Company: Silver Spring Networks

Test of: MicroAP 5

To: FCC CFR 47 Part 15.247 (DTS) &
IC RSS-247 (2400 – 2483.5 MHz)

Report No.: SSNT135–U3_Radiated Rev A

RADIATED TEST REPORT

Master Document Number	Addendum Reports
SSNT135-U3_Master	SSNT135-U3_Conducted
	SSNT135-U3_Radiated

This report is only valid in conjunction with the reports listed in the above table. Together these reports address the requirements for the type of device operating under the standard as listed.

RADIATED TEST REPORT

FROM

MiCOM Labs
opening wireless markets

Test of: Silver Spring Networks MicroAP 5

To: FCC CFR 47 Part 15.247 (DTS) &
IC RSS-247 (2400 – 2483.5 MHz)

Test Report Serial No.: SSNT135 –U3_Radiated Rev A

Applicant: Silver Spring Networks
230 W Tasman Drive
San Jose,
California 95134
USA

Plug in Radio Device

Issue Date: 1st February 2017

This Test Report is Issued Under the Authority of:

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TESTING CERT #2381.01

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1. TEST RESULTS

Note: There are 8 different antenna models available for use with this equipment. The 3 antenna models tested are the highest gain of each antenna type representing the worst case in terms of emissions. Radiated Emissions testing was performed with the radio operating in the mode that exhibits the worst case emissions.

1.1. Emissions

1.1.1. 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).

1.1.1.1. TX Spurious & Restricted Band Emissions (1 – 18 GHz)

Equipment Configuration for TX Spurious & Restricted Band Emissions			
Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2183.98	59.75	2.64	-12.56	49.83	Peak (NRB)	Horizontal	151	1	--	--	Pass
#2	2218.14	61.38	2.62	-12.41	51.59	Max Peak	Horizontal	152	344	74.0	-22.4	Pass
#3	2218.14	47.20	2.62	-12.41	37.41	Max Avg	Horizontal	152	344	54.0	-16.6	Pass
#4	2404.49	55.52	2.69	-11.82	46.39	Fundamental	Horizontal	151	1	--	--	Pass
#5	7216.43	50.73	4.30	-7.35	47.68	Peak (NRB)	Vertical	151	171	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2154.16	60.42	2.59	-12.51	50.50	Peak (NRB)	Horizontal	151	1	--	--	Pass
#2	2248.49	60.86	2.63	-12.12	51.37	Max Peak	Horizontal	122	352	74.0	-22.6	Pass
#3	2248.49	47.71	2.63	-12.12	38.22	Max Avg	Horizontal	122	352	54.0	-15.8	Pass
#4	2439.56	64.22	2.72	-11.72	55.22	Fundamental	Horizontal	151	1	--	--	Pass
#5	7318.49	56.74	4.25	-7.27	53.72	Max Peak	Vertical	181	151	74.0	-20.3	Pass
#6	7318.49	45.11	4.25	-7.27	42.09	Max Avg	Vertical	181	151	54.0	-11.9	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2193.97	59.30	2.59	-12.58	49.31	Peak (NRB)	Horizontal	150	85	--	--	Pass
#2	2479.50	55.04	2.72	-11.65	46.11	Fundamental	Horizontal	150	85	--	--	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2404.43	53.57	2.69	-11.82	44.44	Fundamental	Vertical	151	282	--	--	Pass
#2	7213.52	54.63	4.29	-7.35	51.57	Peak (NRB)	Vertical	151	26	--	--	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2439.48	60.59	2.72	-11.72	51.59	Fundamental	Vertical	142	36	--	--	Pass
#2	7318.56	59.06	4.26	-7.27	56.05	Max Peak	Vertical	149	82	74.0	-18.0	Pass
#3	7318.56	48.54	4.26	-7.27	45.53	Max Avg	Vertical	149	82	54.0	-8.5	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2480.10	51.18	2.72	-11.65	42.25	Fundamental	Vertical	154	360	--	--	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions			
Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2405.53	48.07	2.69	-11.82	38.94	Fundamental	Horizontal	200	0	--	--	Pass
#2	7216.47	48.84	4.30	-7.35	45.79	Peak (NRB)	Vertical	151	119	--	--	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2439.53	60.33	2.72	-11.72	51.33	Fundamental	Horizontal	101	35	--	--	Pass
#2	4879.01	57.97	3.58	-11.25	50.30	Max Peak	Vertical	139	160	74.0	-23.7	Pass
#3	4879.01	47.65	3.58	-11.25	39.98	Max Avg	Vertical	139	160	54.0	-14.0	Pass
#4	7318.37	56.48	4.25	-7.27	53.46	Max Peak	Vertical	158	186	74.0	-20.5	Pass
#5	7318.37	45.07	4.25	-7.27	42.05	Max Avg	Vertical	158	186	54.0	-12.0	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
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	2193.89	58.84	2.59	-12.58	48.85	Peak (NRB)	Horizontal	100	41	--	--	Pass
#2	2479.47	53.76	2.72	-11.65	44.83	Fundamental	Horizontal	151	41	--	--	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

1.1.1.2. TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Equipment Configuration for TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)			
Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.04	52.73	3.87	-21.84	34.76	QP (NRB)	Vertical	101	29	43.0	-8.2	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.16	54.46	3.87	-21.84	36.49	QP (NRB)	Vertical	100	359	43.0	-6.5	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

Equipment Configuration for TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.10	51.04	3.87	-21.84	33.07	QP (NRB)	Vertical	100	23	43.0	-9.9	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

Note: The OQPSK modulation tested represents the worst case for emissions. Radiated emission testing was also performed on OFDM modulation for comparison. These results are maintained on file by the lab.

1.1.1.3. Restricted Edge & Band-Edge Emissions

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions (Restricted Bands)			
Standard:	FCC CFR 47:15.247	**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		

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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).

Lower Band Edge results

Tai Sheng Chen 155-0010-00		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2401.20	2390.00	63.52	49.68	20
250 kbps OQPSK	2405.00	2390.00	60.55	46.16	15

WP WPANT30017-CA		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2401.20	2390.00	61.51	48.44	20
250 kbps OQPSK	2405.00	2390.00	61.38	48.34	15

WP WPANT40010-C		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2401.20	2390.00	62.46	49.08	20
250 kbps OQPSK	2405.00	2390.00	62.08	47.74	15

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	5.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2401.20	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2386.86	28.82	2.68	32.02	63.52	Max Peak	Vertical	201	34	74.0	-10.5	Pass
#2	2390.00	14.95	2.69	32.04	49.68	Max Avg	Vertical	201	34	54.0	-4.3	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2379.13	25.91	2.69	31.95	60.55	Max Peak	Vertical	201	34	74.0	-13.5	Pass
#2	2390.00	11.43	2.69	32.04	46.16	Max Avg	Vertical	201	34	54.0	-7.8	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	4.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2401.20	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2381.47	26.86	2.69	31.96	61.51	Max Peak	Vertical	177	39	74.0	-12.5	Pass
#2	2390.00	13.71	2.69	32.04	48.44	Max Avg	Vertical	177	39	54.0	-5.6	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2378.91	13.70	2.69	31.95	48.34	Max Avg	Vertical	168	207	54.0	-5.7	Pass
#2	2383.39	26.72	2.68	31.98	61.38	Max Peak	Vertical	168	207	74.0	-12.6	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	WP WPANT40010-C	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	3.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2401.20	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2366.56	27.91	2.71	31.84	62.46	Max Peak	Horizontal	168	57	74.0	-11.5	Pass
#2	2390.00	14.35	2.69	32.04	49.08	Max Avg	Horizontal	168	57	54.0	-4.9	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2405.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

2310.00 - 2422.00 MHz												
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	2367.91	27.52	2.71	31.85	62.08	Max Peak	Horizontal	168	22	74.0	-11.9	Pass
#2	2390.00	13.01	2.69	32.04	47.74	Max Avg	Horizontal	168	22	54.0	-6.3	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Upper Band Edge results

Tai Sheng Chen 155-0010-00		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2476.80	2483.50	63.57	50.07	20
250 kbps OQPSK	2480.00	2483.50	63.19	50.62	15

WP WPANT30017-CA		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2476.80	2483.50	65.63	50.62	20
250 kbps OQPSK	2480.00	2483.50	61.55	47.37	15

WP WPANT40010-C		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
2.4 Mbps	2476.80	2483.50	64.27	50.06	20
250 kbps OQPSK	2480.00	2483.50	61.50	48.82	15

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions			
Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	5.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2476.80	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2452.00 - 2524.00 MHz												
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	2484.46	28.47	2.73	32.37	63.57	Max Peak	Vertical	200	74	74.0	-10.4	Pass
#3	2486.20	14.97	2.73	32.37	50.07	Max Avg	Vertical	200	74	54.0	-3.9	Pass
#1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	JMH

Test Measurement Results

2472.00 - 2500.00 MHz												
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	2483.50	15.52	2.73	32.37	50.62	Max Avg	Vertical	143	55	54.0	-3.4	Pass
#2	2483.50	28.09	2.73	32.37	63.19	Max Peak	Vertical	143	55	74.0	-10.8	Pass
#3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	4.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2476.80	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2452.00 - 2524.00 MHz												
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	2483.50	15.52	2.73	32.37	50.62	Max Avg	Vertical	168	206	54.0	-3.4	Pass
#3	2485.47	30.53	2.73	32.37	65.63	Max Peak	Vertical	168	206	74.0	-8.4	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

2460.00 - 2524.00 MHz												
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	2484.02	12.27	2.73	32.37	47.37	Max Avg	Vertical	168	206	54.0	-6.6	Pass
#3	2512.12	26.40	2.73	32.42	61.55	Max Peak	Vertical	168	206	74.0	-12.5	Pass
#1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	WP WPANT40010-C	**Variant:**	2.4 Mbps
Antenna Gain (dBi):	3.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2476.80	**Data Rate:**	2.40 MBit/s
Power Setting:	20	**Tested By:**	OC

Test Measurement Results

2452.00 - 2524.00 MHz												
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	2483.50	14.96	2.73	32.37	50.06	Max Avg	Vertical	201	352	54.0	-3.9	Pass
#2	2483.50	29.17	2.73	32.37	64.27	Max Peak	Vertical	201	352	74.0	-9.7	Pass
#3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2480.00	**Data Rate:**	250.00 KBit/s
Power Setting:	15	**Tested By:**	OC

Test Measurement Results

2452.00 - 2524.00 MHz												
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	2483.50	13.72	2.73	32.37	48.82	Max Avg	Horizontal	170	258	54.0	-5.2	Pass
#2	2483.50	26.40	2.73	32.37	61.50	Max Peak	Horizontal	170	258	74.0	-12.5	Pass
#3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

1.1.2. Digital Emissions (0.03 - 1 GHz)

Radiated Test Conditions for Radiated Digital Emissions (0.03 – 1 GHz)			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Digital Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Digital Emissions (0.03 – 1 GHz)
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.

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

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 51.5dBmV; 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 = 36.3dBmV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are done as:

Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100mV/m
48 dBmV/m = 250mV/m

Limits for Radiated Digital Emissions (0.03 – 1 GHz)

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength		Measurement Distance (m)
	µV/m (microvolts/meter)	dBµV/m (dB microvolts/meter)	

0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F(kHz)	--	30
1.705-30.0	30	29.5	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46.0	3
Above 960	500	54.0	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241. (b) In the emission table above, the tighter limit applies at the band edges. (c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. (e) The provisions in §§15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part. (f) In accordance with §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device. (g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

Equipment Configuration for Digital Emissions (0.03 - 1 GHz)			
Antenna:	Tai Sheng Chen 155-0010-00	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	5.00	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	Not Applicable	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.04	52.73	3.87	-21.84	34.76	MaxQP	Vertical	101	29	43.0	-8.2	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

Note: The antenna model operating at the data rate listed above, was the worst case in terms of TX spurious emissions. Therefore, the above mode was selected for further digital emissions test.

Equipment Configuration for Digital Emissions (0.03 - 1 GHz)			
Antenna:	WP WPANT30017-CA	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	4.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	Not Applicable	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.16	54.46	3.87	-21.84	36.49	MaxQP	Vertical	100	359	43.0	-6.5	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

Note: The antenna model operating at the data rate listed above, was the worst case in terms of TX spurious emissions. Therefore, the above mode was selected for further digital emissions test.

Equipment Configuration for Digital Emissions (0.03 - 1 GHz)			
Antenna:	WP WPANT40010-C	**Variant:**	250 kbps OQPSK
Antenna Gain (dBi):	3.50	**Modulation:**	OQPSK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	100
Channel Frequency (MHz):	2440.00	**Data Rate:**	250.00 KBit/s
Power Setting:	Not Applicable	**Tested By:**	OC

Test Measurement Results

30.00 - 1000.00 MHz												
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	98.10	51.04	3.87	-21.84	33.07	MaxQP	Vertical	100	23	43.0	-9.9	Pass
Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.												

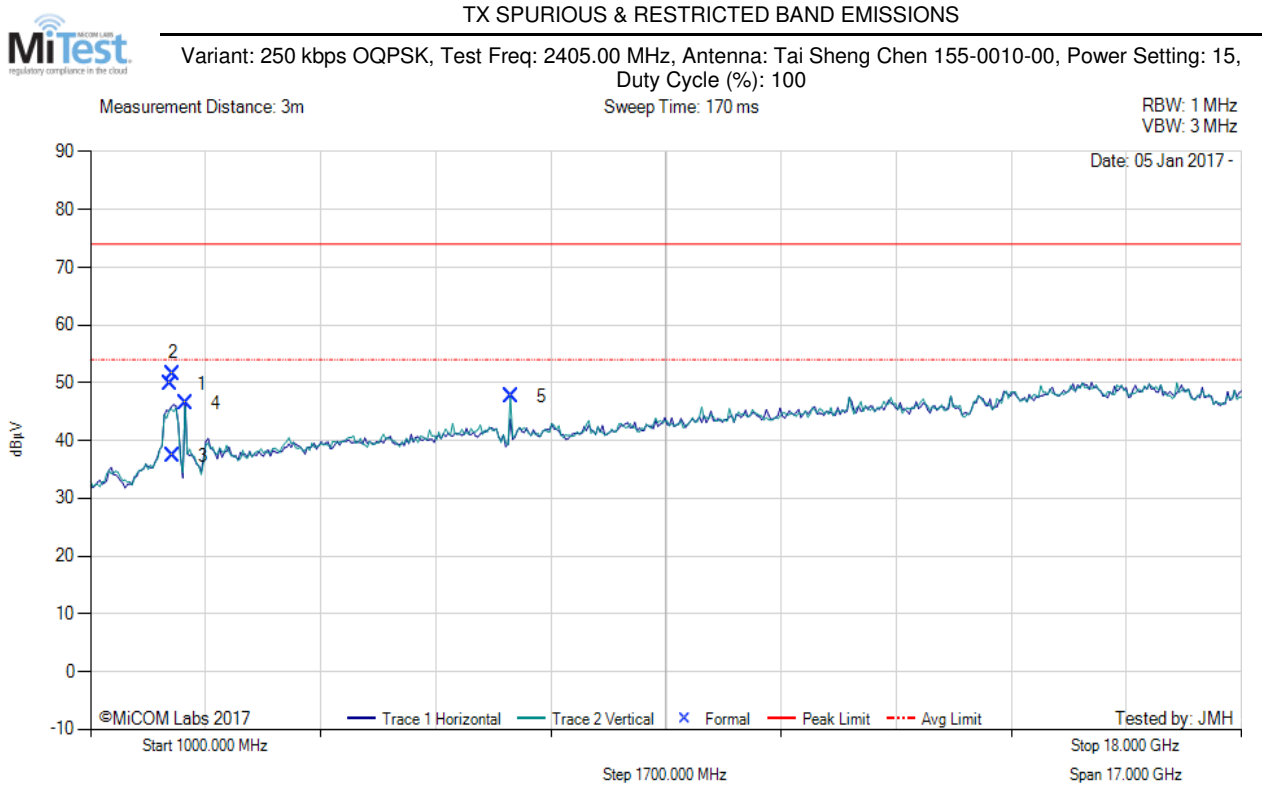
Note: The antenna model operating at the data rate listed above, was the worst case in terms of TX spurious emissions. Therefore, the above mode was selected for further digital emissions test.

A. APPENDIX - GRAPHICAL IMAGES

A.1. Emissions

A.1.1. Radiated Emissions

A.1.1.1. TX Spurious & Restricted Band Emissions



1000.00 - 18000.00 MHz												
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	2183.98	59.75	2.64	-12.56	49.83	Peak (NRB)	Horizontal	151	1	--	--	Pass
2	2218.14	61.38	2.62	-12.41	51.59	Max Peak	Horizontal	152	344	74.0	-22.4	Pass
3	2218.14	47.20	2.62	-12.41	37.41	Max Avg	Horizontal	152	344	54.0	-16.6	Pass
4	2404.49	55.52	2.69	-11.82	46.39	Fundamental	Horizontal	151	1	--	--	Pass
5	7216.43	50.73	4.30	-7.35	47.68	Peak (NRB)	Vertical	151	171	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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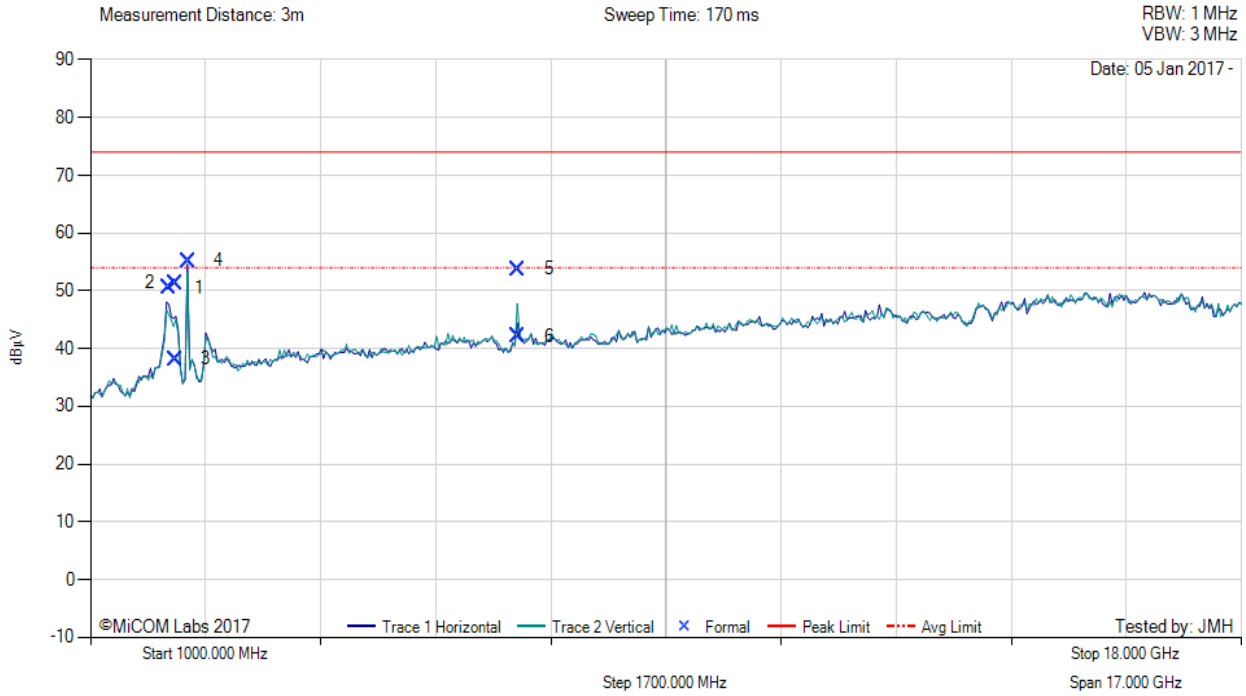
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 15, Duty Cycle (%): 100



1000.00 - 18000.00 MHz												
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	2154.16	60.42	2.59	-12.51	50.50	Peak (NRB)	Horizontal	151	1	--	--	Pass
2	2248.49	60.86	2.63	-12.12	51.37	Max Peak	Horizontal	122	352	74.0	-22.6	Pass
3	2248.49	47.71	2.63	-12.12	38.22	Max Avg	Horizontal	122	352	54.0	-15.8	Pass
4	2439.56	64.22	2.72	-11.72	55.22	Fundamental	Horizontal	151	1	--	--	Pass
5	7318.49	56.74	4.25	-7.27	53.72	Max Peak	Vertical	181	151	74.0	-20.3	Pass
6	7318.49	45.11	4.25	-7.27	42.09	Max Avg	Vertical	181	151	54.0	-11.9	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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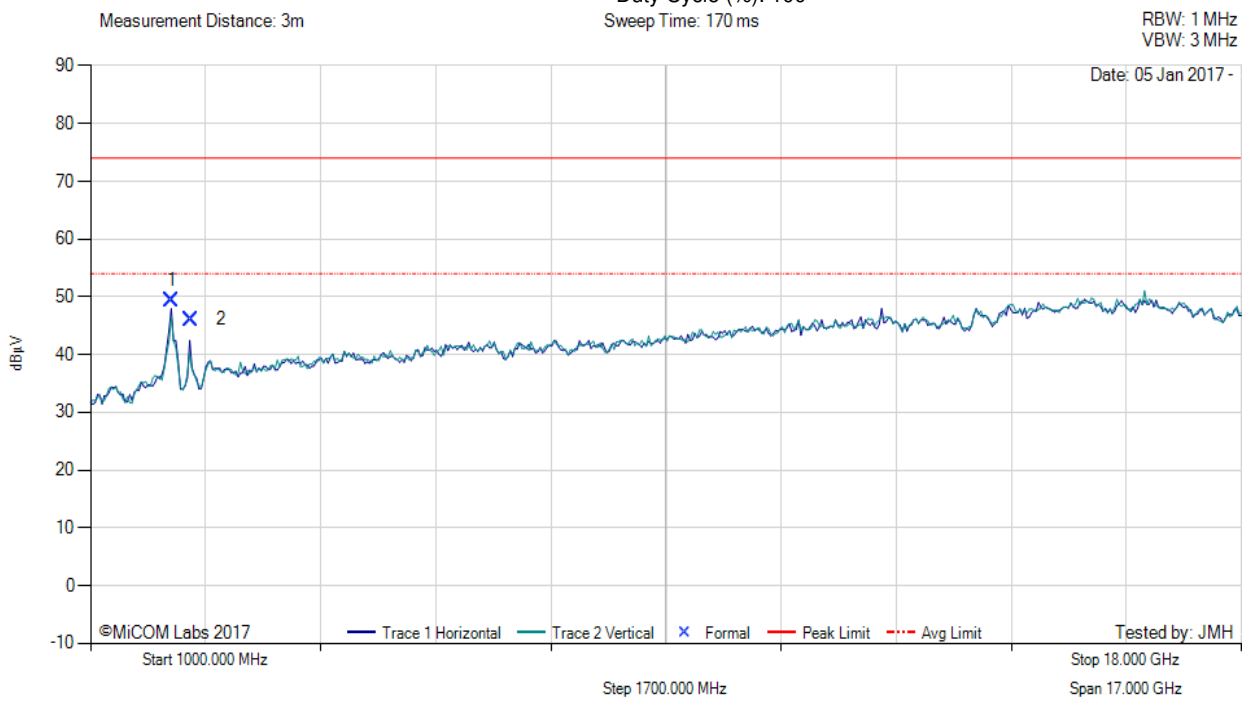
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 15, Duty Cycle (%): 100



1000.00 - 18000.00 MHz												
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	2193.97	59.30	2.59	-12.58	49.31	Peak (NRB)	Horizontal	150	85	--	--	Pass
2	2479.50	55.04	2.72	-11.65	46.11	Fundamental	Horizontal	150	85	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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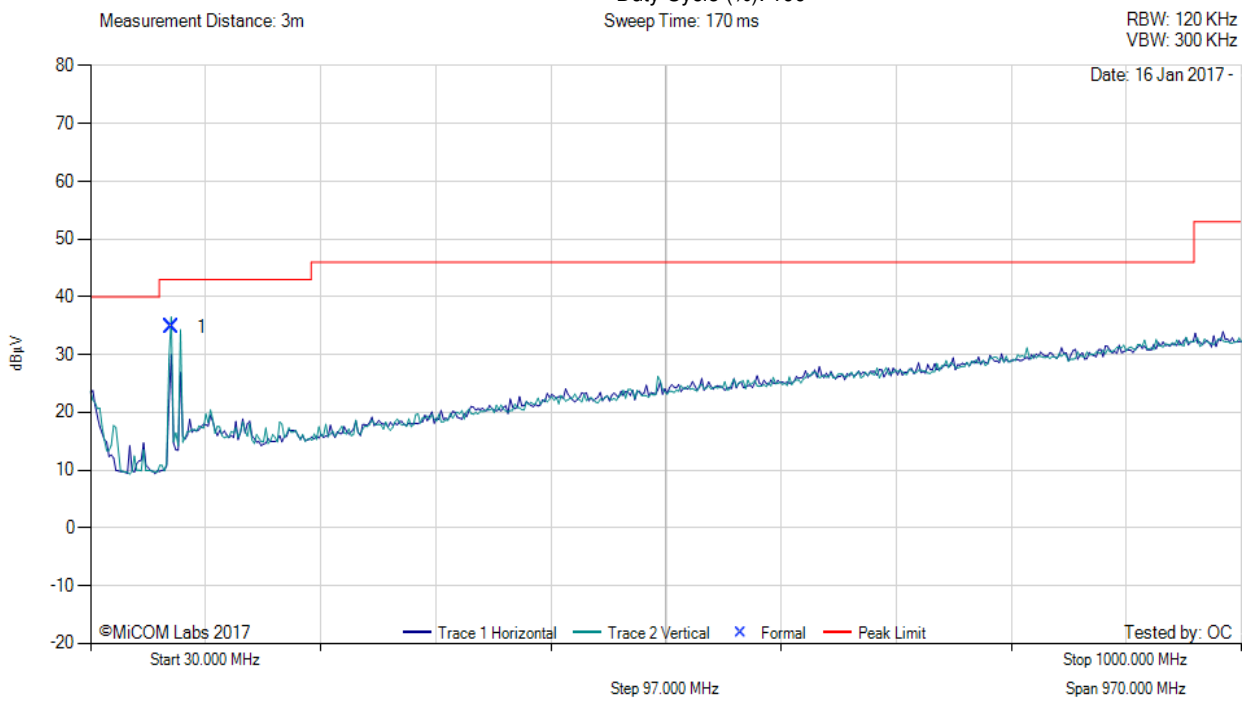
TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 15, Duty Cycle (%): 100



30.00 - 1000.00 MHz												
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	98.04	52.73	3.87	-21.84	34.76	QP (NRB)	Vertical	101	29	43.0	-8.2	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

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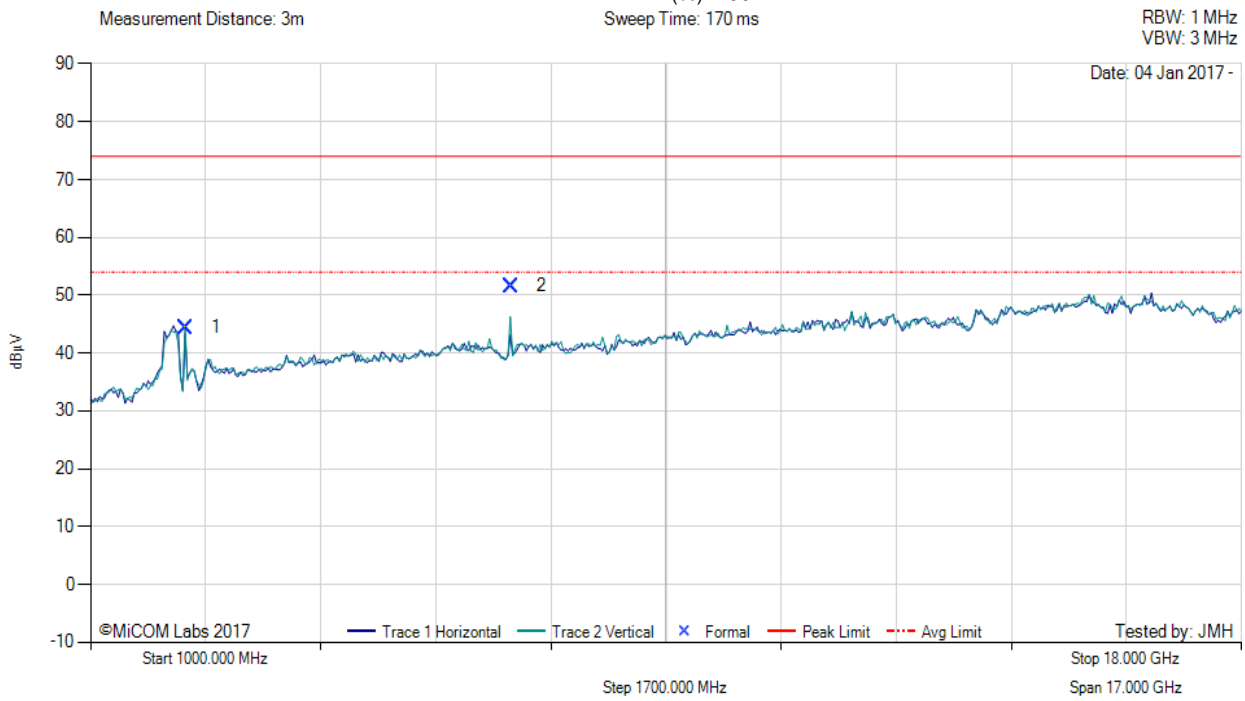
TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2405.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



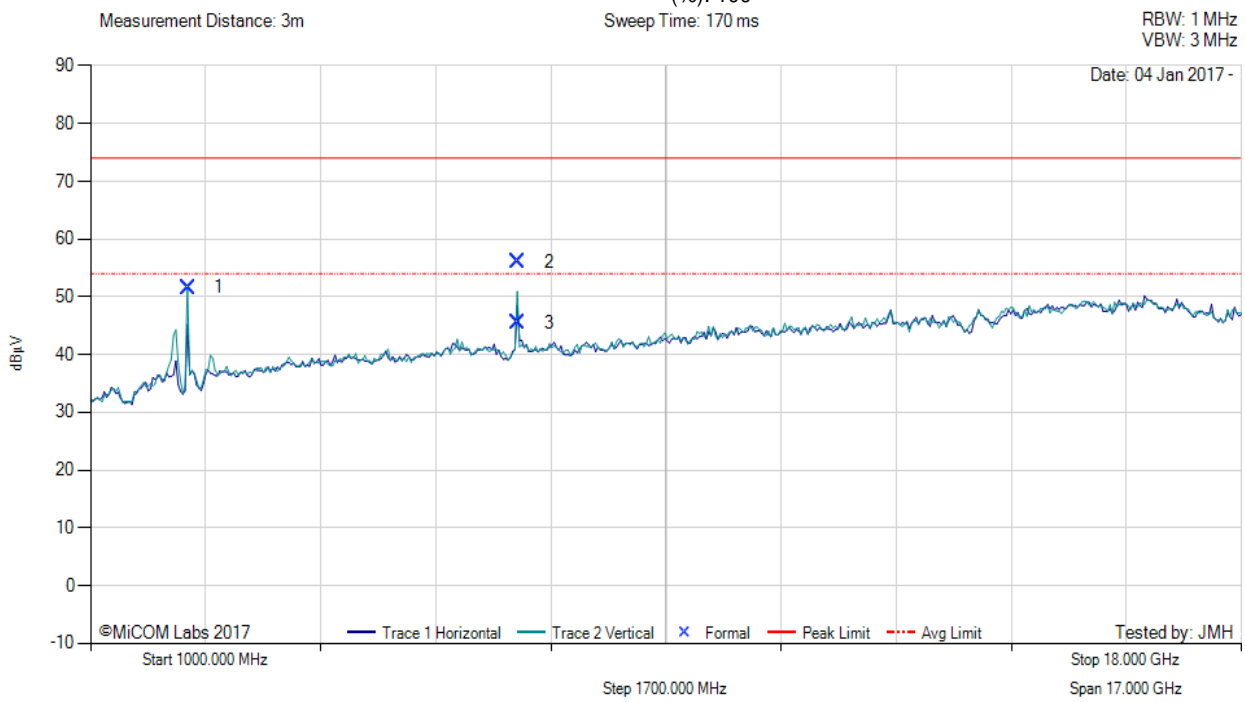
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2404.43	53.57	2.69	-11.82	44.44	Fundamental	Vertical	151	282	--	--	Pass
2	7213.52	54.63	4.29	-7.35	51.57	Peak (NRB)	Vertical	151	26	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



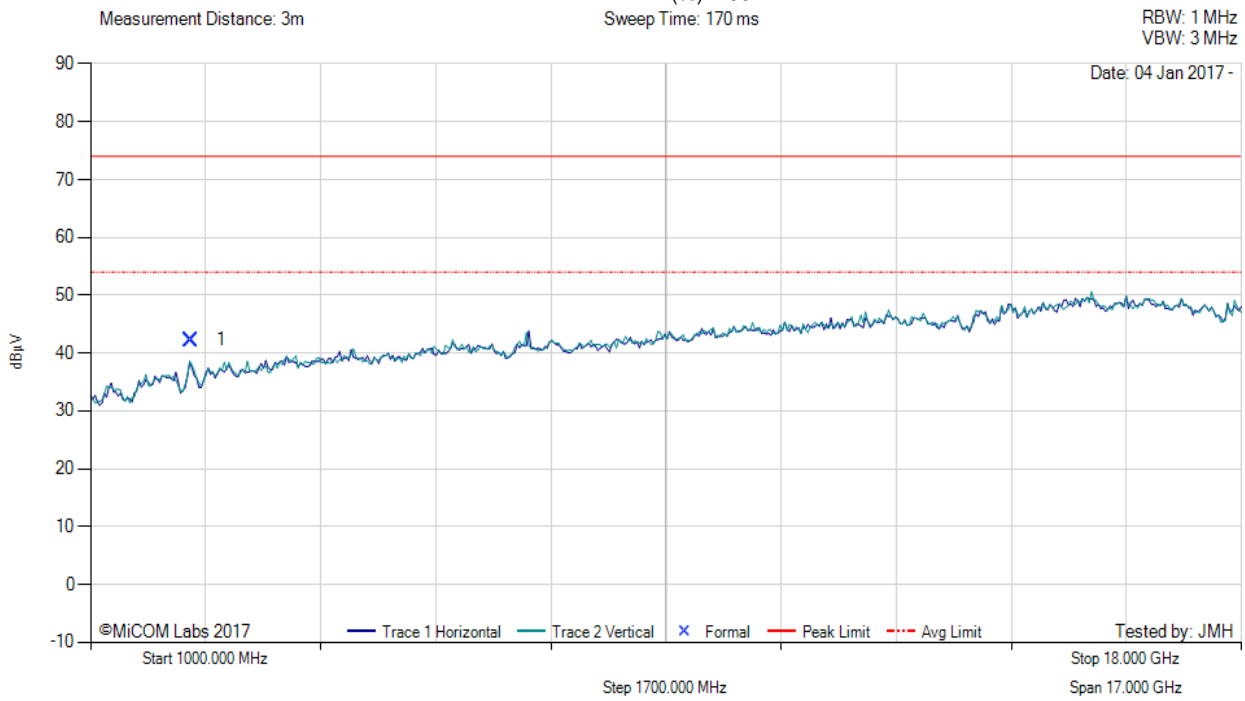
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2439.48	60.59	2.72	-11.72	51.59	Fundamental	Vertical	142	36	--	--	Pass
2	7318.56	59.06	4.26	-7.27	56.05	Max Peak	Vertical	149	82	74.0	-18.0	Pass
3	7318.56	48.54	4.26	-7.27	45.53	Max Avg	Vertical	149	82	54.0	-8.5	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



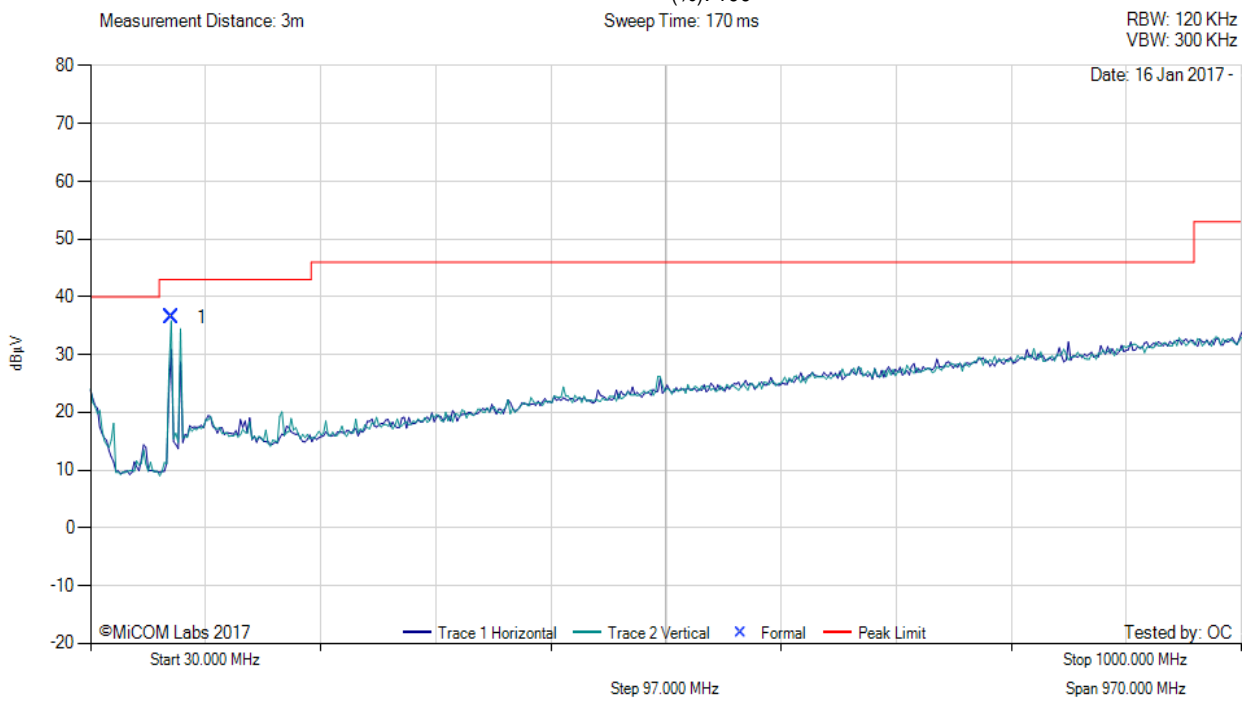
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2480.10	51.18	2.72	-11.65	42.25	Fundamental	Vertical	154	360	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



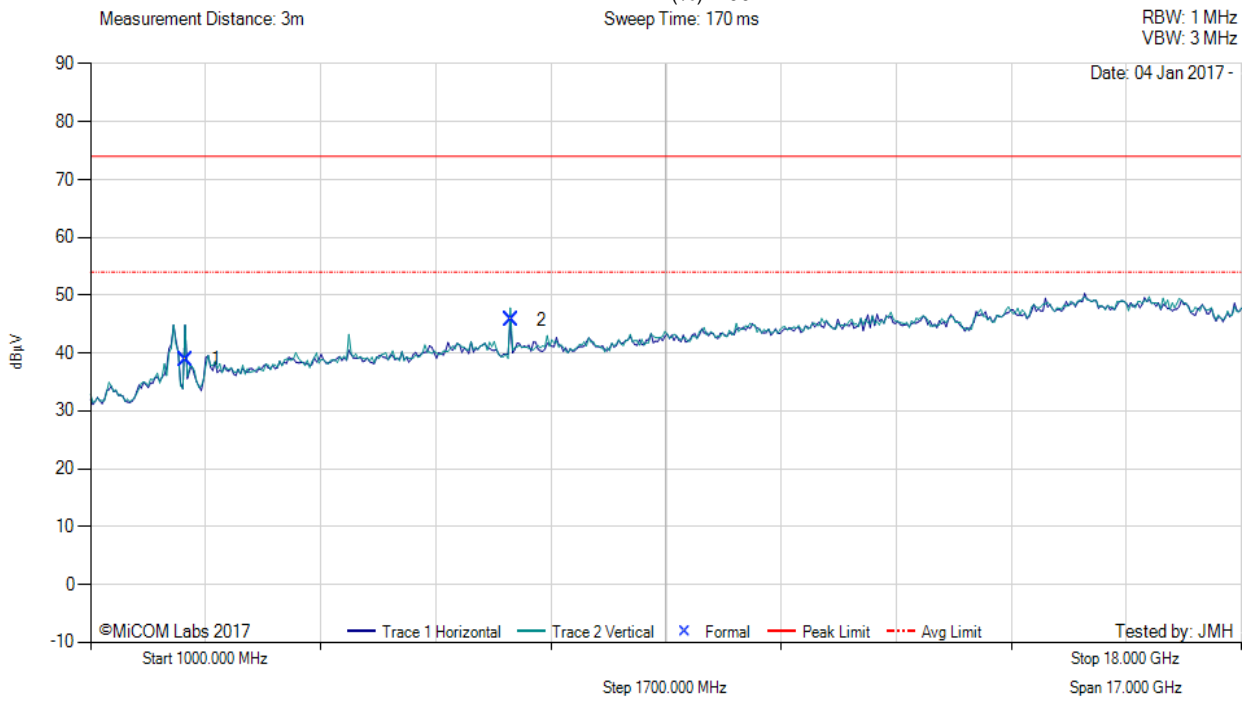
30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	98.16	54.46	3.87	-21.84	36.49	QP (NRB)	Vertical	100	359	43.0	-6.5	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2405.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100



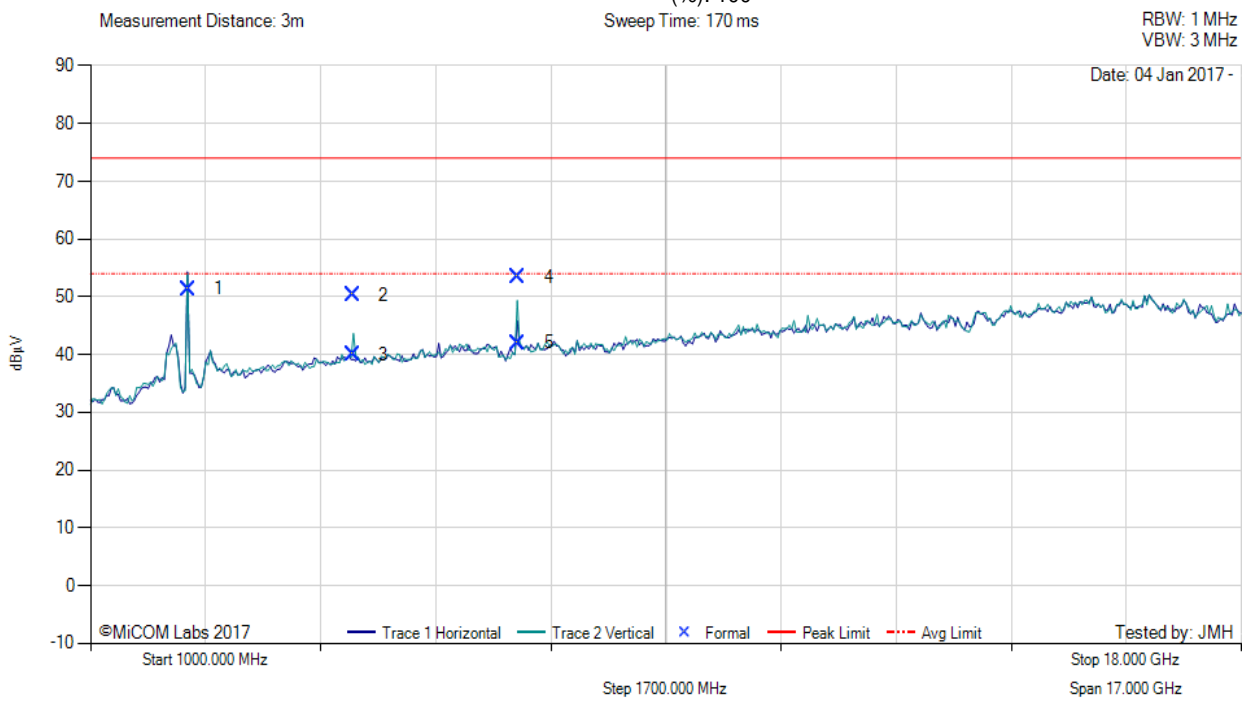
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2405.53	48.07	2.69	-11.82	38.94	Fundamental	Horizontal	200	0	--	--	Pass
2	7216.47	48.84	4.30	-7.35	45.79	Peak (NRB)	Vertical	151	119	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100



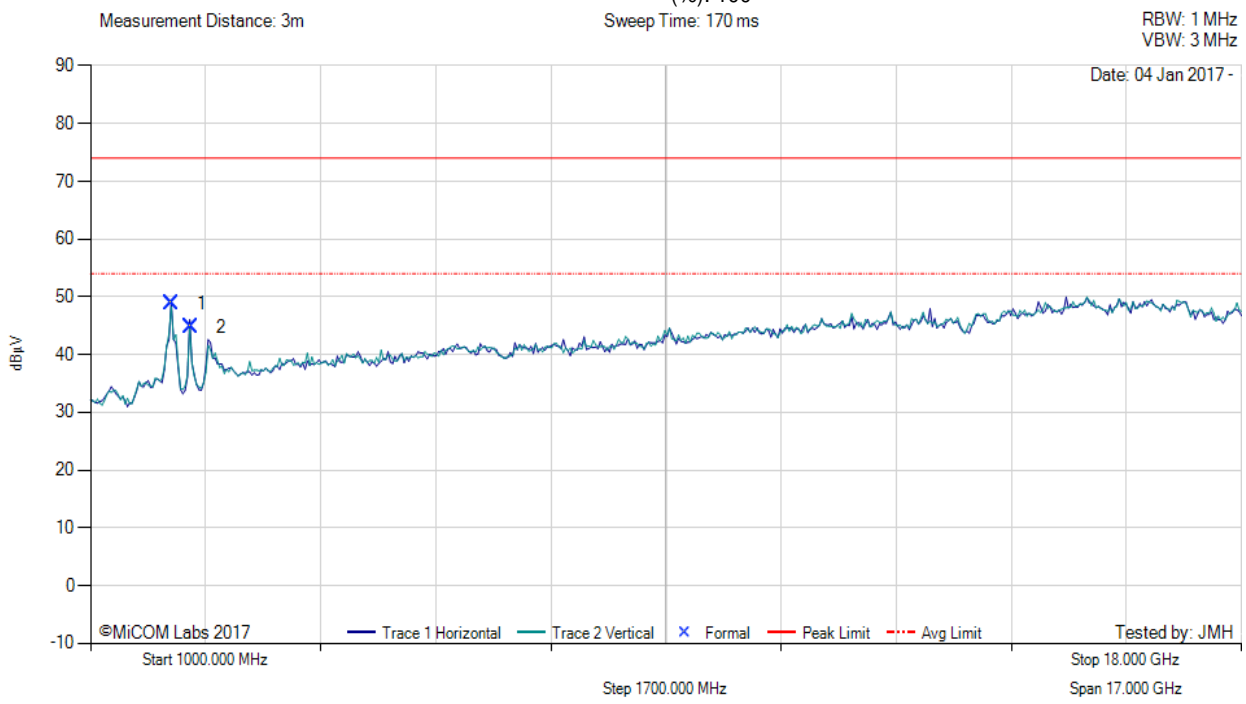
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2439.53	60.33	2.72	-11.72	51.33	Fundamental	Horizontal	101	35	--	--	Pass
2	4879.01	57.97	3.58	-11.25	50.30	Max Peak	Vertical	139	160	74.0	-23.7	Pass
3	4879.01	47.65	3.58	-11.25	39.98	Max Avg	Vertical	139	160	54.0	-14.0	Pass
4	7318.37	56.48	4.25	-7.27	53.46	Max Peak	Vertical	158	186	74.0	-20.5	Pass
5	7318.37	45.07	4.25	-7.27	42.05	Max Avg	Vertical	158	186	54.0	-12.0	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100



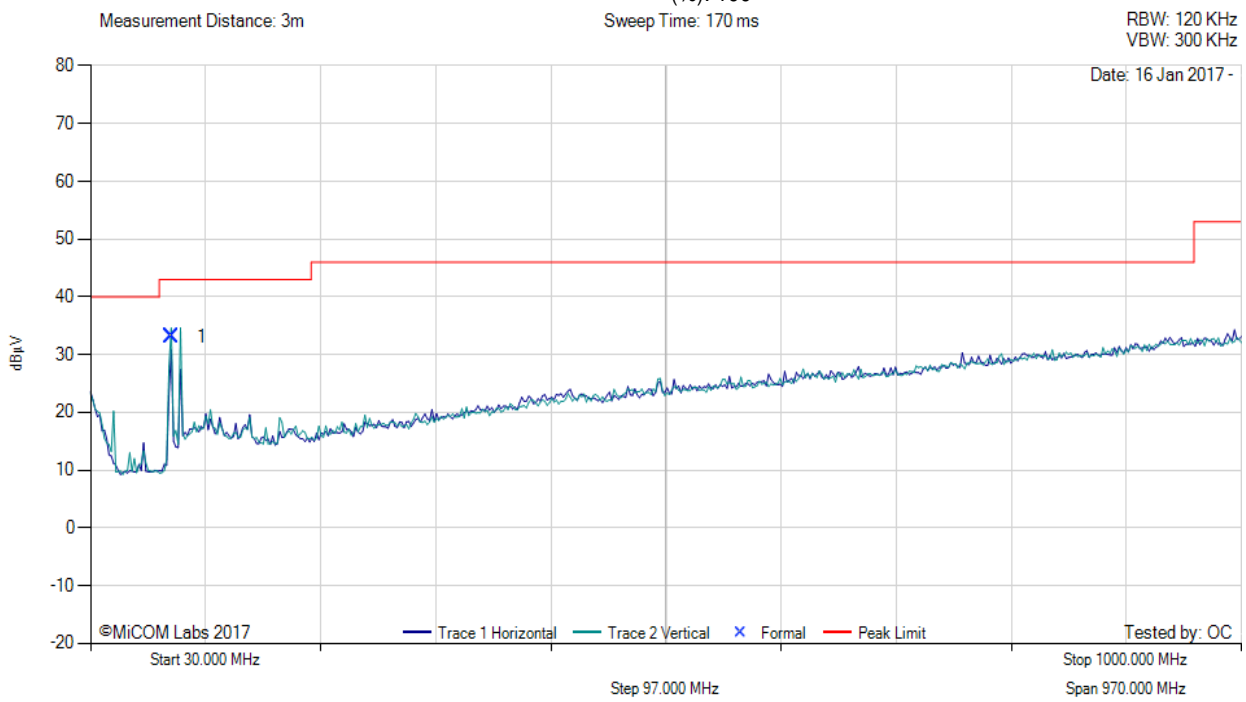
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2193.89	58.84	2.59	-12.58	48.85	Peak (NRB)	Horizontal	100	41	--	--	Pass
2	2479.47	53.76	2.72	-11.65	44.83	Fundamental	Horizontal	151	41	--	--	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

TX Spurious & Restricted Band Emissions (0.03 - 1 GHz)

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100

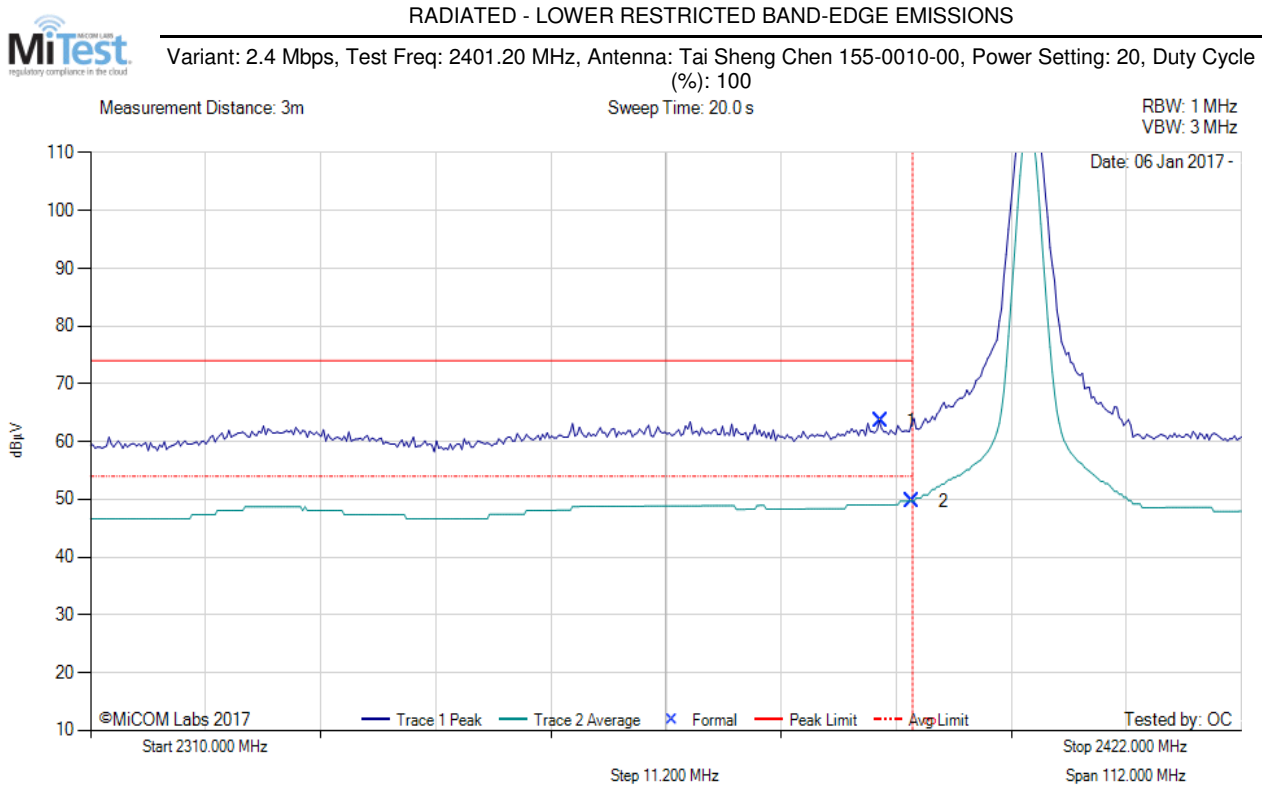


30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	98.10	51.04	3.87	-21.84	33.07	QP (NRB)	Vertical	100	23	43.0	-9.9	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

back to matrix

A.1.1.2. Restricted Edge & Band-Edge Emissions



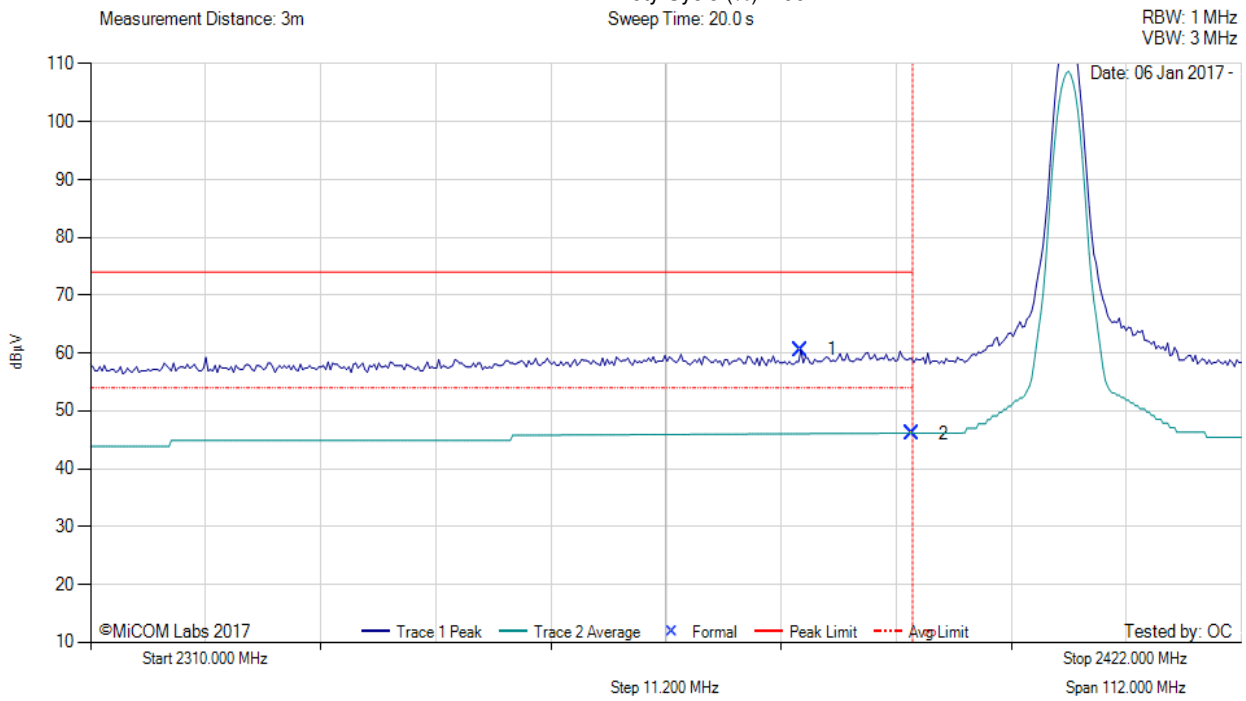
2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2386.86	28.82	2.68	32.02	63.52	Max Peak	Vertical	201	34	74.0	-10.5	Pass
2	2390.00	14.95	2.69	32.04	49.68	Max Avg	Vertical	201	34	54.0	-4.3	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2405.00 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 15, Duty Cycle (%): 100



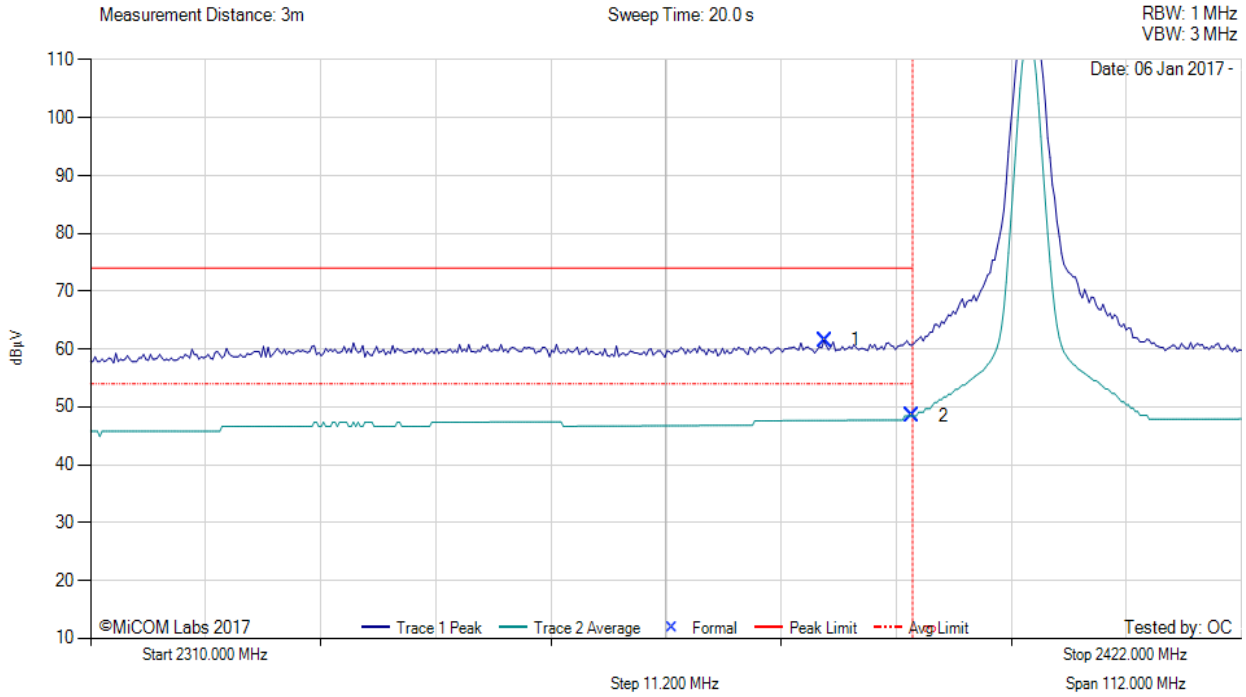
2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2379.13	25.91	2.69	31.95	60.55	Max Peak	Vertical	201	34	74.0	-13.5	Pass
2	2390.00	11.43	2.69	32.04	46.16	Max Avg	Vertical	201	34	54.0	-7.8	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

back to matrix

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 2.4 Mbps, Test Freq: 2401.20 MHz, Antenna: WP WPANT30017-CA, Power Setting: 20, Duty Cycle (%): 100



2310.00 - 2422.00 MHz												
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	2381.47	26.86	2.69	31.96	61.51	Max Peak	Vertical	177	39	74.0	-12.5	Pass
2	2390.00	13.71	2.69	32.04	48.44	Max Avg	Vertical	177	39	54.0	-5.6	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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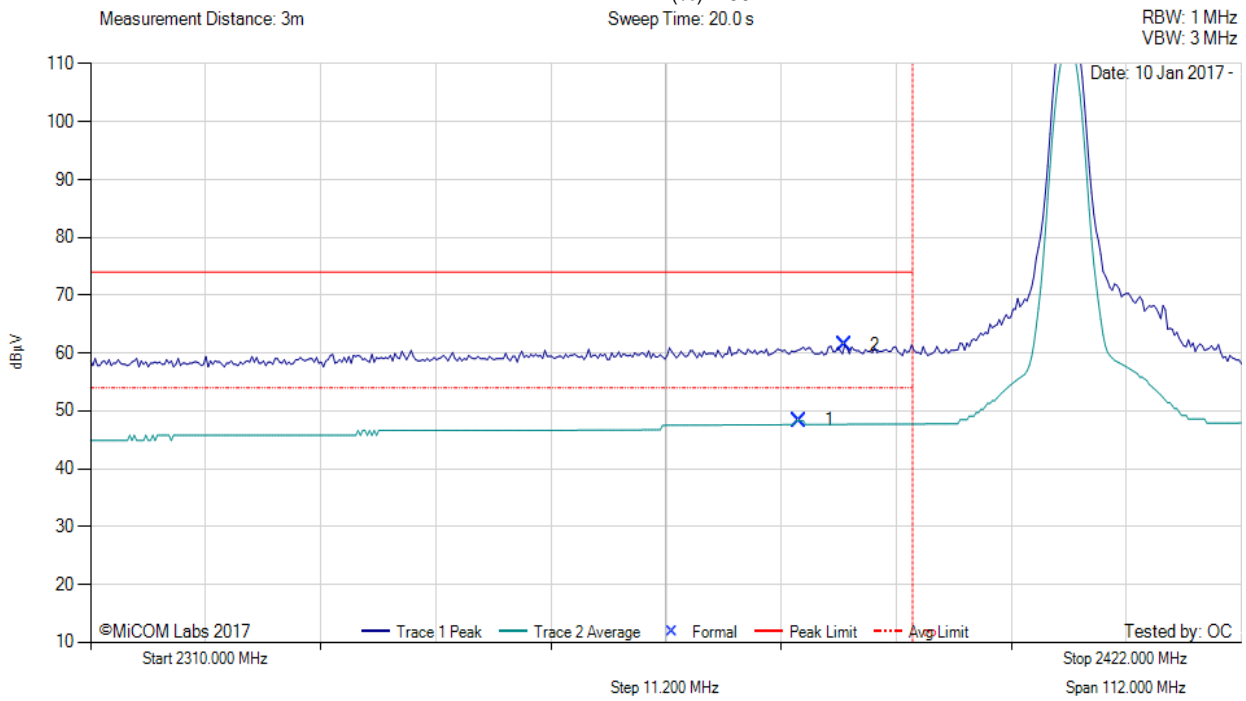
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2405.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



2310.00 - 2422.00 MHz												
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	2378.91	13.70	2.69	31.95	48.34	Max Avg	Vertical	168	207	54.0	-5.7	Pass
2	2383.39	26.72	2.68	31.98	61.38	Max Peak	Vertical	168	207	74.0	-12.6	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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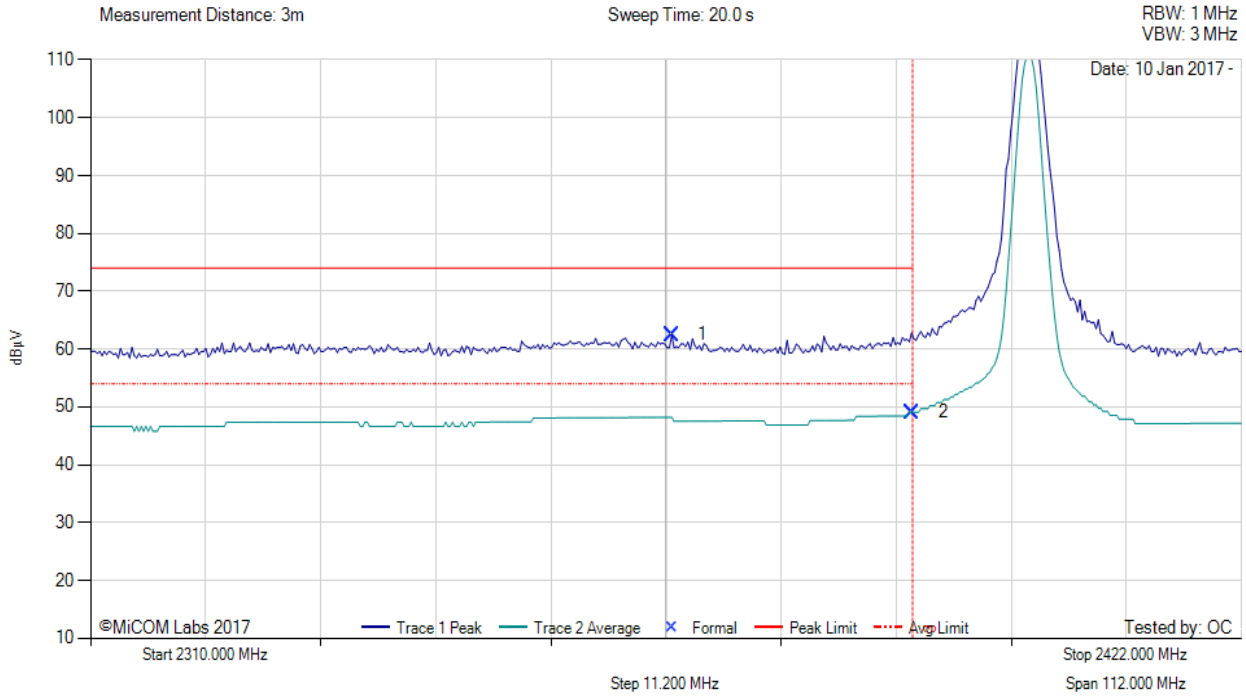
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 2.4 Mbps, Test Freq: 2401.20 MHz, Antenna: WP WPANT40010-C, Power Setting: 20, Duty Cycle (%): 100



2310.00 - 2422.00 MHz												
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	2366.56	27.91	2.71	31.84	62.46	Max Peak	Horizontal	168	57	74.0	-11.5	Pass
2	2390.00	14.35	2.69	32.04	49.08	Max Avg	Horizontal	168	57	54.0	-4.9	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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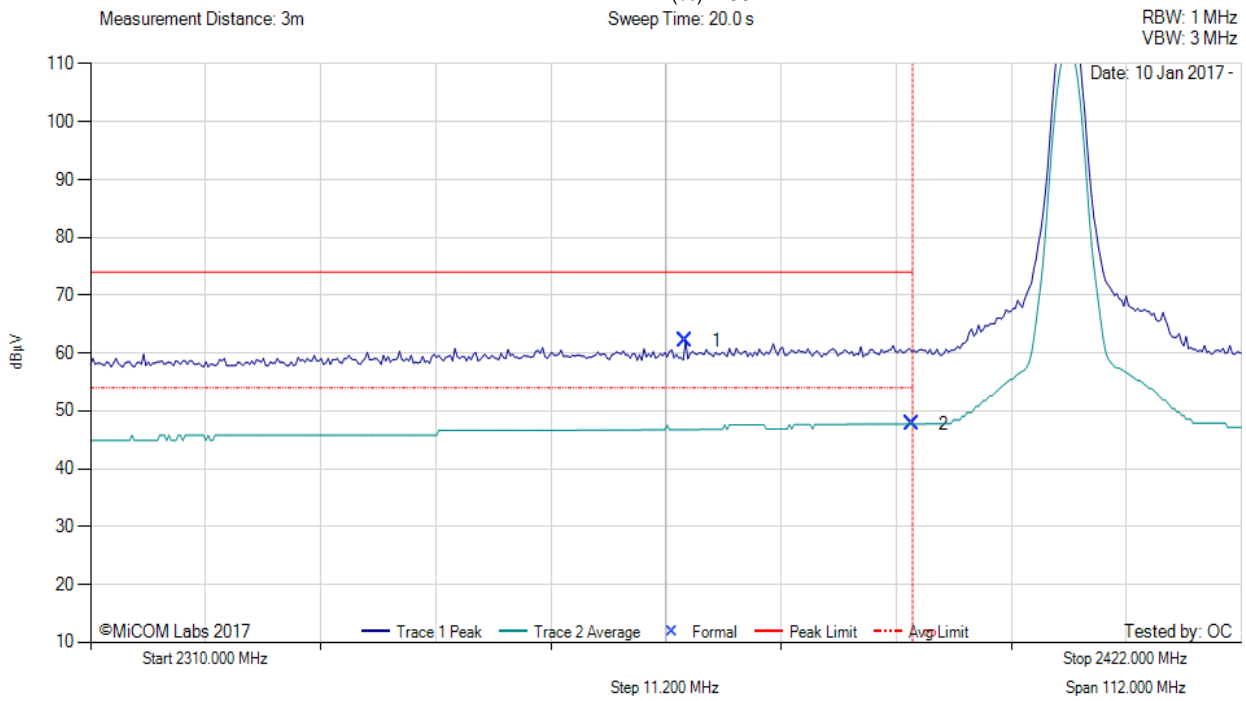
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2405.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100



2310.00 - 2422.00 MHz												
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	2367.91	27.52	2.71	31.85	62.08	Max Peak	Horizontal	168	22	74.0	-11.9	Pass
2	2390.00	13.01	2.69	32.04	47.74	Max Avg	Horizontal	168	22	54.0	-6.3	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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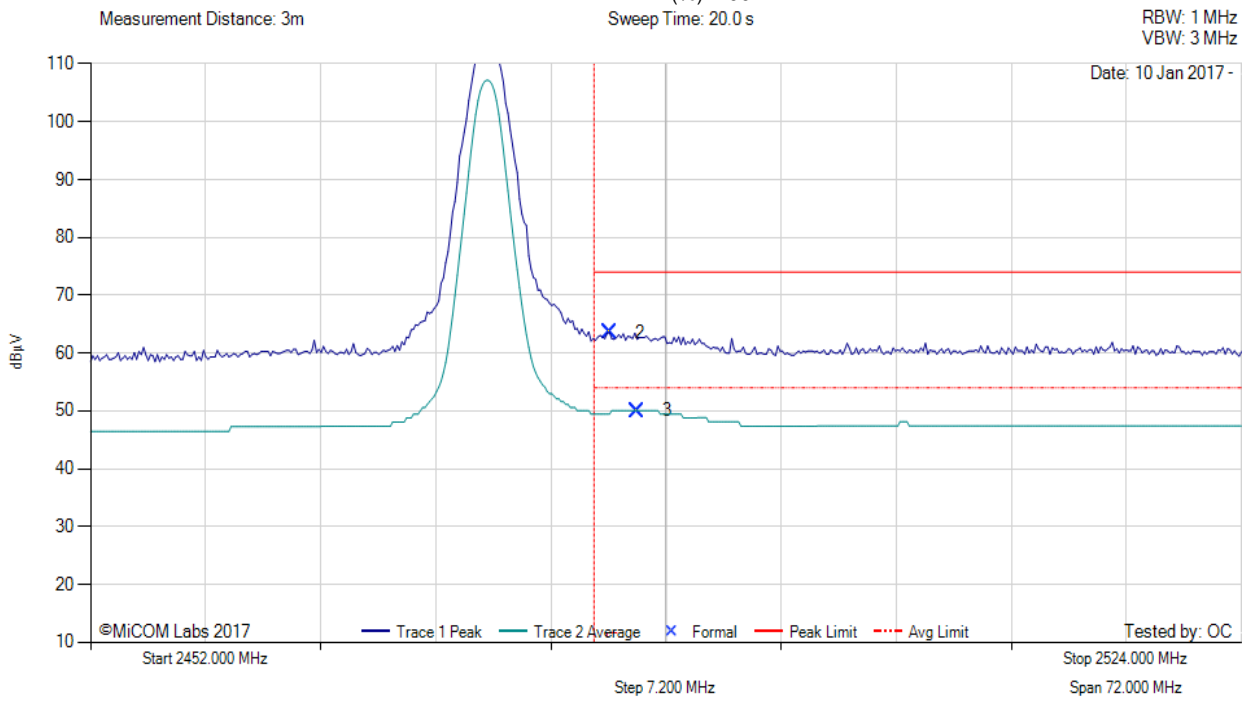
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 2.4 Mbps, Test Freq: 2476.80 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 20, Duty Cycle (%): 100



2452.00 - 2524.00 MHz												
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	2484.46	28.47	2.73	32.37	63.57	Max Peak	Vertical	200	74	74.0	-10.4	Pass
3	2486.20	14.97	2.73	32.37	50.07	Max Avg	Vertical	200	74	54.0	-3.9	Pass
1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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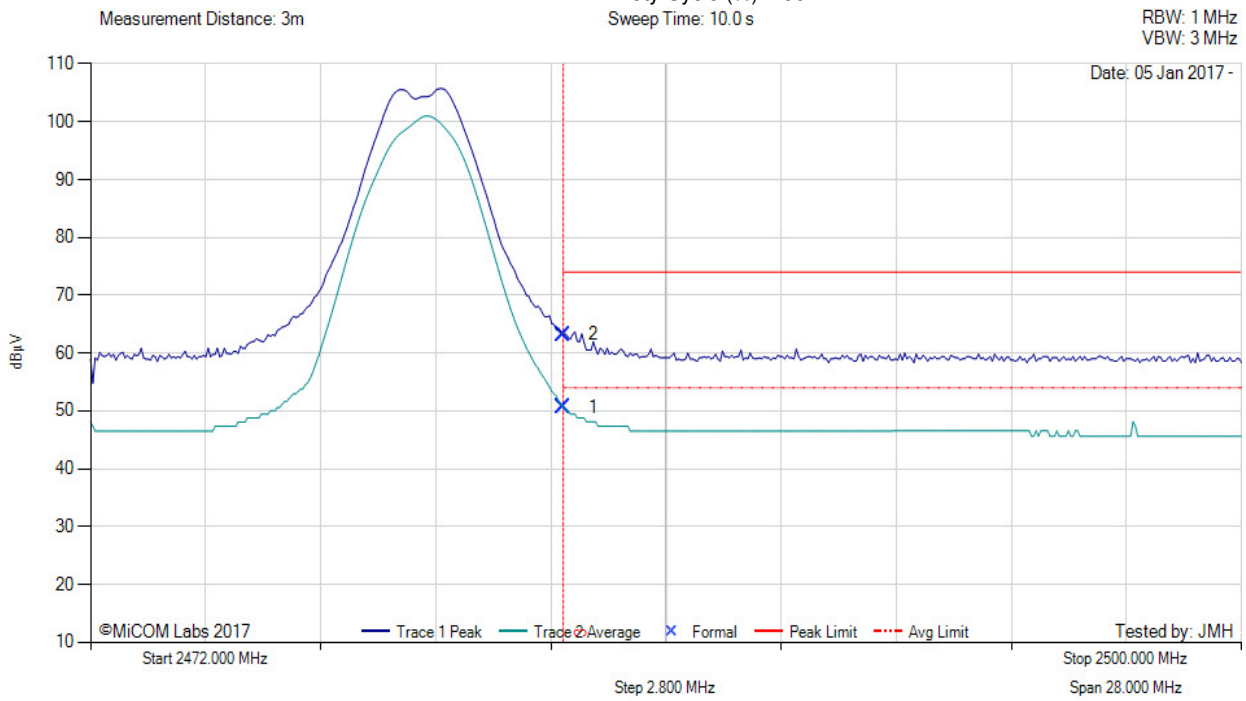
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: Tai Sheng Chen 155-0010-00, Power Setting: 15, Duty Cycle (%): 100



2472.00 - 2500.00 MHz												
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	2483.50	15.52	2.73	32.37	50.62	Max Avg	Vertical	143	55	54.0	-3.4	Pass
2	2483.50	28.09	2.73	32.37	63.19	Max Peak	Vertical	143	55	74.0	-10.8	Pass
3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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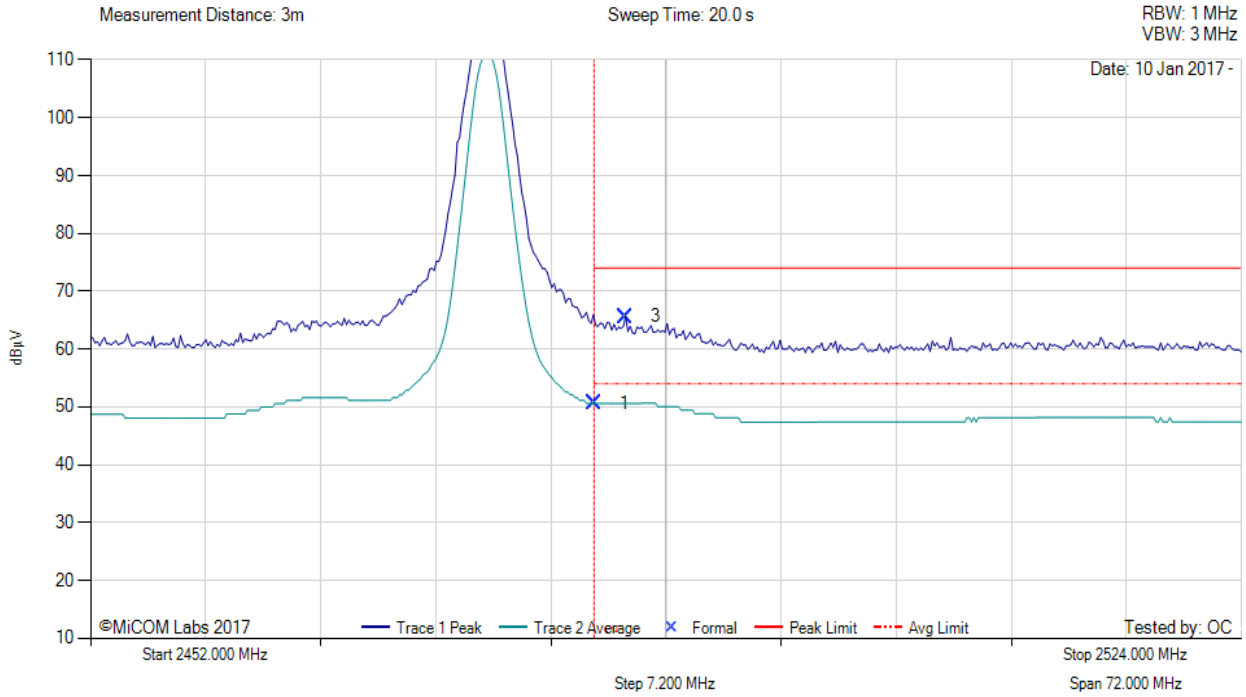
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 2.4 Mbps, Test Freq: 2476.80 MHz, Antenna: WP WPANT30017-CA, Power Setting: 20, Duty Cycle (%): 100



2452.00 - 2524.00 MHz												
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	2483.50	15.52	2.73	32.37	50.62	Max Avg	Vertical	168	206	54.0	-3.4	Pass
3	2485.47	30.53	2.73	32.37	65.63	Max Peak	Vertical	168	206	74.0	-8.4	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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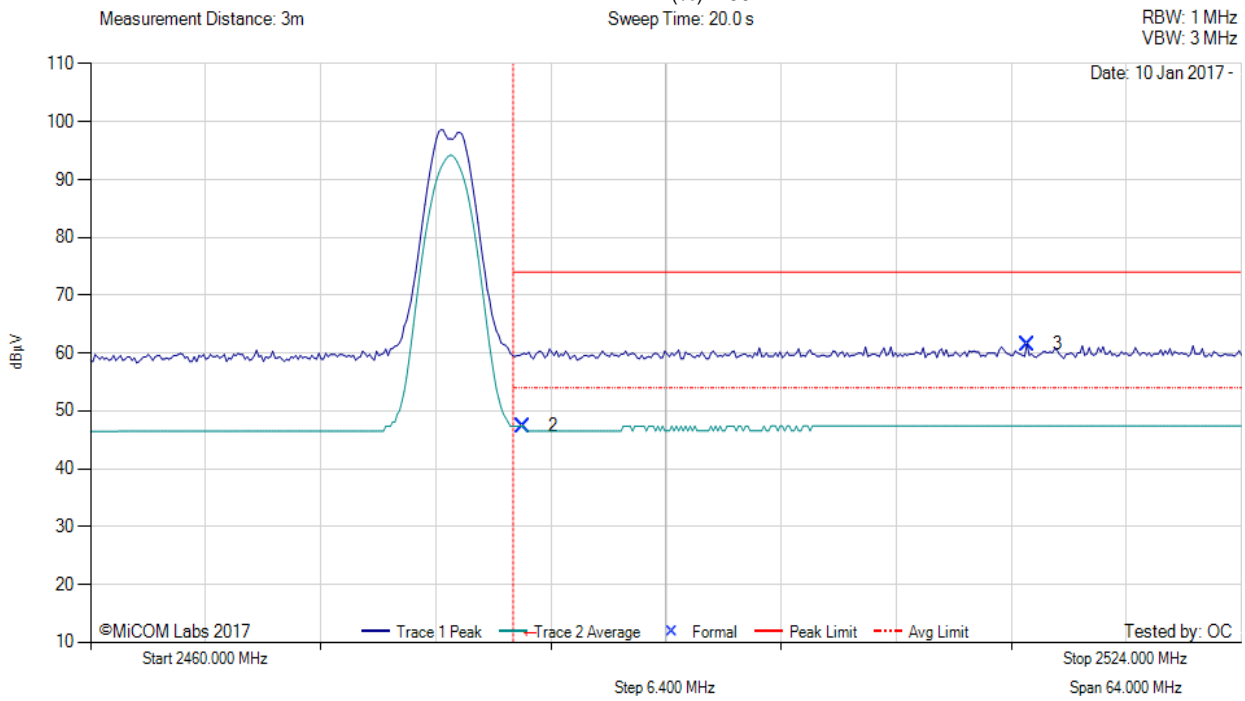
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: WP WPANT30017-CA, Power Setting: 15, Duty Cycle (%): 100



2460.00 - 2524.00 MHz												
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	2484.02	12.27	2.73	32.37	47.37	Max Avg	Vertical	168	206	54.0	-6.6	Pass
3	2512.12	26.40	2.73	32.42	61.55	Max Peak	Vertical	168	206	74.0	-12.5	Pass
1	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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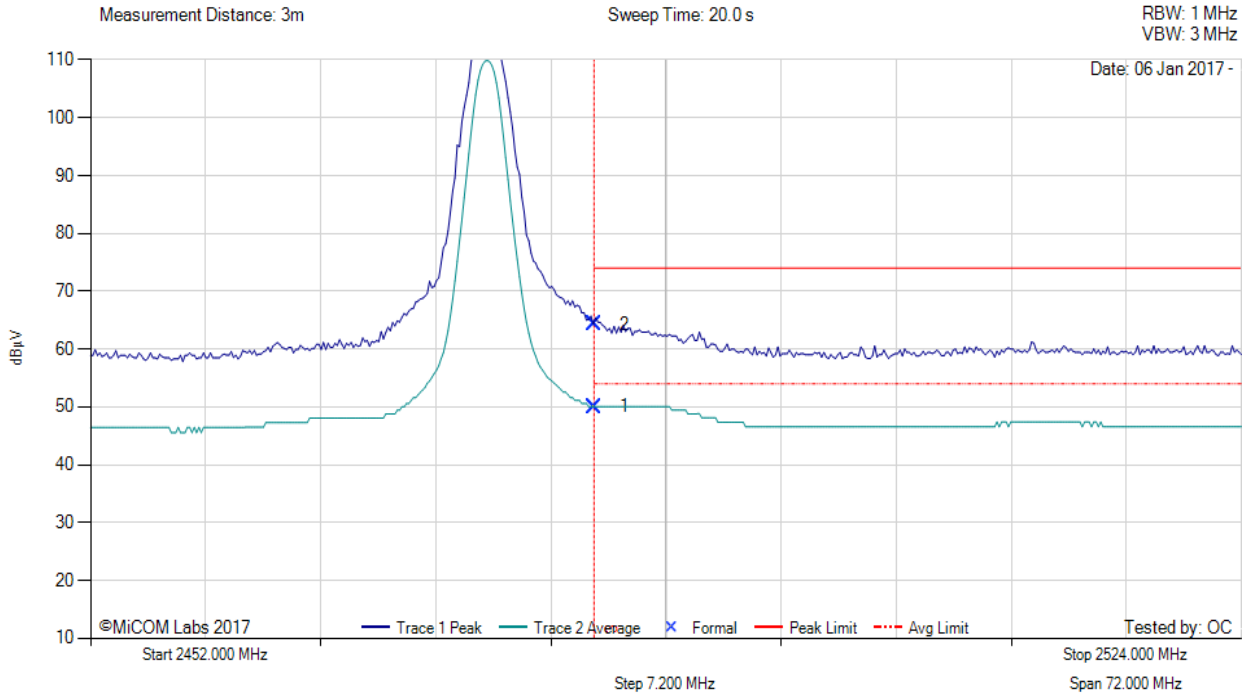
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 2.4 Mbps, Test Freq: 2476.80 MHz, Antenna: WP WPANT40010-C, Power Setting: 20, Duty Cycle (%): 100



2452.00 - 2524.00 MHz												
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	2483.50	14.96	2.73	32.37	50.06	Max Avg	Vertical	201	352	54.0	-3.9	Pass
2	2483.50	29.17	2.73	32.37	64.27	Max Peak	Vertical	201	352	74.0	-9.7	Pass
3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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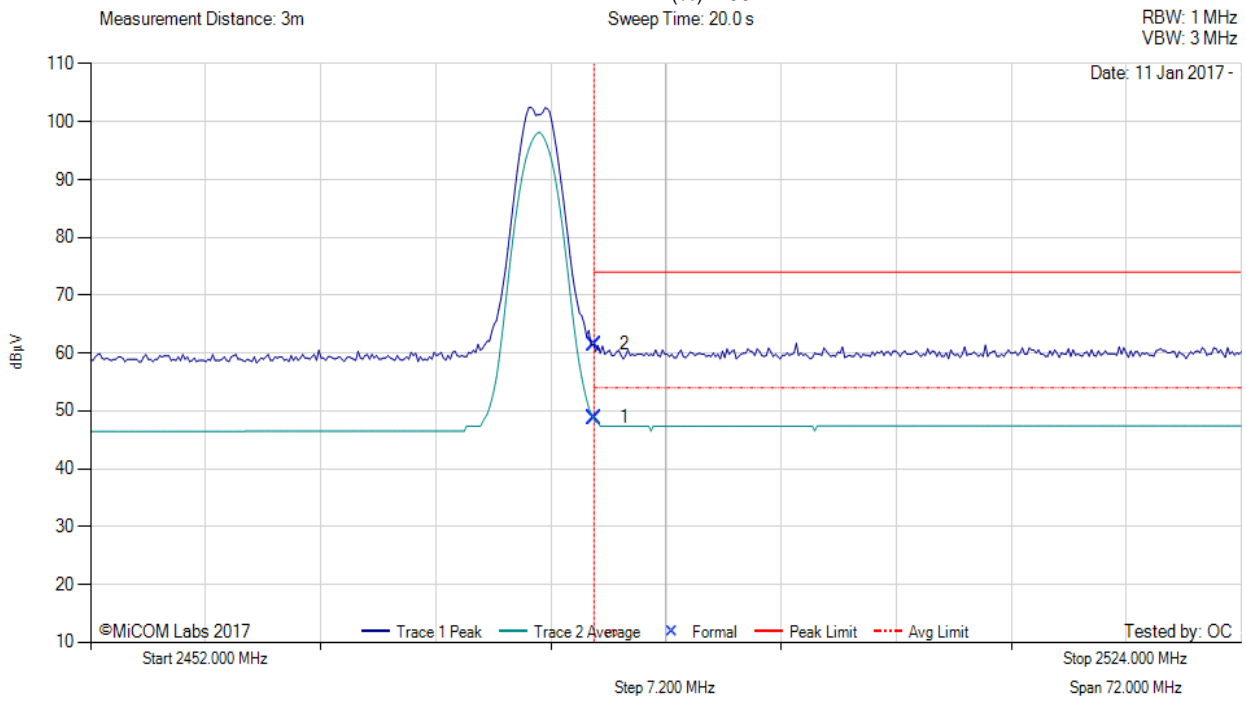
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 250 kbps OQPSK, Test Freq: 2480.00 MHz, Antenna: WP WPANT40010-C, Power Setting: 15, Duty Cycle (%): 100



2452.00 - 2524.00 MHz												
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	2483.50	13.72	2.73	32.37	48.82	Max Avg	Horizontal	170	258	54.0	-5.2	Pass
2	2483.50	26.40	2.73	32.37	61.50	Max Peak	Horizontal	170	258	74.0	-12.5	Pass
3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 150cm non-conductive table. DC powered.

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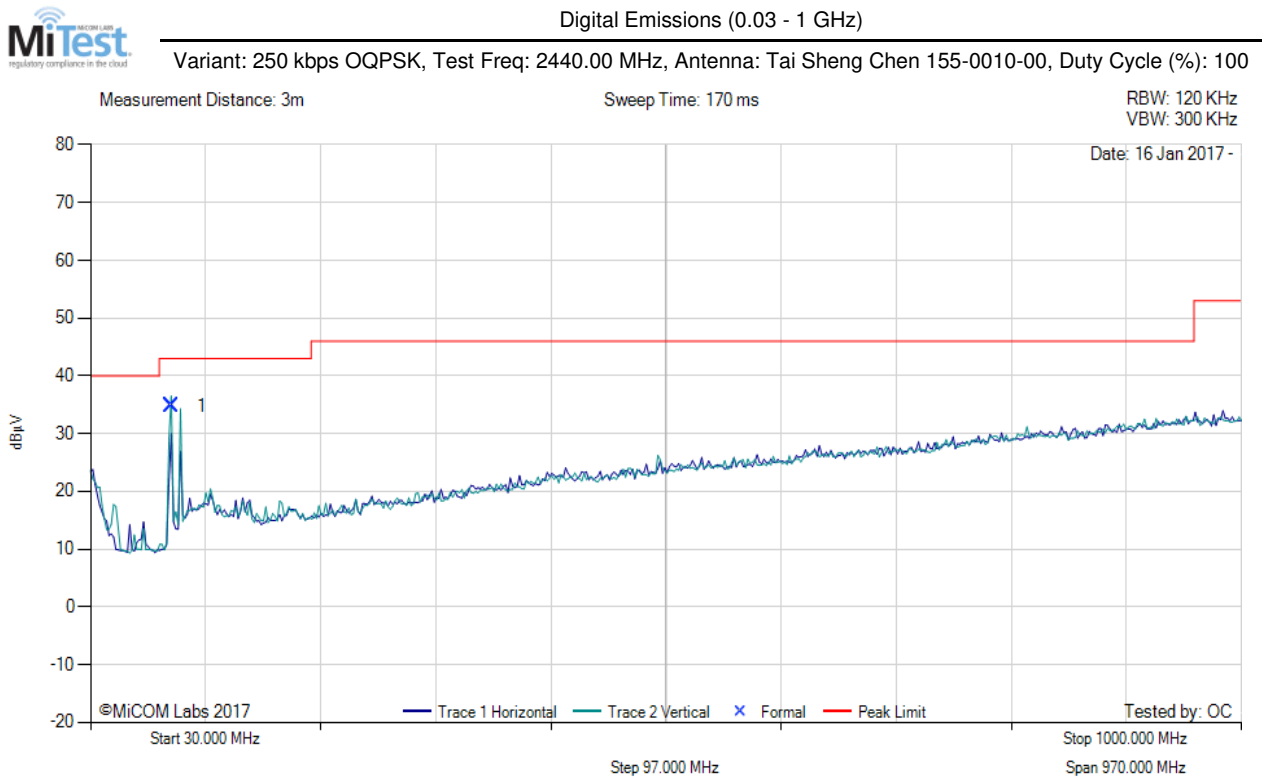
A.1.2. Digital Emissions (0.03 - 1 GHz)



30.00 - 1000.00 MHz												
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	98.04	52.73	3.87	-21.84	34.76	MaxQP	Vertical	101	29	43.0	-8.2	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

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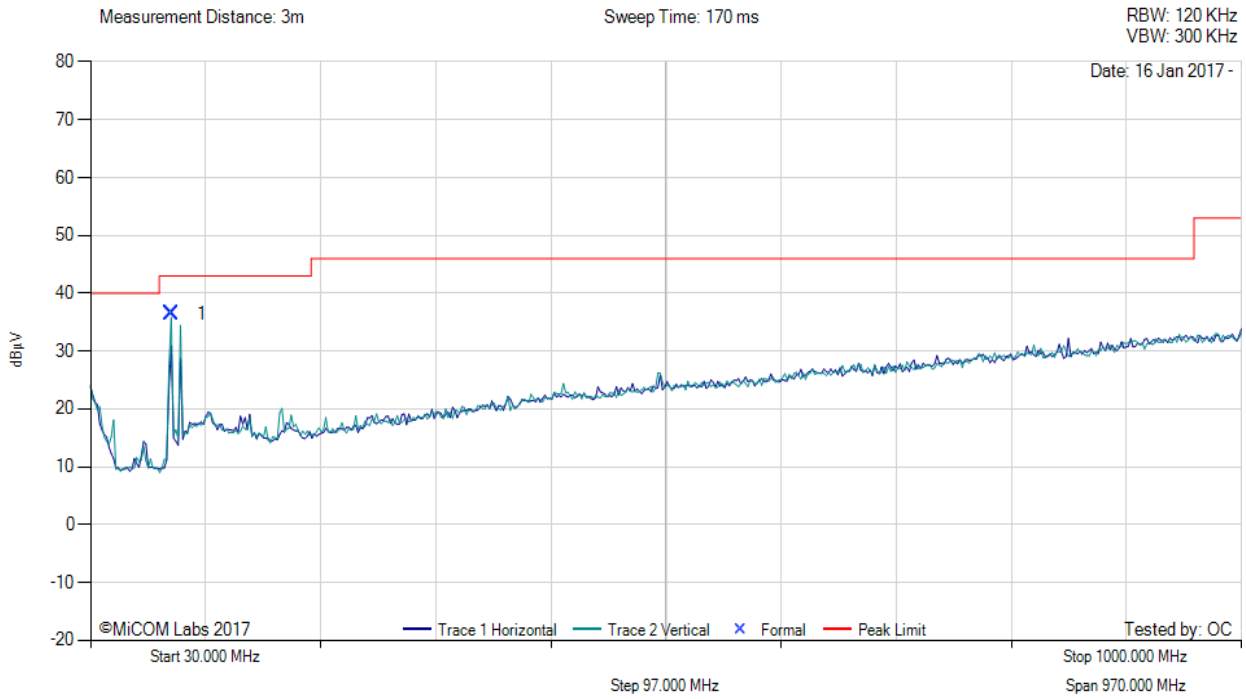
Digital Emissions (0.03 - 1 GHz)

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT30017-CA, Duty Cycle (%): 100



30.00 - 1000.00 MHz												
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	98.16	54.46	3.87	-21.84	36.49	MaxQP	Vertical	100	359	43.0	-6.5	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

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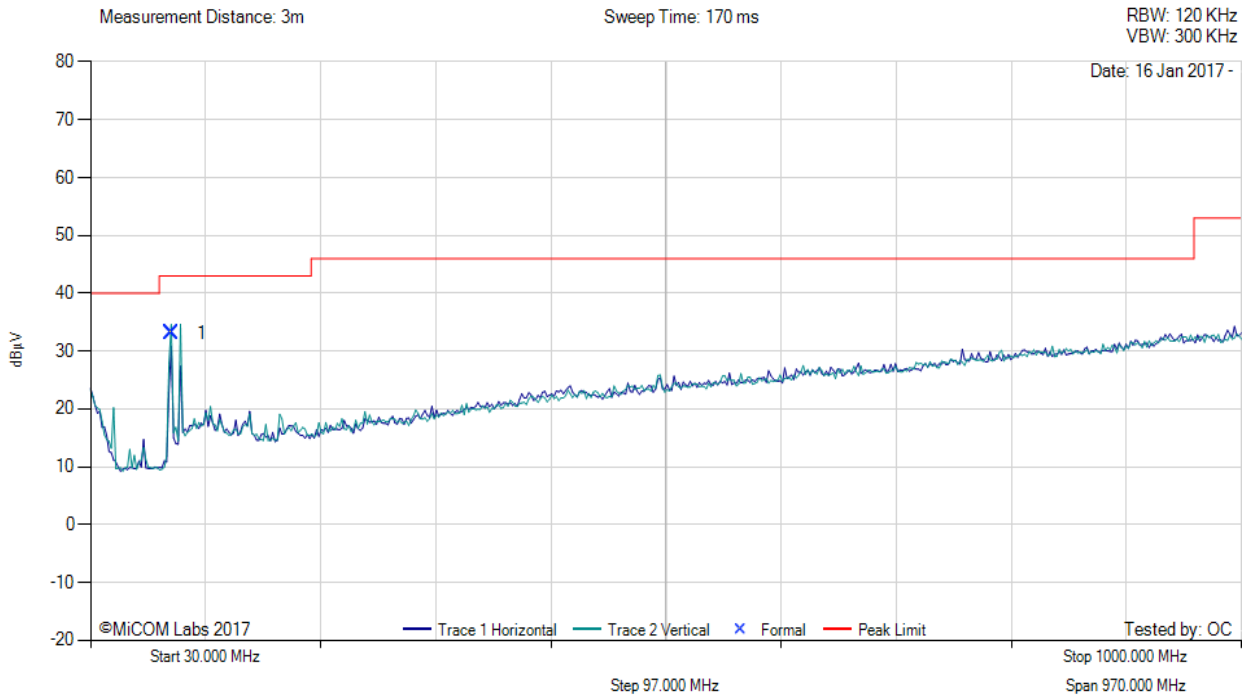
Digital Emissions (0.03 - 1 GHz)

Variant: 250 kbps OQPSK, Test Freq: 2440.00 MHz, Antenna: WP WPANT40010-C, Duty Cycle (%): 100



30.00 - 1000.00 MHz												
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	98.10	51.04	3.87	-21.84	33.07	MaxQP	Vertical	100	23	43.0	-9.9	Pass

Test Notes: Model: GEN 5 MicroAP 174-0763-00 Rev 02. S/N: 0013500700000F70. Placed on 80cm non-conductive table. DC powered.

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