Elliott Laboratories
www.elliottlabs.com
684 West Maude Avenue
Sunnyvale, CA 94085-3518
408-245-7800 Phone
408-245-3499 Fax

Electromagnetic Emissions Test Report
Application for Grant of Equipment Authorization
pursuant to
Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7
FCC Part 15, Subpart E
on the
Ruckus Wireless
Transmitter
Model: 7962

UPN:	5912A-7962
FCC ID:	S9G7962
GRANTEE:	Ruckus Wireless 880 West Maude Ave. Suite 101 Sunnyvale, CA 94085
TEST SITE(S):	Elliott Laboratories 684 W. Maude Ave Sunnyvale, CA 94086 IC Site Registration #: IC 2845A-1; IC 2845A-2
REPORT DATE:	March 2, 2009
FINAL TEST DATE:	February 9, February 10, February 11 and February 19, 2009
AUTHORIZED SIGNATORY:	Mark E. Hill Staff Engineer

ACCREDITED

Testing Cert #2016-01

REVISION HISTORY

Rev #	Date	Comments	Modified By
1			

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SCOPE

An electromagnetic emissions test has been performed on the Ruckus Wireless model 7962 pursuant to the following rules:

Industry Canada RSS-Gen Issue 2
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15, Subpart E requirements for UNII Devices (using FCC DA 02-2138, August 30, 2002)

Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in the following reference standards and as outlined in Elliott Laboratories test procedures:

ANSI C63.4:2003
FCC UNII test procedure 2002-08 DA-02-2138, August 2002

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Ruckus Wireless model 7962 and therefore apply only to the tested sample. The sample was selected and prepared by Craig Owens of Ruckus Wireless.

OBJECTIVE

The primary objective of the manufacturer is compliance with the regulations outlined in the previous section.

Prior to marketing in the USA, all unlicensed transmitters and transceivers require certification. Receive-only devices operating between 30 MHz and 960 MHz are subject to either certification or a manufacturer's declaration of conformity, with all other receive-only devices exempt from the technical requirements.

Prior to marketing in Canada, Class I transmitters, receivers and transceivers require certification. Class II devices are required to meet the appropriate technical requirements but are exempt from certification requirements.

Certification is a procedure where the manufacturer submits test data and technical information to a certification body and receives a certificate or grant of equipment authorization upon successful completion of the certification body's review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units, which are subsequently manufactured.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

STATEMENT OF COMPLIANCE

The tested sample of Ruckus Wireless model 7962 complied with the requirements of the following regulations:

RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"
FCC Part 15, Subpart E requirements for UNII Devices

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

TEST RESULTS SUMMARY

UNII / LELAN DEVICES

Operation in the 5.15 – 5.25 GHz Band

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407(e)		Indoor operation only	Refer to user's manual	N/A	Complies
15.407(a) (1)		26dB Bandwidth	802.11a 33.2 MHz 802.11 HT20 26.3 MHz 802.11 HT40 51.3 MHz	N/A – limits output power if < 20MHz	N/A
15.407 (a) (1)	A9.2(1)	Output Power	802.11a 16.5 dBm (0.045W) 802.11 HT20 16.2 dBm (0.042W) 802.11 HT40 16.3 dBm (0.043)	17dBm	Complies
15.407 (a) (1)		Power Spectral Density	802.11a 2.5 dBm/MHz 802.11 HT20 3.9 dBm/MHz 802.11 HT40 0.4 dBm/MHz	4 dBm/MHz	Complies
	A9.5 (2)		802.11a 2.5 dBm/MHz 802.11 HT20 3.9 dBm/MHz 802.11 HT40 0.4 dBm/MHz	7 dBm/MHz	Complies

General requirements for all UNII bands

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
	A9.5a	Modulation	Digital Modulation is used	Digital modulation is required	Complies
	RSP 100	99% bandwidth	802.11a 19.1 MHz 802.11 HT20 18.9 MHz 802.11 HT40 37.2 MHz	Information only	
15.407(b) (5) / 15.209	A9.3	Spurious Emissions below 1GHz	No emissions below 1GHz	Refer to Standard	Complies
15.407(b) (2)	A9.3	Spurious Emissions above 1GHz	53.9dBµV/m @ 5150.0MHz (-0.1dB)	Refer to Standard	Complies
15.407(a)(6)	-	Peak Excursion Ratio	12.9dB	< 13dB	Complies
	A9.5 (3)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		
15.407 (c)	A9.5(4)	Operation in the absence of information to transmit	Operation is discontinued in the absence of information	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g)	A9.5 (5)	Frequency Stability	Frequency stability is better than 10ppm		Complies
	A9.7	User Manual information	Refer to Exhibit 6 for details		Complies

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	All antennas are internal		Complies
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	50.9dBµV/m @ 7066.7MHz	Refer to standard	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	52.6dBµV @ 13.853MHz (-7.4dB)	Refer to standard	Complies (- ?.? dB)
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding non-interference	
	RSP 100 RSS GEN 7.1.5	User Manual		Statement required regarding detachable antenna	

MEASUREMENT UNCERTAINTIES

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	0.015 to 30	± 3.0
Radiated Emissions	30 to 1000	± 3.6
Radiated Emissions	1000 to 40000	± 6.0

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Ruckus Wireless model 7962 is an Access Point that is designed to distribute WiFi. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/230 Volts, 50/60 Hz, 0.5 Amps. The EUT can also be powered over the POE port.

The sample was received on November 13, 2008 and tested on February 9, February 10, February 11 and February 19, 2009. The EUT consisted of the following component(s):

Manufacturer	Model	Description	Serial Number	FCC ID
Ruckus Wireless, Inc.	7962	802.11a/b/g/n Access Point	0901000003	S9G7962

OTHER EUT DETAILS

The following power supplies are supported in addition to any PoE injector or switch. Ruckus does not supply the PoE supply.

DVE	S024EU1200150	Power Supply	-	-

ANTENNA SYSTEM

The antenna is integral to the device.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 19 cm wide by 15 cm deep by 10 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with emissions specifications.

SUPPORT EQUIPMENT

No equipment was used as local support equipment for emissions testing.

The following equipment was used as remote support equipment for emissions testing:

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	-	Laptop Computer	-	DoC

EUT INTERFACE PORTS

The I/O cabling configuration during emissions testing was as follows:

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop	CAT5	Unshielded	3m
DC Power	AC/DC Adapter	Multiconductor	Shielded	1.5

EUT OPERATION

During transmit mode testing, the EUT was set to continuously transmit at the desired channel, power, and mode. For receive mode testing, the EUT was configured in a receive only mode.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on February 9, February 10, February 11 and February 19, 2009 at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
SVOATS #1	90592	IC 2845-1	684 West Maude Ave, Sunnyvale CA 94085-3518
SVOATS #2	90593	IC 2845-2	

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception, on OATS sites, of predictable local TV, radio, and mobile communications traffic. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4:2003. Measurements are made with the EUT connected to the public power network through a nominal, standardized RF impedance, which is provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A loop antenna is used below 30 MHz. For the measurement range 30 MHz to 1000 MHz either a combination of a biconical antenna and a log periodic or a bi-log antenna is used. Above 1000 MHz, horn antennas are used. The antenna calibration factors to convert the received voltage to an electric field strength are included with appropriate cable loss and amplifier gain factors to determine an overall site factor, which is then programmed into the test receivers or incorporated into the test software.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

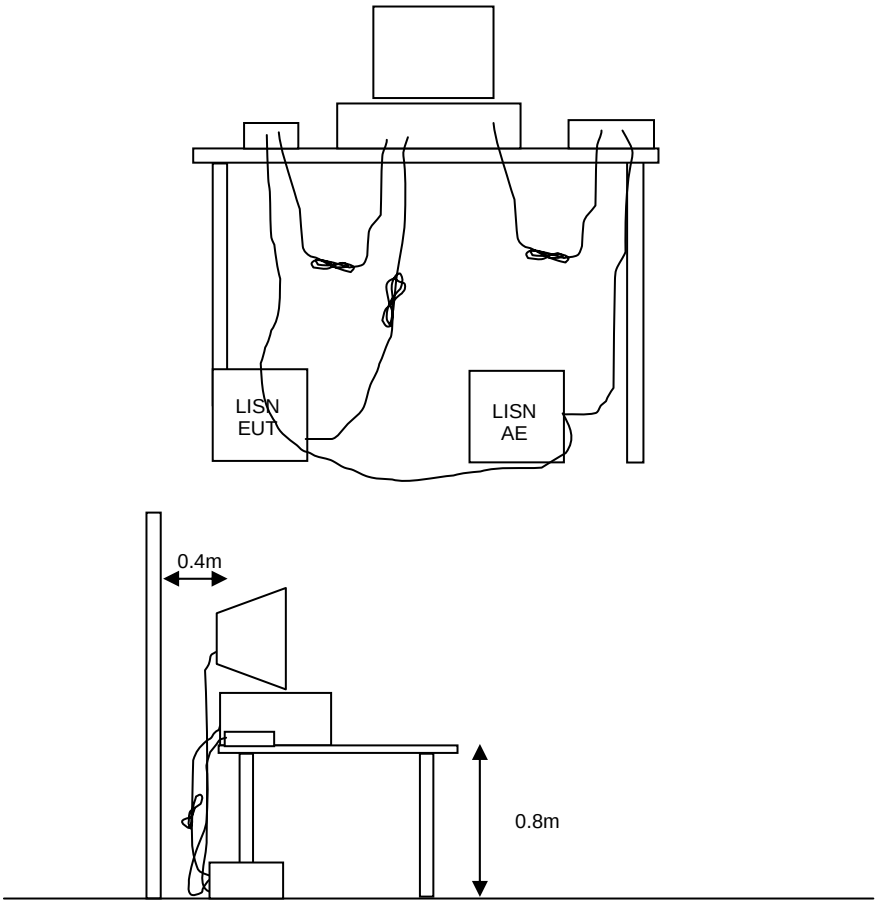
TEST PROCEDURES

EUT AND CABLE PLACEMENT

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

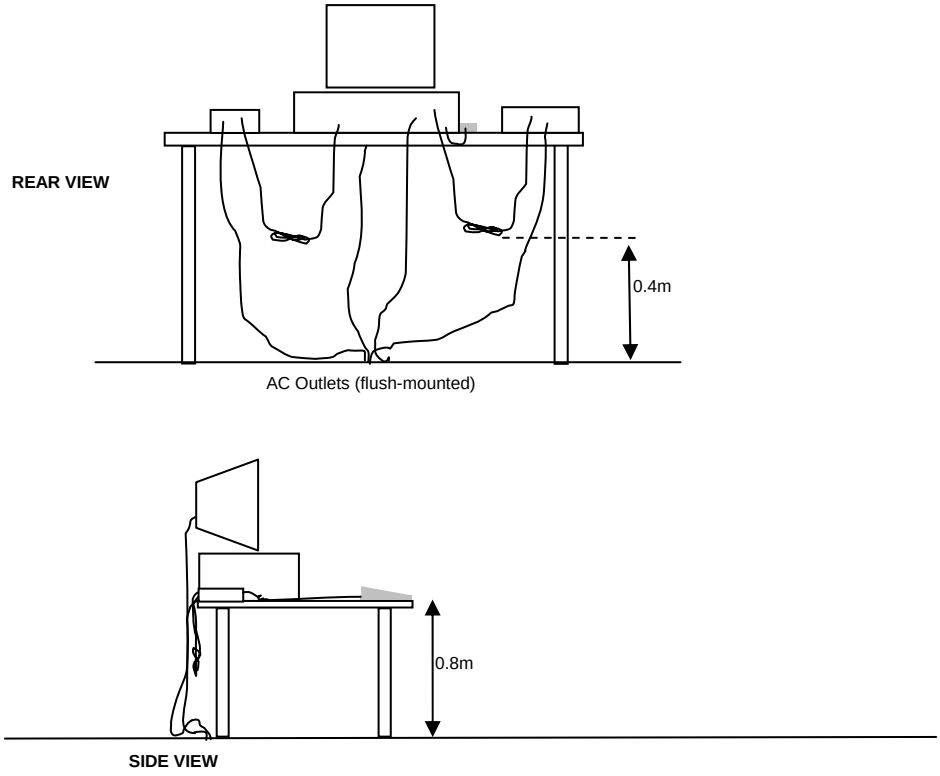


A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

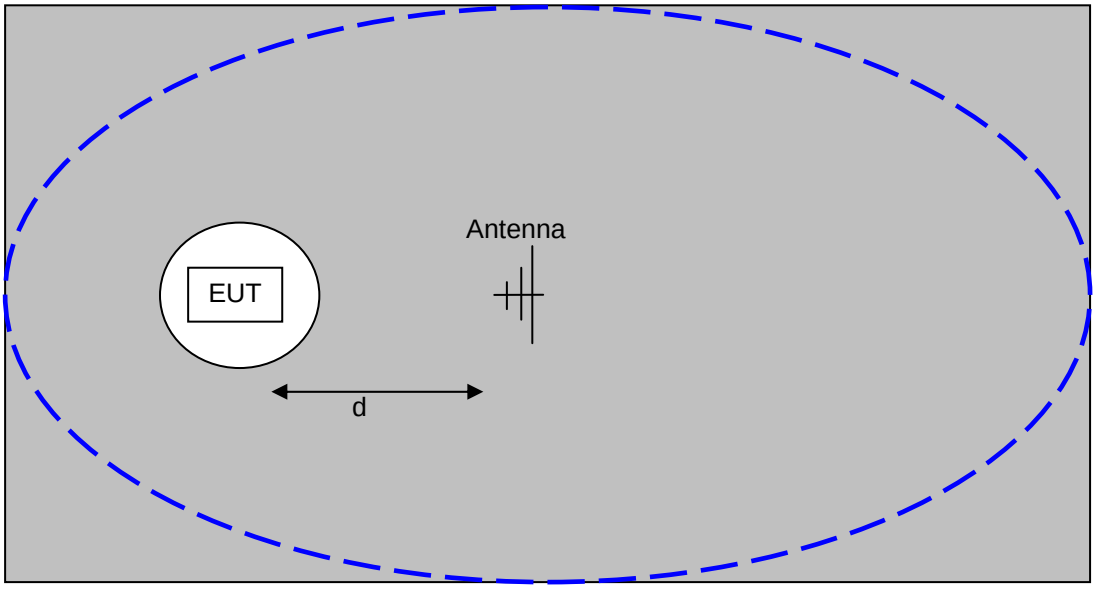
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

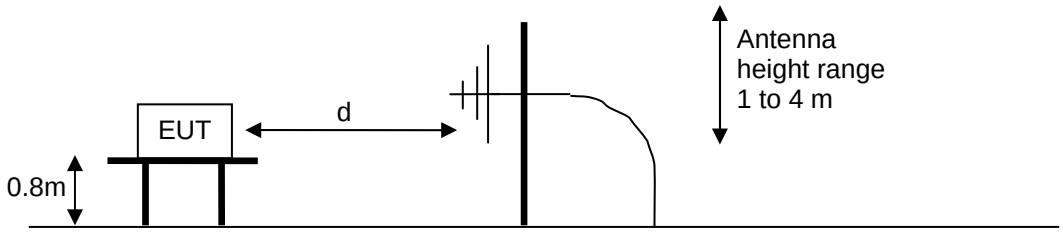
When testing above 18 GHz, the receive antenna is located at 1meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.



Typical Test Configuration for Radiated Field Strength Measurements



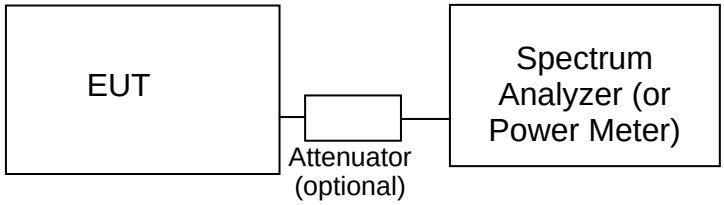
The ground plane extends beyond the ellipse defined in CISPR 16 / CISPR 22 / ANSI C63.4 and is large enough to accommodate test distances (d) of 3m and 10m. Refer to the test data tables for the actual measurement distance.



Test Configuration for Radiated Field Strength Measurements
OATS- Plan and Side Views

CONDUCTED EMISSIONS FROM ANTENNA PORT

Direct measurements of power, bandwidth and power spectral density are performed, where possible, with the antenna port of the EUT connected to either the power meter or spectrum analyzer via a suitable attenuator and/or filter. These are used to ensure that the front end of the measurement instrument is not overloaded by the fundamental transmission.



Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and Elliott's test procedures for the type of radio being tested. When power measurements are made using a resolution bandwidth less than the signal bandwidth the power is calculated by summing the power across the signal bandwidth using either the analyzer channel power function or by capturing the trace data and calculating the power using software. In both cases the summed power is corrected to account for the equivalent noise bandwidth (ENBW) of the resolution bandwidth used.

If power averaging is used (typically for certain digital modulation techniques), the EUT is configured to transmit continuously. Power averaging is performed using either the built-in function of the analyzer or, if the analyzer does not feature power averaging, using external software. In both cases the average power is calculated over a number of sweeps (typically 100). When the EUT cannot be configured to continuously transmit then either the analyzer is configured to perform a gated sweep to ensure that the power is averaged over periods that the device is transmitting or power averaging is disabled and a max-hold feature is used.

If a power meter is used to make output power measurements the sensor head type (peak or average) is stated in the test data table.

BANDWIDTH MEASUREMENTS

The 6dB, 20dB and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands[1] (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100 @ 3m	40 @ 3m
88 to 216	150 @ 3m	43.5 @ 3m
216 to 960	200 @ 3m	46.0 @ 3m
Above 960	500 @ 3m	54.0 @ 3m

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 - 5250	50mW (17 dBm)	4 dBm/MHz
5250 - 5350	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

[1] The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

The peak excursion envelope is limited to 13dB.

OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 210. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 - 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 - 5350	250 mW (24 dBm)[1] 1W (30dBm) eirp	11 dBm/MHz
5470 - 5725	250 mW (24 dBm)[2] 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm) 4W eirp	17 dBm/MHz

In addition, the power spectral density limit shall be reduced by 1dB for every dB the highest power spectral density exceeds the "average" power spectral density) by more than 3dB. The "average" power spectral density is determined by dividing the output power by 10log(EBW) where EBW is the 99% power bandwidth.

Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

OUTPUT POWER AND SPURIOUS LIMITS –UNII and LELAN DEVICES

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of –27dBm/MHz, which is a field strength of 68.3dBuV/m/MHz at a distance of 3m. This is an average limit so the peak value of the emission may not exceed –7dBm/MHz (68.3dBuV/m/MHz at a distance of 3m). For devices operating in the 5725-5850Mhz bands under the LELAN/UNII rules, the limit within 10Mhz of the allocated band is increased to –17dBm/MHz.

[1] If EIRP exceeds 500mW the device must employ TPC
[2] If EIRP exceeds 500mW the device must employ TPC

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - S = M$$

where:

R_r = Receiver Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

A distance factor, when used for electric field measurements above 30MHz, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

For electric field measurements below 30MHz the extrapolation factor is either determined by making measurements at multiple distances or a theoretical value is calculated using the formula:

$$F_d = 40*LOG_{10} (D_m/D_s)$$

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

Where the radiated electric field strength is expressed in terms of the equivalent isotropic radiated power (eirp), or where a field strength measurement of output power is made in lieu of a direct measurement, the following formula is used to convert between eirp and field strength at a distance of 3m from the equipment under test:

$$E = \frac{1000000 \sqrt{30 P}}{3} \text{ microvolts per meter}$$

where P is the eirp (Watts)

EXHIBIT 1: Test Equipment Calibration Data

3 Pages

Radiated Emissions, 30 - 26,500 MHz, 13-Nov-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	15-Jul-10
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Nov-08

Radiated Emissions, 30 - 26,500 MHz, 23-Nov-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	06-Jun-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Nov-08
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	05-Aug-09
EMCO	Antenna, Horn, 1-18 GHz	3115	487	15-Jul-10

Radiated Emissions, 30 - 26,500 MHz, 18-Dec-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	09-Oct-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Dec-08
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	13-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 1000 - 18,000 MHz, 04-Feb-09
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	06-Jun-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Mar-09
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	13-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 30 - 18,000 MHz, 11-Feb-09
Engineer: Joseph Cadigal

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	09-Oct-09
Narda West	High Pass Filter, 8 GHz	HPF 180	821	18-Mar-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Mar-09
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	02-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 1000 - 18,000 MHz, 12-Feb-09
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 9 KHz-26.5 GHz, Non-Program	8563E	284	29-Dec-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	09-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 30 - 26,500 MHz, 13-Nov-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	487	15-Jul-10
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Nov-08

Radiated Emissions, 30 - 26,500 MHz, 23-Nov-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	06-Jun-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Nov-08
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	05-Aug-09
EMCO	Antenna, Horn, 1-18 GHz	3115	487	15-Jul-10

Radiated Emissions, 30 - 26,500 MHz, 18-Dec-08
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	09-Oct-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Dec-08
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	13-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 1000 - 18,000 MHz, 04-Feb-09
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	06-Jun-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Mar-09
Hewlett Packard	High Pass filter, 8.2 GHz (Red System)	P/N 84300-80039 (84125C)	1152	13-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 30 - 18,000 MHz, 11-Feb-09
Engineer: Joseph Cadigal

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	Biconical Antenna, 30-300 MHz	EL30.300	54	26-Mar-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	09-Oct-09
Narda West	High Pass Filter, 8 GHz	HPF 180	821	18-Mar-09
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	24-Mar-09
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	02-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 1000 - 18,000 MHz, 12-Feb-09
Engineer: Rafael Varelas

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 9 KHz-26.5 GHz, Non-Program	8563E	284	29-Dec-09
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	870	09-Oct-09
EMCO	Antenna, Horn, 1-18 GHz	3115	1561	10-Jun-10

Radiated Emissions, 30 - 1,000 MHz, 13-Nov-08
Engineer: Peter Sales

Manufacturer	Description	Model #	Asset #	Cal Due
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	23-May-09
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1630	22-Feb-09
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1632	22-May-09

Radiated Emissions, 30 - 1,000 MHz, 26-Nov-08
Engineer: Chris Groat

Manufacturer	Description	Model #	Asset #	Cal Due
Com-Power Corp.	Preamplifier, 30-1000 MHz	PA-103	1543	14-Nov-09
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	23-May-10
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	04-Dec-08

Radiated Emissions, 30 - 1,000 MHz, 17-Jan-09
Engineer: rvarelas

Manufacturer	Description	Model #	Asset #	Cal Due
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1538	19-Sep-09
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	13-Jun-10
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447E	1606	29-May-09

Conducted Emissions - AC Power Ports, 22-Jan-09
Engineer: Riaz Momand

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 9 KHz-26.5 GHz, Non-Program	8563E	284	29-Dec-09
Elliott Laboratories	LISN, FCC / CISPR	LISN-3, OATS	304	31-Jul-09
Solar Electronics	LISN	8028-50-TS-24-BNC support	904	15-Feb-09
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	02-Oct-09
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1398	12-Feb-09

Conducted Emissions - I-O Ports, 22-Jan-09
Engineer: Riaz Momand

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	SpecAn 9 KHz-26.5 GHz, Non-Program	8563E	284	29-Dec-09
Elliott Laboratories	LISN, FCC / CISPR	LISN-3, OATS	304	31-Jul-09
Solar Electronics	LISN	8028-50-TS-24-BNC support	904	15-Feb-09
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	02-Oct-09
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1398	12-Feb-09
Fischer Custom Comm.	FCC-TLISN-T8-02 (Includes 1907)	FCC-TLISN-T8-02	1906	05-Jul-09

Conducted Emissions - AC Power and Telecommunications Ports, 29-Jan-09
Engineer: Chris Groat

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	LISN, FCC / CISPR	LISN-4, OATS	362	31-Jul-09
Hewlett Packard	EMC Spectrum Analyzer, 9 kHz - 6.5 GHz	8595EM	787	19-Feb-09
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	812	12-Feb-09
Solar Electronics	LISN	8028-50-TS-24-BNC support	904	15-Feb-09
Fischer Custom Comm.	Non-Contact Voltage Probe	F-CVP-1	1296	09-Sep-09
Rohde & Schwarz	Test Receiver, 0.009-2750 MHz	ESN	1332	30-Jan-09
Fischer Custom Comm.	Current Probe, RF	F-16M	1820	26-Mar-10
Fischer Custom Comm.	FCC-TLISN-T8-02 (Includes 1907)	FCC-TLISN-T8-02	1906	05-Jul-09

Radiated Emissions, 30 - 2,000 MHz, 21-Feb-09
Engineer: Joseph Cadigal

Manufacturer	Description	Model #	Asset #	Cal Due
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	263	09-Oct-09
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	02-Sep-10
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1548	13-Jun-10
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	10-Feb-10
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	20-Oct-09
Hewlett Packard	Preamplifier, 100 kHz - 1.3 GHz	8447D OPT	2115	19-Nov-09

Conducted Emissions - Telecommunications Ports, 21-Feb-09
Engineer: Joseph Cadigal

Manufacturer	Description	Model #	Asset #	Cal Due
EMCO	LISN, 10 kHz-100 MHz	3825/2	1292	22-Feb-09
Rohde& Schwarz	Pulse Limiter	ESH3 Z2	1401	17-Apr-09
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	10-Feb-10
Fischer Custom Comm.	Current Probe, RF	F-16M	1820	26-Mar-10
Fischer Custom Comm.	Non-Contact Voltage Probe	F-CVP-1	1958	11-Dec-09

Conducted Emissions - Telecommunications Ports, 05-Mar-09
Engineer: Mark Hill

Manufacturer	Description	Model #	Asset #	Cal Due
Elliott Laboratories	LISN, FCC / CISPR	LISN-3, OATS	304	31-Jul-09
Rohde & Schwarz	Test Receiver, 9 kHz-2750 MHz	ESCS 30	1337	02-Oct-09
Fischer Custom Comm.	Current Probe, RF	F-16M	1820	26-Mar-10
Fischer Custom Comm.	Non-Contact Voltage Probe	F-CVP-1	1958	11-Dec-09

EXHIBIT 2: Test Measurement Data

84 Pages

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		-
Emissions Standard(s):	FCC Part 15.247/RSS-210	Class:	B
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Ruckus Wireless

Model

Dalmatian

Date of Last Test: 2/11/2009

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manger:	Dean Eriksen
Contact:	Craig Owens		
Emissions Standard(s):	FCC Part 15.247/RSS-210	Class:	B
Immunity Standard(s):	-	Environment:	-

EUT INFORMATION

General Description

The EUT is an Access Point that is designed to distribute WiFi. Since the EUT would be placed on a table top during operation, the EUT was treated as table-top equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 120/230 Volts, 50/60 Hz, 0.5 Amps using an external AC/DC adapter. The EUT can also be powered over the POE port.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Ruckus Wireless, Inc.	7962	802.11a/b/g/n Access	0901000003	S9G7962

Other EUT Details

The following power supplies are supported in addition to any PoE injector or switch. Ruckus does not supply the PoE supply.

DVE	S024EU1200150	Power Supply	-	-

EUT Antenna (Intentional Radiators Only)

The six antennas (3 for each band) used in the system are internal to the device.

EUT Enclosure

The EUT enclosure is primarily constructed of plastic. It measures approximately 19 cm wide by 15 cm deep by 10 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	No modifications were made to the EUT during testing.

Modifications applied are assumed to be used on subsequent tests unless otherwise stated as a further modification.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manger:	Dean Eriksen
Contact:	Craig Owens		
Emissions Standard(s):	FCC Part 15.247/RSS-210	Class:	B
Immunity Standard(s):	-	Environment:	-

Test Configuration #1

The following information was collected during the test session(s).

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
-	-	-	-	-

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
Dell	-	Laptop Computer	-	DoC

Cabling and Ports

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
Ethernet	Laptop	CAT5	Unshielded	3m
DC Power	AC/DC Adapter	Multiconductor	Shielded	1.5

EUT Operation During Emissions Tests

During transmit mode testing, the EUT was set to continuously transmit at the desired channel, power, and mode. For receive mode testing, the EUT was configured in a receive only mode.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: Refer to individual run
Test Engineer: Refer to individual run
Test Location: Refer to individual run

Config. Used: 1
Config Change: none
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.

For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11a Legacy	5150-5250 Low	14dBm		Restricted Band Edge at 5150 MHz	15.209	73.1dBµV/m @ 5150MHz (-0.9dB)
	802.11a Legacy	5150-5250 Low	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	56.8dBµV/m @ 10360.1MHz (-11.5dB)
	802.11a Legacy	5150-5250 Center	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	59.0dBµV/m @ 10400.5MHz (-9.3dB)
	802.11a Legacy	5150-5250 High	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	60.3dBµV/m @ 10480.0MHz (-8.0dB)

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-5250 MHz Band

Date of Test: 2/9/2009 & 2/11/09
Test Engineer: Joseph Cadigal/Rafael Varelas
Test Location: SVOATS #1

Run #1a: Low Channel @ 5180 MHz

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5181.600	106.4	V	-	-	AVG	287	1.2	RB 1 MHz; VB: 10 Hz, 14dbm
5180.300	115.2	V	-	-	PK	287	1.2	RB 1 MHz; VB: 1 MHz, 14dbm
5182.570	98.2	H	-	-	AVG	358	1.4	RB 1 MHz; VB: 10 Hz, 21dBm
5182.730	107.6	H	-	-	PK	358	1.4	RB 1 MHz; VB: 1 MHz, 21dBm

5150 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5149.980	73.1	V	74.0	-0.9	PK	287	1.2	RB 1 MHz; VB: 1 MHz, 14dbm
5149.900	52.7	V	54.0	-1.3	Avg	287	1.2	RB 1 MHz; VB: 10 Hz, 14dbm
5149.900	51.5	H	54.0	-2.5	Avg	358	1.4	RB 1 MHz; VB: 10 Hz, 21dBm
5149.880	67.5	H	74.0	-6.5	PK	358	1.4	RB 1 MHz; VB: 1 MHz, 21dBm

Spurious Radiated Emissions:

Power Setting = 21dbm

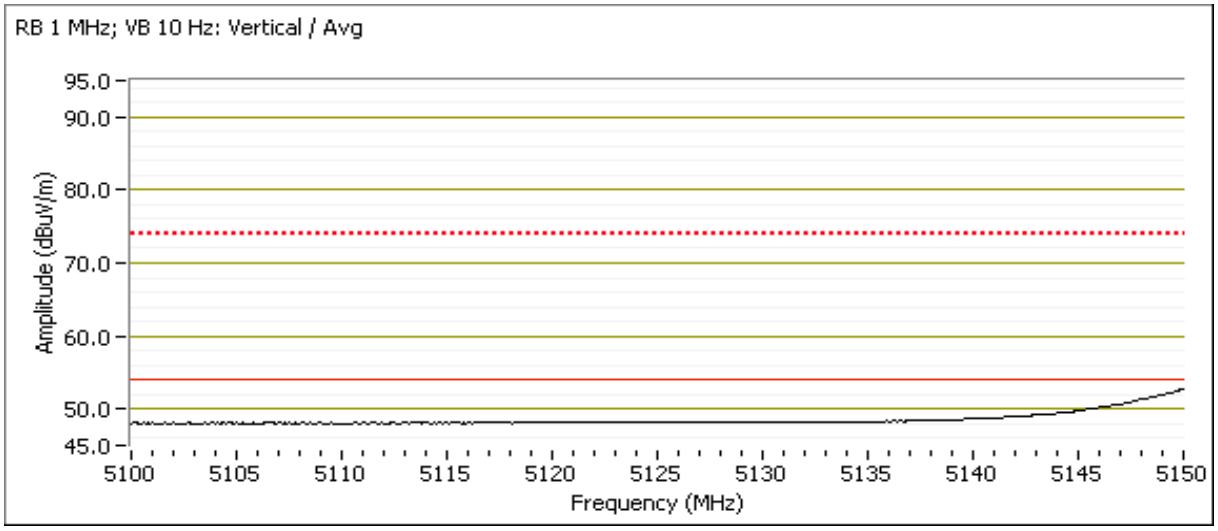
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10360.130	56.8	V	68.3	-11.5	AVG	238	1.0	RB 1 MHz; VB: 10 Hz
10360.490	56.6	H	68.3	-11.7	AVG	163	1.1	RB 1 MHz; VB: 10 Hz
10359.960	68.9	V	88.3	-19.4	PK	238	1.0	RB 1 MHz; VB: 1 MHz
10360.120	68.6	H	88.3	-19.7	PK	163	1.1	RB 1 MHz; VB: 1 MHz

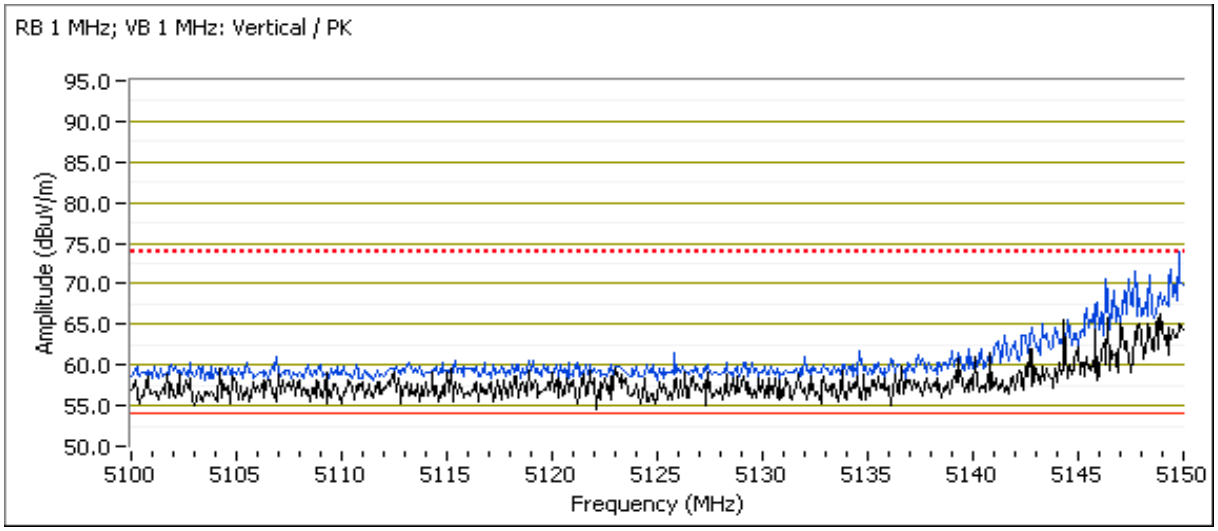
Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1a: Continued

Power = 14dBm

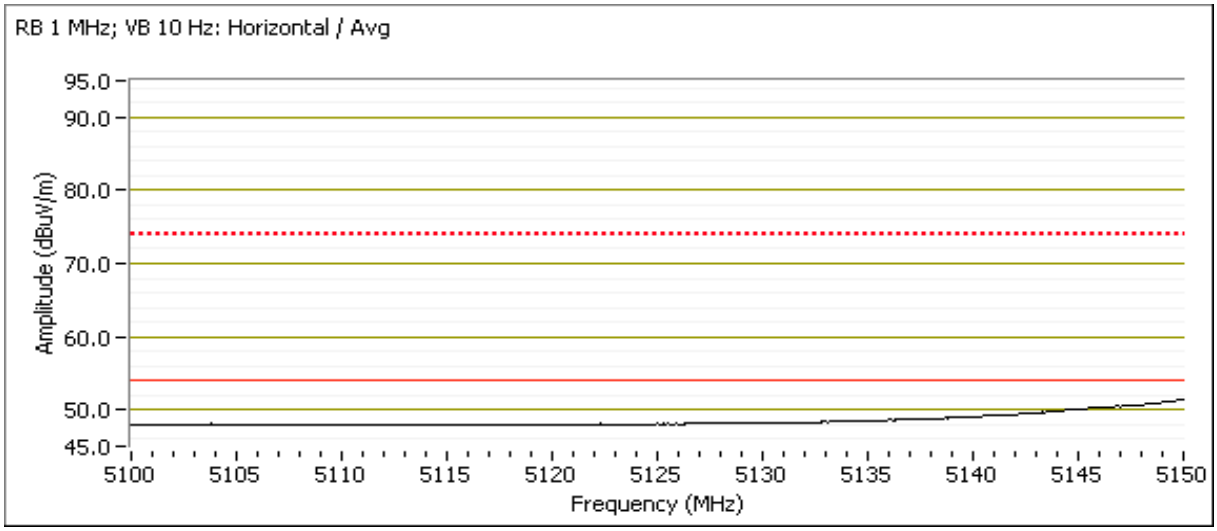


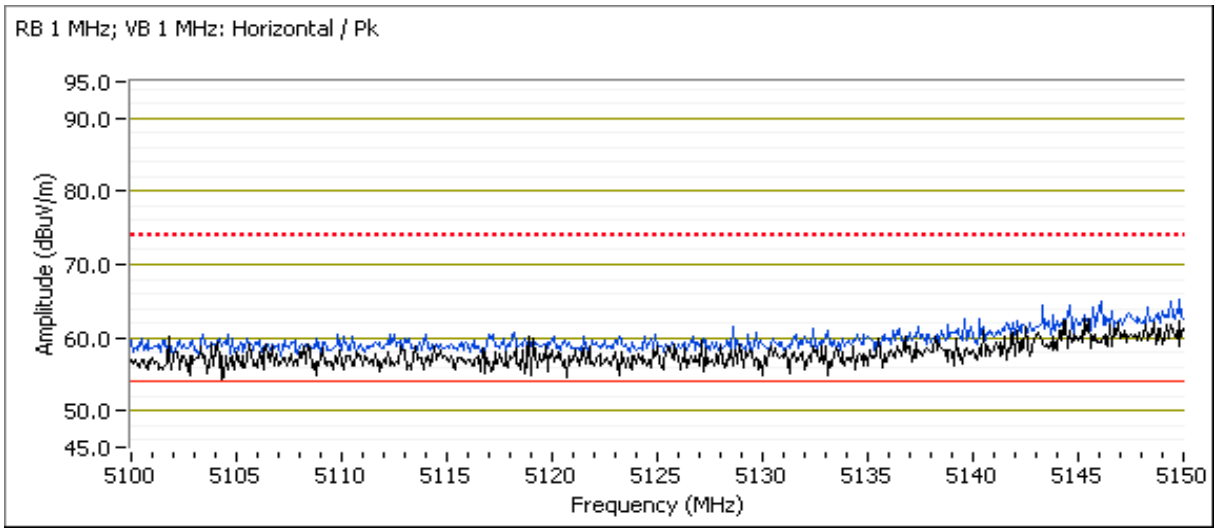


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1a: Continued

Power = 14dBm





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1b: Center Channel

Date of Test: 2/9/2009
Test Engineer: Joseph Cadigal
Test Location: SVOATS #1

Spurious Radiated Emissions:
Power Setting = 21dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10400.510	59.0	V	68.3	-9.3	AVG	120	1.4	RB 1 MHz; VB: 10 Hz
10401.500	56.7	H	68.3	-11.6	AVG	163	1.1	RB 1 MHz; VB: 10 Hz
10401.150	70.6	V	88.3	-17.7	PK	120	1.4	RB 1 MHz; VB: 1 MHz
10399.420	68.3	H	88.3	-20.0	PK	163	1.1	RB 1 MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Run #1c: High Channel @ 5240MHz

Spurious Radiated Emissions:
Power Setting = 21dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10480.000	60.3	V	68.3	-8.0	AVG	360	1.4	RB 1 MHz; VB: 10 Hz
10479.740	54.8	H	68.3	-13.5	AVG	162	1.1	RB 1 MHz; VB: 10 Hz
10481.220	73.8	V	88.3	-14.5	PK	360	1.4	RB 1 MHz; VB: 1 MHz
10478.760	67.0	H	88.3	-21.3	PK	162	1.1	RB 1 MHz; VB: 1 MHz

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: Refer to individual run
Test Engineer: Refer to individual run
Test Location: Refer to individual run

Config. Used: 1
Config Change: none
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11a Legacy	5150-5250 Low	14dBm		Restricted Band Edge at 5150 MHz	15.209	53.9dBµV/m @ 5150.0MHz (-0.1dB)
	802.11a Legacy	5150-5250 Low	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	56.6dBµV/m @ 10359.5MHz (-11.7dB)
	802.11a Legacy	5150-5250 Center	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	58.8dBµV/m @ 10401.3MHz (-9.5dB)
	802.11a Legacy	5150-5250 High	21dBm		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	59.9dBµV/m @ 10479.9MHz (-8.4dB)

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-5250 MHz Band
Power Setting = 21dbm
11n MCS0 HT20 mode

Date of Test: 2/10/2009 & 2/11/09
Test Engineer: Joseph Cadigal/Rafael Varelas
Test Location: SVOATS #1

Run #1a: Low Channel @ 5180 MHz

Fundamental Signal Field Strength

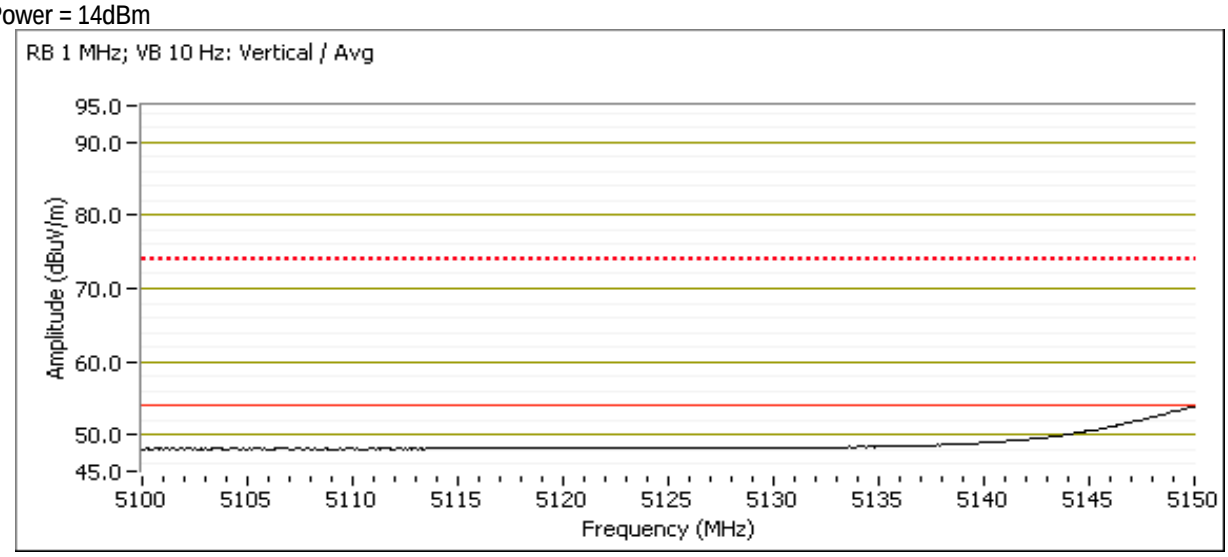
Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5181.630	106.0	V	-	-	AVG	287	1.2	RB 1 MHz; VB: 10 Hz, 14dbm
5184.170	114.5	V	-	-	PK	287	1.2	RB 1 MHz; VB: 1 MHz, 14dbm
5182.930	98.3	H	-	-	AVG	358	1.4	RB 1 MHz; VB: 10 Hz, 21dBm
5181.130	106.7	H	-	-	PK	358	1.4	RB 1 MHz; VB: 1 MHz, 21dBm

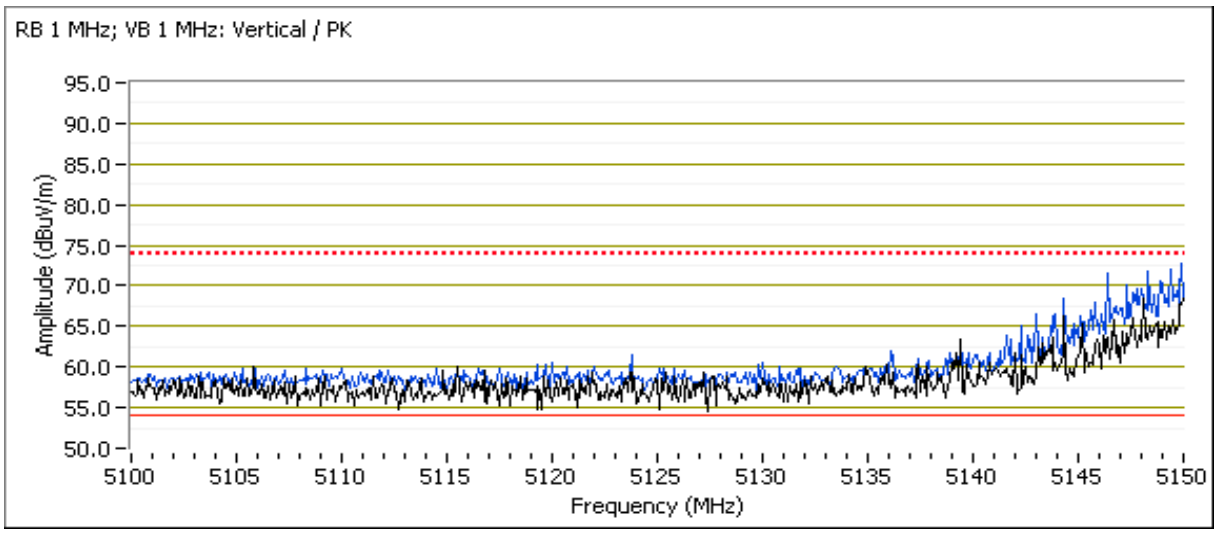
5150 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5149.970	53.9	V	54.0	-0.1	Avg	287	1.2	RB 1 MHz; VB: 10 Hz, 14dbm
5147.440	72.0	V	74.0	-2.0	PK	287	1.2	RB 1 MHz; VB: 1 MHz, 14dbm
5149.940	51.9	H	54.0	-2.1	Avg	358	1.4	RB 1 MHz; VB: 10 Hz, 21dBm
5150.330	67.7	H	74.0	-6.3	PK	358	1.4	RB 1 MHz; VB: 1 MHz, 21dBm

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

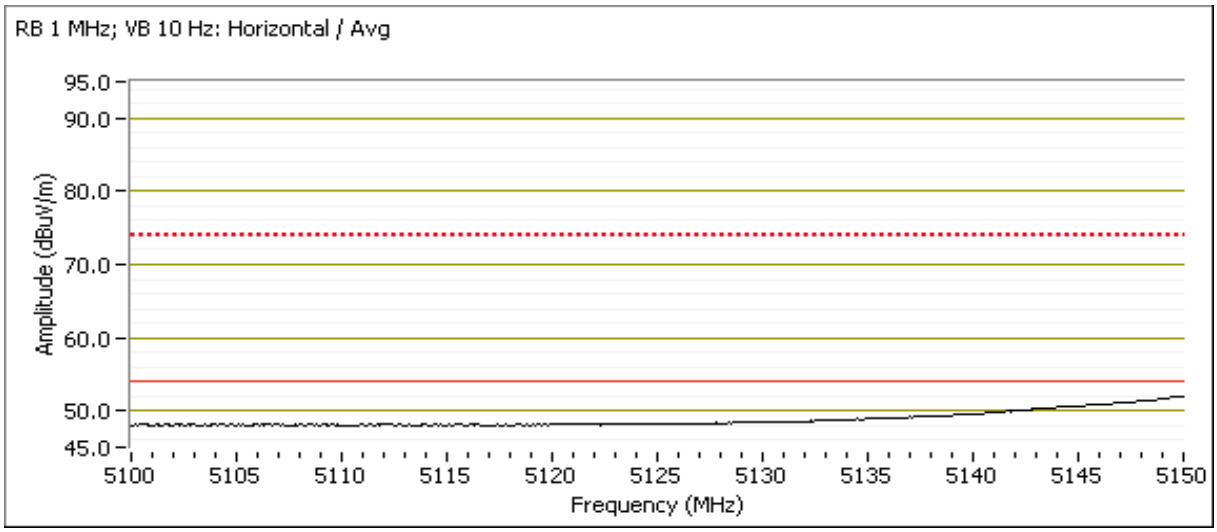
Power = 14dBm

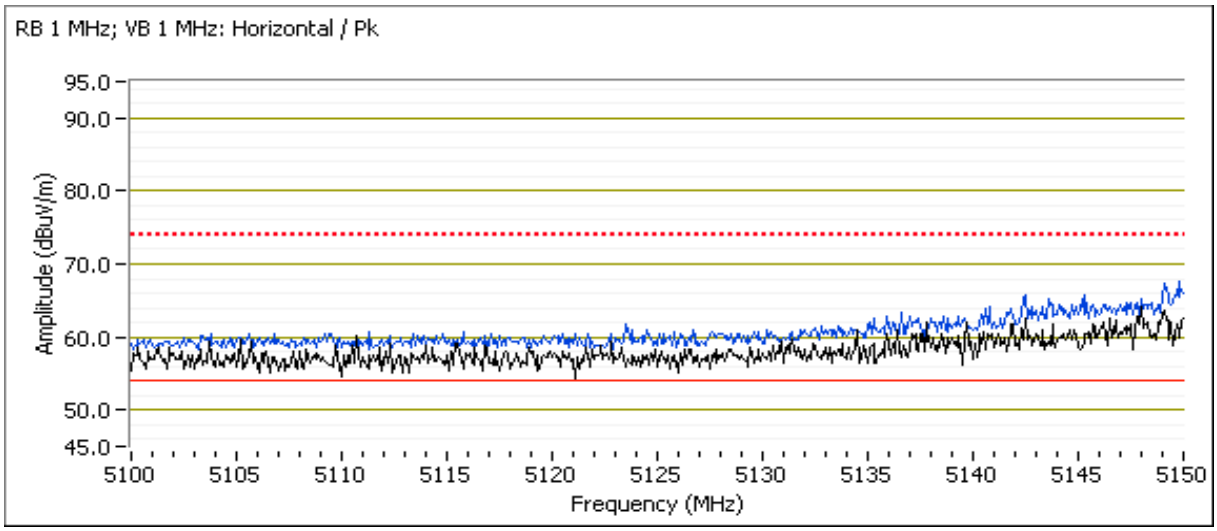




Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Power = 14dBm





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Spurious Radiated Emissions:
Power Setting = 21dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10359.530	56.6	V	68.3	-11.7	AVG	238	1.0	MHz; VB: 10 Hz
10358.870	68.7	V	88.3	-19.6	PK	238	1.0	MHz; VB: 1 MHz
10361.080	56.3	H	68.3	-12.0	AVG	163	1.1	MHz; VB: 10 Hz
10360.740	68.6	H	88.3	-19.7	PK	163	1.1	MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Run #1a: Center Channel
5200MHz
Date of Test: 2/10/2009
Test Engineer: Joseph Cadigal
Test Location: SVOATS #1

Spurious Radiated Emissions:
Power Setting = 21dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10401.250	58.8	V	68.3	-9.5	AVG	120	1.4	MHz; VB: 10 Hz
10399.580	70.0	V	88.3	-18.3	PK	120	1.4	MHz; VB: 1 MHz
10400.820	57.1	H	68.3	-11.2	AVG	163	1.1	MHz; VB: 10 Hz
10401.140	69.1	H	88.3	-19.2	PK	163	1.1	MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Run #1a: High Channel @ 5240MHz

Spurious Radiated Emissions:
Power Setting = 21dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10479.890	59.9	V	68.3	-8.4	AVG	360	1.4	MHz; VB: 10 Hz
10479.850	72.7	V	88.3	-15.6	PK	360	1.4	MHz; VB: 1 MHz
10479.620	54.4	H	68.3	-13.9	AVG	166	1.1	MHz; VB: 10 Hz
10478.510	66.3	H	88.3	-22.0	PK	166	1.1	MHz; VB: 1 MHz

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1c: High Channel @ 5260 MHz

Date of Test: 2/10/2009
Test Engineer: Joseph Cadigal
Test Location: SVOATS #1

Spurious Radiated Emissions:
Power Setting = 17dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10519.590	58.8	V	68.3	-9.5	AVG	360	1.7	. MHz; VB: 10 Hz
10519.670	71.6	V	88.3	-16.7	PK	360	1.7	MHz; VB: 1 MHz
10518.610	55.7	H	68.3	-12.6	AVG	198	1.1	. MHz; VB: 10 Hz
10521.410	69.5	H	88.3	-18.8	PK	198	1.1	MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: Refer to individual run
Test Engineer: Refer to individual run
Test Location: Refer to individual run

Config. Used: 1
Config Change: none
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing.
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	MCS0 HT40	5150-5250 Low	12.5dBm	-	Restricted Band Edge at 5150 MHz	15.209	53.9dBµV/m @ 5149.9MHz (-0.1dB)
	MCS0 HT40	5150-5250 Low	20dBm	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	42.5dBµV/m @ 10381.4MHz (-25.8dB)
	MCS0 HT40	5150-5250 High	20dBm	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	41.9dBµV/m @ 10461.4MHz (-26.4dB)

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5150-5250 MHz Band
11n MCS0 HT40 mode

Date of Test: 2/10/2009 & 2/11/09
Test Engineer: Joseph Cadigal/Rafael Varelas
Test Location: SVOATS #1

Run #1a: Low Channel @ 5190 MHz

Fundamental Signal Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5207.070	95.6	V	-	-	AVG	303	1.3	RB 1 MHz; VB: 10 Hz
5181.600	104.4	V	-	-	PK	303	1.3	RB 1 MHz; VB: 1 MHz
5207.070	83.5	H	-	-	AVG	350	1.7	RB 1 MHz; VB: 10 Hz
5206.730	91.7	H	-	-	PK	350	1.7	RB 1 MHz; VB: 1 MHz

5150 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5149.900	53.9	V	54.0	-0.1	Avg	303	1.3	RB 1 MHz; VB: 10 Hz
5148.830	69.2	V	74.0	-4.8	PK	303	1.3	RB 1 MHz; VB: 1 MHz
5147.310	48.4	H	54.0	-5.6	Avg	350	1.7	RB 1 MHz; VB: 10 Hz
5148.790	61.2	V	74.0	-12.8	PK	350	1.7	RB 1 MHz; VB: 1 MHz

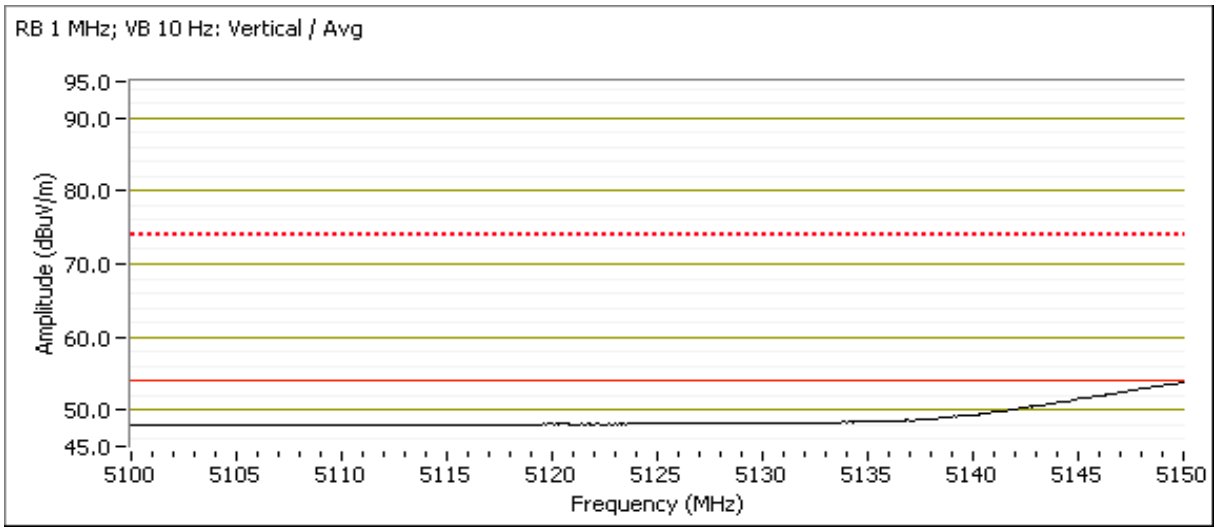
Spurious Radiated Emissions:
Power Setting = 20dBm

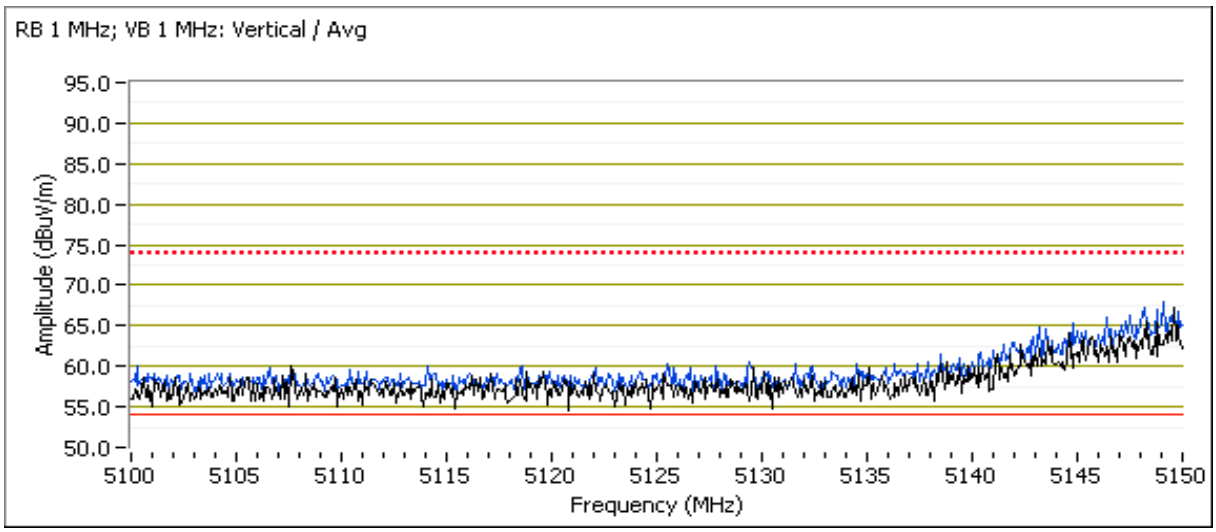
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10381.370	42.5	V	68.3	-25.8	AVG	120	1.0	MHz; VB: 10 Hz
10378.910	53.5	V	88.3	-34.8	PK	120	1.0	MHz; VB: 1 MHz
10381.470	42.5	H	68.3	-25.8	AVG	113	1.3	MHz; VB: 10 Hz
10379.570	53.5	H	88.3	-34.8	PK	113	1.3	MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

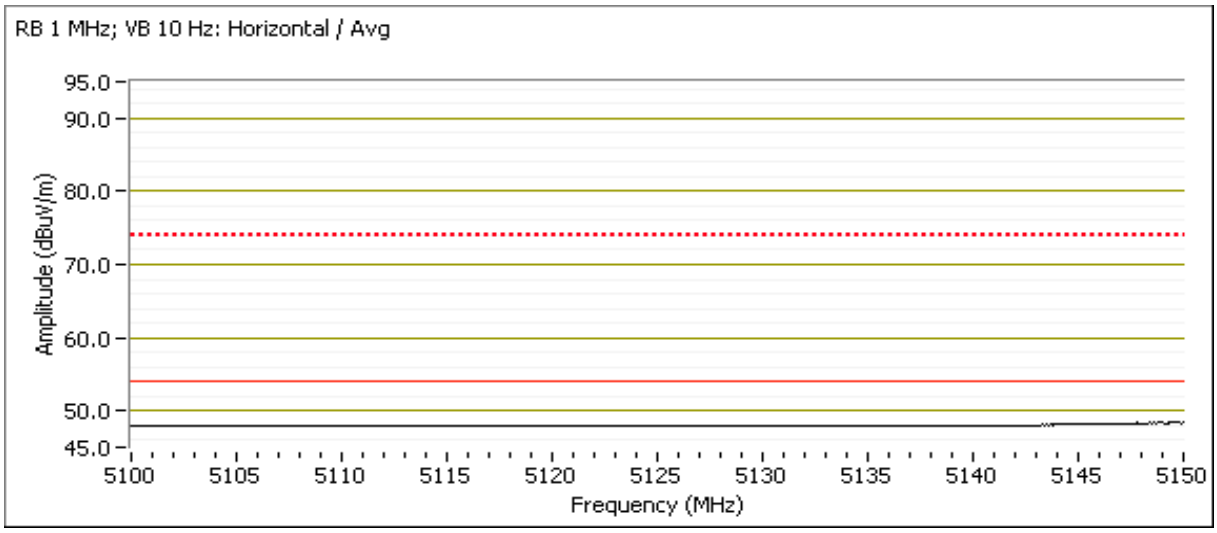
Run #1a: Continued

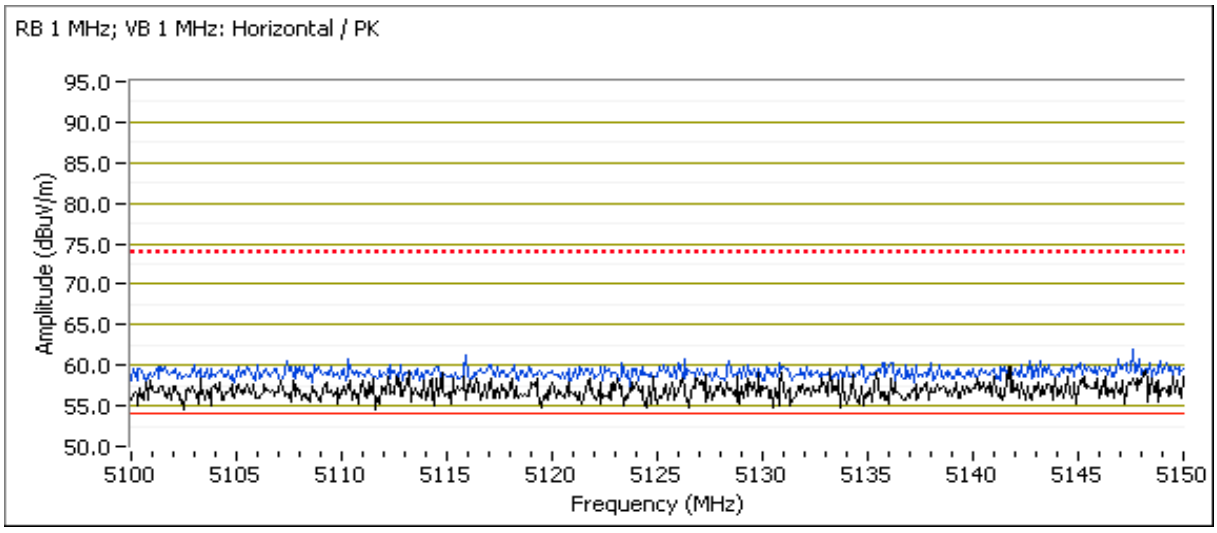




Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1a: Continued





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1b: High Channel @ 5230 MHz
Power Setting = 20dBm

Date of Test: 2/10/2009
Test Engineer: Joseph Cadigal
Test Location: SVOATS #1

Spurious Radiated Emissions:
Power Setting = 20dbm

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
10461.420	41.9	V	68.3	-26.4	AVG	219	1.0	MHz; VB: 10 Hz
10460.340	53.1	V	88.3	-35.2	PK	219	1.0	MHz; VB: 1 MHz

Note 1:	For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Radiated Emissions - Receive Mode

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 2/10/2009 & 2/11/09
Test Engineer: Joseph Cadigal/R. Varelas
Test Location: SVOATS #1 / Chamber #2

Config. Used: 1
Config Change: none
EUT Voltage: 120V/60Hz

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated emissions testing. Remote support equipment was located approximately 30 meters from the test area with all I/O connections running on top of the groundplane.

The test distance and extrapolation factor (if applicable) are detailed under each run description.

Note, **preliminary** testing indicates that the emissions were maximized by orientation of the EUT and elevation of the measurement antenna. **Maximized** testing indicated that the emissions were maximized by orientation of the EUT, elevation of the measurement antenna, and manipulation of the EUT's interface cables.

Ambient Conditions:

Temperature: 20 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
2 - RX on 5200 MHz Legacy Mode	RE, 30 - 1000MHz, Maximized Emissions	RSS GEN	Pass	28.9dBµV/m @ 153.215MHz (-14.6dB)
3a - RX on 5200 MHz Legacy Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	44.1dBµV/m @ 6933.4MHz (-9.9dB)
3b - RX on 5200 MHz HT40 Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	46.0dBµV/m @ 6933.4MHz (-8.0dB)
5 - RX on 5300 MHz Legacy Mode	RE, 30 - 1000MHz, Maximized Emissions	RSS GEN	Pass	26.9dBµV/m @ 53.771MHz (-13.1dB)
6a - RX on 5300 MHz Legacy Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	50.9dBµV/m @ 7066.7MHz (-3.1dB)
6b - RX on 5300 MHz HT40 Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	50.7dBµV/m @ 7066.7MHz (-3.3dB)
8 - RX on 5600 MHz Legacy Mode	RE, 30 - 1000MHz, Maximized Emissions	RSS GEN	Pass	26.0dBµV/m @ 53.847MHz (-14.0dB)
9a - RX on 5600 MHz Legacy Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	49.7dBµV/m @ 7466.7MHz (-4.3dB)
9b - RX on 5600 MHz HT40 Mode	RE, 1000 - 18000MHz, Maximized Emissions	RSS GEN	Pass	49.9dBµV/m @ 7466.7MHz (-4.1dB)

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Modifications Made During Testing

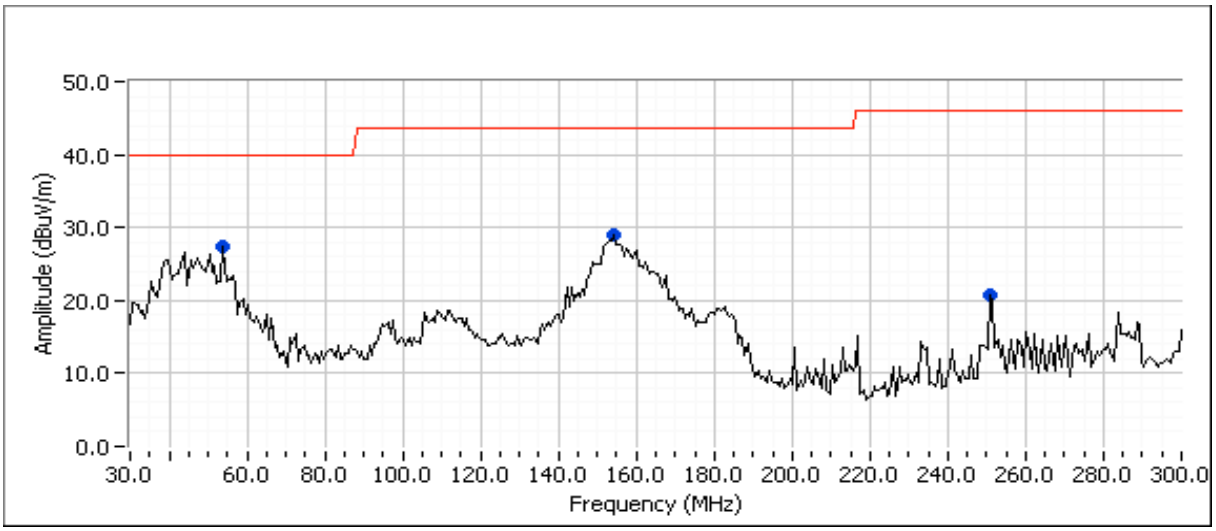
No modifications were made to the EUT during testing

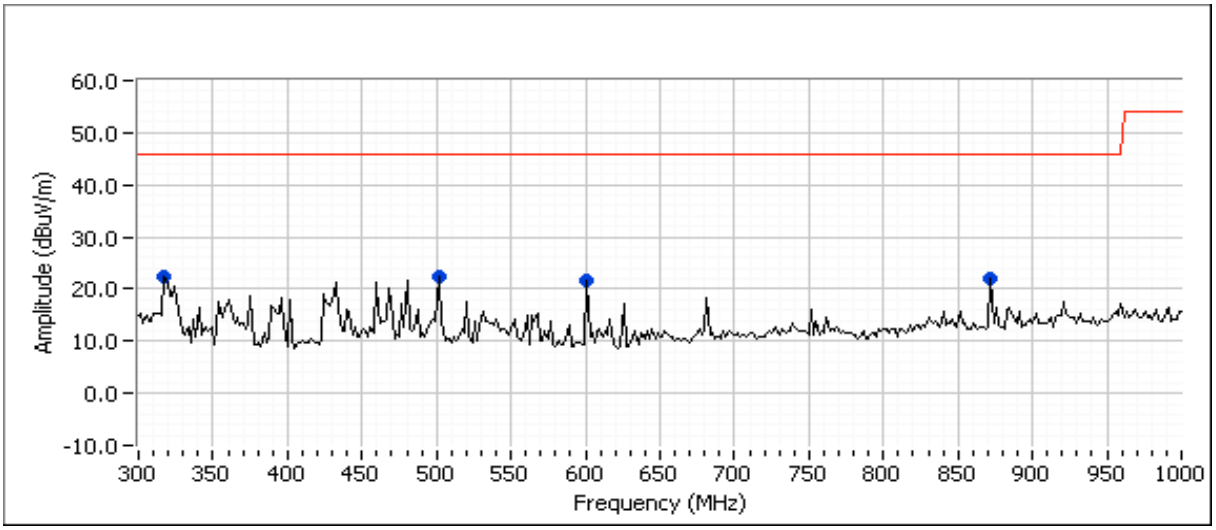
Deviations From The Standard

No deviations were made from the requirements of the standard.

Run #1: Preliminary Radiated Emissions, 30-1000 MHz
EUT set to Receive mode at 5200 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #1: Preliminary Radiated Emissions, 30-1000 MHz

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.938	27.3	V	40.0	-12.7	Peak	271	1.7	
153.215	29.1	H	43.5	-14.4	Peak	238	1.7	
873.468	23.2	H	46.0	-22.8	Peak	61	1.7	
500.006	23.1	H	46.0	-22.9	Peak	331	1.7	
319.041	21.8	V	46.0	-24.2	Peak	298	1.7	
600.005	21.1	V	46.0	-24.9	Peak	269	1.7	
250.013	20.8	H	46.0	-25.2	Peak	299	1.7	

Run #2: Maximized Readings From Run #1

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
153.215	28.9	H	43.5	-14.6	QP	238	1.7	
53.938	24.5	V	40.0	-15.5	QP	271	1.7	

Run #3a: Maximized readings, 1000 - 18000 MHz
EUT set to Receive mode at 5200 MHz, Lagacy Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6933.390	44.1	V	54.0	-9.9	AVG	356	1.3	RB 1 MHz; VB: 10 Hz
10400.920	37.8	H	54.0	-16.2	AVG	316	1.0	RB 1 MHz; VB: 10 Hz
10401.090	37.8	V	54.0	-16.2	AVG	0	1.0	RB 1 MHz; VB: 10 Hz
6933.390	36.7	H	54.0	-17.3	AVG	100	1.0	RB 1 MHz; VB: 10 Hz
3466.560	29.8	H	54.0	-24.2	AVG	314	1.8	RB 1 MHz; VB: 10 Hz
3465.680	29.7	V	54.0	-24.3	AVG	360	1.7	RB 1 MHz; VB: 10 Hz
6933.440	49.7	V	74.0	-24.3	PK	356	1.3	RB 1 MHz; VB: 1 MHz
10400.640	49.1	H	74.0	-24.9	PK	316	1.0	RB 1 MHz; VB: 1 MHz
10398.700	48.6	V	74.0	-25.4	PK	0	1.0	RB 1 MHz; VB: 1 MHz
6933.370	46.9	H	74.0	-27.1	PK	100	1.0	RB 1 MHz; VB: 1 MHz
3466.080	40.9	H	74.0	-33.1	PK	314	1.8	RB 1 MHz; VB: 1 MHz
3467.050	40.8	V	74.0	-33.2	PK	360	1.7	RB 1 MHz; VB: 1 MHz

Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #3b: Maximized readings, 1000 - 18000 MHz
EUT set to Receive mode at 5200 MHz, HT-40 Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

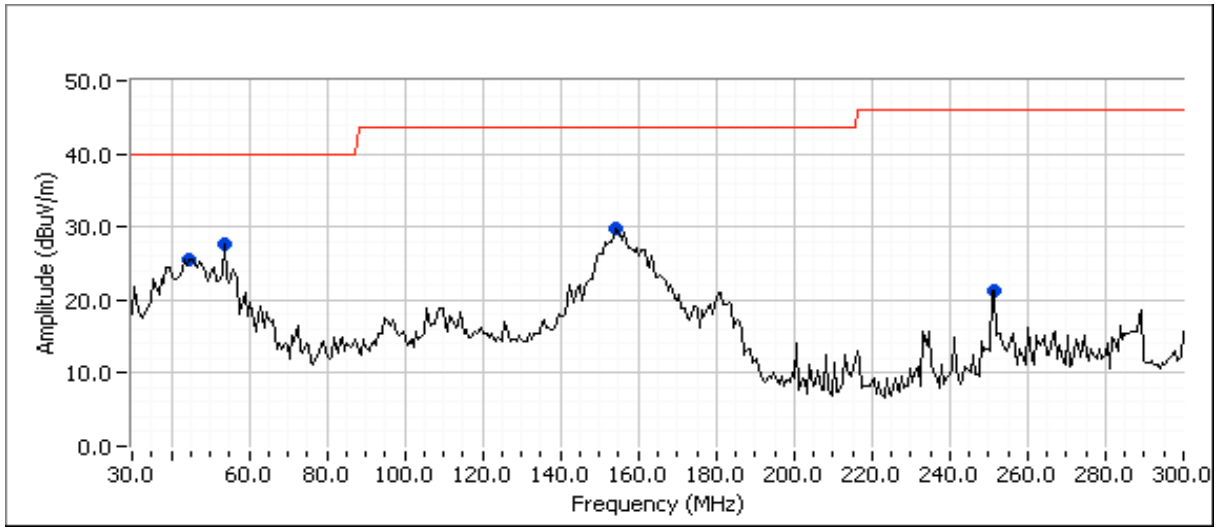
Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
6933.410	46.0	V	54.0	-8.0	AVG	354	1.3	RB 1 MHz; VB: 10 Hz
6933.350	37.9	H	54.0	-16.1	AVG	93	1.6	RB 1 MHz; VB: 10 Hz
10401.180	37.8	H	54.0	-16.2	AVG	0	1.0	RB 1 MHz; VB: 10 Hz
10400.440	37.7	V	54.0	-16.3	AVG	0	1.0	RB 1 MHz; VB: 10 Hz
6933.480	51.1	V	74.0	-22.9	PK	354	1.3	RB 1 MHz; VB: 1 MHz
3466.730	30.2	V	54.0	-23.8	AVG	112	1.6	RB 1 MHz; VB: 10 Hz
3468.040	29.6	H	54.0	-24.4	AVG	221	1.0	RB 1 MHz; VB: 10 Hz
10400.380	49.2	H	74.0	-24.8	PK	0	1.0	RB 1 MHz; VB: 1 MHz
10400.430	49.0	V	74.0	-25.0	PK	0	1.0	RB 1 MHz; VB: 1 MHz
6933.630	47.4	H	74.0	-26.6	PK	93	1.6	RB 1 MHz; VB: 1 MHz
3467.140	41.1	V	74.0	-32.9	PK	112	1.6	RB 1 MHz; VB: 1 MHz
3466.840	41.0	H	74.0	-33.0	PK	221	1.0	RB 1 MHz; VB: 1 MHz

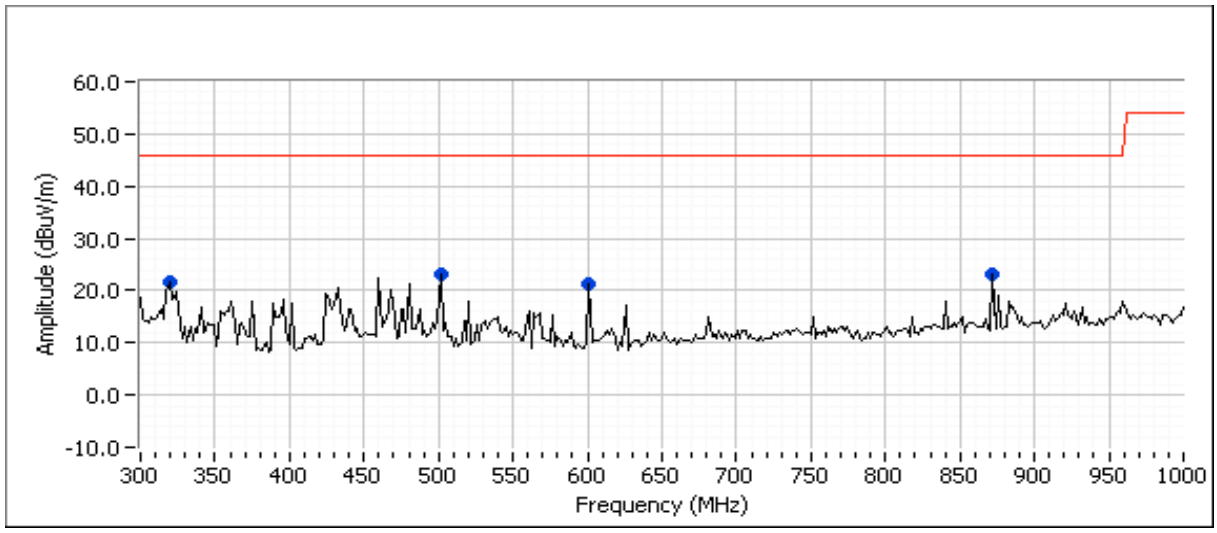
Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #4: Preliminary Radiated Emissions, 30-1000 MHz
EUT set to Receive mode at 5300 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #4: Preliminary Radiated Emissions, 30-1000 MHz

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.771	27.6	V	40.0	-12.4	Peak	0	1.7	
153.251	29.8	H	43.5	-13.7	Peak	239	1.7	
251.016	21.3	H	46.0	-24.7	Peak	299	1.7	
45.779	25.5	V	40.0	-14.5	Peak	301	1.7	
500.006	23.1	H	46.0	-22.9	Peak	331	1.7	
600.005	21.1	V	46.0	-24.9	Peak	269	1.7	
873.468	23.2	H	46.0	-22.8	Peak	61	1.7	
319.041	21.8	V	46.0	-24.2	Peak	298	1.7	

Run #5: Maximized Readings From Run #4

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.771	26.9	V	40.0	-13.1	QP	0	1.7	
153.251	28.9	H	43.5	-14.6	QP	239	1.7	

Run #6a: Maximized readings, 1000 - 18000 MHz
EUT set to Receive mode at 5300 MHz, Lagacy Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7066.740	50.9	V	54.0	-3.1	AVG	274	1.7	RB 1 MHz; VB: 10 Hz
7066.740	39.1	H	54.0	-14.9	AVG	269	2.0	RB 1 MHz; VB: 10 Hz
10600.930	38.3	H	54.0	-15.7	AVG	300	1.0	RB 1 MHz; VB: 10 Hz
10601.110	38.2	V	54.0	-15.8	AVG	317	1.0	RB 1 MHz; VB: 10 Hz
7066.660	54.0	V	74.0	-20.0	PK	274	1.7	RB 1 MHz; VB: 1 MHz
3534.630	30.3	H	54.0	-23.7	AVG	198	1.0	RB 1 MHz; VB: 10 Hz
3533.300	30.3	V	54.0	-23.7	AVG	322	1.0	RB 1 MHz; VB: 10 Hz
10600.070	50.1	V	74.0	-23.9	PK	317	1.0	RB 1 MHz; VB: 1 MHz
10599.660	49.3	H	74.0	-24.7	PK	300	1.0	RB 1 MHz; VB: 1 MHz
7066.650	48.2	H	74.0	-25.8	PK	269	2.0	RB 1 MHz; VB: 1 MHz
3532.020	42.2	H	74.0	-31.8	PK	198	1.0	RB 1 MHz; VB: 1 MHz
3534.820	42.2	V	74.0	-31.8	PK	322	1.0	RB 1 MHz; VB: 1 MHz

Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #6b: Maximized readings, 1000 - 18000 MHz
EUT set to Receive mode at 5300 MHz, HT-40 Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

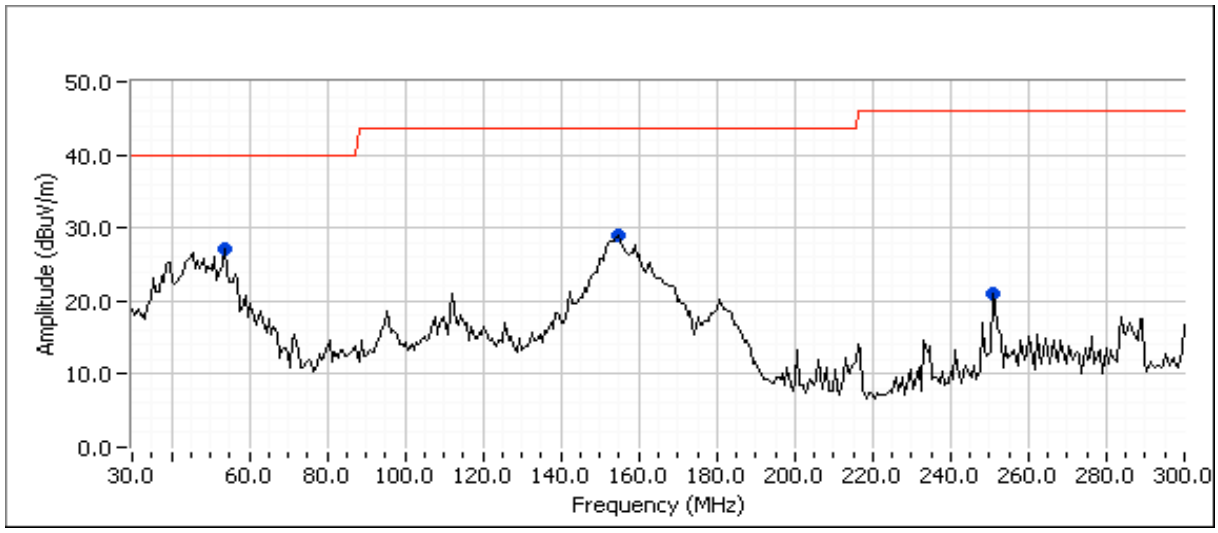
Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7066.710	50.7	V	54.0	-3.3	AVG	269	1.9	RB 1 MHz; VB: 10 Hz
10600.860	38.4	H	54.0	-15.6	AVG	245	1.0	RB 1 MHz; VB: 10 Hz
10600.920	38.3	V	54.0	-15.7	AVG	280	1.0	RB 1 MHz; VB: 10 Hz
7066.720	38.2	H	54.0	-15.8	AVG	277	1.6	RB 1 MHz; VB: 10 Hz
7066.790	54.2	V	74.0	-19.8	PK	269	1.9	RB 1 MHz; VB: 1 MHz
10600.910	50.6	V	74.0	-23.4	PK	280	1.0	RB 1 MHz; VB: 1 MHz
3533.170	30.3	V	54.0	-23.7	AVG	284	1.0	RB 1 MHz; VB: 10 Hz
3533.070	30.1	H	54.0	-23.9	AVG	248	1.0	RB 1 MHz; VB: 10 Hz
10600.560	49.6	H	74.0	-24.4	PK	245	1.0	RB 1 MHz; VB: 1 MHz
7066.540	48.3	H	74.0	-25.7	PK	277	1.6	RB 1 MHz; VB: 1 MHz
3532.550	41.6	V	74.0	-32.4	PK	284	1.0	RB 1 MHz; VB: 1 MHz
3534.100	41.4	H	74.0	-32.6	PK	248	1.0	RB 1 MHz; VB: 1 MHz

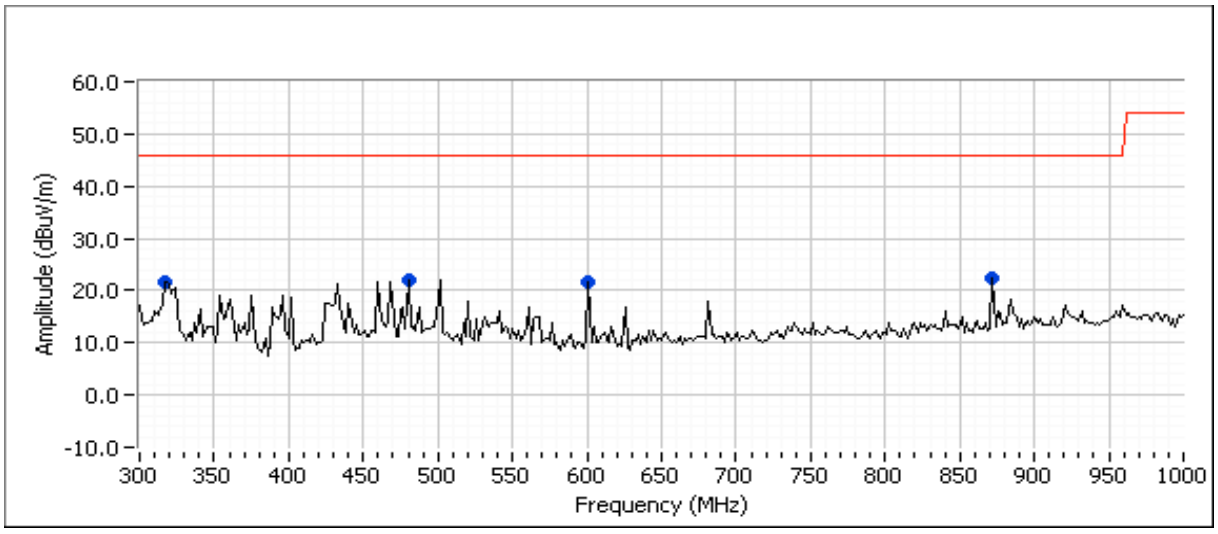
Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #7: Preliminary Radiated Emissions, 30-1000 MHz
EUT set to Receive mode at 5600 MHz

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
30 - 1000 MHz	3	3	0.0





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #7: Preliminary Radiated Emissions, 30-1000 MHz

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.847	27.0	V	40.0	-13.0	Peak	89	1.7	
154.395	29.1	H	43.5	-14.4	Peak	241	1.7	
871.674	22.4	V	46.0	-23.6	Peak	360	1.7	
480.001	22.0	H	46.0	-24.0	Peak	31	1.7	
600.018	21.7	V	46.0	-24.3	Peak	58	1.7	
319.032	21.5	V	46.0	-24.5	Peak	298	1.7	
250.008	21.1	H	46.0	-24.9	Peak	301	1.7	

Run #8: Maximized Readings From Run #7

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.847	26.0	V	40.0	-14.0	QP	89	1.7	
154.395	28.9	H	43.5	-14.6	QP	241	1.7	

Run #9a: Maximized readings, 18000 - 18000 MHz
EUT set to Receive mode at 5600 MHz, Legacy Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7466.720	49.7	V	54.0	-4.3	AVG	332	1.8	RB 1 MHz; VB: 10 Hz
7466.730	44.5	H	54.0	-9.5	AVG	234	1.5	RB 1 MHz; VB: 10 Hz
11200.920	38.6	H	54.0	-15.4	AVG	224	1.0	RB 1 MHz; VB: 10 Hz
11201.100	38.6	V	54.0	-15.4	AVG	314	1.0	RB 1 MHz; VB: 10 Hz
3733.390	38.4	V	54.0	-15.6	AVG	256	1.5	RB 1 MHz; VB: 10 Hz
3733.370	34.4	H	54.0	-19.6	AVG	69	1.8	RB 1 MHz; VB: 10 Hz
7466.660	53.6	V	74.0	-20.4	PK	332	1.8	RB 1 MHz; VB: 1 MHz
11200.950	52.5	H	74.0	-21.5	PK	224	1.0	RB 1 MHz; VB: 1 MHz
7466.950	50.1	H	74.0	-23.9	PK	234	1.5	RB 1 MHz; VB: 1 MHz
11200.500	49.4	V	74.0	-24.6	PK	314	1.0	RB 1 MHz; VB: 1 MHz
3733.330	46.4	V	74.0	-27.6	PK	256	1.5	RB 1 MHz; VB: 1 MHz
3733.320	44.2	H	74.0	-29.8	PK	69	1.8	RB 1 MHz; VB: 1 MHz

Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73745
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	B

Run #9b: Maximized readings, 1000 - 18000 MHz
EUT set to Receive mode at 5600 MHz, HT-40 Mode

Frequency Range	Test Distance	Limit Distance	Extrapolation Factor
1000 - 18000 MHz	3	3	0.0

Frequency	Level	Pol	RSS Gen		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7466.700	49.9	V	54.0	-4.1	AVG	328	1.9	RB 1 MHz; VB: 10 Hz
7466.720	44.0	H	54.0	-10.0	AVG	219	1.6	RB 1 MHz; VB: 10 Hz
3733.400	39.0	V	54.0	-15.0	AVG	325	1.3	RB 1 MHz; VB: 10 Hz
11200.840	38.8	H	54.0	-15.2	AVG	214	1.0	RB 1 MHz; VB: 10 Hz
11200.910	38.5	V	54.0	-15.5	AVG	263	1.0	RB 1 MHz; VB: 10 Hz
7466.620	53.9	V	74.0	-20.1	PK	328	1.9	RB 1 MHz; VB: 1 MHz
11200.750	53.1	H	74.0	-20.9	PK	214	1.0	RB 1 MHz; VB: 1 MHz
3733.320	31.3	H	54.0	-22.7	AVG	360	1.0	RB 1 MHz; VB: 10 Hz
7466.480	50.2	H	74.0	-23.8	PK	219	1.6	RB 1 MHz; VB: 1 MHz
11200.560	49.8	V	74.0	-24.2	PK	263	1.0	RB 1 MHz; VB: 1 MHz
3733.340	45.7	V	74.0	-28.3	PK	325	1.3	RB 1 MHz; VB: 1 MHz
3732.190	42.1	H	74.0	-31.9	PK	360	1.0	RB 1 MHz; VB: 1 MHz

Note 1:	Above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		-
Emissions Standard(s):	FCC Part 15.247/RSS-210	Class:	B
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Ruckus Wireless

Model

Dalmatian

Date of Last Test: 3/20/2009

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 3/20/2009
Test Engineer: Rafael Varelas
Test Location: SVOATS #2

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.5 °C
Rel. Humidity: 40 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	23.8 dBm (0.241W)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	23.5 dBm (0.224W)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	7.97 dBm/MHz
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	8.01 dBm/MHz
1	26dB Bandwidth	15.407	-	50.3 MHz
1	99% Bandwidth	RSS 210	-	37.1 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	12.2 dB
3	Antenna Conducted Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3.0	3.0	3.0	No	3.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5270	20.0	50.3	18.8	19.5	18.8	240.8	23.8	24.0	0.241	PASS
5310	17.5	47.7	15.3	16.2	16.1	116.5	20.7	24.0		PASS
5510	20.0	47.2	18.7	18.3	18.2	208.3	23.2	24.0	0.224	PASS
5590	20.0	45.5	19.0	18.3	18.5	218.7	23.4	24.0		PASS
5670	19.5	49.5	19.5	18.4	18.2	224.0	23.5	24.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5270	37.1	23.8	3.3	3.5	2.8	6.3	7.97	11.0	11.0	PASS
5310	36.8	20.7	-0.1	0.8	0.5	3.3	5.20	11.0	11.0	PASS
5510	36.8	23.2	3.3	2.5	2.3	5.6	7.49	11.0	11.0	PASS
5590	36.8	23.4	3.2	2.9	2.8	6.0	7.75	11.0	11.0	PASS
5670	36.8	23.5	3.7	2.8	3.2	6.3	8.01	11.0	11.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

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Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
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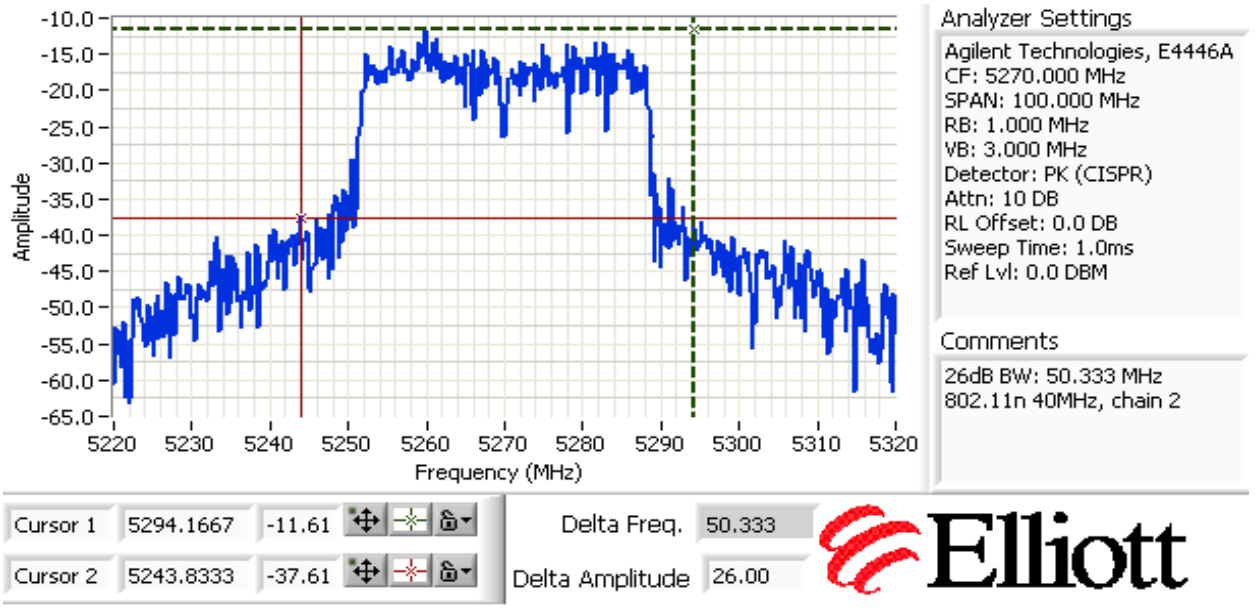
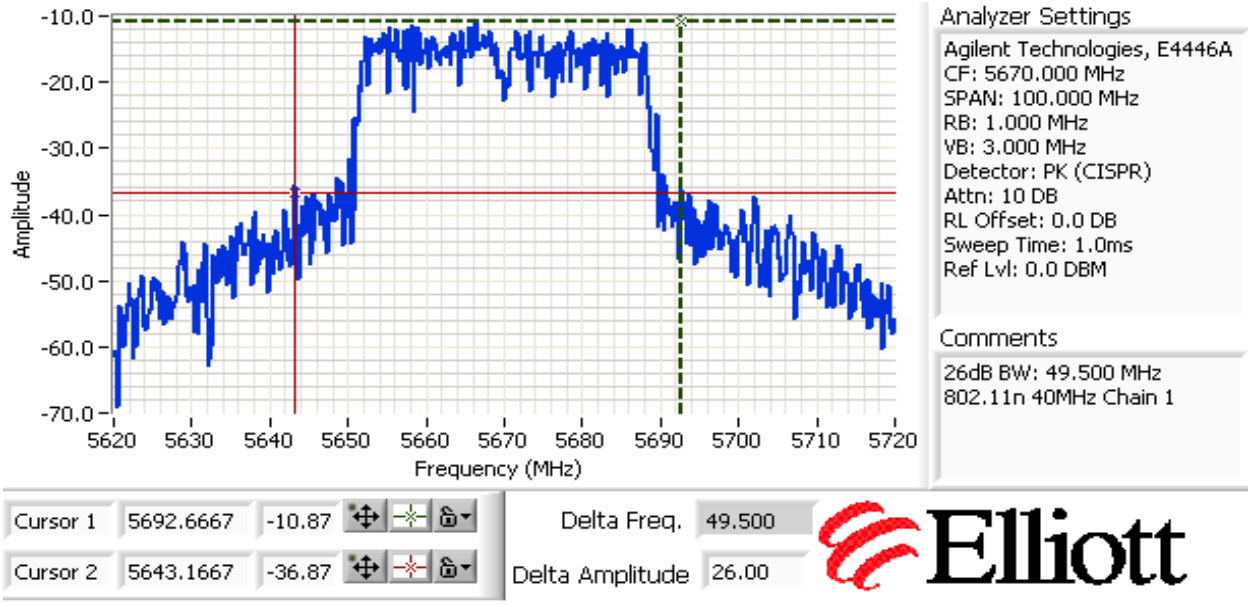
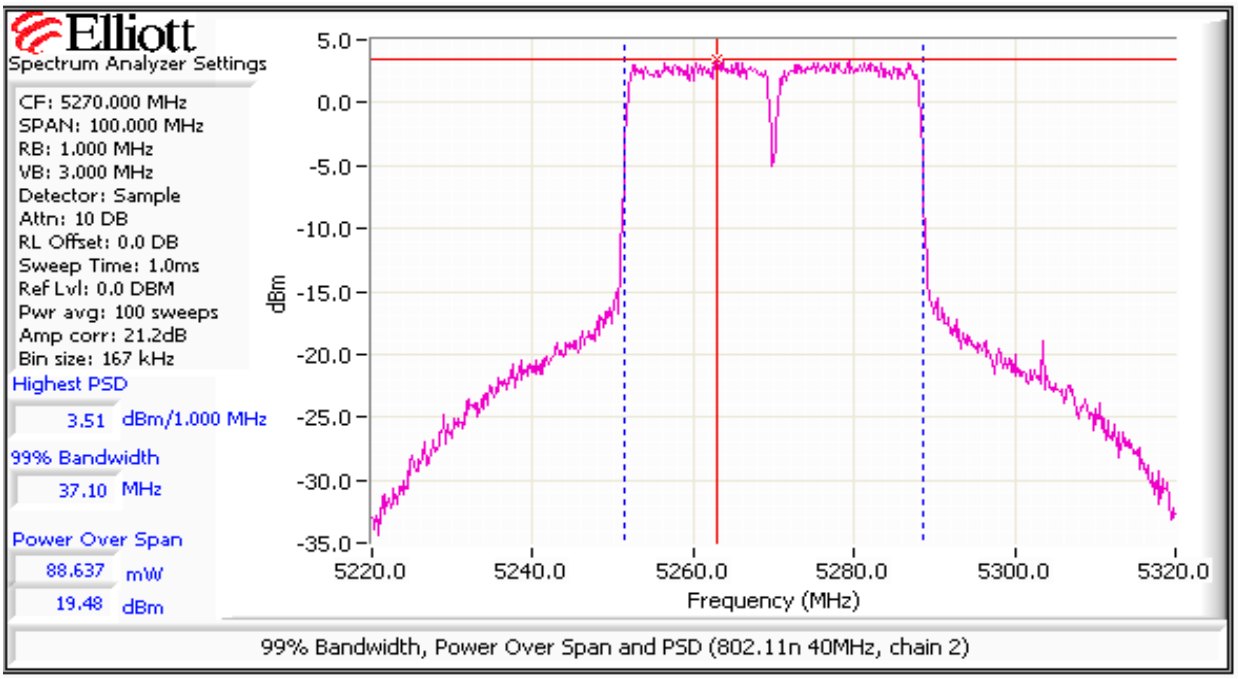
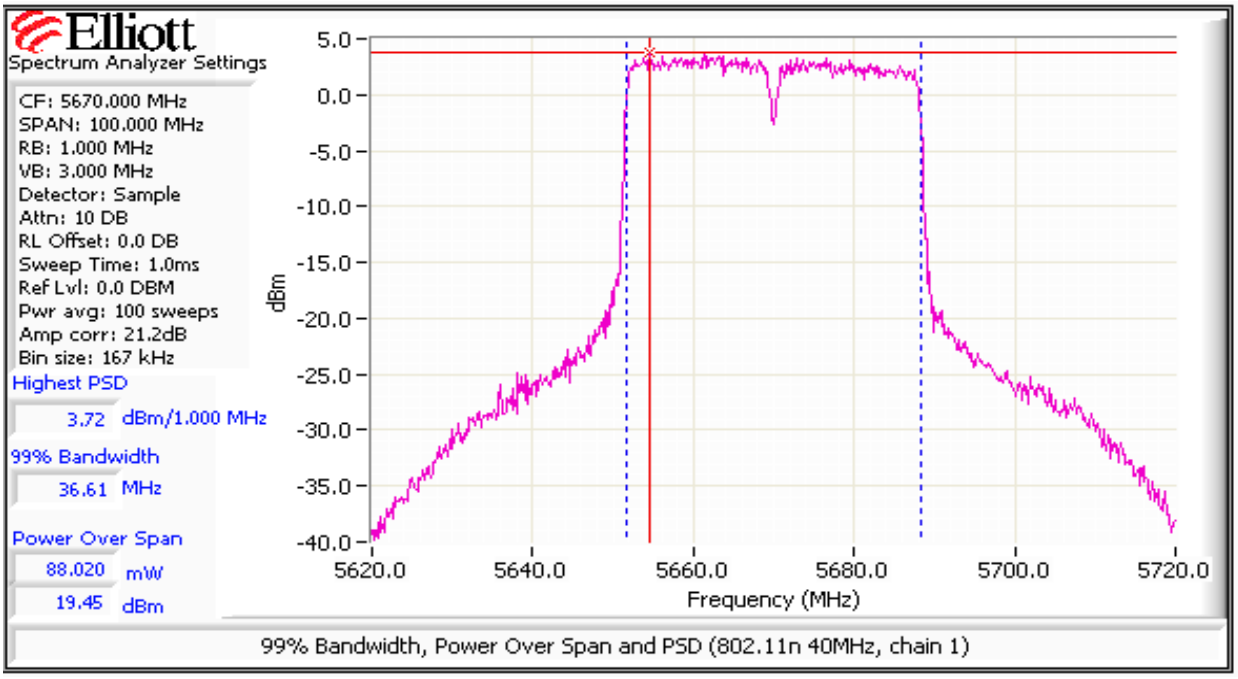
Standard:	FCC Part 15.247/RSS-210	Class:	N/A





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

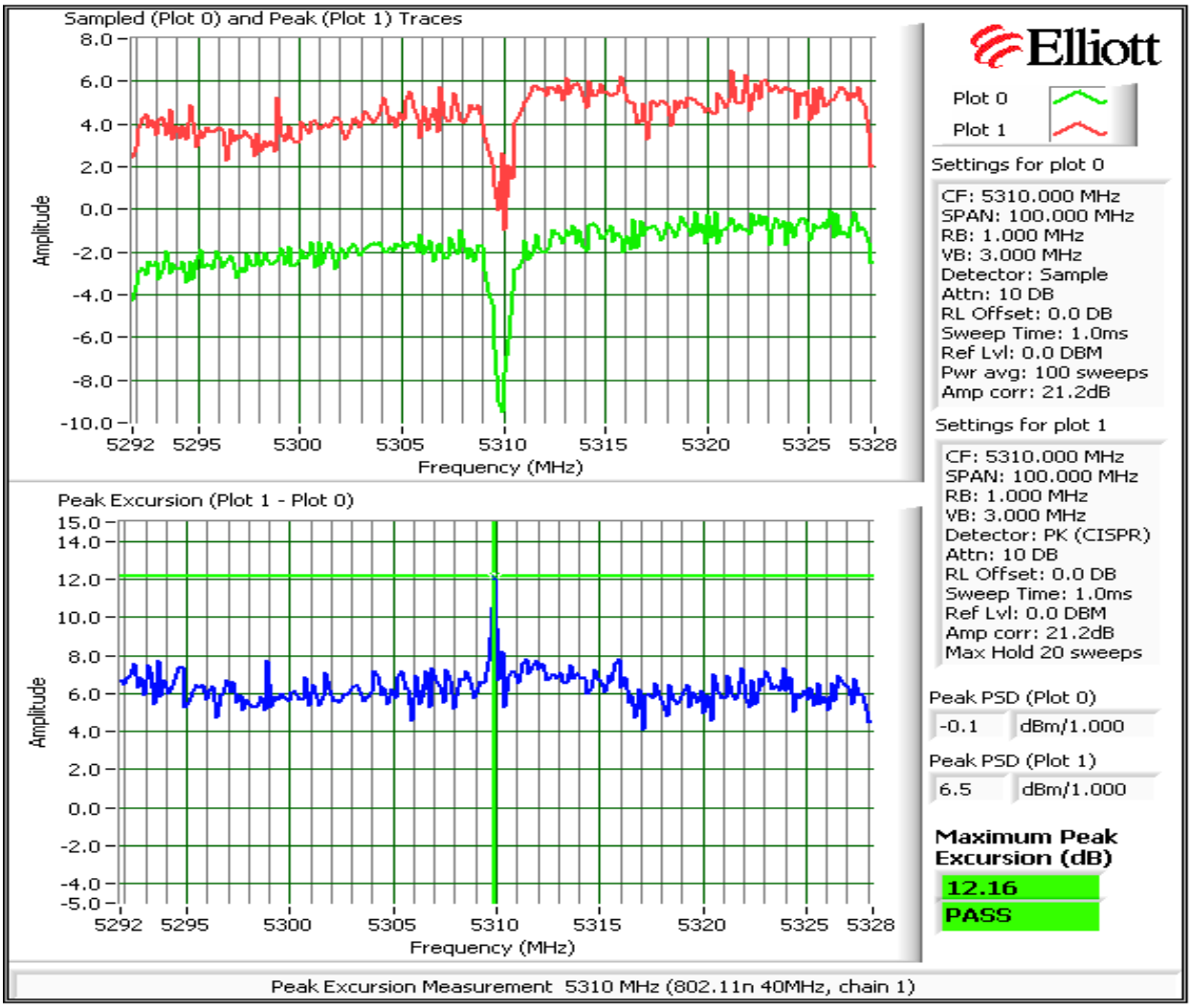
Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5180		13.0	5270	10.0	13.0	5510	9.3	13.0
5200		13.0	5300		13.0	5590	11.3	13.0
5240		13.0	5310	12.2	13.0	5670	12.0	13.0

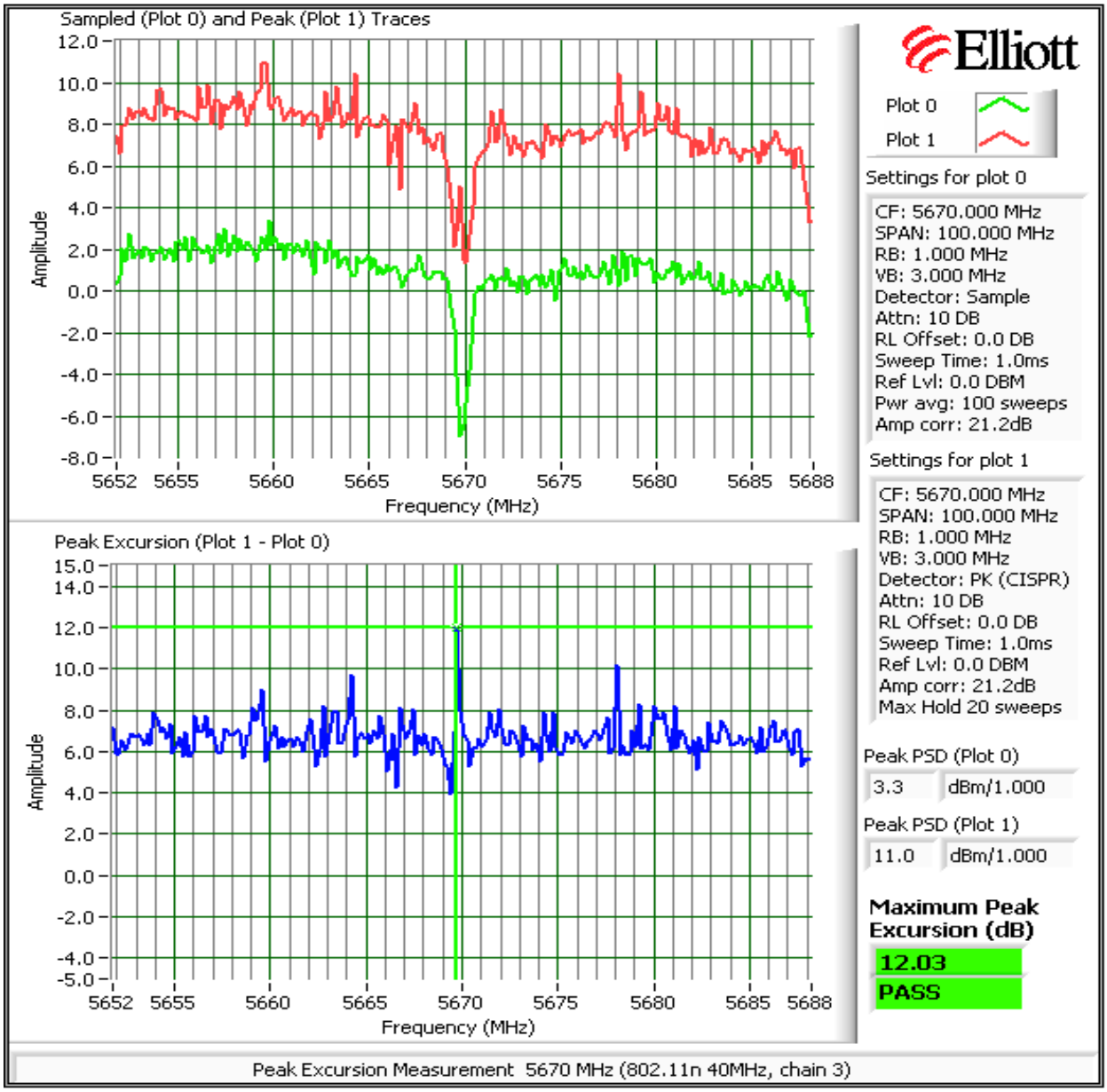
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

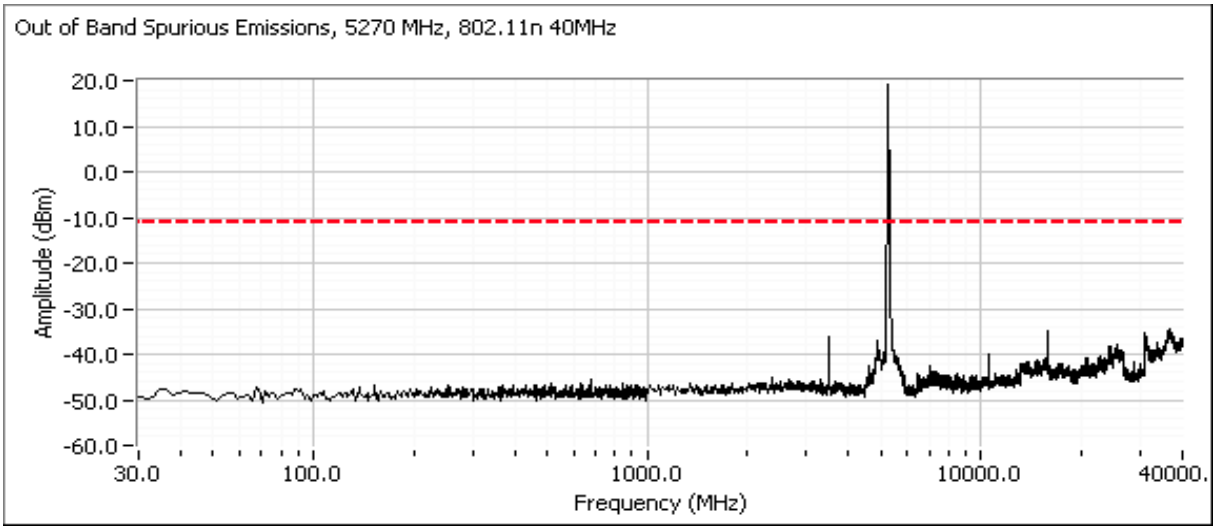
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots [Note 1]:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

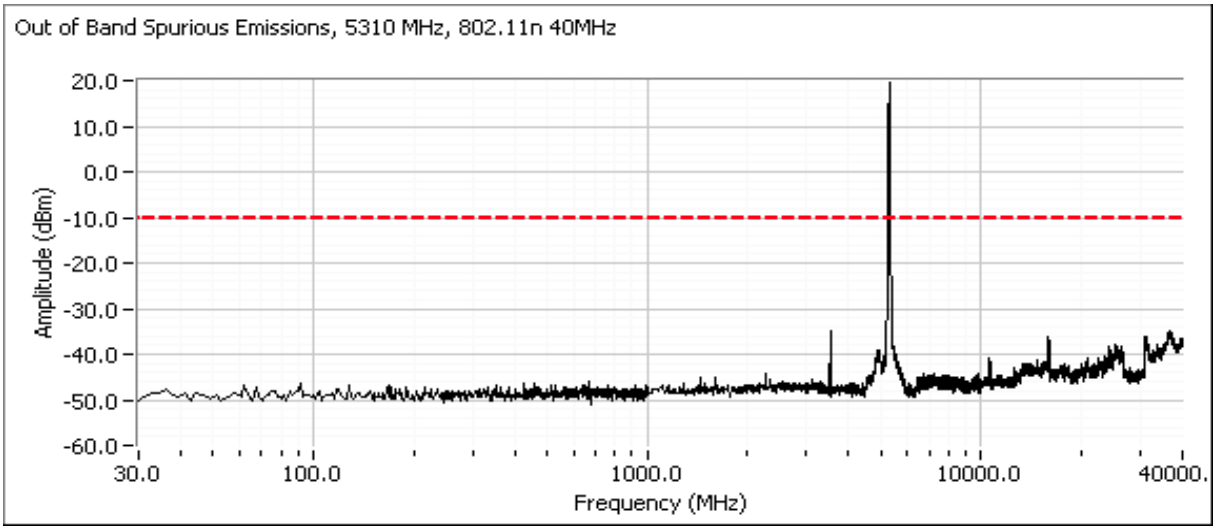
Low channel, 5250 - 5350 MHz Band



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

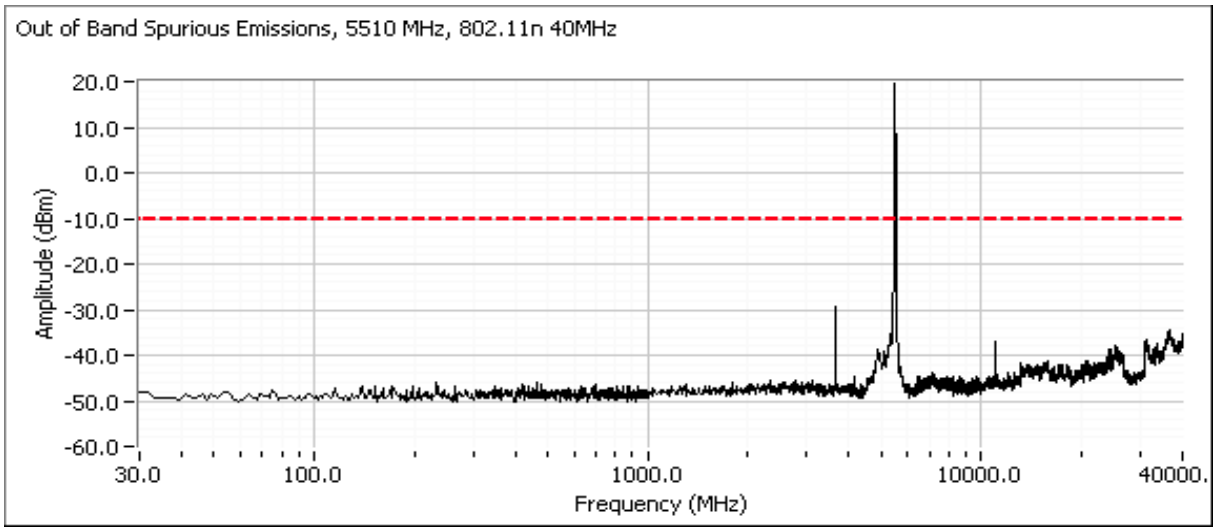
High channel, 5250 - 5350 MHz Band

Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

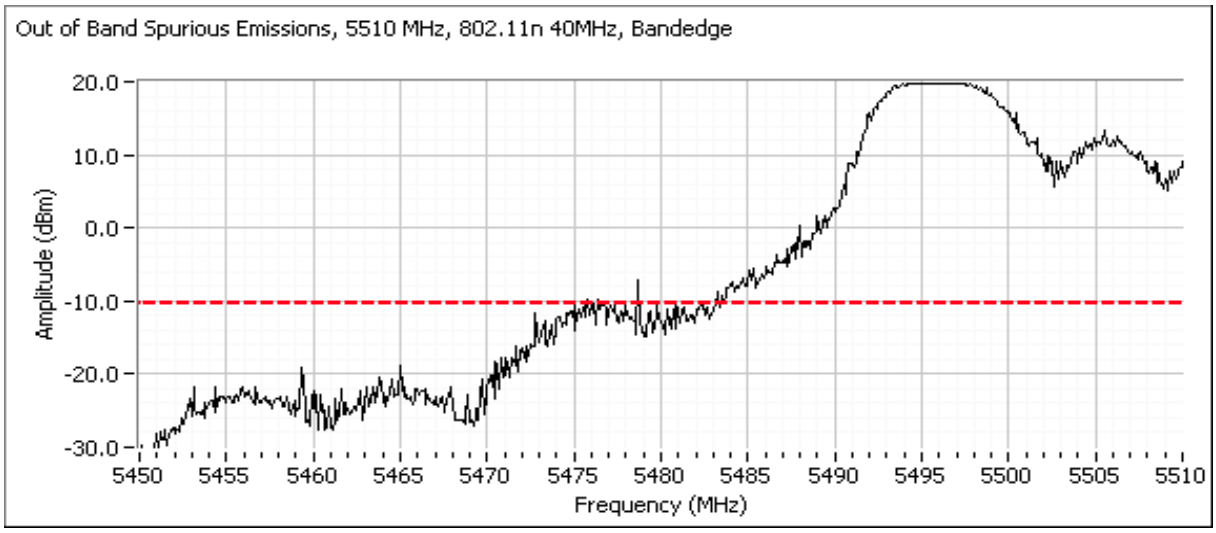


Low channel, 5470 - 5725 MHz Band

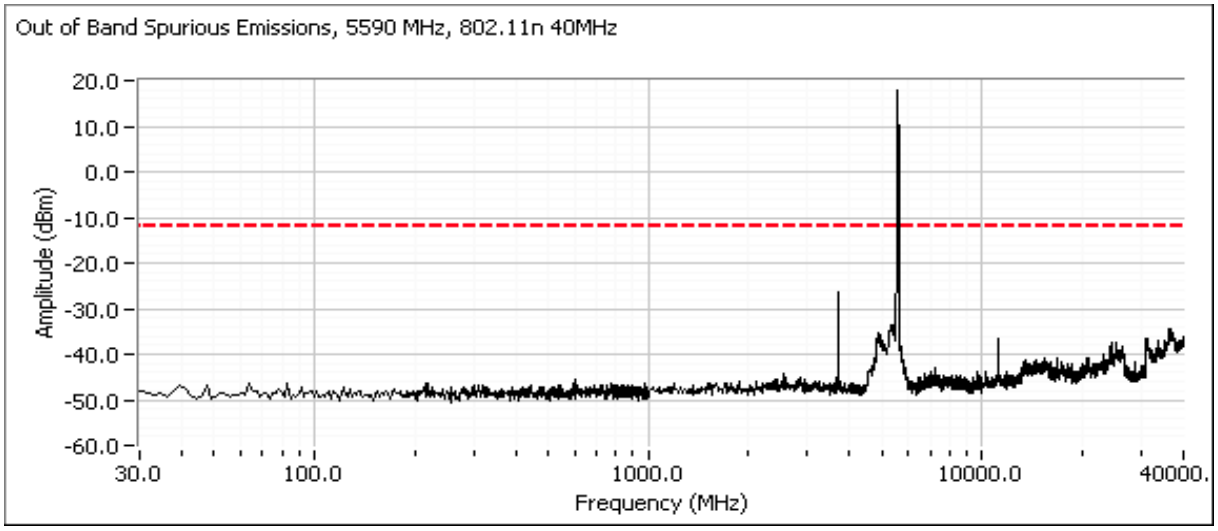
Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz.
Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions test



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



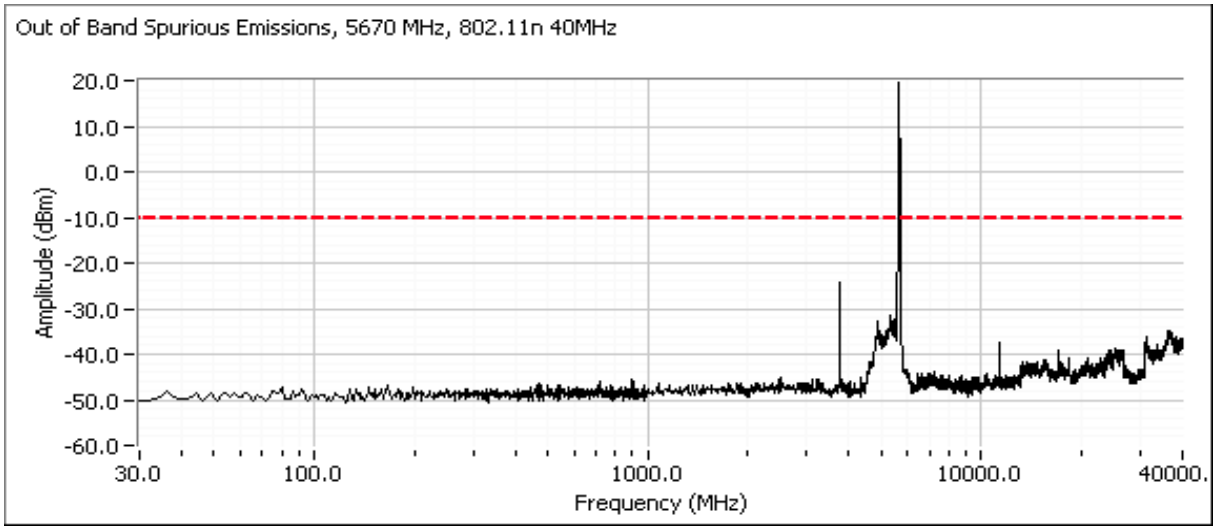
Center channel, 5470 - 5725 MHz Band

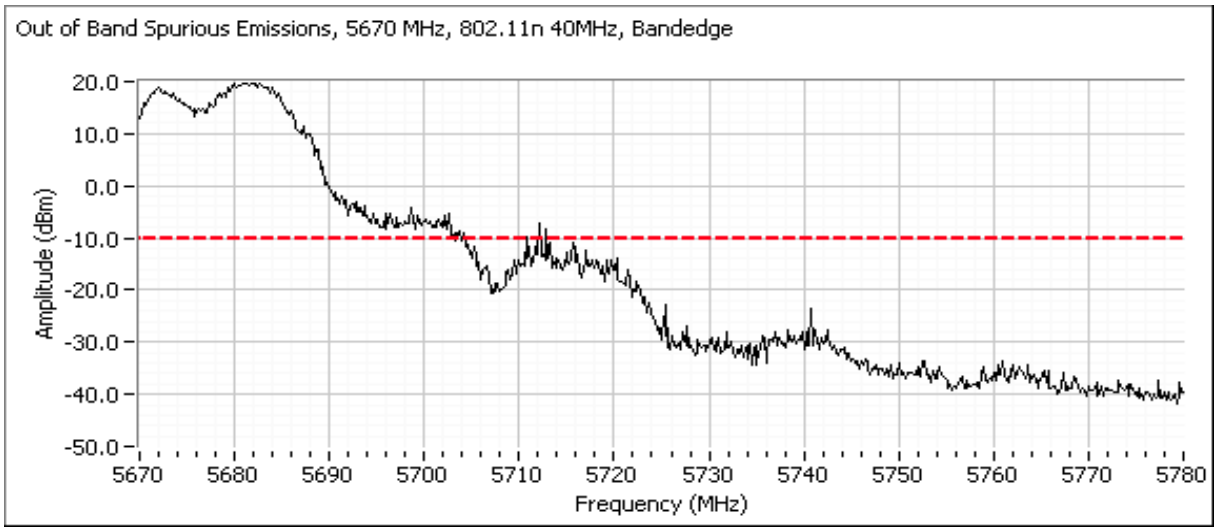


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

High channel, 5470 - 5725 MHz Band

Includes a plot from 5700 - 5780 MHz showing compliance with the limit immediately above the allocated band.





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 3/19/2009
Test Engineer: Rafael Varelas
Test Location: SVOATS #2

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.5 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	23.0 dBm (0.198W)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	23.5 dBm (0.224W)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	10.6 dBm/MHz
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	10.97 dBm/MHz
1	26dB Bandwidth	15.407	-	27.4 MHz
1	99% Bandwidth	RSS 210	-	18.2 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	9.6 dBm
3	Antenna Conducted Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

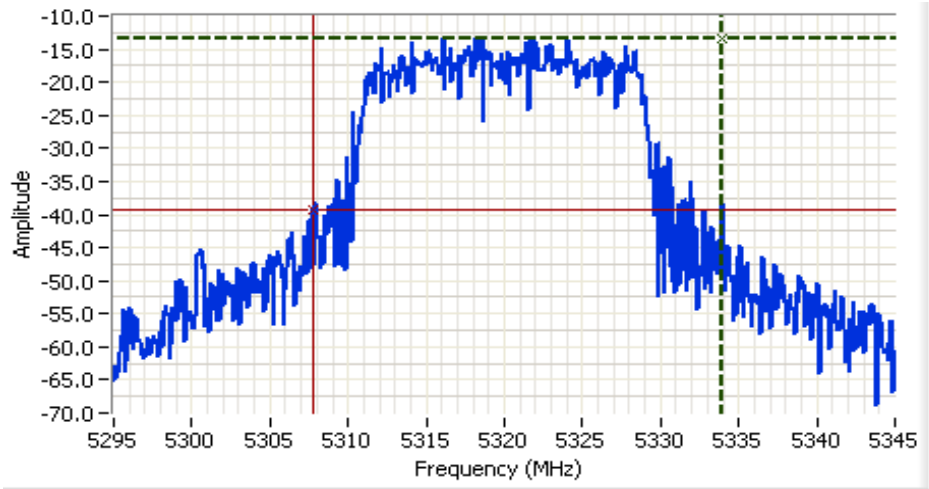
	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3.0	3.0	3.0	No	3.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	19.0	25.3	17.4	18.6	18.2	193.7	22.9	24.0	0.198	PASS
5300	19.5	25.3	17.6	18.4	18.5	197.5	23.0	24.0		PASS
5320	16.0	26.2	14.4	14.8	14.9	88.6	19.5	24.0		PASS
5500	19.5	26.8	18.0	17.5	17.3	173.0	22.4	24.0	0.224	PASS
5600	20.0	27.4	18.8	19.0	18.4	224.5	23.5	24.0		PASS
5700	19.5	27.1	19.1	18.7	18.3	223.0	23.5	24.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	18.2	22.9	4.7	6.0	5.6	10.5	10.21	11.0	11.0	PASS
5300	18.1	23.0	5.5	6.0	6.1	11.6	10.63	11.0	11.0	PASS
5320	18.1	19.5	2.0	2.3	2.4	5.0	7.01	11.0	11.0	PASS
5500	18.1	22.4	5.6	5.2	4.8	9.9	9.97	11.0	11.0	PASS
5600	18.1	23.5	6.2	6.3	6.1	12.5	10.97	11.0	11.0	PASS
5700	18.1	23.5	6.5	6.1	5.9	12.4	10.95	11.0	11.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



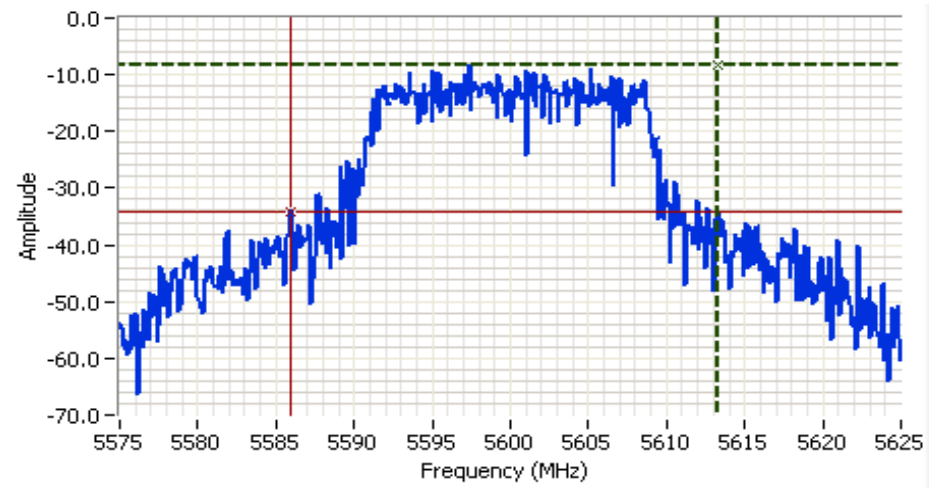
Analyzer Settings

Agilent Technologies, E4446A
CF: 5320.000 MHz
SPAN: 50.000 MHz
RB: 1.000 MHz
VB: 3.000 MHz
Detector: PK (CISPR)
Attn: 10 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 0.0 DBM

Comments

26dB BW: 26.167 MHz
802.11n 20MHz, chain 2

Cursor 1	5333.9167	-13.29	Delta Freq.	26.167
Cursor 2	5307.7500	-39.29	Delta Amplitude	26.00



Analyzer Settings

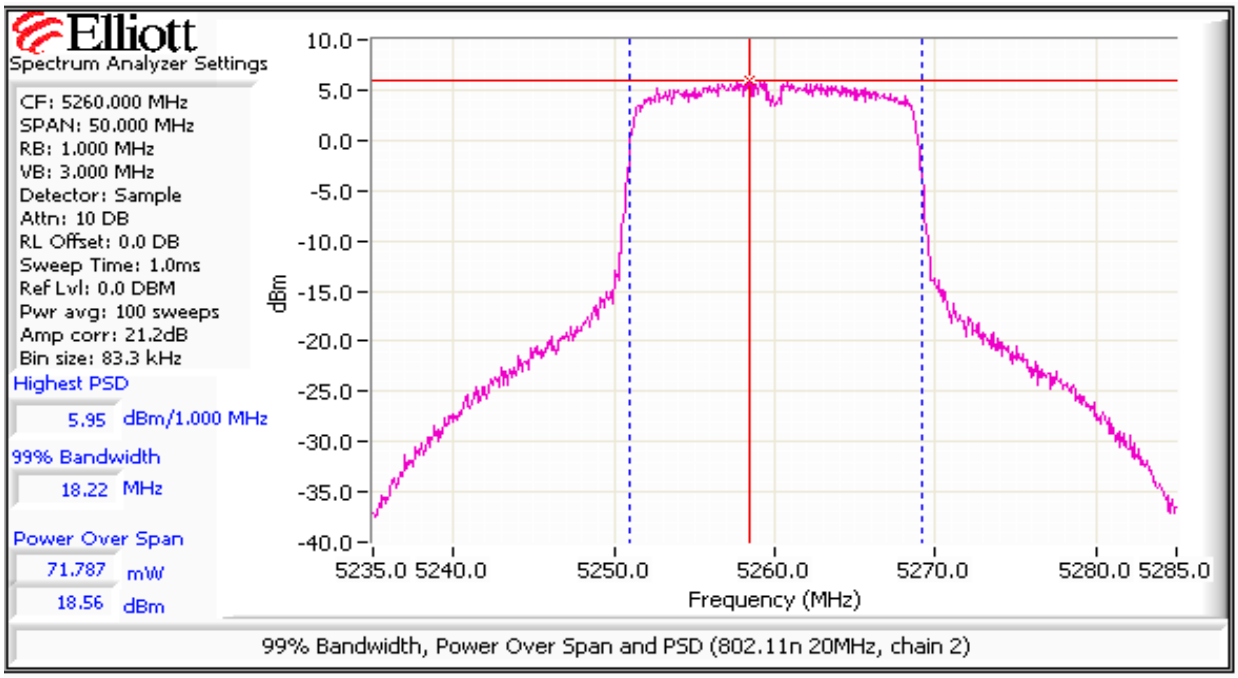
Agilent Technologies, E4446A
CF: 5600.000 MHz
SPAN: 50.000 MHz
RB: 1.000 MHz
VB: 3.000 MHz
Detector: PK (CISPR)
Attn: 10 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 0.0 DBM

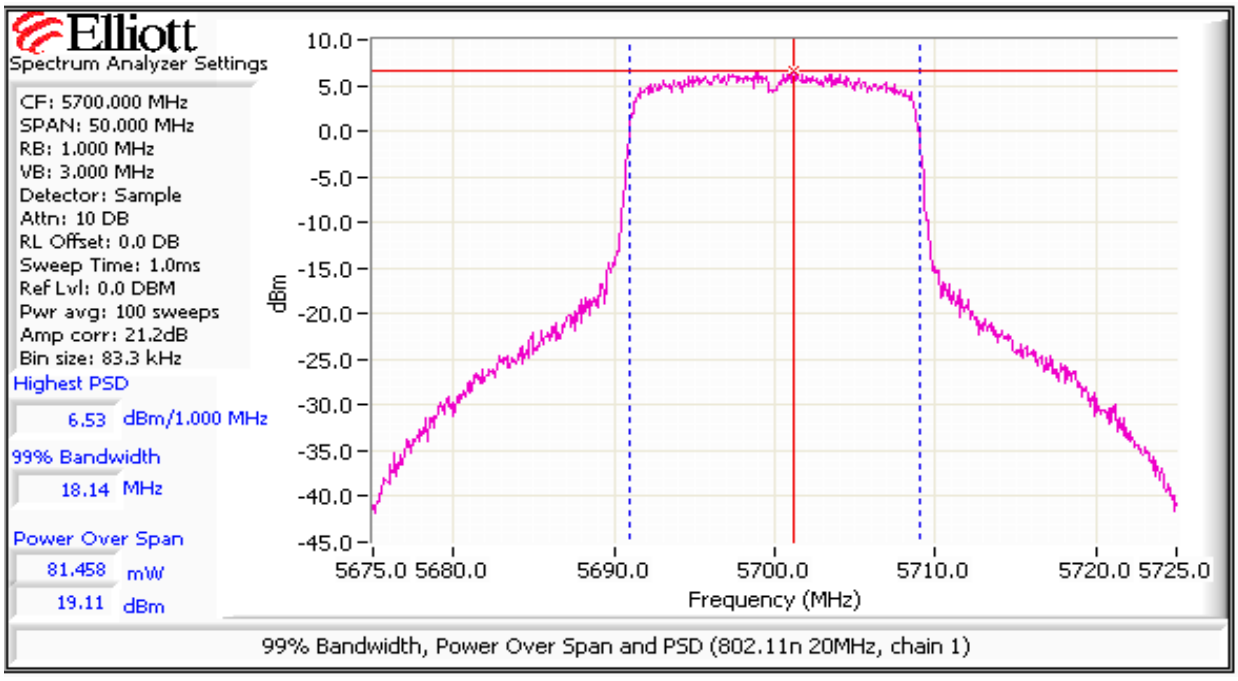
Comments

26dB BW: 27.417 MHz
802.11n 20MHz, chain 2

Cursor 1	5613.3333	-8.25	Delta Freq.	27.417
Cursor 2	5585.9167	-34.25	Delta Amplitude	26.00

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

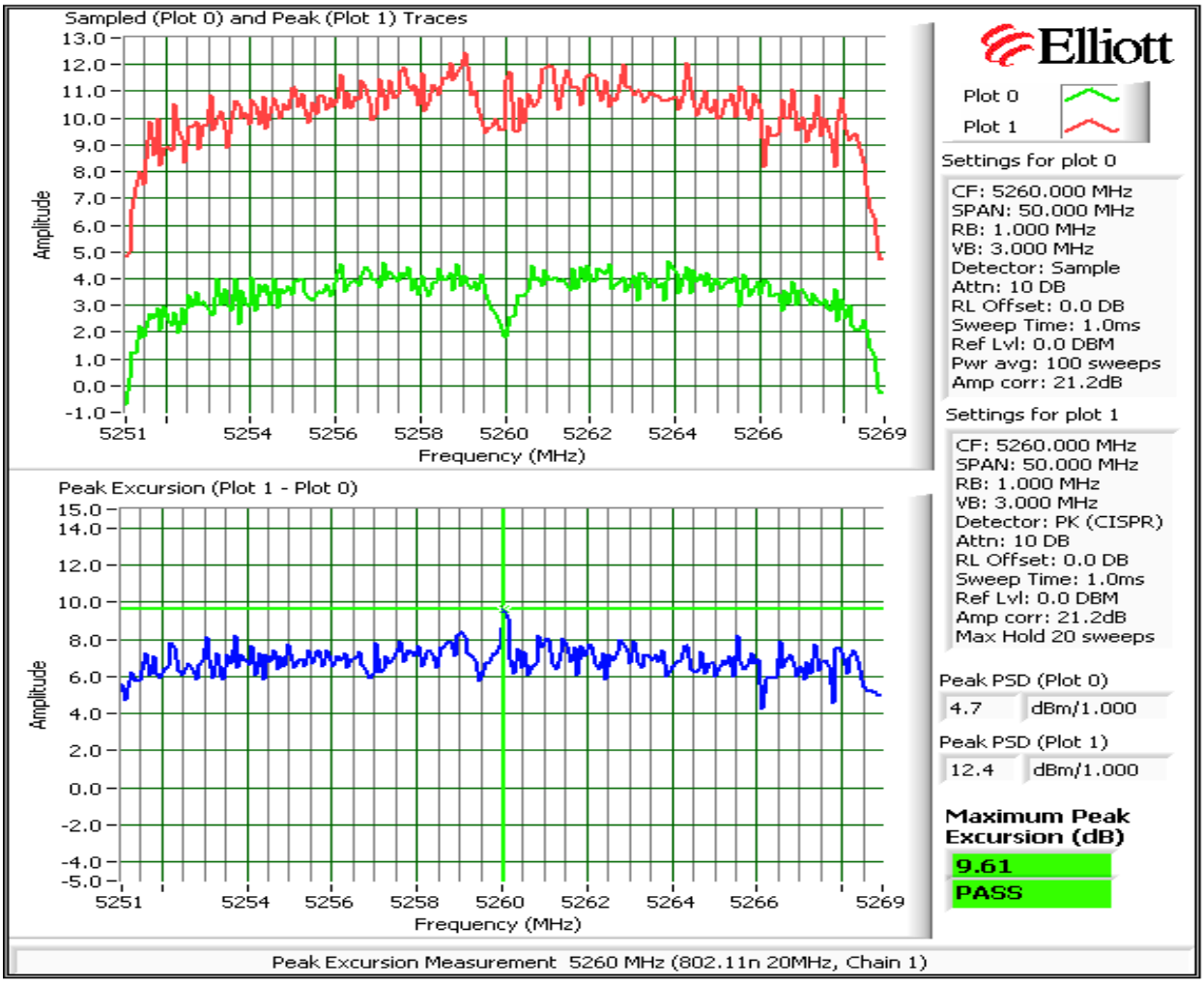
Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5180		13.0	5260	9.6	13.0	5500	9.3	13.0
5200		13.0	5300	9.0	13.0	5600	8.6	13.0
5240		13.0	5320	9.2	13.0	5700	9.4	13.0

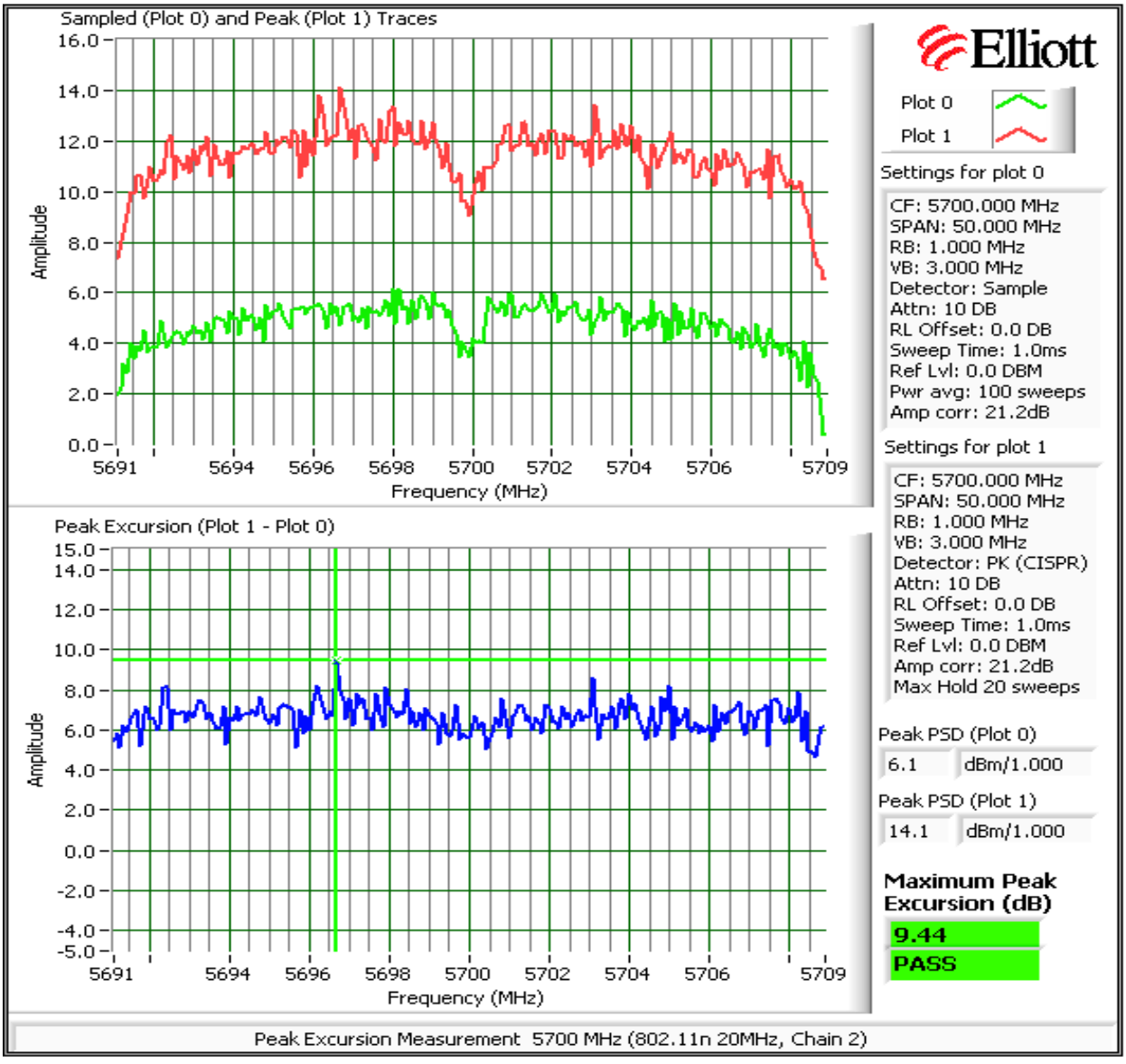
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

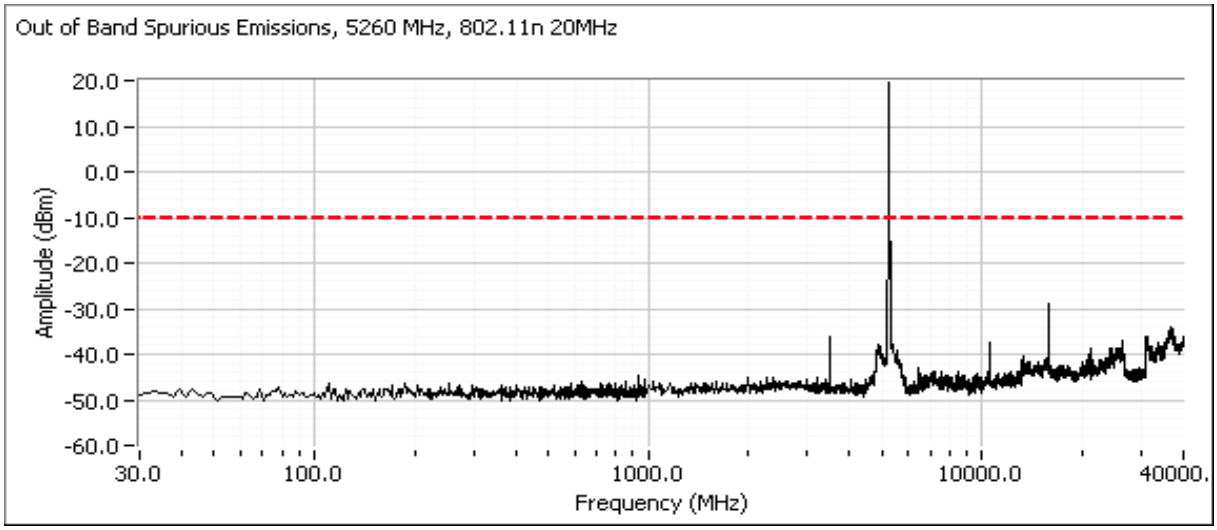
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots [Note 1]:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

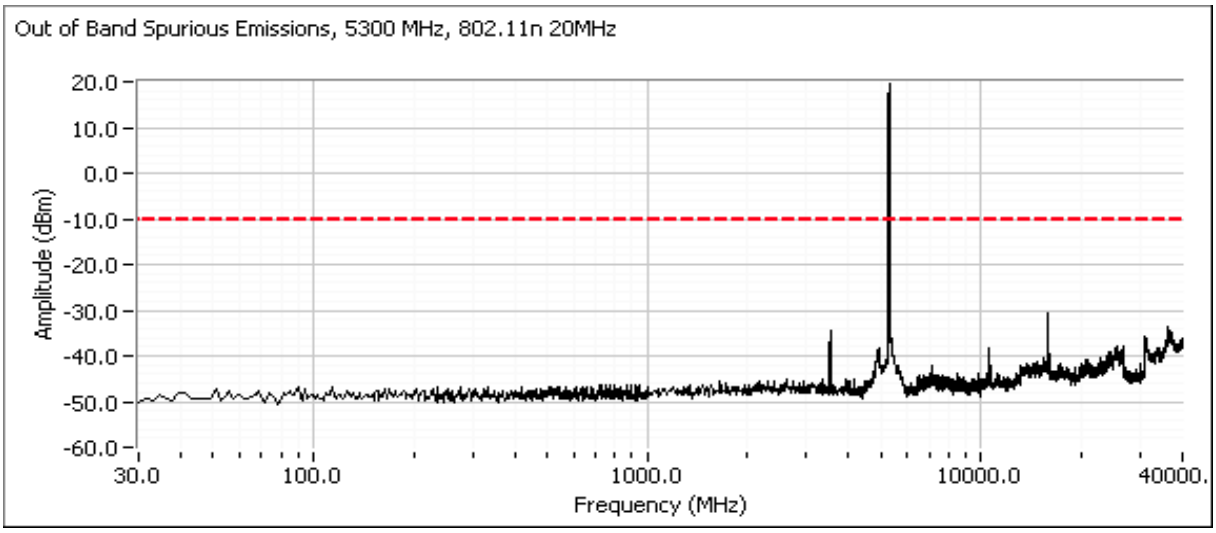
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band



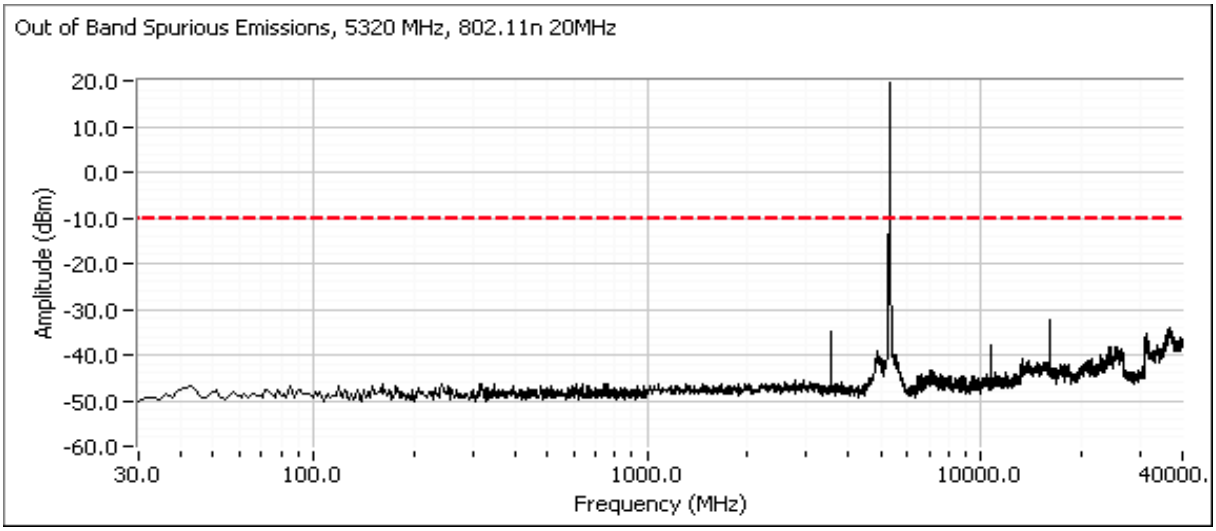
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5250 - 5350 MHz Band



High channel, 5250 - 5350 MHz Band

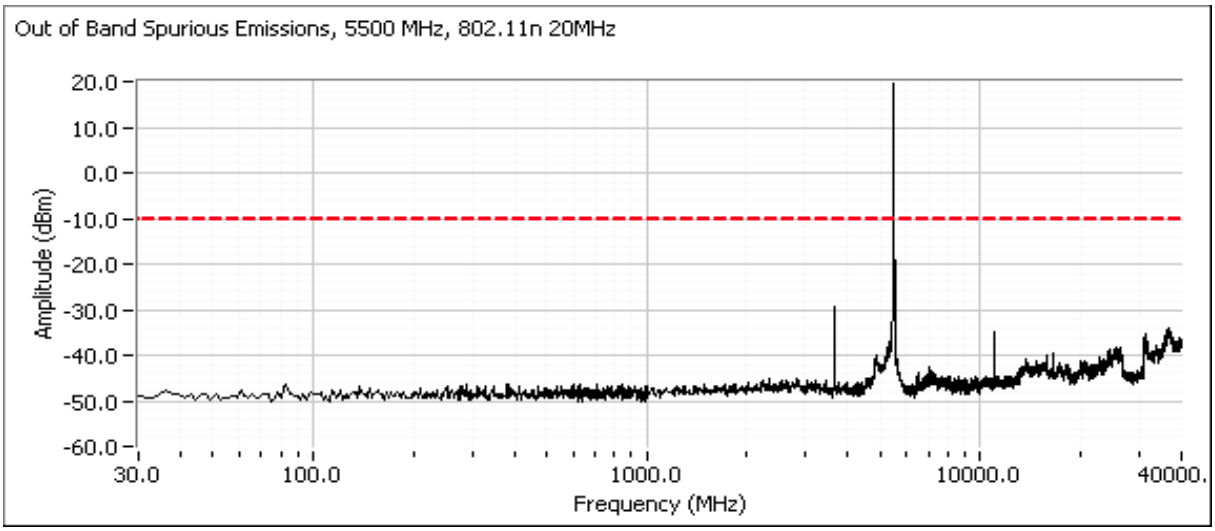
Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

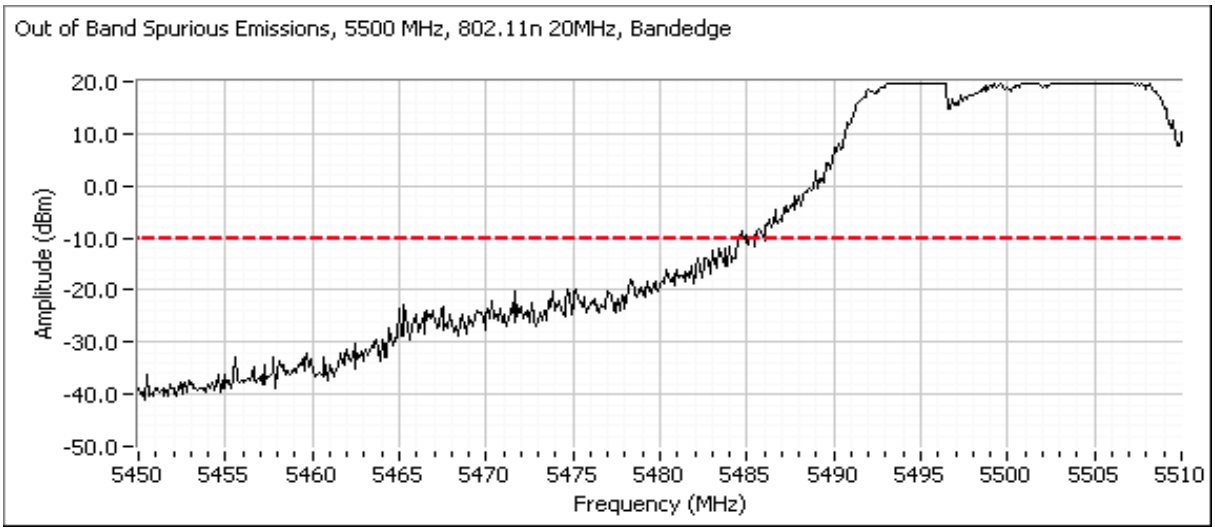


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Low channel, 5470 - 5725 MHz Band

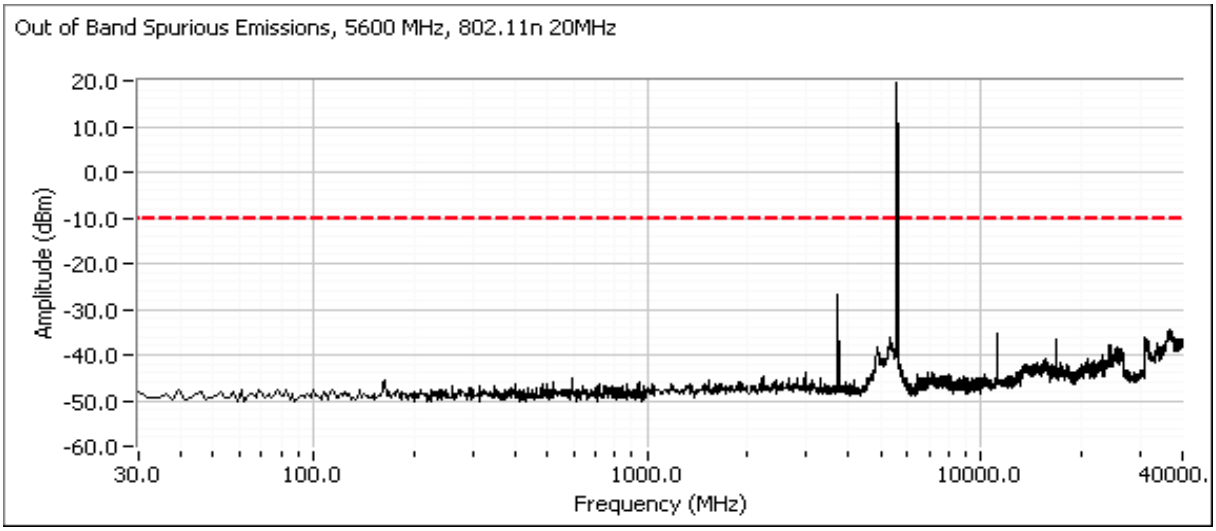
Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions test





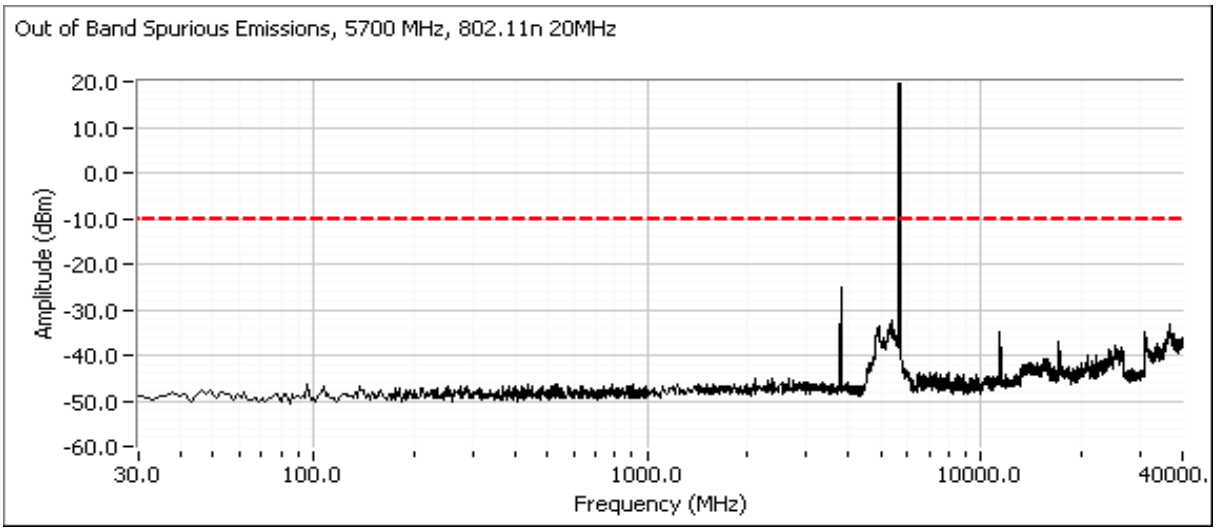
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5470 - 5725 MHz Band

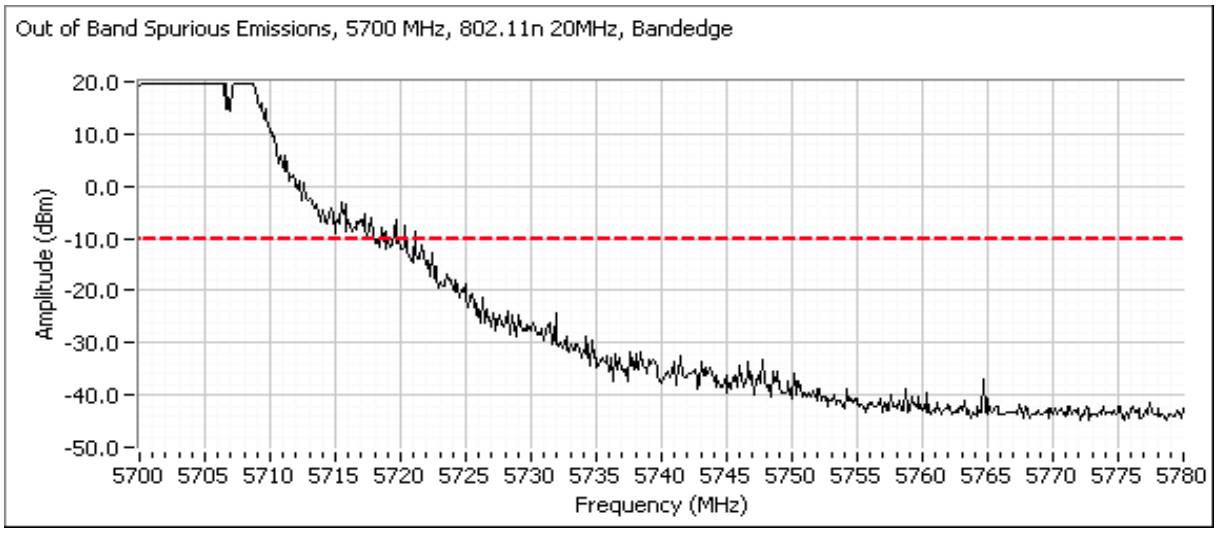


High channel, 5470 - 5725 MHz Band

Includes a plot from 5700 - 5780 MHz showing compliance with the limit immediately above the allocated band.



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 3/19/2009
Test Engineer: Mehran Birgani
Test Location: SVOATS #2

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.7 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	23.1 dBm (0.205W)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	23.1 dBm (0.205W)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	10.95 dBm/MHz
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	10.99 dBm/MHz
1	26dB Bandwidth	15.407	-	31.4 MHz
1	99% Bandwidth	RSS 210	-	17.1 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	9.5 dB
3	Antenna Conducted Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

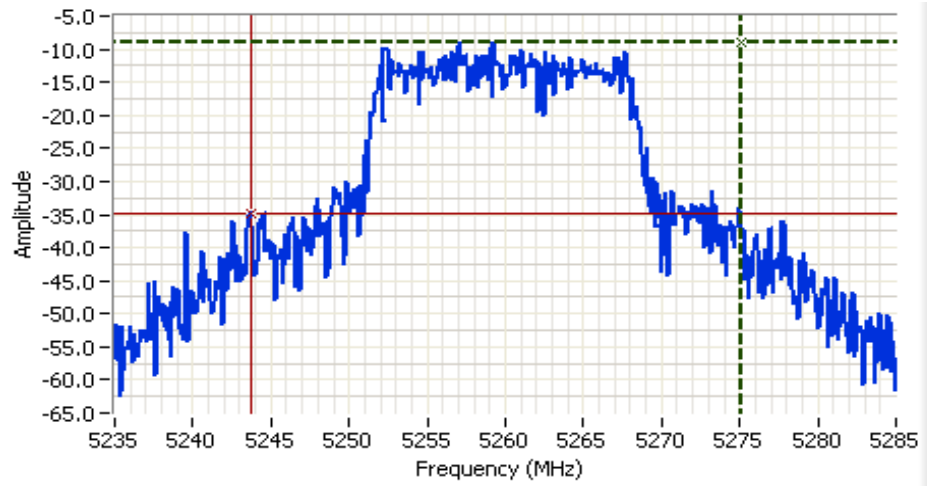
	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3.0	3.0	3.0	No	3.0

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	19.5	31.4	17.9	18.9	18.2	205.4	23.1	24.0	0.205	PASS
5300	19.5	30.0	17.7	18.5	17.8	189.9	22.8	24.0		PASS
5320	16.5	23.3	15.1	14.9	15.0	94.9	19.8	24.0		PASS
5500	19.5	22.8	18.2	17.4	17.2	173.5	22.4	24.0	0.205	PASS
5600	19.5	24.5	18.4	18.5	18.0	203.1	23.1	24.0		PASS
5700	19.0	25.5	18.9	18.3	17.8	205.5	23.1	24.0		PASS

Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5260	17.1	23.1	5.9	6.7	5.9	12.5	10.95	11.0	11.0	PASS
5300	17.1	22.8	5.4	6.3	5.5	11.3	10.52	11.0	11.0	PASS
5320	16.9	19.8	3.0	2.5	2.8	5.7	7.54	11.0	11.0	PASS
5500	16.9	22.4	6.1	5.0	5.0	10.4	10.17	11.0	11.0	PASS
5600	17.0	23.1	6.0	6.3	5.7	12.0	10.78	11.0	11.0	PASS
5700	17.0	23.1	6.7	6.2	5.7	12.6	10.99	11.0	11.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

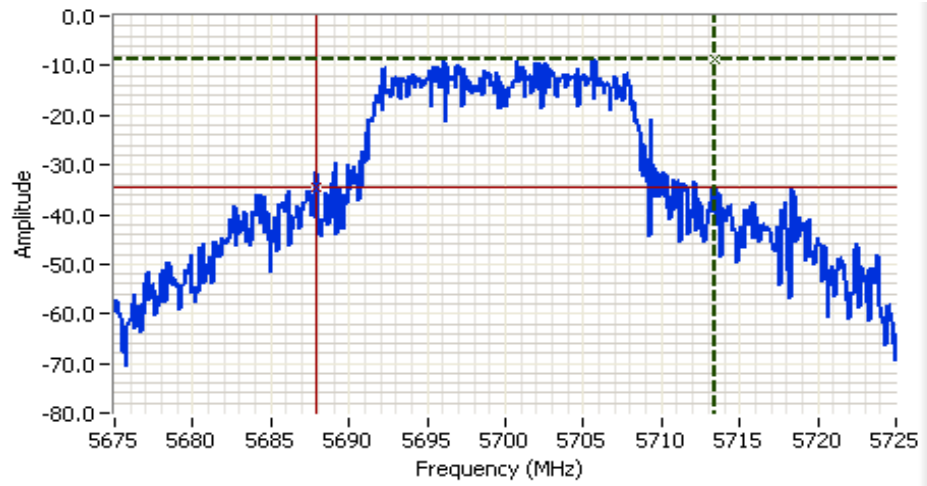
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Analyzer Settings
Agilent Technologies, E4446A
CF: 5260.000 MHz
SPAN: 50.000 MHz
RB: 1.000 MHz
VB: 3.000 MHz
Detector: PK (CISPR)
Attn: 10 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 0.0 DBM

Comments
26dB BW: 31.4 MHz
802.11a chain 2

Cursor 1	5275.0833	-8.96	Delta Freq.	31.417	Elliott
Cursor 2	5243.6667	-34.96	Delta Amplitude	26.00	

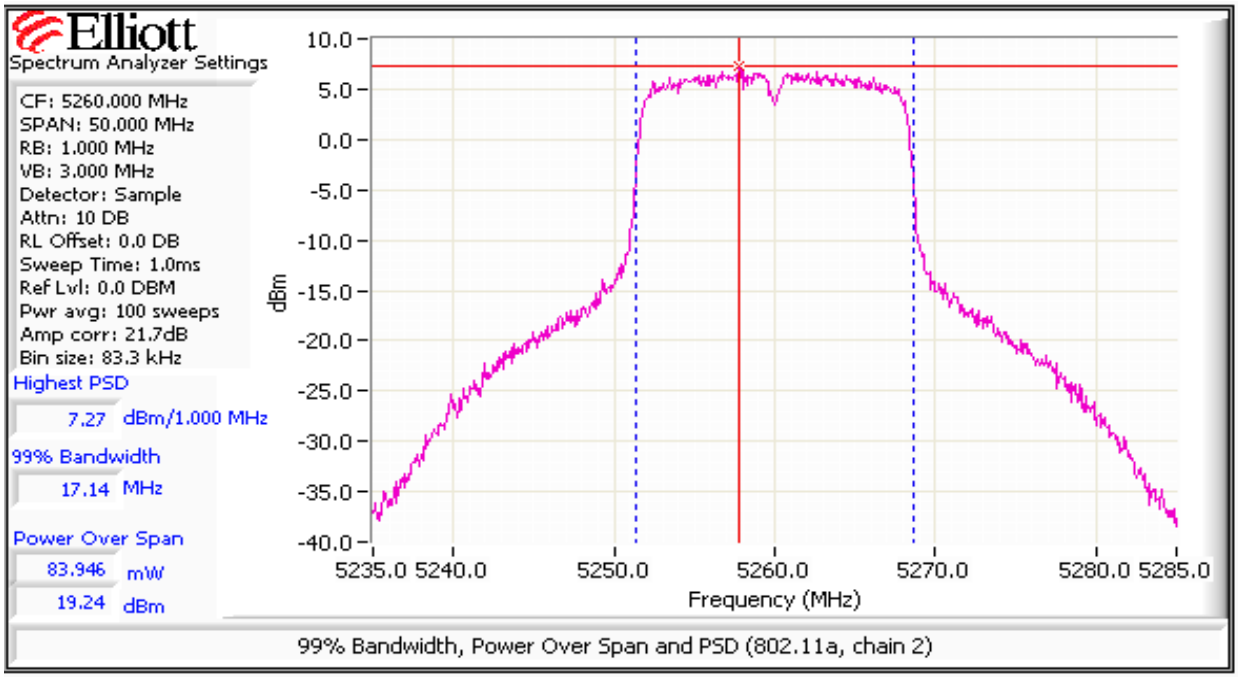


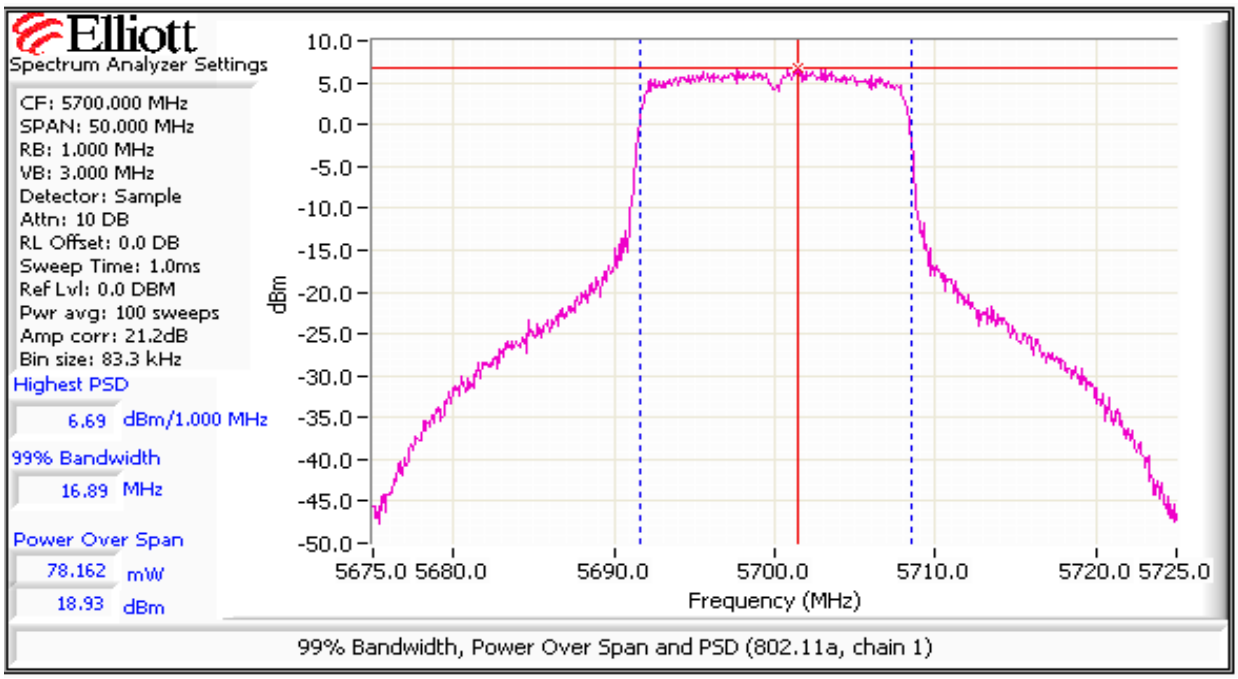
Analyzer Settings
Agilent Technologies, E4446A
CF: 5700.000 MHz
SPAN: 50.000 MHz
RB: 1.000 MHz
VB: 3.000 MHz
Detector: PK (CISPR)
Attn: 10 DB
RL Offset: 0.0 DB
Sweep Time: 1.0ms
Ref Lvl: 0.0 DBM

Comments
26dB BW: 25.5 MHz
802.11a chain 2

Cursor 1	5713.4167	-8.60	Delta Freq.	25.500	Elliott
Cursor 2	5687.9167	-34.60	Delta Amplitude	26.00	

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

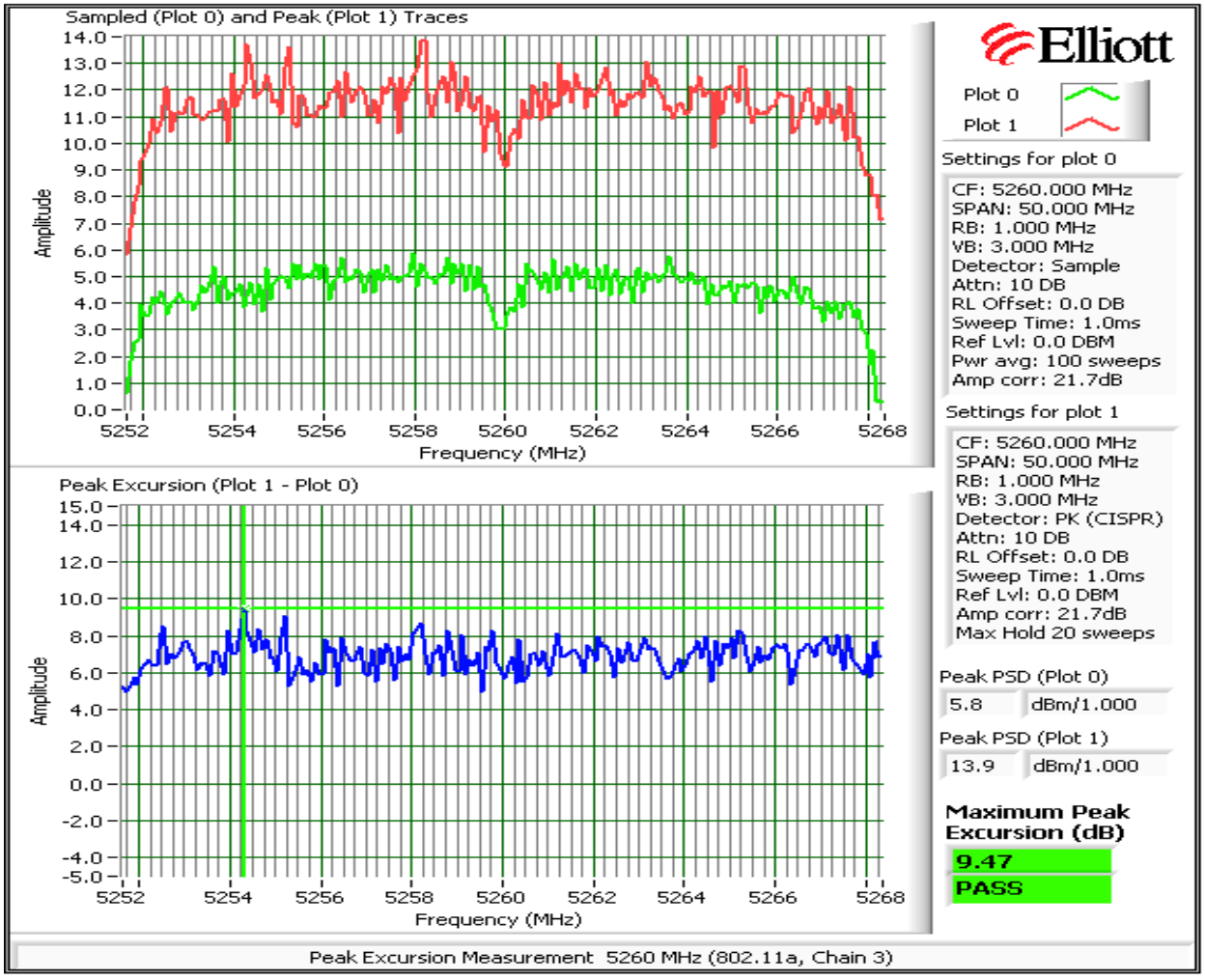
Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5180		13.0	5260	9.4	13.0	5500	9.1	13.0
5200		13.0	5300	9.0	13.0	5600	9.5	13.0
5240		13.0	5320	9.4	13.0	5700	9.4	13.0

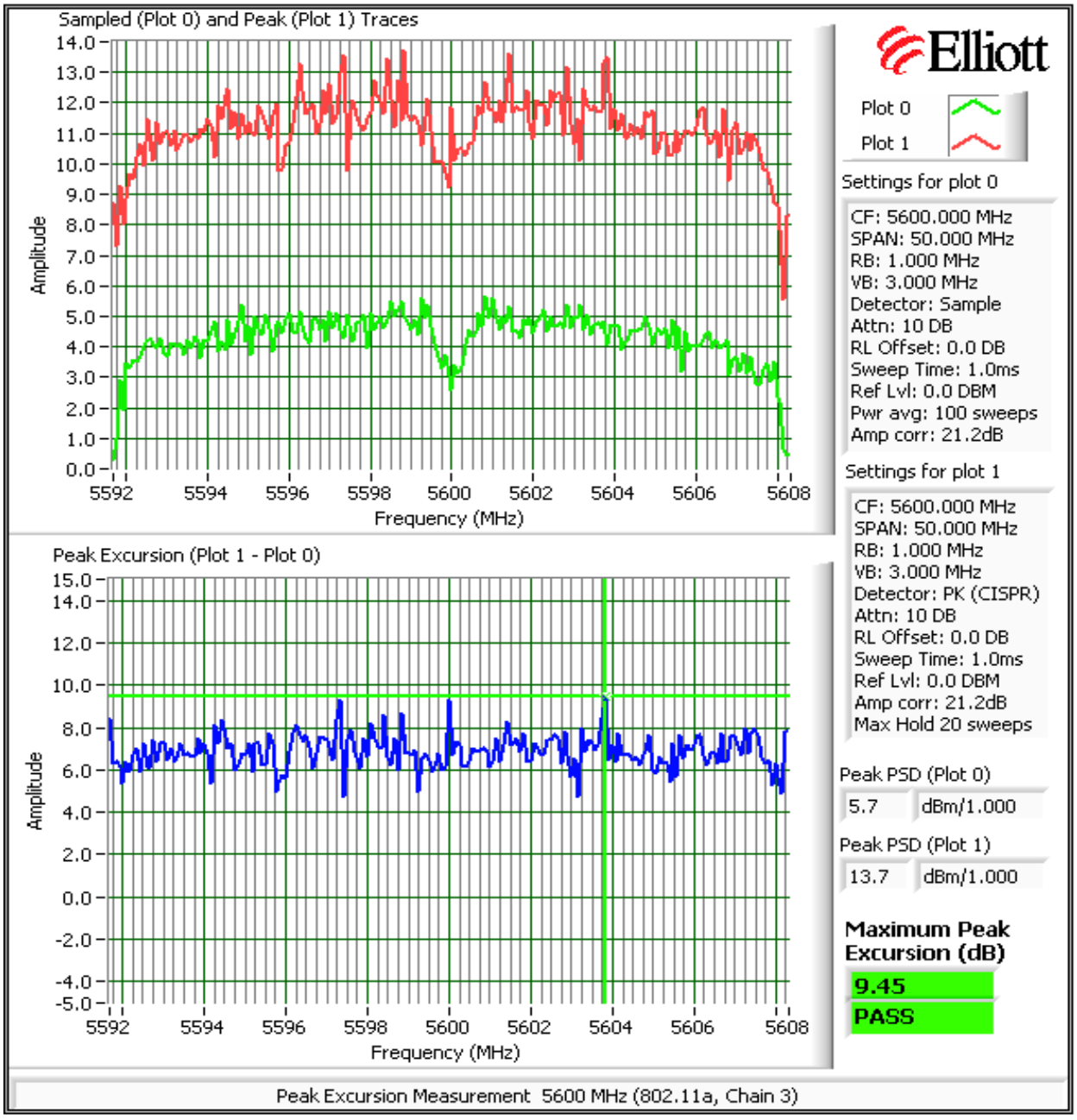
Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

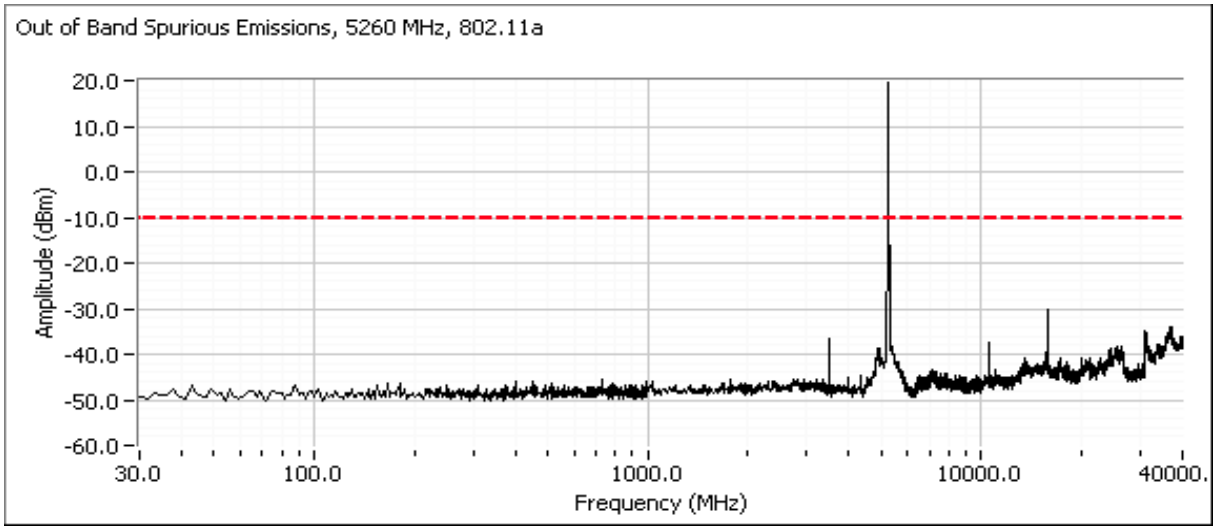
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots Note 1:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

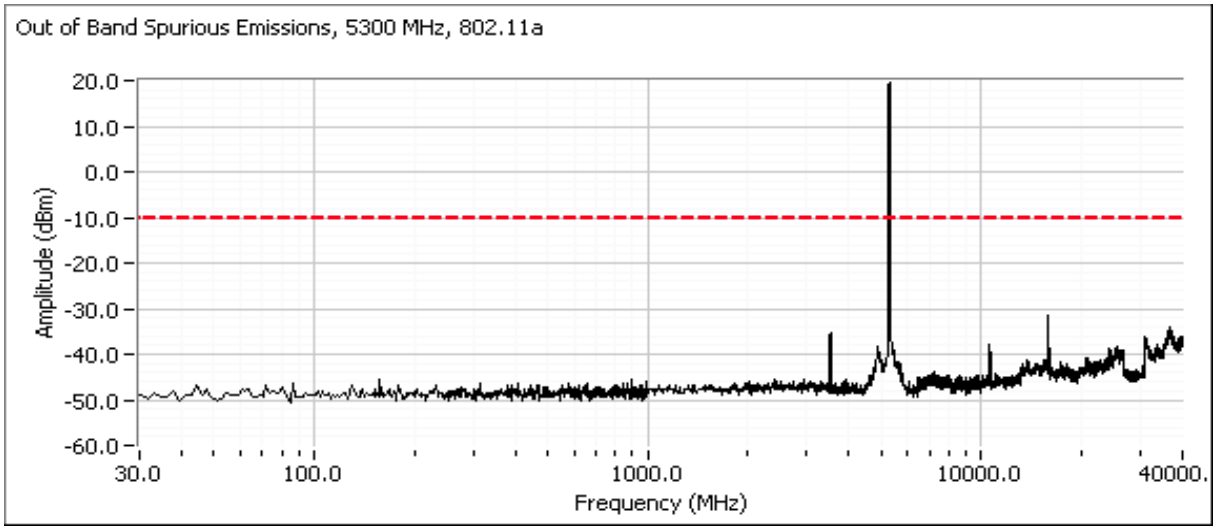
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band



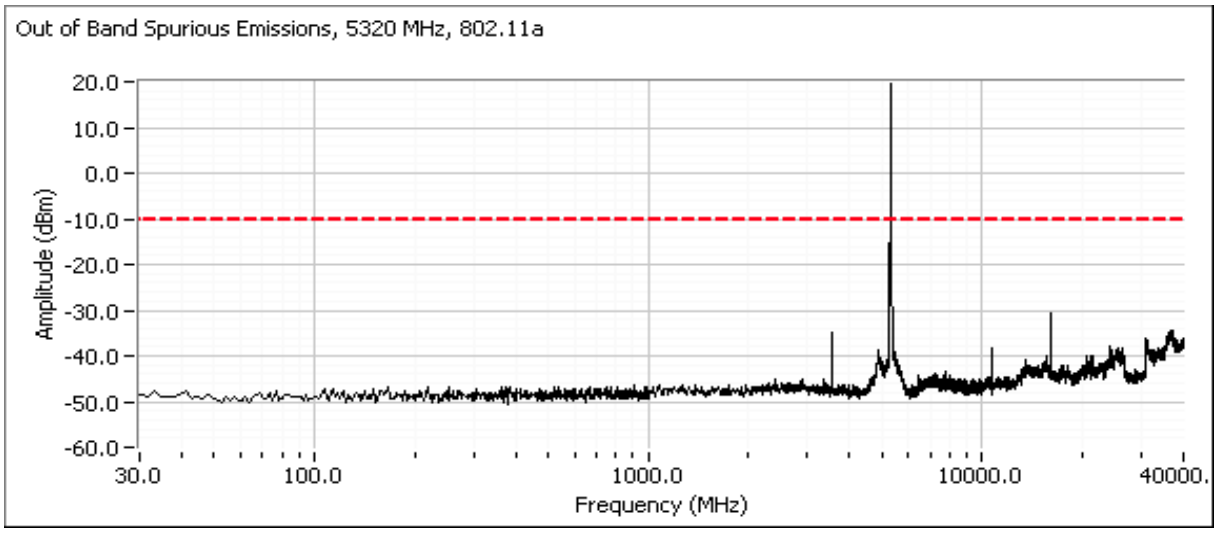
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5250 - 5350 MHz Band



High channel, 5250 - 5350 MHz Band

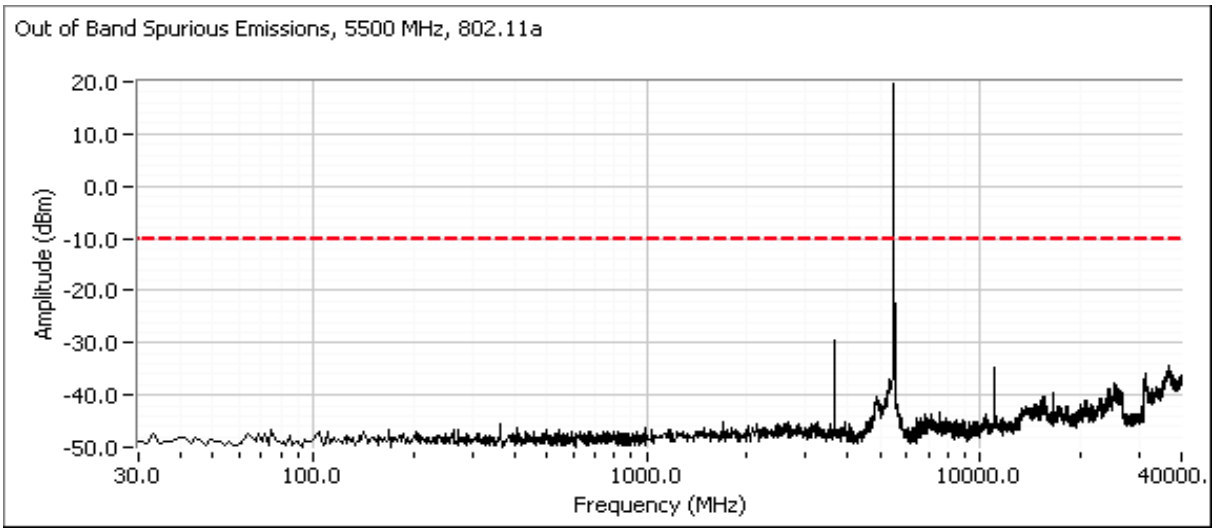
Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

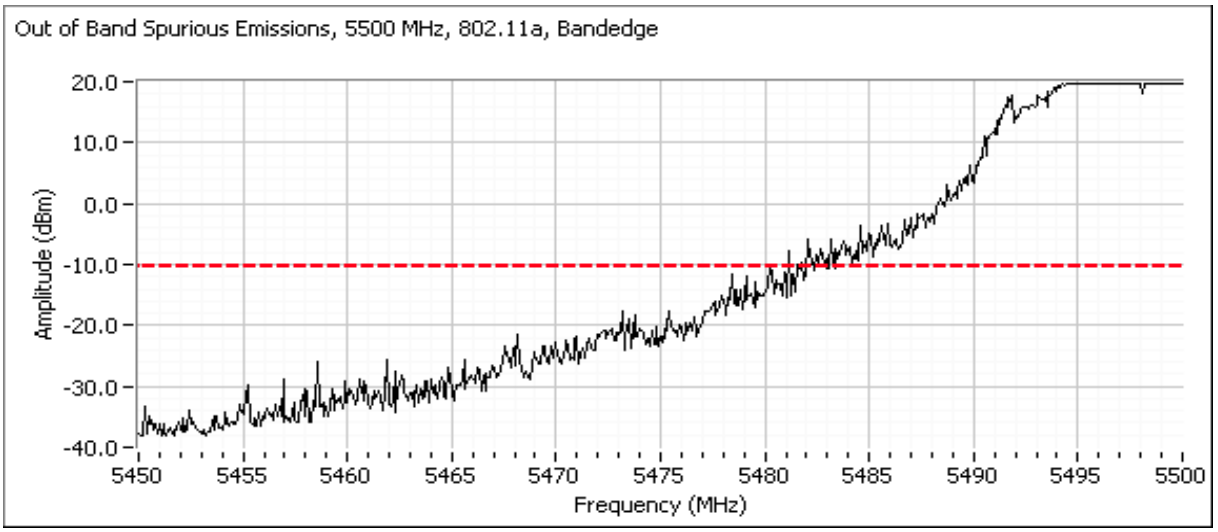


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Low channel, 5470 - 5725 MHz Band

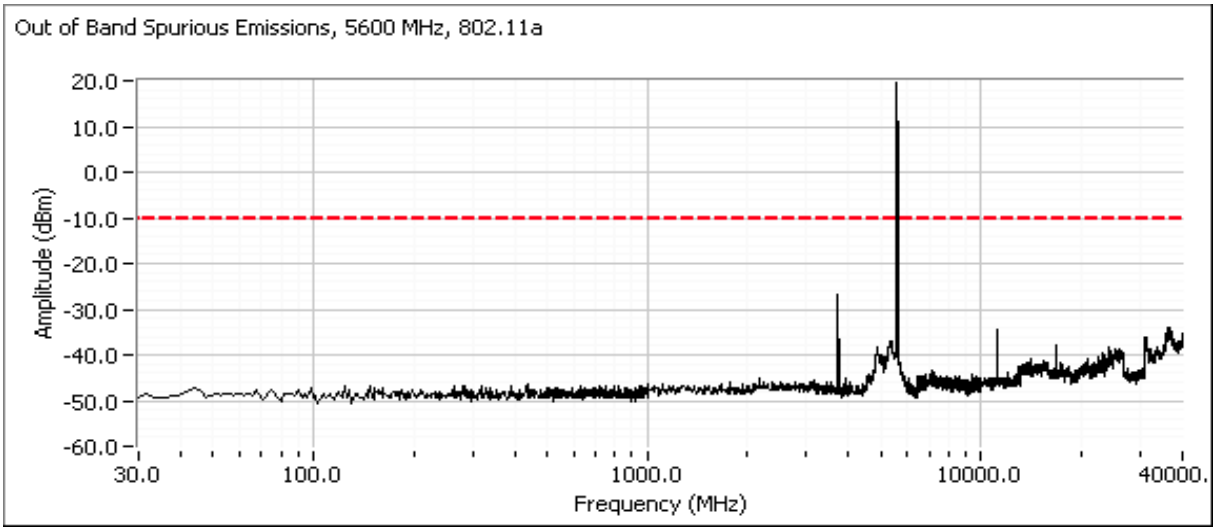
Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.





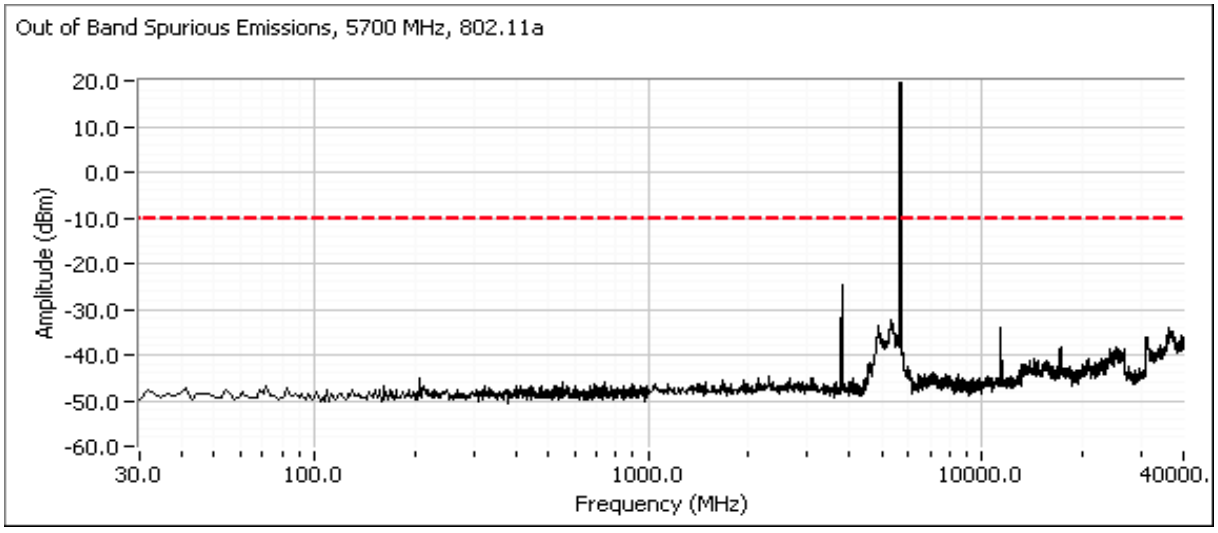
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5470 - 5725 MHz Band

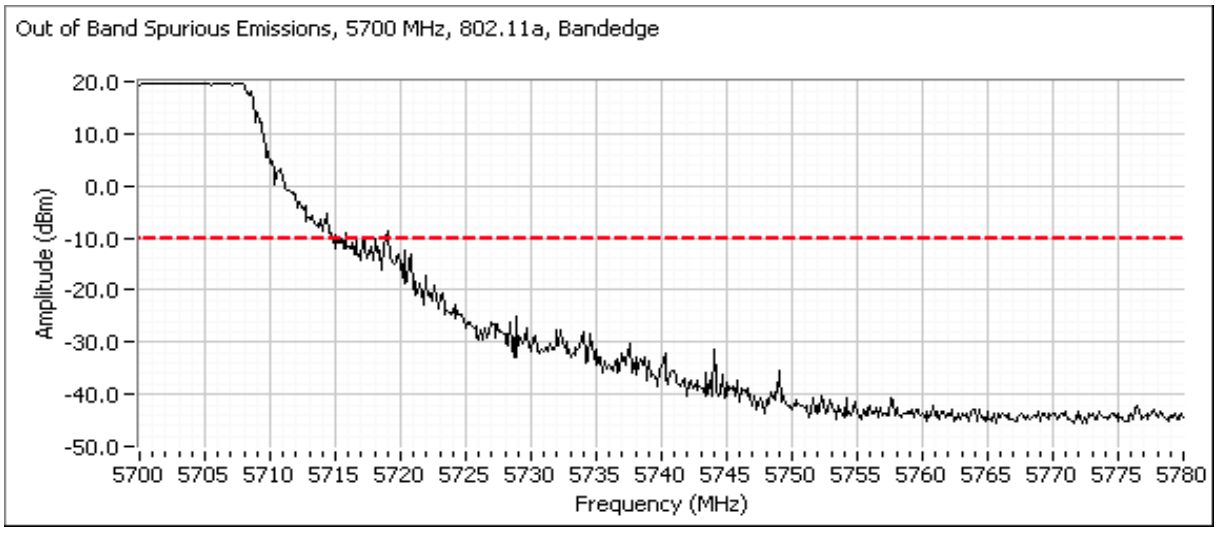


High channel, 5470 - 5725 MHz Band

Includes a plot from 5700 - 5780 MHz showing compliance with the limit immediately above the allocated band.



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 2/19/2008
Test Engineer: Rafael Varelas
Test Location: SVOATS #1

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.7 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	16.5 dBm (0.045 W)
1	PSD, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	3.97 dBm/MHz
1	26dB Bandwidth	15.407	-	33.2 MHz
1	99% Bandwidth	RSS 210	-	19.1 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	12.9 dB
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3	3	3	No	3.0

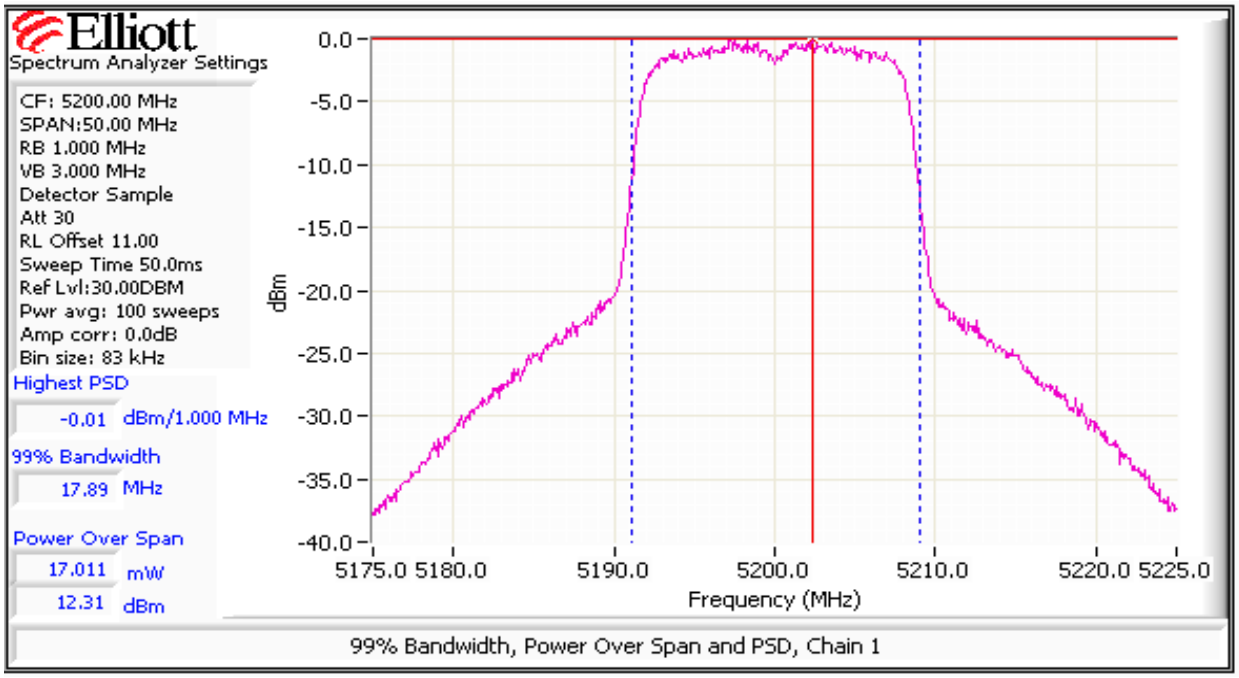
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5180	14.0	40.0	12.0	10.8	11.9	43.4	16.4	17.0	0.045	PASS
5200	14.0	33.2	12.3	11.4	10.7	42.5	16.3	17.0		PASS
5240	14.0	34.0	12.1	11.0	12.1	44.9	16.5	17.0		PASS

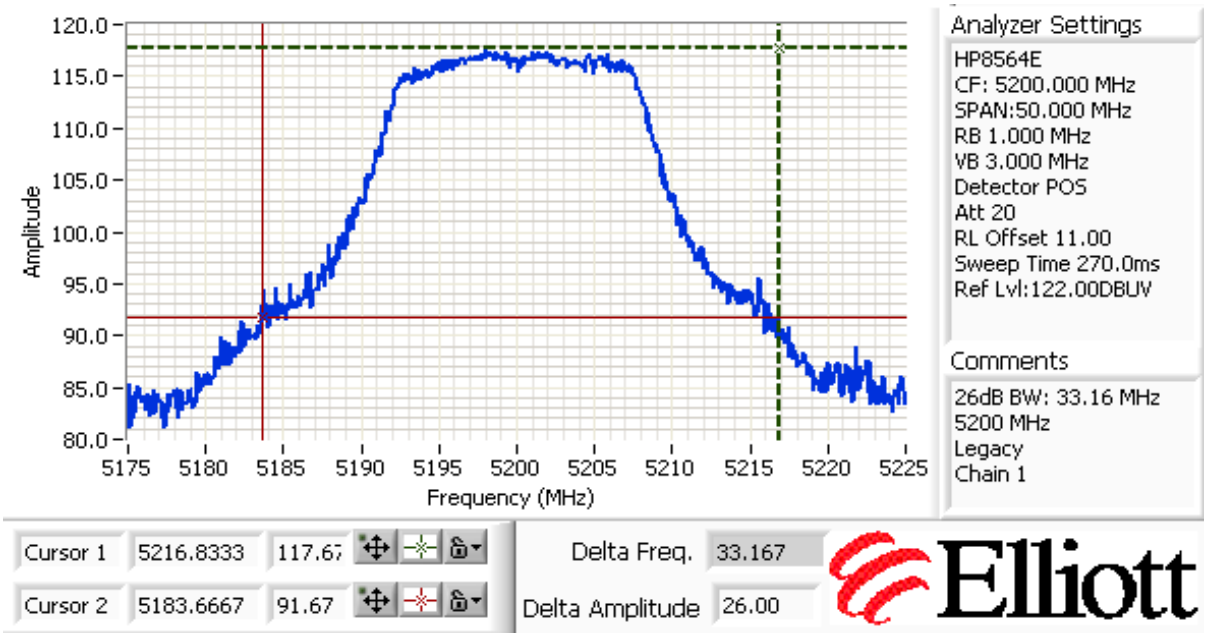
Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5180	18.7	16.4	-1.0	-1.6	-0.5	2.4	3.8	4.0	7.0	PASS
5200	18.6	16.3	0.0	-1.2	-1.9	2.4	3.8	4.0	7.0	PASS
5240	19.1	16.5	-0.3	-1.6	-0.6	2.5	4.0	4.0	7.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. The antennas are sectorized such that the highest effective antenna gain is 3dBi.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Continued





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)	
(MHz)	Value	Limit
5180	11.9	13.0
5200	12.5	13.0
5240	12.9	13.0

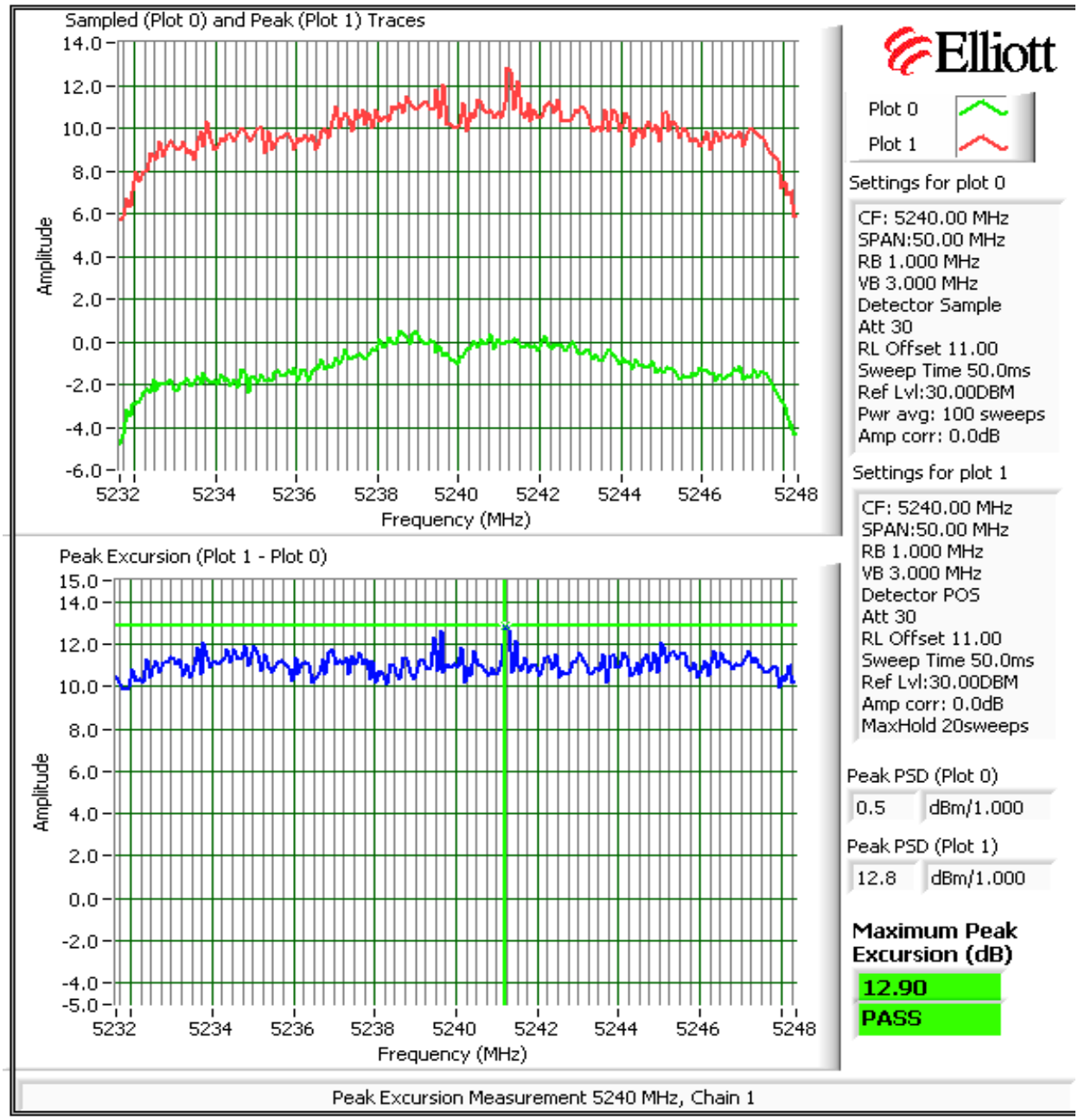
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Continued

Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

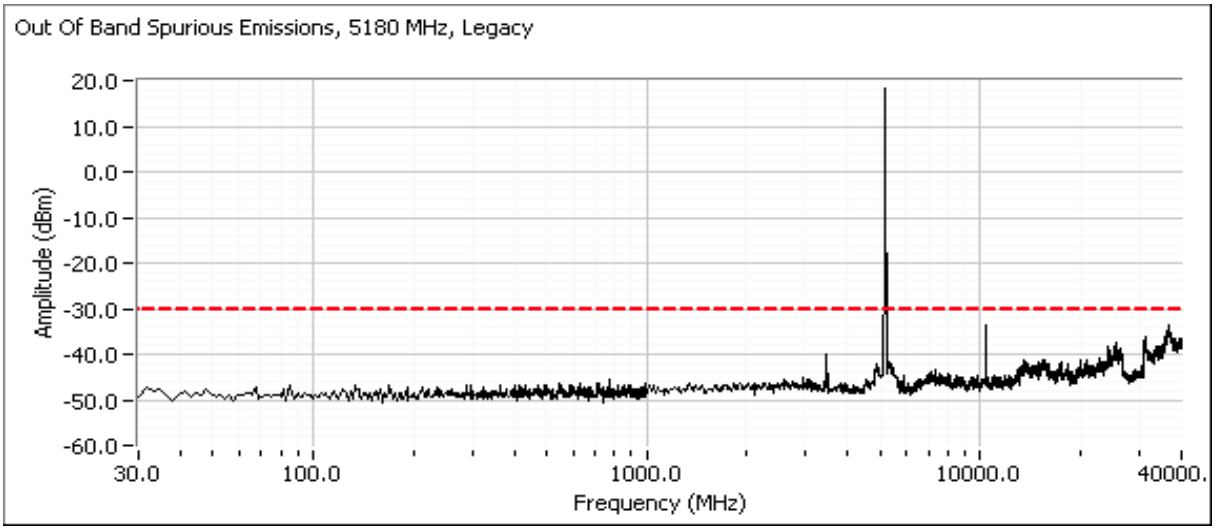
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots [Note 1]:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

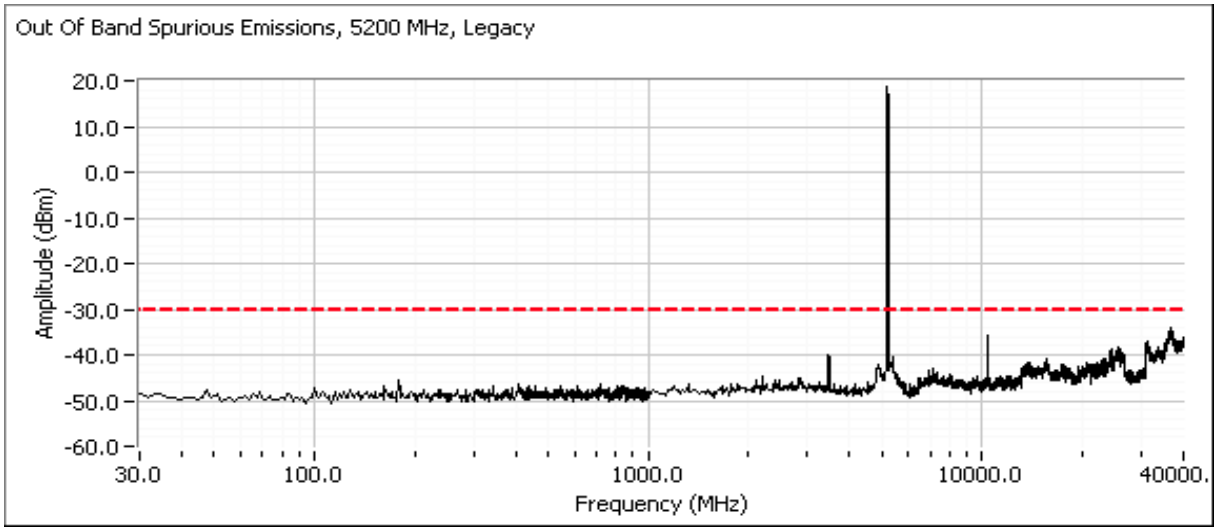
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5150 - 5250 MHz Band

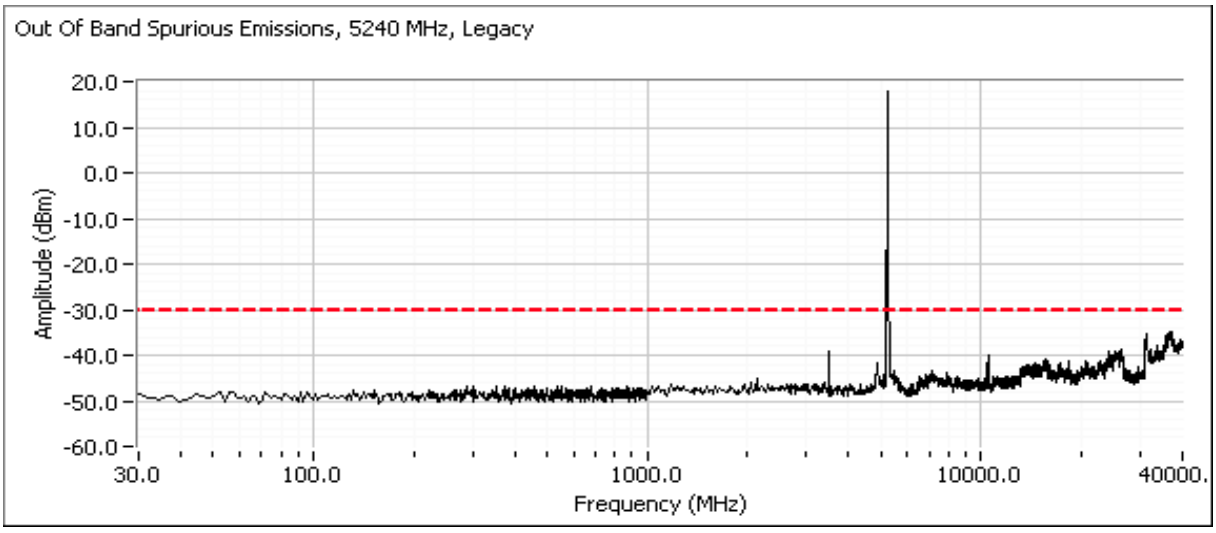


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5150 - 5250 MHz Band



High channel, 5150 - 5250 MHz Band



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 2/19/2008
Test Engineer: Rafael Varelas
Test Location: SVOATS #1

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.7 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	16.2 dBm (0.042 W)
1	PSD, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	3.9 dBm/MHz
1	26dB Bandwidth	15.407	-	26.3 MHz
1	99% Bandwidth	RSS 210	-	18.9 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	12.8 dB
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3	3	3	no	3.0

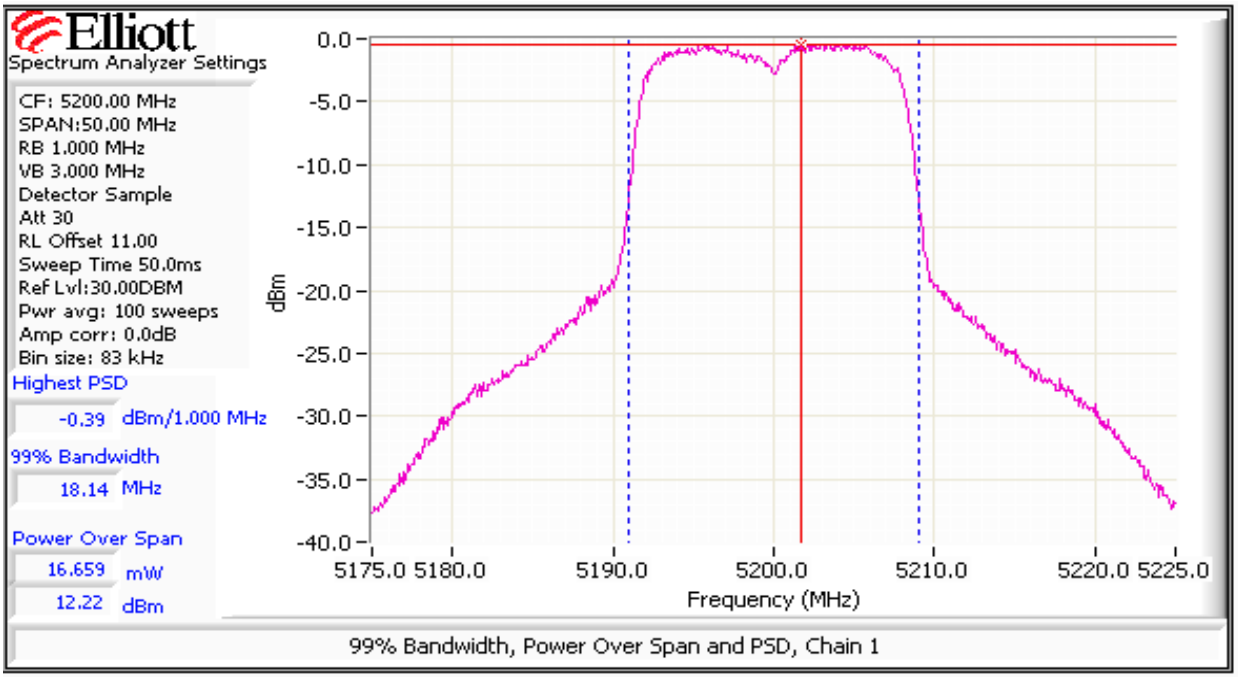
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5180	13.5	33.1	11.9	11.5	9.2	38.0	15.8	17.0	0.042	PASS
5200	13.5	26.3	12.2	10.9	11.1	41.6	16.2	17.0		PASS
5240	13.5	27.5	11.3	10.8	10.7	37.0	15.7	17.0		PASS

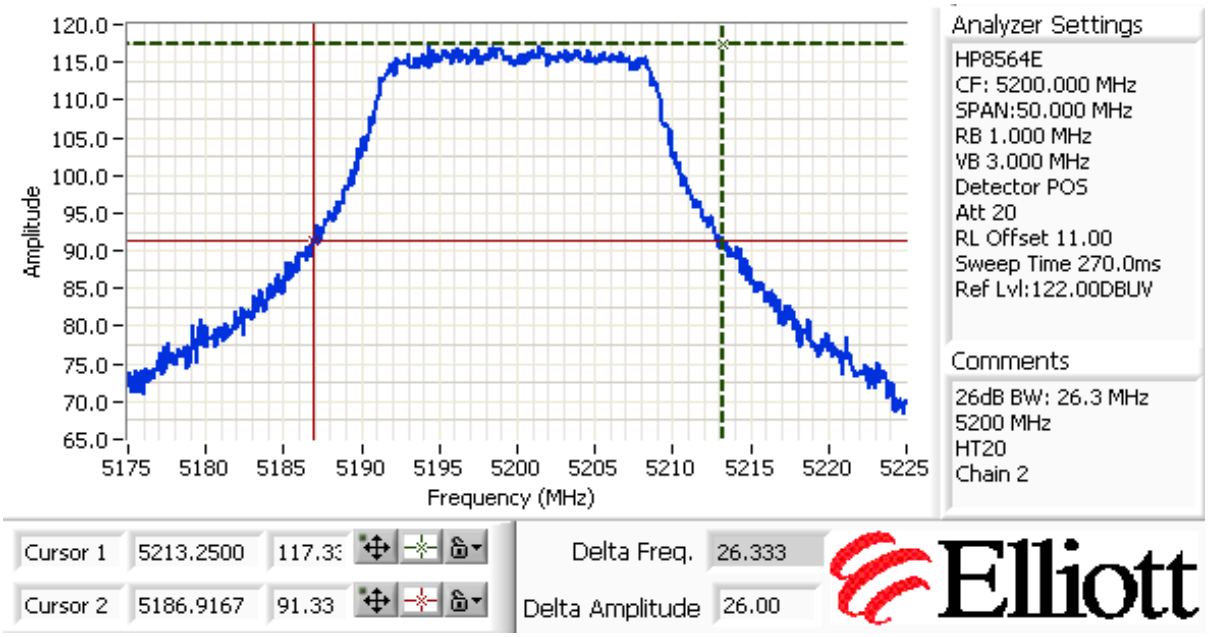
Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5180	18.1	15.8	-0.6	-0.9	-3.1	2.2	3.4	4.0	7.0	PASS
5200	18.1	16.2	-0.4	-1.2	-1.2	2.4	3.9	4.0	7.0	PASS
5240	18.9	15.7	-1.2	-1.8	-1.8	2.1	3.2	4.0	7.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Continued





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)	
(MHz)	Value	Limit
5180	12.2	13.0
5200	12.5	13.0
5240	12.8	13.0

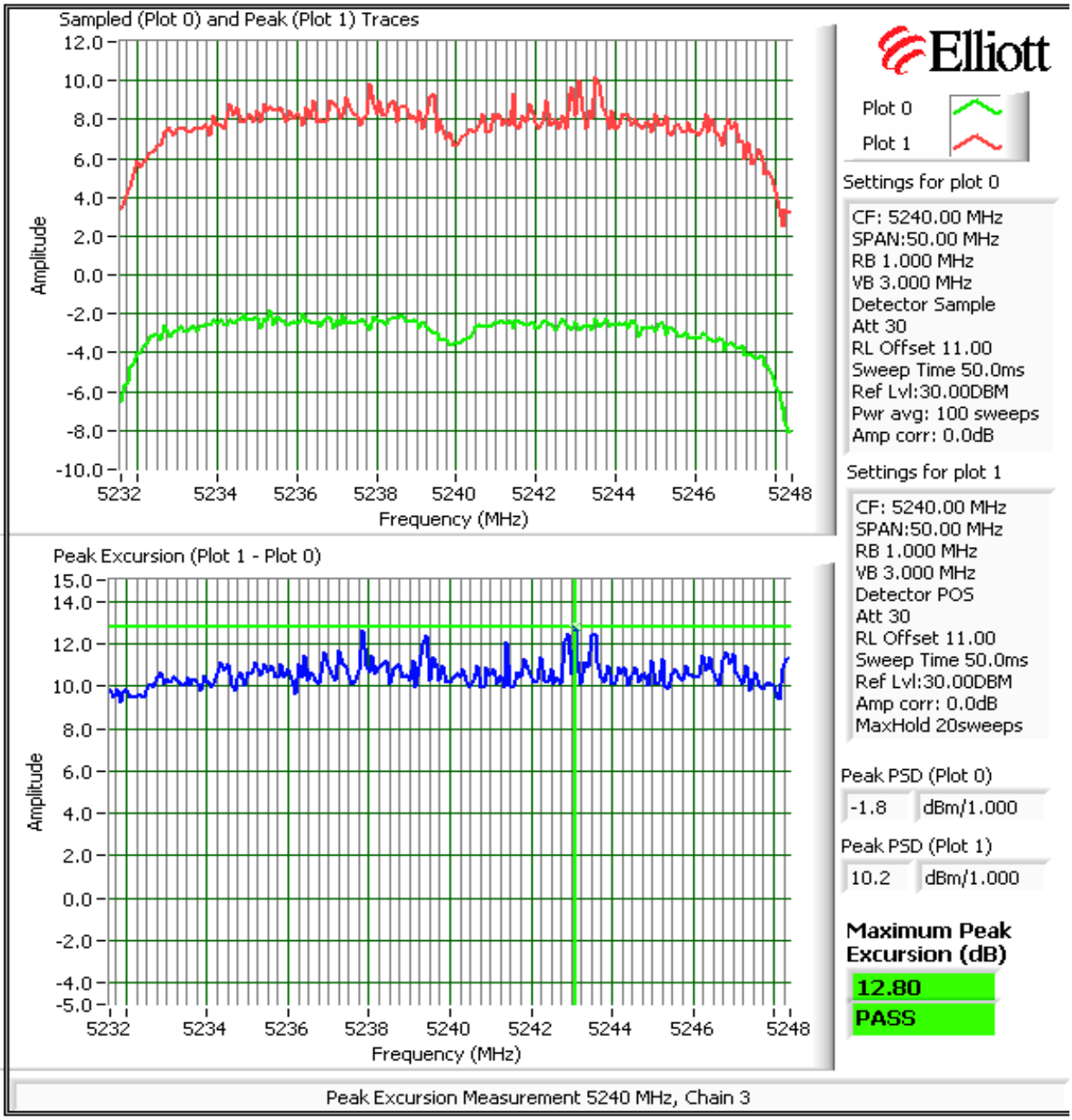
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Continued

Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

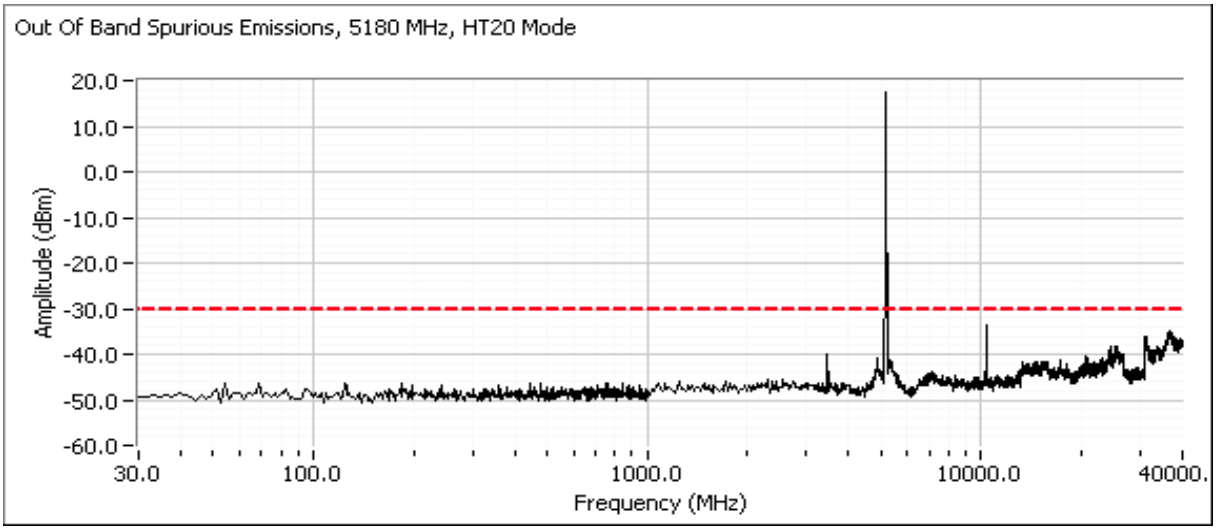
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots Note 1:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

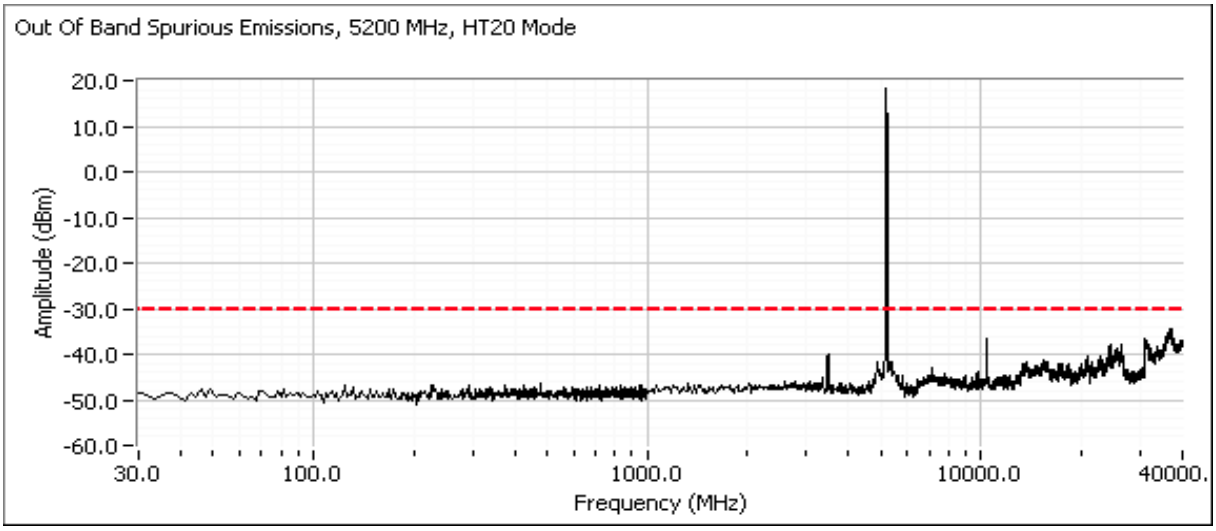
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5150 - 5250 MHz Band

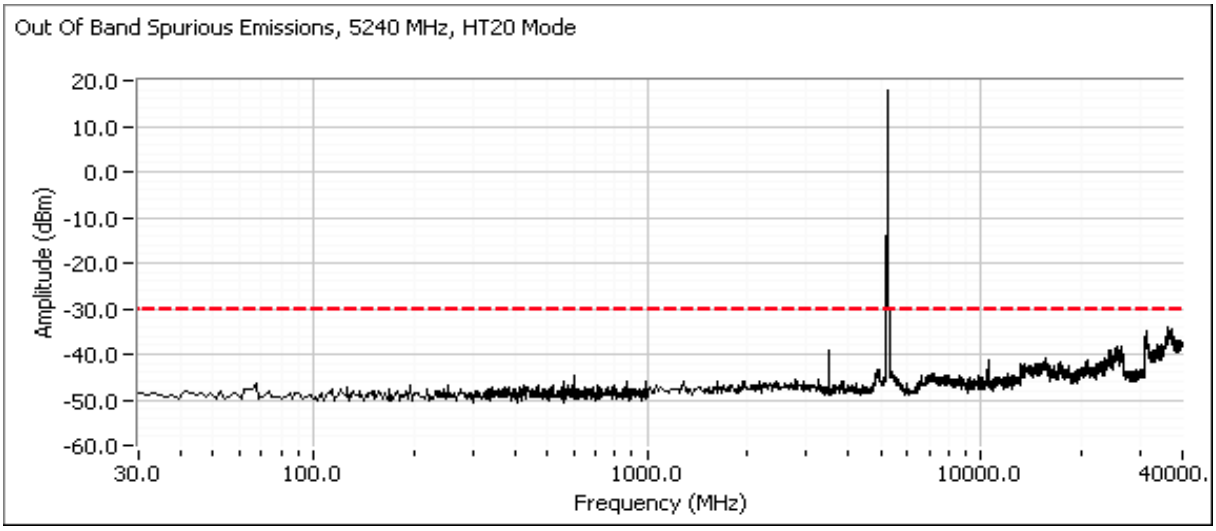


Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Center channel, 5150 - 5250 MHz Band



High channel, 5150 - 5250 MHz Band



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

RSS-210 (LELAN) and FCC 15.407(UNII)
Antenna Port Measurements
Power, PSD, Peak Excursion, Bandwidth and Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 2/19/2008
Test Engineer: Rafael Varelas
Test Location: SVOATS #1

Config. Used: 1
Config Change: None
EUT Voltage: 120V/60Hz

General Test Configuration

When measuring the conducted emissions from the EUT's antenna port, the antenna port of the EUT was connected to the spectrum analyzer or power meter via a suitable attenuator to prevent overloading the measurement system. All measurements are corrected to allow for the external attenuators and cables used.

Ambient Conditions:

Temperature: 18.7 °C
Rel. Humidity: 36 %

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	16.3 dBm (0.043 W)
1	PSD, 5150 - 5250MHz	15.407(a) (1), (2)	Pass	0.4 dBm/MHz
1	26dB Bandwidth	15.407	-	51.3 MHz
1	99% Bandwidth	RSS 210	-	37.2 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	12.97 dB
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Bandwidth, Output Power and Power spectral Density

	Chain 1	Chain 2	Chain 3	Coherent	Effective[5]
Antenna Gain (dBi):	3	3	3	No	3.0

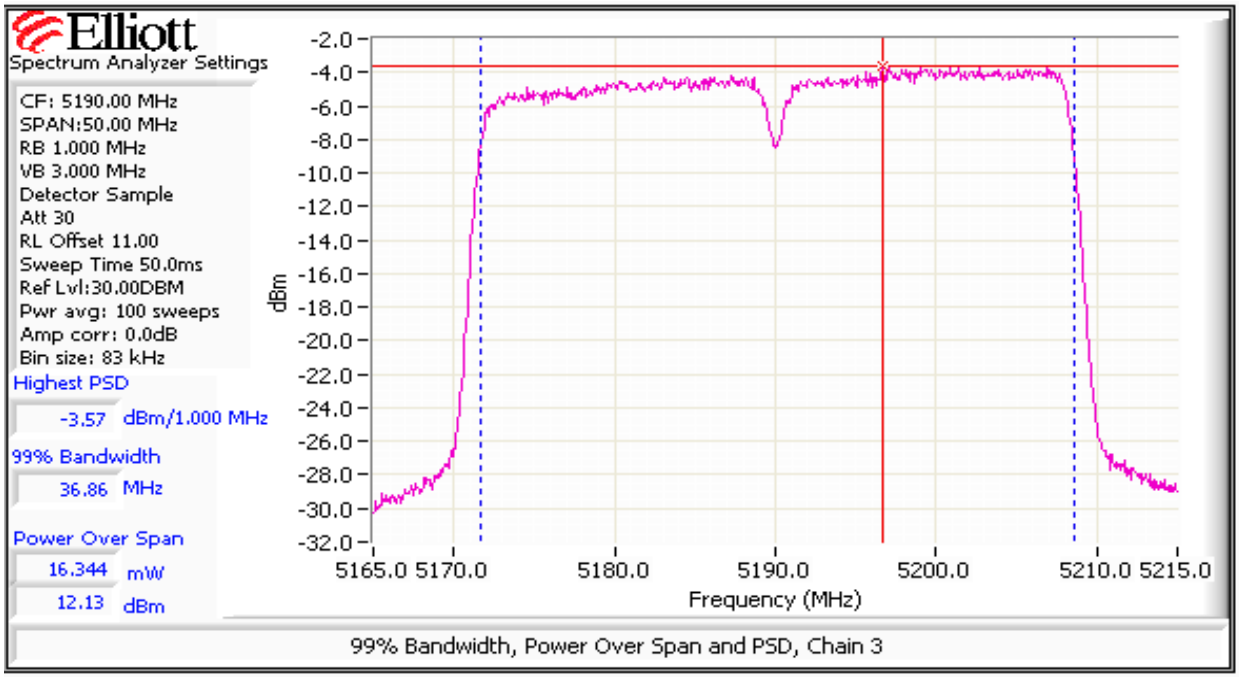
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power[1] dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5190	12.5	79.1	9.2	8.0	12.1	30.8	14.9	17.0	0.043	PASS
5230	14.0	51.3	12.5	11.8	10.1	43.0	16.3	17.0		PASS

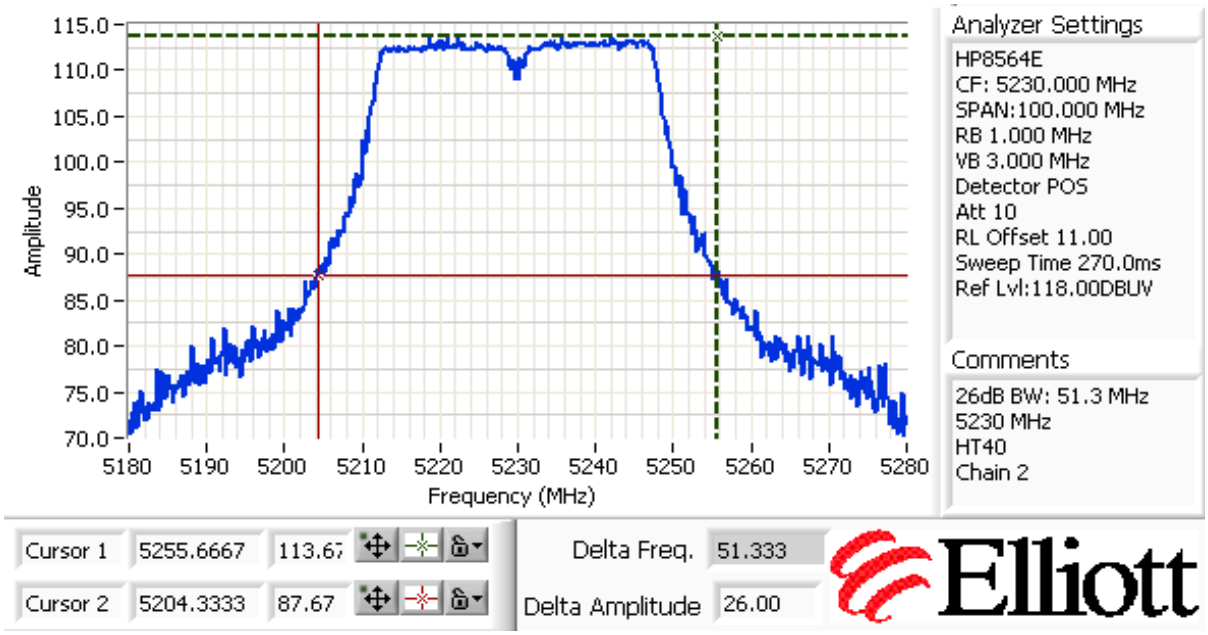
Frequency (MHz)	99%[4] BW	Total Power	PSD[2] dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210[3]	
5190	37.2	14.9	-6.5	-7.6	-3.6	0.8	-0.8	4.0	7.0	PASS
5230	37.1	16.3	-3.1	-4.4	-5.9	1.1	0.4	4.0	7.0	PASS

Note 1:	Output power measured using a spectrum analyzer (see plots below): RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was continuous) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated form the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #1: Continued





Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Peak Excursion Measurement

Device meets the requirement for the peak excursion

Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)		Freq	Peak Excursion(dB)	
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5190	12.97	13.0	5260		13.0	5500		13.0
5200		13.0	5300		13.0	5600		13.0
5230	12.9	13.0	5320		13.0	5700		13.0

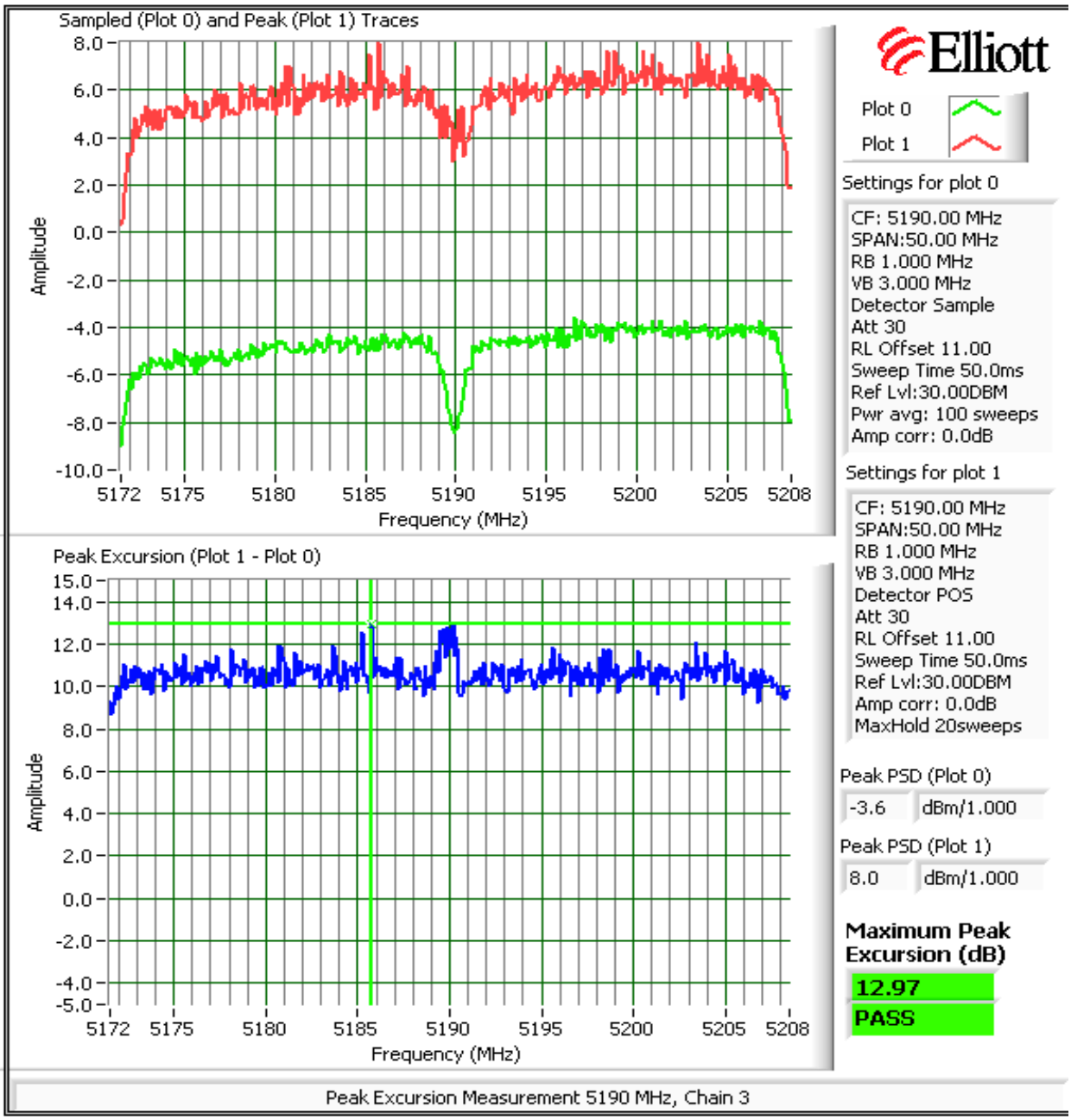
Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #2: Continued

Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

Run #3: Out Of Band Spurious Emissions - Antenna Conducted

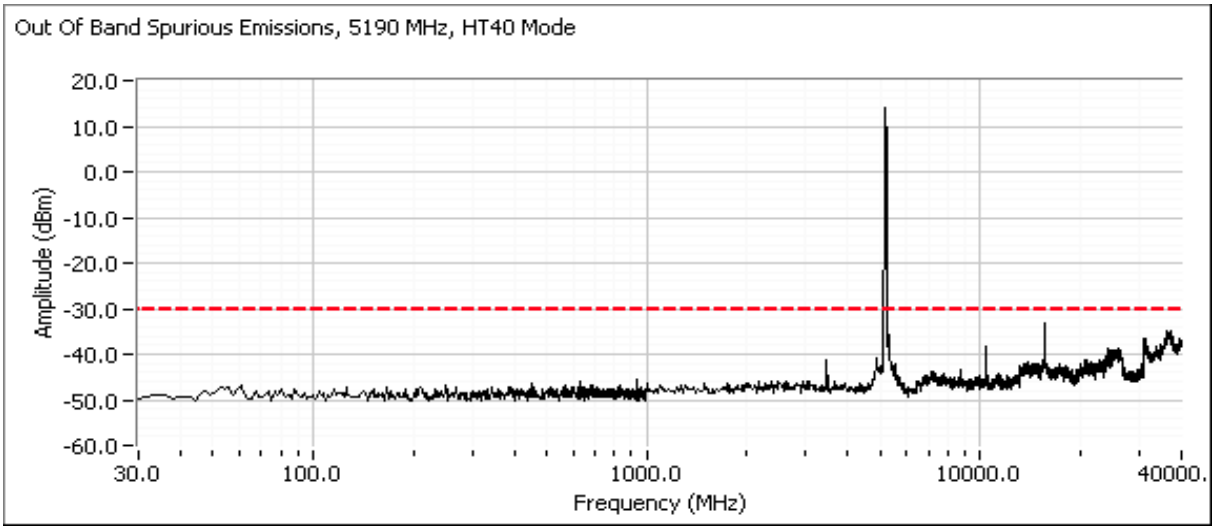
MIMO Devices: Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained with all chains transmitting simultaneously and connected to the analyzer via a combiner. Unused ports of the combiner were terminated in the approrpiate load (50 ohms).

Number of transmit chains:	3		
Maximum Antenna Gain:	3.0	dBi	
Spurious Limit:	-27.0	dBm/MHz eirp	
Limit Used On Plots Note 1:	-30.0	dBm/MHz	Average Limit (RB=1MHz, VB=10Hz)
	-10.0	dBm/MHz	Peak Limit (RB=VB=1MHz)

Note 1:	The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
Note 2:	All spurious signals below 1GHz are measured during digital device radiated emissions test.
Note 3:	Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
Note 4:	If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
Note 5:	Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5150 - 5250 MHz Band



Client:	Ruckus Wireless	Job Number:	J73710
Model:	Dalmatian	T-Log Number:	T73803
		Account Manager:	Dean Eriksen
Contact:	Craig Owens		
Standard:	FCC Part 15.247/RSS-210	Class:	N/A

High channel, 5150 - 5250 MHz Band

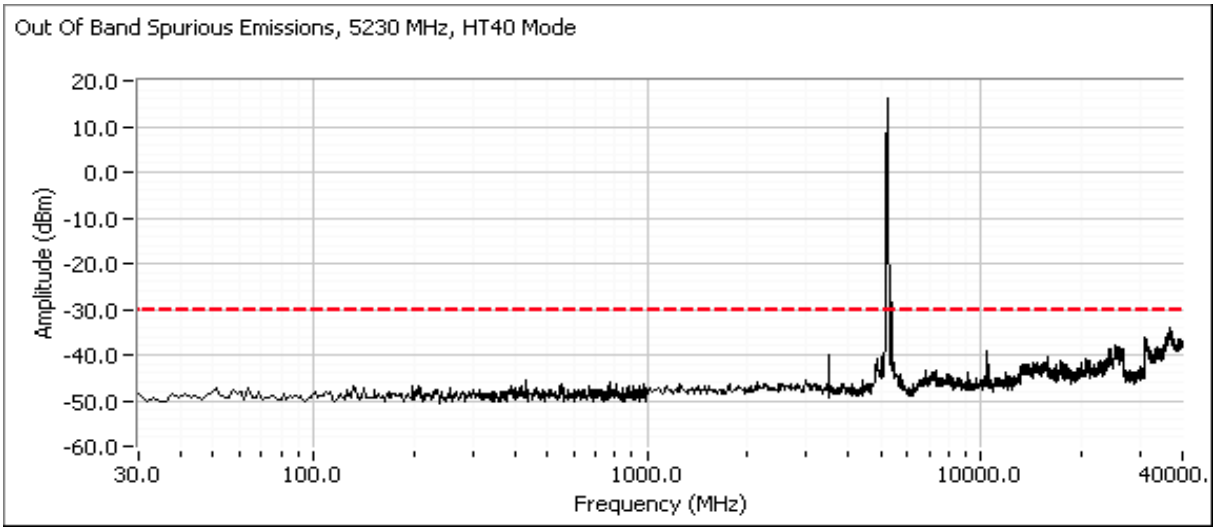


EXHIBIT 3: Photographs of Test Configurations

EXHIBIT 4: Proposed FCC ID Label & Label Location

EXHIBIT 5: Detailed Photographs of Ruckus Wireless Model 7962Construction

EXHIBIT 6: Operator's Manual for Ruckus Wireless Model 7962

EXHIBIT 7: Block Diagram of Ruckus Wireless Model 7962

EXHIBIT 8: Schematic Diagrams for Ruckus Wireless Model 7962

EXHIBIT 9: Theory of Operation for Ruckus Wireless Model 7962

EXHIBIT 10: RF Exposure Information