

NTS Silicon Valley www.nts.com 41039 Boyce Road Fremont, CA 94538

EMC Test Report

Application for FCC Grant of Equipment Authorization FCC Part 15, Subpart E

Model: RAP-155 (APINR155)

FCC ID:	Q9DAPINR15515P
APPLICANT:	Aruba Networks 1344 Crossman Ave Sunnyvale, CA 94089
TEST SITE(S):	National Technical Systems - Silicon Valley 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-4, 2845B-5
REPORT DATE:	May 9, 2016
REISSUE DATE:	July 21, 2016
FINAL TEST DATES:	March 8, 9, 25, 28, 29 and 30, 2016
TOTAL NUMBER OF PAGES:	112

PROGRAM MGR / TECHNICAL REVIEWER:

Mark E Hill Staff Engineer

QUALITY ASSURANCE DELEGATE / FINAL REPORT PREPARER:

David Guidotti Senior Technical Writer



National Technical Systems - Silicon Valley is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise. This report and the information contained herein represent the results of testing test articles identified and selected by the client performed to specifications and/or procedures selected by the client. National Technical Systems (NTS) makes no representations, expressed or implied, that such testing is adequate (or inadequate) to demonstrate efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it represent any statement whatsoever as to its merchantability or fitness of the test article, or similar products, for a particular purpose. This report shall not be reproduced except in full

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	May 9, 2016	First release	
1	July 18, 2016	Revised report to clarify duty cycle and remove erroneous plots	David Guidotti Mark Hill
2.0	July 21, 2016	Removed IC standard references. Corrected spurious emissions margin calculation.	David Guidotti Mark Hill

TABLE OF CONTENTS

REVISION HISTORY	2
TABLE OF CONTENTS	3
SCOPE	4
OBJECTIVE	4
STATEMENT OF COMPLIANCE	
DEVIATIONS FROM THE STANDARDS	
TEST RESULTS SUMMARY	
UNII / LELAN DEVICES	
MEASUREMENT UNCERTAINTIES	8
EQUIPMENT UNDER TEST (EUT) DETAILS	
GENERAL	
OTHER EUT DETAILS	9
ANTENNA SYSTEM	
ENCLOSURE	
MODIFICATIONS	
SUPPORT EQUIPMENT	
EUT INTERFACE PORTS EUT OPERATION	
TEST SITE	
GENERAL INFORMATION	
CONDUCTED EMISSIONS CONSIDERATIONS	11
RADIATED EMISSIONS CONSIDERATIONS	
MEASUREMENT INSTRUMENTATION	
RECEIVER SYSTEM	
INSTRUMENT CONTROL COMPUTER	
LINE IMPEDANCE STABILIZATION NETWORK (LISN)	
FILTERS/ATTENUATORS	13
ANTENNAS	
ANTENNA MAST AND EQUIPMENT TURNTABLE	
INSTRUMENT CALIBRATION	
TEST PROCEDURES	14
EUT AND CABLE PLACEMENT	
CONDUCTED EMISSIONS	
RADIATED EMISSIONS CONDUCTED EMISSIONS FROM ANTENNA PORT	
BANDWIDTH MEASUREMENTS	10
SPECIFICATION LIMITS AND SAMPLE CALCULATIONS	
CONDUCTED EMISSIONS SPECIFICATION LIMITS: FCC 15.207; FCC 15.107(A), RSS GEN	
GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS	20
FCC 15.407 (A) OUTPUT POWER LIMITS	
SPURIOUS EMISSIONS LIMITS –UNII AND LELAN DEVICES	
SAMPLE CALCULATIONS - CONDUCTED EMISSIONS	
SAMPLE CALCULATIONS - RADIATED EMISSIONS SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION	
APPENDIX A TEST EQUIPMENT CALIBRATION DATA	
APPENDIX B TEST DATA	
END OF REPORT	112

SCOPE

An electromagnetic emissions test has been performed on the Aruba Networks model RAP-155 (APINR155), pursuant to the following rules:

FCC Part 15, Subpart E requirements for UNII Devices

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 National Technical Systems - Silicon Valley test procedures:

FCC General UNII Test Procedures KDB789033

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.

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 Aruba Networks model RAP-155 (APINR155) complied with the requirements of the following regulations:

FCC Part 15, Subpart E requirements for UNII Devices

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 Aruba Networks model RAP-155 (APINR155) and therefore apply only to the tested sample. The sample was selected and prepared by Rob Hastings of Aruba Networks.

DEVIATIONS FROM THE STANDARDS

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

TEST RESULTS SUMMARY

UNII / LELAN DEVICES

OPERATION IN THE 5.15 – 5.25 GHZ BAND – ACCESS POINTS

FCC Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407 (a) (1) (ii)	Output Power	a: 24.3 dBm (267.8 mW) n20: 24.3 dBm (266.4 mW) n40: 22.6 dBm (183.9 mW) (Max eirp: 0.534 W)	30 dBm EIRP <= 4W	Complies
15.407 (a) (1) (i), (ii) or (iii)	Power Spectral Density	a: 13.2 dBm/MHz n20: 13.0 dBm/MHz n40: 8.5 dBm/MHz	17 dBm/MHz	Complies
15.407 (a) (1) (i)	EIRP 30° Above Horizon	N/A – not designed for outdoor use		
15.407(b) (1) / 15.209	Spurious Emissions	73.9 dBµV/m @ 5149.3 MHz (-0.1 dB)	Refer to the limits section (p20) for restricted bands, all others -27 dBm/MHz EIRP	Complies

OPERATION IN THE 5.725 – 5.85 GHZ BAND

FCC Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(e)	6dB Bandwidth	16.3MHz min	<= 500 kHz	Complies
15.407(a) (3)	Output Power (multipoint systems)	a: 22.6 dBm (183.7 mW) n20: 22.3 dBm (170.0 mW) n40: 20.9 dBm (122.7 mW) (Max eirp: 0.367 W)	30 dBm (1 W) EIRP <= 4W	Complies
15.407(a) (3)	Power Spectral Density	a: 11.6 dBm/MHz n20: 11.1 dBm/MHz n40: 6.7 dBm/MHz	30 dBm / 500 kHz	Complies
15.407(b) (4) / 15.209	Spurious Emissions	78.2 dBµV/m @ 5724.1 MHz (-0.1 dB)	Refer to the limits section (p20) for restricted bands, all others -17 dBm/MHz EIRP bandedge and -27 dBm/MHz EIRP	Complies

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result		
15.407		Modulation					
15.31 (m)		Channel Selection					
15.407 (c)		Operation in the absence of information to transmit	n Unchanged from original filing				
15.407 (g)		Frequency Stability					
15.407 (h1)		Transmit Power Control	7				
15.407 (h2)		Dynamic frequency Selection (device with radar detection)	Refer to separate test report, reference R101405	Threshold -62dBm (- 64dBm if eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies		

REQUIREMENTS FOR ALL U-NII/LELAN BANDS

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203		RF Connector	Unchanged from original filing		
15.407 (b) (6)		AC Conducted Emissions	36.9 dBµV @ 0.632 MHz (-9.1 dB)	Refer to page 19	Complies
15.247 (i) 15.407 (f)		RF Exposure Requirements	Refer to MPE calculations in separate exhibit	Refer to OET 65, FCC Part 1 and RSS 102	Complies



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	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Redicted omission (field strength)	dDu\//m	25 to 1000 MHz	± 3.6 dB
Radiated emission (field strength)	dBµV/m	1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Aruba Networks model RAP-155 (APINR155) is a dual 802.11abgn radio access point. Since the EUT would be placed on a tabletop during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 100-240 Volts, 50-60 Hz, 1.0 Amps.

The sample was received on March 8, 2016 and tested on March 8, 9, 25, 28, 29 and 30, 2016. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Aruba Networks	APINR155	Access Point	CC0001614	Q9DAPINR155155P
Sunnt	SYS1357-2412	AC Adapter	None	-

OTHER EUT DETAILS

The following EUT details should be noted: 5GHz radio - 3x3 2.4GHz - 2x2 Simultaneous transmission supported (not assessed in the original application)

ANTENNA SYSTEM

Integral, Omni Directional, 3dBi gain.

ENCLOSURE

The EUT enclosure is primarily constructed of plastic. It measures approximately 18.5 cm wide by 3.0 cm deep by 23 cm high.

MODIFICATIONS

No modifications were made to the EUT during the time the product was at NTS Silicon Valley.

SUPPORT EQUIPMENT

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Latitude E5440	Laptop	8ZQNP12	-
Netgear	-	Ethernet Switch	-	-

EUT INTERFACE PORTS

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

Port Connected To		Cable(s)			
T OIL	Connected To	Description	Shielded or Unshielded	Length(m)	
Ethernet Port 0	Laptop	CAT5	Unshielded	10	
Ethernet Ports 1-4	Remote Switch	CAT5 (x4)	Unshielded	10	
DC power in	AC/DC Adapter	2wire	Unshielded	1.5	
Serial/USB	Laptop	multiwire	Unshielded	1.5	

EUT OPERATION

During testing, the EUT was configured for continuous transmission on the noted channel. Power was set to the maximum target power at the worse case data rate for the mode.

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	Designation / Reg	Location	
Olic	FCC	Canada	Location
Chamber 3	US0027	2845B-3	41039 Boyce Road
Chamber 4	US0027	2845B-4	Fremont, CA 94538-2435

ANSI C63.4 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.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.10. 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 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4.

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

Software is used to view and convert 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 software used for radiated and conducted emissions measurements is NTS EMI Test Software (rev 2.10)

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 C63.10 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 as specified in ANSI C63.4. 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 C63.10, 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.

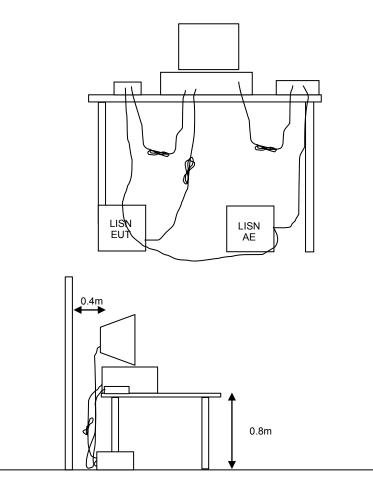


Figure 1 Typical Conducted Emissions Test Configuration



RADIATED EMISSIONS

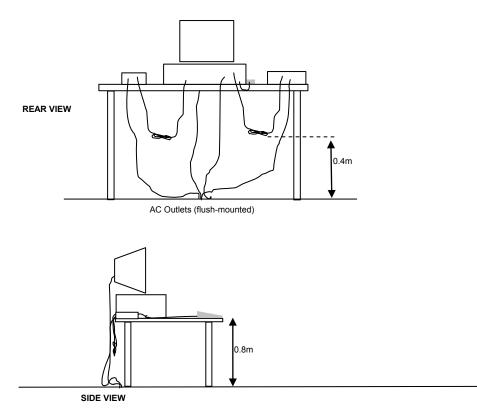
A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). 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.

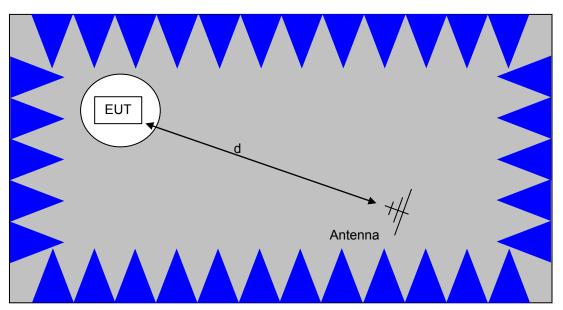
Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna 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.



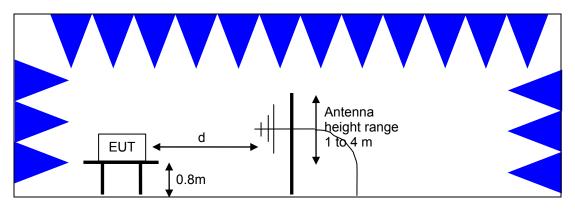


Typical Test Configuration for Radiated Field Strength Measurements



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.

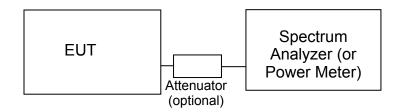
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

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 NTS Silicon Valley'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, 26dB and/or 99% signal bandwidth are measured using the bandwidths recommended by ANSI C63.10 and 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)	Average Limit (dBuV)	Quasi Peak Limit (dBuV)
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.

Report Date: May 9, 2016

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

¹ The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 6

FCC 15.407 (a) OUTPUT POWER LIMITS

The table below shows the limits for output power and output power density. For the 5250-5350 and 5470-5725 MHz bands, 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).

Report Date: May 9, 2016

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	1Watt (30 dBm)	17 dBm/MHz
5250 – 5350 and 5470-5725	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watt (30 dBm)	30 dBm/500kHz

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.

SPURIOUS EMISSIONS 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 field strength of 68.3dBuV/m/MHz at a distance of 3m. For devices operating in the 5725-5850 MHz bands under the LELAN/UNII rules, the limit within 10MHz of the allocated band is increased to -17dBm/MHz.

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:

$$\begin{array}{rcl} R_c &=& R_r \,+\, F_d \\ and \\ M &=& R_c \,-\, L_S \\ where: \\ R_r &=& Receiver Reading in dBuV/m \\ F_d &=& Distance Factor in dB \\ R_c &=& Corrected Reading in dBuV/m \\ L_S &=& Specification Limit in dBuV/m \end{array}$$

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:

 $E = \frac{1000000 \sqrt{30 P}}{d}$ 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.

Report Date: May 9, 2016

Appendix A Test Equipment Calibration Data

<u>Manufacturer</u>	Description	Model	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
Radiated Emissions Hewlett Packard	, 1000 - 40,000 MHz, 08-Mar-16 Microwave Preamplifier, 1-	8449B	785	10/12/2015	10/12/2016
Hewlett Packard	26.5GHz High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
HP / Miteq	SA40 Head (Blue)	TTA1840-45-5P- HG-S	1620	10/21/2015	10/21/2016
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1681	7/13/2015	7/13/2016
A. H. Systems	Red System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	7/16/2015	7/16/2017
EMCO Hewlett Packard	Antenna, Horn, 1-18 GHz Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	3115 8564E (84125C)	2733 3810	11/18/2014 3/1/2016	11/18/2016 3/1/2017
Radio Antenna Port Agilent Technologies	(Power and Spurious Emissior 3Hz -44GHz PSA Spectrum Analyzer	n s), 09-Mar-16 E4446A	2796	3/31/2015	3/31/2016
Radiated Emissions, EMCO Rohde & Schwarz	, Band Edge, 25-Mar-16 Antenna, Horn, 1-18 GHz EMI Test Receiver, 20 Hz-40 GHz	3115 ESIB40 (1088.7490.40)	1561 2493	6/27/2014 2/20/2016	6/27/2016 2/20/2017
Radiated Emissions	, 1000 - 40,000 MHz, 25-Mar-16 Microwave Preamplifier, 1- 26.5GHz	8449B	870	1/21/2016	1/21/2017
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P- HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
EMCO A. H. Systems	Antenna, Horn, 1-18 GHz Purple System Horn, 18- 40GHz	3115 SAS-574, p/n: 2581	1561 2160	6/27/2014 8/28/2014	6/27/2016 8/28/2017
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
	, 1,000 - 40,000 MHz, 28-Mar-16		070	4/04/0040	4/04/0047
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	870	1/21/2016	1/21/2017
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P- HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
EMCO A. H. Systems	Antenna, Horn, 1-18 GHz Purple System Horn, 18- 40GHz	3115 SAS-574, p/n: 2581	1561 2160	6/27/2014 8/28/2014	6/27/2016 8/28/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	2581 BRC50705-02	2241	9/16/2015	9/16/2016



National Technical S	Systems - Silicon Valley Re	port Date: May 9, 20	016	Project number Reissue Date: Jui	
<u>Manufacturer</u> Micro-Tronics	<u>Description</u> Band Reject Filter, 5150-5350 MHz	<u>Model</u> BRC50703-02	<u>Asset #</u> 2251	<u>Calibrated</u> 9/16/2015	<u>Cal Due</u> 9/16/2016
Radiated Emissions, Micro-Tronics	1,000 - 40,000 MHz, 28-Mar-16 Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/13/2015	7/13/2016
Hewlett Packard	Microwave Preamplifier, 1- 26.5GHz	8449B	870	1/21/2016	1/21/2017
HP / Miteq	SA40 Head (Red)	TTA1840-45-5P- HG-S	1145	7/17/2015	7/17/2016
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
EMCO A. H. Systems	Antenna, Horn, 1-18 GHz Purple System Horn, 18- 40GHz	3115 SAS-574, p/n: 2581	1561 2160	6/27/2014 8/28/2014	6/27/2016 8/28/2017
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	9/16/2015	9/16/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
Radiated Emissions, EMCO Hewlett Packard	1000 - 18,000 MHz, 29-Mar-16 Antenna, Horn, 1-18GHz Microwave Preamplifier, 1- 26.5GHz	3115 8449B	868 870	6/26/2014 1/21/2016	6/26/2016 1/21/2017
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	10/17/2015	10/17/2016
Hewlett Packard	High Pass filter, 8.2 GHz	P/N 84300- 80039	1156	6/2/2015	6/2/2016
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	7/13/2015	7/13/2016
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	9/16/2015	9/16/2016
Conducted Emission Rohde & Schwarz Rohde & Schwarz	is - AC Power Ports, 29-Mar-16 Pulse Limiter EMI Test Receiver, 20 Hz-7 GHz	ESH3 Z2 ESIB7	1398 1756	1/25/2016 6/20/2015	1/25/2017 6/20/2016
Com-Power	9KHz-30MHz, 50uH, 15Aac, 10Adc, max CISPR 15	LI-215A	2671	6/26/2015	6/26/2016
Radio Antenna Port (Agilent Technologies	(Power and Spurious Emission PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	is), 29-Mar-16 E4446A	2139	6/22/2015	6/22/2016
Radiated Emissions, EMCO Rohde & Schwarz	1000 - 6,000 MHz, 30-Mar-16 Antenna, Horn, 1-18 GHz EMI Test Receiver, 20 Hz-7 GHz	3115 ESIB7	1561 1756	6/27/2014 6/20/2015	6/27/2016 6/20/2016

Project number JD101099



Appendix B Test Data

T101294 Pages 27 – 111



EMC Test Data

Client:	Aruba Networks	Job Number:	JD101099
Product	RAP-155	T-Log Number:	T101294
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Emissions Standard(s):	FCC 15.407	Class:	В
Immunity Standard(s):	-	Environment:	-

EMC Test Data

For The

Aruba Networks

Product

RAP-155

Date of Last Test: 5/4/2016

EMC Test Data

	E ENGINEER SUCCESS		
Client:	Aruba Networks	Job Number:	JD101099
Model	RAP-155	T-Log Number:	T101294
Model.		Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

Duty Cycle

Date of Test: 3/24/2016 Test Engineer: Mark Hill Test Location: FT Lab #4

NTS

Duty cycle measurements performed on the worse case data rate for power. Worse case data rate taken from original test reports.

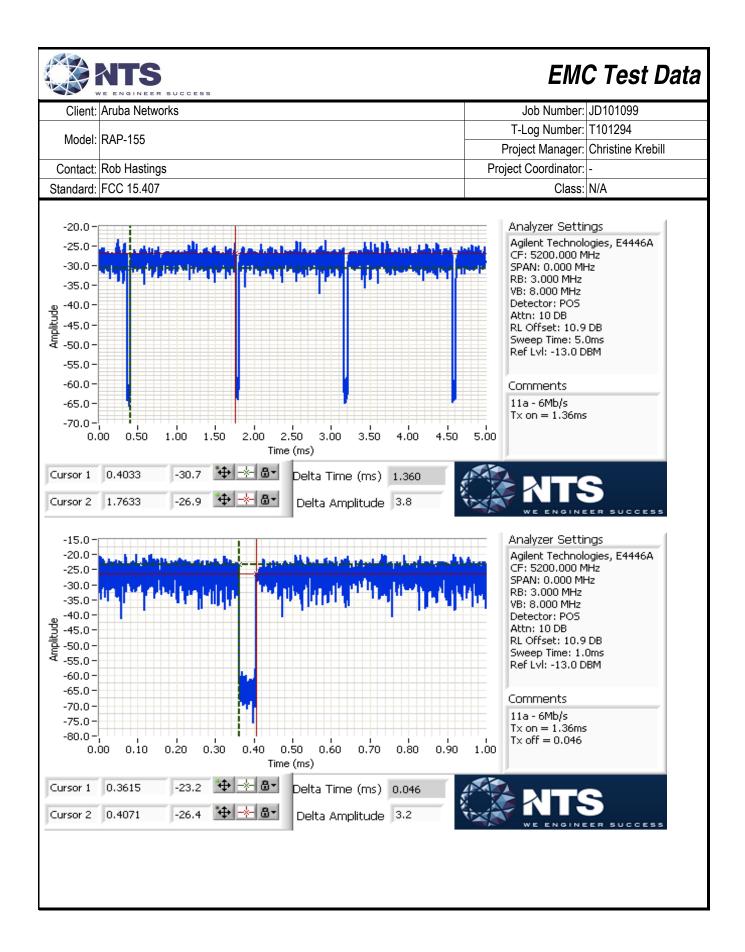
Notes: Measurements taken with maximum RBW/VBW settings allowed.

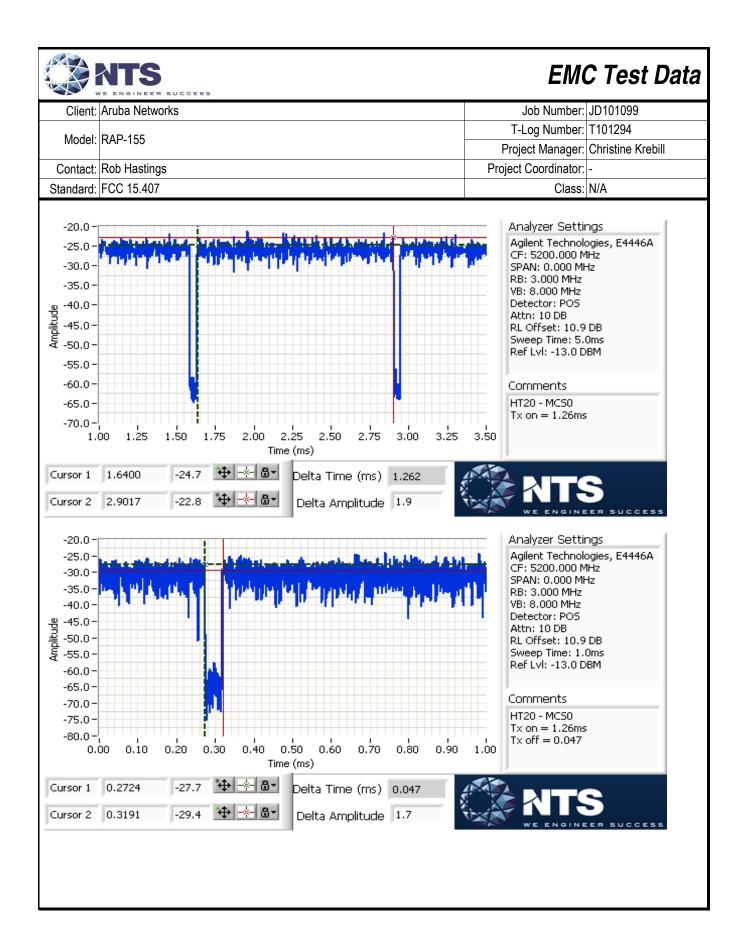
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

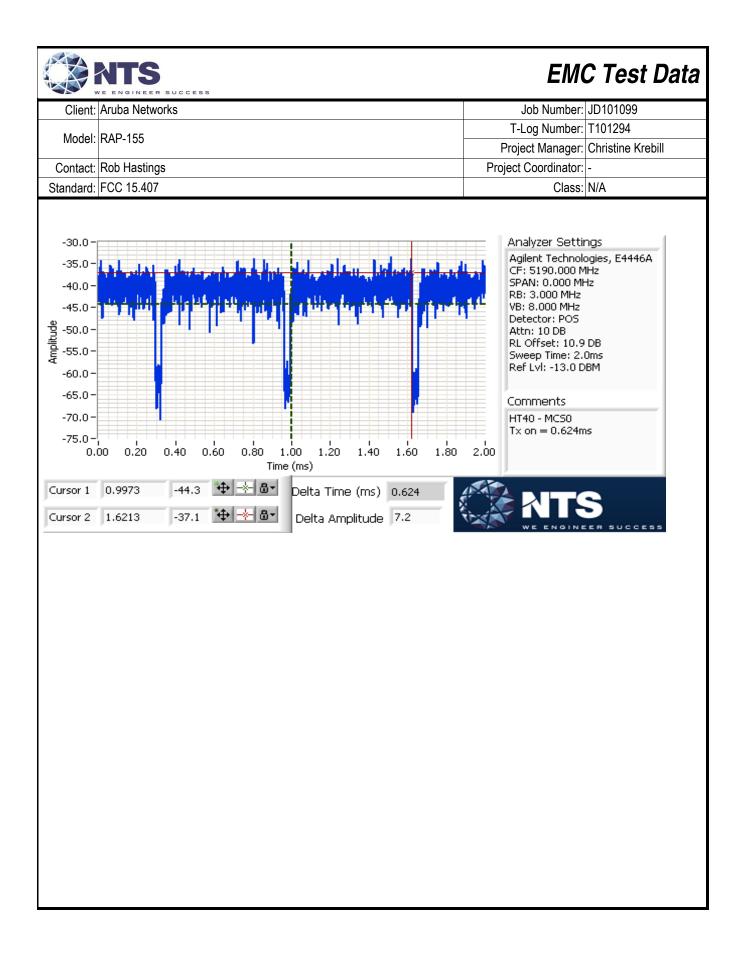
* Correction factor when using RMS/Power averaging - 10*log(1/x)

** Correction factor when using linear voltage average - 20*log(1/x)

T = Minimum transmission duration







		RSUCCESS				EM	C Test Data
Client:	Aruba Netw	orks				Job Number	r: JD101099
Madal						T-Log Number	r: T101294
IVIODEI:	RAP-155					Project Manager	r: Christine Krebill
Contact:	Rob Hasting	gs				Project Coordinator	r: -
Standard:	FCC 15.407	7				Class	s: N/A
RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions							
Test Spe	cific Detai	ls					
	Objective:	The objectiv specification			perform final qualification	n testing of the EUT with	respect to the
[Date of Test:	3/25/2016			Config. Used:	1	
	•	Deniz Demir	ci		Config Change:		
Te	est Location:	FT Ch #4			EUT Voltage:	120 VAC	
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, unless otherwise noted. Ambient Conditions: Temperature: 20-22 °C Rel. Humidity: Summary of Results					noted.		
Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
20MHz Ban	dwith Modes			1			
1-a	а	36 - 5180MHz	18.0	14.0	Restricted Band Edge at 5150 MHz	15.209	73.9 dBµV/m @ 5149.3 MHz (-0.1 dB)
1-b	а	40 - 5200MHz	18.0	18.0	Restricted Band Edge at 5150 MHz	15.209	53.0 dBµV/m @ 5149.1 MHz (-1.0 dB)
4-a	n20	36 - 5180MHz	18.0	14.0	Restricted Band Edge at 5150 MHz	15.209	53.7 dBµV/m @ 5149.4 MHz (-0.3 dB)
4-b	n20	40 - 5200MHz	18.0	18.0	Restricted Band Edge at 5150 MHz	15.209	53.8 dBµV/m @ 5149.1 MHz (-0.2 dB)
40MHz Ban	dwith Modes	-		T	1		
7-а	n40	38 - 5190MHz	18.0	12.0	Restricted Band Edge at 5150 MHz	15.209	73.6 dBµV/m @ 5149.5 MHz (-0.4 dB)
7-b	n40	46 - 5230MHz	18.0	16.0	Restricted Band Edge at 5150 MHz	15.209	53.2 dBµV/m @ 5147.5 MHz (-0.8 dB)
		e During T nade to the El	•	sting			

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test L					
Client:	Aruba Networks	Job Number:	JD101099		
Madal	RAP-155	T-Log Number:	T101294		
wouer.		Project Manager:	Christine Krebill		
Contact:	Rob Hastings	Project Coordinator:	-		
Standard:	FCC 15.407	Class:	N/A		

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time

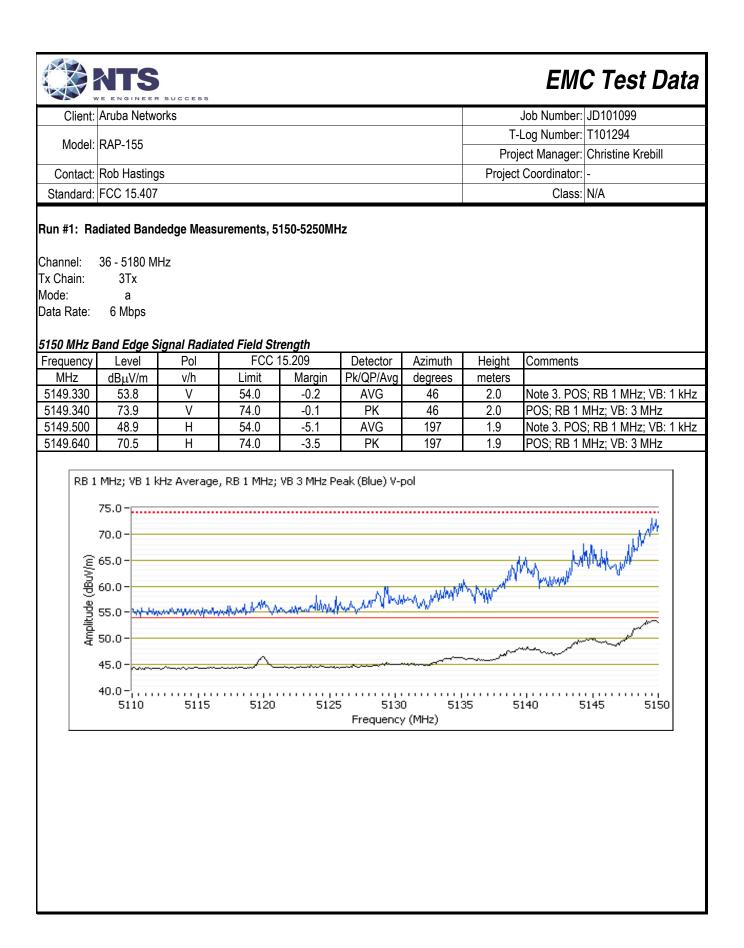
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

Sample Notes

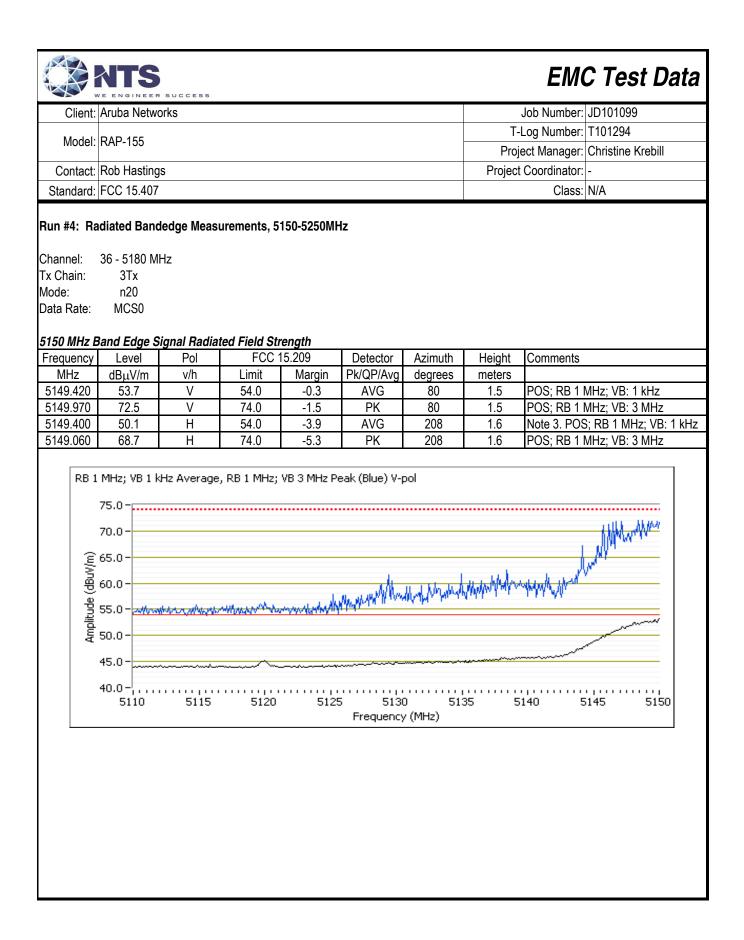
Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

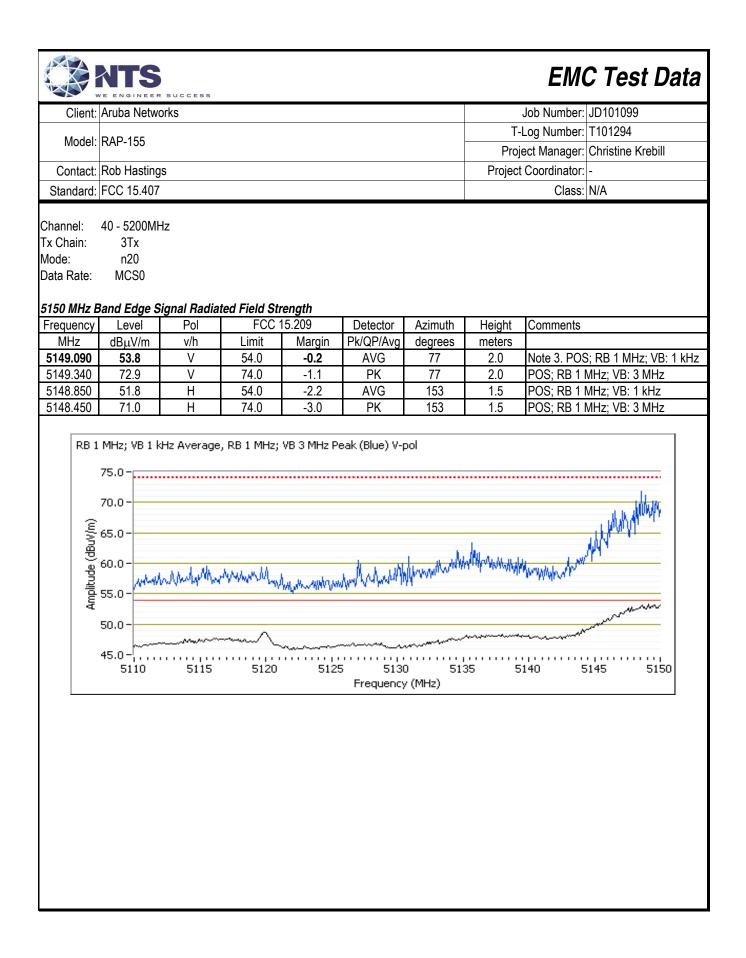
Measurement Specific Notes:

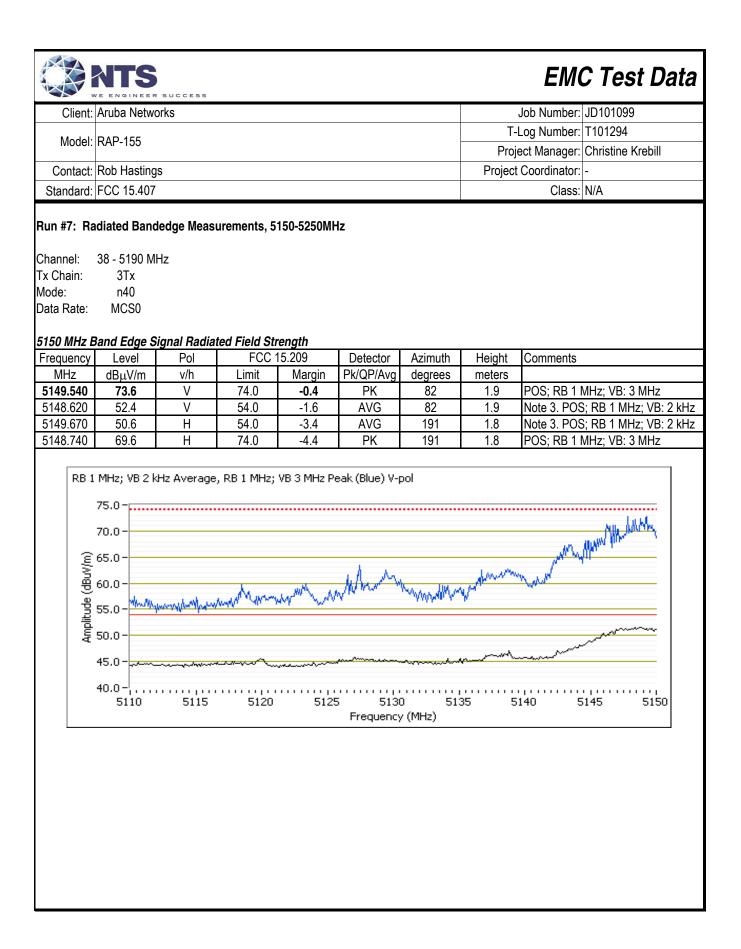
	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
NOLE Z.	sweep, trace average 100 traces (method AD of KDB 789033)
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
NOLE 5.	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 5:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final
Note 5.	measurements.

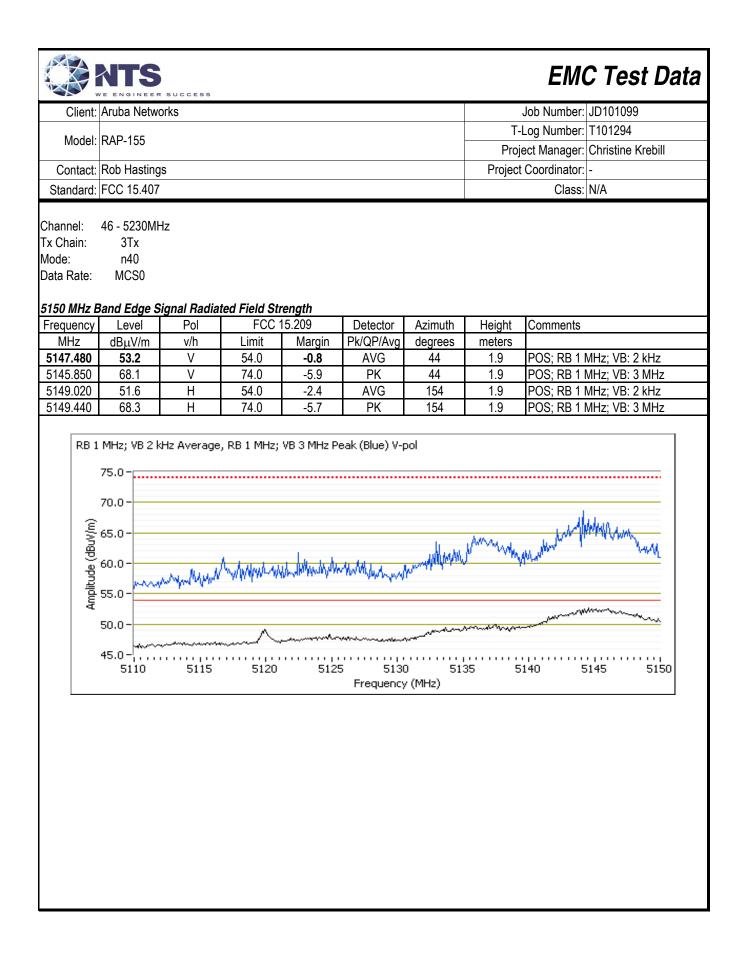


		SUCCESS							C Test Data
Client:	ent: Aruba Networks lel: RAP-155							Job Number:	
Model:								T-Log Number: T101294 Project Manager: Christine Krebill	
Contact:	t: Rob Hastings						Project Coordinator: -		
Standard:	d: FCC 15.407						Class: N/A		
Tx Chain: Mode: Data Rate:	40 - 5200 M 3Tx a 6 Mbps		had Eiald Child	on eth					
Frequency	Level	Signal Radiat Pol	FCC 1		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5149.120	53.0	V	54.0	-1.0	AVG	49	2.0		S; RB 1 MHz; VB: 1 kHz
5149.160	70.1	V	74.0	-3.9	PK	49	2.0		MHz; VB: 3 MHz
5149.450 5149.210	52.2 67.9	H H	54.0 74.0	-1.8 -6.1	AVG PK	198 198	1.9 1.9		<u>S; RB 1 MHz; VB: 1 kHz</u> MHz; VB: 3 MHz
Amplitude (dBuV/m)	70.0 - (0, 65.0 -								
40.0- 5110 5115 5120 5125 5130 5135 5140 5145 5150 Frequency (MHz)									











	LE ENOINEER SOCOESS		
Client:	Aruba Networks	Job Number:	JD101099
Model	RAP-155	T-Log Number:	T101294
wouer.		Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

RSS-247 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.

General Test Configuration

TS

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, unless otherwise noted.

Ambient Conditions:

Temperature:	20-22 °C
Rel. Humidity:	32-35 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
Scans on "c	enter" chanr	el in all OFD	M modes to	determine the	e worst case mode.		•
	а	40 - 5200MHz	18	18	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.7 dBµV/m @ 5434.9 MHz (-3.3 dB)
1	n20	40 - 5200MHz	18	18	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.6 dBµV/m @ 5440.0 MHz (-1.4 dB)
	n40	38 - 5190MHz	18	18	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	50.7 dBµV/m @ 5431.1 MHz (-3.3 dB)
Measureme	nts on low a	nd high chanr	nels in worst	-case OFDM	mode.		
n	n20	36 - 5180MHz	18.0	17.5	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.7 dBµV/m @ 5440.0 MHz (-0.3 dB)
2	n20	48 - 5240MHz	18.0	16.0	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.6 dBµV/m @ 5439.9 MHz (-0.1 dB)

	NTS VE ENGINEER SUCCESS	EM	C Test Data
Client:	Aruba Networks	Job Number:	JD101099
Madal	RAP-155	T-Log Number:	T101294
wouer.	NAC-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	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.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

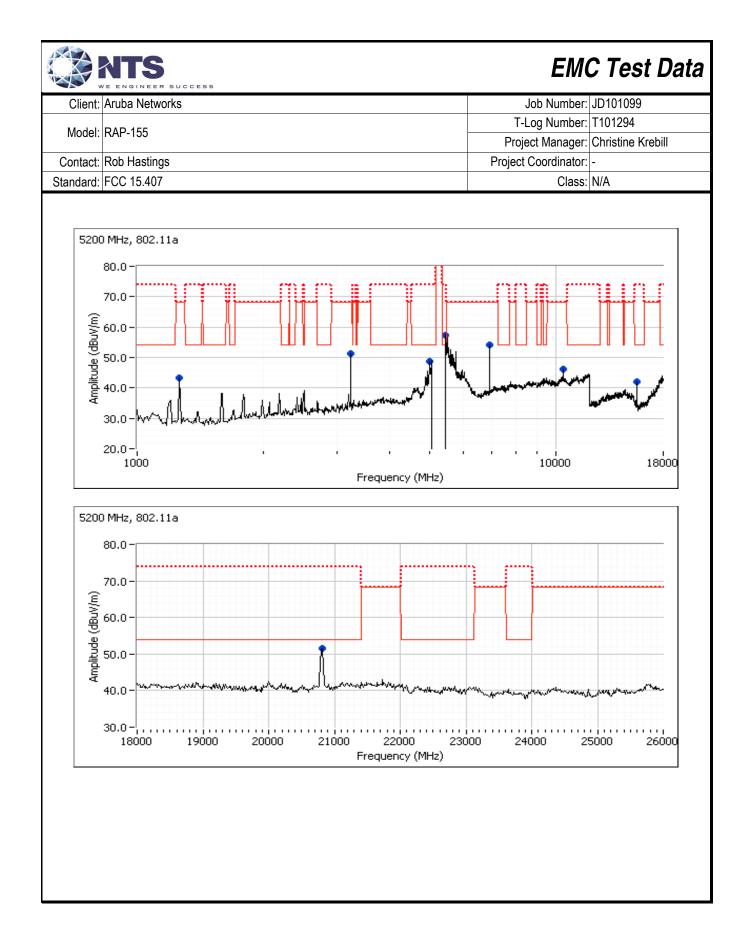
Sample Notes

Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

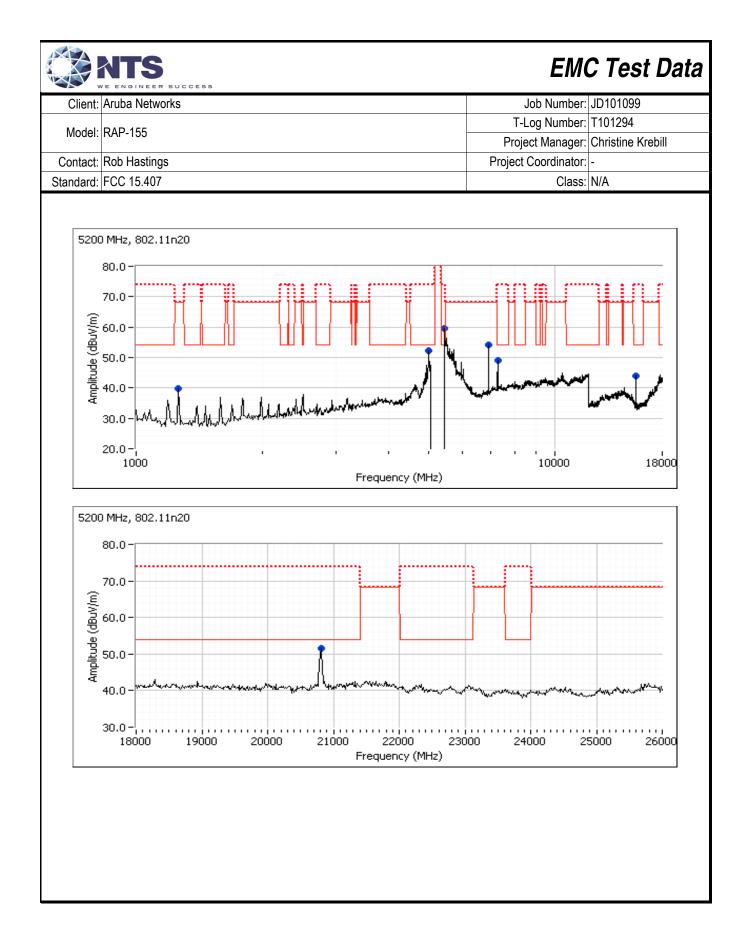
Measurement Specific Notes:

	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method
Note 1:	required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
	demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto
note 2.	sweep, trace average 100 traces (method AD of KDB 789033)
Nata 2.	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz,
Note 3:	peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)

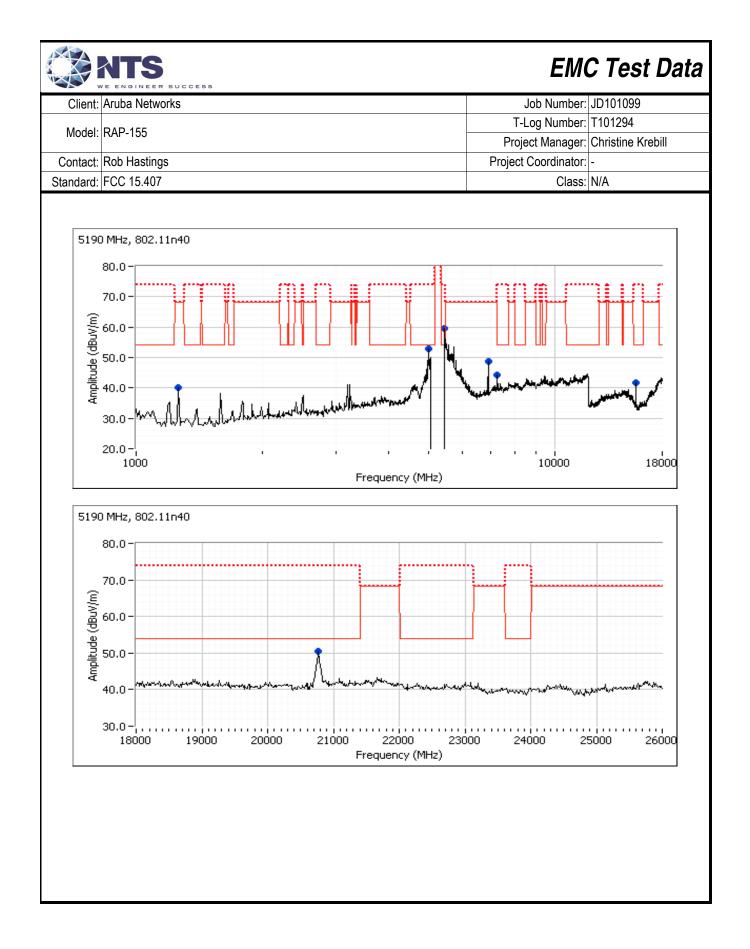
		SUCCESS						EM	C Test Data
Client:	Aruba Netwo							Job Number:	JD101099
							T-	Log Number:	T101294
Model:	RAP-155							-	Christine Krebill
Contact:	Rob Hasting	s						Coordinator:	
	FCC 15.407						110,000	Class:	
Stanuaru.	FCC 15.407							01855.	IN/A
Te Te	diated Spurie Date of Test: est Engineer: est Location: enter Chann	3/25/2016 Rafael Vare FT Ch #4		40,000 MHz	Con	n the 5150-5 onfig. Used: fig Change: UT Voltage:	1 None	and	
Channel:	40		Mode:	а					
x Chain:	3Tx		Data Rate:	6Mbs					
Frequency	Level	Pol	15 200	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
5434.890	50.7	V	54.0	-3.3	Avg	41	1.9	Note 3 POS	S; RB 1 MHz; VB: 1 kH
5435.460	69.0	V	74.0	-5.0	PK	41	1.9		MHz; VB: 3 MHz
6933.080	56.2	V	68.3	-12.1	PK	40	1.3	,	/B 3 MHz;Peak
4999.930	44.3	V	54.0	-9.7	Avg	59	1.9		S; RB 1 MHz; VB: 1 k⊦
4996.540	57.3	V	74.0	-16.7	PK	59	1.9		/B 3 MHz;Peak
1262.870	50.1	V	68.3	-18.2	PK	102	1.0		/B 3 MHz;Peak
3233.840	42.4	V	68.3	-25.9	PK	206	1.8		/B 3 MHz;Peak
0396.690	53.8	V	68.3	-14.5	PK	344	1.0		/B 3 MHz;Peak
5590.000	42.1	V	54.0	-11.9	Peak	332	2.0	1.0 1 10112,1	
20800.680	47.7	V	54.0	-6.3	Avg	356	2.2	Note 3 POS	S; RB 1 MHz; VB: 1 kH
20801.580	61.8	V	74.0	-12.2	PK	356	2.2		/B 3 MHz;Peak
Note:	the device in	dicated ther	e were no sig	gnificant em	issions in this	frequency ra	nge		itennas 20-50cm from
lote 1:	For emission	is in restricte	ed bands, the	limit of 15.2	209 was used	which requir	es average	and peak me	asurements.
1-1-0					limit is -27dBr ≥3MHz, peak (68.3dBuV/n	n). The meas	urement method
lote 2:			iromont (DD-	-11/147 //82					



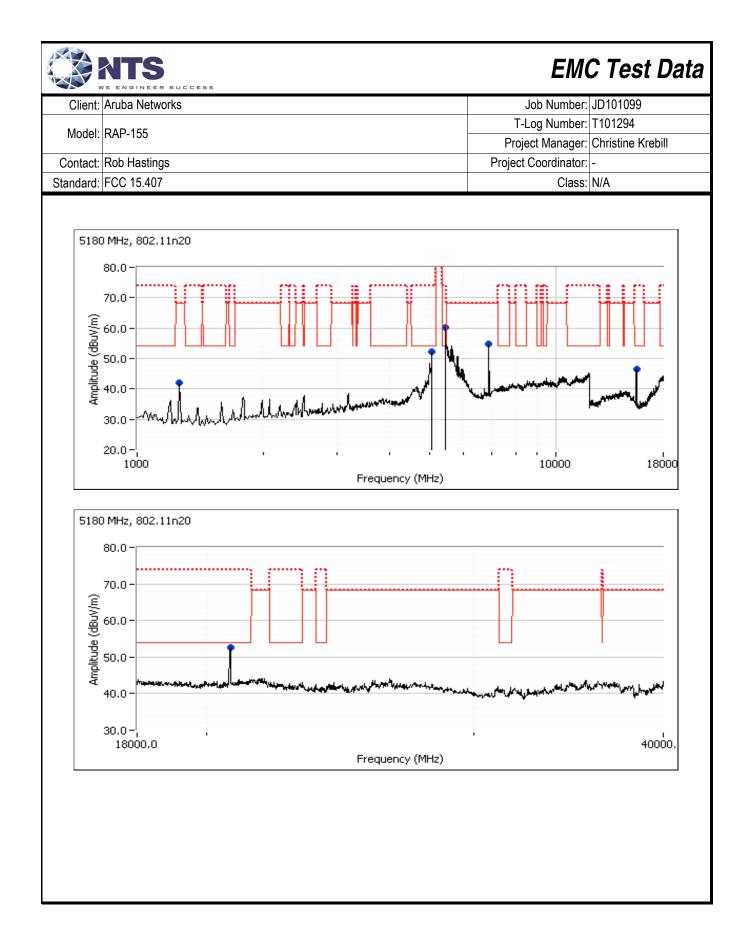
	WE ENGINEER	SUCCESS							15 404000
Client:	Aruba Netwo	Orks						Job Number:	
Model:	RAP-155							Log Number:	
							-	-	Christine Krebill
Contact:	Rob Hasting	ļS					Project	Coordinator:	-
Standard:	FCC 15.407							Class:	N/A
un #1b: C	Center Chan	nel							
hannel:	40		Mode:	11n20					
x Chain:	3Tx		Data Rate:	MCS0					
requency	Level	Pol	15 209	9 / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Commonto	
5440.020	52.6	V	54.0	-1.4	Avg	77	1.5	Note 3, POS	; RB 1 MHz; VB: 1 kH
5442.080	69.4	V	74.0	-4.6	PK	77	1.5		MHz; VB: 3 MHz
7331.370	36.9	V	54.0	-17.1	Avg	213	1.0		S; RB 1 MHz; VB: 1 k⊦
7329.060	49.0	V	74.0	-25.0	PK	213	1.0		/B 3 MHz;Peak
263.610	47.6	V	68.3	-20.7	PK	202	1.0	· · · · ·	/B 3 MHz;Peak
5004.610	43.3	V	54.0	-10.7	Avg	72	2.0		S; RB 1 MHz; VB: 1 kH
004.150	55.4	V	74.0	-18.6	PK	72	2.0		/B 3 MHz;Peak
933.430	56.8	V	68.3	-11.5	PK	39	1.9		/B 3 MHz;Peak
5590.000	43.8	V	54.0	-10.2	Peak	340	2.0	, , .	
0803.470		V	54.0	-5.8	Avg	354	2.1	Note 3, POS	S; RB 1 MHz; VB: 1 kH
0803.920		V	74.0	-10.7	PK	354	2.1		/B 3 MHz;Peak
Note: ote 1: ote 2:	the device in For emission For emission	ndicated ther ns in restricte ns outside of	e were no sig ed bands, the the restricte	gnificant emi limit of 15.2 d bands the	ssions in this 209 was used	frequency ra which requir m/MHz eirp (nge es average	and peak me	tennas 20-50cm from asurements. urement method



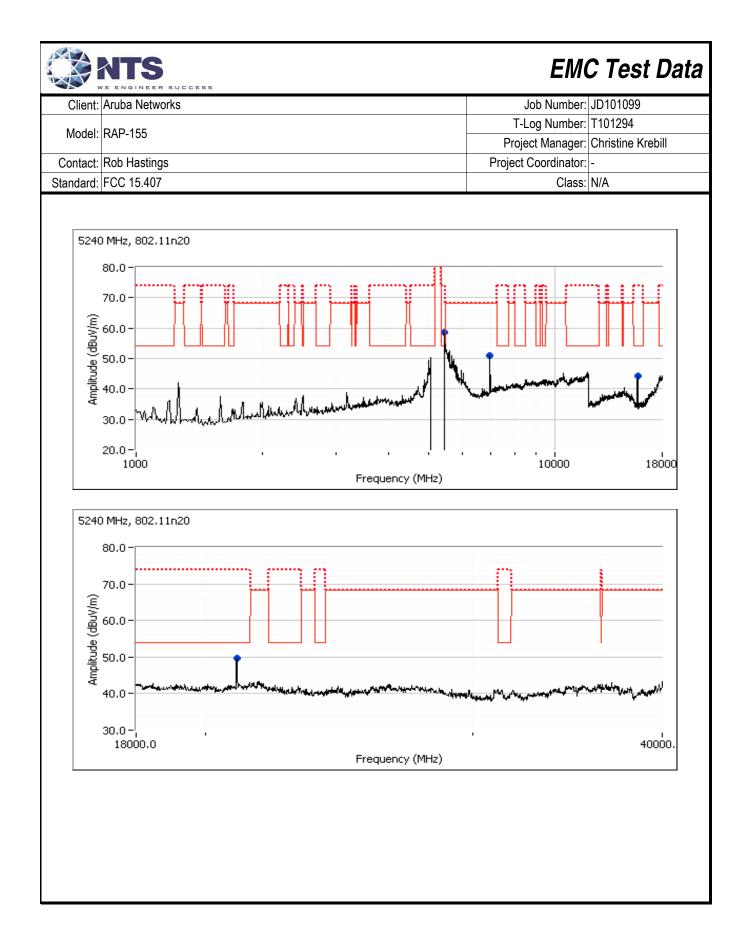
Client: Aruba Networks Job Number: JD101099 Model: RAP-155 T-Log Number: T101294 Project Manager: Christine Kre Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A Run #1c: Center Channel Channel: 38 Mode: 11n40 Tx Chain: 3Tx Data Rate: MCS0 Frequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dB _µ V/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 POS; RB 1 MHz; VB 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB 3 MHz;Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz;VB 3 MHz;Pea 7270.670	oill
Model: RAP-155 Project Manager: Christine Kre Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A Aun #1c: Center Channel Christine Kre Standard: Standard: FCC 15.407 Class: N/A Aun #1c: Center Channel Standard: Mode: 11n40 Standard: Koso Standard: 37x Data Rate: MCS0 MCS0 MMz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.30 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB 3 M 31.30 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB 3 M 31.35 31.35 62.2 V 74.0 -15.2 PK 83 1.7 Note 3. POS; RB 1 MHz; VB 3 M 31.4 39.9 31.7 RB 1 MHz; VB 3 M 31.7 RB 1 MHz; VB 3 M 31.7 RB 1 MHz; VB 3 M <	bill
Project Manager: Christine Kre Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A un #1c: Center Channel N/A hannel: 38 Mode: 11n40 x Chain: 3Tx Data Rate: MCS0 Frequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea	
Standard: FCC 15.407 Class: N/A tun #1c: Center Channel Class: N/A thannel: 38 Mode: 11n40 Comments Comments trequency Level Pol 15.209 / 15E Detector Azimuth Height Comments 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 54397.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea </td <td></td>	
Prince Center Channel Shannel: 38 Mode: 11n40 Schannel: 37x Data Rate: MCS0 Frequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	
Shannel: 38 x Chain: Mode: 11n40 Data Rate: MCS0 Frequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -15.2 PK 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; YB 3 MHz; Pea	
x Chain: 3Tx Data Rate: MCS0 Trequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 4997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	
x Chain: 3Tx Data Rate: MCS0 Trequency Level Pol 15.209 / 15E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 4997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 4997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 6919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; YB	
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; VB: 3 M 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 1997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 1997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 5919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; V	
5431.130 50.7 V 54.0 -3.3 Avg 41 1.9 Note 3. POS; RB 1 MHz; 5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 4997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 5919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	
5431.350 62.2 V 74.0 -11.8 PK 41 1.9 POS; RB 1 MHz; VB: 3 M 4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; VB: 3 M 4997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz; VB 3 MHz; Pea 5919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz; VB 3 MHz; Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	/B: 1 k⊢
4997.000 43.6 V 54.0 -10.4 Avg 83 1.7 Note 3. POS; RB 1 MHz; 1997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz;VB 3 MHz;Pea 1997.370 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz;VB 3 MHz;Pea 1270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz;	
1997.370 58.8 V 74.0 -15.2 PK 83 1.7 RB 1 MHz;VB 3 MHz;Pea 5919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz;VB 3 MHz;Pea 7270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz;	
3919.960 55.7 V 68.3 -12.6 PK 55 1.1 RB 1 MHz;VB 3 MHz;Pea '270.670 37.4 V 54.0 -16.6 Avg 130 2.0 Note 3. POS; RB 1 MHz; '	
7280 040 49.1 V/ 74.0 24.9 PK 130 2.0 PB 1 MHz;V/P 3 MHz;Po3	/B: 1 k⊦
200.040 43.1 V 74.0 -24.3 FR 150 2.0 [RD FWH2, VD 5 WH2, Fed	K
265.110 47.1 V 68.3 -21.2 PK 132 1.9 RB 1 MHz;VB 3 MHz;Pea	κ
5570.000 41.6 V 54.0 -12.4 Peak 342 2.0	
0762.610 47.5 V 54.0 -6.5 Avg 348 1.1 Note 3. POS; RB 1 MHz; '	/B: 1 kł
0763.290 62.1 V 74.0 -11.9 PK 348 1.1 RB 1 MHz;VB 3 MHz;Pea	<
Note: Scans made between 26 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50 the device indicated there were no significant emissions in this frequency range te 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements. te 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement meth required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).	



Client:	Aruba Netwo	orks						Job Number:	JD101099
							T-	Log Number:	T101294
Model:	RAP-155							-	Christine Krebill
Contact:	Rob Hastings	S					-	Coordinator:	
	FCC 15.407						-,	Class:	
C Te	diated Spuri Date of Test: 3 st Engineer: est Location:	3/28/2016 Deniz Demi		40000 MHz	Con	<i>lode: Wors</i> onfig. Used: ifig Change: UT Voltage:	1 None	n Run #1	
un #2a: L	ow Channel								
hannel:	36		Mode:	11n20					
x Chain:	3Tx		Data Rate:	MCS0					
requency	Level	Pol	15.209	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
1261.320	34.8	V	54.0	-19.2	AVG	104	2.5		1 MHz;VB 1 kHz;Pea
1263.670	50.3	V	68.3	-18.0	PK	104	2.5		'B 3 MHz;Peak
5040.010	46.7	V	54.0	-7.3	AVG	75	1.7		1 MHz;VB 1 kHz;Pea
5040.320	58.5	V	74.0	-15.5	PK	75	1.7		B 3 MHz;Peak
5440.030	53.7	V	54.0	-0.3	AVG	220	1.7		S; RB 1 MHz; VB: 1 k
5440.140	64.4	V	74.0	-9.6	PK	220	1.7	-	MHz; VB: 3 MHz
6906.620	58.5 50.2	V V	68.3	-9.8	PK	37	1.2		B 3 MHz;Peak
5537.100 5537.900	50.2 66.2	V V	54.0 74.0	-3.8 -7.8	AVG PK	25 25	<u>1.9</u> 1.9		1 MHz;VB 1 kHz;Pea ′B 3 MHz;Peak
20723.820	49.0	V V	54.0	-7.8	AVG	12	1.9		1 MHz;VB 1 kHz;Pea
0723.820	49.0 63.5	V	74.0	-10.5	PK	12	1.7		B 3 MHz;Peak



	NTS							EM	C Test Data
Client:	Aruba Netwo	success						Job Number:	
Cilent.	Aluba Nelwo	142						Log Number:	
Model:	RAP-155								Christine Krebill
Orighterati	Dah Haatinga								
	Rob Hastings	6					Project	Coordinator:	
Standard:	FCC 15.407							Class:	N/A
Run #2b: H	igh Channel								
Channel:	48		Mode:	11n20					
Tx Chain:	3Tx		Data Rate:	MCS0					
Frequency	Level	Pol	15.209 /	/ 15.247	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5439.910	62.2	H	74.0	-11.8	PK	150	1.8		MHz; VB: 3 MHz
5439.870	53.9	H	54.0	-0.1	AVG	150	1.8		S; RB 1 MHz; VB: 1 kHz
6986.380	55.2	V V	68.3	-13.1	PK	28	2.0		B 3 MHz;Peak
15721.470 15720.580	49.4 65.5	V V	54.0 74.0	-4.6 -8.5	AVG PK	23 23	2.0 2.0		1 MHz;VB 1 kHz;Peak
20966.170	48.0	V V	74.0 54.0	-0.5 -6.0	AVG	303	<u>2.0</u> 1.5		' <u>B 3 MHz;Peak</u> 1 MHz;VB 1 kHz;Peak
20966.810	65.7	V	74.0	-0.0	PK	303	1.5		B 3 MHz;Peak



EMC Test Data									
Client:	Aruba Netw	orks				Job Number:	JD101099		
Madalı						T-Log Number:	T101294		
Wodel:	RAP-155					Project Manager:	Christine Krebill		
Contact: Rob Hastings Project Coordinator: -									
	FCC 15.407					Class:			
	F	RSS-247 a	IND FCC	15.407 (UNII) Radiated Sp	ourious Emissior	IS		
Test Spec	cific Detai		a af this to at		naufaum final avalification	a ta ating of the FLIT with .			
	Objective:	specification			perform final qualification	n testing of the EOT with I	espect to the		
	Date of Test:				Config. Used:				
	•	Deniz Demir	ci / R. Varela	as	Config Change:				
Te	est Location:	FT Ch #4			EUT Voltage:	120 VAC			
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, unless otherwise noted.									
Ambient Conditions:									
Temperature: 20-22 °C									
Rel. Humidity: 32-35 %									
Summary	of Result	ts							
Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin		
20MHz Ban	dwith Modes			1	· · · · · · ·	r			
	а	140			Band Edge		71.2 dBµV/m @ 5713.3		
		149 - 5745MHz	18.0	13.5	5715 MHz		MHz (-2.8 dB) 77.6 dBµV/m @ 5724.2		
	а				Band Edge 5715 - 5725 MHz		ИНz (-0.7 dB)		
					Band Edge		64.4 dBµV/m @ 5714.8		
	а	153 -	40.0	40.0	5715 MHz		MHz (-3.9 dB)		
	-	5765MHz	18.0	18.0	Band Edge	1	71.8 dBµV/m @ 5724.4		
1	а				5715 - 5725 MHz	15E	MHz (-6.5 dB)		
I	а				Band Edge	IJE	77.7 dBµV/m @ 5852.5		
	a	165 -	18.0	15.5	5850 - 5860 MHz		MHz (-0.6 dB)		
	а	5825MHz			Band Edge		69.5 dBµV/m @ 5861.1		
					5860 MHz		MHz (-4.5 dB)		
	а	161 -			Band Edge 5850 - 5860 MHz		68.7 dBµV/m @ 5855.5		
		5805MHz	18.0	18.0	Band Edge	•	MHz (-9.6 dB) 66.8 dBµV/m @ 5860.1		
	а				5860 MHz		MHz (-1.5 dB)		
					•	•			

		RSUCCESS				EM	C Test Data
Client	Aruba Netw	orks				Job Number:	JD101099
Madal						T-Log Number:	T101294
woden	: RAP-155					Project Manager:	Christine Krebill
Contact	Rob Hasting	gs				Project Coordinator:	-
Standard	FCC 15.407	7				Class:	N/A
Summary	y of Resul	ts					
Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
	HT20	149 -	18.0	13.5	Band Edge 5715 MHz		70.0 dBµV/m @ 5714.7 MHz (-4.0 dB)
	HT20	5745MHz	10.0	13.5	Band Edge 5715 - 5725 MHz		78.2 dBµV/m @ 5724.1 MHz (-0.1 dB)
	HT20	153 -	40.0	40.0	Band Edge 5715 MHz		68.0 dBµV/m @ 5713.4 MHz (-0.3 dB)
	HT20	5765MHz	18.0	18.0	Band Edge 5715 - 5725 MHz		73.2 dBµV/m @ 5724.5 MHz (-5.1 dB)
2	HT20	165 -			Band Edge 5850 - 5860 MHz	15E	77.8 dBµV/m @ 5850.5 MHz (-0.5 dB)
	HT20	5825MHz	18.0	14.5	Band Edge 5860 MHz		70.0 dBµV/m @ 5862.4 MHz (-4.0 dB)
	HT20	161 -			Band Edge 5850 - 5860 MHz		71.4 dBµV/m @ 5850.2 MHz (-6.9 dB)
	HT20	5805MHz	18.0	18.0	Band Edge 5860 MHz		65.7 dBµV/m @ 5867.0 MHz (-2.6 dB)
40MHz Ban	dwith Mode				0000 11112		Winz (2.0 dB)
	HT40	151 -	40.0	40.5	Band Edge 5715 MHz	15E	73.6 dBµV/m @ 5714.6 MHz (-0.4 dB)
<u>^</u>	HT40	5755MHz	18.0	12.5	Band Edge 5715 - 5725 MHz	15E	78.2 dBµV/m @ 5724.9 MHz (-0.1 dB)
3	HT40	159-	40.0	40.0	Band Edge 5850 - 5860 MHz	15E	71.9 dBµV/m @ 5850.4 MHz (-6.4 dB)
	HT40	5795MHz	18.0	16.0	Band Edge 5860 MHz	15E	53.0 dBµV/m @ 5860.1 MHz (-1.0 dB)

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.

	NTS	EMO	C Test Data
Client:	Aruba Networks	Job Number:	JD101099
Madal	RAP-155	T-Log Number:	T101294
MOUEI.	RAF-100	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

Sample Notes

Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be
Note 3:	demonstrated by meeting the average and peak limits of 15.209, as an alternative. Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 5:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.
l	

Client:	Aruba I	Networ	rks						Job Number:	JD101099
N.4								T-	Log Number:	T101294
Model:	RAP-1	55						Proj	ect Manager:	Christine Krebill
Contact:	Rob Ha	astings	;					Project	Coordinator:	-
Standard:		-							Class:	N/A
Run #1: Ra	diated	Bande	edge Meas	urements, 5	725-5850 MI	Ηz				
hannel:	149 - 5	745MF	Ηz							
x Chain:	3T:	х								
lode:	а									
ata Rate:	6 Mb	ops								
		•								
715 MHz E	Band Ed	lge Sig	gnal Radia	ted Field Str	rength					
requency	Lev	el	Pol	FCC 1	15.209	Detector	Azimuth	Height	Comments	
MHz	dBµ∖	//m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5714.110	48.	7	V	54.0	-5.3	AVG	51	2.0	Note 1,3.PC	S; RB 1 MHz; VB: 1 kH
5713.310	71.	2	V	74.0	-2.8	PK	51	2.0	POS; RB 1	MHz; VB: 3 MHz
5714.800	48.	2	Н	54.0	-5.8	AVG	162	2.0	POS; RB 1	MHz; VB: 1 kHz
5714.160	70.	5	Н	74.0	-3.5	PK	162	2.0	POS; RB 1	MHz; VB: 3 MHz
715-5725 I	MHz Ba	nd Ed		Radiated Fie					-	
requency	Lev	el	Pol	15	5.E	Detector	Azimuth	Height	Comments	
roquonoj				Limit	Margin	Pk/QP/Avg	degrees	meters		
MHz	dBµ∖	//m	v/h		margin			IIICICIS		
MHz	dΒμ\ 77.	6	V	78.3	-0.7	PK	51	2.0		MHz; VB: 3 MHz
	dBµ∖	6								MHz; VB: 3 MHz MHz; VB: 3 MHz

50.0

5695

5700

ANA A

rs

SUCCESS

5705

Frequency (MHz)

5710

5715

5725

5720

	VE ENGINEER	SUCCESS						EM	
Client:	Aruba Netwo	orks						Job Number:	
Model	RAP-155							Log Number:	
MOUEI.	1.46-133						Proj	ect Manager:	Christine Krebill
Contact:	Rob Hastings	5					Project	Coordinator:	-
Standard:	FCC 15.407							Class:	N/A
Channel: Tx Chain: Mode: Data Rate:	153 - 5765M 3Tx a 6 Mbps								
	Band Edge Si Level	gnai Radia Pol		r <i>engtn</i> 15.209	Detector	Azimuth	Height	Comments	
Frequency MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
5714.820	64.4	V	68.3	-3.9	PK	258	1.0	POS [,] RB 1	MHz; VB: 3 MHz
5714.520	59.8	H	68.3	-8.5	PK	158	1.7		MHz; VB: 3 MHz
5715-5725	MHz Band Ec	lge Signal I Pol	Radiated Fie	eld Strength	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
5724.440	71.8	V	78.3	-6.5	PK	258	1.0	POS: RB 1	MHz; VB: 3 MHz
5722.640	67.6	H	78.3	-10.7	PK	158	1.7		MHz; VB: 3 MHz
(m 70.0 75.0 (m 70.0 (m 70.0 65.0 65.0 60.0 4 55.0 50.0			and the shared		Millerall ^{inger} iore				href Hannager

Client: Aruba Networks Job Number: JD 101099 Model: RAP-155 T-Log Number: T101294 Contact: Rob Hastings Project Manager: Christine Krebill Standard: FCC 15.407 Class: N/A Channel: 165 - 5825MHz Tx Class: N/A S600 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Delector Azimuth Height Comments Mede: a MHz dB _{II} V/m V/h Limit Margin Pk/QP/Avg degrees meters 5661.560 49.2 V 54.0 4.8 AVG 45 1.8 Note 1.3. POS; RB 1 MHz; VB : 3MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB : 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB : 3 MHz 5860.240 66.2 H 74.0 -7.8 <			SUCCESS						EMO	C Test Dat
Model: RAP-155 Project Manager: Christine Krebili Contact: Rob Hastings Project Manager: Christine Krebili Standard: FCC 15.407 Class: N/A	Client:	Aruba Netwo	orks						Job Number:	JD101099
Model: RAP-155 Project Manager: Christine Krebill Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A		/						T-	Log Number:	T101294
Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A Channel: 165 - 5825MHz X X X Chain: 3Tx Nde: a Joata Rate: MCS0 MHz Badd Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµJ/m v/h Limit Margin PK/QP/Avg degrees meters 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5852.520 77.7 V 78.3 -0.6	Model:	RAP-155							-	
Standard: FCC 15.407 Class: N/A Channel: 165 - 5825MHz X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X X <td>Contact:</td> <td>Rob Hasting</td> <td>s</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td>-</td> <td></td>	Contact:	Rob Hasting	s					-	-	
Channel: 165 - 5825MHz fx Chain: 3Tx Jode: a Jata Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Encented Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m Vh Limit Margin Pk/QP/Avg degrees meters 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1.3. POS; RB 1 MHz; VB: 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB: 3 MHz 5860.5800 MEz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments S850-5860 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 585.2520 77.7 7.8 <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			-							
x Chain: 3 Tx /lode: a Jota Rate: MCS0 i860 MHz Band Edge Signal Radiated Field Strength Encode Azimuth Height Comments MHz dBµt/m v/n Limit Margin PK/QP/Avg degrees meters 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5861.090 69.5 V 74.0 -4.5 PK 45 1.8 POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5860.300 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz S861.500 YB 3 MHz	otaridara.								01000.	
Model: a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments 5861.560 49.2 V 54.0 4.8 AVG 45 1.8 Note 1.3. POS; RB 1 MHz; VB 5861.560 49.2 V 54.0 4.5 PK 45 1.8 Note 1.3. POS; RB 1 MHz; VB 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz 5860.540 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments 5850.5210 77.7 V 78.3 -1.7 PK 45 1.8 POS; RB 1 MHz; VB 3 MHz 5850.210 76.6 H 78.3	Channel:	165 - 5825M	Hz							
Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5861.900 69.5 V 74.0 -4.5 PK 445 1.8 POS; RB 1 MHz; VB: 3 MHz 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5860.5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµtV/m v/h Limit Margin Pk/QP/Avg degrees meters 5850.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz 60.0 </td <td>Tx Chain:</td> <td>3Tx</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Tx Chain:	3Tx								
3860 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 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5861.590 69.5 V 74.0 -4.5 PK 45 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5860.5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5850.210 76.6 H	/lode:	а								
Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters MHz 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz SMz SMz 3MHz BOS; RB 1 MHz; VB: 3 MHz WS 3 MHz Metars MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters meters SSS2.520 77.7 V 78.3 -0.6 PK 45 <td>Data Rate:</td> <td>MCS0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Data Rate:	MCS0								
Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1.3. POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1.3. POS; RB 1 MHz; VB 3 MHz VPol 80.0 70.0 76.6										
MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB 5861.090 69.5 V 74.0 -4.5 PK 45 1.8 POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5860.800 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz 650-5860 MHz Band Edge Signal Radiated Field Strength						Detector	Arimuth	Hoight	Commonto	
5861.560 49.2 V 54.0 -4.8 AVG 45 1.8 Note 1,3. POS; RB 1 MHz; VB 5861.090 69.5 V 74.0 -4.5 PK 45 1.8 POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 POS; RB 1 MHz; VB 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB 3 MHz Reduency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 <									Comments	
5861.090 69.5 V 74.0 -4.5 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5850.500 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dB _µ //m v/h Limit Margin Pk/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 90 60.0									Note 1.3 PC)S' RB 1 MHz' VR' 1 I
5860.240 48.4 H 54.0 -5.6 AVG 167 1.8 Note 1,3. POS; RB 1 MHz; VB 5863.900 66.2 H 74.0 -7.8 PK 167 1.8 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 850-5860 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 80.0 - - - - 70.0 - - - - - - - - - - - - - - - - - - - - - - - - - <td></td>										
5863.900 66.2 H 74.0 -7.8 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 5850-5860 MHz Band Edge Signal Radiated Field Strength Errequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz S850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz V 90.0										
Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <td></td>										
Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <td></td>										
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees meters 5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -									-	
5852.520 77.7 V 78.3 -0.6 PK 45 1.8 POS; RB 1 MHz; VB: 3 MHz 5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Position of the second sec									Comments	
5850.210 76.6 H 78.3 -1.7 PK 167 1.8 POS; RB 1 MHz; VB: 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol 80.0 - 75.0 - 90 65.0 91 65.0 92 55.0						u u				
RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol										
80.0 - 75.0 - 75.0 - 75.0 - 65.0 - 60.0 - 55.0 -	5050.210	70.0	11	10.5	-1.7	Γſ	107	1.0	FU3, ND 11	
45.0- 5850 5855 5860 5865 5870 5875 5880 5885 5890 Frequency (MHz)	(m.	80.0 - 75.0 - 70.0 - 65.0 - 60.0 - 55.0 - 50.0 - 45.0 -				5 5870		//////////////////////////////////////	~~^// 	nuhul///////////////////////////////////

Standard: FCC 15.407 Channel: 161 - 5805MHz Tx Chain: 3Tx Mode: a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth MHz dBµV/m V/h Limit Margin Pk/QP/Avg 66.8 V 5860.060 66.8 5860.0840 60.5 H 68.3 -7.8 PK 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth MHz dBµV/m MHz V Stato -9.6 PK 264 1 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 75.0	Job Number: JD101099 T-Log Number: T101294 Project Manager: Christine Krebill Project Coordinator: - Class: N/A eight Comments eters 1.3 POS; RB 1 MHz; VB: 3 MHz 1.0 POS; RB 1 MHz; VB: 3 MHz
Contact: Rob Hastings F Standard: FCC 15.407 F Channel: 161 - 5805MHz Tx Chain: 3Tx Mode: a a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength F F F Frequency Level Pol FCC 15.209 Detector Azimuth He MHz dBμV/m v/h Limit Margin PK/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 PK 264 1 5860.840 60.5 H 68.3 -7.8 PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength F F Pequency Level Pol 15.E Detector Azimuth He MHz dBμV/m v/h Limit Margin PK/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1	Project Manager: Christine Krebill Project Coordinator: - Class: N/A eight Comments eters 1.3 POS; RB 1 MHz; VB: 3 MHz
Contact: Rob Hastings F Standard: FCC 15.407 F Channel: 161 - 5805MHz F X Chain: 3Tx Node: a Joata Rate: MCS0 F F 6800 MHz Band Edge Signal Radiated Field Strength F F Frequency Level Pol FCC 15.209 Detector Azimuth He MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 PK 264 1 5860.840 60.5 H 68.3 -7.8 PK 153 1 6850-5860 MHz Band Edge Signal Radiated Field Strength F F F P 15.5 Detector Azimuth He MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees me 65855.490 68.7 V 78.3 -9.6 PK 264 1	Project Coordinator: - Class: N/A Poight Comments Peters 1.3 POS; RB 1 MHz; VB: 3 MHz
Standard: FCC 15.407 Channel: 161 - 5805MHz ix Chain: 3Tx Aode: a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength	Project Coordinator: - Class: N/A Poight Comments Peters 1.3 POS; RB 1 MHz; VB: 3 MHz
Standard: FCC 15.407 Channel: 161 - 5805MHz Fx Chain: 3Tx Mode: a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth MHz dBµV/m V/h Limit Margin Pk/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 F860.840 60.5 H 68.3 -7.8 Frequency Level Pol 15.2 Detector Azimuth Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.2 153 1 S850-740 68.7 <td>eight Comments eters 1.3 POS; RB 1 MHz; VB: 3 MHz</td>	eight Comments eters 1.3 POS; RB 1 MHz; VB: 3 MHz
Channel: 161 - 5805MHz Tx Chain: 3Tx Mode: a Data Rate: MCS0 5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 Frequency Level Pol 15.5 PK 264 1 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5850.490 68.7 V 78.3 -9.6 PK 264	eight Comments eters 1.3 POS; RB 1 MHz; VB: 3 MHz
Frequency Level Pol FCC 15.209 Detector Azimuth He MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 PK 264 1 5860.840 60.5 H 68.3 -7.8 PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth He 6850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 75.0 75.0 75.0 75.0	eters 1.3 POS; RB 1 MHz; VB: 3 MHz
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5860.060 66.8 V 68.3 -1.5 PK 264 1 5860.840 60.5 H 68.3 -7.8 PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth He MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - <	eters 1.3 POS; RB 1 MHz; VB: 3 MHz
5860.060 66.8 V 68.3 -1.5 PK 264 1 5860.840 60.5 H 68.3 -7.8 PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength PK 153 1 Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 80.0 - - - - - - <t< td=""><td>1.3 POS; RB 1 MHz; VB: 3 MHz</td></t<>	1.3 POS; RB 1 MHz; VB: 3 MHz
5860.840 60.5 H 68.3 -7.8 PK 153 1 5850-5860 MHz Band Edge Signal Radiated Field Strength End Detector Azimuth He Frequency Level Pol 15.E Detector Azimuth He MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 7	
5850-5860 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth He MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	
Frequency Level Pol 15.E Detector Azimuth He MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - - - -	
MHz dBμV/m v/h Limit Margin Pk/QP/Avg degrees me 5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - - - -	
5855.490 68.7 V 78.3 -9.6 PK 264 1 5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - 75.0 -	eight Comments
5850.740 65.1 H 78.3 -13.2 PK 153 1 RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - 75.0 -	eters
RB 1 MHz; VB 3 MHz Peak ; V-pol 80.0 - 75.0 -	1.3 POS; RB 1 MHz; VB: 3 MHz 1.0 POS; RB 1 MHz; VB: 3 MHz
(m 70.0	

5715 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 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 1 kH 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 1 kH 5713.670 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715-5725 MHz Band Edge Signal Radiated Field Strength - 5716 Strength - 5716 Strength	Olicint.	Alubal		INO						JOD Number.	30101033
Project Manager: Christine Krebill Contact: Rob Hastings Project Coordinator: - Standard: FCC 15.407 Class: N/A Run #2: Radiated Bandedge Measurements, 5725-5850 MHz Class: N/A Channel: 149 - 5745MHz Class: N/A Xchain: 3Tx Jode HT20 Jode Standard: Comments M/A Jode: HT20 Joata Rate: MCS0 MCS0 Standard: Comments M/A Standard: MHz Bit/Vm Vh Limit Margin Pk/QP/Avg degrees meters Standard:	Madal		F F						T-	Log Number:	T101294
Standard: FCC 15.407 Class: N/A Standard: FCC 15.407 Class: N/A Standard: FCC 15.407 Class: N/A Standard: Frequency Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Mclaid: Mclaid: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Stand: Standard: Standard:	Wodel:	RAP-1	55						Proj	ect Manager:	Christine Krebill
Standard: FCC 15.407 Class: N/A Standard: FCC 15.407 Class: N/A Standard: FCC 15.407 Class: N/A Standard: Frequency Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Mclaid: Mclaid: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Standard: Stand: Standard: Standard:	Contact:	Rob Ha	astinas	6					Proiect	t Coordinator:	-
Radiated Bandedge Measurements, 5725-5850 MHz Shannel: 149 - 5745MHz x Chain: 3Tx Jode: HT20 Data Rate: MCS0 S715 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1.3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 4.0 PK 157 2.1 Note 1.3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -5.5 PK 166 2.0 Note 1.3. POS; RB 1 MHz; VB: 3 MHz 5715.6725 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµ/V/m Vh 11mt Margin Pk/QP/Avg degr			-						,		
Channel: 149 - 5745MHz Xa Chain: 3Tx Mode: HT20 Data Rate: MCS0 ST15 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµ/V/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.4840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 1 kHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5725.575 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµ/V/m V/h Limit Margin	otanaara.		0.101							014001	
Tx Chain: 3Tx Aode: HT20 bata Rate: MCS0 S715 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBjLV/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 1 kH 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5725.06 78.2 V 78.3 <	Run #2: Ra	adiated	Bande	edge Meas	urements, 5	725-5850 M	Hz				
Mode: HT20 bata Rate: MCS0 7715 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 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.570 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5713.670 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5724.900 78.0 H 15.E Detector Azimuth Height Comments MHz dBµV/m	Channel:	149 - 5	745M	Hz							
Data Rate: MCS0 S715 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 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.5755 MHz Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees	x Chain:	3T:	х								
S715 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµU/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.540 48.8 V 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 Detector Azimuth Height Comments 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz	/lode:	HT2	20								
Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.5725 MHZ Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.0 H 78.3 -0.1 <td< td=""><td>Data Rate:</td><td>MCS</td><td>S0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Data Rate:	MCS	S0								
Frequency Level Pol FCC 15.209 Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.5725 MHZ Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.0 H 78.3 -0.1 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 775.7575 MHZ Band Edge Signal Radiated Field Strength Erequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5724.060 78.2 V 78.3 <	5715 MHz I	Band Ec	dge Si	gnal Radia							
5714.840 48.8 V 54.0 -5.2 AVG 157 2.1 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.725 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 60.0		Lev	el	Pol	FCC ²	15.209		Azimuth	Height	Comments	
5714.720 70.0 V 74.0 -4.0 PK 157 2.1 POS; RB 1 MHz; VB 3 MHz 5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB 3 MHz 5715.000 68.5 H 74.0 -5.5 PK 166 2.0 Note 1,3. POS; RB 1 MHz; VB 3 MHz S7715-5725 MHz Band Edge Signal Radiated Field Strength Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.000 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB 3 MHz 80.0 - - - - 0.3 PK 166 2.0 POS; RB 1 MHz; VB 3 MHz 9 60.0 - - - - - - - - - - <td></td> <td></td> <td></td> <td></td> <td></td> <td><u> </u></td> <td></td> <td><u> </u></td> <td></td> <td></td> <td></td>						<u> </u>		<u> </u>			
5715.000 46.1 H 54.0 -7.9 AVG 166 2.0 Note 1,3. POS; RB 1 MHz; VB: 1 kHz 5713.670 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.070 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.070 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5715.07 Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin PK/QP/Avg degrees meters 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.060 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 65.0											
5713.670 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5713.670 68.5 H 74.0 -5.5 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5713.670 Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz S704.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz S0.0											
interval in the interval interva											
Frequency Level Pol 15.E Detector Azimuth Height Comments MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 88 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <t< td=""><td>5713.670</td><td>68.</td><td>5</td><td>Н</td><td>74.0</td><td>-5.5</td><td>PK</td><td>166</td><td>2.0</td><td>POS; RB 1</td><td>MHz; VB: 3 MHz</td></t<>	5713.670	68.	5	Н	74.0	-5.5	PK	166	2.0	POS; RB 1	MHz; VB: 3 MHz
MHz dBµV/m v/h Limit Margin Pk/QP/Avg degrees meters 5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 75.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - 70.0 - <td>5715-5725</td> <td>MHz Ba</td> <td>nd Ed</td> <td>lge Signal I</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	5715-5725	MHz Ba	nd Ed	lge Signal I							
5724.060 78.2 V 78.3 -0.1 PK 157 2.1 POS; RB 1 MHz; VB: 3 MHz 5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -	Frequency	Lev	el	Pol	15	5.E	Detector	Azimuth	Height	Comments	
5724.200 78.0 H 78.3 -0.3 PK 166 2.0 POS; RB 1 MHz; VB: 3 MHz RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol 80.0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>											
RB 1 MHz; VB 1 kHz Average, RB 1 MHz; VB 3 MHz Peak (Blue) V-pol 80.0 75.0 (w) 70.0 65.0 90 60.0 90 60.0 0 0 0 0 0											
80.0 - 75.0 - (m) 70.0	5724.200	78.	0	Н	78.3	-0.3	PK	166	2.0	POS; RB 1	MHz; VB: 3 MHz
80.0 - 75.0 - (m) 70.0 - (m) 65.0 - (m) 65.0 - (m) 65.0 - (m) 65.0 - (m) 65.0 - (m) 65.0 - (m) 70.0											
75.0 - (m) 70.0 - (m) 70.0 - (m) 65.0 - 90 60.0 - (m) 70.0 - 90 65.0 -	RB 1	L MHz; V	/B1 kH	Hz Average	, RB 1 MHz;	VB 3 MHz P	eak (Blue) V	-pol			
75.0 - (m) 70.0 - (m) 70.0 - (m) 65.0 - 99 60.0 - (m) 70.0 - 90 65.0 -				-							
75.0 - (0, 70.0 - (0, 70.0 - 65.0 - 90, 60.0 - 55.0 - 50.0 - 50.0 - (0, 70.0 - (0		80.0-								·····	
(@ 70.0 - @ 70.0 - @ 65.0 - @ 65.0 - @ 65.0 - @ 55.0 - \$ 0.0		75.0-									, rollar
Image: 10.0 - Image: 10.0 -		, 0.0									NAM
^{AB}	12	70.0-								Likhu an	AN
B 60.0 B 60.0 B 55.0 S0.0 Malana	- Ang	65.0-							A	(III YIY WAA	M ¹
9 60.0 - 55.0 - 50.0 - 50.0 -		05.0-							M. MY		
50.0	j p	60.0-					Mr. 60 day	Min Mill	1 P.		
₹ 55.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 - 50.0 -	lit l		Andre	unhursen	manutant	hundhad	NATI AND	Ast it. i			
50.0-	a	55.0-									and the second
											at the advantage of the second second

Job Number: JD101099

GINEER SUCCESS

Client: Aruba Networks

Frequency (MHz)

5710

.

5715

...

5725

.....

5720

Model: Contact:	Aruba Netwo RAP-155	rks						EMO	C Test Data
Model: Contact:	RAP-155	rks							
Contact:							,	Job Number:	JD101099
Contact:							T-	Log Number:	T101294
							Proje	ect Manager:	Christine Krebill
Chandard	Rob Hastings	6					Project	Coordinator:	-
Standard:	FCC 15.407						-	Class:	N/A
Tx Chain: Mode: Data Rate:	153 - 5765MI 3Tx HT20 MCS0								
	and Edge Si	-						1-	
Frequency	Level	Pol	FCC 1		Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5713.380 5714.340	68.0 64.9	V H	68.3 68.3	-0.3 -3.4	PK PK	261 147	1.5 1.0		MHz; VB: 3 MHz MHz; VB: 3 MHz
5714.340	04.9	П	00.3	-3.4	۳ň	147	1.0	PU5; RB 11	
5715-5725 I	MHz Band Ed	lae Sianal I	Radiated Fie	ld Strenath					
Frequency	Level	Pol	15	i.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5724.480	73.2	V	78.3	-5.1	PK	261	1.5	POS; RB 1 I	MHz; VB: 3 MHz
5723.840	72.1	Н	78.3	-6.2	PK	147	1.0	POS; RB 1 I	MHz; VB: 3 MHz
80.0 75.0 (<u>()</u> 70.0 (<u>()</u> 70.0 (<u>()</u> 70.0 (<u>()</u> 70.0 (<u>()</u> 70.0 (<u>)</u> (<u>)</u> (<u>)</u> (<u>)</u> (<u>)</u> (<u>)</u> (<u>)</u> (<u>)</u>	- - - - - - -		VM/Whyl 5695	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	MHU. WANNAN	5710		111 1000000000000000000000000000000000	

Client:	Aruba Netwo	rks						Job Number:	JD101099
Madal							T-	Log Number:	T101294
Model:	RAP-155						Proj	ect Manager:	Christine Krebill
Contact:	Rob Hastings	3					Project	t Coordinator:	-
Standard:	FCC 15.407							Class:	N/A
Channel:	165 - 5825M	Hz							
x Chain:	3Tx								
lode: ata Rate:	HT20 MCS0								
ala Rale:	MCS0								
860 MHz E	Band Edge Si	gnal Radia	ted Field St	rength					
requency	Level	Pol	FCC	15.209	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5861.300	48.9	<u>V</u>	54.0	-5.1	AVG	56	2.0		DS; RB 1 MHz; VB: 1 I
5862.420	70.0 47.7	V H	74.0	-4.0	PK AVG	56 210	2.0		MHz; VB: 3 MHz
5863.600 5860.710	67.2	<u>п</u> Н	54.0 74.0	-6.3 -6.8	PK	210	1.8 1.8		<u>DS; RB 1 MHz; VB: 1 I</u> MHz; VB: 3 MHz
5000.710	01.2	11	74.0	-0.0	FK	210	1.0	F00, ND T1	
850-5860	MHz Band Ed	lge Signal I	Radiated Fie	eld Strength	1				
requency	Level	Pol	1:	5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5850.460	77.8	V	78.3	-0.5	PK	56	2.0		MHz; VB: 3 MHz
5850.570	74.0	Н	78.3	-4.3	PK	211	1.9	POS; RB 1 I	MHz; VB: 3 MHz
Amplitude (dBuV/m)	80.0 - 75.0 - 70.0 - 65.0 - 55.0 - 50.0 - 45.0 -	·····							~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	5850	5855	5860	5865	5 5870 Frequency		/5 5	880 5	885 5890

Model: F Contact: F Standard: F	Rob Hastings FCC 15.407 161 - 5805Mł 3Tx HT20 MCS0	i					T-l Proj∉	Job Number: Log Number: ect Manager: Coordinator:	T101294 Christine Krebill
Contact: F Standard: F Channel: 1 X Chain: Mode: Data Rate: Bata Rate: Frequency	Rob Hastings FCC 15.407 161 - 5805Mł 3Tx HT20 MCS0						Proje	ect Manager:	Christine Krebill
Contact: F Standard: F Channel: 1 X Chain: Mode: Data Rate: Bata Rate: Frequency	Rob Hastings FCC 15.407 161 - 5805Mł 3Tx HT20 MCS0							-	
Standard: F Channel: 1 Tx Chain: Node: Data Rate: Beo MHz Ba Frequency	FCC 15.407 161 - 5805MH 3Tx HT20 MCS0						Project	Coordinator:	
Channel: 1 ix Chain: 1ode: Data Rate: 2860 MHz Ba Frequency	161 - 5805Mł 3Tx HT20 MCS0	Ηz					-		-
x Chain: lode: bata Rate: 860 MHz Ba Frequency	3Tx HT20 MCS0	Ηz						Class:	N/A
requency		mal Dadia	tool Field Ch						
	Level	gnai наdia Pol		r engtn 15.209	Detector	Azimuth	Height	Comments	
111116	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	Height meters	Comments	
5867.030	65.7	V	68.3	-2.6	PK	238	1.5	POS: RB 1 !	MHz; VB: 3 MHz
5860.180	62.2	Ĥ	68.3	-6.1	PK	151	2.0		MHz; VB: 3 MHz
					·				
	IHz Band Ed								
requency	Level	Pol		5.E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h V	Limit	Margin	Pk/QP/Avg	degrees	meters		
5850.180 5853.910	71.4 65.9	 H	78.3 78.3	-6.9 -12.4	PK PK	238 151	1.5 2.0		MHz; VB: 3 MHz MHz; VB: 3 MHz
+ 0.00 75.0 (m/ 70.0 (m/ ngp 65.0 60.0 55.0 50.0 45.0	MAN NAME	h		дт 5865	5870	5875	Щ ич икодол 5880	5885	

	NTS VE ENGINEER SUCCESS	EMC Test Data				
Client:	Aruba Networks	Job Number:	JD101099			
Madalı	RAP-155	T-Log Number:	T101294			
woder.		Project Manager:	Christine Krebill			
Contact:	Rob Hastings	Project Coordinator:	-			
Standard:	FCC 15.407	Class:	N/A			

Run #3: Radiated Bandedge Measurements, 5725-5850 MHz

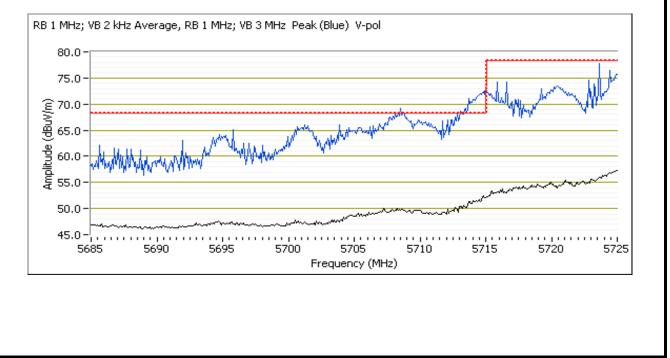
Channel: 151 - 5755MHz Tx Chain: 3Tx Mode: HT40 Data Rate: MCS0

5715 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 2	15.209	Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5714.930	53.3	V	54.0	-0.7	AVG	88	2.1	Note 1,3. POS; RB 1 MHz; VB: 2 kHz
5714.590	73.6	V	74.0	-0.4	PK	88	2.1	POS; RB 1 MHz; VB: 3 MHz
5714.680	51.5	Н	54.0	-2.5	AVG	157	1.5	Note 1,3. POS; RB 1 MHz; VB: 2 kHz
5714.510	70.3	Н	74.0	-3.7	PK	157	1.5	POS; RB 1 MHz; VB: 3 MHz

5715-5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5724.870	78.2	V	78.3	-0.1	PK	88	2.1	POS; RB 1 MHz; VB: 3 MHz
5724.970	75.9	Н	78.3	-2.4	PK	157	1.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba Netwo	rks		Job Number:	JD101099				
	D 4 D 4 D 4						T-	Log Number:	T101294
Model:	RAP-155						Proj	ect Manager:	Christine Krebill
Contact:	Rob Hasting	6					Project	t Coordinator:	-
Standard:	FCC 15.407							Class:	N/A
Channel:	159 - 5795M	Hz							
x Chain:	3Tx								
/lode:	HT40								
)ata Rate:	MCS0								
	Band Edge Si								
Frequency		Pol		15.209	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5860.100	53.0	V	54.0	-1.0	AVG	43	1.8		DS; RB 1 MHz; VB: 2 kl
5861.340	70.8	V	74.0	-3.2	PK	43	1.8	,	MHz; VB: 3 MHz
5860.780	51.3	Н	54.0	-2.7	AVG	139	2.1		DS; RB 1 MHz; VB: 2 kl
5863.070	70.1	Н	74.0	-3.9	PK	139	2.1	POS; RB 1	MHz; VB: 3 MHz
5 850-5860 Frequency MHz	MHz Band Ed Level dBμV/m	lge Signal I Pol v/h		ld Strength 5.E Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments	
5850.380	71.9	V	78.3	-6.4	PK	52	2.0	POS: RB 1	MHz; VB: 3 MHz
5852.490	72.1	Ĥ	78.3	-6.2	PK	139	2.1		MHz; VB: 3 MHz
(m)	80.0 - 75.0 - 70.0 - 65.0 - 60.0 - 55.0 - 50.0 -	W m	Mullin C		Peak (Blue) V	rn Wyrt	wmhuh/yh/	www.www.	/~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
					5 5870) 587			



	LE ENGINEER SUCCESS		
Client:	Aruba Networks	Job Number:	JD101099
Model	RAP-155	T-Log Number:	T101294
wouer.		Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

RSS-247 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.

General Test Configuration

TS

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, unless otherwise noted.

Ambient Conditions:

Temperature:	20-22 °C
Rel. Humidity:	32-35 %

Summary of Results

,							
Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
Scans on "c	enter" chann	el in all OFD	M modes to	determine the	e worst case mode.		
	157 -	10	10	Radiated Emissions,	FCC 15.209 / 15 E	51.5 dBµV/m @ 5360.1	
	а	5785MHz	18	18	1 - 40 GHz	FUU 15.2097 15 E	MHz (-2.5 dB)
1	n20	157 -	18	18	Radiated Emissions,	FCC 15.209 / 15 E	51.2 dBµV/m @ 5439.9
I NZU	5785MHz	10	10	1 - 40 GHz	FUU 15.2097 15 E	MHz (-2.8 dB)	
	. 10	151 -	10	18	Radiated Emissions,	FCC 15.209 / 15 E	51.4 dBµV/m @ 5439.9
n40		5755MHz	18	10	1 - 40 GHz	FUU 15.2097 15 E	MHz (-2.6 dB)
Measureme	nts on low a	nd high chani	nels in worst	-case OFDM	mode.		
		149 -	18	18	Radiated Emissions,	FCC 15.209 / 15 E	52.4 dBµV/m @ 5440.0
2	а	5745MHz	10	10	1 - 40 GHz	FUU 15.2097 15 E	MHz (-1.6 dB)
2	_	165 -	18	18	Radiated Emissions,	FCC 15.209 / 15 E	53.9 dBµV/m @ 5360.0
	а	5825MHz	10	IÕ	1 - 40 GHz	FUU 10.209/10 E	MHz (-0.1 dB)

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.



EMC Test Data

Client:	Aruba Networks	Job Number:	JD101099
Model	RAP-155	T-Log Number:	T101294
Model.	NAC-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time

Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

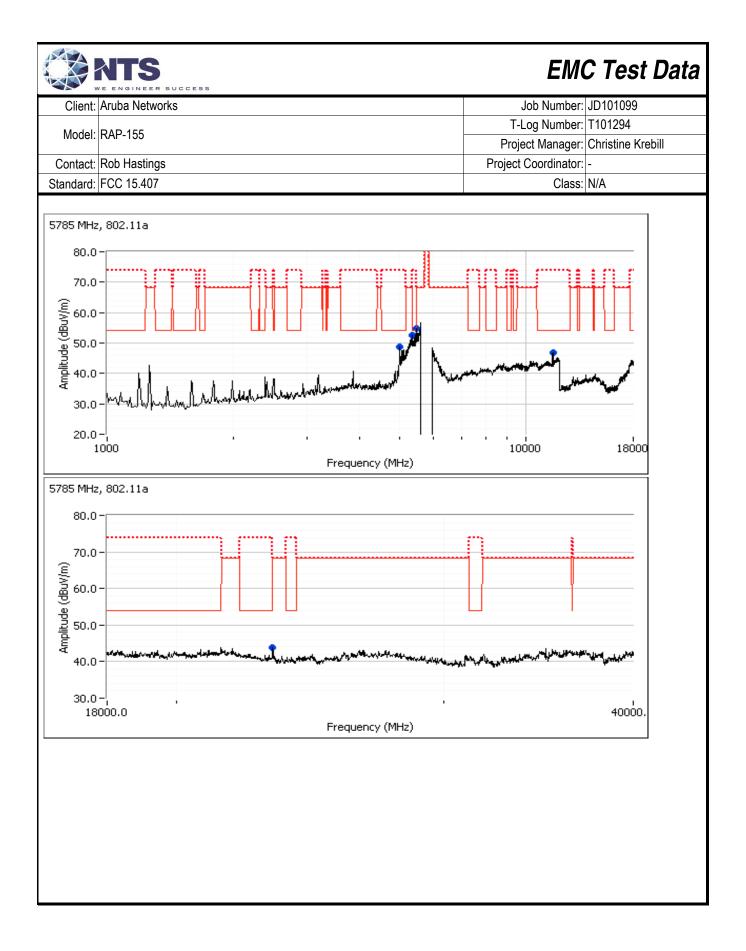
Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

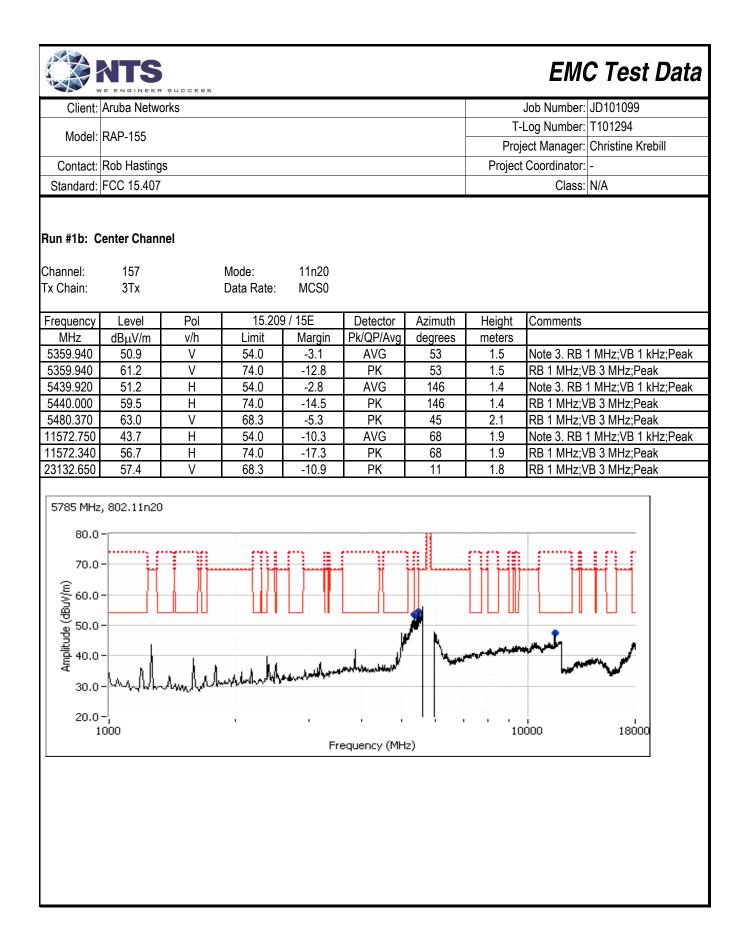
Sample Notes

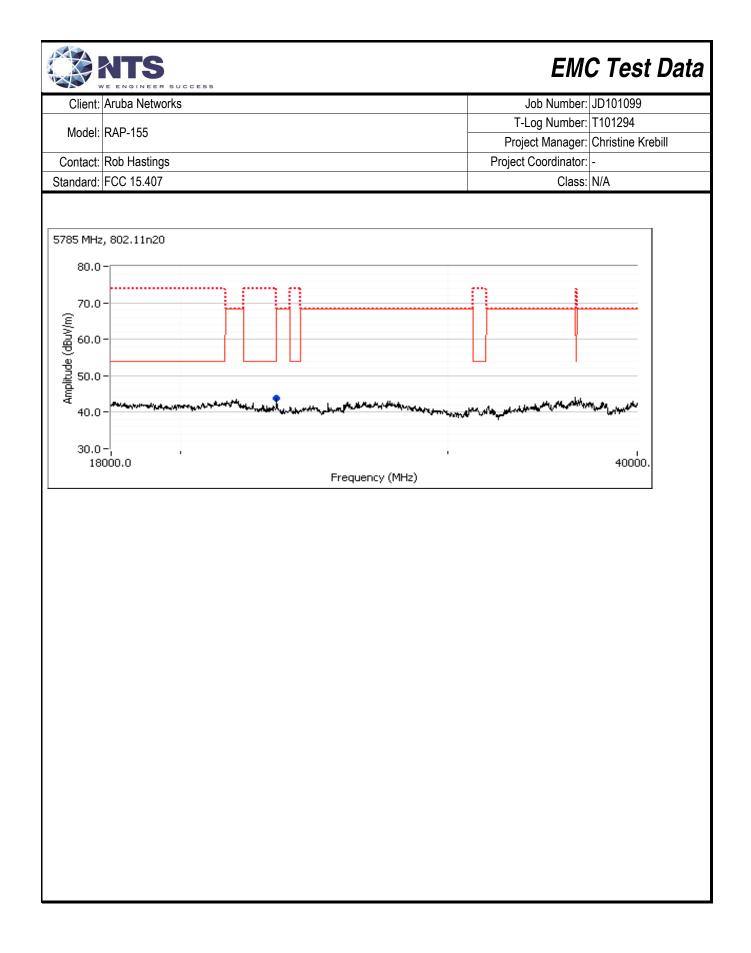
Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

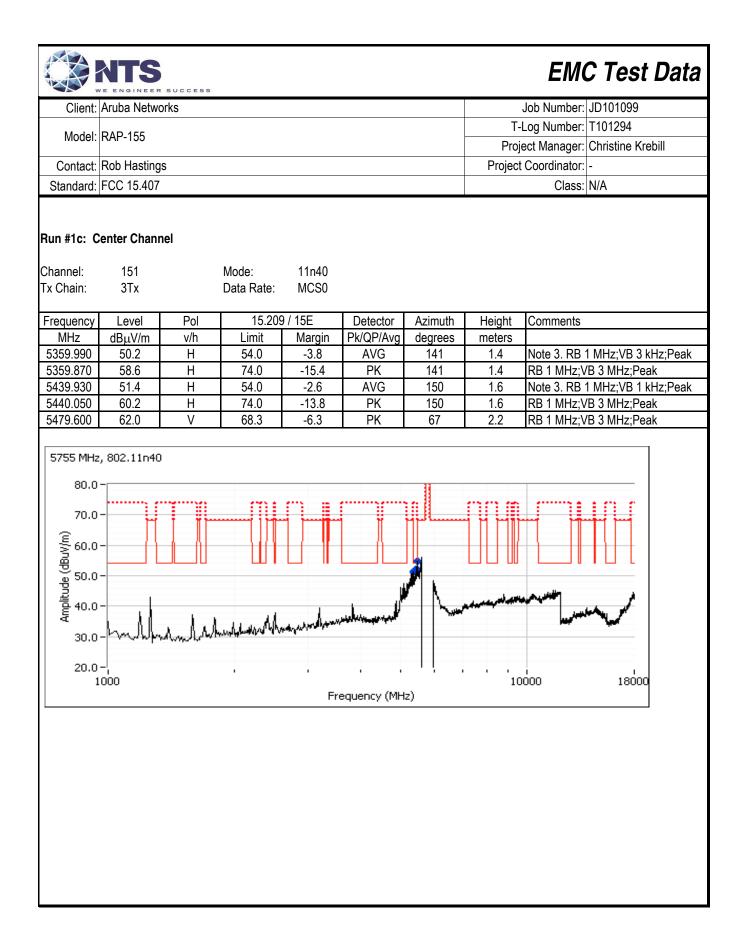
Measurement Specific Notes:

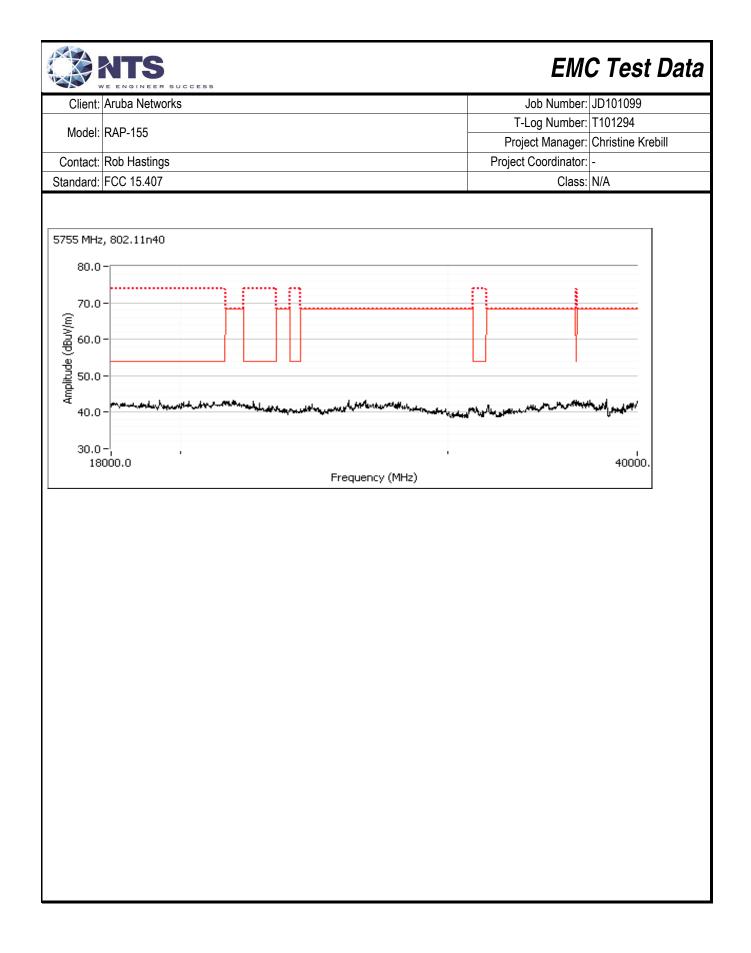
N ASP.	E ENGINEER	SUCCESS							C Test Dat
Client:	Aruba Netwo	orks						Job Number:	JD101099
Madalı							T-	Log Number:	T101294
woder:	RAP-155						Proj	ect Manager:	Christine Krebill
Contact:	Rob Hasting	S					Project	Coordinator:	-
Standard:	FCC 15.407							Class:	N/A
C Te	Date of Test:	3/28/2016 Deniz Demi	ons, 1,000 - 4 rci / R. Varela		Con	n the 5725-5 onfig. Used: fig Change: UT Voltage:	1 None	Ind	
un #1a: Ce	enter Chann	el							
hannel:	157		Mode:	а					
x Chain:	3Tx		Data Rate:	6Mbs					
requency	Level	Pol	15.209) / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	Comments	
986.770	40.0	V	54.0	-14.0	AVG	41	1.9	Note 3 RB [·]	1 MHz;VB 1 kHz;Pea
1992.810	58.2	V	74.0	-15.8	PK	41	1.9		B 3 MHz;Peak
5360.130	51.5	V	54.0	-2.5	AVG	42	2.0		1 MHz;VB 1 kHz;Pea
5360.170	62.3	V	74.0	-11.7	PK	42	2.0		B 3 MHz;Peak
5440.050	51.1	H	54.0	-2.9	AVG	148	1.4		1 MHz;VB 1 kHz;Pea
5440.160	59.9	Н	74.0	-14.1	PK	148	1.4		'B 3 MHz;Peak
5480.480	61.0	V	68.3	-7.3	PK	84	1.9		B 3 MHz;Peak
1570.820	44.5	Н	54.0	-9.5	AVG	65	2.0	Note 3. RB	1 MHz;VB 1 kHz;Pea
1570.860	57.8	Н	74.0	-16.2	PK	65	2.0	RB 1 MHz;V	'B 3 MHz;Peak
3136.170	57.8	V	68.3	-10.5	PK	19	1.8	RB 1 MHz;V	'B 3 MHz;Peak

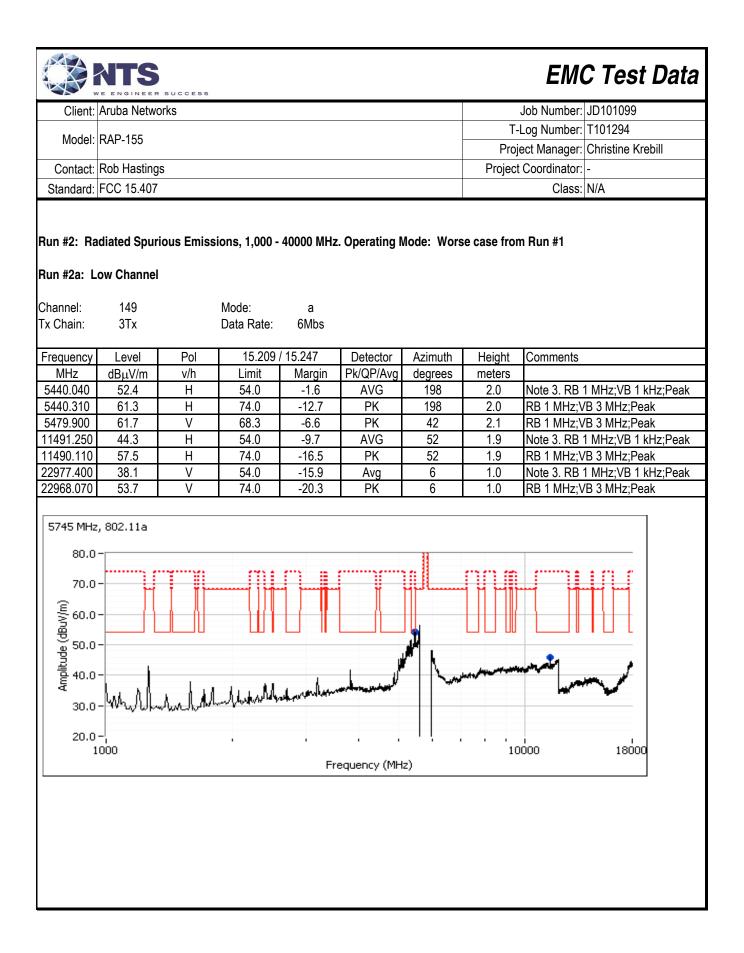


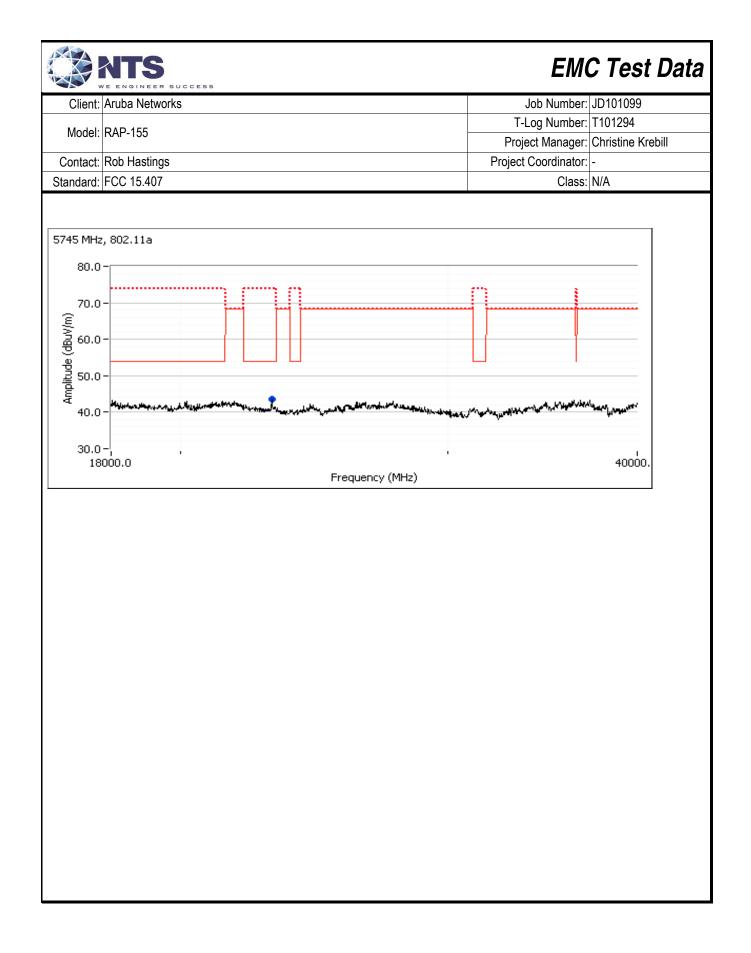


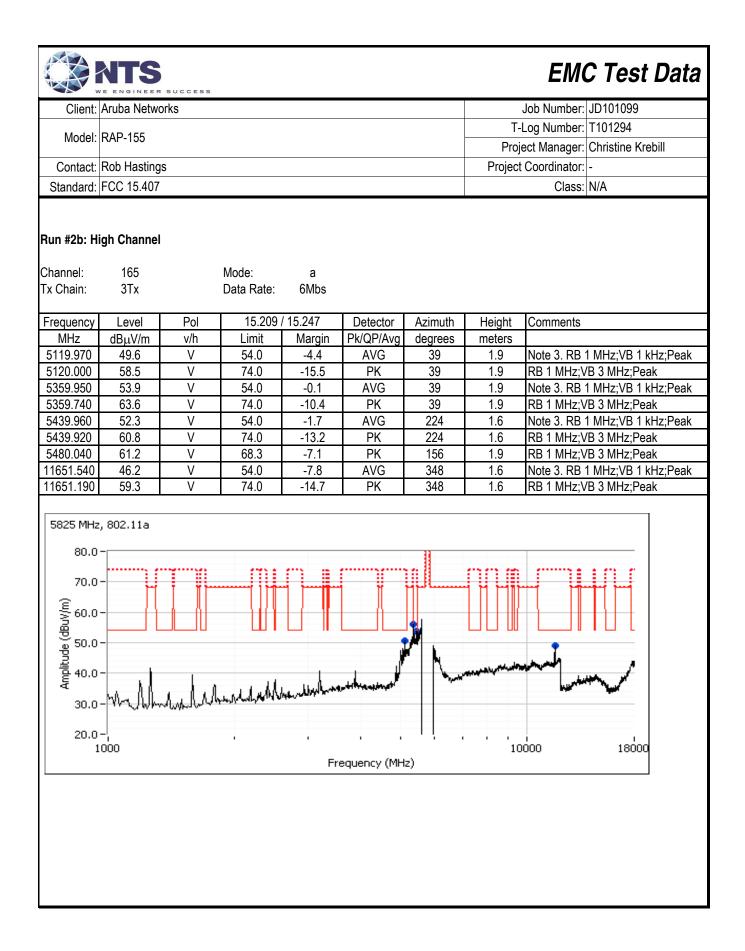


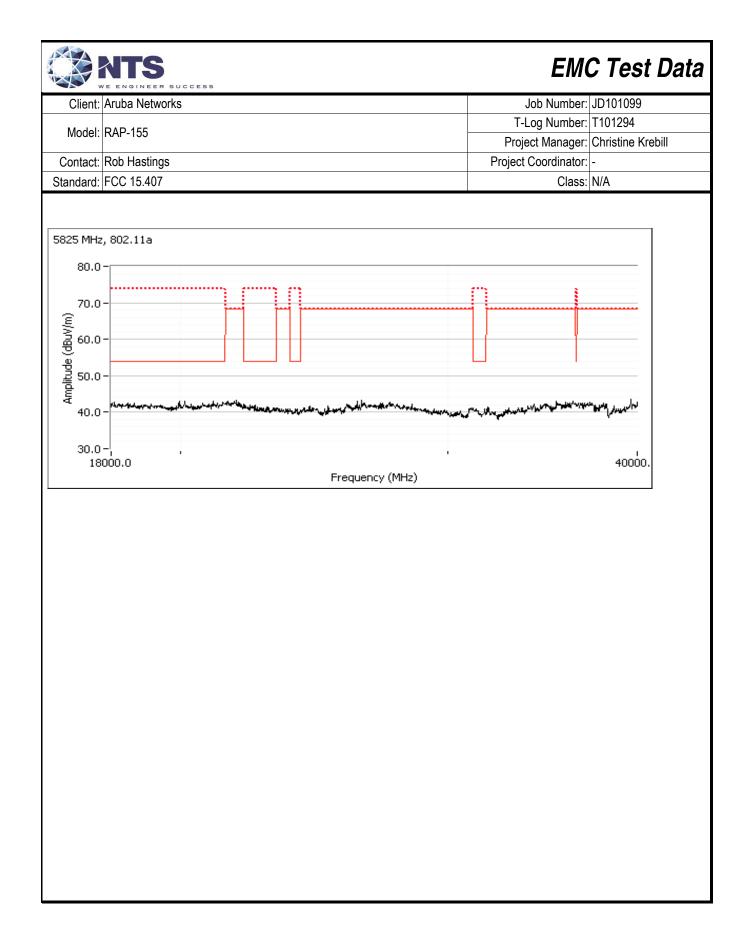












Client:	Aruba Networks	Job Number:	JD101099
Model: RAP-155	DAD 155	T-Log Number:	T101294
wouer.	NAC-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII) **Antenna Port Measurements** Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

TS

UCCESS

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

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5150 - 5250MHz	15.407(a) (1) (ii)	Pass	a: 24.3 dBm (267.8 mW) n20: 24.3 dBm (266.4 mW) n40: 22.6 dBm (183.9 mW)
1	PSD, 5150 - 5250MHz	15.407(a) (1) (ii)	Pass	a: 13.2 dBm/MHz n20: 13.0 dBm/MHz n40: 8.5 dBm/MHz
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 16.9 MHz n20: 18.0 MHz n40: 36.3 MHz
2	Antenna Conducted - Out of Band Spurious	15.407(b) -27dBm/MHz	performed radiated	All emissions below the -27dBm/MHz limit

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.

°C

Ambient Conditions:

Temperature:	22.3 °C
Rel. Humidity:	36 %



	We engineer success							
Client:	Aruba Networks	Job Number:	JD101099					
Madal	RAP-155	T-Log Number:	T101294					
woder.		Project Manager:	Christine Krebill					
Contact:	Rob Hastings	Project Coordinator:	-					
Standard:	FCC 15.407	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.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

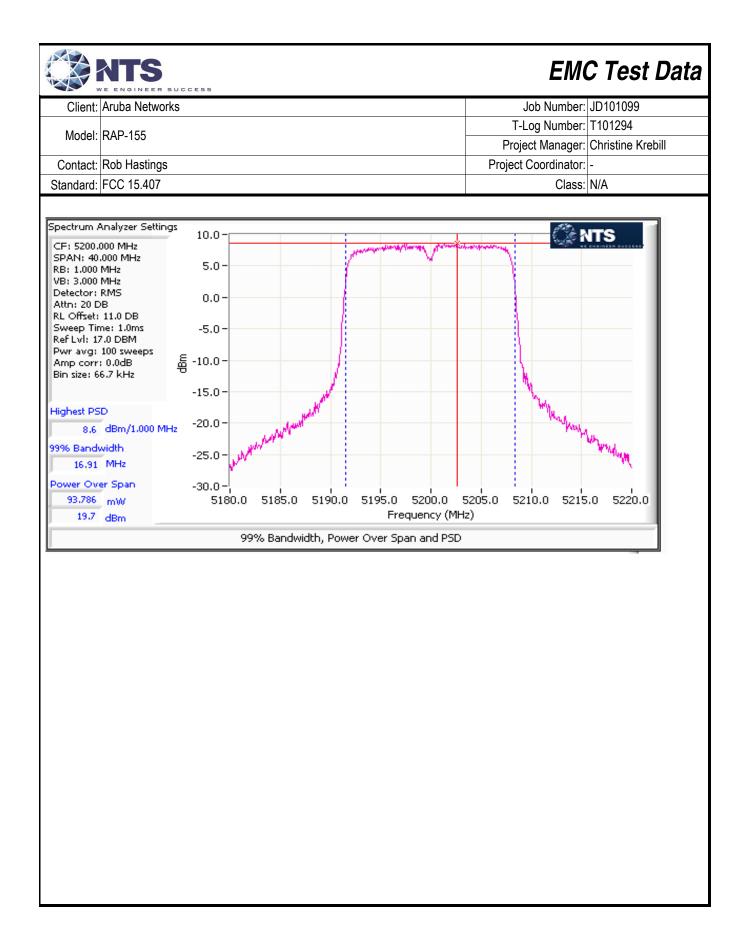
Sample Notes

Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

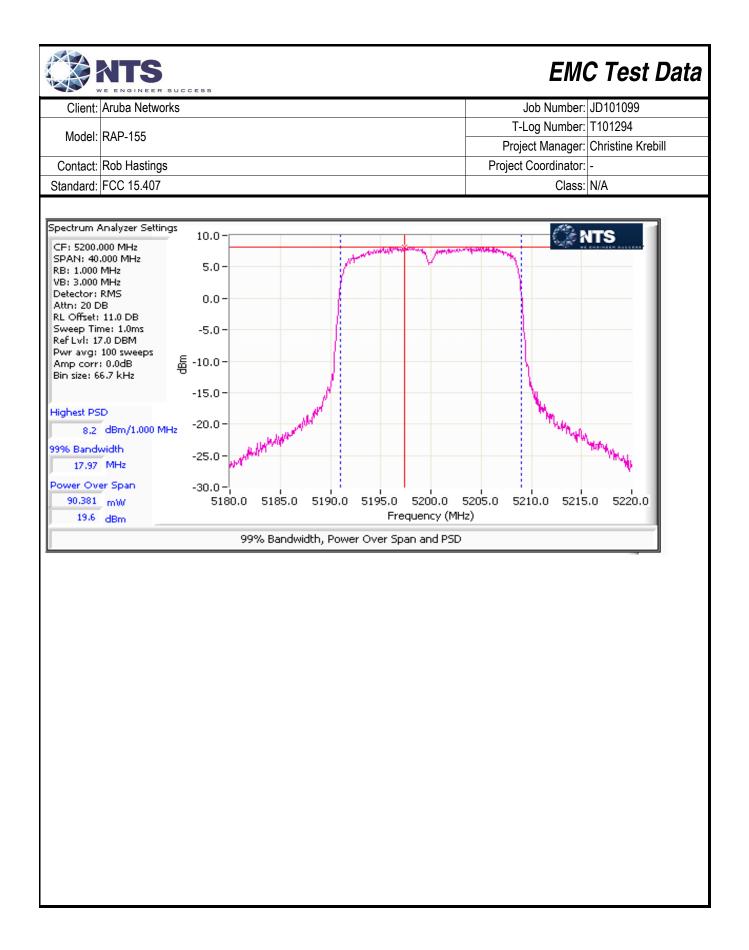
	NTS	SUCCESS						EMO	C Test	Data
Client:	Aruba Netw	orks						Job Number:	JD101099	
								Log Number:		
Model:	RAP-155							ect Manager:		ebill
Contact:	Rob Hasting	s						Coordinator:		
	FCC 15.407						,	Class:		
[Te	Date of Test:	t put Power 3/29/2016 0 Rafael Vare FT Lab #4B	:00	Spectral Der	Con Con	Systems Config. Used: nfig Change: EUT Voltage:	None			
Note 1:	OBW, # of p OBW. The cycle. (meti	oints in swee	ep ≥ 2*span/ its were adju ANSI C63.10	RBW, auto s sted by addii)	weep, RMS on the second seco	analyzer (sed detector, pow above) dB.	er averaging	on,and pow	er integratior	n over the
NOLE Z.						for the anten	na qain as t	he maximum	eirp allowed	is
Note 3:	10dBm/MHz PSD (calcul	z. The limits a	are also corre e measured p	ected for insta bower divided	ances where d by the mea	the highest r sured 99% ba	neasured va	lue of the PS	D exceeds t	he average
Note 4:	times OBW.					ween 1-5 % (
Note 5:	(in linear ter mode of the the limits is chain. If the the EIRP is	ms). The an MIMO devic the highest g signals are the product c	tenna gain u e. If the sigr ain of the inc coherent the of the effectiv	sed to deterr nals on the no dividual chain n the effectiv re gain and to	mine the EIR on-coherent l ns and the EI ve antenna ga otal power.	alculated from P and limits f between the t RP is the sun ain is the sun	or PSD/Outp transmit cha n of the prod n (in linear te	out power dep ins then the lucts of gain a rms) of the g	pends on the gain used to and power or ains for each	operating determine n each
Note 6:	Plots are no	t corrected to	or duty cycle.	Any duty cy	ycie correctio	n is applied i	n the calcula	ition of total p	ower.	
Antenna Ga	ain Informat	ion								
Freq		Antenna Gair 2	n (dBi) / Chai 3	n 4	BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
5150-5250	3	3	3		No	Yes	Yes	No	3.00	7.80
5250-5350					No	Yes	Yes	No		
5470-5725					No	Yes	Yes	No		
5725-5825	3	3	3		No	Yes	Yes	No	3.00	7.80

	NTS				EM	C Test Data
Client:	Aruba Networks				Job Number	JD101099
					T-Log Number:	
Model:	RAP-155				-	Christine Krebill
Contact:	Rob Hastings				Project Coordinator	
	FCC 15.407				Class	
	that support CDD mod Min # of spatial streams: Max # of spatial streams:	es 1 3				
Notes:	CDD = Cyclic Delay Dive cross polarized.	rsity (or Cycli	c Shift Dive	ersity) modes supported	data rates supported for mu , Sectorized / Xpol = antenr	has are sectorized or
Notes:		•		•	(PSD) = total gain for PSD value for power could be dif	
Notes:	Array gain for power/psd For systems with Beamfo					
Notes:	calculated based on bear Option 2: Antennas are p	nforming crite paired for bea h beamformir	eria. mforming,	and the pairs are config	ted from cyclic delay table ured to use the cyclic delay array gain associated with C	v diversity of 802.11; the
FCC UNII-1	l imite	Pwr	PSD			
	Outdoor AP	30	17	7		
X	Indoor AP	30	17	-		
	Station (e.g. Client)	24	11			
	Outdoor AP (>30° Elv.)	21	-]		

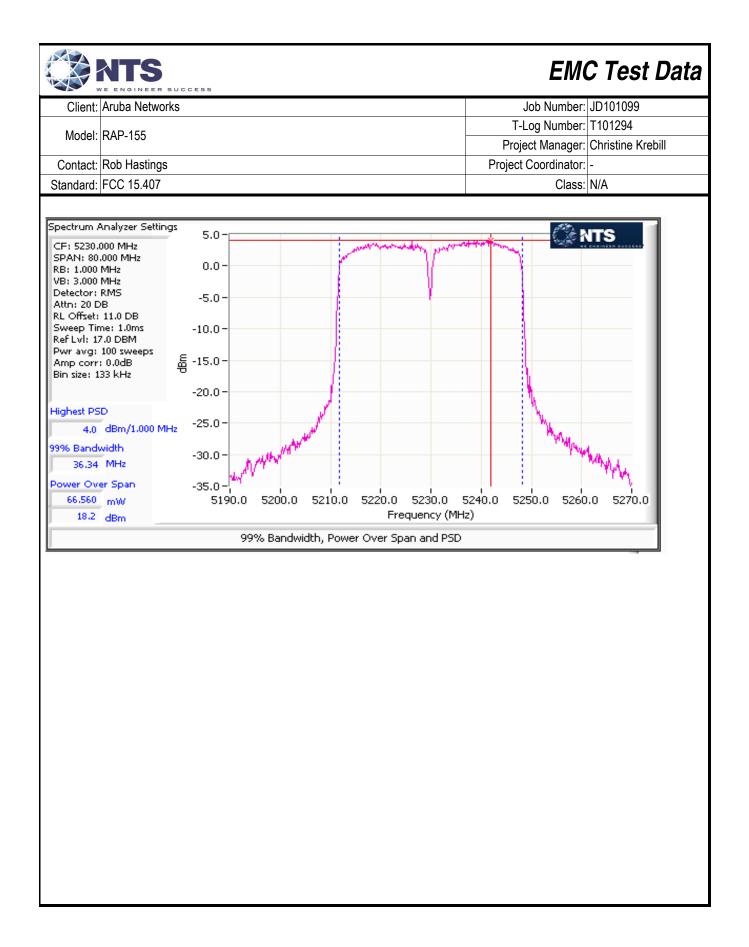
	ATS	SUCCESS						EM	C Test	Data	
Client:	Aruba Netwo	orks						Job Number:	JD101099		
Model:	RAP-155						T-L	og Number:	T101294		
				Project Manager: Christine Krebill			bill				
	act: Rob Hastings Project Coordina										
Standard:	FCC 15.407							Class:	N/A		
/IMO Devid Mode:	ce - 5150-52 11a	50 MHz Ban	d - FCC				Max	FIRP (mW).	534.33125		
Frequency		Software	26dB BW	Duty Cycle	Power ¹	Total	Power		Max Power		
(MHz)	Chain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Result	
	1				15.6		-	-			
5180	3	14		97	15.0	99.8	20.0	30.0		Pass	
	4				14.0						
	2				14.6 19.7				4 F		
	3	10			19.3	007.0				_	
5200	4	18		97		267.8	24.3	30.0	0.268	Pass	
	2				19.1						
	1				16.6						
5240	3	16		97	17.3	143.5	21.6	30.0		Pass	
5240	3 4 2	16		97	17.3 16.0	143.5	21.6	30.0		Pass	
150-5250 I Mode:	4 2 PSD - FCC 11a		99% BW						Limit		
i150-5250 I	4 2 PSD - FCC		99% BW (MHz)	97 Duty Cycle %	16.0		21.6 PSD ¹ dBm/MHz	FCC	Limit /MHz	Pass	
i 150-5250 I Mode: Frequency	4 2 PSD - FCC 11a Chain 1 3 4 2	Software		Duty Cycle	16.0 PSD	Total	PSD ¹	FCC dBm			
5 150-5250 I Mode: Frequency (MHz)	4 2 PSD - FCC 11a Chain 1 3 4	Software Setting		Duty Cycle %	16.0 PSD dBm/MHz 4.6 4.1	Total mW/MHz	PSD ¹ dBm/MHz	FCC dBm 15	/MHz	Result	



Client:	Aruba Netwo	orks					,	Job Number:	JD101099	
Madalı	RAP-155						T-L	og Number:	T101294	
woder.	KAP-100			Project Manager: Christine K		Christine Kre	bill			
Contact:	Rob Hasting	IS			Project Coordinator: -					
Standard:	FCC 15.407							Class:	N/A	
IMO Devid Mode:	ce - 5150-52 n20	50 MHz Ban	d - FCC				Мах		531.53788	
requency		Software	26dB BW	Duty Cycle	Power ¹	Total	Power		Max Power	
(MHz)	Chain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Resul
()	1				15.2				. ,	
5180	3	14		96	14.8	95.3	19.8	30.0		Pass
	4				44.5					
	2				14.5 19.6					
5000	3	40		00	19.3	000.4	04.0	20.0	0.000	
5200	4	18		96		266.4	24.3	30.0	0.266	Pass
	2				19.0					
					100					
	1				16.6					
5240	3	16		96	16.6	149.6	21.7	30.0		Pass
5240		16		96		149.6	21.7	30.0		Pass
50-5250 F Mode:	3 4	16 Software Setting	99% BW (MHz)	96 Duty Cycle %	17.5		21.7 PSD ¹ dBm/MHz	FCC	Limit /MHz	Pass
50-5250 F Mode: requency	3 4 2 PSD - FCC n20 Chain 1 3 4	Software		Duty Cycle	17.5 16.2 PSD dBm/MHz 3.8 3.5	Total	PSD ¹	FCC dBm		Resul
50-5250 F Mode: requency (MHz)	3 4 2 PSD - FCC n20 Chain 1 3	Software Setting		Duty Cycle %	17.5 16.2 PSD dBm/MHz 3.8	Total mW/MHz	PSD ¹ dBm/MHz	FCC dBm 15	/MHz	



Client	NTS	SUCCESS						EM	C Test	Data
	Aruba Netwo							Job Number:	JD101099	
Madal							T-L	og Number:	T101294	
Wodel:	RAP-155					Proje	ect Manager:	Christine Kre	bill	
Contact:	Rob Hasting	IS	Project	Coordinator: -						
Standard:	FCC 15.407							Class:	N/A	
MIMO Devi Mode:	ce - 5150-52 n40	50 MHz Ban	d - FCC				Max	FIRP (m\\/).	366.92874	
Frequency		Software	26dB BW	Duty Cycle	Power	Total F	Power ¹	FCC Limit	Max Power	
(MHz)	Chain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Result
	1				13.6		-			
5190	3	12		93	12.4	64.8	18.1	30.0		Pass
	4				13.0					
	1				18.2				0.184	
5230	3	16		93	17.8	183.9	22.6	30.0		Pass
5250	4	10		90		105.9	22.0	30.0		F 855
	2				16.5					
	PSD - FCC									
5150-5250 Mode: Frequency (MHz)	n40 Chain	Software Setting	99% BW (MHz)	Duty Cycle	PSD dBm/MHz	Total mW/MHz	PSD ¹ dBm/MHz		Limit /MHz	Result
Mode: Frequency	n40						_	dBm		Result Pass



Client:	Aruba Networks	Job Number:	JD101099
Madal	Model: RAP-155	T-Log Number:	T101294
wouer.	NAC-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

RSS-247 (LELAN) and FCC 15.407(UNII) Antenna Port Measurements Power, PSD, Bandwidth and Spurious Emissions

Test Specific Details

TS

UCCESS

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

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5725 - 5850MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 22.6 dBm (183.7 mW) n20: 22.3 dBm (170.0 mW) n40: 20.9 dBm (122.7 mW)
1	PSD, 5725 - 5850MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 11.6 dBm/MHz n20: 11.1 dBm/MHz n40: 6.7 dBm/MHz
1	99% Bandwidth	RSS-GEN (Information only)	N/A	a: 17.2 MHz n20: 18.1 MHz n40: 36.7 MHz
2	Antenna Conducted - Out of Band Spurious	15.407(b) -27dBm/MHz	performed radiated	All emissions below the -27dBm/MHz limit

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:	22.3 °C
Rel. Humidity:	36 %



	WE ENGINEER SUCCESS							
Client:	Aruba Networks	Job Number:	JD101099					
Modol	RAP-155	T-Log Number:	T101294					
woder.		Project Manager:	Christine Krebill					
Contact:	Rob Hastings	Project Coordinator:	-					
Standard:	FCC 15.407	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.

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033 D01

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

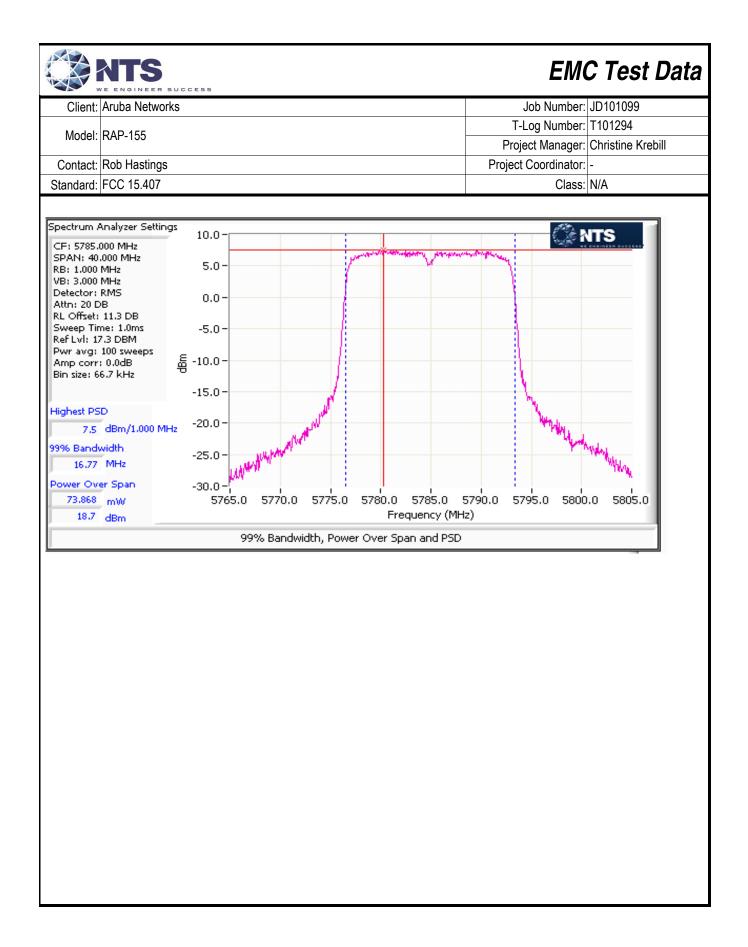
Sample Notes

Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

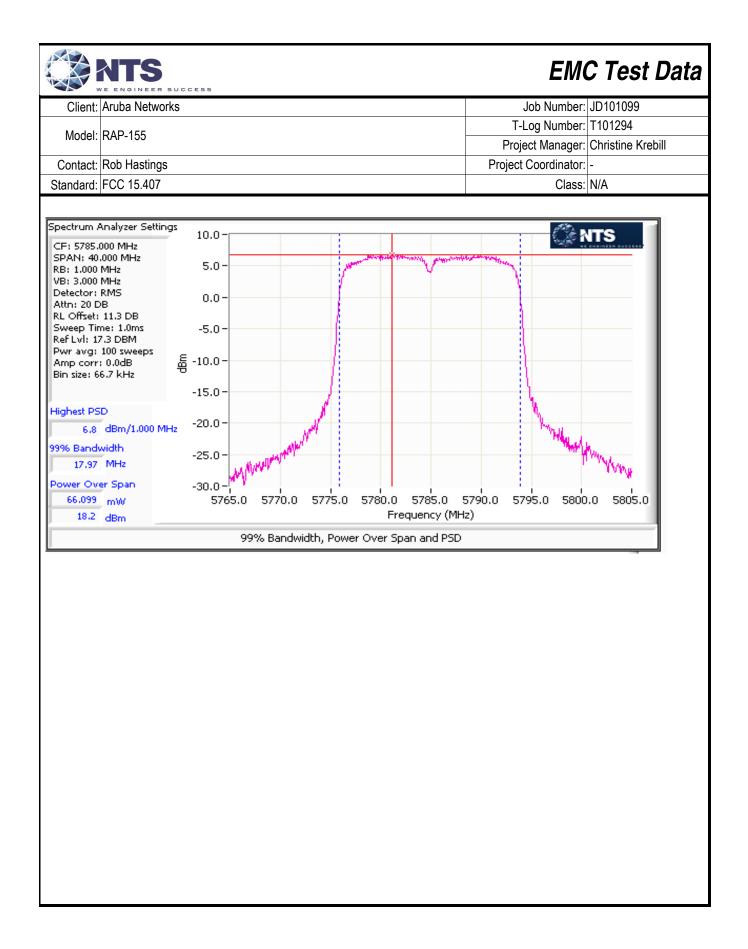
		SUCCESS						ЕМС	C Test	Data
Client:	Aruba Netw	orks						Job Number:	JD101099	
Madalı							T-	Log Number:	T101294	
woder.	RAP-155					-	Proj	ect Manager:	Christine Kr	ebill
Contact:	Rob Hasting	js					Project	Coordinator:	-	
Standard:	FCC 15.407	,						Class:	N/A	
[Te	Date of Test:	tput Power 3/29 & 3/30/ Rafael Vare FT Lab #4B	2016	Spectral Der) Co) Systems Config. Used: onfig Change: EUT Voltage:	None			
Note 1:	OBW, # of p OBW. The cycle. (metl	oints in swee	ep ≥ 2*span/ its were adju ANSI C63.10	RBW, auto s sted by addii)	weep, RMS ng (see table	analyzer (see detector, pow e above) dB.	er averagin	g on, and pow	er integratior	n over the
						tween 1-5 % c	of OBW and	I VB ≥ 3*RB, S	Span betwee	n 1.5 and 5
Note 3:	times OBW.					alculated from				
Note 4:	(in linear ter mode of the the limits is chain. If the the EIRP is	ms). The an MIMO devic the highest g signals are the product c	tenna gain u e. If the sigr ain of the inc coherent the of the effectiv	sed to deterr hals on the no dividual chain n the effectiv re gain and to	nine the EIF on-coherent is and the E re antenna g otal power.	RP and limits for between the t IRP is the sum ain is the sum	or PSD/Out ransmit cha n of the proo (in linear te	put power dep ains then the g ducts of gain a erms) of the g	ends on the gain used to and power or ains for each	operating determine n each
Note 6:	Plots are no	t corrected for	or duty cycle.	Any duty cy	cle correction	on is applied ir	n the calcula	ation of total p	ower.	
Antonno Cr	ain Informat	ion								
		Antenna Gair	n (dBi) / Chai	n		MultiChain		Sectorized	Dir G	Dir G
Freq	1	2	3	4	BF	Legacy	CDD	/ Xpol	(PWR)	(PSD)
5150-5250	3	3	3		No	Yes	Yes	No	3.00	7.8
5250-5350					No	Yes	Yes	No		
5470-5725					No	Yes	Yes	No		
5725-5825	3	3	3		No	Yes	Yes	No	3.00	7.8

	NTS	EM	C Test Data
Client:	Aruba Networks	Job Number:	JD101099
		T-Log Number:	T101294
Model:	RAP-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A
	that support CDD modes Min # of spatial streams: 1 Max # of spatial streams: 3		
Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy dat CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, S cross polarized.	ectorized / Xpol = antenn	as are sectorized or
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PS FCC KDB 662911. Depending on the modes supported, the Array Gain value.	, •	
Notes:	Array gain for power/psd calculated per KDB 662911 D01.		
Notes:	For systems with Beamforming and CDD, choose one the following options Option 1: Delays are optimized for beamforming, rather than being selected calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured array gain associated with beamforming with 2 antennas (3dB), and the arra (3dB for PSD and 0 dB for power)	d from cyclic delay table o ed to use the cyclic delay	diversity of 802.11; the

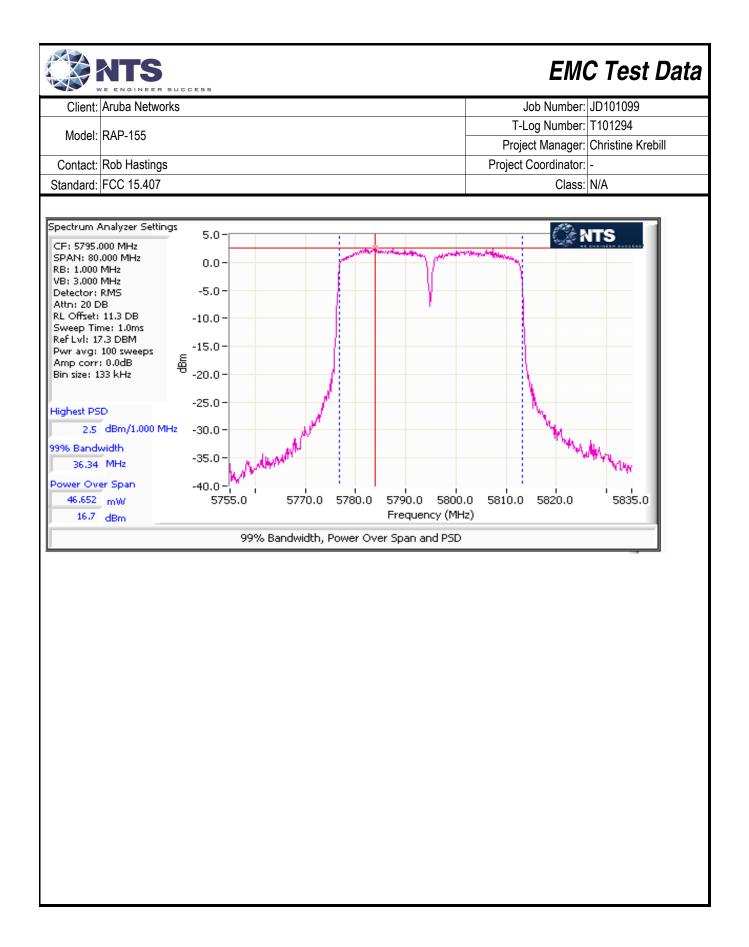
		SUCCESS						EM	C Test	Data
Client:	Aruba Netwo	orks						Job Number:		
Model:	RAP-155							og Number:		
					Project Manager: Christine K Project Coordinator: -			bill		
	Rob Hasting						Project			
Standard:	FCC 15.407							Class:	N/A	
MIMO Devid Mode:	ce - 5725-58 11a	50 MHz Ban	d - FCC/IC				Мах	EIRP (mW):	366.5	
Frequency		Software	99% BW	Duty Cycle	Power	Total I	Power ¹	Limit	Max Power	D
(MHz)	Chain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	Result
	1				13.0					
5745	3	13.5	16.8	97	14.1	63.4	18.0	30.0		Pass
	2				12.0					
	1				17.5					
5785	3	18.0	16.8	97	18.7	183.7	22.6	30.0	0.184	Pass
0100	4	10.0	10.0		40.0	100.1	22.0	00.0	0.101	1 400
	2				16.8 14.4				-	
					15.6					_
5825	3 4	15.5	16.8	97	15.6	88.9	19.5	30.0		Pass
5825	3	15.5	16.8	97	15.6	88.9	19.5	30.0		Pass
725-5850 F Mode:	3 4		16.8 99% BW (MHz)	97 Duty Cycle %	13.5 PSD dBm/MHz		19.5 PSD ¹ dBm/MHz	FCC Limit	IC Limit 00kHz	
725-5850 F Mode: Frequency	3 4 2 PSD - FCC/IC 11a Chain 1 3 4	Software	99% BW	Duty Cycle	13.5 PSD dBm/MHz 2.2 3.0	Total	PSD ¹	FCC Limit		Pass Result Pass
725-5850 F Mode: Frequency (MHz)	3 4 2 PSD - FCC/IO 11a Chain 1 3	Software Setting	99% BW	Duty Cycle %	13.5 PSD dBm/MHz 2.2	Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm/5	00kHz	Result



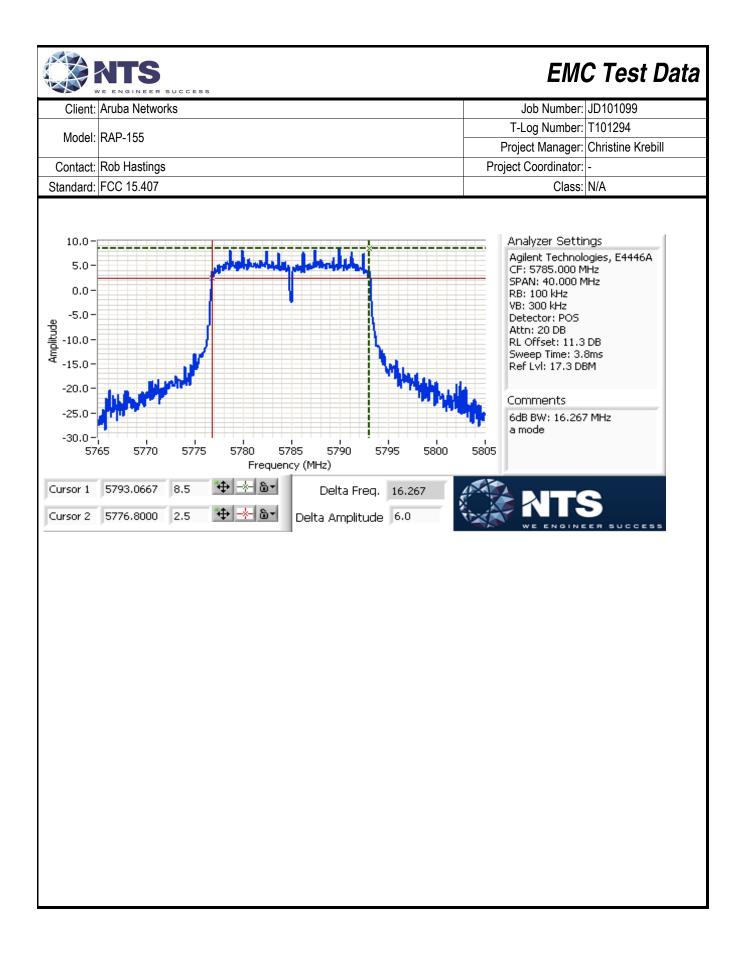
Client:	Aruba Netwo	orks						Job Number:		
Model:	RAP-155							og Number:		
	.						-		Christine Kre	bill
	Rob Hasting						Project	Coordinator:		
Standard:	FCC 15.407							Class:	N/A	
IMO Devi	ce - 5725-58	50 MHz Ban	d - FCC/IC							
Mode:	n20						Max	EIRP (mW):		
requency	Chain	Software	99% BW	Duty Cycle	Power	Total I	Power ¹	FCC Limit	Max Power	Resu
(MHz)		Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	1,000
	1				12.6					
5745	3	13.5	18.0	96	13.6	59.0	17.7	30.0		Pas
	4				11.9					
	1				17.2					
5785	3	18.0	18.0	96	18.2	170.0	22.3	30.0	0.170	Pas
5705	4	10.0	10.0	90		170.0	22.3	30.0	0.170	Pas
	2				16.5					
	1				13.3					
5825	1 3	14.5	17.9	96		68.2	18.3	30.0		Pas
5825	1	14.5	17.9	96	13.3	68.2	18.3	30.0		Pass
725-5850 Mode:	1 3 4 2 MHz PSD - F n20	cc/ic			13.3 14.4 12.2				IC Limit	
725-5850	1 3 4 2 MHz PSD - F		17.9 99% BW (MHz)	Duty Cycle	13.3 14.4 12.2 PSD	Total	PSD ¹	FCC Limit	IC Limit /MHz	Pass
725-5850 I <u>Mode:</u> requency	1 3 4 2 MHz PSD - F n20	CC/IC Software	99% BW		13.3 14.4 12.2			FCC Limit		
725-5850 I Mode: requency (MHz)	1 3 4 2 MHz PSD - F n20 Chain 1 3	CC/IC Software Setting	99% BW	Duty Cycle %	13.3 14.4 12.2 PSD dBm/MHz	Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm	/MHz	Resu
725-5850 I <u>Mode:</u> requency	1 3 4 2 MHz PSD - F n20 Chain 1 3 4	CC/IC Software	99% BW	Duty Cycle	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3	Total	PSD ¹	FCC Limit		Resu
725-5850 I Mode: requency (MHz)	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2	CC/IC Software Setting	99% BW	Duty Cycle %	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7	Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm	/MHz	
725-5850 I Mode: requency (MHz) 5745	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2 1	CC/IC Software Setting 13.5	99% BW	Duty Cycle % 96	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7 6.1	Total mW/MHz 4.5	PSD ¹ dBm/MHz 6.5	FCC Limit dBm 28.2	/MHz 28.2	Resu Pas
725-5850 I Mode: requency (MHz)	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2	CC/IC Software Setting	99% BW	Duty Cycle %	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7	Total mW/MHz	PSD ¹ dBm/MHz	FCC Limit dBm	/MHz	Resu
725-5850 I Mode: requency (MHz) 5745	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2 1 3	CC/IC Software Setting 13.5	99% BW	Duty Cycle % 96	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7 6.1	Total mW/MHz 4.5	PSD ¹ dBm/MHz 6.5	FCC Limit dBm 28.2	/MHz 28.2	Resu Pas
725-5850 I Mode: requency (MHz) 5745	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2 1 3 4 2 1 3 4 2 1	CC/IC Software Setting 13.5	99% BW	Duty Cycle % 96	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7 6.1 6.8 5.4 2.3	Total mW/MHz 4.5	PSD ¹ dBm/MHz 6.5	FCC Limit dBm 28.2	/MHz 28.2	Resu Pas
725-5850 I Mode: requency (MHz) 5745 5785	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2 1 3 4 2 1 3 4 2 1 3 3	CC/IC Software Setting 13.5 18.0	99% BW	Duty Cycle % 96 96	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7 6.1 6.8 0.7 6.1 6.8	Total mW/MHz 4.5 12.8	PSD ¹ dBm/MHz 6.5 11.1	FCC Limit dBm 28.2 28.2	/MHz 28.2 28.2	Resu Pas Pas
725-5850 I Mode: requency (MHz) 5745	1 3 4 2 MHz PSD - F n20 Chain 1 3 4 2 1 3 4 2 1 3 4 2 1	CC/IC Software Setting 13.5	99% BW	Duty Cycle % 96	13.3 14.4 12.2 PSD dBm/MHz 1.7 2.3 0.7 6.1 6.8 5.4 2.3	Total mW/MHz 4.5	PSD ¹ dBm/MHz 6.5	FCC Limit dBm 28.2	/MHz 28.2	Resu Pas

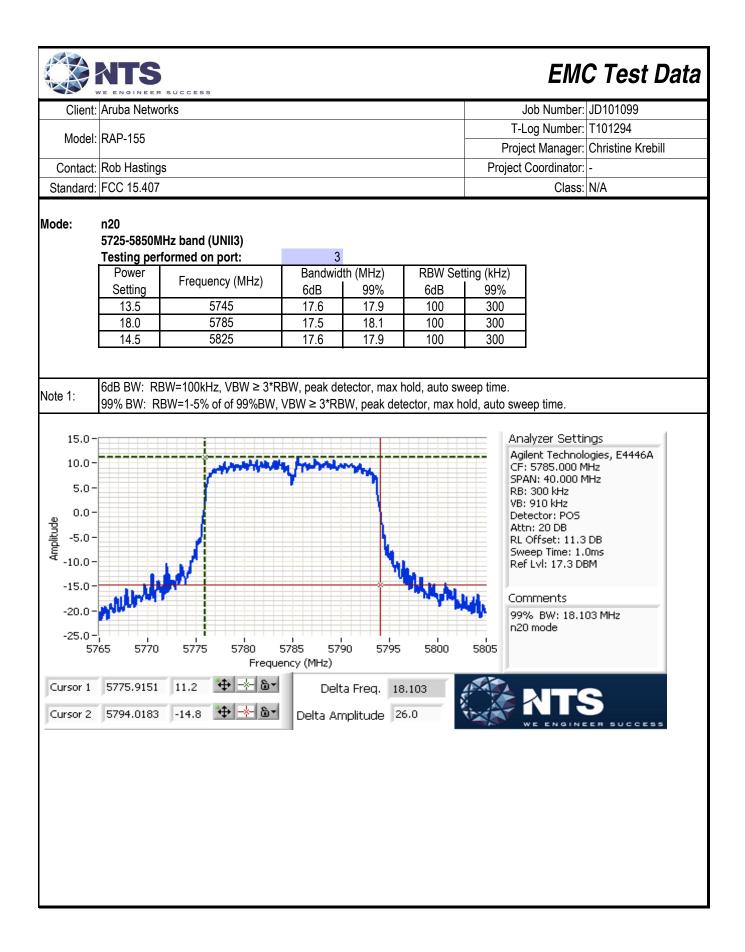


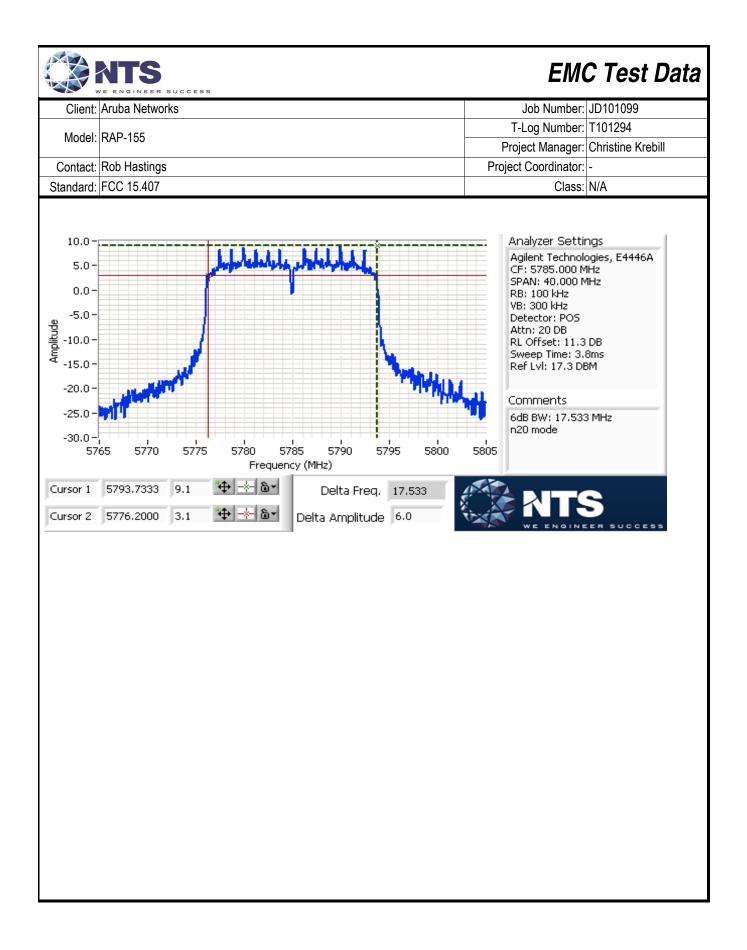
Client.	Aruba Netwo	orks						Job Number:		
Model:	RAP-155			T-Log Number: T101294						
<u> </u>				Project Manager: Christine Krebill Project Coordinator: -						
	Rob Hasting						Project			
Standard:	FCC 15.407							Class:	N/A	
IIMO Devi Mode:	ce - 5725-58 n40	50 MHz Ban	d - FCC/IC				Max	EIRP (mW):	244.8	
requency	Chain	Software	99% BW	Duty Cycle	Power	Total I	Power ¹	FCC Limit	Max Power	Resu
(MHz)	Onain	Setting	(MHz)	%	dBm	mW	dBm	dBm	(W)	i tesu
5755	1 3 4	12.5	36.3	93	11.9 12.9	51.8	17.1	30.0		Pass
	2				11.2				0.123	
	1				15.7					
5795	3	16.0	36.3	93	16.7	122.7	20.9	30.0		Pase
	3 4 2			93	<u>16.7</u> 14.8	122.7	20.9	30.0		Pass
IIMO Devie Mode:	3 4			93 Duty Cycle %			20.9 PSD ¹ dBm/MHz	FCC Limit	IC Limit /MHz	
IIMO Devie Mode: Frequency	3 4 2 ce 5725-5850 n40) MHz PSD - Software	• FCC/IC 99% BW	Duty Cycle	14.8 PSD	Total	PSD ¹	FCC Limit		Pass

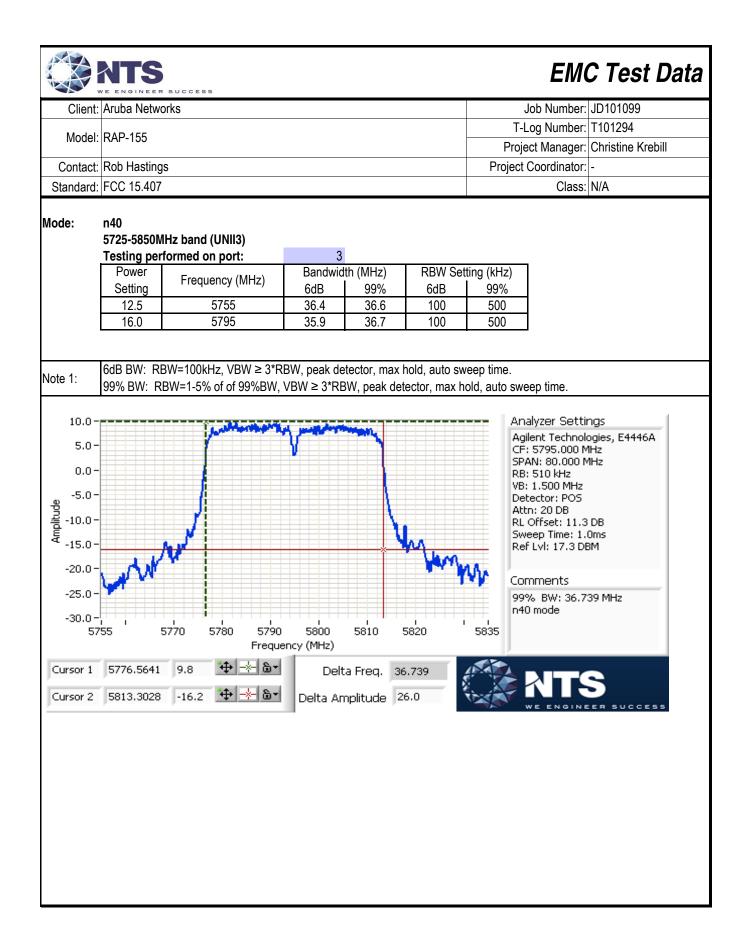


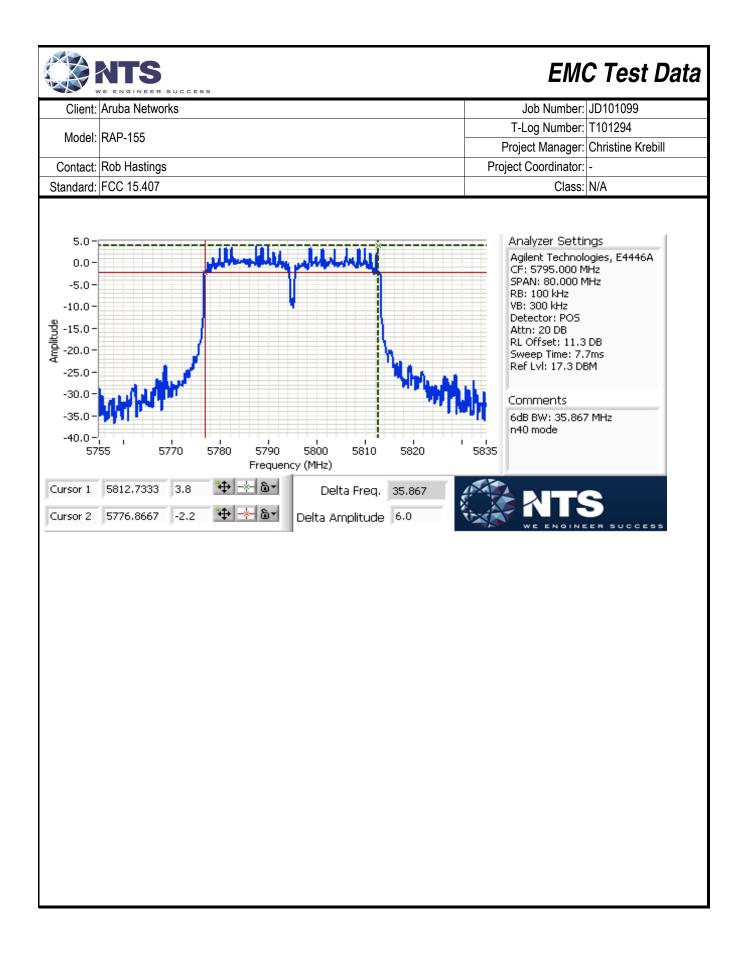
	WE ENGINEER	SUCCESS						C Test Da
Client:	: Aruba Netwo	rks					Job Number:	JD101099
Model	: RAP-155					1	-Log Number:	T101294
Model.	. 1041-100					Pro	oject Manager:	Christine Krebill
Contact:	Rob Hastings	;				Proje	ct Coordinator:	-
	FCC 15.407						Class:	N/A
l Te	andwidth Mea Date of Test: 3 est Engineer: F est Location: F	3/30/2016 0:00 Rafael Varelas		Cor	config. Used: nfig Change: UT Voltage:	None	z	
de:	11a							
		Iz band (UNII3)						
	Testing perf	ormed on port:	3 Bandwid	lth (MHz)		ting (MHz)	7	
	Setting	Frequency (MHz)	6dB	99%	6dB	.ung (IVIHZ) 99%		
	13.5	5745	16.4	16.7	100	300	1	
	10.0	5785	16.3	17.2	100	300		
	18.0							
ote 1:	15.5 6dB BW: RB	5825 W=100kHz, VBW ≥ 3*RI 3W=1-5% of of 99%BW, '	16.4 BW, peak de			300 veep time.	weep time.	
15.0- 10.0- 5.0-	15.5 6dB BW: RB 99% BW: RE	5825 W=100kHz, VBW ≥ 3*R	16.4 BW, peak de VBW ≥ 3*RE	etector, max h	nold, auto sw	300 veep time. Iold, auto si	analyzer Setti Agilent Technol IF: 5785.000 M IPAN: 40.000 M IB: 300 kHz IB: 910 kHz Detector: POS Attn: 20 DB IL Offset: 11.3 Iweep Time: 1. Ref Lvl: 17.3 DI	ogies, E4446A 1Hz 1Hz 9 DB 0ms
15.0 - 10.0 - 5.0 - 0.0 - -5.0 -	15.5 6dB BW: RB 99% BW: RE	5825 W=100kHz, VBW ≥ 3*RI 3W=1-5% of of 99%BW, V	16.4 BW, peak de VBW ≥ 3*RE	etector, max h	nold, auto sw	300 veep time. iold, auto s	analyzer Setti Agilent Technol F: 5785.000 M iPAN: 40.000 M RB: 300 kHz B: 310 kHz betector: POS Attn: 20 DB RL Offset: 11.3 iweep Time: 1.	ogies, E4446A /Hz vIHz BDB Oms BM
15.0 - 10.0 - 5.0 - 0.0 - -5.0 - -10.0 - -15.0 - -20.0 - -25.0 -	15.5 6dB BW: RB 99% BW: RE	5825 W=100kHz, VBW ≥ 3*RI 3W=1-5% of of 99%BW, Y	16.4 BW, peak de VBW ≥ 3*RE	etector, max h 3W, peak det	nold, auto sw	300 veep time. Iold, auto si	Analyzer Setti Agilent Technol F: 5785,000 M iPAN: 40,000 M RB: 300 kHz RB: 910 kHz Detector: POS Attn: 20 DB Attn: 20 DB Attn: 20 DB Attn: 20 DB Attn: 21 DB Attn	ogies, E4446A /Hz vIHz BDB Oms BM
15.0 - 10.0 - 5.0 - 0.0 - -5.0 - -10.0 - -15.0 - -20.0 - -25.0 -	15.5 6dB BW: RB 99% BW: RE	5825 W=100kHz, VBW ≥ 3*RI 3W=1-5% of of 99%BW, Y	16.4 BW, peak de VBW ≥ 3*RE	etector, max h 3W, peak det	nold, auto sw ector, max h	300 veep time. Iold, auto si A F F F F F F F F F F	analyzer Setti Agilent Technol F: 5785,000 M iPAN: 40,000 M (B: 300 kHz (B: 910 kHz)etector: POS Attn: 20 DB (L) Offset: 11,3 iweep Time: 1, Ref Lvl: 17,3 DI Comments (9% BW: 17,1	ogies, E4446A /Hz vIHz BDB Oms BM













	WE ENGINEER SUCCESS						
Client:	Aruba Networks	Job Number:	JD101099				
Madal	RAP-155	T-Log Number:	T101294				
wouer.	NAF-155	Project Manager:	Christine Krebill				
Contact:	Rob Hastings	Project Coordinator:	-				
Standard:	FCC 15.407	Class:	N/A				

RSS-247 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.

General Test Configuration

TS

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, unless otherwise noted.

Ambient Conditions:

Temperature:	20-22 °C
Rel. Humidity:	32-35 %

Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	worse case of the UNII1 + 11b	5G: 36 2G: 1	5G: 18 2G: 18	5G: 18 2G: 18	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.8 dBµV/m @ 5440.0 MHz (-0.2 dB)
2	worse case of the UNII1 + 11b	5G: 48 2G: 11	5G: 18 2G: 18	5G: 16 2G: 18	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.5 dBµV/m @ 5439.9 MHz (-0.5 dB)

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.

	VE ENGINEER SUCCESS	EMO	J lest Data
Client:	Aruba Networks	Job Number:	JD101099
Model:	DAD 155	T-Log Number:	T101294
	RAP-155	Project Manager:	Christine Krebill
Contact:	Rob Hastings	Project Coordinator:	-
Standard:	FCC 15.407	Class:	N/A

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time Unless otherwise stated/noted, emission has duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold 50 traces. (method VB of KDB 789033)

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6Mbs	0.97	Y	1.36	0.15	0.29	735
HT20	MCS0	0.96	Y	1.26	0.16	0.32	794
HT40	MCS0	0.93	Y	0.624	0.32	0.63	1603

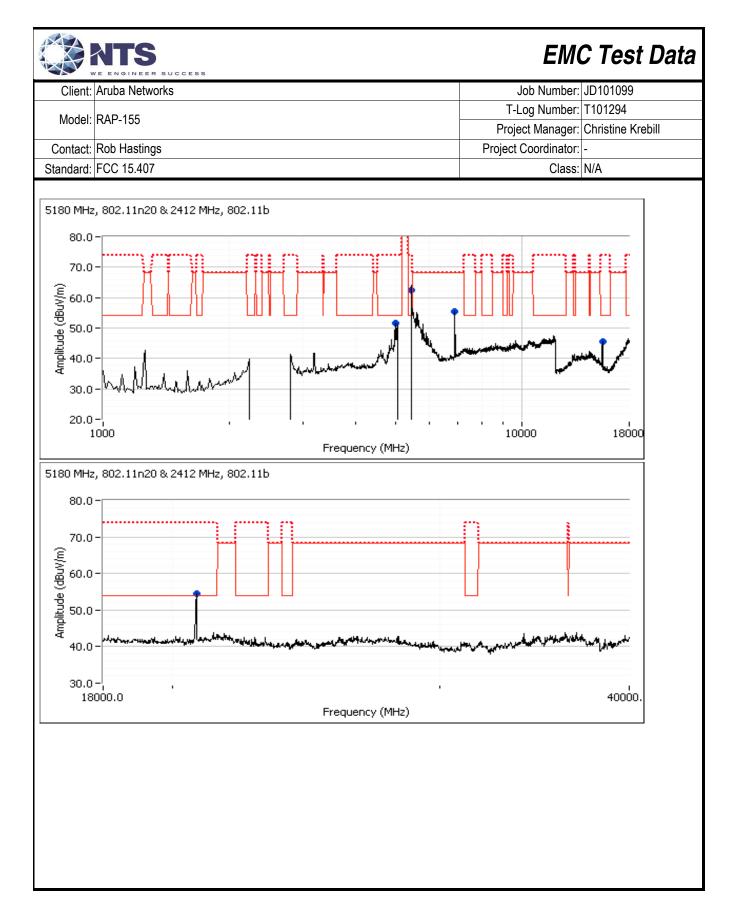
Sample Notes

Sample S/N: CC0001614 MAC:000B868F4553 Driver: N/A Antenna: Integral 3x3

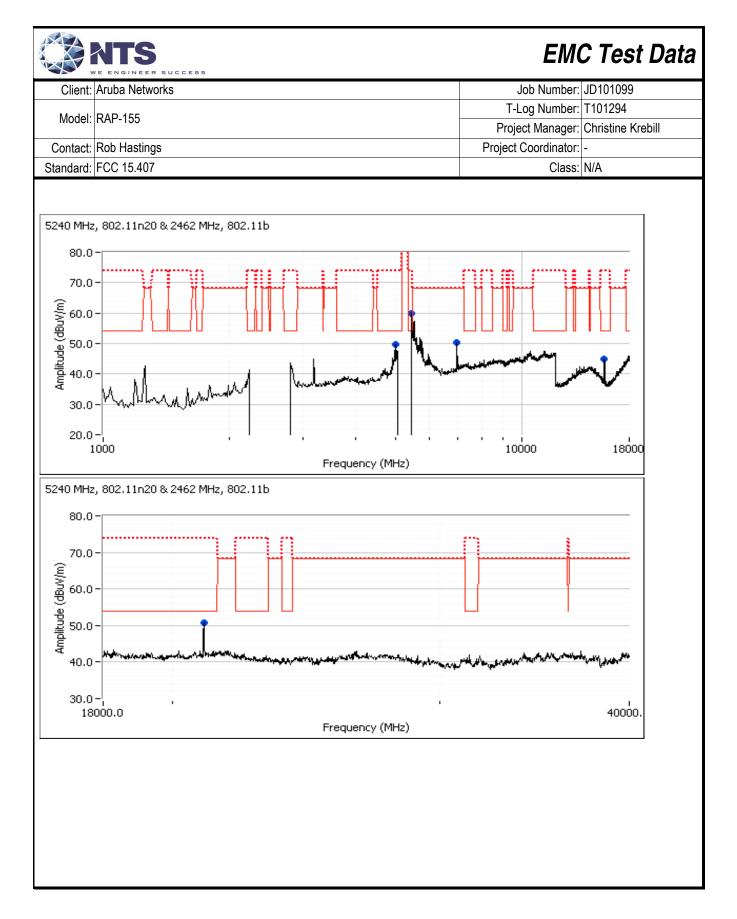
Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 2:	Emission has a duty cycle ≥ 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100 traces (method AD of KDB 789033)
Note 3:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep,max hold 50*1/DC traces (method VB of KDB 789033)
Note 4:	Emission has a duty cycle < 98%, average measurement performed: RBW=1MHz, VBW=3MHz, RMS, Power averaging, auto sweep, trace average 100*1/DC traces, measurement corrected by Pwr correction factor (method AD of KDB 789033)

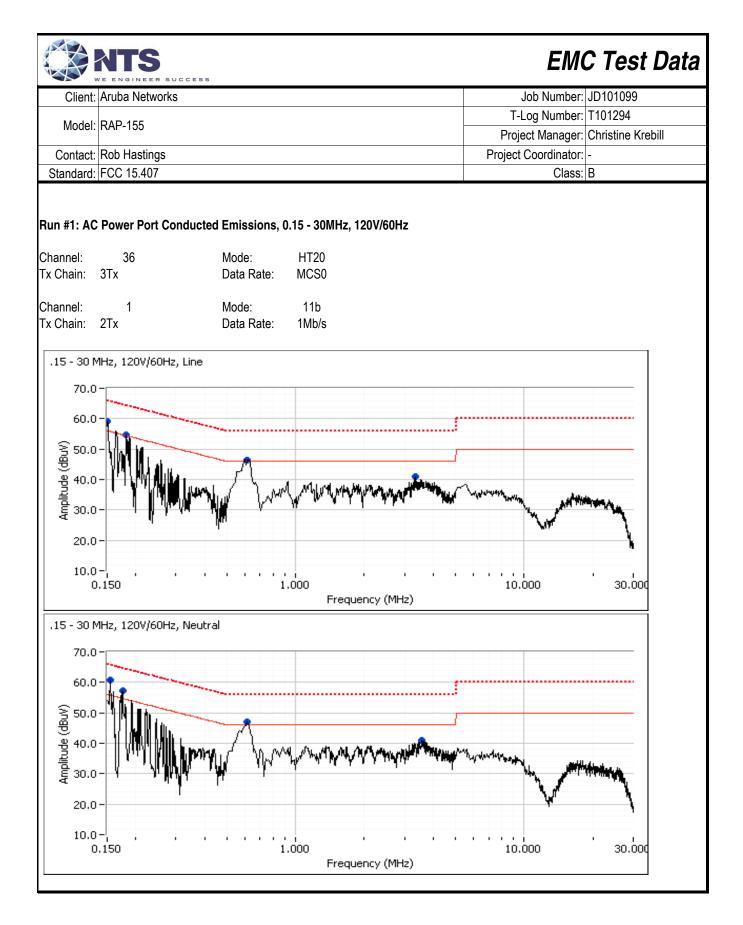
		SUCCESS						EM	C Test Data
Client:	Aruba Netwo							Job Number:	JD101099
Madal							T-	Log Number:	T101294
Nodel	RAP-155						Proj	ect Manager:	Christine Krebill
Contact:	Rob Hasting	S					Project	Coordinator:	-
	FCC 15.407							Class:	
	l.		ons, 1,000 - 4	10 000 MH 7			L		L
	Date of Test:			10,000 11112		onfig. Used:	1		
Te	est Engineer:	Rafael Vare	elas			fig Change:			
Т	est Location:	FT Ch #5			E	UT Voltage:	120 VAC		
hannel:	36		Mode:	HT20					
x Chain:	3Tx		Data Rate:	MCS0					
Channel:	1		Mode:	11b					
Tx Chain:	2Tx		Data Rate:	1Mb/s					
Frequency	Level	Pol	15.209) / 15E	Detector	Azimuth	Height	Comments	
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters		
5440.000	53.8	Н	54.0	-0.2	Avg	204	1.9		MHz;VB 1 kHz;Peak
5441.340	66.2	Н	74.0	-7.8	PK	204	1.9		/B 3 MHz;Peak
4997.100	43.3	V	54.0	-10.7	Avg	81	1.9		MHz;VB 1 kHz;Peak
4999.480	59.7	V	74.0	-14.3	PK	81	1.9		/B 3 MHz;Peak
6906.670	57.6	V V	68.3	-10.7	PK	21	1.1		/B 3 MHz;Peak
5544.720 5542.720	47.1 60.6	V	54.0 74.0	-6.9 -13.4	Avg PK	297 297	1.8 1.8		MHz;VB 1 kHz;Peak
20721.830		V	54.0	-13.4	Avg	345	1.0		/B 3 MHz;Peak MHz;VB 1 kHz;Peak
20721.300	63.3	V	74.0	-10.7	PK	345	1.2		/B 3 MHz;Peak
.0721.000	00.0	v	74.0	-10.7		545	1.2		D 5 Mi 12,1 Cak
ote 1:	For emission	ns in restrict	ed bands, the	limit of 15.2	209 was used	which requir	es average	and peak me	asurements.
lote 2:							68.3dBuV/m	n). The meas	urement method
	required is a	i peak meas	urement (RB:	=1MHz, VB≥	≥3MHz, peak (detector).			



Test Engir	stings .407		10,000 MHz.			T-I Proje	Job Number: Log Number: ect Manager: Coordinator: Class:	T101294 Christine Krebill -					
Contact: Rob Ha Standard: FCC 19 Run #2, Radiated 9 Date of Test Engin Test Loca Channel: 48	stings .407 Spurious Emissi Fest: 3/28/2016 eer: Rafael Vare		10,000 MHz.			Proje	ect Manager: Coordinator:	Christine Krebill -					
Contact: Rob Ha Standard: FCC 19 Run #2, Radiated 9 Date of Test Engin Test Loca Channel: 48	stings .407 Spurious Emissi Fest: 3/28/2016 eer: Rafael Vare		10,000 MHz.				Coordinator:	-					
Standard: FCC 15 Run #2, Radiated 5 Date of Test Engin Test Loca Channel: 48	.407 purious Emissi Test: 3/28/2016 teer: Rafael Vare		10,000 MHz.			Project							
Standard: FCC 15 Run #2, Radiated 5 Date of Test Engin Test Loca Channel: 48	.407 purious Emissi Test: 3/28/2016 teer: Rafael Vare		10,000 MHz.										
Run #2, Radiated S Date of Test Engir Test Loca Channel: 48	purious Emissi est: 3/28/2016 eer: Rafael Vare		10,000 MHz.		FCC 15.407								
Channel: 48	tion: FT Ch #5			Co	onfig. Used: fig Change:								
					UT Voltage:								
		Mode: Data Rate:	HT20 MCS0										
Channel: 11 Tx Chain: 2Tx		Mode: Data Rate:	11b 1Mb/s										
Frequency Lev	el Pol	15.209) / 15E	Detector	Azimuth	Height	Comments						
MHz dBµ∖		Limit	Margin	Pk/QP/Avg	degrees	meters							
5439.920 53.		54.0	-0.5	Avg	189	1.6	Note 3,RB 1	MHz;VB 1 kHz;Peak					
5440.260 63.		74.0	-10.3	PK	189	1.6	RB 1 MHz;V	/B 3 MHz;Peak					
4981.990 42.		54.0	-11.7	Avg	19	1.7		MHz;VB 1 kHz;Peak					
4985.540 59.		74.0	-14.6	PK	19	1.7		/B 3 MHz;Peak					
6986.640 54.		68.3	-13.9	PK	14	1.8		/B 3 MHz;Peak					
15713.130 45.		54.0	-8.3	Avg	284	1.8		MHz;VB 1 kHz;Peak					
15713.800 59. 20966.740 48.		74.0 54.0	-14.1 -5.4	PK Acc	284 300	<u>1.8</u> 1.5		/B 3 MHz;Peak					
20969.070 48. 20969.070 63.		74.0	-10.7	Acg PK	300	1.5		MHz;VB 1 kHz;Peak					
0909.070 03.	o v	74.0	-10.7	FN	300	1.0							
lote 1: For em	ssions in restrict	ed bands. the	limit of 15.2	09 was used	which require	es average a	and peak me	asurements.					
For em		f the restricted	d bands the l	limit is -27dBn	n/MHz eirp (-		urement method					



Client: Aruba Networks Model: RAP-155				
Model: RAP-155				Job Number: JD101099
			T	-Log Number: T101294
			Pro	ject Manager: Christine Krebill
Contact: Rob Hastings			Projec	t Coordinator: -
Standard: FCC 15.407				Class: B
	Conduct (NTS Silicon Valley, Fremont	ed Emissions Facility, Semi-Ane		ber)
Fest Specific Details				
· Objective: The o	objective of this test session is to pe ification listed above.	rform final qualificati	ion testing of	the EUT with respect to the
Date of Test: 3/29/	2016	Config. Use	d: 1	
Test Engineer: Rafa		Config Change		
Test Location: Frem	iont Chamber #5	EUT Voltage	e: 120V/60Hz	2
For tabletop equipment, the El and 80cm from the LISN. Ren	tion UT was located on a wooden table i note support equipment was located ed through metal conduit and when	I outside of the semi	-anechoic cha	r, 40 cm from a vertical coupling pla amber. Any cables running to remo
and 80cm from the LISN. Ren	UT was located on a wooden table i note support equipment was located ed through metal conduit and when Temperature:	I outside of the semi	-anechoic cha	r, 40 cm from a vertical coupling pla amber. Any cables running to remo
For tabletop equipment, the El and 80cm from the LISN. Ren support equipment where route	UT was located on a wooden table i note support equipment was located ed through metal conduit and when	l outside of the semi possible passed thro 22.3 °C	-anechoic cha	r, 40 cm from a vertical coupling pla amber. Any cables running to remo
For tabletop equipment, the El and 80cm from the LISN. Ren upport equipment where route Ambient Conditions:	UT was located on a wooden table i note support equipment was located ed through metal conduit and when Temperature:	l outside of the semi possible passed thro 22.3 °C	-anechoic cha	r, 40 cm from a vertical coupling pla amber. Any cables running to remo



Client: Aruba Networks Job Number: JD101099										
Client:	Aruba Netw	orks					Job Number:	JD101099		
Madal							T-Log Number:	T101294		
Model:	RAP-155						Project Manager:	Christine Krebill		
	Rob Hasting						Project Coordinator:	-		
Standard:	FCC 15.407	,					Class:	В		
Preliminary peak readings captured during pre-scan (peak readings vs. average limit)										
Frequency	Level	AC	Clas	ss B	Detector	Comments				
MHz	dBµV	Line	Limit	Margin	QP/Ave					
0.150	59.1	Line 1	56.0	3.1	Peak					
0.181	54.6	Line 1	54.4	0.2	Peak					
0.632	46.5	Line 1	46.0	0.5	Peak					
3.324	40.8	Line 1	46.0	-5.2	Peak					
0.153	60.8	Neutral	55.7	5.1	Peak					
0.175	57.2	Neutral	54.7	2.5	Peak					
0.609	47.1	Neutral	46.0	1.1	Peak					
3.556	41.1	Neutral	46.0	-4.9	Peak					
Final quasi	-peak and a	verage readi	ings							
Frequency	Level	AC	Clas	ss B	Detector	Comments				
MHz	dBμV	Line	Limit	Margin	QP/Ave					
0.632	36.9	Line 1	46.0	-9.1	AVG	AVG (0.10s)				
0.609	36.8	Neutral	46.0	-9.2	AVG	AVG (0.10s)				
0.609	46.2	Neutral	56.0	-9.8	QP	QP (1.00s)				
0.632	45.6	Line 1	56.0	-10.4	QP	QP (1.00s)				
0.150	54.2	Line 1	66.0	-11.8	QP	QP (1.00s)				
0.153	53.9	Neutral	65.8	-11.9	QP	QP (1.00s)				
0.175	50.6	Neutral	64.7	-14.1	QP	QP (1.00s)				
0.181	49.3	Line 1	64.4	-15.1	QP	QP (1.00s)				
3.324	29.2	Line 1	46.0	-16.8	AVG	AVG (0.10s)				
3.324	37.4	Line 1	56.0	-18.6	QP	QP (1.00s)				
3.556	26.1	Neutral	46.0	-19.9	AVG	AVG (0.10s)				
3.556	34.8	Neutral	56.0	-21.2	QP	QP (1.00s)				
0.150	34.1	Line 1	56.0	-21.9	AVG	AVG (0.10s)				
0.153	33.3	Neutral	55.8	-22.5	AVG	AVG (0.10s)				
0.181	31.8	Line 1	54.4	-22.6	AVG	AVG (0.10s)				
0.175	30.1	Neutral	54.7	-24.6	AVG	AVG (0.10s)				



End of Report

This page is intentionally blank and marks the last page of this test report.