

EMC Test Report

Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7

FCC Part 15 Subpart C

Model: W2SW0001

IC CERTIFICATION #:	7980A-22553
FCC ID:	VSF22553

APPLICANT: Juniper Systems, Inc. 1132 West 1700 North Logan, UT 84321

TEST SITE(S): Elliott Laboratories 41039 Boyce Road. Fremont, CA. 94538-2435

IC SITE REGISTRATION #: 2845B-5

REPORT DATE: September 13, 2010

FINAL TEST DATES: July 13 and 14, 2010

AUTHORIZED SIGNATORY:

Mark Briggs Staff Engineer Elliott Laboratories



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REVISION HISTORY

Rev#	Date	Comments	Modified By
	09-13-2010	First release	

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SCOPE

An electromagnetic emissions test has been performed on the Juniper Systems, Inc. model W2SW0001, 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 C

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 DTS Measurement Procedure KDB558074, March 2005

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.

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 Juniper Systems, Inc. model W2SW0001 complied with the requirements of the following regulations:

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 C

Maintenance of compliance is the responsibility of the manufacturer. Any modifications to the product should be assessed to determine their potential impact on the compliance status of the device with respect to the standards detailed in this test report.

The test results recorded herein are based on a single type test of Juniper Systems, Inc. model W2SW0001 and therefore apply only to the tested sample. The sample was selected and prepared by Kent Campbell of Juniper Systems, Inc..

DEVIATIONS FROM THE STANDARDS

No deviations were made from the published requirements listed in the scope of this report.

TEST RESULTS SUMMARY

DIGITAL TRANSMISSION SYSTEMS (2400 - 2483.5MHz)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)	
15.247(a)	RSS 210 A8.2	Digital Modulation	Not evaluated, the proposed changes to the radio module (new antenna type and host-specific portable rf exposure			
15.247 (a) (2)	RSS 210 A8.2 (1)	6dB Bandwidth	conditions) do not affect bandwidth, output power	, U		
15.247 (b)	RSS 210	Output Power	antenna port.			
(3)	A8.2 (4)	(multipoint systems)				
15 247(4)	RSS 210	Power Spectral	The field strength of the fundamental signal was measured			
15.247(d)	A8.2 (2)	Density	to verify that the expected field strength, based on the			
15.247(c)	RSS 210 A8.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	module's output power rating, was within 3dB of the expected value based on the original testing performed on the module with a 3dBi antenna.			
15.247(c) / 15.209	RSS 210 A8.5	Radiated Spurious Emissions 30MHz – 25 GHz	adiated Spurious Emissions 48.0dBµV/m@ 2389 9MHz 15.207 in restricted bands, all others (6.0dB)			
Note 1: Limit of -30dBc used because the rated power was measured using the UNII test procedure (maximum power averaged over a transmission burst) during the original device certification tests.						

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Not evaluated – proposed changes do not affect the rf connector as previously described in the original filings for the module.		t the rf al filings
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	37.8dBµV/m @ 4838.3MHz	Refer to page 17	Complies (16.2dB)
15.207	RSS GEN Table 2	AC Conducted Emissions	Not measured – proposed changes do not affect the values previously measured. Note that the host system is subject to the Class B digital device limits for spurious emissions on the AC power port of the AC adapter.		n is subject
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to SAR report and RSS 102 declaration	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Refer to host system manual	Statement required regarding non- interference	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	N/A - for this specific host system antenna is integral	Statement for products with detachable antenna	N/A
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	From original certification documents:	Information only	N/A

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	Measurement Unit	Frequency Range	Expanded Uncertainty
RF power, conducted (power meter)	dBm	25 to 7000 MHz	$\pm 0.52 \text{ dB}$
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	$\pm 0.7 \text{ dB}$
Conducted emission of transmitter	dBm	25 to 26500 MHz	$\pm 0.7 \text{ dB}$
Conducted emission of receiver	dBm	25 to 26500 MHz	$\pm 0.7 \text{ dB}$
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz 1000 to 40000 MHz	$\frac{\pm 3.6 \text{ dB}}{\pm 6.0 \text{ dB}}$
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Juniper Systems, Inc. model W2SW0001 is an 802.11bg wireless module. Testing covered by the scope of this test report was performed to evaluate the module in a specific host system, the Juniper Systems' MESA hand-held PDT. As the module has been approved under the FCC's and Industry Canada's modular approval system, and as no changes other than the addition of a new antenna type for use in the specific host system configuration detailed in the application documents associated with this report, testing was limited to an evaluation of the radiated spurious emissions.

The sample was received on July 12, 2010 and tested on July 13 and 14, 2010. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Juniper Systems	W2SW0001	802.11bg Module (Wi-Fi)	none	VSF22553

ANTENNA SYSTEM

The antenna system evaluated for the combination of W2SW0001 module in the Juniper Systems' handheld PDT model MESA was the Tyco Electronics part number 1513349-1. This antenna has a gain of 0dBi in the 2400-2483.5MHz band and is integrated into the host device.

ENCLOSURE

The host system enclosure is constructed of a magnesium alloy case-front and molded plastic case-back. It measures approximately 13 cm wide by 22 cm deep by 5 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at Elliott.

SUPPORT EQUIPMENT

Company	Model	Description	Serial Number	FCC ID
Juniper Systems	MESA	Hand-held PDT	none	N/A

EUT INTERFACE PORTS

Port	Connected		Cable(s)	
FOIL	То	Description	Shielded or Unshielded	Length(m)
Handheld DC	AC/DC	Multiconductor	Unshielded (w/molded	1.5m
Power In	Adapter	Winneonductor	Ferrite)	1.5m
AC/DC	AC Mains			
Adapter AC In	AC Mains	-	-	-

EUT OPERATION

During testing the module was exercised under control of the hand held system test utility. The module was operating in a continuous transmit mode on the top, bottom and center channels at maximum power level. Additional testing was performed with the module in a receive-only mode, tuned to the center channel.

All testing was limited to the frequency range above 1GHz as emissions below 1GHz were considered to be host dependent and will be subject to the appropriate limits for a digital device.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken 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		n Numbers	Location
Site	FCC	Canada	
Chamber 5	211948	2845B-5	41039 Boyce Road Fremont, CA 94538-2435

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. 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 16-1-1 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 nonconductive 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.

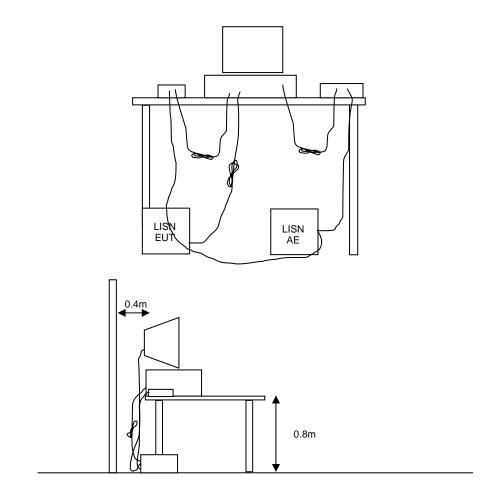
TEST PROCEDURES

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.



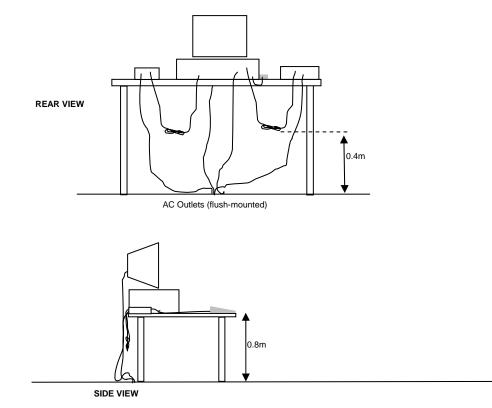
RADIATED EMISSIONS

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.

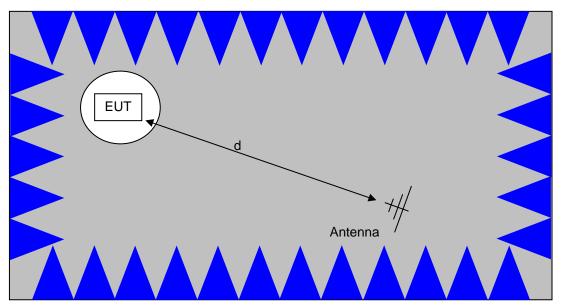
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

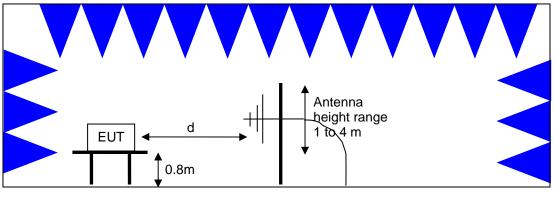


Typical Test Configuration for Radiated Field Strength Measurements



The anechoic materials on the walls and ceiling ensure compliance with the normalized site attenuation requirements of CISPR 16 / CISPR 22 / ANSI C63.4 for an alternate test site at the measurement distances used.

Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



<u>Test Configuration for Radiated Field Strength Measurements</u> <u>Semi-Anechoic Chamber, Plan and Side Views</u>

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.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

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:

CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(a), RSS GEN

The table below shows the limits for the emissions on the AC power line from an intentional radiator and a receiver.

Frequency (MHz)		
0.150 to 0.500	Linear decrease on logarithmic frequency axis between 56.0 and 46.0	Linear decrease on logarithmic frequency axis between 66.0 and 56.0
0.500 to 5.000	46.0	56.0
5.000 to 30.000	50.0	60.0

GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands¹ (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

RECEIVER RADIATED SPURIOUS EMISSIONS SPECIFICATION LIMITS

The table below shows the limits for the spurious emissions from receivers as detailed in FCC Part 15.109, RSS 210 Table 2, RSS GEN Table 1 and RSS 310 Table 3. Note that receivers operating outside of the frequency range 30 MHz – 960 MHz are exempt from the requirements of 15.109.

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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
902 - 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 - 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 - 5850	1 Watt (30 dBm)	8 dBm/3kHz

The maximum permitted output power is reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 - 5850 MHz band are not subject to this restriction.

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

The limits for unwanted (spurious) emissions from the transmitter falling in the restricted bands are those specified in the general limits sections of FCC Part 15 and RSS 210. All other unwanted (spurious) emissions shall be at least 20dB below the level of the highest in-band signal level (30dB if the power is measured using the sample detector/power averaging method).

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:

 $R_c = R_r + F_d$

 $M = R_c - L_s$

where:

and

 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 d (meters) from the equipment under test:

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

where P is the eirp (Watts)

For a measurement at 3m the conversion from a logarithmic value for field strength (dBuV/m) to an eirp power (dBm) is -95.3dB.

Radiated Emissions,	1000 - 18,000 MHz, 13 and 14 July	, 2010		
<u>Manufacturer</u>	Description	<u>Model</u>	Asset #	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	870	8/19/2010
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	7/15/2010
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/29/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010
Hewlett Packard	Head (Inc W1-W4, 1946, 1947) Purple	84125C	1772	5/6/2011
A.H. Systems	Purple System Horn, 18-40GHz	SAS-574, p/n: 2581	2160	5/7/2011

Appendix A Test Equipment Calibration Data

Appendix B Test Data

T79928 14 Pages

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EMC Test Data

An LALLE) company		
Client:	Juniper Systems	Job Number:	J79764
Model:	W2SW0001 in Mesa	T-Log Number:	T79928
		Account Manager:	Christine Krebill
Contact:	Kent Campbell	Project Engineer:	Mark Briggs
Emissions Standard(s):	FCC 15.247 / RSS 210	Class:	-
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Juniper Systems

Model

W2SW0001 in Mesa

Date of Last Test: 7/15/2010

EMC Test Data

 Client:
 Juniper Systems
 Job Number:
 J79764

 Model:
 W2SW0001 in Mesa
 T-Log Number:
 T79928

 Contact:
 Kent Campbell
 Account Manager:
 Christine Krebill

 Standard:
 FCC 15.247 / RSS 210
 Class:
 N/A

RSS 210 and FCC 15.247 (DTS) 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.

General Test Configuration

Elliott

The EUT was installed in the host system and placed on the turntable for radiated spurious emissions testing.

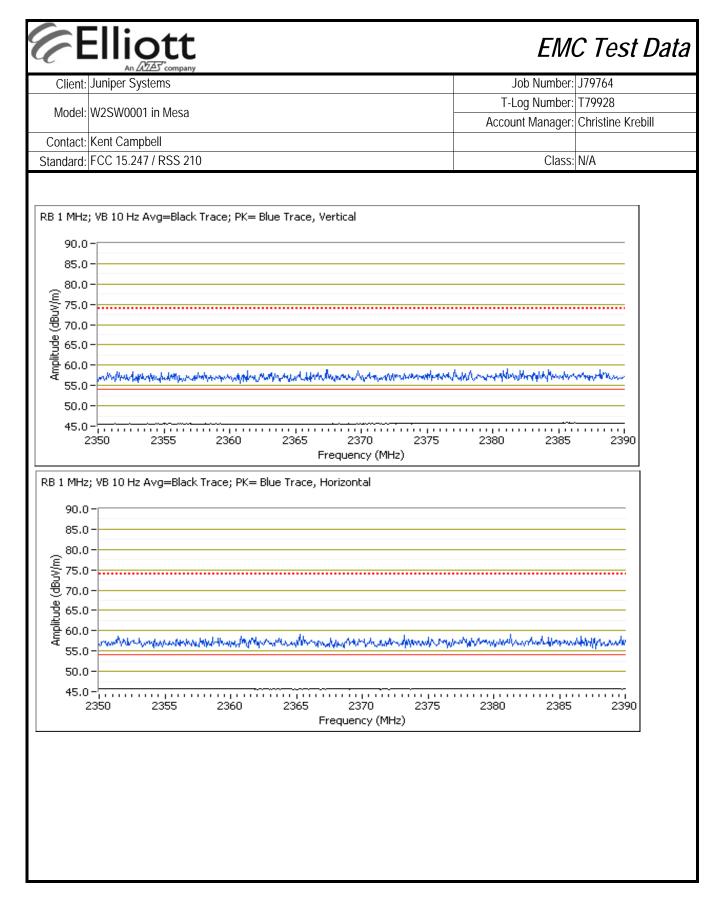
For radiated emissions testing the measurement antenna was located 3 meters from the EUT.

Summary of Results - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Expected FS	Measured FS	Test Performed	Limit	Result / Margin
Expected F	S is the targe		h in dBuV/m		n a 1MHz bandwidth, for t	he fundamental (average) based on the original
testing perfe	ormed on the	module with	a 3dBi anter	ina.		500 D 145 000 /	
1	000 116	2412 MHz	100.0	102	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	47.2dBµV/m @ 2387.0MHz (-6.8dB)
I	802.11b	2462 MHz	100.0	101	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	48.0dBµV/m @ 2486.4MHz (-6.0dB)
2	000 11-	2412 MHz	96.0	93.5	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	48.0dBµV/m @ 2389.9MHz (-6.0dB)
2	802.11g	2462 MHz	95.0	94.0	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	47.9dBµV/m @ 2483.5MHz (-6.1dB)
nitial meas	urements ma		nter channel	in both mode	rences between the emiss es to determine the worst of nnels		
3a	802.11b	2437MHz	-	102	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.2dBµV/m @ 4874.0MHz (-7.8dB)
3b	802.11g	2437MHz	-	94	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	35.4dBµV/m @ 7306.7MHz (-18.6dB)
3c	802.11b	2412 MHz	100	102	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	46.9dBµV/m @ 4824.1MHz (-7.1dB)
3d	802.11b	2462 MHz	100	101	Radiated Emissions, 1 - 26 GHz	FCC Part 15.209 / 15.247(c)	44.7dBµV/m @ 4924.0MHz (-9.3dB)

Elliott	EIVIC	C Test D
Client: Juniper Systems	Job Number:	J79764
Model: W2SW0001 in Mesa	T-Log Number: Account Manager:	
Contact: Kent Campbell	Account Manager.	
Standard: FCC 15.247 / RSS 210	Class:	N/A
mbient Conditions: Temperature: 20.7 °C		
Rel. Humidity: 41 %		
odifications Made During Testing o modifications were made to the EUT during testing		
eviations From The Standard o deviations were made from the requirements of the standard.		

Client:									1
	Juniper Syste	ems			Job Number:				
Model:	W2SW0001	in Mesa						Log Number:	
							Acco	unt Manager:	Christine Krebi
	Kent Campbo								
	FCC 15.247							Class:	N/A
	diated Emiss		Band Edge	s - 802.11b)				
_	Date of Test: st Engineer:		20						
	est Location:								
2un #1a: 80	02.11b, 2412	MHz							
					es measured				n 100kHz
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz UT Flat	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	-	
2411.370	102.2	V			AVG	224	1.0		
2411.370	102.2	V	-	-	PK	224	1.0		
2411.500	99.6	V	-	-	PK	224	1.0	RB 100 kHz	; VB: 100 kHz
2411.400	98.7	H	-	-	AVG	285	1.0		,
2411.270	101.8	Н	-	-	PK	285	1.0		
UT Uprigh									
2411.400	98.3	V	-	-	AVG	219	1.0	_	
2413.170	101.3	V	-	-	PK	219	1.0		
2412.900 2411.230	100.9 103.9	H H	-	-	AVG PK	187 187	1.0 1.0		
2411.230	98.3	H	-	-	PK	187	1.0	RB 100 kHz	; VB: 100 kHz
UT Side	70.0					107	1.0		
2411.400	99.7	V	-	-	AVG	72	1.0		
2411.270	102.9	V	-	-	PK	72	1.0		
2412.870	96.9	V	-	-	PK	72	1.0	RB 100 kHz	; VB: 100 kHz
2411.370	97.4	Н	-	-	AVG	99	1.2		
2411.230	100.5	Н	-	-	PK	99	1.2	<u> </u>	
and Edgo	Signal Field	Strength [)irect measu	urement of	field strength	,			
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Sommonito	
2387.000	47.2	V	54.0	-6.8	AVG	223	1.0	1	
2387.520	58.2	V	74.0	-15.8	PK	223	1.0		
2387.040 2387.040	47.1 58.6	H H	54.0 74.0	-6.9 -15.4	AVG PK	232 232	1.0 1.0		



Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters Comments 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 Aurona 2463.200 103.7 V 120.0 -16.3 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2464.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 PK 233 1.0 RB 100 kHz; VB: 100 kHz 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 PK 2463.900 96.8 V 120.0 -23.5 AVG 188 1.0 PK <	Model: W2SW0001 in Mesa Account Manager: Christine Krebi Standard: Fect 15:247 / RSS 210 Class: N/A Standard: FCC 15:247 / RSS 210 Class: N/A Frequency Level Pol 15:209 / 15:247 Detector Azimuth Height Comments MHz dBµV/m V/h Limit Margin Pk/QP/Avg degrees meters 2462:000 100.6 V 120.0 -19.4 AVG 223 1.0 2463:200 100.6 V 120.0 -22.1 PK 223 1.0 2463:200 100.5 H 120.0 -22.4 AVG 226 1.2 2461:200 100.5 H 120.0 -23.2 AVG 188 1.0 2463:300 96.8 V 120.0 -23.2 AVG 175 1.2 2463:200 99.4 H 120.0 -23.2 AVG 175 1.2 2463:200	Client:	Juniper Syste	ems						Job Number:	J79764
Account Manager Christine Krebill Standard: FCC 15.247 / RSS 210 Class: NIA Run #1b: 802.11b, 2462MHz Undamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµt/m v/h Limit Margin Pk/QP/Avg degrees meters UT Flat - - - - - - - 2462.900 100.6 V 120.0 -22.1 PK 223 1.0 -	Account Manager: Christine Kreb Standard: FCC 15.247 / RSS 210 Class: NA Run #1b: 802.11b, 2462MHz Class: NA NA Run #1b: 802.11b, 2462MHz Class: NA NA Run #1b: 802.11b, 2462MHz Class: NA NA Run #1b: 802.11b, 2462MHz Detector Azimuth Height Comments MHz dBµU/m v/h Limit Margin Pk/OP/Avg degrees meders 2462.900 100.6 V 120.0 -16.3 PK 223 1.0 2462.900 100.5 H 120.0 -19.5 PK 226 1.2 UT Upright 2463.900 96.6 V 120.0 -22.4 AVG 188 1.0 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2462.940 2463.900 96.5 H 120.0 -21.2 AVG 175 1.2 2463.900 2463.2	Madal							T	Log Number:	T79928
Standard: FCC 15.247 / RSS 210 Class IV/A Class IV/A Standard: FCC 15.247 / RSS 210 Class IV/A Class IV/A Standard: Fed Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Fequency Level Pol Standard: Fed Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Fequency Level Pol Standard: Fed Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Fequency Level Pol Standard: Fed Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Fequency Level Pol 100 Value: Val	Standard: FCC 15.247 / RSS 210 Class: N/A MHz dBµV/m v/h Distor Azimuth Height Comments MHz dBµV/m v/h 1200	Model:	W2SW00011	in iviesa				-	Ассо	unt Manager:	Christine Krebill
Run #1b: 802.11b, 2462MHz undamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209/15.247 Delector Azimuth Height Comments MHz dBµV/m Vh Limit Margin PK/OP/Avg degrees meters 2462.900 100.6 V 120.0 -16.3 PK 223 1.0 2463.200 100.6 V 120.0 -22.1 PK 223 1.0 2463.200 170.6 H 120.0 -22.1 PK 223 1.0 2463.200 170.5 H 120.0 -22.4 AVG 226 1.2 UT Upright - - - - - - - 2463.900 96.8 V 120.0 -23.5 AVG 175 1.2 - - 2463.200 99.4 H 120.0 -21.2 AVG 95 1.3	Run #1b: 802.11b, 2462MHz undamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dB _W //m Umit Margin Pk/QP/Avg degrees meters 2462.900 100.6 V 120.0 -16.3 PK 223 1.0 2462.870 2463.200 100.5 H 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz; 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -23.2 AVG 188 1.0 2463.900 96.8 V 120.0 -23.2 AVG 175 1.2 2463.900 96.5 H 120.0 -23.2 AVG 175 1.2 2463.900 96.5 H 120.0 -23.2 AVG 175 1.2 2463.900	Contact:	Kent Campbe	ell							
MH2 dBµV/m v/h Limit Margin PK/OP/Avg degrees meters 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2463.200 103.7 V 120.0 -16.3 PK 223 1.0 2463.200 97.9 V 120.0 -22.1 PK 223 1.0 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -23.2 AVG 188 1.0 2463.900 96.8 V 120.0 -23.2 AVG 175 1.2 2463.900 96.5 H 120.0 -23.2 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.700 97.2 H 120.0 -18.1 PK 95 1.3 2462.750 98.8 V	Fundamental Signal Field Strength: Peak and average values measured in 1 MHz, and peak value measured in 100kHz Frequency Level Pol 15.209 / 15.247 Delector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2462.900 100.7 V 120.0 -12.1 PK 223 1.0 2462.970 97.9 V 120.0 -22.1 PK 226 1.2 2462.970 100.5 H 120.0 -22.4 AVG 226 1.2 2461.300 100.5 H 120.0 -23.2 AVG 188 1.0 2463.900 96.8 V 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2461.300 99.4 H 120.0 -21.2	Standard:	FCC 15.247	/ RSS 210						Class:	N/A
Frequency Level Pol 15:209/15:247 Delector Azimuth Height Comments MHz dBµV/m vh Limit Margin PK/OP/Avg degrees meters 2462:900 100.6 V 120.0 -19.4 AVG 223 1.0 2462:900 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2462:970 97.9 V 120.0 -22.1 PK 226 1.2 2461:200 100.5 H 120.0 -22.4 AVG 226 1.2 2463:900 96.8 V 120.0 -23.2 AVG 188 1.0 2463:900 96.5 H 120.0 -23.5 AVG 175 1.2 2463:200 99.4 H 120.0 -21.2 AVG 95 1.3 246:3201 97.2 H 120.0 -21.2 AVG<	Frequency Level Pol 15.209/15.247 Detector Azimuth Height Comments MHz dBµJ/m v/h Limit Margin Pk/QP/Avg degrees meters 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2462.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 2463.900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.900 96.6 V 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -22.8 AVG 175 1.2 2463.200 99.4 H 120.0 -21.2 AVG 12 1.4	Run #1b: 80	2.11b, 2462N	ЛНz							
MHz dBµV/m v/h Limit Margin PK/OP/Avg degrees meters 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2463.200 103.7 V 120.0 -16.3 PK 223 1.0 2463.200 103.7 V 120.0 -22.1 PK 223 1.0 2464.200 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -23.2 AVG 188 1.0 2463.900 96.8 V 120.0 -23.2 AVG 175 1.2 2463.300 99.6 V 120.0 -23.5 AVG 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.70 101.9 V	MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2462.900 100.6 V 120.0 -16.3 PK 223 1.0 2462.900 100.6 V 120.0 -22.1 PK 223 1.0 2462.900 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.900 96.6 V 120.0 -23.2 AVG 188 1.0 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H	Fundamenta	al Signal Fiel	d Strength			es measured	in 1 MHz, an	d peak valu		n 100kHz
EUT Flat Image: Constraint of the second secon	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $									Comments	
2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2463.200 103.7 V 120.0 -16.3 PK 223 1.0 2462.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -23.2 AVG 128 1.0 2463.900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.900 96.6 V 120.0 -23.2 AVG 175 1.2 2463.900 96.6 V 120.0 -23.5 AVG 175 1.2 2463.900 99.4 H 120.0 -22.8 AVG 112 1.4 2462.940 101.9 V 120.0 -22.8 AVG 112 1.4 2461.300 97.2 H 120.0 -22.8 AVG 112 1.4 2461.	2462.900 100.6 V 120.0 -19.4 AVG 223 1.0 2463.200 103.7 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 2463.300 96.8 V 120.0 -22.4 AVG 188 1.0 2463.300 96.8 V 120.0 -20.4 PK 188 1.0 2463.300 99.6 V 120.0 -20.4 PK 188 1.0 2463.300 99.6 V 120.0 -20.6 PK 175 1.2 2463.200 99.4 H 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -12.2 AVG 95 1.3 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 2461.230 </td <td></td> <td>dBµV/m</td> <td>v/h</td> <td>Limit</td> <td>Margin</td> <td>Pk/QP/Avg</td> <td>degrees</td> <td>meters</td> <td></td> <td></td>		dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2463.200 103.7 V 120.0 -16.3 PK 223 1.0 RB 100 kHz; VB: 100 kHz; 2460.400 97.6 H 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz; 2461.200 100.5 H 120.0 -19.5 PK 226 1.2	2463.200 103.7 V 120.0 -16.3 PK 223 1.0 2462.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.300 96.6 V 120.0 -23.2 AVG 188 1.0 2463.900 96.6 V 120.0 -23.2 AVG 188 1.0 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.8 V 120.0 -21.2 AVG 95 1.3 2462.940 101.9 V 120.0 -21.2 AVG 112 1.4 2461.30 101.2 H 120.0 -22.8 AVG 112 1.4 2461.20<		100.4	M	100.0	10 /		າາາ	1.0		
2462.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2461.200 100.5 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.900 96.6 V 120.0 -23.2 AVG 188 1.0 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -23.5 AVG 175 1.2 2462.940 101.9 V 120.0 -21.2 AVG 95 1.3 2462.940 101.9 V 120.0 -18.1 PK 95 1.3 2462.940 101.9<	2462.870 97.9 V 120.0 -22.1 PK 223 1.0 RB 100 kHz; VB: 100 kHz 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.370 97.2 H 120.0 -18.1 PK 13.1 246.136 2461.370 97.2<										
2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 EUT Upright	2460.400 97.6 H 120.0 -22.4 AVG 226 1.2 2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.300 96.5 H 120.0 -20.4 PK 188 1.0 2463.300 96.5 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -18.1 PK 95 1.3 2462.750 98.8 V 120.0 -19.8 PK 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 2461.230 100.2 H 120.0 -6.0 AVG 217 1.0 2480.270 48.0 V									RB 100 kH7	·· VR· 100 kHz
2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.300 96.8 V 120.0 -23.2 AVG 188 1.0 2463.300 96.5 H 120.0 -23.2 AVG 175 1.2 2463.300 96.5 H 120.0 -23.5 AVG 175 1.2 2463.300 96.5 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -21.2 AVG 112 1.4 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m V/h Limit Margin PK/QP/Avg<	2461.200 100.5 H 120.0 -19.5 PK 226 1.2 2463.900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.300 99.6 V 120.0 -23.2 AVG 188 1.0 2463.300 99.6 V 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.940 101.9 V 120.0 -21.2 AVG 95 1.3 2461.370 97.2 H 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -19.8 PK 112 1.4 2461.320 100.2 H 120.0 -19.8 PK 112 1.4 2461.320 100.2 H 120.0 -19.8 PK 112 1.4 2461.320 100.2 H 120.0 -19.8 PK 112 1.4 2461.320 18.2 Yeld </td <td></td>										
EUT Upright 2463.300 96.8 V 120.0 -23.2 AVG 188 1.0 2463.130 99.6 V 120.0 -20.4 PK 188 1.0 2463.300 96.5 H 120.0 -20.4 PK 188 1.0 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.940 101.9 V 120.0 -18.1 PK 112 1.4 2461.30 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength Direct measurement of field strength H Prequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments 2486.370 48.0 V 54.0 -6.0<	EUT Upright 2463 900 96.8 V 120.0 -23.2 AVG 188 1.0 2463.130 99.6 V 120.0 -20.4 PK 188 1.0 2463.130 99.6 V 120.0 -20.4 PK 188 1.0 2463.200 99.4 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2461.270 97.2 H 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg									1	
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2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.940 101.9 V 120.0 -22.8 AVG 112 1.4 2461.330 97.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµU/m V/h Limit Margin Pk/OP/Avg degrees meters 2486.370 48.0 V 54.0 -6.3 AVG 137 1.2 2486.270 47.7 H 54.0 -6.3	2463.900 96.5 H 120.0 -23.5 AVG 175 1.2 2463.200 99.4 H 120.0 -20.6 PK 175 1.2 EUT Side										
2463.200 99.4 H 120.0 -20.6 PK 175 1.2 EUT Side	2463.200 99.4 H 120.0 -20.6 PK 175 1.2 EUT Side										
EUT Side V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -18.1 PK 95 1.3 2461.230 100.2 H 120.0 -18.1 PK 95 1.3 2461.230 100.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 <	EUT Side									 	
2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.750 98.8 V 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.370 97.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209/15.247 Detector Azimuth Height Comments MHz dBµU/m v/h Limit Margin Pk/OP/Avg degrees meters 2486.370 48.0 V 54.0 -6.0 AVG 137 1.2 2484.150 59.3 V 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 <	2462.750 98.8 V 120.0 -21.2 AVG 95 1.3 2462.940 101.9 V 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.330 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/OP/Avg degrees meters 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137		99.4	Н	120.0	-20.6	PK	175	1.2		
2462.940 101.9 V 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2466.370 48.0 V 54.0 -6.0 AVG 137 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.30 59.2 H 74.0 -14.8 PK 137 1.2 75.0	2462.940 101.9 V 120.0 -18.1 PK 95 1.3 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of field strength Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m V/h Limit Margin Pk/OP/Avg degrees meters 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 90.0 - - - - - - -		00.0	V	100.0	<u>11 1</u>		OE	1 0	+	
2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.370 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 90.0 - - - - - - - 90.0 - - - - - - -	2461.370 97.2 H 120.0 -22.8 AVG 112 1.4 2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 88 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - 90.0 - - - - - - - - 90.0 - - - - </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>+</td> <td></td>									+	
2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.300 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - - 90.0 - - - - - -	2461.230 100.2 H 120.0 -19.8 PK 112 1.4 Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.470 47.7 H 54.0 -6.3 AVG 137 1.2 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 88.1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - 90.0 - - - - - - <										
Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 -	Band Edge Signal Field Strength - Direct measurement of 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 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 80.0 - - - - - - - 90.0 - - - - - - - 90.0 - - - - - - - <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td></td></t<>									1	
Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 -	Frequency Level Pol 15.209 / 15.247 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 -										
2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - 80.0 - - - - - 91.0 - - - - - 92.0 - - - - - - 90.0 - - - - - - - 90.0 - - - - - - - - 90.0 <	2486.370 48.0 V 54.0 -6.0 AVG 217 1.0 2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - - - - - - -								Height	Comments	
2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - - 90.0 -	2484.150 59.3 V 74.0 -14.7 PK 217 1.0 2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 85.0 - - - - 80.0 - - - - - - - 90.0 -					Margin	<u>u</u>	9	meters		
2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 - - - - 80.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 - - - - - - - - 90.0 -	2486.270 47.7 H 54.0 -6.3 AVG 137 1.2 2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0										
2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0	2484.330 59.2 H 74.0 -14.8 PK 137 1.2 RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0										
RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0- 85.0- 80.0- 75.0- 90.0- 90.0- 80.0- 75.0- 90.0- 90.0- 80.0- 75.0- 90.0- 90.0- 80.0- 75.0- 90.0- 90.0- 90.0- 90.0- 80.0- 75.0- 90.0-	RB 1 MHz; VB 10 Hz Avg=Black Trace; PK= Blue Trace, Vertical 90.0 85.0 80.0 75.0 75.0 90,0 65.0									┨────	
90.0 - 85.0 - 80.0 - 75.0 - 900 75.0 - 65.0 - 55.0 - 50.0 -	90.0- 85.0- 80.0- (W) 75.0- 65.0- 65.0- 55.0- 55.0-							137	1.2		
85.0 - 80.0 - 75.0 - 9001 60.0 - 55.0 - 50.0 -	85.0 - 80.0 - 75.0 - 90 65.0 - 90 65.0 - 55.0 - 100 100 100 100 100 100 100 10	RB 1 MH	lz; VB 10 Hz	Avg=Black	Trace; PK=1	Blue Trace,	Vertical				
80.0 - (U) 75.0 - 900 - 900 - 900 - 55.0 - 50.0 -	80.0 - 75.0 - 90 70.0 - 90 65.0 - 60.0 - 55.0 - White long we down white long we down whether long we d	90.	.0								
((85.	.0-								
50.0	55.0-	\approx 80.	.0								
50.0	55.0-	5.	.0-								
50.0 -	55.0-	<u>୍</u> ା ଞି 70,	.0 0.								
50.0 -	55.0-	9 65.	.0 -								
50.0 -	55.0-	0.4 Đ	0-								
50.0 -	55.0-		- WHALMAN	Mad Mark Mark	palabara Antonio	-ANA ANA ANA	with an induction	walker	and the second	And Mader and Martin Co	non hadden
	50.0-	55.	.0								
		50.	.0								

Client:	Juniper Syst	ems						Job Number:	J79764
					Ţ	Log Number:	T79928		
Model:	W2SW0001	in Mesa		Ассо	unt Manager:	Christine Krebi			
Contact:	Kent Campb	ell							
Standard:	FCC 15.247	/ RSS 210						Class:	N/A
un #2: Ra	adiated Emis	sions at the	Band Edge	s - 802.11g					ł
	Date of Test:		_	-					
	est Engineer:								
10	est Location:	FI Chamber	#5						
ın #2a∙ 8	02.11g, 2412	MH7							
			Peak and a	iverage valu	es measured	in 1 MHz, ar	id peak valu	ie measured i	n 100kHz
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
	orst case fro		100.0	04 5	A1/0	000	4.0		
2417.170	93.5	V V	120.0	-26.5	AVG PK	220	1.0		
2416.270 2414.070	101.8 91.9	V	120.0 120.0	-18.2 -28.1	PK PK	220 220	1.0 1.0	RR 100 년구	; VB: 100 kHz
2417.200	91.9	H	120.0	-28.1	AVG	139	1.0	IND TOO KITZ	, VD. TOU NHZ
2416.370	100.1	H	120.0	-19.9	PK	139	1.2		
ž					field strength			•	
requency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2389.930 2389.200	48.0 60.6	V V	54.0 74.0	-6.0 -13.4	AVG PK	221 221	1.0 1.0		
2389.200	47.7	V H	54.0	-13.4	AVG	134	1.0		
2389.730	60.6	H	74.0	-13.4	PK	134	1.0		
							-		
RB 1 MHz	; VB 10 Hz A	vg=Black Tra	ace; PK= Blu	Je Trace, Ve	ertical				
00.0									
90.0									
85.0									
ି କ ^{80.0}) -								
(m//mp 75.0 90,00 65.0 60.0)								
豊 70.0) –								
ු ී 65.0) -								
/ 문 60.0) -		1						
작 55.0)- Ministration	and marked and	manthan	-Andrewskiller	www.manadalah	manteralistation	manaphanaph	www.www.www.	horward
50.0									
			······		<u> </u>		~		
40.0	2350	2355	2360	2365	2370	2375	2380	2385	2390
				Fr	equency (MH	2)			

Client	Juniper Syst	ems						Job Number: J79764
Maria I.	140004					T	Log Number: T79928	
Model	: W2SW0001	In Mesa	Acco	unt Manager: Christine Krebill				
	: Kent Campt							
Standard	: FCC 15.247	/ RSS 210						Class: N/A
	02.11g, 2462							
								ie measured in 100kHz
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments
MHz	dBµV/m vorst case fr	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2468.370	94.2	V	120.0	-25.8	AVG	222	1.0	
2466.370	101.8	V	120.0	-18.2	PK	222	1.0	
2458.370	92.3	V	120.0	-27.7	PK	222	1.0	RB 100 kHz; VB: 100 kHz
2455.200	88.9	H	120.0	-31.1	AVG	237	1.0	
2458.070	96.7	Н	120.0	-23.3	PK	237	1.0	
					field strength			O
Frequency		Pol		/ 15.247	Detector	Azimuth	Height	Comments
MHz 2483.500	dBμV/m 47.9	v/h V	Limit 54.0	Margin -6.1	Pk/QP/Avg AVG	degrees 221	meters 1.0	
2485.980	47.9 59.1	V	74.0	-0.1	PK	221	1.0	
2483.500	47.6	H	54.0	-6.4	AVG	138	1.0	
2485.050	59.0	H	74.0	-15.0	PK	138	1.2	
RB 1 MHz 90.0 85.0 (W/Ng) 75.0 970.0 65.0 400 400.0	- - - -					Mandrid Johnson Walter	h.Marriera, h.d.	rw/thylathylathylathylathy

CE								EM	C Test Dat
Client:	Juniper Syst							Job Number:	J79764
							T-	Log Number:	T79928
Model:	W2SW0001	in Mesa			•	Christine Krebill			
Contact:	Kent Campb	pell							
Standard:	FCC 15.247	/ RSS 210						Class:	N/A
D Te: Te	Date of Test: st Engineer:	Rafael Vare FT Chambe	las	26,000 MHz					
undamenta	al Signal Fie	eld Strength			es measured		id peak valu	e measured i	n 100kHz
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2437.900	102.1	V	120.0	-17.9	AVG	215	1.0		
2438.100	105.2	V	120.0	-14.8	PK	215	1.0		
2436.500	99.3	V	120.0	-20.7	PK	215	1.0		; VB: 100 kHz
2437.870	96.9	Н	120.0	-23.1	PK	138	1.2	RB 100 kHz	; VB: 100 kHz
		emission leve emissions ou ons Pol	tside of restr			dBμV/m dBμV/m Azimuth	Limit is -300 Height	dBc (UNII pov	ver measurement)
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	(EUT Orient	ation)
4874.000	46.2	V	54.0	-7.8	AVG	271	1.0	EUT Flat	
4874.000	45.5	Ĥ	54.0	-8.5	AVG	244	1.0	EUT Upright	ŀ
4874.000	43.8	V	54.0	-10.2	AVG	108	1.0	EUT Side	
4874.010	43.8	H	54.0	-10.2	AVG	235	1.0	EUT Flat	
4873.980	43.1	V	54.0	-10.9	AVG	105	1.2	EUT Upright	
4874.000	42.7	Н	54.0	-11.3	AVG	109	1.0	EUT Side	-
7310.100	37.8	V	54.0	-16.2	AVG	86	1.1	EUT Flat	
7310.270	37.4	V	54.0	-16.6	AVG	207	1.0	EUT Upright	t
7310.200	37.1	V	54.0	-16.9	AVG	60	1.0	EUT Side	
7310.300	37.1	Н	54.0	-16.9	AVG	81	1.0	EUT Upright	t
7307.600	36.3	Н	54.0	-17.7	AVG	212	1.0	EUT Flat	
7306.630	36.2	Н	54.0	-17.8	AVG	61	1.3	EUT Side	
4874.040	49.7	Н	74.0	-24.3	PK	244	1.2	EUT Upright	t
4873.970	49.6	V	74.0	-24.4	PK	271	1.0	EUT Flat	
7308.870	49.6	Н	74.0	-24.4	PK	61	1.3	EUT Side	
4873.990	49.0	Н	74.0	-25.0	PK	235	1.0	EUT Flat	
7310.870	48.5	V	74.0	-25.5	PK	86	1.1	EUT Flat	
4874.050	48.4	V	74.0	-25.6	PK	108	1.0	EUT Side	
1015 000	48.3	V	74.0	-25.7	PK	207	1.0	EUT Upright	
	10 0	Н	74.0	-26.0	PK	81	1.0	EUT Upright	
7309.600	48.0	\ <i>i</i>		04.0	PK	60	1.0	EUT Side	
7315.230 7309.600 7312.270	48.0	V	74.0	-26.0					1
7309.600 7312.270 4873.960	48.0 47.9	V	74.0	-26.1	PK	105	1.2	EUT Upright	t
7309.600 7312.270	48.0								l

6	Ellic	Dtt Art company						EMO	C Test Da
Client	Juniper Syst							Job Number:	J79764
							T-	Log Number:	T79928
Model:	W2SW0001	in Mesa					Account Manager: Christine Krebill		
Contact	Kent Campb	ell						-	
Standard:	FCC 15.247	/ RSS 210						Class:	N/A
Run #3b: 8	302.11g, 2437	/MHz					l.		L
			: Peak and a	verage value	es measured	in 1 MHz, aı	nd peak valu	e measured i	n 100kHz
Frequency	Level	Pol		/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
2442.100	94.2	V	120.0	-25.8	AVG	214	1.0		
2430.530	102.5	V	120.0	-17.5	PK	214	1.0		
2435.030	92.0	V	120.0	-28.0	PK	214	1.0	RB 100 kHz	; VB: 100 kHz
2431.500	90.6	Н	120.0	-29.4	РК	137	1.2		; VB: 100 kHz
							_		
F	undamental e	mission leve	l @ 3m in 10	OkHz RBW:	92	dBµV/m]		
			tside of restr	icted bands:	62	dBµV/m	Limit is -300	dBc (UNII pov	ver measurement)
Other Spur	ious Emissio	ons							
Frequency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
7304.900	35.4	V	54.0	-18.6	AVG	229	1.0	EUT Side	
7306.700	35.4	Н	54.0	-18.6	AVG	35	1.0	EUT Flat	
7301.070	35.3	V	54.0	-18.7	AVG	351	1.0	EUT Flat	
7303.770	35.3	V	54.0	-18.7	AVG	276	1.0	EUT Upright	t
7303.930	35.3	Н	54.0	-18.7	AVG	348	1.6	EUT Side	
7303.800	35.2	Н	54.0	-18.8	AVG	273	1.3	EUT Upright	t
4874.200	33.1	V	54.0	-20.9	AVG	251	1.0	EUT Flat	
4875.870	32.0	Н	54.0	-22.0	AVG	237	1.0	EUT Flat	
4876.130	32.0	Н	54.0	-22.0	AVG	56	1.0	EUT Side	
4875.870	31.8	Н	54.0	-22.2	AVG	253	1.3	EUT Upright	t
4876.330	31.8	V	54.0	-22.2	AVG	216	1.0	EUT Upright	t
4878.170	31.7	V	54.0	-22.3	AVG	86	1.0	EUT Side	
7312.000	47.7	V	74.0	-26.3	PK	351	1.0	EUT Flat	
7303.700	47.3	Н	74.0	-26.7	PK	35	1.0	EUT Flat	
7314.770	47.2	Н	74.0	-26.8	PK	273	1.3	EUT Upright	
7319.530	46.6	V	74.0	-27.4	PK	276	1.0	EUT Upright	t
7310.270	46.5	V	74.0	-27.5	PK	229	1.0	EUT Side	
7305.730	46.4	Н	74.0	-27.6	PK	348	1.6	EUT Side	
4871.930	45.4	V	74.0	-28.6	PK	251	1.0	EUT Flat	
4877.200	44.1	Н	74.0	-29.9	PK	253	1.3	EUT Upright	t
4879.170	44.0	Н	74.0	-30.0	PK	237	1.0	EUT Flat	
4877.500	43.4	Н	74.0	-30.6	PK	56	1.0	EUT Side	
4868.000	43.3	V	74.0	-30.7	PK	216	1.0	EUT Upright	t
4883.800	43.2	V	74.0	-30.8	PK	86	1.0	EUT Side	
		1							
lote 1:						For all othe	er emissions	, the limit was	set 30dB below the
	level of the f					-			
lote 2:	IScans from	18GHz - 260	Hz showed	no signficant	signals from	the system			

Client	Juniper Syst	ems						Job Number:	179764
GIEIL							Т	Log Number:	
Model	W2SW0001	in Mesa					Account Manager: Christine Krebil		
Contact	Kent Campb	ell						5	
Standard	FCC 15.247	/ RSS 210						Class:	N/A
Run #3c: 8	802.11b (wors	st case from	n runs 3a an	d 3b), 2412N	ЛНz				
F	undamental e	mission leve	el @ 3m in 1(00kHz RBW:	99.6	dBµV/m	1		
			itside of restr			dBµV/m	Limit is -30	dBc (UNII pov	ver measurement)
							- 	`	
	missions (E			/orst case fo / 15.247					
Frequency MHz	Level dBµV/m	Pol v/h	Limit	/ 15.247 Margin	Detector Pk/QP/Avg	Azimuth	Height	Comments	
4824.100	46.9	VII	54.0	-7.1	AVG	degrees 246	meters 1.0		
4824.100	40.9 50.8	V	54.0 74.0	-7.1	PK	246	1.0		
4824.070	43.9	H	54.0	-23.2	AVG	240	1.0		
102 1.070		H	74.0	-26.0	PK	246	1.0	1	
	48.0	П	/4.0						
4823.920	48.0 47.6	V						RB 100 kHz	; VB: 100 kHz
4823.920 7237.220 7236.580	47.6 46.7 For emission	V H ns in restricte	69.6 69.6	-22.0 -22.9 e limit of 15.2	PK PK 09 was used.	82 248	1.2 1.1	RB 100 kHz	; VB: 100 kHz ; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Note 1: Run #3d: 8	47.6 46.7 For emissior level of the f	V H undamental st case from	69.6 69.6 ed bands, the and measure n runs 3a an	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M	PK PK 09 was used. /Hz	82 248 For all othe	1.2 1.1	RB 100 kHz	; VB: 100 kHz
4823.920 7237.220 7236.580 Jote 1: Run #3d: 8	47.6 46.7 For emissior level of the f 302.11b (wors	V H ns in restricte undamental st case from mission leve	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M	РК РК 09 was used. ИНz 97.9	82 248 For all othe dBµV/m	1.2 1.1 er emissions	RB 100 kHz	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Note 1: Run #3d: 8	47.6 46.7 For emissior level of the f 302.11b (wors	V H ns in restricte undamental st case from mission leve	69.6 69.6 ed bands, the and measure n runs 3a an	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M	РК РК 09 was used. ИНz 97.9	82 248 For all othe	1.2 1.1 er emissions	RB 100 kHz	; VB: 100 kHz
4823.920 7237.220 7236.580 Note 1: Run #3d: 8	47.6 46.7 For emissior level of the f 302.11b (wors undamental e Limit for e	V H ns in restricte undamental st case from mission leve emissions ou	69.6 69.6 and measure on runs 3a an el @ 3m in 10 utside of restr	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462 d 3b), 2462 00kHz RBW: icted bands:	РК РК 09 was used. //Hz 97.9 67.9	82 248 For all othe dBμV/m dBμV/m	1.2 1.1 er emissions	RB 100 kHz , the limit was dBc (UNII pov	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Note 1: Run #3d: 8	47.6 46.7 For emissior level of the f 302.11b (wors undamental e Limit for e	V H ns in restricte undamental st case from mission leve emissions ou	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 utside of restr ientation - w	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462 d 3b), 2462 00kHz RBW: icted bands:	РК РК 09 was used. //Hz 97.9 67.9	82 248 For all othe dBμV/m dBμV/m	1.2 1.1 er emissions	RB 100 kHz , the limit was dBc (UNII pov	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Jote 1: Run #3d: 8 F Spurious E	47.6 46.7 For emissior level of the f 302.11b (wors undamental e Limit for e	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol v/h	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 utside of restr ientation - w	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462 d 3b), 2462 00kHz RBW: icted bands: vorst case fo	РК РК 09 was used. //Hz 97.9 67.9 pr both 2nd a	82 248 For all othe dBμV/m dBμV/m	1.2 1.1 er emissions Limit is -30 monics fron	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Jote 1: Run #3d: 6 Frequency MHz 4924.030	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e missions (E Level dBµV/m 44.7	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol Vh V	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M d 3b), 2462M D0kHz RBW: icted bands: vorst case for / 15.247 Margin -9.3	PK PK 09 was used. /Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264	1.2 1.1 er emissions Limit is -30 monics fron Height meters 1.0	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Note 1: Run #3d: 8 F Spurious E Frequency MHz 4924.030 4923.950	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e imissions (El Level dBμV/m 44.7 48.6	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol V/h V V	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M 00kHz RBW: icted bands: vorst case fo / 15.247 Margin -9.3 -25.4	PK PK 09 was used. //Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG PK	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264	1.2 1.1 er emissions Limit is -30 monics fron Height meters 1.0 1.0	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Jote 1: Run #3d: 8 Frequency MHz 4924.030 4923.950 4924.030	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e imissions (E Level dBμV/m 44.7 48.6 41.8	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol V/h V V H	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M 00kHz RBW: icted bands: vorst case fo / 15.247 Margin -9.3 -25.4 -12.2	PK PK 09 was used. //Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG PK AVG	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 232	1.2 1.1 er emissions Limit is -30 monics from Height meters 1.0 1.0 1.1	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 lote 1: Run #3d: 8 F F F F requency MHz 4924.030 4923.950 4924.030 4924.030	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e imissions (E Level dBμV/m 44.7 48.6 41.8 47.2	V H ns in restricter undamental st case from mission leve emissions ou UT in flat or Pol V/h V V V H H H	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0 74.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462f 00kHz RBW: icted bands: vorst case for / 15.247 Margin -9.3 -25.4 -12.2 -26.8	PK PK 09 was used. //Hz 97.9 67.9 or both 2nd a 0 detector Pk/QP/Avg AVG PK AVG PK	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 232 232	1.2 1.1 er emissions Limit is -30 monics from Height meters 1.0 1.0 1.1 1.1	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 lote 1: Run #3d: & F Spurious E Frequency MHz 4924.030 4924.030 4924.030 4924.030 7386.930	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e timissions (E Level dBμV/m 44.7 48.6 41.8 47.2 37.3	V H ns in restricter undamental st case from mission leve emissions ou UT in flat or Pol V/h V V V V H H H V	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0 74.0 54.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M id 3	PK PK 09 was used. //Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG PK AVG PK AVG	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 232 232 88	1.2 1.1 er emissions Limit is -30 monics from Height meters 1.0 1.1 1.1	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 lote 1: Run #3d: 6 F F F F F F F F F F F F F F F F F F F	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e missions (El Level dBμV/m 44.7 48.6 41.8 47.2 37.3 48.6	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol V/h V V V H H H V V	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M 00kHz RBW: icted bands: vorst case for / 15.247 Margin -9.3 -25.4 -12.2 -26.8 -16.7 -25.4	PK PK 09 was used. /Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 264 232 232 88 88	1.21.1er emissionsLimit is -30monics fromHeightmeters1.01.01.11.41.4	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 lote 1: Run #3d: 8 F F F F F F F F F F F F F F F F F F F	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e missions (El Level dBμV/m 44.7 48.6 41.8 47.2 37.3 48.6 36.0	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol V/h V V V V H H H V V H	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M 00kHz RBW: icted bands: vorst case fo / 15.247 Margin -9.3 -25.4 -12.2 -26.8 -16.7 -25.4 -18.0	PK PK 09 was used. //Hz 97.9 67.9 or both 2nd a Detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 264 264 232 232 88 88 88 157	1.21.1er emissionsLimit is -30monics fromHeightmeters1.01.01.11.41.41.0	RB 100 kHz , the limit was dBc (UNII pov n Run 3a)	; VB: 100 kHz set 30dB below the
4823.920 7237.220 7236.580 Note 1: Run #3d: 8 F Spurious E Frequency MHz 4924.030 4923.950	47.6 46.7 For emission level of the f 302.11b (wors undamental e Limit for e missions (E Level dBμV/m 44.7 48.6 41.8 47.2 37.3 48.6 36.0 47.5	V H ns in restricte undamental st case from mission leve emissions ou UT in flat or Pol V/h V V V V H H H V V H H H	69.6 69.6 ed bands, the and measure n runs 3a an el @ 3m in 10 itside of restr ientation - w 15.209 Limit 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0 54.0 74.0	-22.0 -22.9 e limit of 15.2 ed in 100kHz d 3b), 2462M 00kHz RBW: icted bands: vorst case for / 15.247 Margin -9.3 -25.4 -12.2 -26.8 -16.7 -25.4 -18.0 -26.5	PK PK 09 was used. /Hz 97.9 67.9 or both 2nd a 0 detector Pk/QP/Avg AVG PK AVG PK AVG PK AVG PK AVG PK	82 248 For all othe dBμV/m dBμV/m and 3rd harr Azimuth degrees 264 264 264 264 232 232 88 88 88 157 157	1.2 1.1 er emissions Limit is -30 monics from Height meters 1.0 1.1 1.4 1.4 1.0 1.1	RB 100 kHz , the limit was dBc (UNII pov n Run 3a) Comments	; VB: 100 kHz set 30dB below the

Ellic	Stt			EMC Test Data
Client: Juniper Syst	2 company			Job Number: J79764
Model: W2SW0001	in Mesa			-Log Number: T79928
			Acco	unt Manager: Christine Krebill
Contact: Kent Campt Standard: FCC 15.247				Class: -
	Radiat (Elliott Laboratories Fremo	ed Emissions nt Facility, Semi-An	echoic Cham	ber)
Test Specific Detail Objective:	S The objective of this test session is to specification listed above.	perform final qualific	ation testing o	f the EUT with respect to the
Date of Test: Test Engineer: Test Location:		Config. Use Config Chang EUT Voltag		
	guration upport equipment were located on the esting the measurement antenna was			sting.
Ambient Condition Summary of Result	Temperature:20.4 °Rel. Humidity:42 %			
Run #	Test Performed	Limit	Result	Margin
1-2	Radiated Emissions 1 GHz - 8 GHz Maximized	RSS-210	Pass	37.8dBµV/m @ 4838.3MHz (-16.2dB)
Deviations From Th	made to the EUT during testing	ard.		

Client:	Juniper Syst	ems						Job Number:	J79764	
Model: W2SW0001 in Mesa								T-Log Number: T79928		
wouer.	WZ3W0001	III IVIESA					Account Manager: Christine Krebi			
	Kent Campb							01		
	FCC 15.247 Radiated E							Class:	-	
	Date of Test:		1000 - 0,000	/ 111112						
	st Engineer:									
Te	est Location:	FT Chamb	ber #5							
02.11b, 24	137MHz									
requency	Level	Pol		-210	Detector	Azimuth	Height	Comments		
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters			
1221.670 3823.330	32.4 37.4	V V	54.0 54.0	-21.6 -16.6	Peak Peak	263 356	1.0 1.6			
		-								
70.0 (m/\ng 60.0 50.0 40.0 40.0				www.wheek	when and	hore-tonely-estimate	Managerand	morestan	man	
30.0	-what	Manner	www.							
25.0	1000 1500	2000 :	2500 3000	3500 40	000 4500 Frequency (N	5000 5500	6000	6500 7000	7500 8000	

Client	<u>An 242</u> Juniper Syst	ems						Job Numb	er: J79	764
Madal		in Maca					Ţ.	Log Numb	er: T79	9928
wouer	W2SW0001	III Wesa					Account Manager: Christine Kreb			ristine Krebil
	Kent Campb									
	FCC 15.247							Cla	SS: -	
	x Radiated E Date of Test:) MHZ						
	est Engineer:									
	est Location:									
00.440	4070411-									
02.11g, 24 requency	437MHZ Level	Pol	RSS	5-210	Detector	Azimuth	Height	Commer	its	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Commen		
838.330	37.8	V	54.0	-16.2	Peak	317	1.9			
875.000	33.5	Н	54.0	-20.5	Peak	192	1.6			
(m/vm) 90.00 40.00 40.00)-)-			Martinational	prosection	Rectificant	manana	mm	and the	man
	o-Whomby	how	an water and the							
JU.L	1-	/*								

Appendix C Test Configuration Photographs

Test configuration photographs will be provided as a separate document.