

TEST REPORT ADDENDUM - RADIATED

FROM



Test of: Actiontec Electronics Inc T3200M

to

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

Test Report Serial No.: ATEC14-U5_Radiated Rev A

Note: this report is one of a set of four reports that together address the requirements of the standard for certification purposes.

Master Document Number	Addendum Reports
ATEC14-U5_Master	ATEC14-U5_Conducted
	ATEC14-U5_Radiated
	ATEC14-U2 (FCC Part 15B & ICES_003)

This report supersedes: NONE

Applicant: Actiontec Electronics Inc
760 N Mary Avenue
Sunnyvale, California 94085
USA

Product Function: Wireless 802.11ac Bonded VDSL2
Modem Gateway with MoCA 2.0

Issue Date: 1st April 2016

This Test Report is Issued Under the Authority of:

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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' Section of this report

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.

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1. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	1 st April 2016	Initial release.
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In the above table the latest report revision will replace all earlier versions.

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2. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
15.247(d) [IC RSS-247 8.9] Emissions	Complies	-
(2) Radiated Emissions	Complies	-
(i) 15.205 [IC RSS-247 8.10] Restricted Band Emissions	Complies	View Data
(ii) 15.205 [IC RSS-247 8.10] Restricted Band-Edge Emissions	Complies	View Data

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3. TEST RESULTS

3.1. Emissions

3.1.1. Radiated Emissions

3.1.1.1. Restricted Band 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. (°C):	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:

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 \text{ dBmV/m}$$

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

$$\text{Level (dBmV/m)} = 20 * \log (\text{level (mV/m)})$$

$$40 \text{ dBmV/m} = 100 \text{ mV/m}$$

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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.

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- (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).

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Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11b
Antenna Gain (dBi):	3.00	Modulation:	CCK
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2412.00	Data Rate:	1.00 MBit/s
Power Setting:	24	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	1166.82	37.67	2.13	-16.56	23.24	Max Avg	Horizontal	191	322	54.0	-30.8	Pass
#2	1166.82	65.85	2.13	-16.56	51.42	Max Peak	Horizontal	191	322	74.0	-22.6	Pass
#3	2411.04	51.54	2.69	-11.80	42.43	Fundamental	Vertical	151	0	--	--	
#4	4799.99	55.08	3.52	-11.12	47.48	Max Avg	Horizontal	109	59	54.0	-6.5	Pass
#5	4799.99	59.12	3.52	-11.12	51.52	Max Peak	Horizontal	109	59	74.0	-22.5	Pass
#6	6431.91	57.64	3.99	-7.99	53.64	Peak (NRB)	Horizontal	151	0	--	--	Pass
#7	7236.33	50.74	4.25	-7.34	47.65	Peak (NRB)	Vertical	151	337	--	--	Pass
#8	9647.91	53.71	5.29	-6.08	52.92	Peak (NRB)	Vertical	151	284	--	--	Pass
#9	12060.93	44.73	5.65	-5.22	45.16	Max Avg	Vertical	143	228	54.0	-8.8	Pass
#10	12060.93	53.04	5.65	-5.22	53.47	Max Peak	Vertical	143	228	74.0	-20.5	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11b
Antenna Gain (dBi):	3.00	Modulation:	CCK
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2437.00	Data Rate:	1.00 MBit/s
Power Setting:	24	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	1163.64	39.05	2.14	-16.61	24.58	Max Avg	Vertical	131	123	54.0	-29.4	Pass
#2	1163.64	70.81	2.14	-16.61	56.34	Max Peak	Vertical	131	123	74.0	-17.7	Pass
#3	4799.97	54.71	3.52	-11.12	47.11	Max Avg	Horizontal	129	64	54.0	-6.9	Pass
#4	4799.97	58.86	3.52	-11.12	51.26	Max Peak	Horizontal	129	64	74.0	-22.7	Pass
#5	6431.86	53.92	3.99	-7.99	49.92	Peak (NRB)	Horizontal	151	139	--	--	Pass
#6	9647.87	51.90	5.29	-6.08	51.11	Peak (NRB)	Horizontal	151	360	--	--	Pass
#7	9747.93	52.28	5.29	-6.23	51.34	Peak (NRB)	Vertical	151	0	--	--	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11b
Antenna Gain (dBi):	3.00	Modulation:	CCK
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2462.00	Data Rate:	1.00 MBit/s
Power Setting:	24	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2462.97	63.43	2.74	-11.67	54.50	Fundamental	Vertical	101	1	--	--	
#2	4924.00	38.12	3.58	-11.38	30.32	Max Avg	Horizontal	125	70	54.0	-23.7	Pass
#3	4924.00	52.27	3.58	-11.38	44.47	Max Peak	Horizontal	125	70	74.0	-29.5	Pass
#4	6431.97	54.20	3.99	-7.99	50.20	Peak (NRB)	Horizontal	151	53	--	--	Pass
#5	9847.91	53.47	5.39	-5.94	52.92	Peak (NRB)	Vertical	151	25	--	--	Pass
#6	12863.82	52.69	5.28	-6.81	51.16	Peak (NRB)	Horizontal	151	157	--	--	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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3.1.1.2. Restricted Band-Edge Emissions

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11b
Antenna Gain (dBi):	3.00	Modulation:	CCK
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2412.00	Data Rate:	1.00 MBit/s
Power Setting:	24	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2384.95	25.04	2.68	32.00	59.72	Max Peak	Horizontal	187	330	74.0	-14.3	Pass
#2	2386.93	12.83	2.68	32.02	47.53	Max Avg	Horizontal	187	330	54.0	-6.5	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11g
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2412.00	Data Rate:	6.00 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2390.00	18.16	2.69	32.04	52.89	Max Avg	Horizontal	187	330	54.0	-1.1	Pass
#2	2390.00	35.11	2.69	32.04	69.84	Max Peak	Horizontal	187	330	74.0	-4.2	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2412.00	Data Rate:	6.50 MBit/s
Power Setting:	19	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2390.00	17.64	2.69	32.04	52.37	Max Avg	Horizontal	187	330	54.0	-1.6	Pass
#2	2390.00	34.56	2.69	32.04	69.29	Max Peak	Horizontal	187	330	74.0	-4.7	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2422.00	Data Rate:	13.50 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2383.87	33.42	2.68	31.99	68.09	Max Peak	Horizontal	187	330	74.0	-5.9	Pass
#2	2390.00	18.09	2.69	32.04	52.82	Max Avg	Horizontal	187	330	54.0	-1.2	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

Summary - Lower Restricted Band-Edge Emissions

Galtronics Custom PCB SMT		Band-Edge Freq		Limit 74.0dB μ V/m		Limit 54.0dB μ V/m		Power Setting
Operational Mode	Operating Frequency (MHz)	MHz		dB μ V/m		dB μ V/m		
802.11b	2412.00	2390.00		59.72		47.53		24
802.11g	2412.00	2390.00		69.84		52.89		20
802.11n HT-20	2412.00	2390.00		69.29		52.37		19
802.11n HT-40	2422.00	2390.00		68.09		52.82		17

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Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11b
Antenna Gain (dBi):	3.00	Modulation:	CCK
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2462.00	Data Rate:	1.00 MBit/s
Power Setting:	24	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2483.50	15.62	2.73	32.37	50.72	Max Avg	Horizontal	153	321	54.0	-3.3	Pass
#2	2484.43	29.01	2.73	32.37	64.11	Max Peak	Horizontal	153	321	74.0	-9.9	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11g
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2462.00	Data Rate:	6.00 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2483.50	35.40	2.73	32.37	70.50	Max Peak	Horizontal	153	321	74.0	-3.5	Pass
#2	2483.90	17.11	2.73	32.37	52.21	Max Avg	Horizontal	153	321	54.0	-1.8	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2462.00	Data Rate:	6.50 MBit/s
Power Setting:	19	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2483.50	17.88	2.73	32.37	52.98	Max Avg	Horizontal	153	321	54.0	-1.0	Pass
#2	2483.50	36.94	2.73	32.37	72.04	Max Peak	Horizontal	153	321	74.0	-2.0	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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Title: Actiontec Electronics Inc T3200M
To: FCC CFR 47 Part 15.247 (DTS) & IC RSS-247
Serial #: ATEC14-U5_Radiated Rev A
Issue Date: 1st April 2016
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Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Galtronics Custom PCB SMT	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	100
Channel Frequency (MHz):	2452.00	Data Rate:	13.50 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	2484.83	33.17	2.73	32.37	68.27	Max Peak	Horizontal	153	321	74.0	-5.7	Pass
#2	2485.50	17.43	2.73	32.37	52.53	Max Avg	Horizontal	153	321	54.0	-1.5	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

Summary - Upper Restricted Band-Edge Emissions

Galtronics Custom PCB SMT		Band-Edge Freq		Limit 74.0dB μ V/m		Limit 54.0dB μ V/m		Power Setting
Operational Mode	Operating Frequency (MHz)	MHz		dB μ V/m		dB μ V/m		
802.11b	2462.00	2483.50		64.11		50.72		24
802.11g	2462.00	2483.50		70.50		52.21		20
802.11n HT-20	2462.00	2483.50		72.04		52.98		19
802.11n HT-40	2452.00	2483.50		68.27		52.53		16

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Title: Actiontec Electronics Inc T3200M
To: FCC CFR 47 Part 15.247 (DTS) & IC RSS-247
Serial #: ATEC14-U5_Radiated Rev A
Issue Date: 1st April 2016
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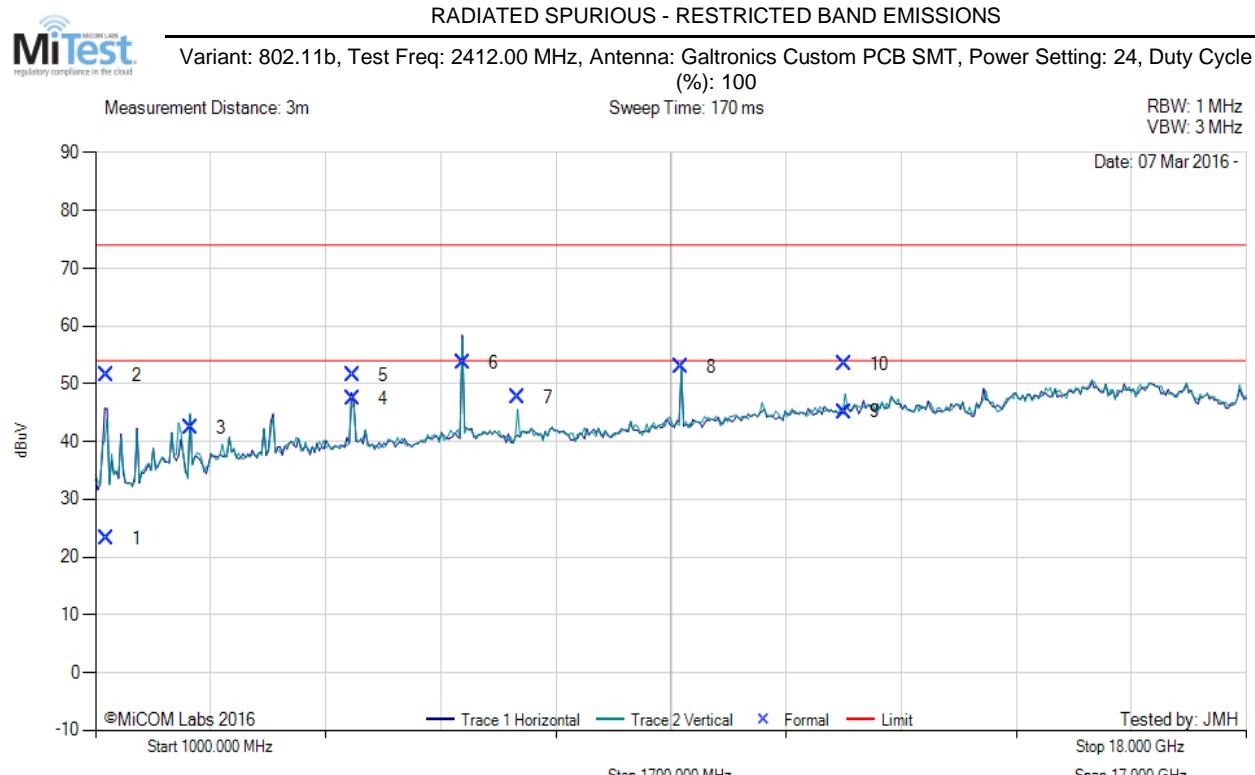
A. APPENDIX - GRAPHICAL IMAGES

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A.1. Emissions

A.1.1. Radiated Emissions

A.1.1.1. Restricted Band Emissions



Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1166.82	37.67	2.13	-16.56	23.24	Max Avg	Horizontal	191	322	54.0	-30.8	Pass
2	1166.82	65.85	2.13	-16.56	51.42	Max Peak	Horizontal	191	322	74.0	-22.6	Pass
3	2411.04	51.54	2.69	-11.80	42.43	Fundamental	Vertical	151	0	--	--	
4	4799.99	55.08	3.52	-11.12	47.48	Max Avg	Horizontal	109	59	54.0	-6.5	Pass
5	4799.99	59.12	3.52	-11.12	51.52	Max Peak	Horizontal	109	59	74.0	-22.5	Pass
6	6431.91	57.64	3.99	-7.99	53.64	Peak (NRB)	Horizontal	151	0	--	--	Pass
7	7236.33	50.74	4.25	-7.34	47.65	Peak (NRB)	Vertical	151	337	--	--	Pass
8	9647.91	53.71	5.29	-6.08	52.92	Peak (NRB)	Vertical	151	284	--	--	Pass
9	12060.93	44.73	5.65	-5.22	45.16	Max Avg	Vertical	143	228	54.0	-8.8	Pass
10	12060.93	53.04	5.65	-5.22	53.47	Max Peak	Vertical	143	228	74.0	-20.5	Pass

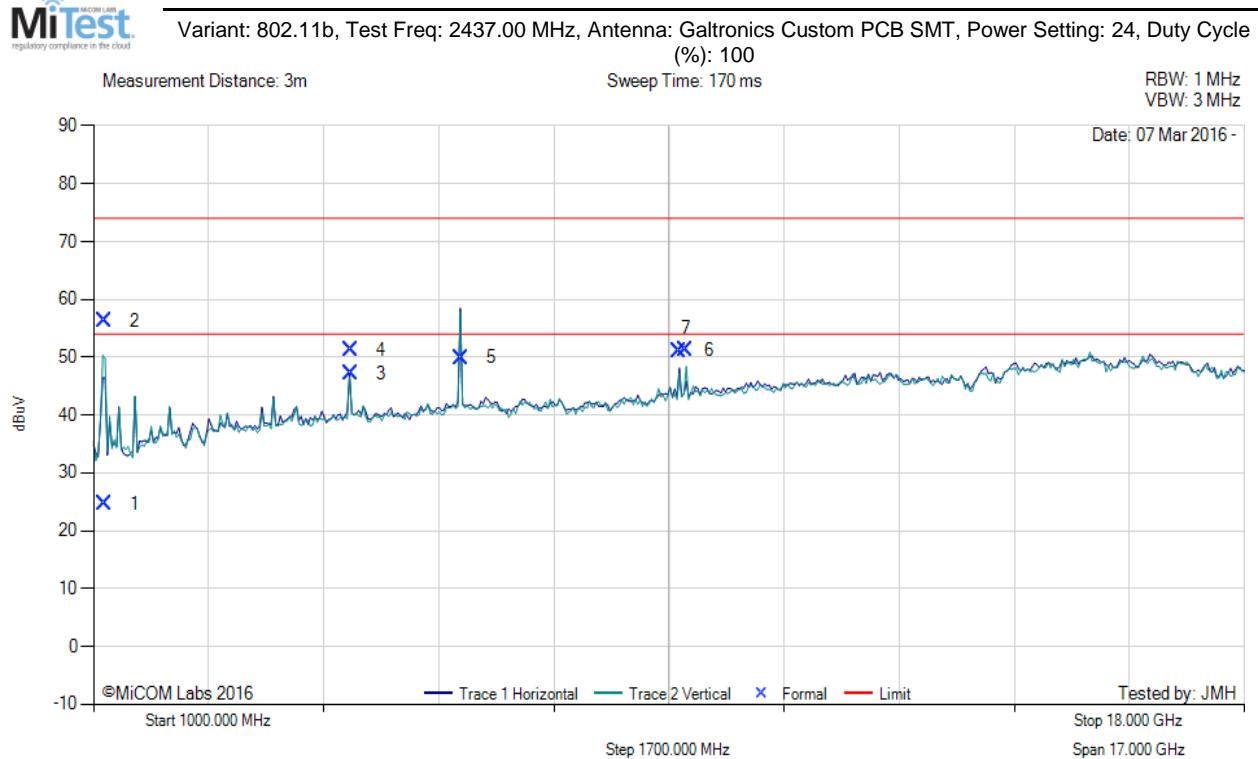
Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	1163.64	39.05	2.14	-16.61	24.58	Max Avg	Vertical	131	123	54.0	-29.4	Pass
2	1163.64	70.81	2.14	-16.61	56.34	Max Peak	Vertical	131	123	74.0	-17.7	Pass
3	4799.97	54.71	3.52	-11.12	47.11	Max Avg	Horizontal	129	64	54.0	-6.9	Pass
4	4799.97	58.86	3.52	-11.12	51.26	Max Peak	Horizontal	129	64	74.0	-22.7	Pass
5	6431.86	53.92	3.99	-7.99	49.92	Peak (NRB)	Horizontal	151	139	--	--	Pass
6	9647.87	51.90	5.29	-6.08	51.11	Peak (NRB)	Horizontal	151	360	--	--	Pass
7	9747.93	52.28	5.29	-6.23	51.34	Peak (NRB)	Vertical	151	0	--	--	Pass

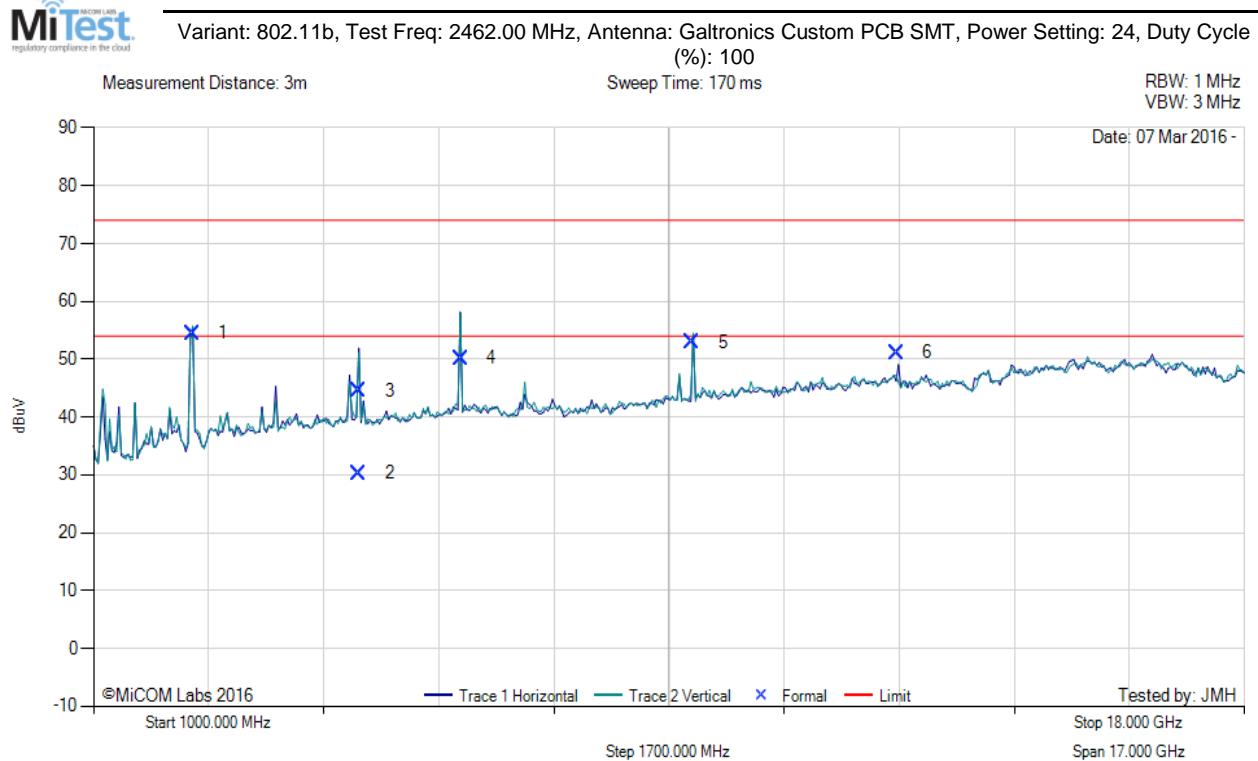
Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

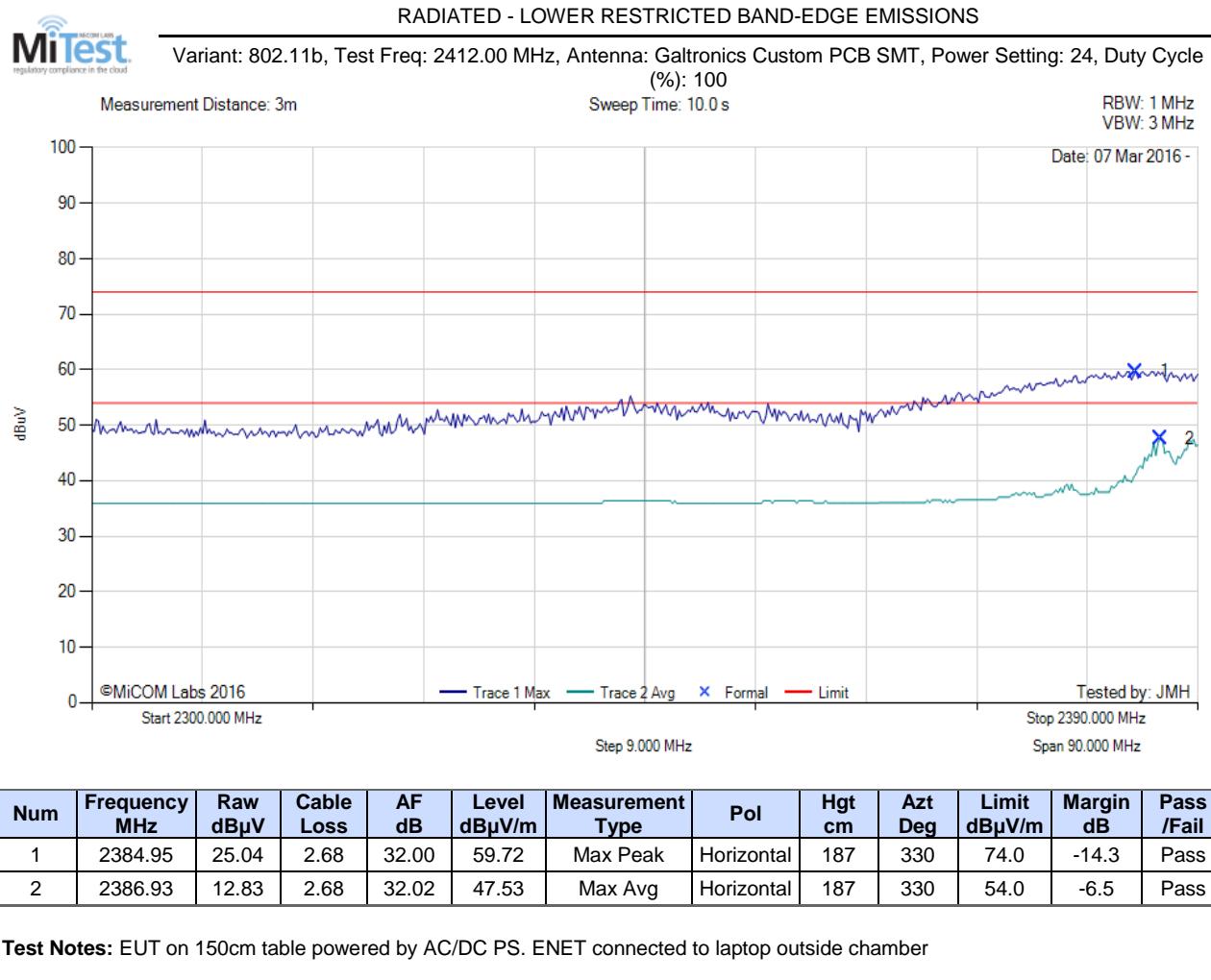


Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2462.97	63.43	2.74	-11.67	54.50	Fundamental	Vertical	101	1	--	--	
2	4924.00	38.12	3.58	-11.38	30.32	Max Avg	Horizontal	125	70	54.0	-23.7	Pass
3	4924.00	52.27	3.58	-11.38	44.47	Max Peak	Horizontal	125	70	74.0	-29.5	Pass
4	6431.97	54.20	3.99	-7.99	50.20	Peak (NRB)	Horizontal	151	53	--	--	Pass
5	9847.91	53.47	5.39	-5.94	52.92	Peak (NRB)	Vertical	151	25	--	--	Pass
6	12863.82	52.69	5.28	-6.81	51.16	Peak (NRB)	Horizontal	151	157	--	--	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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A.1.1.2. Restricted Band-Edge Emissions



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RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

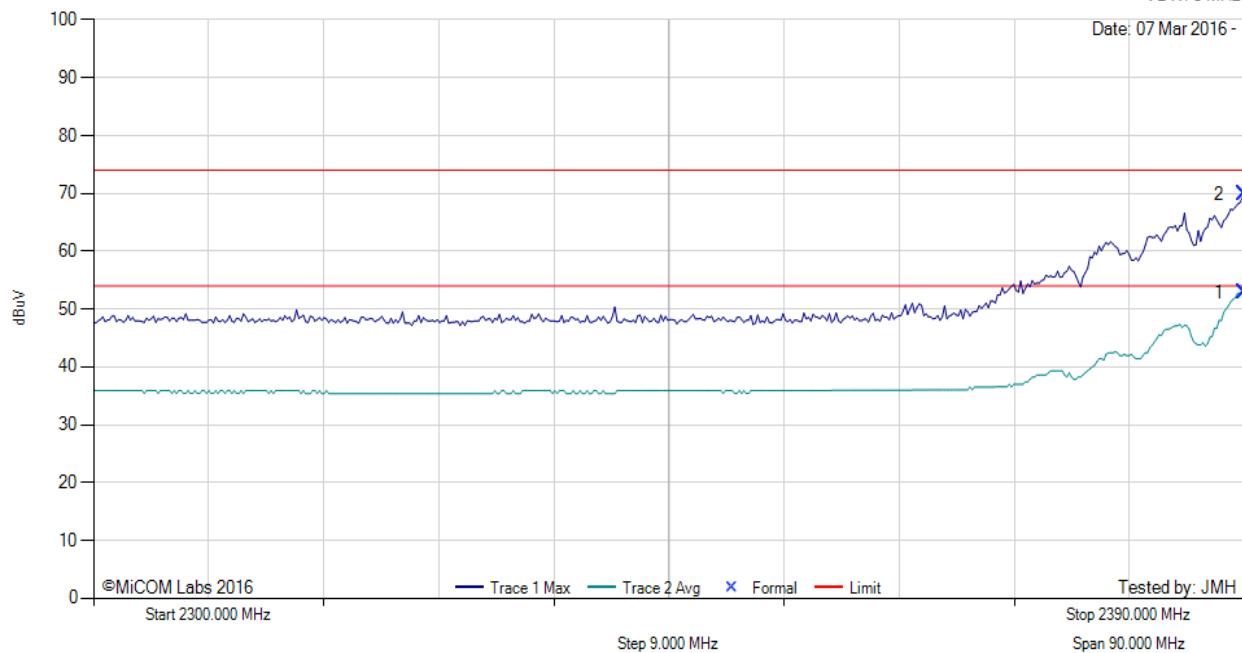


Variant: 802.11g, Test Freq: 2412.00 MHz, Antenna: Galtronics Custom PCB SMT, Power Setting: 20, Duty Cycle (%) 100

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
VBW: 3 MHz



Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2390.00	18.16	2.69	32.04	52.89	Max Avg	Horizontal	187	330	54.0	-1.1	Pass
2	2390.00	35.11	2.69	32.04	69.84	Max Peak	Horizontal	187	330	74.0	-4.2	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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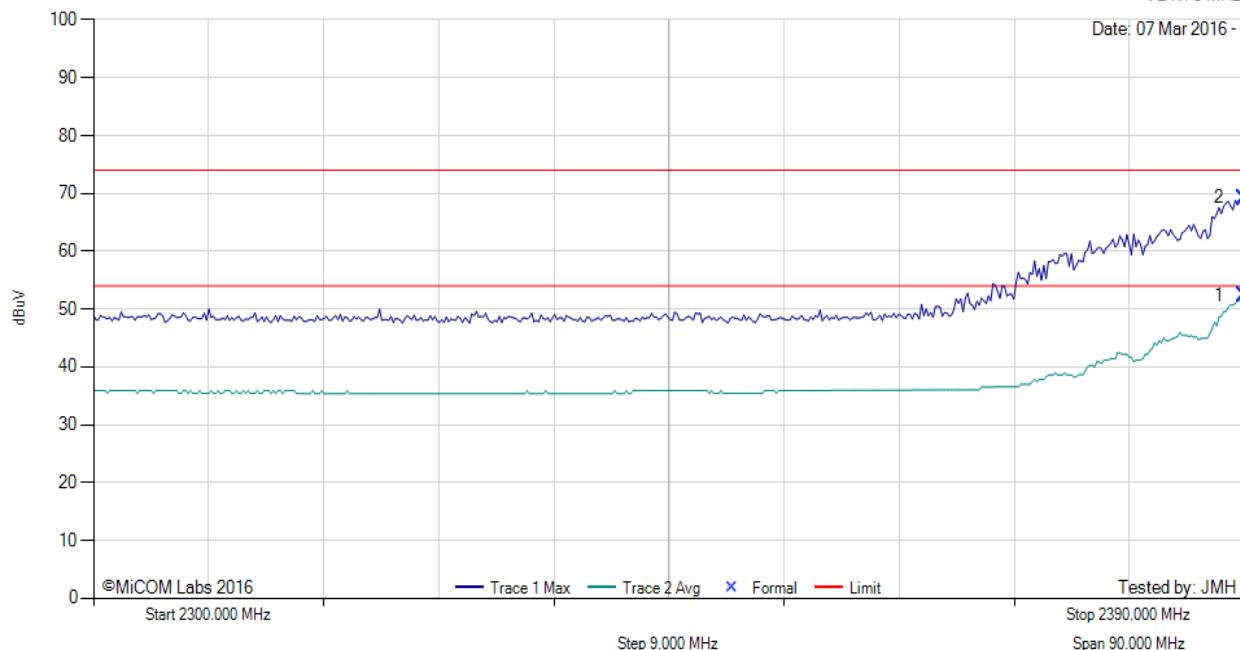
RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 2412.00 MHz, Antenna: Galtronics Custom PCB SMT, Power Setting: 19, Duty Cycle (%): 100

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
VBW: 3 MHz



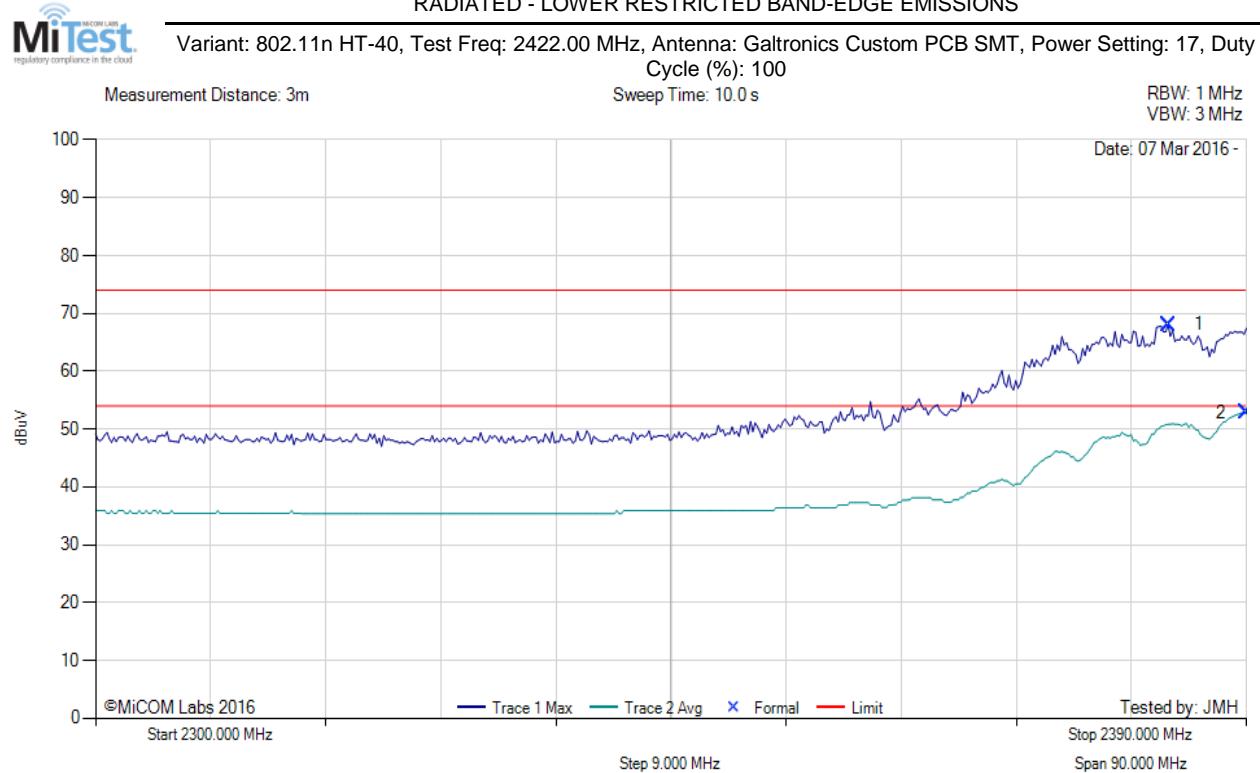
Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2390.00	17.64	2.69	32.04	52.37	Max Avg	Horizontal	187	330	54.0	-1.6	Pass
2	2390.00	34.56	2.69	32.04	69.29	Max Peak	Horizontal	187	330	74.0	-4.7	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS



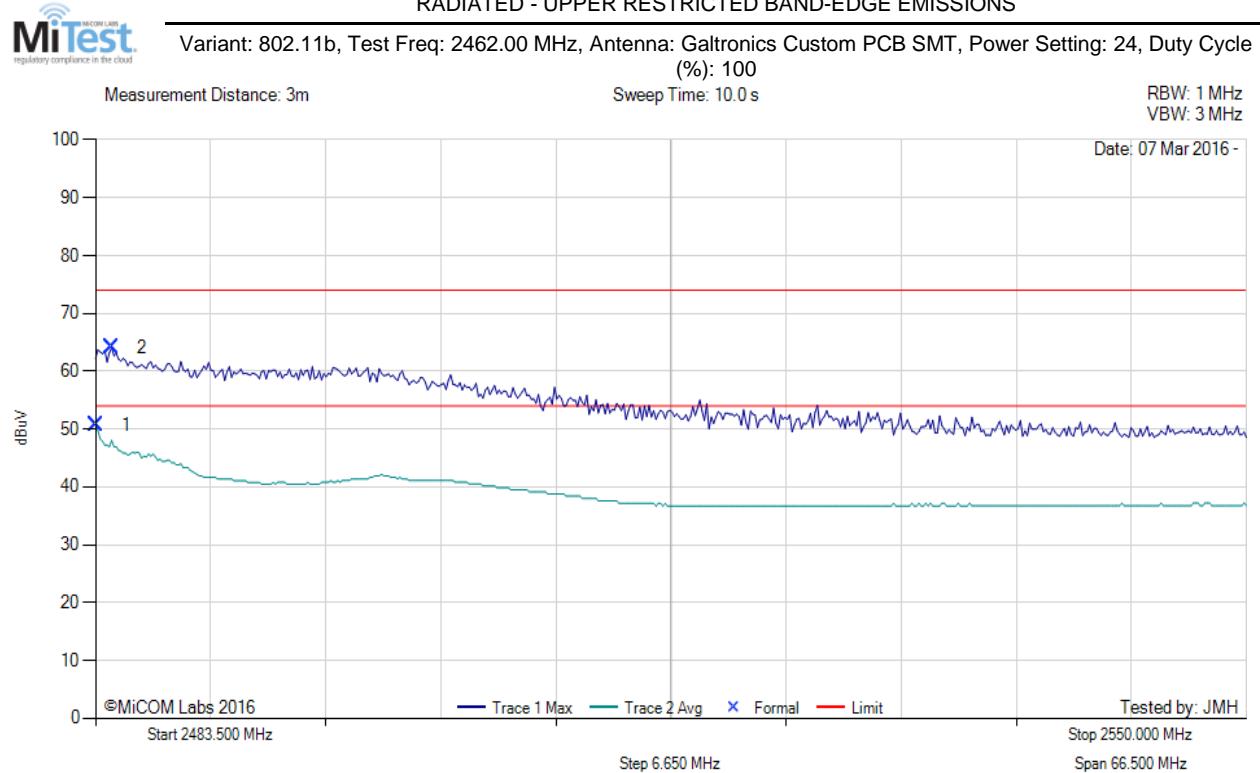
Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2383.87	33.42	2.68	31.99	68.09	Max Peak	Horizontal	187	330	74.0	-5.9	Pass
2	2390.00	18.09	2.69	32.04	52.82	Max Avg	Horizontal	187	330	54.0	-1.2	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS



Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2483.50	15.62	2.73	32.37	50.72	Max Avg	Horizontal	153	321	54.0	-3.3	Pass
2	2484.43	29.01	2.73	32.37	64.11	Max Peak	Horizontal	153	321	74.0	-9.9	Pass

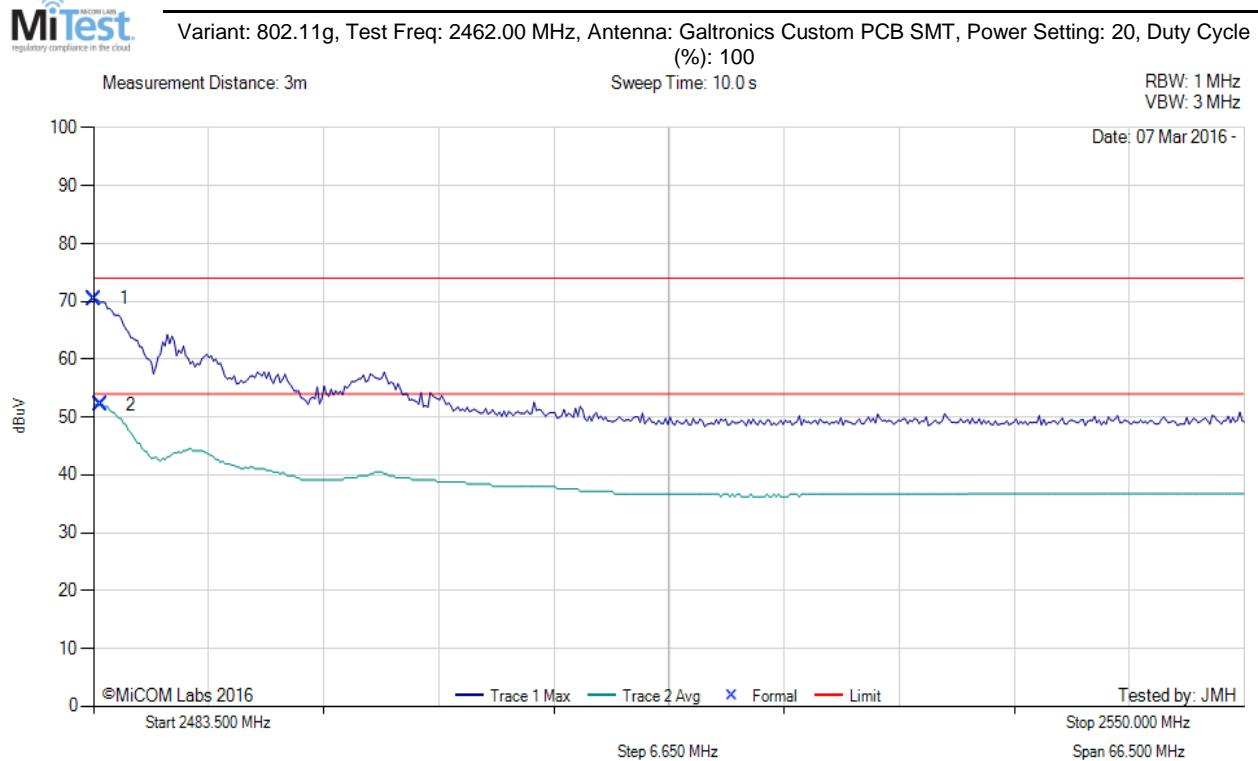
Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS



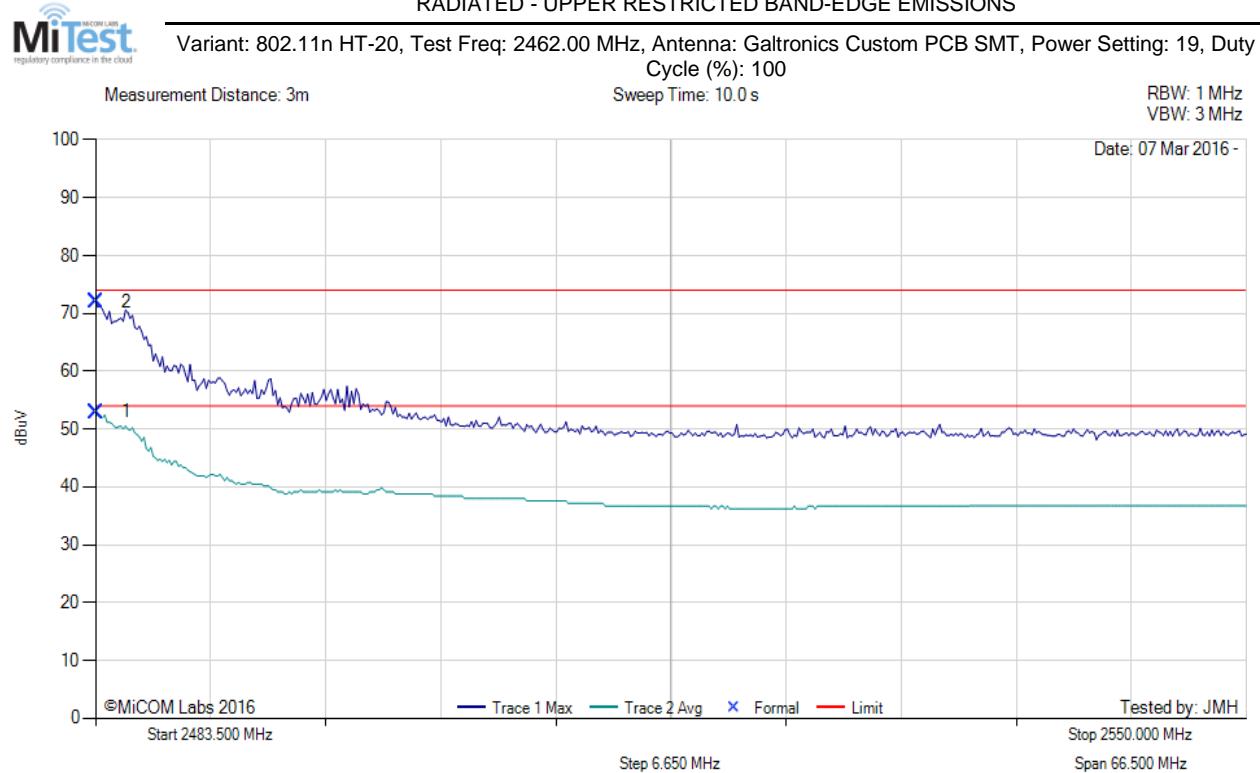
Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2483.50	35.40	2.73	32.37	70.50	Max Peak	Horizontal	153	321	74.0	-3.5	Pass
2	2483.90	17.11	2.73	32.37	52.21	Max Avg	Horizontal	153	321	54.0	-1.8	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS



Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2483.50	17.88	2.73	32.37	52.98	Max Avg	Horizontal	153	321	54.0	-1.0	Pass
2	2483.50	36.94	2.73	32.37	72.04	Max Peak	Horizontal	153	321	74.0	-2.0	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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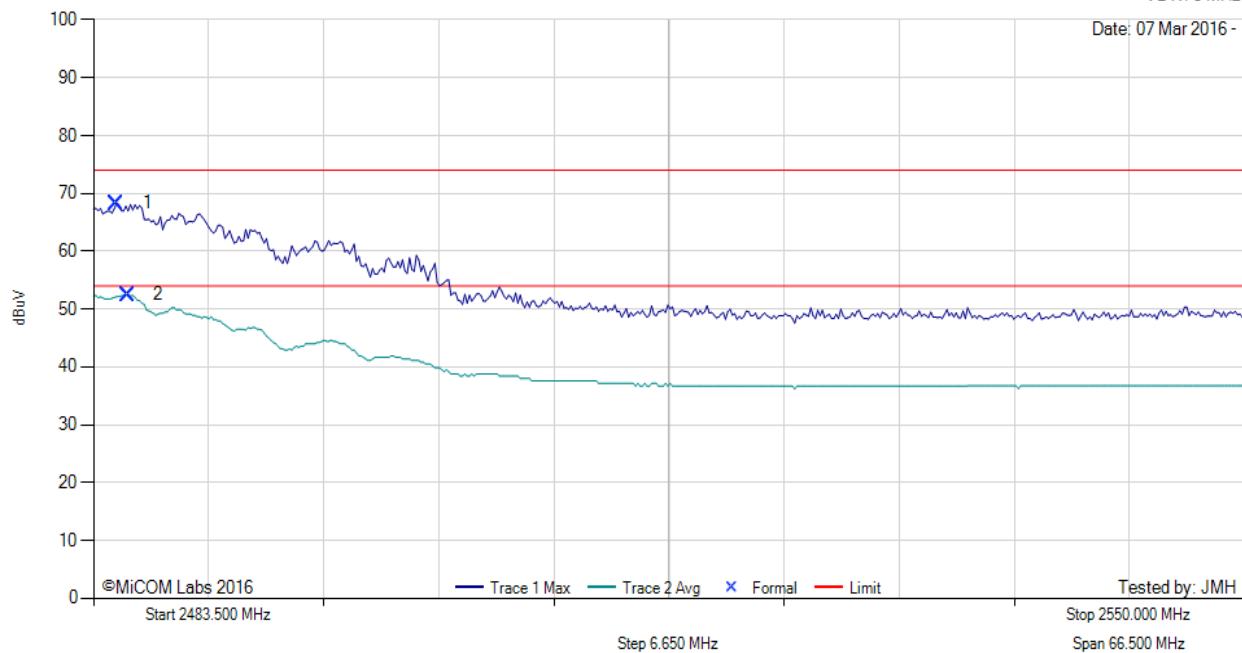
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 2452.00 MHz, Antenna: Galtronics Custom PCB SMT, Power Setting: 16, Duty Cycle (%): 100

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
VBW: 3 MHz



Num	Frequency MHz	Raw dB μ V	Cable Loss	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
1	2484.83	33.17	2.73	32.37	68.27	Max Peak	Horizontal	153	321	74.0	-5.7	Pass
2	2485.50	17.43	2.73	32.37	52.53	Max Avg	Horizontal	153	321	54.0	-1.5	Pass

Test Notes: EUT on 150cm table powered by AC/DC PS. ENET connected to laptop outside chamber

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