



802.11g

Testing was performed on the data rate which resulted in the highest conducted output power. The data rate used during testing was 9 Mbps. For configurations supporting multiple bandwidths, emission measurements were only made in the bandwidth with the highest conducted output power.

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
38.203	30.4	40.0	-9.6	279	1.00	Vertical
49.355	35.7	79.3	-43.6	341	1.00	Vertical
56.667	40.6	79.3	-38.7	352	1.00	Vertical
57.978	38.6	79.3	-41.0	0	1.00	Vertical
226.807	30.4	79.3	-48.9	340	1.16	Vertical
227.367	37.6	79.3	-41.7	212	1.00	Horizontal

Table 35 - 2412 MHz - 30 MHz to 1 GHz Emissions Results

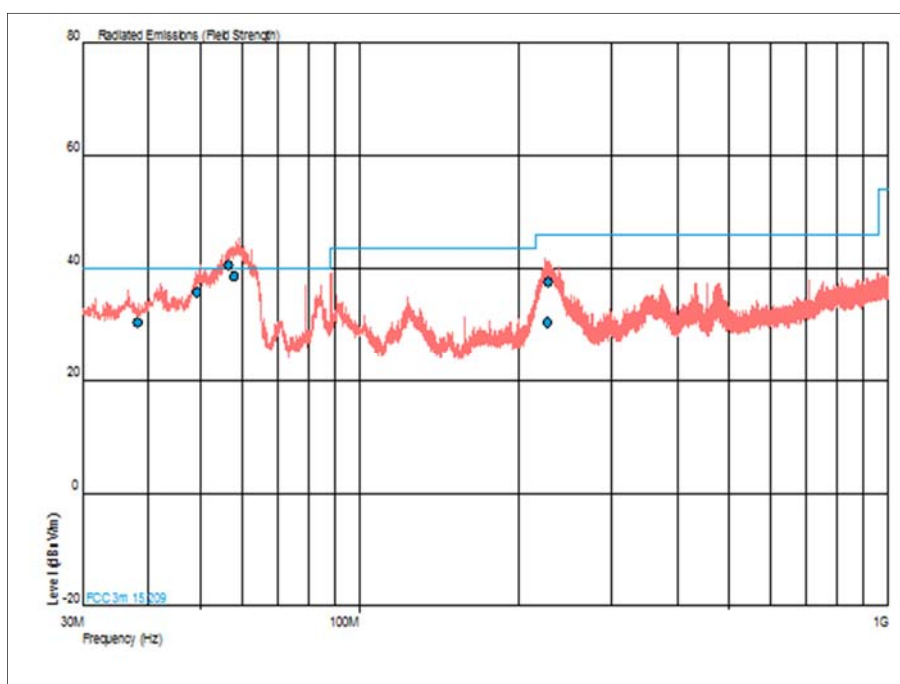


Figure 73 - 2412 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 36 - 2412 MHz - 1 GHz to 25 GHz Emissions Results

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

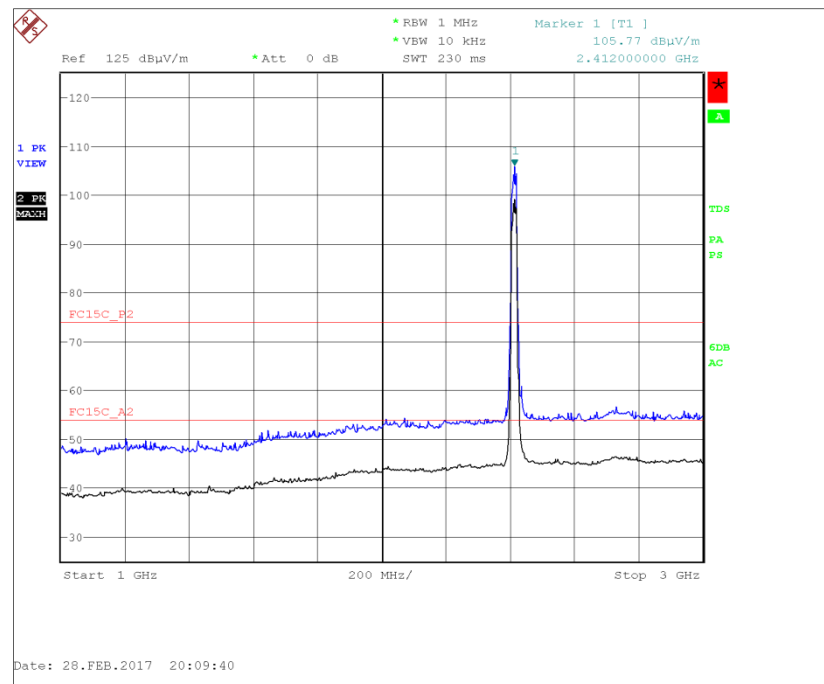


Figure 74 - 2412 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

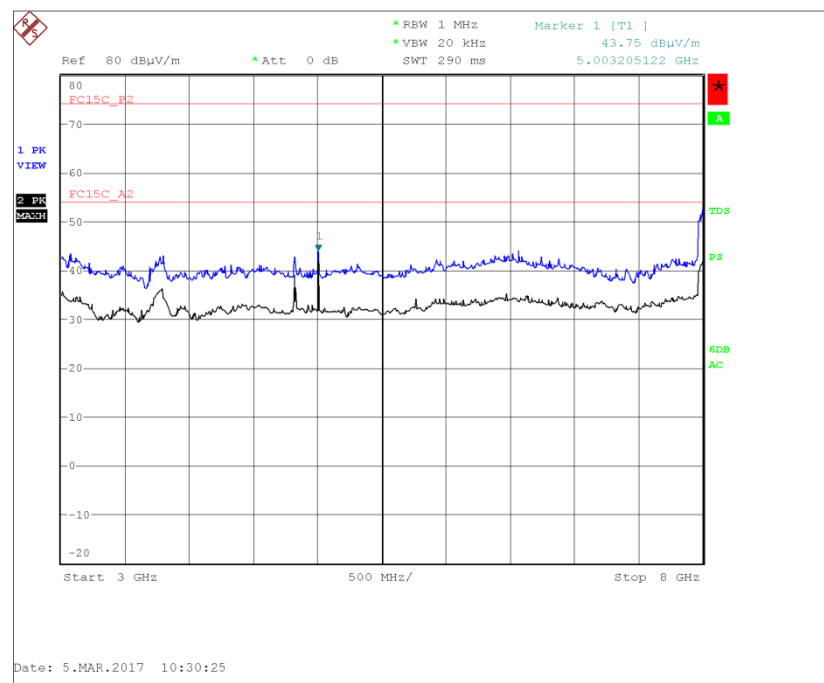


Figure 75 - 2412 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

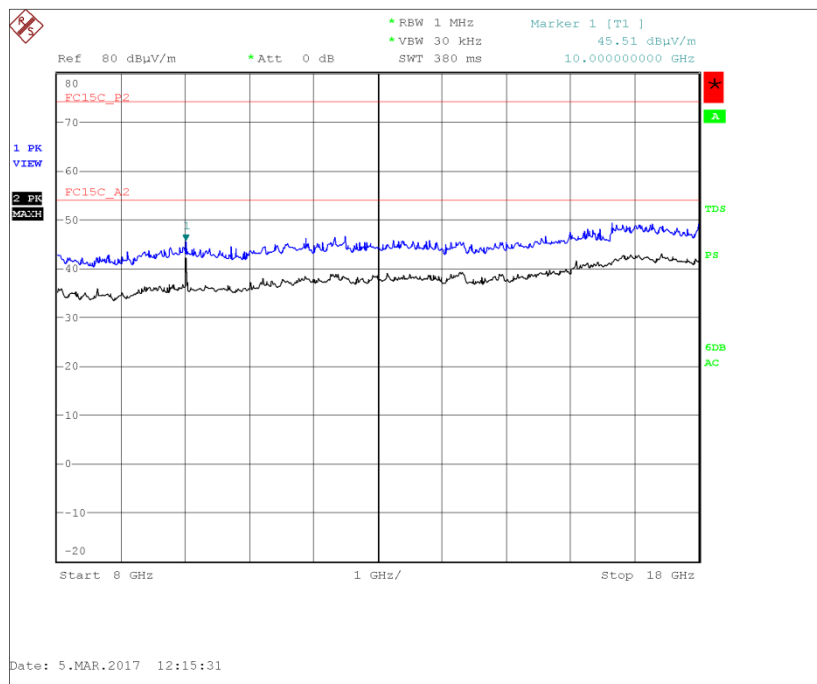


Figure 76 - 2412 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

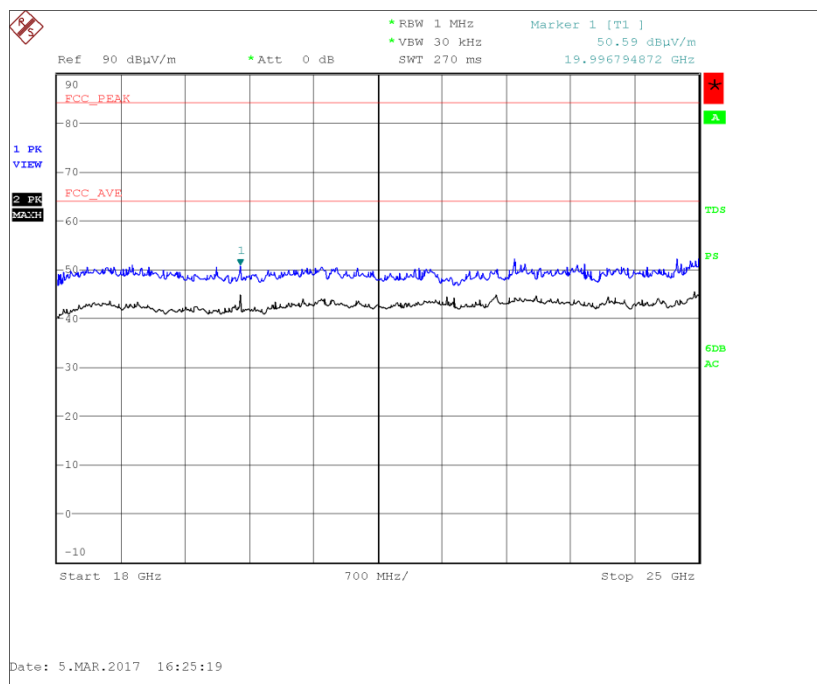


Figure 77 - 2412 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
38.012	28.8	40.0	-11.2	127	1.00	Vertical
55.045	37.8	79.3	-41.5	356	1.16	Vertical
56.445	40.5	79.3	-38.8	360	1.00	Vertical
57.050	39.8	79.3	-39.5	0	1.26	Vertical
225.548	37.6	79.3	-41.7	0	1.00	Horizontal
226.670	30.2	79.3	-49.1	346	1.00	Vertical

Table 37 - 2437 MHz - 30 MHz to 1 GHz Emissions Results

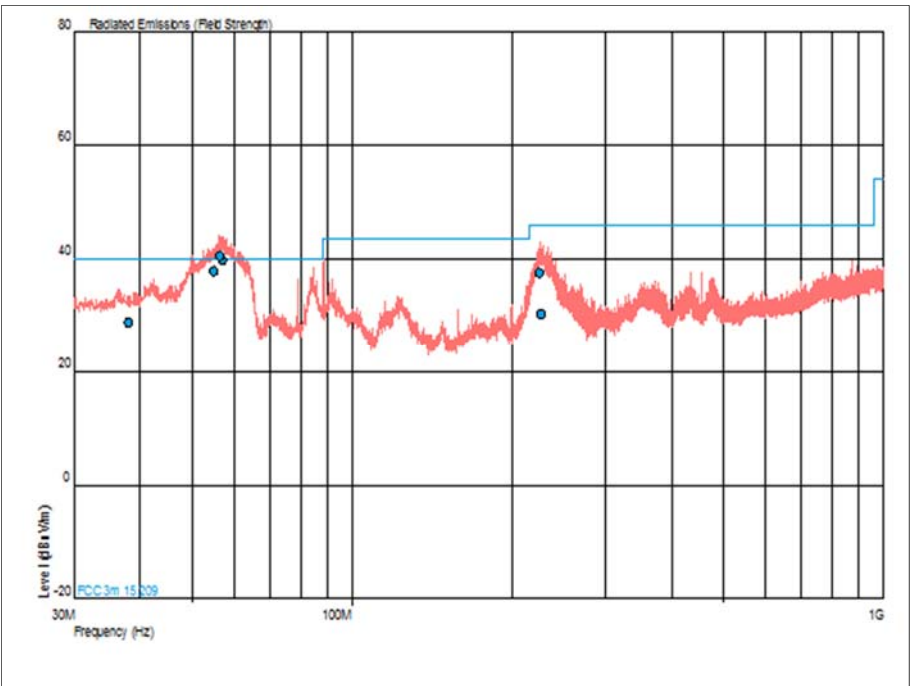


Figure 78 - 2437 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 38 - 2437 MHz - 1 GHz to 25 GHz Emissions Results

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



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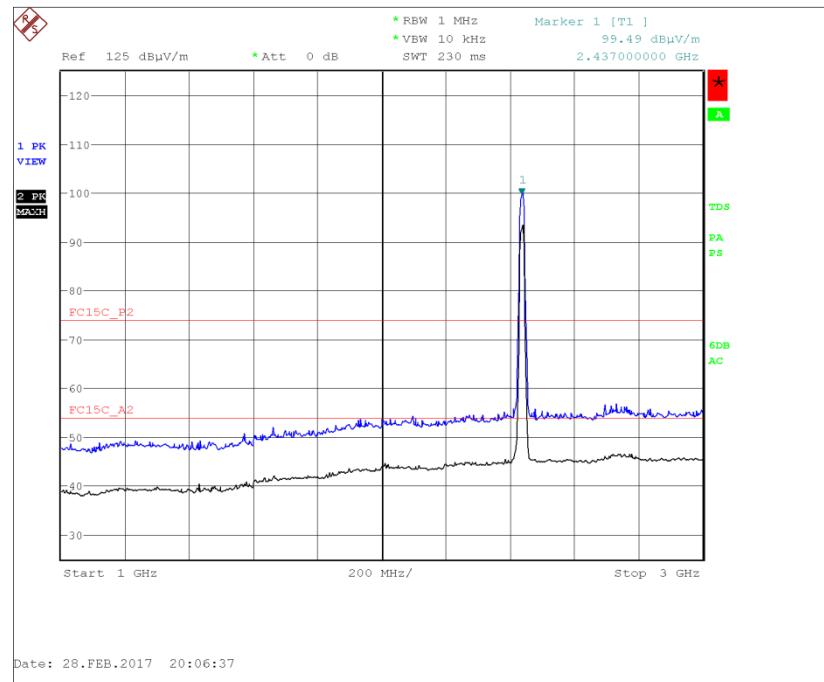


Figure 79 - 2437 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

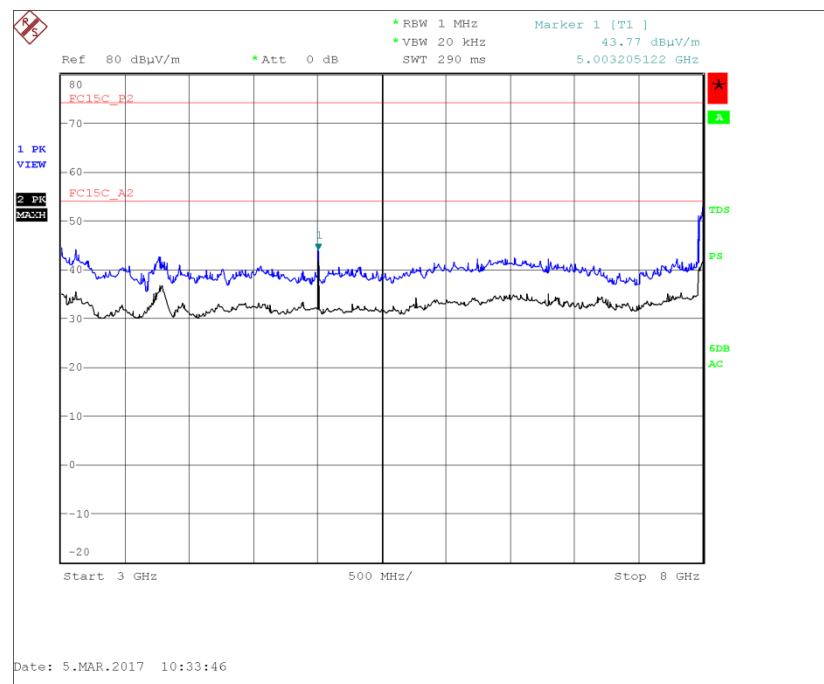


Figure 80 - 2437 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

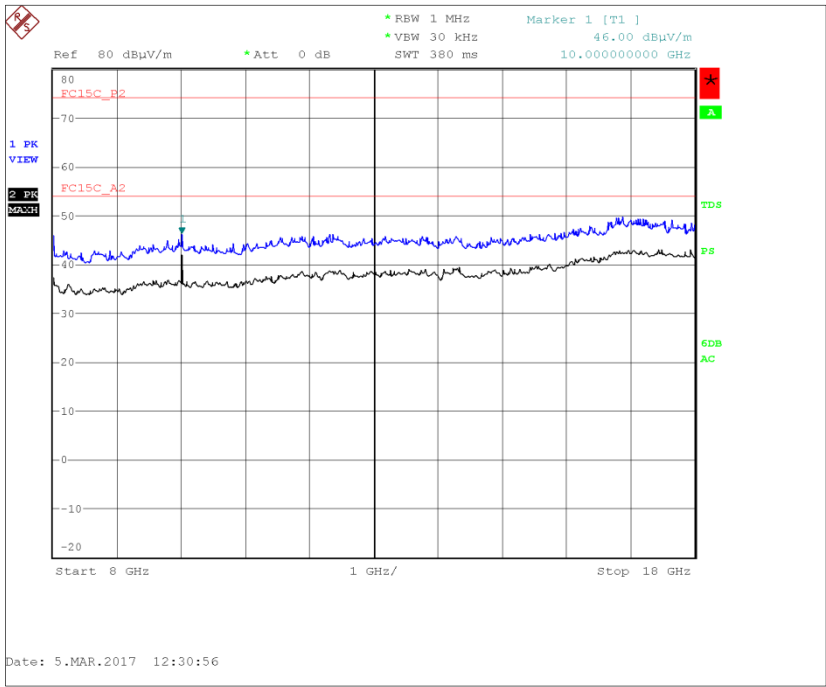


Figure 81 - 2437 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

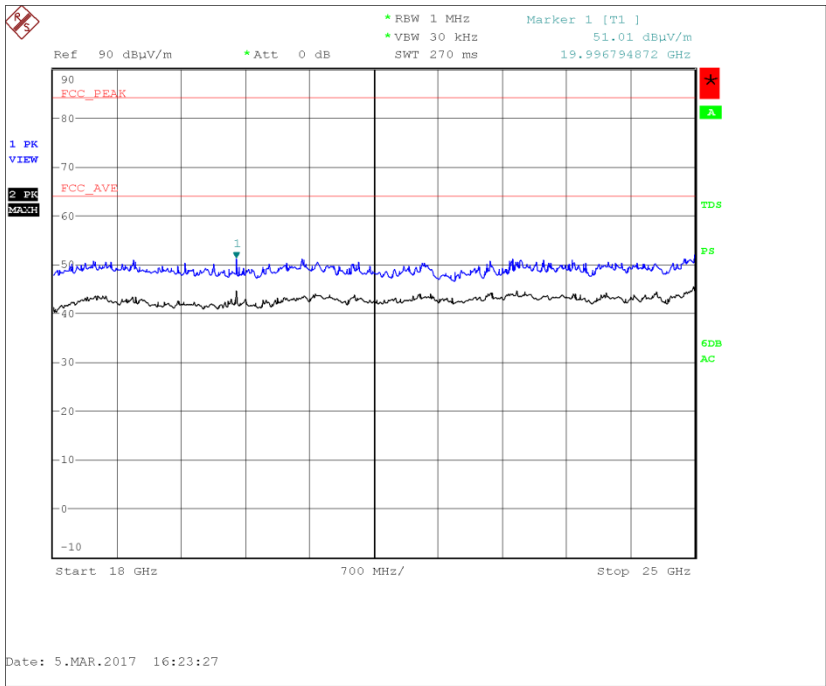


Figure 82 - 2437 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
37.514	30.5	40.0	-9.5	299	1.00	Vertical
56.451	39.0	80.7	-41.7	316	1.00	Vertical
56.652	41.1	80.7	-39.6	0	1.00	Vertical
57.260	39.4	80.7	-41.3	356	1.00	Vertical
225.010	39.7	80.7	-41.0	46	1.00	Horizontal
227.294	30.0	80.7	-50.7	360	1.26	Vertical

Table 39 - 2462 MHz - 30 MHz to 1 GHz Emissions Results

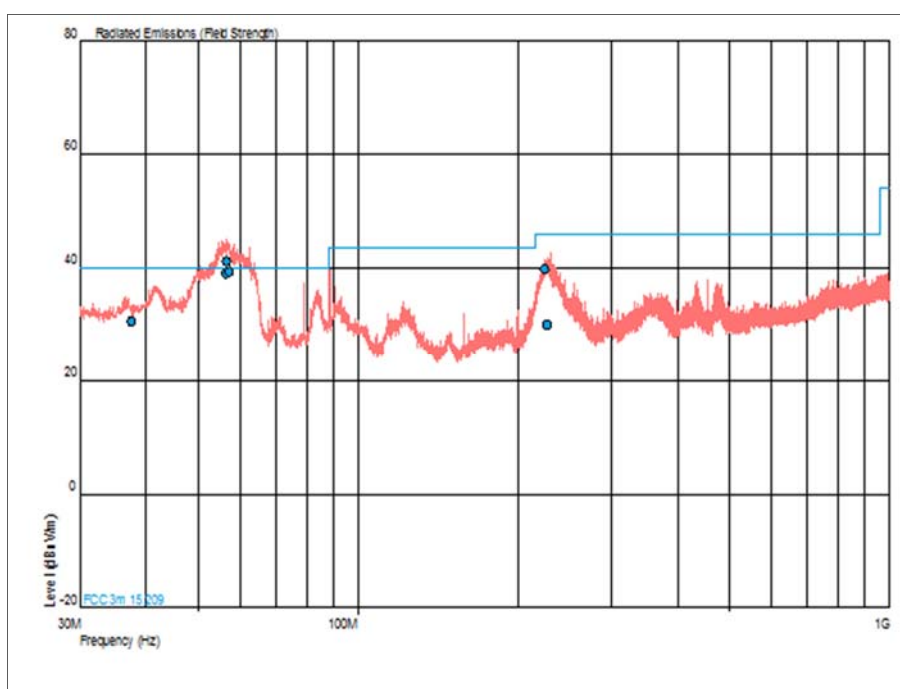


Figure 83 - 2462 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 40 - 2462 MHz - 1 GHz to 25 GHz Emissions Results

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

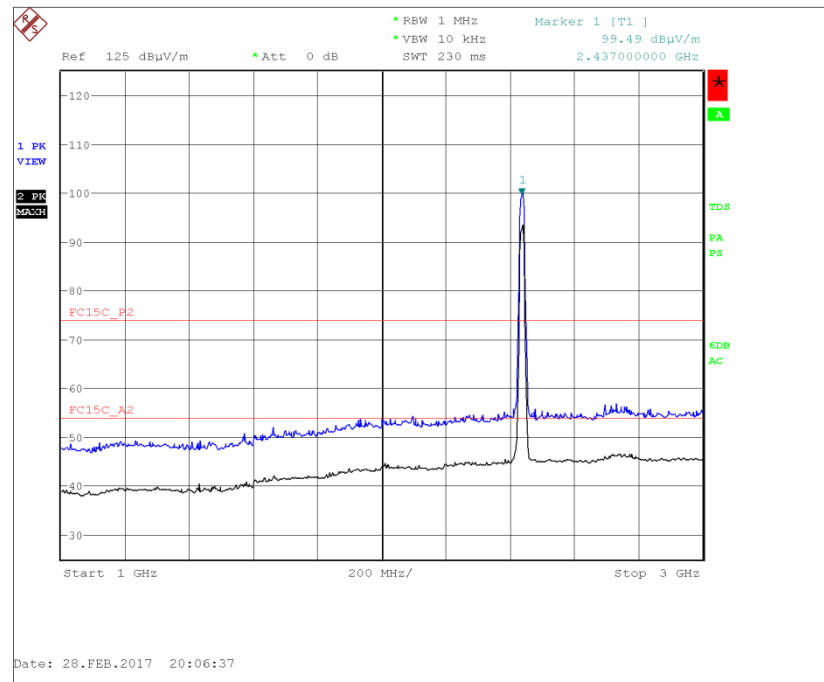


Figure 84 - 2462 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

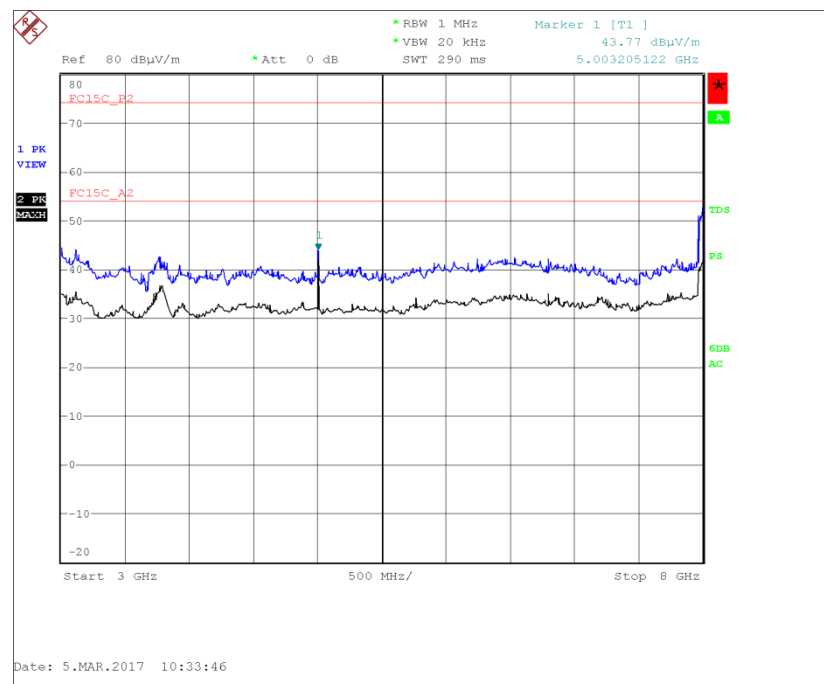


Figure 85 - 2462 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

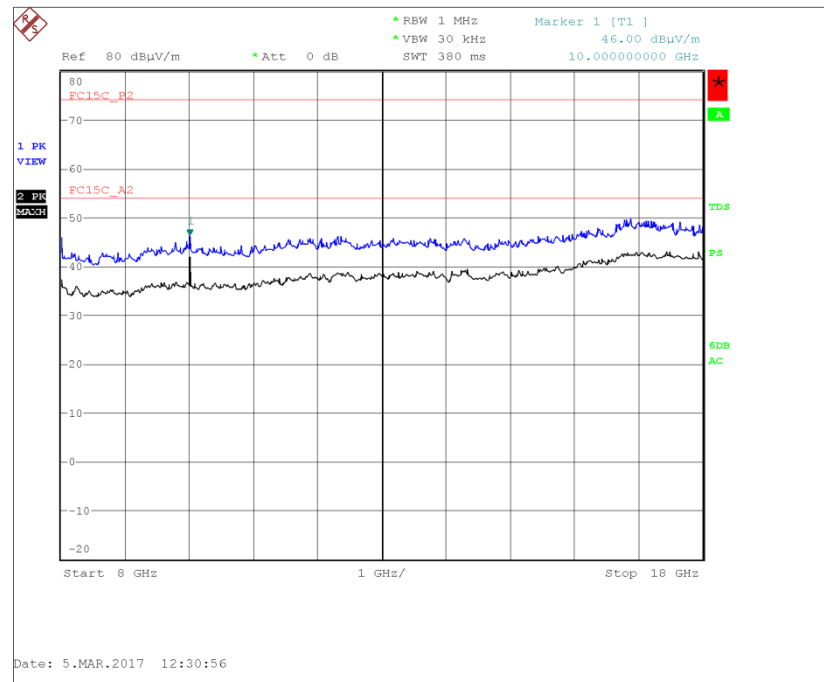


Figure 86 - 2462 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

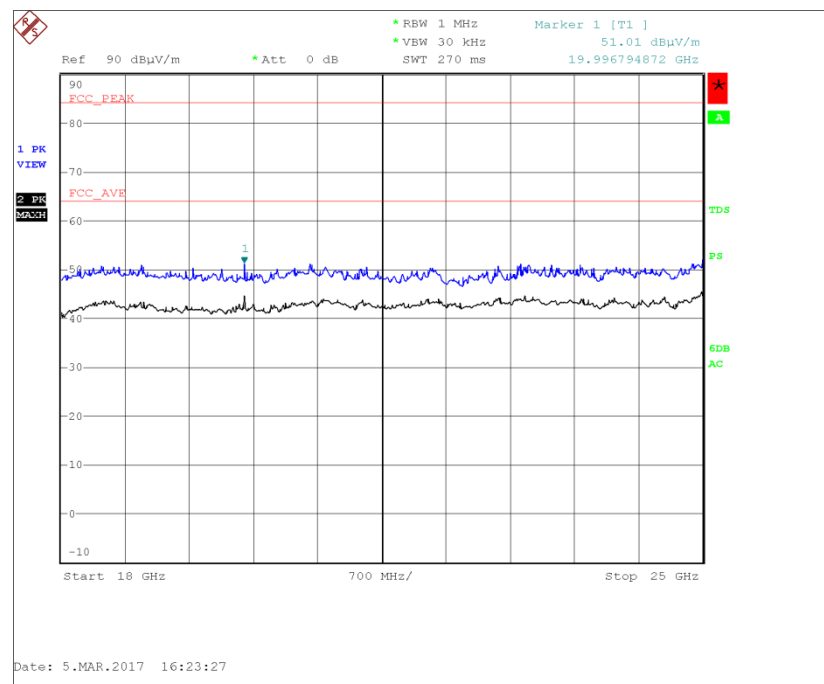


Figure 87 - 2462 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



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)

802.11n (20 MHz Bandwidth)

Testing was performed on the modulation coding scheme which resulted in the highest conducted output power. The modulation coding scheme used during testing was MCS8. For configurations supporting multiple bandwidths, emission measurements were only made in the bandwidth with the highest conducted output power.

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
38.129	31.1	40.0	-8.9	360	1.00	Vertical
50.201	35.0	77.2	-42.2	317	1.00	Vertical
56.523	40.9	77.2	-36.3	0	1.00	Vertical
59.450	39.5	77.2	-37.7	121	1.00	Vertical
226.117	30.8	77.2	-46.4	334	1.00	Vertical
227.365	39.0	77.2	-38.2	20	1.00	Horizontal

Table 41 - 2412 MHz - 30 MHz to 1 GHz Emissions Results

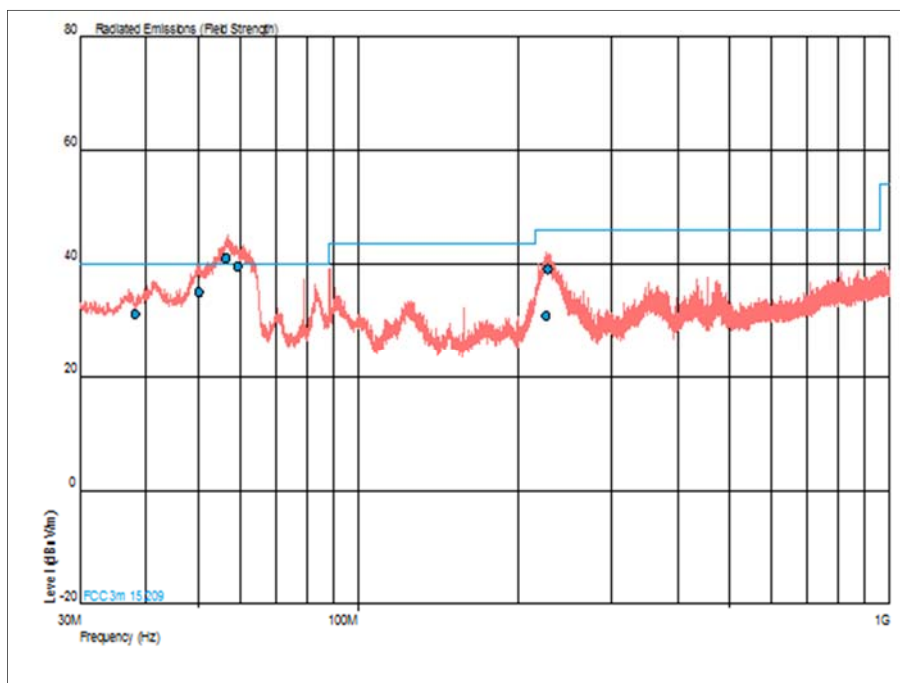


Figure 88 - 2412 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 42 - 2412 MHz - 1 GHz to 25 GHz Emissions Results

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

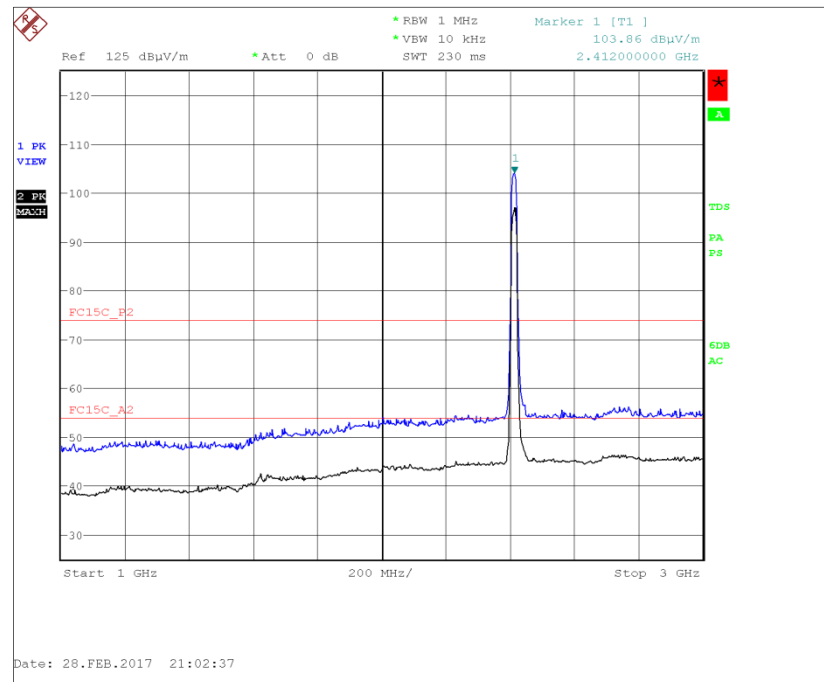


Figure 89 - 2412 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

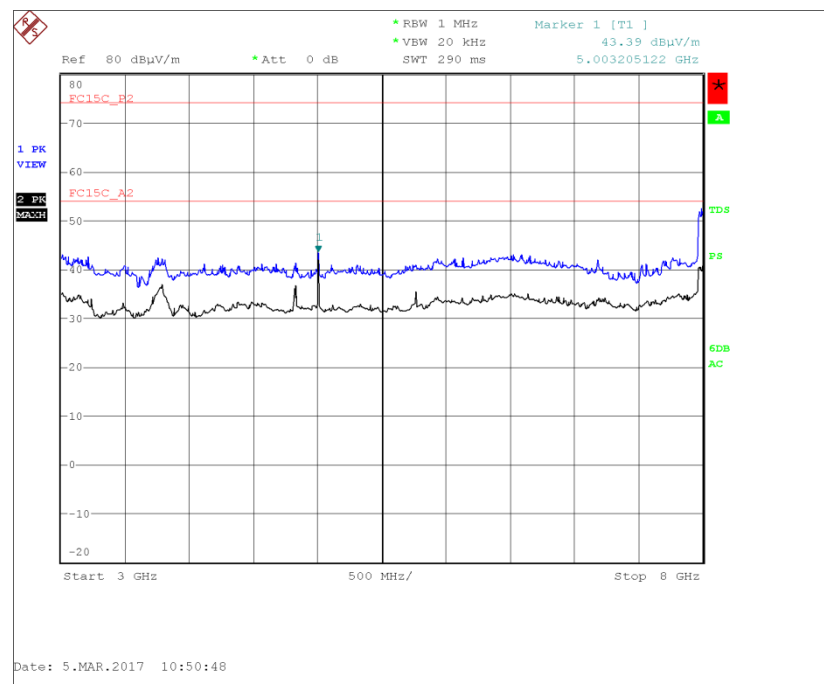


Figure 90 - 2412 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

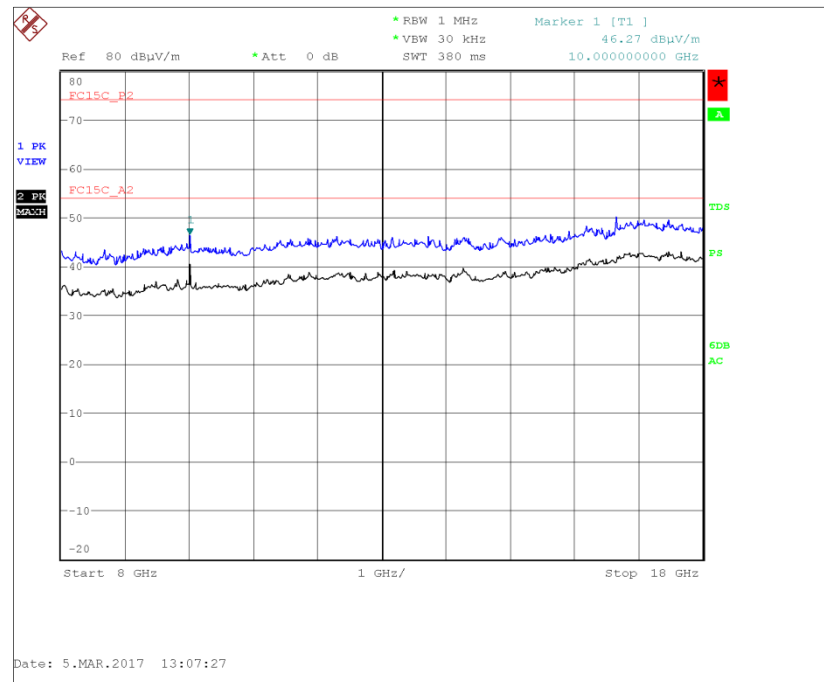


Figure 91 - 2412 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

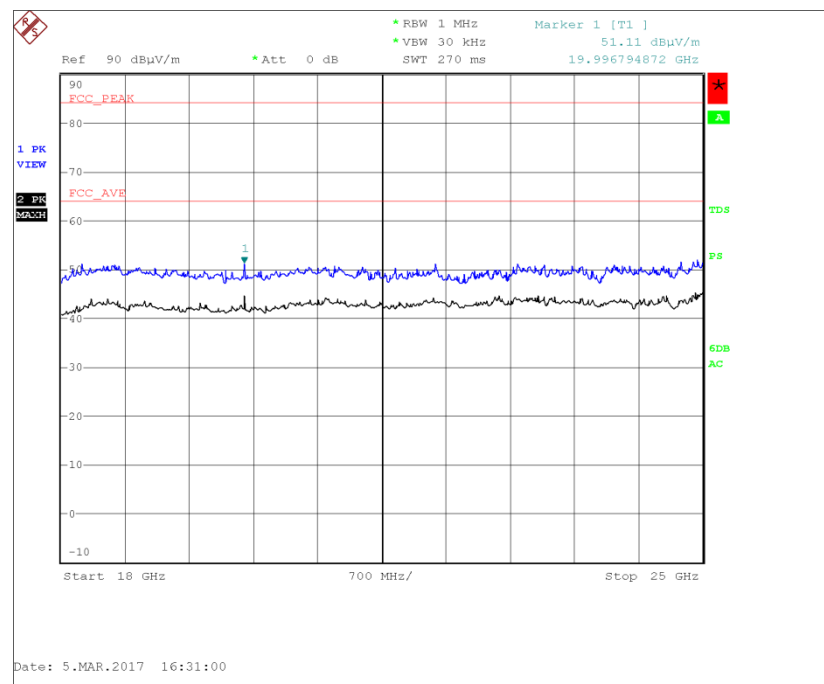


Figure 92 - 2412 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
37.632	30.2	40.0	-9.8	232	1.00	Vertical
54.935	39.2	77.2	-38.0	4	1.00	Vertical
56.753	40.1	77.2	-37.1	351	1.00	Vertical
58.716	38.8	77.2	-38.4	134	1.00	Vertical
226.100	30.5	77.2	-46.7	335	1.00	Vertical
228.344	38.8	77.2	-38.4	37	1.00	Horizontal

Table 43 - 2437 MHz - 30 MHz to 1 GHz Emissions Results

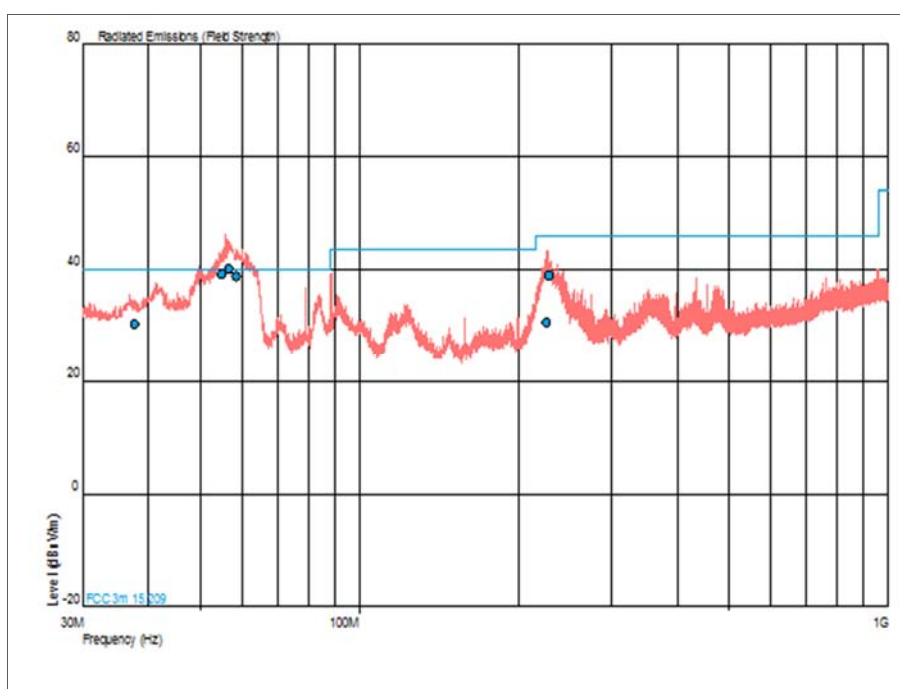


Figure 93 - 2437 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 44 - 2437 MHz - 1 GHz to 25 GHz Emissions Results

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

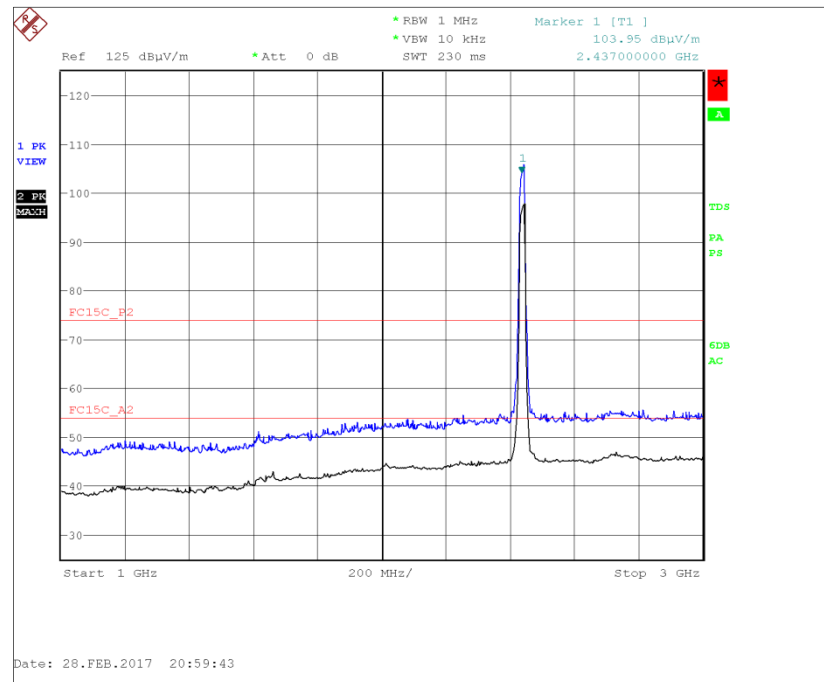


Figure 94 - 2437 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

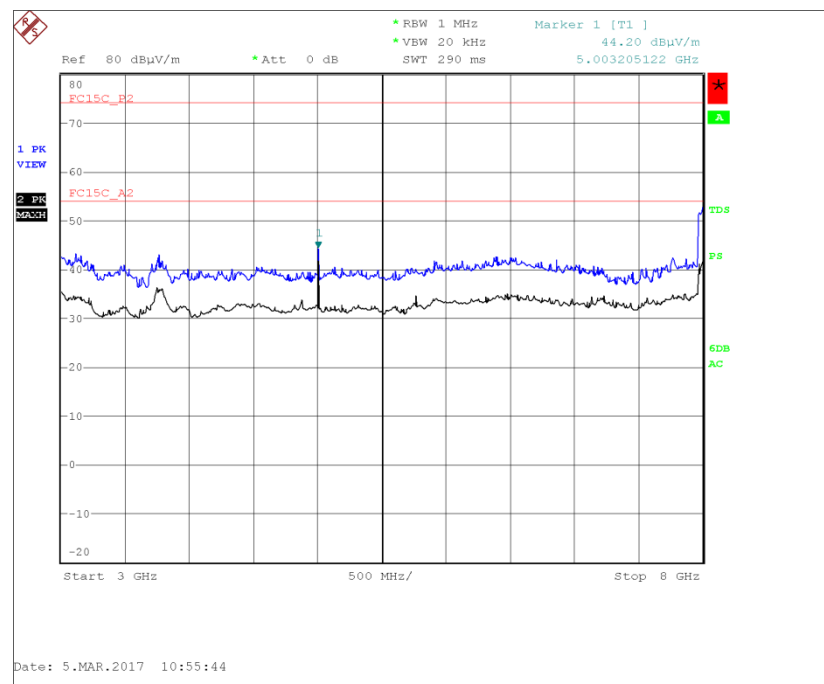


Figure 95 - 2437 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

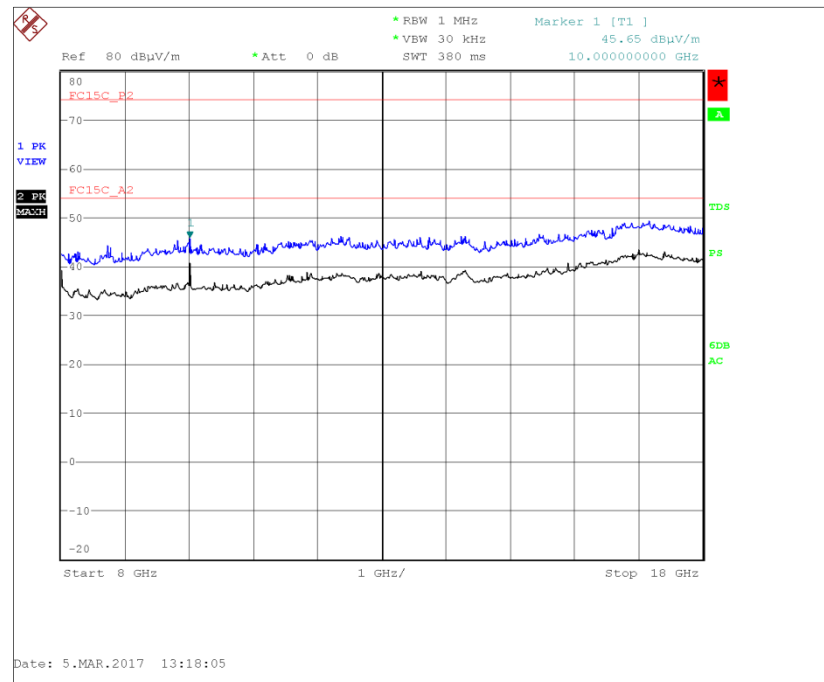


Figure 96 - 2437 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

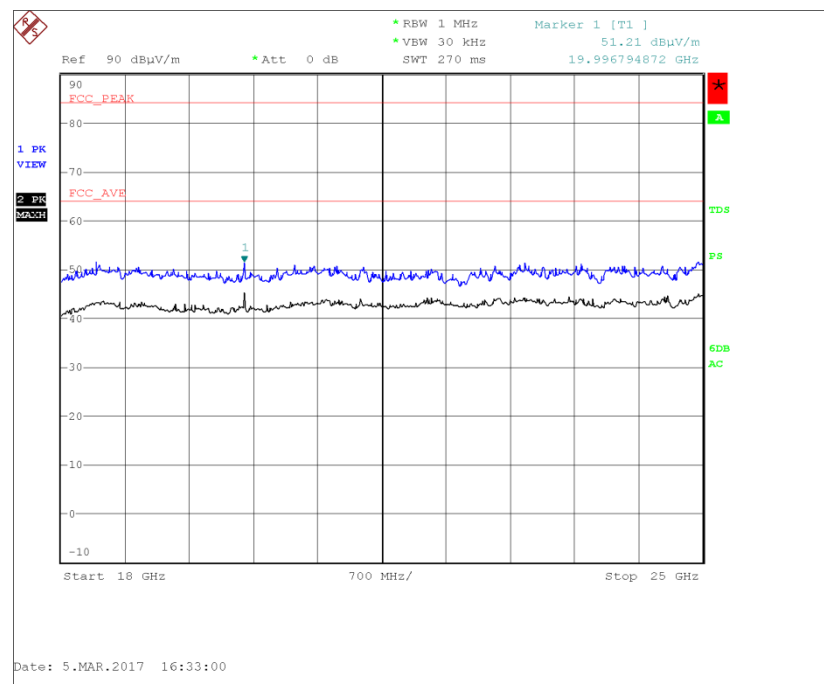


Figure 97 - 2437 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
37.630	30.9	40.0	-9.1	230	1.00	Vertical
49.689	36.0	79.9	-43.9	328	1.00	Vertical
57.183	40.1	79.9	-39.8	360	1.00	Vertical
57.542	40.9	79.9	-39.0	0	1.00	Vertical
225.040	31.6	79.9	-48.3	347	1.00	Vertical
226.081	37.9	79.9	-42.0	0	1.00	Horizontal

Table 45 - 2462 MHz - 30 MHz to 1 GHz Emissions Results

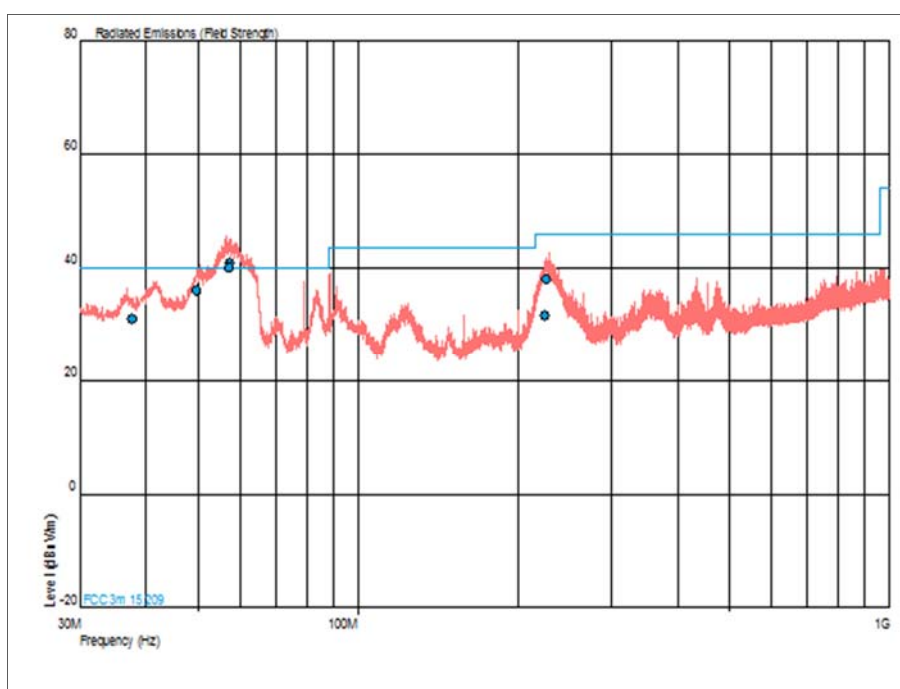


Figure 98 - 2462 MHz - 30 MHz to 1 GHz - Horizontal and Vertical

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

Table 46 - 2462 MHz - 1 GHz to 25 GHz Emissions Results

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

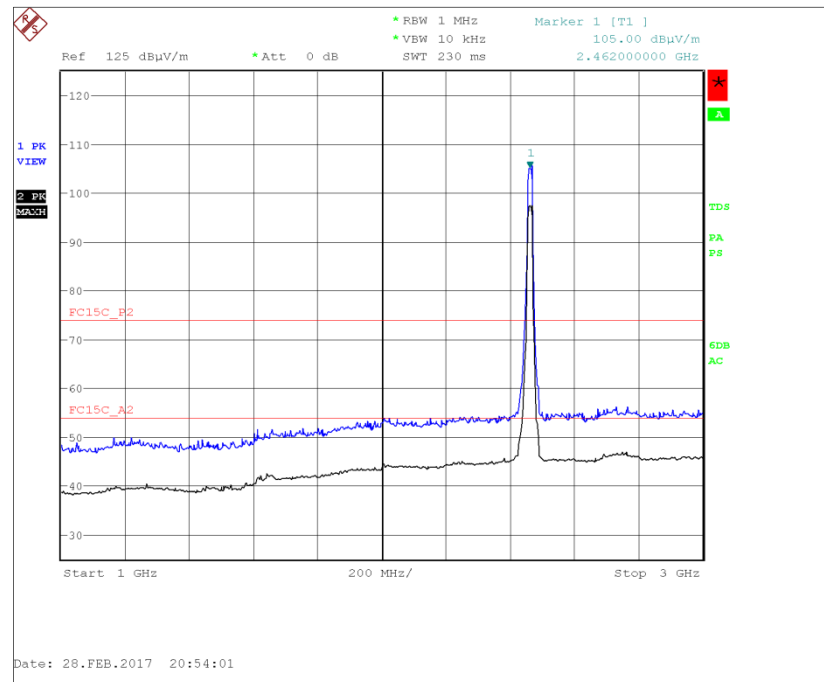


Figure 99 - 2462 MHz - 1 GHz to 3 GHz - Horizontal and Vertical

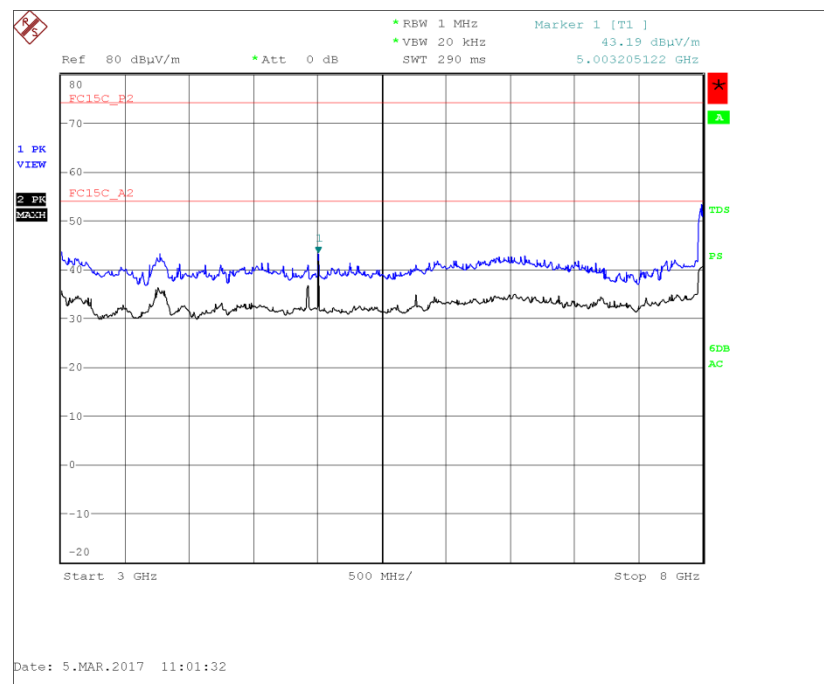


Figure 100 - 2462 MHz - 3 GHz to 8 GHz - Horizontal and Vertical

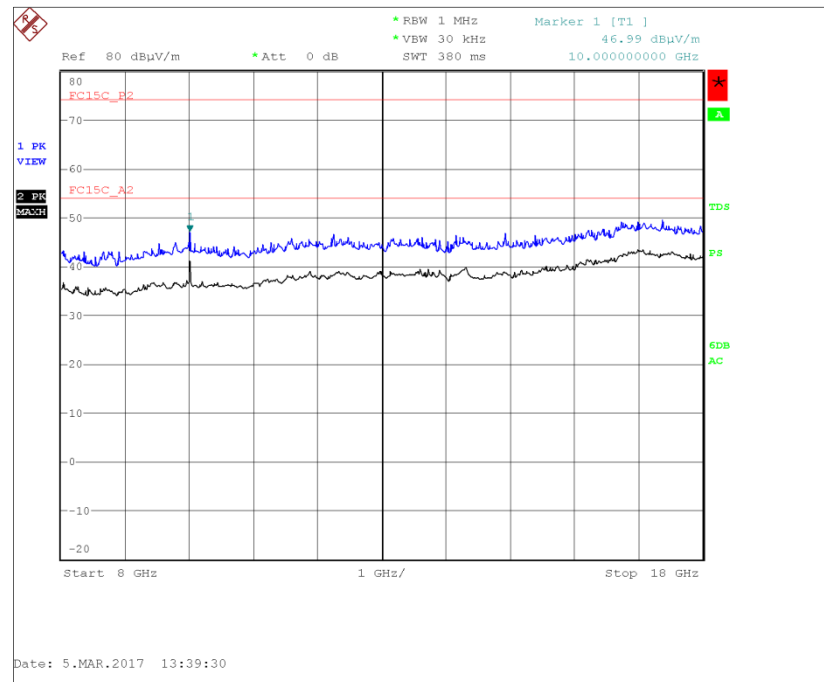


Figure 101 - 2462 MHz - 8 GHz to 18 GHz - Horizontal and Vertical

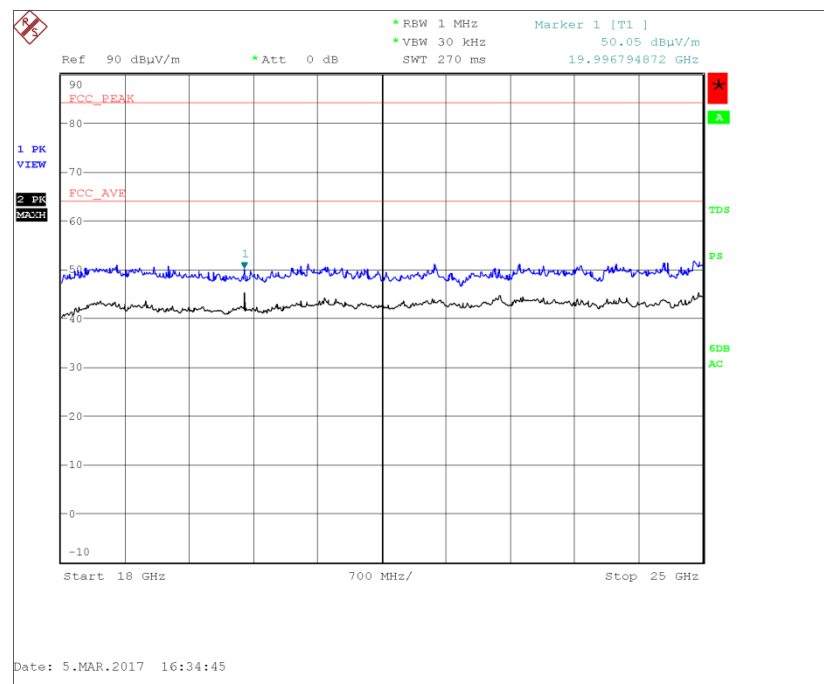


Figure 102 - 2462 MHz - 18 GHz to 25 GHz - Horizontal and Vertical



Product Service

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)

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
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	12-Feb-2018
Pre-Amplifier	Phase One	PS04-0086	1533	12	29-Jul-2017
18GHz - 40GHz Pre-Amplifier	Phase One	PSO4-0087	1534	12	23-Jan-2018
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	21-Sep-2017
Multimeter	Iso-tech	IDM101	2417	12	30-Sep-2017
Antenna (Bilog)	Chase	CBL6143	2904	24	11-Jun-2017
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Tilt Antenna Mast	matur GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matur GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	17-Oct-2017
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4411	12	23-Mar-2017
Suspended Substrate Highpass Filter	Advance Power Components	11SH10-3000/X18000-O/O	4412	12	23-Mar-2017
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	29-Jul-2015
Cable (Rx, SMAm-SMAm 0.5m)	Scott Cables	SLSLL18-SMSM-00.50M	4528	6	03-Feb-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018

Table 47

TU - Traceability Unscheduled



2.5 Restricted Band Edges

2.5.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.205

2.5.2 Equipment Under Test and Modification State

DAQRI Smart Helmet, S/N: 1829C-DC8-6UPN9XJWJW - Modification State 0

2.5.3 Date of Test

28-February-2017

2.5.4 Test Method

Testing was performed in accordance with ANSI C63.10, Clause 11.13.1.

Plots for average measurements were taken in accordance with ANSI C63.10, Clause 4.1.4.2.3.

Final average measurements were taken in accordance with ANSI C63.10, Clause 4.1.4.2.2.

2.5.5 Environmental Conditions

Ambient Temperature 19.0 - 19.1 °C

Relative Humidity 31.0 %

2.5.6 Test Results

Bluetooth Low Energy

Modulation	Packet Type	Measured Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
GFSK	DH1	2390.0	62.23	46.27

Table 48 – 2402 MHz

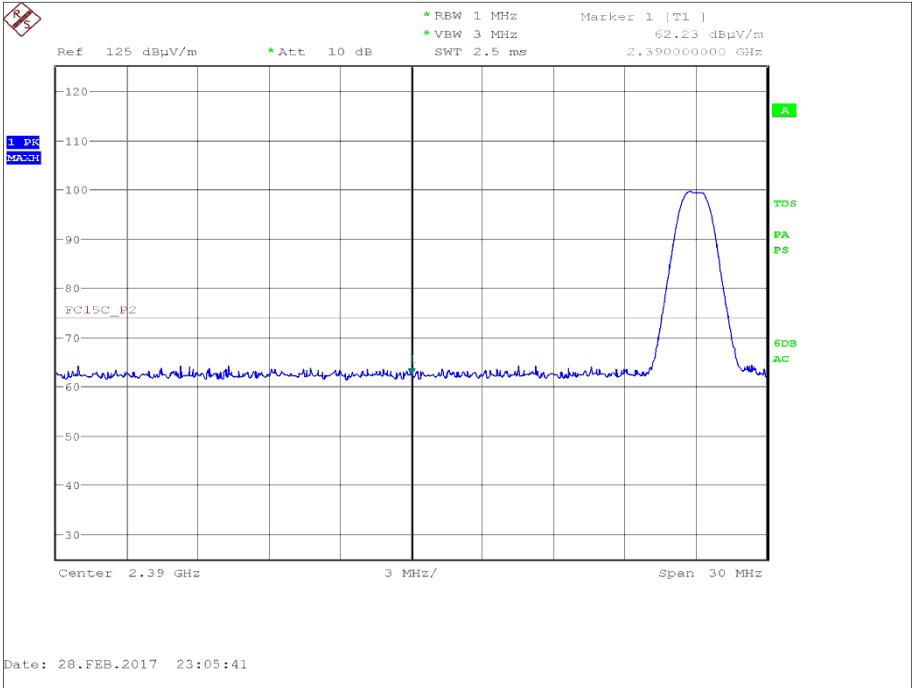


Figure 103 – 2402 MHz, GFSK/DH1, Measured Frequency 2390.0 MHz, Peak



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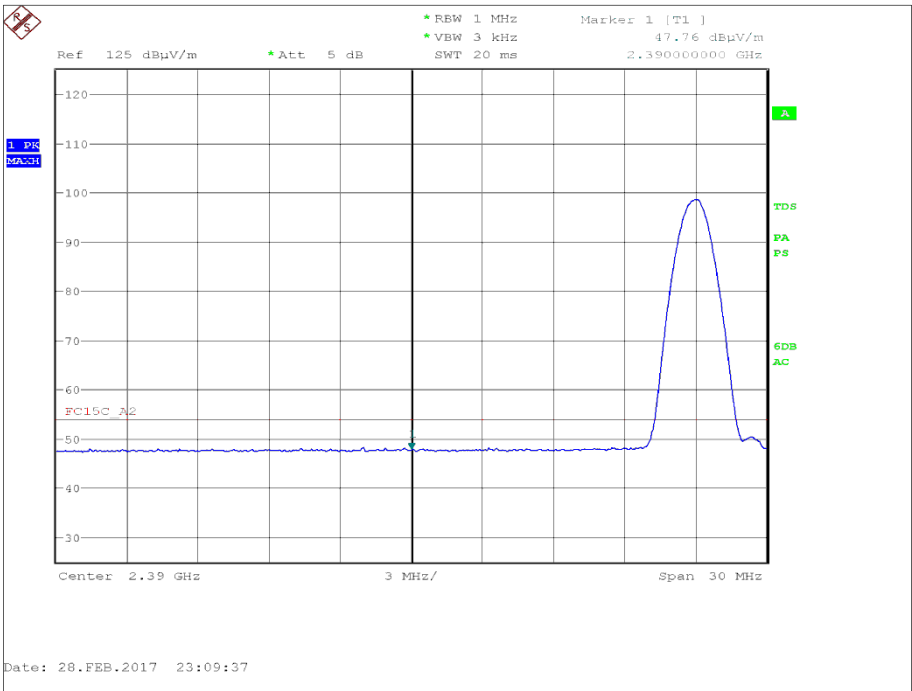


Figure 104 - 2402 MHz, GFSK/DH1, Measured Frequency 2390.0 MHz, Average



Modulation	Packet Type	Measured Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
GFSK	DH1	2483.5	62.53	46.46

Table 49 – 2480 MHz

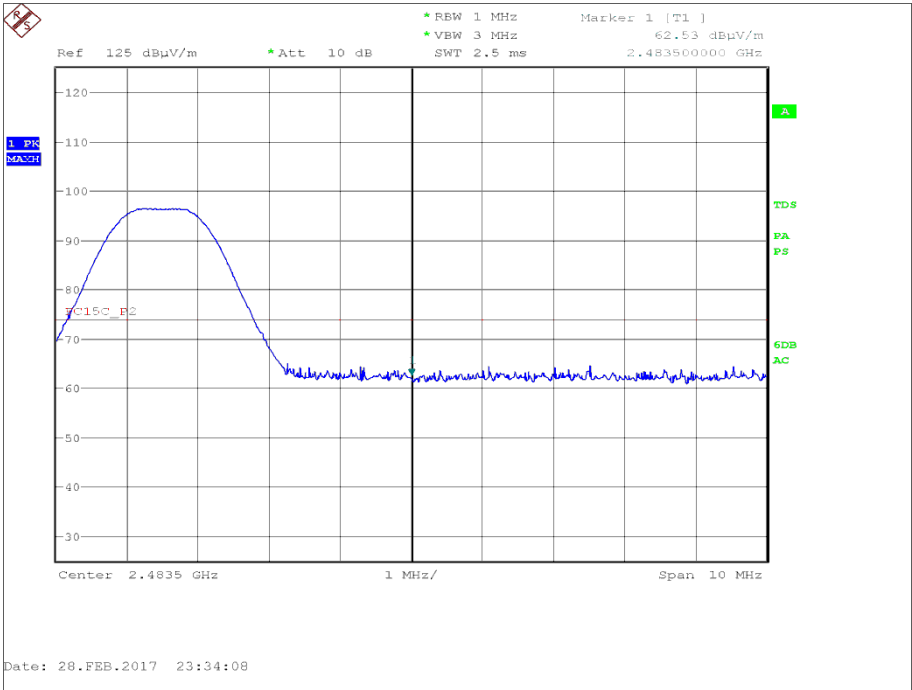


Figure 105 - 2480 MHz, GFSK/DH1, Measured Frequency 2483.5MHz, Peak



Product Service

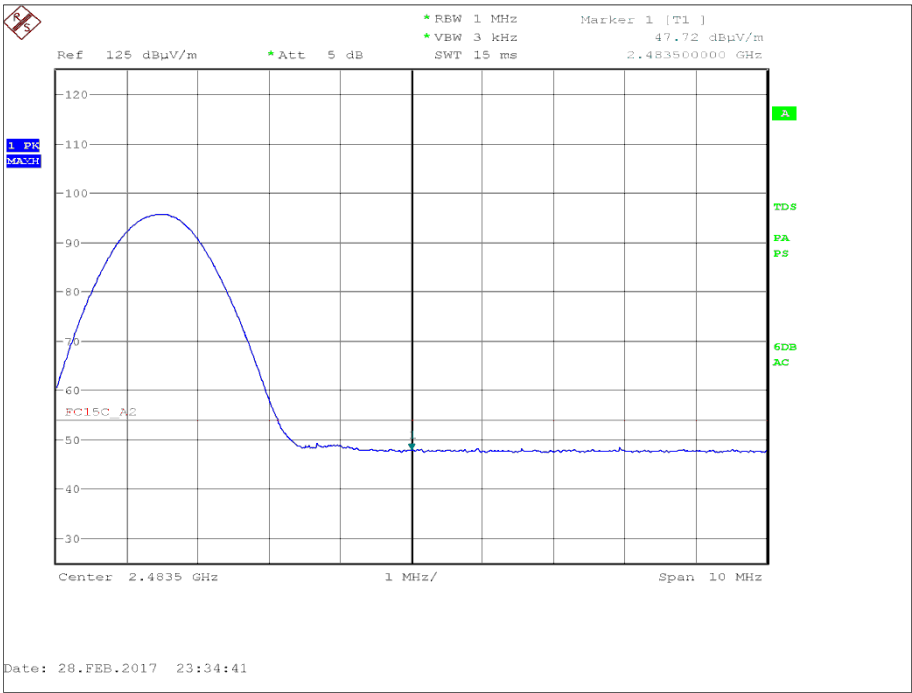


Figure 106 - 2480 MHz, GFSK/DH1, Measured Frequency 2483.5MHz, Average

FCC 47 CFR Part 15, Limit Clause 15.205

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 50



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Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power	11 Mbps	2390.0	63.90	46.70
Data rate/MCS with Widest Bandwidth	5.5 Mbps	2390.0	63.56	46.55

Table 51 – 2412 MHz

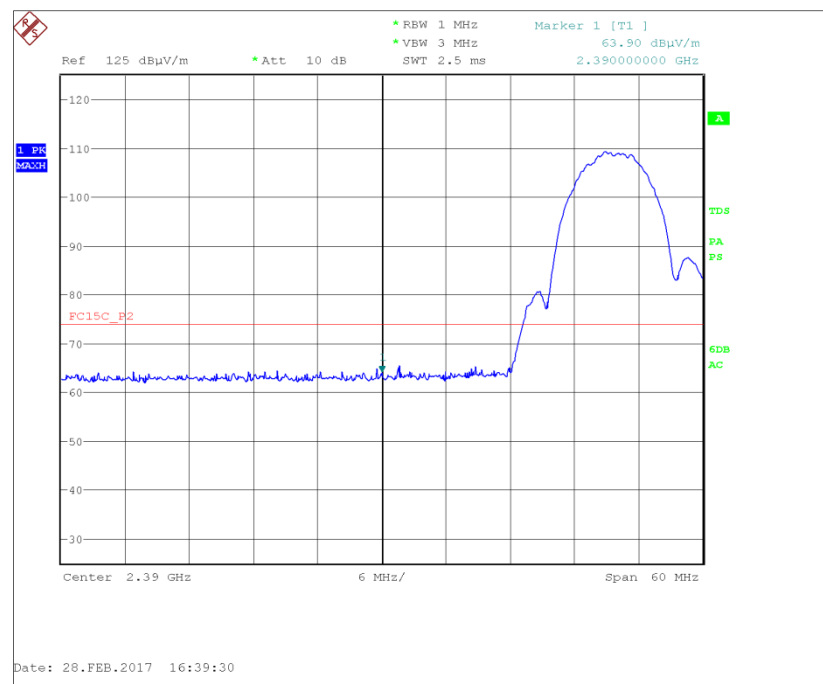


Figure 107 - 2412 MHz, 11 Mbps, Measured Frequency 2390.0 MHz, Peak



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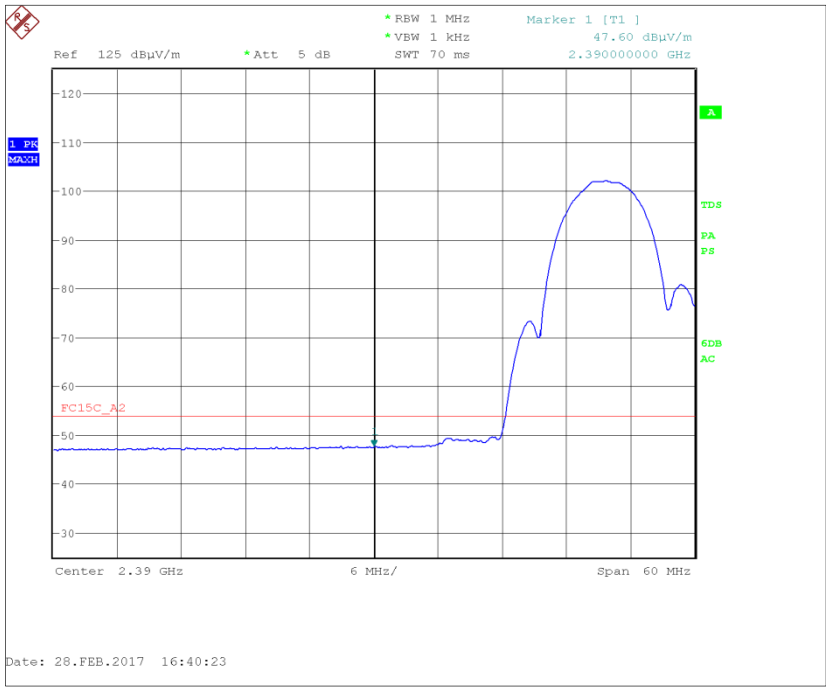


Figure 108 - 2412 MHz, 11 Mbps, Measured Frequency 2390.0 MHz, Average

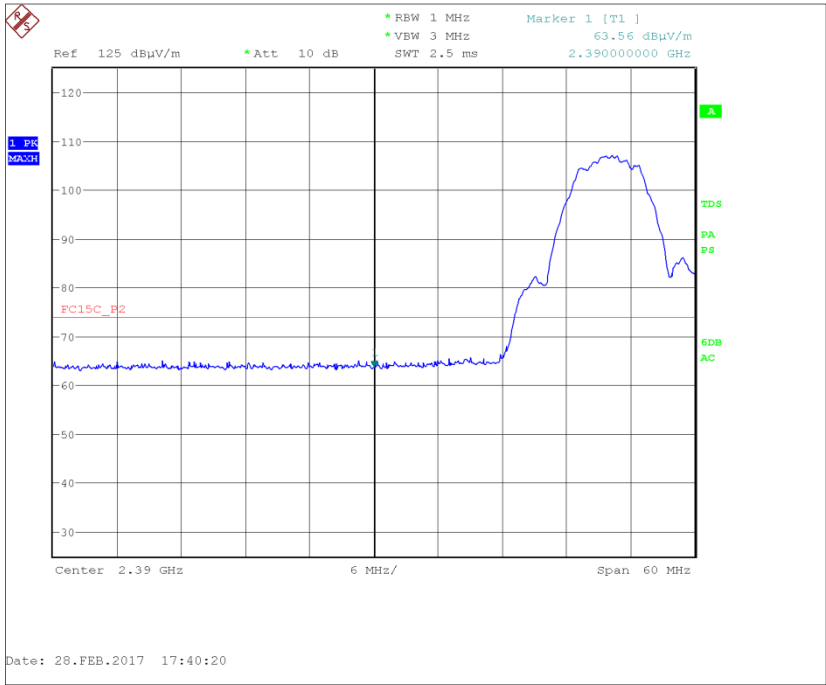


Figure 109 - 2412 MHz, 5.5 Mbps, Measured Frequency 2390.0 MHz, Peak



Product Service



Figure 110 - 2412 MHz, 5.5 Mbps, Measured Frequency 2390.0 MHz, Average



Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power	11 Mbps	2483.5	63.67	46.95
Data rate/MCS with Widest Bandwidth	5.5 Mbps	2483.5	63.05	46.99

Table 52 – 2462 MHz

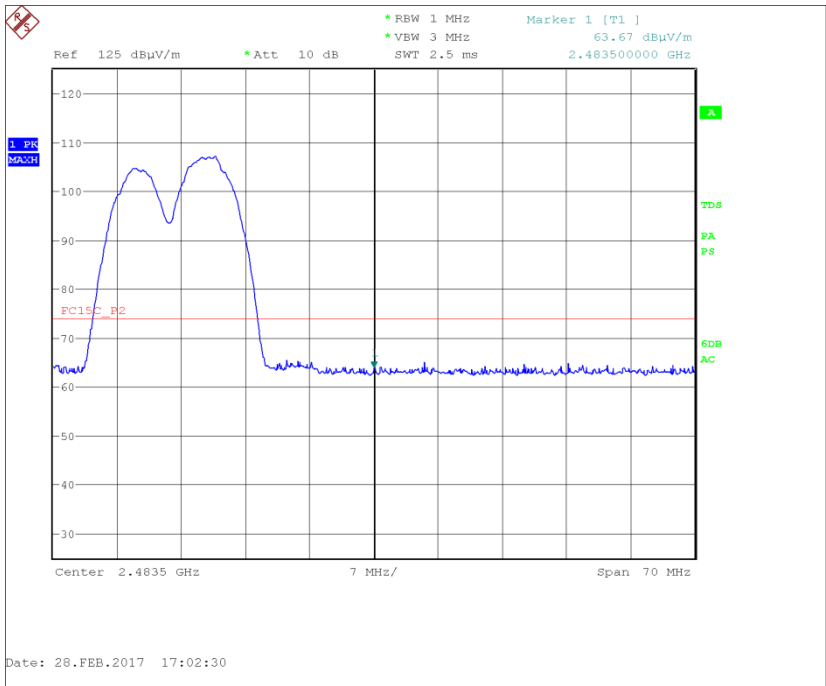


Figure 111 - 2462 MHz, 11 Mbps, Measured Frequency 2483.5 MHz, Peak



Product Service

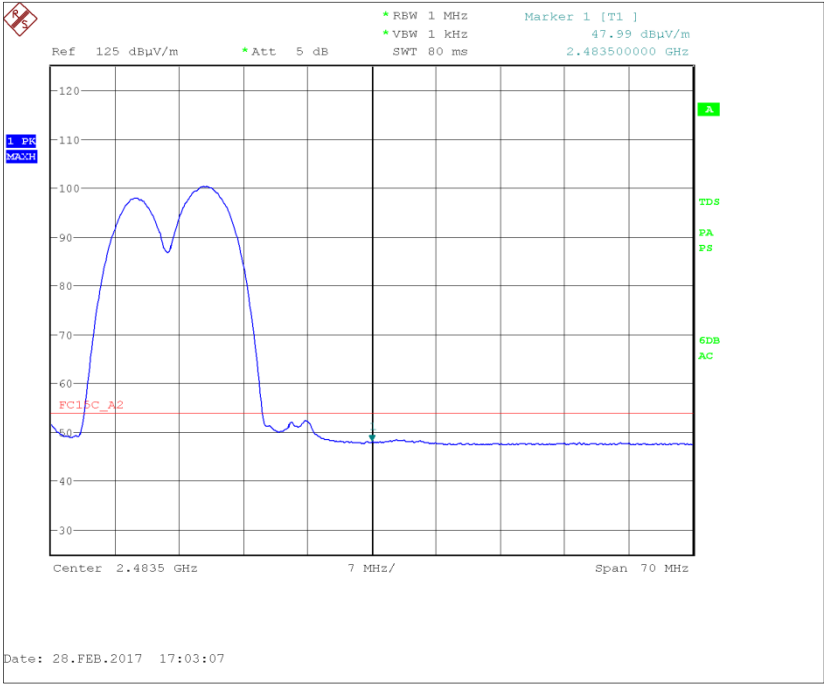


Figure 112 - 2462 MHz, 11 Mbps, Measured Frequency 2483.5 MHz, Average

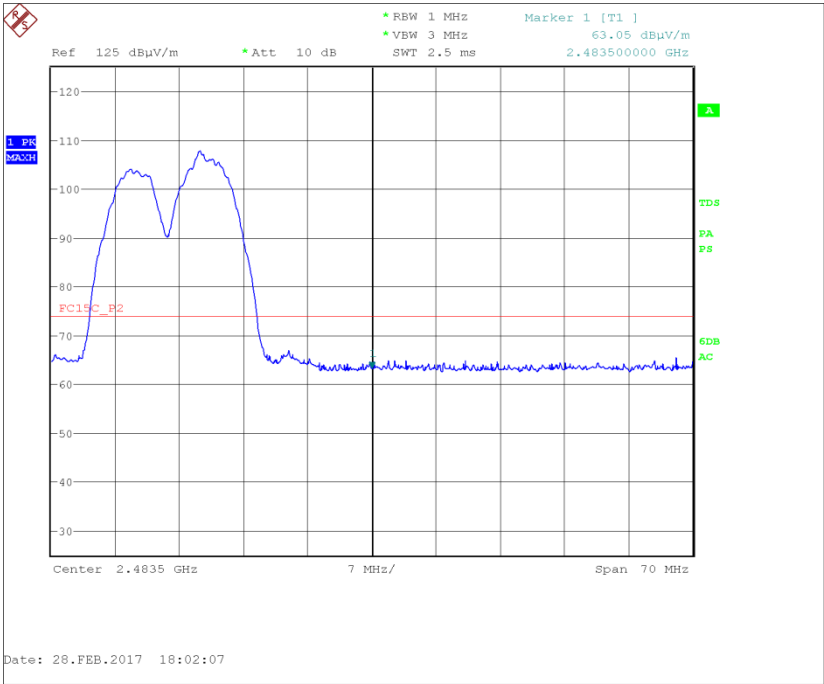


Figure 113 - 2462 MHz, 5.5 Mbps, Measured Frequency 2483.5 MHz, Peak



Product Service

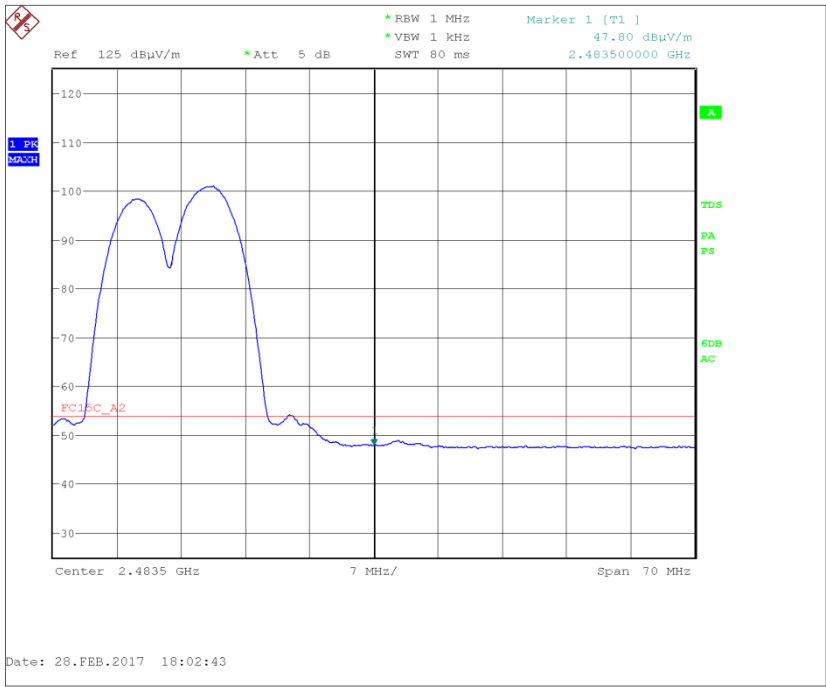


Figure 114 - 2462 MHz, 5.5 Mbps, Measured Frequency 2483.5 MHz, Average

FCC 47 CFR Part 15, Limit Clause 15.205

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 53



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Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power and Widest Bandwidth	9 Mbps	2390.0	65.15	47.55

Table 54 – 2462 MHz

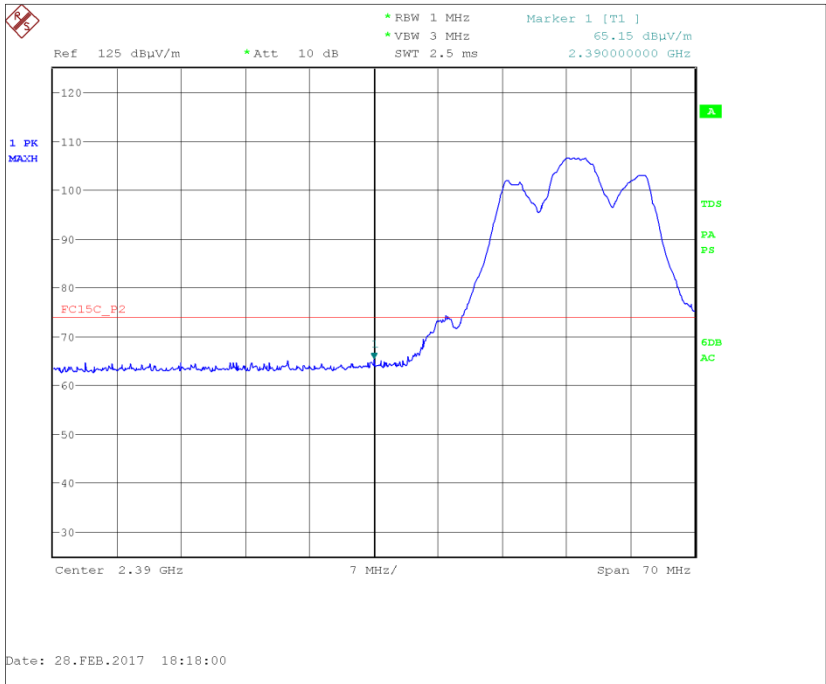


Figure 115 - 2412 MHz, 9 Mbps, Measured Frequency 2390.0 MHz, Peak



Product Service

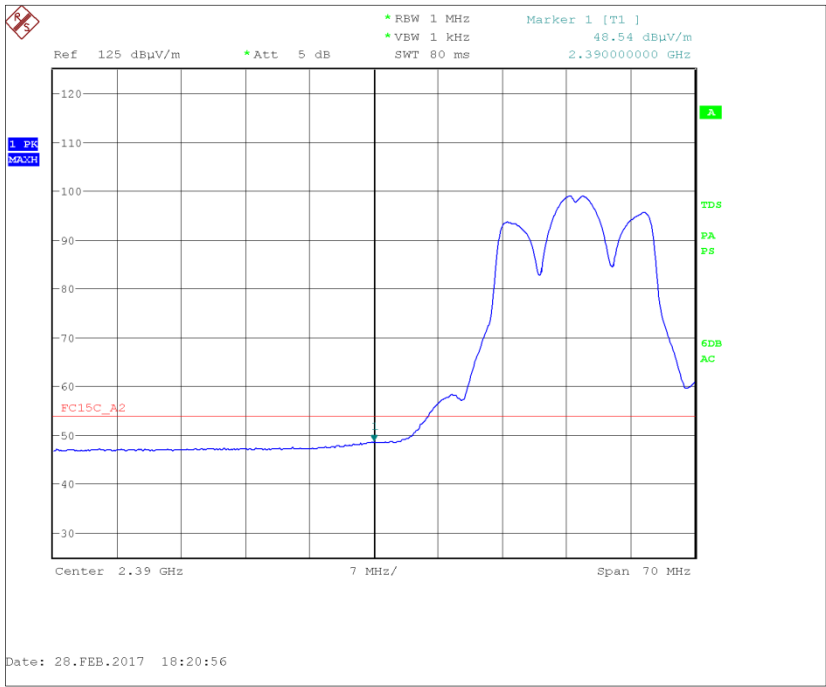


Figure 116 - 2412 MHz, 9 Mbps, Measured Frequency 2390.0 MHz, Average

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power and Widest Bandwidth	9 Mbps	2483.5	63.86	49.75

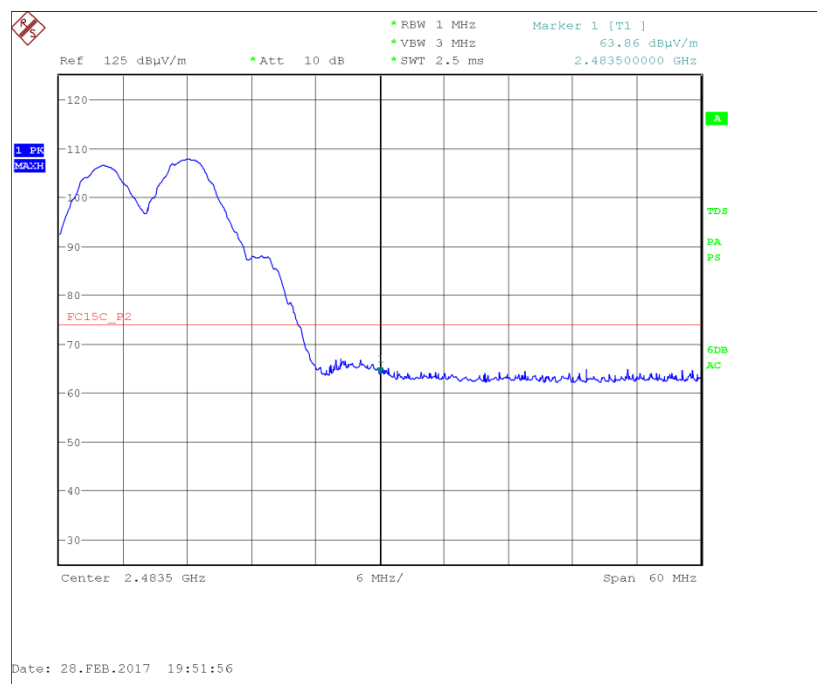
Table 55 – 2462 MHz

Figure 117 - 2462 MHz, 9 Mbps, Measured Frequency 2483.5 MHz, Peak



Product Service

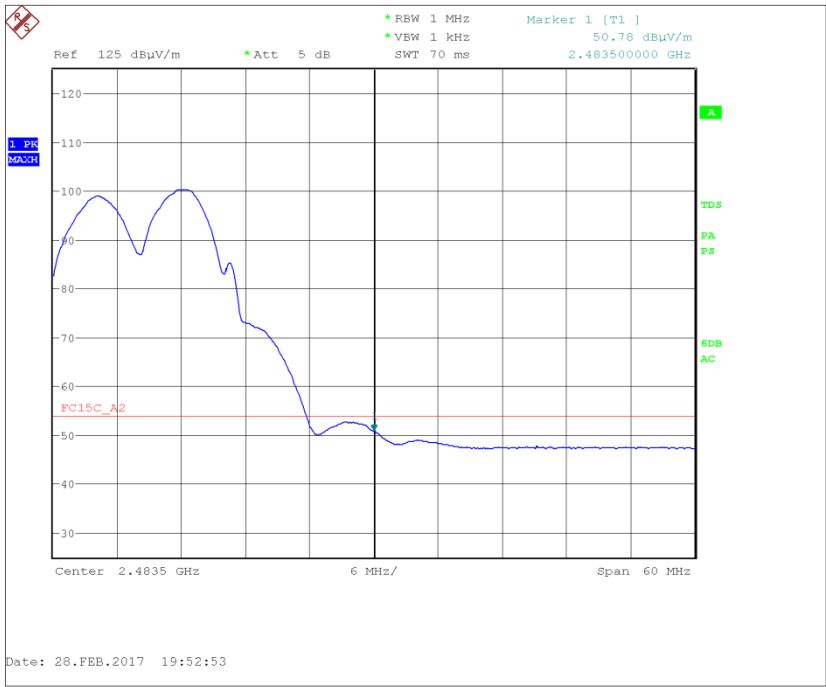


Figure 118 - 2462 MHz, 9 Mbps, Measured Frequency 2483.5 MHz, Average

FCC 47 CFR Part 15, Limit Clause 15.205

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 56

802.11n (20 MHz Bandwidth)

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power	MCS8	2390.0	63.16	47.42
Data rate/MCS with Widest Bandwidth	MCS0	2390.0	64.72	48.73

Table 57 – 2412 MHz

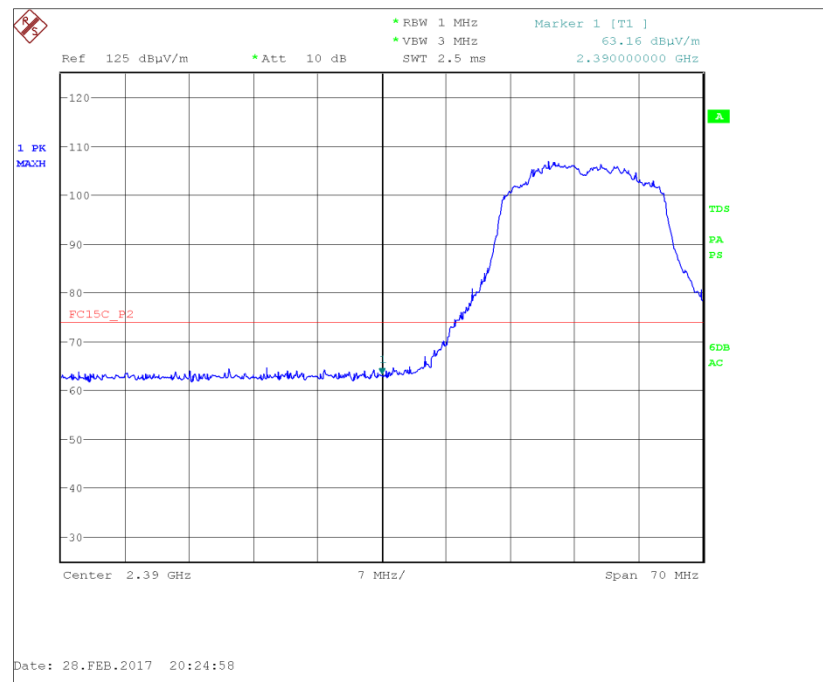


Figure 119 - 2412 MHz, MCS8, Measured Frequency 2390.0 MHz, Peak



Figure 120 - 2412 MHz, MCS8, Measured Frequency 2390.0 MHz, Average

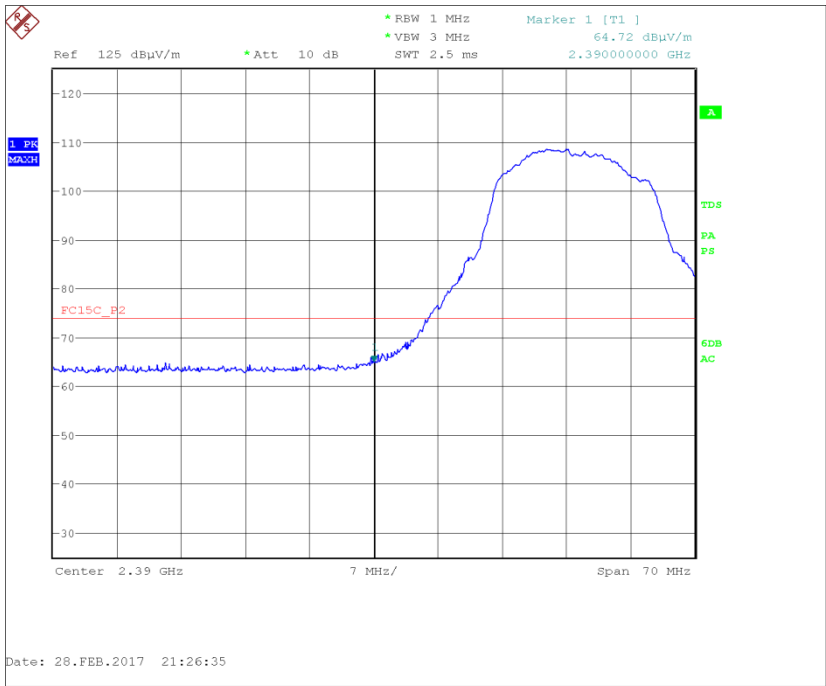


Figure 121 - 2412 MHz, MCS0, Measured Frequency 2390.0 MHz, Peak



Product Service



Figure 122 - 2412 MHz, MCS0, Measured Frequency 2390.0 MHz, Average



Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Data rate/MCS with Highest Power	MCS8	2483.5	63.72	48.92
Data rate/MCS with Widest Bandwidth	MCS0	2483.5	62.66	47.23

Table 58 – 2462 MHz

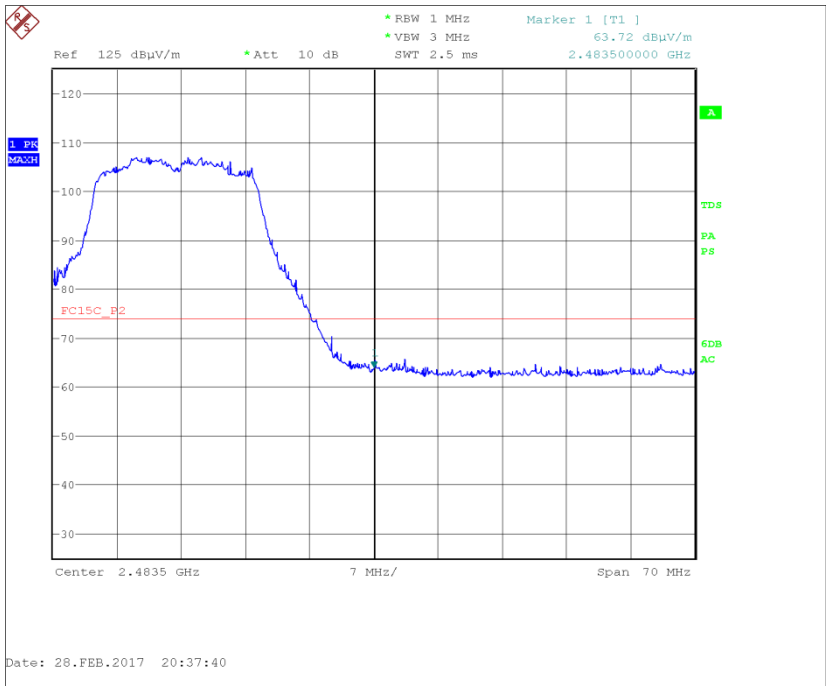


Figure 123 - 2462 MHz, MCS8, Measured Frequency 2483.5 MHz, Peak

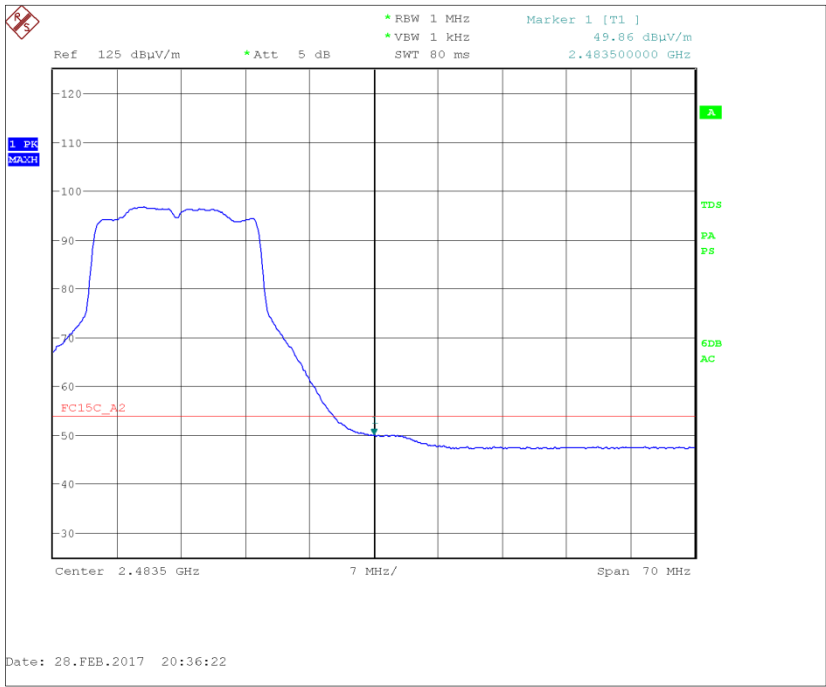


Figure 124 - 2462 MHz, MCS8, Measured Frequency 2483.5 MHz, Average

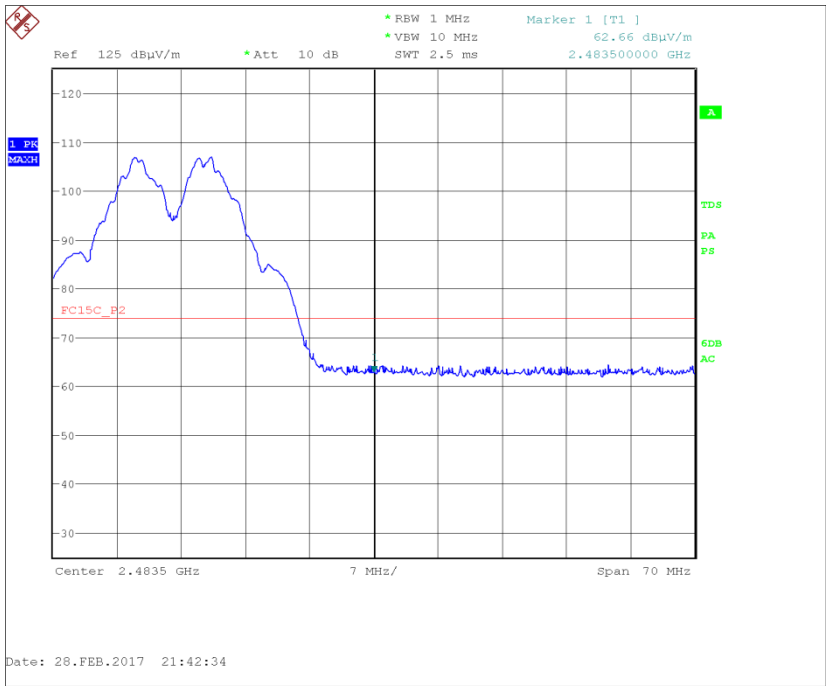


Figure 125 - 2462 MHz, MCS0, Measured Frequency 2483.5 MHz, Peak



Product Service

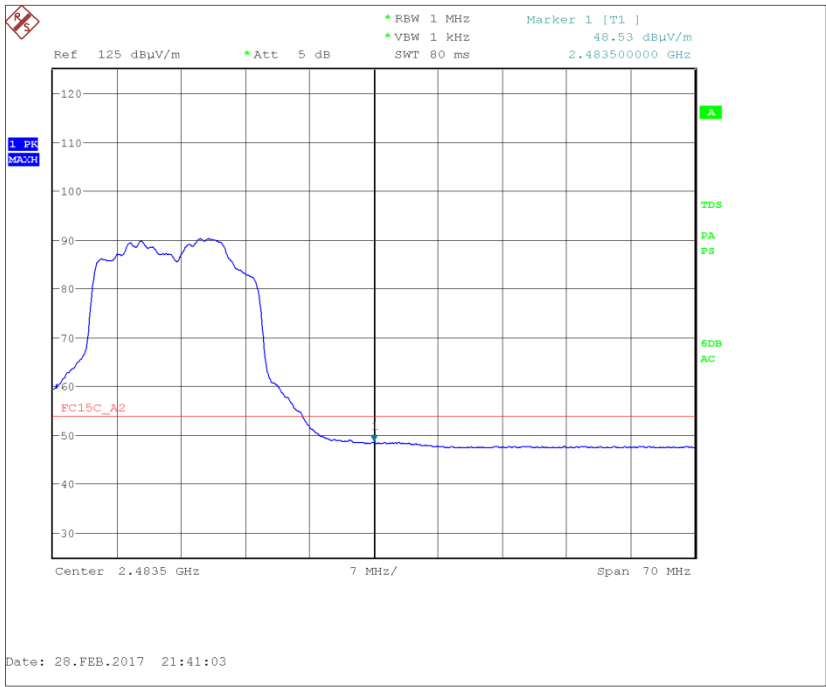


Figure 126 - 2462 MHz, MCS0, Measured Frequency 2483.5 MHz, Average
FCC 47 CFR Part 15, Limit Clause 15.205

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 59



802.11n (40 MHz Bandwidth)

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
Data rate/MCS with Highest Power	MCS4	2390.0	67.20	51.75
Data rate/MCS with Widest Bandwidth	MCS10	2390.0	68.04	52.17

Table 60 – 2422 MHz

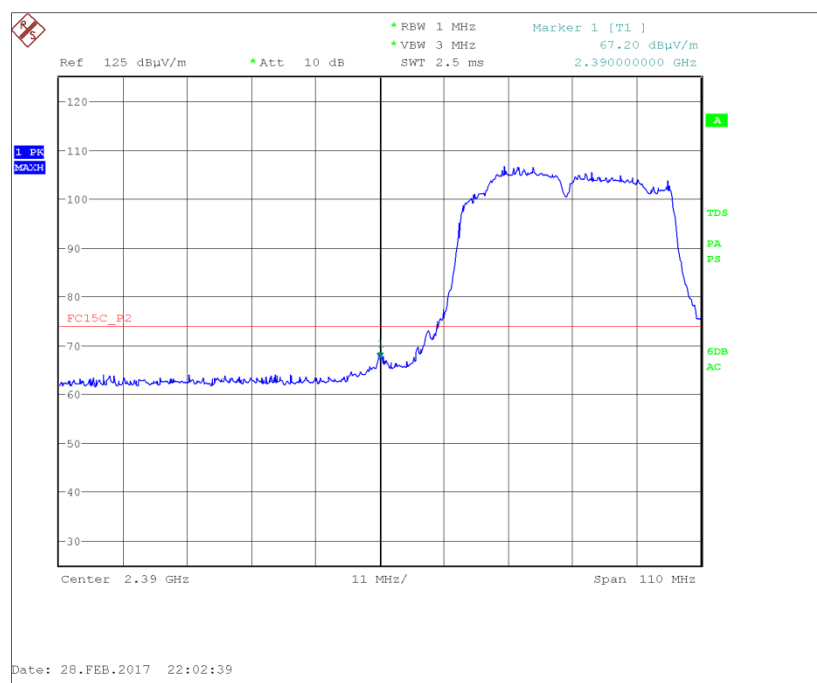


Figure 127 - 2422 MHz, MCS4, Measured Frequency 2390.0 MHz, Peak

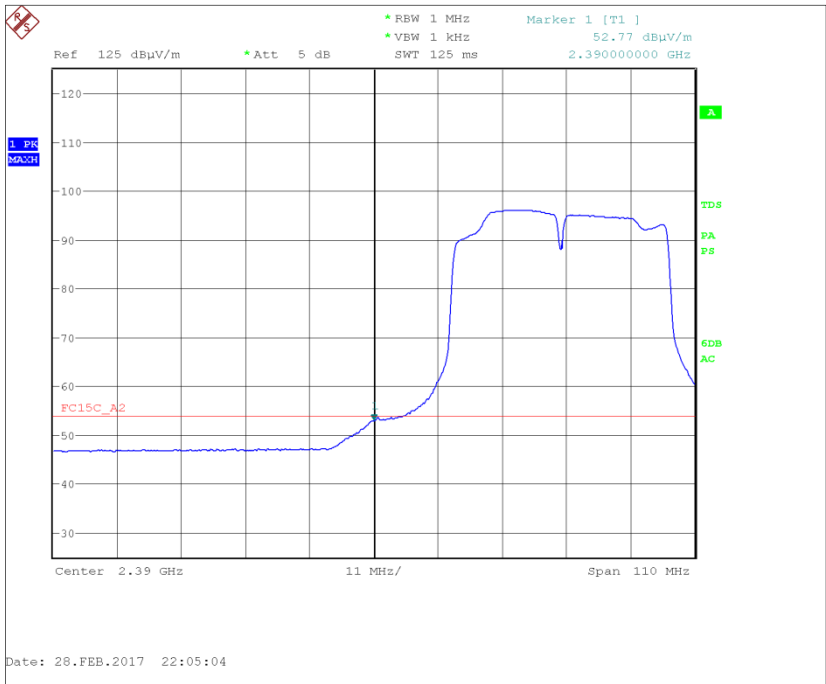


Figure 128 - 2422 MHz, MCS4, Measured Frequency 2390.0 MHz, Average

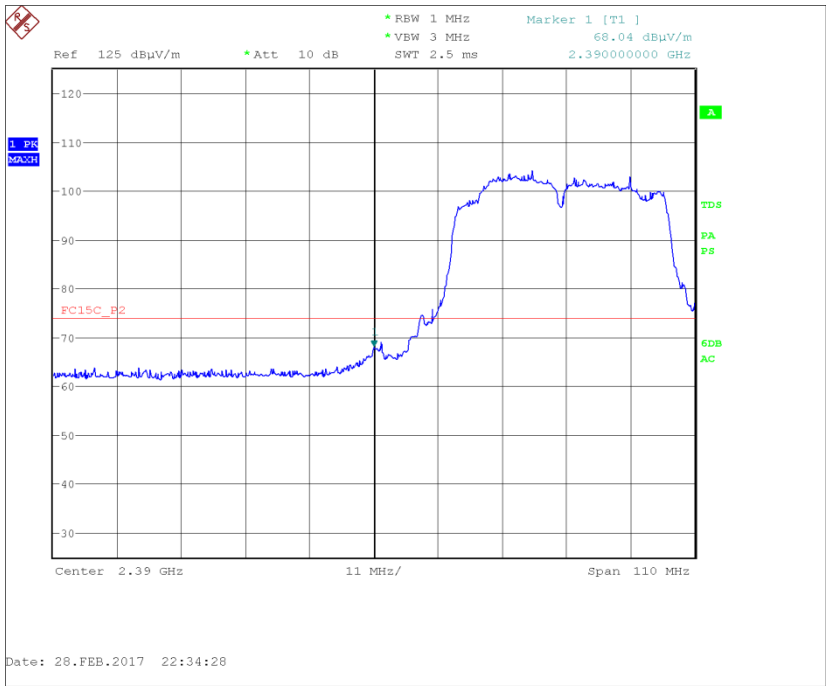


Figure 129 - 2422 MHz, MCS10, Measured Frequency 2390.0 MHz, Peak



Product Service

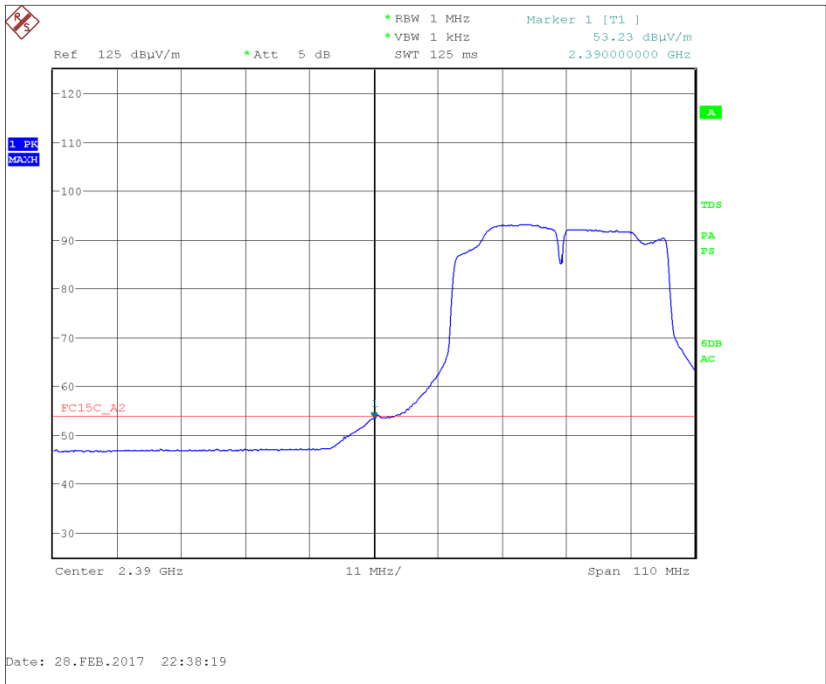


Figure 130 - 2422 MHz, MCS10, Measured Frequency 2390.0 MHz, Average



Product Service

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBµV/m)	Average Level (dBµV/m)
Data rate/MCS with Highest Power	MCS4	2483.5	62.99	47.39
Data rate/MCS with Widest Bandwidth	MCS10	2483.5	64.19	49.71

Table 61 – 2452 MHz

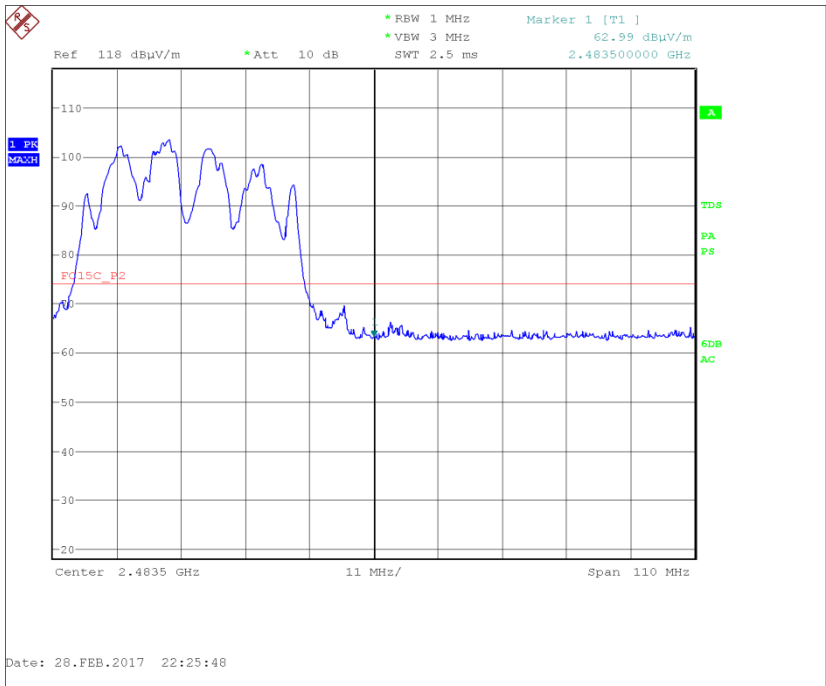


Figure 131 - 2452 MHz, MCS4, Measured Frequency 2483.5 MHz, Peak

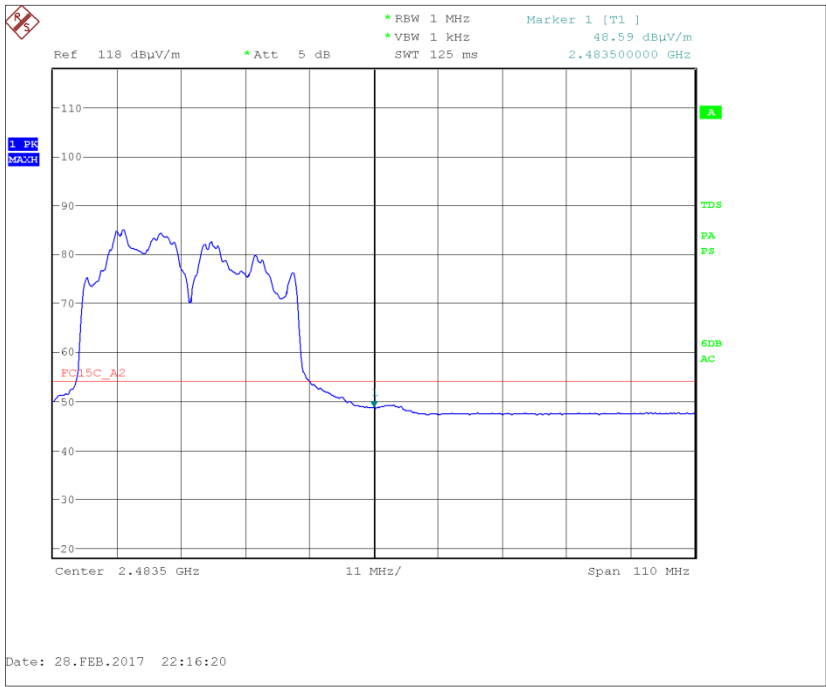


Figure 132 - 2452 MHz, MCS4, Measured Frequency 2483.5 MHz, Average

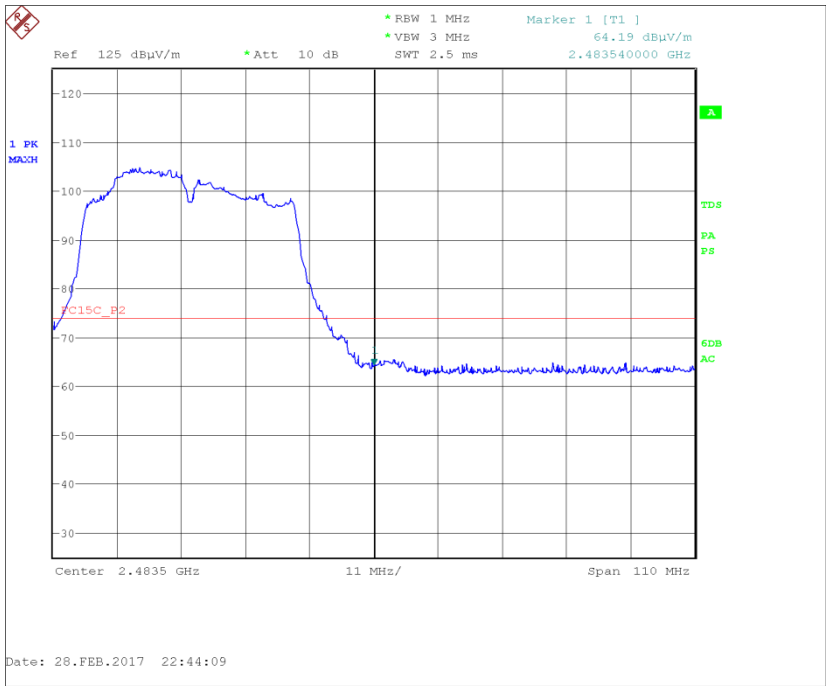


Figure 133 - 2452 MHz, MCS10, Measured Frequency 2483.5 MHz, Peak

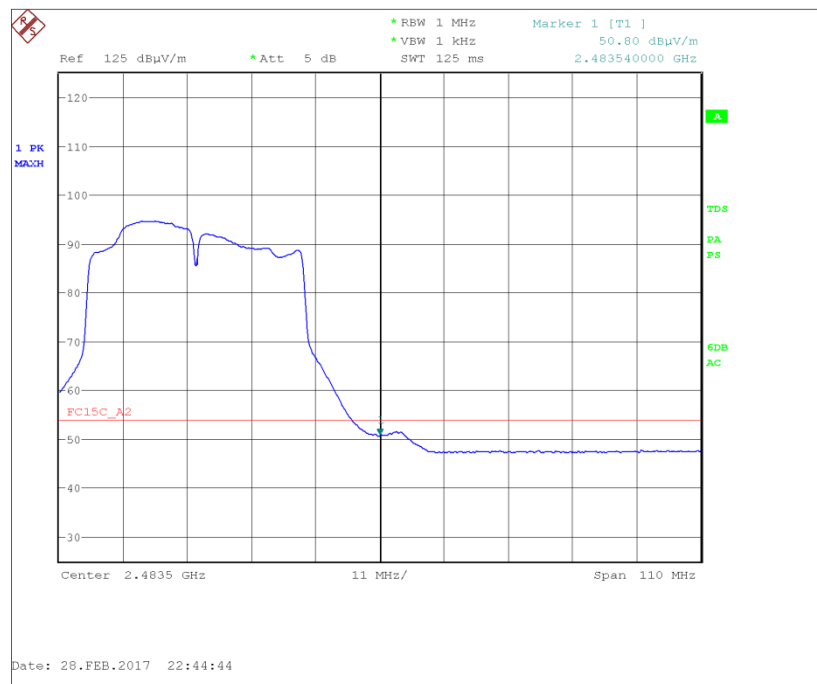


Figure 134 - 2452 MHz, MCS10, Measured Frequency 2483.5 MHz, Average

FCC 47 CFR Part 15, Limit Clause 15.205

	Peak (dBμV/m)	Average (dBμV/m)
Restricted Bands of Operation	74	54

Table 62

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	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	21-Sep-2017
Multimeter	Iso-tech	IDM101	2417	12	30-Sep-2017
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Tilt Antenna Mast	matur GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matur GmbH	NCD	3917	-	TU
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	29-Jul-2015



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018

Table 63

TU - Traceability Unscheduled



2.6 Authorised Band Edges

2.6.1 Specification Reference

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

2.6.2 Equipment Under Test and Modification State

DAQRI Smart Helmet, S/N: 1829C-DC8-6UPN9XJWJW - Modification State 0

2.6.3 Date of Test

28-February-2017

2.6.4 Test Method

Testing was performed in accordance with ANSI C63.10, Clause 11.13.1.

2.6.5 Environmental Conditions

Ambient Temperature 19.0 - 19.1 °C

Relative Humidity 31.0 %

2.6.6 Test Results

Bluetooth Low Energy

Modulation	Packet Type	Measured Frequency (MHz)	Peak Level (dBμV/m)
GFSK	DH1	2400.0	51.94

Table 64 – 2402 MHz

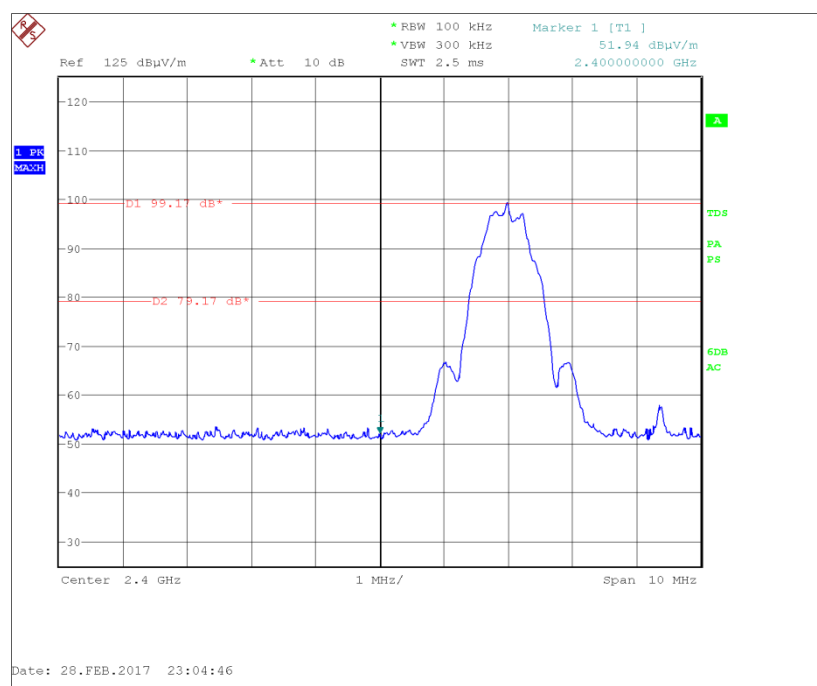


Figure 135 - 2402 MHz, GFSK/DH1, Measured Frequency 2400.0 MHz



Modulation	Packet Type	Measured Frequency (MHz)	Peak Level (dBμV/m)
GFSK	DH1	2483.5	52.20

Table 65 – 2480 MHz

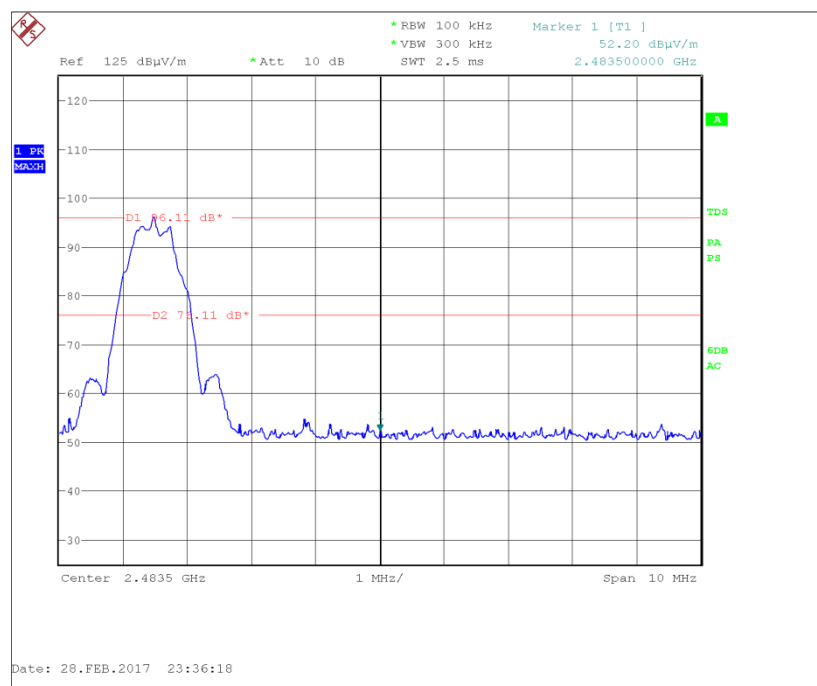


Figure 136 - 2480 MHz, GFSK/DH1, Measured Frequency 2483.5 MHz

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.



802.11b

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	11 Mbps	2400.0	53.37
Data rate/MCS with Widest Bandwidth	5.5 Mbps	2400.0	52.52

Table 66 – 2412 MHz

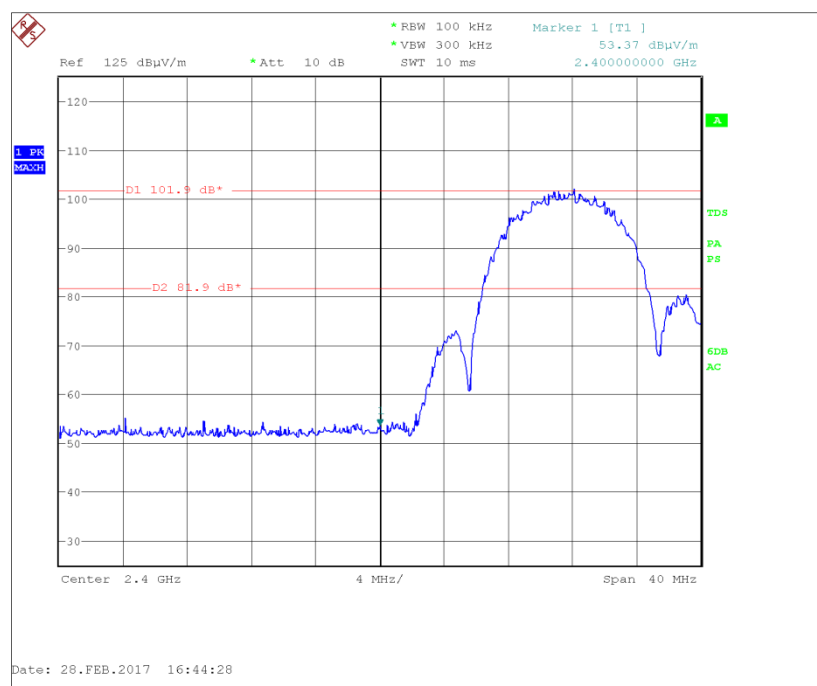


Figure 137 - 2412 MHz, 11 Mbps, Measured Frequency 2400.0 MHz



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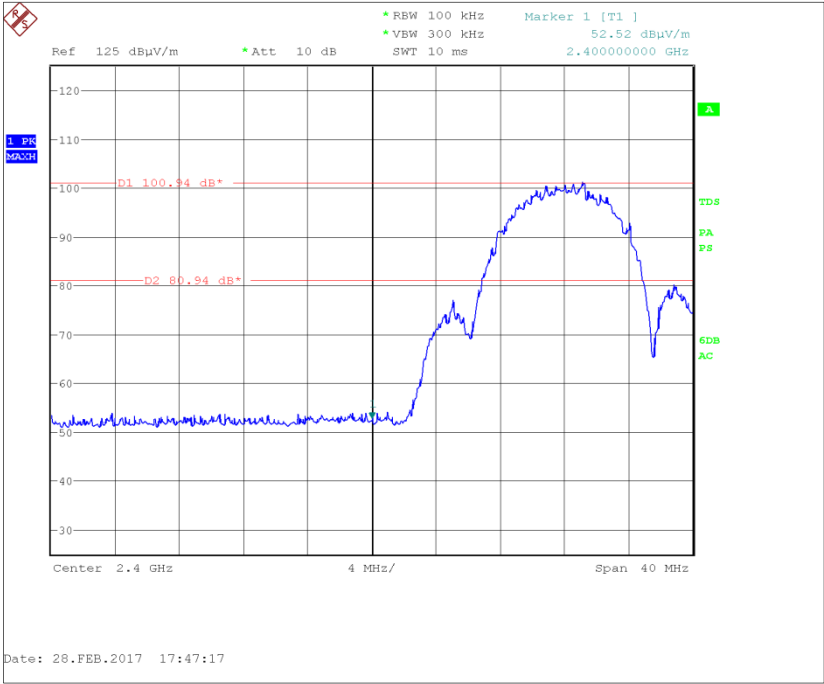


Figure 138 - 2412 MHz, 5.5 Mbps, Measured Frequency 2400.0 MHz



Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	11 Mbps	2483.5	52.22
Data rate/MCS with Widest Bandwidth	5.5 Mbps	2483.5	53.05

Table 67 – 2462 MHz

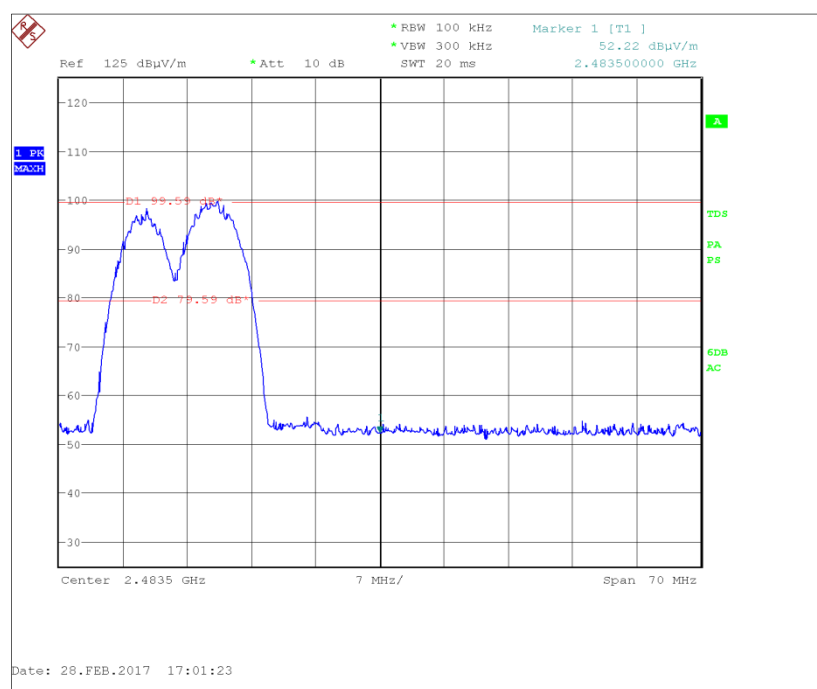


Figure 139 - 2462 MHz, 11 Mbps, Measured Frequency 2483.5 MHz

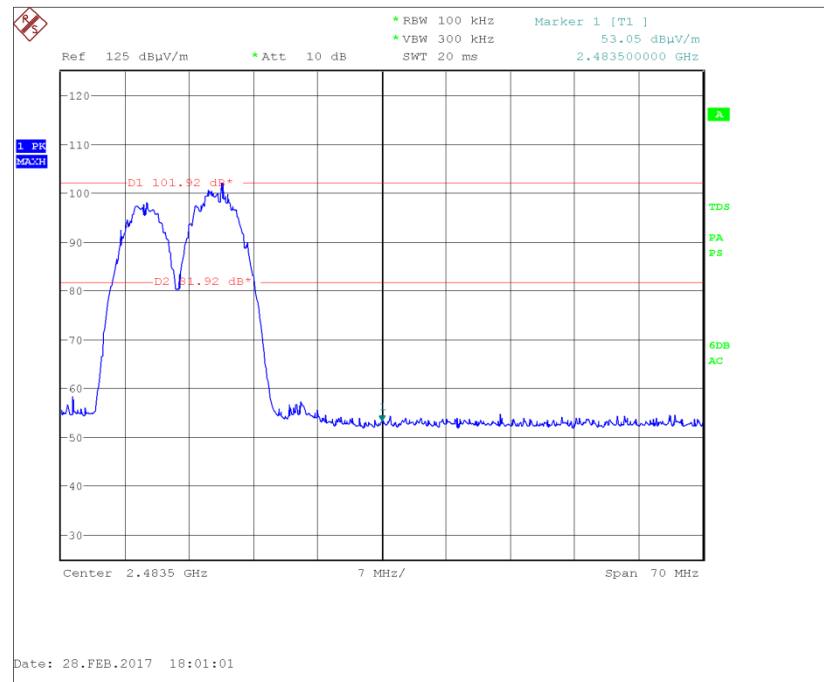


Figure 140 - 2462 MHz, 5.5 Mbps, Measured Frequency 2483.5 MHz

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.



802.11g

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	9 Mbps	2400.0	58.99
Data rate/MCS with Widest Bandwidth	N/A	2400.0	N/A

Table 68 – 2412 MHz

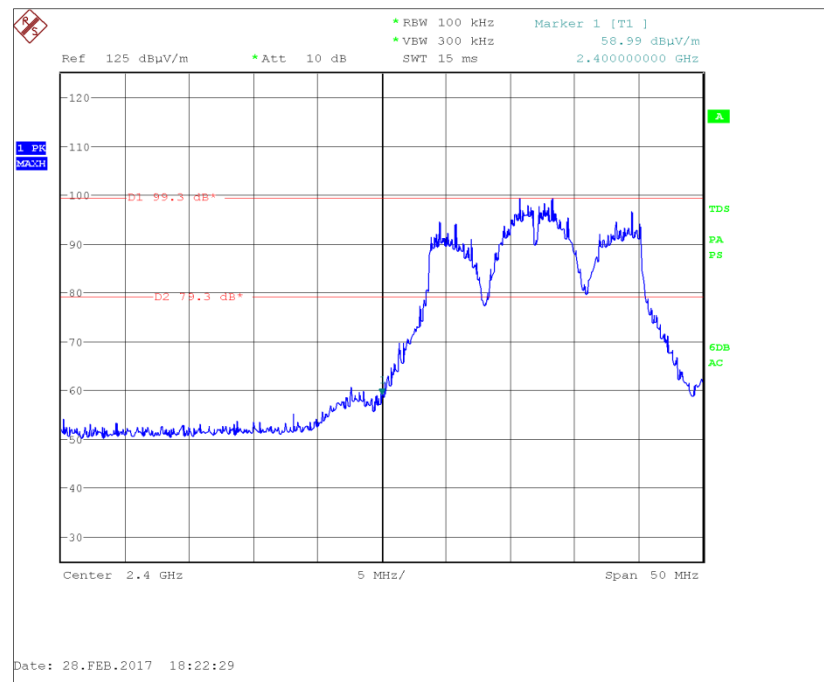


Figure 141 - 2412 MHz, 9 Mbps, Measured Frequency 2400.0 MHz



Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	9 Mbps	2483.5	55.08
Data rate/MCS with Widest Bandwidth	N/A	2483.5	N/A

Table 69 – 2462 MHz

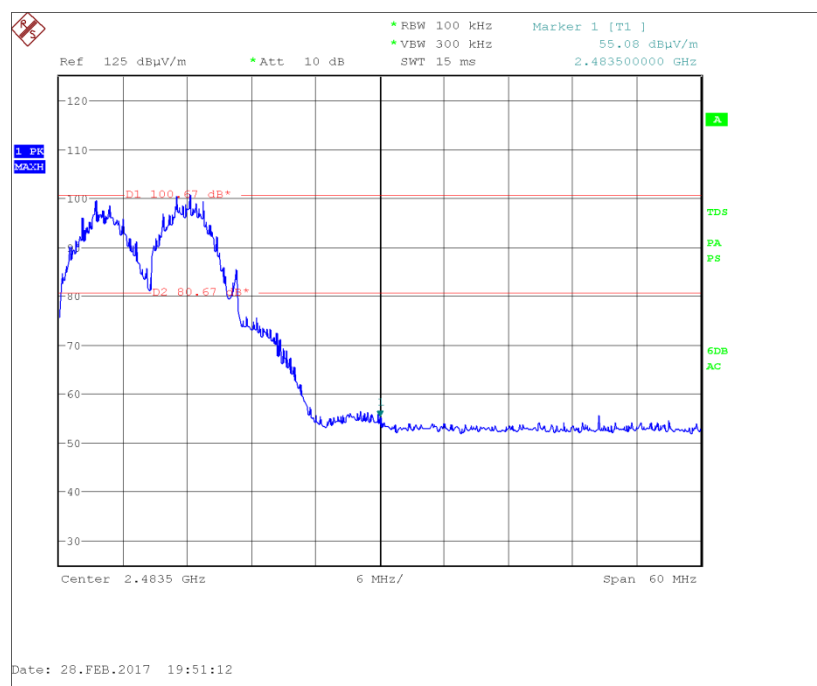


Figure 142 - 2462 MHz, 9 Mbps, Measured Frequency 2483.5 MHz

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.



802.11n (20 MHz Bandwidth)

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	MCS8	2400.0	64.42
Data rate/MCS with Widest Bandwidth	MCS0	2400.0	69.16

Table 70 – 2412 MHz

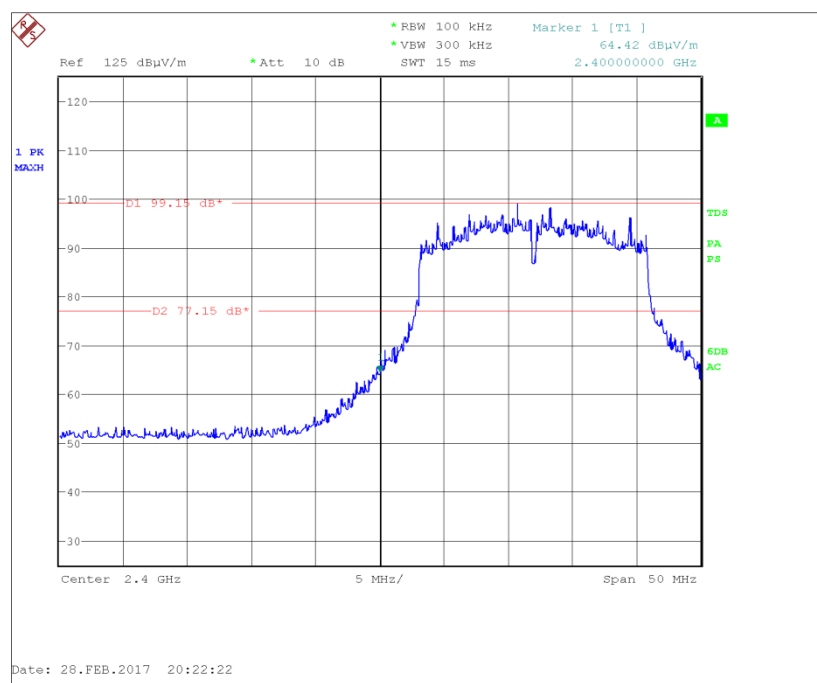


Figure 143 - 2412 MHz, MCS8, Measured Frequency 2400.0 MHz

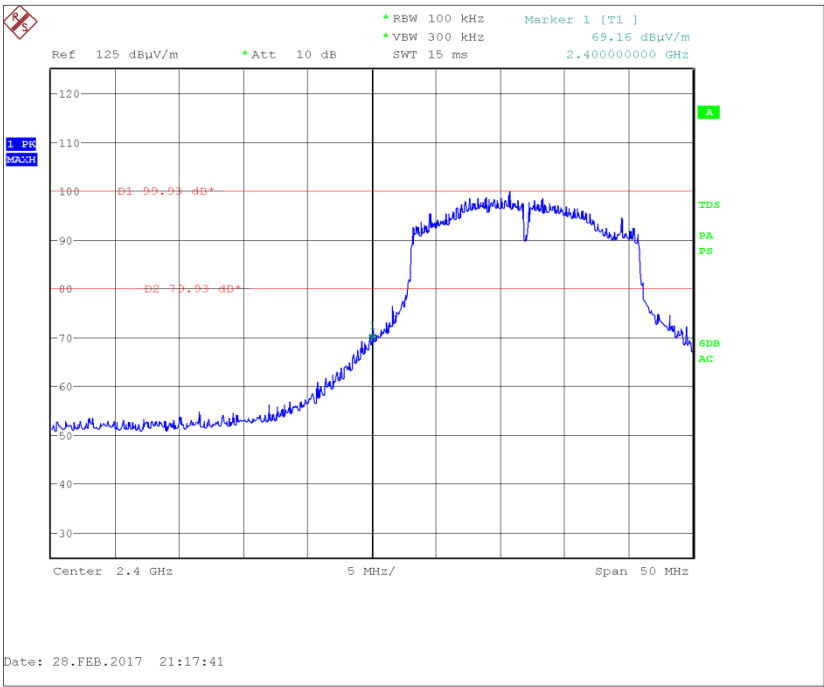


Figure 144 - 2412 MHz, MCS0, Measured Frequency 2400.0 MHz

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	MCS8	2483.5	53.16
Data rate/MCS with Widest Bandwidth	MCS0	2483.5	53.15

Table 71 – 2462 MHz

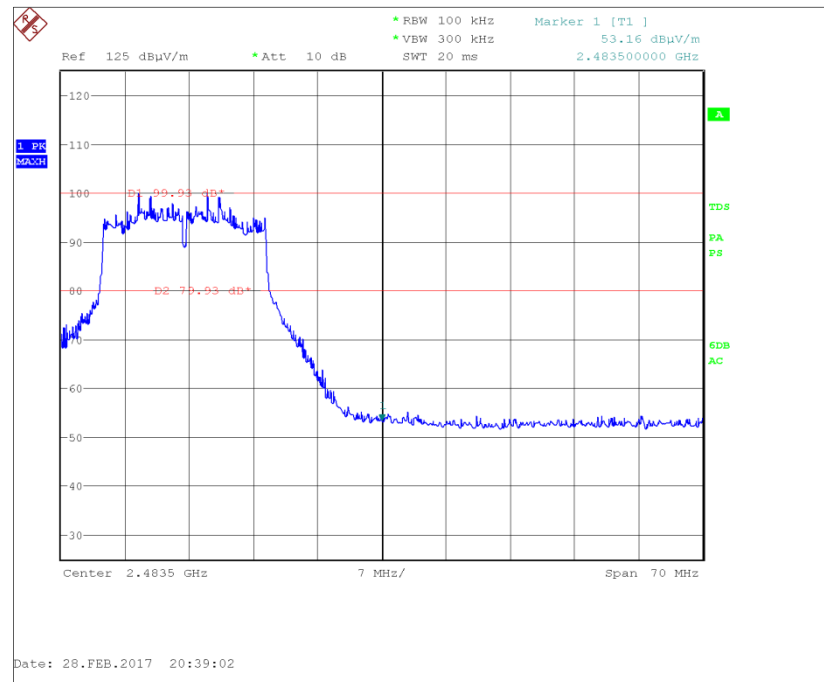


Figure 145 - 2462 MHz, MCS8, Measured Frequency 2483.5 MHz

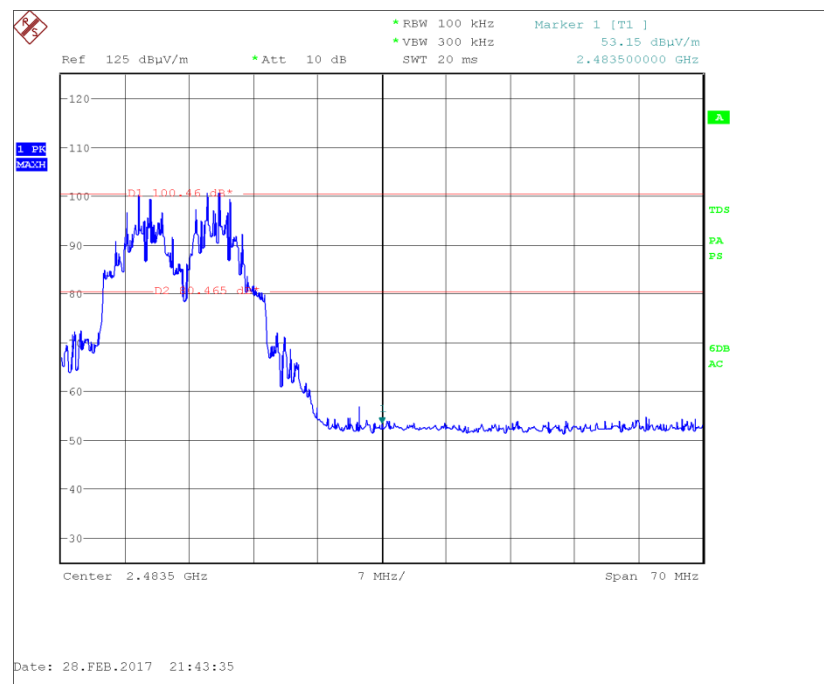


Figure 146 - 2462 MHz, MCS0, Measured Frequency 2483.5 MHz

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.

802.11n (40 MHz Bandwidth)

Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	MCS4	2400.0	59.67
Data rate/MCS with Widest Bandwidth	MCS10	2400.0	60.82

Table 72 – 2422 MHz

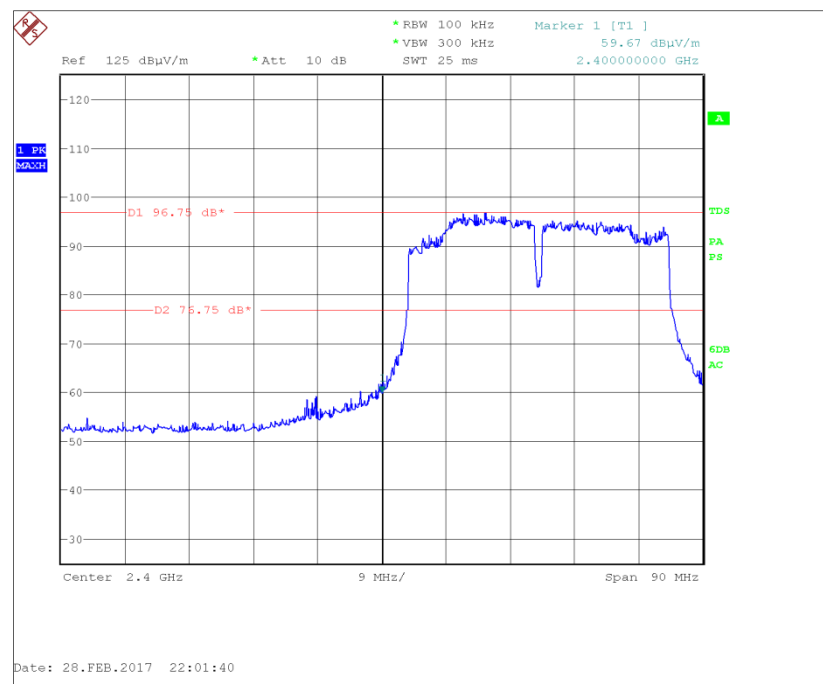


Figure 147 - 2422 MHz, MCS4, Measured Frequency 2400.0 MHz



Product Service



Figure 148 - 2422 MHz, MCS10, Measured Frequency 2400.0 MHz



Mode	Data Rate/MCS	Measured Frequency (MHz)	Peak Level (dBμV/m)
Data rate/MCS with Highest Power	MCS4	2483.5	53.49
Data rate/MCS with Widest Bandwidth	MCS10	2483.5	54.14

Table 73 – 2452 MHz

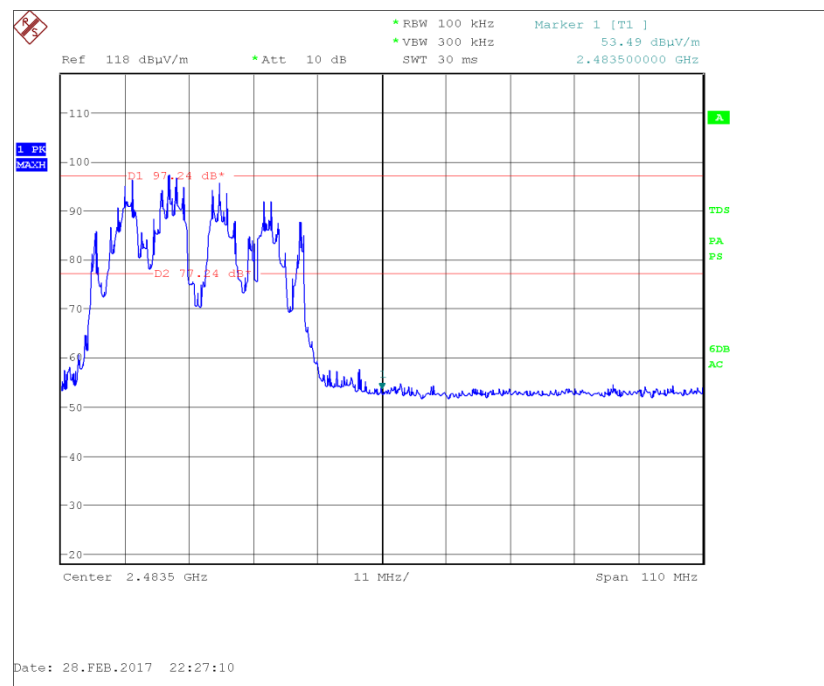


Figure 149 - 2452 MHz, MCS4, Measured Frequency 2483.5 MHz

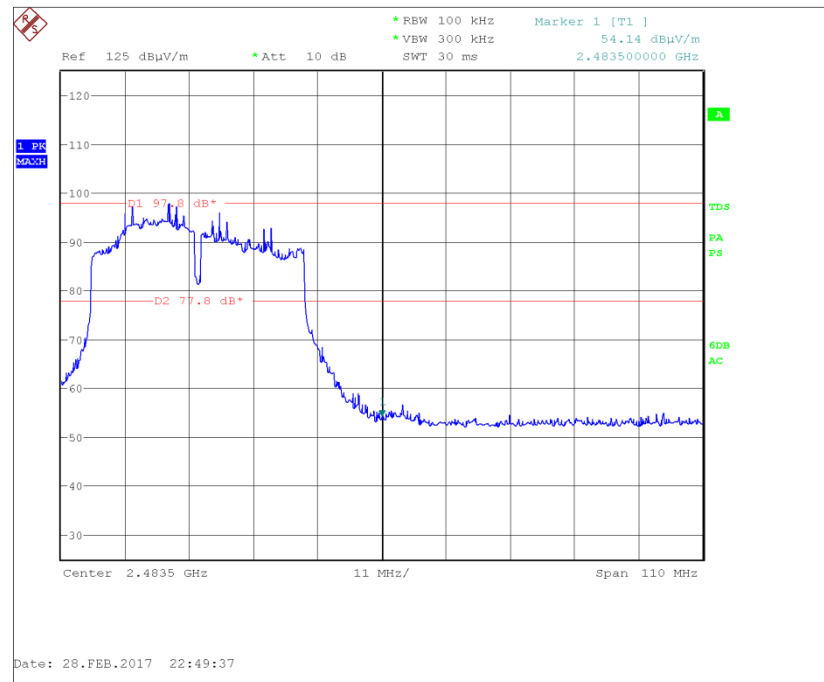


Figure 150 - 2452 MHz, MCS10, Measured Frequency 2483.5 MHz

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.



2.6.7 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	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	21-Sep-2017
Multimeter	Iso-tech	IDM101	2417	12	30-Sep-2017
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	29-Jul-2015
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018

Table 74

TU - Traceability Unscheduled



3 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Maximum Conducted Output Power	± 0.70 dB
Emission Bandwidth	± 212.114 kHz
Power Spectral Density	± 3.0 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.1 dB 1 GHz to 40 GHz: ± 6.3 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.1 dB 1 GHz to 40 GHz: ± 6.3 dB
Restricted Band Edges	30 MHz to 1 GHz: ± 5.1 dB 1 GHz to 40 GHz: ± 6.3 dB

Table 75