Lab Code: 200167-0

FCC PART 15 SUBPART C

TEST AND MEASUREMENT REPORT

For

Actiontec Electronics, Inc.

760 N. Mary Avenue,

Sunnyvale, CA 94085, USA

FCC ID: LNQGT784WN
Model: GT784WNV

Report Type:	**Product Type:**
CIIPC Report	Wireless 802.11n ADSL2 Modem Gateway

Test Engineer:	Lionel Lara
Report Number:	R1109234-247
Report Date:	2011-11-01
Reviewed By:	Victor Zhang EMC/RF Lead
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1109234-247	CIIPC Report	2011-11-01

1 General Description

1.1 Product Description for Equipment Under Test (EUT)

This test and measurement report was prepared on behalf of *Actiontec Electronics*, Inc., and their product model: *GT784WNV*, FCC ID: *LNQGT784WN* which will henceforth be referred to as the EUT (Equipment Under Test). The EUT is a Wireless 11n ADSL2 Modem Gateway. It features 802.11b/g/n modes with n mode in 20 MHz bandwidth. The operating frequency is from 2412 to 2462 MHz.

1.2 Mechanical Description of EUT

The "EUT" measures 16.5cm (L) x 13cm (W) x3.5cm (H), and weighs approximately 298 g.

The test data gathered are from typical production sample, serial number: SA111391600022, *provided by the manufacturer.*

1.3 Objective

This class II permissive change measurement and test report is prepared on behalf of *Actiontec Electronics Inc.*, in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for Radiated Spurious Emissions for switching to two internal PIFA antennas for the EUT. The rest of the hardware design remains unchanged.

1.4 Related Submittal(s)/Grant(s)

FCC ID: LNQGT784WN, BACL Report Number: R10081714-247

1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz and ANSI C63.10-2009, American National Standard for Testing Unlicensed Wireless Devices.

1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are: spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from $\pm$2.0 for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.7 Test Facility

The test site used by BACL Corp. to collect radiated and conducted emissions measurement data is located at its facility in Sunnyvale, California, USA.

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997, and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2001670.htm

2 System Test Configuration

2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2003 & ANSI C63.10-2009.

The worst-case data rates are determined to be as follows for each mode based upon investigation by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

2.2 EUT Exercise Software

Software: Tera Term provided by the manufacture, the s/w was verified by BACL.

2.3 Equipment Modifications

No modifications were made to the EUT.

2.4 Special Accessories

N/A

2.5 Local Support Equipment

Manufacturer	Description	Model No.	Serial No.
Dell	Laptop	PP18L	PF329 A03
Netgear	Wireless dual band USB adapter	WNDA3100	2D4114BU04207

2.6 Internal Configuration

Manufacturer	Description	Model No.	Serial No.
Actiontec	PCB Board	E241819	SA111391600022

2.7 Power Supply and Line Filters

Manufacturer	Description	Model No.	Serial No.
Actiontec Electronics, Inc.	I.T.E Power Supply	MT12-Y120100-A1	-

2.8 Interface Ports and Cabling

Cable Description	Length (m)	From	To
RF Cable	< 1 m	EUT	PSA
USB to RS232	< 1 m	EUT	Laptop

3 Summary of Test Results

Results reported relate only to the product tested.

FCC Rules	Description of Test	Results
§15.247 (i), §2.1091	RF Exposure (MPE) Information	Compliant
§15.203	Antenna Requirement	Compliant
§ 15.207 (a)	AC Line Conducted Emissions	NA[1]
§2.1051 §15.247 (d)	Spurious Emissions at Antenna Port	NA[1]
§15.205	Restricted Bands	NA[1]
§15.209 (a) §15.247 (d)	Radiated Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Bandwidth	NA[1]
§15.247 (b)(3)	Maximum Peak Output Power	NA[1]
§ 15.247 (d)	100 kHz Bandwidth of Frequency Band Edge	NA[1]
§15.247 (e)	Power Spectral Density	NA[1]

[1]***Note:*** *Refer to original filing with FCC ID: LNQGT784WN, Report #: R10081714-247 Granted by BACL on 2010-10-08.*

4 FCC §15.247 (i) & §2.1091 - RF Exposure Information

4.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

4.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

4.3 MPE Results

Frequency Band	Conducted Output Power (dBm)	Antenna Gain (dBi)	MPE Distance (cm)	Power Density (mw/cm^2)	MPE Limit (mw/cm^2)	Result
2.4 GHz	20.42	3.5	20	0.049	1.0	Compliance

Result:

The predicted power density level at 20 cm is 0.049 mw/cm^2 which is below the uncontrolled exposure limit of 1.0 mW/cm^2. The EUT is used at least 20 cm away from user's body. It is determined as mobile equipment and complies with the MPE limit.

5 FCC §15.203 - Antenna Requirement

5.1 Applicable Standard

According to FCC §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC §15.247 (b) (4), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Antenna Connector Construction

EUT has two Transmitter/Receiver antennae which are both internal type antennae. The Transmitter antenna has a max gain of 3.5 dBi which fulfills the requirements of FCC rule 15.203.

6 FCC §15.207 – AC Line Conducted Emissions

6.1 Applicable Standard

Section 15.207 Conducted limits:

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 (1)	56 to 46 (1)
0.5-5	56	46
5-30	60	50

(1) *Decreases with the logarithm of the frequency.*

6.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.

7 FCC §2.1051 & §15.247(d) - Spurious Emissions at Antenna Terminals

7.1 Applicable Standard

For FCC §15.247(d) in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Requirements: FCC §2.1051.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1057.

7.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.

8 FCC §15.205, §15.209 & §15.247(d) - Spurious Radiated Emissions

8.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz.

As per FCC §15.209(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 (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 (1)	3
88 - 216	150 (1)	3
216 - 960	200 (1)	3
Above 960	500	3

(1) 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., Sections 15.231 and 15.241.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

f (MHz)	f (MHz)	f (MHz)	f (GHz)
0.090 – 0.110	16.42 – 16.423	960 – 1240	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5. 35 – 5. 46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 –167.17	3.332 – 3339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	33458 – 3358	23.6 – 24.0
12.29 – 12.293	240 – 285	3600 – 4400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As Per FCC §15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

8.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15 Subpart C limits.

8.3 EUT Setup

The radiated emissions tests were performed using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

8.4 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Agilent	Spectrum Analyzer	E4440A	MY44303352	2011-05-10
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100337	2011-03-21
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2011-08-10
Hewlett Packard	Pre amplifier	8447D	2944A06639	2011-06-09
Mini-Circuits	Pre Amplifier	ZVA-183-S	570400946	2011-05-09
EMCO	Horn antenna	3115	9511-4627	2011-10-03

Statement of Traceability: BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

8.5 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000 MHz:

(1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
(2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

8.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit.
The equation for margin calculation is as follows:

Margin = Corrected Amplitude - FCC Limit

8.7 Test Environmental Conditions

Temperature:	23-25 °C
Relative Humidity:	50-55 %
ATM Pressure:	101-103kPa

The testing was performed by Lionel Lara on 2011-10-03 to 2011-10-07 at 5m Chamber 3.

8.8 Summary of Test Results

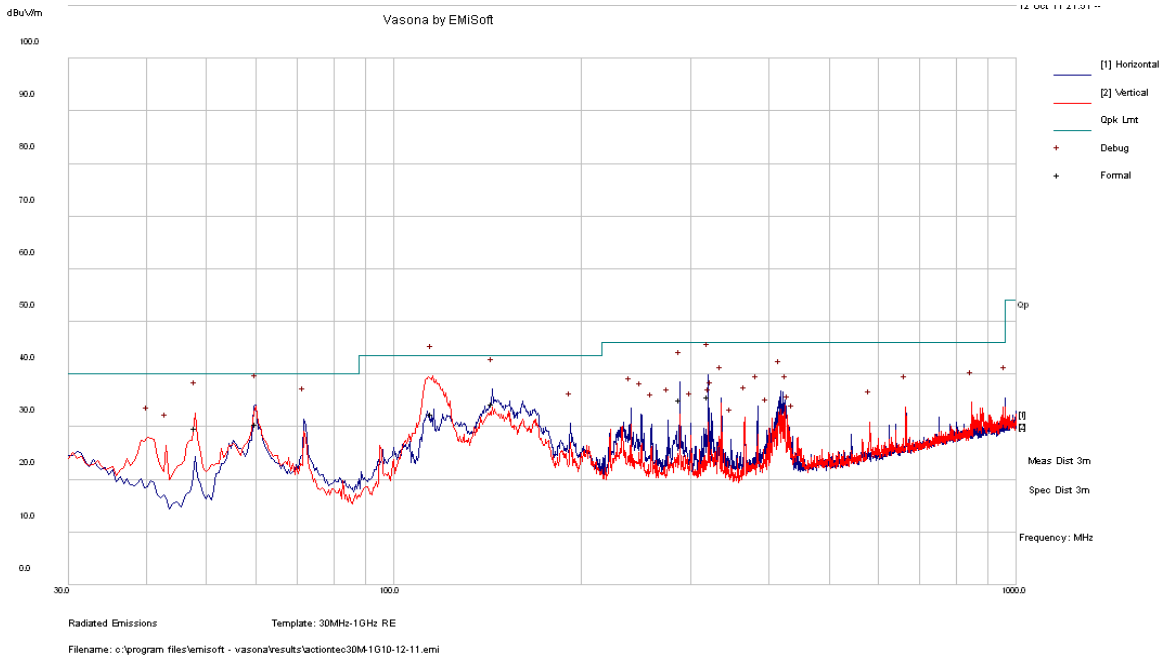
According to the data hereinafter, the EUT complied with the limits presented in FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247, and had the worst margin of:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
30-1000 MHz			
-5.84	320	Horizontal	802.11g Low CH 30-1000 MHz
1-25 GHz			
-0.37	4924.05	Horizontal	802.11b High CH 1-25 GHz

8.9 Test Results and Plots

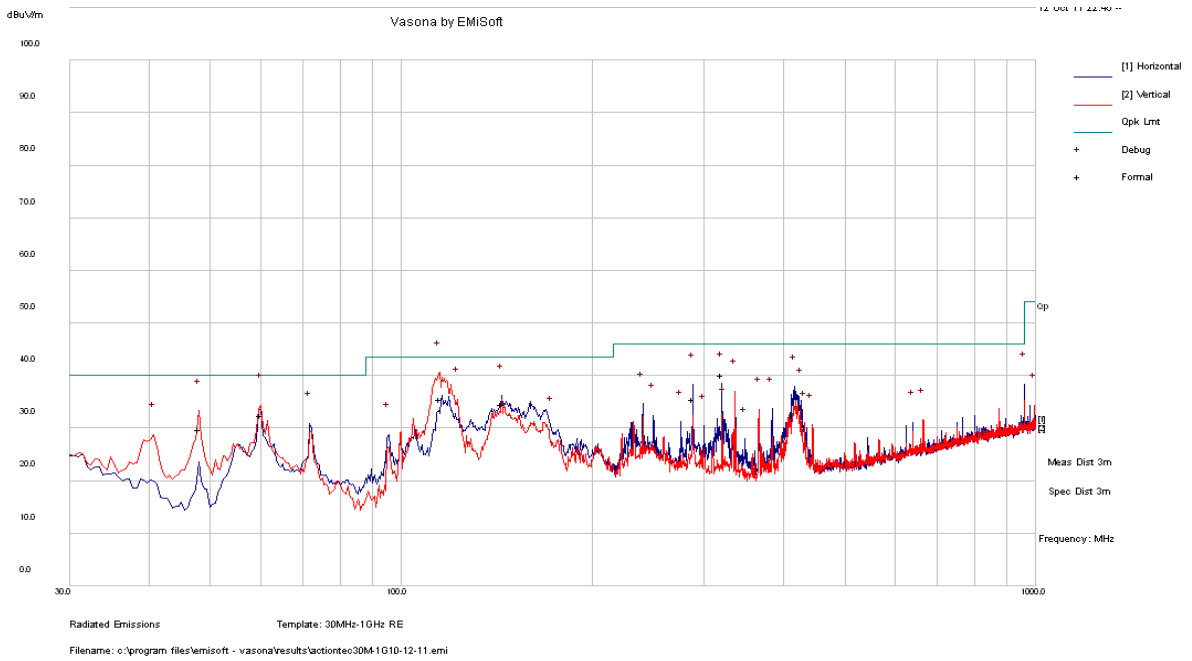
1) 30 – 1000 MHz Measured at 3 meters:

802.11b, Worst Channel(High Channel 2462 MHz, measured at 3 meters)



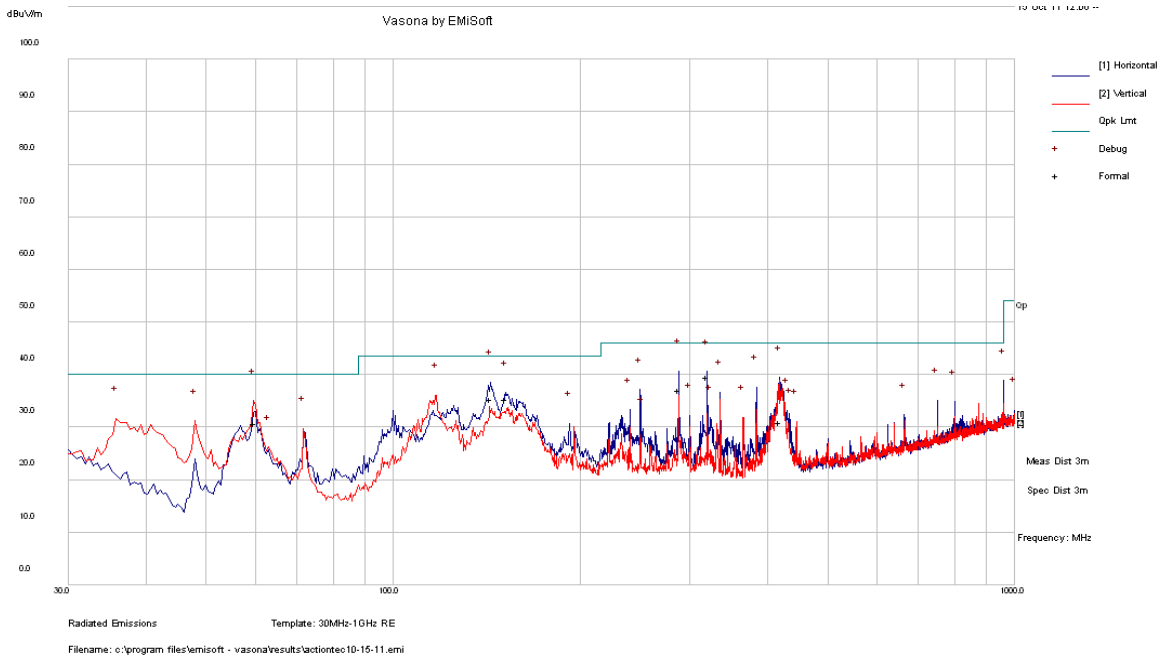
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
143.996	34.39	157	H	165	43.5	-9.11
60.04025	30.63	397	H	204	40	-9.37
48.00625	29.86	99	V	360	40	-10.14
319.9898	35.75	103	H	310	46	-10.25
287.9808	35.16	115	H	206	46	-10.84
115.361	32.57	99	V	112	43.5	-10.93

802.11g,Worst Channel (Low Channel 2412 MHz, measured at 3 meters)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
319.9978	40.16	115	H	229	46	-5.84
60.03325	32.54	245	V	154	40	-7.46
114.9733	35.53	129	V	107	43.5	-7.97
144.0115	34.52	274	H	277	43.5	-8.98
48.00525	29.81	105	V	328	40	-10.19
288.0223	35.45	109	H	212	46	-10.55

802.11n 20 MHz BW, Worst Channel (Low Channel 2412 MHz, measured at 3 meters)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
320.0273	39.65	99	H	212	46	-6.35
151.7173	35.35	221	H	64	43.5	-8.15
143.4740	35.26	246	H	11	43.5	-8.24
287.9913	37.10	107	H	176	46	-8.90
59.8035	30.71	303	V	142	40	-9.29
418.3058	30.99	242	H	2	46	-15.01

2) Above 1 GHz Measured at 3 meters:

802.11b mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Part 15C		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
802.11b, Low Channel 2412 MHz, measured at 3 meters											
2571.67	52.11	45	100	V	29.0	3.27	27.6	56.79	74	-17.21	peak
2571.92	51.33	94	183	H	29.0	3.27	27.6	56.01	74	-17.99	peak
2571.17	42.2	45	100	V	29.0	3.27	27.6	46.88	54	-7.12	Ave
2571.17	42.24	94	183	H	29.0	3.27	27.6	46.92	54	-7.08	Ave
4823.95	46.58	357	163	V	32.9	4.56	27.8	56.27	74	-17.73	peak
4824	46.55	212	163	H	32.9	4.56	27.8	56.24	74	-17.76	peak
4824	43.05	357	163	V	32.9	4.56	27.8	52.74	54	-1.26	Ave
4824.05	42.85	212	163	H	32.9	4.56	27.8	52.54	54	-1.46	Ave
802.11b, Middle Channel 2437 MHz, measured at 3 meters											
2599.08	54.52	256	159	V	29.3	3.27	27.6	59.52	74	-14.48	peak
2599.58	51.91	94	220	H	29.3	3.27	27.6	56.91	74	-17.09	peak
2600	42.75	256	159	V	29.3	3.27	27.6	47.75	54	-6.25	Ave
2599.83	41.71	94	220	H	29.3	3.27	27.6	46.71	54	-7.29	Ave
4874.02	46.96	360	161	V	32.9	4.54	27.8	56.59	74	-17.41	peak
4873.97	46.59	208	173	H	32.9	4.54	27.8	56.22	74	-17.78	peak
4874.05	42.26	360	161	V	32.9	4.54	27.8	51.89	54	-2.11	Ave
4874.1	42.97	208	173	H	32.9	4.54	27.8	52.60	54	-1.40	Ave
802.11b, High Channel 2462 MHz, measured at 3 meters											
2356.75	50.65	44	100	V	27.7	3.12	27.5	53.93	74	-20.07	peak
2342.17	48.41	155	256	H	27.7	3.12	27.5	51.69	74	-22.31	peak
2320	37.41	44	100	V	27.7	3.12	27.5	40.69	54	-13.31	Ave
2320	35.76	155	256	H	27.7	3.12	27.5	39.04	54	-14.96	Ave
4924.07	47.17	159	112	V	33.0	4.52	27.7	56.98	74	-17.02	peak
4923.87	47.11	204	168	H	33.0	4.52	27.7	56.92	74	-17.08	peak
4923.98	43.58	159	112	V	33.0	4.52	27.7	53.39	54	-0.61	Ave
4924.05	43.82	204	168	H	33.0	4.52	27.7	53.63	54	-0.37	Ave

802.11g mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Part 15C		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
802.11g, Low Channel 2412 MHz, measured at 3 meters											
2381.33	62.18	44	100	V	27.8	3.12	27.5	65.56	74	-8.44	peak
2381.5	56.9	69	127	H	27.8	3.12	27.5	60.28	74	-13.72	peak
2383.92	35.09	44	100	V	27.8	3.12	27.5	38.51	54	-15.49	Ave
2384.5	30.45	69	127	H	27.8	3.12	27.5	33.83	54	-20.17	Ave
7234.08	50.44	105	152	V	37.8	5.49	27.5	66.25	74	-7.75	peak
7234.58	50.81	203	166	H	37.8	5.49	27.5	66.62	74	-7.38	peak
7236.83	28.23	105	152	V	37.8	5.49	27.5	44.04	54	-9.96	Ave
7236.5	27.92	203	166	H	37.8	5.49	27.5	43.73	54	-10.27	Ave
802.11g, Middle Channel 2437 MHz, measured at 3 meters											
2378.42	50.77	46	100	V	27.8	3.12	27.5	54.15	74	-19.85	peak
2377.92	45.91	70	124	H	27.8	3.12	27.5	49.29	74	-24.71	peak
2377.83	35.78	46	100	V	27.8	3.12	27.5	39.20	54	-14.80	Ave
2378.08	32.84	70	124	H	27.8	3.12	27.5	36.22	54	-17.78	Ave
7309.67	51.38	165	152	V	37.8	5.57	27.9	66.81	74	-7.19	peak
7309.17	50.32	202	181	H	37.8	5.57	27.9	65.75	74	-8.25	peak
7310.33	27.04	165	152	V	37.8	5.57	27.9	42.47	54	-11.53	Ave
7304	26.69	202	181	H	37.8	5.57	27.9	42.12	54	-11.88	Ave
802.11g, High Channel 2462 MHz, measured at 3 meters											
2492.75	50.72	45	100	V	28.5	3.35	27.6	54.96	74	-19.04	peak
2494.83	47.02	94	100	H	28.5	3.35	27.6	51.26	74	-22.74	peak
2500.5	28.1	45	100	V	28.5	3.35	27.6	32.34	54	-21.66	Ave
2500.25	27.82	94	100	H	28.5	3.35	27.6	32.06	54	-21.94	Ave
7385.58	41.69	346	164	V	37.6	5.62	27.9	56.99	74	-17.01	peak
7383.33	40.95	199	170	H	37.6	5.62	27.9	56.25	74	-17.75	peak
7385.17	27.52	346	164	V	37.6	5.62	27.9	42.82	54	-11.18	Ave
7381.58	27.48	199	170	H	37.6	5.62	27.9	42.78	54	-11.22	Ave

802.11n 20 MHz BW mode

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Part 15C		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
802.11n 20 MHz BW, Low Channel 2412 MHz, measured at 3 meters											
2380.96	65.49	179	100	V	27.8	3.12	27.5	68.87	74	-5.13	peak
2339.78	62.97	159	100	H	27.8	3.12	27.5	66.35	74	-7.65	peak
2384.46	38.36	179	100	V	27.8	3.12	27.5	41.74	54	-12.26	Ave
2384.71	35.96	159	100	H	27.8	3.12	27.5	39.34	54	-14.66	Ave
7234.92	53.23	295	180	V	37.8	5.49	27.5	69.04	74	-4.96	peak
7235.92	48.44	77	151	H	37.8	5.49	27.5	64.25	74	-9.75	peak
7235	28.1	295	180	V	37.8	5.49	27.5	43.91	54	-10.09	Ave
7233.67	27.67	77	151	H	37.8	5.49	27.5	43.48	54	-10.52	Ave
802.11n 20 MHz BW, Middle Channel 2437 MHz, measured at 3 meters											
2356.97	50.53	332	100	V	27.7	3.12	27.5	53.81	74	-20.19	peak
2354.47	48.25	156	256	H	27.7	3.12	27.5	51.53	74	-22.47	peak
2354.47	38.17	332	100	V	27.7	3.12	27.5	41.45	54	-12.55	Ave
2377.97	36.81	156	256	H	27.7	3.12	27.5	40.09	54	-13.91	Ave
7308	50.3	167	140	V	37.8	5.57	27.9	65.73	74	-8.27	peak
7304.83	47.39	184	173	H	37.8	5.57	27.9	62.82	74	-11.18	peak
7310.58	28.09	167	140	V	37.8	5.57	27.9	43.52	54	-10.48	Ave
7310	27.36	184	173	H	37.8	5.57	27.9	42.79	54	-11.21	Ave
802.11n 20 MHz BW, High Channel 2462 MHz, measured at 3 meters											
2376.5	49.41	332	100	V	27.8	3.12	27.5	52.79	74	-21.21	peak
2379.33	48.4	161	255	H	27.8	3.12	27.5	51.78	74	-22.22	peak
2376.42	37.14	332	100	V	27.8	3.12	27.5	40.56	54	-13.44	Ave
2379.58	35.87	161	255	H	27.8	3.12	27.5	39.25	54	-14.75	Ave
7382.5	44.3	71	161	V	37.6	5.62	27.9	59.60	74	-14.40	peak
-[1]	-	-	-	-	-	-	-	-	-	-	-
7383.17	27.85	71	161	V	37.6	5.62	27.9	43.15	54	-10.85	Ave
-[1]	-	-	-	-	-	-	-	-	-	-	-

Note[1]: *Spurious emissions at or below noise floor level*

3) Restricted Band Edge:

Frequency (MHz)	S.A. Reading (dBµV)	Turntable Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Amp. (dBµV/m)	Part 15C		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
802.11b, Lowest Channel											
2390	36.92	32	100	V	27.8	3.12	0	67.84	74	-6.160	peak
2389.47	36.18	170	246	H	27.8	3.12	0	67.1	74	-6.900	peak
2390	18.42	32	100	V	27.8	3.12	0	49.34	54	-4.660	Ave
2390	18.31	170	246	H	27.8	3.12	0	49.23	54	-4.770	Ave
802.11b, Highest Channel											
2483.8	37.31	330	100	V	28.5	3.21	0	69.02	74	-4.980	peak
2483.52	37.37	168	232	H	28.5	3.21	0	69.08	74	-4.920	peak
2483.5	21.54	330	100	V	28.5	3.21	0	53.25	54	-0.750	Ave
2483.5	19.37	168	232	H	28.5	3.21	0	51.08	54	-2.920	Ave
802.11g, Lowest Channel											
2390	39.470	46	100	V	27.8	3.12	0	70.390	74	-3.610	peak
2390	31.150	173	100	H	27.8	3.12	0	62.070	74	-11.930	peak
2390	21.120	46	100	V	27.8	3.12	0	52.040	54	-1.960	Ave
2390	14.990	173	100	H	27.8	3.12	0	45.910	54	-8.090	Ave
802.11g, Highest Channel											
2483.64	40.340	44	100	V	28.5	3.21	0	72.050	74	-1.950	peak
2483.55	36.030	95	100	H	28.5	3.21	0	67.740	74	-6.260	peak
2483.58	21.800	44	100	V	28.5	3.21	0	53.510	54	-0.490	Ave
2483.55	18.050	95	100	H	28.5	3.21	0	49.760	54	-4.240	Ave
802.11n 20 MHz BW, Lowest Channel											
2389.87	41.610	167	182	V	27.8	3.12	0	72.530	74	-1.470	peak
2389.73	38.930	171	100	H	27.8	3.12	0	69.850	74	-4.150	peak
2389.47	22.810	167	182	V	27.8	3.12	0	53.730	54	-0.270	Ave
2390	20.680	171	100	H	27.8	3.12	0	51.600	54	-2.400	Ave
802.11n 20 MHz BW, Highest Channel											
2483.55	40.830	46	100	V	28.5	3.21	0	72.540	74	-1.460	peak
2484.27	36.250	170	100	H	28.5	3.21	0	67.960	74	-6.040	peak
2483.5	21.970	46	100	V	28.5	3.21	0	53.680	54	-0.320	Ave
2484.62	18.380	170	100	H	28.5	3.21	0	50.090	54	-3.910	Ave

9 FCC §15.247(a) (2) – 6 dB & 99% Emission Bandwidth

9.1 Applicable Standard

According to FCC §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz

9.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.

10 FCC §15.247(b) - Peak Output Power Measurement

10.1 Applicable Standard

FCC §15.247(b) the maximum peak output power of the intentional radiator shall not exceed the following:

FCC §15.247(b) (3) for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

10.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.

11 FCC §15.247(d) - 100 kHz Bandwidth of Band Edges

11.1 Applicable Standard

According to FCC §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c)).

11.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.

12 FCC §15.247(e) - Power Spectral Density

12.1 Applicable Standard

According to FCC §15.247 (e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

12.2 Test Results

Please Refer to original filing of FCC ID: LNQGT784WN, Report #: R10081714 Granted by BACL on 2010-10-08.