

**EMC Test Report****Application for FCC Grant of Equipment Authorization  
Canada Certification  
Class III Permissive Change****Innovation, Science and Economic Development Canada  
RSS-Gen Issue 5 / RSS-247 Issue 2  
FCC Part 15, Subpart E****Model: APIN0555**IC CERTIFICATION #: 4675A-APIN0555  
FCC ID: Q9DAPIN0555APPLICANT: Aruba, a Hewlett Packard Enterprise Company  
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Santa Clara, CA 95054TEST SITE(S): National Technical Systems  
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IC SITE REGISTRATION #: 2845B-3; 2845B-4, 2845B-5, 2845B-7

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November 1 and 2, December 2, 3, 4, 5, 6 and  
27, 2018, January 14 and 15, February 14, 15  
and 19, 2019

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## REVISION HISTORY

Rev#	Date	Comments	Modified By
-	July 3, 2019	First release	
1	July 25, 2019	Corrected antenna gain value on page 12 and chain designations throughout the report.	dwb

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**SCOPE**

An electromagnetic emissions test has been performed on the Aruba, a Hewlett Packard Enterprise Company model APIN0555, pursuant to the following rules:

RSS-Gen Issue 5 “General Requirements for Compliance of Radio Apparatus”

RSS 247 Issue 2 “Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices”

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 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.

National Technical Systems is accredited by the A2LA, certificate number 0214.26, to perform the test(s) listed in this report, except where noted otherwise.

**OBJECTIVE**

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

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

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

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

**STATEMENT OF COMPLIANCE**

The tested sample of Aruba, a Hewlett Packard Enterprise Company model APIN0555 complied with the requirements of the following regulations:

RSS 247 Issue 2 "Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices"

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, a Hewlett Packard Enterprise Company model APIN0555 and therefore apply only to the tested samples. The samples were selected and prepared by Mark Hill of Aruba, a Hewlett Packard Enterprise Company.

**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 5.25 – 5.35 GHZ BAND

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)		26dB Bandwidth	All > 20 MHz	N/A – limits output power if < 20MHz	N/A
	RSS-247 6.2.2 (1)	99% Bandwidth	a: 16.8 MHz ax20: 19.1 MHz ax40: 38.2 MHz ax80: 78.1 MHz	N/A – limits EIRP if < 20MHz	N/A
15.407(a) (2)	RSS-247 6.2.1 (2)	Output Power	802.11a: 36.5 mW ax20: 37.6 mW ax40: 75.5 mW ax80: 97.5 mW (Max eirp: 0.326 W)	24 dBm (250 mW) EIRP <= 1W	Complies
15.407(a) (2)	RSS-247 6.2.2 (1)	Power Spectral Density	802.11a: 3.2 dBm/MHz ax20: 3.2 dBm/MHz ax40: 3.2 dBm/MHz ax80: 1.8 dBm/MHz	11 dBm/MHz	Complies
15.407(b) (2) / 15.209	RSS-247 6.2.2 (2)	Spurious Emissions above 1GHz	53.6 dBμV/m @ 5350.1 MHz (-0.4 dB)	Refer to the limits section (p24) for restricted bands, all others -27 dBm/MHz EIRP	Complies

#### OPERATION IN THE 5.47 – 5.725 GHZ BAND

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a) (2)		26dB Bandwidth	All > 20 MHz	N/A – limits output power if < 20MHz	N/A
		99% Bandwidth	a: 16.8 MHz ax20: 19.1 MHz ax40: 38.2 MHz ax80: 78.1 MHz	N/A – limits EIRP if < 20MHz	N/A
15.407(a) (2)		Output Power	802.11a: 40.5 mW ax20: 40.3 mW ax40: 89.1 mW ax80: 162.8 mW (Max eirp: 0.620 W)	24 dBm (250 mW) EIRP <= 1W	Complies
15.407(a) (2)		Power Spectral Density	802.11a: 3.6 dBm/MHz n20: 3.6 dBm/MHz n40: 3.7 dBm/MHz ac80: 3.7 dBm/MHz	11 dBm/MHz	Complies
15.407(b) (3) / 15.209		Spurious Emissions above 1GHz	68.2 dBμV/m @ 5469.6 MHz (-0.1 dB)	Refer to the limits section (p24) for restricted bands, all others -27 dBm/MHz EIRP	Complies
		Non-operation in 5600 – 5650 MHz sub band	Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description		Complies



**OPERATION IN THE 5.47 – 5.725 GHZ BAND**

	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
	RSS-247 6.2.3 (1)	99% Bandwidth	a: 16.8 MHz ax20: 19.1 MHz ax40: 38.2 MHz ax80: 78.1 MHz	N/A – limits EIRP if < 20MHz	N/A
	RSS-210 A9.2(2)	Output Power	802.11a: 40.5 mW ax20: 40.3 mW ax40: 89.1 mW ax80: 162.8 mW (Max eirp: 0.620 W)	24 dBm (250 mW) EIRP <= 1W	Complies
	RSS-247 6.2.3 (1)	Power Spectral Density	802.11a: 3.6 dBm/MHz n20: 3.6 dBm/MHz n40: 3.7 dBm/MHz ac80: 3.7 dBm/MHz	11 dBm/MHz	Complies
	RSS-247 6.2.3 (2)	Spurious Emissions above 1GHz	68.2 dBμV/m @ 5469.6 MHz (-0.1 dB)	Refer to the limits section (p24) for restricted bands, all others -27 dBm/MHz EIRP	Complies
	RSS-247 6.2.3	Non-operation in 5600 – 5650 MHz sub band	Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description		Complies

**REQUIREMENTS FOR ALL U-NII/LELAN BANDS**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	RSS-247 6.1	Modulation	System uses OFDM techniques	Digital modulation is required	Complies
15.407(b) (6) / 15.209	RSS-247 6.2.1 (2)	Spurious Emissions below 1GHz		Refer to page 25	Complies
15.31 (m)	RSS-247 6.4 (1) RSS-Gen 6.9	Channel Selection	Emissions tested at outermost and middle channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15.407 (c)	RSS-247 6.4 (2)	Operation in the absence of information to transmit	No change from original filing	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g)		Frequency Stability	No change from original filing	Signal shall remain within the allocated band	Complies
15.407 (h1)	RSS-247 6.2.2 (1) 6.2.3 (1)	Transmit Power Control	TCP mechanism is discussed in the Operational Description	The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW)	Complies
15.407 (h2)	RSS-247 6.3	Dynamic frequency Selection (device without radar detection)	Refer to separate test report, reference FR-075848.21	Threshold -62dBm (-64dBm if eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies
	RSS-247 6.4 (5)	User manual information	No change from original filing	Warning regarding Tilt angle for EIRP compliance, Indoor use for 5150-5250 MHz band and Radar are primary user of some bands	Complies

**GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS**

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	No change from original filing	Unique or integral antenna required	Complies
15.407 (b) (6)	RSS-Gen Table 4	AC Conducted Emissions	39.3 dB $\mu$ V @ 0.422 MHz (-8.1 dB)	Refer to page 23	Complies
15.247 (i) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in separate exhibit, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSS-Gen 6.8	User Manual	No change from original filing	Statement for products with detachable antenna	Complies
-	RSS-Gen 8.4	User Manual	No change from original filing	Statement for all products	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	$\pm 0.52$ dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	$\pm 0.7$ dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	$\pm 0.7$ dB
Conducted emission of receiver	dBm	25 to 26500 MHz	$\pm 0.7$ dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	$\pm 2.5$ dB
Radiated emission (field strength)	dB $\mu$ V/m	25 to 1000 MHz	$\pm 3.6$ dB
		1000 to 40000 MHz	$\pm 6.0$ dB
Conducted Emissions (AC Power)	dB $\mu$ V	0.15 to 30 MHz	$\pm 2.4$ dB

**EQUIPMENT UNDER TEST (EUT) DETAILS****GENERAL**

The Aruba, a Hewlett Packard Enterprise Company model APIN0555 is a enterprise grade Wi-Fi Access Point with two radios (one for 5 GHz bands and a second for 2.4 GHz bands). In addition, it incorporates a Bluetooth Low Energy (BLE) and ZigBee radio. Since the EUT could be placed in any position during operation, the EUT was treated as tabletop equipment during testing to simulate the end-user environment. The electrical rating of the EUT is 56VDC, 0.6A.

The sample was received on October 12, 2018 and tested on October 12, 15, 16, 17, 22, 25, 26, 29 and 31, November 1 and 2, December 2, 3, 4, 5, 6 and 27, 2018, January 14 and 15, February 14, 15 and 19, 2019. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Aruba	APIN0555	Wi-Fi Access Point	CNGFK9Y02N	Q9DAPIN0555
Aruba	APIN0555	Wi-Fi Access Point	CNGFK9Y005	Q9DAPIN0555
Aruba	APIN0555	Wi-Fi Access Point	CNGXK9Y07P	Q9DAPIN0555

**OTHER EUT DETAILS**

The following EUT details should be noted: Maximum Antenna Gains (details in test results):

2.4GHz: 3.9dBi max

5GHz: 5.8dBi max

BLE/ZigBee: 4.5dBi

**ANTENNA SYSTEM**

The antenna system consists of many custom designed integral antennas.

**ENCLOSURE**

The EUT enclosure is primarily constructed of plastic. It measures approximately 26 cm wide by 26 cm deep by 5.5 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
CUI Inc	ATS048T-A480	AC Adapter	-	-

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

Company	Model	Description	Serial Number	FCC ID
Dell	LatitudeE5440	Laptop	TS-0000342	-
Microsemi	PD-9001GR/AT/AC	POE adapter	None	-

## EUT INTERFACE PORTS

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

### EUT

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
en0	Remote POE Adapter	Cat 6	Unshielded	7.6
en1	Unterminated	Cat 6	Unshielded	2
DC power	AC Adapter	Two wire with ferrite	Unshielded	1.4
USB	Not connected	-	-	-
micro USB	Not connected	-	-	-

### Additional on Support Equipment

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
AC Adapter	Mains	Two wire	Unshielded	1.3
POE adapter	Laptop	Cat 6	Unshielded	4
POE adapter	Mains	Three wire	Unshielded	1.3

The micro USB and USB ports are for debug use only.

## EUT OPERATION

During testing, the EUT was configured using the laptop to transmit continuously from all radios (2.4 GHz Wi-Fi, 5 GHz Wi-Fi and BLE/ZigBee) simultaneously on the selected channels and at the maximum power level. The BLE/ZigBee radio cannot transmit BLE and ZigBee simultaneously.

**PROPOSED MODIFICATION DETAILS****GENERAL**

This section details the modifications to the Aruba, a Hewlett Packard Enterprise Company model APIN0555 being proposed. All performance and construction deviations from the characteristics originally reported to the FCC are addressed

**SOFTWARE**

The AurbOS was modified to enable channel operating in the 5250-5350 MHz and 5470-5725 MHz bands.

**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 / Registration Numbers		Location
	FCC	Canada	
Chamber 4	US1031	US0027 (2845B)	41039 Boyce Road Fremont, CA 94538-2435
Chamber 5			

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. Results from testing performed in this chamber have been correlated with results from an open area test site. 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 non-conductive antenna mast equipped with a motor-drive to vary the antenna height. Measurements below 30 MHz are made with the loop antenna at a fixed height of 1m above the ground plane.

ANSI C63.10 specifies that the test height above ground for table mounted devices shall be 80 centimeters for testing below 1 GHz and 1.5m for testing above 1 GHz. 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.

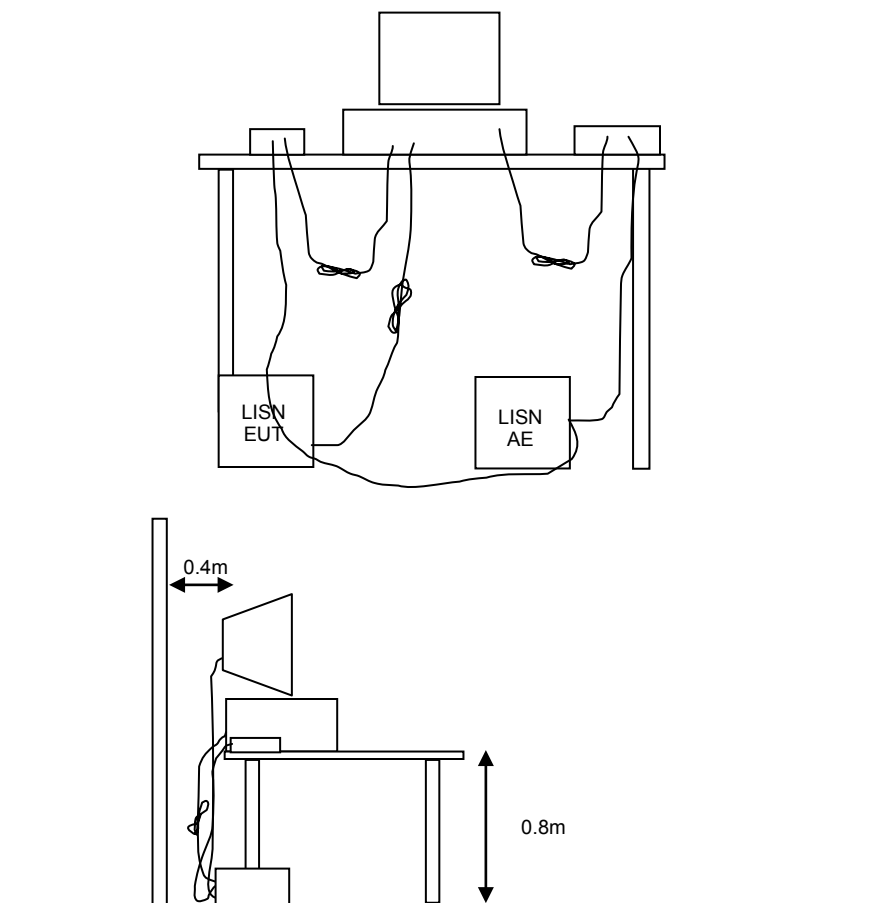
## TEST PROCEDURES

### 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**

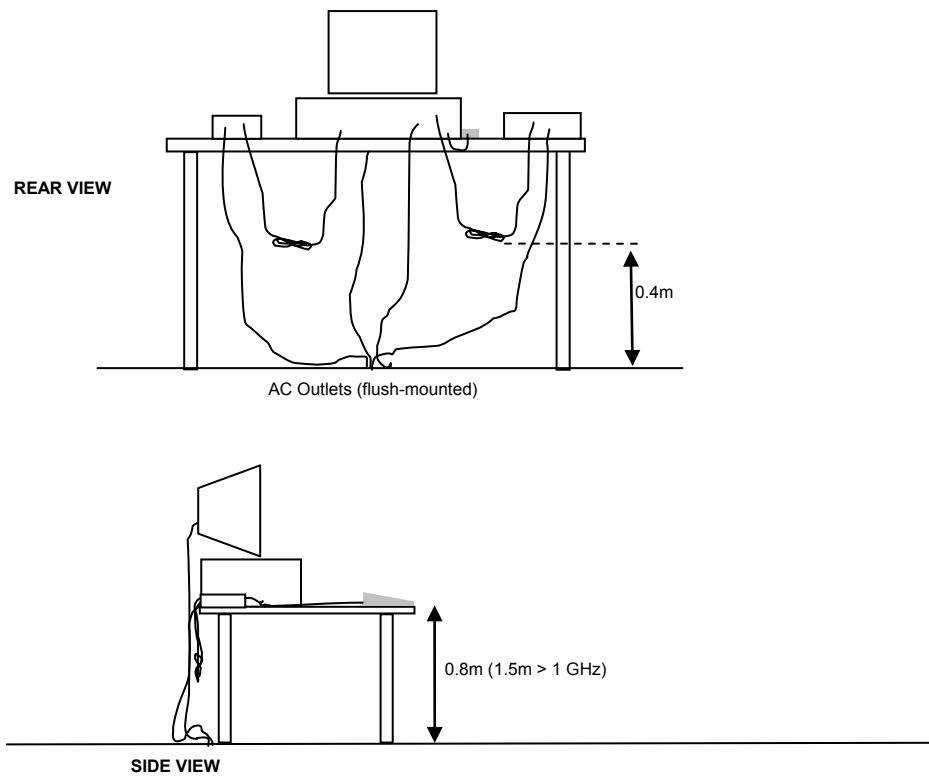
**RADIATED EMISSIONS**

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.

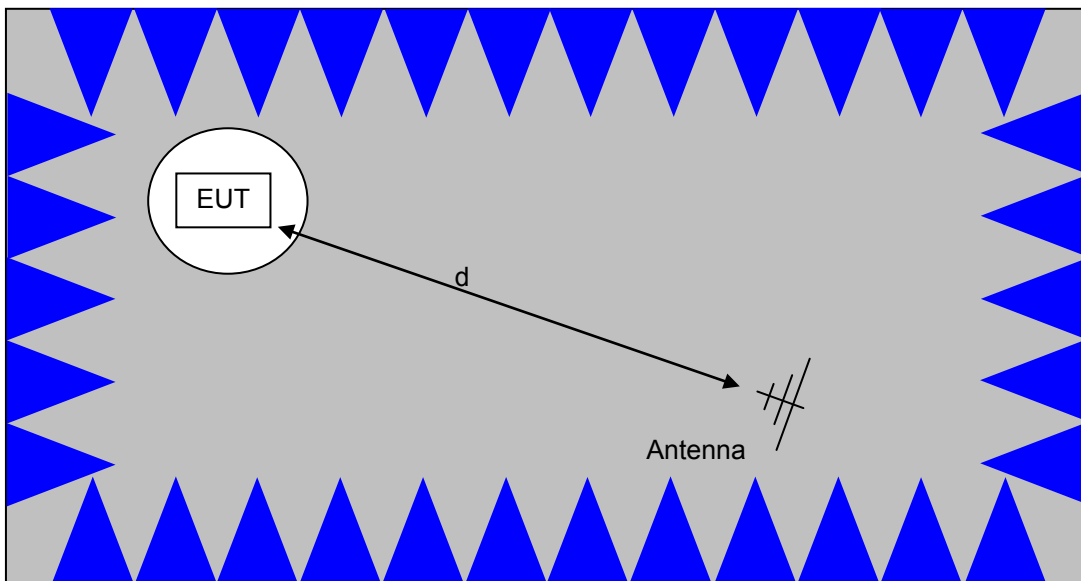
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

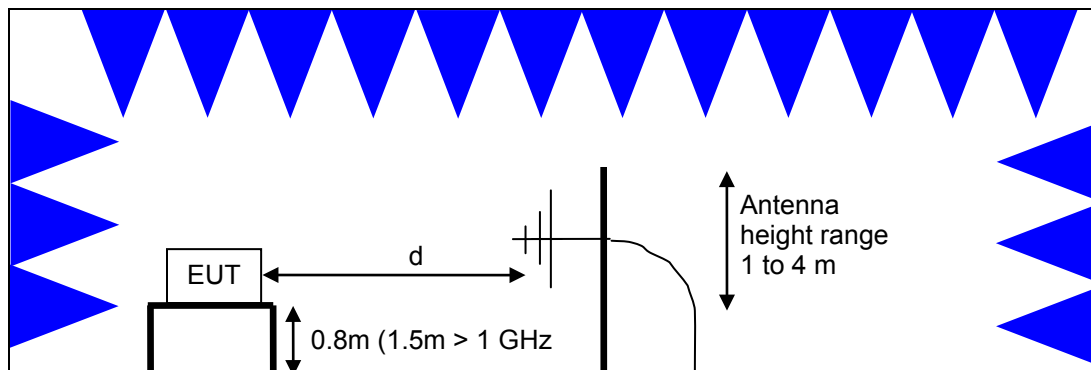


Typical Test Configuration for Radiated Field Strength Measurements



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.

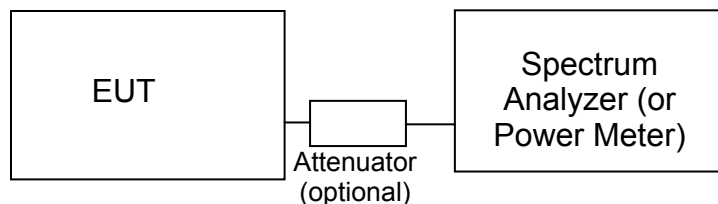
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

**CONDUCTED EMISSIONS FROM ANTENNA PORT**

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

Test Configuration for Antenna Port Measurements

Measurement bandwidths (video and resolution) are set in accordance with the relevant standards and 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 bands<sup>1</sup>.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{\text{KHz}} @ 300\text{m}$	$67.6-20*\log_{10}(F_{\text{KHz}}) @ 300\text{m}$
0.490-1.705	$24000/F_{\text{KHz}} @ 30\text{m}$	$87.6-20*\log_{10}(F_{\text{KHz}}) @ 30\text{m}$
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

<sup>1</sup> The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 7



### 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).

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.

### OUTPUT POWER LIMITS –LELAN DEVICES

The table below shows the limits for output power and output power density defined by RSS 247. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 – 5350 and 5470 - 5725	250 mW (24 dBm) <sup>2</sup> 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watt (30 dBm) 4W eirp	30 dBm/500kHz

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.

<sup>2</sup> If EIRP exceeds 500mW the device must employ TPC

**SAMPLE CALCULATIONS - CONDUCTED EMISSIONS**

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

$$R_r - S = M$$

where:

$R_r$  = Receiver Reading in dBuV

$S$  = Specification Limit in dBuV

$M$  = Margin to Specification in +/- dB

**SAMPLE CALCULATIONS - RADIATED EMISSIONS**

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

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

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

where:

$F_d$  = Distance Factor in dB

$D_m$  = Measurement Distance in meters

$D_s$  = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

$R_r$  = Receiver Reading in dBuV/m

$F_d$  = Distance Factor in dB

$R_c$  = Corrected Reading in dBuV/m

$L_s$  = Specification Limit in dBuV/m

$M$  = Margin in dB Relative to Spec

**SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION**

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

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

where P is the eirp (Watts)

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

## Appendix A Test Equipment Calibration Data

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
<b>Radiated Spurious Emissions, 1000 - 6,500 MHz, 21-Mar-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/29/2016	9/29/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/28/2016	10/28/2018
<b>Radiated Emissions, 1000 - 6,000 MHz, 02-Apr-18</b>					
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/30/2016	6/30/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/8/2017	7/8/2018
<b>Spurious Emissions, 16-Jul-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz	3115	487	8/18/2016	8/18/2018
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	8/30/2017	8/30/2018
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	2/16/2018	2/16/2019
<b>Radiated Spurious Emissions, 1000 - 6,500 MHz, 15-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1538	2/10/2018	2/10/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	2870	8/24/2017	8/24/2019
<b>Radiated Emissions - Band Edge, 16-Oct-18</b>					
EMCO	Antenna, Horn, 1-18GHz	3115	868	7/9/2018	7/9/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
<b>Radiated Emissions - Band Edge, 17-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18GHz	3115	868	7/9/2018	7/9/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
<b>Radiated Spurious Emissions, 1000 - 6,500 MHz, 19-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1538	2/10/2018	2/10/2019



<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
<b>Radiated Emissions, 1000 - 6,000 MHz, 22-Oct-18</b>					
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	2493	3/22/2018	3/22/2019
<b>Radiated Emissions, 1000 - 6,000 MHz, 24-Oct-18</b>					
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
<b>Radiated Spurious Emissions, 1000 - 18,000 MHz, 25-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	4/18/2018	4/18/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz 12GHz	BRC50703-02	1729	4/18/2018	4/18/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
<b>Radiated Spurious Emissions, 1-18 GHz, 29-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	EMC Spectrum Analyzer, 9 KHz-26.5 GHz	8593EM	1141	1/25/2018	1/25/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	4/18/2018	4/18/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	6/20/2018	6/20/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	8/17/2018	8/17/2019
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-01	2738	8/18/2018	8/18/2019
<b>Radiated Emissions, 1,000 - 12,000 MHz, 29-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A



<b><u>Manufacturer</u></b>	<b><u>Description</u></b>	<b><u>Model</u></b>	<b><u>Asset #</u></b>	<b><u>Calibrated</u></b>	<b><u>Cal Due</u></b>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-01	2738	8/18/2018	8/18/2019
<b>Radiated Emissions, 1 - 40 GHz, 30-Oct-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Narda West	High Pass Filter, 8 GHz	HPF 180	821	1/8/2018	1/8/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
A. H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	9/5/2017	8/8/2020
<b>Radiated Emissions, 1 - 40 GHz, 31-Oct-18</b>					
EMCO	Antenna, Horn, 1-18GHz	3115	868	7/9/2018	7/9/2020
HP / Miteq	SA40 P Head HF preAmplifier, 18-40 GHz (w/2415)	TTA1840-45-5P-HG-S	1772	9/12/2018	9/12/2019
A. H. Systems	System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	7/21/2017	7/21/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	8/30/2018	8/30/2019
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	2/16/2018	2/16/2019
<b>Radiated Spurious Emissions, 1 - 40 GHz, 01-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
HP / Miteq	SA40 B Head HF preAmplifier, 18-40 GHz (w/1393)	TTA1840-45-5P-HG-S	1620	1/9/2018	1/9/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
A. H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	9/5/2017	8/8/2020
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	8/17/2018	8/17/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	8/17/2018	8/17/2019

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
<b>Radiated Spurious Emissions, 1 - 18 GHz, 02-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2017	12/8/2018
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18GHz	3115	868	7/9/2018	7/9/2020
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	8/30/2018	8/30/2019
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	2/16/2018	2/16/2019
<b>Rx Radiated spurious Emissions, 05-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18GHz	3115	868	7/9/2018	7/9/2020
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	5/30/2017	5/30/2019
HP / Miteq	SA40 P Head HF preAmplifier, 18-40 GHz (w/2415)	TTA1840-45-5P-HG-S	1772	9/12/2018	N/A
A. H. Systems	System Horn, 18-40GHz	SAS-574, p/n: 2581	2161	7/21/2017	7/21/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	2199	8/30/2018	8/30/2019
Hewlett Packard	Spectrum Analyzer (SA40) Purple 9 kHz - 40 GHz,	8564E (84125C)	2415	2/16/2018	2/16/2019
Hewlett Packard	9KHz-1300MHz pre-amp	8447F	2777	12/27/2017	12/27/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019
<b>Conducted Emissions - AC Power and Telecommunications Ports, 05-Nov-18</b>					
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1401	1/8/2018	1/8/2019
Fischer Custom Comm	LISN, 25A, 150kHz to 30MHz, 25 Amp,	FCC-LISN-50-25-2-09	2001	8/15/2018	8/15/2019
Com-Power	ISN, T8 unscreened	ISN-T8	3260	2/20/2018	2/20/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019
<b>Radiated Spurious Emissions, 30 - 1,000 MHz, 06-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1549	5/30/2017	5/30/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2251	8/17/2018	8/17/2019
Hewlett Packard	9KHz-1300MHz pre-amp	8447F	2777	12/27/2017	12/27/2018
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019



<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Calibrated</u>	<u>Cal Due</u>
<b>Radiated Spurious Emissions, 1000 - 6,500 MHz, 13-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
<b>Radiated Band edge, 13-Nov-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019
<b>Radiated Emissions, Band-edge, 03-Dec-18</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 03-Dec-18</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 04-Dec-18</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 05-Dec-18</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 06-Dec-18</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radiated Emissions, 27-Dec-18</b>					
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	5/1/2018	5/1/2019
Hewlett Packard	Spectrum Analyzer (SA40) Blue 9 kHz - 40 GHz	8564E (84125C)	1393	12/8/2018	12/8/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019



<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Asset #</b>	<b>Calibrated</b>	<b>Cal Due</b>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	8/30/2018	8/30/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	8/17/2018	8/17/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019
HP / Miteq	SA40 B Head HF preAmplifier, 18-40 GHz (w/1393)	TTA1840-45-5P-HG-S	1620	1/9/2018	1/9/2019
A. H. Systems	Blue System Horn, 18-40GHz	SAS-574, p/n: 2581	2159	9/5/2017	8/8/2020
<b>Radiated Emissions, 1000 - 6,000 MHz, 28-Dec-18</b>					
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	9482	10/13/2018	10/13/2019
<b>Radiated Emissions, 30 - 1,000 MHz, 14-Jan-19</b>					
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1538	2/10/2018	2/10/2019
Com-Power	Preamplifier, 30-1000 MHz	PA-103	1632	1/7/2019	1/7/2020
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	2197	10/4/2017	10/4/2019
<b>Radiated Emissions, 1,000 - 12,000 MHz, 15-Jan-19</b>					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	1683	4/18/2018	4/18/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	6/20/2018	6/20/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 17-Jan-19</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 18-Jan-19</b>					
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 21-Jan-19</b>					
National Technical Systems	NTS UNII Power Software (rev 3.8)	N/A	0		N/A



<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Asset #</b>	<b>Calibrated</b>	<b>Cal Due</b>
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radio Antenna Port (Power and Spurious Emissions), 22-Jan-19</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS UNII Power Software (rev 3.8)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Signal Analyzer 20 Hz - 26.5 GHz	FSQ26	2327	6/25/2018	6/25/2019
Rohde & Schwarz	Open Switch and Control Unit with integrated power meter	OSP120 with OSP-B157 module	3000	5/1/2018	5/1/2019
<b>Radiated Emissions, 1,000 - 6,000 MHz, 15-Feb-19</b>					
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
<b>Radiated Emissions, 1,000 - 18,000 MHz, 19-Feb-19</b>					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz 12GHz	BRC50703-02	1729	4/18/2018	4/18/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	8/17/2018	8/17/2019
<b>Radiated Emissions, 1,000 - 40,000, 20-Feb-19</b>					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz 12GHz	BRC50703-02	1729	4/18/2018	4/18/2019



<b><u>Manufacturer</u></b>	<b><u>Description</u></b>	<b><u>Model</u></b>	<b><u>Asset #</u></b>	<b><u>Calibrated</u></b>	<b><u>Cal Due</u></b>
Micro-Tronics	Band Reject Filter, 2400-2500 MHz 18GHz	BRM50702-02	2238	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	8/17/2018	8/17/2019
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	2241	8/17/2018	8/17/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019

## ***Appendix B Test Data***

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## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Product	APIN0555	T-Log Number:	TL075848-RA-FCC
System Configuration:	-	Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Emissions Standard(s):	FCC §15.247 & §15.407	Class:	
Immunity Standard(s):	-	Environment:	Radio

## EMC Test Data

For The

**Aruba, a Hewlett Packard Enterprise company**

Product

APIN0555

Date of Last Test: 6/20/2019



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

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

#### Test Specific Details

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

#### Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 36.5 mW 20: 37.6 mW 40: 75.5 mW 80: 97.1 mW
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 3.2 mW/MHz 20: 3.2 mW/MHz 40: 3.2 mW/MHz 80: 1.8 mW/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	Pass	EIRP = 21.9 dBm (153.9 mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 16.8 MHz 20: 19.06 MHz 40: 38.2 MHz 80: 78.1 MHz

#### 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.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

**Ambient Conditions:** Temperature: 22-23 °C  
Rel. Humidity: 38-40 %

### 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	6 MB/s	92.3%	Yes	1.44	0.3	0.7	696	5 GHz only
11ax20	MCS0	96.2%	Yes	5.45	0.2	0.3	184	
11n20	MCS0	96.2%	Yes	5.43	0.2	0.3	184	
11ax40	MCS0	95.5%	Yes	5.41	0.2	0.4	185	
11n40	MCS0	95.6%	Yes	4.78	0.2	0.4	209	
ax80	MCS0	95.9%	Yes	5.40	0.2	0.4	185	5 GHz only
ac80	MCS0	95.1%	Yes	4.75	0.2	0.4	210	5 GHz only

### Sample Notes

Sample S/N: CNGFK9Y02N (BLE) & CNGFK9Y005 (Zigbee)

Driver: P4 V0.4.5

Antenna: Internal 8 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Date of Test: 12/04/18  
 Test Engineer: Roy Zheng / Rafael Varelas  
 Test Location: FT Lab #4a

Config. Used: 1 (Zigbee EUT setup)  
 Config Change: None  
 EUT Voltage: PoE

Note 1:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$ , RMS detector, trace average 100 traces (at least 100 traces, increase the number to get true average), power averaging on and power integration over the OBW. The measurements were adjusted by adding the Pwr Cor Factor in dB. This is based on $10\log(1/x)$ , where x is the duty cycle. (method SA-2 of ANSI C63.10)
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and $\text{VB} \geq 3 \times \text{RB}$ , Span between 1.5 and 5 times OBW.
Note 4:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

### Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain								Dir G (PWR)	Dir G (PSD)
	1	2	3	4	5	6	7	8		
5250-5350	5.5	3.7	5.3	2.9	4.3	4.5	5.8	3.9	2.0	10.8

8x8 mode uses 4 V and 4 H polarized antennas, directional gain used is the highest of the two.  
 4x4 mode uses 2 V and 2 H polarized antennas, directional gain used is the highest of the two.  
 Legacy modes operate on all chains  
 Power for BF mode is reduced by 3 dB so effective antenna gain does not change  
 CDD active for single stream modes

### For devices that support CDD modes

Min # of spatial streams: 1  
 Max # of spatial streams: 8





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD 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 from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: 11a

Max EIRP (mW): 57.8

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power <sup>1</sup> mW	FCC Limit dBm	Max Power (W)	Result
5260	0	6.0	23.654	92	6.3	32.3	15.1	24.0	Pass
	1				5.8				
	2				4.8				
	3				6.1				
	4				5.4				
	5				4.7				
	6				5.5				
	7				6.7				
5300	0	5.0	23.606	92	5.4	30.0	14.8	24.0	Pass
	1				5.5				
	2				6.4				
	3				6.0				
	4				4.3				
	5				4.7				
	6				4.3				
	7				6.0				
5320	0	5.0	23.702	92	5.8	36.5	15.6	24.0	Pass
	1				6.1				
	2				7.1				
	3				6.6				
	4				5.3				
	5				5.6				
	6				6.3				
	7				6.8				



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: 11a

Max EIRP (mW): 57.8

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power		IC limit dBm	Max Power (W)	Result
						mW	dBm			
5260	0	6.0	16.6	92.3	6.3	32.3	15.1	23.2	0.037	Pass
	1				5.8					
	2				4.8					
	3				6.1					
	4				5.4					
	5				4.7					
	6				5.5					
	7				6.7					
5300	0	5.0	16.6	92.3	5.4	30.0	14.8	23.2		Pass
	1				5.5					
	2				6.4					
	3				6.0					
	4				4.3					
	5				4.7					
	6				4.3					
	7				6.0					
5320	0	5.0	16.8	92.3	5.8	36.5	15.6	23.3	Pass	
	1				6.1					
	2				7.1					
	3				6.6					
	4				5.3					
	5				5.6					
	6				6.3					
	7				6.8					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5250-5350 PSD - FCC/ISED

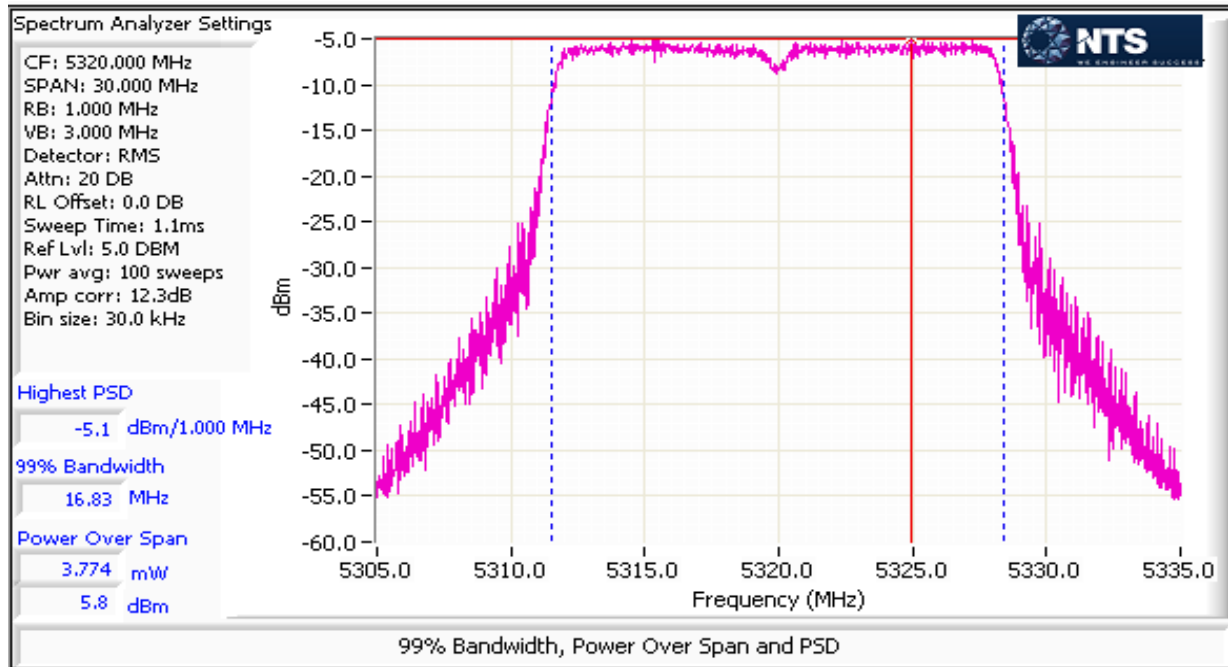
Mode: 11a

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	0	6.0		92	-4.4	3.1	4.9	6.2	11.0	Pass
	1				-4.5					
	2				-5.8					
	3				-4.5					
	4				-4.5					
	5				-5.4					
	6				-4.2					
	7				-3.3					
5300	0	5.0		92	-5.3	3.2	5.1	6.2	11.0	Pass
	1				-4.9					
	2				-3.5					
	3				-3.9					
	4				-4.8					
	5				-4.5					
	6				-4.9					
	7				-3.5					
5320	0	5.0		92	-5.1	3.2	5.1	6.2	11.0	Pass
	1				-4.8					
	2				-3.8					
	3				-4.2					
	4				-4.9					
	5				-4.1					
	6				-4.0					
	7				-3.7					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax20

Max EIRP (mW): 59.6

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power <sup>1</sup>		FCC Limit dBm	Max Power (W)	Result
						mW	dBm			
5260	0	6.0	21.5	96.2	6.0	32.3	15.1	24.0	0.038	Pass
	1				5.9					
	2				6.5					
	3				6.4					
	4				5.2					
	5				5.1					
	6				6.0					
	7				5.8					
5300	0	6.5	21.7	96.2	6.5	37.6	15.8	24.0		Pass
	1				6.6					
	2				7.2					
	3				7.2					
	4				5.7					
	5				5.8					
	6				6.8					
	7				6.4					
5320	0	6.0	21.3	96.2	6.0	33.8	15.3	24.0	Pass	
	1				6.1					
	2				6.8					
	3				6.6					
	4				5.3					
	5				5.4					
	6				7.2					
	7				4.8					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: ax20

Max EIRP (mW): 59.6

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power <sup>1</sup>		IC Limit dBm	Max Power (W)	Result
					mW	dBm				
5260	0	6.0	19.06	96.2	6.0	32.3	15.1	23.8	0.038	Pass
	1				5.9					
	2				6.5					
	3				6.4					
	4				5.2					
	5				5.1					
	6				6.0					
	7				5.8					
5300	0	6.5	19.06	96.2	6.5	37.6	15.8	23.8		Pass
	1				6.6					
	2				7.2					
	3				7.2					
	4				5.7					
	5				5.8					
	6				6.8					
	7				6.4					
5320	0	6.0	18.9	96.2	6.0	33.8	15.3	23.8	Pass	
	1				6.1					
	2				6.8					
	3				6.6					
	4				5.3					
	5				5.4					
	6				7.2					
	7				4.8					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5250-5350 PSD - FCC/ISED

Mode: ax20

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	0	6.0		96.2	-4.9	2.8	4.5	6.2	11.0	Pass
	1				-4.6					
	2				-4.4					
	3				-4.3					
	4				-5.0					
	5				-5.1					
	6				-4.4					
	7				-4.9					
5300	0	6.5		96.2	-4.5	3.2	5.1	6.2	11.0	Pass
	1				-4.1					
	2				-3.7					
	3				-3.6					
	4				-4.5					
	5				-4.1					
	6				-4.1					
	7				-4.4					
5320	0	6.0		96.2	-4.7	3.2	5.1	6.2	11.0	Pass
	1				-4.2					
	2				-3.6					
	3				-3.9					
	4				-4.5					
	5				-4.4					
	6				-3.3					
	7				-5.0					





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax40

Max EIRP (mW): 119.7

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power <sup>1</sup> mW	dBm	FCC Limit dBm	Max Power (W)	Result
5270	0	10.5	44.7	95.5	9.7	73.7	18.7	24.0	0.076	Pass
	1				9.6					
	2				10.2					
	3				10.1					
	4				8.7					
	5				8.5					
	6				8.7					
	7				9.7					
5310	0	10.5	44.1	95.5	9.6	75.5	18.8	24.0	0.076	Pass
	1				9.7					
	2				10.3					
	3				10.3					
	4				9.0					
	5				8.5					
	6				8.3					
	7				10.2					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: ax40

Max EIRP (mW): 119.7

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power <sup>1</sup> mW	Total Power <sup>1</sup> dBm	IC Limit dBm	Max Power (W)	Result
5270	0	10.5	38.2	95.5	9.7	73.7	18.7	24.0	0.076	Pass
	1				9.6					
	2				10.2					
	3				10.1					
	4				8.7					
	5				8.5					
	6				8.7					
	7				9.7					
5310	0	10.5	38.2	95.5	9.6	75.5	18.8	24.0	0.076	Pass
	1				9.7					
	2				10.3					
	3				10.3					
	4				9.0					
	5				8.5					
	6				8.3					
	7				10.2					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device 5250-5350 PSD - FCC/ISED

Mode: ax40

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5270	0	10.5		95.5	-4.5	3.1	4.9	6.2	11.0	Pass
	1				-4.3					
	2				-4.1					
	3				-4.2					
	4				-4.7					
	5				-4.4					
	6				-4.7					
	7				-4.2					
5310	0	10.5		95.5	-4.5	3.2	5.1	6.2	11.0	Pass
	1				-4.2					
	2				-3.7					
	3				-3.7					
	4				-4.3					
	5				-4.8					
	6				-5.1					
	7				-3.3					



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax80

Max EIRP (mW): 153.9

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power <sup>1</sup> mW	Total Power <sup>1</sup> dBm	FCC Limit dBm	Max Power (W)	Result
5290	0	11.5	87.5	95.9	11.6	97.1	19.9	24.0	0.097	Pass
	1				10.4					
	2				11.5					
	3				11.2					
	4				9.7					
	5				9.6					
	6				9.4					
	7				11.2					

## MIMO Device - 5250-5350 MHz Band - ISERC

Mode: ax80

Max EIRP (mW): 153.9

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power <sup>1</sup> mW	Total Power <sup>1</sup> dBm	IC Limit dBm	Max Power (W)	Result
5290	0	11.5	78.1	95.9	11.6	97.1	19.9	24.0	0.097	Pass
	1				10.4					
	2				11.5					
	3				11.2					
	4				9.7					
	5				9.6					
	6				9.4					
	7				11.2					

## MIMO Device 5250-5350 PSD - FCC/ISERC

Mode: ax80

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5290	0	11.5		95.9	-6.2	1.8	2.6	6.2	11.0	Pass
	1				-7.2					
	2				-6.5					
	3				-6.5					
	4				-7.0					
	5				-7.2					
	6				-7.5					
	7				-5.8					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

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

#### Test Specific Details

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

#### 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:      21-23 °C  
   Rel. Humidity:      38-42 %

#### 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.

#### Sample Notes

Sample S/N: CNGFK9Y02N (BLE) & CNGFK9Y005 (Zigbee)

Driver: P4 V0.4.5

Antenna: Internal 8 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio (5GHz radio may also use 4 antennas but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simultaneously). Tests performed with 8 antennas at the 4 antenna power levels. Tests performed with 4 antennas at the target power.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 40.5 mW 20: 40.3 mW 40: 89.1 mW 80: 162.8 mW
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 3.6 mW/MHz 20: 3.6 mW/MHz 40: 3.7 mW/MHz 80: 3.7 mW/MHz
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP ≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold	Pass	EIRP = 22.6 dBm (182.7 mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 18.24 MHz 20: 19.52 MHz 40: 38.91 MHz 80: 78.336 MHz

### 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	6 MB/s	0.923	Yes	1.437	0.3	0.7	696	5 GHz only
11ax20	MCS0	0.962	Yes	5.448	0.2	0.3	184	
11ax40	MCS0	0.955	Yes	5.414	0.2	0.4	185	
ax80	MCS0	0.959	Yes	5.401	0.2	0.4	185	5 GHz only

### For devices that support CDD modes

Min # of spatial streams: 1  
Max # of spatial streams: 8



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1: Bandwidth, Output Power and Power Spectral Density - MIMO Systems

Date of Test: 12/5/2018 0:00  
 Test Engineer: Roy Zheng  
 Test Location: FT Lab #4a

Config. Used: 1 (Zigbee EUT setup)  
 Config Change: None  
 EUT Voltage: PoE

Note 1:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer (see plots below). RBW=1MHz, VB=3 MHz, Span > OBW, # of points in sweep $\geq 2 \times \text{span}/\text{RBW}$ , RMS sample detector, trace average 100 traces (at least 100 traces, increase the number to get true average), power averaging on and power integration over the OBW. The measurements were adjusted by adding YY dB. This is based on $10\log(1/x)$ , where x is the duty cycle. (method SA-2 of ANSI C63.10)
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	99% Bandwidth measured in accordance with C63.10 - RB between 1-5 % of OBW and $\text{VB} \geq 3 \times \text{RB}$ , Span between 1.5 and 5 times OBW.
Note 4:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

### Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain								Dir G (PWR)	Dir G (PSD)
	1	2	3	4	5	6	7	8		
5470-5725	3.2	3.4	2.8	3.6	4.5	3.3	5.4	3.6	0.5	9.3

8x8 mode uses 4 V and 4 H polarized antennas, directional gain used is the highest of the two.  
 4x4 mode uses 2 V and 2 H polarized antennas, directional gain used is the highest of the two.  
 Legacy modes operate on all chains  
 Power for BF mode is reduced by 3 dB so effective antenna gain does not change  
 CDD active for single stream modes



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Notes:	BF = beamforming mode supported, Multichain Legacy = 802.11 legacy data rates supported for multichain transmissions, CDD = Cyclic Delay Diversity (or Cyclic Shift Diversity) modes supported, Sectorized / Xpol = antennas are sectorized or cross polarized.
Notes:	Dir G (PWR) = total gain (Gant + Array Gain) for power calculations; GA (PSD) = total gain for PSD calculations based on FCC KDB 662911. Depending on the modes supported, the Array Gain value for power could be different from the PSD 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 from cyclic delay table of 802.11; Array gains calculated based on beamforming criteria. Option 2: Antennas are paired for beamforming, and the pairs are configured to use the cyclic delay diversity of 802.11; the array gain associated with beamforming with 2 antennas (3dB), and the array gain associated with CDD with two antennas (3dB for PSD and 0 dB for power)





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: 11a

Max EIRP (mW): 45.4

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power		FCC Limit dBm	Max Power (W)	Result
					mW	dBm				
5500	0	7.0	20.962	92.3	6.9	40.5	16.1	24.0	0.041	Pass
	1				6.6					
	2				7.3					
	3				6.8					
	4				6.6					
	5				6.5					
	6				6.1					
	7				6.7					
5580	0	6.5	23.702	92.3	6.2	37.1	15.7	24.0		Pass
	1				6.0					
	2				6.8					
	3				5.8					
	4				6.3					
	5				6.1					
	6				7.1					
	7				6.1					
5700	0	6.5	22.885	92.3	6.2	37.4	15.7	24.0		Pass
	1				6.1					
	2				6.4					
	3				5.9					
	4				6.1					
	5				6.7					
	6				6.8					
	7				6.5					
5720	0	7.0	22.837	92.3	5.9	32.9	15.2	24.0	Pass	
	1				5.7					
	2				5.3					
	3				5.5					
	4				5.9					
	5				6.3					
	6				6.2					
	7				5.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.0		92.3	2.6	16.2	12.1	30.0	0.0162	Pass
	1				2.5					
	2				2.2					
	3				2.1					
	4				2.4					
	5				3.4					
	6				4.0					
	7				2.2					



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: 11a

Max EIRP (mW): 45.4

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power		IC Limit dBm	Max Power (W)	Result
						mW	dBm			
5500	0	7.0	17.424	92.3	6.9	40.5	16.1	23.4	0.041	Pass
	1				6.6					
	2				7.3					
	3				6.8					
	4				6.6					
	5				6.5					
	6				6.1					
	7				6.7					
5580	0	6.5	18.24	92.3	6.2	37.1	15.7	23.6		Pass
	1				6.0					
	2				6.8					
	3				5.8					
	4				6.3					
	5				6.1					
	6				7.1					
	7				6.1					
5700	0	6.5	17.808	92.3	6.2	37.4	15.7	23.5		Pass
	1				6.1					
	2				6.4					
	3				5.9					
	4				6.1					
	5				6.7					
	6				6.8					
	7				6.5					
5720	0	7.0	17.856	92.3	5.9	32.9	15.2	23.5	Pass	
	1				5.7					
	2				5.3					
	3				5.5					
	4				5.9					
	5				6.3					
	6				6.2					
	7				5.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.0		92.3	2.6	16.2	12.1	30.0	0.0162	Pass
	1				2.5					
	2				2.2					
	3				2.1					
	4				2.4					
	5				3.4					
	6				4.0					
	7				2.2					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470-5700 PSD - FCC/ISED

Mode: 11a

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	0	7.0		92.3	-3.9	3.5	5.4	7.7	11.0	Pass
	1				-4.2					
	2				-3.8					
	3				-4.2					
	4				-3.7					
	5				-3.8					
	6				-4.1					
	7				-4.3					
5580	0	6.5		92.3	-4.1	3.6	5.6	7.7	11.0	Pass
	1				-4.4					
	2				-3.9					
	3				-4.9					
	4				-3.6					
	5				-3.6					
	6				-2.6					
	7				-4.3					
5700	0	6.5		92.3	-4.4	3.4	5.3	7.7	11.0	Pass
	1				-4.4					
	2				-4.6					
	3				-4.8					
	4				-4.2					
	5				-3.9					
	6				-2.5					
	7				-4.3					
5720	0	7.0		92.3	-3.6	3.6	5.6	7.7	11.0	Pass
	1				-4.3					
	2				-4.5					
	3				-4.4					
	4				-3.7					
	5				-3.1					
	6				-3.1					
	7				-4.5					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.0		92.3	-4.0	3.6	5.6	26.7	26.7	Pass
	1				-4.0					
	2				-4.4					
	3				-4.5					
	4				-3.9					
	5				-3.2					
	6				-2.3					
	7				-4.4					

#### Spectrum Analyzer Settings

CF: 5500.000 MHz  
 SPAN: 30.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: RMS  
 Attn: 20 DB  
 RL Offset: 0.0 DB  
 Sweep Time: 1.1ms  
 Ref Lvl: 5.0 DBM  
 Pwr avg: 100 sweeps  
 Amp corr: 12.3dB  
 Bin size: 30.0 kHz

#### Highest PSD

-3.9 dBm/1.000 MHz

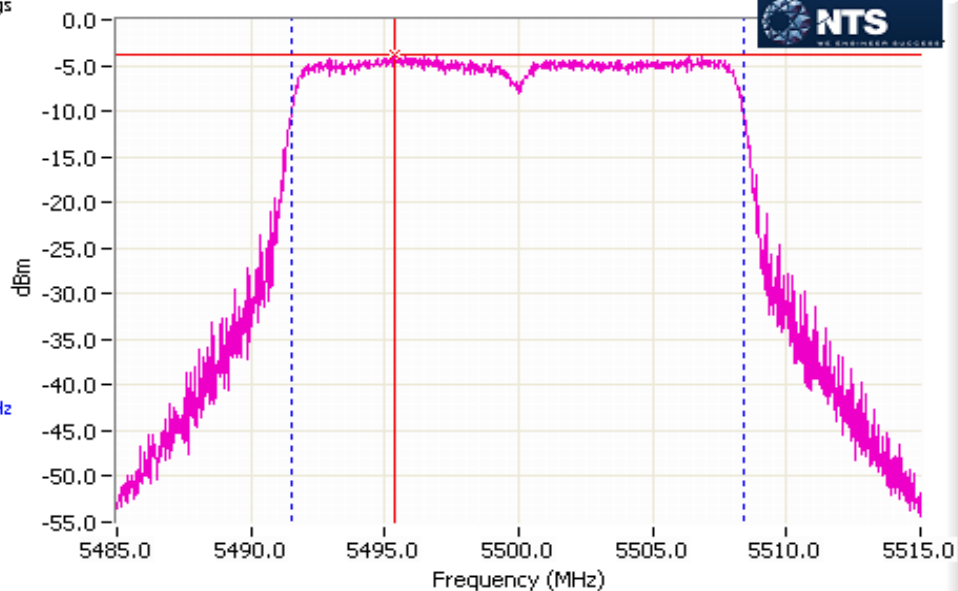
#### 99% Bandwidth

16.83 MHz

#### Power Over Span

4.921 mW

6.9 dBm



99% Bandwidth, Power Over Span and PSD



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ax20

Max EIRP (mW): 45.2

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power		FCC Limit dBm	Max Power (W)	Result
						mW	dBm			
5500	0	7.5	22.917	96.2	7.2	40.3	16.1	24.0	0.040	Pass
	1				6.8					
	2				6.9					
	3				7.1					
	4				7.2					
	5				6.6					
	6				6.6					
	7				6.4					
5580	0	7.5	22.837	96.2	6.8	36.9	15.7	24.0		Pass
	1				6.2					
	2				6.4					
	3				6.3					
	4				6.6					
	5				6.7					
	6				6.7					
	7				6.0					
5700	0	7.5	22.917	96.2	6.9	39.3	15.9	24.0		Pass
	1				6.5					
	2				6.2					
	3				6.4					
	4				6.4					
	5				7.1					
	6				7.5					
	7				6.8					
5720	0	7.5	22.756	96.2	7.1	40.0	16.0	24.0		Pass
	1				6.7					
	2				6.9					
	3				6.6					
	4				6.9					
	5				7.0					
	6				6.9					
	7				6.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.5		96.2	0.8	10.9	10.4	30.0	0.0109	Pass
	1				0.3					
	2				0.4					
	3				0.7					
	4				1.5					
	5				1.3					
	6				0.3					
	7				3.3					





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax20

Max EIRP (mW): 45.2

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power		IC Limit dBm	Max Power (W)	Result
					mW	dBm				
5500	0	7.5	19.36	96.2	7.2	40.3	16.1	23.9	0.040	Pass
	1				6.8					
	2				6.9					
	3				7.1					
	4				7.2					
	5				6.6					
	6				6.6					
	7				6.4					
5580	0	7.5	19.44	96.2	6.8	36.9	15.7	23.9		Pass
	1				6.2					
	2				6.4					
	3				6.3					
	4				6.6					
	5				6.7					
	6				6.7					
	7				6.0					
5700	0	7.5	19.52	96.2	6.9	39.3	15.9	23.9		Pass
	1				6.5					
	2				6.2					
	3				6.4					
	4				6.4					
	5				7.1					
	6				7.5					
	7				6.8					
5720	0	7.5	19.52	96.2	7.1	40.0	16.0	23.9		Pass
	1				6.7					
	2				6.9					
	3				6.6					
	4				6.9					
	5				7.0					
	6				6.9					
	7				6.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.5		96.2	0.8	10.9	10.4	30.0	0.0109	Pass
	1				0.3					
	2				0.4					
	3				0.7					
	4				1.5					
	5				1.3					
	6				0.3					
	7				3.3					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

5470-5725 PSD - FCC/ISED

Mode: ax20

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	0	7.5		96.2	-3.7	3.5	5.4	7.7	11.0	Pass
	1				-4.2					
	2				-3.9					
	3				-3.7					
	4				-3.4					
	5				-3.5					
	6				-3.7					
	7				-4.3					
5580	0	7.5		96.2	-3.6	3.5	5.4	7.7	11.0	Pass
	1				-4.0					
	2				-4.3					
	3				-4.3					
	4				-3.2					
	5				-3.2					
	6				-2.8					
	7				-4.6					
5700	0	7.5		96.2	-3.8	3.6	5.6	7.7	11.0	Pass
	1				-4.0					
	2				-4.2					
	3				-4.2					
	4				-3.7					
	5				-3.2					
	6				-2.6					
	7				-3.6					
5720	0	7.5		96.2	-3.4	3.5	5.4	7.7	11.0	Pass
	1				-4.3					
	2				-4.0					
	3				-4.4					
	4				-3.5					
	5				-3.5					
	6				-3.1					
	7				-4.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5720	0	7.5		96.2	-3.6	4.0	6.0	26.7	26.7	Pass
	1				-3.6					
	2				-3.3					
	3				-3.5					
	4				-2.7					
	5				-2.7					
	6				-2.3					
	7				-3.9					



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ax40

Max EIRP (mW): 100

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power		FCC Limit dBm	Max Power (W)	Result
						mW	dBm			
5510	0	11.5	42.949	95.5	10.1	81.0	19.1	24.0	0.089	Pass
	1				9.8					
	2				9.9					
	3				9.8					
	4				10.1					
	5				9.6					
	6				9.5					
	7				10.0					
5550	0	11.5	42.949	95.5	10.0	82.2	19.1	24.0		Pass
	1				9.9					
	2				9.8					
	3				10.0					
	4				10.3					
	5				9.9					
	6				9.8					
	7				9.6					
5670	0	11.5	42.564	95.5	10.2	89.1	19.5	24.0	Pass	
	1				10.2					
	2				10.0					
	3				10.0					
	4				10.1					
	5				10.4					
	6				10.8					
	7				10.4					
5710	0	11.0	56.282	95.5	9.2	68.0	18.3	24.0	Pass	
	1				8.7					
	2				9.0					
	3				8.8					
	4				9.2					
	5				9.4					
	6				9.3					
	7				9.1					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5710	0	11.0		95.5	4.3	22.8	13.6	30.0	0.0228	Pass
	1				4.5					
	2				4.4					
	3				3.9					
	4				4.6					
	5				4.1					
	6				4.5					
	7				4.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax40

Max EIRP (mW): 100

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power		IC Limit dBm	Max Power (W)	Result
						mW	dBm			
5510	0	11.5	38.528	95.5	10.1	81.0	19.1	24.0	0.089	Pass
	1				9.8					
	2				9.9					
	3				9.8					
	4				10.1					
	5				9.6					
	6				9.5					
	7				10.0					
5550	0	11.5	38.528	95.5	10.0	82.2	19.1	24.0		Pass
	1				9.9					
	2				9.8					
	3				10.0					
	4				10.3					
	5				9.9					
	6				9.8					
	7				9.6					
5670	0	11.5	38.4	95.5	10.2	89.1	19.5	24.0		Pass
	1				10.2					
	2				10.0					
	3				10.0					
	4				10.1					
	5				10.4					
	6				10.8					
	7				10.4					
5710	0	11.0	38.912	95.5	9.2	68.0	18.3	24.0		Pass
	1				8.7					
	2				9.0					
	3				8.8					
	4				9.2					
	5				9.4					
	6				9.3					
	7				9.1					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5710	0	11		95.5	4.3	22.8	13.6	30.0	0.0228	Pass
	1				4.5					
	2				4.4					
	3				3.9					
	4				4.6					
	5				4.1					
	6				4.5					
	7				4.4					





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device 5470-5725 PSD - FCC/ISED

Mode: ax40

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5510	0	11.5		95.5	-3.7	3.6	5.6	7.7	11.0	Pass
	1				-3.6					
	2				-4.0					
	3				-3.9					
	4				-3.2					
	5				-3.7					
	6				-3.4					
	7				-3.9					
5550	0	11.5		95.5	-3.8	3.6	5.6	7.7	11.0	Pass
	1				-4.0					
	2				-3.9					
	3				-4.0					
	4				-3.1					
	5				-3.3					
	6				-3.4					
	7				-4.1					
5670	0	11.5		95.5	-3.7	3.7	5.7	7.7	11.0	Pass
	1				-3.8					
	2				-4.2					
	3				-4.1					
	4				-3.7					
	5				-3.3					
	6				-2.2					
	7				-3.6					
5710	0	11		95.5	-4.0	3.6	5.6	7.7	11.0	Pass
	1				-4.2					
	2				-4.0					
	3				-4.3					
	4				-3.4					
	5				-3.0					
	6				-2.8					
	7				-4.0					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Portion within 5725-5850 MHz band (UNII-3)

5710	0	11		95.5	-5.7	2.3	3.6	26.7	26.7	Pass
	1				-5.6					
	2				-5.9					
	3				-6.2					
	4				-5.6					
	5				-5.6					
	6				-4.7					
	7				-5.7					



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

Mode: ax80

Max EIRP (mW): 177.5

Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power		FCC Limit dBm	Max Power (W)	Result
						mW	dBm			
5530	0	13.5	90	95.9	12.5	158.2	22.0	24.0	0.158	Pass
	1				13.1					
	2				12.8					
	3				12.8					
	4				12.6					
	5				12.6					
	6				12.9					
	7				12.9					
5610	0	14	92.051	95.9	13.0	158.0	22.0	24.0		Pass
	1				12.7					
	2				12.4					
	3				12.5					
	4				12.4					
	5				12.8					
	6				13.4					
	7				12.9					
5690	0	14	93.59	95.9	12.9	162.8	22.1	24.0	Pass	
	1				12.6					
	2				12.6					
	3				12.5					
	4				12.8					
	5				13.2					
	6				13.7					
	7				12.8					

Portion within 5725-5850 MHz band (UNII-3)

5690	0	14		95.9	-1.3	7.8	8.9	30.0	0.0078	Pass
	1				-1.1					
	2				-0.3					
	3				-0.7					
	4				-0.4					
	5				0.5					
	6				0.7					
	7				-0.2					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax80

Max EIRP (mW): 182.7

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power <sup>1</sup> dBm	Total Power mW	dBm	IC Limit dBm	Max Power (W)	Result
5530	0	13.5	78.336	95.9	12.5	158.2	22.0	24.0	0.163	Pass
	1				13.1					
	2				12.8					
	3				12.8					
	4				12.6					
	5				12.6					
	6				12.9					
	7				12.9					
5690	0	14	78.336	95.9	12.9	162.8	22.1	24.0	0.163	Pass
	1				12.6					
	2				12.6					
	3				12.5					
	4				12.8					
	5				13.2					
	6				13.7					
	7				12.8					

### Portion within 5725-5850 MHz band (UNII-3)

5690	0	14		95.9	-1.3	7.8	8.9	30.0	0.0078	Pass
	1				-1.1					
	2				-0.3					
	3				-0.7					
	4				-0.4					
	5				0.5					
	6				0.7					
	7				-0.2					



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

5470-5725 PSD - FCC/ISED  
Mode: ax80

Note: 5610 MHz channel not used for Canada

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	PSD dBm/MHz	Total PSD <sup>1</sup> mW/MHz	Total PSD <sup>1</sup> dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5530	0	13.5		95.9	-4.1	3.1	4.9	7.7	11.0	Pass
	1				-4.4					
	2				-4.8					
	3				-4.6					
	4				-4.4					
	5				-3.7					
	6				-4.4					
	7				-4.1					
5610	0	14		95.9	-3.8	3.4	5.3	7.7	-	Pass
	1				-4.1					
	2				-4.5					
	3				-4.6					
	4				-4.2					
	5				-3.5					
	6				-2.5					
	7				-4.2					
5690	0	14		95.9	-3.7	3.7	5.7	7.7	11.0	Pass
	1				-4.1					
	2				-4.3					
	3				-4.2					
	4				-3.5					
	5				-3.3					
	6				-2.2					
	7				-3.8					

Portion within 5725-5850 MHz band (UNII-3)

5690	0	14		95.9	-6.2	2.0	3.0	26.7	26.7	Pass
	1				-6.3					
	2				-6.7					
	3				-6.9					
	4				-6.3					
	5				-5.7					
	6				-5.0					
	7				-6.4					



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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

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: 24.8 °C  
Rel. Humidity: 39 %

#### Summary of Results

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a, BLE	64 5320 MHz	9.0	14.0	Restricted Band Edge at 5350 MHz	15.209	52.9 dBµV/m @ 5350.2 MHz (-1.1 dB)
3		100 5500 MHz	9.0	16.0	Restricted Band Edge at 5460 MHz		52.1 dBµV/m @ 5460.0 MHz (-1.9 dB)
				12.0	Band Edge 5460 - 5470 MHz	15E	67.8 dBµV/m @ 5468.9 MHz (-0.5 dB)
		140 5700 MHz	9.0	11.0	Band Edge 5725MHz		67.5 dBµV/m @ 5725.3 MHz (-0.8 dB)
6	ax20, BLE	ax20 64 - 5320MHz	14.0	14.0	Restricted Band Edge at 5350 MHz	15.209	53.3 dBµV/m @ 5350.5 MHz (-0.7 dB)
7	ax20, BLE	100 - 5500MHz	14.0	13.5	Restricted Band Edge at 5460 MHz	15.209	47.8 dBµV/m @ 5460.0 MHz (-6.2 dB)
			14.0	13.5	Band Edge 5460 - 5470 MHz	15E	67.2 dBµV/m @ 5469.9 MHz (-1.1 dB)
		140 - 5700MHz	14.0	12.5	Band Edge 5725MHz		67.8 dBµV/m @ 5729.1 MHz (-0.5 dB)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
40MHz Bandwith Modes							
10	ax40, BLE	62 - 5310MHz	14.5	15.0	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5350.2 MHz (-0.5 dB)
11		102 - 5510MHz	14.5	14.5	Restricted Band Edge at 5460 MHz		51.2 dBµV/m @ 5459.3 MHz (-2.8 dB)
		102 - 5510MHz	14.5	14.5	Band Edge 5460 - 5470 MHz	15E	68.2 dBµV/m @ 5469.6 MHz (-0.1 dB)
		134 - 5670MHz	14.5	14.5	Band Edge 5725MHz		67.6 dBµV/m @ 5727.3 MHz (-0.7 dB)
80MHz Bandwith Modes							
14	ax80, BLE	58 - 5290MHz	14.5	14.5	Restricted Band Edge at 5350 MHz	15.209	53.6 dBµV/m @ 5350.1 MHz (-0.4 dB)
15		106 - 5530MHz	14.5	13.5	Restricted Band Edge at 5460 MHz		51.5 dBµV/m @ 5451.6 MHz (-2.5 dB)
		106 - 5530MHz	14.5	13.5	Band Edge 5460 - 5470 MHz	15E	67.5 dBµV/m @ 5462.1 MHz (-0.8 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, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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  $\geq 98\%$  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)
BLE	1 Mb/s	0.65	Yes	0.424	1.9	3.8	2358
ZigBee	-	0.43	Yes	0.858	3.7	7.4	1166
11a	6 MB/s	0.92	Yes	1.437	0.3	0.7	696
ac20	MCS0	0.95	Yes	5.474	0.2	0.5	183
ax20	MCS0	0.96	Yes	5.452	0.2	0.4	183
ax40	MCS0	0.96	Yes	5.297	0.2	0.4	189
ax80	MCS0	0.96	Yes	5.401	0.2	0.4	185
ax80+80	MCS0	0.95	Yes	5.401	0.2	0.4	185

2 kHz  
1 kHz  
200 Hz  
200 Hz  
200 Hz  
200 Hz  
200 Hz

### Sample Notes

Sample S/N: CNGFK9Y02N (BLE)

Driver: P4 V0.4.5

Antenna: Internal 8 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio (5GHz radio may also use 4 antennas but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simultaneously). Tests performed with 8 antennas at the 4 antenna power levels. Tests performed with 4 antennas at the target power.

### 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 $\geq$ 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 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)
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.





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2: Radiated Bandedge Measurements, 5250-5350MHz

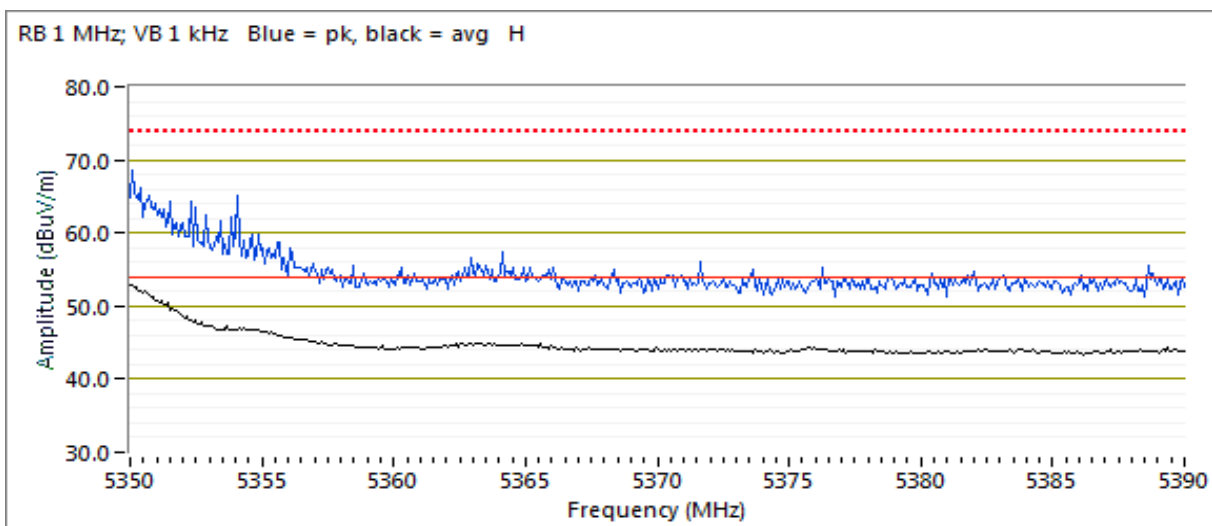
Channel: 64 - 5320 MHz at setting 9, BLE at 2440 MHz, 8 dBm, V primary antenna.

Tx Chain: 8

Mode: a

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209	Detector	Azimuth	Height	Comments
5350.240	52.9	H	54.0 -1.1	Avg	49	2.0	VB 1 kHz, note 3
5353.210	68.5	H	74.0 -5.5	PK	49	2.0	





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #3: Radiated Bandedge Measurements, 5470-5725MHz

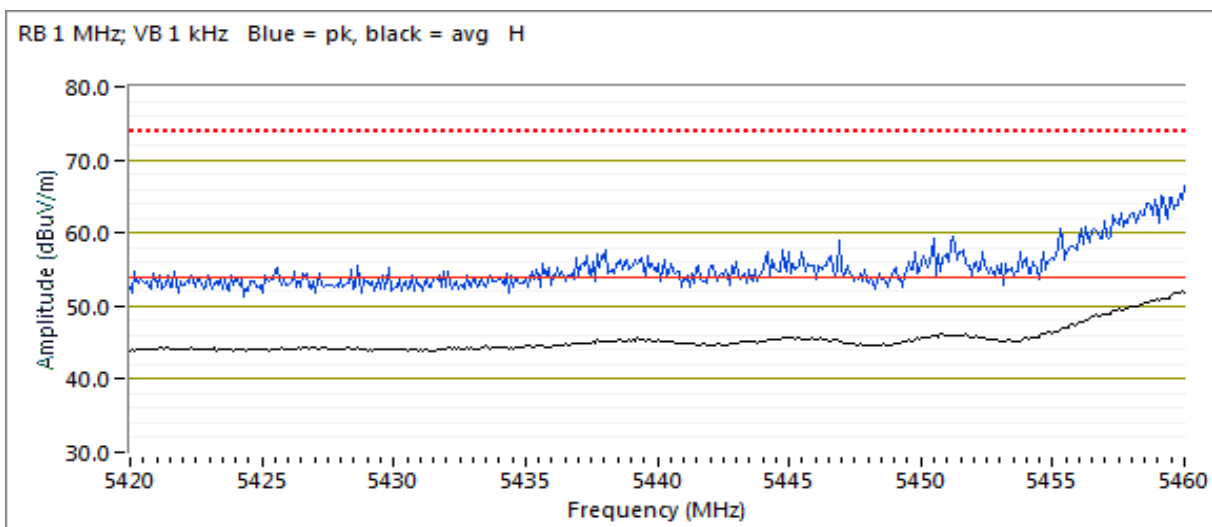
Channel: 100 - 5500 MHz at setting 15, BLE at 2440 MHz, 8 dBm, V primary antenna.

Tx Chain: 8

Mode: a

### 5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5460.000	52.1	H	54.0	-1.9	Avg	301	1.82	VB 1 kHz, note 3
5459.760	68.2	H	74.0	-5.8	PK	301	1.82	



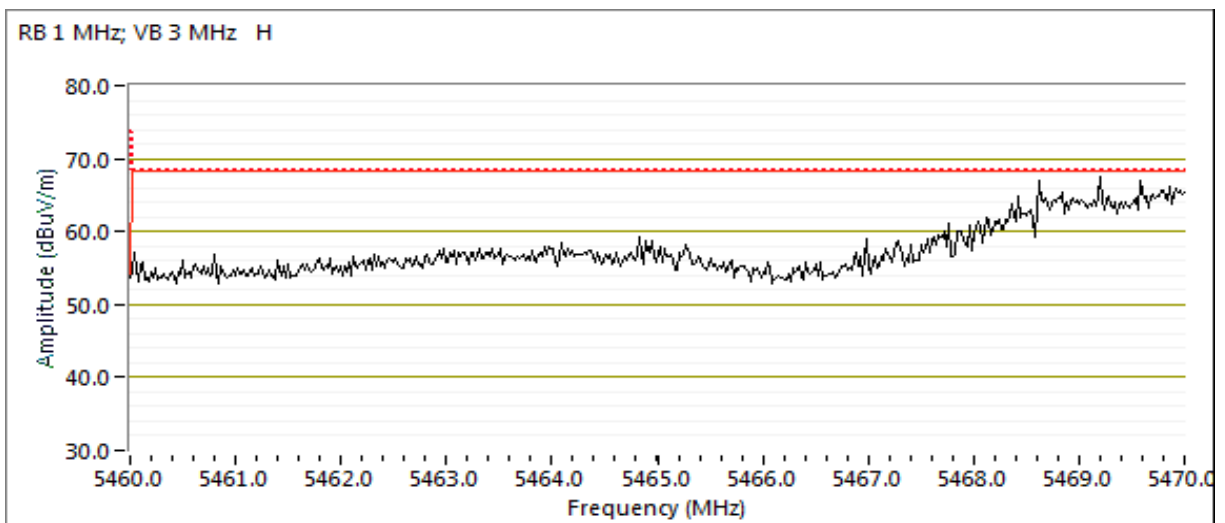


## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5468.920	67.8	H	68.3	-0.5	PK	43	1.53	
5469.800	50.9	H	54.0	-3.1	Avg	43	1.53	VB 1 kHz, note 3
5468.920	67.8	H	74.0	-6.2	PK	43	1.53	





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Date of Test: 10/22/2018  
 Test Engineer: John Caizzi  
 Test Location: Fremont Chamber #7

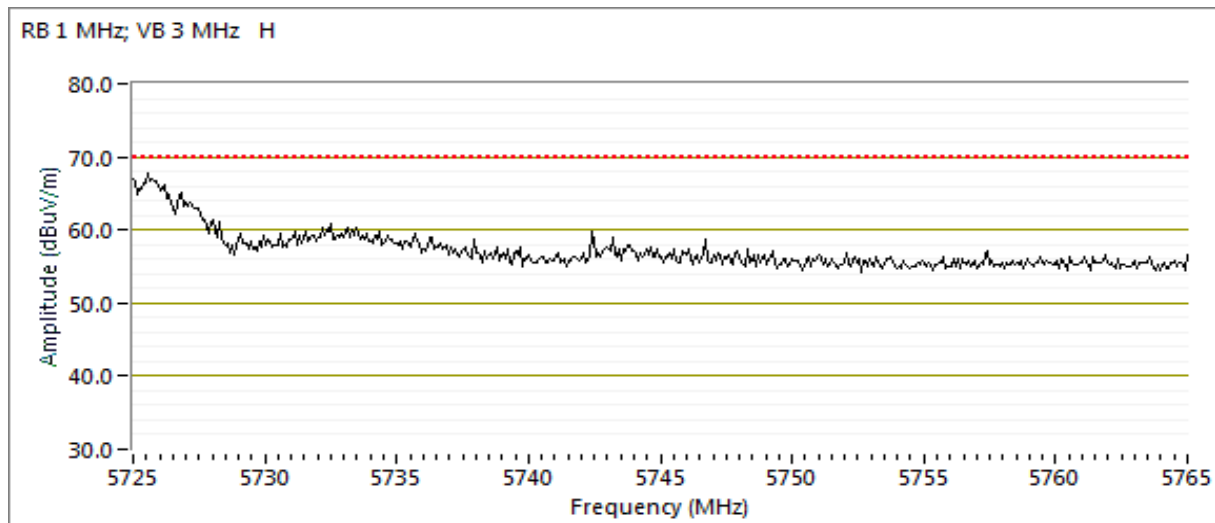
Config. Used: 1  
 Config Change: none  
 EUT Voltage: PoE & 120V/60Hz

Channel: 140 - 5700 MHz at setting 11  
 Tx Chain: 8  
 Mode: a

Mode: BLE at 8 dBm  
 Ch.Freq.: 2440 MHz  
 V primary antenna

## 5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.320	67.5	H	68.3	-0.8	PK	62	1.51	





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #6: Radiated Bandedge Measurements, 5250-5350 MHz

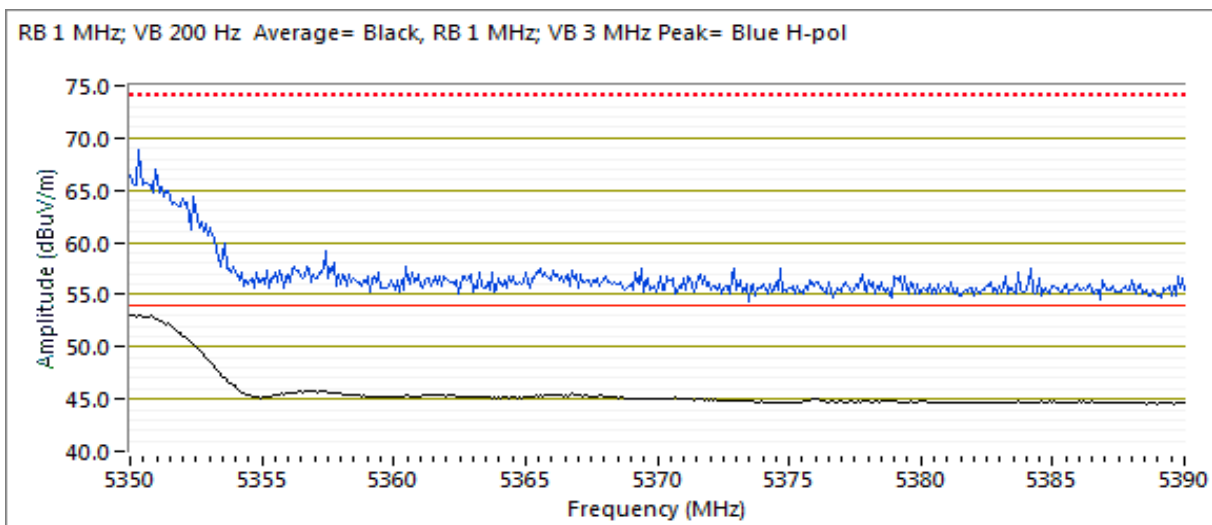
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 64 - 5320 MHz  
 Tx Chain: 8x8  
 Mode: ax20, BLE

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.500	53.3	H	54.0	-0.7	Avg	300	1.4	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5350.530	69.7	H	74.0	-4.3	PK	300	1.4	POS; RB 1 MHz; VB: 3 MHz
5350.190	51.6	V	54.0	-2.4	Avg	272	1.9	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5351.520	67.2	V	74.0	-6.8	PK	272	1.9	POS; RB 1 MHz; VB: 3 MHz





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #7: Radiated Bandedge Measurements, 5470-5725MHz

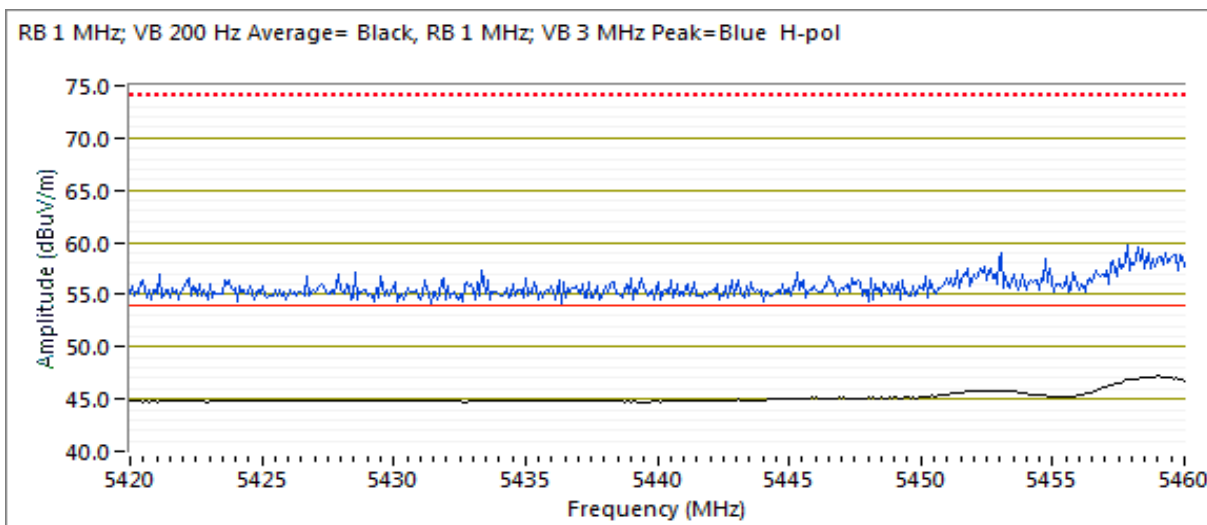
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 100 - 5500 MHz  
 Tx Chain: 8x8  
 Mode: ax20, BLE

### 5460 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	
5460.000	47.8	V	54.0	-6.2	Avg	295	1.5	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5458.990	47.2	H	54.0	-6.8	Avg	298	1.5	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5459.920	63.8	V	74.0	-10.2	PK	295	1.5	POS; RB 1 MHz; VB: 3 MHz
5459.900	61.1	H	74.0	-12.9	PK	298	1.5	POS; RB 1 MHz; VB: 3 MHz



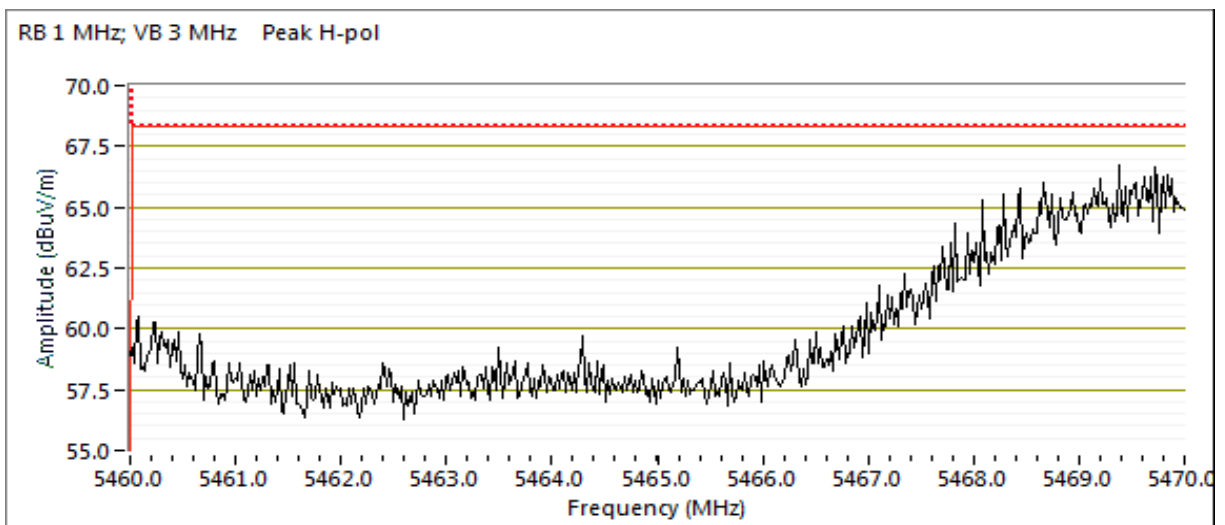


## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.930	67.2	H	68.3	-1.1	PK	300	1.4	POS; RB 1 MHz; VB: 3 MHz
5469.000	61.4	V	68.3	-6.9	PK	289	1.6	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

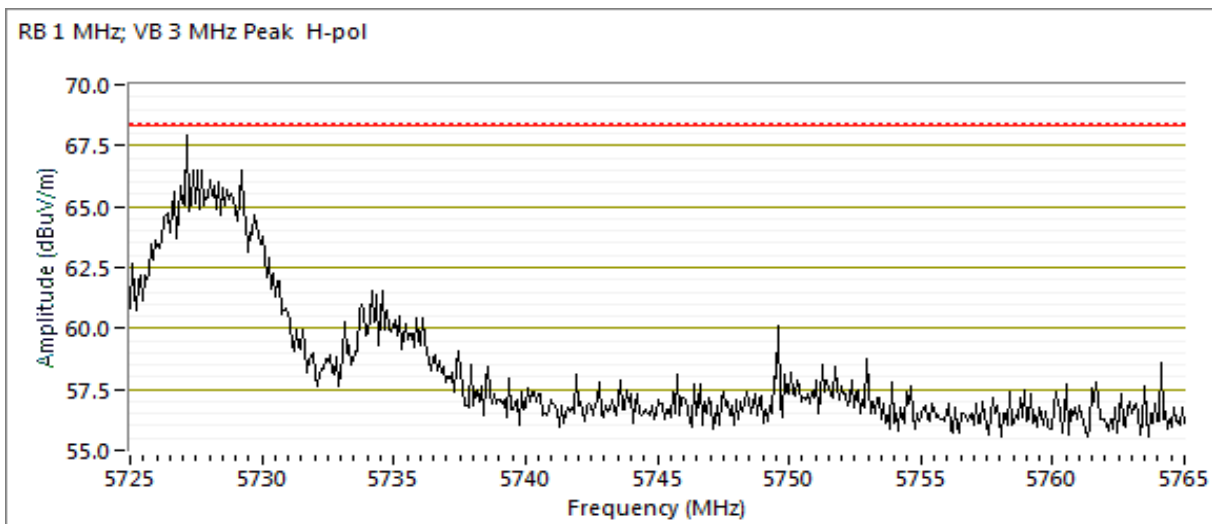
Channel: 140 - 5700MHz

Tx Chain:

Mode: ax20, BLE

### 5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5729.070	67.8	H	68.3	-0.5	PK	288	1.6	POS; RB 1 MHz; VB: 3 MHz
5726.890	63.4	V	68.3	-4.9	PK	293	2.0	POS; RB 1 MHz; VB: 3 MHz







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #10: Radiated Bandedge Measurements, 5250-5350 MHz

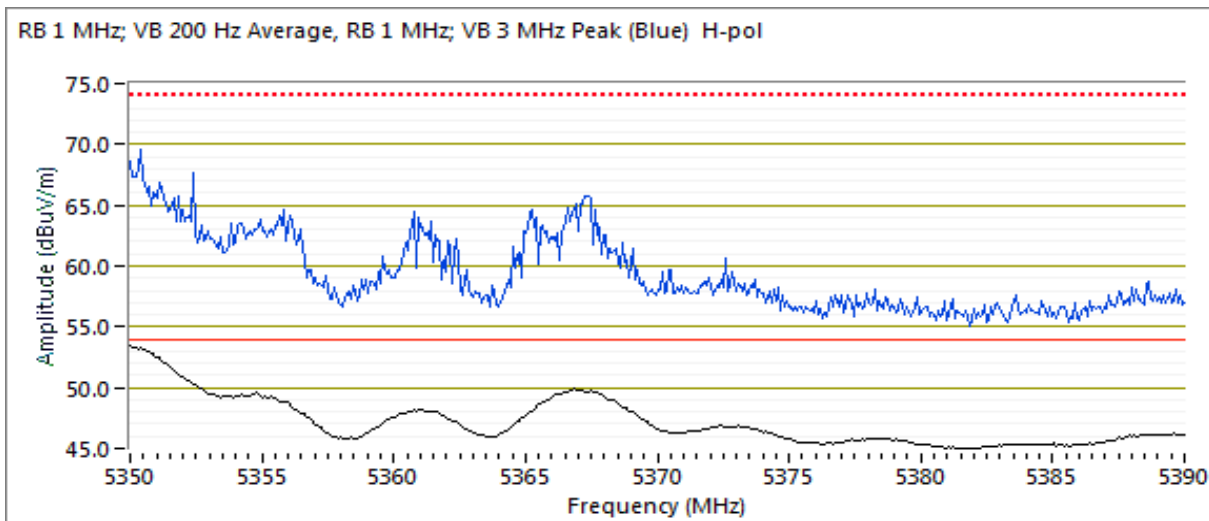
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 62 - 5310 MHz  
 Tx Chain: 8x8  
 Mode: ax40

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.160	53.5	H	54.0	-0.5	Avg	290	1.4	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5350.230	69.4	H	74.0	-4.6	PK	290	1.4	POS; RB 1 MHz; VB: 3 MHz
5353.470	50.3	V	54.0	-3.7	Avg	283	1.9	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5352.600	65.0	V	74.0	-9.0	PK	283	1.9	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #11: Radiated Bandedge Measurements, 5470-5725 MHz

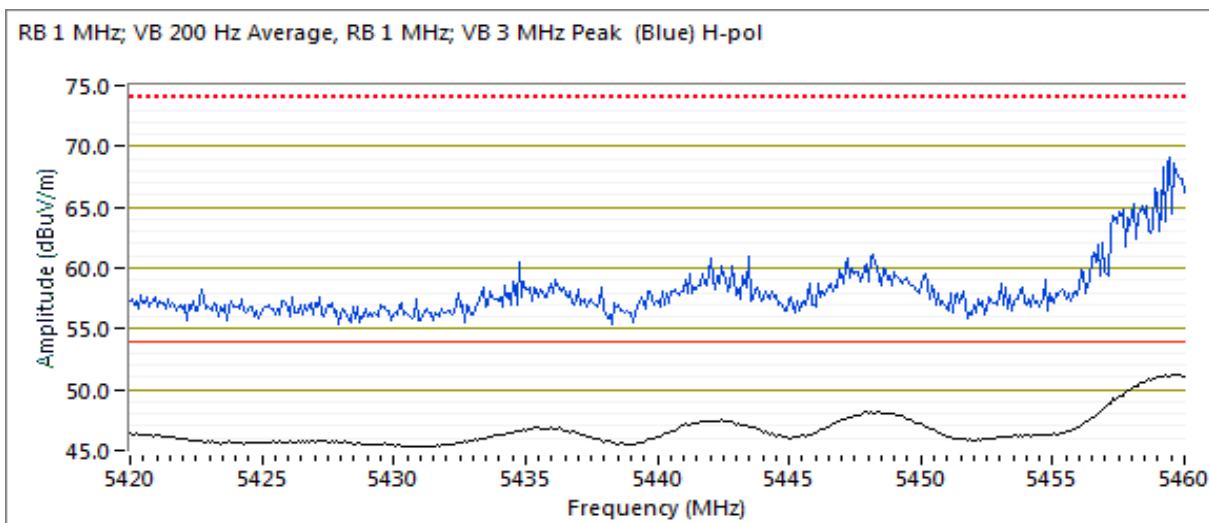
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 102 - 5510 MHz  
 Tx Chain: 8x8  
 Mode: ax40

### 5460 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	
5459.250	51.2	H	54.0	-2.8	Avg	294	2.0	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5459.420	69.4	H	74.0	-4.6	PK	294	2.0	POS; RB 1 MHz; VB: 3 MHz
5459.930	51.0	V	54.0	-3.0	Avg	284	1.6	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5459.620	68.8	V	74.0	-5.2	PK	284	1.6	POS; RB 1 MHz; VB: 3 MHz



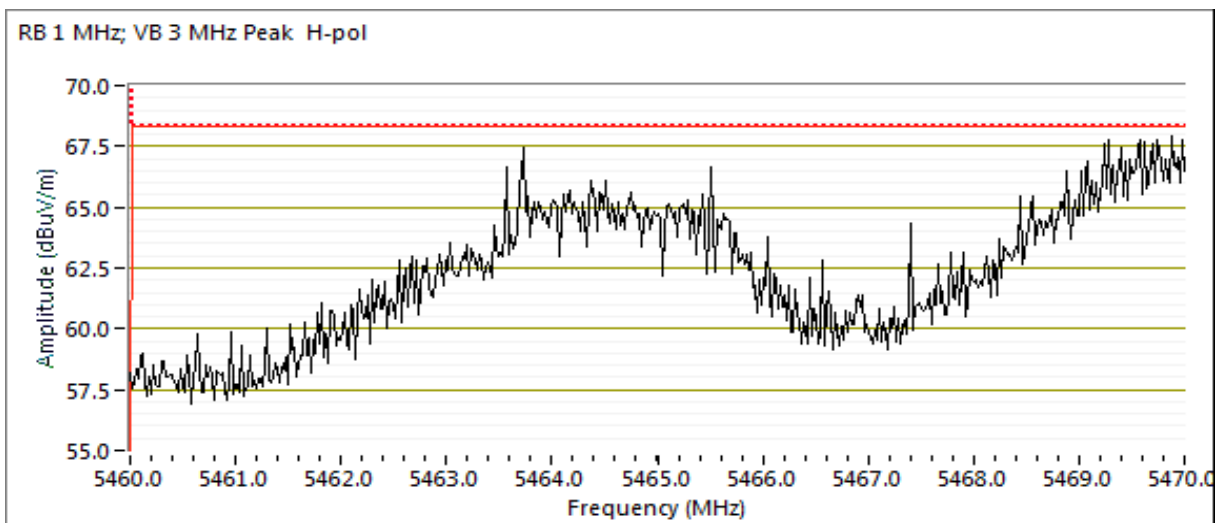


## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.570	68.2	H	68.3	-0.1	PK	294	1.5	POS; RB 1 MHz; VB: 3 MHz
5467.820	66.0	V	68.3	-2.3	PK	290	1.5	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

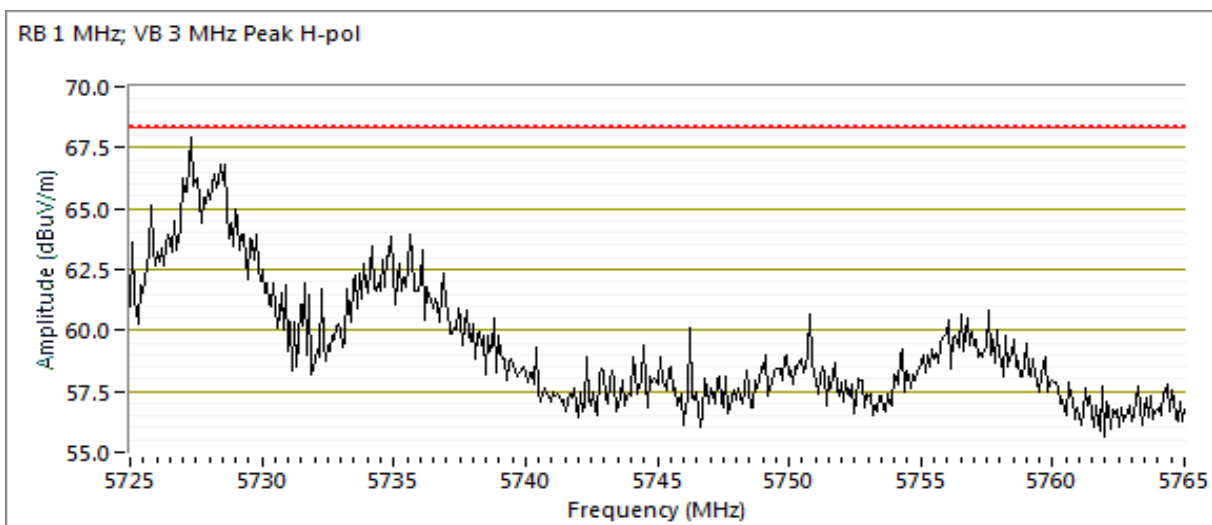
Channel: 134 - 5670 MHz

Tx Chain: 8x8

Mode: ax40

### 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	
5727.280	67.6	H	68.3	-0.7	PK	296	2.0	POS; RB 1 MHz; VB: 3 MHz
5733.000	64.9	V	68.3	-3.4	PK	292	2.1	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #14: Radiated Bandedge Measurements, 5250-5350 MHz

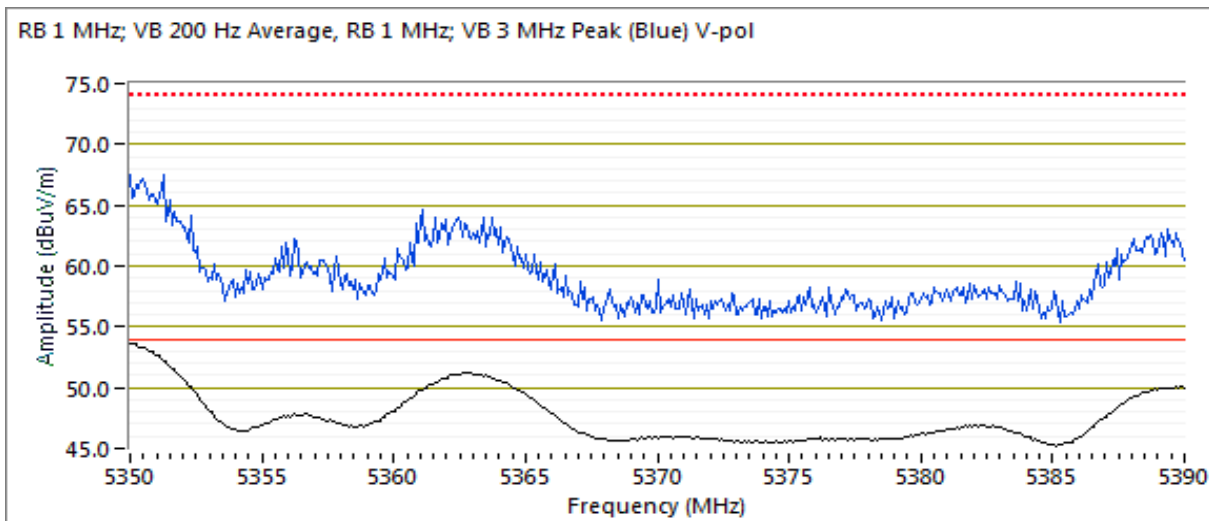
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 58 - 5290 MHz  
 Tx Chain: 8x8  
 Mode: ax80

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.090	53.6	V	54.0	-0.4	Avg	293	1.8	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5353.100	52.9	H	54.0	-1.1	Avg	293	1.6	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5350.570	69.5	V	74.0	-4.5	PK	293	1.8	POS; RB 1 MHz; VB: 3 MHz
5354.130	68.3	H	74.0	-5.7	PK	293	1.6	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #15: Radiated Bandedge Measurements, 5470-5725 MHz

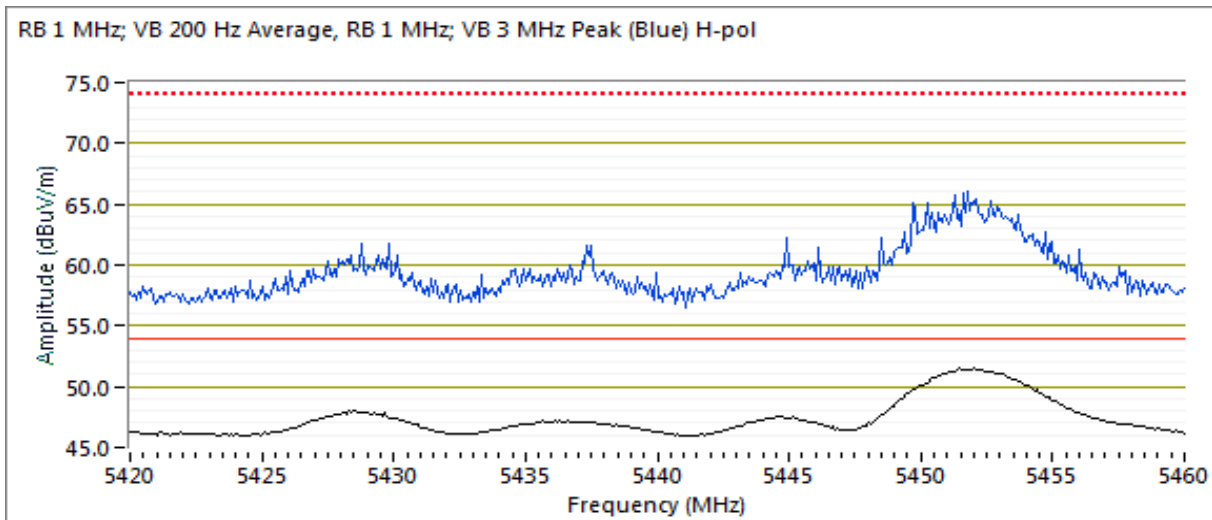
Date of Test: 10/16/2018  
 Test Engineer: Deniz Demirci  
 Test Location: Fremont Chamber #7

Config. Used: 1  
 Config Change: None  
 EUT Voltage: POE & 120 V, 60 Hz

Channel: 106 - 5530 MHz  
 Tx Chain: 8x8  
 Mode: ax80

### 5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5451.560	51.5	H	54.0	-2.5	Avg	282	2.3	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5453.440	66.9	H	74.0	-7.1	PK	282	2.3	POS; RB 1 MHz; VB: 3 MHz
5454.640	49.6	V	54.0	-4.4	Avg	282	1.4	Note 3 - POS; RB 1 MHz; VB: 200 Hz
5455.480	65.1	V	74.0	-8.9	PK	282	1.4	POS; RB 1 MHz; VB: 3 MHz



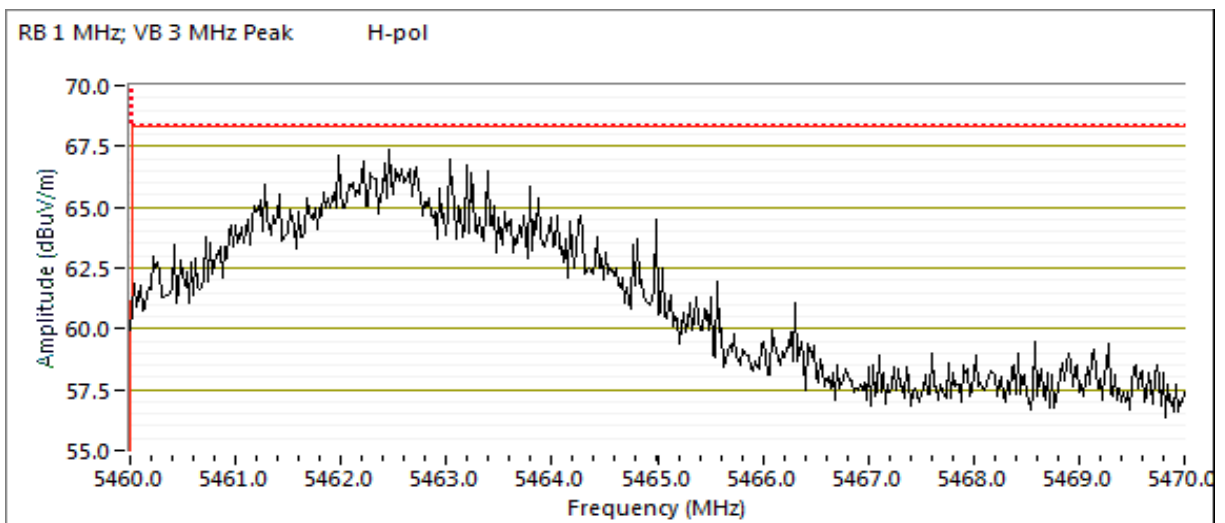


## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5462.050	67.5	H	68.3	-0.8	PK	276	1.7	POS; RB 1 MHz; VB: 3 MHz
5461.250	66.1	V	68.3	-2.2	PK	287	1.1	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### RSS-247, FCC 15.247 and FCC 15.407 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

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:        20-24 °C  
   Rel. Humidity:        35-45 %

#### 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.

#### Summary of Results

Run #	Mode	Channel	Target Powers	Power Settings	Test Performed	Limit	Result / Margin
Scans on "center" channel in all five OFDM modes determined the worst case modes were a and b.							
2	a / b, ZigBee	6, 116 Wi-Fi 18 - ZB	15 / 20 / 8	15 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	39.1 dBµV/m @ 22319.7MHz (-14.9dB)
	a / b, ZigBee	6, 60 Wi-Fi 26 - ZigBee	15 / 20 / 8	15 / 20 / 8			47.2 dBµV/m @ 10599.9 MHz (-6.8 dB)
	a / b, BLE	6, 116 Wi-Fi 17 - BLE	15 / 20 / 8	15 / 20 / 8			49.4 dBµV/m @ 7319.3 MHz (-4.6 dB)
	a / b, BLE	6, 60 Wi-Fi 39 - BLE	15 / 20 / 8	15 / 20 / 8			49.4 dBµV/m @ 7439.3 MHz (-4.6 dB)





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #	Mode	Channel	Target Powers	Power Settings	Test Performed	Limit	Result / Margin
-------	------	---------	---------------	----------------	----------------	-------	-----------------

Scans on "lowest" and "center" channel in all five OFDM modes to determine the worst case mode. (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band).

4	a / g	1 & 60	14 / 20	20 / 20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	46.2 dBµV/m @ 2195.7 MHz (-7.8 dB)
	ax20	1 & 60	14.0 / 20	20 / 20			44.2 dBµV/m @ 10600.0 MHz (-9.8 dB)
	ax40	1 & 54	14.5 / 20	20 / 20			33.9 dBµV/m @ 21076.6MHz (-20.1dB)
	ax80 / b	1 & 58	14.5 / 20	20 / 20			51.9 dBµV/m @ 10580.0MHz (-16.4dB)

Measurements on low and high channels in worst-case OFDM mode.

5	g / a	1 & 52	20 / 20	20 / 20	Radiated Emissions, 1 - 12 GHz	FCC 15.209/ 15.247 / 15 E	43.8 dBµV/m @ 1034.9 MHz (-10.2 dB)
		11 & 64	20 / 20				46.4 dBµV/m @ 21275.0 MHz (-7.6 dB)

Scans on "center" channel in all five OFDM modes to determine the worst case mode (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band). ac160 mode performed in Run 1.

6	g / a	6 & 116	20 / 12	20 / 20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.1 dBµV/m @ 22320.7 MHz (-9.9 dB)
	ax20	6 & 116	20 / 14.5	20 / 20			42.8dBµV/m @ 22321.4MHz (-11.2dB)
	ax40	6 & 110	20 / 14.5	20 / 20			50.1 dBµV/m @ 11100.0 MHz (-3.9 dB)
	ax80 / b	6 & 122	20 / 14.5	20 / 20			44.4 dBµV/m @ 11220.0 MHz (-9.6 dB)

Measurements on low and high channels in worst-case OFDM mode.

7	ax40	3 & 102	20 / 20	20 / 20	Radiated Emissions, 1 - 12 GHz	FCC 15.209/ 15.247 / 15 E	48.6dBµV/m @ 11019.9MHz (-5.4dB)
		9 & 142	20 / 20				43.1dBµV/m @ 22835.7MHz (-10.9dB)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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  $\geq 98\%$  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)	
BLE	1 Mb/s	0.65	Yes	0.424	1.9	3.8	2358	3 kHz
ZigBee	-	0.43	Yes	0.858	3.7	7.4	1166	2 kHz
11b	1 Mb/s	0.78	Yes	0.667	1.1	2.2	1499	2 kHz
11g	6 Mb/s	0.92	Yes	1.437	0.4	0.7	696	1 kHz
11a	6 Mb/s	0.92	Yes	1.437	0.3	0.7	696	1 kHz
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182	200 Hz
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185	200 Hz
ax80	MCS0	0.96	Yes	5.401	0.2	0.4	185	200 Hz

### Sample Notes

Sample S/N: CNGFK9Y02N (BLE) & CNGFK9Y005 (Zigbee)

Driver: P4 V0.4.5

Antenna: Internal 8 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio (5GHz radio may also use 4 antennas but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simultaneously). Tests performed with 8 antennas at the 4 antenna power levels. Tests performed with 4 antennas at the target power.

### Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB $\geq$ 3MHz, peak detector).
Note 2:	Emission in non-restricted band, but limit of 15.209 used.
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 constant duty cycle $< 98\%$ , average measurement performed: RBW=1MHz, VBW $> 1/T$ but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by linear voltage correction factor
Note 5:	-20 dB correction factor was used for ZigBee as 10% operational duty cycle
Note 6:	Digital device emission, class A limit extrapolated to 3m applied, peak reading vs peak or average limit.



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #2, Radiated Spurious Emissions, 1,000 - 40,000 MHz.

Date of Test: 12/27/2018 0:00

Test Engineer: Rafael Varelas

Test Location: Ft Chamber #5

Config. Used: 1

Config Change: None

EUT Voltage: PoE

## Run #2b: Center Channel

Channel: 6, 116 Wi-Fi, 18 - ZigBee

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Mode: a, b

Data Rate: 6Mbps, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	43.3	H	60.0	-16.7	Peak	129	1.0	Note 6
2000.000	48.3	H	60.0	-11.7	Peak	61	1.0	Note 6
11151.670	43.6	V	54.0	-10.4	Peak	209	1.0	
22319.690	39.1	V	54.0	-14.9	Vavg	220	1.6	RB 1 MHz;VB 1 kHz; VAVG 100
22320.070	51.8	V	74.0	-22.2	PK	220	1.6	RB 1 MHz;VB 3 MHz;Peak
7321.330	37.3	V	54.0	-16.7	Avg	187	2.0	Note 5
7321.530	57.3	V	74.0	-16.7	PK	187	2.0	RB 1 MHz;VB 3 MHz;Peak
5084.750	37.2	V	54.0	-16.8	Vavg	250	2.0	RB 1 MHz;VB 1 kHz; VAVG 100
5085.320	49.7	V	74.0	-24.3	PK	250	2.0	RB 1 MHz;VB 3 MHz;Peak

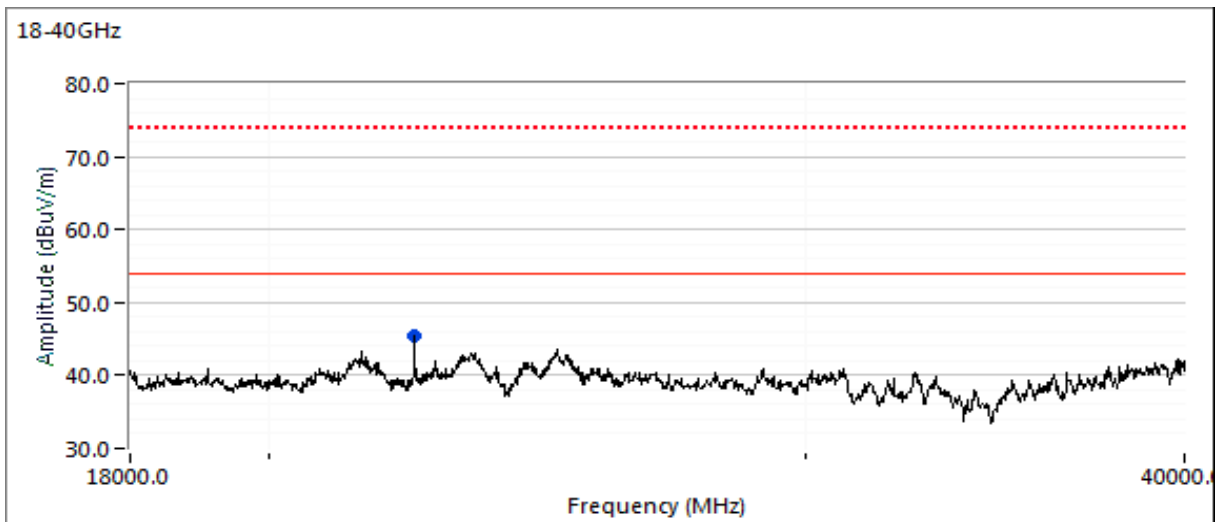
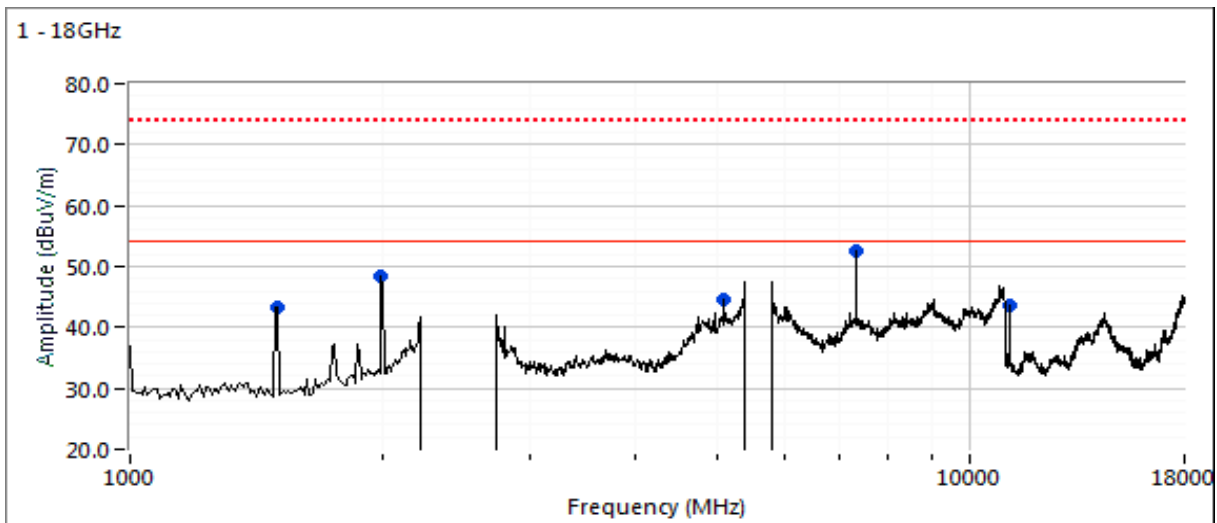
Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBμV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2c: Center Channel

Channel: 6, 60 Wi-Fi, 26 - ZigBee

Mode: a, b

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: 6Mbps, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	43.9	H	54.0	-10.1	Peak	120	1.0	
2000.000	48.2	H	60.0	-11.8	Peak	62	2.2	Note 6
7438.690	38.2	V	54.0	-15.8	Avg	222	1.0	Note 5
7441.490	58.2	V	74.0	-15.8	PK	222	1.0	RB 1 MHz;VB 3 MHz;Peak
10599.870	47.2	V	54.0	-6.8	Vavg	191	1.0	RB 1 MHz;VB 1 kHz; VAVG 100
10599.810	55.3	V	74.0	-18.7	PK	191	1.0	RB 1 MHz;VB 3 MHz;Peak
5454.860	40.9	H	54.0	-13.1	Avg	130	1.7	RB 1 MHz;VB 1 kHz; VAVG 100
5455.100	52.3	H	74.0	-21.7	PK	130	1.7	RB 1 MHz;VB 3 MHz;Peak

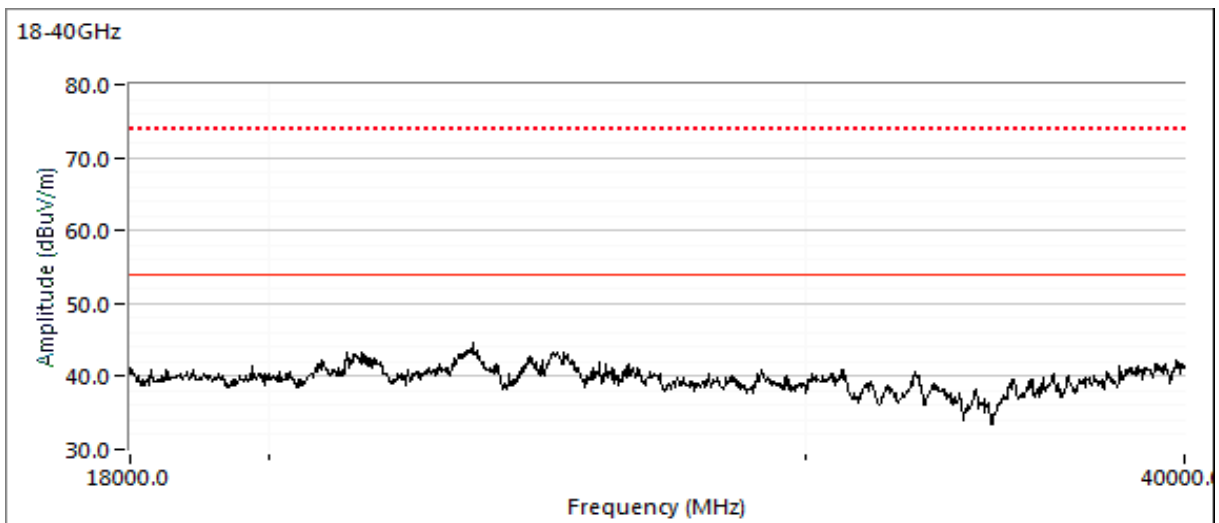
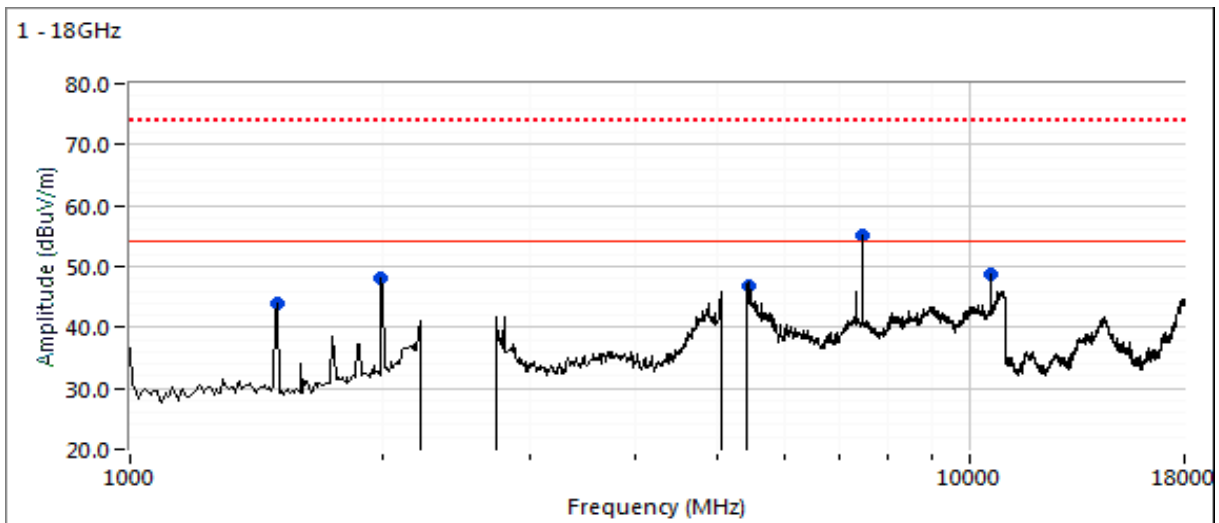
Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dB $\mu$ V/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB $\geq$ 3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2e: Center Channel

Channel: 6, 116 Wi-Fi, 17 - BLE

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Mode: a, b

Data Rate: 6Mbps, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2000.000	46.0	V	60.0	-14.0	Peak	184	1.0	Note 6
7319.270	49.4	V	54.0	-4.6	Vavg	220	1.3	VB 3 kHz;Peak VAVG 100
7320.750	55.5	V	74.0	-18.5	PK	220	1.3	RB 1 MHz;VB 3 MHz;Peak
4879.790	46.1	V	54.0	-7.9	Vavg	210	1.1	VB 3 kHz;Peak VAVG 100
4879.380	51.0	V	74.0	-23.0	PK	210	1.1	RB 1 MHz;VB 3 MHz;Peak

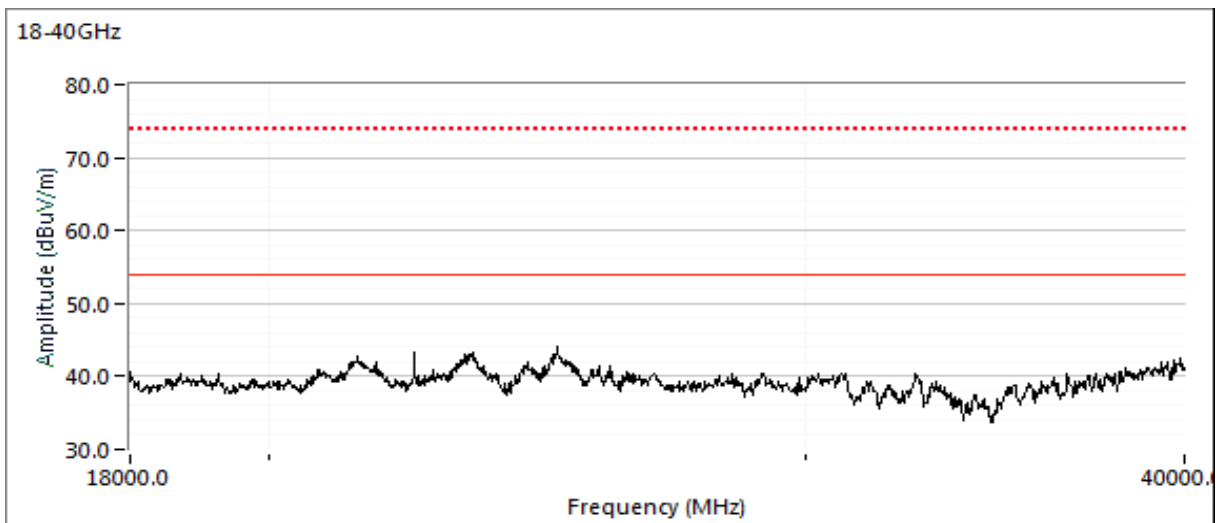
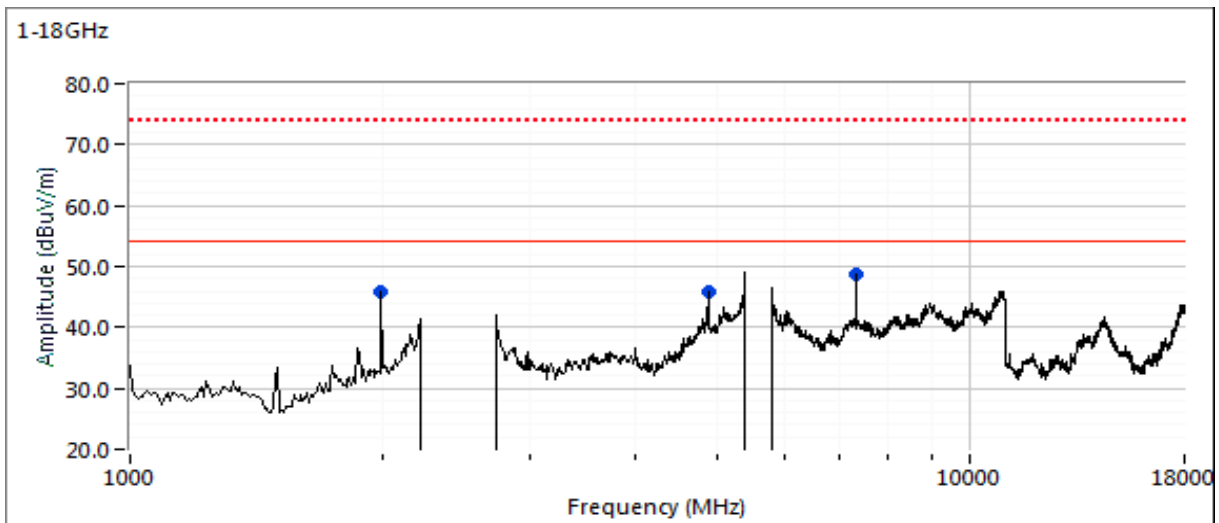
Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dB $\mu$ V/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB $\geq$ 3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2f: Center Channel

Channel: 6, 60 Wi-Fi, 39 - BLE

Mode: a, b

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: 6Mbps, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2000.000	48.5	H	60.0	-11.5	Peak	95	2.2	Note 6
7439.330	49.4	V	54.0	-4.6	Vavg	218	1.3	VB 3 kHz;Peak VAVG 100
7440.520	56.1	V	74.0	-17.9	PK	218	1.3	RB 1 MHz;VB 3 MHz;Peak
10599.930	47.3	V	54.0	-6.7	Vavg	180	1.4	VB 1 kHz;Peak VAVG 100
10599.970	55.4	V	74.0	-18.6	PK	180	1.4	RB 1 MHz;VB 3 MHz;Peak
4954.130	40.2	V	54.0	-13.8	Vavg	118	1.6	VB 1 kHz;Peak VAVG 100
4955.520	49.0	V	74.0	-25.0	PK	118	1.6	RB 1 MHz;VB 3 MHz;Peak

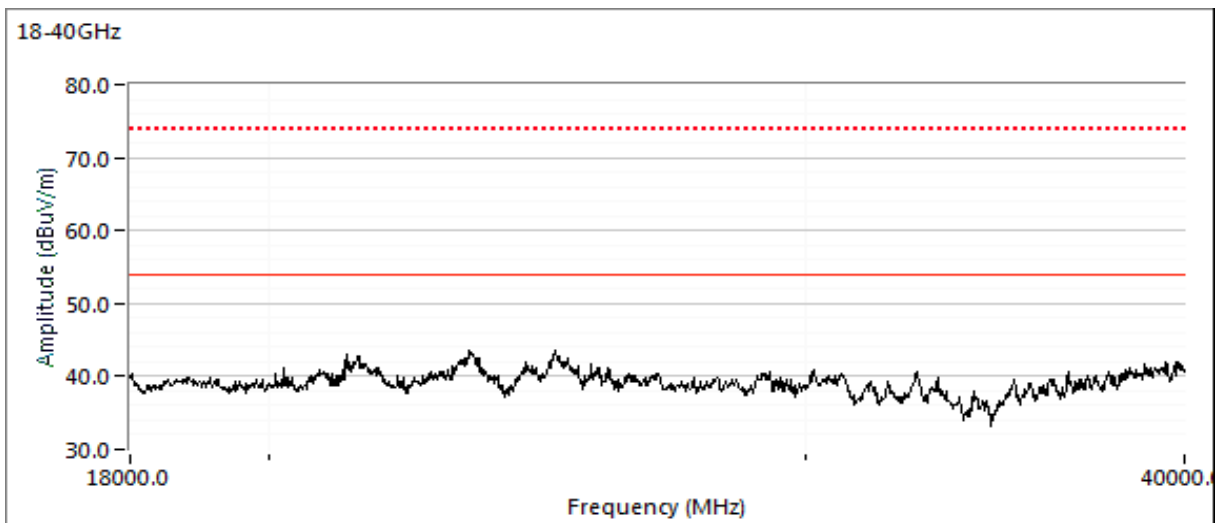
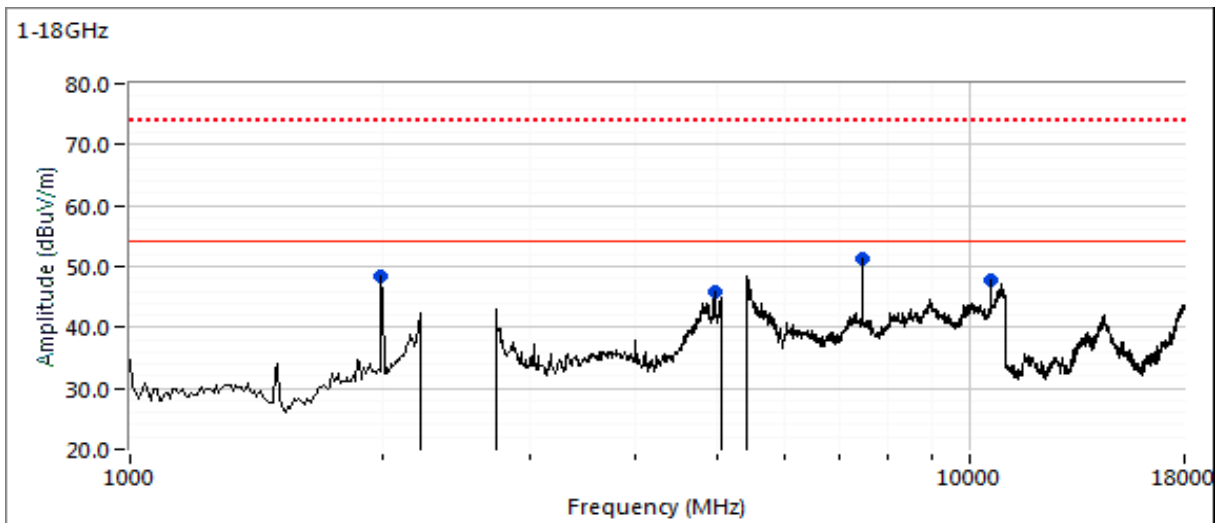
Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dB $\mu$ V/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB $\geq$ 3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #4, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250-5350 MHz Band

Date of Test: 10/26/18

Test Engineer: John Caizzi

Test Location: Chamber 4

Config. Used: 1

Config. Used: none

EUT Voltage: PoE & 120V / 60Hz

## Run #4a: Center Channel

Channel: 1 & 60 Wi-Fi

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Mode: a, g

Data Rate: 6 Mb/s

Power: 20/20

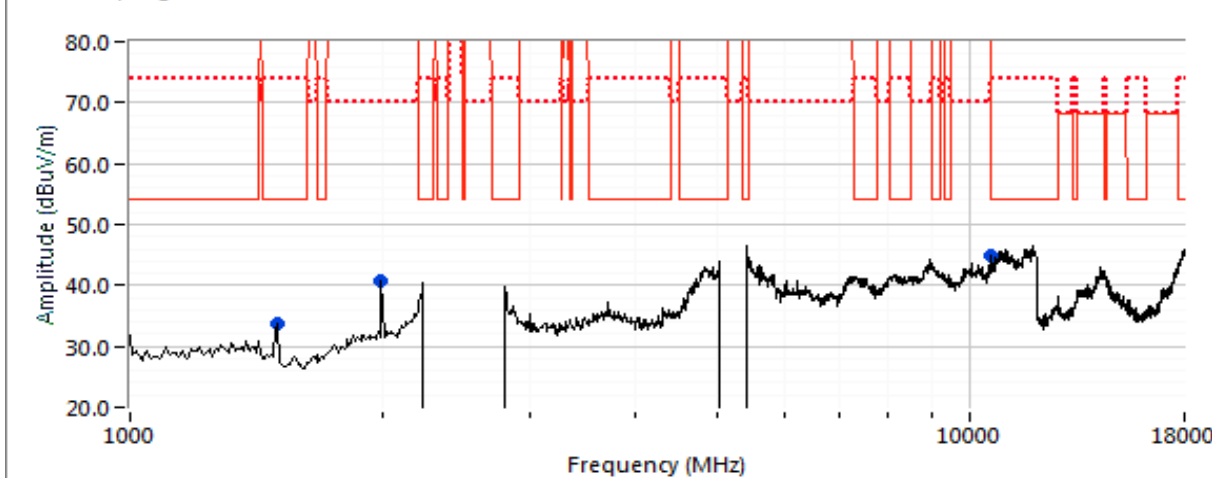
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
21195.680	46.2	V	54.0	-7.8	Avg	25	1.1	VB 1 kHz, note 3
21195.700	55.3	V	74.0	-18.7	PK	25	1.1	RB 1 MHz;VB 3 MHz;Peak
10599.980	44.6	V	54.0	-9.4	Avg	357	2.02	VB 1 kHz, note 3
10599.980	52.6	V	74.0	-21.4	PK	357	2.02	RB 1 MHz;VB 3 MHz;Peak
1500.000	33.8	V	60.0	-26.2	Peak	161	2.0	Note 6
2000.000	40.9	V	60.0	-19.1	Peak	262	1.5	Note 6

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.

Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

11a CH60, 11g CH1





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #4b: Center Channel

Channel: 1 & 60 Wi-Fi

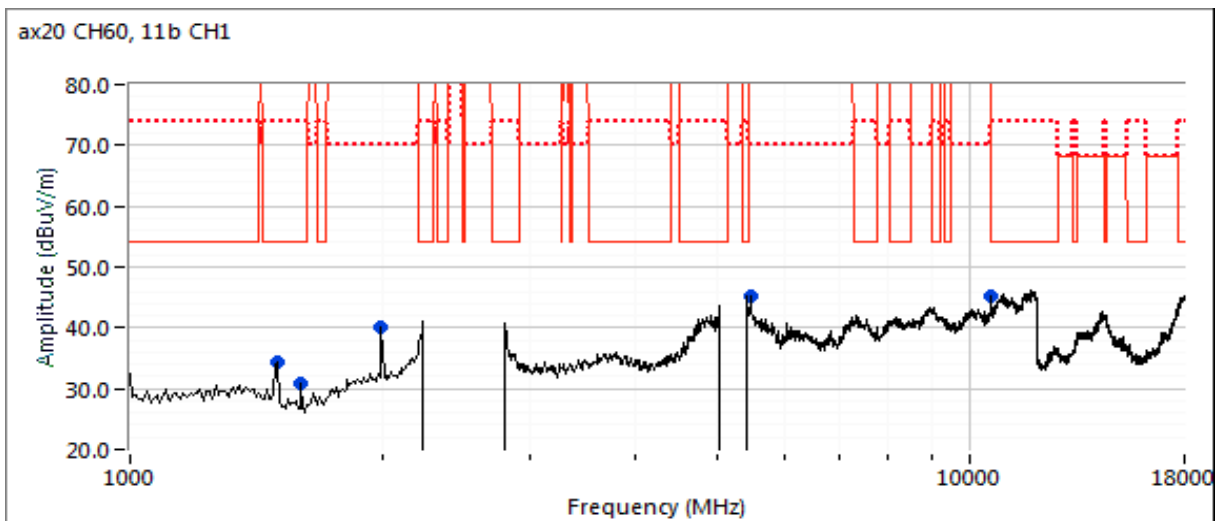
Mode: ax20, b

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: MCS0 & 1 Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	34.3	V	60.0	-25.7	Peak	142	1.5	Note 6
2000.000	40.0	V	60.0	-20.0	Peak	193	1.5	Note 6
5472.220	51.0	H			PK	297	1.61	See bandedge measurements
10599.880	52.9	V	74.0	-21.1	PK	358	2.02	RB 1 MHz;VB 3 MHz;Peak
10599.980	44.2	V	54.0	-9.8	Avg	358	2.02	VB 300 Hz, note 3
21203.990	58.4	V	74.0	-15.6	PK	25	1.05	RB 1 MHz;VB 3 MHz;Peak
21204.370	43.6	V	54.0	-10.4	AVG	25	1.05	RB 1 MHz;VB 300 Hz; note 3

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #4c: Center Channel

Channel: 1 & 54 Wi-Fi

Mode: ax40, b

Power: 20/20

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

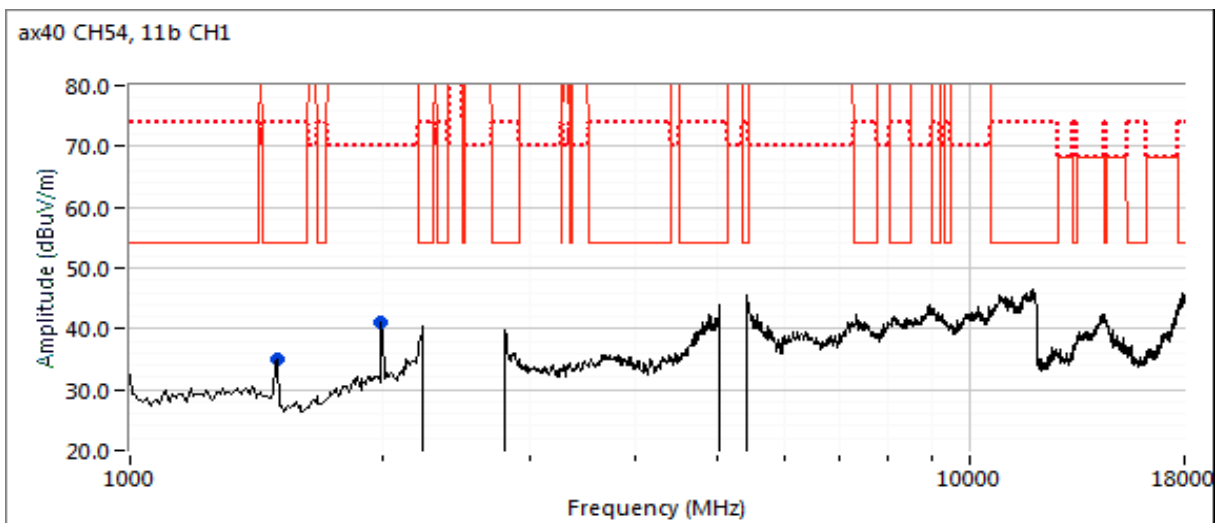
Data Rate: MCS0 & 1 Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
21076.630	33.9	V	54.0	-20.1	VAVG	16	1.0	RB 1 MHz;VB 1 kHz; note 3
21078.830	46.6	V	74.0	-27.4	PK	16	1.0	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.0	V	60.0	-25.0	Peak	34	1.5	Note 6

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.

Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #4d: Center Channel

Channel: 1 & 58 Wi-Fi

Mode: ax80 / b

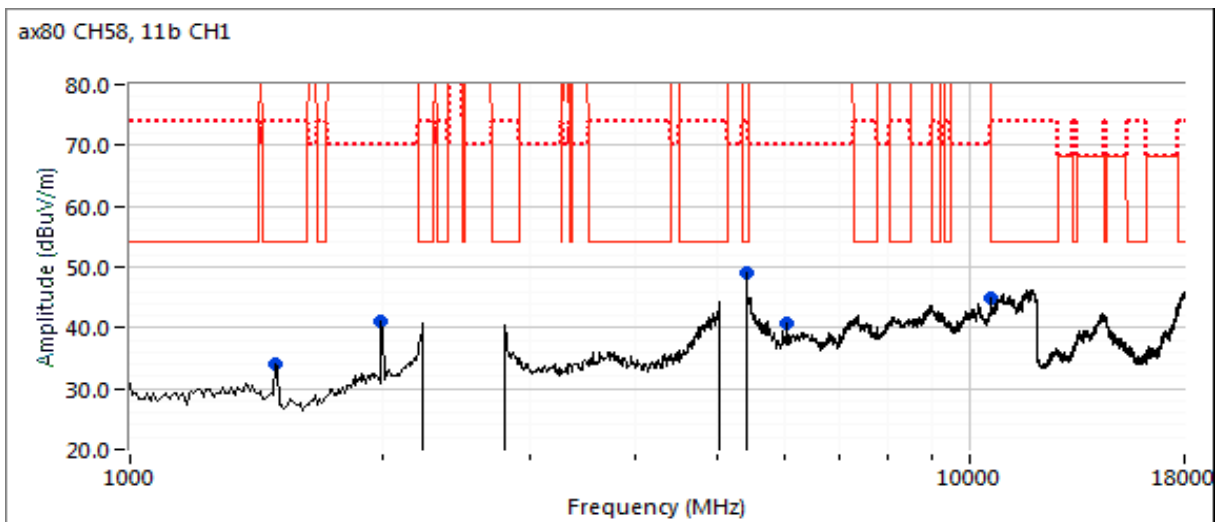
Power: 20/20

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: MCS0 & 1 Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	34.0	V	54.0	-20.0	Peak	32	1.5	Note 6
2000.000	41.0	V	70.0	-29.0	Peak	259	1.5	Note 6
5416.670	49.0	V			Peak	296	1.0	See bandedge measurements.
10579.950	51.9	V	68.3	-16.4	PK	357	2.0	RB 1 MHz;VB 3 MHz;Peak
6048.280	45.8	H	68.3	-22.5	PK	293	1.4	RB 1 MHz;VB 3 MHz;Peak
21055.380	33.7	V	54.0	-20.3	VAVG	16	1.0	RB 1 MHz;VB 1 kHz; note 3
21056.100	46.2	V	68.3	-22.1	PK	16	1.0	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #5: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #4

Date of Test: 10/31/18

Config. Used: 1

Test Engineer: M. Birgani

Config Change: -

Test Location: Chamber 7

EUT Voltage: PoE & 120/60Hz

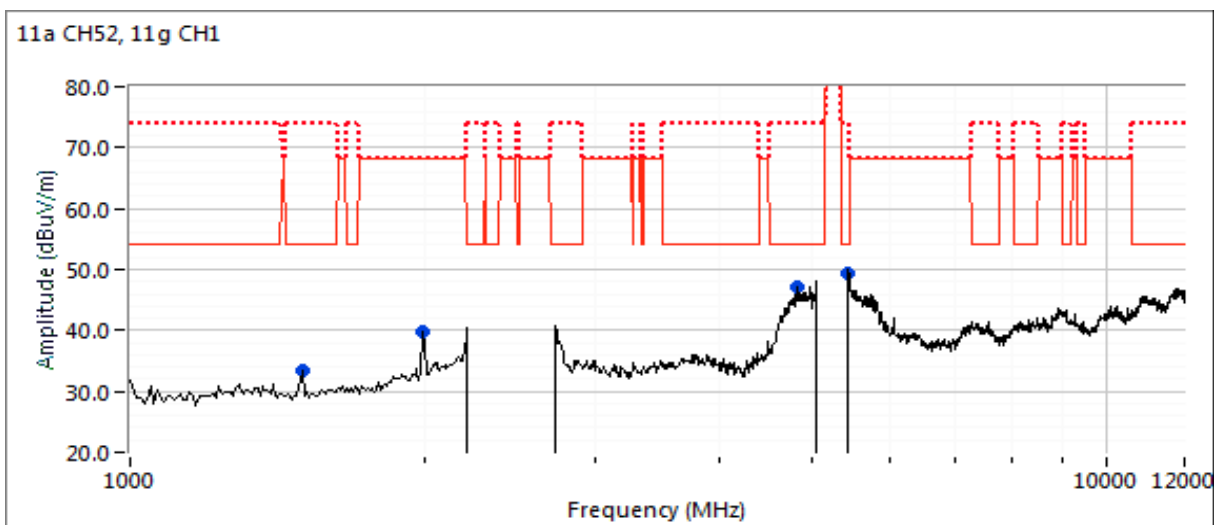
Run #5a: Low Channel

Channel/Mode/Rate/Chains/Power: 1/g/6Mbps/4/20

Channel/Mode/Rate/Chains/Power: 52/a/6Mbps/8/20

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	33.5	V	60.0	-26.5	Peak	291	1.5	Note 6
2000.000	39.8	V	60.0	-20.2	Peak	306	1.0	Note 6
4830.230	43.0	H	54.0	-11.0	Avg	303	1.72	VB 1 kHz, note 3
4822.870	55.6	H	74.0	-18.4	PK	303	1.72	RB 1 MHz;VB 3 MHz;Peak
5433.330	49.3	H			Peak	306	1.5	See bandedge measurement.
21034.940	43.8	V	54.0	-10.2	VAVG	340	1.1	RB 1 MHz;VB 1 kHz
21036.030	58.3	V	74.0	-15.7	PK	340	1.1	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 12 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

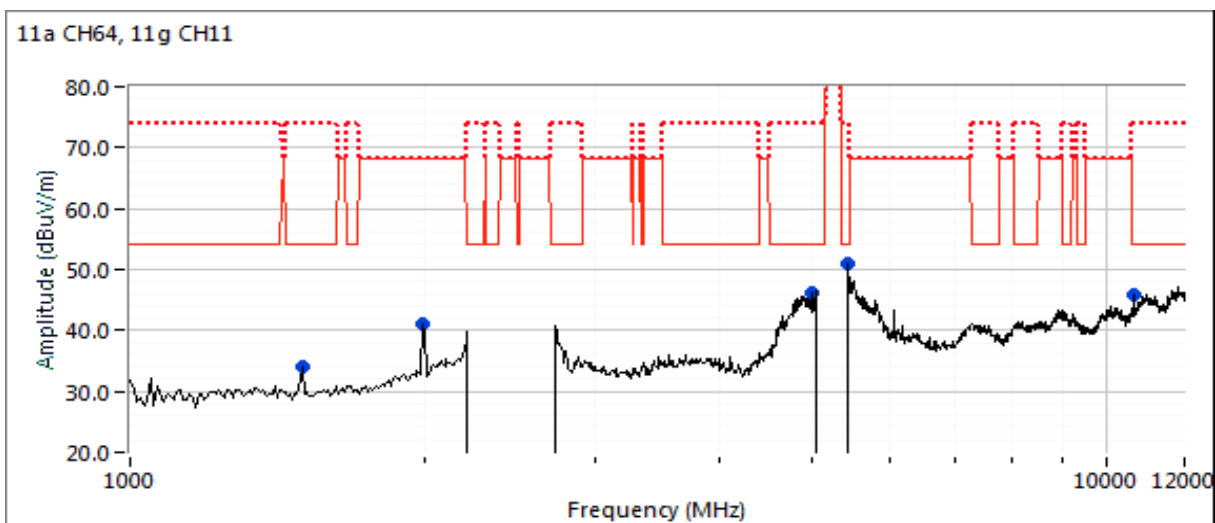
### Run #5b: High Channel

Channel/Mode/Rate/Chains/Power: 11/g/6Mbps/4/20

Channel/Mode/Rate/Chains/Power: 64/a/6Mbps/8/20

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	34.0	V	60.0	-26.0	Peak	326	1.0	Note 6
2000.000	41.1	V	60.0	-18.9	Peak	336	1.0	Note 6
4961.470	42.1	H	54.0	-11.9	Avg	299	1.73	VB 1 kHz, note 3
4957.400	55.1	H	74.0	-18.9	PK	299	1.73	RB 1 MHz;VB 3 MHz;Peak
5425.000	50.8	H			Peak	294	2.0	See bandedge measurement.
10640.000	44.3	V	54.0	-9.7	Avg	8	2.04	VB 1 kHz, note 3
10639.820	51.6	V	74.0	-22.4	PK	8	2.04	
21275.030	46.4	V	54.0	-7.6	VAVG	340	1.1	RB 1 MHz;VB 1 kHz
21275.720	59.3	V	74.0	-14.7	PK	340	1.1	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 12 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #6, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

Date of Test: 10/29/18  
 Test Engineer: John Caizzi  
 Test Location: Chamber 4

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

Run #6a: Center Channel

Channel: 6 & 116 Wi-Fi  
 Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Mode: g, a  
 Data Rate:

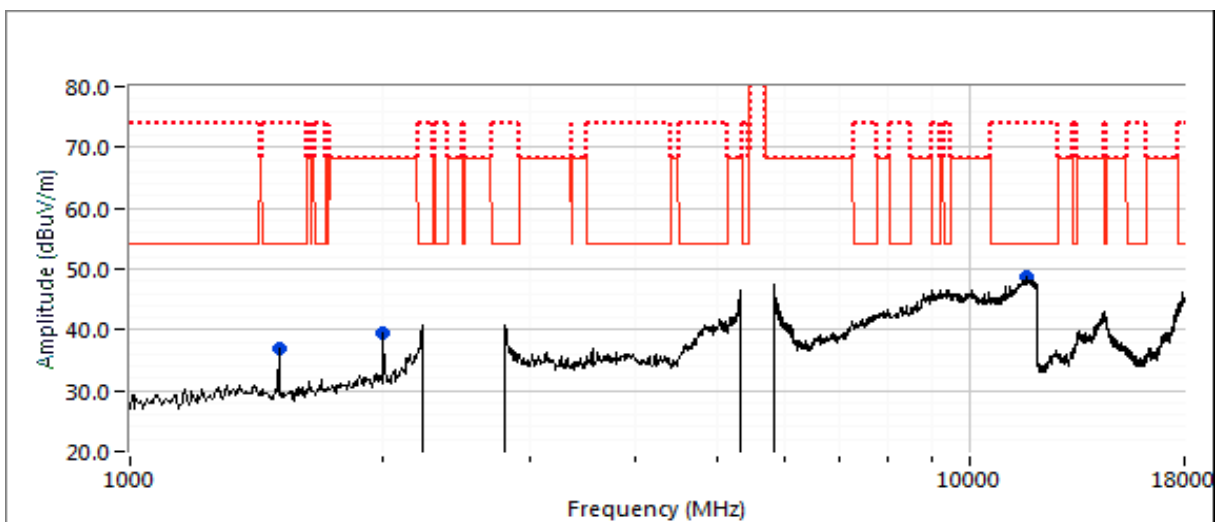
Power: 20 / 12

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11694.250	42.3	V	54.0	-11.7	Avg	88	2.5	VB 1 kHz, note 3
11696.480	53.3	V	74.0	-20.7	PK	88	2.5	RB 1 MHz;VB 3 MHz;Peak
22320.720	44.1	V	54.0	-9.9	AVG	28	1.0	RB 1 MHz;VB 1 kHz; note 3
22321.060	57.4	V	74.0	-16.6	PK	28	1.0	RB 1 MHz;VB 3 MHz;Peak
1500.000	36.9	V	60.0	-23.1	Peak	63	1.0	Note 6
2000.000	39.4	V	60.0	-20.6	Peak	345	1.0	Note 6

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.

Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #6b: Center Channel

Channel: 6 & 116 Wi-Fi

Mode: ax20 / ax20

Power: 20 /20

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

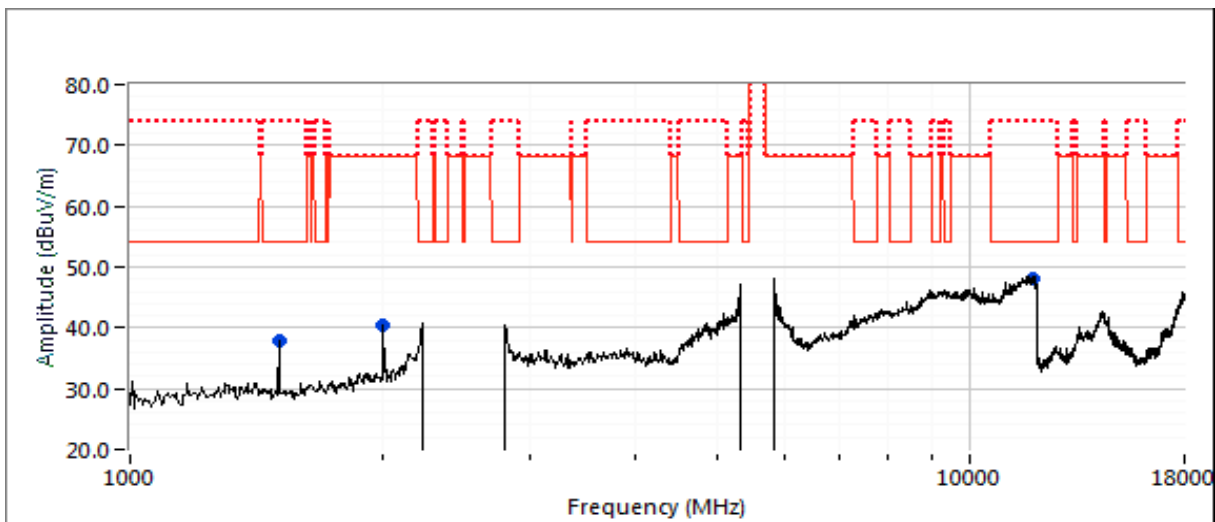
Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11890.500	41.9	H	54.0	-12.1	Avg	316	2.0	VB 300 Hz, note 3.
11889.990	53.3	H	74.0	-20.7	PK	316	2.0	RB 1 MHz;VB 3 MHz;Peak
22321.440	42.8	V	54.0	-11.2	VAVG	28	1.2	RB 1 MHz;VB 300 Hz; note 3
22321.160	57.4	V	74.0	-16.6	PK	28	1.2	RB 1 MHz;VB 3 MHz;Peak
1500.000	37.8	V	60.0	-22.2	Peak	165	1.0	Note 6
2000.000	40.3	V	60.0	-19.7	Peak	175	1.5	Note 6

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.

Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #6c: Center Channel

Channel: 6 & 110 Wi-Fi

Mode: 11ax40, b

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: 1 Mb/s & MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11099.950	50.1	V	54.0	-3.9	Avg	29	1.9	VB 300 Hz, note 3.
11099.780	55.8	V	74.0	-18.2	PK	29	1.9	RB 1 MHz;VB 3 MHz;Peak
22192.400	37.4	V	54.0	-16.6	Avg	32	1.0	VB 300 Hz, note 3.
22193.500	50.8	V	74.0	-23.2	PK	32	1.0	RB 1 MHz;VB 3 MHz;Peak
1500.000	37.5	V	60.0	-22.5	Peak	78	1.0	Note 6
2000.000	39.9	V	60.0	-20.1	Peak	145	1.5	Note 6

Note: Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.

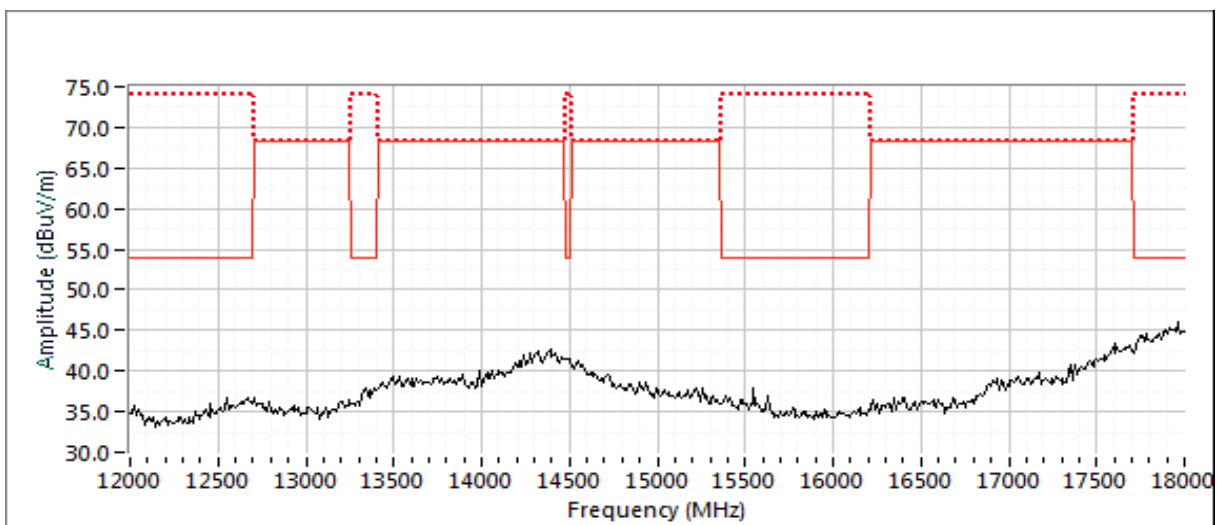
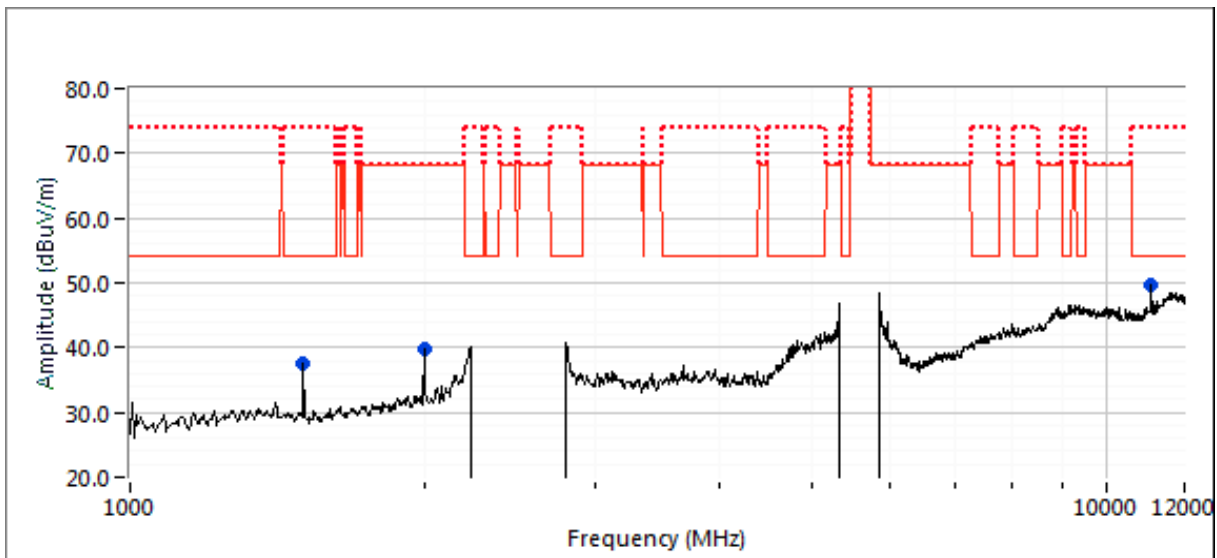
Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #6d: Center Channel

Channel: 6 & 122 Wi-Fi

Mode: ax80 / b

Note: Channel 122 not used in Canada

Tx Chain: 8 (5GHz), 4 (2.4 GHz)

Data Rate: 1 Mb/s & MCS0

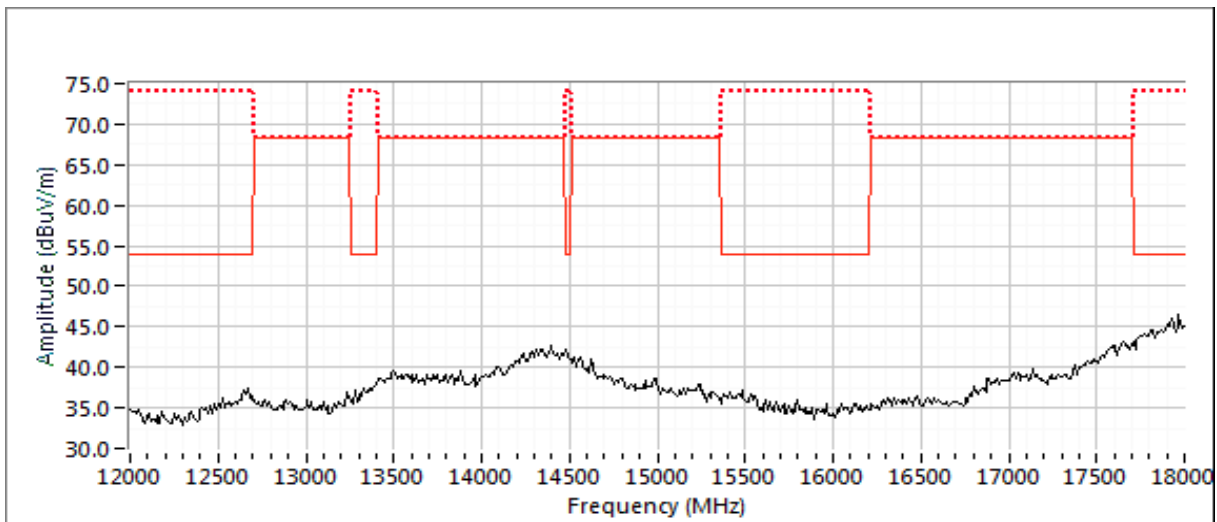
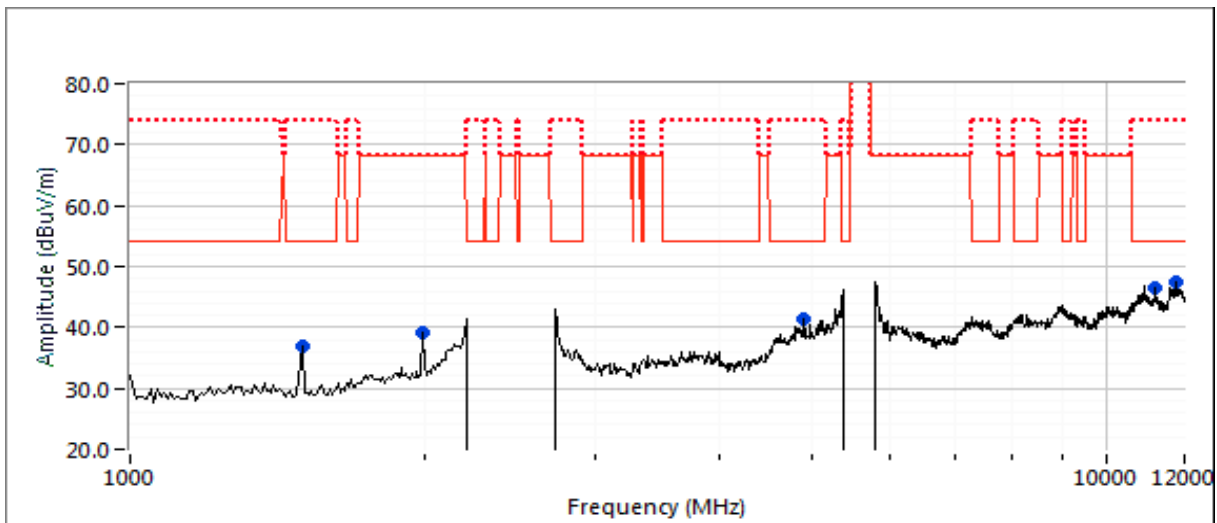
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	36.8	H	60.0	-23.2	Peak	205	2.0	Note 6
2000.000	39.1	V	60.0	-20.9	Peak	150	1.5	Note 6
4895.950	37.4	H	54.0	-16.6	Avg	30	2.0	VB 3 kHz, note 3
4896.070	46.8	H	74.0	-27.2	PK	30	2.0	RB 1 MHz;VB 3 MHz;Peak
11219.980	44.4	V	54.0	-9.6	Avg	146	1.5	VB 3 kHz, note 3
11219.900	52.4	V	74.0	-21.6	PK	146	1.5	RB 1 MHz;VB 3 MHz;Peak
22439.970	37.8	V	54.0	-16.2	Avg	3	1.0	VB 3 kHz, note 3
22439.970	51.2	V	74.0	-22.8	PK	3	1.0	RB 1 MHz;VB 3 MHz;Peak

Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #7: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #6

Date of Test: 10/31/18

Config. Used: 1

Test Engineer: M. Birgani

Config Change: -

Test Location: Chamber 7

EUT Voltage: PoE & 120/60Hz

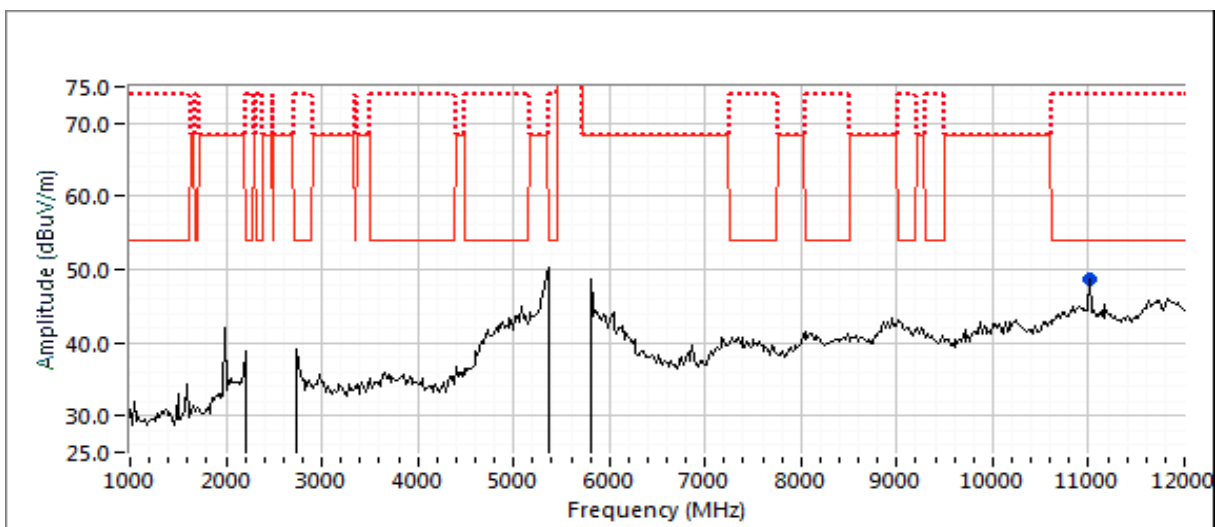
Run #7a: Low Channel

Channel/Mode/Rate/Chains/Power: 3/ax40/MCS0/4/20

Channel/Mode/Rate/Chains/Power: 102/ax40/MCS0/8/20

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11019.890	48.6	V	54.0	-5.4	VAVG	26	1.0	RB 1 MHz;VB 300 Hz
22038.260	41.8	V	54.0	-12.2	VAVG	24	1.1	RB 1 MHz;VB 300 Hz
22038.660	56.1	V	74.0	-17.9	PK	24	1.1	RB 1 MHz;VB 3 MHz;Peak
11019.950	55.2	V	74.0	-18.8	PK	26	1.0	RB 1 MHz;VB 3 MHz;Peak

Note: Scans made between 12 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #7b: High Channel

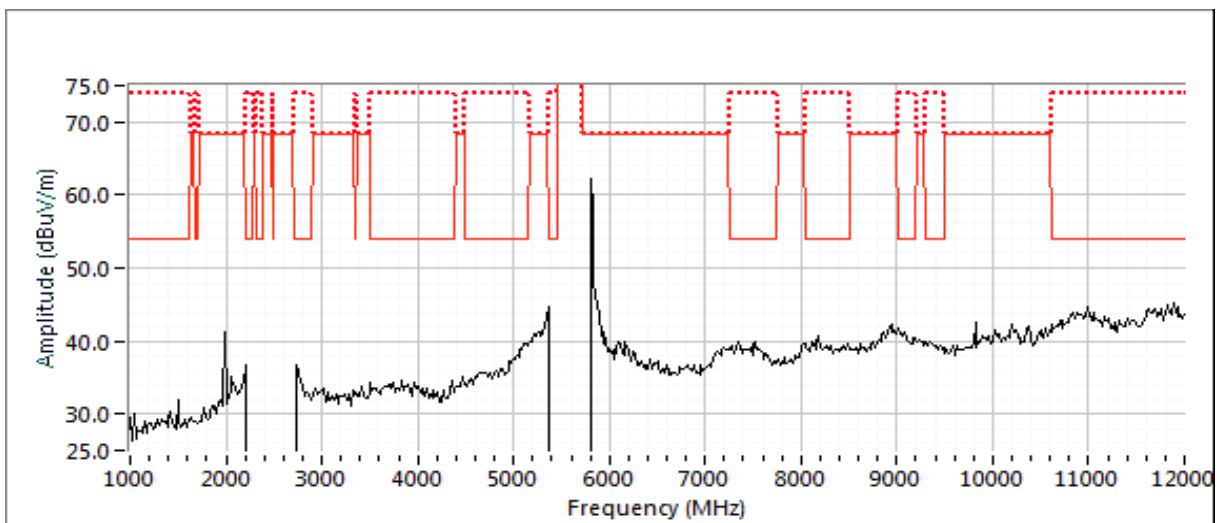
Channel/Mode/Rate/Chains/Power: 9/ax40/MCS0/4/20

Channel/Mode/Rate/Chains/Power: 142/ax40/MCS0/8/20

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
22835.730	43.1	V	54.0	-10.9	Avg	332	1.92	VB 300 Hz, note 3.
22835.450	57.1	V	74.0	-16.9	PK	332	1.92	RB 1 MHz;VB 3 MHz;Peak

Note:

Scans made between 12 - 40 GHz with the measurement antenna moved around the EUT 30 from the device indicated there were no significant emissions in this frequency range other than the 4th harmonic of the 5GHz fundamental.







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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

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: 17-21 °C  
Rel. Humidity: 38-45 %

#### 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.

#### Summary of Results

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
20MHz Bandwidth Modes							
2	a	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 16 / 8	20 / 14 16 / 8	Restricted Band Edge at 5350 MHz	15.209	45.1 dBµV/m @ 5350.1 MHz (-8.9 dB)
3	a	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 16 / 8	20 / 14 / 16 / 8	Restricted Band Edge at 5460 MHz	15.209	50.1 dBµV/m @ 5460.0 MHz (-3.9 dB)
	a	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 16 / 8	20 / 14 / 16 / 8	Band Edge 5460 - 5470 MHz	15E	65.0 dBµV/m @ 5469.5 MHz (-3.3 dB)
	a	1, 64 & 140 Wi-Fi 37 - BLE	20 / 14 / 16 / 8	20 / 14 / 13 / 8	Band Edge 5725MHz	15E	67.8 dBµV/m @ 5729.7 MHz (-0.5 dB)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
20MHz Bandwidth Modes							
5	ax20	1, 36 & 100 Wi-Fi 37 - BLE	20 / 14.5 / 13.5 / 8	20 / 14.5 / 13.5 / 8	Restricted Band Edge at 5150 MHz	15.209	52.8 dBµV/m @ 5148.7 MHz (-1.2 dB)
6	ax20	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 13.5 / 8	20 / 14 / 13.5 / 8	Restricted Band Edge at 5350 MHz	15.209	48.7 dBµV/m @ 5350.0 MHz (-5.3 dB)
7	ax20	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 13.5 / 8	20 / 14 / 13.5 / 8	Restricted Band Edge at 5460 MHz	15.209	43.6 dBµV/m @ 5459.8 MHz (-10.4 dB)
	ax20	1, 64 & 100 Wi-Fi 37 - BLE	20 / 14 / 13.5 / 8	20 / 14 / 13.5 / 8	Band Edge 5460 - 5470 MHz	15E	56.5 dBµV/m @ 5463.0 MHz (-11.8 dB)
	ax20	1, 64 & 140 Wi-Fi 37 - BLE	20 / 14 / 16 / 8	20 / 14 / 16 / 8	Band Edge 5725MHz	15E	55.5 dBµV/m @ 5732.6 MHz (-12.8 dB)
40MHz Bandwidth Modes							
10	ax40	1, 62 & 102 Wi-Fi 37 - BLE	20 / 15 / 14.5 / 8	20 / 13 / 14.5 / 8	Restricted Band Edge at 5350 MHz	15.209	52.7 dBµV/m @ 5350.1 MHz (-1.3 dB)
11	ax40	1, 62 & 102 Wi-Fi 37 - BLE	20 / 15 / 14.5 / 8	20 / 13 / 14.5 / 8	Restricted Band Edge at 5460 MHz	15.209	52.7 dBµV/m @ 5350.1 MHz (-1.3 dB)
	ax40	1, 62 & 102 Wi-Fi 37 - BLE	20 / 15 / 14.5 / 8	20 / 13 / 14.5 / 8	Band Edge 5460 - 5470 MHz	15E	58.1 dBµV/m @ 5470.0 MHz (-10.2 dB)
	ax40	1, 62 & 134 Wi-Fi 37 - BLE	20 / 15 / 14.5 / 8	20 / 13 / 14.5 / 8	Band Edge 5725MHz	15E	66.6 dBµV/m @ 5761.0 MHz (-1.7 dB)
80MHz Bandwidth Modes							
14	ax80	1, 58 & 106 Wi-Fi 37 - BLE	20 / 14.5 / 13.5 / 8	20/11.5/ 13.5/8	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5350.1 MHz (-0.5 dB)
15	ax80	1, 58 & 106 Wi-Fi 37 - BLE	20 / 14.5 / 13.5 / 8	20/11.5/ 13.5/8	Restricted Band Edge at 5460 MHz	15.209	45.8 dBµV/m @ 5460.0 MHz (-8.2 dB)
	ax80	1, 58 & 106 Wi-Fi 37 - BLE	20 / 14.5 / 13.5 / 8	20/11.5/ 13.5/8	Band Edge 5460 - 5470 MHz	15E	61.6 dBµV/m @ 5469.0 MHz (-6.7 dB)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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  $\geq 98\%$  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)
BLE	1 Mb/s	0.65	Yes	0.424	1.9	3.8	2358
11b	1 Mb/s	0.78	Yes	0.667	1.1	2.2	1499
11a	6 MB/s	0.92	Yes	1.437	0.3	0.7	696
ax20	MCS0	0.96	Yes	5.452	0.2	0.4	183
ax40	MCS0	0.96	Yes	5.297	0.2	0.4	189
ax80	MCS0	0.96	Yes	5.401	0.2	0.4	185

2 kHz  
1 kHz  
200 Hz  
200 Hz  
200 Hz

### Sample Notes

Sample S/N: CNGXK9Y07

Driver: P5

Antenna: Integral

### 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 $\geq$ 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 $\geq 98\%$ , 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)
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.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2: Radiated Bandedge Measurements, 5350 MHz

Date of Test: 02/14/19

Test Engineer: Mehran Birgani

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: PoE & 120V/ 60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

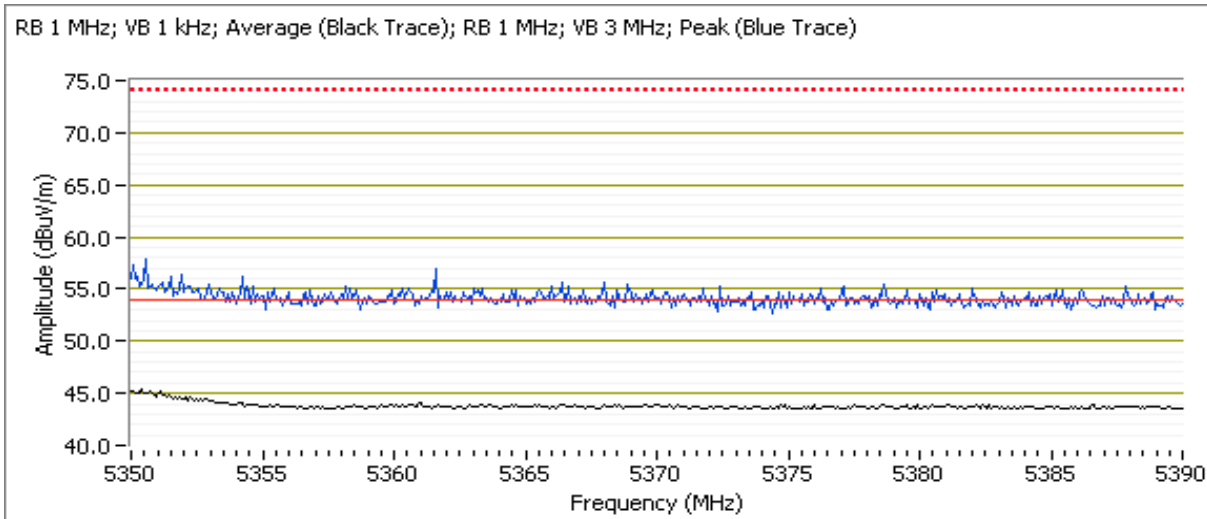
Mode,Channel, Chains, Data Rate,Power: a,36,4x4,6Mbps,14.0

Mode,Channel, Chains, Data Rate,Power: a,100,4x4,6Mbps,16.0

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.110	45.1	V	54.0	-8.9	AVG	275	1.4	RB 1 MHz; VB: 1 kHz; Note 3
5350.090	42.4	H	54.0	-11.6	AVG	67	1.0	RB 1 MHz; VB: 1 kHz; Note 3
5350.790	57.9	V	74.0	-16.1	PK	275	1.4	RB 1 MHz; VB: 3 MHz
5353.030	57.0	H	74.0	-17.0	PK	67	1.0	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #3: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 02/14/19

Test Engineer: Mehran Birgani

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: PoE & 120V/ 60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

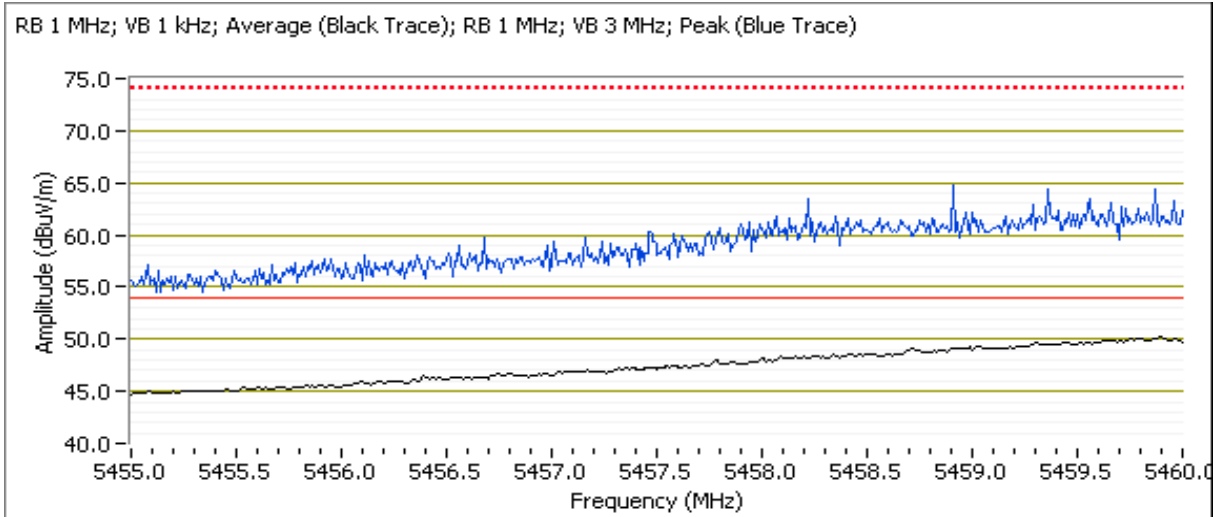
Mode,Channel, Chains, Data Rate,Power: a,36,4x4,6Mbps,14.0

Mode,Channel, Chains, Data Rate,Power: a,100,4x4,6Mbps,16.0

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5460.000	50.1	H	54.0	-3.9	AVG	302	2.1	RB 1 MHz; VB: 1 kHz; Note 3
5459.650	65.8	H	74.0	-8.2	PK	302	2.1	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

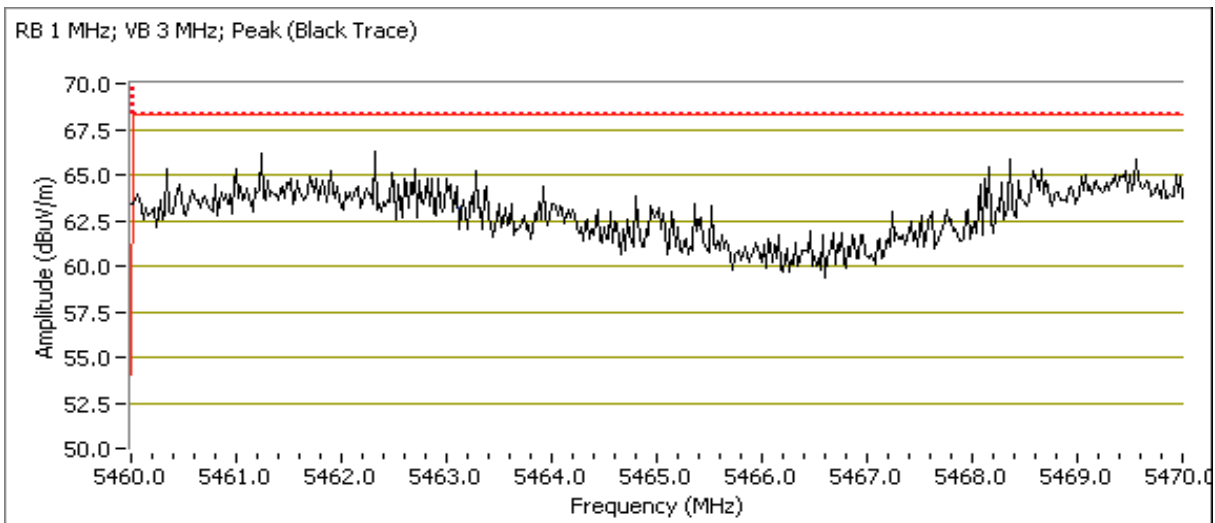
Date of Test: 02/14/19  
 Test Engineer: Mehran Birgani  
 Test Location: Fremont Chamber #7

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

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: a,36,4x4,6Mbps,14.0  
 Mode,Channel, Chains, Data Rate,Power: a,100,4x4,6Mbps,16.0  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.520	65.0	H	68.3	-3.3	PK	302	2.1	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

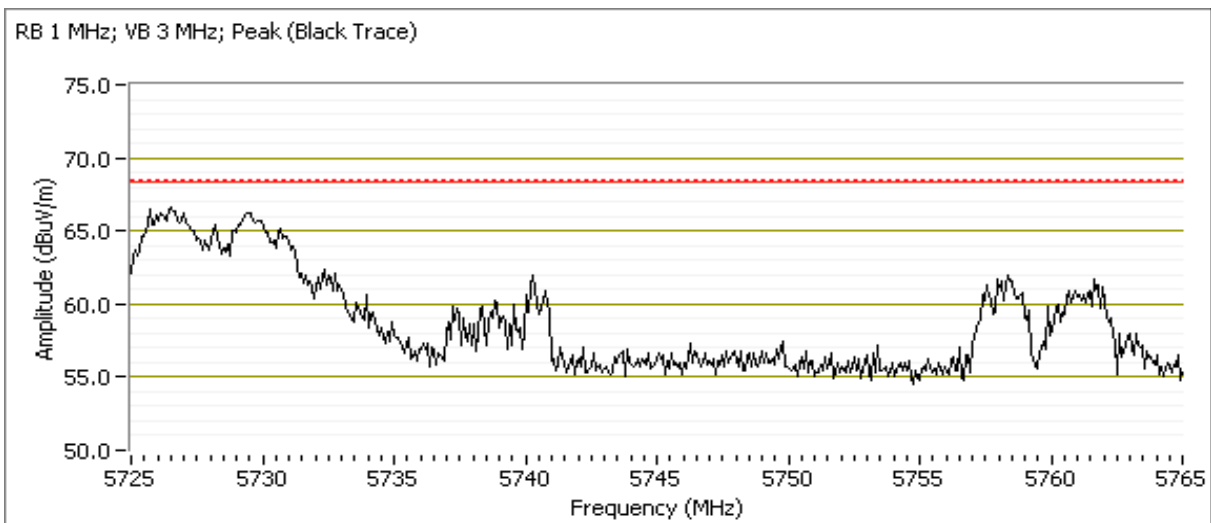
Date of Test: 02/14/19  
 Test Engineer: Deniz Demirci  
 Test Location: Frement Chamber #7

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

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: a,64,4x4,6Mbps,14.0  
 Mode,Channel, Chains, Data Rate,Power: a,140,4x4,6Mbps,13.0  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5729.670	67.8	H	68.3	-0.5	PK	268	1.4	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #5: Radiated Bandedge Measurements, 5150 MHz

Date of Test: 02/14/19

Test Engineer: David Bare

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: POE & 120 V, 60 Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

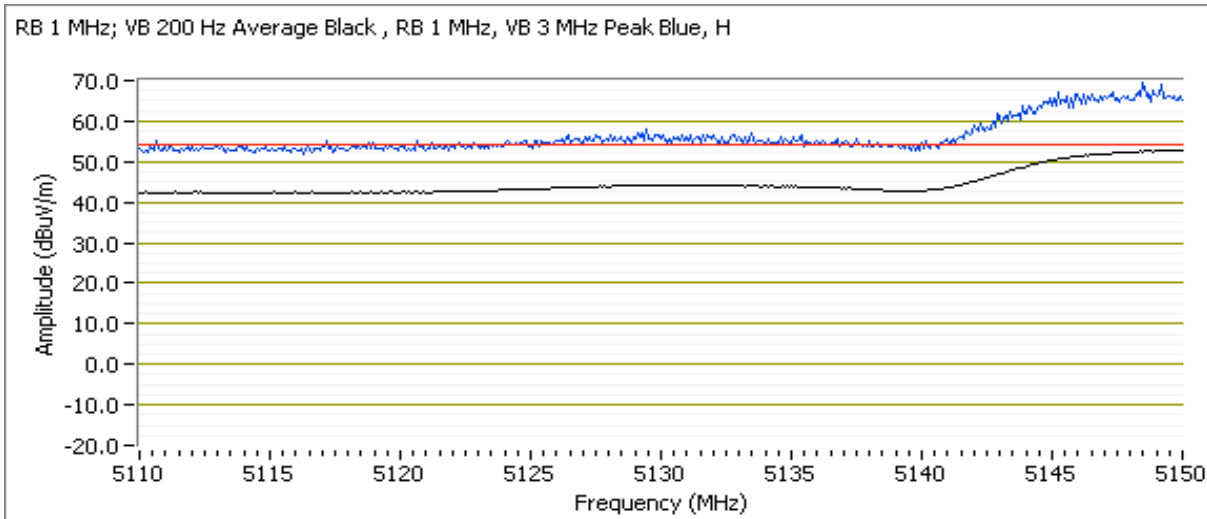
Mode,Channel, Chains, Data Rate,Power: ax20,36,4x4,MCS0,14.5

Mode,Channel, Chains, Data Rate,Power: ax20,100,4x4,MCS0,13.5

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5150 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5148.680	52.8	H	54.0	-1.2	Avg	74	1.8	RB 1 MHz; VB: 200 Hz, Note 3
5149.340	69.3	H	74.0	-4.7	PK	74	1.8	RB 1 MHz; VB: 3 MHz







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #6: Radiated Bandedge Measurements, 5350 MHz

Date of Test: 2/15/2019 0:00

Test Engineer: Roy Zheng

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: POE & 120 V, 60 Hz

Channel: 1, 64, 100, BLE

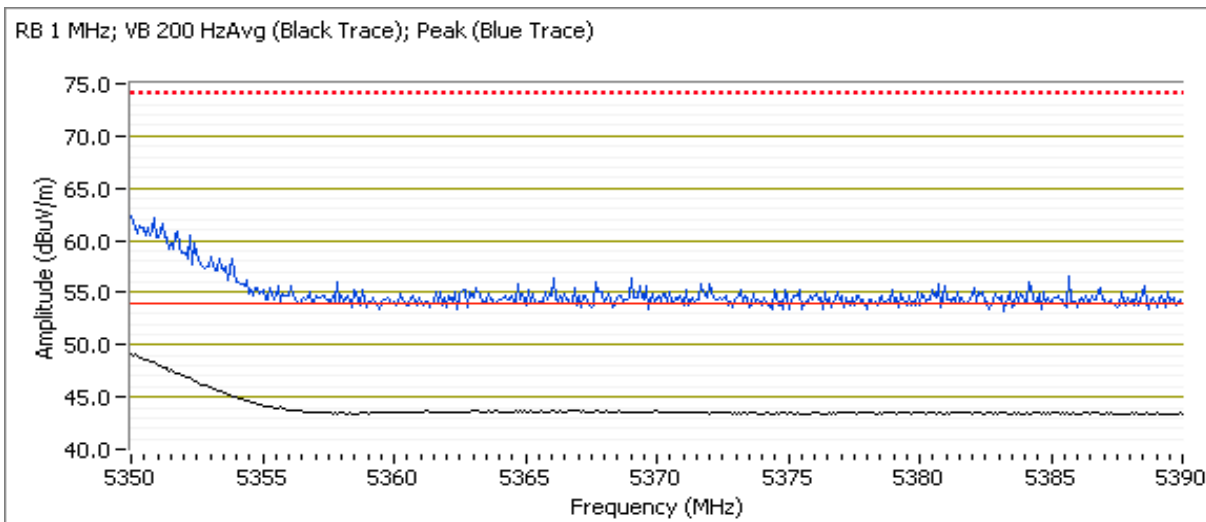
Tx Chain: 4 and 4

Mode: b, ax20, BLE

Data Rate: 1 Mb/s, MCS0, 1 Mb/s

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.000	48.7	H	54.0	-5.3	Avg	272	1.0	RB 1 MHz; VB: 200 Hz, Note 3
5350.400	60.5	H	74.0	-13.5	PK	272	1.0	RB 1 MHz; VB: 3 MHz
5350.000	47.8	V	54.0	-6.2	Avg	258	2.1	RB 1 MHz; VB: 200 Hz, Note 3
5350.400	58.6	V	74.0	-15.4	PK	258	2.1	RB 1 MHz; VB: 3 MHz





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

## Run #7: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 2/15/2019 0:00

Test Engineer: Roy Zheng

Test Location: Fremont Chamber #7

Config. Used: 1

Config Change: None

EUT Voltage: POE & 120 V, 60 Hz

Channel: 1, 64, 100, BLE

Tx Chain: 4 and 4

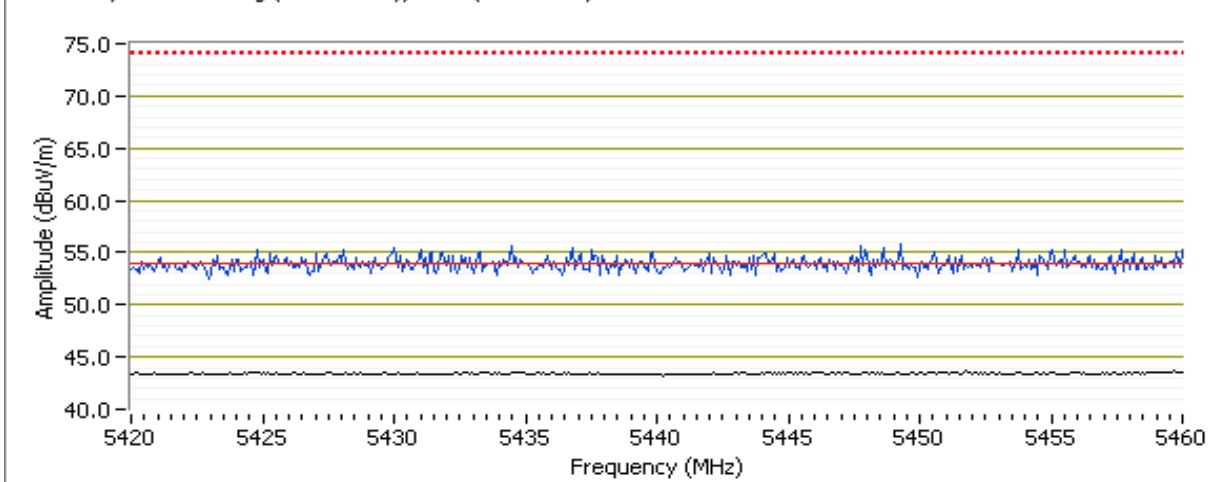
Mode: b, ax20, BLE

Data Rate: 1 Mb/s, MCS0, 1 Mb/s

## 5460 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	
5459.760	43.6	H	54.0	-10.4	Avg	148	3.0	RB 1 MHz; VB: 200 Hz, Note 3
5452.300	55.5	H	74.0	-18.5	PK	148	3.0	RB 1 MHz; VB: 3 MHz

RB 1 MHz; VB 200 HzAvg (Black Trace); Peak (Blue Trace)



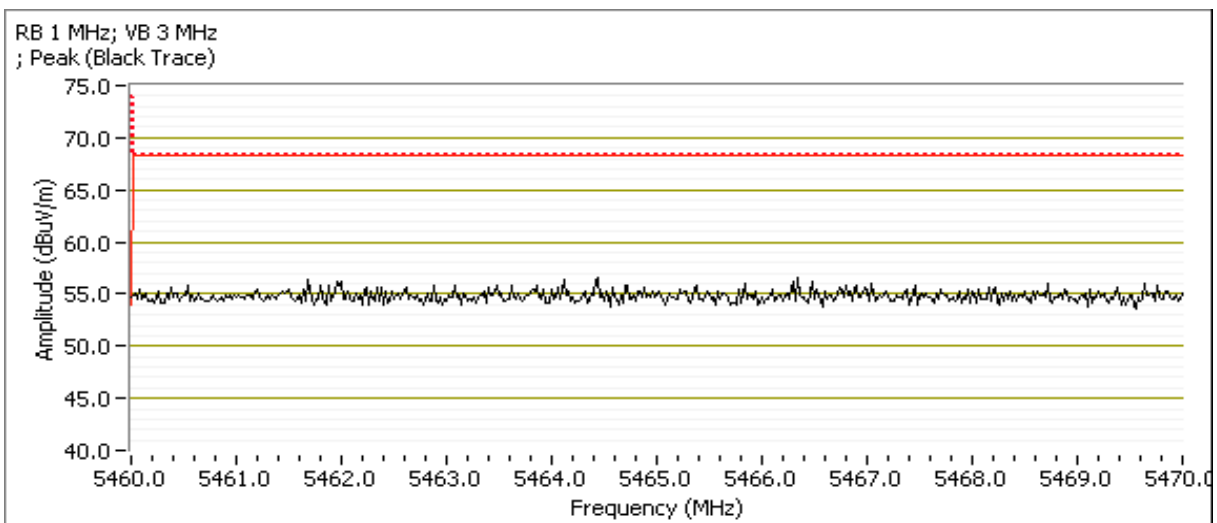


## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5463.030	56.5	H	68.3	-11.8	PK	148	3.0	POS; RB 1 MHz; VB: 3 MHz





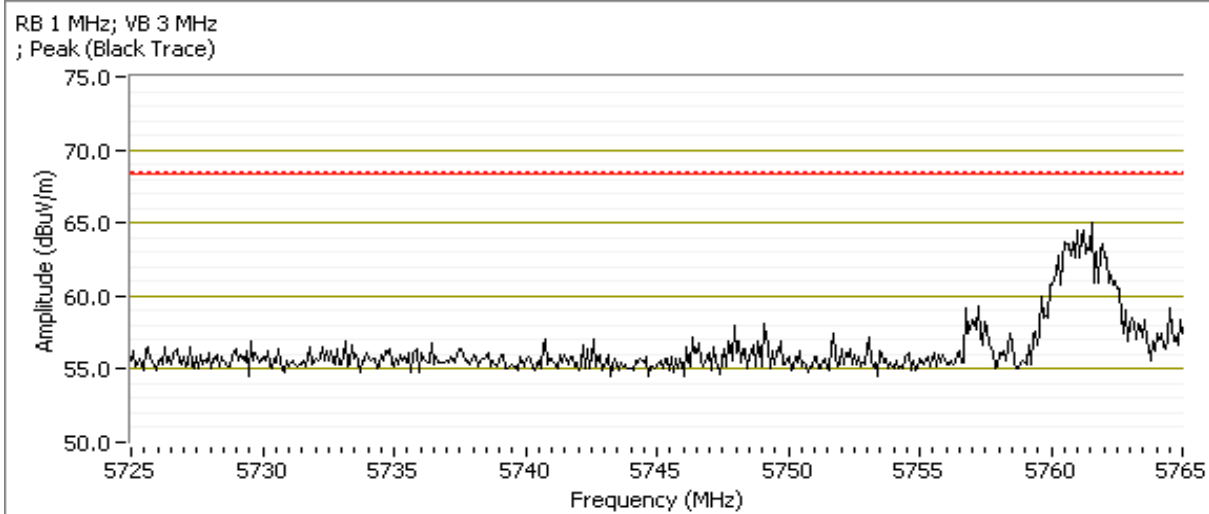
## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Channel: 1, 64, 140, BLE  
 Tx Chain: 4 and 4  
 Mode: b, ax20, BLE  
 Data Rate: 1 Mb/s, MCS0, 1 Mb/s

### 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	
5732.620	55.5	V	68.3	-12.8	PK	317	1.1	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #10: Radiated Bandedge Measurements, 5350 MHz

Date of Test: 01/15/19

Test Engineer: Mehran Birgani

Test Location: Chamber #7

Config. Used: 1

Config Change: -

EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

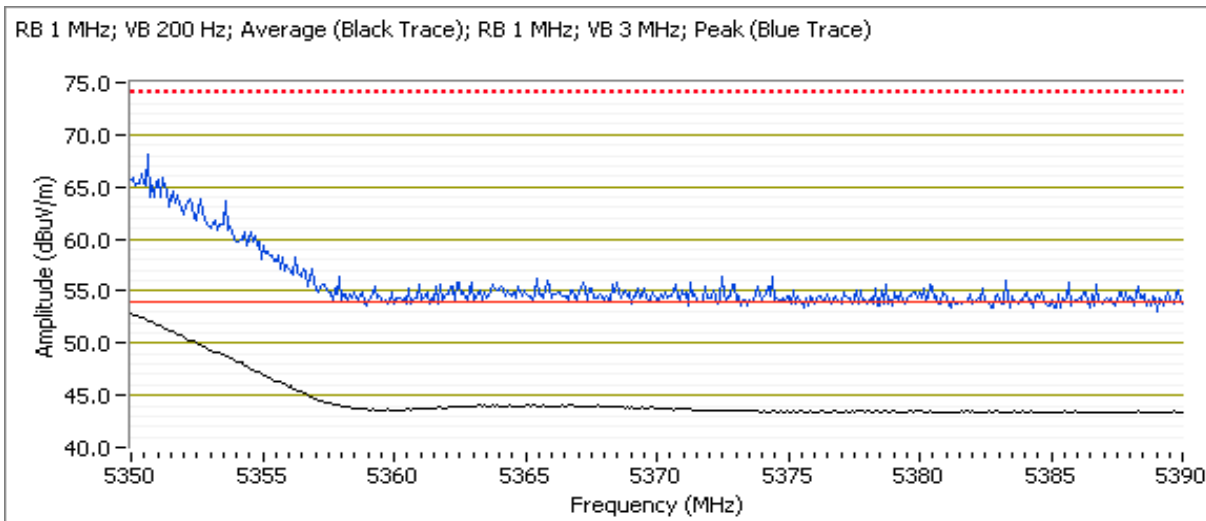
Mode,Channel, Chains, Data Rate,Power: ax40,62,4x4,MCS0,13

Mode,Channel, Chains, Data Rate,Power: ax40,102,4x4,MCS0,14.5

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.070	52.7	H	54.0	-1.3	AVG	272	1.0	RB 1 MHz; VB: 200 Hz, Note 3
5355.170	49.6	V	54.0	-4.4	AVG	268	1.0	RB 1 MHz; VB: 200 Hz, Note 3
5351.450	68.8	H	74.0	-5.2	PK	272	1.0	RB 1 MHz; VB: 3 MHz
5353.910	62.9	V	74.0	-11.1	PK	268	1.0	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #11: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 01/15/19

Test Engineer: Mehran Birgani

Test Location: Chamber #7

Config. Used: 1

Config Change: -

EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

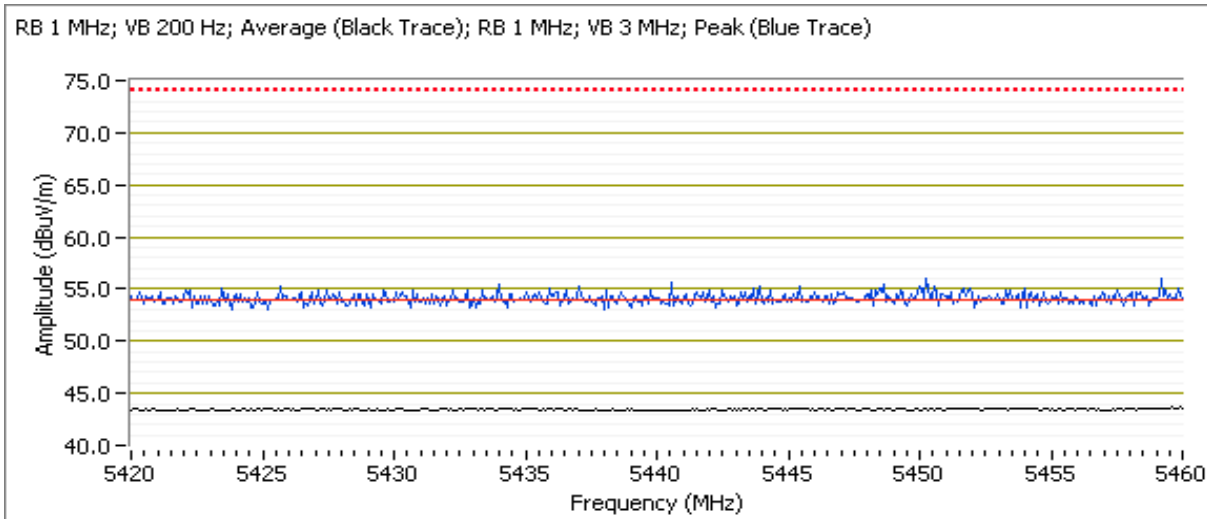
Mode,Channel, Chains, Data Rate,Power: ax40,62,4x4,MCS0,13

Mode,Channel, Chains, Data Rate,Power: ax40,102,4x4,MCS0,14.5

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.070	52.7	H	54.0	-1.3	AVG	272	1.0	POS; RB 1 MHz; VB: 200 Hz
5351.450	68.8	H	74.0	-5.2	PK	272	1.0	POS; RB 1 MHz; VB: 3 MHz
5459.760	44.2	V	54.0	-9.8	AVG	298	1.0	POS; RB 1 MHz; VB: 200 Hz
5446.370	56.5	V	74.0	-17.5	PK	298	1.0	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

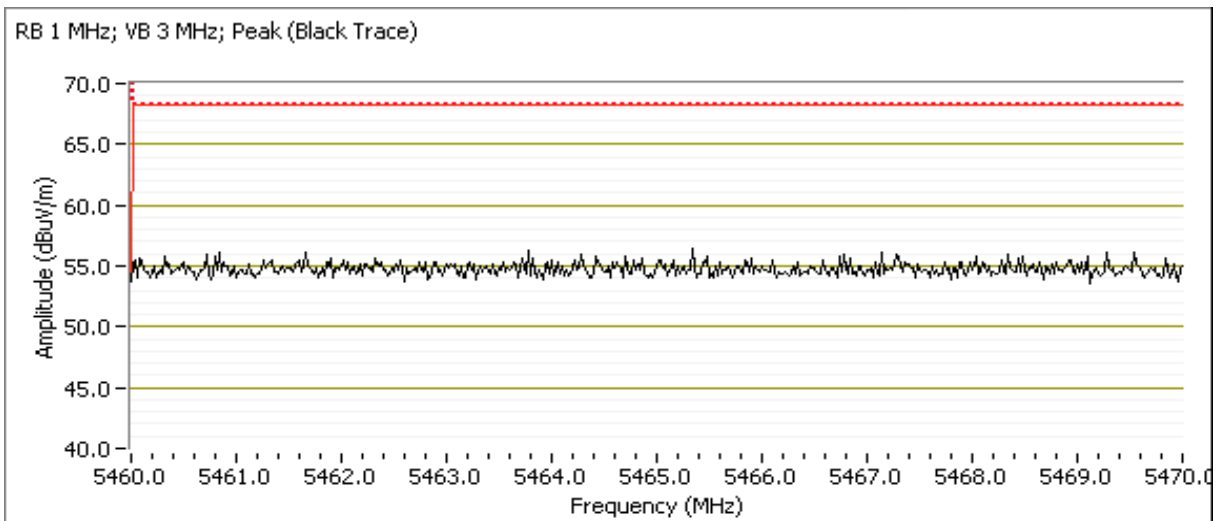
Date of Test: 01/15/19  
 Test Engineer: Mehran Birgani  
 Test Location: Chamber #7

Config. Used: 1  
 Config Change: -  
 EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax40,62,4x4,MCS0,13  
 Mode,Channel, Chains, Data Rate,Power: ax40,102,4x4,MCS0,14.5  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5470.000	58.1	V	68.3	-10.2	PK	298	1.0	POS; RB 1 MHz; VB: 3 MHz
5462.500	56.3	H	68.3	-12.0	PK	20	1.0	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

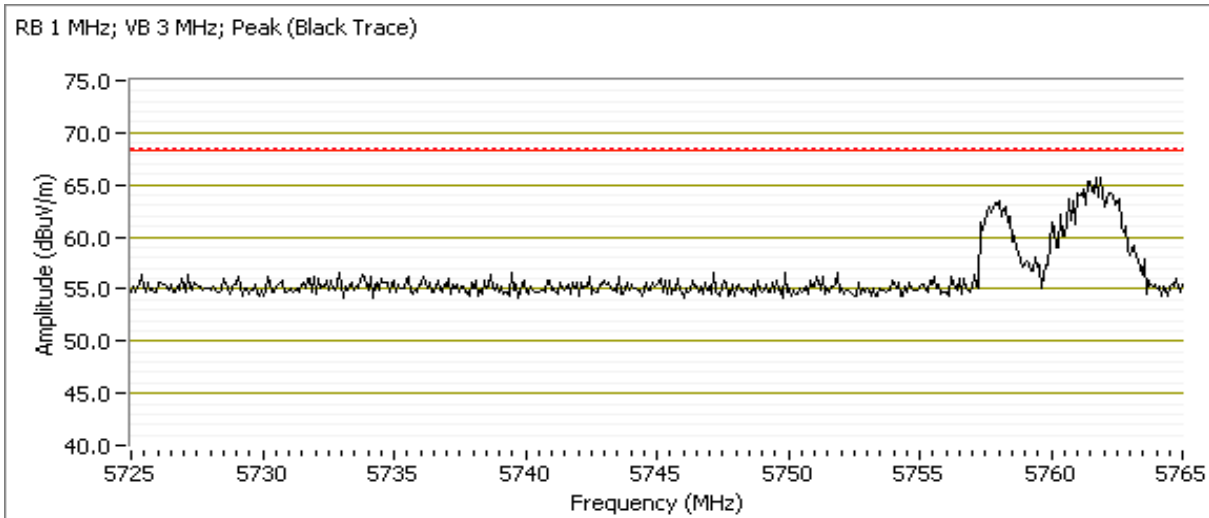
Date of Test: 01/15/19  
 Test Engineer: Mehran Birgani  
 Test Location: Chamber #7

Config. Used: 1  
 Config Change: -  
 EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax40,62,4x4,MCS0,13  
 Mode,Channel, Chains, Data Rate,Power: ax40,134,4x4,MCS0,14.5  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5761.010	66.6	H	68.3	-1.7	PK	212	1.6	POS; RB 1 MHz; VB: 3 MHz
5763.100	65.6	V	68.3	-2.7	PK	258	2.5	RB 1 MHz; VB: 3 MHz







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #14: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 01/15/19

Test Engineer: Mehran Birgani

Test Location: Chamber #7

Config. Used: 1

Config Change: -

EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

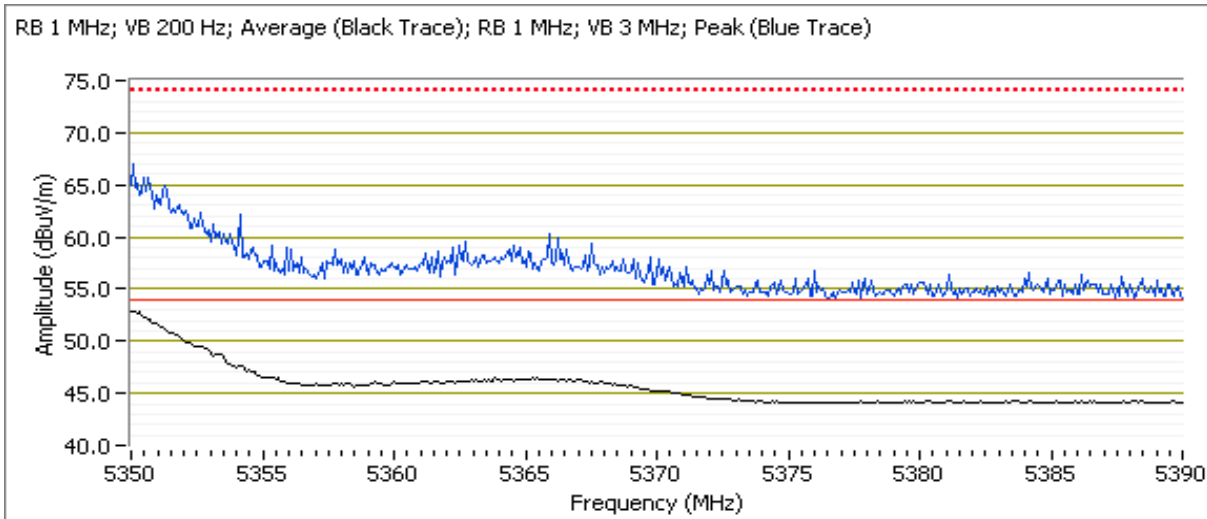
Mode,Channel, Chains, Data Rate,Power: ax80,58,4x4,MCS0,11.5

Mode,Channel, Chains, Data Rate,Power: ax80,106,4x4,MCS0,13.5

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5350 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.050	53.5	H	54.0	-0.5	AVG	52	1.4	RB 1 MHz; VB: 200 Hz, Note 3
5350.350	67.6	H	74.0	-6.4	PK	52	1.4	RB 1 MHz; VB: 3 MHz
5350.090	47.5	V	54.0	-6.5	AVG	318	1.3	RB 1 MHz; VB: 200 Hz, Note 3
5350.710	61.8	V	74.0	-12.2	PK	318	1.3	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #15: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 01/15/19

Test Engineer: Mehran Birgani

Test Location: Chamber #7

Config. Used: 1

Config Change: -

EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

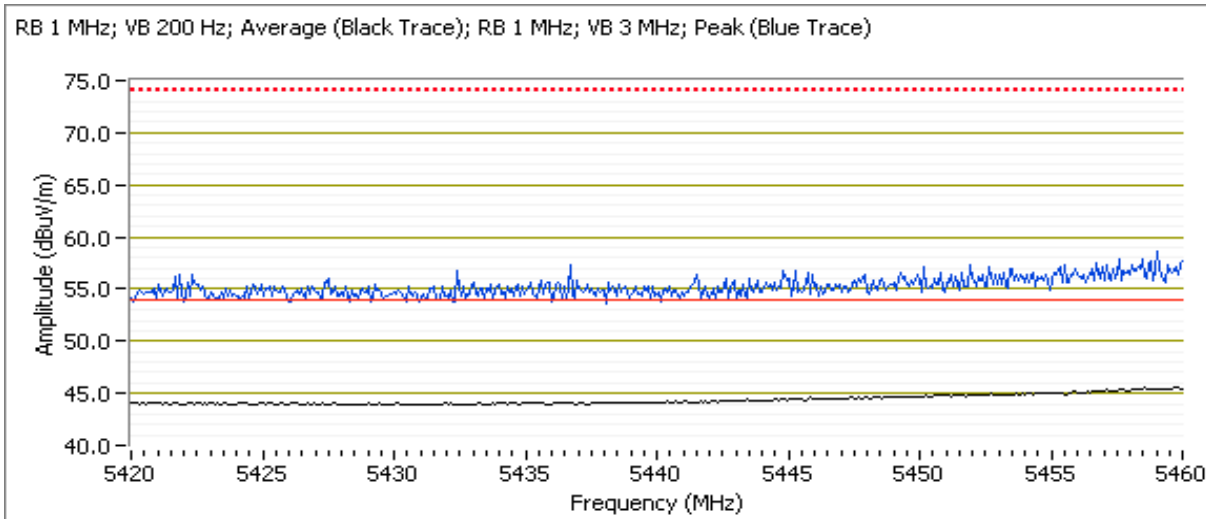
Mode,Channel, Chains, Data Rate,Power: ax80,58,4x4,MCS0,11.5

Mode,Channel, Chains, Data Rate,Power: ax80,106,4x4,MCS0,13.5

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5460 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.980	45.8	V	54.0	-8.2	AVG	318	1.3	RB 1 MHz; VB: 200 Hz, Note 3
5459.080	45.6	H	54.0	-8.4	AVG	57	1.3	RB 1 MHz; VB: 200 Hz, Note 3
5458.930	61.0	V	74.0	-13.0	PK	318	1.3	RB 1 MHz; VB: 3 MHz
5458.010	59.4	H	74.0	-14.6	PK	57	1.3	RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

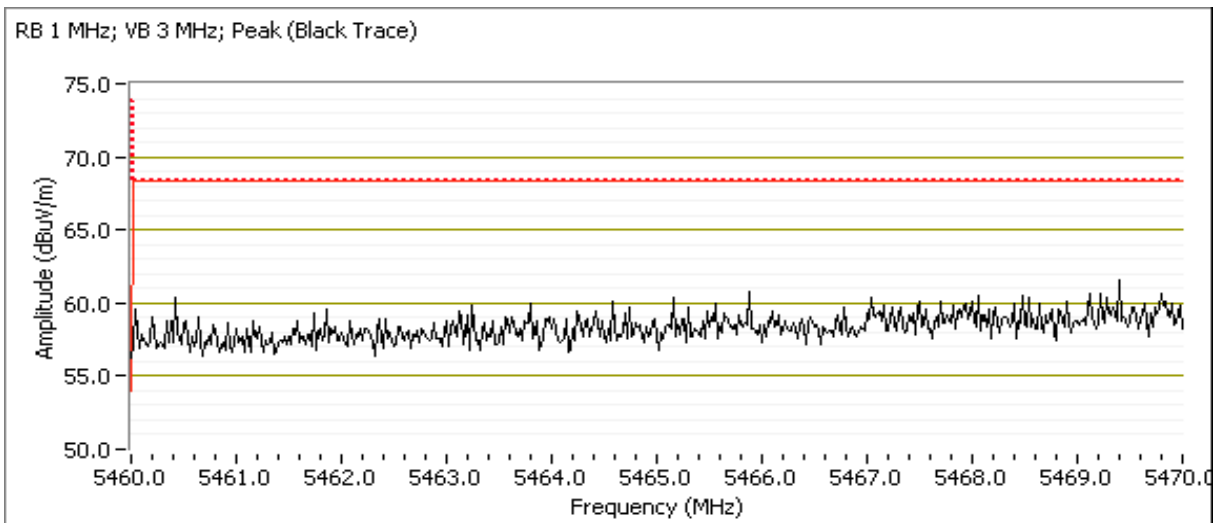
Date of Test: 01/15/19  
 Test Engineer: Mehran Birgani  
 Test Location: Chamber #7

Config. Used: 1  
 Config Change: -  
 EUT Voltage: PoE and 120V/60Hz

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax80,58,4x4,MCS0,11.5  
 Mode,Channel, Chains, Data Rate,Power: ax80,106,4x4,MCS0,13.5  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

### 5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5469.000	61.6	V	68.3	-6.7	PK	318	1.3	RB 1 MHz; VB: 3 MHz
5464.630	60.8	H	68.3	-7.5	PK	57	1.3	POS; RB 1 MHz; VB: 3 MHz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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

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: 18-22 °C

Rel. Humidity: 38-43 %

#### 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, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Summary of Results

Run #	Mode	Channel	Power Setting		Test Performed	Limit	Result / Margin
Scans on closest 5 GHz channels in all four OFDM modes to determine the worst case mode (4x4 in lower 5 GHz bands, 4x4 in upper 5GHz bands and 4x4 in 2.4 GHz band)							
1	b, a BLE	1, 64 & 100 Wi-Fi 37 - BLE	20, 20, 8		Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.5 dBµV/m @ 7207.0 MHz (-11.5 dB)
	b, ax20, BLE	1, 64 & 100 Wi-Fi 37 - BLE	20, 20, 8		Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.4 dBµV/m @ 7205.1 MHz (-10.6 dB)
	b, ax40, BLE	1, 62 & 102 Wi-Fi 37 - BLE	20, 20, 8		Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.2 dBµV/m @ 4804.0 MHz (-11.8 dB)
	b, ax80, BLE	1, 58 & 114 Wi-Fi 37 - BLE	20, 20, 8		Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.8 dBµV/m @ 7205.3 MHz (-11.2 dB)
Measurements on low, mid and high channels in worst-case OFDM mode							
2	b, ax20, BLE	1, 52 & 144 Wi-Fi 37 - BLE	20, 20, 20, 8		Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.7 dBµV/m @ 7205.9 MHz (-6.3 dB)
		1, 60 & 116 Wi-Fi 37 - BLE	20, 20, 20, 8				47.6 dBµV/m @ 7205.4 MHz (-6.4 dB)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		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  $\geq 98\%$  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)
BLE	1 Mb/s	0.65	Yes	0.424	1.9	3.8	2358
11b	1 Mb/s	0.78	Yes	0.667	1.1	2.2	1499
11a	6 MB/s	0.92	Yes	1.437	0.3	0.7	696
ax20	MCS0	0.96	Yes	5.452	0.2	0.4	183
ax40	MCS0	0.96	Yes	5.297	0.2	0.4	189
ax80	MCS0	0.96	Yes	5.401	0.2	0.4	185

2 kHz

1 kHz

200 Hz

200 Hz

200 Hz

### Sample Notes

Sample S/N: CNGXK9Y07

Driver: P5

Antenna: Integral

### 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 $\geq$ 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 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 5:	Digital device emission, class A limit extrapolated to 3m applied, peak reading vs peak or average limit.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5150-5350 MHz Bands

Date of Test: 02/19/19

Config. Used: 1

Test Engineer: Roy Zheng

Config Change: None

Test Location: Fremont Chamber #5

EUT Voltage: POE & 120 V, 60 Hz

### Run #1a: Low and High Channels

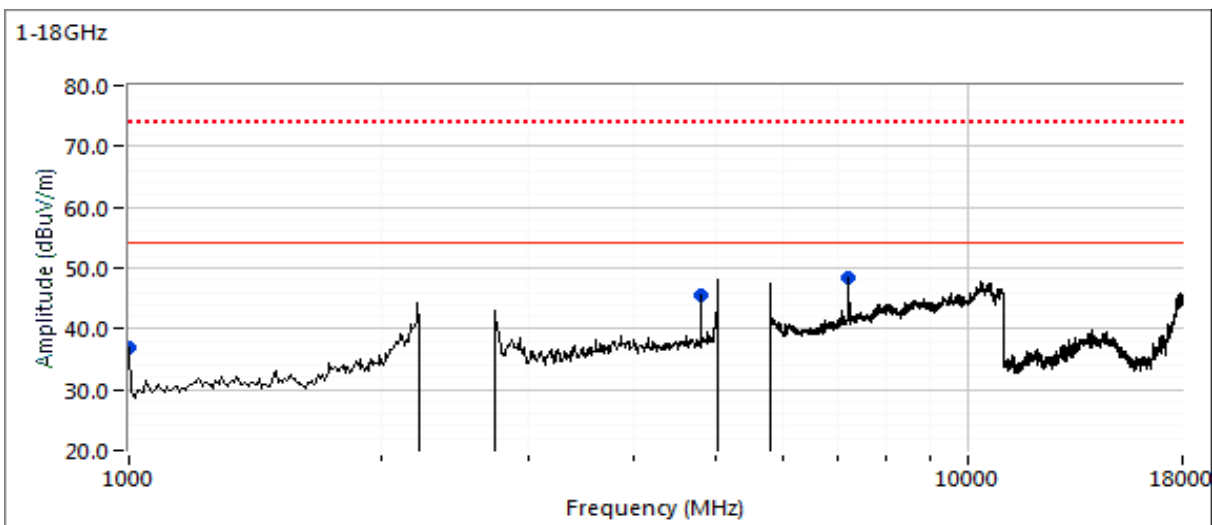
Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

Mode,Channel, Chains, Data Rate,Power: a,64,4x4,6Mbps,20

Mode,Channel, Chains, Data Rate,Power: a,100,4x4,6Mbps,20

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7206.960	42.5	H	54.0	-11.5	PK	116	2.1	RB 1 MHz;VB 1 kHz; Note 3
4804.000	39.6	H	54.0	-14.4	AVG	197	2.1	RB 1 MHz;VB 1 kHz; Note 3
1000.000	36.9	V	54.0	-17.1	Peak	158	1.0	
7207.000	53.5	H	74.0	-20.5	PK	116	2.1	RB 1 MHz;VB 3 MHz;Peak
4803.450	48.5	H	74.0	-25.5	PK	197	2.1	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	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).



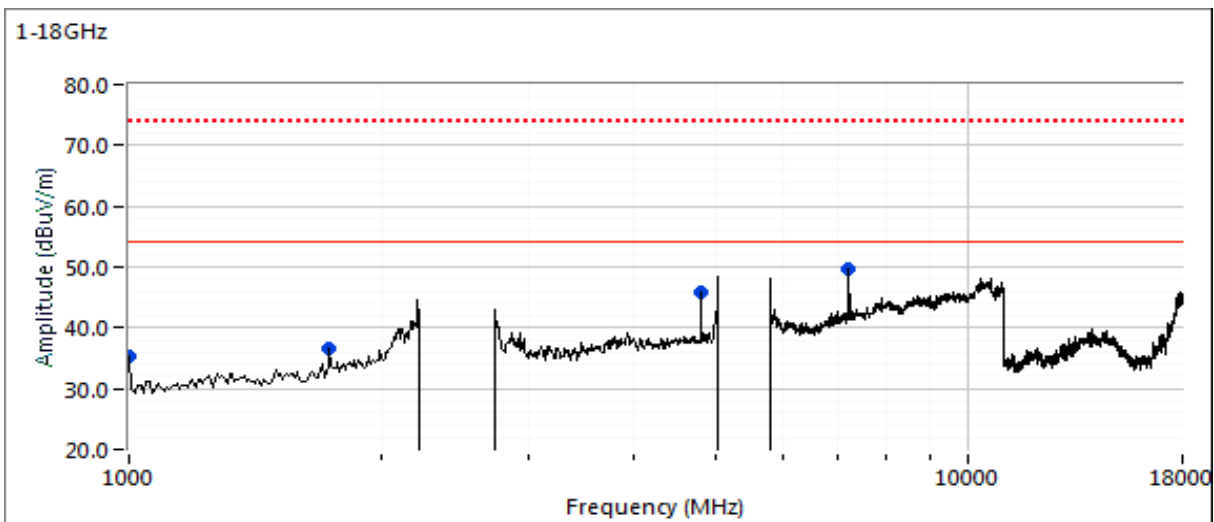
## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1b: Low and High Channels

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax20,64,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: ax20,100,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7205.100	43.4	H	54.0	-10.6	PK	121	2.1	RB 1 MHz;VB 300 Hz; Note 3
4803.970	41.4	H	54.0	-12.6	AVG	217	2.1	RB 1 MHz;VB 300 Hz; Note 3
1000.000	35.3	V	54.0	-18.7	Peak	119	1.0	
7205.110	54.1	H	74.0	-19.9	PK	121	2.1	RB 1 MHz;VB 3 MHz;Peak
4803.950	50.8	H	74.0	-23.2	PK	217	2.1	RB 1 MHz;VB 3 MHz;Peak
1733.330	36.6	V	68.3	-31.7	Peak	314	1.0	



Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	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).





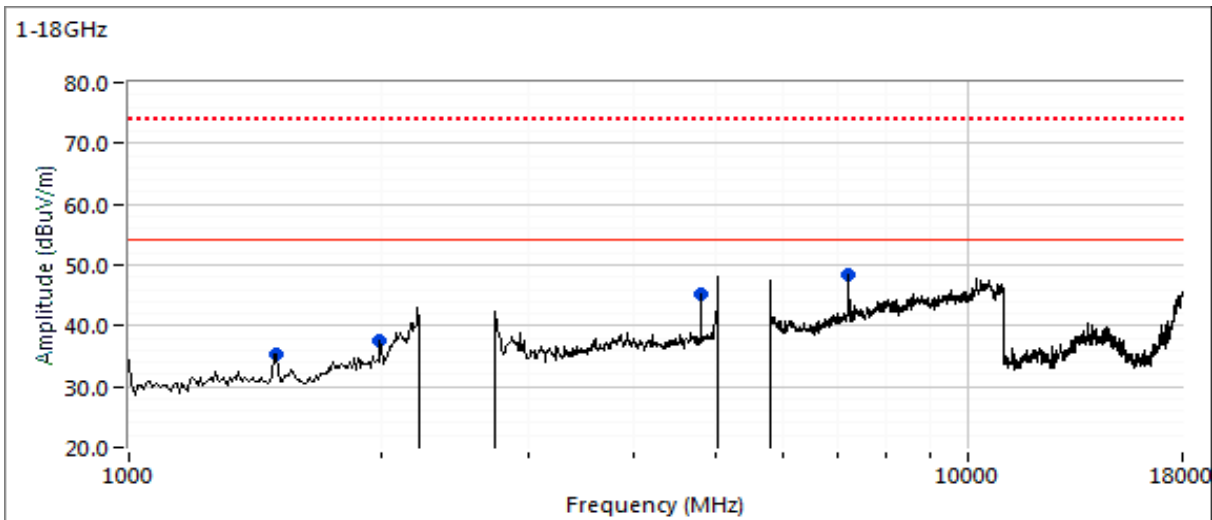
## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1c: Low and High Channels

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax40,62,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: ax40,102,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4803.980	42.2	H	54.0	-11.8	AVG	224	2.2	RB 1 MHz;VB 300 Hz; Note 3
7208.280	41.0	H	54.0	-13.0	AVG	224	2.2	RB 1 MHz;VB 300 Hz; Note 3
2000.000	37.5	V	60.0	-22.5	Peak	91	1.0	Note 6
4803.340	51.4	H	74.0	-22.6	PK	224	2.2	RB 1 MHz;VB 3 MHz;Peak
7208.330	50.0	H	74.0	-24.0	PK	242	2.2	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.3	V	60.0	-24.7	Peak	235	1.0	Note 6



Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	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).



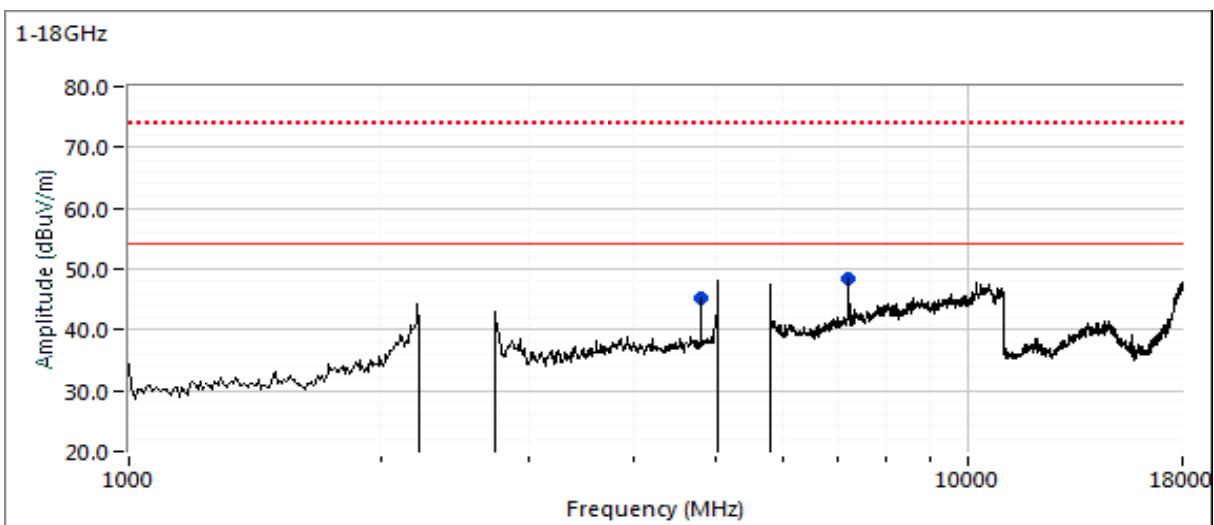
## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #1d: Low and High Channels

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax80,58,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: ax80,114,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7205.270	42.8	H	54.0	-11.2	AVG	230	2.1	RB 1 MHz;VB 300 Hz; Note 3
4804.010	42.3	H	54.0	-11.7	AVG	230	2.1	RB 1 MHz;VB 300 Hz; Note 3
7205.310	54.8	H	74.0	-19.2	PK	165	1.5	RB 1 MHz;VB 3 MHz;Peak
4804.120	51.4	H	74.0	-22.6	PK	230	2.1	RB 1 MHz;VB 3 MHz;Peak



Note:	Scans made between 18 - 40 GHz with the measurement antenna moved around the card and its antennas 20-50cm from the device indicated there were no significant emissions in this frequency range
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	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).



# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

Run #2: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #1

Date of Test: 2/19/2019

Config. Used: 1

Test Engineer: Deniz Demirci

Config Change: None

Test Location: Fremont Chamber #5

EUT Voltage: POE & 120 V, 60 Hz

Run #2a: High and Low Channels

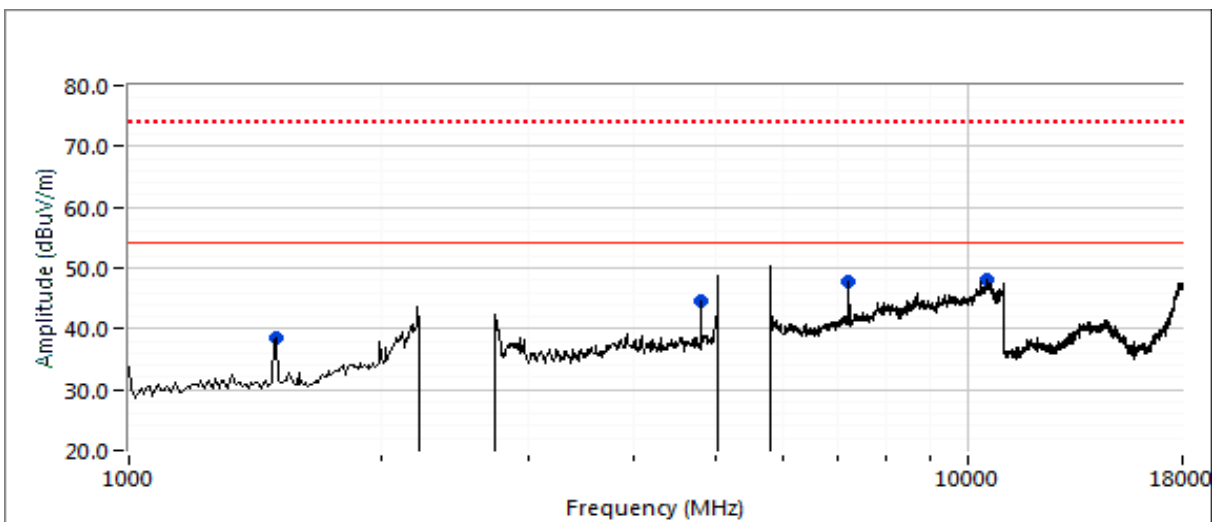
Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20

Mode,Channel, Chains, Data Rate,Power: ax20,52,4x4,MCS0,20

Mode,Channel, Chains, Data Rate,Power: ax20,144,4x4,MCS0,20

Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1499.990	39.1	V	54.0	-14.9	AVG	284	1.1	RB 1 MHz;VB 10 Hz;Peak - CW clock
1499.870	44.6	V	74.0	-29.4	PK	284	1.1	RB 1 MHz;VB 3 MHz;Peak - CW clock
4804.040	46.0	H	54.0	-8.0	AVG	242	2.2	RB 1 MHz;VB 3 kHz;Peak VAVG 100
4804.030	52.3	H	74.0	-21.7	PK	242	2.2	RB 1 MHz;VB 3 MHz;Peak
7205.430	47.6	H	54.0	-6.4	AVG	124	2.4	RB 1 MHz;VB 3 kHz;Peak VAVG 100
7205.110	55.2	H	74.0	-18.8	PK	124	2.4	RB 1 MHz;VB 3 MHz;Peak
10518.430	42.4	H	54.0	-11.6	AVG	159	1.9	RB 1 MHz;VB 300 Hz;Peak VAVG 100
10518.360	56.0	H	74.0	-18.0	PK	159	1.9	RB 1 MHz;VB 3 MHz;Peak



Note 1: For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Note 2: 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).



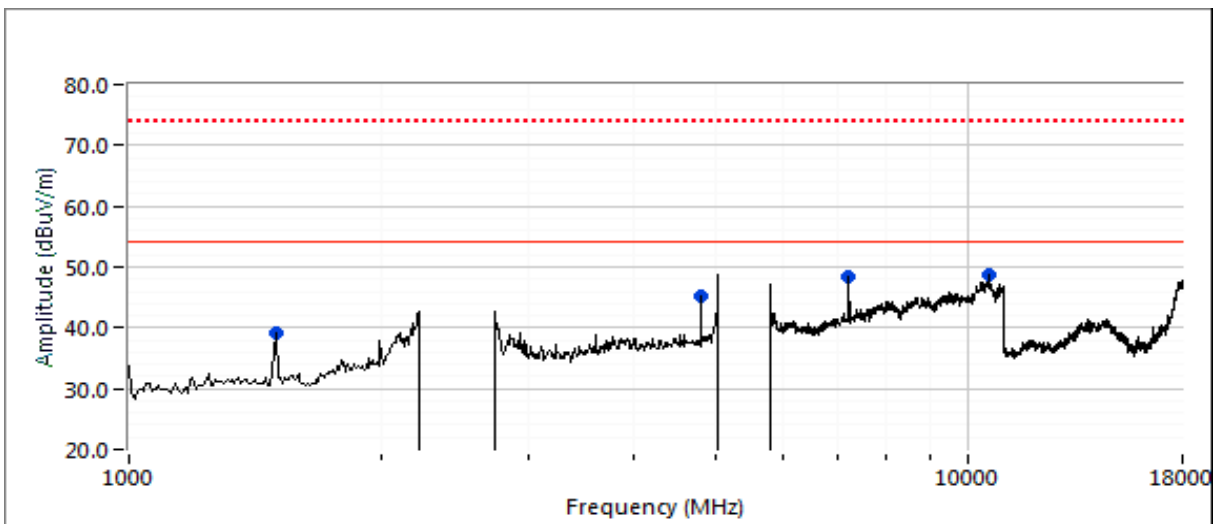
## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Coordinator:	David Bare
		Class:	N/A

### Run #2b: Center Channels

Mode,Channel, Chains, Data Rate,Power: b,1,4x4,1Mbps,20  
 Mode,Channel, Chains, Data Rate,Power: ax20,60,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: ax20,116,4x4,MCS0,20  
 Mode,Channel, Chains, Data Rate,Power: BLE,37,1x1,1Mbps,8

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	39.2	V	54.0	-14.8	AVG	276	1.1	RB 1 MHz;VB 10 Hz;Peak - CW clock
1499.980	44.6	V	74.0	-29.4	PK	276	1.1	RB 1 MHz;VB 3 MHz;Peak - CW clock
4803.940	46.1	H	54.0	-7.9	AVG	232	2.2	RB 1 MHz;VB 3 kHz;Peak VAVG 100
4803.530	51.5	H	74.0	-22.5	PK	232	2.2	RB 1 MHz;VB 3 MHz;Peak
7205.910	47.7	H	54.0	-6.3	AVG	149	1.1	RB 1 MHz;VB 3 kHz;Peak VAVG 100
7205.390	55.5	H	74.0	-18.5	PK	149	1.1	RB 1 MHz;VB 3 MHz;Peak
10605.240	44.8	V	54.0	-9.2	AVG	206	1.9	RB 1 MHz;VB 300 Hz;Peak VAVG 100
10604.670	57.9	V	74.0	-16.1	PK	206	1.9	RB 1 MHz;VB 3 MHz;Peak



Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	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).



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Radiated Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

#### Test Specific Details

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

Date of Test: 11/6/2018  
Test Engineer: John Caizzi  
Test Location: Chamber #5

Config. Used: 1  
Config Change: None  
EUT Voltage: PoE & 110 V / 60Hz

#### General Test Configuration

The EUT and any local support equipment were located on the turntable for radiated emissions testing. Any remote support equipment was located outside the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:                      Temperature:            24 °C  
   Rel. Humidity:            40 %

#### Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	Radiated Spurious Emissions 30 - 1000 MHz, WiFi	15.247	Pass	36.8 dBµV/m @ 45.29 MHz (-3.2 dB)
1b		15E 15.209	Pass	36.0 dBµV/m @ 43.61 MHz (-4.0 dB)
2a	Radiated Spurious Emissions 30 - 1000 MHz, BLE	15.247 15.209	Pass	36.6 dBµV/m @ 45.26 MHz (-3.4 dB)
2b			Pass	36.3 dBµV/m @ 43.61 MHz (-3.7 dB)
3a	Radiated Spurious Emissions 30 - 1000 MHz, Zigbee		Pass	36.2 dBµV/m @ 43.79 MHz (-3.8 dB)
3b			Pass	36.2 dBµV/m @ 43.65 MHz (-3.8 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, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Sample Notes

Sample S/N: CNGFK9Y02N (BLE) & CNGFK9Y005 (Zigbee)

### Run #1a, Radiated Spurious Emissions, 30 - 1000 MHz, Wi-Fi

Channel, Mode, Chain, Level: 6, g, 4, 20

Channel, Mode, Chain, Level: 40, a, 8, 20

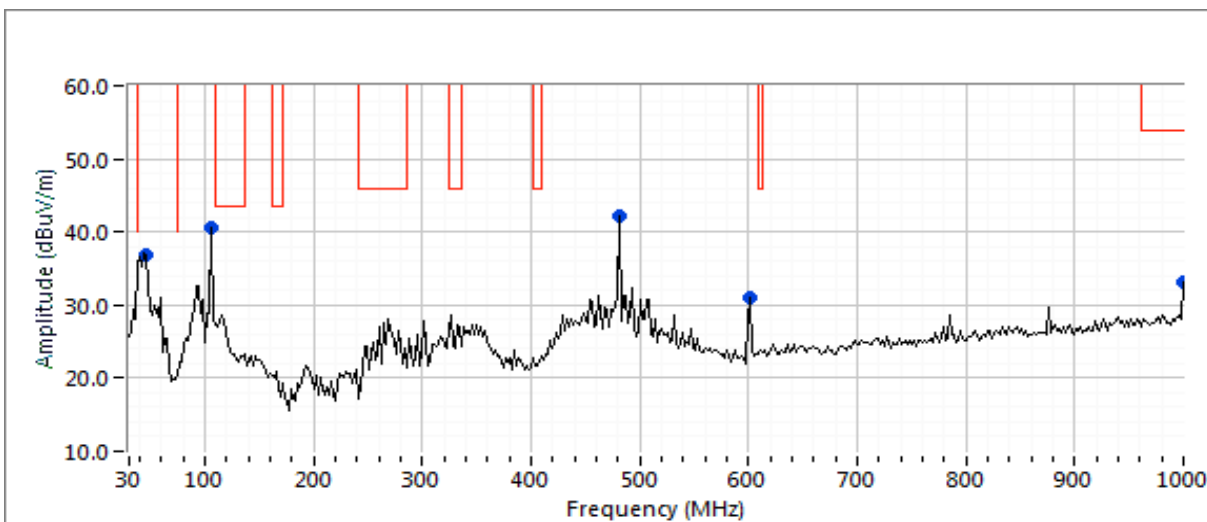
### Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
45.286	36.9	V	40.0	-3.1	Peak	320	1.0	Note 1
105.731	40.7	V	43.5	-2.8	Peak	0	1.5	Note 1
480.057	42.2	V	46.0	-3.8	Peak	324	1.0	Note 1
600.019	30.9	V	46.0	-15.1	Peak	200	1.0	Note 1
1000.000	33.1	H	54.0	-20.9	Peak	72	4.0	

### Final QP readings

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
45.286	36.8	V	40.0	-3.2	QP	325	1.00	Note 1
105.731	37.2	V	43.5	-6.3	QP	320	1.00	Note 1
480.057	37.5	V	46.0	-8.5	QP	301	1.16	Note 1
600.019	25.2	V	46.0	-20.8	QP	216	1.00	Note 1

Note 1 | Emission in non-restricted band, but limit of 15.209 used.





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Run #1b, Radiated Spurious Emissions, 30 - 1000 MHz, Wi-Fi

Channel, Mode, Chain, Level: 11, b, 4, 20

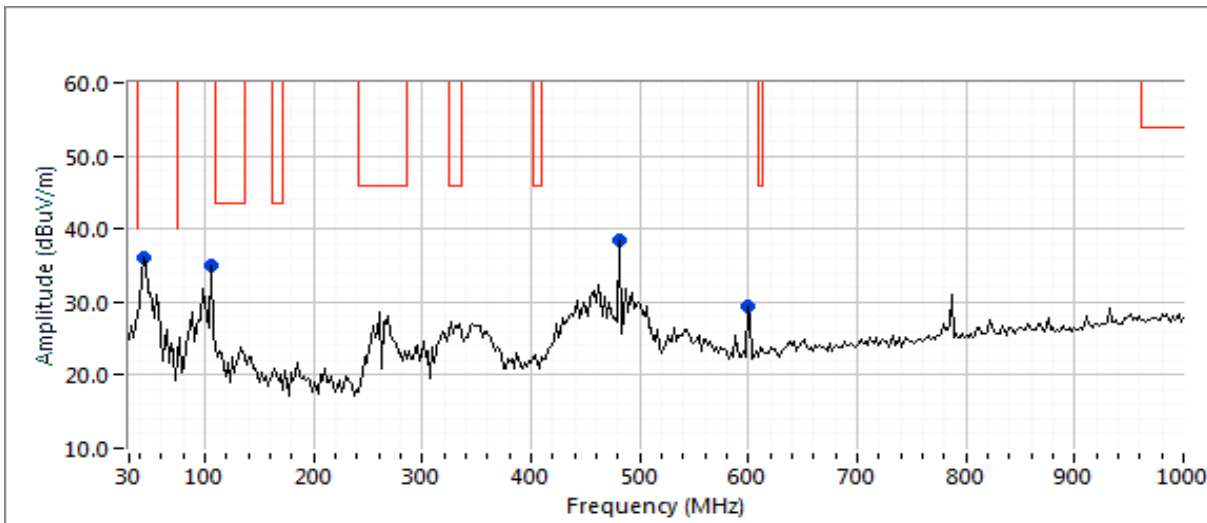
Channel, Mode, Chain, Level: 165, ax20, 8, 20

### Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.607	36.0	V	40.0	-4.0	Peak	315	1.0	Note 1
105.812	35.0	V	43.5	-8.5	Peak	107	1.0	Note 1
480.982	38.5	H	46.0	-7.5	Peak	66	1.5	Note 1
599.559	29.5	H	46.0	-16.5	Peak	253	1.5	Note 1

Note 1 Emission in non-restricted band, but limit of 15.209 used.

Note 2 Emissions were the same as run 1a, though the channels and modes were different. Therefore, it is likely that none of these emissions are radio signals. Testing on other channels in other modes was not done, since the emissions would not change.





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #2a, Radiated Spurious Emissions, 30 - 1000 MHz, BLE  
Channel, Chain, Level: 37, 1, 8

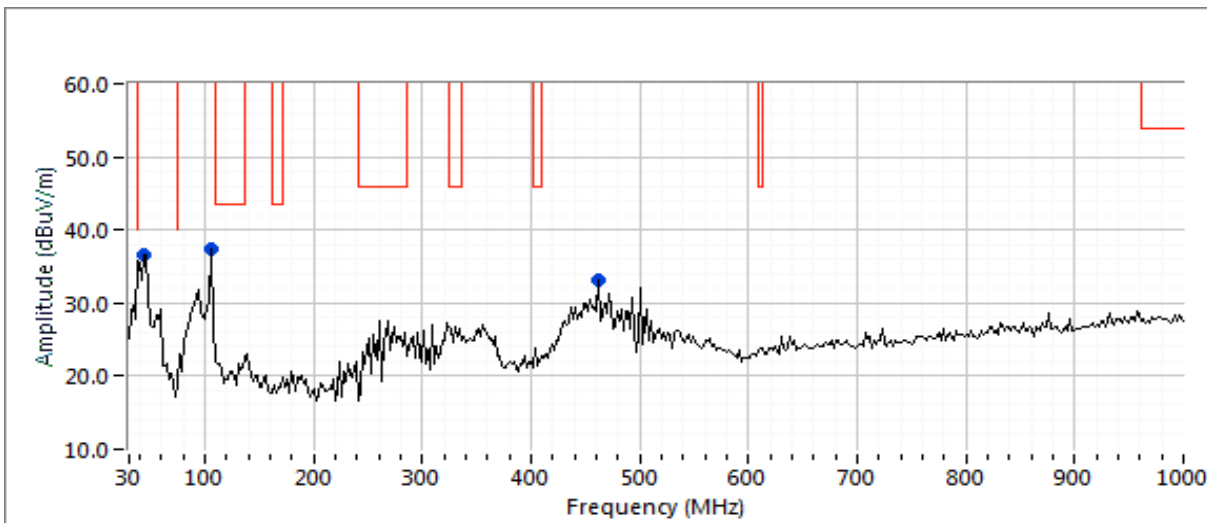
Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
45.263	36.7	V	40.0	-3.3	Peak	360	1.0	Note 1
105.750	37.4	V	43.5	-6.1	Peak	269	1.0	Note 1
460.832	33.1	V	46.0	-12.9	Peak	311	1.5	Note 1

Final QP readings

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
45.263	36.6	V	40.0	-3.4	QP	360	1.00	Note 1
105.750	37.6	V	43.5	-5.9	QP	322	1.04	Note 1
460.832	32.6	V	46.0	-13.4	QP	319	1.23	Note 1

Note 1 | Emission in non-restricted band, but limit of 15.209 used.







## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #2b, Radiated Spurious Emissions, 30 - 1000 MHz, BLE  
Channel, Chain, Level: 39, 1, 8

### Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

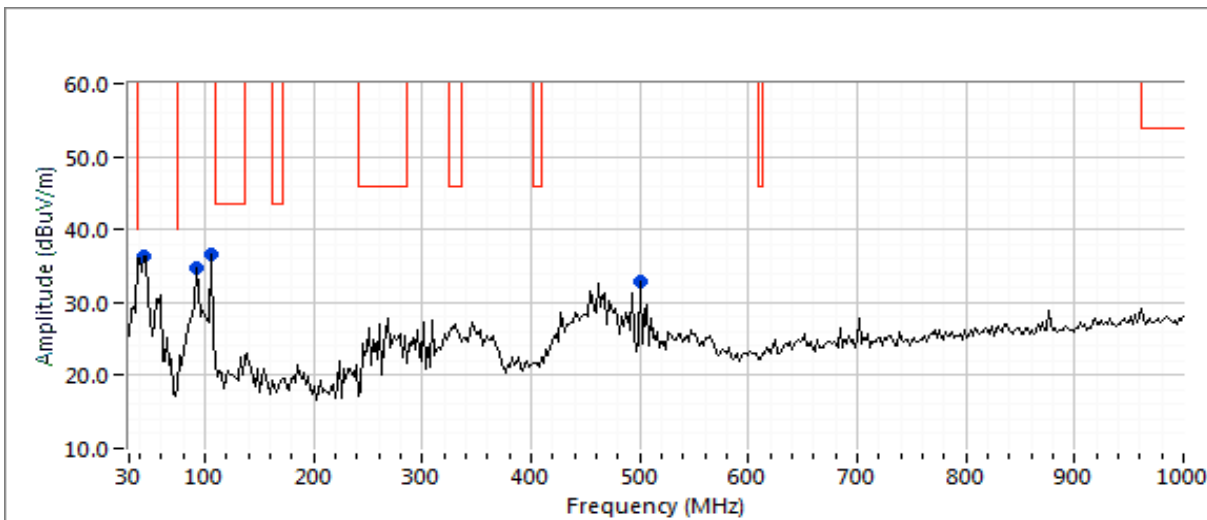
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.607	36.3	V	40.0	-3.7	Peak	274	1.0	Note 1
92.357	34.8	V	43.5	-8.7	Peak	118	1.0	Note 1
105.812	36.7	V	43.5	-6.8	Peak	291	1.0	Note 1
499.196	33.0	V	46.0	-13.0	Peak	235	1.0	Note 1

### Final QP readings

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
92.357	32.7	V	43.5	-10.8	QP	106	1.10	Note 1
499.196	33.6	V	46.0	-12.4	QP	227	1.00	Note 1

Note 1 Emission in non-restricted band, but limit of 15.209 used.

Note 2 Emissions were the same as run 2a, though the channel was different. Therefore, it is likely that none of these emissions are radio signals. Testing on the middle channel was not done, since the emissions would not change.





# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #3a, Radiated Spurious Emissions, 30 - 1000 MHz, Zigbee  
Channel, Chain, Level: 11, 1, 8

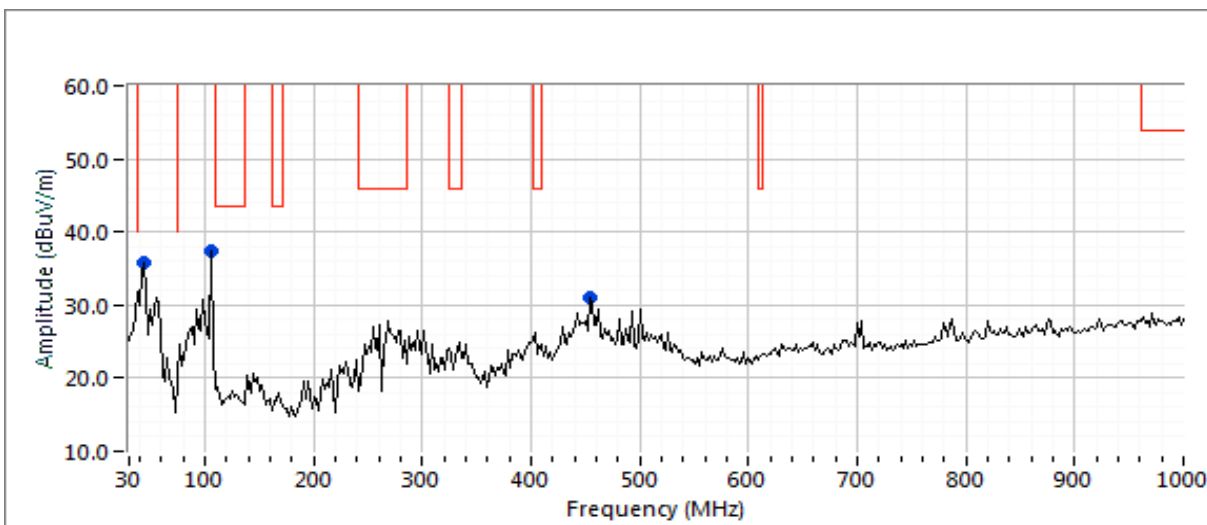
## Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.791	35.8	V	40.0	-4.2	Peak	312	1.0	Note 1
105.724	37.5	V	43.5	-6.0	Peak	124	1.0	Note 1
454.415	30.9	V	46.0	-15.1	Peak	321	1.5	Note 1

## Final QP readings

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.791	36.2	V	40.0	-3.8	QP	4	1.01	Note 1
105.724	37.5	V	43.5	-6.0	QP	79	1.01	Note 1
454.415	28.7	V	46.0	-17.3	QP	321	1.50	Note 1

Note 1 | Emission in non-restricted band, but limit of 15.209 used.





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #3b, Radiated Spurious Emissions, 30 - 1000 MHz, Zigbee  
Channel, Chain, Level: 26, 1, 8

Preliminary peak readings captured during pre-scan (peak readings vs. QP limit)

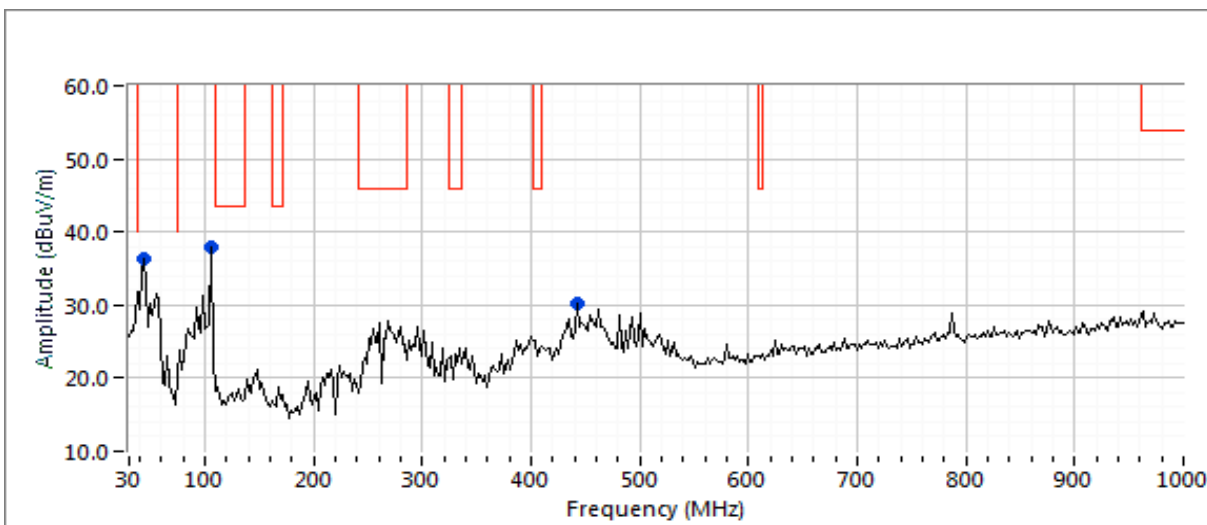
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.607	36.4	V	40.0	-3.6	Peak	329	1.0	
105.812	38.0	V	43.5	-5.5	Peak	89	1.0	
442.104	30.3	V	46.0	-15.7	Peak	305	1.0	

Final QP readings

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
43.649	36.2	V	40.0	-3.8	QP	4	1.01	Note 1

Note 1 Emission in non-restricted band, but limit of 15.209 used.

Note 2 Emissions were the same as run 3a, though the channel was different. Therefore, it is likely that none of these emissions are radio signals. Testing on the middle channel was not done, since the emissions would not change.





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Conducted Emissions

(NTS Silicon Valley, Fremont Facility, Semi-Anechoic Chamber)

#### Test Specific Details

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

Date of Test: 11/5/2018  
Test Engineer: John Caizzi  
Test Location: Chamber 5

Config. Used: 1  
Config Change: none  
EUT Voltage: PoE & 110V / 60Hz, 220V / 60Hz, 230V / 50Hz

#### General Test Configuration

For tabletop equipment, the EUT and POE adapter were located on a wooden table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. A second LISN was used for all local support equipment. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment were routed through metal conduit and passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:                      Temperature:      23-24 °C  
   Rel. Humidity:      35-38 %

#### Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power, 110V/60Hz	EN 55032 Class B	Pass	38.5 dBµV @ 0.46 MHz (-8.3 dB)
2	CE, AC Power, 230V/50Hz	EN 55032 Class B	Pass	42.2 dBµV @ 0.50 MHz (-3.8 dB)
3	CE, AC Power, 220V/60Hz	EN 55032 Class B	Pass	41.5 dBµV @ 0.50 MHz (-4.5 dB)
4	CE, AC Power, PoE, 220V/60Hz	EN 55032 Class B	Pass	34.6 dBµV @ 0.45 MHz (-12.2 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.

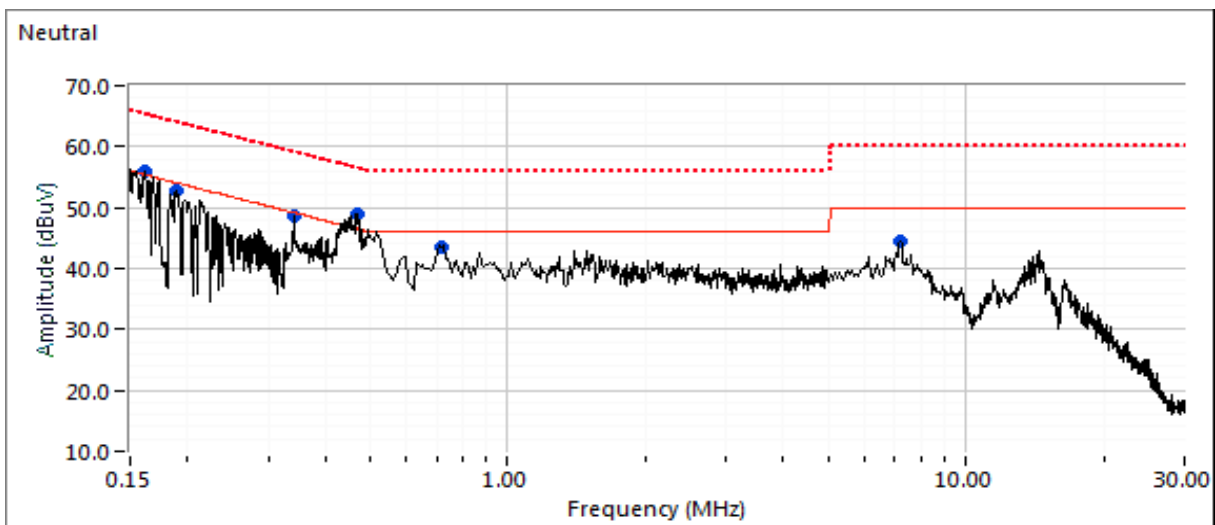
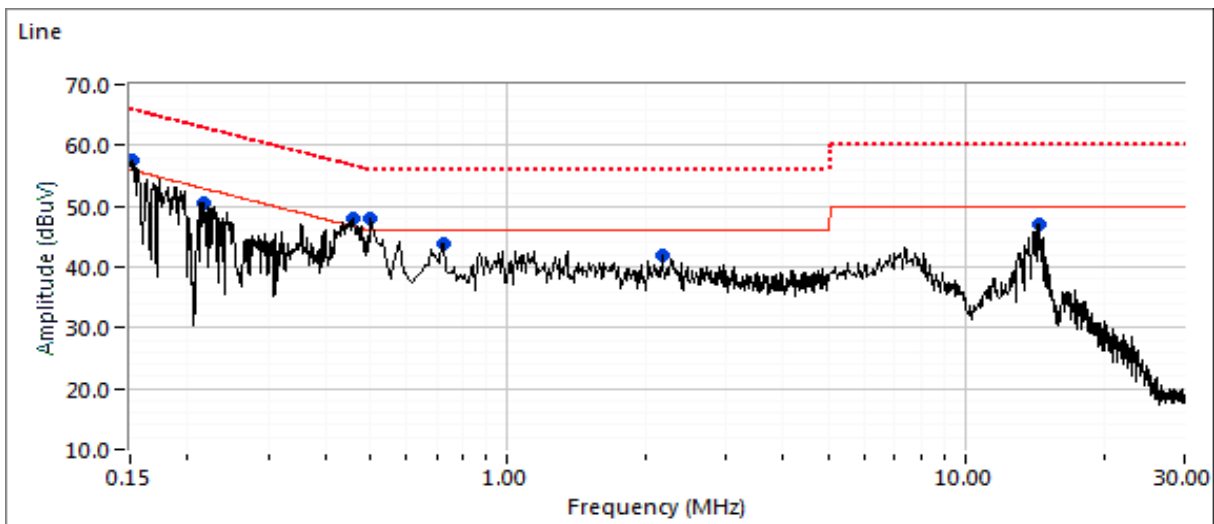
Note: The unit was transmitting at 2412MHz in 802.11b mode and 5180MHz in 802.11a mode.



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 110V/60Hz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.154	57.4	Line	55.9	1.5	Peak	
0.214	50.4	Line	52.9	-2.5	Peak	
0.455	47.9	Line	46.7	1.2	Peak	
0.499	48.0	Line	46.0	2.0	Peak	
0.721	43.7	Line	46.0	-2.3	Peak	
2.121	42.0	Line	46.0	-4.0	Peak	
14.502	46.9	Line	50.0	-3.1	Peak	
0.155	55.9	Neutral	55.4	0.5	Peak	
0.186	52.8	Neutral	54.1	-1.3	Peak	
0.348	48.6	Neutral	49.2	-0.6	Peak	
0.463	49.0	Neutral	46.5	2.5	Peak	
0.722	43.5	Neutral	46.0	-2.5	Peak	
7.115	44.5	Neutral	50.0	-5.5	Peak	



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Final quasi-peak and average readings

Frequency MHz	Level dB $\mu$ V	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.455	38.5	Line	46.8	-8.3	AVG	
0.154	33.5	Line	55.8	-22.3	AVG	
0.154	49.7	Line	65.8	-16.1	QP	
0.214	20.8	Line	53.1	-32.3	AVG	
0.214	43.2	Line	63.1	-19.9	QP	
0.455	38.5	Line	46.8	-8.3	AVG	
0.455	45.4	Line	56.8	-11.4	QP	
0.499	35.6	Line	46.0	-10.4	AVG	
0.499	43.2	Line	56.0	-12.8	QP	
0.721	34.6	Line	46.0	-11.4	AVG	
0.721	41.2	Line	56.0	-14.8	QP	
2.121	29.9	Line	46.0	-16.1	AVG	
2.121	36.2	Line	56.0	-19.8	QP	
14.502	31.5	Line	50.0	-18.5	AVG	
14.502	39.3	Line	60.0	-20.7	QP	
0.155	32.8	Neutral	55.7	-22.9	AVG	
0.155	49.5	Neutral	65.7	-16.2	QP	
0.186	27.0	Neutral	54.2	-27.2	AVG	
0.186	46.0	Neutral	64.2	-18.2	QP	
0.348	34.4	Neutral	49.0	-14.6	AVG	
0.348	41.7	Neutral	59.0	-17.3	QP	
0.463	37.4	Neutral	46.6	-9.2	AVG	
0.463	44.8	Neutral	56.6	-11.8	QP	
0.722	35.6	Neutral	46.0	-10.4	AVG	
0.722	41.7	Neutral	56.0	-14.3	QP	
7.115	31.4	Neutral	50.0	-18.6	AVG	
7.115	37.1	Neutral	60.0	-22.9	QP	

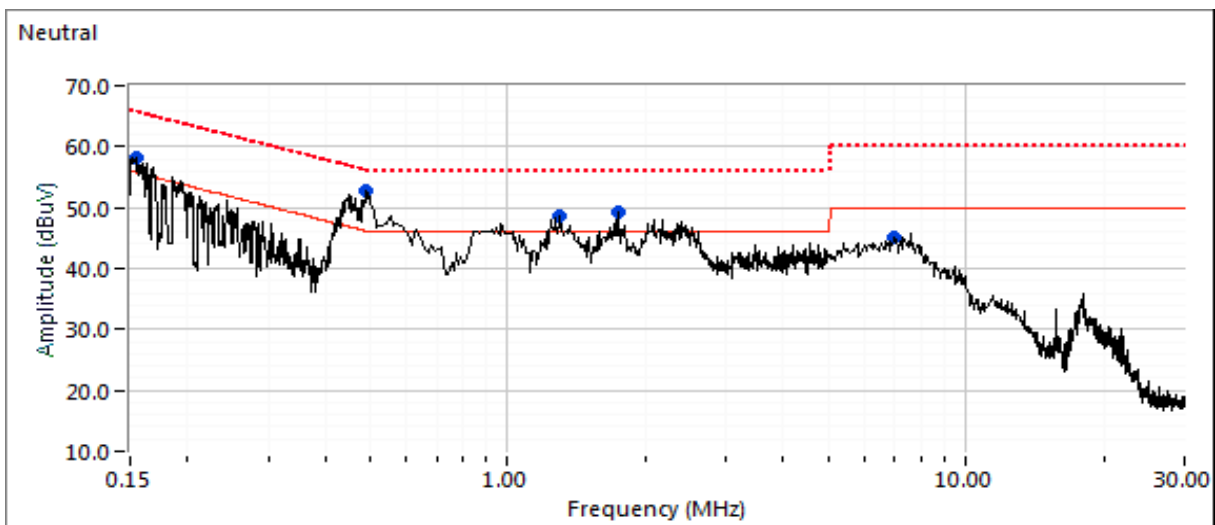
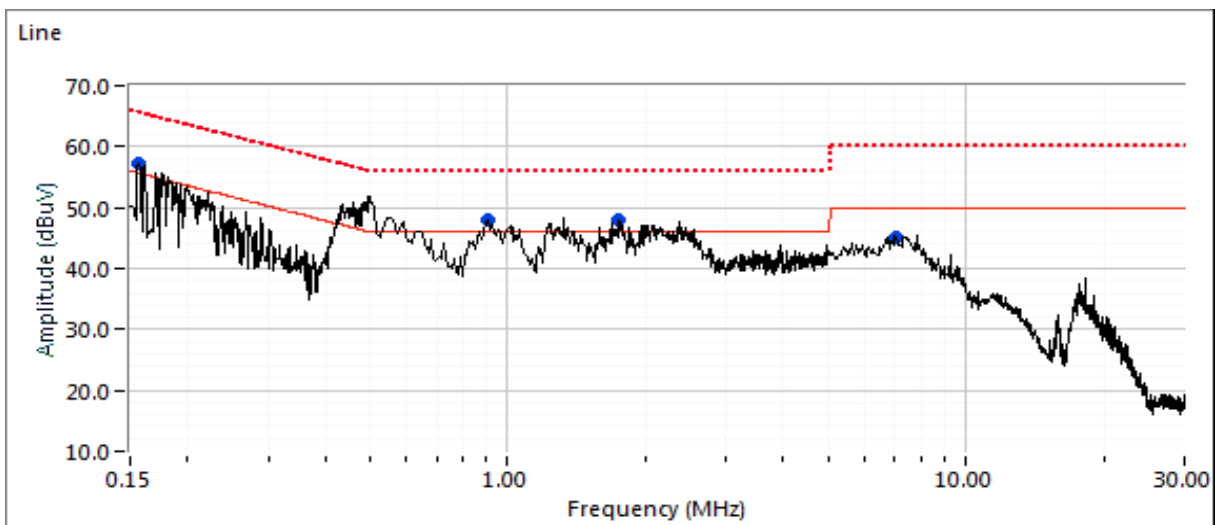
Note 1:	
Note 2:	



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #2: AC Power Port Conducted Emissions, 0.15 - 30MHz, 230V/50Hz







# EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

## Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.150	57.3	Line	55.6	1.7	Peak	
0.497	51.9	Line	46.0	5.9	Peak	
0.904	48.0	Line	46.0	2.0	Peak	
1.680	47.9	Line	46.0	1.9	Peak	
7.310	45.0	Line	50.0	-5.0	Peak	
0.152	58.1	Neutral	55.8	2.3	Peak	
0.492	52.7	Neutral	46.2	6.5	Peak	
1.359	48.7	Neutral	46.0	2.7	Peak	
1.747	49.1	Neutral	46.0	3.1	Peak	
7.071	45.2	Neutral	50.0	-4.8	Peak	

## Final quasi-peak and average readings

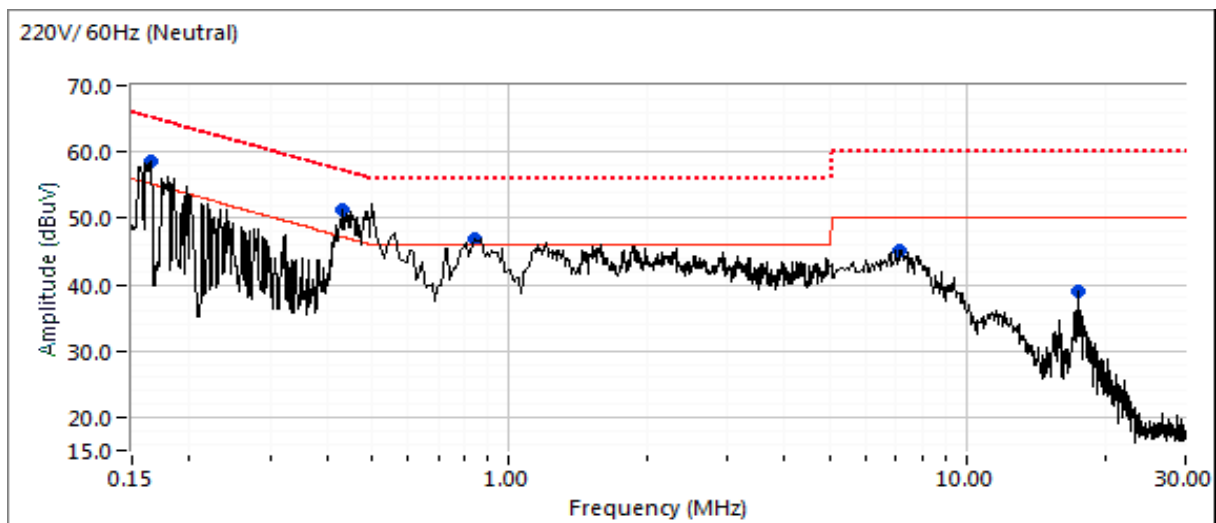
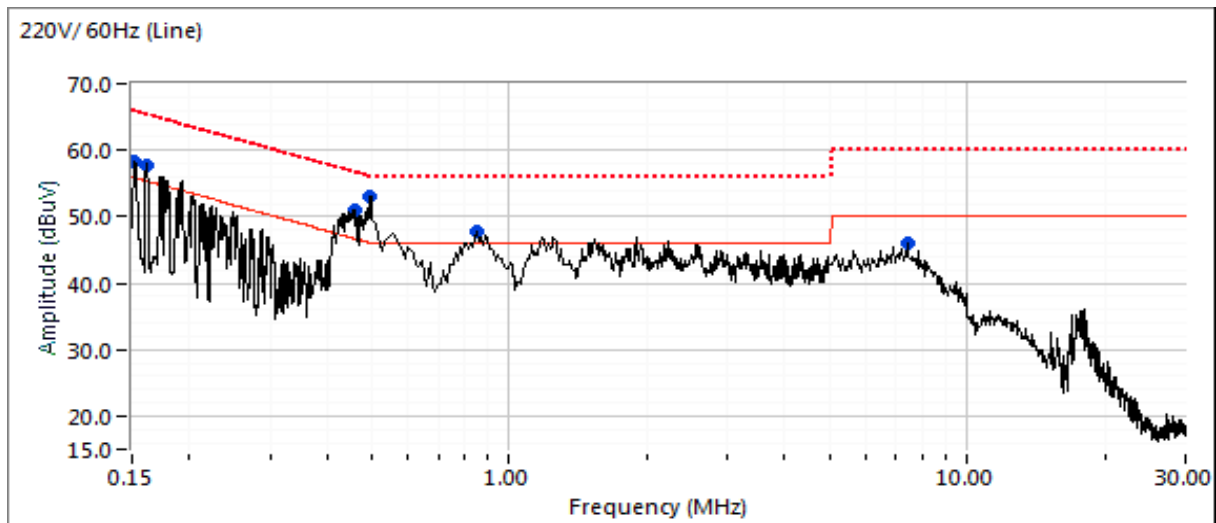
Frequency MHz	Level dBμV	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.150	36.9	Line	56.0	-19.1	AVG	
0.150	51.4	Line	66.0	-14.6	QP	
0.497	42.2	Line	46.0	-3.8	AVG	
0.497	49.5	Line	56.0	-6.5	QP	
0.904	37.0	Line	46.0	-9.0	AVG	
0.904	43.6	Line	56.0	-12.4	QP	
1.680	37.5	Line	46.0	-8.5	AVG	
1.680	44.0	Line	56.0	-12.0	QP	
7.310	34.8	Line	50.0	-15.2	AVG	
7.310	40.9	Line	60.0	-19.1	QP	
0.152	35.4	Neutral	55.9	-20.5	AVG	
0.152	51.0	Neutral	65.9	-14.9	QP	
0.492	42.3	Neutral	46.1	-3.8	AVG	
0.492	50.0	Neutral	56.1	-6.1	QP	
1.359	38.0	Neutral	46.0	-8.0	AVG	
1.359	43.8	Neutral	56.0	-12.2	QP	
1.747	37.7	Neutral	46.0	-8.3	AVG	
1.747	43.6	Neutral	56.0	-12.4	QP	
7.071	34.7	Neutral	50.0	-15.3	AVG	
7.071	40.6	Neutral	60.0	-19.4	QP	



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #3: AC Power Port Conducted Emissions, 0.15 - 30MHz, 220V/60Hz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Run #3: AC Power Port Conducted Emissions, 0.15 - 30MHz, 220V/60Hz

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dB $\mu$ V	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.498	53.1	Line	46.0	7.1	Peak	
0.500	51.6	Neutral	46.0	5.6	Peak	
0.457	51.0	Line	46.7	4.3	Peak	
0.432	51.4	Neutral	47.2	4.2	Peak	
0.500	49.5	Line	46.0	3.5	Peak	
0.163	58.5	Neutral	55.2	3.3	Peak	
0.152	58.4	Line	55.9	2.5	Peak	
0.160	57.8	Line	55.4	2.4	Peak	
0.866	46.8	Neutral	46.0	0.8	Peak	
7.400	45.9	Line	50.0	-4.1	Peak	
7.245	45.2	Neutral	50.0	-4.8	Peak	
17.510	39.1	Neutral	50.0	-10.9	Peak	

### Final quasi-peak and average readings

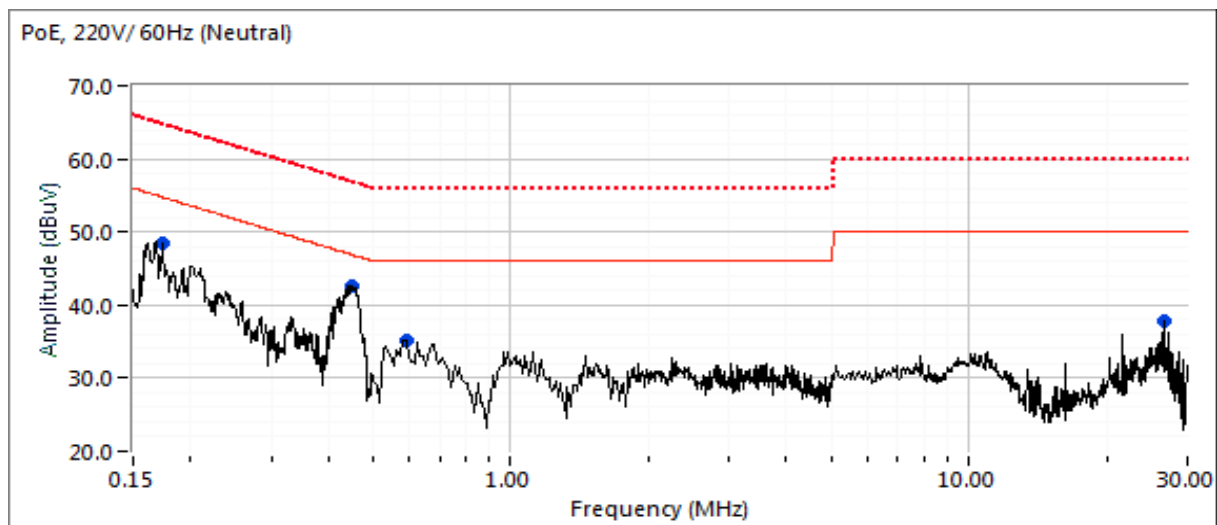
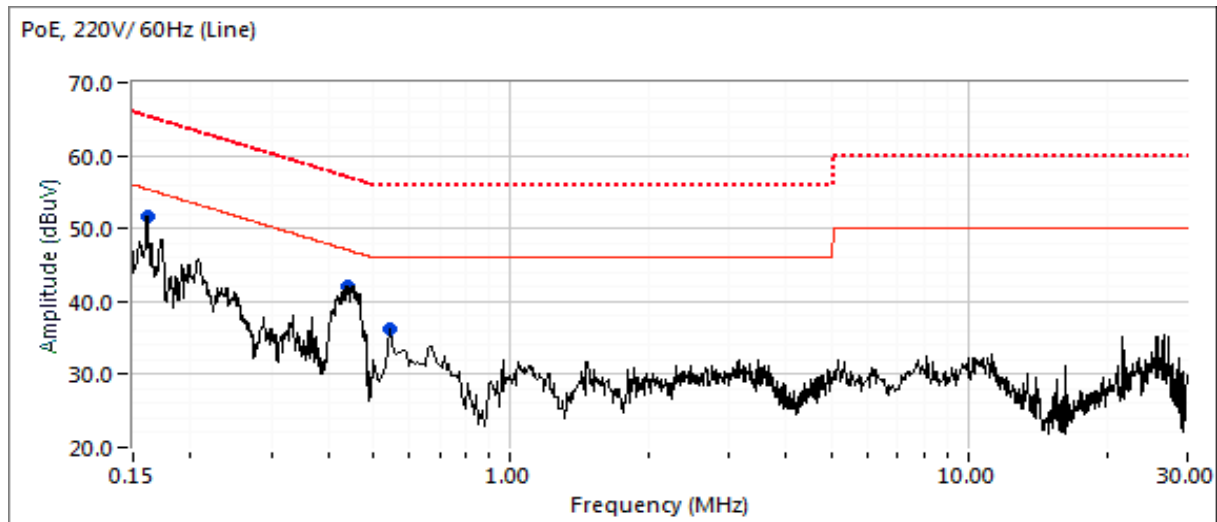
Frequency MHz	Level dB $\mu$ V	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.498	41.5	Line	46.0	-4.5	AVG	AVG (0.10s)
0.500	41.5	Line	46.0	-4.5	AVG	AVG (0.10s)
0.500	41.4	Neutral	46.0	-4.6	AVG	AVG (0.10s)
0.498	50.1	Line	56.0	-5.9	QP	QP (1.00s)
0.500	49.8	Neutral	56.0	-6.2	QP	QP (1.00s)
0.500	49.6	Line	56.0	-6.4	QP	QP (1.00s)
0.432	40.7	Neutral	47.2	-6.5	AVG	AVG (0.10s)
0.457	39.7	Line	46.8	-7.1	AVG	AVG (0.10s)
0.866	37.2	Neutral	46.0	-8.8	AVG	AVG (0.10s)
0.457	47.7	Line	56.8	-9.1	QP	QP (1.00s)
0.432	48.1	Neutral	57.2	-9.1	QP	QP (1.00s)
0.866	44.3	Neutral	56.0	-11.7	QP	QP (1.00s)
0.152	52.6	Line	65.9	-13.3	QP	QP (1.00s)
0.160	51.5	Line	65.4	-13.9	QP	QP (1.00s)
0.163	51.2	Neutral	65.3	-14.1	QP	QP (1.00s)
7.245	34.0	Neutral	50.0	-16.0	AVG	AVG (0.10s)
7.245	40.5	Neutral	60.0	-19.5	QP	QP (1.00s)
0.152	35.0	Line	55.9	-20.9	AVG	AVG (0.10s)
0.160	30.6	Line	55.4	-24.8	AVG	AVG (0.10s)
0.163	30.4	Neutral	55.3	-24.9	AVG	AVG (0.10s)



## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

Run #4: PoE AC Power Port Conducted Emissions, 0.15 - 30MHz, 220V/60Hz





## EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR075848
Model:	APIN0555	T-Log Number:	TL075848-RA-FCC
Contact:	Mark Hill	Project Manager:	Christine Krebill
Standard:	FCC §15.247 & §15.407	Project Engineer:	David Bare
		Class:	Enter on cover sheet

### Run #3: AC Power Port Conducted Emissions, 0.15 - 30MHz, 220V/60Hz

Preliminary peak readings captured during pre-scan (peak readings vs. average limit)

Frequency MHz	Level dB $\mu$ V	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.160	51.6	Line	55.4	-3.8	Peak	
0.453	42.7	Neutral	46.8	-4.1	Peak	
0.444	42.1	Line	47.0	-4.9	Peak	
0.174	48.5	Neutral	54.8	-6.3	Peak	
0.549	36.3	Line	46.0	-9.7	Peak	
0.583	35.2	Neutral	46.0	-10.8	Peak	
26.611	37.7	Neutral	50.0	-12.3	Peak	

### Final quasi-peak and average readings

Frequency MHz	Level dB $\mu$ V	AC Line	Class B		Detector QP/Ave	Comments
			Limit	Margin		
0.453	34.6	Neutral	46.8	-12.2	AVG	AVG (0.10s)
0.444	34.6	Line	47.0	-12.4	AVG	AVG (0.10s)
0.453	41.2	Neutral	56.8	-15.6	QP	QP (1.00s)
0.444	41.4	Line	57.0	-15.6	QP	QP (1.00s)
26.611	31.0	Neutral	50.0	-19.0	AVG	AVG (0.10s)
0.160	36.4	Line	55.5	-19.1	AVG	AVG (0.10s)
0.160	45.3	Line	65.5	-20.2	QP	QP (1.00s)
0.174	34.0	Neutral	54.8	-20.8	AVG	AVG (0.10s)
0.583	25.0	Neutral	46.0	-21.0	AVG	AVG (0.10s)
0.549	33.9	Line	56.0	-22.1	QP	QP (1.00s)
0.174	41.4	Neutral	64.8	-23.4	QP	QP (1.00s)
0.583	32.6	Neutral	56.0	-23.4	QP	QP (1.00s)
0.549	20.9	Line	46.0	-25.1	AVG	AVG (0.10s)
26.611	34.9	Neutral	60.0	-25.1	QP	QP (1.00s)

### ***End of Report***

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