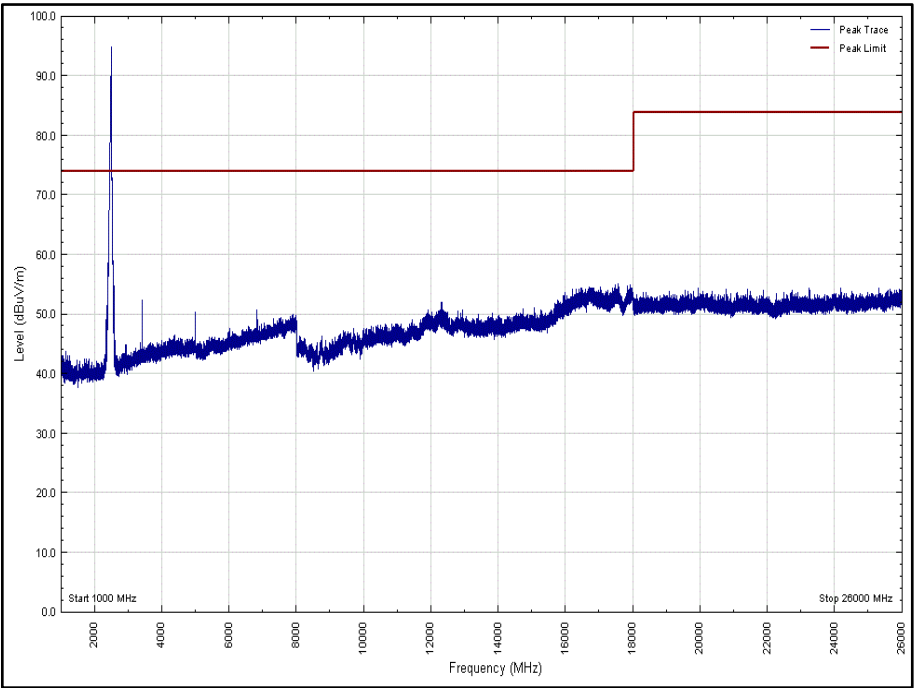


Figure 225 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Peak

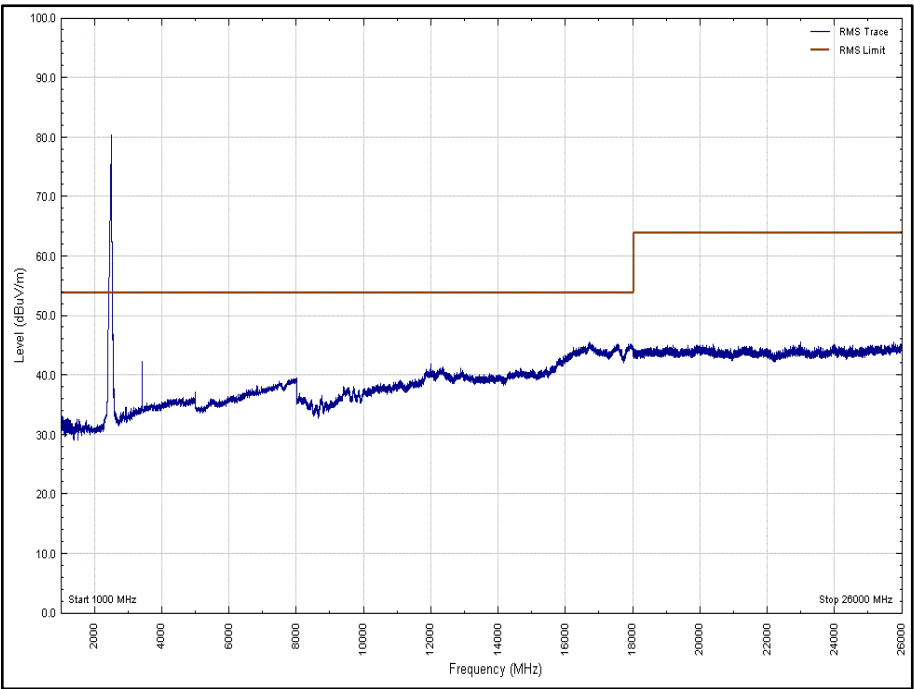


Figure 226 - 2472 MHz - 1000 MHz to 26000 MHz, Horizontal – Average

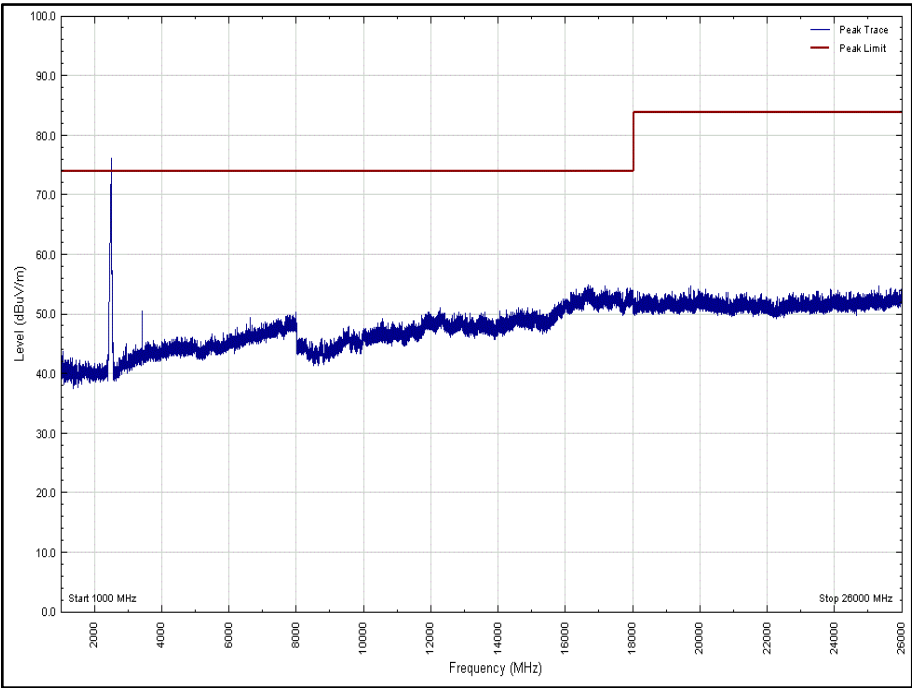


Figure 227 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical – Peak

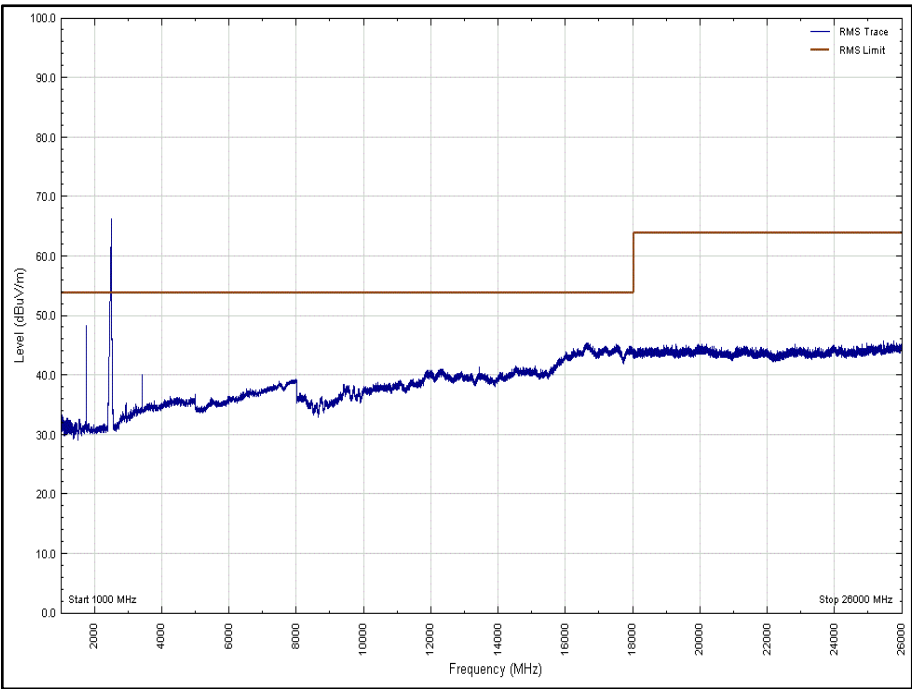


Figure 228 - 2472 MHz - 1000 MHz to 26000 MHz, Vertical - Average



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.



2.6.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5 and RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna with permanent attenuator (Bilog)	Schaffner	CBL6143	287	24	15-May-2020
10dB/1W SMA Attenuator dc - 18GHz	Sealectro	60-674-1010-89	395	0	O/P Mon
Pre-Amplifier	Phase One	PS04-0086	1533	12	08-Feb-2020
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	0	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	15-Nov-2019
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Dec-2019
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	25-Oct-2019
Cable (3.5kW Tx, Nm-Nm, 7m)	Scott Cables	9918-NMNM-7000	4500	6	09-Jul-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	11-Dec-2019
High Pass Filter (4GHz)	K&L Microwave	11SH10-4000/X18000-0/0	4599	12	04-Sep-2019
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	05-Mar-2020
Mast Controller	Maturo GmbH	NCD	4810	0	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	0	TU
Double Ridge Broadband Horn Antenna	Schwarzbeck	BBHA 9120 B	4848	12	11-Mar-2020
8 - 18 GHz pre amp	Wright Technologies	PS06-0061	4971	12	07-Dec-2019
Band Reject Filter - 2.425 GHz	Wainwright	WRCGV14-2390-2400-2450-2460-50SS	5066	12	02-Oct-2019
Band Reject Filter - 2.425 GHz	Wainwright	WRCGV14-2390-2400-2450-2460-50SS	5067	12	02-Oct-2019
Band Reject Filter - 2.4585 GHz	Wainwright	WRCGV14-2423.5-2433.5-2483.5-2493.5-50SS	5068	12	02-Oct-2019
Band Reject Filter - 2.4585 GHz	Wainwright	WRCGV14-2423.5-2433.5-2483.5-2493.5-50SS	5069	12	02-Oct-2019
EMI Test Receiver	Rohde & Schwarz	ESW44	5084	12	11-Nov-2019
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5095	12	04-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-1000	5103	12	06-Oct-2020



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Cable (18 GHz)	Rosenberger	LU7-071-1000	5104	12	05-Dec-2019
Cable (18 GHz)	Rosenberger	LU7-071-2000	5107	12	06-Oct-2020
EmX Emissions Software	TUV SUD	EmX	5125	0	Software
1.5m 40GHz RF Cable	Scott Cables	KPS-1501-2000-KPS	5127	6	11-Dec-2019
Screened Room (11)	Rainford	Rainford	5136	36	01-Nov-2021
Mast	Maturo	TAM 4.0-P	5158	0	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	0	TU
Turntable	Maturo	TT 15WF	5160	0	TU
8 Meter Cable	Teledyne	PR90-088-8MTR	5212	12	30-Aug-2020
Horn Antenna (1-10GHz)	Schwarzbeck	BBHA 9120 B	5215	12	11-Mar-2020
DRG Horn Antenna (7.5-18GHz)	Schwarzbeck	HWRD750	5216	12	11-Mar-2020
3 GHz High pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	5219	12	15-Feb-2020

Table 92

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



3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Maximum Conducted Output Power	± 3.2 dB
Power Spectral Density	± 3.2 dB
Emission Bandwidth	67.183 kHz to ± 83.149 kHz
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
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB

Table 93

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the result of the compliance measurement and does not take into account measurement instrumentation uncertainty. Measurement system uncertainty is calculated, as indicated above, in accordance with the appropriate guidelines detailed within the specification of test.