TEST REPORT ADDENDUM – RADIATED

FROM

Test of: Silver Spring Networks NIC-510

To: FCC CFR 47 Part 15 Subpart C 15.247 & IC RSS 247 (DTS)

Test Report Serial No.: SSNT113-U2_Radiated Draft

Issue Date: 9th August 2016

Master Document Number	Addendum Reports
SSNT113-U2_Master	SSNT113-U2_Conducted
	SSNT113-U2_Radiated

Table of Contents

1. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix 'Graphical Data'.

Testing and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for regulatory compliance.

2. TEST RESULTS

2.1. Radiated Emissions

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions (Restricted Bands)			
Standard:	FCC CFR 47 Part 15 Subpart C 15.247 (DTS)	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious and Band-Edge Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.205, 15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions (Restricted Bands)
Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter and waveguide filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned. Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

Test configuration and setup for Radiated Spurious and Band-Edge Measurement were per the Radiated Test Set-up specified in this document.

Limits for Restricted Bands
Peak emission: 74 dBuV/m
Average emission: 54 dBuV/m

Field Strength Calculation
The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.
FS = R + AF + CORR - FO

where:
FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss or Waveguide Loss

Example:
Given receiver input reading of 51.5 dBmV; Antenna Factor of 8.5 dB; Cable Loss of 1.3 dB; Falloff Factor of 0 dB, an Amplifier Gain of 26 dB and Notch Filter Loss of 1 dB. The Field Strength (FS) of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBmV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are as follows:
Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100 mV/m
48 dBmV/m = 250 mV/m
Restricted Bands of Operation (15.205)
(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Frequency Band			
MHz	**MHz**	**MHz**	**GHz**
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.

(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.

(8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

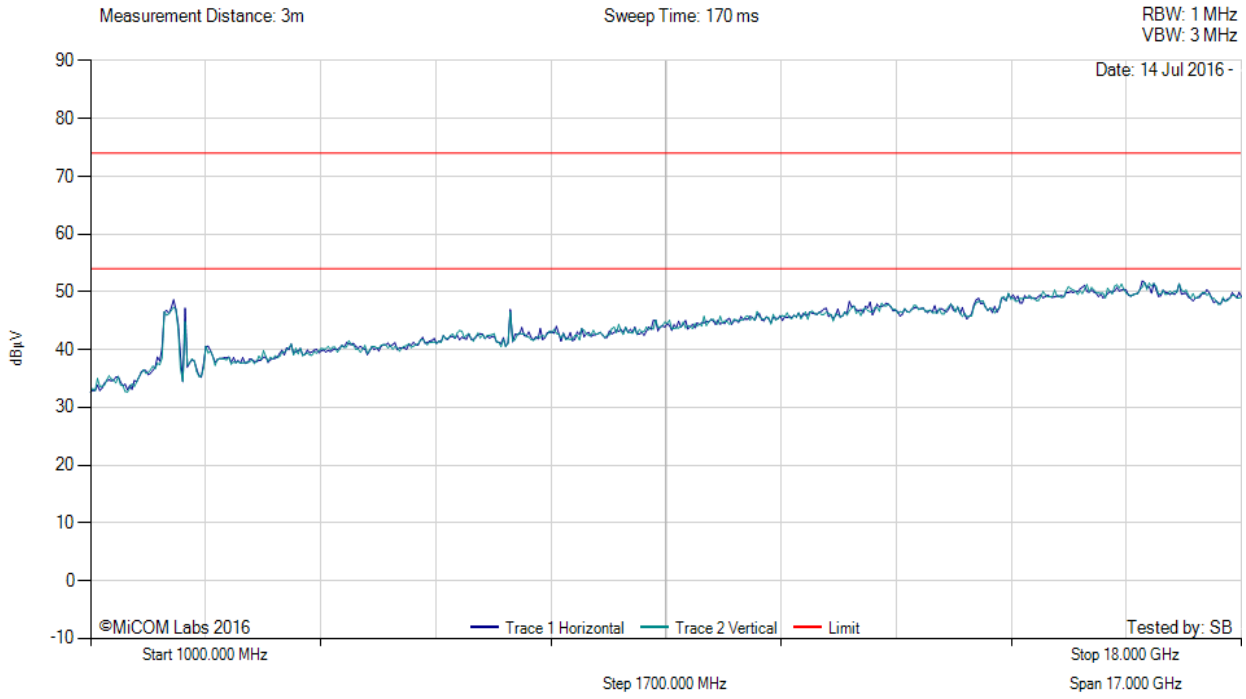
2.1.1. Restricted Band Emissions

Integral Antenna

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2405.00 MHz, Antenna: integral, Duty Cycle (%): 100

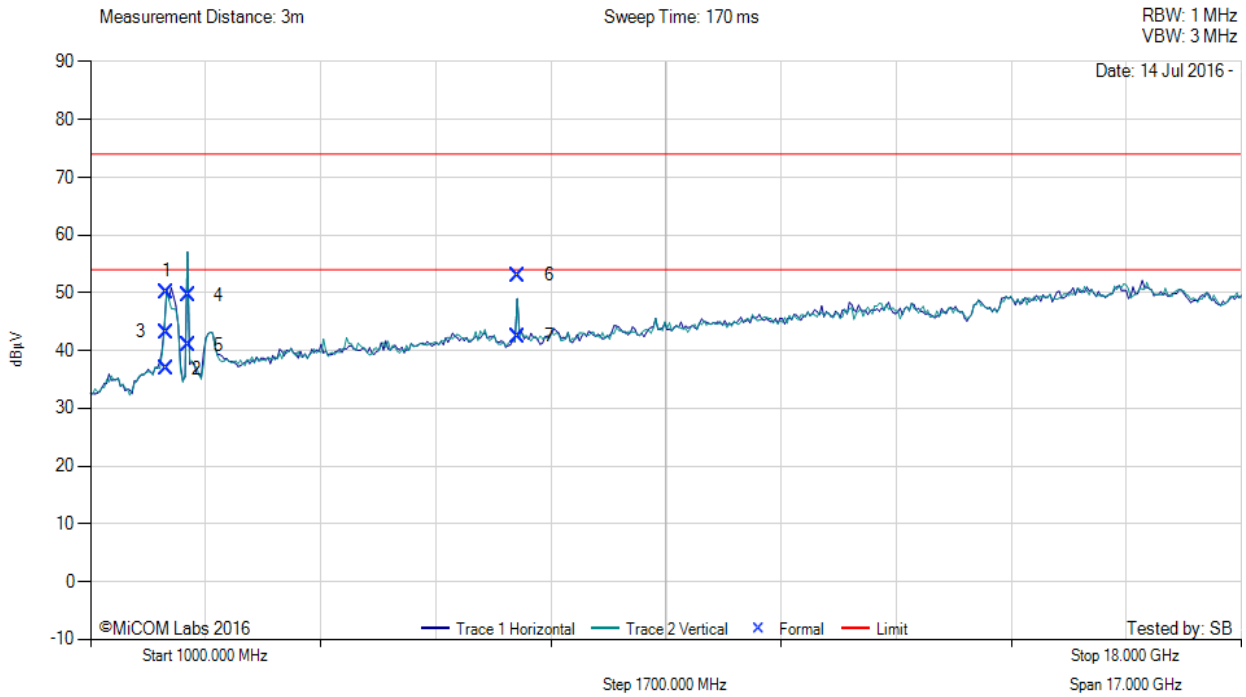


There are no emissions found within 6dB of the limit line.

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	Integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	DTS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2440.00 MHz, Antenna: Integral, Duty Cycle (%): 100

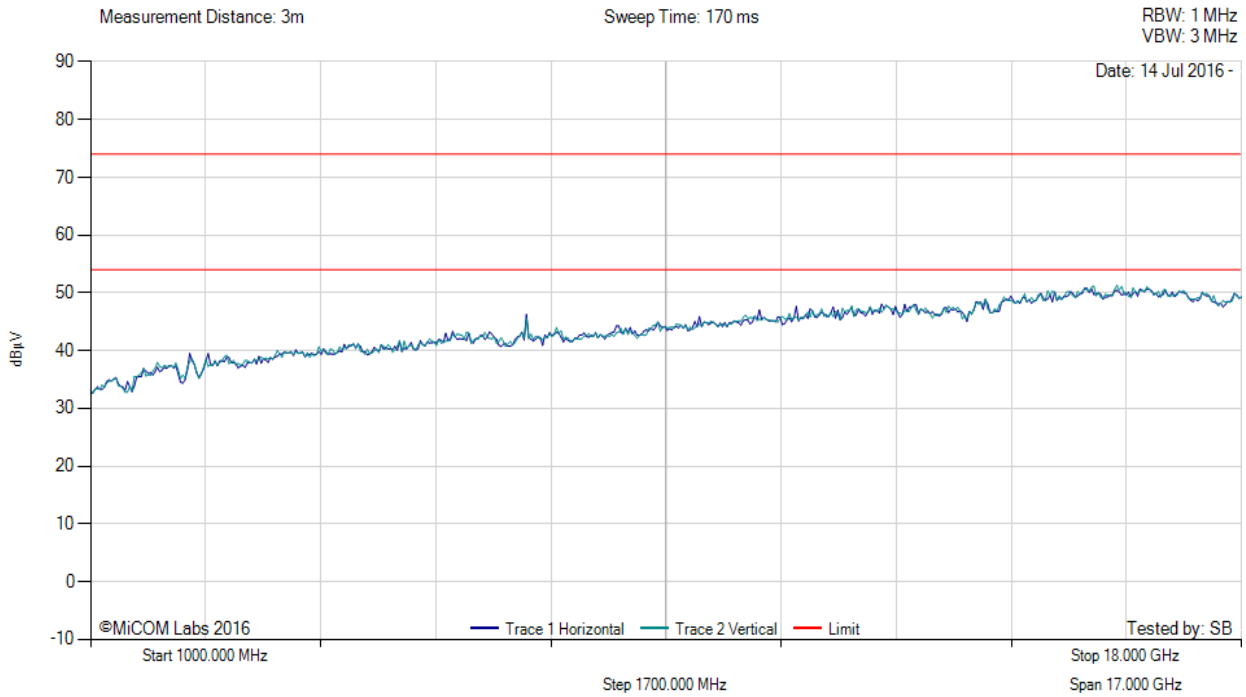


Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2120.44	59.85	2.60	-12.30	50.15	Max Peak	Horizontal	169	290	74.0	-23.9	Pass
2	2120.44	46.54	2.60	-12.30	36.84	Max Avg	Horizontal	169	290	54.0	-17.2	Pass
3	2120.44	52.96	2.60	-12.30	43.26	Peak (NRB)	Horizontal	101	1	--	--	Pass
4	2439.56	58.58	2.72	-11.72	49.58	Fundamental	Horizontal	101	1	--	--	
5	2439.56	49.94	2.72	-11.72	40.94	Peak (NRB)	Vertical	101	1	--	--	Pass
6	7318.28	56.06	4.25	-7.27	53.04	Max Peak	Horizontal	130	309	74.0	-21.0	Pass
7	7318.28	45.49	4.25	-7.27	42.47	Max Avg	Horizontal	130	309	54.0	-11.5	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	Integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2480.00 MHz, Antenna: Integral, Duty Cycle (%): 100



There are no emissions found within 6dB of the limit line.

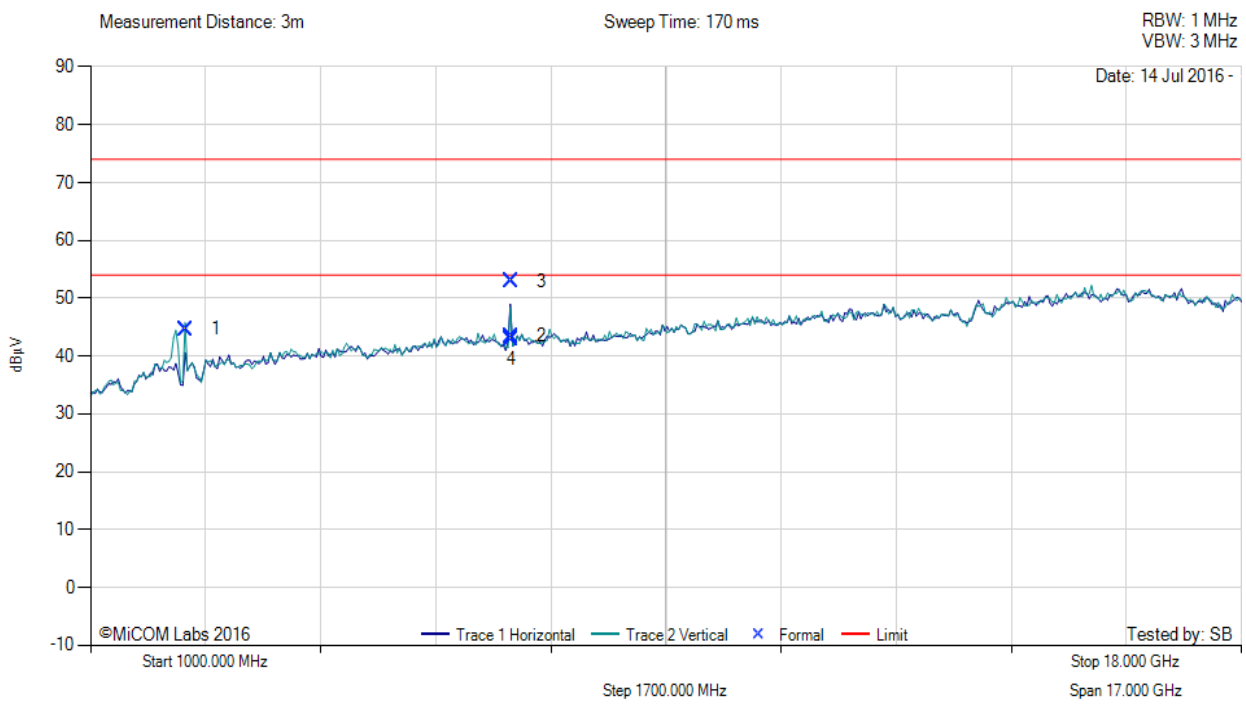
WP ANT Antenna

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	WPANT30017-CA	**Variant:**	DTS
Antenna Gain (dBi):	4.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2405.00 MHz, Antenna: WP ANT, Duty Cycle (%): 100

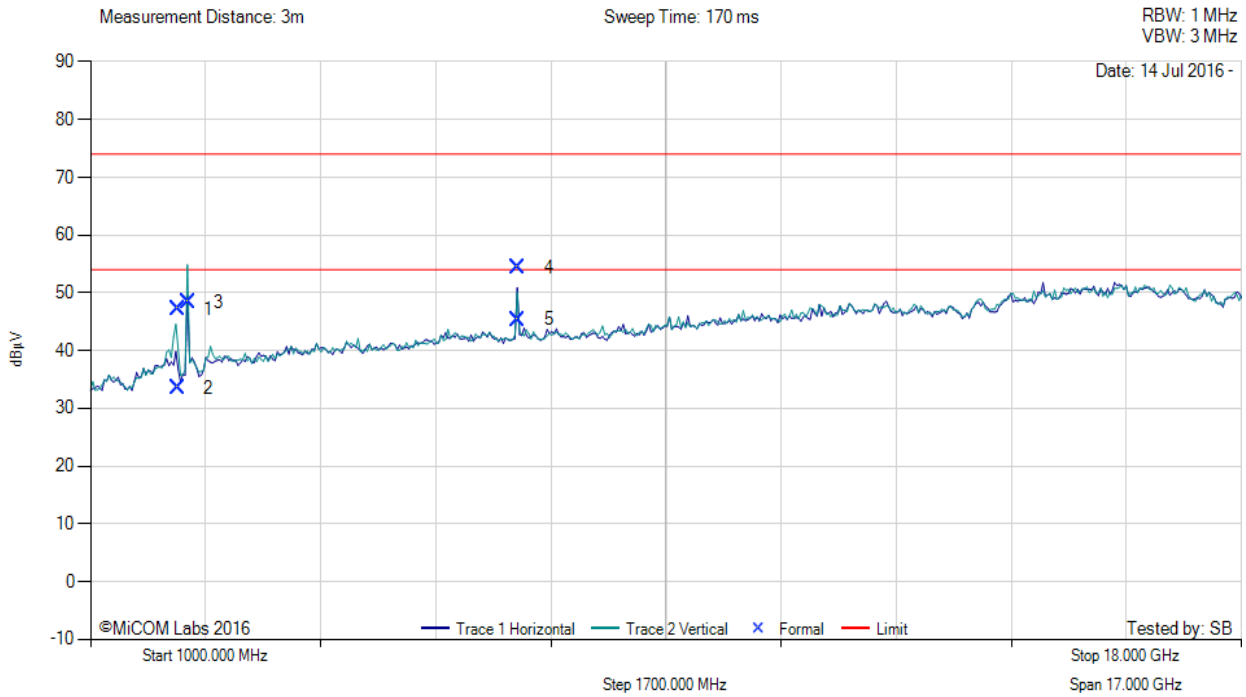


Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2404.80	53.79	2.69	-11.82	44.66	Fundamental	Vertical	176	81	--	--	
2	7213.43	46.56	4.29	-7.35	43.50	Peak (NRB)	Horizontal	101	1	--	--	Pass
3	7213.43	55.93	4.29	-7.35	52.87	Max Peak	Horizontal	143	310	74.0	-21.1	Pass
4	7213.43	46.03	4.29	-7.35	42.97	Max Avg	Horizontal	143	310	54.0	-11.0	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	WPANT30017-CA	**Variant:**	DTS
Antenna Gain (dBi):	4.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2440.00 MHz, Antenna: WP ANT, Duty Cycle (%): 100

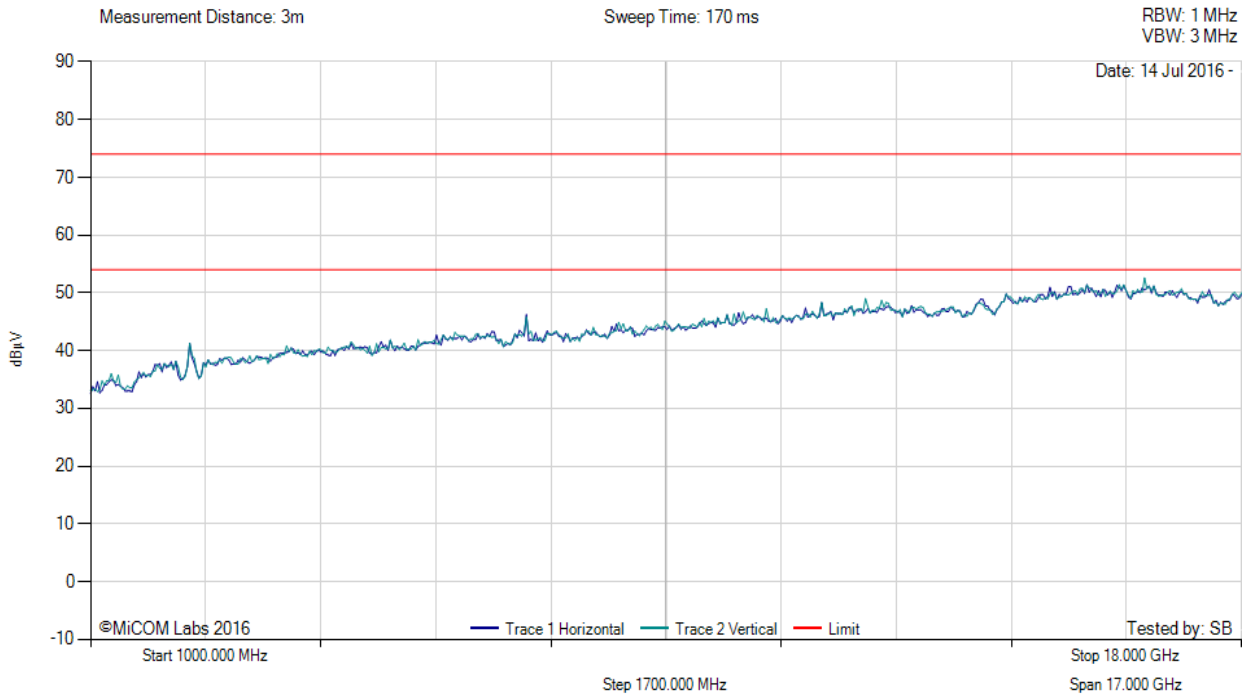


Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2283.96	56.70	2.66	-12.16	47.20	Max Peak	Vertical	184	155	74.0	-26.8	Pass
2	2283.96	43.04	2.66	-12.16	33.54	Max Avg	Vertical	184	155	54.0	-20.5	Pass
3	2440.51	57.38	2.72	-11.72	48.38	Fundamental	Vertical	101	1	--	--	
4	7318.61	57.44	4.26	-7.27	54.43	Max Peak	Horizontal	149	305	74.0	-19.6	Pass
5	7318.61	48.36	4.26	-7.27	45.35	Max Avg	Horizontal	149	305	54.0	-8.7	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	WPANT30017-CA	**Variant:**	DTS
Antenna Gain (dBi):	4.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2480.00 MHz, Antenna: WP ANT, Duty Cycle (%): 100



There are no emissions found within 6dB of the limit line.

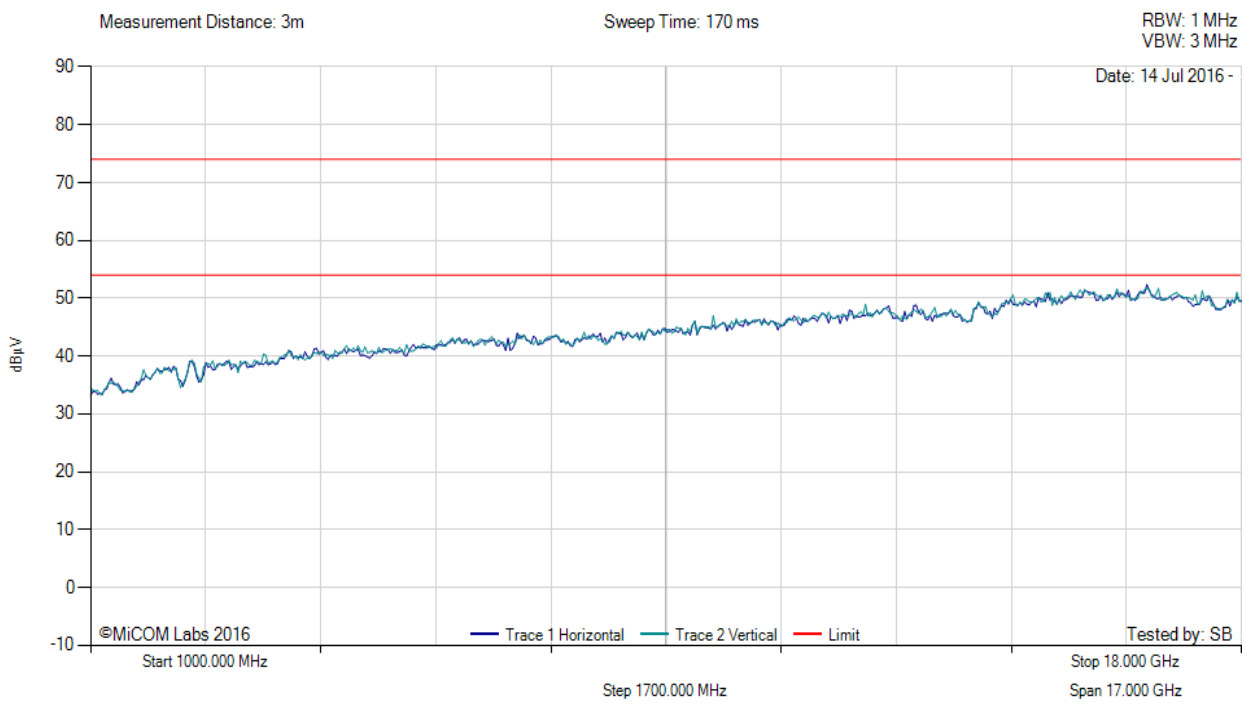
Meter Band Antenna

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	WPANT40020-SA	**Variant:**	DTS
Antenna Gain (dBi):	3.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2405.00 MHz, Antenna: Meter Ant, Duty Cycle (%): 100

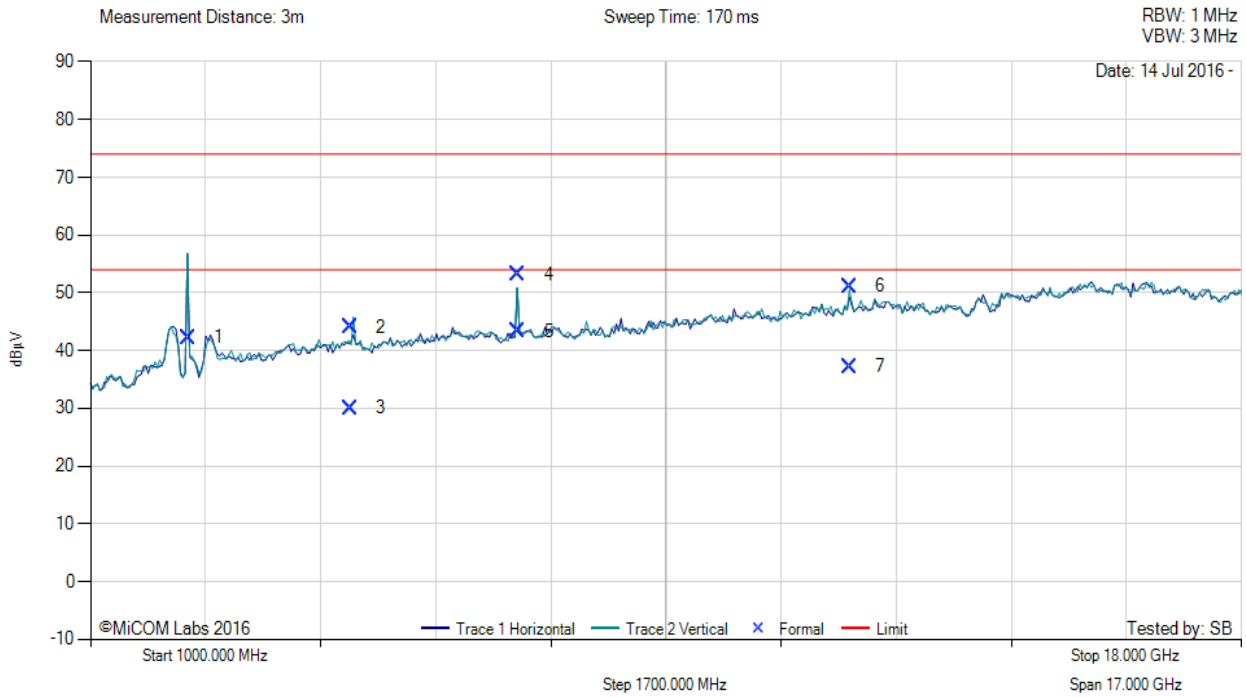


There are no emissions found within 6dB of the limit line.

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	WPANT40020-SA	**Variant:**	DTS
Antenna Gain (dBi):	3.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2440.00 MHz, Antenna: Meter Ant, Duty Cycle (%): 100

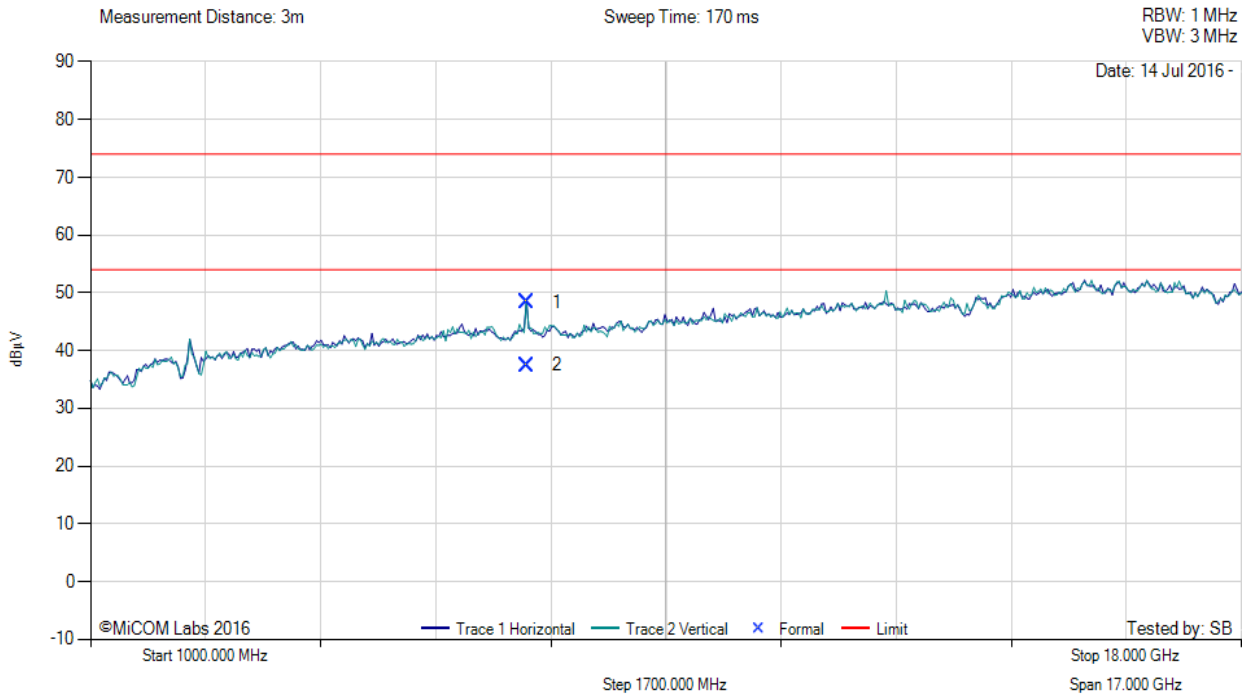


Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2439.68	51.29	2.72	-11.72	42.29	Fundamental	Vertical	101	13	--	--	
2	4842.94	51.63	3.58	-11.18	44.03	Max Peak	Vertical	167	86	74.0	-30.0	Pass
3	4842.94	37.62	3.58	-11.18	30.02	Max Avg	Vertical	167	86	54.0	-24.0	Pass
4	7318.68	56.18	4.26	-7.27	53.17	Max Peak	Horizontal	101	281	74.0	-20.8	Pass
5	7318.68	46.39	4.26	-7.27	43.38	Max Avg	Horizontal	101	281	54.0	-10.6	Pass
6	12215.35	50.60	5.48	-5.00	51.08	Max Peak	Vertical	156	236	74.0	-22.9	Pass
7	12215.35	36.77	5.48	-5.00	37.25	Max Avg	Vertical	156	236	54.0	-16.8	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions			
Antenna:	WPANT40020-SA	**Variant:**	DTS
Antenna Gain (dBi):	3.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: DTS, Test Freq: 2480.00 MHz, Antenna: Meter Ant, Duty Cycle (%): 100



Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	7440.76	51.18	4.30	-7.13	48.35	Max Peak	Horizontal	188	272	74.0	-25.7	Pass
2	7440.76	40.34	4.30	-7.13	37.51	Max Avg	Horizontal	188	272	54.0	-16.5	Pass

2.1.2. Restricted Band Edge Emissions

Integral		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m
DTS	2405.00	2390.00	54.55	42.43
DTS	2480.00	2483.50	60.53	52.42

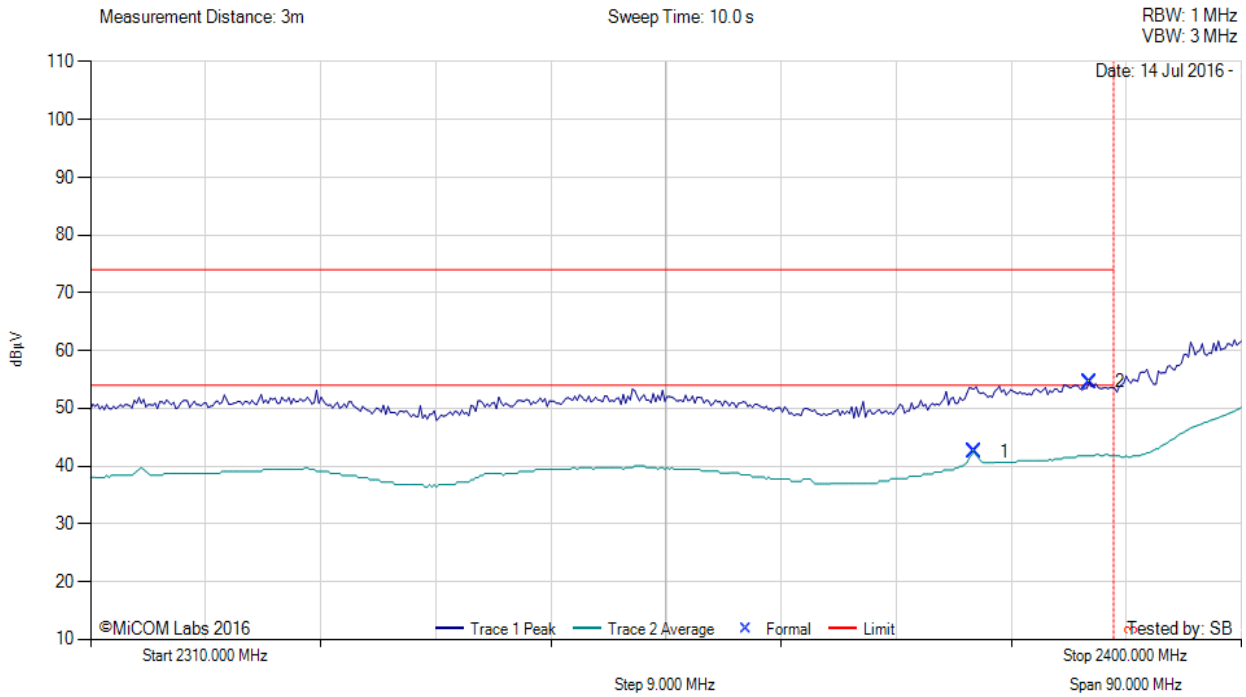
WPANT30017-CA		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m
DTS	2405.00	2390.00	54.40	44.13
DTS	2480.00	2483.50	59.25	51.71

WPANT40020-SA		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m
DTS	2405.00	2390.00	53.70	41.95
DTS	2480.00	2483.50	58.70	51.54

Equipment Configuration for 2390 MHz Radiated Band-Edge Emissions			
Antenna:	integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: , Test Freq: 2405.00 MHz, Antenna: integral, Duty Cycle (%): 100



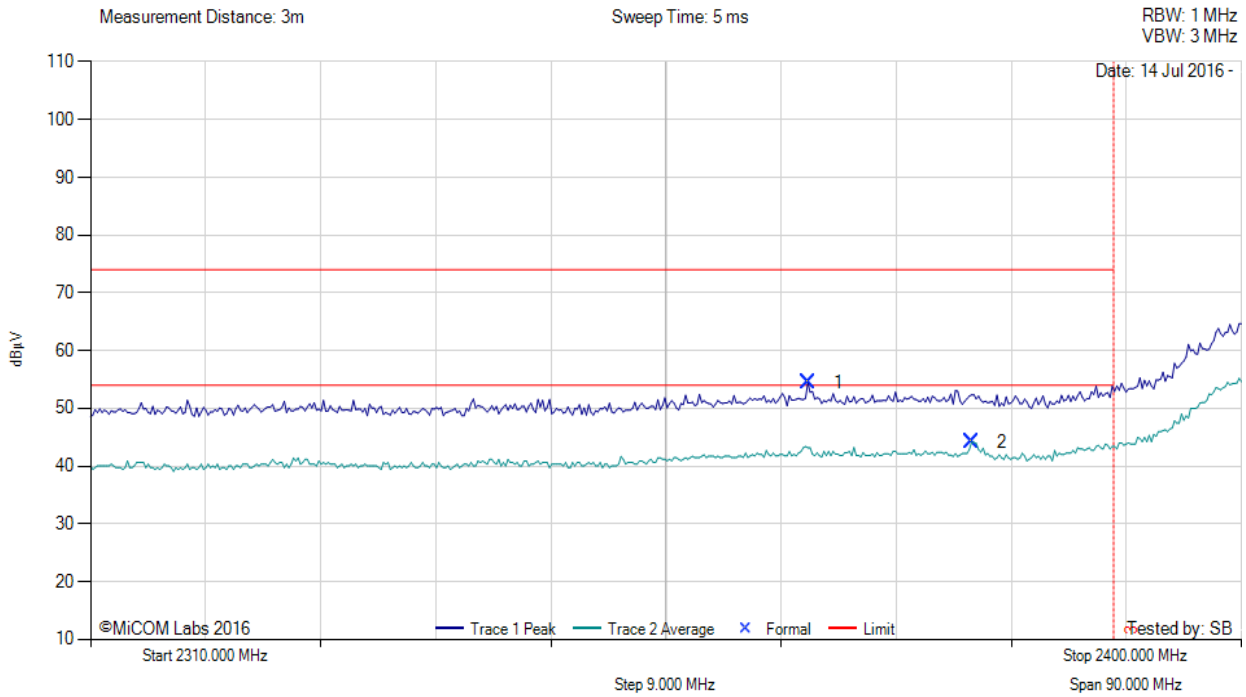
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2379.08	7.79	2.69	31.95	42.43	Max Avg	Horizontal	146	172	54.0	-11.6	Pass
2	2388.10	19.84	2.68	32.03	54.55	Max Peak	Horizontal	146	172	74.0	-19.5	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

Equipment Configuration for 2390 MHz Radiated Band-Edge Emissions			
Antenna:	WPANT30017-CA	**Variant:**	DTS
Antenna Gain (dBi):	4.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: , Test Freq: 2405.00 MHz, Antenna: WP ANT, Duty Cycle (%): 100



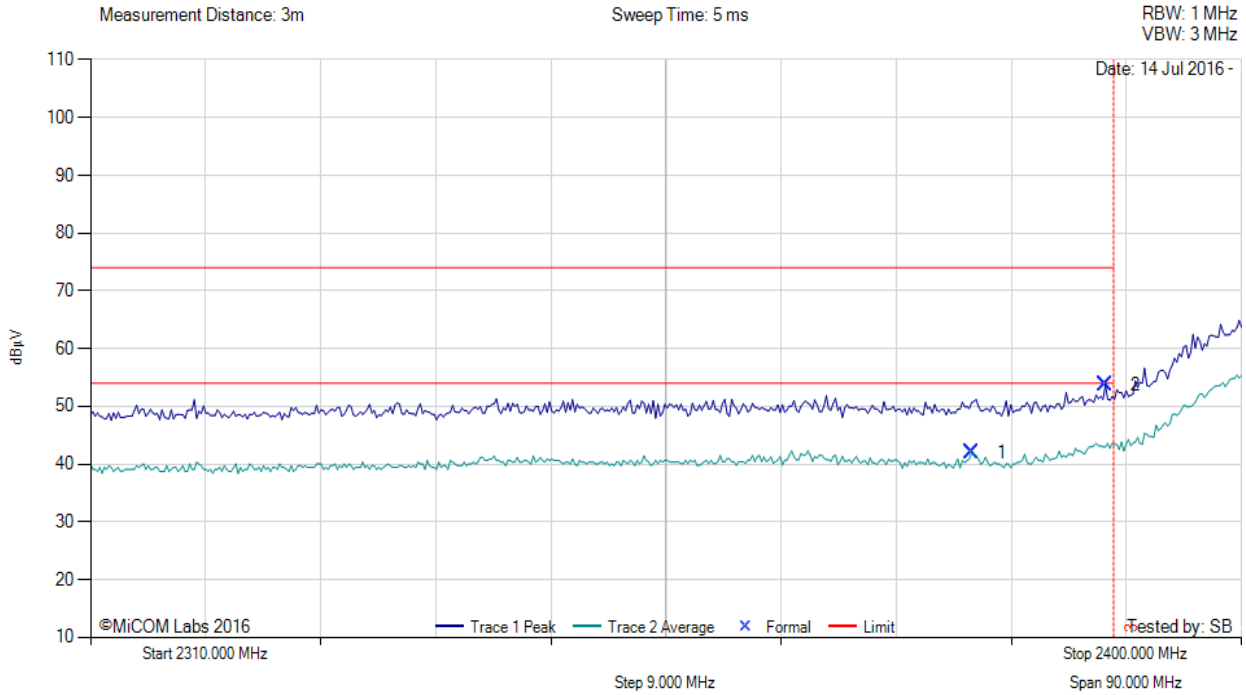
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2366.09	19.87	2.70	31.83	54.40	Max Peak	Vertical	156	155	74.0	-19.6	Pass
2	2378.90	9.49	2.69	31.95	44.13	Max Avg	Vertical	156	155	54.0	-9.9	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

Equipment Configuration for 2390 MHz Radiated Band-Edge Emissions			
Antenna:	WPANT40020-SA	**Variant:**	DTS
Antenna Gain (dBi):	3.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: , Test Freq: 2405.00 MHz, Antenna: meter ant, Duty Cycle (%): 100

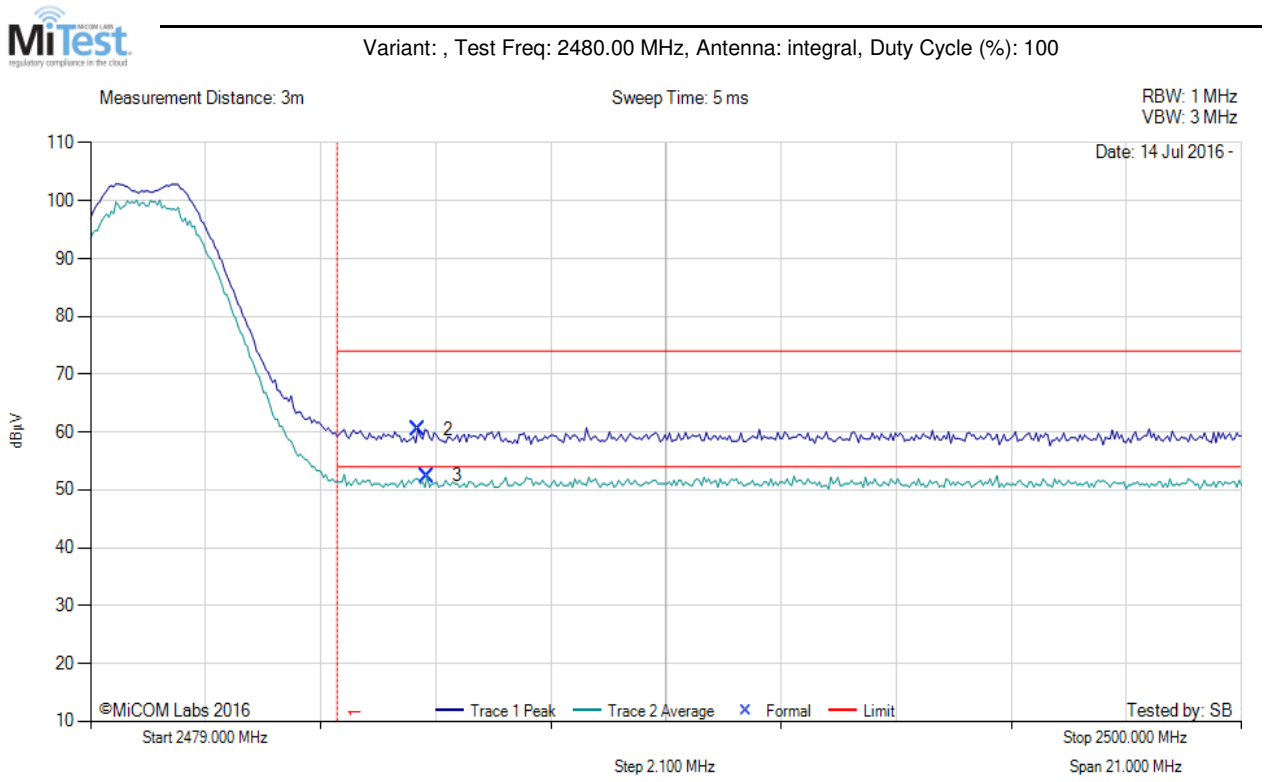


Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2378.90	7.31	2.69	31.95	41.95	Max Avg	Vertical	156	294	54.0	-12.1	Pass
2	2389.36	18.98	2.68	32.04	53.70	Max Peak	Vertical	156	294	74.0	-20.3	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

Equipment Configuration for 2483.5 MHz Radiated Band-Edge Emissions			
Antenna:	integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results



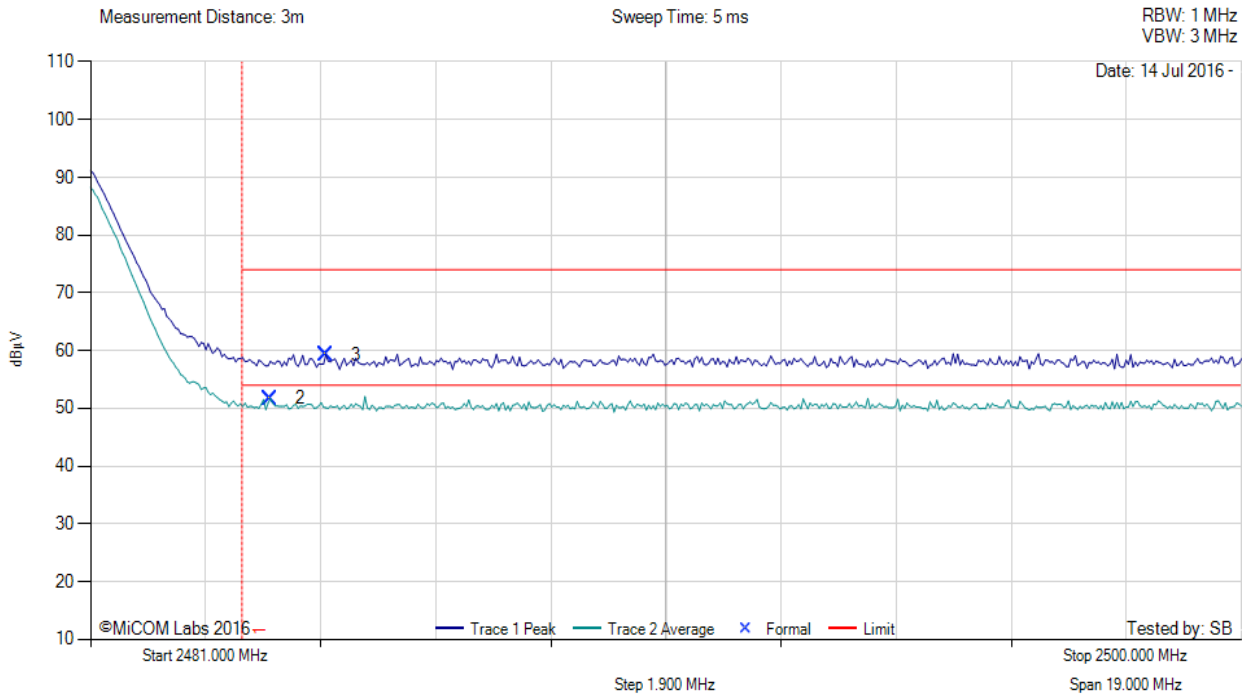
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2	2484.97	25.43	2.73	32.37	60.53	Max Peak	Horizontal	152	111	74.0	-13.5	Pass
3	2485.14	17.32	2.73	32.37	52.42	Max Avg	Horizontal	152	111	54.0	-1.6	Pass
1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

Equipment Configuration for 2483.5 MHz Radiated Band-Edge Emissions			
Antenna:	WPANT30017-CA	**Variant:**	DTS
Antenna Gain (dBi):	4.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: , Test Freq: 2480.00 MHz, Antenna: WP ANT, Duty Cycle (%): 100



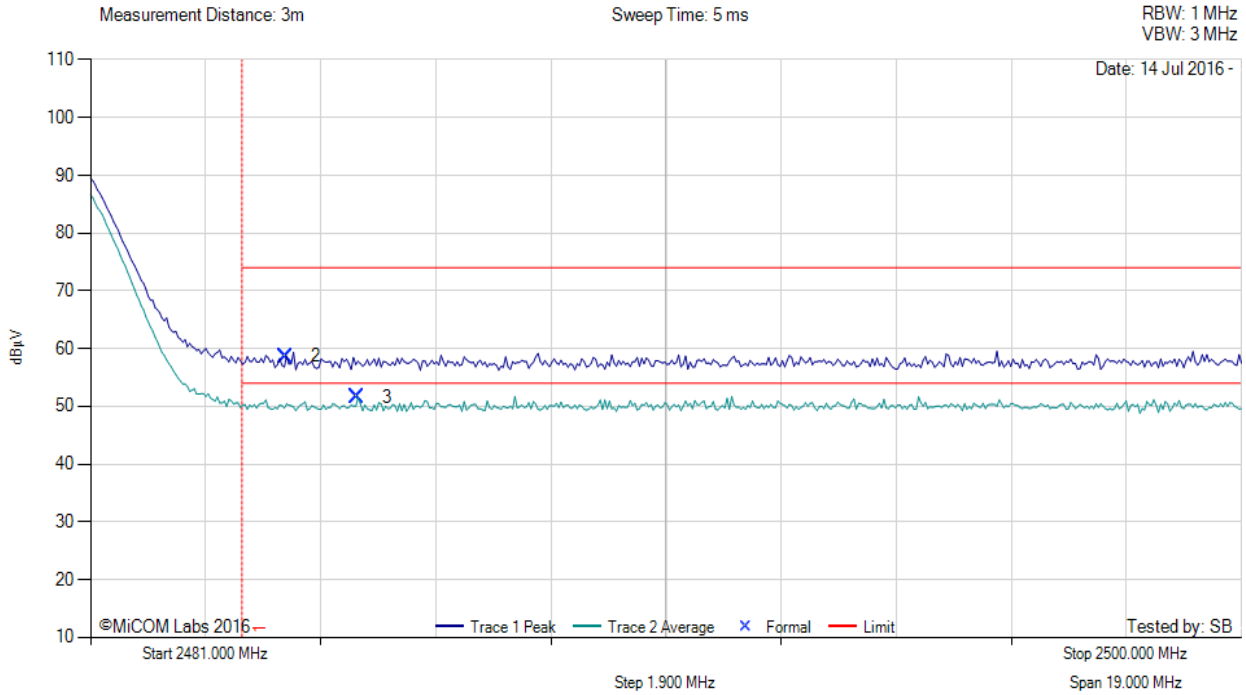
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2	2483.96	16.61	2.73	32.37	51.71	Max Avg	Vertical	162	149	54.0	-2.3	Pass
3	2484.89	24.15	2.73	32.37	59.25	Max Peak	Vertical	162	149	--	-14.8	Pass
1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

Equipment Configuration for 2483.5 MHz Radiated Band-Edge Emissions			
Antenna:	WPANT40020-SA	**Variant:**	DTS
Antenna Gain (dBi):	3.5	**Modulation:**	DSSS
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	N/A
		Tested By:	SB

Test Measurement Results

Variant: , Test Freq: 2480.00 MHz, Antenna: Meter Ant, Duty Cycle (%): 100



Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2	2484.22	23.60	2.73	32.37	58.70	Max Peak	Vertical	156	272	74.0	-15.3	Pass
3	2485.40	16.44	2.73	32.37	51.54	Max Avg	Vertical	156	272	54.0	-2.5	Pass
1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Back to Matrix

2.1.3. Digital Emissions (0.03 - 1 GHz)

FCC, Part 15 Subpart C §15.205/ §15.209
Industry Canada RSS-Gen §8.9

Test Procedure

Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. The anechoic chamber test set-up is identified in Section 6 Test Set-Up Photographs.

The EUT had two methods of powering on ac/dc converter and Power over Ethernet (POE). Both modes were tested for emissions below 1GHz.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. In this test facility, the Antenna Factor, Cable Loss, and Amplifier Gains are loaded into the Rohde & Schwarz Receiver and the corrected field strength can be read directly on the receiver.

$$FS = R + AF + CORR$$

where:

FS = Field Strength
R = Measured Receiver Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain

For example:
Given a Receiver input reading of 51.5dBμV; Antenna Factor of 8.5dB; Cable Loss of 1.3dB; Falloff Factor of 0dB, an Amplifier Gain of 26dB and Notch Filter Loss of 1dB. The Field Strength of the measured emission is:

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 dB\mu V/m$$

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

$$Level\ (dB\mu V/m) = 20 * Log\ (level\ (\mu V/m))$$

40 dBμV/m = 100μV/m
48 dBμV/m = 250μV/m

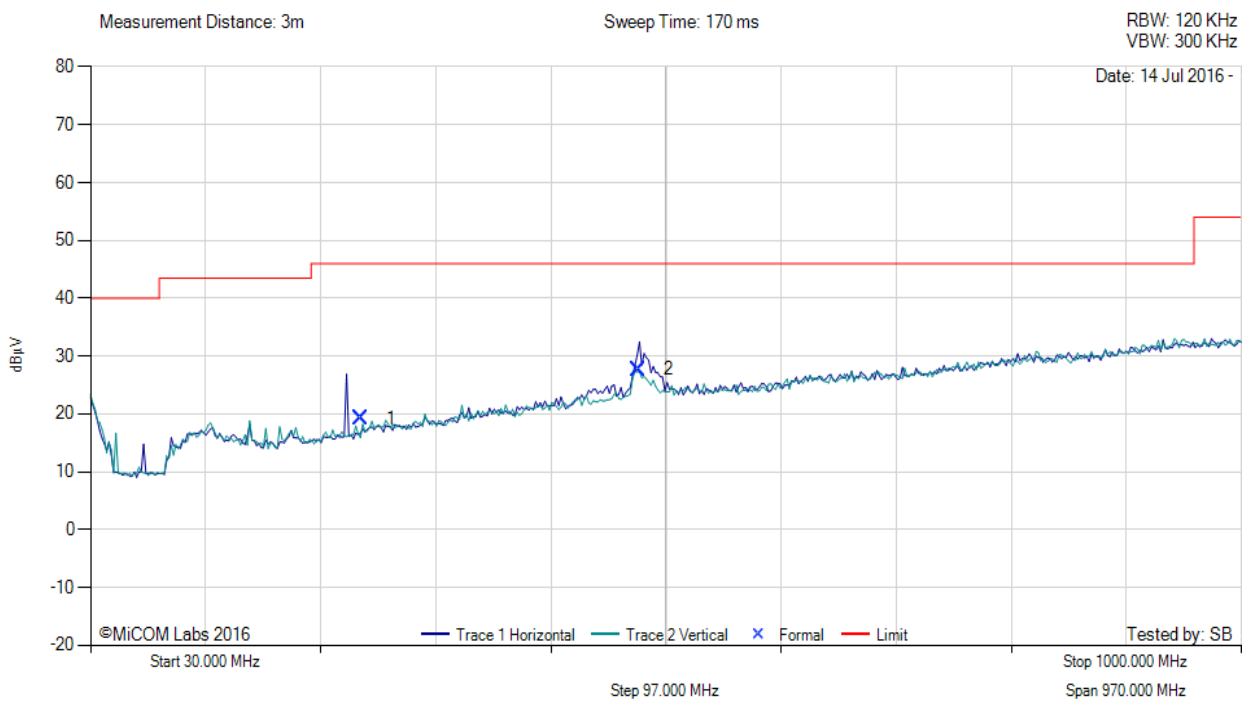
Measurement Results: Radiated Emissions; 0.03 – 1 GHz

Equipment Configuration for Radiated Digital Emissions (0.03 - 1 GHz) Class B

Antenna:	Integral	**Variant:**	DTS
Antenna Gain (dBi):	5.0	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	Not Applicable	**Data Rate:**	250 Kbps
		Tested By:	SB

Test Measurement Results

Variant: DTS, Antenna: Integral,



Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	257.82	33.21	4.56	-18.63	19.14	Peak (Scan)	Horizontal	100	101	46.0	-26.9	Pass
2	491.25	35.26	5.32	-12.89	27.69	Peak (NRB)	Horizontal	100	66	--	--	Pass

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