41039 Boyce Road
Fremont, CA. 94538

510-578-3500 Phone
510-440-9525 Fax

EMC Test Report

Class III Permissive Change

Innovation, Science and Economic Development Canada
RSS-Gen Issue 5 / RSS-247 Issue 2
FCC Part 15, Subpart E

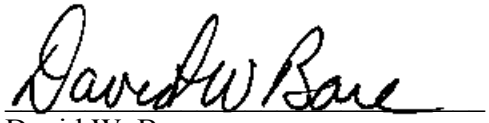
Model: APIN0534 and APIN0535

IC CERTIFICATION #:	4675A-APIN0534535
FCC ID:	Q9DAPIN0534535
APPLICANT:	Aruba, a Hewlett Packard Enterprise company 3333 Scott Blvd Santa Clara, CA 95054
TEST SITE(S):	National Technical Systems 41039 Boyce Road. Fremont, CA. 94538-2435
IC SITE REGISTRATION #:	2845B-3; 2845B-4, 2845B-5, 2845B-7
PROJECT NUMBER:	PR077654
REPORT DATE:	July 3, 2019
RE-ISSUED DATE:	July 24, 2019
FINAL TEST DATES:	October 2, 3, 5, 8, 9, 11, 12, 16, 17, 18, 19, 22, 23, 25, 26 and 31, and November 1, 7, 8, 9, 12 and 29 and December 26 and 27, 2018 and January 14, 2019
TOTAL NUMBER OF PAGES:	273

A2LA ACCREDITED
Testing Cert #0214.26

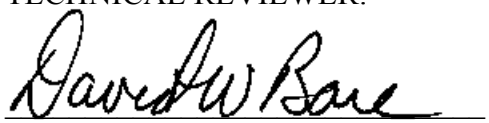
VALIDATING SIGNATORIES

PROGRAM MGR



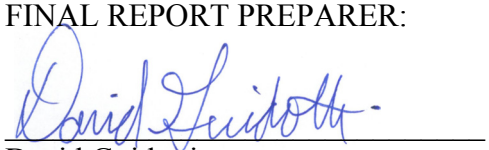
David W. Bare
Chief Engineer

TECHNICAL REVIEWER:



David W. Bare
Chief Engineer

FINAL REPORT PREPARER:



David Guidotti
Senior Technical Writer

QUALITY ASSURANCE DELEGATE

Jesse Reel
Quality Assurance

REVISION HISTORY

Rev#	Date	Comments	Modified By
-	July 3, 2019	First release	
1	July 24, 2019	Corrected 99% bandwidth values for ax20 mode in the 5470-5725 MHz band on pages 9 and 66.	dwb

TABLE OF CONTENTS

SCOPE

An electromagnetic emissions test has been performed on the Aruba, a Hewlett Packard Enterprise company model APIN0534 and APIN0535, 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:

ANSI C63-10-2013
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.

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

STATEMENT OF COMPLIANCE

The tested samples of Aruba, a Hewlett Packard Enterprise company models APIN0534 and APIN0535 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 APIN0534 and APIN0535 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: 16.83 MHz ax20: 19.13 MHz ax40: 37.82 MHz ax80: 77.2 MHz	N/A – limits EIRP if < 20MHz	N/A
15.407(a) (2)	RSS-247 6.2.1 (2)	Output Power	802.11a: 70.3 mW ax20: 111.2 mW ax40: 52.9 mW ax80: 115.6 mW (Max eirp: 0.183 W)	24 dBm (250 mW) EIRP <= 1W	Complies
15.407(a) (2)	RSS-247 6.2.2 (1)	Power Spectral Density	802.11a: 6.2 dBm/MHz ax20: 8.0 dBm/MHz ax40: 2.1 dBm/MHz ax80: 2.3 dBm/MHz	9 dBm/MHz	Complies
15.407(b) (2) / 15.209	RSS-247 6.2.2 (2)	Spurious Emissions above 1GHz	53.7 dBµV/m @ 5142.7 MHz (-0.3 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		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
15.407(a) (2)		Output Power	802.11a: 72.0 mW ax20: 101.6 mW ax40: 119.7 mW ax80: 134.4 mW (Max eirp: 0.213 W)	24 dBm (250 mW) EIRP <= 1W	Complies
15.407(a) (2)		Power Spectral Density	802.11a: 6.4 dBm/MHz ax20: 7.8 dBm/MHz ax40: 4.9 dBm/MHz ax80: 2.9 dBm/MHz	9 dBm/MHz	Complies
15.407(b) (3) / 15.209		Spurious Emissions above 1GHz	68.2 dBµV/m @ 5725.1 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: 16.84 MHz ax20: 19.2 MHz ax40: 37.86 MHz ax80: 77.22 MHz	N/A – limits EIRP if < 20MHz	N/A
	RSS-210 A9.2(2)	Output Power	802.11a: 72.0 mW ax20: 101.6 mW ax40: 119.7 mW ax80: 134.4 mW (Max eirp: 0.213 W)	24 dBm (250 mW) EIRP <= 1W	Complies
	RSS-247 6.2.3 (1)	Power Spectral Density	802.11a: 6.4 dBm/MHz ax20: 7.8 dBm/MHz ax40: 4.9 dBm/MHz ax80: 2.9 dBm/MHz	9 dBm/MHz	Complies
	RSS-247 6.2.3 (2)	Spurious Emissions above 1GHz	68.2 dBµV/m @ 5725.1 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	34.2 dBµV/m @ 34.13 MHz (margin: -5.8 dB)	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	TPC is not required as the device operates at below 500mW eirp	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 with radar detection)	Refer to separate test report, reference FR-077654.21	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 dBµV @ 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	± 0.52 dB
RF power, conducted (Spectrum analyzer)	dBm	25 to 7000 MHz	± 0.7 dB
Conducted emission of transmitter	dBm	25 to 26500 MHz	± 0.7 dB
Conducted emission of receiver	dBm	25 to 26500 MHz	± 0.7 dB
Radiated emission (substitution method)	dBm	25 to 26500 MHz	± 2.5 dB
Radiated emission (field strength)	dBµV/m	25 to 1000 MHz	± 3.6 dB
		1000 to 40000 MHz	± 6.0 dB
Conducted Emissions (AC Power)	dBµV	0.15 to 30 MHz	± 2.4 dB

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Aruba, a Hewlett Packard Enterprise company models APIN0534 and APIN0535 are enterprise grade Wi-Fi access points 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 48 Volts DC, 0.75 Amps or POE (57 Volts DC, 0.95Amps).

The samples were received on October 1, 2018 and tested on October 2, 3, 5, 8, 9, 11, 12, 16, 17, 18, 19, 22, 23, 25, 26 and 31, and November 1, 7, 8, 9, 12 and 29 and December 26 and 27, 2018 and January 14, 2019. The following samples were used during testing:

Company	Model	Description	Serial Number	FCC ID
Aruba	APIN0524	Wi-Fi Access Point	CNG6K9V019	Q9DAPIN0534535
Aruba	APIN0525	Wi-Fi Access Point	CNG6K9W01F	
Aruba	APIN0524	Wi-Fi Access Point	CNG6K9V00M	
Aruba	APIN0525	Wi-Fi Access Point	CNG6K9W00R	
Aruba	APIN0525	Wi-Fi Access Point	CNG6K9V00C	

OTHER EUT DETAILS

The following EUT details should be noted:
Model APIN0534 uses external Wi-Fi antennas. Model APIN0535 uses internal Wi-Fi antennas. Both models use a separate internal BLE/ZigBee antenna.
Maximum antenna gains for internal antennas (details in test results):
2.4GHz: 3.5dBi max
5GHz: 5.4dBi max
BLE/ZigBee: 5.0 dBi (APIN0534), 3.1 dBi (APIN0535)

Maximum antenna gains for external antennas.

Antenna Model #	Description	2.4 Gain / 5G Gain
AP-ANT-1W	Whip/dipole antenna	3.8dBi/5.8dBi
AP-ANT-20	Whip/dipole antenna	2dBi/2dBi
AP-ANT-19	Whip/dipole antenna	3dBi/6dBi
AP-ANT-13B	Patch antenna	2.3dBi/4dBi
AP-ANT-40	Panel	4dBi/5dBi (4 element)
AP-ANT-45	Panel	5.5dBi/4.5dBi (4 element)
AP-ANT-48	Panel	8.5dBi/8.5dBi (4 element

The 802.11ax mode does not support partial RU configurations.

ENCLOSURE

The EUT enclosure measures approximately 24.5 by 24.5 by 5 centimeters. It is primarily constructed of aluminum and uncoated plastic.

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
HP	840 G3	Laptop	5CG75124D0	-
Microsemi	PD-9001GR/AT/AC	POE adapter	None	-

EUT INTERFACE PORTS

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

Port	Connected To	Cable(s)		
		Description	Shielded or Unshielded	Length(m)
DC Input	AC Adapter	two wire	Unshielded	1.2
Ethernet	POE Adatper	Cat 6	Unshielded	7.6
USB	Not connected	-	-	-
micro USB	Not connected	-	-	-
AC Adapter	Mains	Two wire	Unshileded	1.3
POE adapter	HP Laptop	Cat 6	Unshileded	1.5
POE adapter	Mains	Three wire	Unshileded	1.3

The micro USB and USB ports are for debug only.

EUT OPERATION

During testing, the EUT was 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 APIN0534 and APIN0535 being proposed. All performance and construction deviations from the characteristics originally reported to the FCC are addressed

SOFTWARE

The AurbaOS 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.

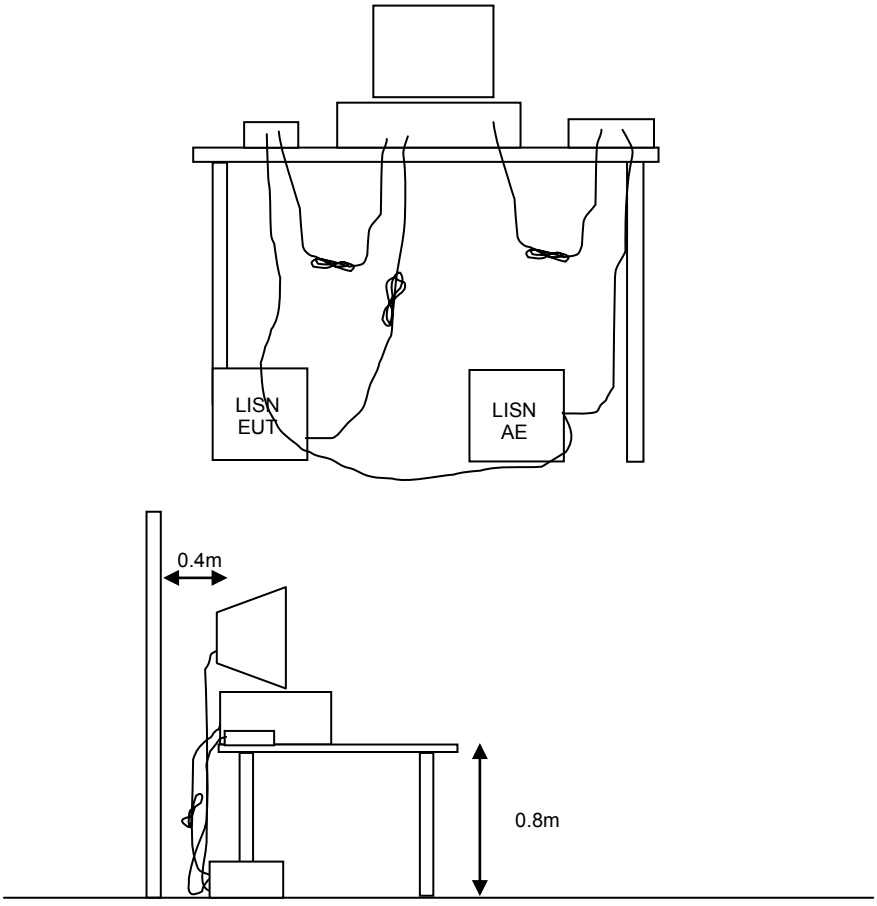


Figure 1 Typical Conducted Emissions Test Configuration

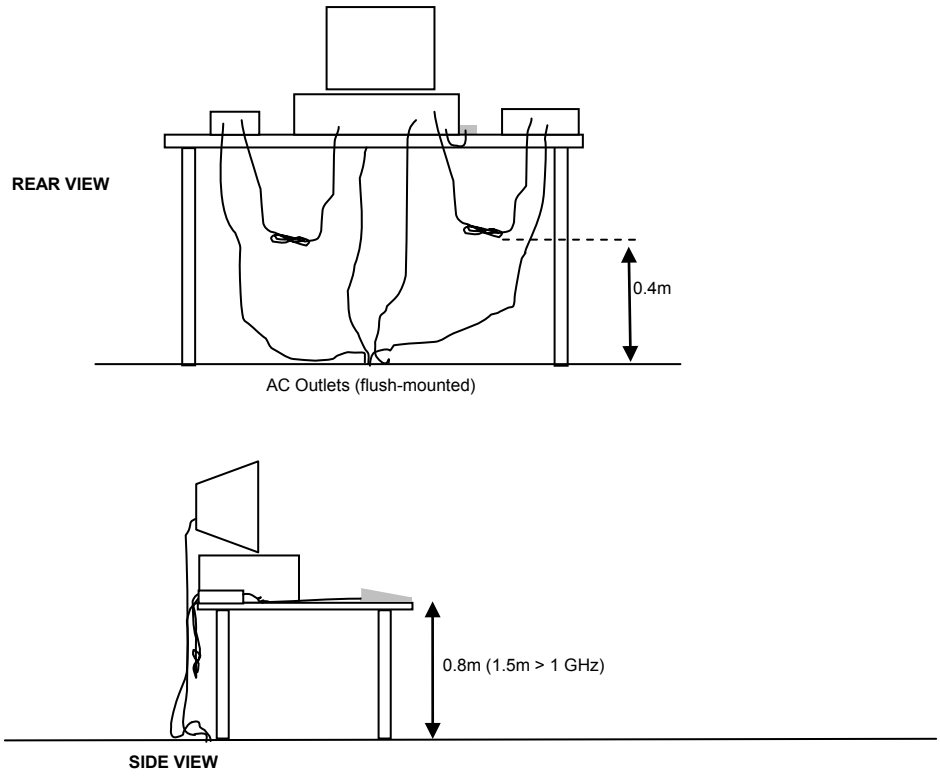
RADIATED EMISSIONS

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.

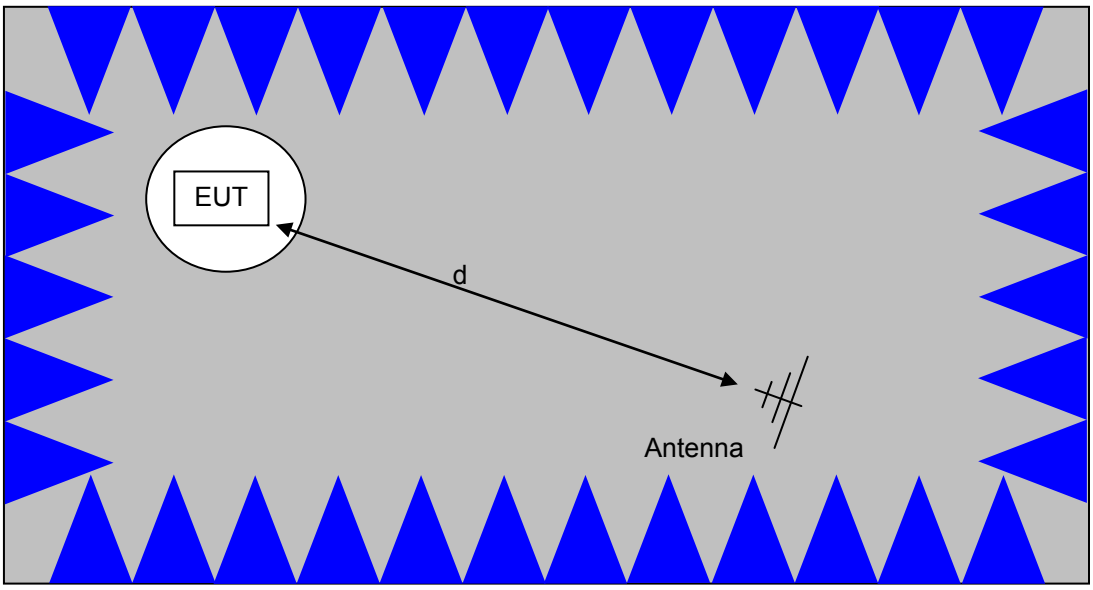
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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

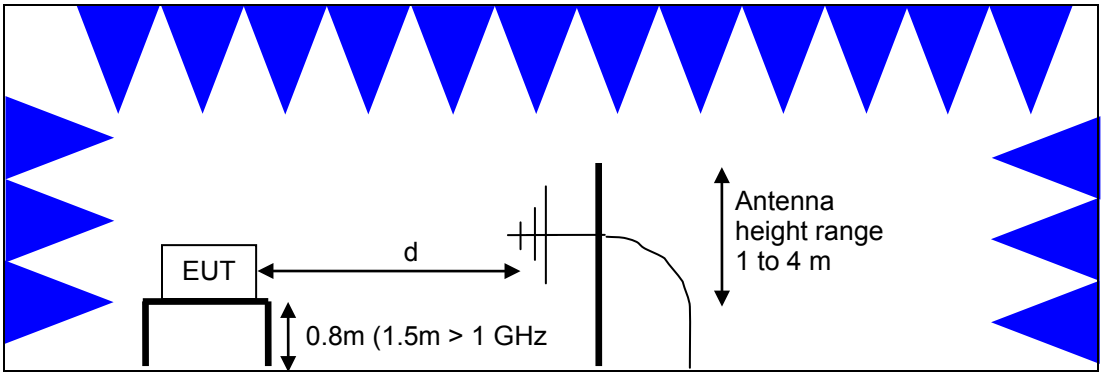


Typical Test Configuration for Radiated Field Strength Measurements



The 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.

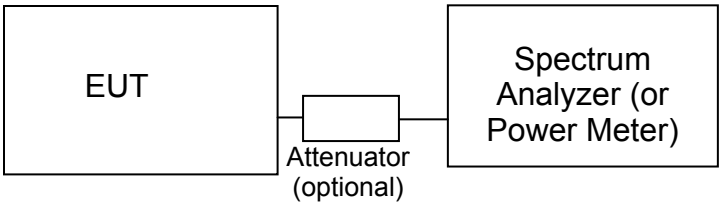
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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[1].

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

[1] The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 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)2 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.

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

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

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

$$R_r - S = M$$

where:
R_r = Receiver Reading in dBuV
S = Specification Limit in dBuV
M = Margin to Specification in +/- dB

SAMPLE CALCULATIONS - RADIATED EMISSIONS

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

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

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

where:
F_d = Distance Factor in dB
D_m = Measurement Distance in meters
D_s = Specification Distance in meters

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

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

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

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

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:
R_r = Receiver Reading in dBuV/m
F_d = Distance Factor in dB
R_c = Corrected Reading in dBuV/m
L_s = Specification Limit in dBuV/m
M = Margin in dB Relative to Spec

SAMPLE CALCULATIONS - FIELD STRENGTH TO EIRP CONVERSION

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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radiated Emissions, Bandedge, 05-Oct-18					
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
Radiated Emissions, Bandedge UNII , 12-Oct-18					
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
Radiated Emissions, 1000 - 40,000 MHz, 16-Oct-18					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
EMCO	Antenna, Horn, 1-18 GHz (SA40-Red)	3115	1142	9/18/2018	9/18/2020
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
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	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
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	8/17/2018	8/17/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
Radiated Emissions, 1000 - 40,000 MHz, 17-Oct-18					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	8/17/2018	8/17/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radiated Emissions, 1000 - 40,000 MHz, 18-Oct-18					
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 1000 - 40,000 MHz, 19-Oct-18					
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	5/1/2018	5/1/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	8/17/2018	8/17/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 1000 - 40,000 MHz, 22-Oct-18					
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 1000 - 40,000 MHz, 23-Oct-18					
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 1000 - 40,000 MHz, 25-Oct-18					
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 1000 - 40,000 MHz, 26-Oct-18					
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	9/5/2018	9/5/2019
HP / Miteq	SA40 R Head HF preAmplifier, 18-40 GHz (w/1148)	TTA1840-45-5P-HG-S	1145	9/8/2018	9/8/2019
Hewlett Packard	Spectrum Analyzer (SA40) Red 30 Hz -40 GHz	8564E (84125C)	1148	9/27/2018	9/27/2019
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, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
A. H. Systems	Spare System Horn, 18-40GHz	SAS-574, p/n: 2581	2162	8/4/2017	8/4/2019
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Radiated Emissions, 30 - 1,000 MHz, 31-Oct-18					
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	8/1/2018	8/1/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
Com-Power	Preamplifier, 30-1000 MHz	PA-103	2465	5/24/2018	5/24/2019
Radiated Emissions, 1000 - 6,000 MHz, 31-Oct-18					
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
Micro-Tronics	Band Reject Filter, 2400-2500 MHz	BRM50702-02	2249	5/1/2018	5/1/2019
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Micro-Tronics	Band Reject Filter, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
Radiated Emissions, 1000 - 6,000 MHz, 01-Nov-18					
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
Radio Antenna Port (Power and Spurious Emissions), 07-Nov-18					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	4/4/2018	4/4/2019
Rohde & Schwarz	Peak Power Sensor 100 uW - 2 Watts use with 20dB attenuator sn:1031.6959.00 only	NRV-Z32	3225	11/5/2017	12/5/2018
Rohde & Schwarz	20dB attenuator sn:1031.6959.00 only for Peak Power Sensor 100 uW - 2 Watts	NRV-Z32 atten	3226	11/5/2017	12/5/2018
Radio Antenna Port (Power and Spurious Emissions), 12-Nov-18					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
Radiated Emissions, 27-Dec-18					
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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
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
Radiated Emissions, 27-Dec-18					
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
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	2240	8/17/2018	8/17/2019

Appendix B Test Data

TL077654-RA-FCC Pages 34 – 272

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Product	APIN0534 and APIN0535	T-Log Number:	TL077654-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

APIN0534 and APIN0535

Date of Last Test: 6/20/2019

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Test Specific Details

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: 70.3 mW ax20: 111.2 mW ax40: 52.9 mW ax80: 115.6 mW
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 6.2 mW/MHz ax20: 8.0 mW/MHz ax40: 2.1 mW/MHz ax80: 2.3 mW/MHz
1	Max EIRP 5250 - 5350MHz	TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold = -64dBm.	Pass	EIRP = 22.6 dBm (183.2 mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 16.83 MHz ax20: 19.13 MHz ax40: 37.82 MHz ax80: 77.2 MHz
2	Antenna Conducted - Out of Band Spurious	15.407(b) -27dBm/MHz		All emissions below the -27dBm/MHz limit

General Test Configuration

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

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Ambient Conditions:

Temperature: 23 °C
Rel. Humidity: 37.3 %

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	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185

Sample Notes

Sample S/N: CNG6K9V00M
Driver: P2 WNC 0.4.3a

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 11/8/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: FT Lab #4b EUT Voltage: POE & 120V/60Hz

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 ≥ 2*span/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. Tthe measurements were adjusted by adding YY dB. This is based on 10log(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 VB ≥ 3*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	2.0	2.0	2.0	2.0					2.0	8.0

Higher gain antennas used for model APIN0534 and internal antennas of the APIN0535 use a corresponding lower power settings
Legacy modes operate on all chains
Power for BF mode is reduced by 6 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: 4

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	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)
Notes:	Based on PSD results for 802.11n modes in the 5150-5250 Mhz band, only 802.11ax modes tested for 5725-5850 MHz.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: 11a — Max EIRP (mW): 111.4

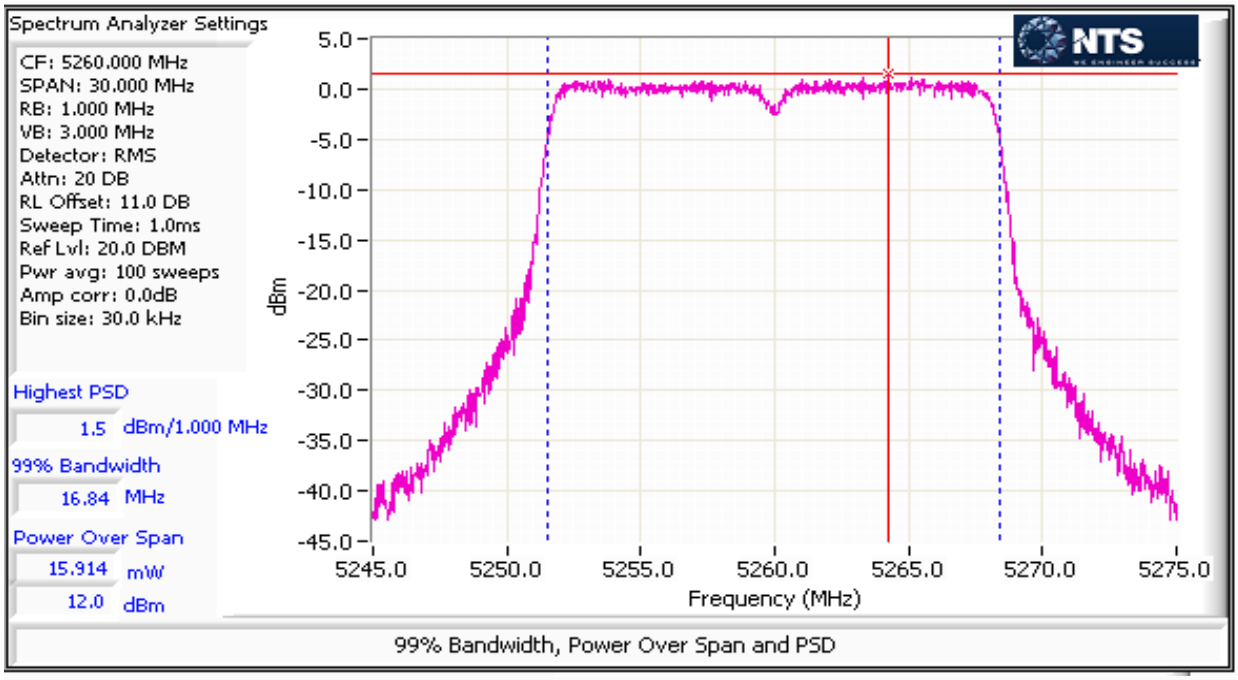
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5260	0	15	21.52	92.3	12.0	70.3	18.5	24.0	0.070	Pass
	1				12.4					
	2				12.0					
	3				12.0					
5300	0	15	20.92	92.3	11.6	64.9	18.1	24.0		Pass
	1				11.9					
	2				11.9					
	3				11.6					
5320	0	15	20.76	92.3	11.8	69.7	18.4	24.0		Pass
	1				12.4					
	2				12.4					
	3				11.6					

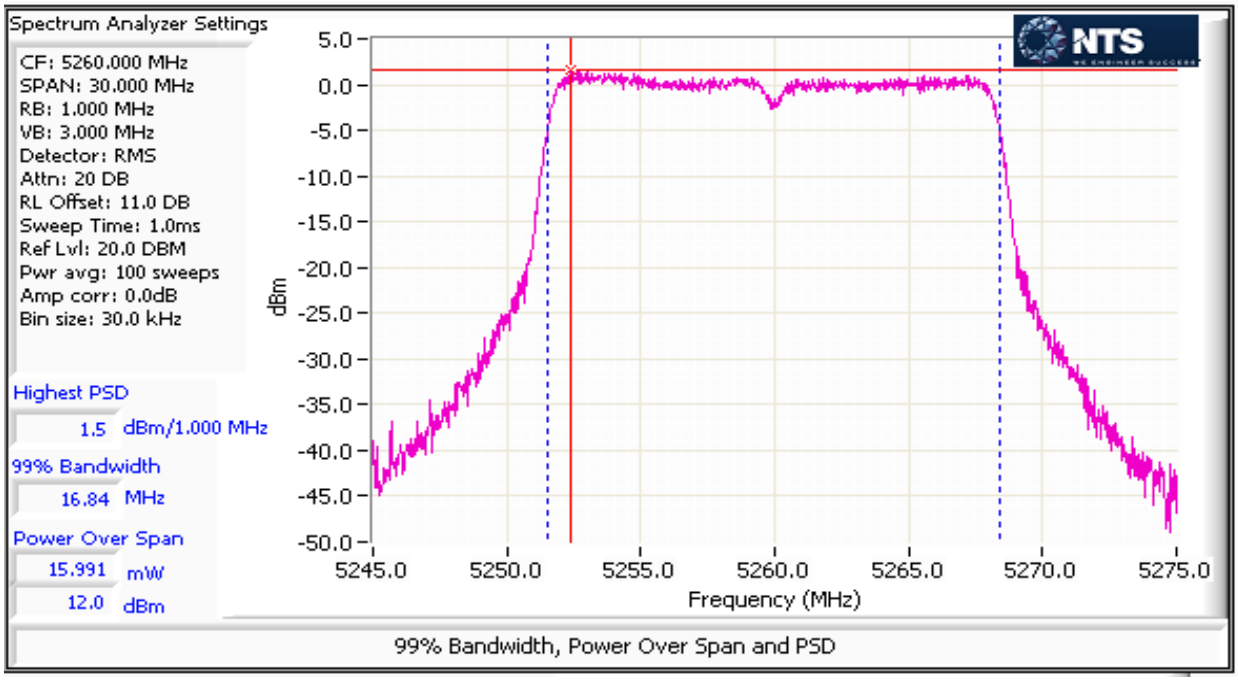
MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: 11a — Max EIRP (mW): 112.2

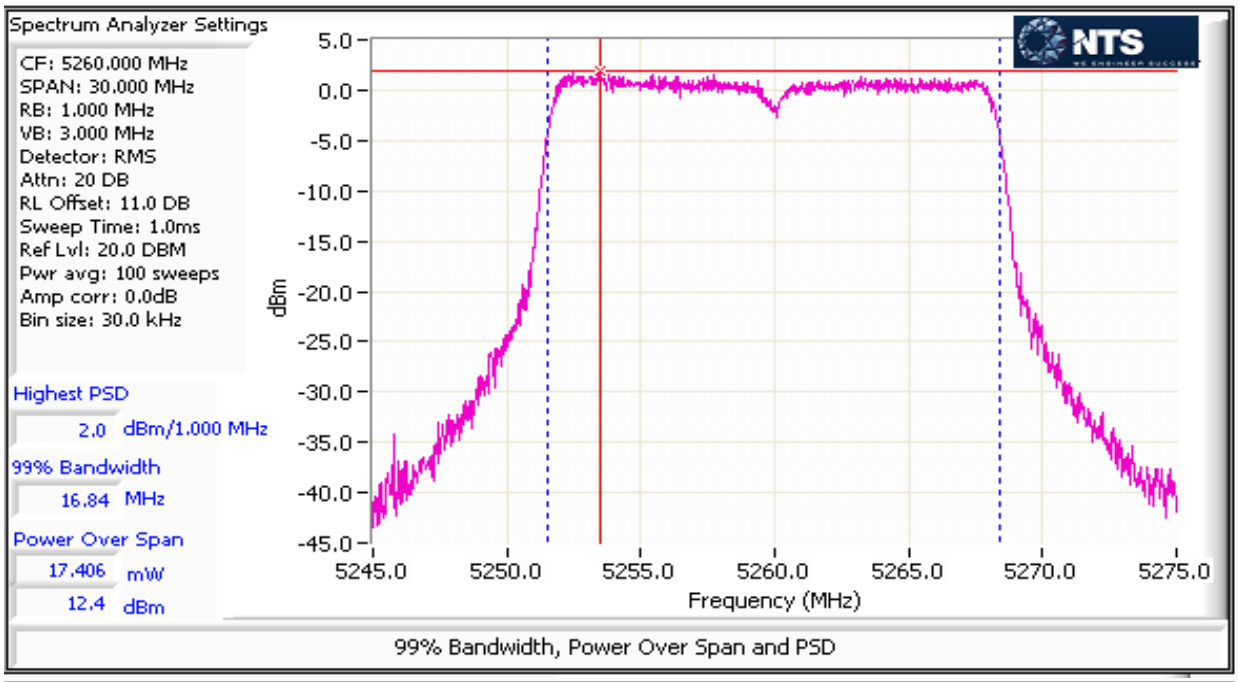
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC limit dBm	Max Power (W)	Result
5260	0	15	16.81	92.3	12.0	70.3	18.5	23.3	0.071	Pass
	1				12.4					
	2				12.0					
	3				12.0					
5300	0	15	16.83	92.3	11.6	64.9	18.1	23.3		Pass
	1				11.9					
	2				11.9					
	3				11.6					
5320	0	15	16.81	92.3	11.8	69.7	18.4	23.3		Pass
	1				12.4					
	2				12.4					
	3				11.6					

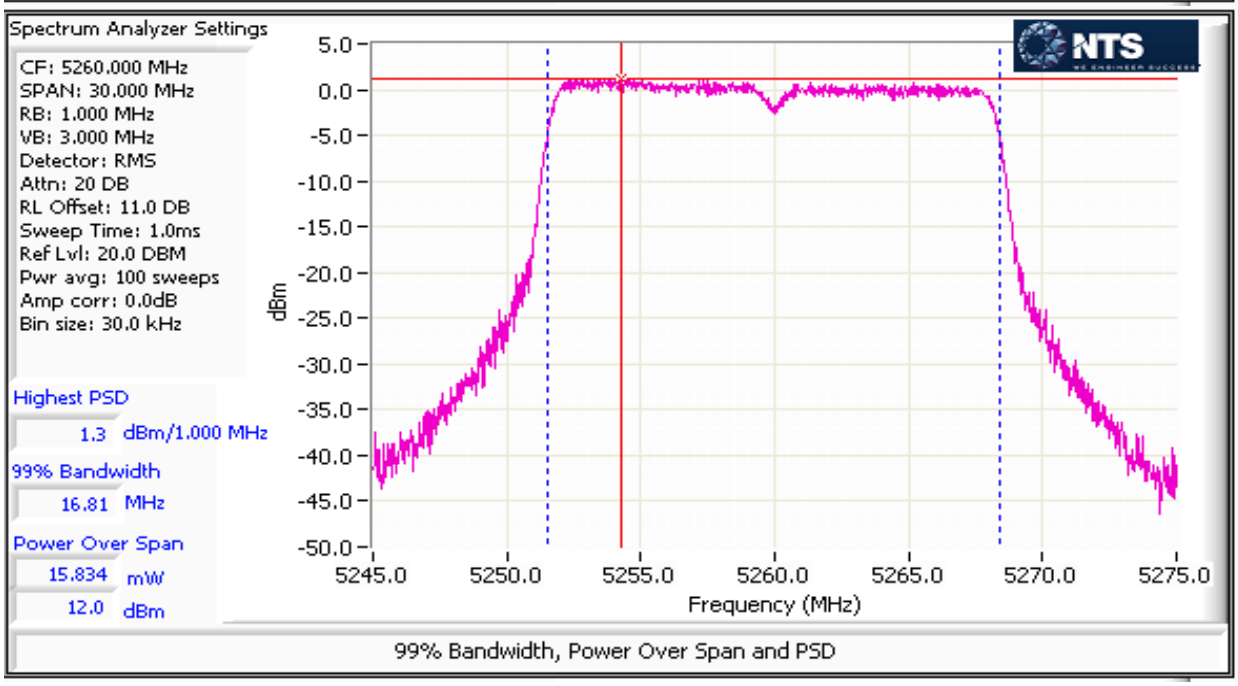
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5250-5350 PSD - FCC/ISEDC

Mode: 11a

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	0	15		92.3	1.5	6.2	7.9	9.0	11.0	Pass
	1				2.0					
	2				1.3					
	3				1.5					
5300	0	15		92.3	0.9	5.7	7.6	9.0	11.0	Pass
	1				1.3					
	2				1.4					
	3				1.0					
5320	0	15		92.3	1.1	5.9	7.7	9.0	11.0	Pass
	1				1.6					
	2				1.7					
	3				1.0					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax20 Max EIRP (mW): 176.2

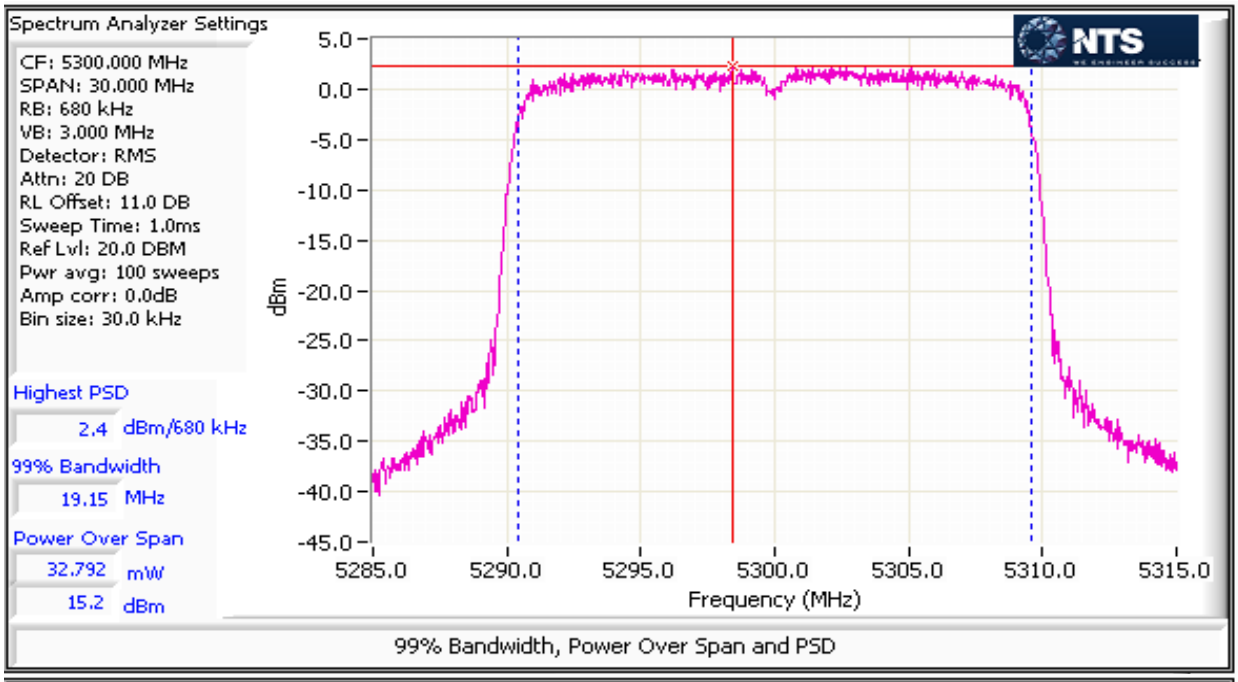
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5260	0	16	21.28	95.6	13.9	102.7	20.1	24.0	0.111	Pass
	1				14.1					
	2				13.8					
	3				13.8					
5300	0	17	21	95.6	13.6	111.2	20.5	24.0		Pass
	1				14.0					
	2				14.0					
	3				15.2					
5320	0	17	21.12	95.6	13.6	104.2	20.2	24.0		Pass
	1				14.3					
	2				14.2					
	3				13.7					

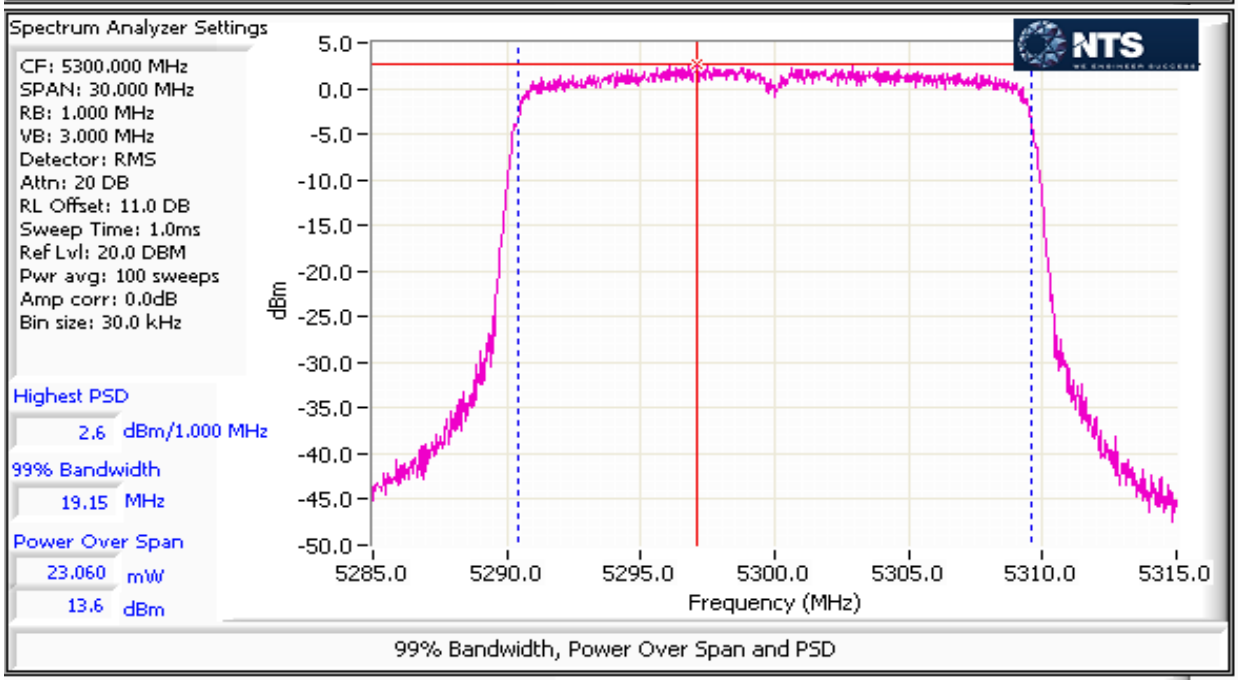
MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: ax20 Max EIRP (mW): 176.2

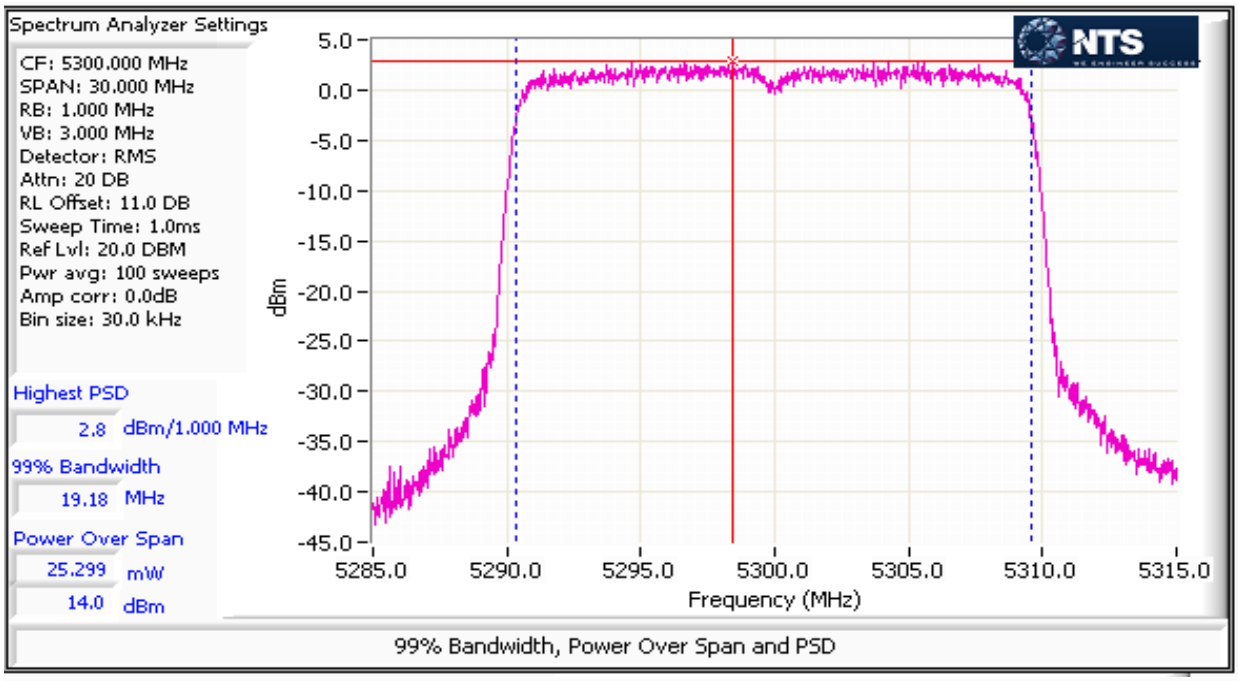
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power[1] mW	Total Power[1] dBm	IC Limit dBm	Max Power (W)	Result
5260	0	16	19.11	95.6	13.9	102.7	20.1	23.8	0.111	Pass
	1				14.1					
	2				13.8					
	3				13.8					
5300	0	17	19.13	95.6	13.6	111.2	20.5	23.8		Pass
	1				14.0					
	2				14.0					
	3				15.2					
5320	0	17	19.13	95.6	13.6	104.2	20.2	23.8		Pass
	1				14.3					
	2				14.2					
	3				13.7					

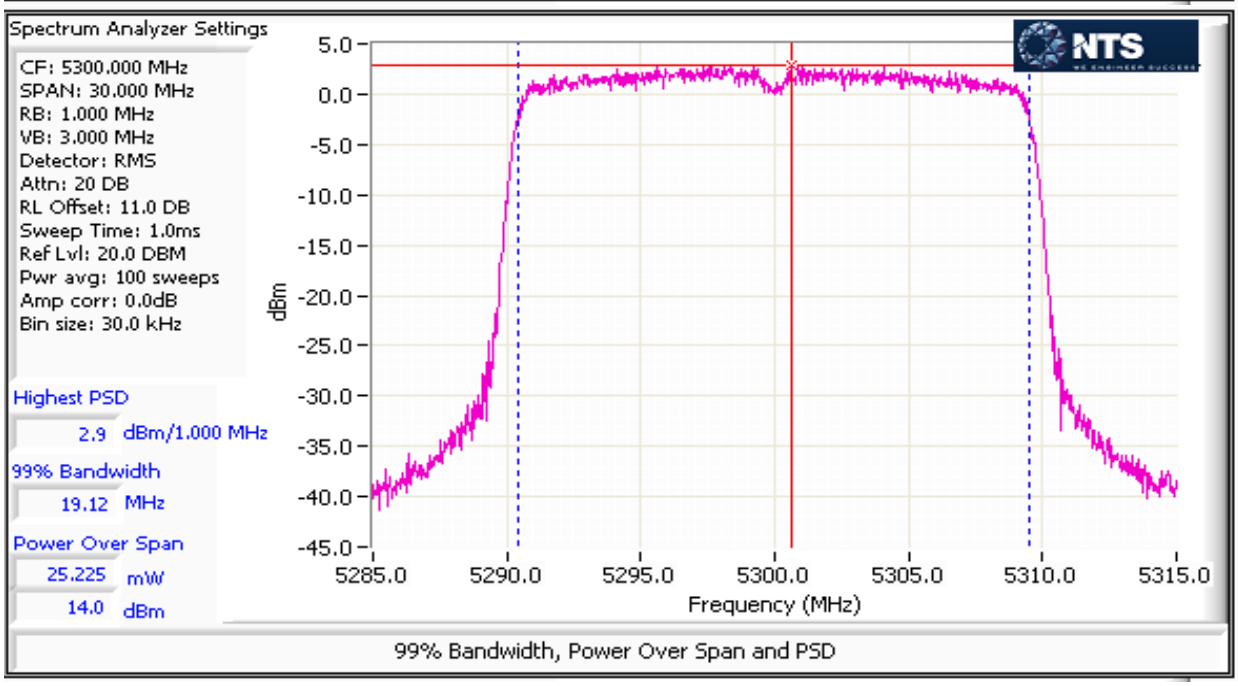
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5250-5350 PSD - FCC/ISEDC
Mode: ax20

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5260	0	16		95.6	2.6	7.6	8.8	9.0	11.0	Pass
	1				2.7					
	2				2.6					
	3				2.4					
5300	0	17		95.6	2.6	7.8	8.9	9.0	11.0	Pass
	1				2.8					
	2				2.9					
	3				2.4					
5320	0	17		95.6	2.5	8.0	9.0	9.0	11.0	Pass
	1				3.0					
	2				3.3					
	3				2.4					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax40 Max EIRP (mW): 83.8

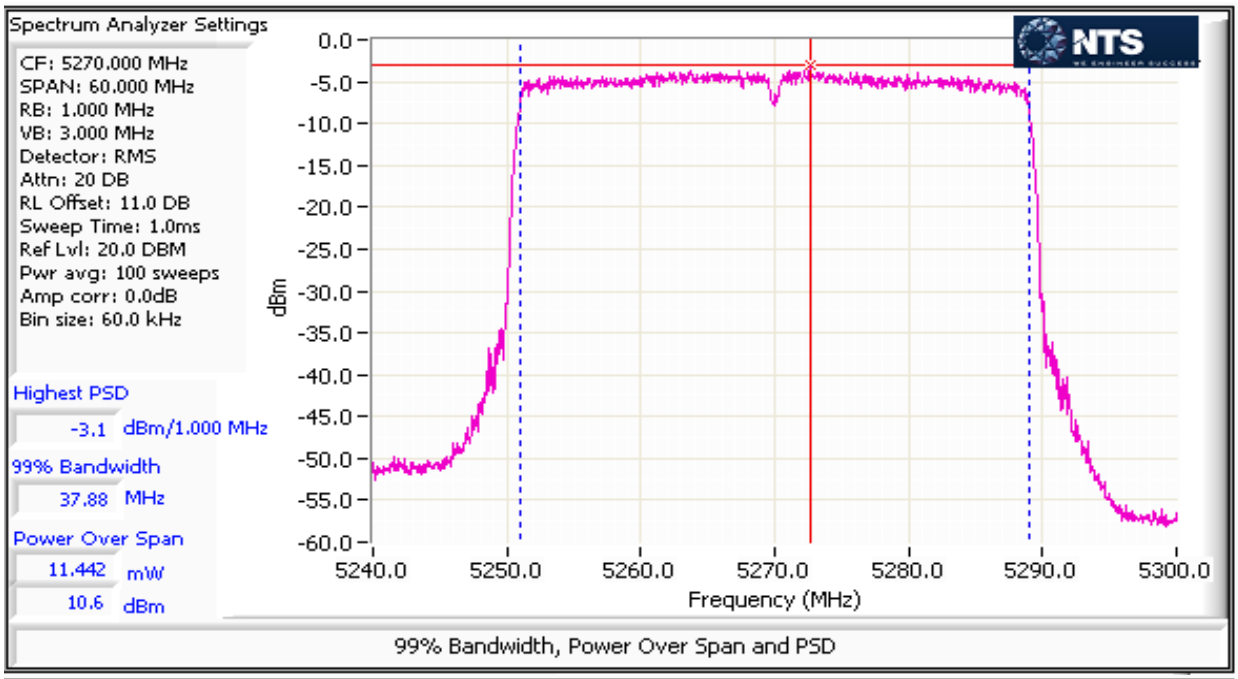
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5270	0	12	41.12	95.9	9.2	36.8	15.7	24.0	0.053	Pass
	1				9.7					
	2				9.6					
	3				9.3					
5310	0	14	40.8	95.9	10.6	52.9	17.2	24.0		Pass
	1				11.3					
	2				11.0					
	3				11.2					

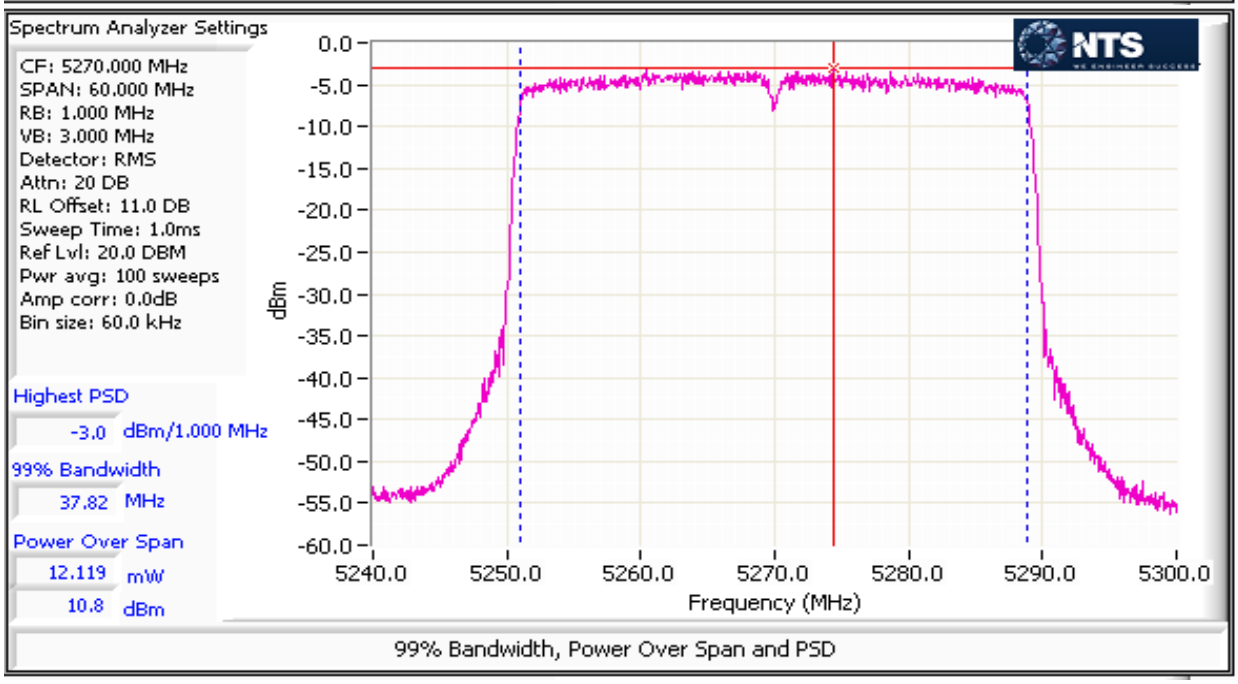
MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: ax40 Max EIRP (mW): 83.8

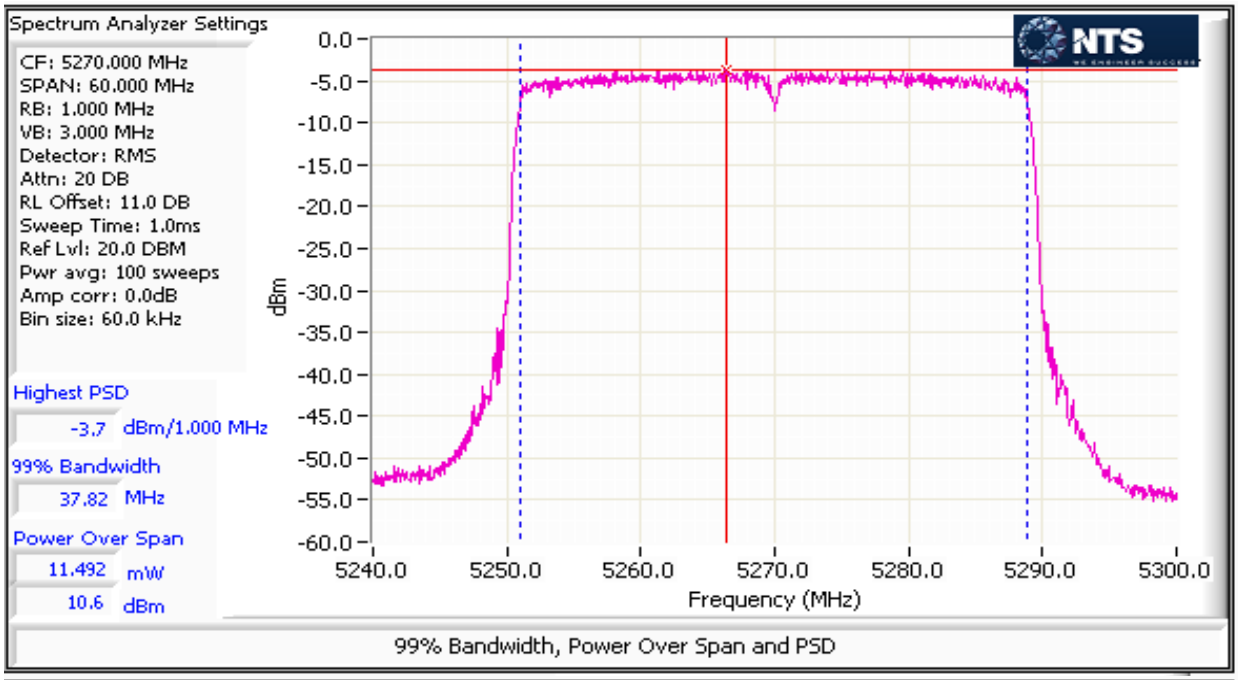
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power[1] mW	Total Power[1] dBm	IC Limit dBm	Max Power (W)	Result
5270	0	12	37.82	95.9	9.2	36.8	15.7	24.0	0.053	Pass
	1				9.7					
	2				9.6					
	3				9.3					
5310	0	14	37.76	95.9	10.6	52.9	17.2	24.0		Pass
	1				11.3					
	2				11.0					
	3				11.2					

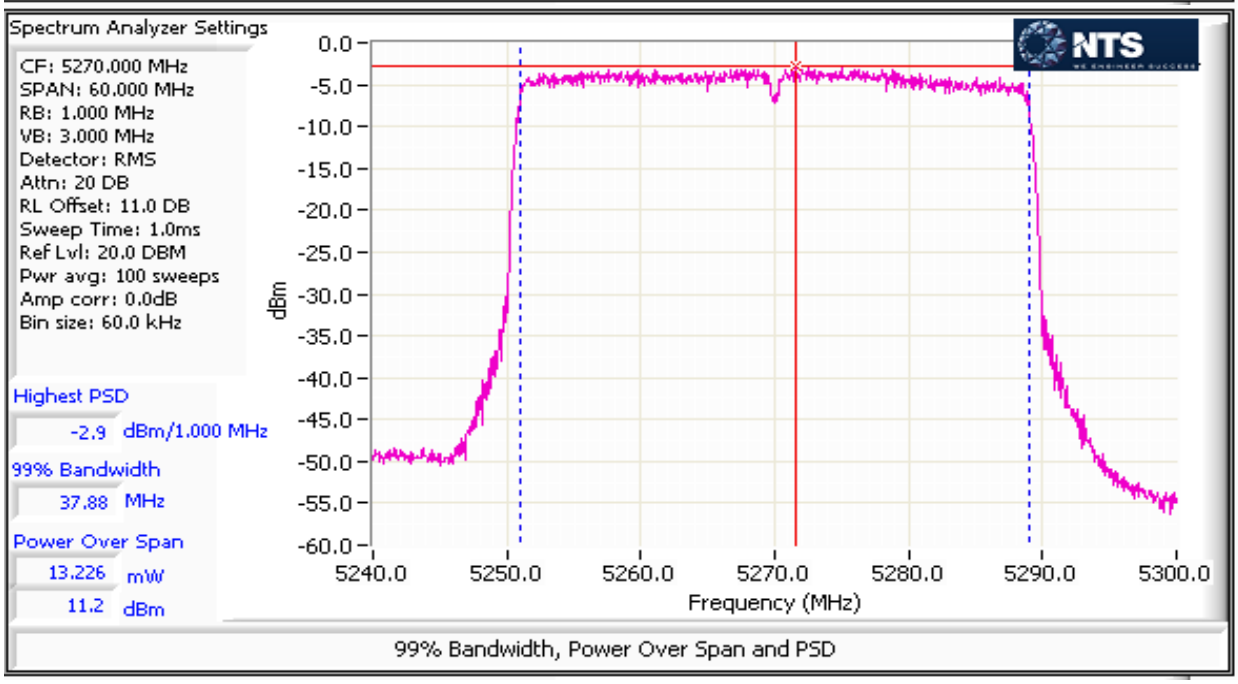
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device 5250-5350 PSD - FCC/ISEDC

Mode: ax40

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5270	0	12		95.9	-4.8	1.5	1.8	9.0	11.0	Pass
	1				-4.4					
	2				-4.4					
	3				-4.5					
5310	0	14		95.9	-3.5	2.1	3.2	9.0	11.0	Pass
	1				-2.7					
	2				-3.2					
	3				-2.8					

MIMO Device - 5250-5350 MHz Band - FCC

Mode: ax80 Max EIRP (mW): 183.2

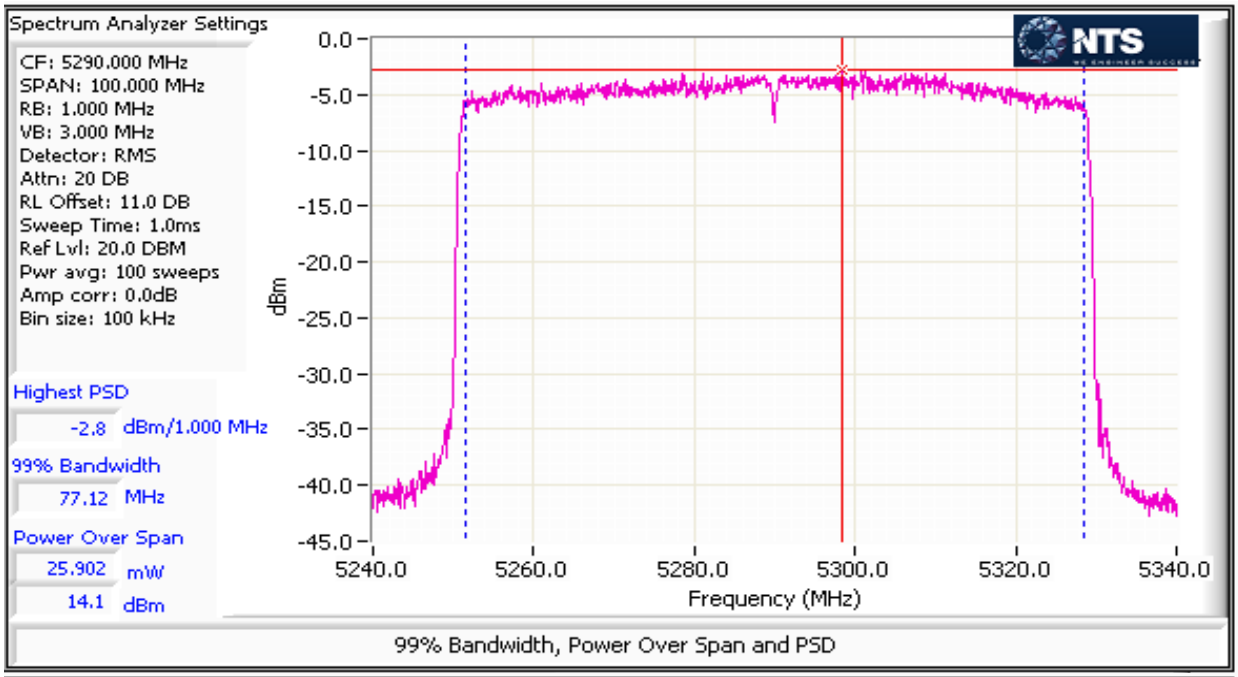
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power[1] mW	Total Power[1] dBm	FCC Limit dBm	Max Power (W)	Result
5290	0	17.5	82.56	94.9	14.1	115.6	20.6	24.0	0.116	Pass
	1				14.6					
	2				14.6					
	3				14.2					

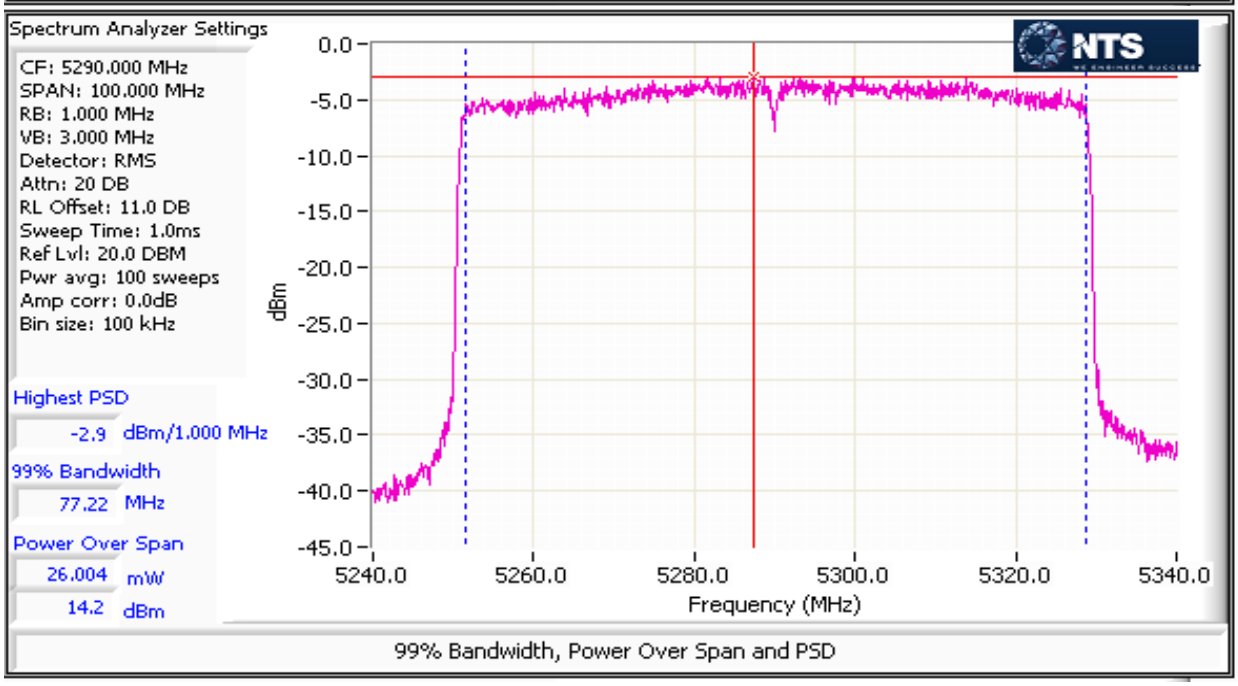
MIMO Device - 5250-5350 MHz Band - ISEDC

Mode: ax80 Max EIRP (mW): 183.2

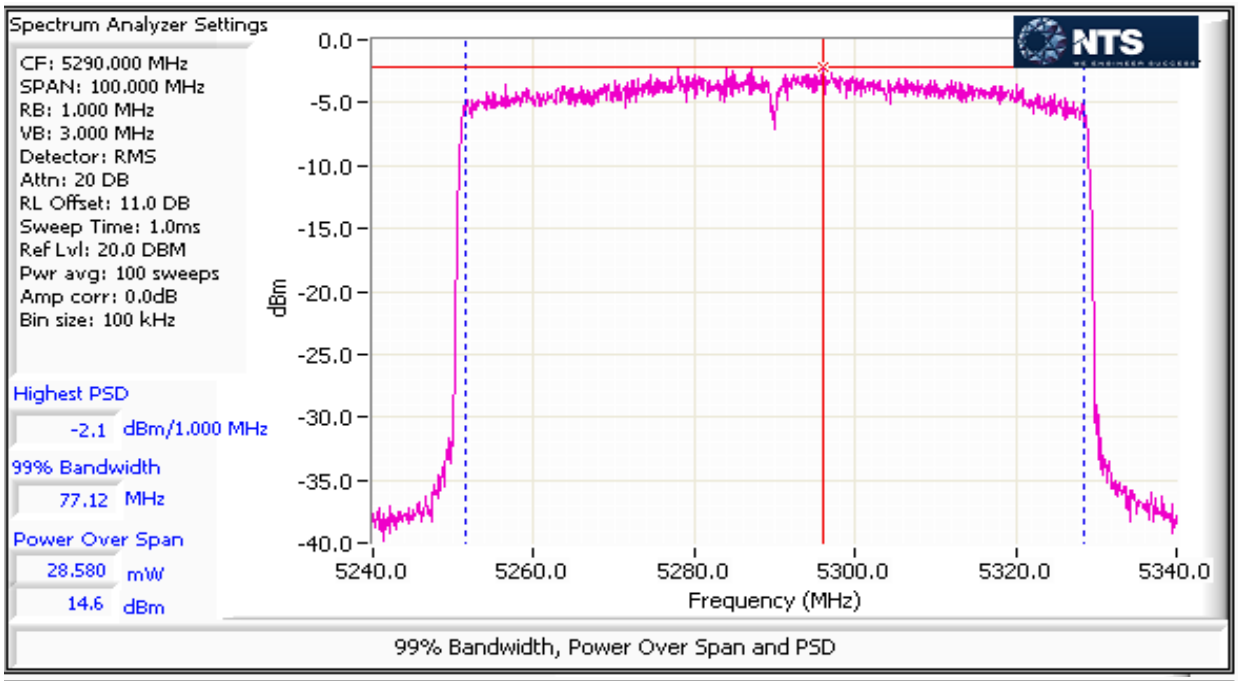
Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power[1] mW	Total Power[1] dBm	IC Limit dBm	Max Power (W)	Result
5290	0	17.5	77.2	94.9	14.1	115.6	20.6	24.0	0.116	Pass
	1				14.6					
	2				14.6					
	3				14.2					

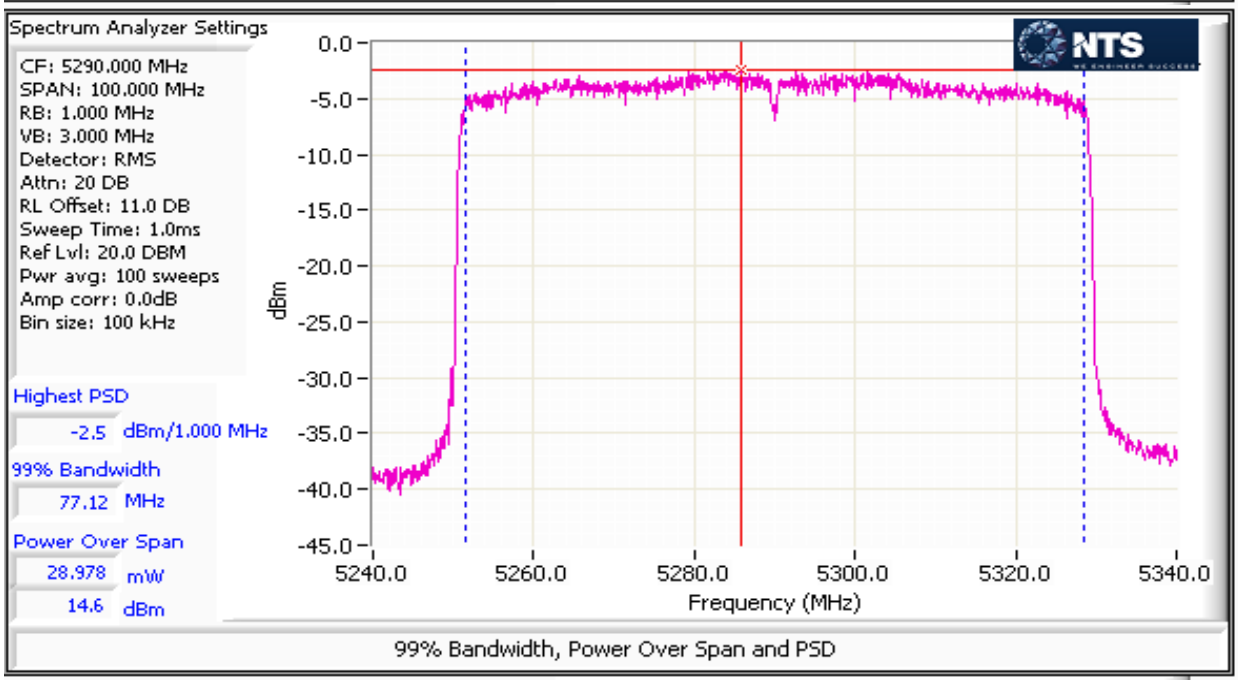
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device 5250-5350 PSD - FCC/ISEDC
Mode: ax80

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC Limit dBm/MHz	Result
5290	0	17.5		94.9	-2.8	2.3	3.6	9.0	11.0	Pass
	1				-2.5					
	2				-2.1					
	3				-2.9					

MIMO Device - 5250-5350 MHz Band - FCC
Mode: ax160 (80+80)

Covered by test reported for UNII-1 band

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Test Specific Details

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, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 72.0 mW ax20: 101.6 mW ax40: 119.7 mW ax80: 134.4 mW
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2), (3) RSS-247 6.2	Pass	a: 6.4 mW/MHz ax20: 7.8 mW/MHz ax40: 4.9 mW/MHz ax80: 2.9 mW/MHz
1	Max EIRP 5470 - 5725MHz	TPC required if EIRP≥ 500mW (27dBm). EIRP ≥ 200mW (23dBm) DFS threshold	Pass	EIRP = 23.3 dBm (213 mW)
1	26dB Bandwidth	15.407 (Information only)	-	> 20MHz for all modes
1	99% Bandwidth	RSS-247 (Information only)	N/A	a: 16.84 MHz ax20: 18.9 MHz ax40: 37.86 MHz ax80: 77.22 MHz
2	Antenna Conducted - Out of Band Spurious	15.407(b) -27dBm/MHz		All emissions below the -27dBm/MHz limit

General Test Configuration

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

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Ambient Conditions:

Temperature: 22.6 °C
Rel. Humidity: 38 %

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	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185

Sample Notes

Sample S/N: CNG6K9V00M
Driver: P2 WNC 0.4.3a

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 11/9/2018 Config. Used: 1
Test Engineer: Roy Zheng / R. Varelas Config Change: None
Test Location: FT Lab #4b EUT Voltage: POE & 120V/60Hz

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 ≥ 2*span/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. Tthe measurements were adjusted by adding YY dB. This is based on 10log(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 VB ≥ 3*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	2.0	2.0	2.0	2.0					2.0	8.0

Higher gain antennas used for model APIN0534 and internal antennas of the APIN0535 use a corresponding lower power settings
Legacy modes operate on all chains
Power for BF mode is reduced by 6 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: 4

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	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)
Notes:	Based on PSD results for 802.11n modes in the 5150-5250 Mhz band, only 802.11ax modes tested for 5725-5850 MHz.

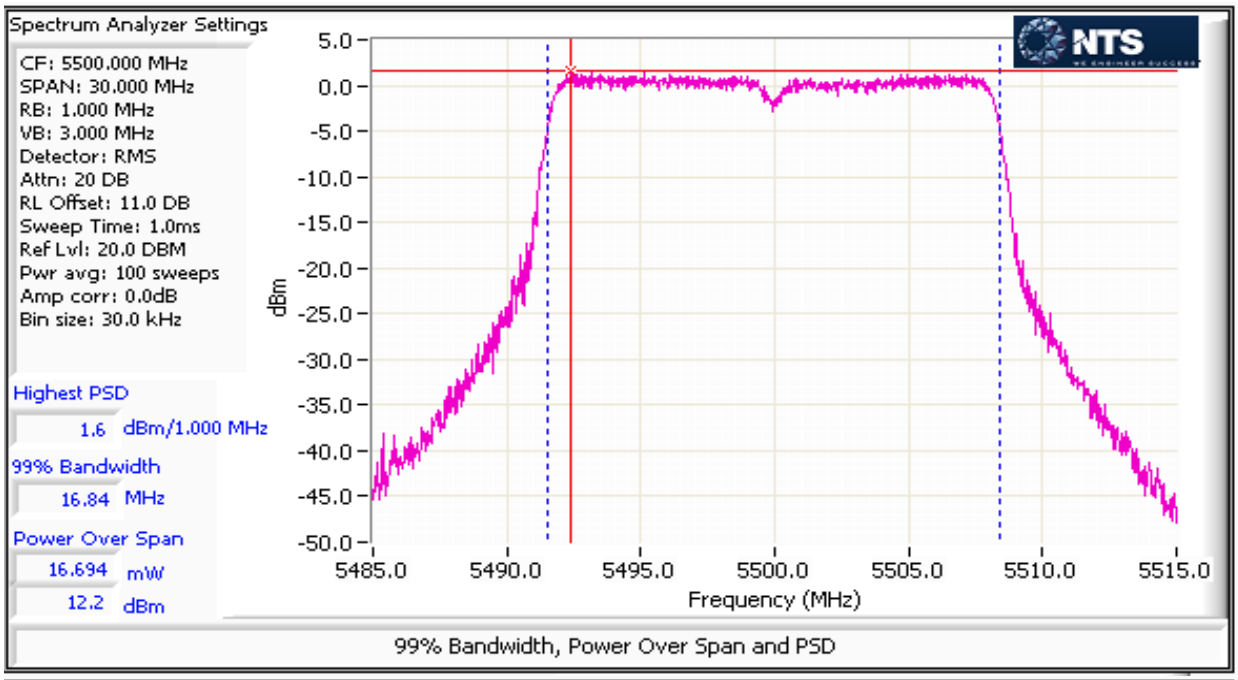
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

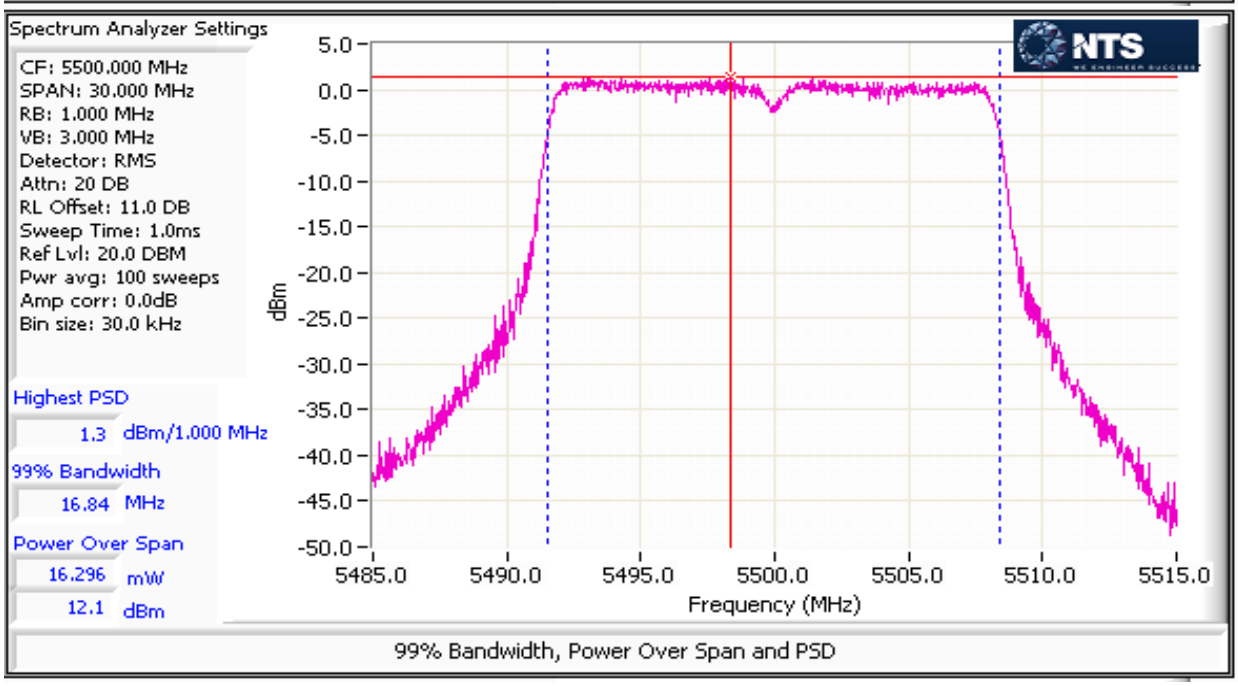
MIMO Device - 5470-5725 MHz Band - FCC

Mode: 11a — Max EIRP (mW): 114.1

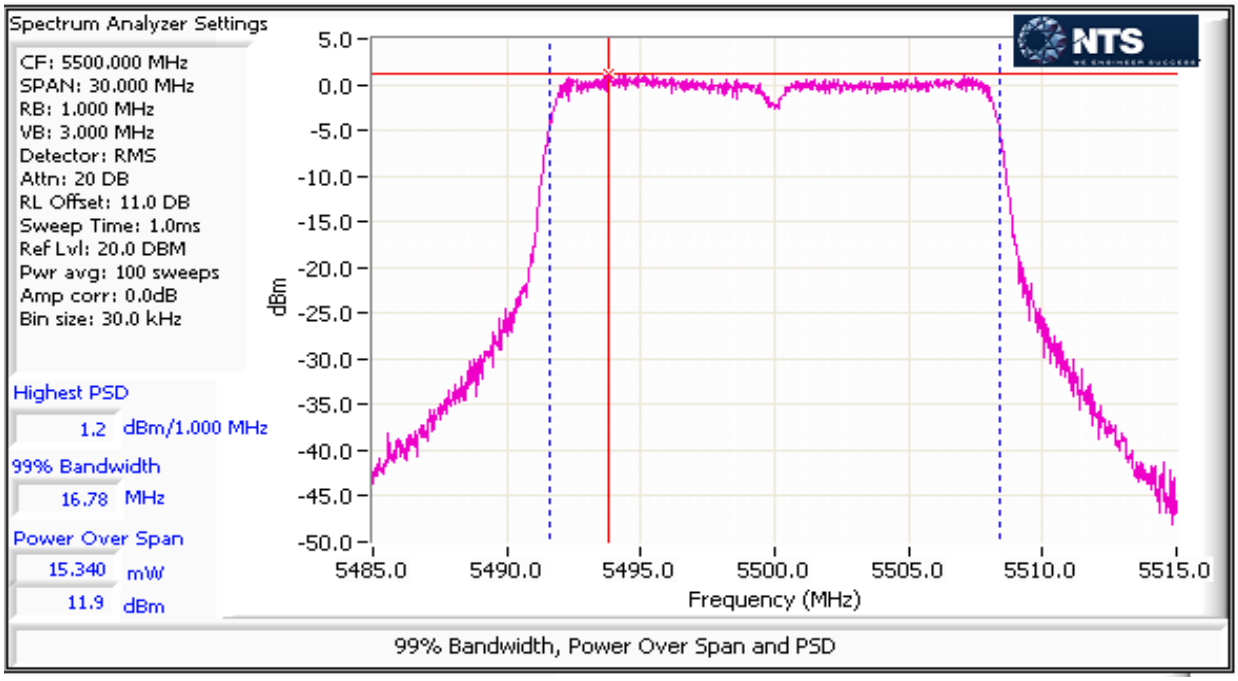
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	0	15	21.56	92.3	12.1	72.0	18.6	24.0	0.072	Pass
	1				12.6					
	2				12.2					
	3				11.9					
5580	0	15	22.28	92.3	11.7	71.4	18.5	24.0		Pass
	1				12.5					
	2				12.6					
	3				11.8					
5700	0	14	22.16	92.3	10.7	54.0	17.3	24.0		Pass
	1				11.1					
	2				11.1					
	3				10.9					
5720	0	15	22.08	92.3	11.0	58.9	17.7	24.0		Pass
	1				11.6					
	2				11.6					
	3				11.1					
Portion within 5725-5850 MHz band (UNII-3)										
5720	0	15		92.3	5.2	14.9	11.7	30.0	0.0149	Pass
	1				5.5					
	2				5.4					
	3				5.3					

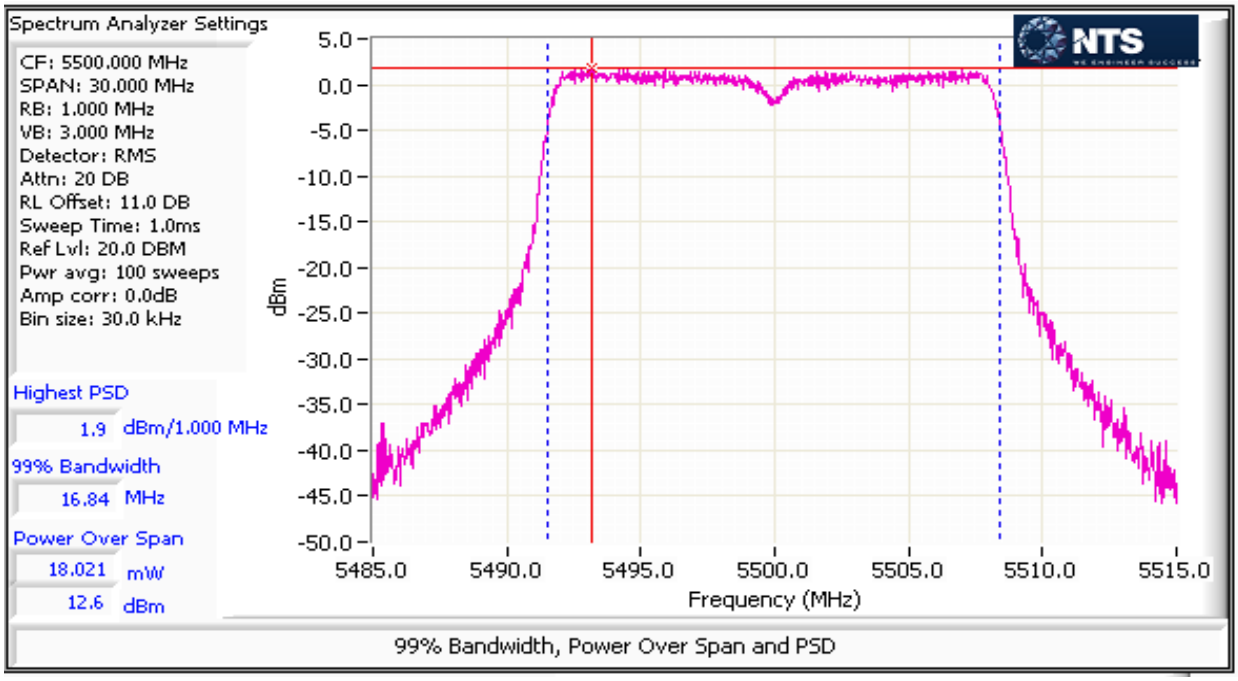
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: 11a — Max EIRP (mW): 114.1

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	0	15	16.84	92.3	12.1	72.0	18.6	23.3	0.072	Pass
	1				12.6					
	2				12.2					
	3				11.9					
5580	0	15	16.84	92.3	11.7	71.4	18.5	23.3		Pass
	1				12.5					
	2				12.6					
	3				11.8					
5700	0	14	16.84	92.3	10.7	54.0	17.3	23.3		Pass
	1				11.1					
	2				11.1					
	3				10.9					
5720	0	15	16.78	92.3	11.0	58.9	17.7	23.2		Pass
	1				11.6					
	2				11.6					
	3				11.1					

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

5720	0	15		92.3	5.2	14.9	11.7	30.0	0.0149	Pass
	1				5.5					
	2				5.4					
	3				5.3					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470-5700 PSD - FCC/ISEDC

Mode: 11a

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	0	15		92.3	1.3	6.1	7.9	9.0	11.0	Pass
	1				1.9					
	2				1.6					
	3				1.2					
5580	0	15		92.3	1.0	5.9	7.7	9.0	11.0	Pass
	1				1.6					
	2				1.8					
	3				1.0					
5700	0	14		92.3	-0.2	4.6	6.6	9.0	11.0	Pass
	1				0.4					
	2				0.6					
	3				0.1					
5720	0	15		92.3	1.3	6.4	8.1	9.0	11.0	Pass
	1				2.0					
	2				2.2					
	3				1.3					
Portion within 5725-5850 MHz band (UNII-3)										
5720	0	15		92.3	1.3	6.1	7.9	28.0	28.0	Pass
	1				1.7					
	2				1.4					
	3				1.4					

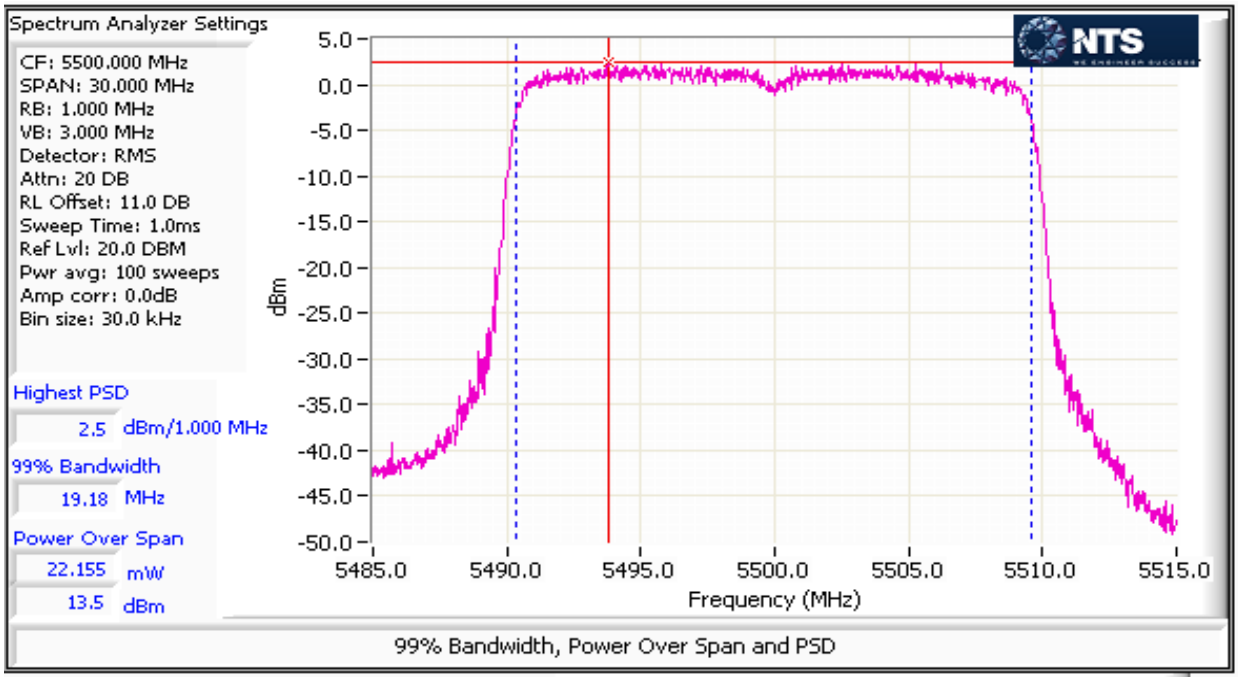
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

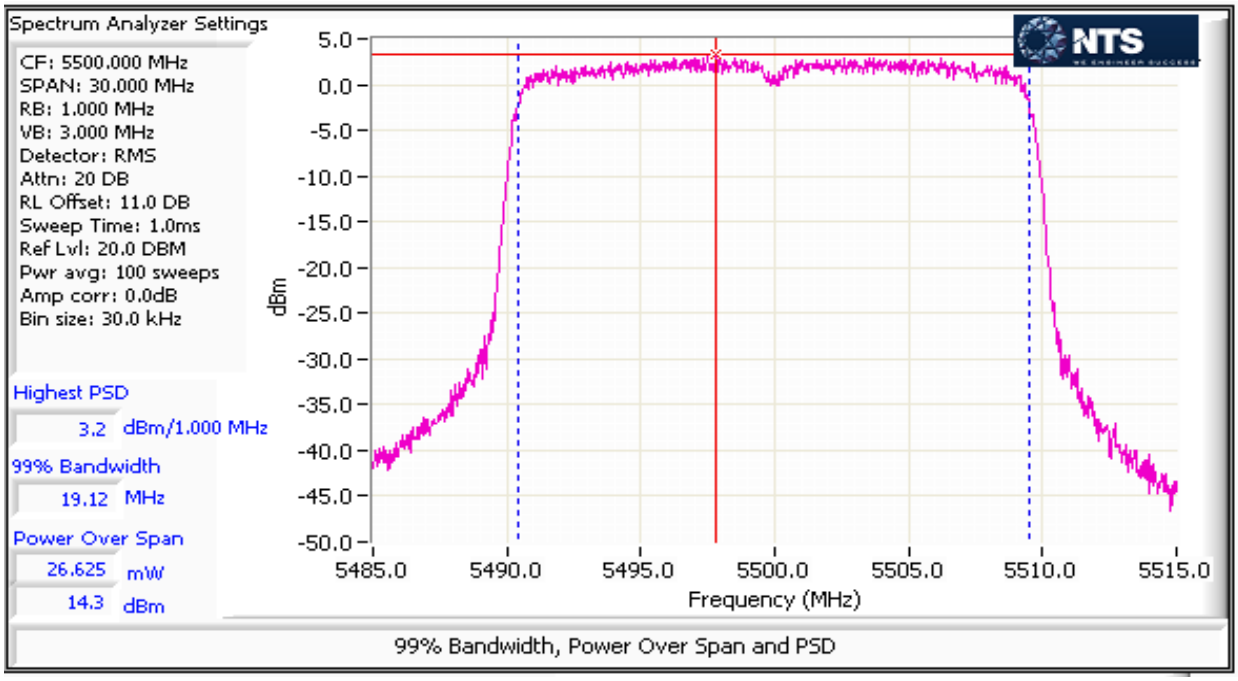
MIMO Device - 5470-5725 MHz Band - FCC

Mode: ax20 Max EIRP (mW): 161

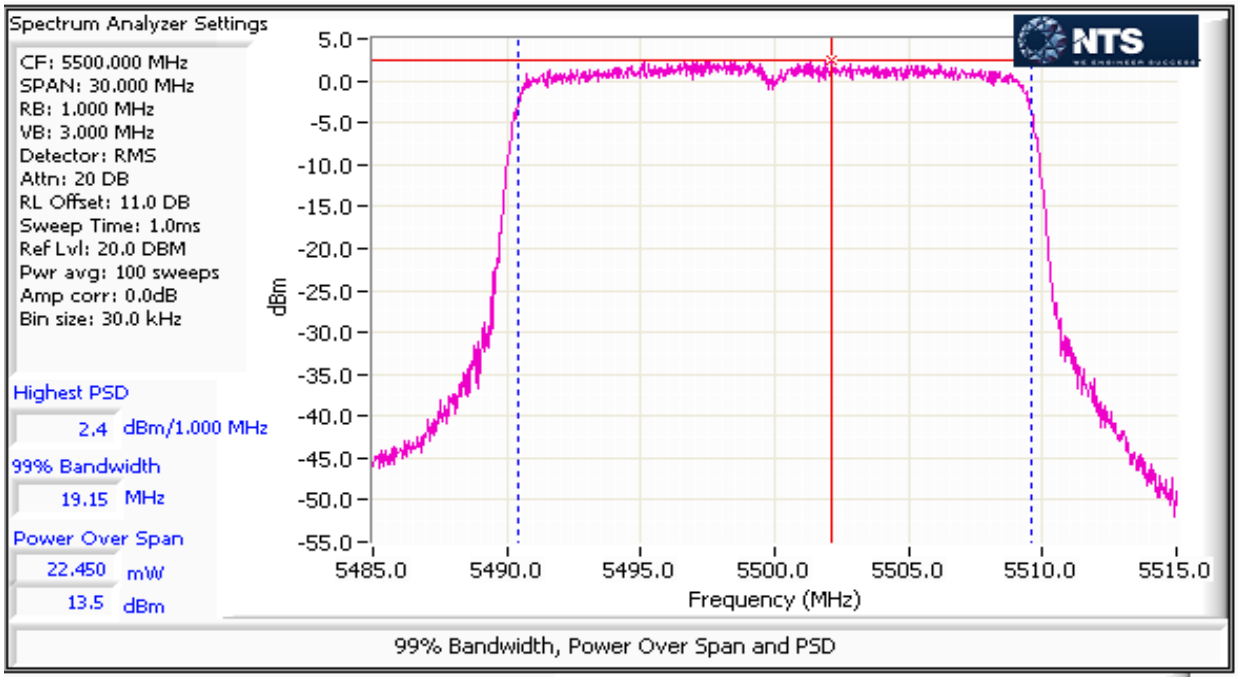
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5500	0	16.5	21.7	95.6	13.5	97.4	19.9	24.0	0.102	Pass
	1				14.3					
	2				13.5					
	3				13.3					
5580	0	16.5	21	95.6	14.0	101.6	20.1	24.0		Pass
	1				13.5					
	2				14.0					
	3				13.9					
5700	0	16.5	21.2	95.6	13.0	92.8	19.7	24.0		Pass
	1				13.6					
	2				13.7					
	3				13.5					
5720	0	16.5	21	95.6	13.1	84.5	19.3	24.0		Pass
	1				13.0					
	2				13.0					
	3				13.1					
Portion within 5725-5850 MHz band (UNII-3)										
5720	0	16.5		95.6	7.6	24.7	13.9	30.0	0.0247	Pass
	1				8.2					
	2				7.5					
	3				7.5					

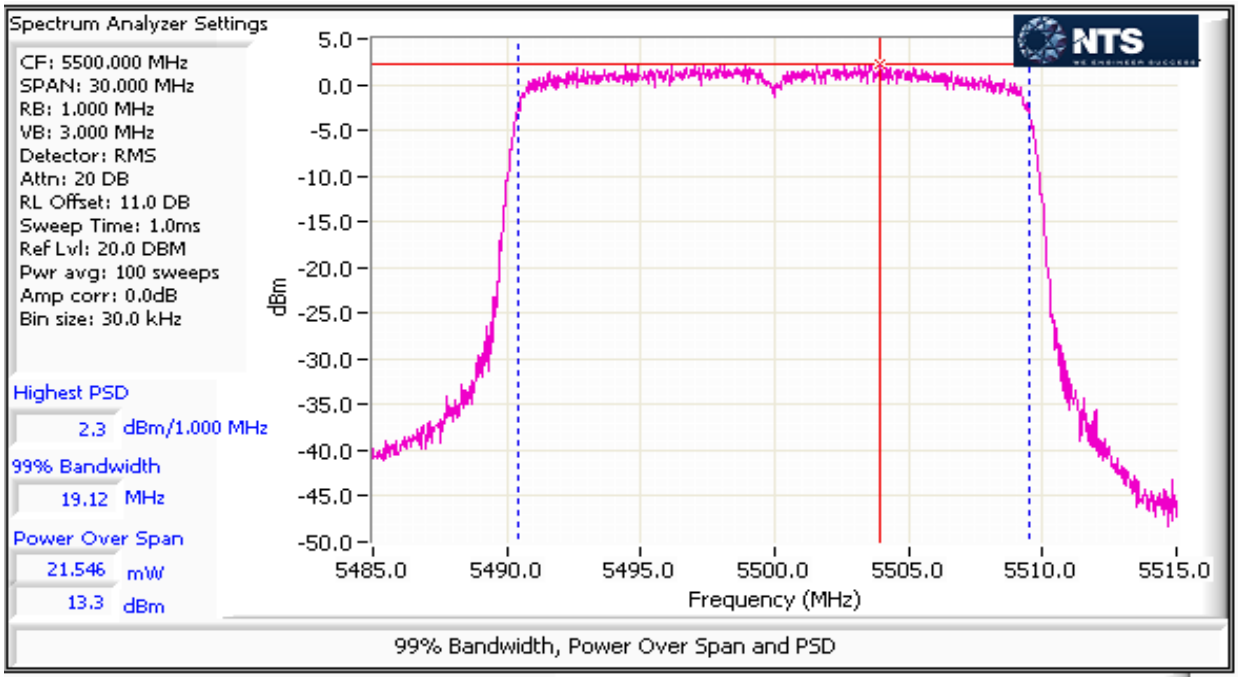
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax20 Max EIRP (mW): 161

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5500	0	16.5	19.18	95.6	13.5	97.4	19.9	23.8	0.102	Pass
	1				14.3					
	2				13.5					
	3				13.3					
5580	0	16.5	19.18	95.6	14.0	101.6	20.1	23.8		Pass
	1				13.5					
	2				14.0					
	3				13.9					
5700	0	16.5	19.15	95.6	13.0	92.8	19.7	23.8		Pass
	1				13.6					
	2				13.7					
	3				13.5					
5720	0	16.5	14.61	95.6	13.1	84.5	19.3	22.6		Pass
	1				13.0					
	2				13.0					
	3				13.1					
Portion within 5725-5850 MHz band (UNII-3)										
5720	0	16.5		95.6	7.6	24.7	13.9	30.0	0.0247	Pass
	1				8.2					
	2				7.5					
	3				7.5					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470-5725 PSD - FCC/ISEDC

Mode: ax20

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5500	0	16.5		95.6	2.5	7.6	8.8	9.0	11.0	Pass
	1				3.2					
	2				2.4					
	3				2.3					
5580	0	16.5		95.6	3.1	7.5	8.8	9.0	11.0	Pass
	1				2.2					
	2				2.4					
	3				2.5					
5700	0	16.5		95.6	2.0	7.6	8.8	9.0	11.0	Pass
	1				2.7					
	2				3.0					
	3				2.6					
5720	0	16.5		95.6	2.7	7.8	8.9	9.0	11.0	Pass
	1				2.6					
	2				2.8					
	3				2.7					
Portion within 5725-5850 MHz band (UNII-3)										
5720	0	16.5		95.6	2.3	7.2	8.6	28.0	28.0	Pass
	1				2.7					
	2				2.2					
	3				2.3					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5470-5725 MHz Band - FCC

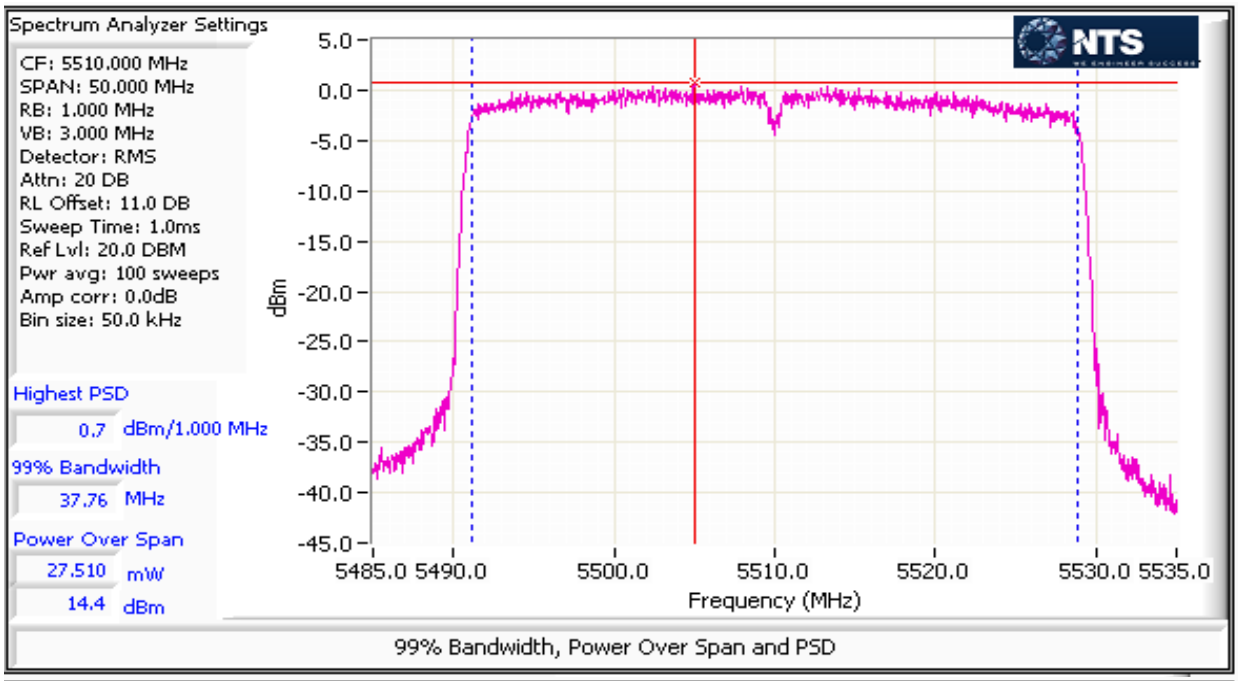
Mode: ax40 Max EIRP (mW): 189.7

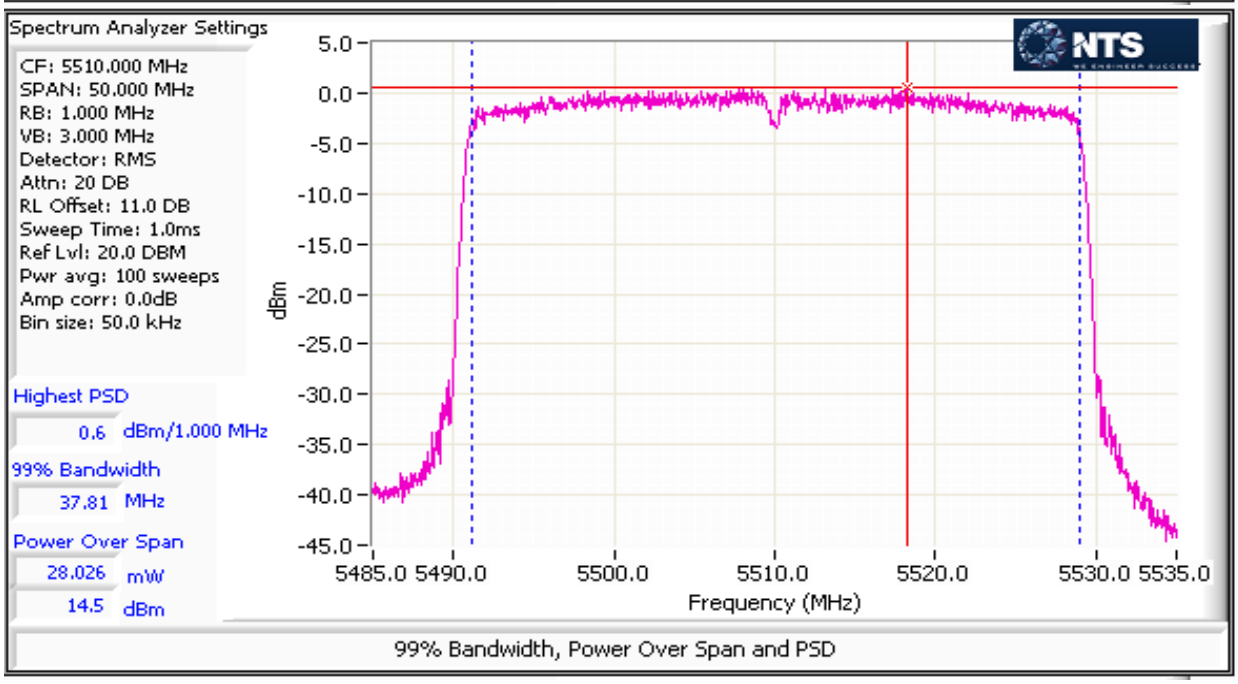
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5510	0	17.5	40.7	95.9	14.5	119.7	20.8	24.0	0.120	Pass
	1				14.8					
	2				14.6					
	3				14.4					
5550	0	15	40.9	95.9	11.8	63.7	18.0	24.0		Pass
	1				12.2					
	2				12.0					
	3				11.3					
5670	0	16	40.7	95.9	13.0	91.9	19.6	24.0		Pass
	1				13.6					
	2				13.6					
	3				13.5					
5710	0	17.5	41.4	95.9	13.8	108.0	20.3	24.0		Pass
	1				14.2					
	2				14.4					
	3				14.1					

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

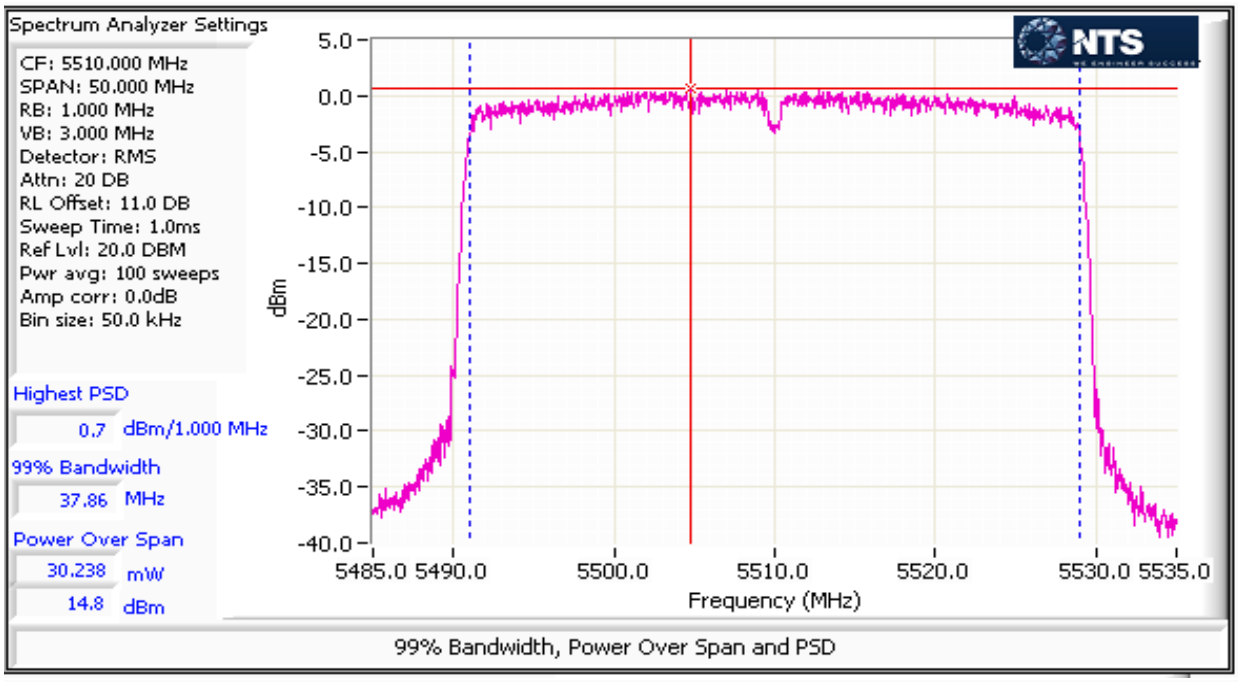
5710	0	17.5		95.9	3.8	10.5	10.2	30.0	0.0105	Pass
	1				4.0					
	2				4.2					
	3				4.1					

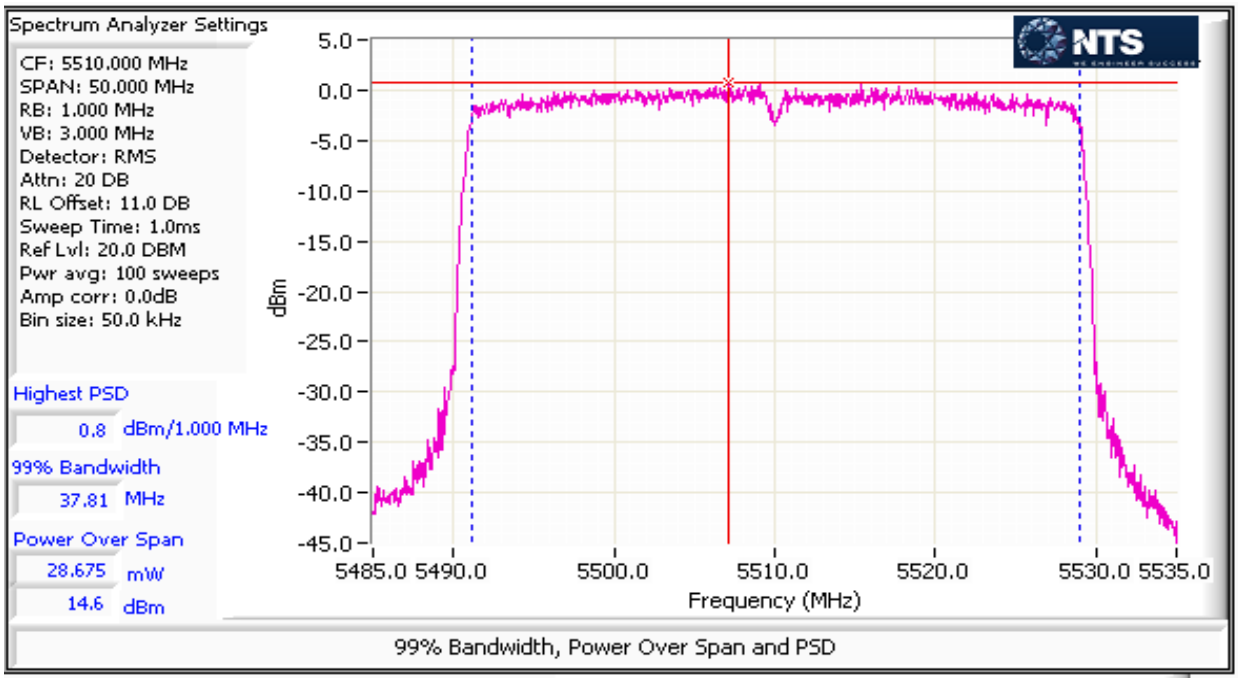
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax40 Max EIRP (mW): 189.7

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5510	0	17.5	37.8	95.9	14.5	119.7	20.8	24.0	0.120	Pass
	1				14.8					
	2				14.6					
	3				14.4					
5550	0	15	37.86	95.9	11.8	63.7	18.0	24.0		Pass
	1				12.2					
	2				12.0					
	3				11.3					
5670	0	16	37.81	95.9	13.0	91.9	19.6	24.0		Pass
	1				13.6					
	2				13.6					
	3				13.5					
5710	0	17.5	37.76	95.9	13.8	108.0	20.3	24.0		Pass
	1				14.2					
	2				14.4					
	3				14.1					
Portion within 5725-5850 MHz band (UNII-3)										
5710	0	17.5		95.9	3.8	10.5	10.2	30.0	0.0105	Pass
	1				4.0					
	2				4.2					
	3				4.1					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device 5470-5725 PSD - FCC/ISEDC

Mode: ax40

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5510	0	17.5		95.9	0.6	4.9	6.9	9.0	11.0	Pass
	1				0.7					
	2				0.8					
	3				0.7					
5550	0	15		95.9	-2.2	2.6	4.1	9.0	11.0	Pass
	1				-1.5					
	2				-1.8					
	3				-2.7					
5670	0	16		95.9	-1.2	3.8	5.8	9.0	11.0	Pass
	1				-0.1					
	2				-0.4					
	3				-0.2					
5710	0	17.5		95.9	0.2	4.8	6.8	9.0	11.0	Pass
	1				0.5					
	2				1.0					
	3				0.6					
Portion within 5725-5850 MHz band (UNII-3)										
5710	0	17.5		95.9	-0.6	3.7	5.7	28.0	28.0	Pass
	1				-0.7					
	2				-0.4					
	3				-0.3					

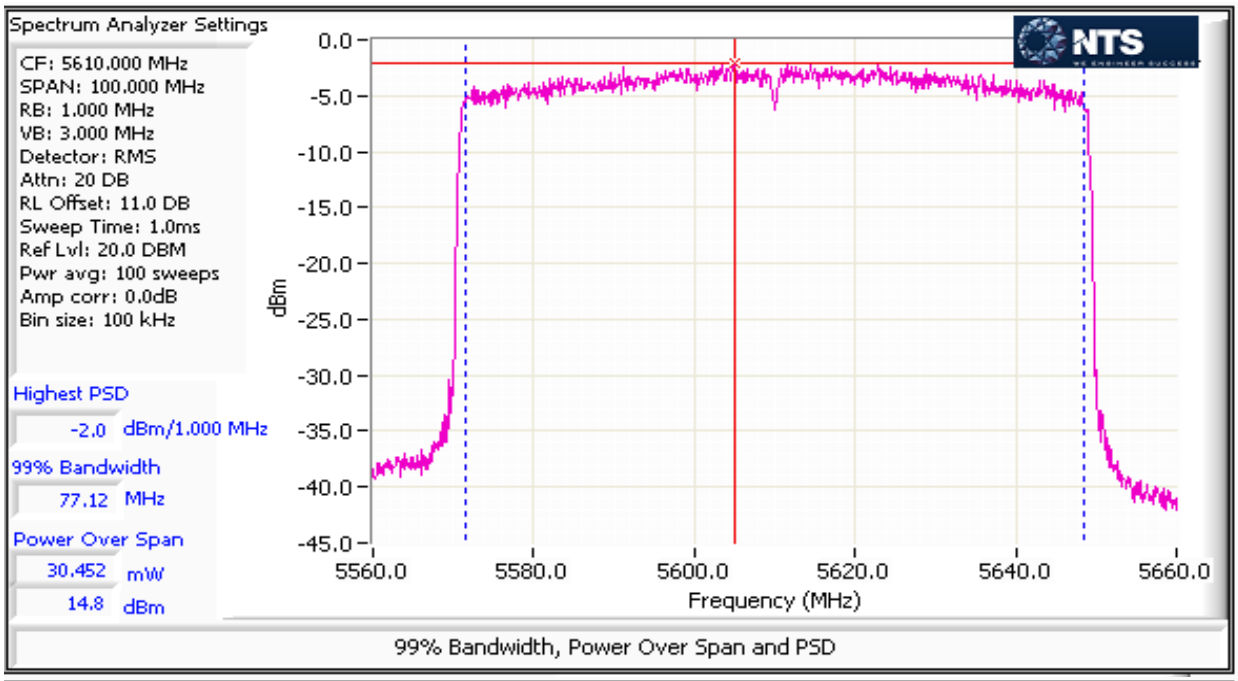
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

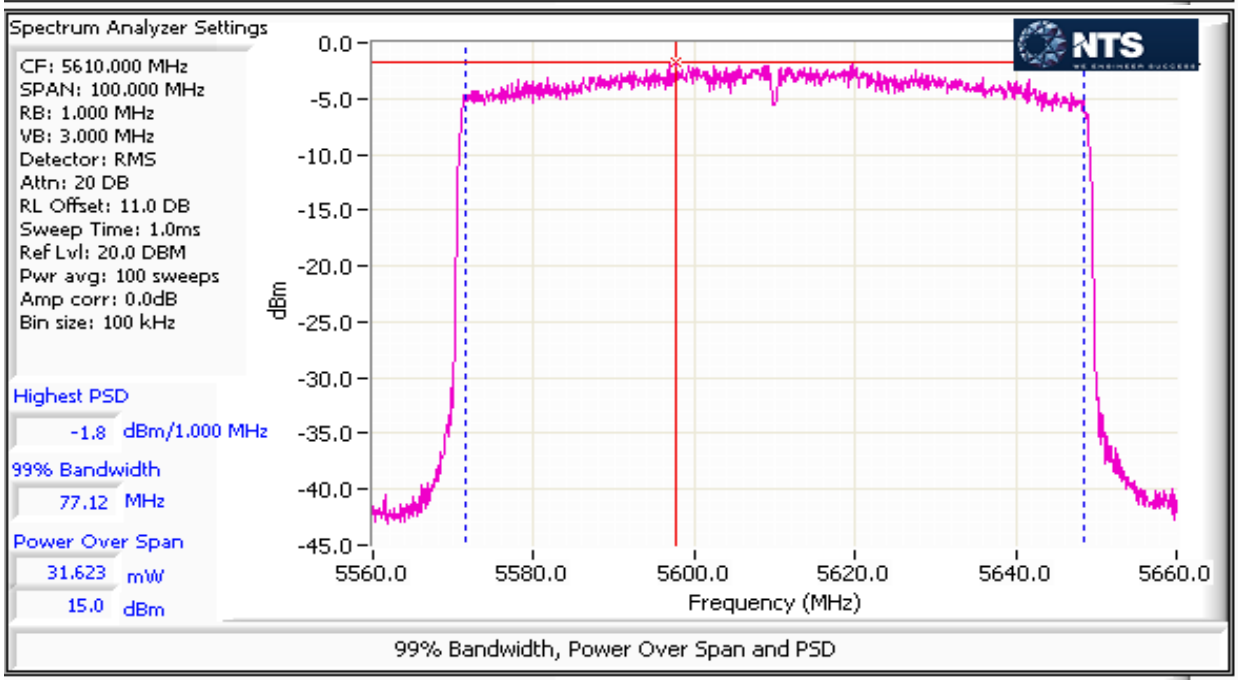
MIMO Device - 5470-5725 MHz Band - FCC

Mode: ax80 Max EIRP (mW): 213.0

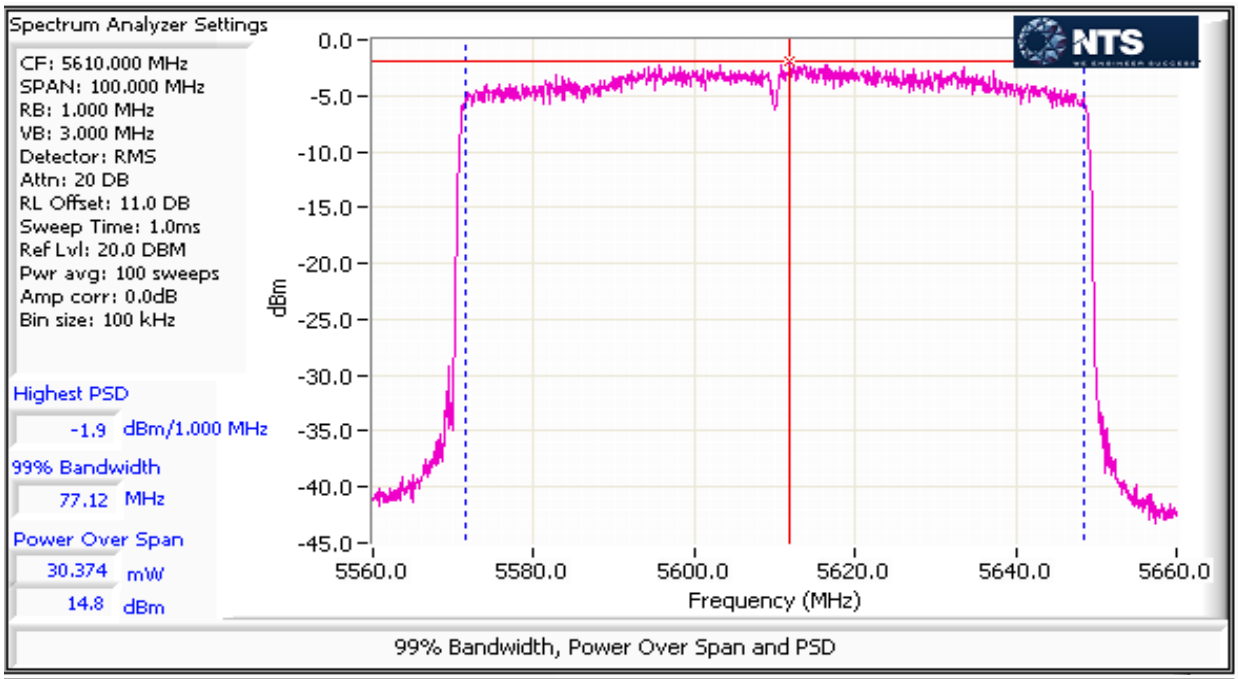
Frequency (MHz)	Chain	Software Setting	26dB BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	FCC Limit dBm	Max Power (W)	Result
5530	0	14.5	81	94.9	11.3	58.7	17.7	24.0	0.134	Pass
	1				11.7					
	2				11.7					
	3				11.0					
5610	0	17.5	81.1	94.9	15.0	134.4	21.3	24.0		Pass
	1				14.8					
	2				15.5					
	3				14.8					
5690	0	17.5	81.6	94.9	14.1	119.8	20.8	24.0		Pass
	1				14.8					
	2				14.8					
	3				14.4					
Portion within 5725-5850 MHz band (UNII-3)										
5690	0	17.5		94.9	0.0	4.6	6.6	30.0	0.0046	Pass
	1				0.6					
	2				0.7					
	3				0.1					

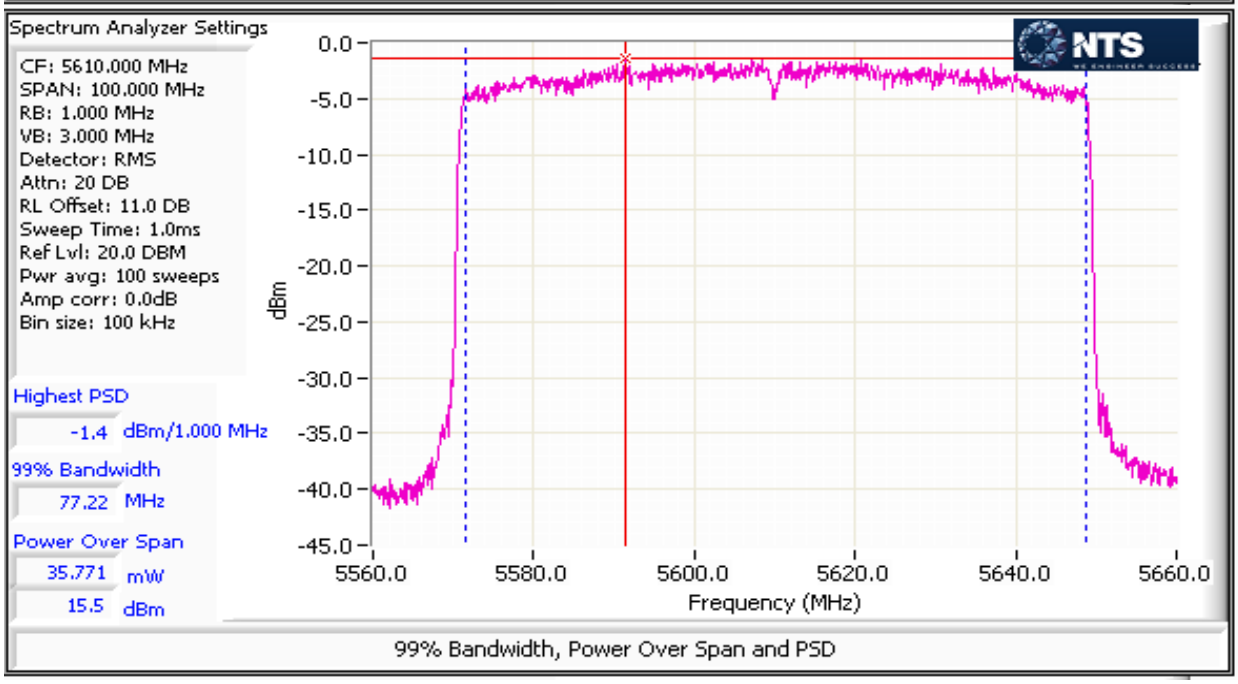
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

MIMO Device - 5470-5725 MHz Band - ISEDC

Mode: ax80 Max EIRP (mW): 189.9

Frequency (MHz)	Chain	Software Setting	99% BW (MHz)	Duty Cycle %	Power[1] dBm	Total Power mW	Total Power dBm	IC Limit dBm	Max Power (W)	Result
5530	0	14.5	77.22	94.9	11.3	58.7	17.7	24.0	0.120	Pass
	1				11.7					
	2				11.7					
	3				11.0					
5690	0	17.5	77.2	94.9	14.1	119.8	20.8	24.0		Pass
	1				14.8					
	2				14.8					
	3				14.4					
Portion within 5725-5850 MHz band (UNII-3)										
5690	0	17.5		94.9	0.0	4.6	6.6	30.0	0.0046	Pass
	1				0.6					
	2				0.7					
	3				0.1					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470-5725 PSD - FCC/ISEDC Note: 5610 MHz channel not used for Canada

Mode: ax80

Frequency (MHz)	Chain	Software Setting		Duty Cycle %	PSD dBm/MHz	Total PSD[1] mW/MHz	Total PSD[1] dBm/MHz	FCC Limit dBm/MHz	IC limit dBm/MHz	Result
5530	0	14.5		94.9	-5.8	1.2	0.8	9.0	11.0	Pass
	1				-5.1					
	2				-5.2					
	3				-5.9					
5610	0	17.5		94.9	-1.8	2.9	4.6	9.0	-	Pass
	1				-1.9					
	2				-1.4					
	3				-1.2					
5690	0	17.5		94.9	-2.7	2.5	4.0	9.0	11.0	Pass
	1				-2.1					
	2				-1.9					
	3				-2.4					
Portion within 5725-5850 MHz band (UNII-3)										
5690	0	17.5		94.9	-4.6	1.6	2.0	28.0	28.0	Pass
	1				-4.3					
	2				-4.1					
	3				-4.3					

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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:	23.7 °C
Rel. Humidity:	39 %

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

BLE Sample SN: CNG6K9W00R and Zigbee Sample SN: CNG6K9W01F
Driver: P2 WNC 0.4.3a
Antenna: Integral 4x4 and BLE/ZigBee

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Summary of Results

Run #	Mode	Channel	Target Setting	Final Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a	64 - 5320MHz	15.0	15.5	Restricted Band Edge at 5350 MHz	15.209	53.0 dBµV/m @ 5350.0 MHz (-1.0 dB)
3		100 - 5500MHz	15.0	17.0	Restricted Band Edge at 5460 MHz		53.4 dBµV/m @ 5457.1 MHz (-0.6 dB)
		100 - 5500MHz	15.0	17.0	Band Edge 5460 - 5470 MHz	15E	55.4 dBµV/m @ 5467.0 MHz (-12.9 dB)
		140 - 5700MHz	15.0	13.5	Band Edge 5725MHz		66.3 dBµV/m @ 5725.8 MHz (-2.0 dB)
6	ax20	64 - 5320MHz	17.0	17.0	Restricted Band Edge at 5350 MHz	15.209	49.0 dBµV/m @ 5350.6 MHz (-5.0 dB)
7		100 - 5500MHz	17.0	17.0	Restricted Band Edge at 5460 MHz		44.3 dBµV/m @ 5459.7 MHz (-9.7 dB)
		100 - 5500MHz	17.0	17.0	Band Edge 5460 - 5470 MHz	15E	66.1 dBµV/m @ 5469.0 MHz (-2.2 dB)
		140 - 5700MHz	17.0	16.5	Band Edge 5725MHz		66.9 dBµV/m @ 5725.6 MHz (-1.4 dB)
40MHz Bandwith Modes							
10	ax40	62 - 5310MHz	17.5	16.0	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @ 5350.3 MHz (-0.5 dB)
11		102 - 5510MHz	17.5	16.0	Restricted Band Edge at 5460 MHz		53.4 dBµV/m @ 5459.8 MHz (-0.6 dB)
		102 - 5510MHz	17.5	16.0	Band Edge 5460 - 5470 MHz	15E	67.7 dBµV/m @ 5463.4 MHz (-0.6 dB)
		134 - 5670MHz	17.5	17.5	Band Edge 5725MHz		55.9 dBµV/m @ 5726.040 MHz (-64.1
80MHz Bandwith Modes							
14	ax80	58 - 5290MHz	17.5	13.0	Restricted Band Edge at 5350 MHz	15.209	53.4 dBµV/m @ 5351.9 MHz (-0.6 dB)
15		106 - 5530MHz	17.5	15.0	Restricted Band Edge at 5460 MHz		51.8 dBµV/m @ 5459.8 MHz (-2.2 dB)
		106 - 5530MHz	17.5	15.0	Band Edge 5460 - 5470 MHz	15E	52.7 dBµV/m @ 5469.9 MHz (-1.3 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 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:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/2/2018 Config. Used: 1

Test Engineer: Roy Zheng Config Change: None

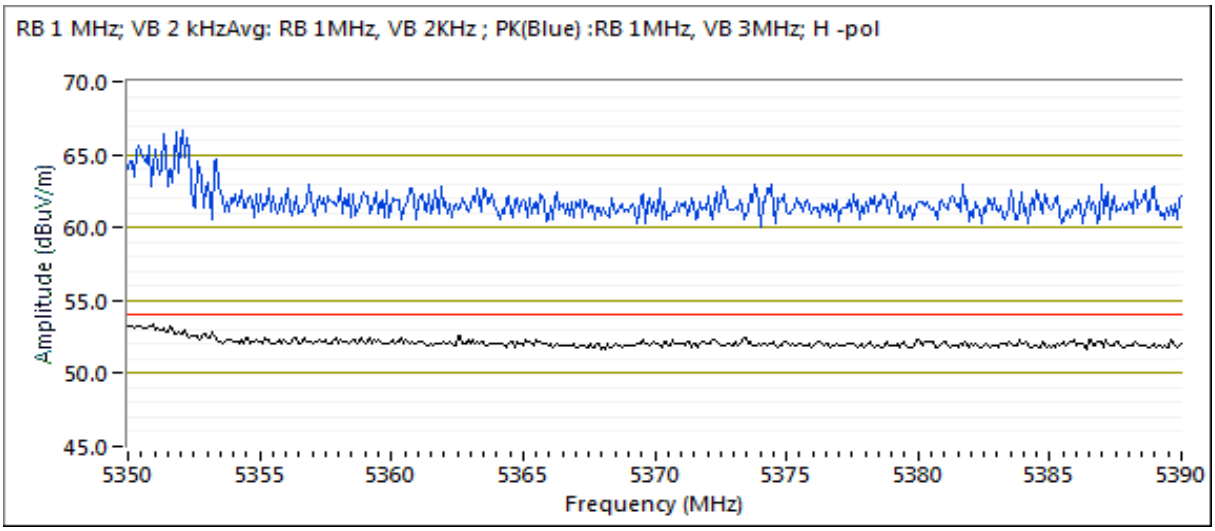
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 64 - 5320MHz at 15.5dBm Mode: BLE at 8 dBm

Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

5350 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	
5350.000	53.0	H	54.0	-1.0	AVG	51	1.9	Note 3: RB 1 MHz; VB: 2 kHz
5351.120	66.6	H	74.0	-7.4	PK	51	1.9	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

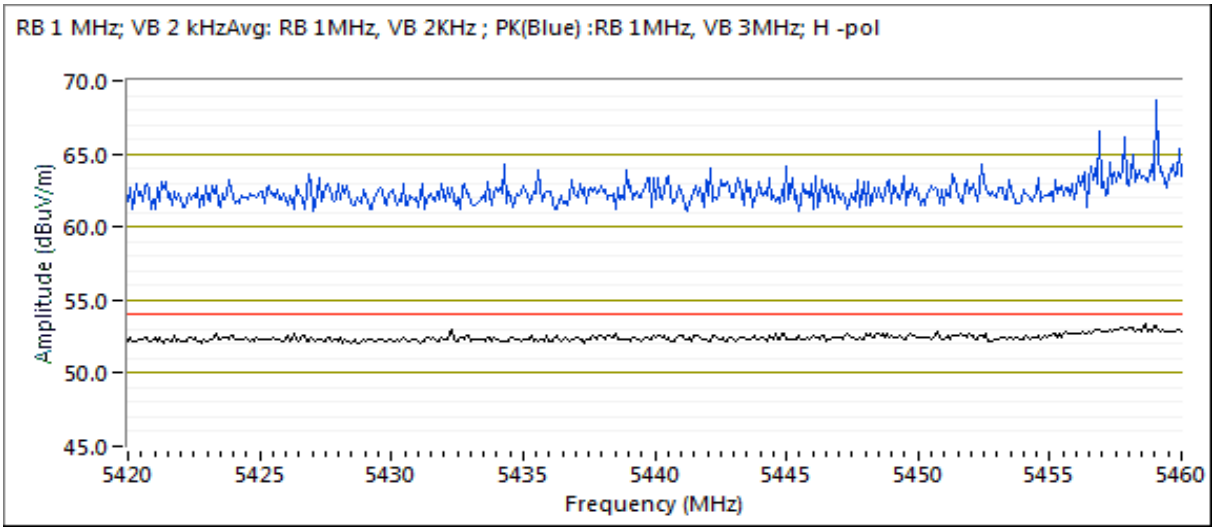
Run #3: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 17dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

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	
5457.110	53.4	H	54.0	-0.6	VAVG	48	1.8	Note 3: RB 1 MHz; VB: 2 kHz
5432.580	64.8	H	74.0	-9.2	PK	48	1.8	RB 1 MHz; VB: 3 MHz



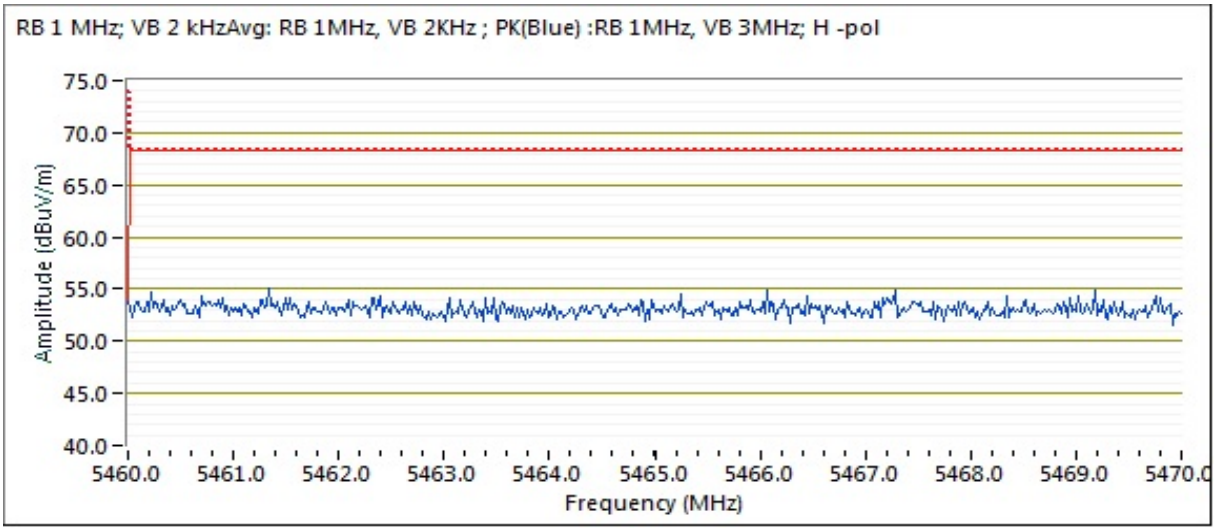
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 17dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

5470 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	
5466.990	55.4	H	68.3	-12.9	PK	304	2.1	RB 1 MHz; VB: 3 MHz



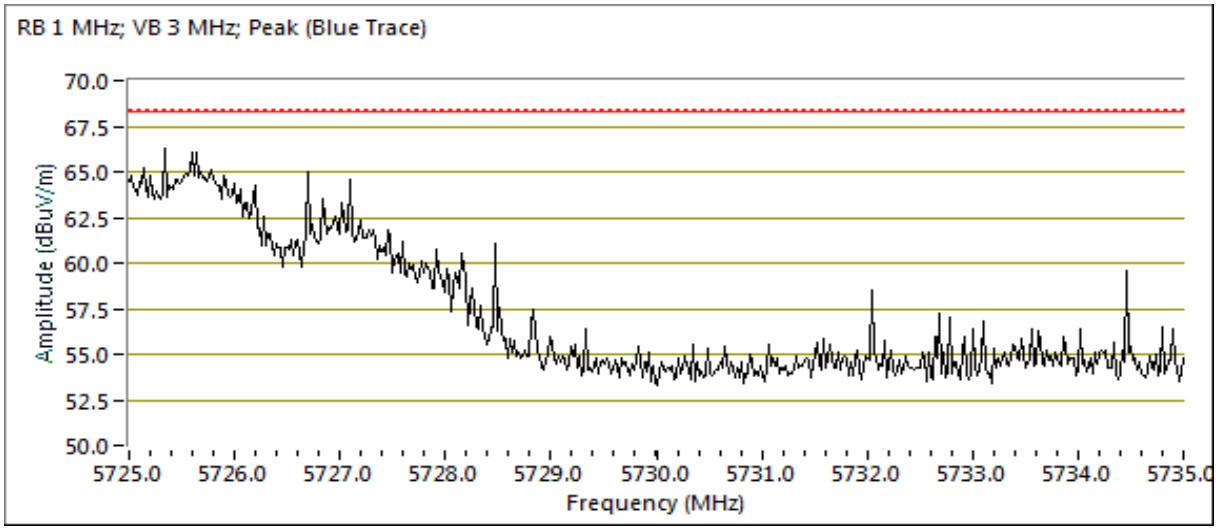
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: M. Birgani Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 140 - 5700MHz at 13.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

5725 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5725.750	66.3	H	68.3	-2.0	PK	61	1.2	RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

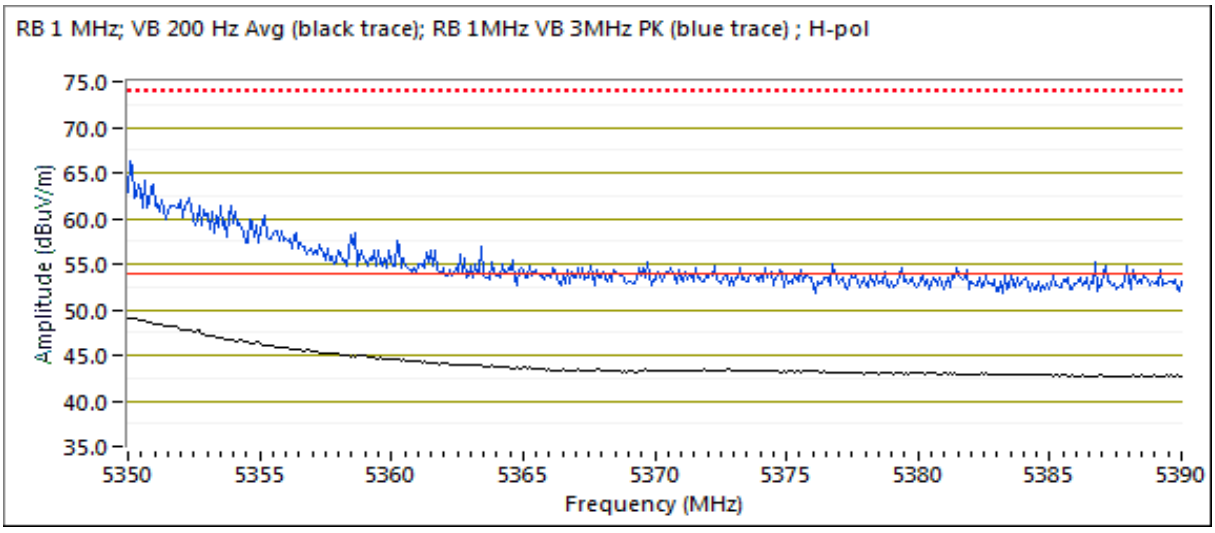
Run #6: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 64 - 5320MHz at 17dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

5350 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	
5350.600	49.0	H	54.0	-5.0	Avg	39	1.5	POS; RB 1 MHz; VB: 200 Hz
5351.170	65.9	H	74.0	-8.1	PK	39	1.5	POS; RB 1 MHz; VB: 3 MHz
5350.300	48.9	V	54.0	-5.1	Avg	34	1.6	POS; RB 1 MHz; VB: 200 Hz
5351.320	65.7	V	74.0	-8.3	PK	34	1.6	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

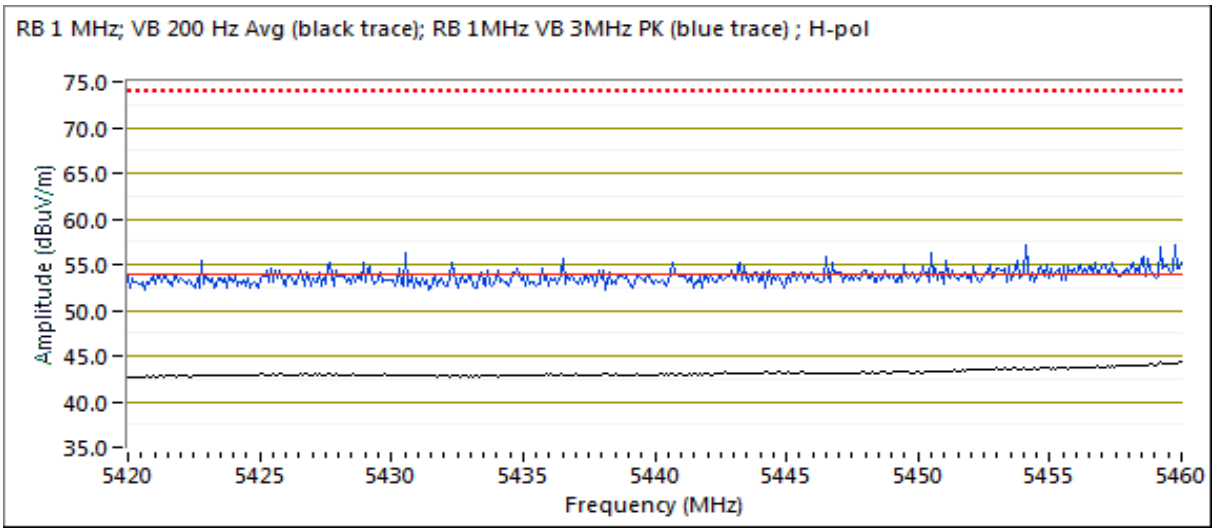
Run #7: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 17dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

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	
5459.680	44.3	H	54.0	-9.7	Avg	298	1.0	POS; RB 1 MHz; VB: 200 Hz
5459.760	43.6	V	54.0	-10.4	Avg	349	1.0	POS; RB 1 MHz; VB: 200 Hz
5459.880	56.5	H	74.0	-17.5	PK	298	1.0	POS; RB 1 MHz; VB: 3 MHz
5457.600	55.0	V	74.0	-19.0	PK	349	1.0	POS; RB 1 MHz; VB: 3 MHz



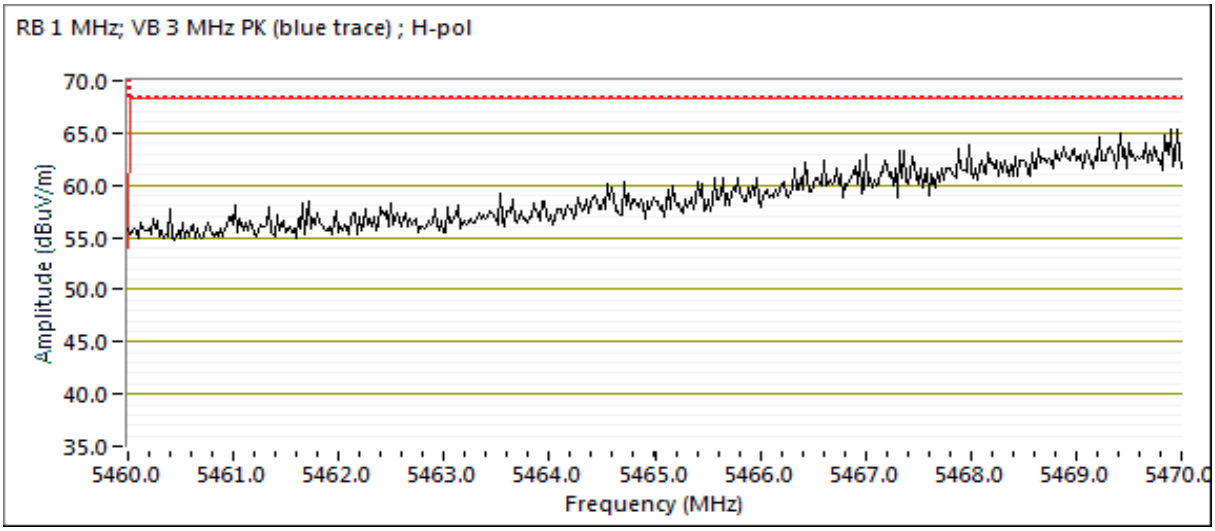
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 17dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

5470 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	
5468.960	66.1	H	68.3	-2.2	PK	298	1.0	POS; RB 1 MHz; VB: 3 MHz
5469.980	62.9	V	68.3	-5.4	PK	349	1.0	POS; RB 1 MHz; VB: 3 MHz



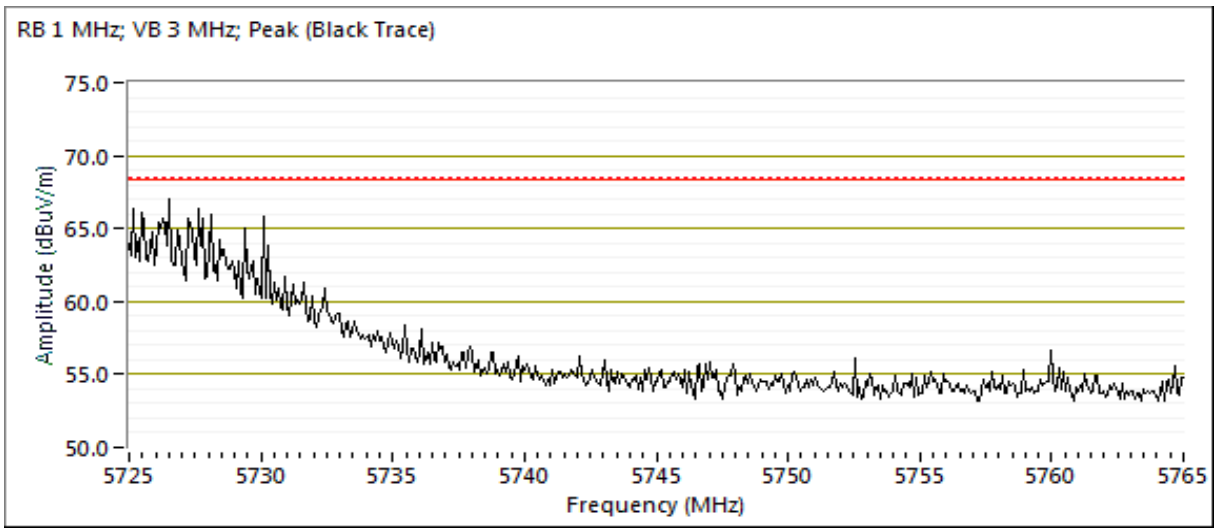
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/2/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 140 - 5700MHz at 16.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

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	
5725.600	66.9	H	68.3	-1.4	PK	22	1.1	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/3/2018 Config. Used: 1

Test Engineer: Roy Zheng Config Change: None

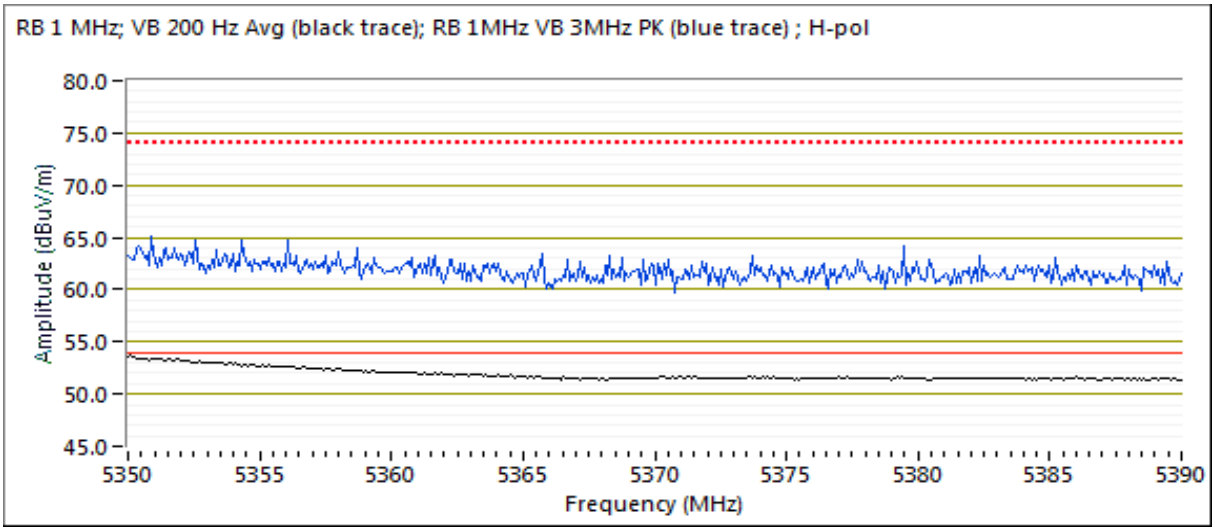
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 62 - 5310MHz at 16dBm Mode: BLE at 8 dBm

Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

5350 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	
5350.320	53.5	H	54.0	-0.5	AVG	44	1.9	POS; RB 1 MHz; VB: 200 Hz
5364.350	65.5	H	74.0	-8.5	PK	44	1.9	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/3/2018 Config. Used: 1

Test Engineer: Roy Zheng Config Change: None

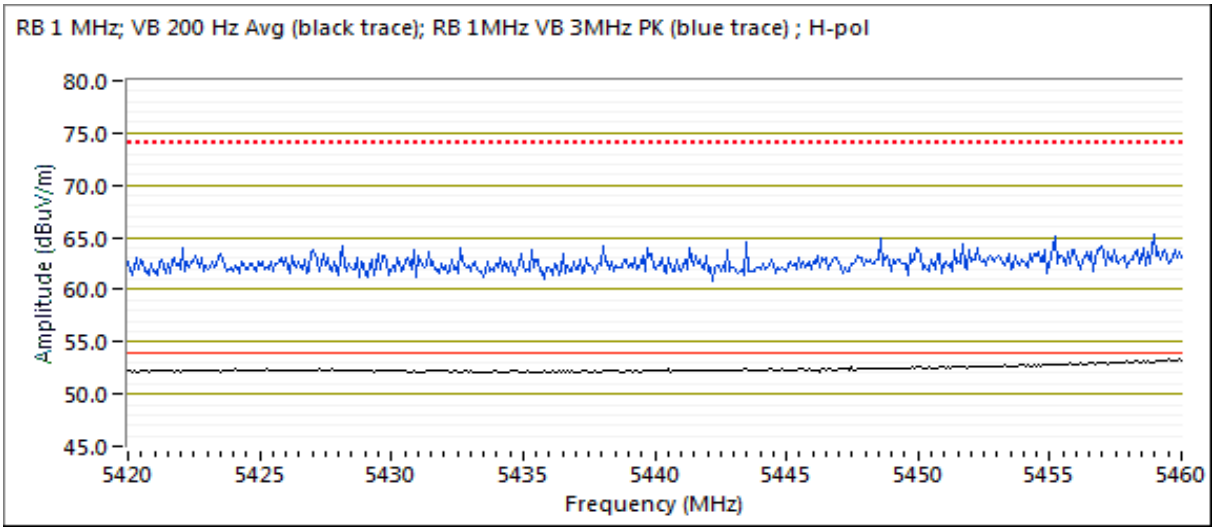
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 102 - 5510MHz at 16dBm Mode: BLE at 8 dBm

Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

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	
5459.840	53.4	H	54.0	-0.6	AVG	56	1.0	POS; RB 1 MHz; VB: 200 Hz
5458.480	65.0	H	74.0	-9.0	PK	56	1.0	POS; RB 1 MHz; VB: 3 MHz



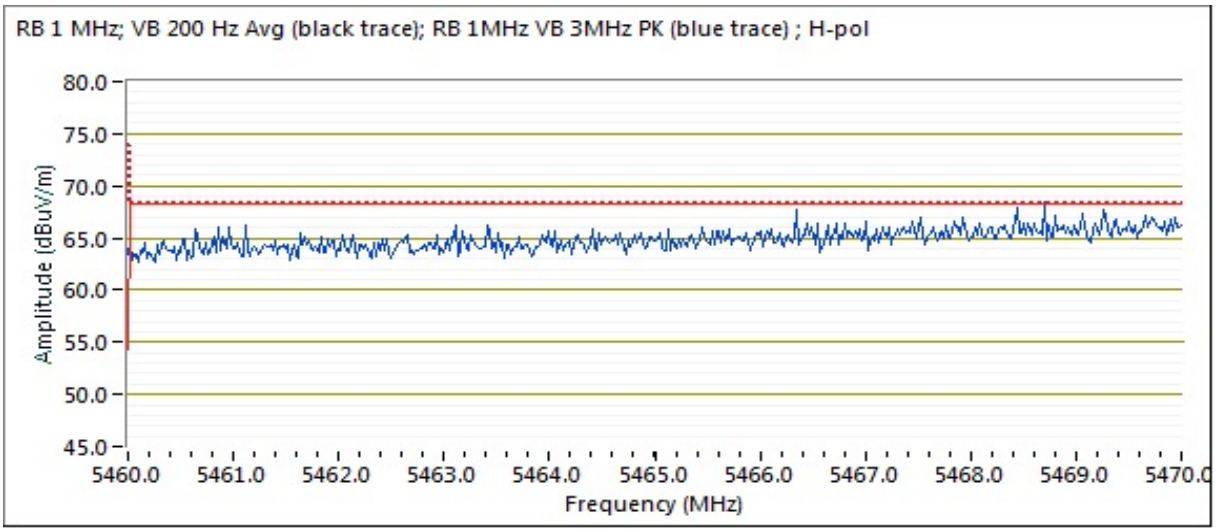
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/3/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 102 - 5510MHz at 16dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

5470 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	
5463.430	67.7	H	68.3	-0.6	PK	56	1.0	POS; RB 1 MHz; VB: 3 MHz



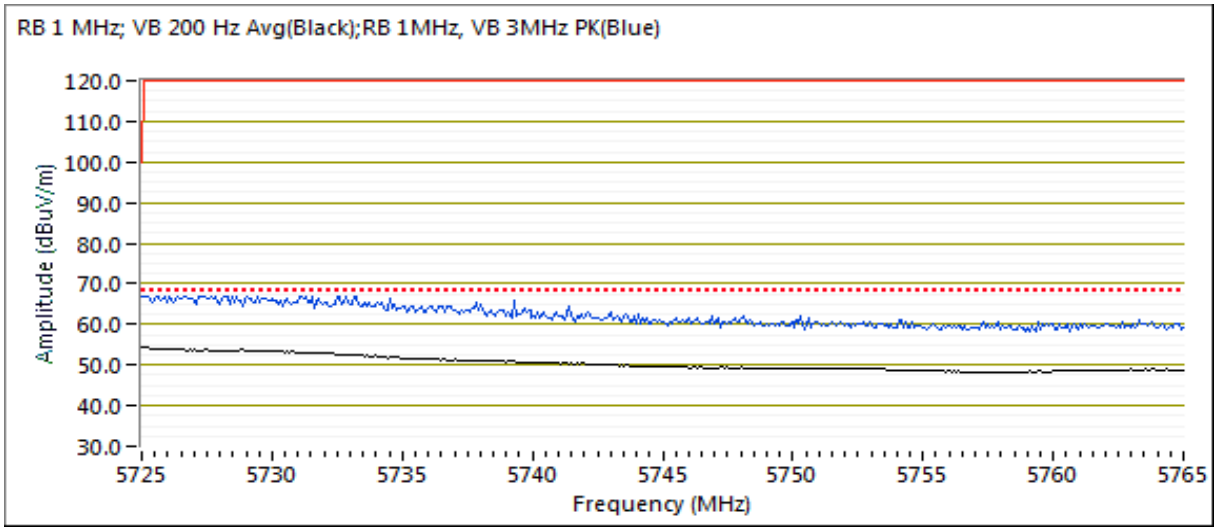
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/3/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 134 - 5670MHz at 17.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

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	
5726.040	55.9	H	120.0	-64.1	AVG	42	1.9	POS; RB 1 MHz; VB: 200 Hz
5725.320	70.0	H	120.0	-50.0	PK	42	1.9	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/3/2018 Config. Used: 1

Test Engineer: Roy Zheng Config Change: None

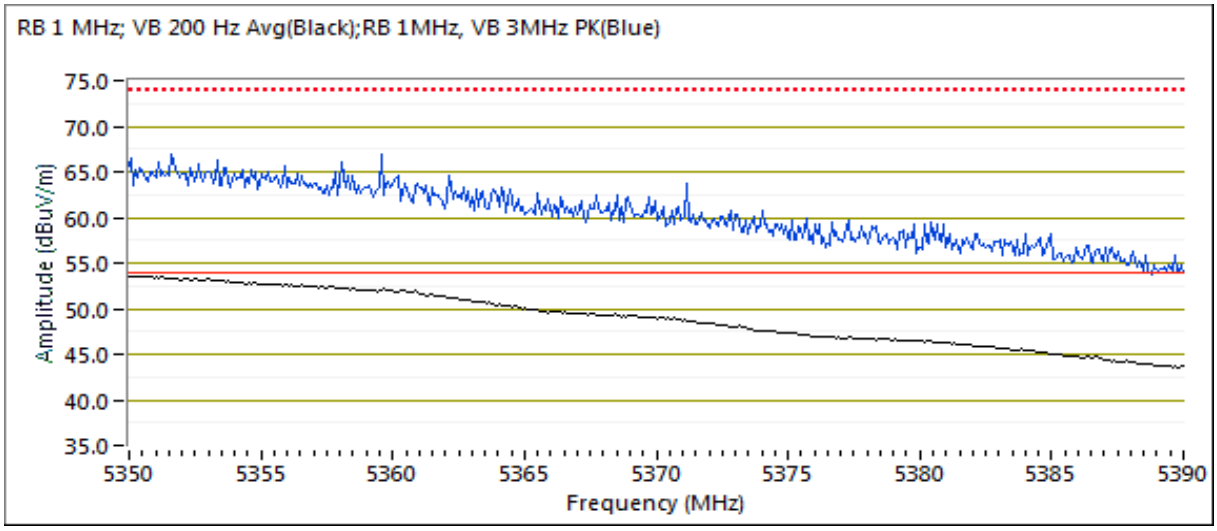
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 58 - 5290MHz at 13dBm Mode: BLE at 8 dBm

Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

5350 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	
5350.400	53.3	H	54.0	-0.7	AVG	65	1.7	POS; RB 1 MHz; VB: 200 Hz
5350.080	66.8	H	74.0	-7.2	PK	65	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

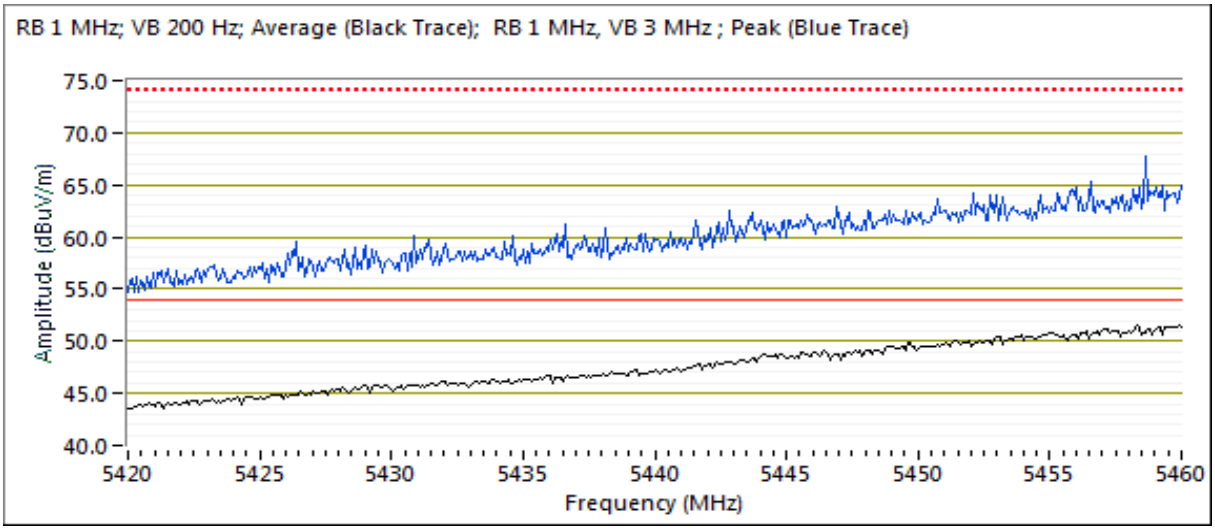
Run #15: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/3/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 106 - 5530MHz at 15dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

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	
5459.750	51.8	H	54.0	-2.2	VAVG	62	1.4	Note 3, RB 1 MHz; VB: 200 Hz
5457.790	65.3	H	74.0	-8.7	PK	62	1.4	POS; RB 1 MHz; VB: 3 MHz



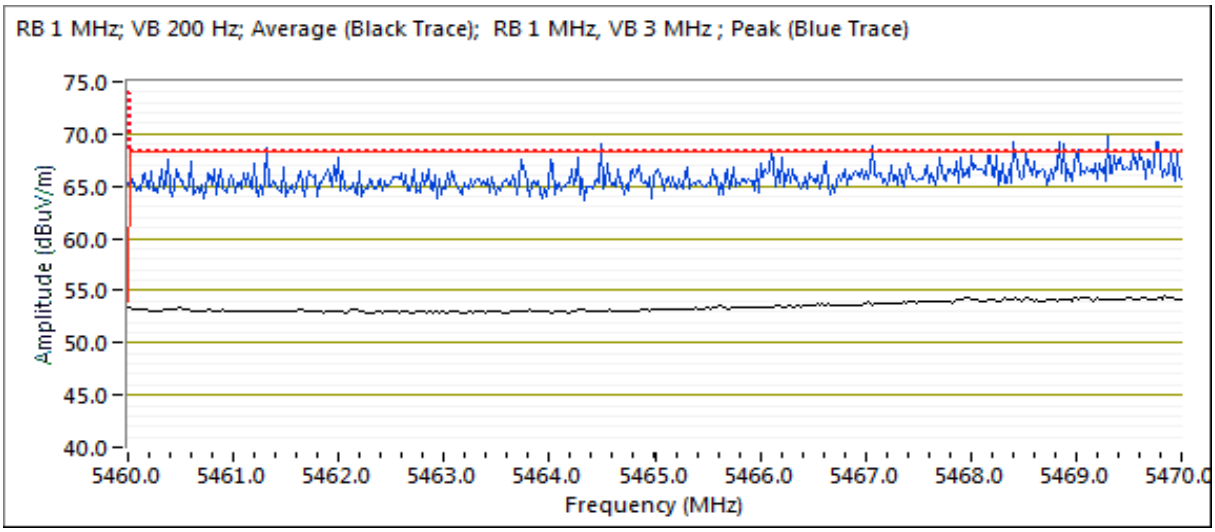
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/3/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 106 - 5530MHz at 15dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

5470 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	
5469.870	52.7	H	54.0	-1.3	VAVG	62	1.4	Note 3, RB 1 MHz; VB: 200 Hz
5469.630	67.4	H	74.0	-6.6	PK	62	1.4	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 24.5 °C
Rel. Humidity: 41 %

Summary of Results

Run #	Mode	Channel	Power Setting	Final Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a	64 - 5320MHz	15	15.0	Restricted Band Edge at 5350 MHz	15.209	52.2 dBµV/m @ 5350.5 MHz (-1.8 dB)
3		100 - 5500MHz	15	14.0	Restricted Band Edge at 5460 MHz		44.7 dBµV/m @ 5459.9 MHz (-9.3 dB)
		100 - 5500MHz	15	14.0	Band Edge 5460 - 5470 MHz	15E	67.4 dBµV/m @ 5468.8 MHz (-0.9 dB)
		140 - 5700MHz	15	14.5	Band Edge 5725MHz		68.2 dBµV/m @ 5725.1 MHz (-0.1 dB)
6	ax20	64 - 5320MHz	17	16.0	Restricted Band Edge at 5350 MHz	15.209	52.5 dBµV/m @ 5350.0 MHz (-1.5 dB)
7		100 - 5500MHz	17	16.5	Restricted Band Edge at 5460 MHz		52.0 dBµV/m @ 5459.9 MHz (-2.5 dB)
		100 - 5500MHz	17	16.5	Band Edge 5460 - 5470 MHz	15E	67.3 dBµV/m @ 5469.9 MHz (-1.0 dB)
		140 - 5700MHz	17	16.5	Band Edge 5725MHz		66.9 dBµV/m @ 5726.5 MHz (-1.4 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Setting	Final Setting	Test Performed	Limit	Result / Margin
40MHz Bandwith Modes							
10	ax40	62 - 5310MHz	17.5	15.0	Restricted Band Edge at 5350 MHz	15.209	53.7 dBµV/m @ 5142.7 MHz (-0.3 dB)
11		102 - 5510MHz	17.5	11.5	Restricted Band Edge at 5460 MHz		49.6 dBµV/m @ 5459.8 MHz (-4.4 dB)
		102 - 5510MHz	17.5	11.5	Band Edge 5460 - 5470 MHz	15E	67.4 dBµV/m @ 5467.9 MHz (-0.9 dB)
		134 - 5670MHz	17.5	16.0	Band Edge 5725MHz		66.8 dBµV/m @ 5732.5 MHz (-1.5 dB)
80MHz Bandwith Modes							
14	ax80	58 - 5290MHz	17.5	13.5	Restricted Band Edge at 5350 MHz	15.209	53.1 dBµV/m @ 5351.4 MHz (-0.9 dB)
15		106 - 5530MHz	17.5	16.5	Restricted Band Edge at 5460 MHz		52.9 dBµV/m @ 5459.8 MHz (-1.1 dB)
		106 - 5530MHz	17.5	16.5	Band Edge 5460 - 5470 MHz	15E	67.2 dBµV/m @ 5469.1 MHz (-1.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6 MB/s	0.93	Yes	1.438	0.3	0.6	695
ax20	MCS0	0.96	Yes	5.444	0.2	0.4	184
11ax40	MCS0	0.96	Yes	5.444	0.2	0.4	184
11ax80	MCS0	0.95	Yes	5.408	0.2	0.5	185

Sample Notes

BLE Sample SN: CNG6K9V019 and Zigbee Sample SN: CNG6K9V00C
Driver: P2 WNC 0.4.3a
Antenna: AP-ANT-19 Wi-Fi and Integral BLE/ZigBee

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 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:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/11/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

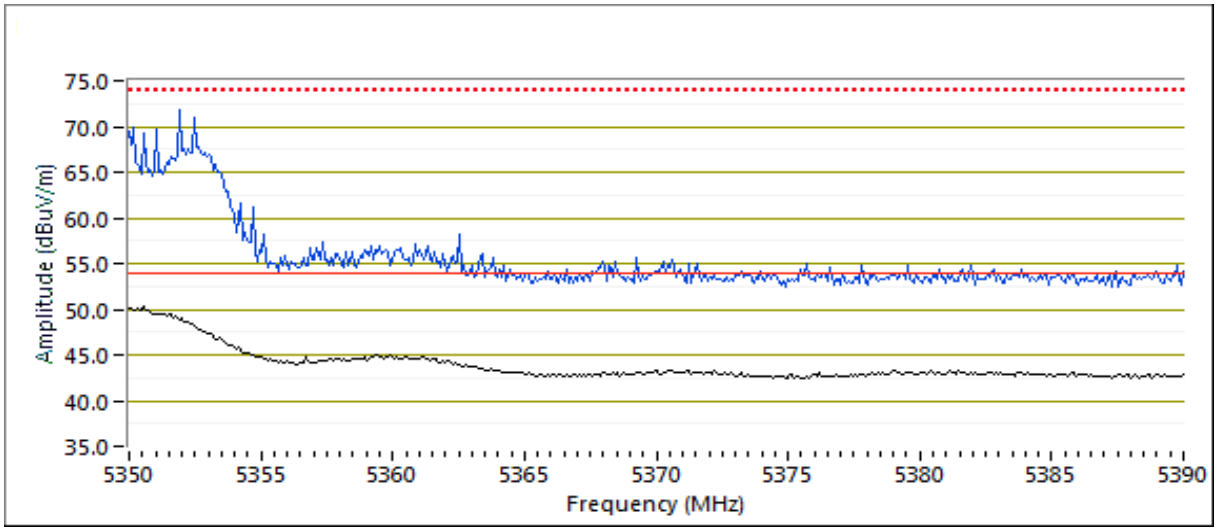
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 64 - 5320MHz at 15dBm
Tx Chain: 4Tx
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5350.490	52.2	V	54.0	-1.8	VAVG	306	1.5	Note 3; RB 1 MHz; VB: 1 kHz
5350.560	69.2	V	74.0	-4.8	PK	306	1.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/11/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

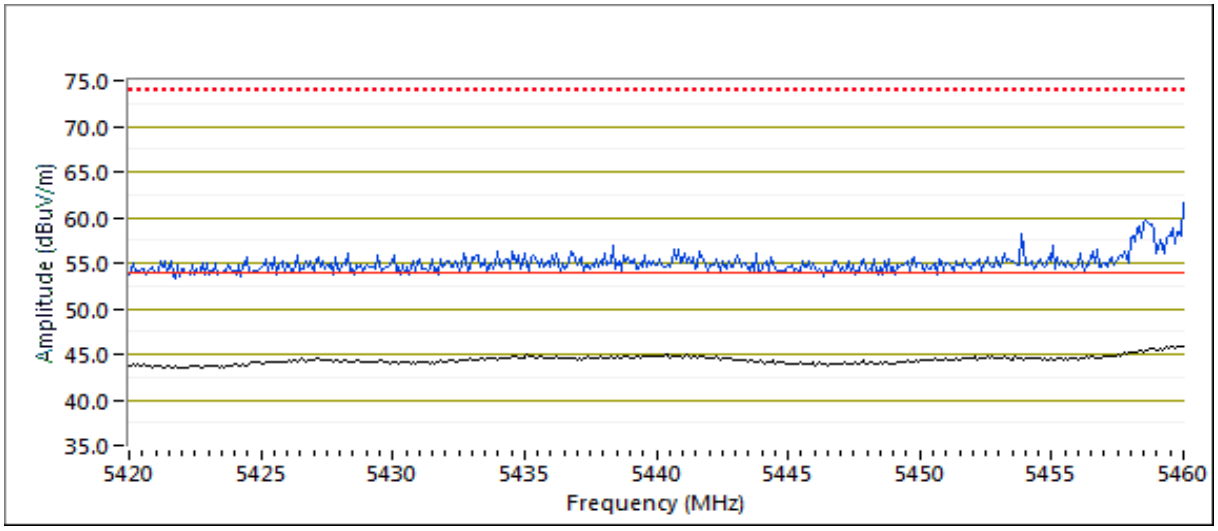
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 100 - 5500MHz at 14dBm
Tx Chain: 4Tx
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

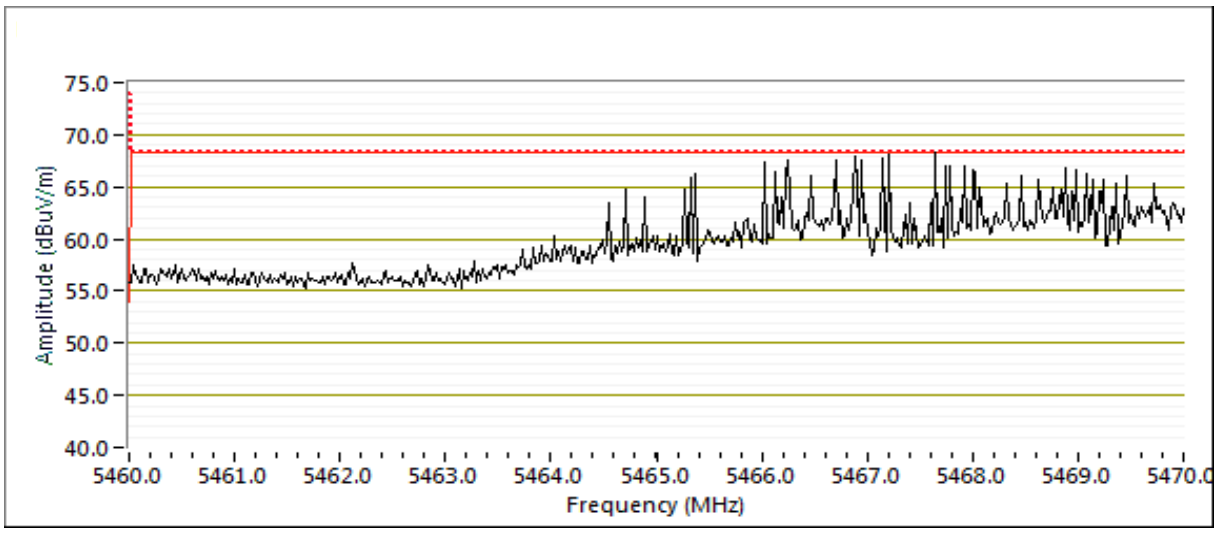
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.920	44.7	V	54.0	-9.3	VAVG	319	1.5	Note 3; RB 1 MHz; VB: 1 kHz
5458.320	61.2	V	74.0	-13.8	PK	319	1.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5468.760	67.4	V	68.3	-0.9	PK	315	1.4	POS; RB 1 MHz; VB: 3 MHz



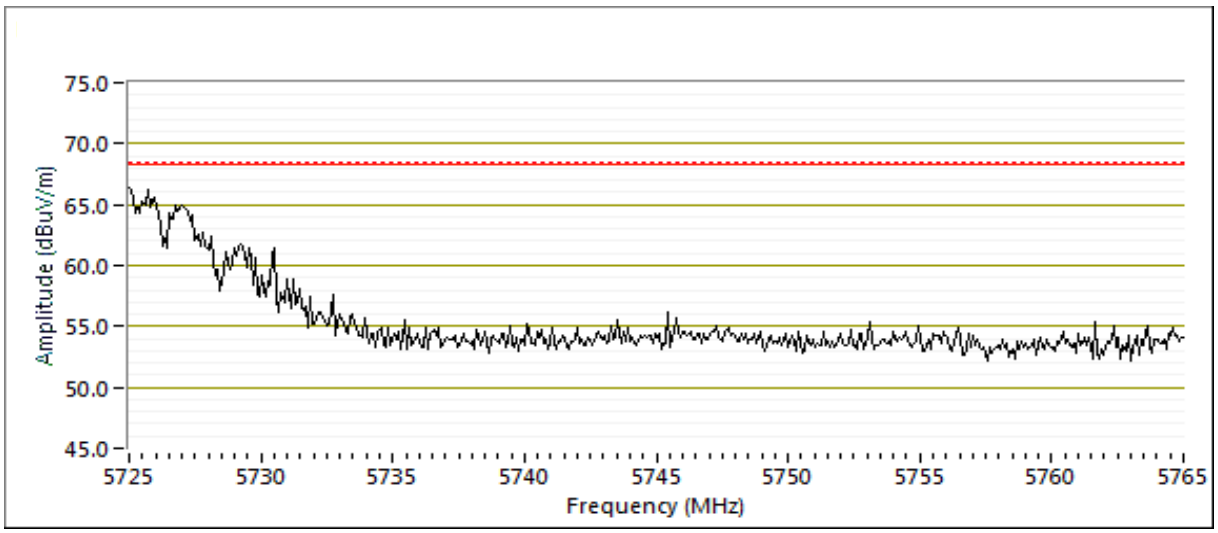
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz at 14.5dBm
Tx Chain: 4Tx
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

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	
5726.920	67.1	V	68.3	-1.2	PK	307	1.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/11/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

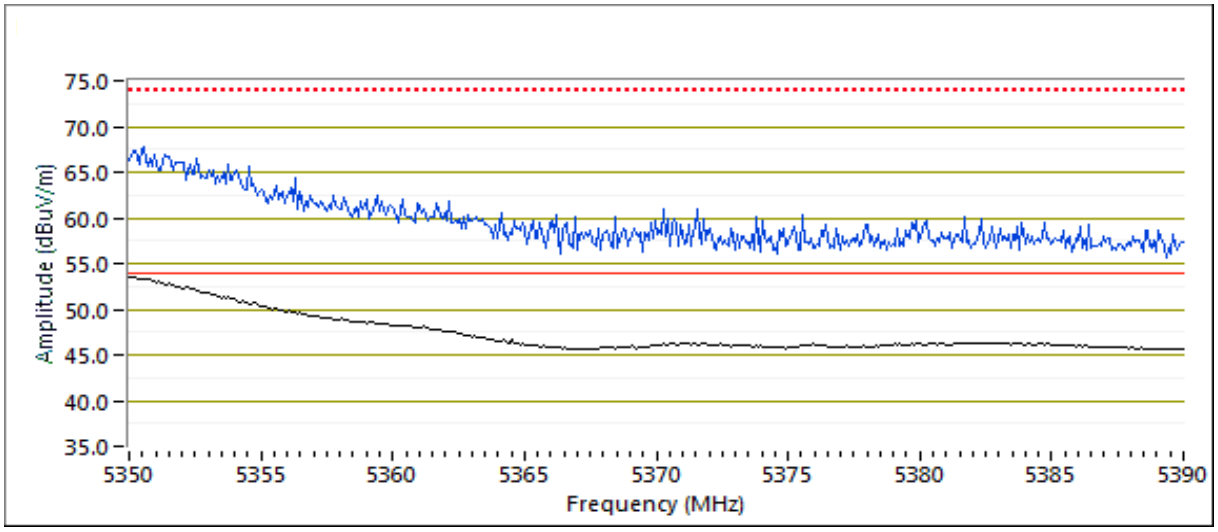
Config. Used: 1
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Channel: 64 - 5320MHz at 16dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5350.020	52.5	V	54.0	-1.5	VAVG	8	1.6	Note 3; RB 1 MHz; VB: 200 Hz
5350.240	65.2	V	74.0	-8.8	PK	8	1.6	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/11/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

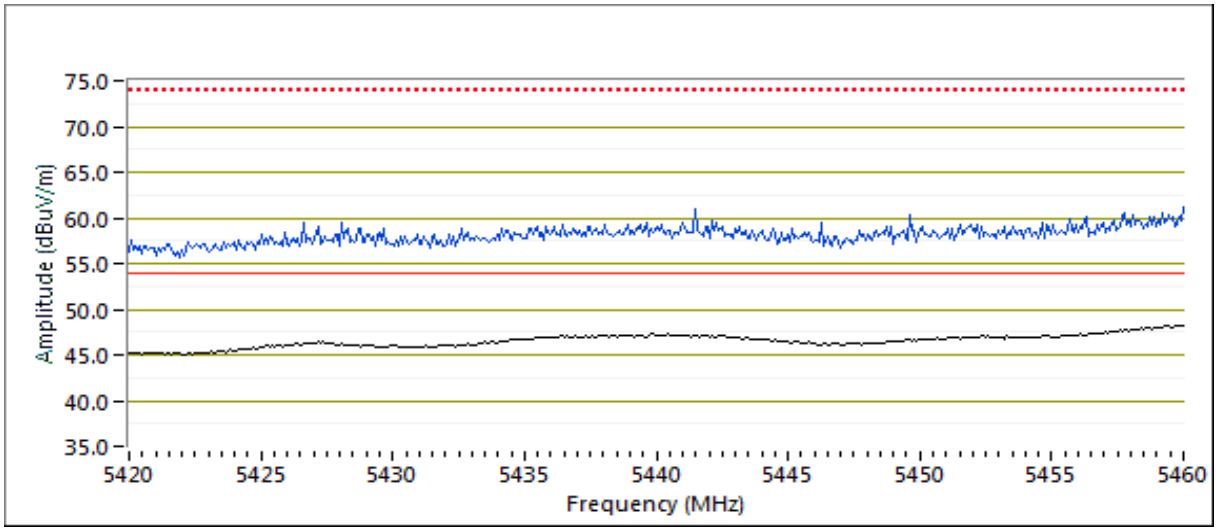
Config. Used: 1
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 16.5dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

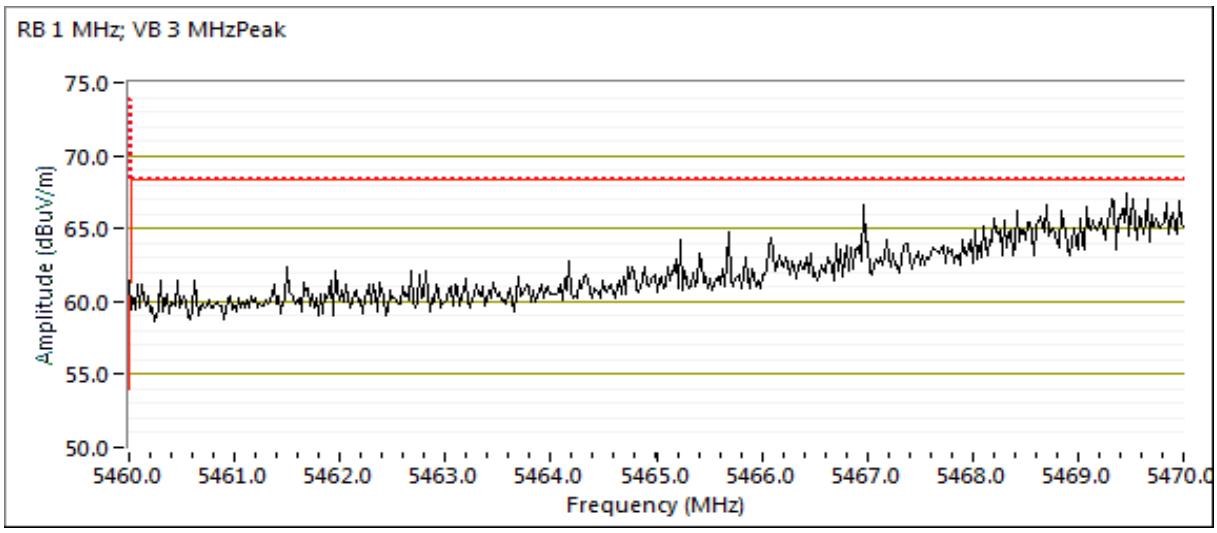
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.920	52.0	V	54.0	-2.5	AVG	323	1.7	Note 3; RB 1 MHz; VB: 200 Hz
5437.880	64.5	V	74.0	-10.2	PK	323	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5469.860	67.3	V	68.3	-1.0	PK	323	1.7	POS; RB 1 MHz; VB: 3 MHz



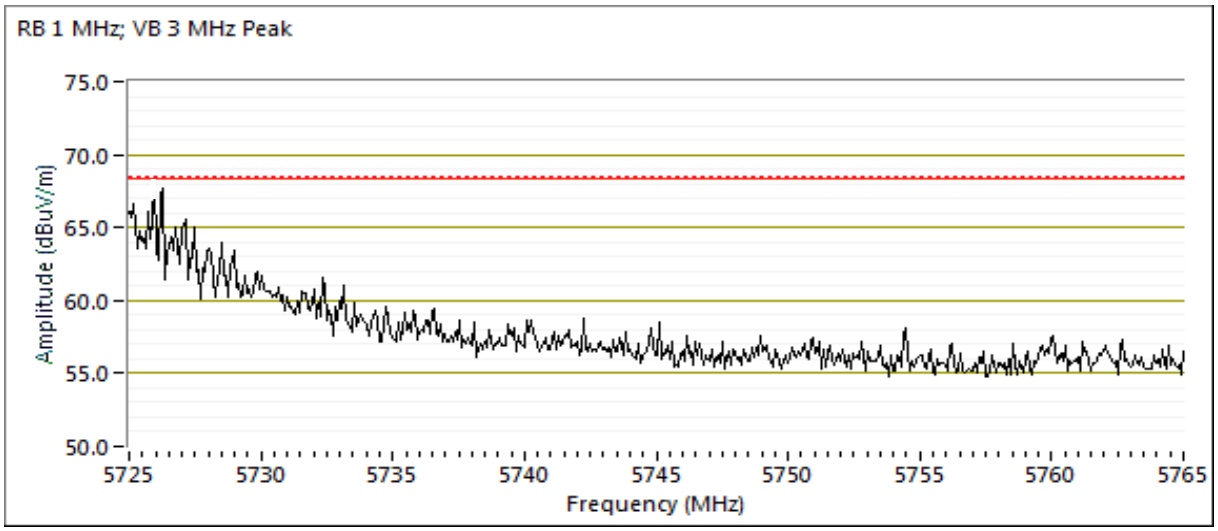
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz 16.5dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

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	
5726.520	66.9	V	68.3	-1.4	PK	323	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

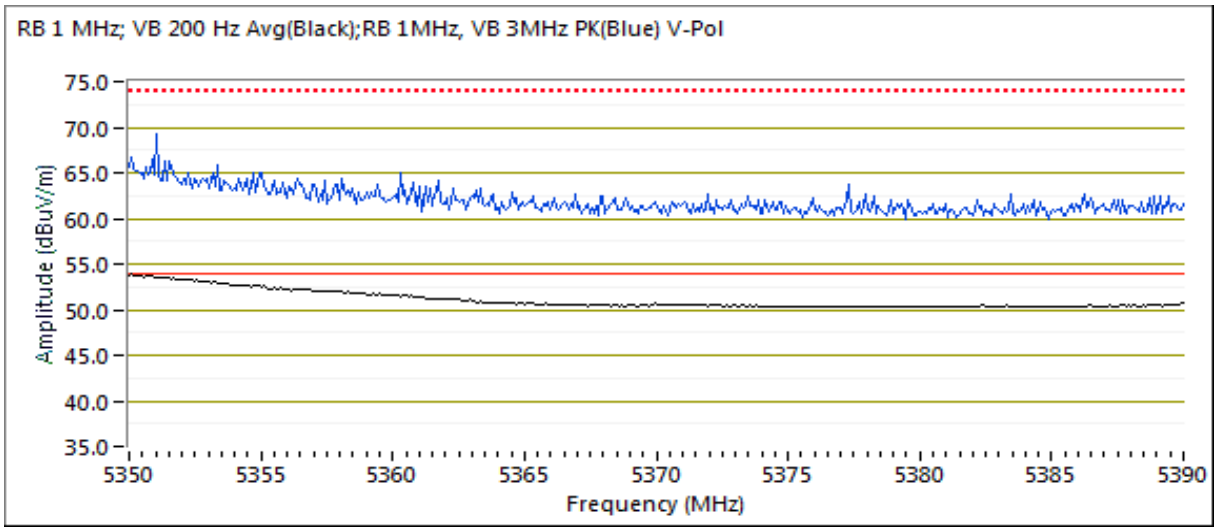
Run #10: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/12/2018
Test Engineer: Jude Semana
Test Location: Fremont Chamber #4

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

Channel: 62 - 5310MHz at 15dBm
Tx Chain: 4Tx
Mode: ax40

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz



5350 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	
5350.480	53.7	V	54.0	-0.3	Avg	307	1.4	Note 3; RB 1 MHz; VB: 200 Hz
5353.130	66.7	V	74.0	-7.3	PK	307	1.4	POS; RB 1 MHz; VB: 3 MHz
5380.060	39.5	H	54.0	-14.5	Avg	161	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5384.550	51.3	H	74.0	-22.7	PK	161	1.0	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

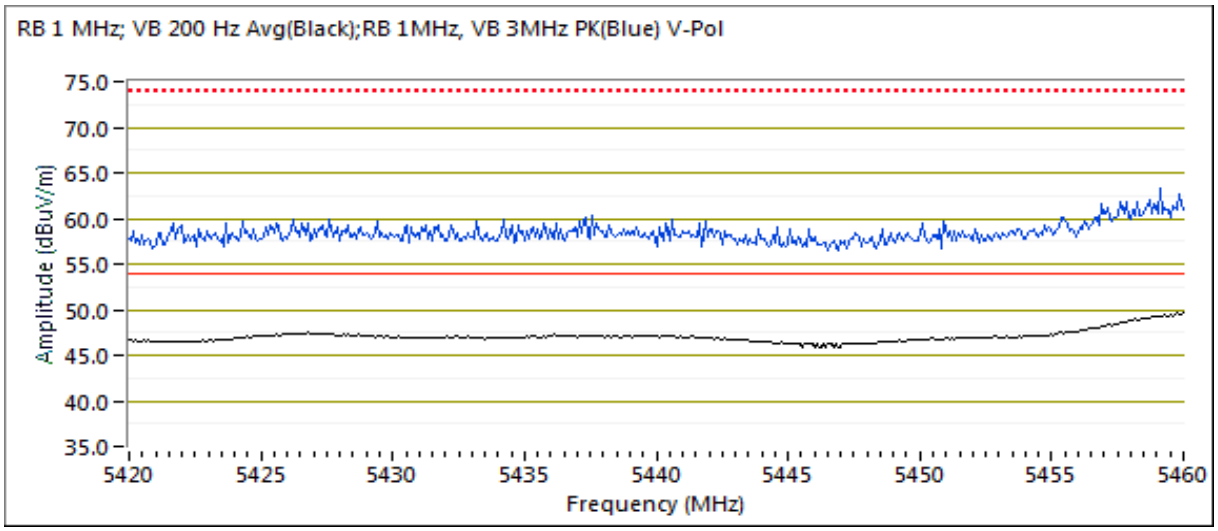
Run #11: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/12/2018
Test Engineer: Jude Semana
Test Location: Fremont Chamber #4

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

Channel: 102 - 5510MHz
Tx Chain: 4Tx
Mode: ax40

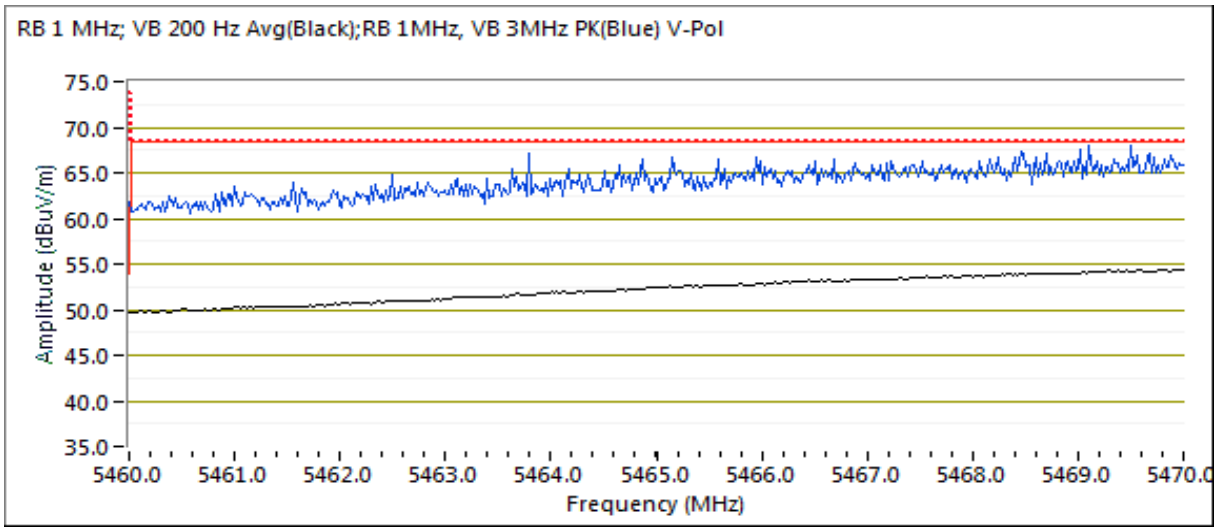
Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz



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	
5459.840	49.6	V	54.0	-4.4	Avg	330	1.5	Note 3; RB 1 MHz; VB: 200 Hz
5458.800	61.8	V	74.0	-12.2	PK	330	1.5	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

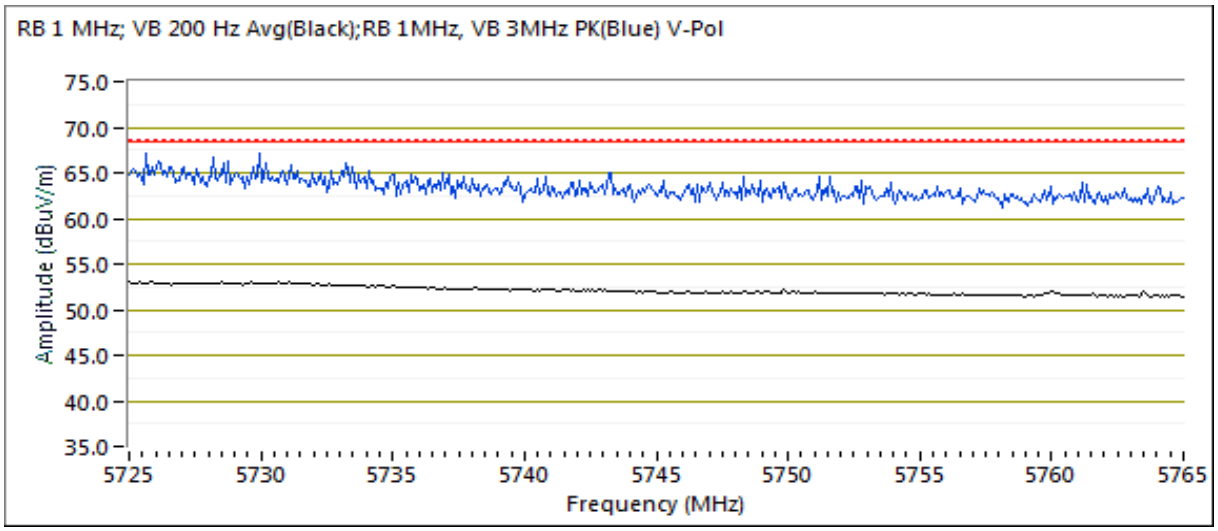


5470 MHz Band Edge Signal Radiated Field Strength

Frequency	Level	Pol	15.E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5467.860	67.4	V	68.3	-0.9	PK	330	1.5	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 134 - 5670MHz
Tx Chain: 4Tx
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	
5732.460	66.8	V	68.3	-1.5	PK	225	1.6	POS; RB 1 MHz; VB: 3 MHz
5740.870	62.5	H	68.3	-5.8	PK	130	0.9	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

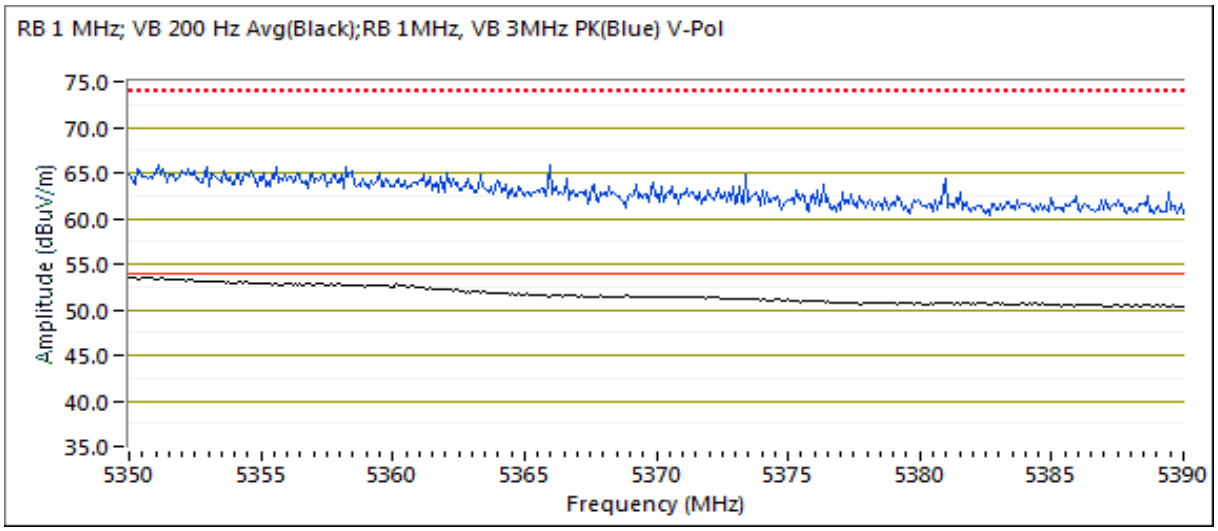
Run #14: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/12/2018
Test Engineer: Jude Semana
Test Location: Fremont Chamber #4

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

Channel: 58 - 5290MHz at 13.5dBm
Tx Chain: 4Tx
Mode: ax80

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz



5350 MHz Band Edge Signal Radiated Field Strength

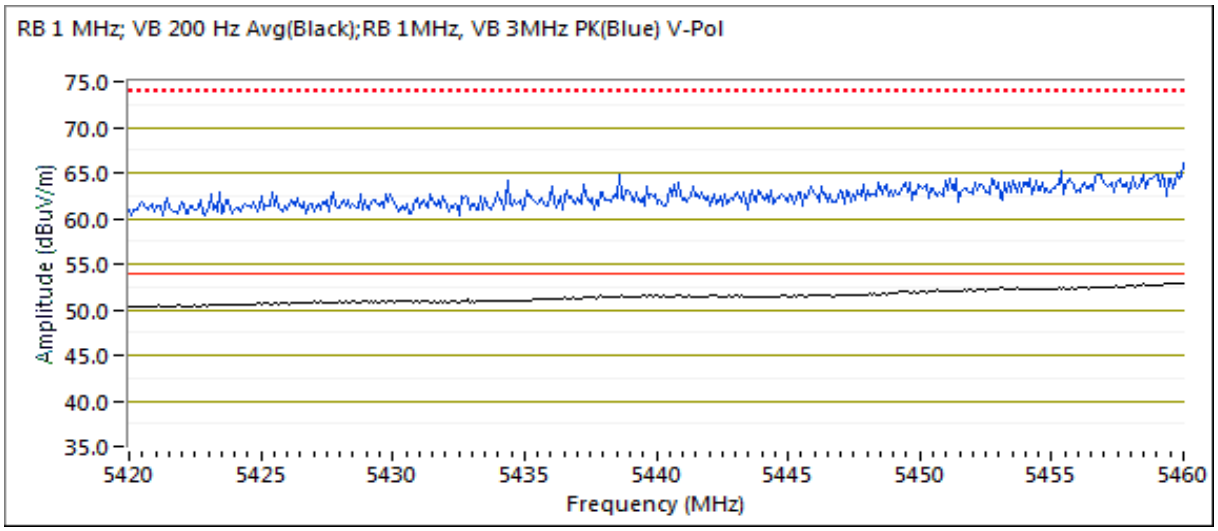
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5351.440	53.1	V	54.0	-0.9	Avg	39	1.4	Note 3; RB 1 MHz; VB: 200 Hz
5351.460	65.9	V	74.0	-8.1	PK	39	1.4	POS; RB 1 MHz; VB: 3 MHz
5385.510	49.3	H	54.0	-4.7	Avg	103	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5381.420	61.5	H	74.0	-12.5	PK	103	1.0	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/12/2018 Config. Used: 1
Test Engineer: Jude Semana Config Change: None
Test Location: Fremont Chamber #4 EUT Voltage: PoE & 120V/60Hz

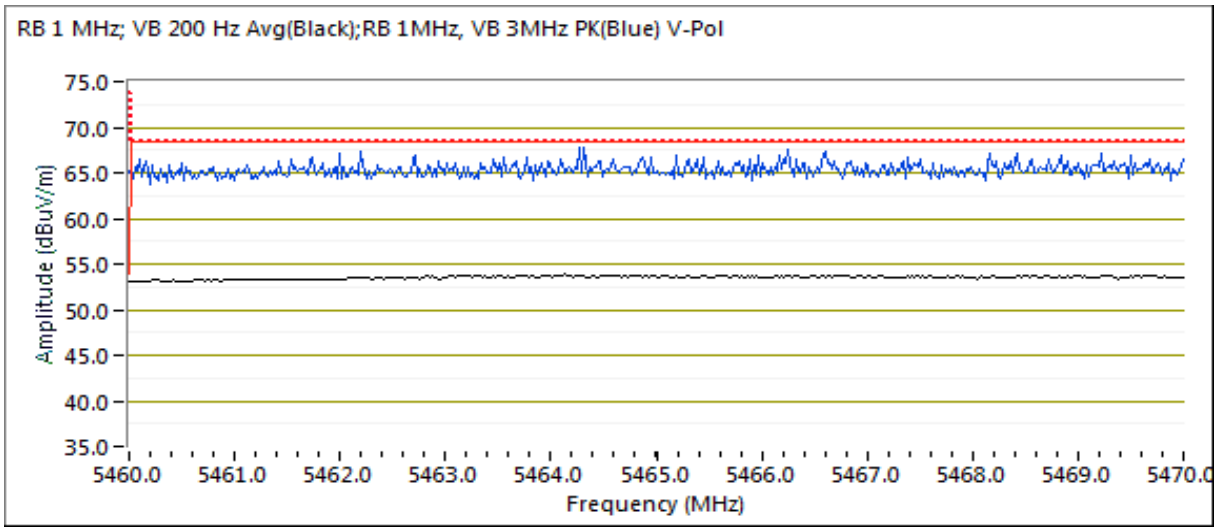
Channel: 106 - 5530MHz BLE at 8 dBm
Tx Chain: 4Tx 2440 MHz
Mode: ax80



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	
5459.840	52.9	V	54.0	-1.1	Avg	177	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5452.630	65.5	V	74.0	-8.5	PK	177	1.0	POS; RB 1 MHz; VB: 3 MHz
5459.520	51.1	H	54.0	-2.9	Avg	174	1.3	Note 3; RB 1 MHz; VB: 200 Hz
5453.670	63.4	H	74.0	-10.6	PK	174	1.3	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



5470 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	
5469.100	67.2	V	68.3	-1.1	PK	177	1.0	POS; RB 1 MHz; VB: 3 MHz
5467.780	64.3	H	68.3	-4.0	PK	174	1.3	POS; RB 1 MHz; VB: 3 MHz

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 24.1 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Mode	Channel	Power Setting	Final Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a	64 - 5320MHz	15.0	15.0	Restricted Band Edge at 5350 MHz	15.209	51.6 dBµV/m @ 5350.04 MHz (-2.4 dB)
3		100 - 5500MHz	15.0	15.0	Restricted Band Edge at 5460 MHz		46.1 dBµV/m @ 5457.56 MHz (-7.9 dB)
		100 - 5500MHz	15.0	15.0	Band Edge 5460 - 5470 MHz	15E	64.6 dBµV/m @ 5465.65 MHz (-3.7 dB)
		140 - 5700MHz	15.0	14.0	Band Edge 5725MHz		67.6 dBµV/m @ 5725.40 MHz (-0.7 dB)
6	ax20	64 - 5320MHz	17.0	17.0	Restricted Band Edge at 5350 MHz	15.209	53.1 dBµV/m @ 5350.01 MHz (-0.9 dB)
7		100 - 5500MHz	17.0	16.5	Restricted Band Edge at 5460 MHz		47.5 dBµV/m @ 5459.75 MHz (-6.5 dB)
		100 - 5500MHz	17.0	16.5	Band Edge 5460 - 5470 MHz	15E	67.8 dBµV/m @ 5468.90 MHz (-0.5 dB)
		140 - 5700MHz	17.0	16.5	Band Edge 5725MHz		67.3 dBµV/m @ 5725.80 MHz (-1.0 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Setting	Final Setting	Test Performed	Limit	Result / Margin
40MHz Bandwith Modes							
10	ax40	54 - 5270MHz	17.5	12.0	Restricted Band Edge at 5350 MHz	15.209	51.8 dBµV/m @ 5390.02 MHz (-2.2 dB)
		62 - 5310MHz	17.5	14.0	Restricted Band Edge at 5350 MHz		52.7 dBµV/m @ 5350.18 MHz (-1.3 dB)
11		102 - 5510MHz	17.5	15.0	Restricted Band Edge at 5460 MHz		50.4 dBµV/m @ 5459.93 MHz (-3.6 dB)
		102 - 5510MHz	17.5	15.0	Band Edge 5460 - 5470 MHz	15E	66.7 dBµV/m @ 5469.66 MHz (-1.6 dB)
		134 - 5670MHz	17.5	16.0	Band Edge 5725MHz		67 dBµV/m @ 5731.41 MHz (-1.3 dB)
80MHz Bandwith Modes							
14	ax80	58 - 5290MHz	17.5	10.0	Restricted Band Edge at 5350 MHz	15.209	51.7dBµV/m @ 5350.31 MHz (-2.3 dB)
15		106 - 5530MHz	17.5	14.5	Restricted Band Edge at 5460 MHz		52.7dBµV/m @ 5459.75 MHz (-1.3 dB)
		106 - 5530MHz	17.5	14.5	Band Edge 5460 - 5470 MHz	15E	68dBµV/m @ 5466.53 MHz (-0.3 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.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	6 MB/s	0.93	Yes	1.438	0.3	0.6	695
ax20	MCS0	0.96	Yes	5.444	0.2	0.4	184
11ax40	MCS0	0.96	Yes	5.444	0.2	0.4	184
11ax80	MCS0	0.95	Yes	5.408	0.2	0.5	185

Sample Notes

BLE Sample SN: CNG6K9V019 and Zigbee Sample SN: CNG6K9V00C
Driver: P2 WNC 0.4.3a
Antenna: AP-ANT-20 Wi-Fi and Integral BLE/ZigBee

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 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:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/8/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

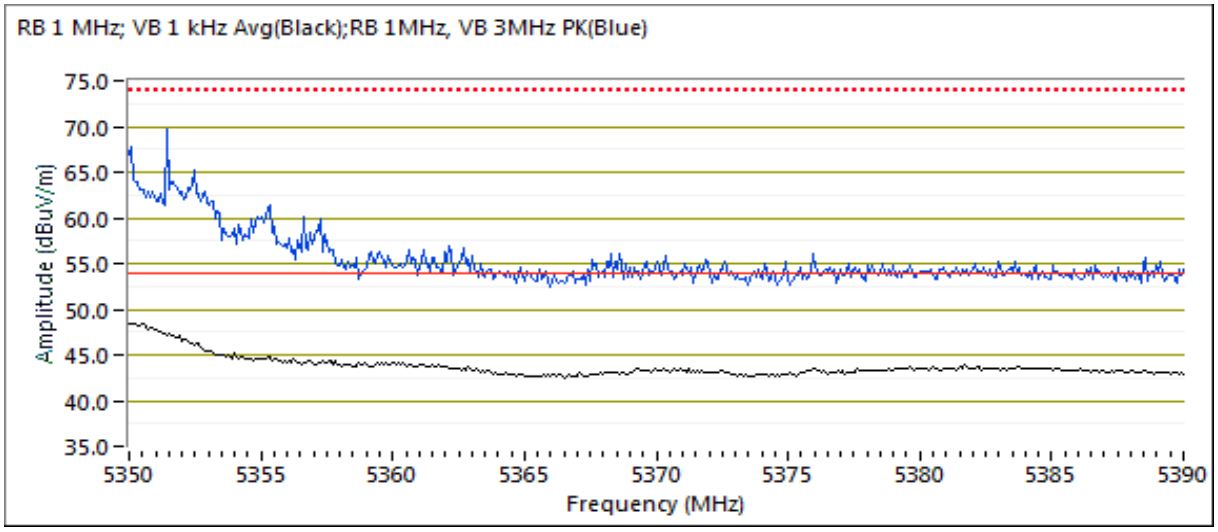
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 64 - 5320MHz at 15dBm
Tx Chain: 4Tx
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5350.000	69.0	V	74.0	-5.0	PK	45	2.0	POS; RB 1 MHz; VB: 3 MHz
5350.040	51.6	V	54.0	-2.4	AVG	45	2.0	Note 3; RB 1 MHz; VB: 1 kHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/8/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

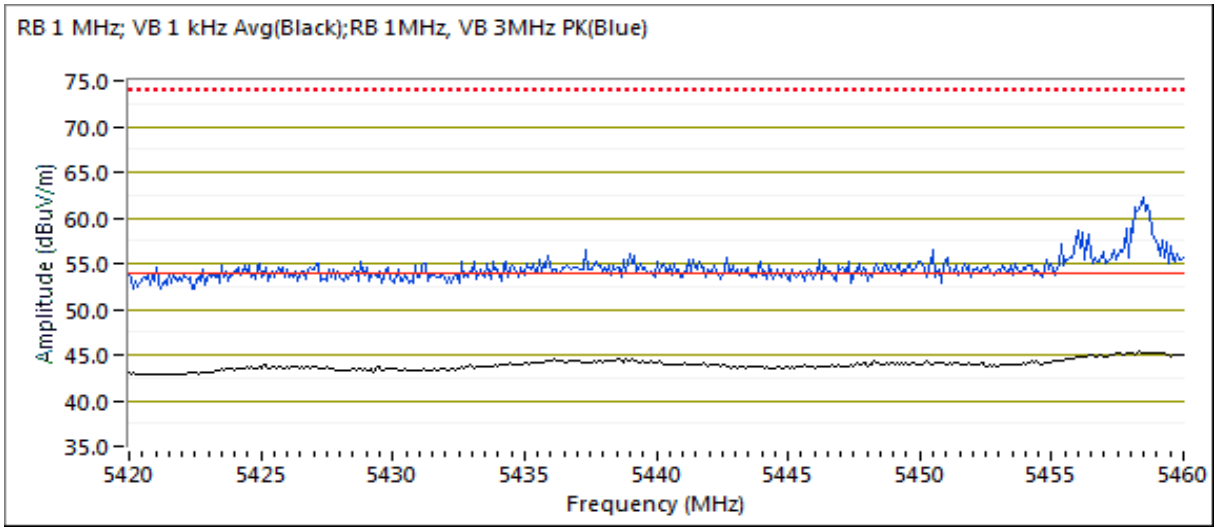
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 100 - 5500MHz at 15dBm
Tx Chain: 4Tx
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

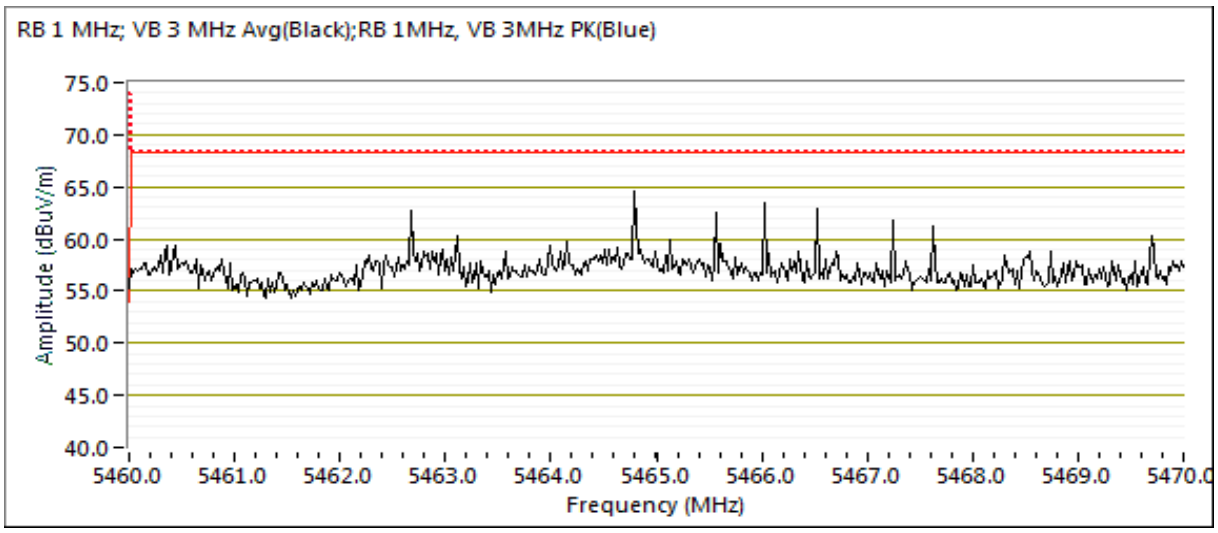
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5458.960	61.6	V	74.0	-12.4	PK	44	2.0	POS; RB 1 MHz; VB: 3 MHz
5457.560	46.1	V	54.0	-7.9	AVG	44	2.0	Note 3; RB 1 MHz; VB: 1 kHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5465.650	64.6	V	68.3	-3.7	PK	44	2.0	POS; RB 1 MHz; VB: 3 MHz



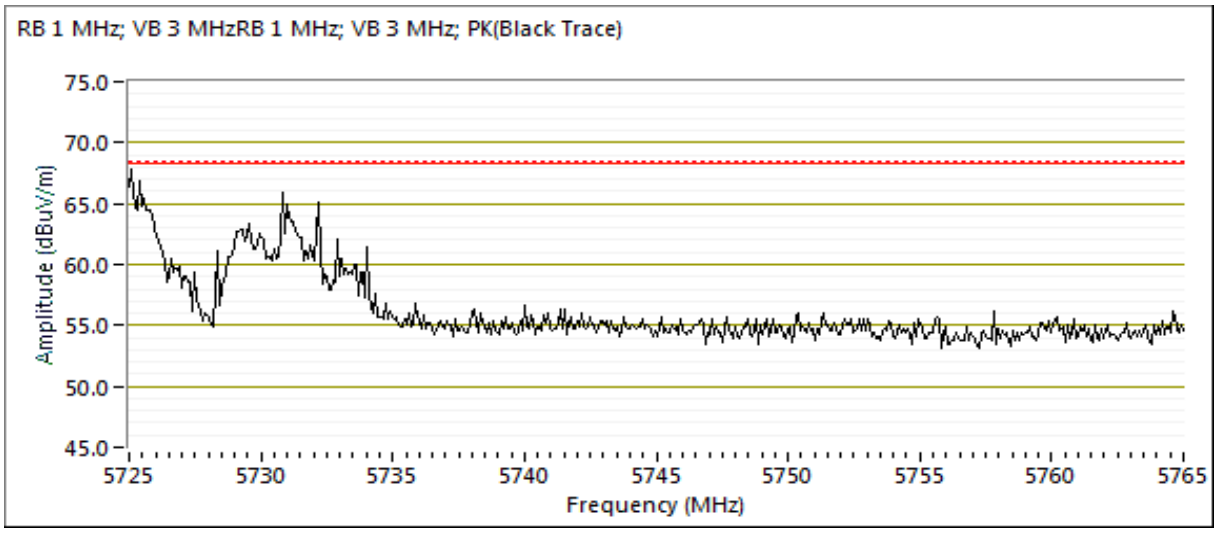
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz at 14dBm
Tx Chain: 4
Mode: a

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

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	
5725.400	67.6	V	68.3	-0.7	PK	311	2.3	POS; RB 1 MHz; VB: 3 MHz
5762.110	54.3	H	68.3	-14.0	PK	204	2.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

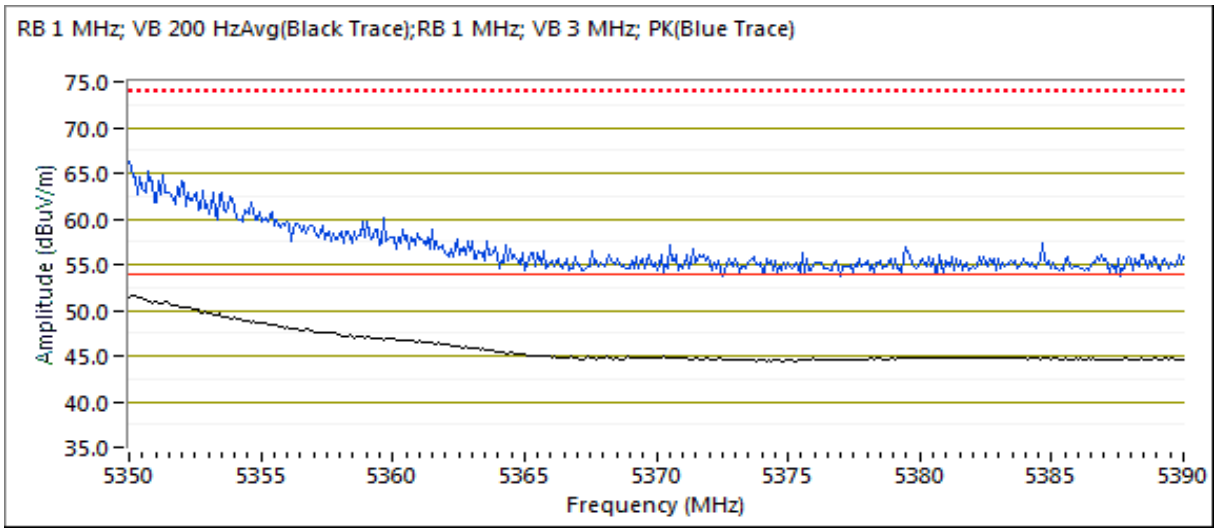
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 64 - 5320MHz at 17dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5351.600	66.1	V	74.0	-7.9	PK	309	1.2	POS; RB 1 MHz; VB: 3 MHz
5350.010	53.1	V	54.0	-0.9	AVG	309	1.2	Note 3; RB 1 MHz; VB: 200 Hz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

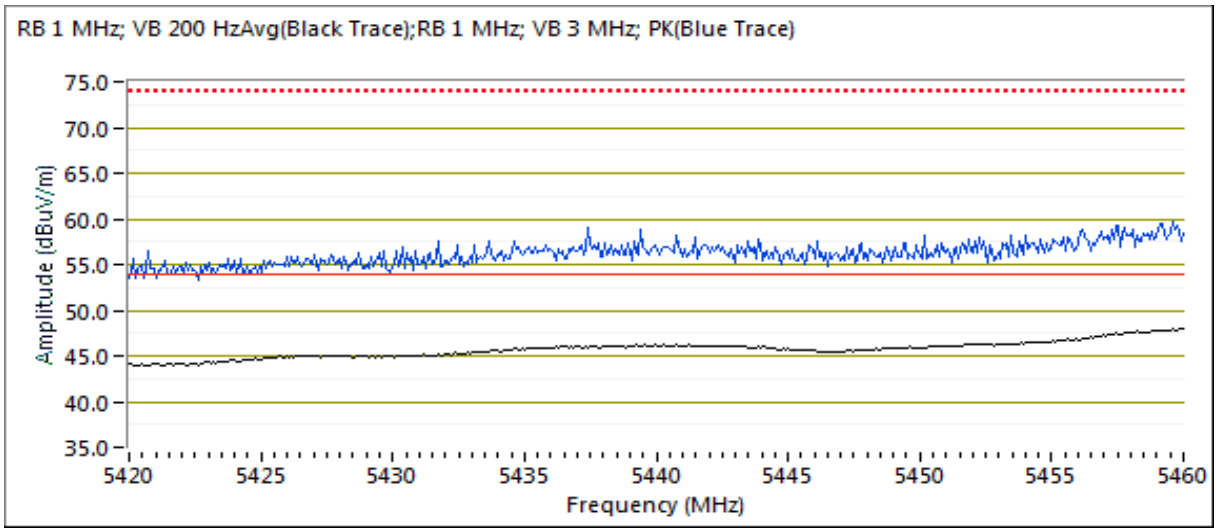
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 100 - 5500MHz at 16.5dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

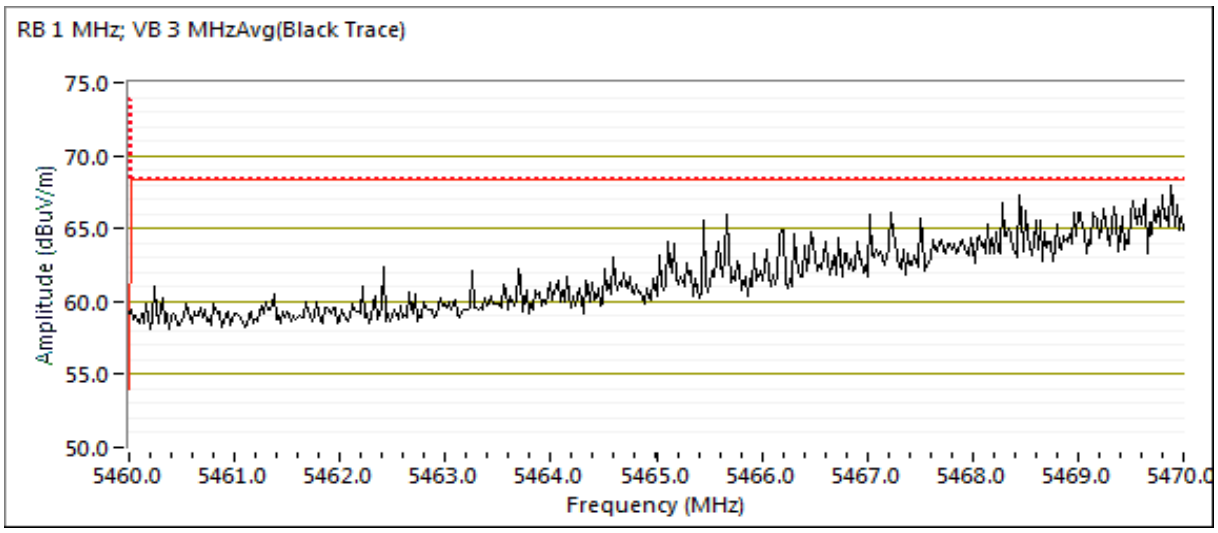
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.600	59.9	V	74.0	-14.1	PK	318	1.2	POS; RB 1 MHz; VB: 3 MHz
5459.750	47.5	V	54.0	-6.5	AVG	318	1.2	Note 3; RB 1 MHz; VB: 200 Hz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5468.900	67.8	V	68.3	-0.5	PK	318	1.2	POS; RB 1 MHz; VB: 3 MHz



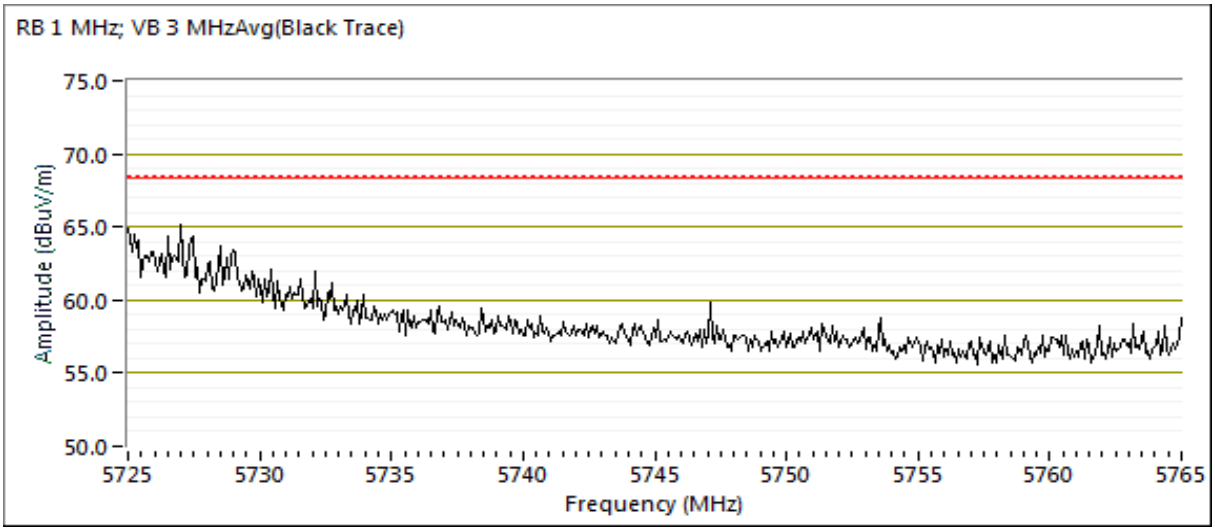
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz AT 16.5dBm
Tx Chain: 4Tx
Mode: ax20

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

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	
5725.800	67.3	V	68.3	-1.0	PK	318	1.6	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

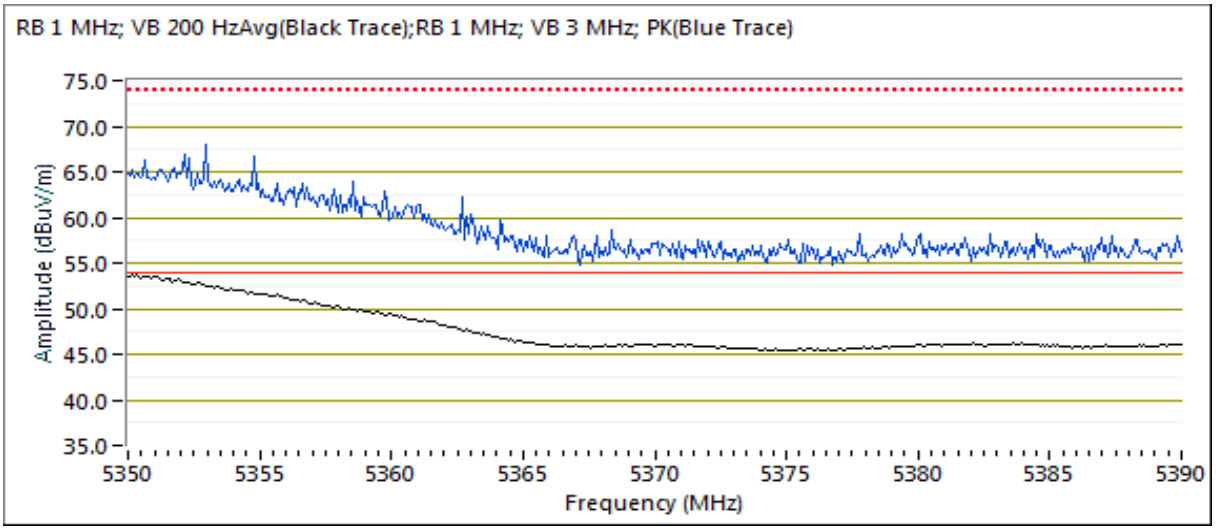
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 62 - 5310MHz at 14dBm
Tx Chain: 4Tx
Mode: ax40

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5350.240	64.7	V	74.0	-9.3	PK	306	1.9	POS; RB 1 MHz; VB: 3 MHz
5350.180	52.7	V	54.0	-1.3	VAVG	306	1.9	Note 3; RB 1 MHz; VB: 200 Hz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

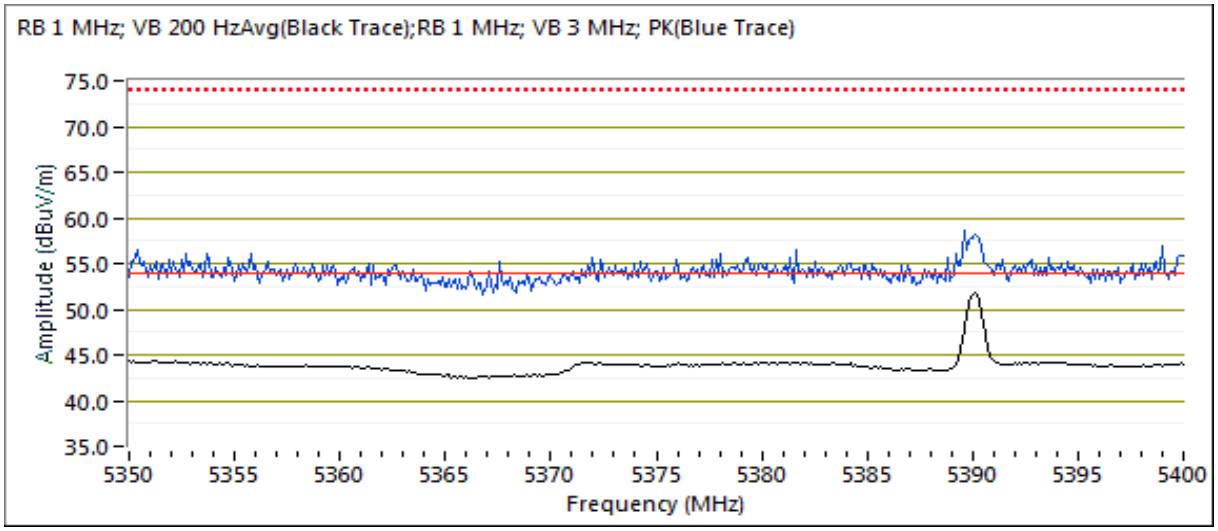
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 54 - 5270MHz at 12dBm
Tx Chain: 4Tx
Mode: ax40

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5390.020	51.8	V	54.0	-2.2	VAVG	320	1.8	Note 3; RB 1 MHz; VB: 200 Hz
5389.460	59.9	V	74.0	-14.1	PK	320	1.8	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

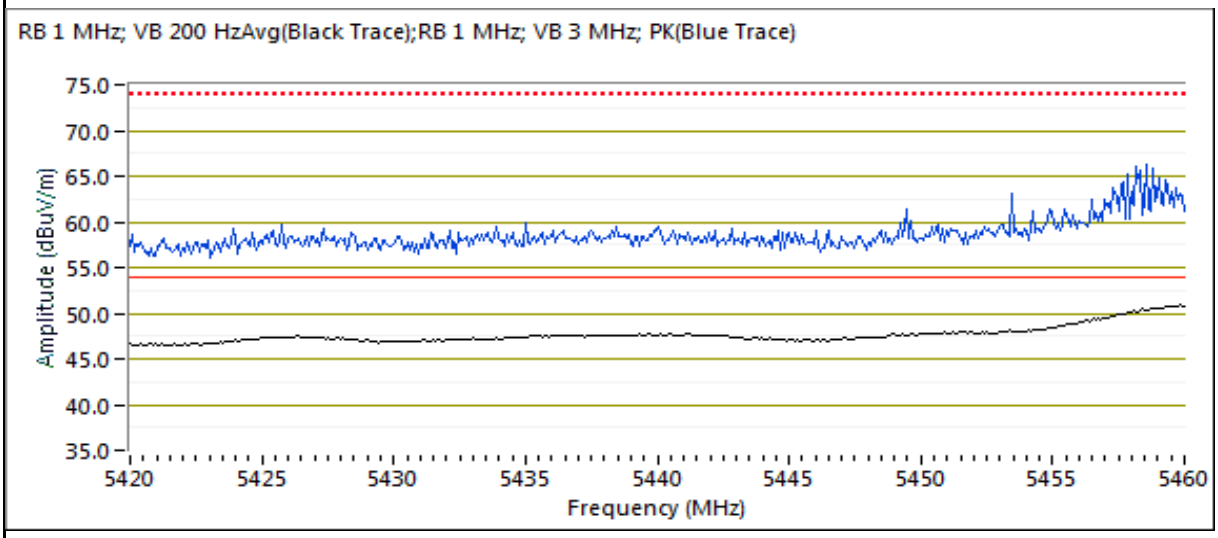
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 102 - 5510MHz at 15dBm
Tx Chain: 4Tx
Mode: ax40

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

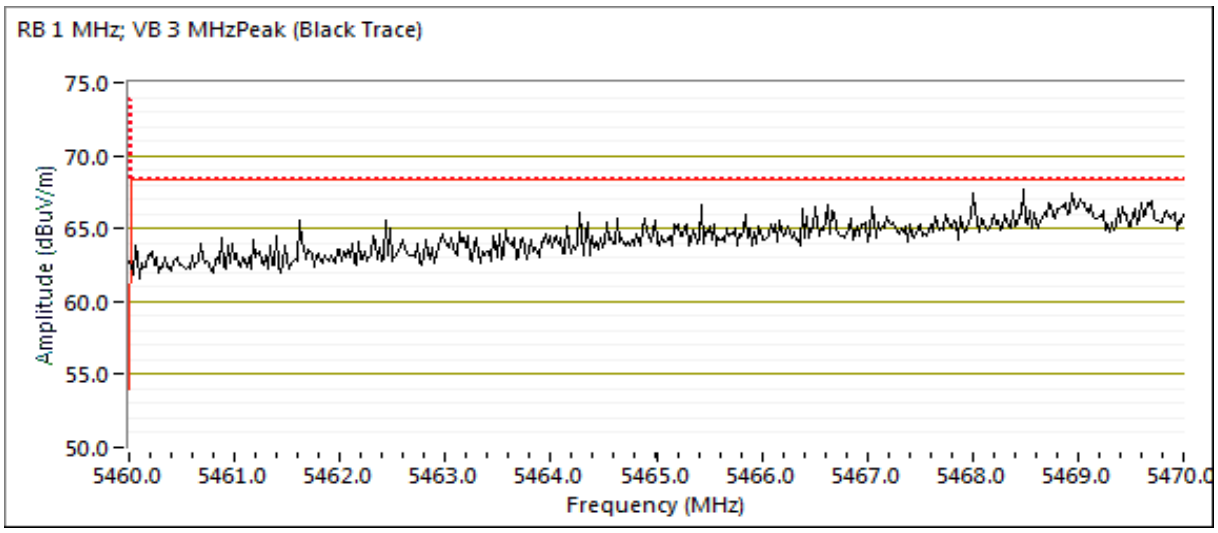
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.920	50.4	V	54.0	-3.6	AVG	321	1.8	Note 3; RB 1 MHz; VB: 200 Hz
5458.580	65.8	V	74.0	-7.5	PK	321	1.8	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5469.660	66.7	V	68.3	-1.6	PK	321	1.8	POS; RB 1 MHz; VB: 3 MHz

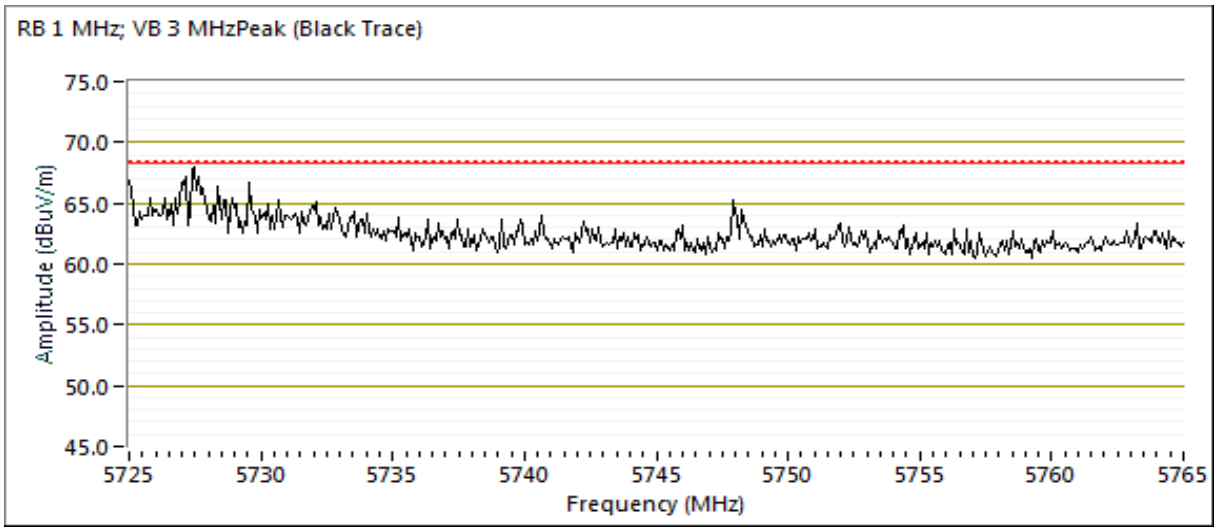


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 134 - 5670MHz at 16dBm
Tx Chain: 4Tx
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	
5731.410	67.0	V	68.3	-1.3	PK	321	2.5	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

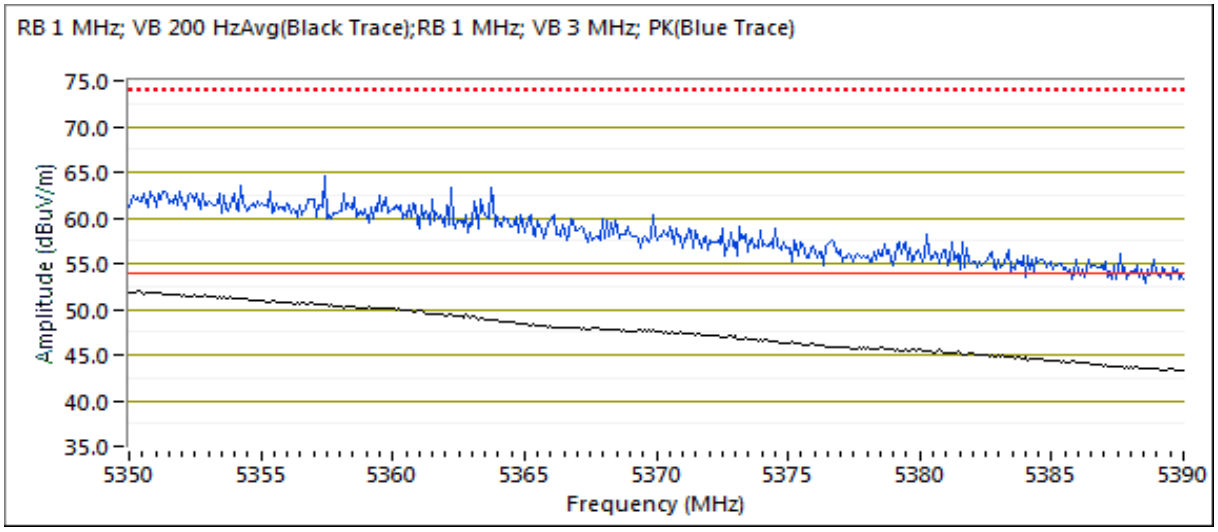
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 58 - 5290MHz at 10dBm
Tx Chain: 4Tx
Mode: ax80

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5350 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	
5353.290	64.1	V	74.0	-9.9	PK	323	1.7	POS; RB 1 MHz; VB: 3 MHz
5350.310	51.7	V	54.0	-2.3	AVG	323	1.7	Note 3; RB 1 MHz; VB: 200 Hz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/9/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

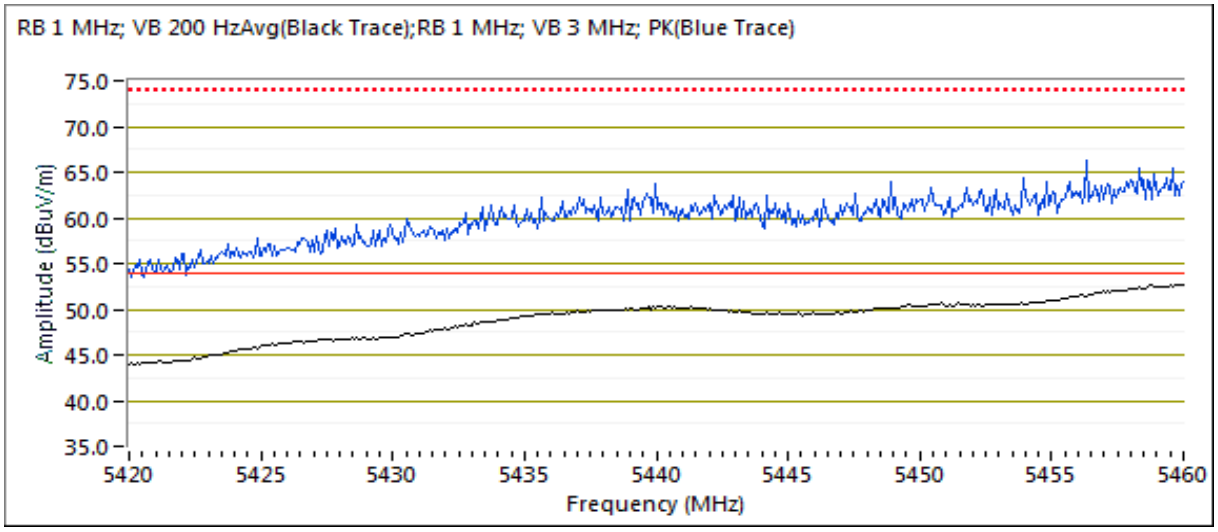
Config. Used: 1
Config Change: none
EUT Voltage: PoE

Channel: 106 - 5530M at 14.5dBm
Tx Chain: 4Tx
Mode: ax80

Mode: BLE at 8 dBm
Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

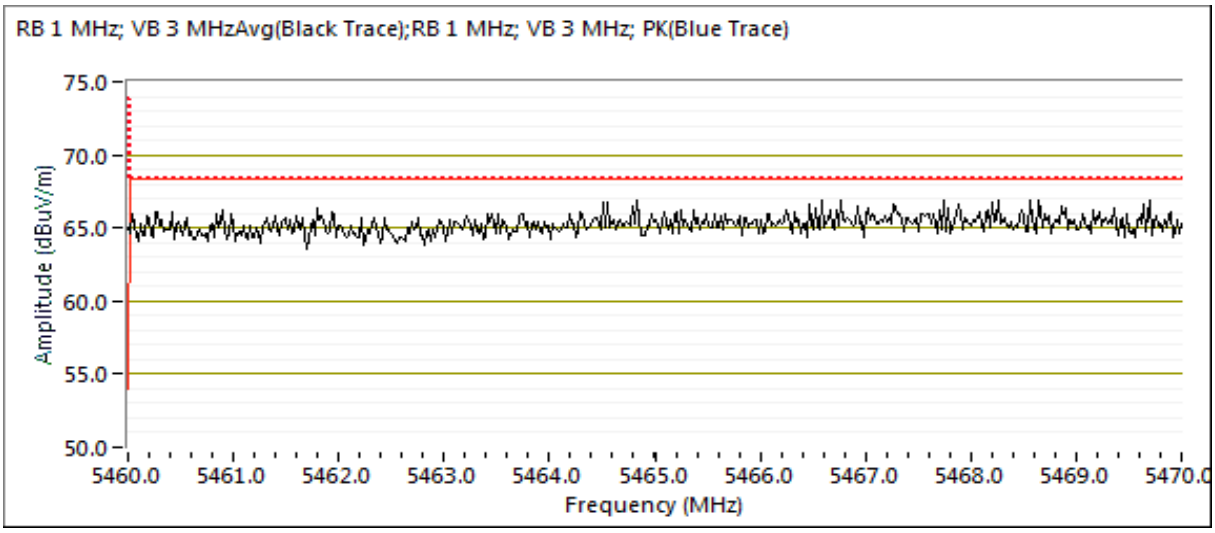
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5460.000	65.4	V	74.0	-8.6	PK	316	1.6	POS; RB 1 MHz; VB: 3 MHz
5459.750	52.7	V	54.0	-1.3	AVG	316	1.6	Note 3; RB 1 MHz; VB: 200 Hz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5466.530	68.0	V	68.3	-0.3	PK	316	1.6	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

RSS-247 and FCC 15.407 (UNII) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 23.6 °C
Rel. Humidity: 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.

Sample Notes

BLE Sample SN: CNG6K9V019 and Zigbee Sample SN: CNG6K9V00C
Driver: P2 WNC 0.4.3a
Antenna: AP-ANT-48 Wi-Fi and Integral BLE/ZigBee

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Summary of Results

Run #	Mode	Channel	Target Setting	Final Setting	Test Performed	Limit	Result / Margin
20MHz Bandwith Modes							
2	a	64 - 5320MHz	15.0	15.0	Restricted Band Edge at 5350 MHz	15.209	50.7 dBµV/m @ 5350.1 MHz (-3.3 dB)
3	a	100 - 5500MHz	15.0	13.5	Restricted Band Edge at 5460 MHz	15.209	44.8 dBµV/m @ 5459.0 MHz (-9.2 dB)
3	a	100 - 5500MHz	15.0	13.5	Band Edge 5460 - 5470 MHz	15E	64.7 dBµV/m @ 5461.6 MHz (-3.6 dB)
3	a	140 - 5700MHz	15.0	13.0	Band Edge 5725MHz	15E	66.9 dBµV/m @ 5725.6 MHz (-1.4 dB)
6	ax20	64 - 5320MHz	17.0	17.0	Restricted Band Edge at 5350 MHz	15.209	53.6 dBµV/m @ 5350.0 MHz (-0.4 dB)
7	ax20	100 - 5500MHz	17.0	16.0	Restricted Band Edge at 5460 MHz	15.209	47.6 dBµV/m @ 5459.9 MHz (-6.4 dB)
7	ax20	100 - 5500MHz	17.0	16.0	Band Edge 5460 - 5470 MHz	15E	67.5 dBµV/m @ 5470.0 MHz (-0.8 dB)
7	ax20	140 - 5700MHz	17.0	15.5	Band Edge 5725MHz	15E	68.1 dBµV/m @ 5725.5 MHz (-0.2 dB)
40MHz Bandwith Modes							
10	ax40	62 - 5310MHz	17.5	13.0	Restricted Band Edge at 5350 MHz	15.209	51.7 dBµV/m @ 5350.1 MHz (-2.3 dB)
10	ax40	54 - 5270MHz	17.5	17.5	Restricted Band Edge at 5350 MHz	15.209	51.2 dBµV/m @ 5351.0 MHz (-2.8 dB)
11	ax40	102 - 5510MHz	17.5	16.0	Restricted Band Edge at 5460 MHz	15.209	51.4 dBµV/m @ 5459.75 MHz (-2.9 dB)
11	ax40	102 - 5510MHz	17.5	14.5	Band Edge 5460 - 5470 MHz	15E	49.6 dBµV/m @ 5459.75 MHz (-4.4 dB)
11	ax40	110 - 5550MHz	17.5	17.5	Band Edge 5460 - 5470 MHz	15E	51.0 dBµV/m @ 5430.0 MHz (-3.0 dB)
11	ax40	110 - 5550MHz	17.5	17.5	Band Edge 5460 - 5470 MHz	15E	56.2 dBµV/m @ 5465.3 MHz (-12.1 dB)
11	ax40	134 - 5670MHz	17.5	15.0	Band Edge 5725MHz	15E	52.3 dBµV/m @ 5149.751 MHz (-1.7 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Target Setting	Final Setting	Test Performed	Limit	Result / Margin
80MHz Bandwith Modes							
14	ax80	58 - 5290MHz	17.5	13.0	Restricted Band Edge at 5350 MHz	15.209	53.5 dBµV/m @5350.31 MHz (-0.5 dB)
15		106 - 5530MHz	17.5	14.5	Restricted Band Edge at 5460 MHz		53.4 dBµV/m @5459.75 MHz (-0.6 dB)
		106 - 5530MHz	17.5	14.5	Band Edge 5460 - 5470 MHz	15E	66.4 dBµV/m @5469.74 MHz (-1.9 dB)

Procedure Comments:

Measurements performed in accordance with FCC KDB 789033

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11a	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185

Measurement Specific Notes:

Note 1:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m). The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector). Per KDB 789033 2) c) (i), compliance can be demonstrated by meeting the average and peak limits of 15.209, as an alternative.
Note 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:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

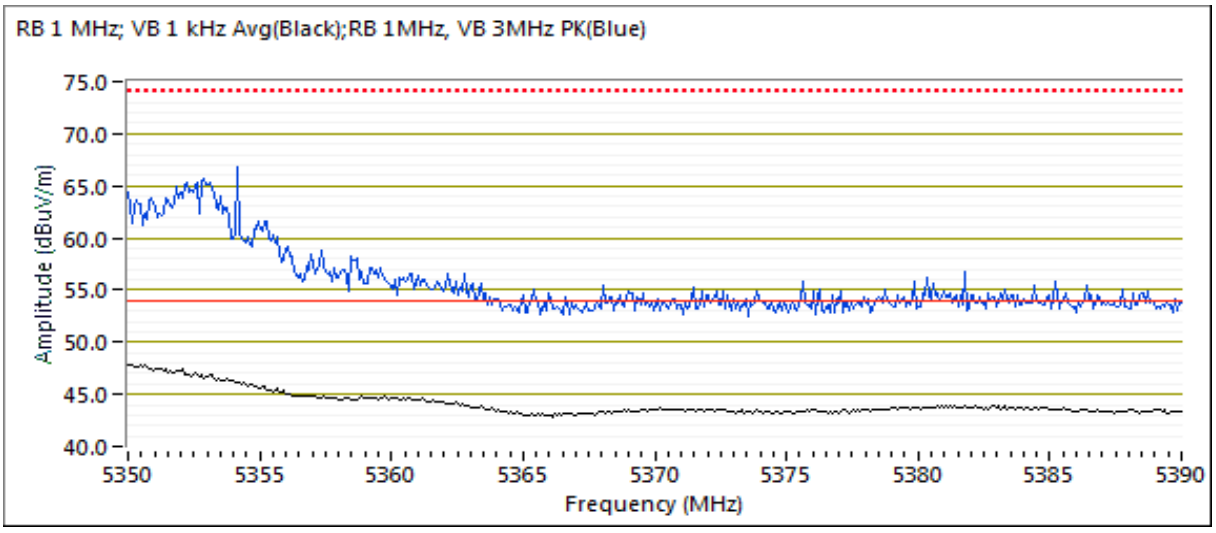
Run #2: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 64 - 5320MHz at 15dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

5350 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	
5350.080	50.7	H	54.0	-3.3	VAVG	7	1.7	Note 3; RB 1 MHz; VB: 1 kHz
5352.320	66.5	H	74.0	-7.5	PK	7	1.7	POS; RB 1 MHz; VB: 3 MHz
5350.190	50.5	V	54.0	-3.5	VAVG	360	1.3	Note 3; RB 1 MHz; VB: 1 kHz
5351.520	66.7	V	74.0	-7.3	PK	360	1.3	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

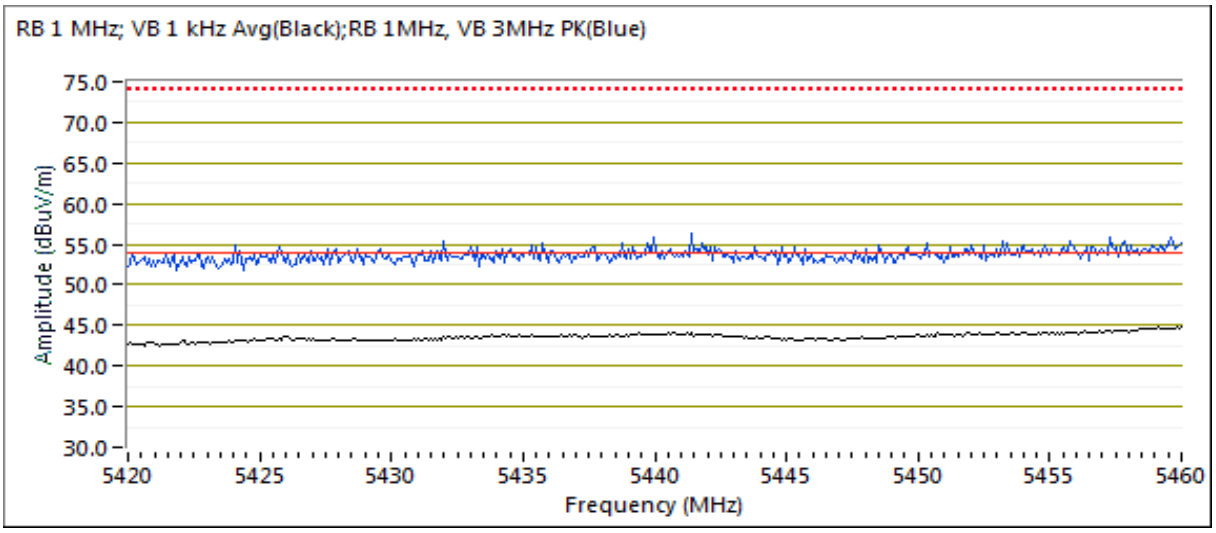
Run #3: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz at 13.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

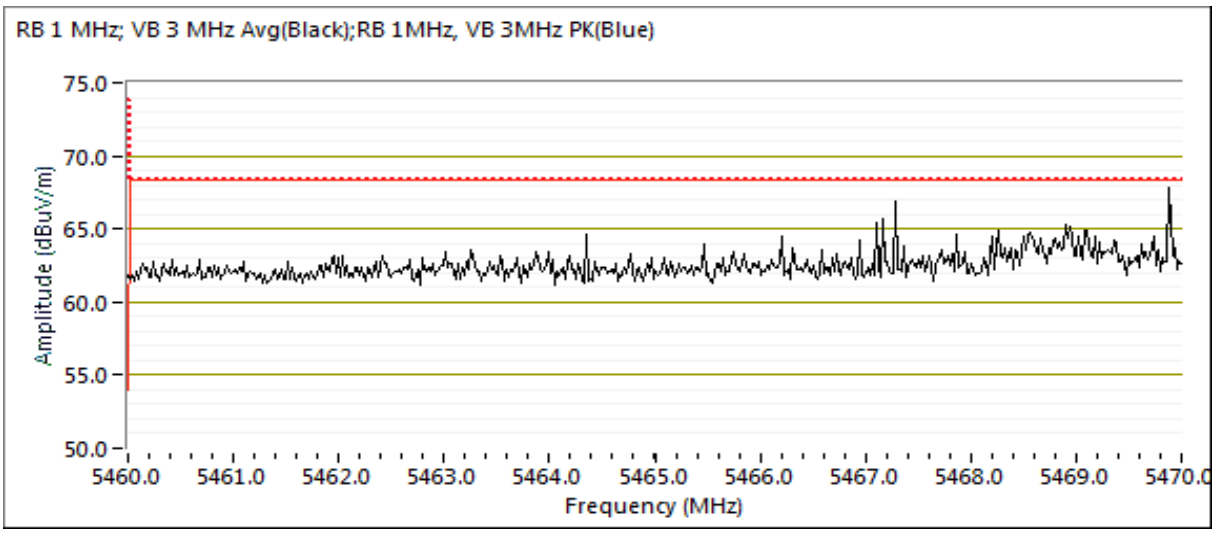
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5459.360	44.5	H	54.0	-9.5	AVG	360	2.0	Note 3; RB 1 MHz; VB: 1 kHz
5459.840	56.3	H	74.0	-17.7	PK	360	2.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5461.600	64.7	H	68.3	-3.6	PK	0	2.1	POS; RB 1 MHz; VB: 3 MHz
5466.370	64.0	V	68.3	-4.3	PK	0	2.2	POS; RB 1 MHz; VB: 3 MHz

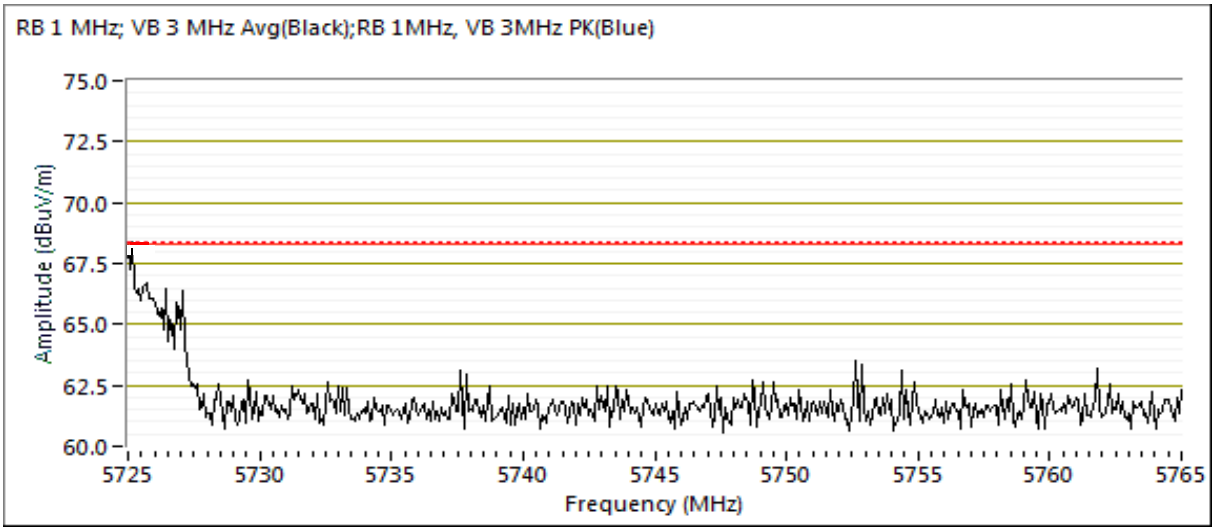


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz@13 Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: a Ch.Freq.: 2440 MHz

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	
5725.560	66.9	H	68.3	-1.4	PK	342	1.9	POS; RB 1 MHz; VB: 3 MHz
5730.210	66.0	V	68.3	-3.3	PK	356	1.8	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

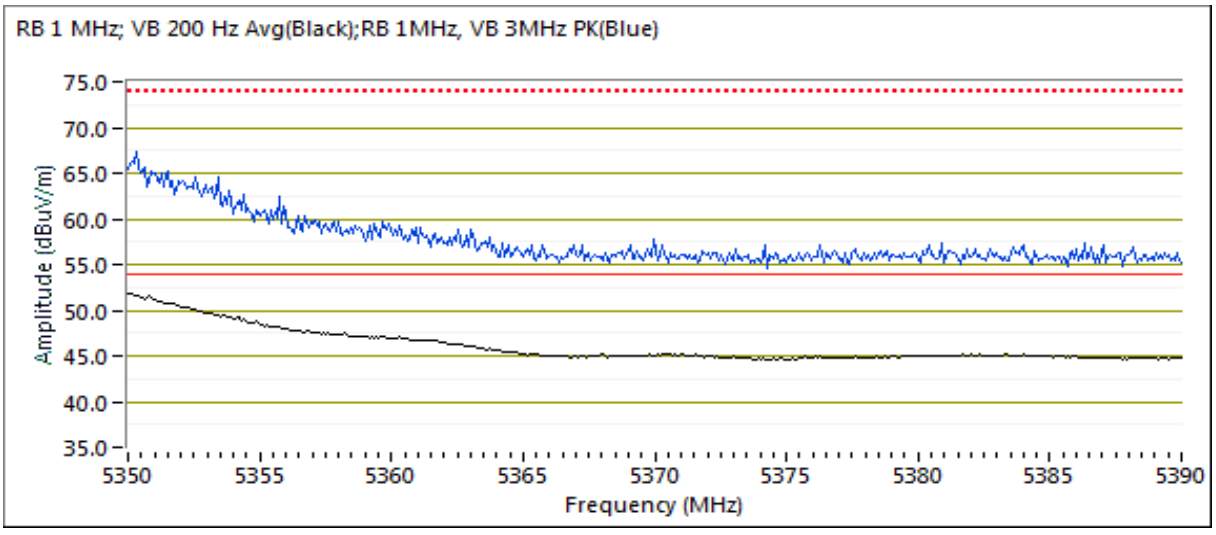
Run #6: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 64 - 5320MHz @ 17.0dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

5350 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	
5350.040	53.6	H	54.0	-0.4	Avg	360	1.2	Note 3; RB 1 MHz; VB: 200 Hz
5352.400	68.0	H	74.0	-6.0	PK	360	1.2	POS; RB 1 MHz; VB: 3 MHz
5350.000	53.5	V	54.0	-0.5	Avg	12	1.7	Note 3; RB 1 MHz; VB: 200 Hz
5351.280	66.9	V	74.0	-7.1	PK	12	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

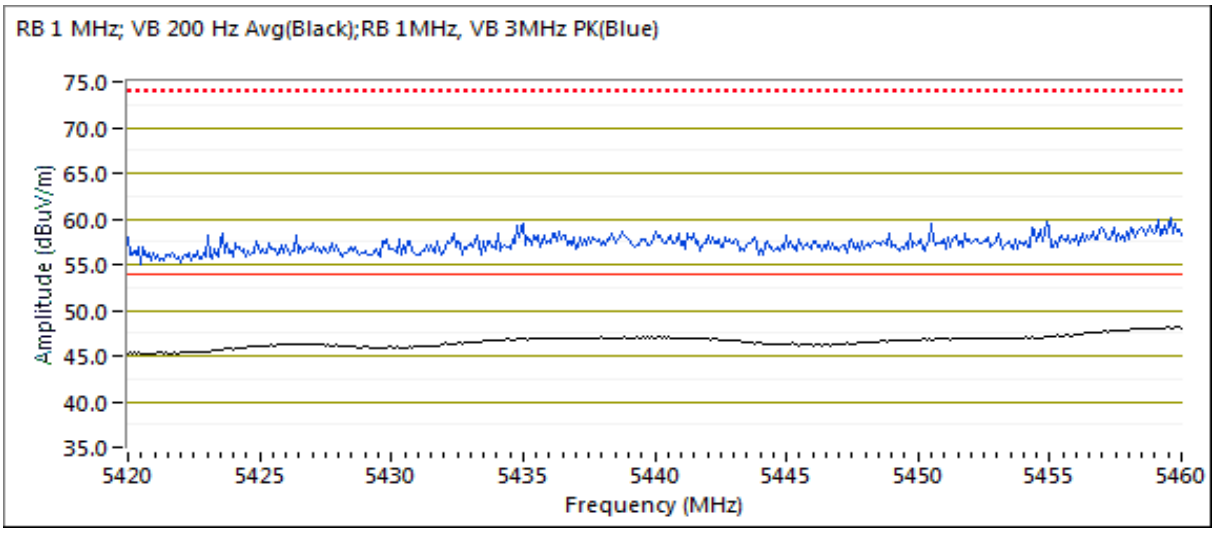
Run #7: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 100 - 5500MHz @ 16.0dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

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	
5459.880	47.6	V	54.0	-6.4	Avg	11	1.6	Note 3; RB 1 MHz; VB: 200 Hz
5451.400	64.2	V	74.0	-9.8	PK	11	1.6	POS; RB 1 MHz; VB: 3 MHz

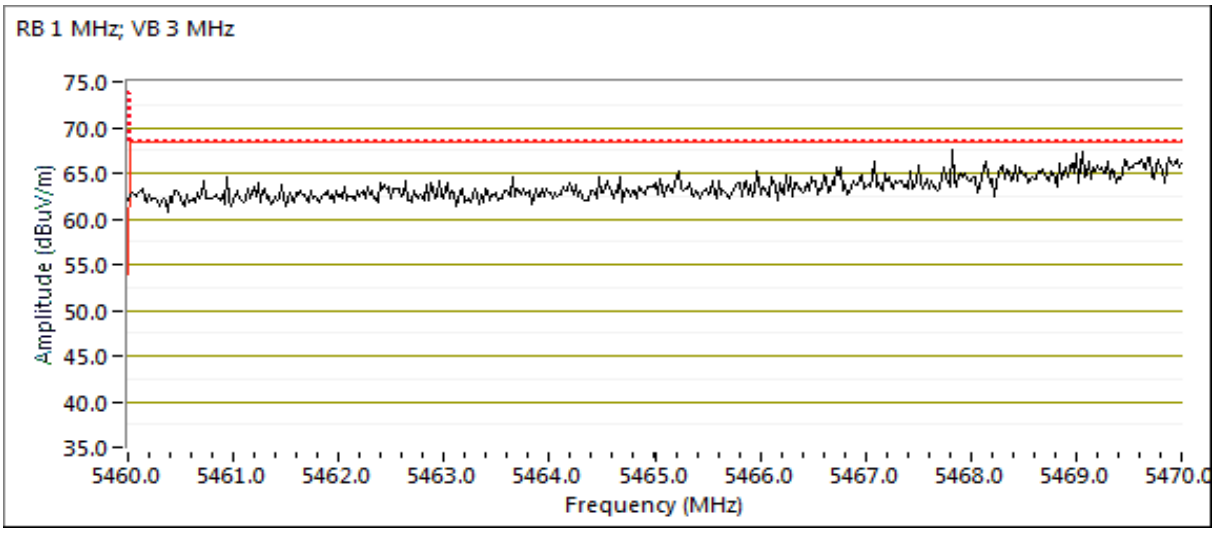


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 100 - 5500MHz @ 16.0dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

5470 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	
5469.980	67.5	V	68.3	-0.8	PK	11	1.6	POS; RB 1 MHz; VB: 3 MHz

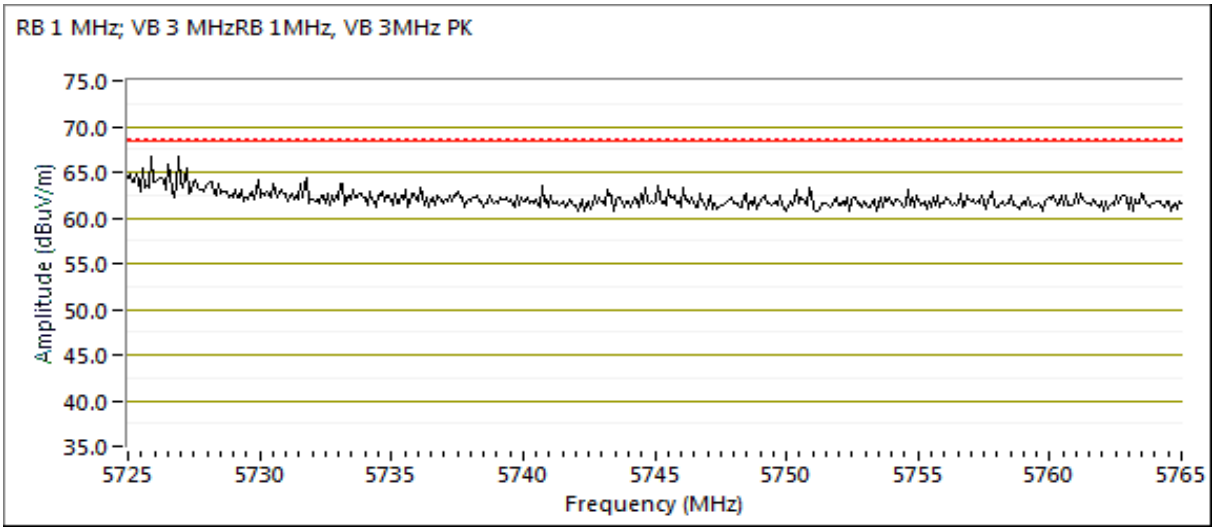


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 140 - 5700MHz @ 15.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax20 Ch.Freq.: 2440 MHz

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	
5725.450	68.1	V	68.3	-0.2	PK	0	2.2	POS; RB 1 MHz; VB: 3 MHz
5729.450	64.9	H	68.3	-3.4	PK	7	1.7	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 62 - 5310MHz @ 13.0dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

5350 MHz Band Edge Signal Radiated Field Strength

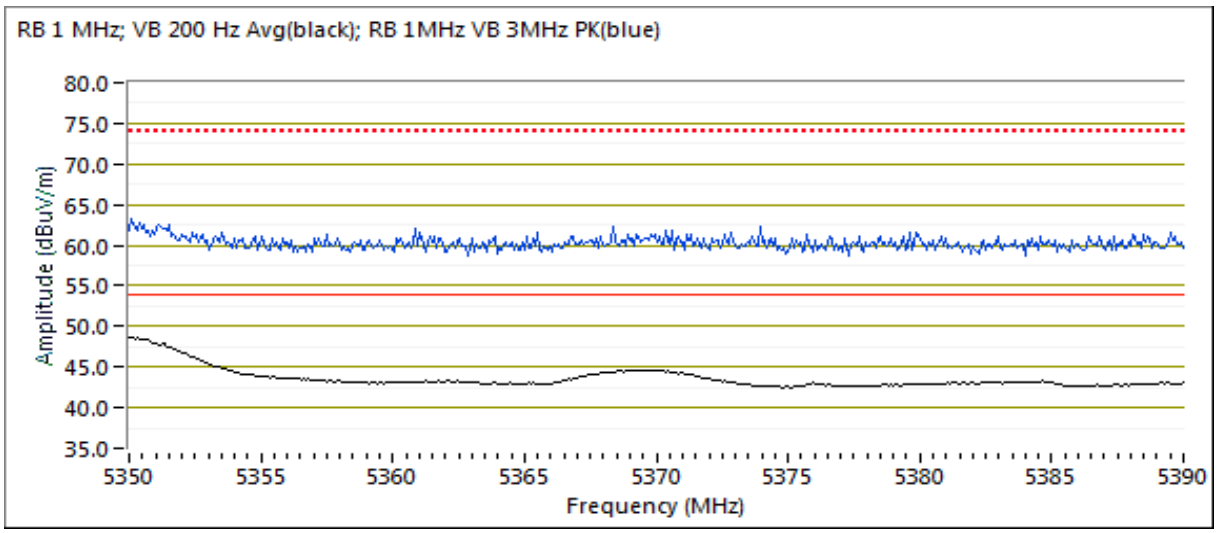
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5350.060	51.7	H	54.0	-2.3	Avg	359	1.6	Note 3; RB 1 MHz; VB: 200 Hz
5350.300	64.4	H	74.0	-9.6	PK	359	1.6	POS; RB 1 MHz; VB: 3 MHz

Date of Test: 11/1/2018 Config. Used: 1
Test Engineer: Rafael Varelas Config Change: none
Test Location: Fremont Chamber #4 EUT Voltage: PoE & 120V/60Hz

Channel: 54 - 5270MHz @ 17.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

5350 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	
5350.950	51.2	H	54.0	-2.8	Avg	181	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5350.300	64.3	H	74.0	-9.7	PK	181	1.0	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

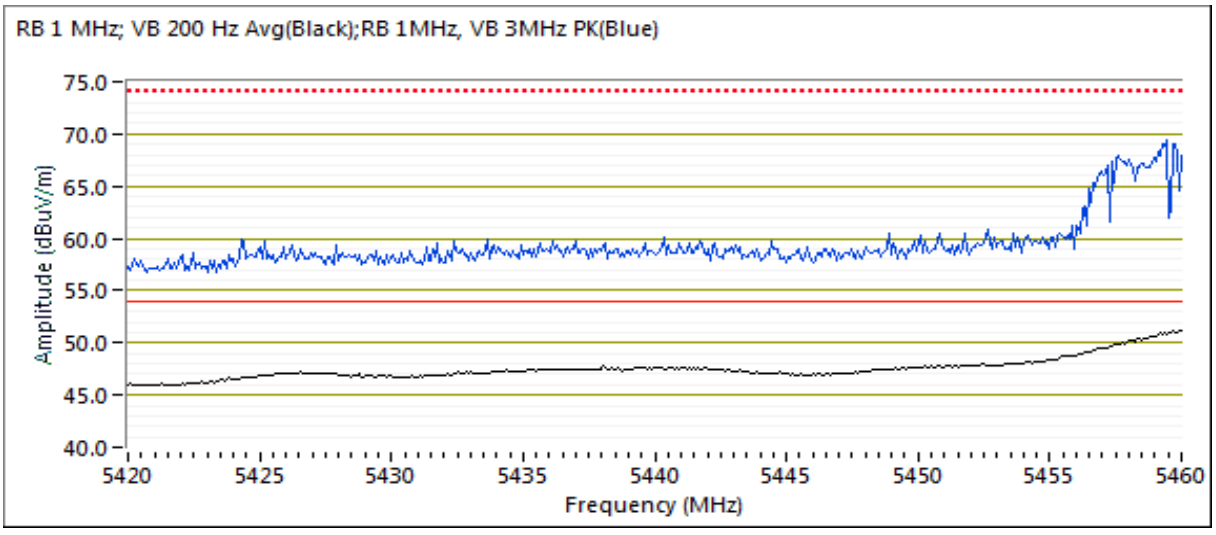
Run #11: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/8/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 102 - 5510MHz @ 14.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

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	
5459.120	61.9	V	74.0	-12.1	PK	359	1.0	POS; RB 1 MHz; VB: 3 MHz
5459.950	49.3	V	54.0	-4.7	VAVG	360	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5459.750	49.6	H	54.0	-4.4	VAVG	350	1.6	Note 3; RB 1 MHz; VB: 200 Hz
5459.840	62.3	H	74.0	-11.7	PK	350	1.6	POS; RB 1 MHz; VB: 3 MHz

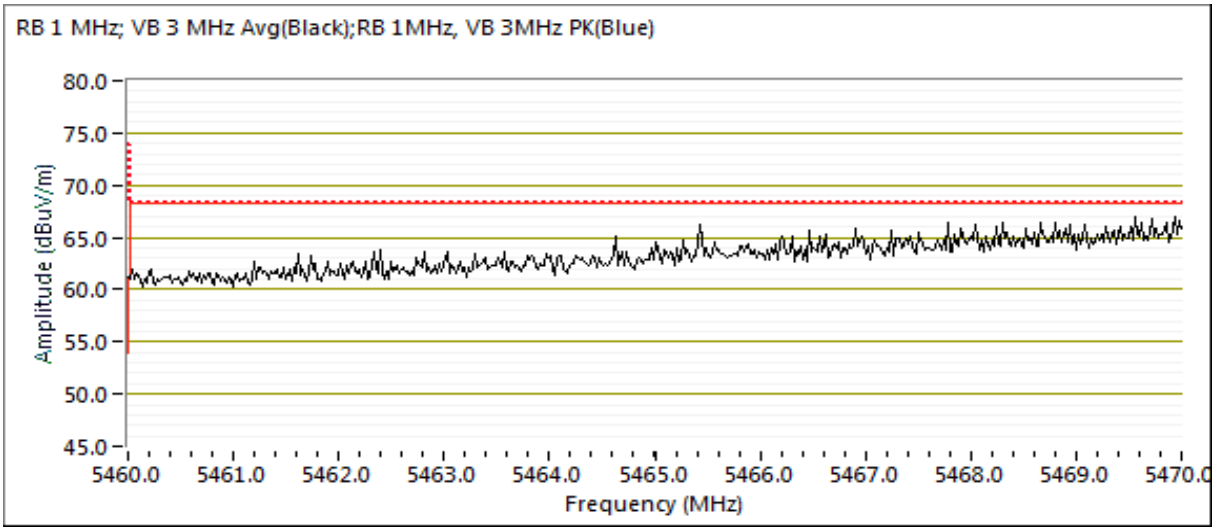


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 102 - 5510MHz @ 14.5dBm
Mode: BLE at 8 dBm
Tx Chain: 4Tx
Mode: ax40
Ch.Freq.: 2440 MHz

5470 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	
5469.460	67.2	V	68.3	-1.1	PK	345	1.8	POS; RB 1 MHz; VB: 3 MHz
5465.710	67.5	H	68.3	-0.8	PK	350	1.6	POS; RB 1 MHz; VB: 3 MHz



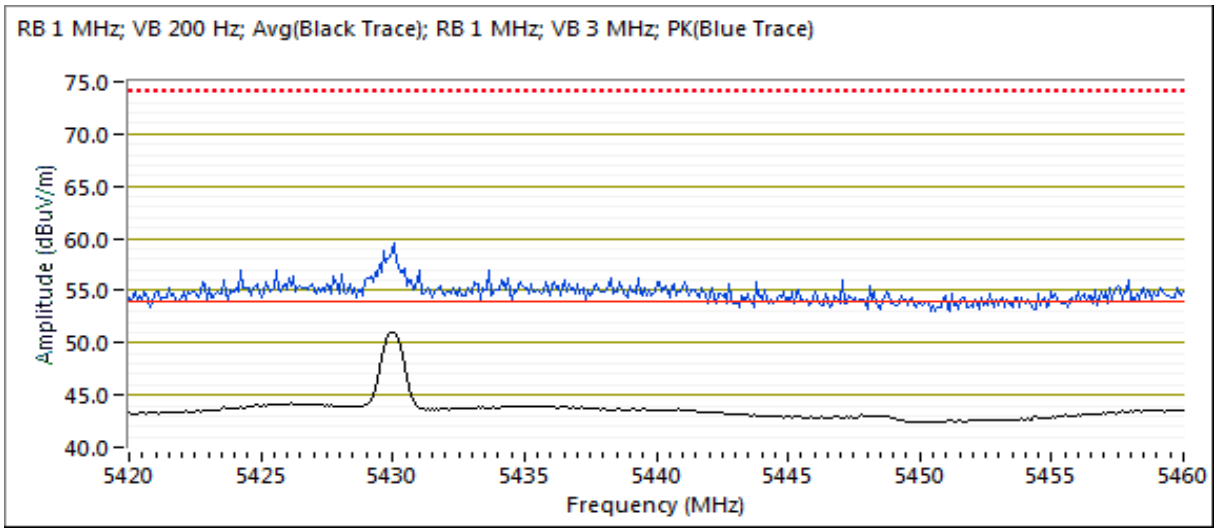
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/8/2018 Config. Used: 1
Test Engineer: M. Birgani Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 110 - 5550MHz @ 17.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

5460 MHz Band Edge Signal Radiated Field Strength

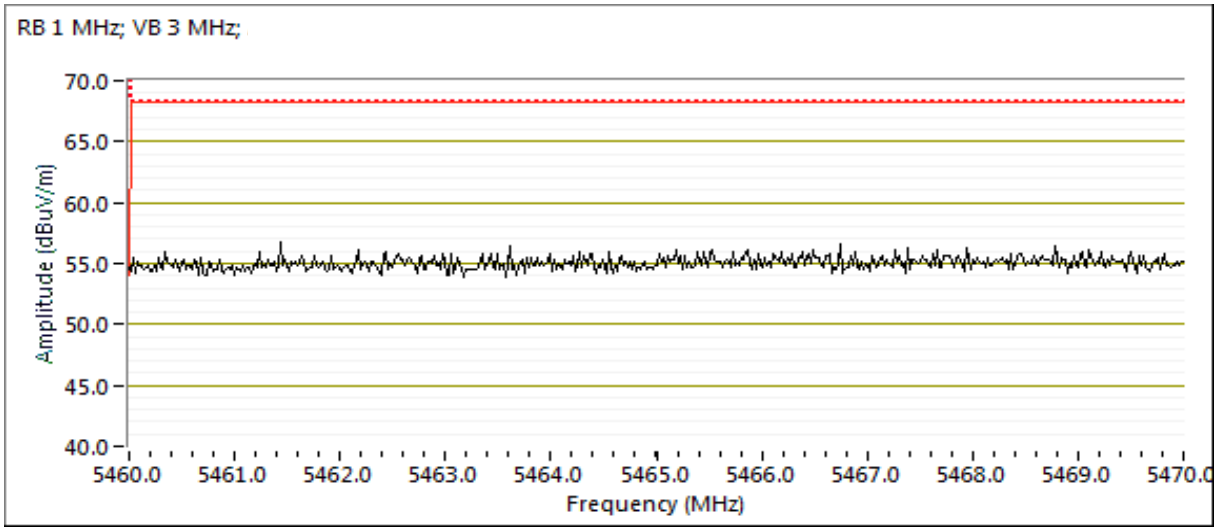
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5430.010	51.0	H	54.0	-3.0	VAVG	48	1.0	Note 3; RB 1 MHz; VB: 200 Hz
5429.790	59.2	H	74.0	-14.8	PK	48	1.0	RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

5470 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	
5465.250	56.2	H	68.3	-12.1	PK	48	1.0	POS; RB 1 MHz; VB: 3 MHz



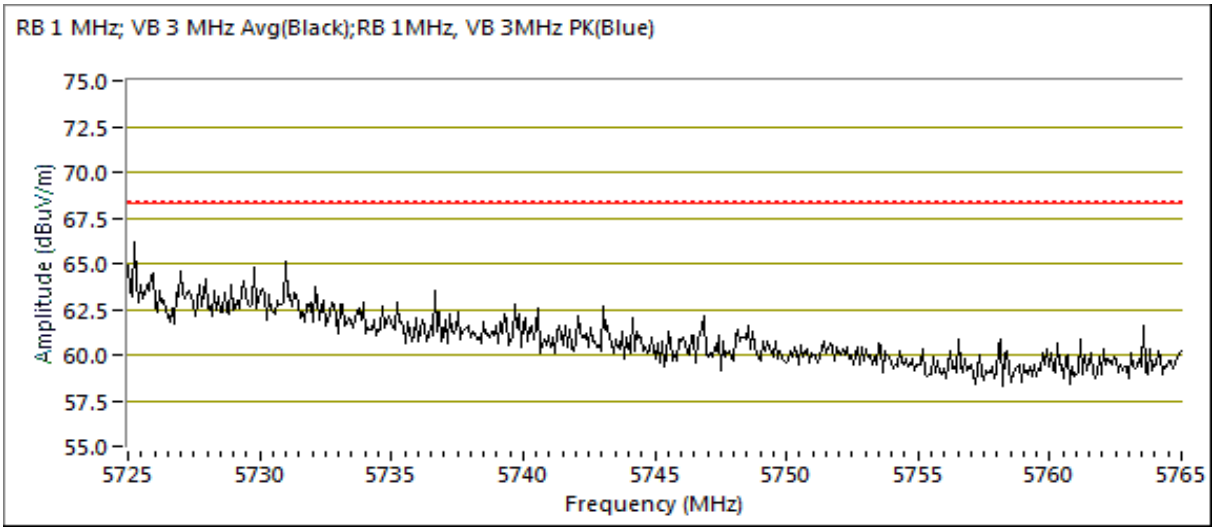
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Date of Test: 10/5/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: None
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 134 - 5670MHz at 15dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax40 Ch.Freq.: 2440 MHz

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	
5739.990	65.5	H	68.3	-2.8	PK	8	2.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

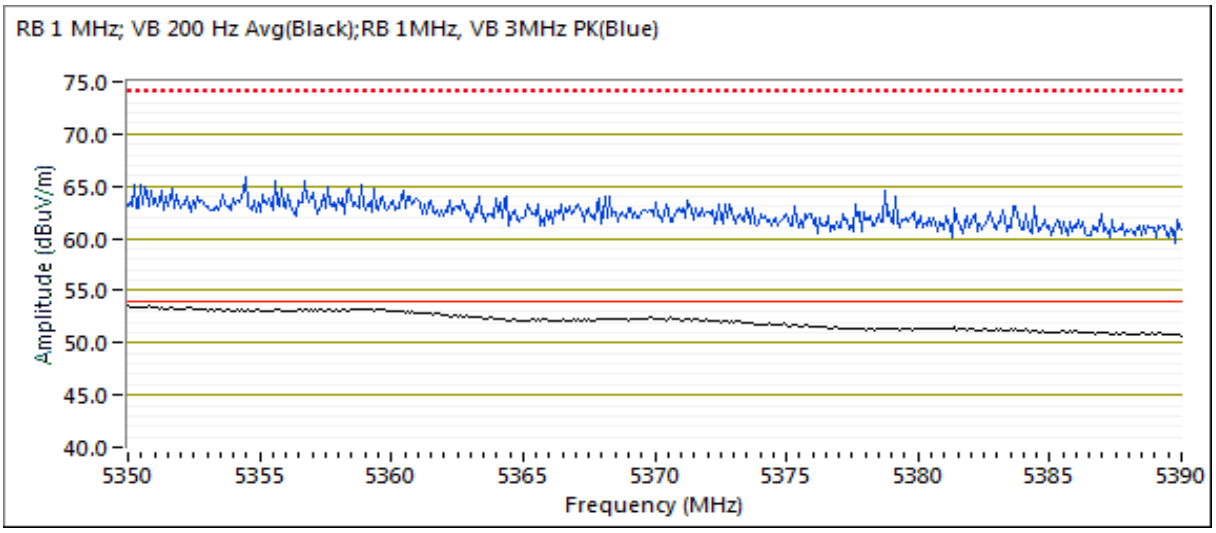
Run #14: Radiated Bandedge Measurements, 5250-5350MHz

Date of Test: 10/8/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 58 - 5290MHz at 13dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

5350 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	
5350.310	53.5	H	54.0	-0.5	AVG	359	2.2	Note 3; RB 1 MHz; VB: 200 Hz
5351.280	65.7	H	74.0	-8.3	PK	359	2.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

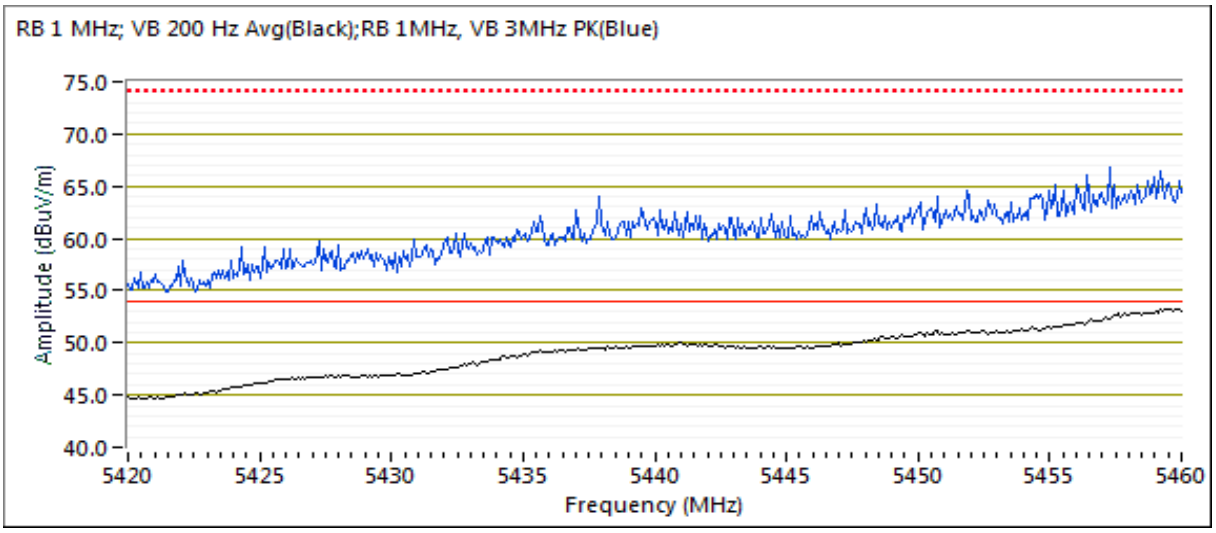
Run #15: Radiated Bandedge Measurements, 5470-5725MHz

Date of Test: 10/8/2018 Config. Used: 1
Test Engineer: Roy Zheng Config Change: none
Test Location: Fremont Chamber #5 EUT Voltage: PoE & 120V/60Hz

Channel: 106 - 5530MHz at 14.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

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	
5459.750	53.4	H	54.0	-0.6	AVG	349	1.7	Note 3; RB 1 MHz; VB: 200 Hz
5457.270	66.9	H	74.0	-7.1	PK	0	1.8	POS; RB 1 MHz; VB: 3 MHz

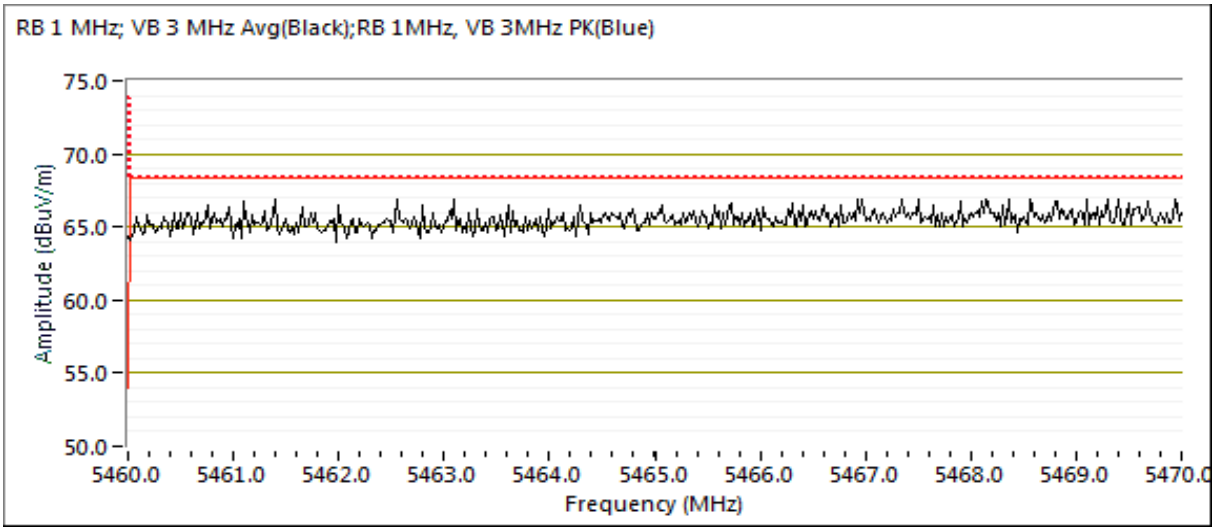


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Channel: 106 - 5530MHz at 14.5dBm Mode: BLE at 8 dBm
Tx Chain: 4Tx Mode: ax80 Ch.Freq.: 2440 MHz

5470 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	
5469.740	66.4	H	68.3	-1.9	PK	0	1.8	POS; RB 1 MHz; VB: 3 MHz
5464.250	66.3	V	68.3	-2.0	PK	360	1.2	POS; RB 1 MHz; VB: 3 MHz



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	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: 38-42 %

Summary of Results

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Scans on worst case mode above with BLE or ZigBee also active.							
2	ax40 / b, ZigBee	6, 110 Wi-Fi 18 - ZB	17.5 / 20 / 8	17.5 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	50.3 dBµV/m @ 9747.9 MHz (-3.7 dB)
	ax40 / b, ZigBee	6, 54 Wi-Fi 26 - ZigBee	17.5 / 20 / 8	17.5 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	51.0 dBµV/m @ 9748.0 MHz (-3.0 dB)
	ax40 / b, BLE	6, 110 Wi-Fi 17 - BLE	17.5 / 20 / 8	17.5 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.4 dBµV/m @ 4875.0 MHz (-11.6 dB)
	ax40 / b, BLE	6, 54 Wi-Fi 39 - BLE	17.5 / 20 / 8	17.5 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.7 dBµV/m @ 9741.7 MHz (-10.3 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Scans on "lowest" and "center" channel in all five OFDM modes to determine the worst case mode. ax80+80 mode performed in Run 1.							
4	a / g, BLE	1, 60 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.5 dBµV/m @ 21177.77 MHz (-11.5 dB)
	ax20, BLE	1, 60 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	66.3 dBµV/m @ 21204.37 MHz (-7.7 dB)
	ax40, BLE	6, 54 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.5 dBµV/m @ 21083.2 MHz (-9.5 dB)
	ac80 / b	1, 58 Wi-Fi 17 - BLE	20	19	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	52.9 dBµV/m @ 5432.1 MHz (-1.1 dB)
Measurements on low and high channels in worst-case OFDM mode.							
5	ac80 / b	1, 52 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.6 dBµV/m @ 21027.8 MHz (-6.4 dB)
	ac80 / b	11, 64 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.7 dBµV/m @ 21288.2 MHz (-6.3 dB)
Scans on "highest" and "center" channel in all five OFDM modes to determine the worst case mode. Ax80+80 mode performed in Run 1.							
6	a / g, BLE	11, 116 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	58.1 dBµV/m @ 16738.5 MHz (-10.2 dB)
	ax20, BLE	11, 116 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	60.5 dBµV/m @ 16736.87 MHz (-7.8 dB)
	ax40, BLE	9, 110 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.3 dBµV/m @ 5349.1 MHz (-9.7 dB)
	ac80 / b, BLE	11, 122 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	49.2 dBµV/m @ 9847.9 MHz (-4.8 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Measurements on low and high channels in worst-case OFDM mode.							
7	ac80 / b, BLE	1, 116 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	36.9 dBµV/m @ 1875 MHz (-17.1 dB)
	ac80 / b, BLE	11, 138 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	46.9 dBµV/m @ 9847.96 MHz (-7.1 dB)
10	BLE	37	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	40.9 dBµV/m @ 4803.850 MHz (-13.1 dB)
		17	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	44.3 dBµV/m @ 4879.97 MHz (-9.7 dB)
		39	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	41.3 dBµV/m @ 5999.99 MHz (-12.7 dB)
11	ZigBee	11	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	31.4 dBµV/m @ 2893.6 MHz (-22.6 dB)
		18	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	44.1 dBµV/m @ 7321.5 MHz (-9.9 dB)
		26	8	8	Radiated Emissions, 1 - 25 GHz	FCC 15.209/ 15.247	40.9 dBµV/m @ 9474.5 MHz (-13.1 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
ZigBee	250 kb/s	0.43	Yes	0.863	3.7	7.4	1159
BLE	1 Mb/s	0.72	Yes	0.586	1.4	2.9	1706
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495
11a	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185

Sample Notes

BLE Sample SN: CNG6K9W00R and Zigbee Sample SN: CNG6K9W01F
Driver: P2 WNC 0.4.4

Antenna: Integral. 4 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio (5GHz radio may also use 2 antennas but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simutaneously). Tests performed with 4 antennas at the 2 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≥3MHz, peak detector).
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.

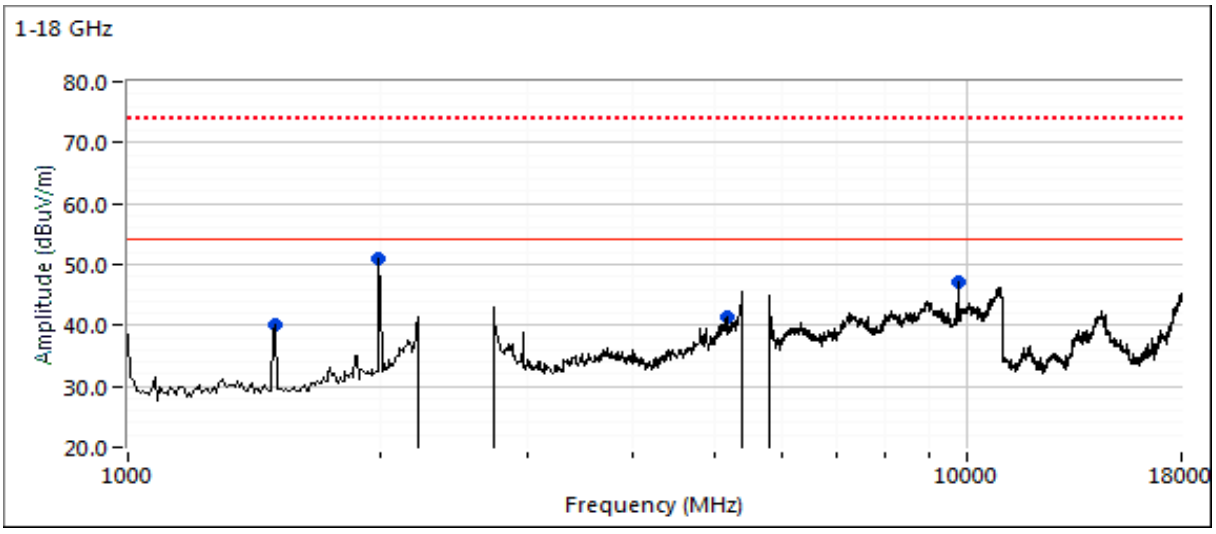
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

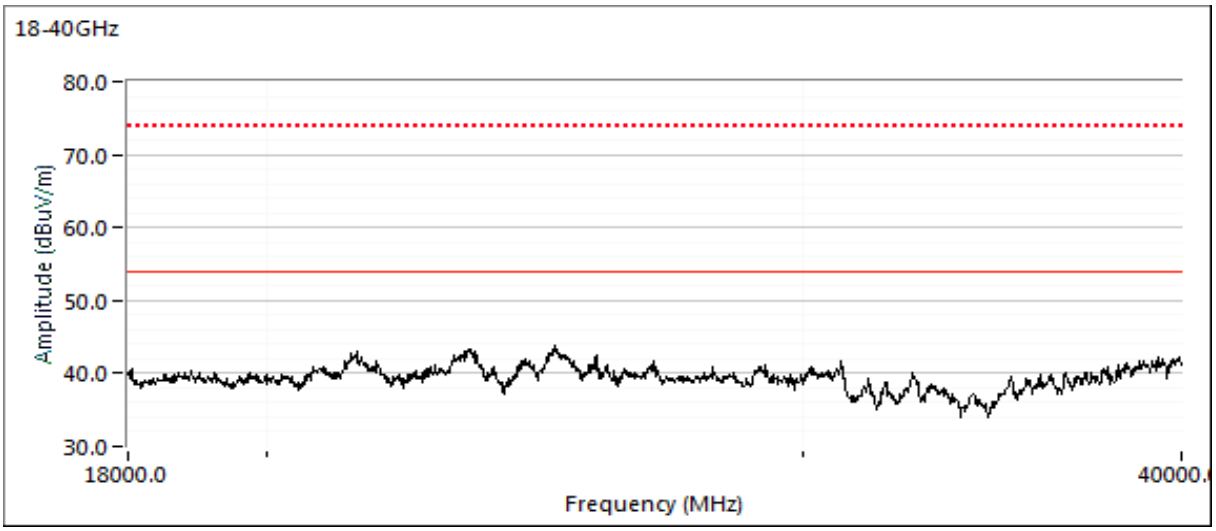
Date of Test: 12/26/18 Config. Used: 1
Test Engineer: Roy Zheng / R. Varelas Config Change: None
Test Location: FT Chamber #5 EUT Voltage: PoE

Run #2b: Center Channel
Channel: 6, 110 Wi-Fi, 18 - ZigBee Mode: ax40, b
Tx Chain: 4 Data Rate: MCS0, 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	40.0	H	60.0	-20.0	Peak	223	1.9	Note 5
2000.000	50.8	H	60.0	-9.2	Peak	223	1.9	Note 5
9747.930	50.3	H	54.0	-3.7	Vavg	194	1.0	Note 4;VB 3 kHz;Peak VAVG 100
9747.840	53.9	H	74.0	-20.1	PK	194	1.0	RB 1 MHz;VB 3 MHz;Peak
5180.060	36.0	V	54.0	-18.0	Vavg	130	1.1	Note 4;VB 300 Hz;Peak VAVG 100
5178.260	48.4	V	74.0	-25.6	PK	130	1.1	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

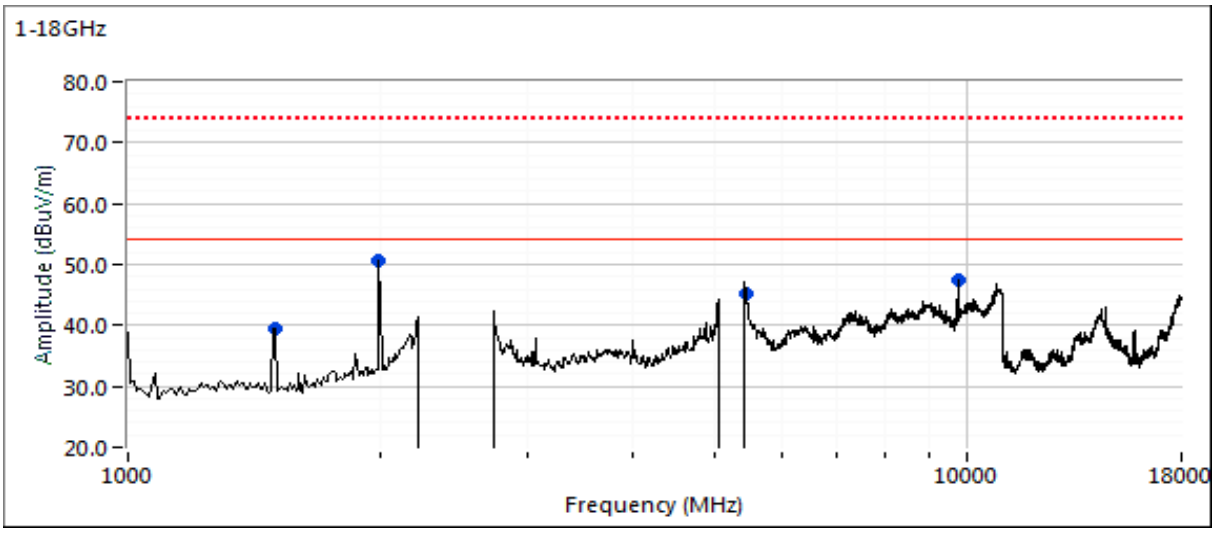


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

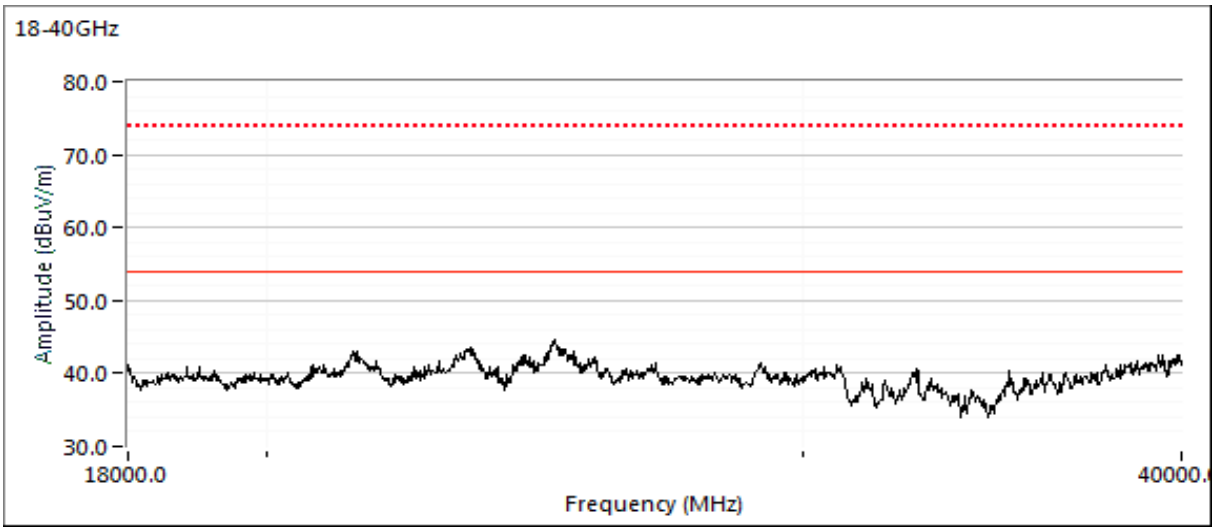
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2c: Center Channel
Channel: 6, 54 Wi-Fi, 26 - ZigBee
Tx Chain: 4
Mode: ax40, b
Data Rate: MCS0, 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	39.6	V	60.0	-20.4	Peak	155	1.0	Note 5
2000.000	50.7	H	60.0	-9.3	Peak	217	1.9	Note 5
9747.990	51.0	H	54.0	-3.0	Vavg	199	1.0	RB 1 MHz;VB 3 kHz;Peak VAVG 100
9747.890	54.7	H	74.0	-19.3	PK	199	1.0	RB 1 MHz;VB 3 MHz;Peak
5465.980	39.0	V	54.0	-15.0	Vavg	133	1.0	RB 1 MHz;VB 300 Hz;Peak VAVG 100
5465.730	51.3	V	74.0	-22.7	PK	133	1.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

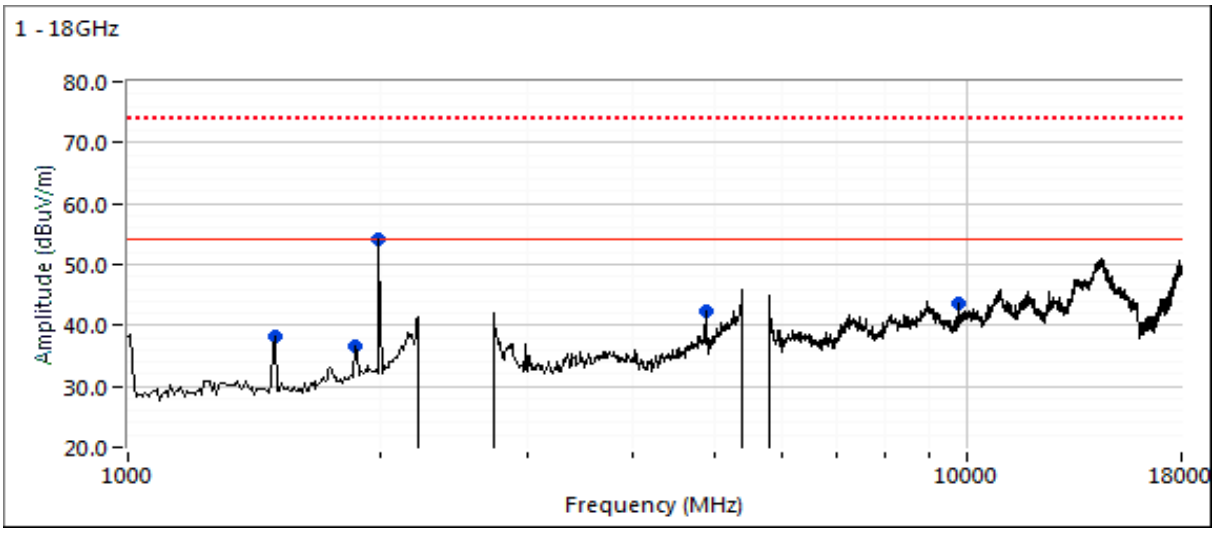


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

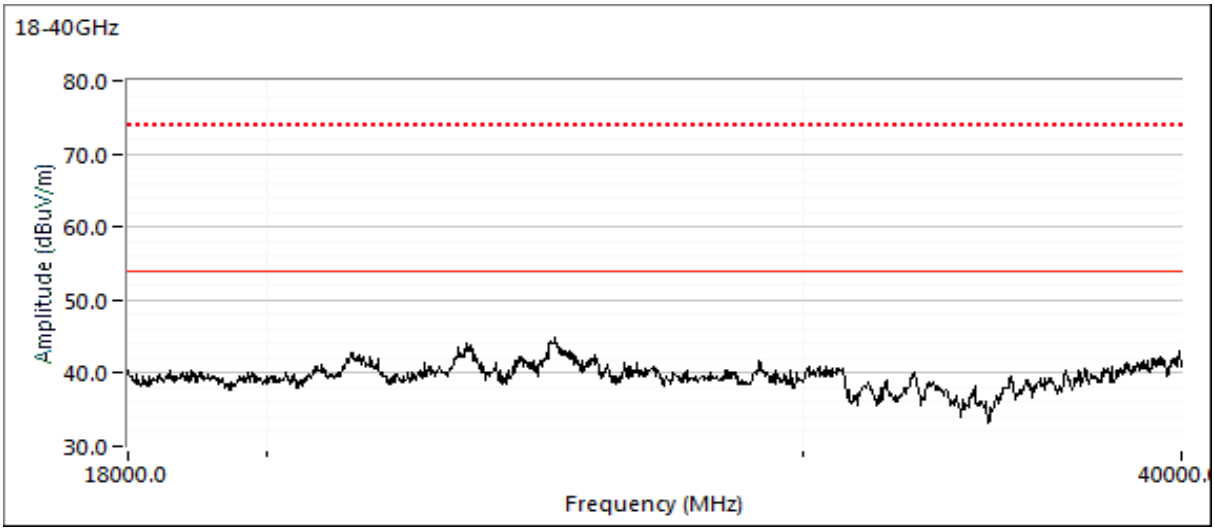
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2e: Center Channel
Channel: 6, 110 Wi-Fi, 17 - BLE
Tx Chain: 4
Mode: ax40, b
Data Rate: MCS0, 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	38.2	H	60.0	-21.8	Peak	222	1.9	Note 5
2000.000	54.2	H	60.0	-5.8	Peak	76	1.6	Note 5
1866.670	36.7	V	54.0	-17.3	Peak	216	1.0	Note 5
4875.000	42.4	H	54.0	-11.6	Peak	243	1.6	Peak reading with average limit
9741.670	41.2	H	54.0	-12.8	Vavg	199	1.0	RB 1 MHz;VB 3 kHz;Peak VAVG 100
9741.890	43.6	H	74.0	-30.4	PK	199	1.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

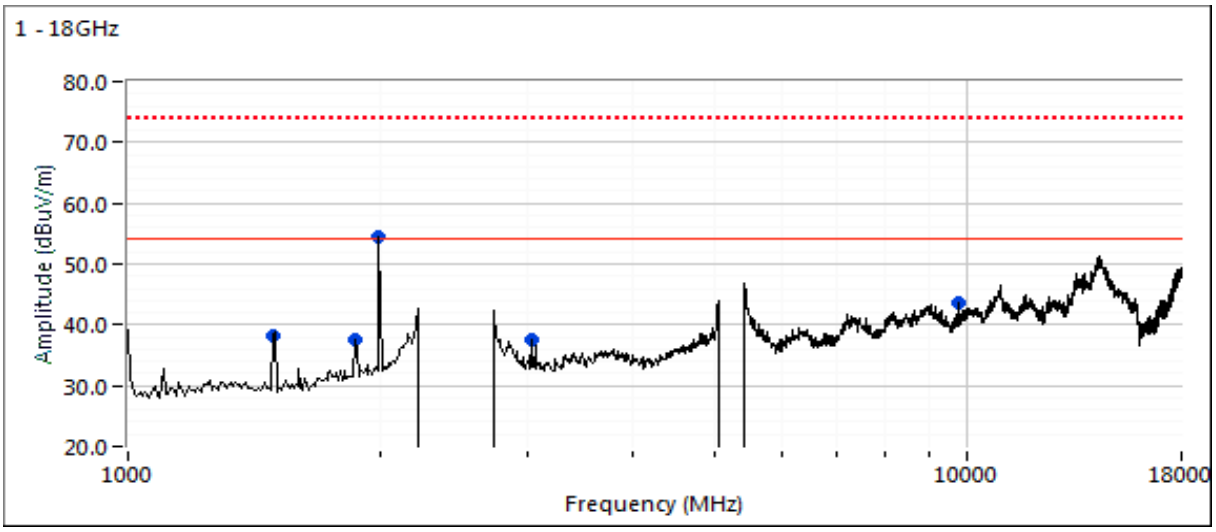


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

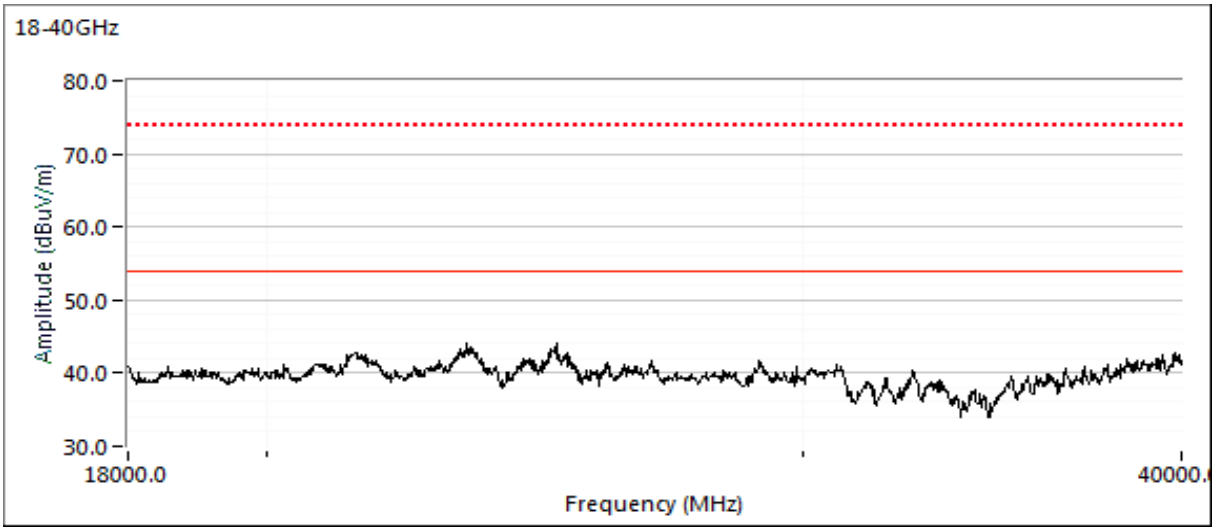
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2f: Center Channel
Channel: 6, 54 Wi-Fi, 39 - BLE
Tx Chain: 4
Mode: ax40, b
Data Rate: MCS0, 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	38.2	H	60.0	-21.8	Peak	224	1.9	Note 5
1866.670	37.6	H	60.0	-22.4	Peak	131	1.0	Note 5
2000.000	54.4	H	60.0	-5.6	Peak	74	1.6	Note 5
3025.000	37.6	H	60.0	-22.4	Peak	131	1.0	Note 5
9741.670	43.7	V	54.0	-10.3	Peak	34	1.0	Peak reading with average limit



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

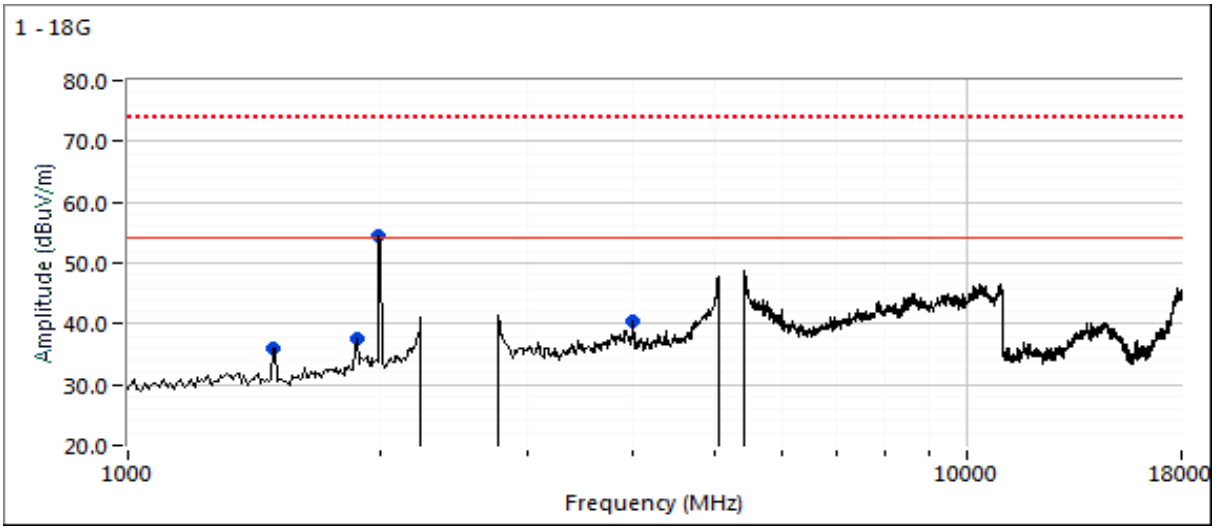
Run #4, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250-5350 MHz Band

Date of Test: 10/25/2018 Config. Used: Internal
Test Engineer: Roy Zheng Config Change: none
Test Location: Chamber 5 EUT Voltage: PoE

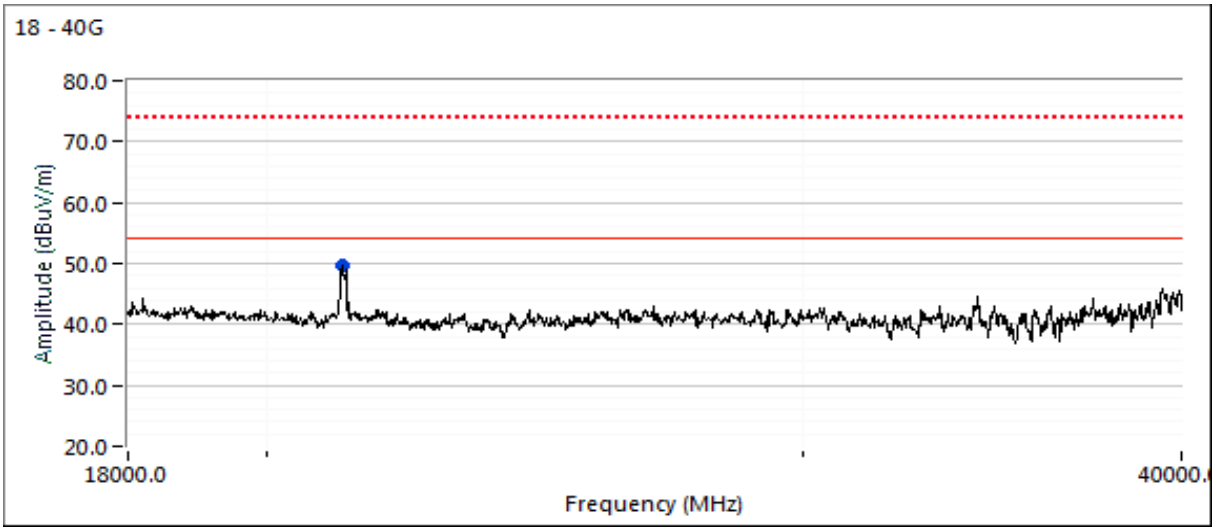
Run #4a: Center Channel

Channel: 1 & 60 Wi-Fi, 17 - BLE Mode: a, g
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	35.8	H	60.0	-24.2	Peak	126	1.0	Note 5
1875.000	37.5	H	60.0	-22.5	Peak	207	1.0	Note 5
2000.000	54.5	V	60.0	-5.5	Peak	80	1.0	Note 5
4000.030	36.5	V	54.0	-17.5	VAVG	212	1.5	RB 1 MHz;VB 1 KHz;Note 3
4000.010	46.9	V	74.0	-27.1	PK	212	1.5	RB 1 MHz;VB 3 MHz;Peak
21177.770	42.5	V	54.0	-11.5	VAVG	184	1.6	RB 1 MHz;VB 1 KHz;Note 3
21179.240	57.0	V	74.0	-17.0	PK	184	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



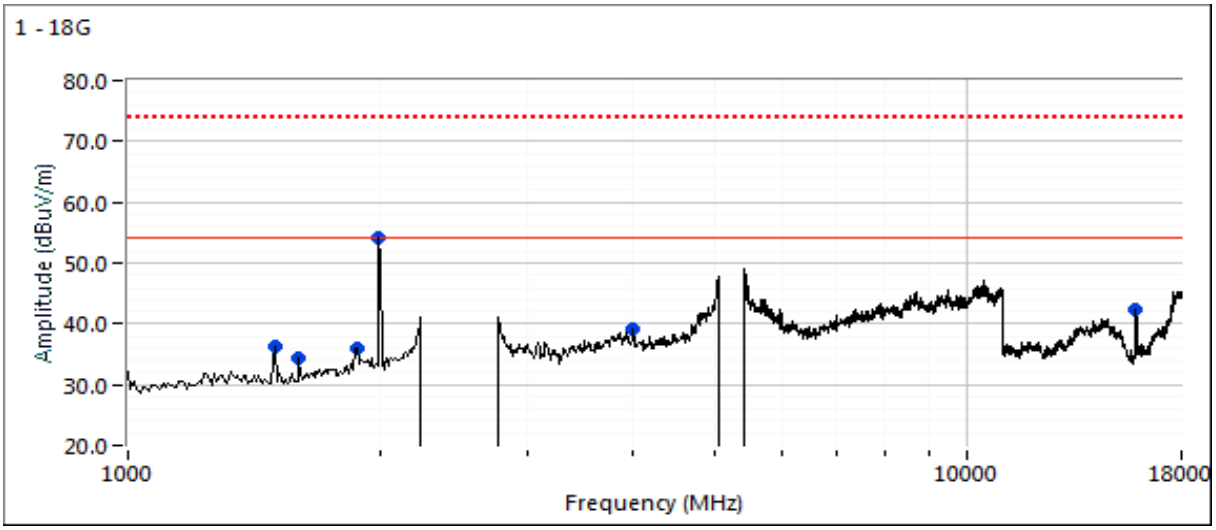
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

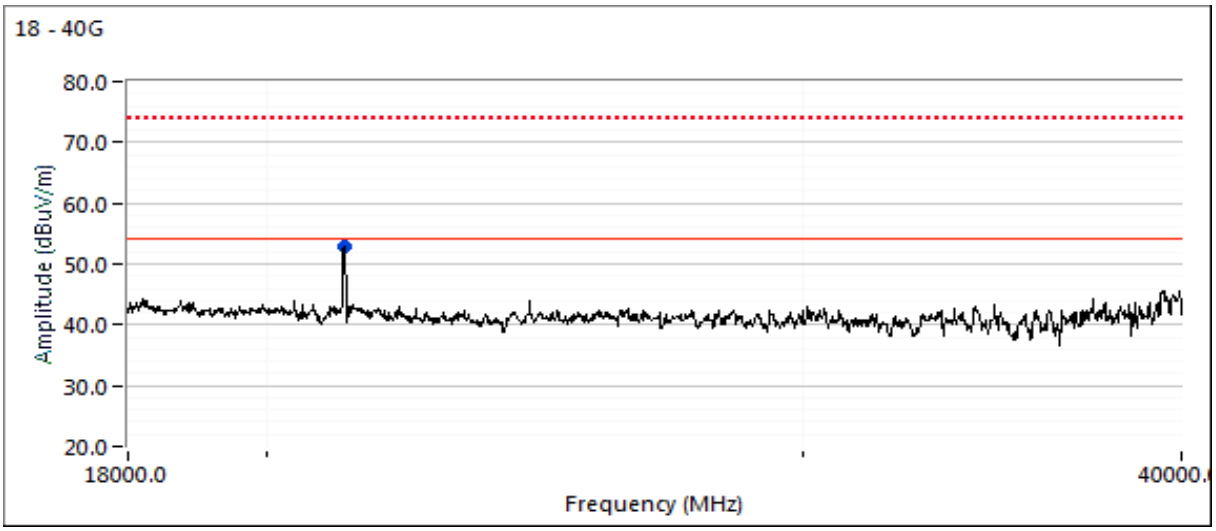
Run #4b: Center Channel

Channel: 1 & 60 Wi-Fi, 17 - BLE Mode: 11ax20
Tx Chain: 4 (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	
1500.000	36.2	H	60.0	-23.8	Peak	127	1.6	Note 5
1600.000	34.4	V	60.0	-25.6	Peak	7	2.5	Note 5
1875.000	36.0	H	60.0	-24.0	Peak	219	1.0	Note 5
2000.000	54.0	V	60.0	-6.0	Peak	81	1.0	Note 5
4000.030	37.7	V	54.0	-16.3	VAVG	219	1.4	RB 1 MHz;VB 300 Hz;Note 3
3999.760	47.6	V	74.0	-26.4	PK	219	1.4	RB 1 MHz;VB 3 MHz;Peak
15900.630	37.2	V	54.0	-16.8	VAVG	161	1.7	RB 1 MHz;VB 300 Hz;Note 3
15900.630	52.2	V	74.0	-21.8	PK	161	1.7	RB 1 MHz;VB 3 MHz;Peak
21204.610	45.6	V	54.0	-8.4	VAVG	211	1.7	RB 1 MHz;VB 300 Hz;Note 3
21204.370	66.3	V	74.0	-7.7	PK	211	1.7	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



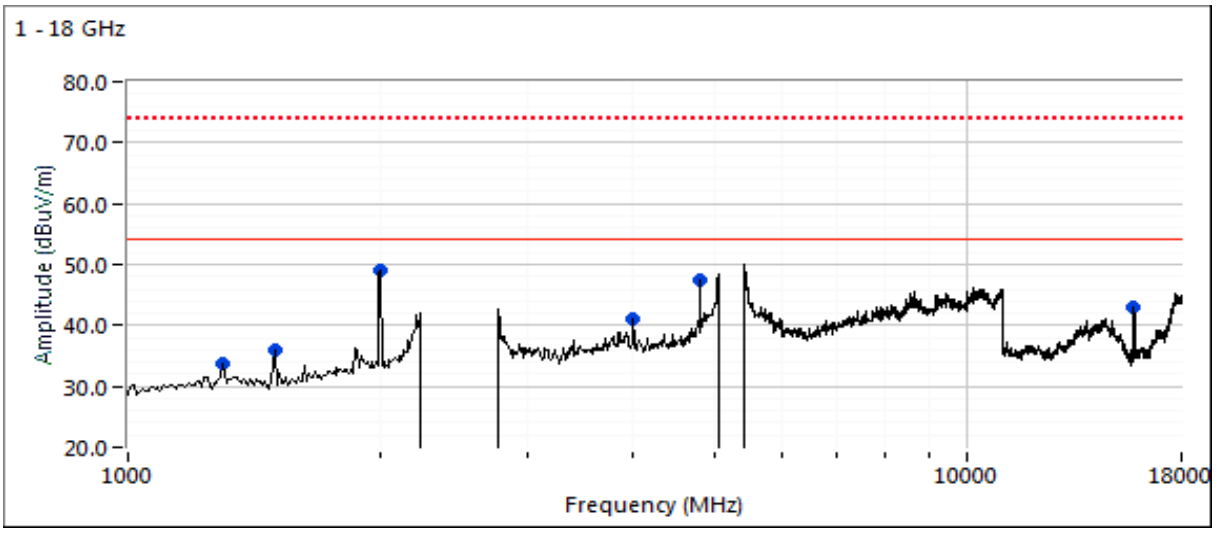
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

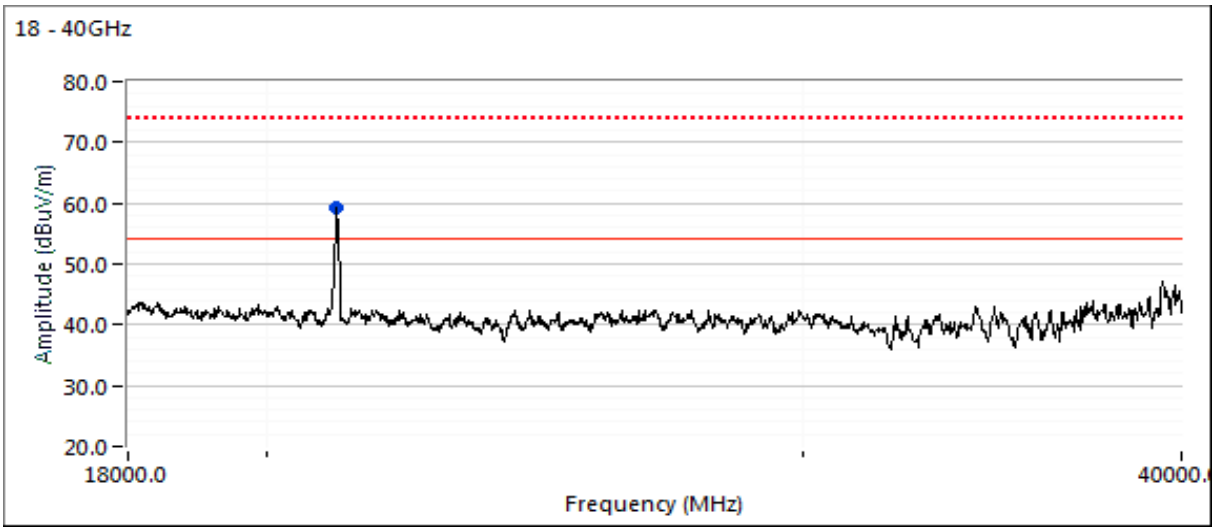
Run #4c: Center Channel

Channel: 3 & 54 Wi-Fi, 17 - BLE Mode: 11ax40
Tx Chain: 4 (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	
1300.000	33.7	H	60.0	-26.3	Peak	204	1.3	Note 5
1500.000	36.0	V	60.0	-24.0	Peak	359	2.2	Note 5
15806.670	43.1	V	54.0	-10.9	Peak	120	1.9	Peak reading with average limit
2000.030	49.1	V	60.0	-10.9	PK	194	1.3	Note 5
4000.000	37.7	V	54.0	-16.3	VAVG	205	1.3	RB 1 MHz;VB 300 Hz;Note 3
3999.860	48.6	V	74.0	-25.4	PK	205	1.3	RB 1 MHz;VB 3 MHz;Peak
4800.000	36.4	H	54.0	-17.6	VAVG	93	1.3	RB 1 MHz;VB 300 Hz;Note 3
4800.620	49.4	H	74.0	-24.6	PK	93	1.3	RB 1 MHz;VB 3 MHz;Peak
21083.170	44.5	V	54.0	-9.5	VAVG	197	1.6	RB 1 MHz;VB 300 Hz;Note 3
21062.330	58.8	V	74.0	-15.2	PK	197	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

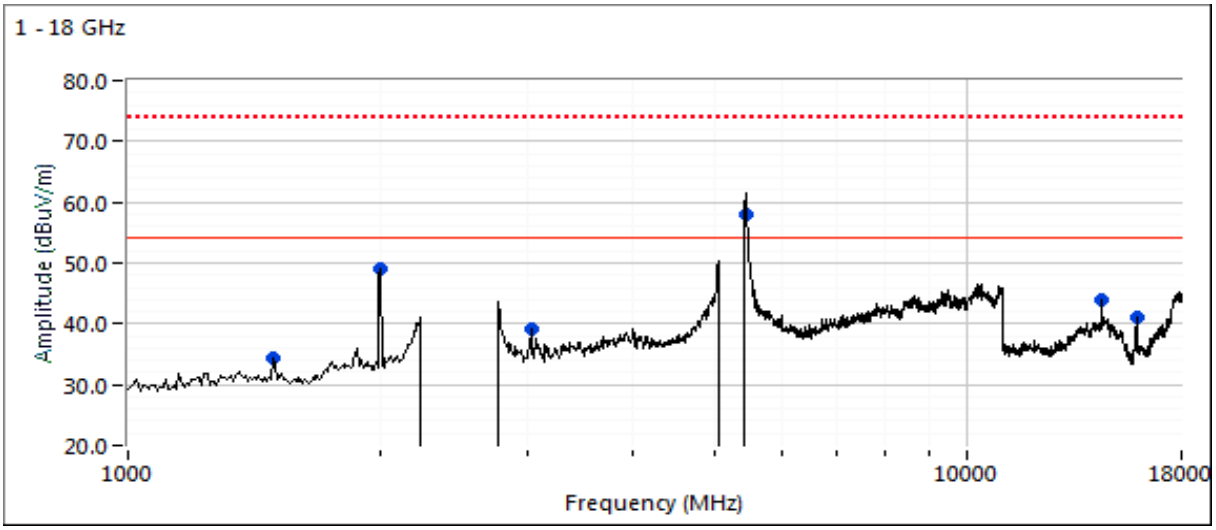


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

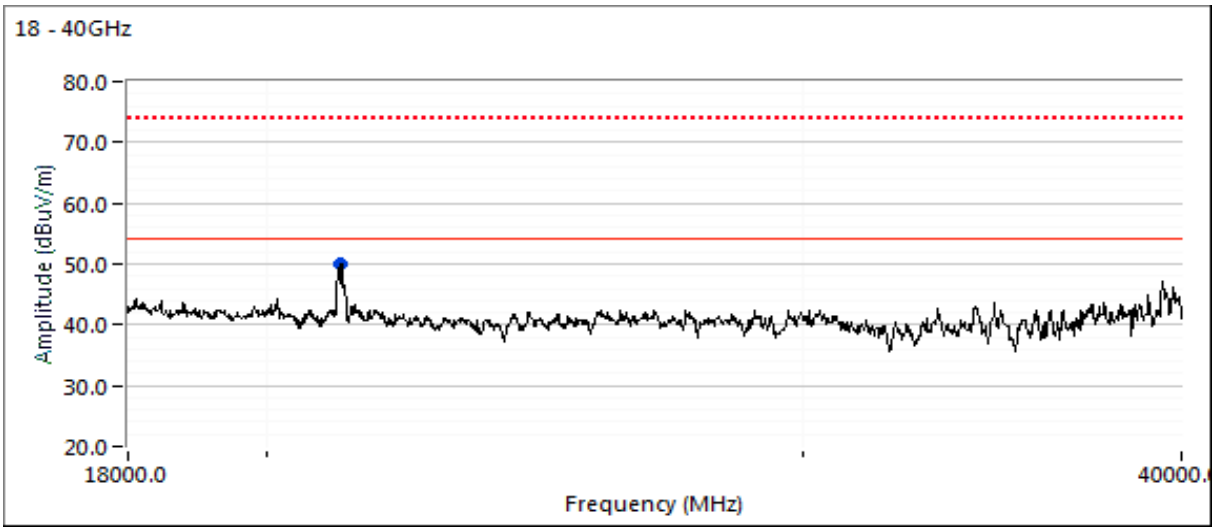
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4d: Center Channel
Channel: 1 & 58 Wi-Fi, 17 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/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	35.5	V	60.0	-24.5	Peak	39	1.0	Note 5
3025.000	39.0	H	60.0	-21.0	Peak	218	1.0	Note 5
14476.670	43.8	H	54.0	-10.2	Peak	161	1.6	Peak reading with average limit
15911.670	41.0	H	54.0	-13.0	Peak	204	1.3	Peak reading with average limit
2000.150	52.5	V	60.0	-7.5	Peak	62	1.6	Note 5
3023.940	37.2	H	54.0	-16.8	VAVG	110	1.5	RB 1 MHz;VB 300 Hz;Note 3
3023.830	47.3	H	74.0	-26.7	PK	110	1.5	RB 1 MHz;VB 3 MHz;Peak
21128.000	45.4	V	54.0	-8.6	VAVG	189	1.6	RB 1 MHz;VB 300 Hz;Note 3
21130.130	59.5	V	74.0	-14.5	PK	189	1.6	RB 1 MHz;VB 3 MHz;Peak
5432.110	52.9	H	54.0	-1.1	VAVG	215	1.4	RB 1 MHz;VB 300 Hz;Note 3
5432.270	67.5	H	74.0	-6.5	PK	215	1.4	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

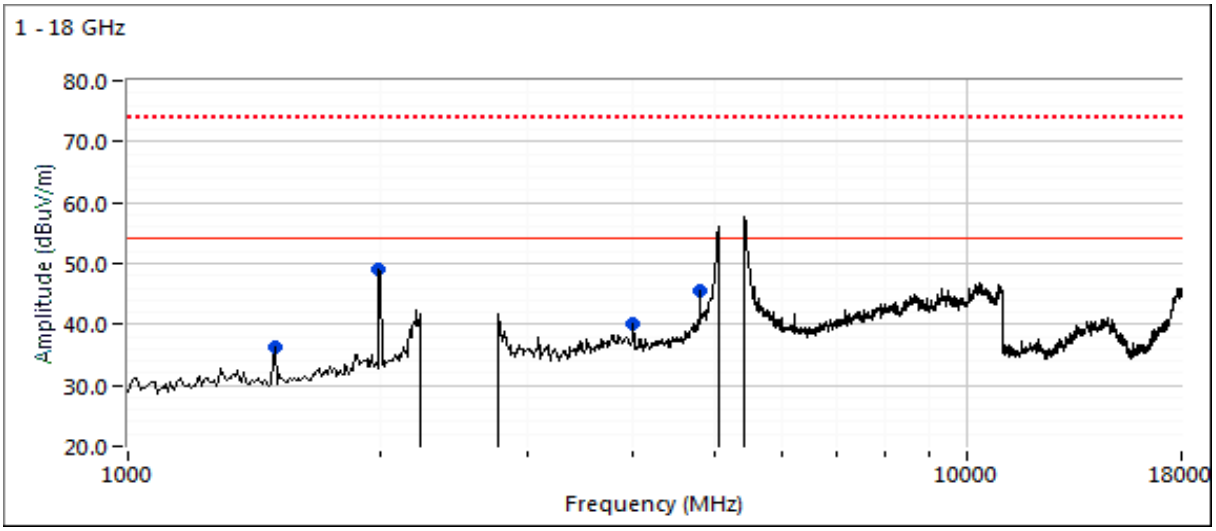
Run #5: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #4

Date of Test: 10/25/2018 Config. Used: Internal
Test Engineer: Roy Zheng Config Change: none
Test Location: Chamber 5 EUT Voltage: PoE

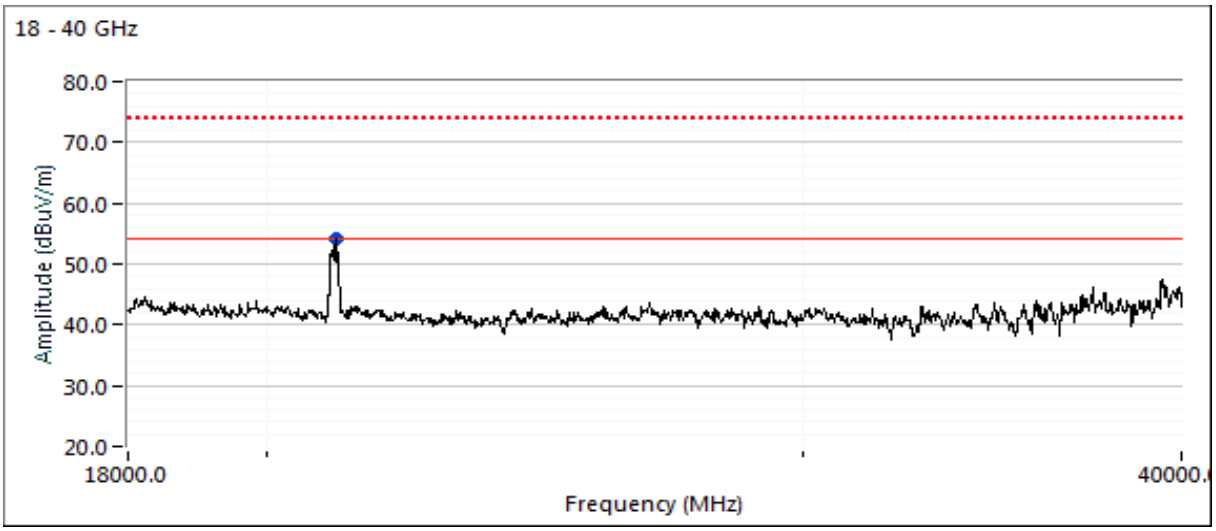
Run #5a: Low Channel

Channel: 1 & 52 Wi-Fi, 37 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
21027.800	47.6	V	54.0	-6.4	VAVG	192	1.0	RB 1 MHz;VB 300 Hz;Note 3
21027.730	62.3	V	74.0	-11.7	PK	192	1.0	RB 1 MHz;VB 3 MHz;Peak
3999.970	37.7	V	54.0	-16.3	VAVG	211	1.3	RB 1 MHz;VB 300 Hz;Note 3
4000.080	47.6	V	74.0	-26.4	PK	211	1.3	RB 1 MHz;VB 3 MHz;Peak
4803.900	42.1	H	54.0	-11.9	VAVG	104	1.3	RB 1 MHz;VB 300 Hz;Note 3
4804.470	52.9	H	74.0	-21.1	PK	104	1.3	RB 1 MHz;VB 3 MHz;Peak
1500.000	36.2	V	60.0	-23.8	Peak	360	1.9	Note 5
2000.220	49.3	H	60.0	-10.7	Peak	192	2.2	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

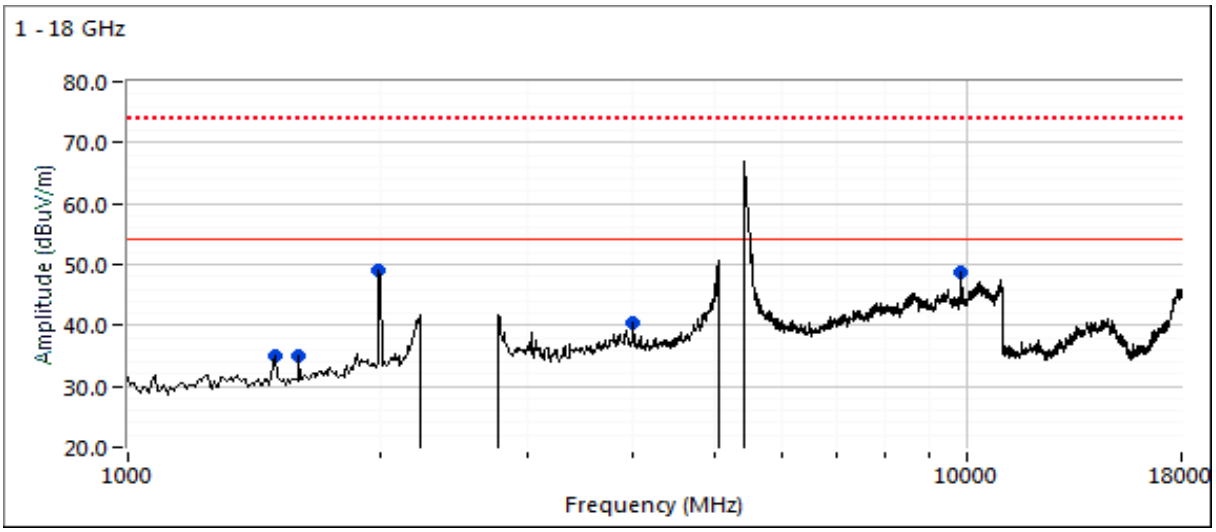


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

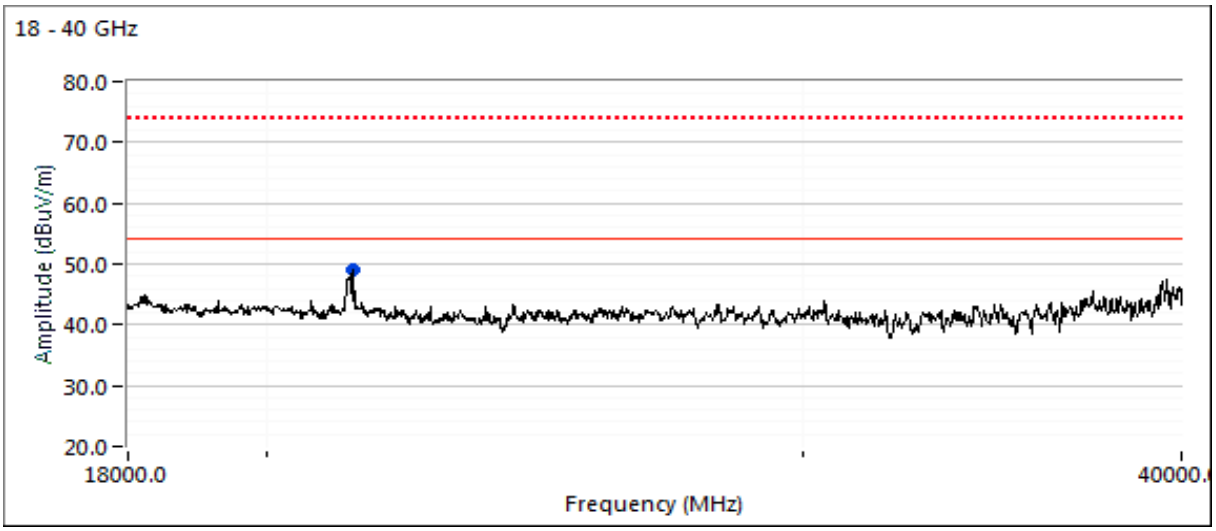
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #5b: High Channel
Channel: 11 & 64 Wi-Fi, 39 - BLE Mode: ac20 / b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/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	35.0	V	60.0	-25.0	Peak	165	1.6	Note 5
1600.000	35.0	V	60.0	-25.0	Peak	16	1.3	Note 5
2000.000	51.9	V	60.0	-8.1	Peak	59	1.6	Note 5
3999.940	35.6	V	54.0	-18.4	VAVG	194	1.6	RB 1 MHz;VB 300 Hz;Note 3
3999.880	46.4	V	74.0	-27.6	PK	194	1.6	RB 1 MHz;VB 3 MHz;Peak
9848.020	41.4	H	54.0	-12.6	VAVG	210	1.6	RB 1 MHz;VB 300 Hz;Note 3
9849.670	53.0	H	74.0	-21.0	PK	210	1.6	RB 1 MHz;VB 3 MHz;Peak
21288.190	47.7	V	54.0	-6.3	VAVG	198	1.0	RB 1 MHz;VB 300 Hz;Note 3
21289.820	62.2	V	74.0	-11.8	PK	198	1.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

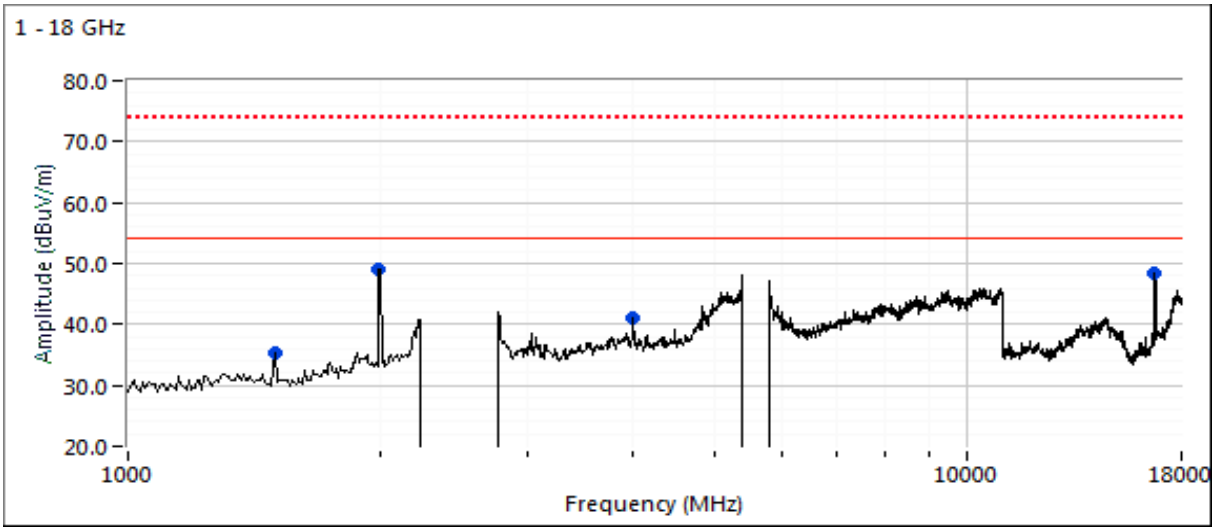
Run #6, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

Date of Test: 10/25/2018 Config. Used: Internal
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber 5 EUT Voltage: PoE

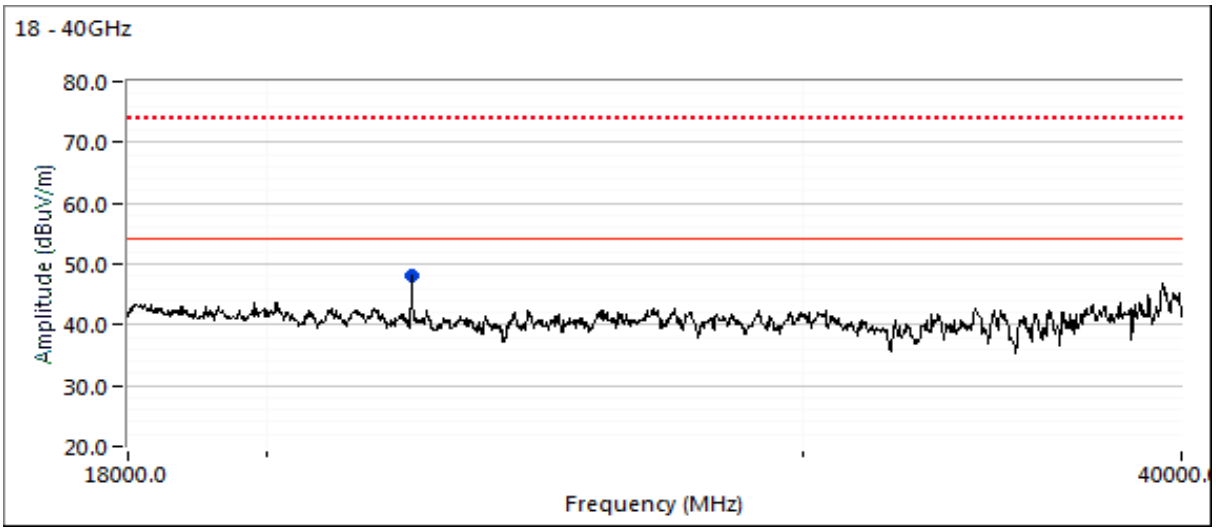
Run #6a: Center Channel

Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: a, g
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6Mb/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	35.3	V	60.0	-24.7	Peak	360	1.9	Note 5
16738.500	58.1	H	68.3	-10.2	Peak	201	1.3	RB 1 MHz;VB 3 MHz;Peak
2000.030	50.5	H	60.0	-9.5	Peak	181	2.2	Note 5
3999.970	38.9	V	54.0	-15.1	VAVG	216	1.3	RB 1 MHz;VB 1 kHz;Note 3
3999.980	47.8	V	74.0	-26.2	PK	216	1.3	RB 1 MHz;VB 3 MHz;Peak
22321.900	42.3	V	54.0	-11.7	VAVG	200	1.6	RB 1 MHz;VB 1 kHz;Note 3
22321.750	59.8	V	74.0	-14.2	PK	200	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



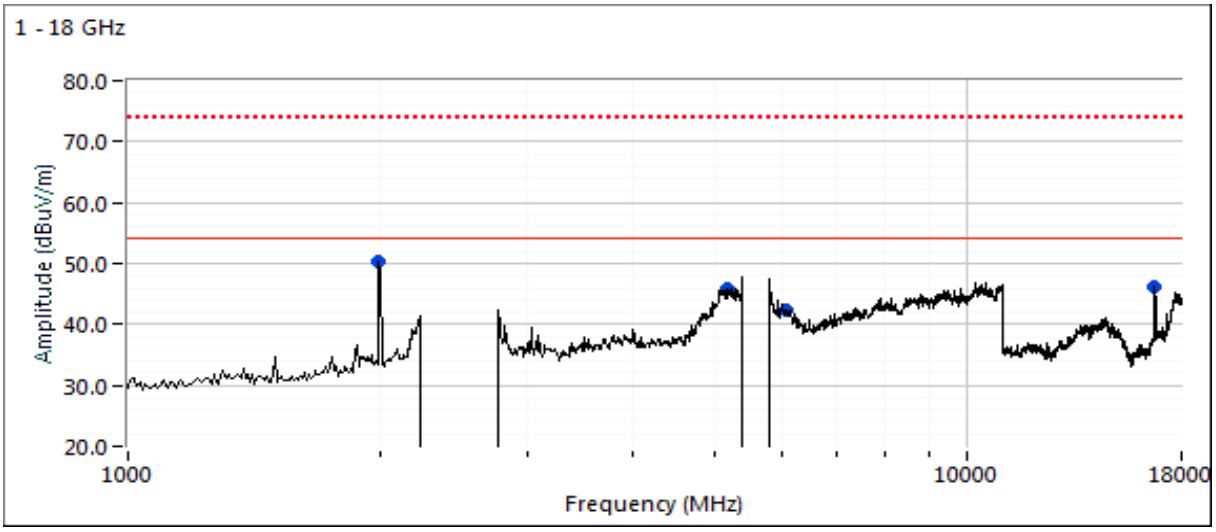
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

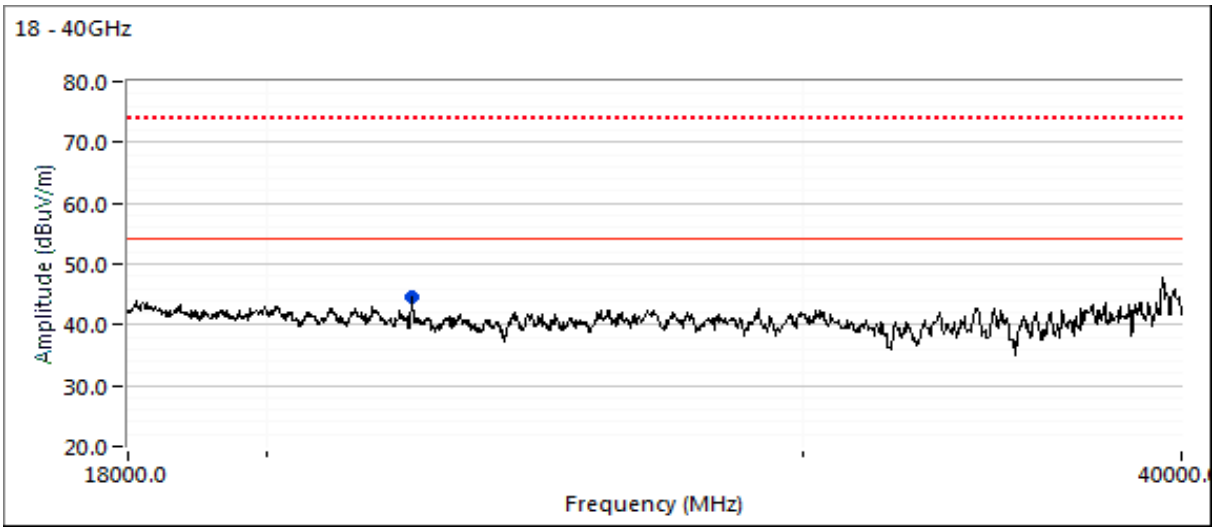
Run #6b: Center Channel

Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: 11ax20
Tx Chain: 4 (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	
16736.870	60.5	V	68.3	-7.8	PK	182	1.5	RB 1 MHz;VB 3 MHz;Peak
5204.580	41.4	H	54.0	-12.6	Avg	217	1.6	RB 1 MHz;VB 300 Hz;Note 3
5205.300	54.5	H	74.0	-19.5	PK	217	1.6	RB 1 MHz;VB 3 MHz;Peak
2000.000	50.5	H	60.0	-9.5	PK	215	1.3	Note 5
6073.750	38.5	H	54.0	-15.5	Avg	110	1.5	RB 1 MHz;VB 300 Hz;Note 3
6075.830	51.5	H	74.0	-22.5	PK	110	1.5	RB 1 MHz;VB 3 MHz;Peak
22322.800	38.9	H	54.0	-15.1	VAVG	140	1.6	RB 1 MHz;VB 300 Hz;Note 3
22322.270	55.9	H	74.0	-18.1	PK	140	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

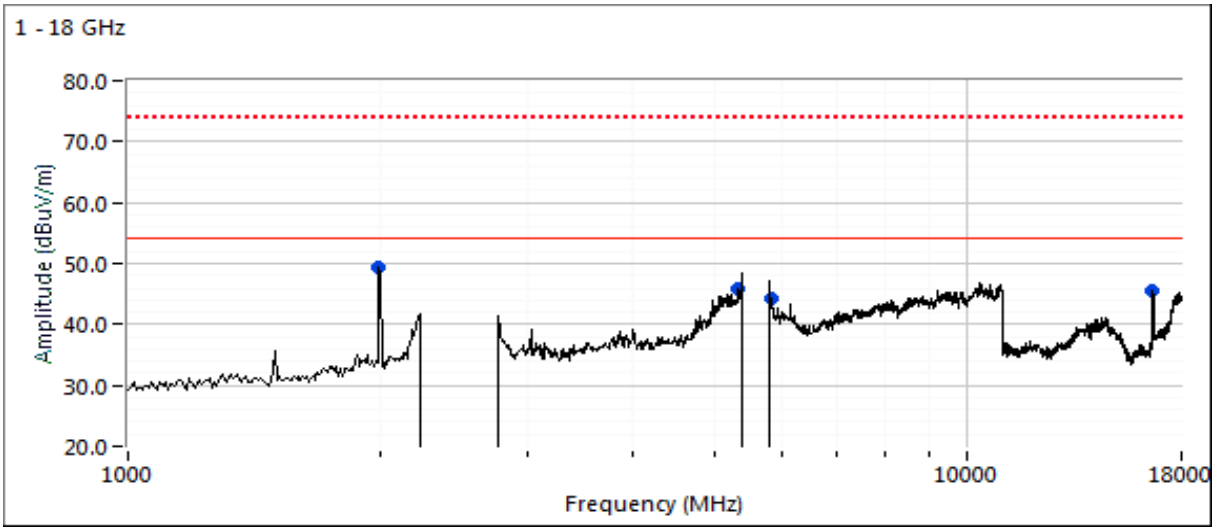


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

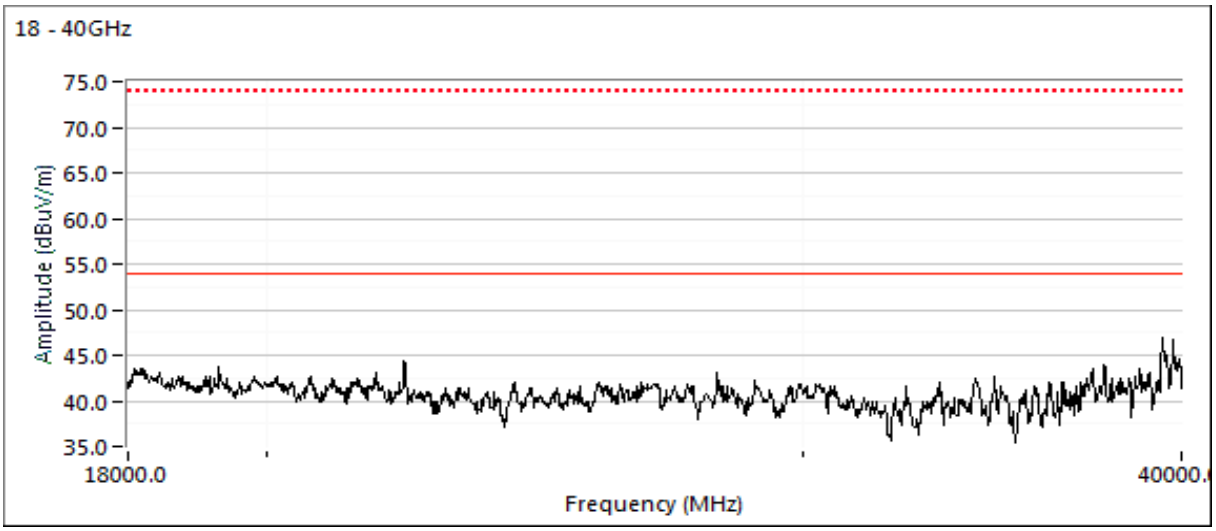
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6c: Center Channel
Channel: 9 & 110 Wi-Fi, 39 - BLE Mode: 11ax40
Tx Chain: 4 (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	
16645.160	53.0	H	68.3	-15.3	PK	181	1.9	RB 1 MHz;VB 3 MHz;Peak
5810.420	43.5	H	54.0	-10.5	Avg	136	1.5	RB 1 MHz;VB 300 Hz;Note 3
5808.470	55.9	H	74.0	-18.1	PK	136	1.5	RB 1 MHz;VB 3 MHz;Peak
2000.030	48.8	H	60.0	-11.2	Avg	217	1.3	Note 5
2000.060	51.1	H	80.0	-28.9	PK	217	1.3	Note 5
5349.060	44.3	H	54.0	-9.7	Avg	216	1.6	RB 1 MHz;VB 300 Hz;Note 3
5350.820	56.6	H	74.0	-17.4	PK	216	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

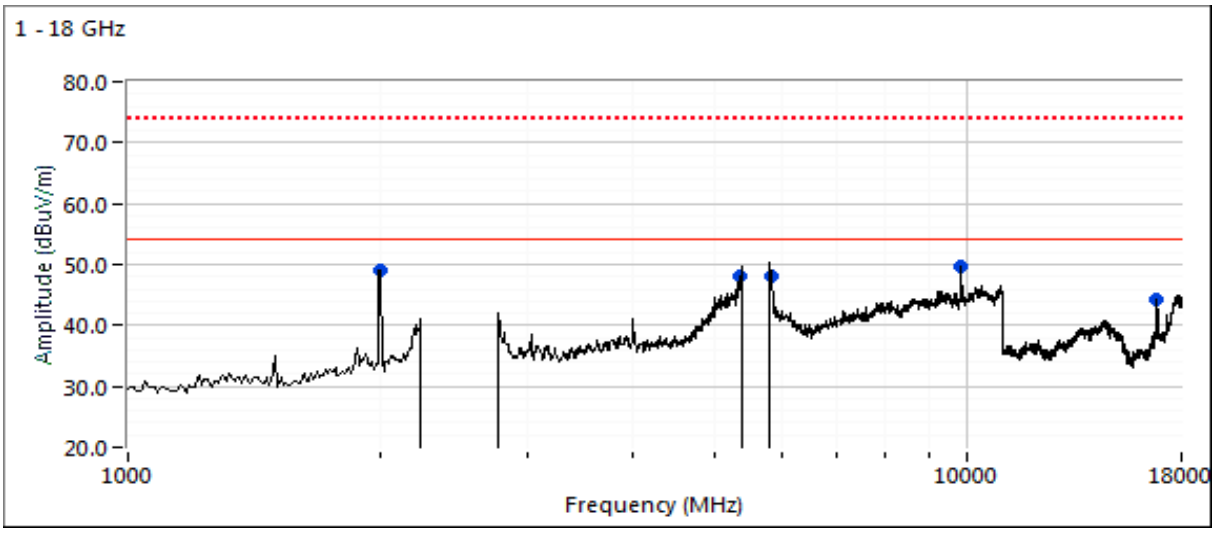


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

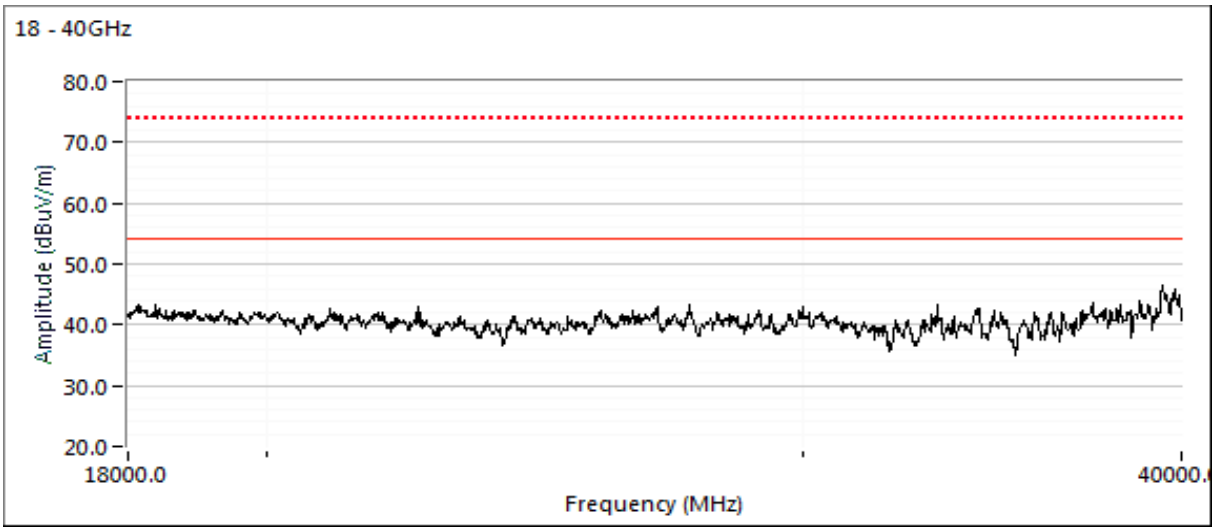
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6d: Center Channel
Channel: 11 & 122 Wi-Fi, 39 - BLE Mode: ac80 / b Note: Channel 122 not used in Canada
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
16833.330	44.1	H	68.3	-24.2	Peak	187	1.3	RB 1 MHz;VB 3 MHz;Peak
5372.350	46.1	H	54.0	-7.9	Avg	219	1.7	RB 1 MHz;VB 300 Hz;Note 3
5372.770	58.7	H	74.0	-15.3	PK	219	1.7	RB 1 MHz;VB 3 MHz;Peak
2000.120	50.8	H	60.0	-9.2	Peak	144	1.0	Note 5
9847.900	49.2	V	54.0	-4.8	Avg	126	1.0	RB 1 MHz;VB 300 Hz;Note 3
9847.830	57.1	V	74.0	-16.9	PK	126	1.0	RB 1 MHz;VB 3 MHz;Peak
5824.260	46.6	H	54.0	-7.4	Avg	118	1.9	RB 1 MHz;VB 300 Hz;Note 3
5824.810	62.8	H	74.0	-11.2	PK	118	1.9	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

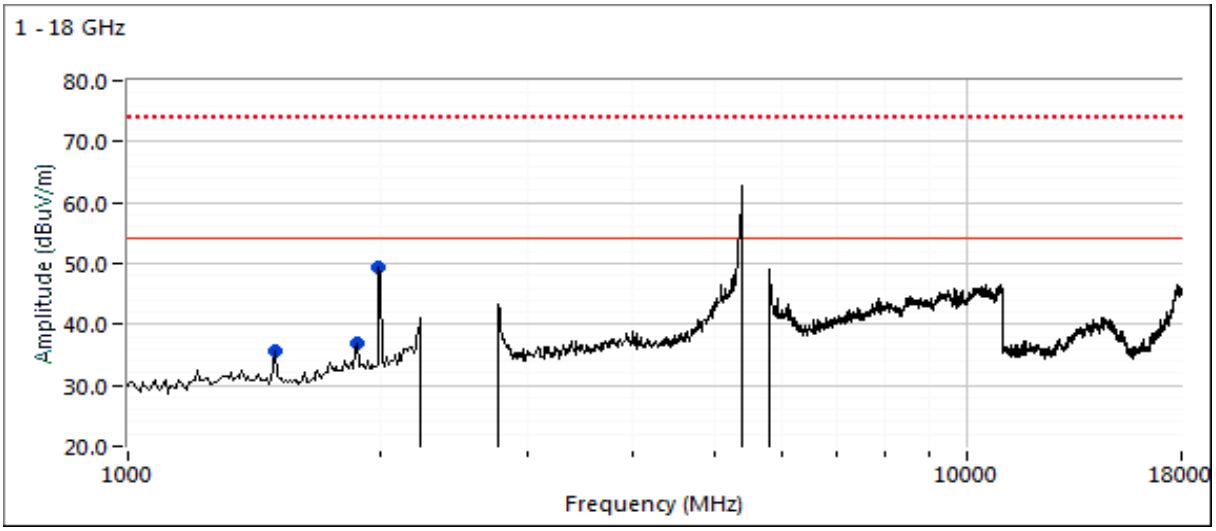
Run #7: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Runs #7 and 8

Date of Test: 10/16/2018 Config. Used: Ant 19
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

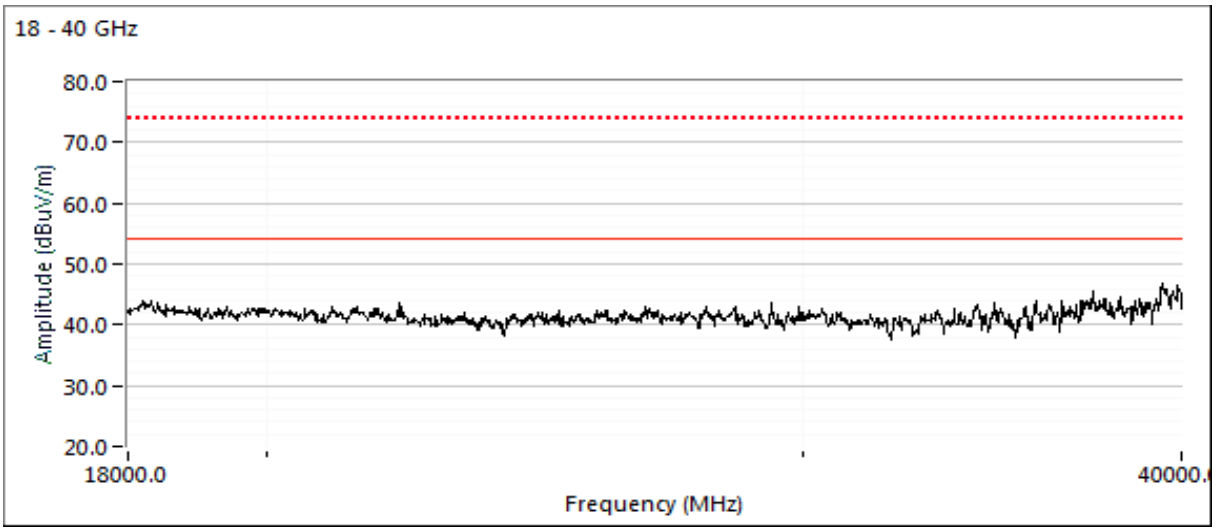
Run #7a: Low Channel

Channel: 1 & 106 WiFi, 39 - BLE Mode: ac80 / b
Tx Chain: 4 Data Rate: MCS0, 1MB/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	35.5	V	60.0	-24.5	Peak	356	1.9	Note 5
1875.000	36.9	H	60.0	-23.1	Peak	111	1.0	Note 5
1999.980	46.6	H	60.0	-13.4	VAVG	144	1.0	Note 5
1999.900	50.7	H	80.0	-29.3	PK	144	1.0	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



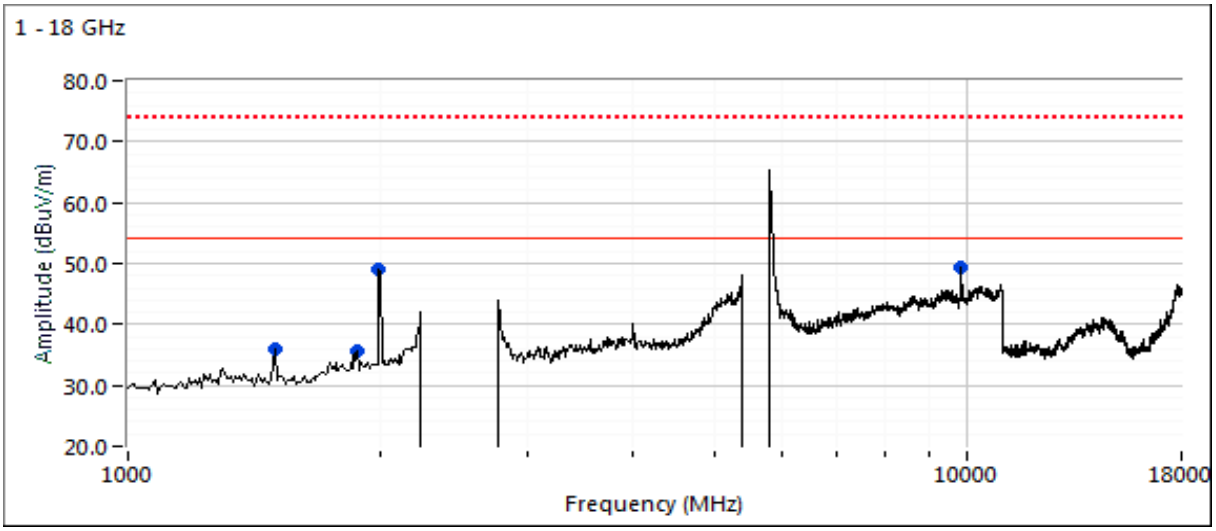
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

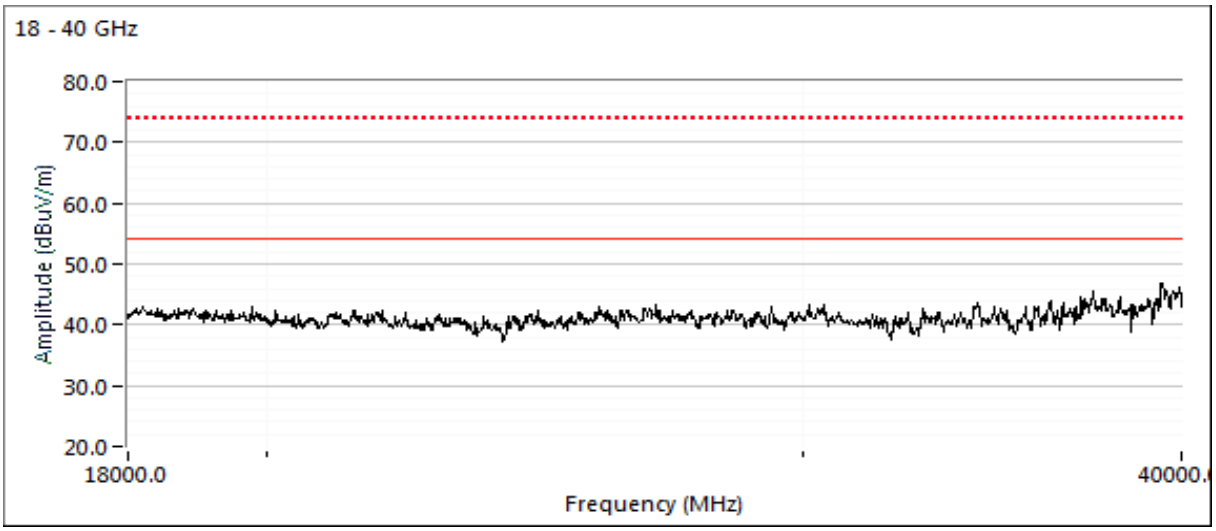
Run #7b: High Channel

Channel: 1 & 138 WiFi, 39 - BLE
Tx Chain: 4
Mode: ac80 / b
Data Rate: MCS0, 1MB/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	36.0	V	60.0	-24.0	Peak	157	1.6	Note 5
1875.000	35.6	V	60.0	-24.4	Peak	119	1.6	Note 5
2000.030	46.4	H	60.0	-13.6	VAVG	158	1.0	Note 5
2000.050	49.8	H	80.0	-30.2	PK	158	1.0	Note 5
9847.960	46.9	V	54.0	-7.1	VAVG	131	1.0	RB 1 MHz;VB 300 Hz;Note 3
9847.980	55.3	V	74.0	-18.7	PK	131	1.0	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

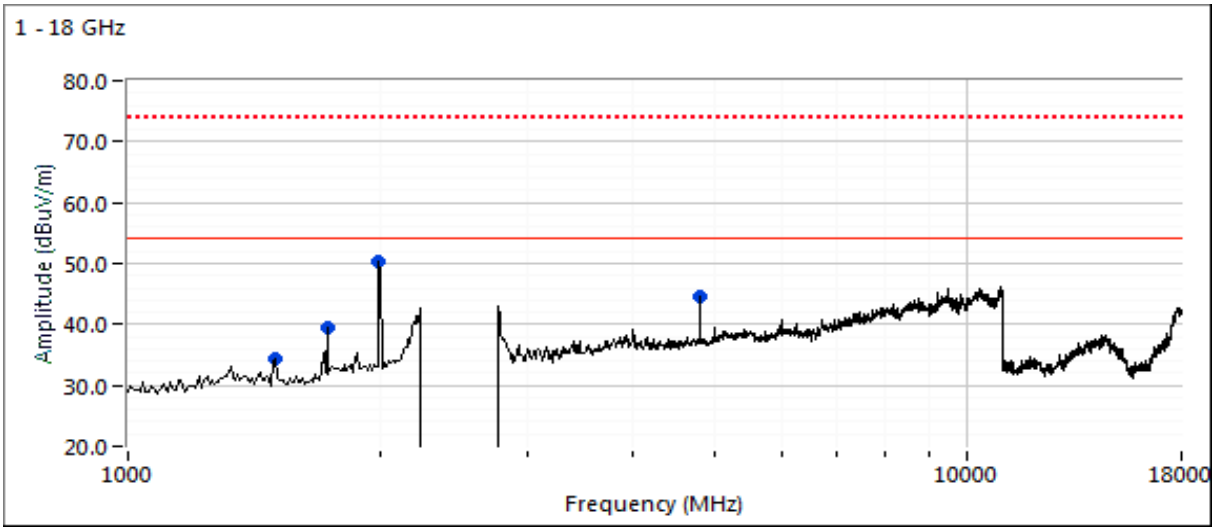
Run #10: Radiated Spurious Emissions, 1,000 - 25,000 MHz. Operating Mode: BLE

Date of Test: 10/26/2018 0:00 Config. Used: integral
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

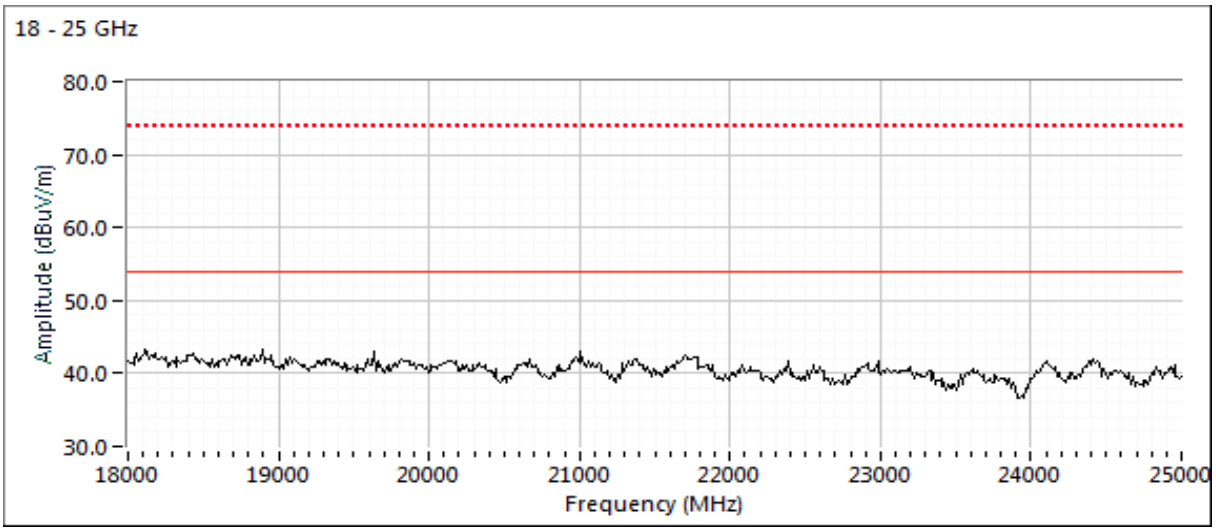
Run #10a: Low Channel

Channel: 37 (2402 MHz) Mode: BLE
Tx Chain: BLE Data Rate: 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	34.2	V	60.0	-25.8	Peak	37	1.0	Note 5
2000.000	50.2	V	60.0	-9.8	Peak	174	1.0	Note 5
4803.850	40.9	V	54.0	-13.1	VAVG	221	1.3	RB 1 MHz;VB 3 kHz;Note 3
4803.630	48.7	V	74.0	-25.3	PK	221	1.3	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



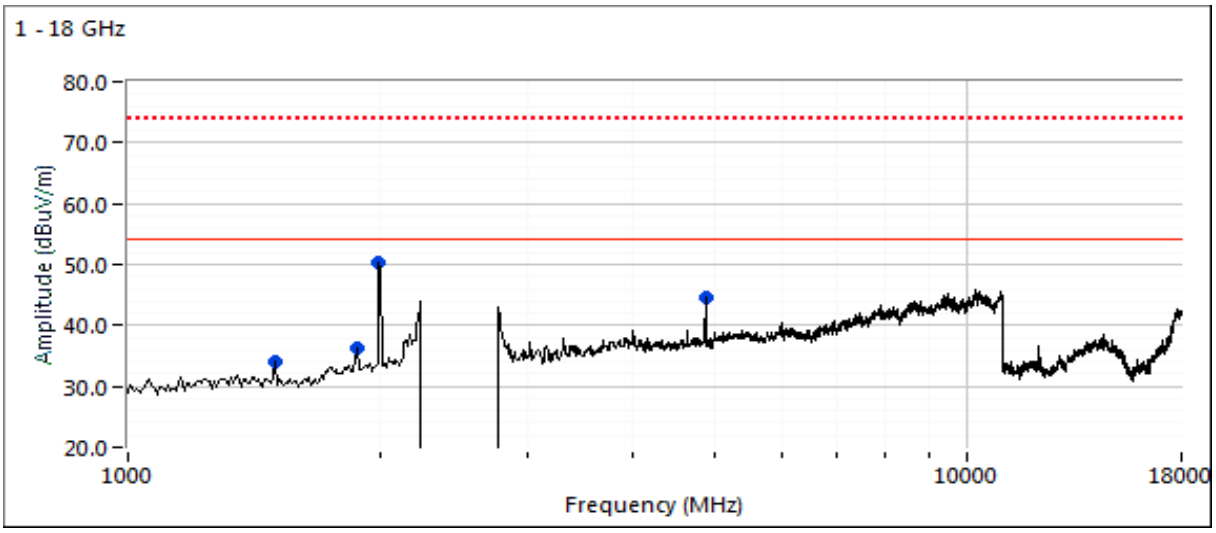
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

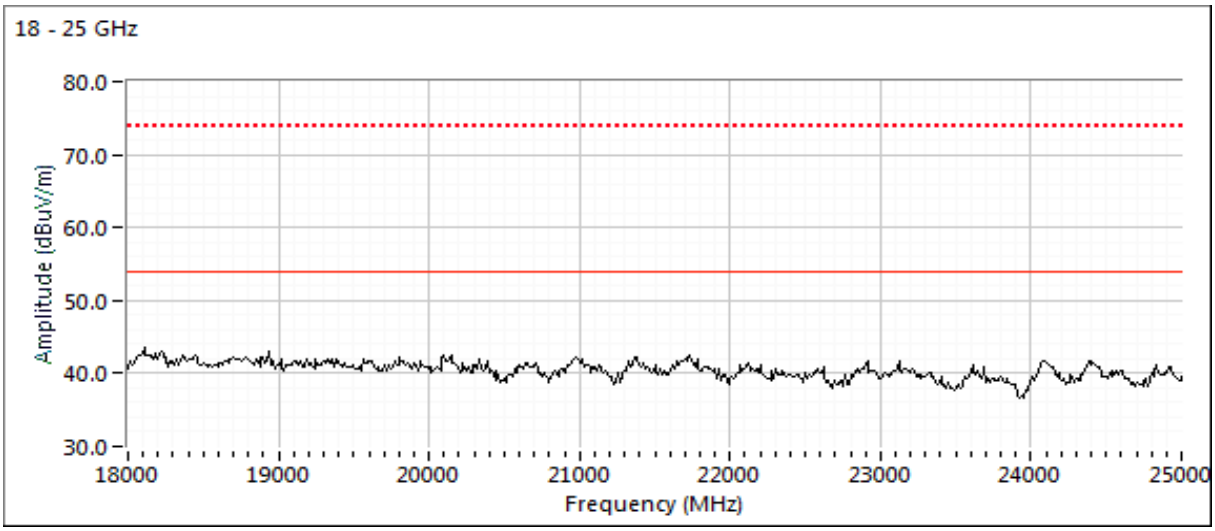
Run #10b: Middle Channel

Channel: 17 (2440 MHz) Mode: BLE
Tx Chain: BLE Data Rate: 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	34.2	V	60.0	-25.8	Peak	360	1.9	Note 5
1875.000	36.3	H	60.0	-23.7	Peak	115	1.0	Note 5
2000.000	50.4	V	60.0	-9.6	Peak	177	1.0	Note 5
4879.970	44.3	H	54.0	-9.7	VAVG	222	1.4	RB 1 MHz;VB 3 kHz;Note 3
4880.350	50.0	H	74.0	-24.0	PK	222	1.4	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



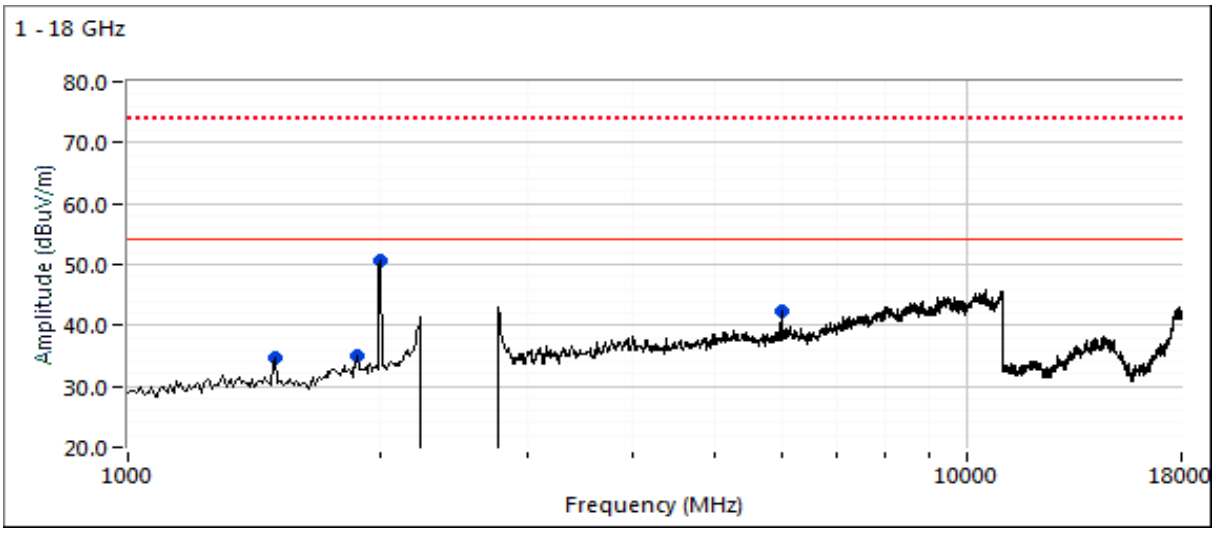
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

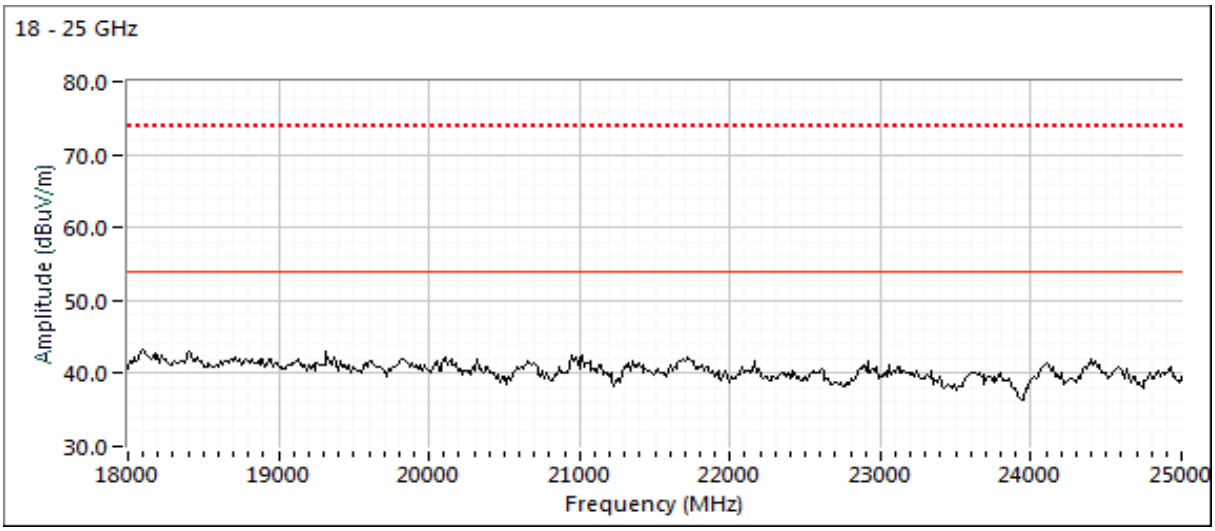
Run #10c: High Channel

Channel: 39 (2480 MHz) Mode: BLE
Tx Chain: BLE Data Rate: 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	34.7	V	60.0	-25.3	Peak	360	1.9	Note 5
1875.000	35.0	V	60.0	-25.0	Peak	85	1.6	Note 5
2000.000	50.6	V	60.0	-9.4	Peak	183	1.0	Note 5
5999.990	41.3	V	54.0	-12.7	VAVG	142	1.3	RB 1 MHz;VB 3 kHz;Note 3
5999.770	48.9	V	74.0	-25.1	PK	142	1.3	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #11: Radiated Spurious Emissions, 1,000 - 25,000 MHz. Operating Mode: ZigBee

Date of Test: 11/29/18 Config. Used: 1

Test Engineer: M. Birgani Config Change: -

Test Location: Chamber 5 EUT Voltage: PoE, 120V/60Hz

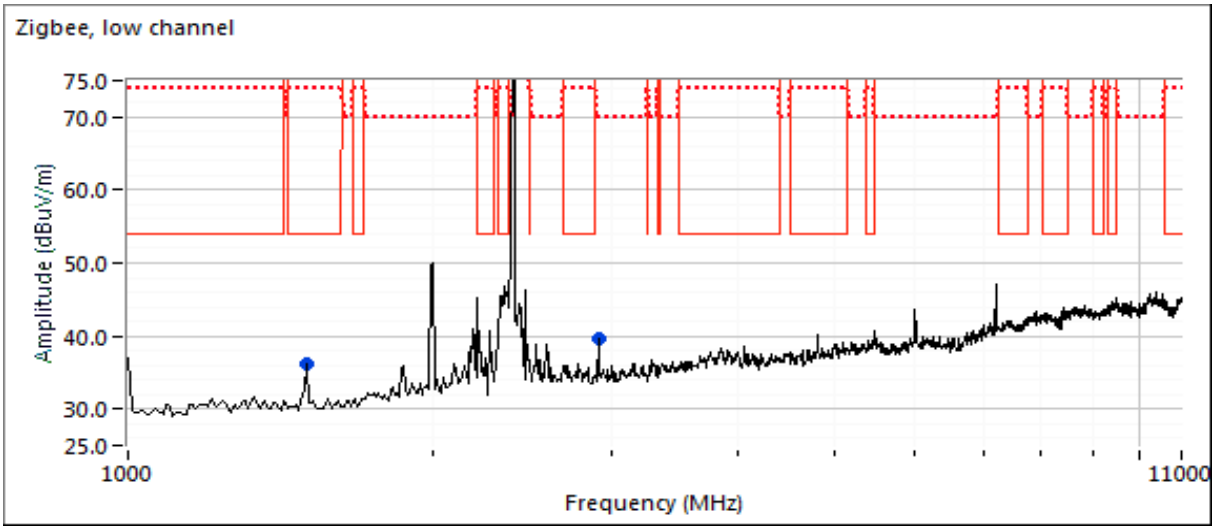
Run #11a: Low Channel

Channel: 11, 2405MHz Mode: Zigbee

Tx Chain: 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2893.570	31.4	H	54.0	-22.6	AVG	105	2.2	RB 1 MHz;VB 1 kHz;Peak
1499.910	24.8	V	54.0	-29.2	AVG	243	2.5	RB 1 MHz;VB 1 kHz;Peak
2896.400	42.8	H	74.0	-31.2	PK	105	2.2	RB 1 MHz;VB 3 MHz;Peak
1498.980	39.3	V	74.0	-34.7	PK	243	2.5	RB 1 MHz;VB 3 MHz;Peak

Note 1:	Scans made between 11 - 25 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

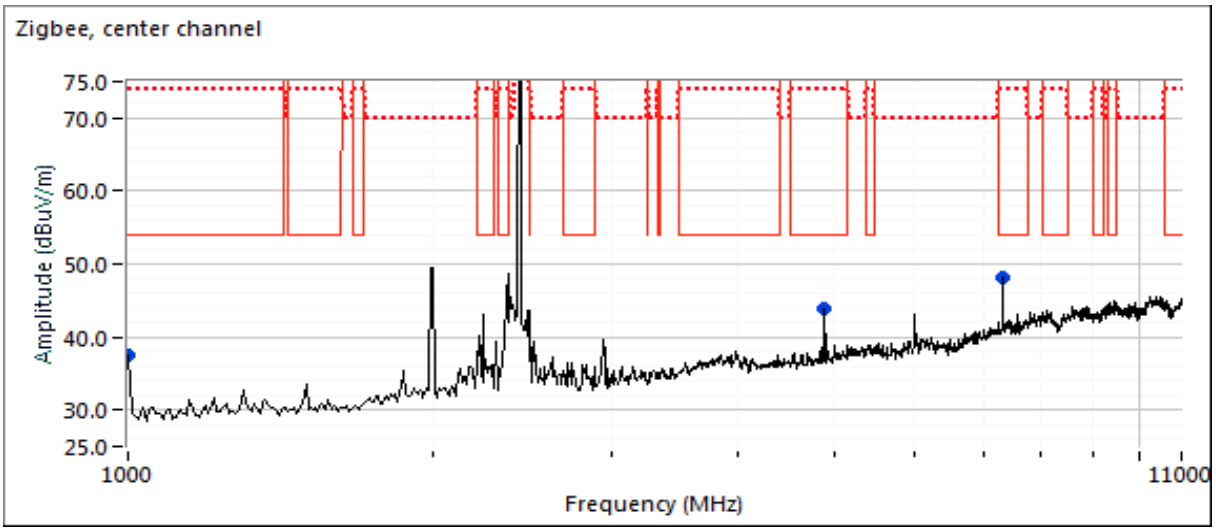


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #11b: Middle Channel
Channel: 18, 2440MHz Mode: Zigbee
Tx Chain: 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
7321.450	44.1	H	54.0	-9.9	AVG	221	1.9	RB 1 MHz;VB 10 kHz;Peak
4905.500	34.1	H	54.0	-19.9	AVG	116	1.9	RB 1 MHz;VB 10 kHz;Peak
7320.960	53.6	H	74.0	-20.4	PK	221	1.9	RB 1 MHz;VB 3 MHz;Peak
1009.970	27.2	H	54.0	-26.8	AVG	346	1.9	RB 1 MHz;VB 10 kHz;Peak
4907.850	45.8	H	74.0	-28.2	PK	116	1.9	RB 1 MHz;VB 3 MHz;Peak
1009.030	38.7	H	74.0	-35.3	PK	346	1.9	RB 1 MHz;VB 3 MHz;Peak

Note 1:	Scans made between 11 - 25 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

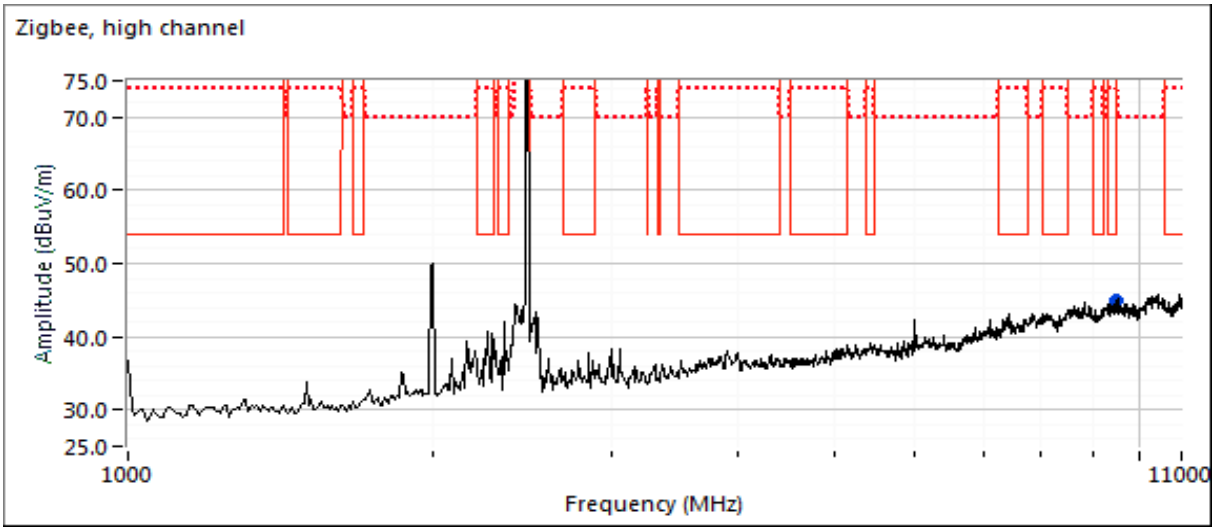


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #11c: High Channel
Channel: 26, 2480MHz Mode: Zigbee
Tx Chain: 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9474.540	40.9	H	54.0	-13.1	AVG	350	2.2	RB 1 MHz;VB 1 kHz;Peak
9474.710	52.7	H	74.0	-21.3	PK	350	2.2	RB 1 MHz;VB 3 MHz;Peak

Note 1:	Scans made between 11 - 25 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



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	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: 23.4 °C
Rel. Humidity: 40 %

Summary of Results

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Scans on worst case mode above with ZigBee active.							
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	No emissions above the noise floor
	a / b, ZigBee	6, 60 Wi-Fi 26 - ZigBee	15 / 20 / 8	15 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	No emissions above the noise floor

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Scans on "lowest" and "center" channel in all five OFDM modes to determine the worst case mode. (4x4 in 5 GHz bands and 4x4 in 2.4 GHz band). Ax80+80 mode performed in Run 1.							
4	a / g	1 & 60 Wi-Fi	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	56.9 dBµV/m @ 5759.9 MHz (-11.4 dB)
	ax20	1 & 60 Wi-Fi	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	57.6 dBµV/m @ 5759.98 MHz (-10.7 dB)
	ax40, BLE	1 & 54 Wi-Fi 17 BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	55.9 dBµV/m @ 5760.0 MHz (-12.4 dB)
	ac80 / b, BLE	1 & 58 Wi-Fi 17 BLE	20	19.5	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	53.2 dBµV/m @ 5443.3 MHz (-0.8 dB)
Measurements on low and high channels in worst-case OFDM mode.							
5	ac80 / b, BLE	1 & 52 Wi-Fi 37 - BLE	20	18.5	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	52.6 dBµV/m @ 5048.6 MHz (-1.4 dB)
	ac80 / b, BLE	11 & 64 Wi-Fi 39 - BLE	20	20.0	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	51.4 dBµV/m @ 9847.9 MHz (-2.6 dB)
Scans on "highest" and "center" channel in all five OFDM modes to determine the worst case mode (4x4 in 5 GHz bands and 4x4 in 2.4 GHz band). ac160 mode performed in Run 1.							
6	a / g, BLE	11 & 116 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.1 dBµV/m @ 5051.5 MHz (-10.9 dB)
	ax20, BLE	11 & 116 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	58.3 dBµV/m @ 5183.7 MHz (-10.0 dB)
	ax40, BLE	9 & 110 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	56.1 dBµV/m @ 5223.3 MHz (-12.2 dB)
	ac80 / b, BLE	11 & 122 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	50.6 dBµV/m @ 5378.8 MHz (-3.4 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Measurements on low and high channels in worst-case OFDM mode.							
7	ac80 / b, BLE	1 & 106 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	46.8 dBµV/m @ 4902.3 MHz (-7.2 dB)
	ac80 / b, BLE	11 & 138 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	62.3 dBµV/m @ 5954.6 MHz (-6.0 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
ZigBee	250 kb/s	0.43	Yes	0.863	3.7	7.4	1159
BLE	1 Mb/s	0.72	Yes	0.586	1.4	2.9	1706
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495
11a	MCS0	0.92	Yes	1.4	0.3	0.7	698
11ax20	MCS0	0.96	Yes	5.4	0.2	0.4	184
11ax40	MCS0	0.96	Yes	5.4	0.2	0.4	184
11ax80	MCS0	0.95	Yes	5.4	0.2	0.5	185

Sample Notes

BLE Sample SN: CNG6K9V019 and Zigbee Sample SN: CNG6K9V00C
Driver: P2 WNC 0.4.4
Antenna: AP-ANT-19 Wi-Fi, Integral BLE/ZigBee. 4 antennas for 5 GHz radio and 4 antennas for 2.4 GHz radio (5GHz radio may also use 2 antennas but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simutaneously). Tests performed with 4 antennas at the 2 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≥3MHz, peak detector).
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.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

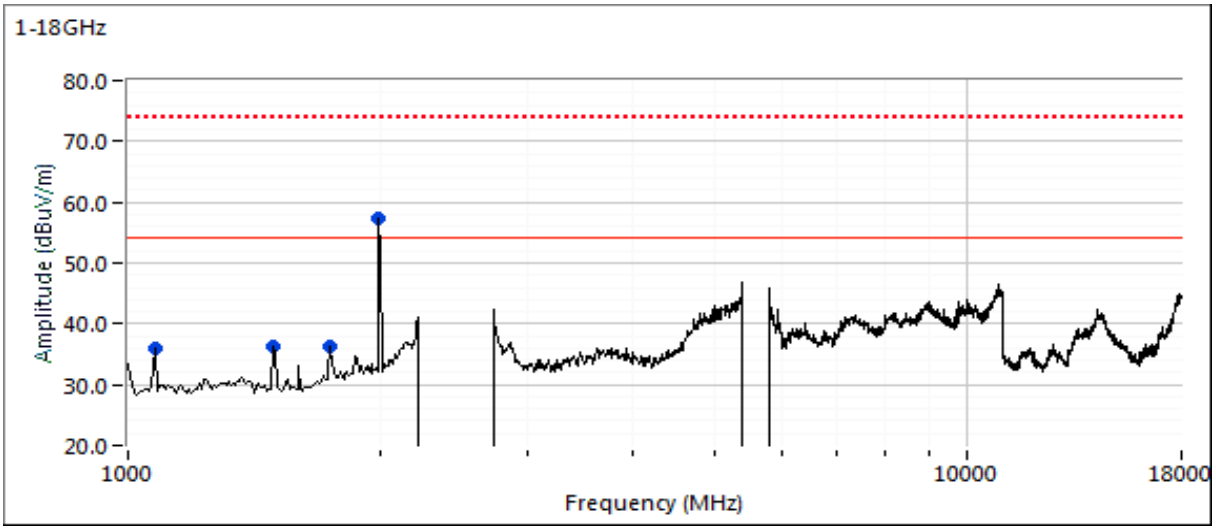
Run #2, Radiated Spurious Emissions, 1,000 - 40,000 MHz.

Date of Test: 12/27/2018 Config. Used: Ant 19
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

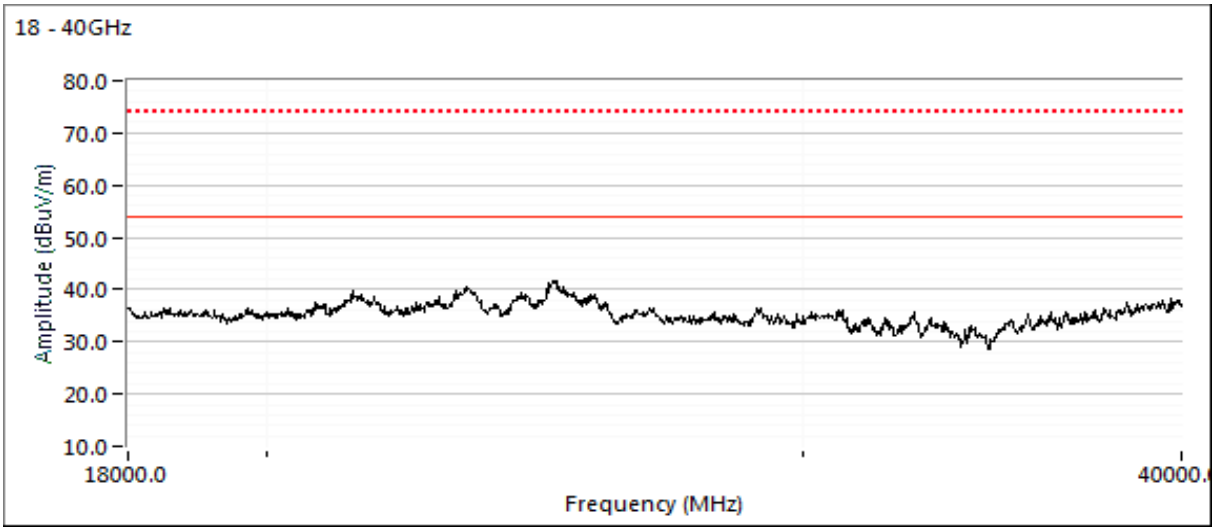
Run #2b: Center Channel

Channel: 6, 116 Wi-Fi, 18 - ZigBee Mode: a, b
Tx Chain: 4 Data Rate: MCS0, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1075.000	35.8	H	60.0	-24.2	Peak	123	2.2	Note 5
1500.000	36.3	H	60.0	-23.7	Peak	234	1.3	Note 5
1741.670	36.2	V	60.0	-23.8	Peak	237	1.3	Note 5
2000.000	57.2	V	60.0	-2.8	Peak	76	2.2	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

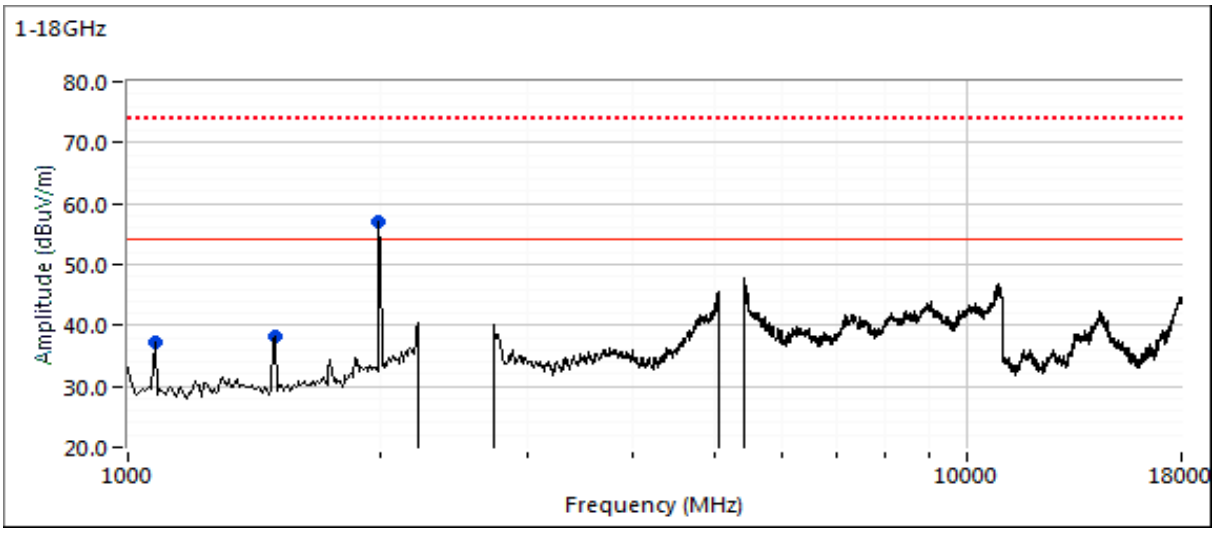


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

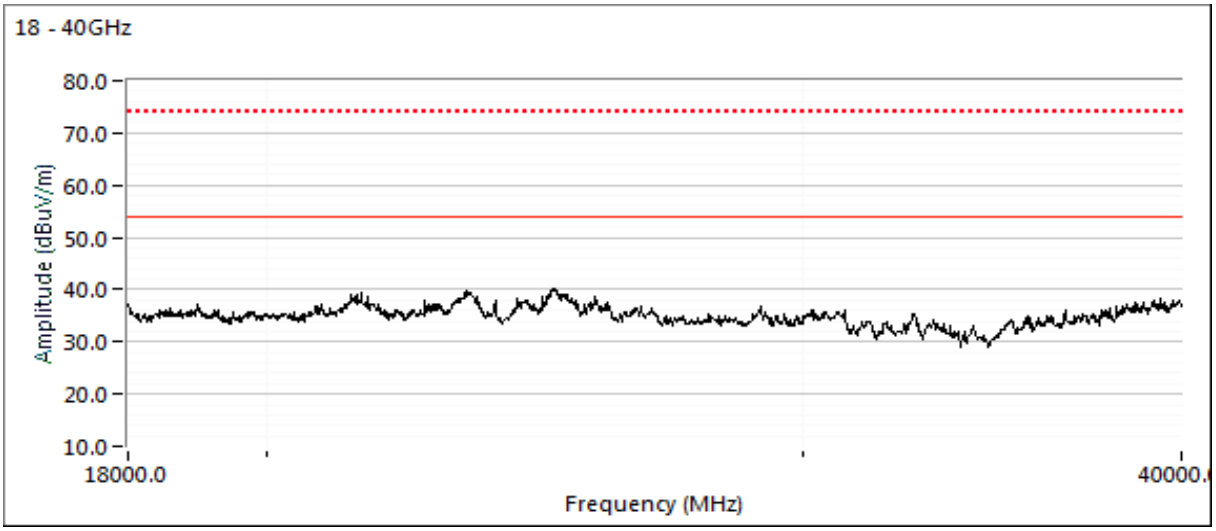
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2c: Center Channel
Channel: 6, 60 Wi-Fi, 26 - ZigBee
Tx Chain: 4
Mode: a, b
Data Rate: MCS0, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1075.000	37.3	H	60.0	-22.7	Peak	151	2.2	Note 5
1500.000	38.1	H	60.0	-21.9	Peak	238	1.3	Note 5
2000.000	56.9	V	60.0	-3.1	Peak	69	1.0	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

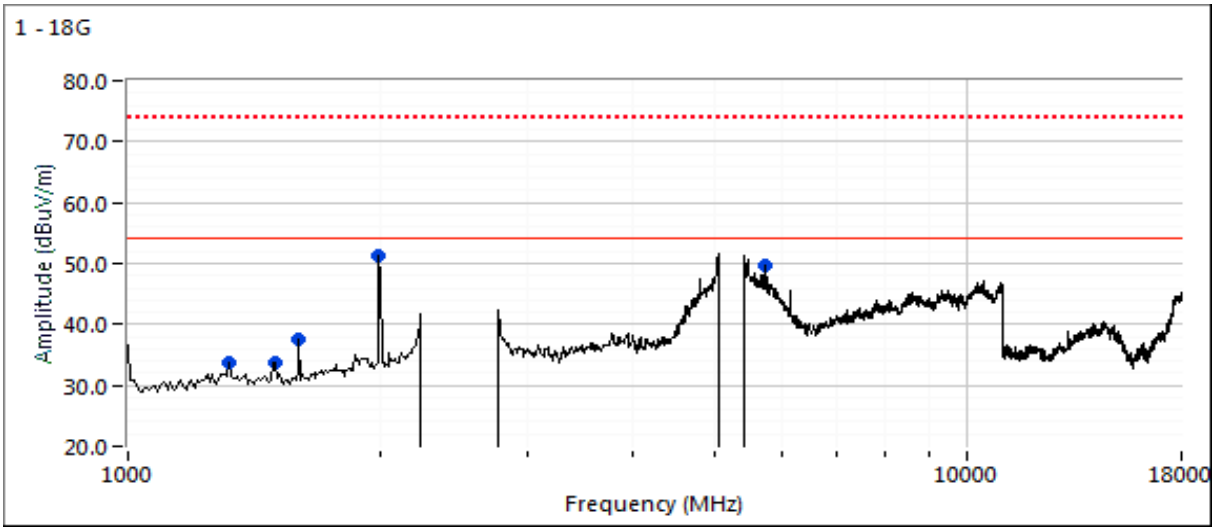
Run #4, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5250-5350 MHz Band

Date of Test: 10/16/2018 Config. Used: Ant 19
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

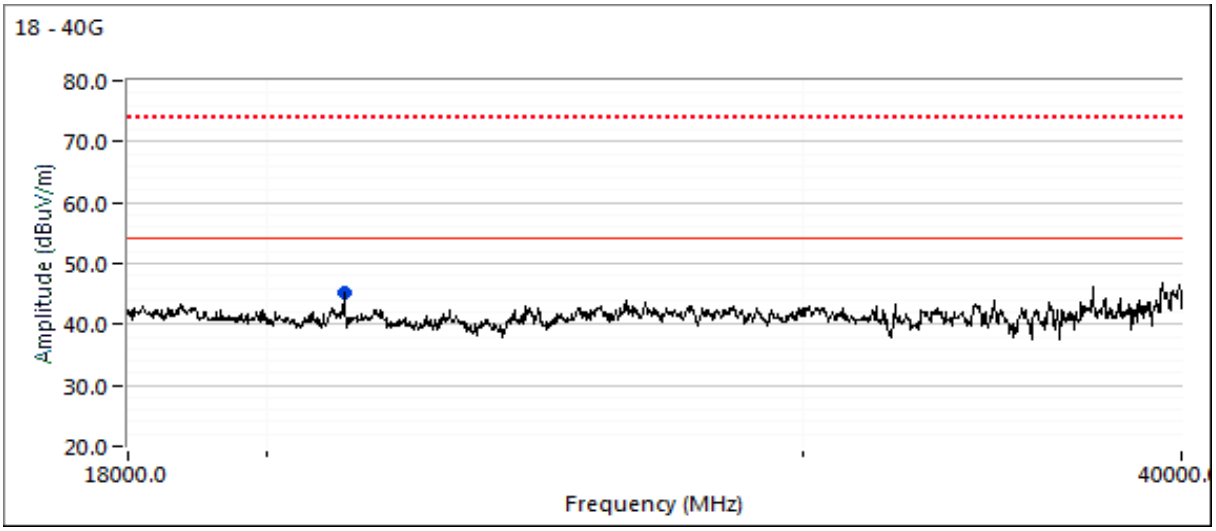
Run #4a: Center Channel

Channel: 1 & 60 Wi-Fi Mode: a, g
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6MB/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1316.670	33.6	H	60.0	-26.4	Peak	59	1.6	Note 5
1500.000	33.7	V	60.0	-26.3	Peak	313	1.6	Note 5
1600.000	37.4	V	60.0	-22.6	Peak	278	1.9	Note 5
2000.000	51.4	V	60.0	-8.6	Peak	41	1.6	Note 5
5759.920	56.9	V	68.3	-11.4	PK	175	1.5	RB 1 MHz;VB 3 MHz;Peak
21196.600	39.9	V	54.0	-14.1	VAVG	247	1.2	RB 1 MHz;VB 1KHz;Note 3
21195.400	55.3	V	74.0	-18.7	PK	247	1.2	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

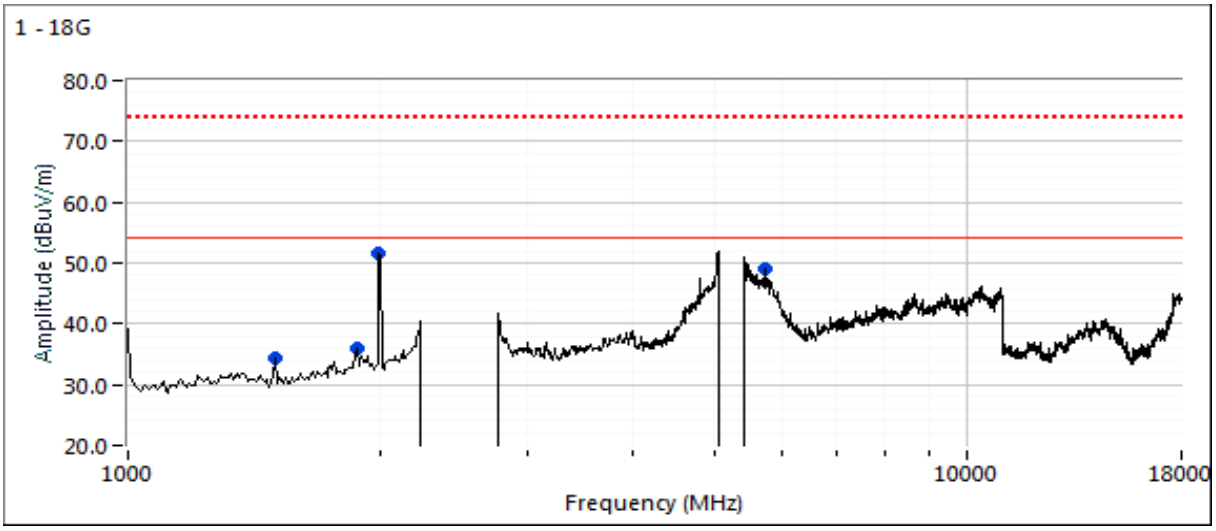
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4b: Center Channel

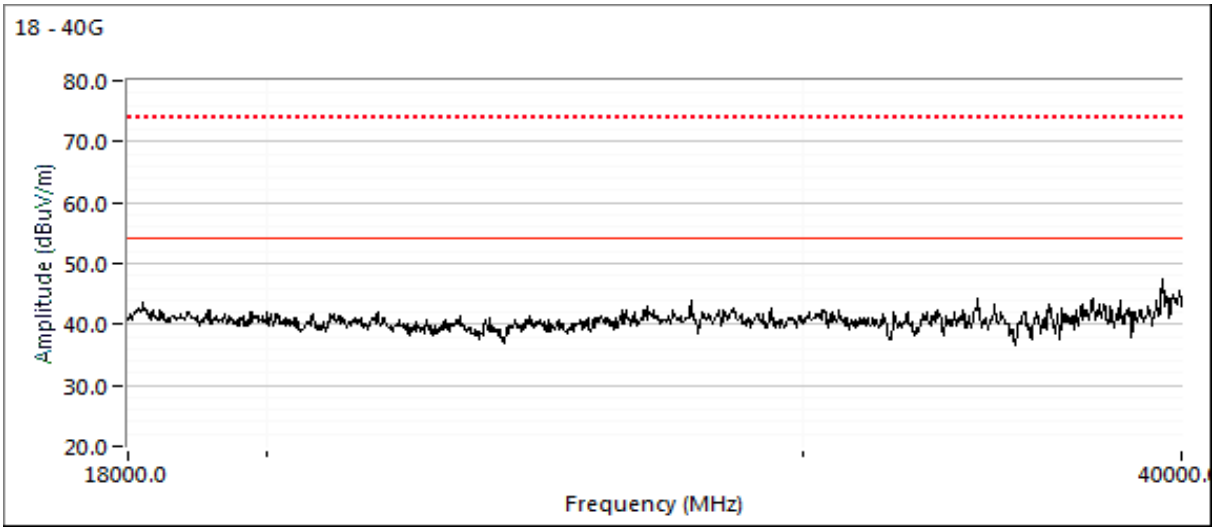
Channel: 1 & 60 Wi-Fi Mode: 11ax20

Tx Chain: 4 (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	
1500.000	34.4	V	60.0	-25.6	Peak	332	1.9	Note 5
1875.000	35.9	H	60.0	-24.1	Peak	65	1.9	Note 5
2000.000	51.5	V	60.0	-8.5	Peak	45	1.6	Note 5
5759.550	57.6	V	68.3	-10.7	PK	165	1.4	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4c: Center Channel

Date of Test: 10/17/2018 8:00 — Config. Used: Ant 19

Test Engineer: Roy Zheng — Config Change: none

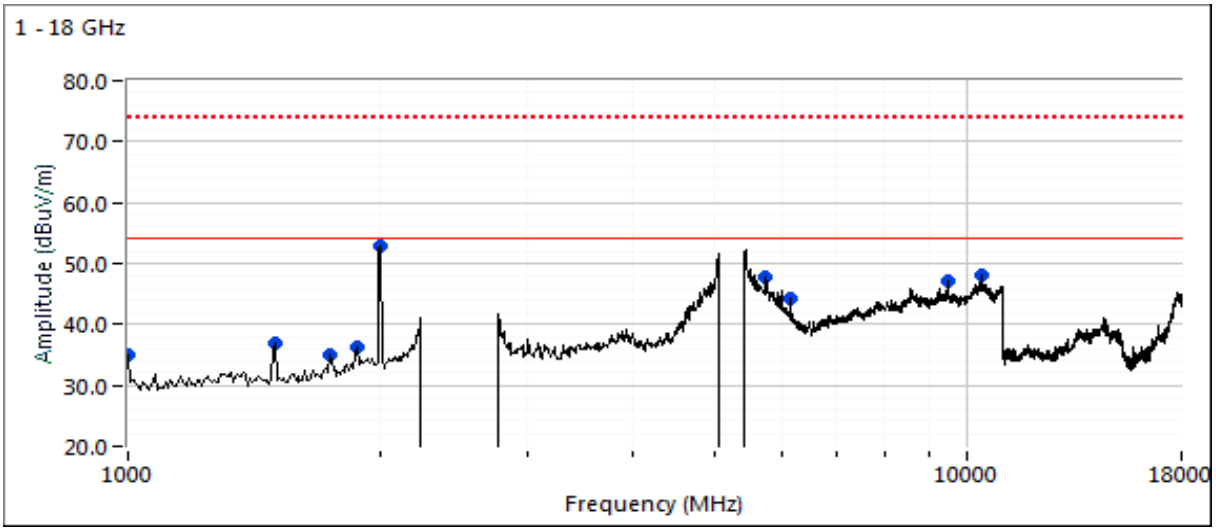
Test Location: Chamber #5 — EUT Voltage: PoE & 120V/60Hz

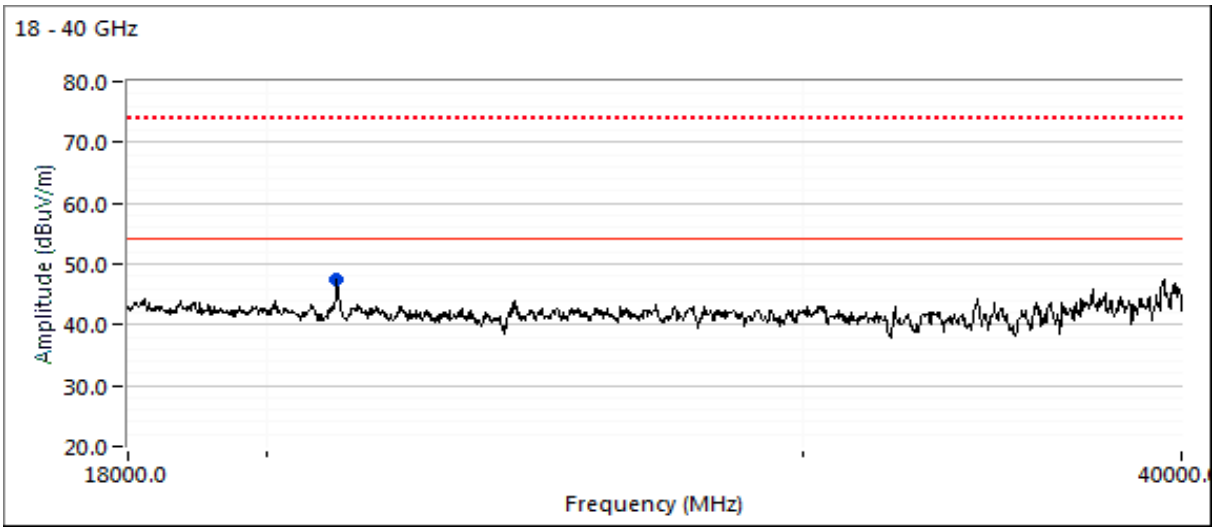
Channel: 1 & 54 Wi-Fi, 17 - BLE — Mode: 11ax40

Tx Chain: 4 (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	
1000.000	35.0	H	60.0	-25.0	Peak	53	1.9	Note 5
1500.000	37.0	H	60.0	-23.0	Peak	63	1.9	Note 5
1741.670	35.1	V	60.0	-24.9	Peak	209	1.0	Note 5
1875.000	36.2	H	60.0	-23.8	Peak	6	1.3	Note 5
2000.060	52.3	H	60.0	-7.7	Avg	337	1.0	Note 5
2000.060	54.2	H	80.0	-25.8	PK	337	1.0	Note 5
5759.980	55.9	H	68.3	-12.4	PK	328	1.5	RB 1 MHz;VB 3 MHz;Peak
6143.850	50.9	H	68.3	-17.4	PK	330	1.5	RB 1 MHz;VB 3 MHz;Peak
9505.560	42.0	V	68.3	-26.3	PK	330	1.5	RB 1 MHz;VB 3 MHz;Peak
9725.000	53.0	V	68.3	-15.3	PK	330	1.5	RB 1 MHz;VB 3 MHz;Peak
10392.740	55.6	H	68.3	-12.7	PK	330	1.5	RB 1 MHz;VB 3 MHz;Peak
21088.330	41.2	V	54.0	-12.8	VAVG	176	1.2	RB 1 MHz;VB 300 Hz; Note 3
21088.560	60.8	V	74.0	-13.2	PK	176	1.2	RB 1 MHz;VB 3 MHz;Peak

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



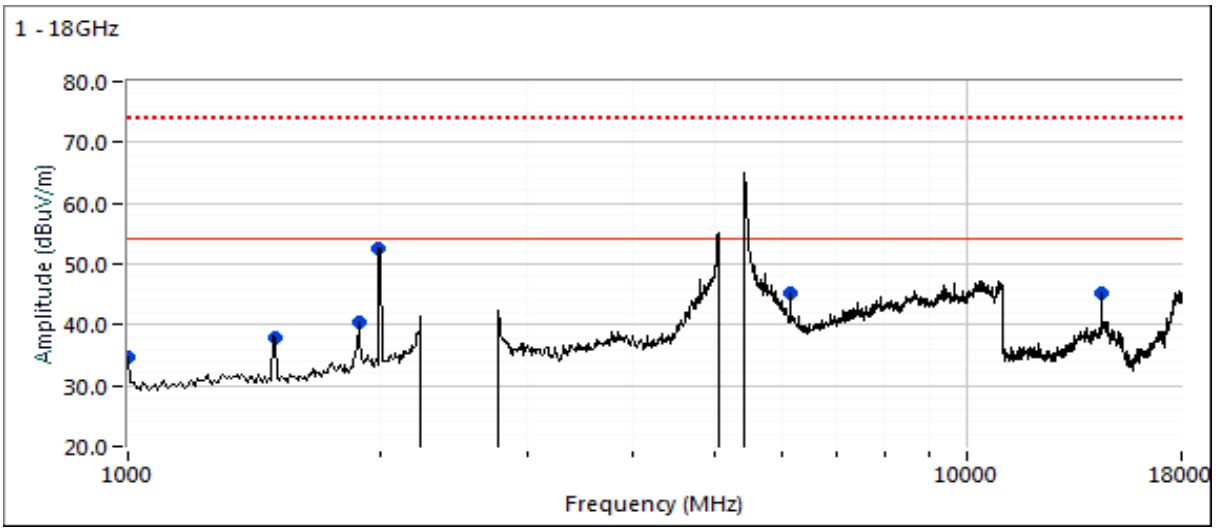


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

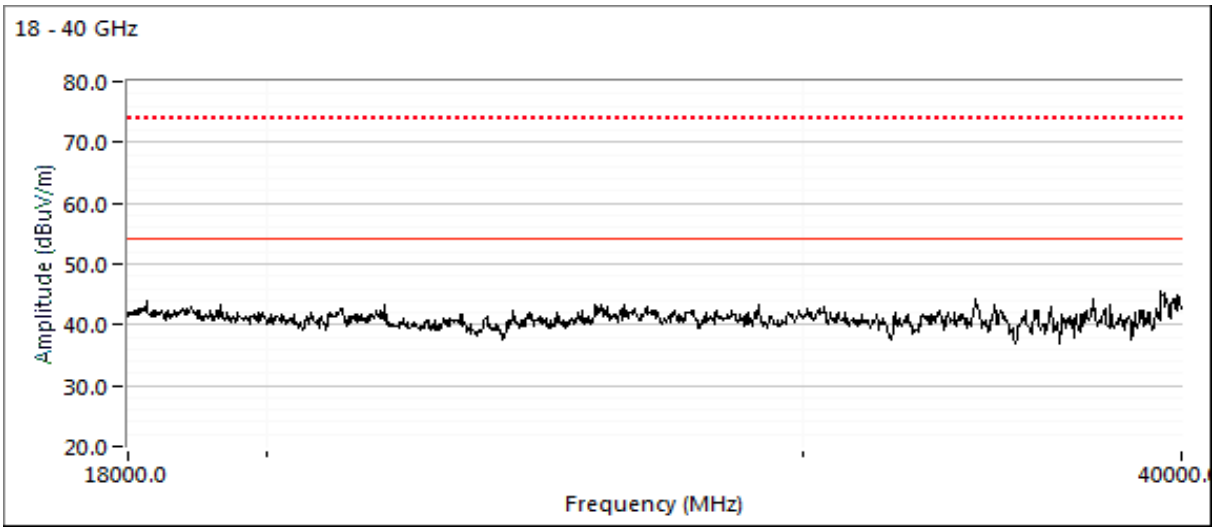
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4d: Center Channel
Channel: 1 & 58 Wi-Fi, 17 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1000.000	34.8	V	60.0	-25.2	Peak	69	1.9	Note 5
1500.000	38.0	V	60.0	-22.0	Peak	50	1.0	Note 5
1883.330	40.3	V	60.0	-19.7	Peak	226	1.0	Note 5
2000.070	53.6	V	60.0	-6.4	Avg	122	2.0	Note 5
2000.050	55.4	V	80.0	-24.6	PK	122	2.0	Note 5
6149.120	49.2	V	68.3	-19.1	PK	122	2.0	RB 1 MHz;VB 3 MHz;Peak
14472.100	38.4	V	54.0	-15.6	VAVG	0	1.3	RB 1 MHz;VB 300Hz;Note 3
14481.140	50.1	V	74.0	-23.9	PK	0	1.3	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

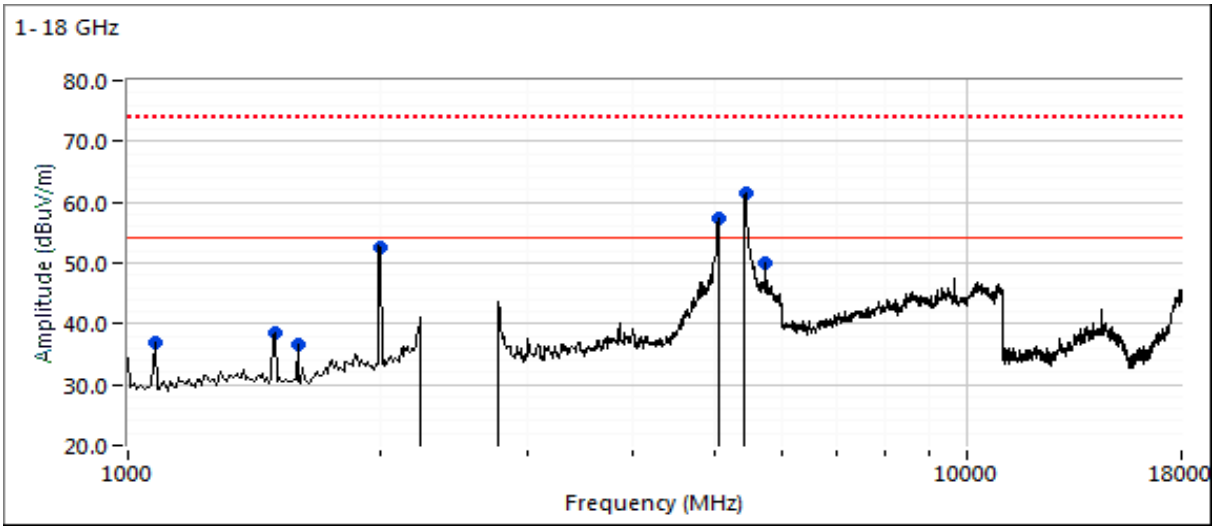
Run #5: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Run #4

Date of Test: 10/18/2018 0:00 Config. Used: Ant 19
Test Engineer: Roy Zheng Config Change: none
Test Location: Chamber #4 EUT Voltage: PoE & 120V/60Hz

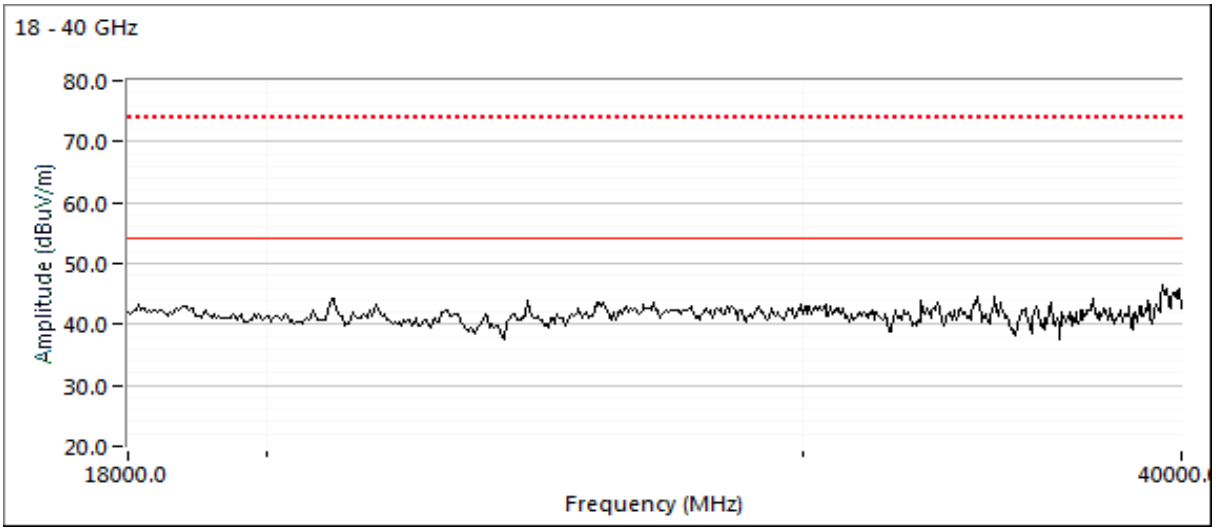
Run #5a: Low Channel

Channel: 1 & 52 Wi-Fi, 37 - BLE Mode: ac80,b
Tx Chain: 4 (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	
1075.000	36.8	V	60.0	-23.2	Peak	349	1.9	Note 5
1500.000	38.4	V	60.0	-21.6	Peak	58	1.0	Note 5
1591.670	36.6	V	60.0	-23.4	Peak	333	2.5	Note 5
2000.060	52.6	V	60.0	-7.4	Avg	127	1.0	Note 5
1999.990	54.1	V	80.0	-25.9	PK	127	1.0	Note 5
5760.310	54.5	V	68.3	-13.8	PK	20	1.6	RB 1 MHz;VB 3 MHz;Peak
5048.590	52.6	V	54.0	-1.4	VAVG	19	1.6	RB 1 MHz;VB 300 Hz;Note 3
5050.010	70.4	V	74.0	-3.6	PK	19	1.6	RB 1 MHz;VB 3 MHz;Peak
5449.200	52.3	V	54.0	-1.7	VAVG	17	1.6	RB 1 MHz;VB 300 Hz;Note 3
5449.400	69.1	V	74.0	-4.9	PK	17	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



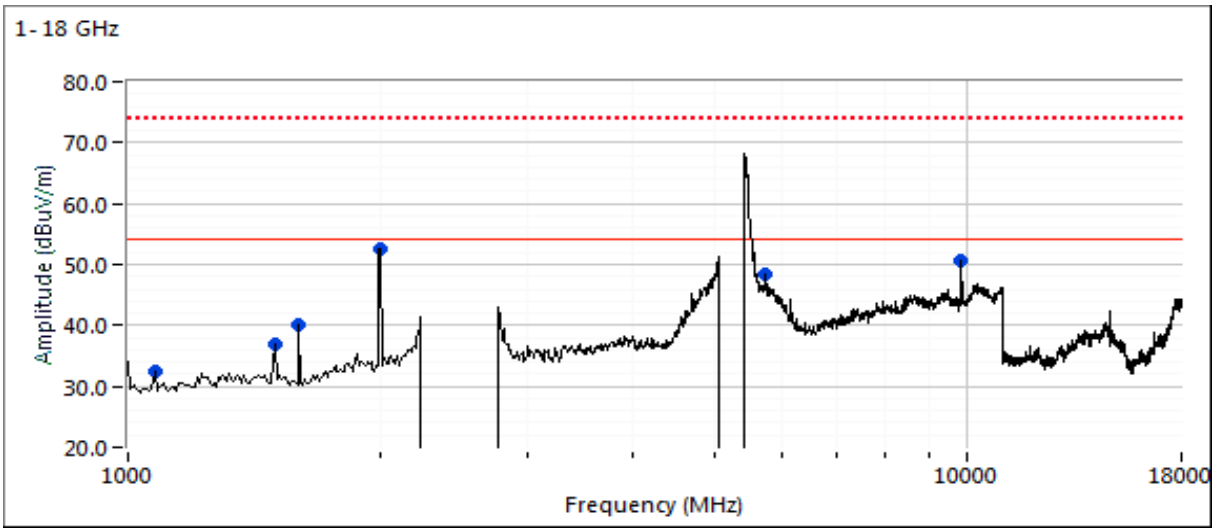
Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

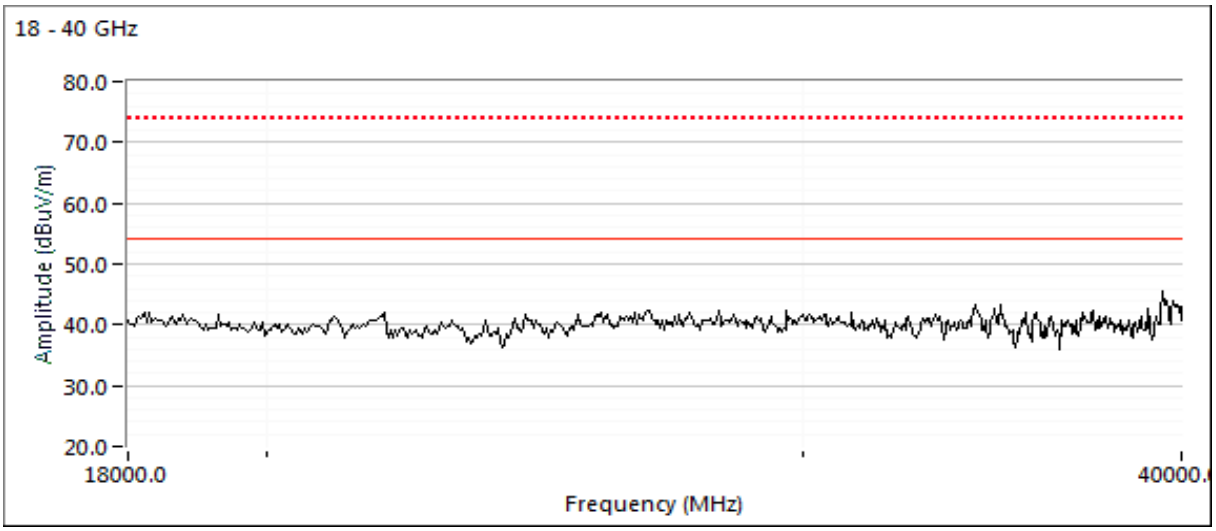
Run #5b: High Channel

Channel: 11 & 64 Wi-Fi, 39 - BLE
Mode: ac80,b
Tx Chain: 4 (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	36.9	V	60.0	-23.1	Peak	61	1.0	Note 5
1600.000	40.0	H	60.0	-20.0	Peak	60	1.0	Note 5
1075.000	32.6	V	60.0	-27.4	Peak	359	1.3	Note 5
2000.040	53.5	V	60.0	-6.5	Avg	120	1.0	Note 5
2000.020	54.8	V	80.0	-25.2	PK	120	1.0	Note 5
5759.270	56.3	V	68.3	-12.0	PK	198	1.6	RB 1 MHz;VB 3 MHz;Peak
9847.890	51.4	V	54.0	-2.6	VAVG	170	1.3	RB 1 MHz;VB 300 Hz;Note 3
9847.980	57.8	V	74.0	-16.2	PK	170	1.3	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

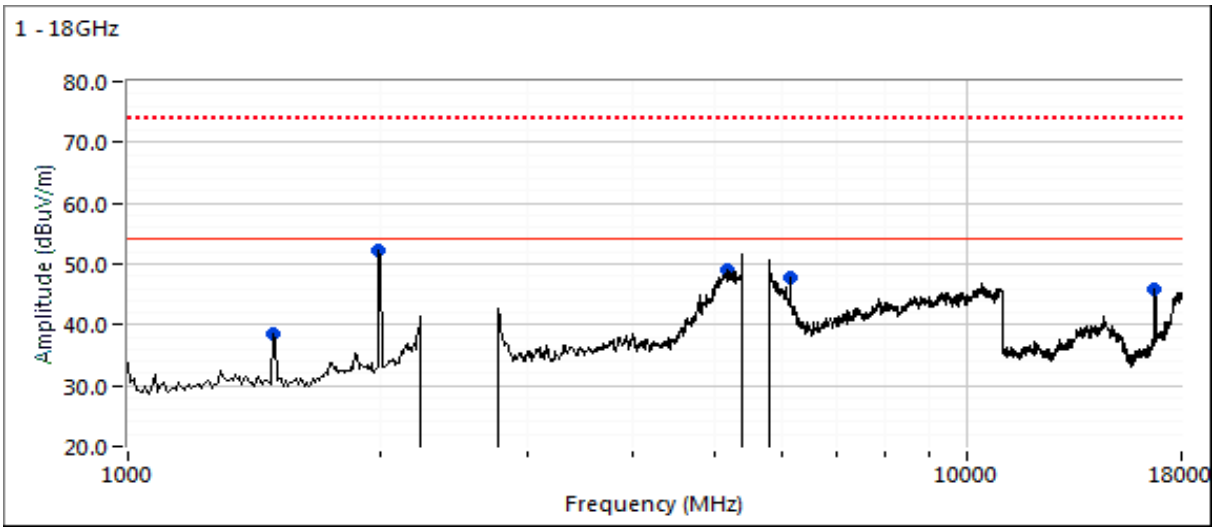
Run #6, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5470-5725 MHz Band

Date of Test: 10/17/2018 0:00 Config. Used: Ant 19
Test Engineer: Rafael Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

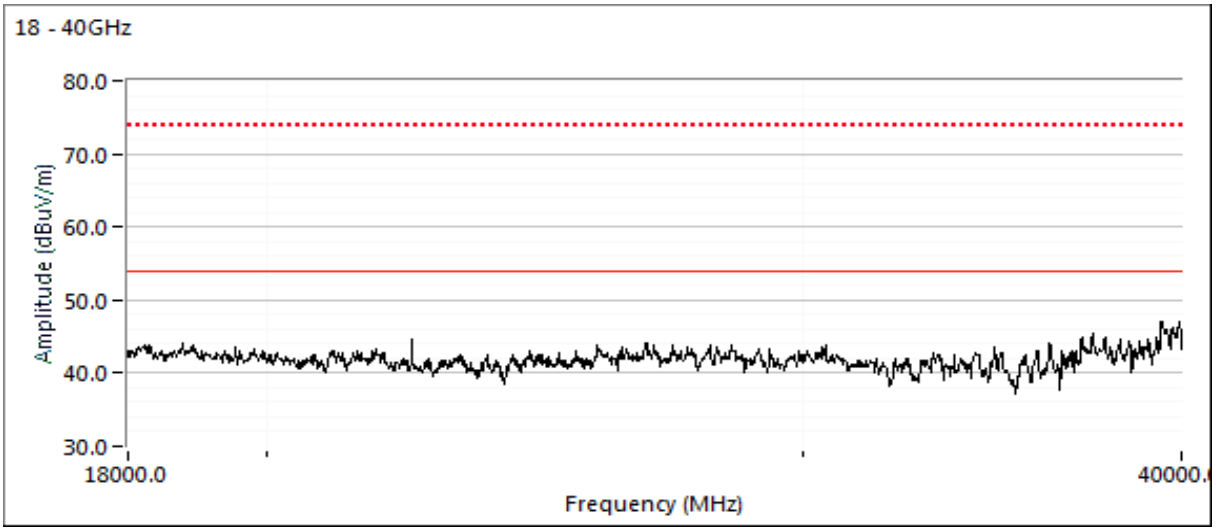
Run #6a: Center Channel

Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: a, g
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6 MB/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.080	37.3	V	60.0	-22.7	Peak	69	2.2	Note 5
16740.000	45.8	V	68.3	-22.5	Peak	183	1.3	
5051.450	43.1	V	54.0	-10.9	VAVG	230	1.6	RB 1 MHz;VB 1 kHz; Note 3
5051.240	55.8	V	74.0	-18.2	PK	230	1.6	RB 1 MHz;VB 3 MHz;Peak
2000.090	49.2	V	60.0	-10.8	Avg	102	1.8	Note 5
2000.120	51.4	V	80.0	-28.6	PK	102	1.8	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

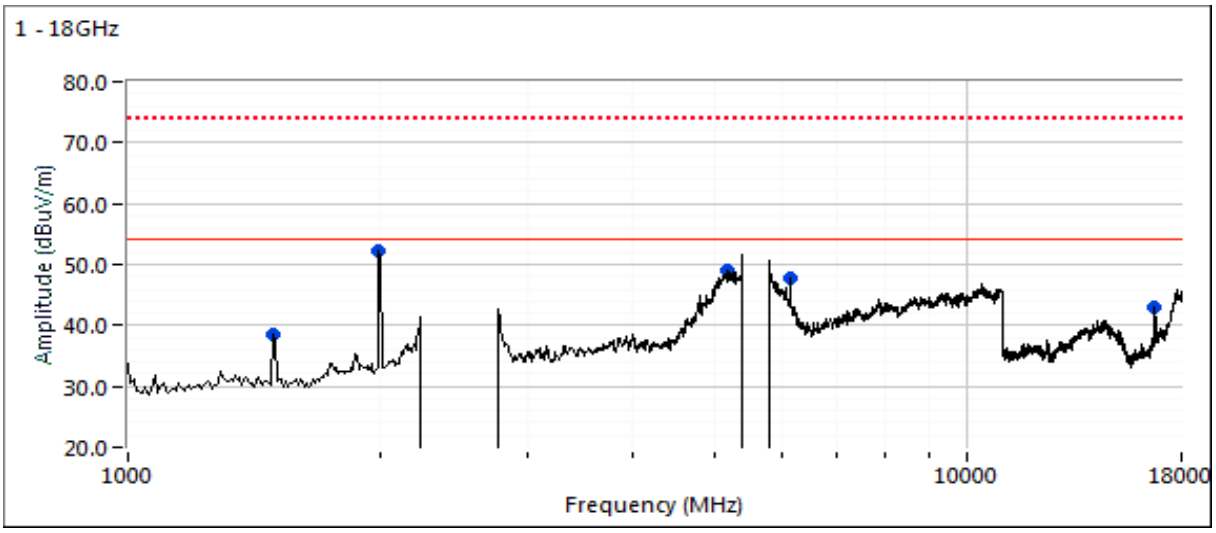
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6b: Center Channel

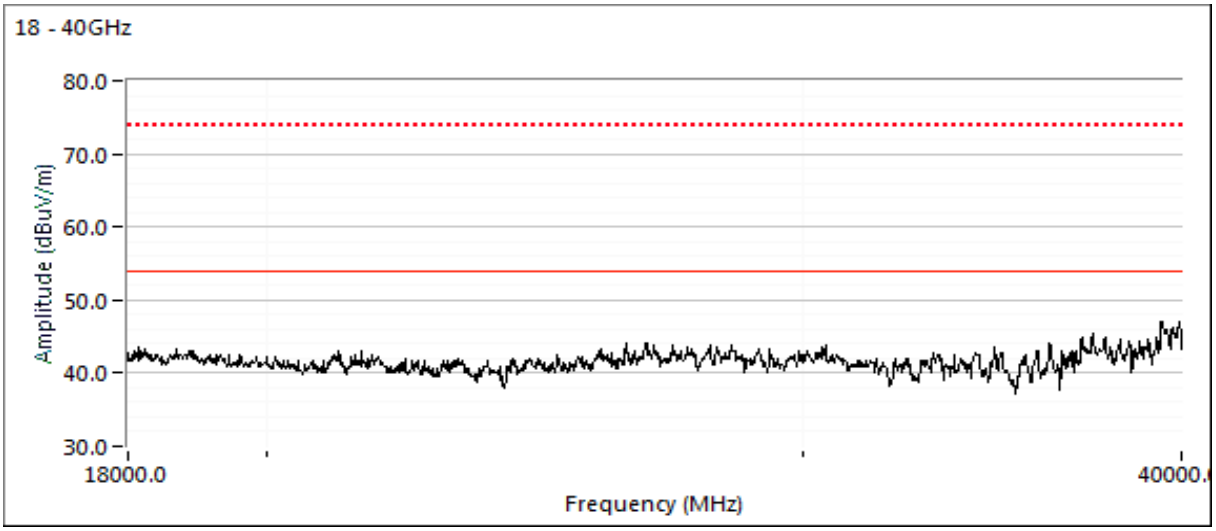
Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: 11ax20

Tx Chain: 4 (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	
1500.160	38.4	V	60.0	-21.6	Peak	68	1.9	Note 5
16740.000	43.0	V	68.3	-25.3	Peak	156	1.3	
2000.040	48.6	V	60.0	-11.4	Avg	96	1.0	Note 5
2000.010	51.2	V	80.0	-28.8	PK	96	1.0	Note 5
5183.680	58.3	V	68.3	-10.0	PK	320	1.6	RB 1 MHz;VB 3 MHz;Peak
6144.050	54.3	V	68.3	-14.0	PK	319	1.6	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

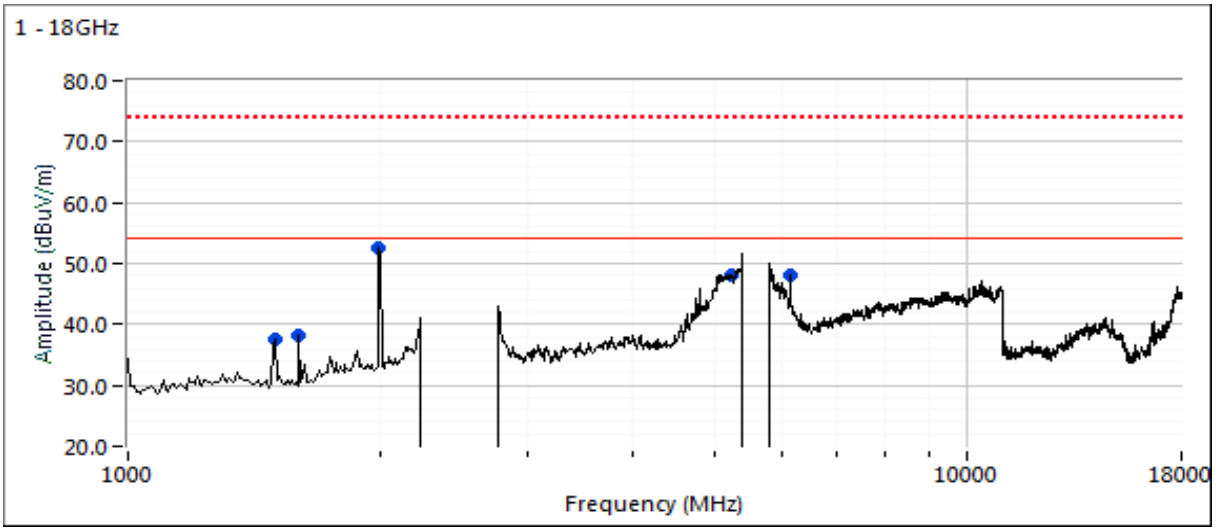
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6c: Center Channel

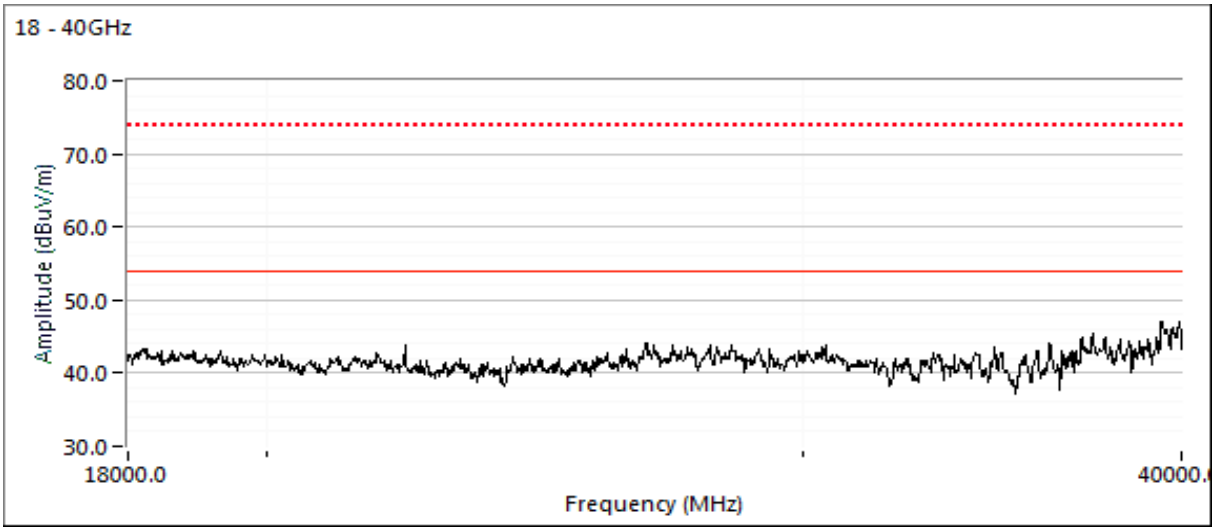
Channel: 9 & 110 Wi-Fi, 39 - BLE Mode: 11ax40

Tx Chain: 4 (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	
1500.080	37.6	V	60.0	-22.4	Peak	61	1.0	Note 5
1599.920	38.1	V	60.0	-21.9	Peak	307	1.6	Note 5
5223.300	56.1	V	68.3	-12.2	PK	176	1.6	RB 1 MHz;VB 3 MHz;Peak
6149.650	52.1	V	68.3	-16.2	PK	133	1.6	RB 1 MHz;VB 3 MHz;Peak
2000.080	49.6	V	60.0	-10.4	Avg	100	1.0	Note 5
2000.080	51.8	V	80.0	-28.2	PK	100	1.0	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

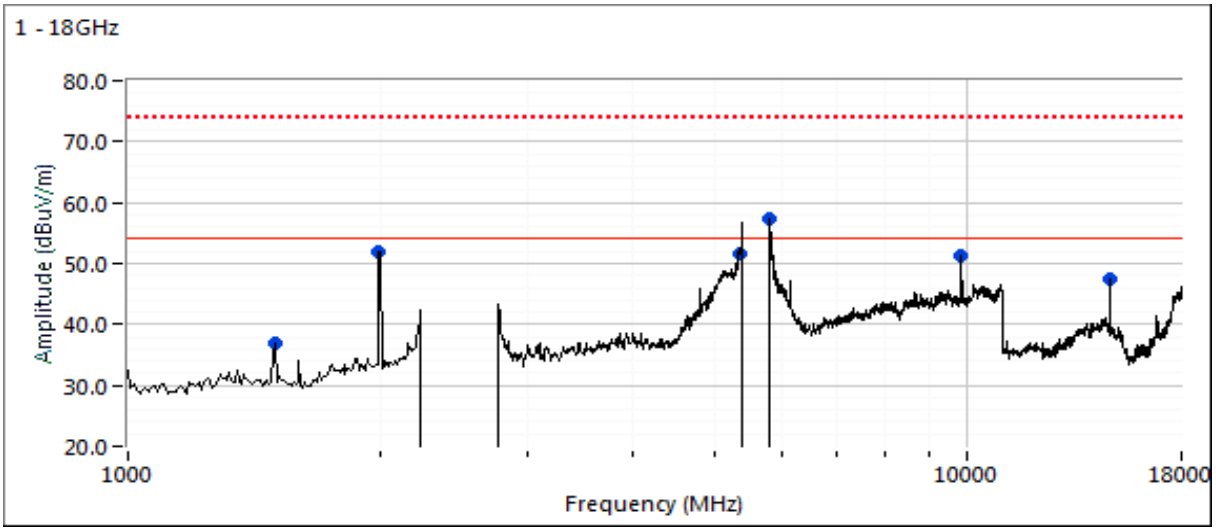
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6d: Center Channel

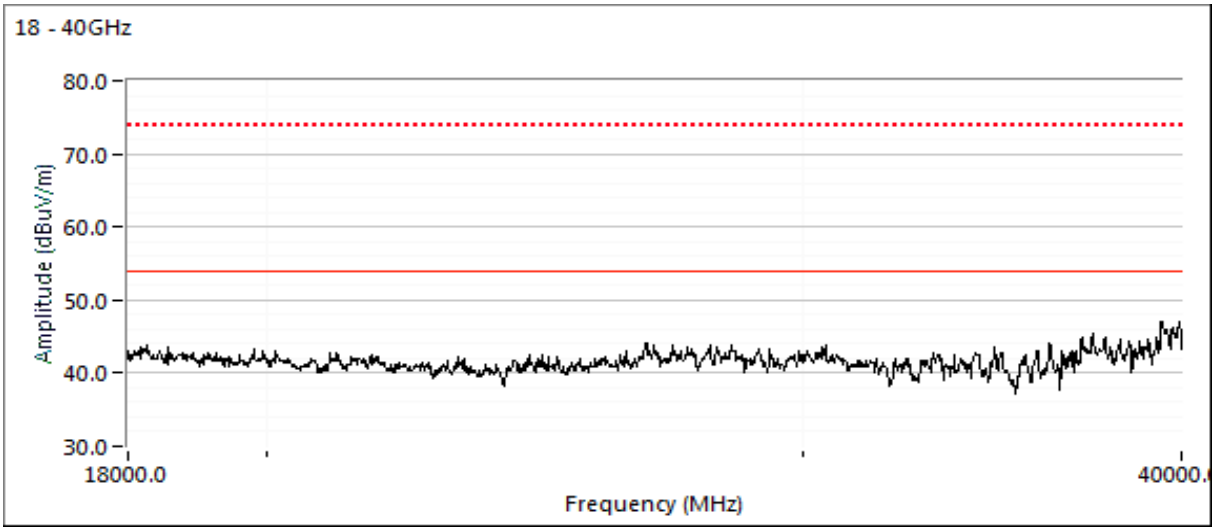
Channel: 11 & 122 Wi-Fi, 39 - BLE Mode: ac80 / b Note: Channel 122 not used in Canada

Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.170	37.0	V	60.0	-23.0	Peak	71	1.9	Note 5
2000.050	52.4	V	60.0	-7.6	Avg	13	1.4	Note 5
2000.070	54.0	V	80.0	-26.0	PK	13	1.4	Note 5
9847.920	48.3	V	54.0	-5.7	VAVG	180	1.0	RB 1 MHz;VB 300 Hz; Note 3
9848.140	57.0	V	74.0	-17.0	PK	180	1.0	RB 1 MHz;VB 3 MHz;Peak
5378.790	50.6	V	54.0	-3.4	VAVG	224	1.5	RB 1 MHz;VB 300 Hz; Note 3
5378.810	64.3	V	74.0	-9.7	PK	224	1.5	RB 1 MHz;VB 3 MHz;Peak
5821.920	64.0	V	68.3	-4.3	PK	148	1.5	RB 1 MHz;VB 3 MHz;Peak
14771.680	53.3	V	68.3	-15.0	PK	167	1.7	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

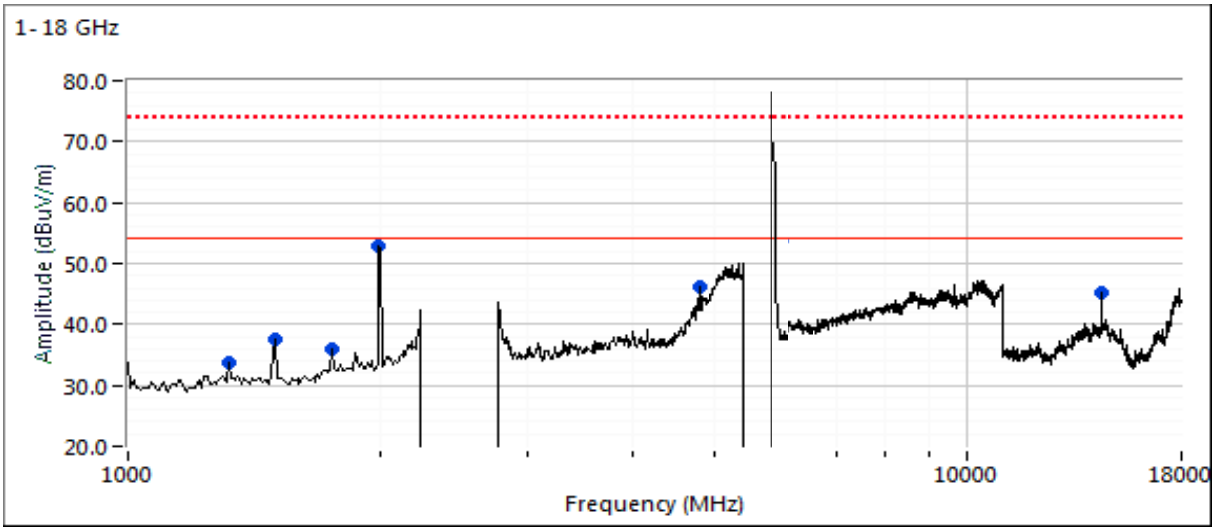
Run #7: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Runs #7 and 8

Date of Test: 10/18/2018 0:00 Config. Used: Ant 19
Test Engineer: Roy Zheng Config Change: none
Test Location: Chamber #4 EUT Voltage: PoE & 120V/60Hz

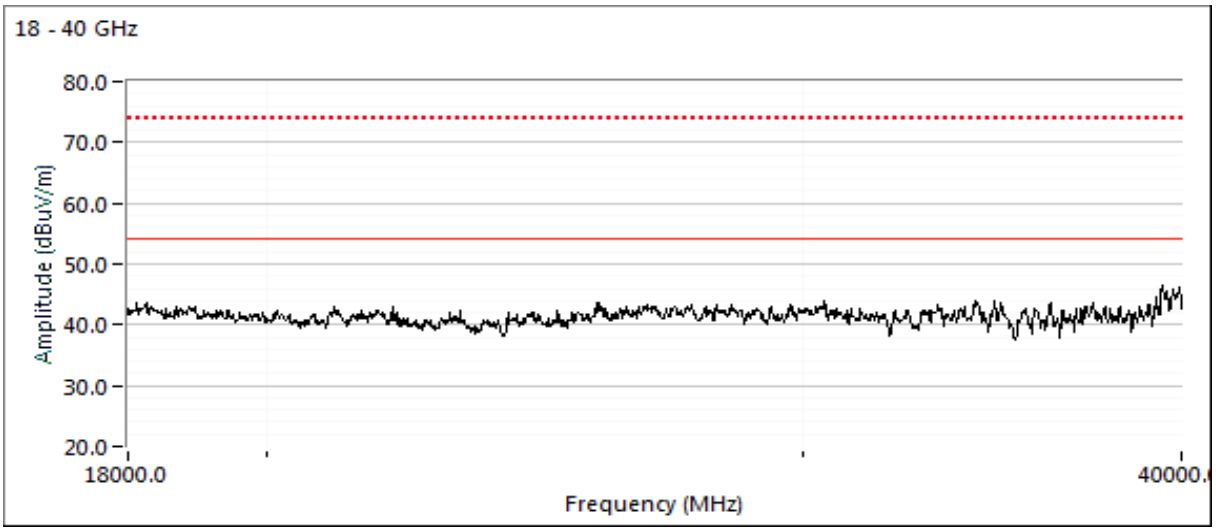
Run #7a: Low Channel

Channel: 1&100 Wi-Fi, 37 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz low), 4 (5GHz high), 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	
1316.670	33.6	H	60.0	-26.4	Peak	136	1.0	Note 5
1500.000	37.5	V	60.0	-22.5	Peak	13	1.0	Note 5
1750.000	36.0	H	60.0	-24.0	Peak	33	2.2	Note 5
2000.020	53.3	V	60.0	-6.7	Avg	130	1.2	Note 5
2000.130	56.5	V	80.0	-23.5	PK	130	1.2	Note 5
4902.300	46.8	V	54.0	-7.2	VAVG	30	1.4	RB 1 MHz;VB 300 kHz;Note 3
4900.660	52.5	V	74.0	-21.5	PK	30	1.4	RB 1 MHz;VB 3 MHz;Peak
14471.920	43.1	V	54.0	-10.9	VAVG	205	1.3	RB 1 MHz;VB 300 Hz;Note 3
14471.830	51.5	V	74.0	-22.5	PK	205	1.3	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

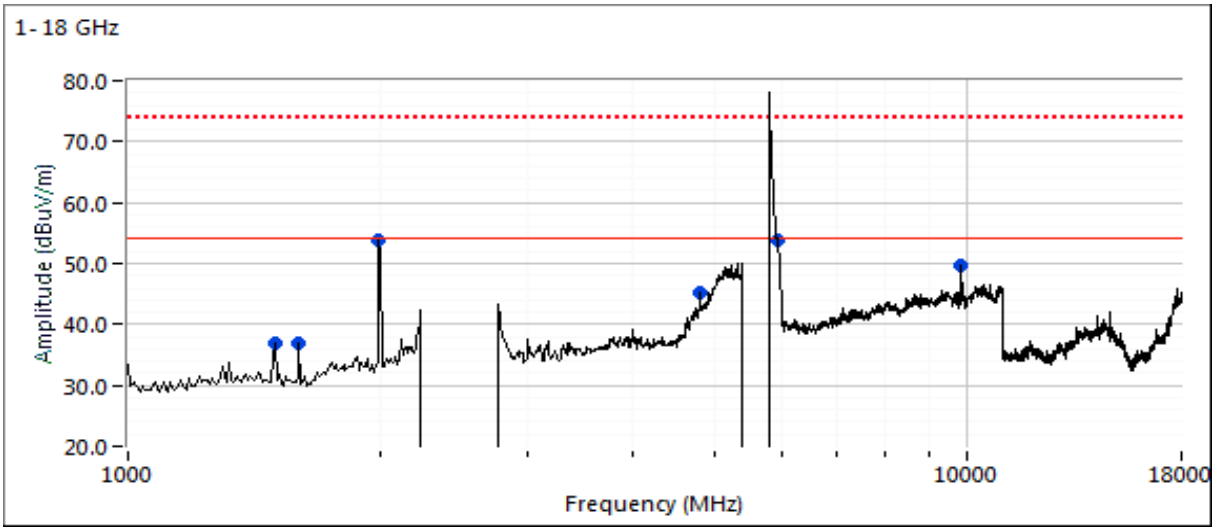


Note 1:	For emissions in restricted bands, the limit of 15.209 was used which requires average and peak measurements.
Note 2:	For emissions outside of the restricted bands the limit is -27dBm/MHz eirp (68.3dBuV/m) for emissions related to UNII operation. The measurement method required is a peak measurement (RB=1MHz, VB≥3MHz, peak detector).

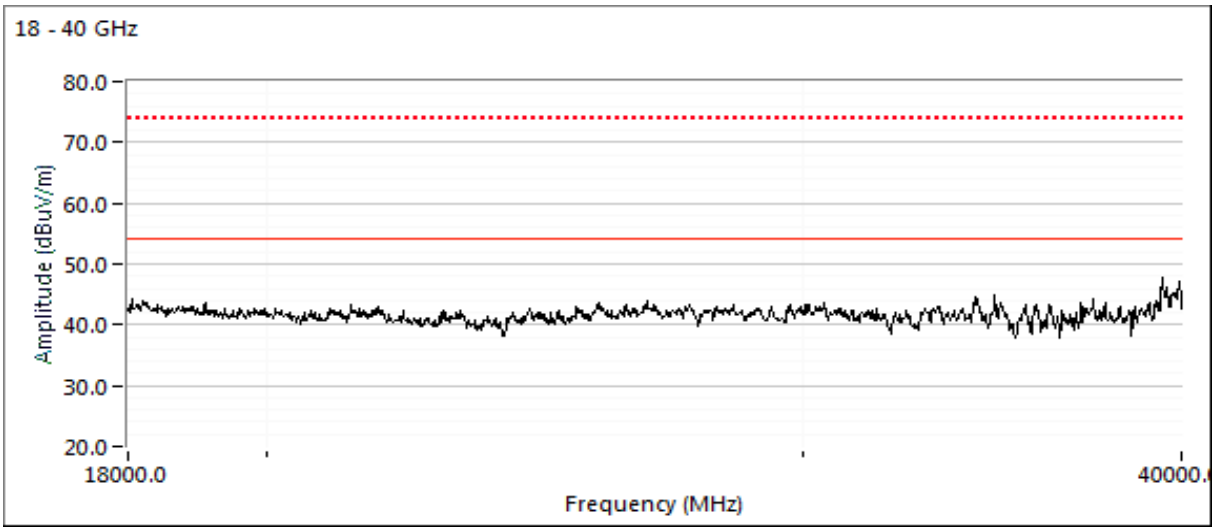
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #7b: High Channel
Channel: 11&144 Wi-Fi, 39 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz low), 4 (5GHz high), 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	36.8	V	60.0	-23.2	Peak	34	1.6	Note 5
1600.000	36.9	H	60.0	-23.1	Peak	178	2.5	Note 5
2000.000	51.7	V	60.0	-8.3	Avg	124	1.0	Note 5
1999.970	51.2	V	80.0	-28.8	PK	124	1.0	Note 5
4799.980	43.3	V	54.0	-10.7	VAVG	14	1.8	RB 1 MHz;VB 300 Hz;Note 3
4800.060	52.3	V	74.0	-21.7	PK	14	1.8	RB 1 MHz;VB 3 MHz;Peak
5954.590	62.3	V	68.3	-6.0	PK	33	1.7	RB 1 MHz;VB 3 MHz;Peak
9847.870	45.4	H	54.0	-8.6	VAVG	96	1.7	RB 1 MHz;VB 300 Hz;Note 3
9848.120	54.8	H	74.0	-19.2	PK	96	1.7	RB 1 MHz;VB 3 MHz;Peak



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	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: 23-24 °C
Rel. Humidity: 37-39 %

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	Power Settings		Test Performed	Limit	Result / Margin
Scans on worst case mode above with BLE or ZigBee also active.							
2	g & a Zigbee	6 & 116 18	15 & 20 8	15 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	All radio emissions were below the limit.
	g & a Zigbee	6 & 60 26	15 & 20 8	15 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	All radio emissions were below the limit.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #	Mode	Channel	Power Settings		Test Performed	Limit	Result / Margin
Scans on "lowest" and "center" channel in all five OFDM modes to determine the worst case mode. (4x4 in 5 GHz bands and 4x4 in 2.4 GHz band). Ax80+80 mode performed in Run 1.							
4	g & a	1 & 60	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.0 dBµV/m @ 4800.1 MHz (-9.0 dB)
	ax20	1 & 60	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	46.1 dBµV/m @ 4800.0 MHz (-7.9 dB)
	b & ax40 BLE	1 & 54 17	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.8 dBµV/m @ 4799.9 MHz (-10.2 dB)
	b & ac80 BLE	1 & 58 37	20 6	18.5 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	52.6 dBµV/m @ 5437.6 MHz (-1.4 dB)
Measurements on low and high channels in worst-case OFDM mode.							
5	b & ac80 BLE	1 & 52 37	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	49.7 dBµV/m @ 2000.03 MHz (-4.3 dB)
	b & ac80 BLE	11 & 64 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.1 dBµV/m @ 4899.1 MHz (-9.9 dB)
Scans on "highest" and "center" channel in all five OFDM modes to determine the worst case mode (4x4 in 5 GHz bands and 4x4 in 2.4 GHz band). Ax80+80 mode performed in Run 1.							
6	g & a BLE	11 & 116 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	58.0 dBµV/m @ 5169.0 MHz (-10.3 dB)
	ax20 BLE	11 & 116 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	58.6 dBµV/m @ 5200.1 MHz (-9.7 dB)
	ax40 BLE	9 & 110 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	48.1 dBµV/m @ 5348.2 MHz (-5.9 dB)
	b & ac80 BLE	11 & 122 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	49.6 dBµV/m @ 5371.9 MHz (-4.4 dB)
Measurements on low and high channels in worst-case OFDM mode.							
7	ax40 BLE	3 & 102 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.5 dBµV/m @ 5184 MHz (-6.5 dB)
	ax40 BLE	9 & 142 39	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	38.2 dBµV/m @ 4849.1 MHz (-15.8 dB)

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Procedure Comments:

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

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
ZigBee	250 kb/s	42.7%	Yes	0.9	3.7	7.4	1159
BLE	1 Mb/s	72.0%	Yes	0.6	1.4	2.9	1706
11b	1 Mb/s	78.4%	Yes	0.7	1.1	2.1	1495
11a	MCS0	92.3%	Yes	1.4	0.3	0.7	698
11ax20	MCS0	95.6%	Yes	5.4	0.2	0.4	184
11ax40	MCS0	95.9%	Yes	5.4	0.2	0.4	184
11ax80	MCS0	94.9%	Yes	5.4	0.2	0.5	185
11ac80+80	MCS0	96.5%	Yes	5.4	0.2	0.3	184

Sample Notes

BLE Sample SN: CNG6K9V019 and Zigbee Sample SN: CNG6K9V00C
Driver: P2 WNC 0.4.3a
Antenna: AP-ANT-48 Wi-Fi, Integral BLE/ZigBee. 5GHz radio may also use 2 elements but with 3 dB higher power and can operate in both lower and upper 5 GHz bands simutaneously. Tests performed with at the 2 elements 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≥3MHz, peak detector).
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.

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

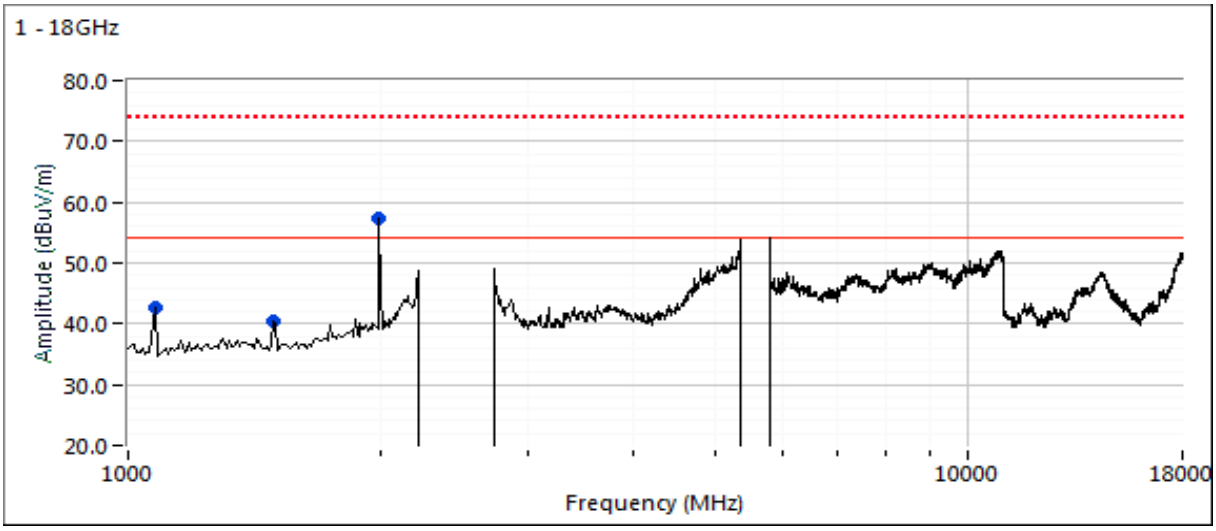
Run #2, Radiated Spurious Emissions, 1,000 - 40,000 MHz.

Date of Test: 12/27/2018 0:00 — Config. Used: Panel antenna
Test Engineer: Roy Zheng / R. Varelas — Config Change: none
Test Location: Chamber #5 — EUT Voltage: PoE & 120V/60Hz

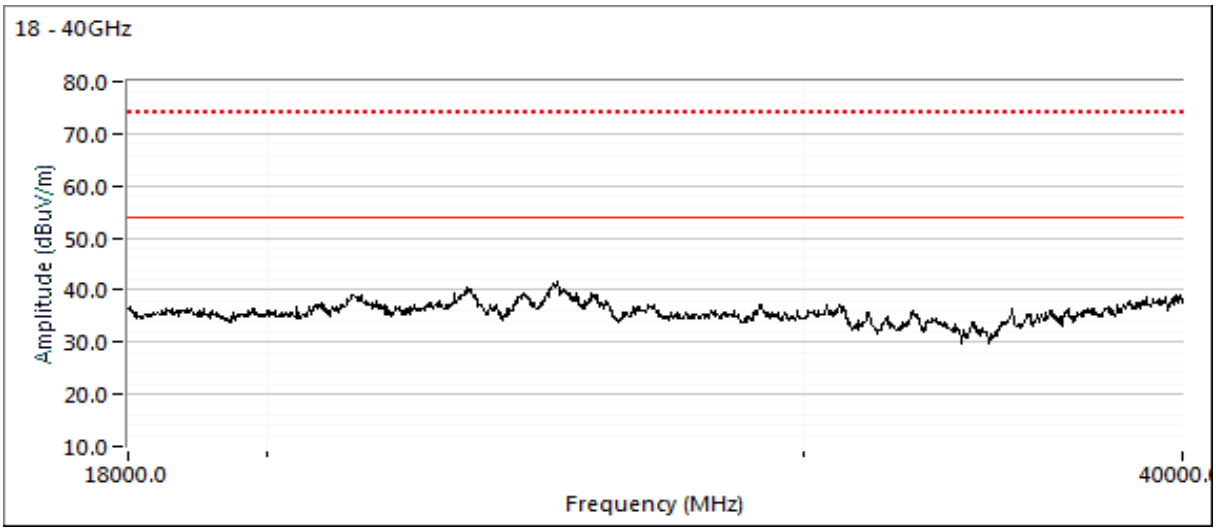
Run #2b: Center Channel

Channel: 6, 116 Wi-Fi, 18 - ZigBee — Mode: g & a
Tx Chain: 4 — Data Rate: 6Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2000.000	57.2	H	60.0	-2.8	Peak	71	2.2	Note 5



Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

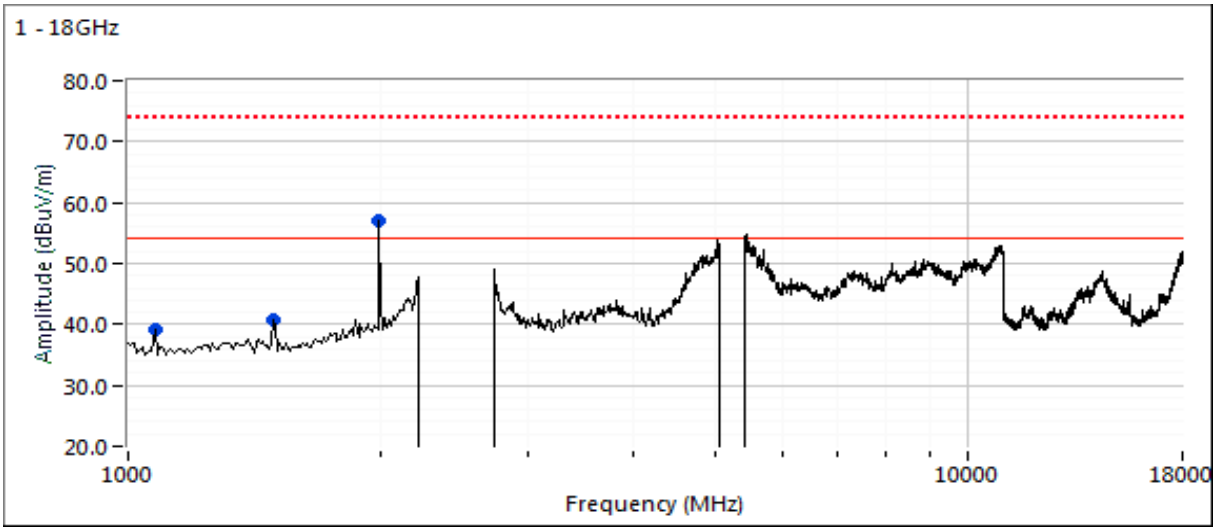


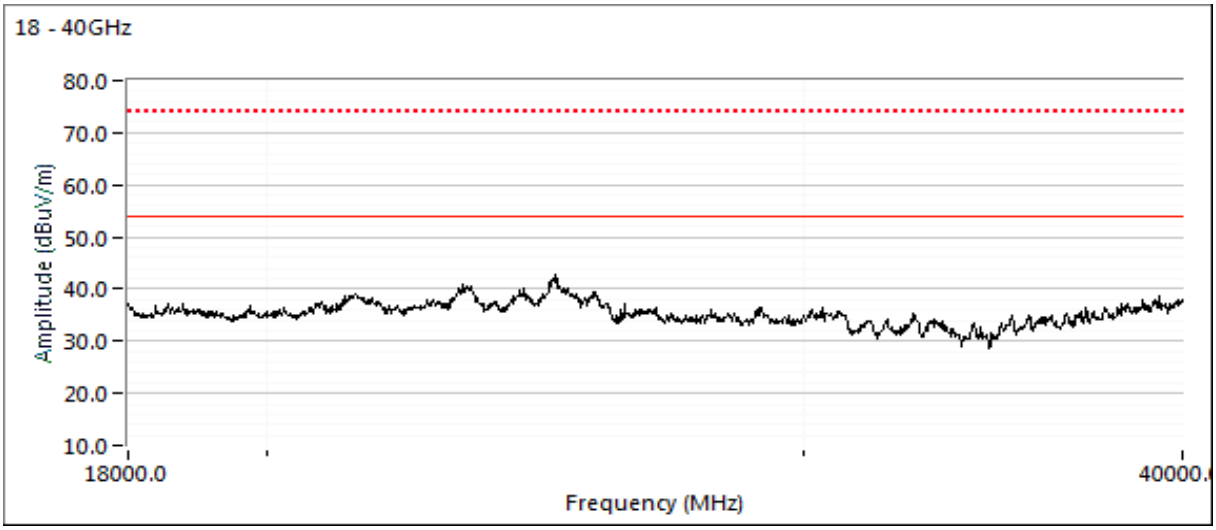
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2c: Center Channel

Channel: 6, 60 Wi-Fi, 26 - ZigBee
Mode: g & a
Tx Chain: 4
Data Rate: 6Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2000.000	56.9	V	60.0	-3.1	Peak	73	1.3	Note 5





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/19/2018 0:00 Config. Used: Panel antenna
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: FT Chamber #4 EUT Voltage: PoE & 120V/60Hz

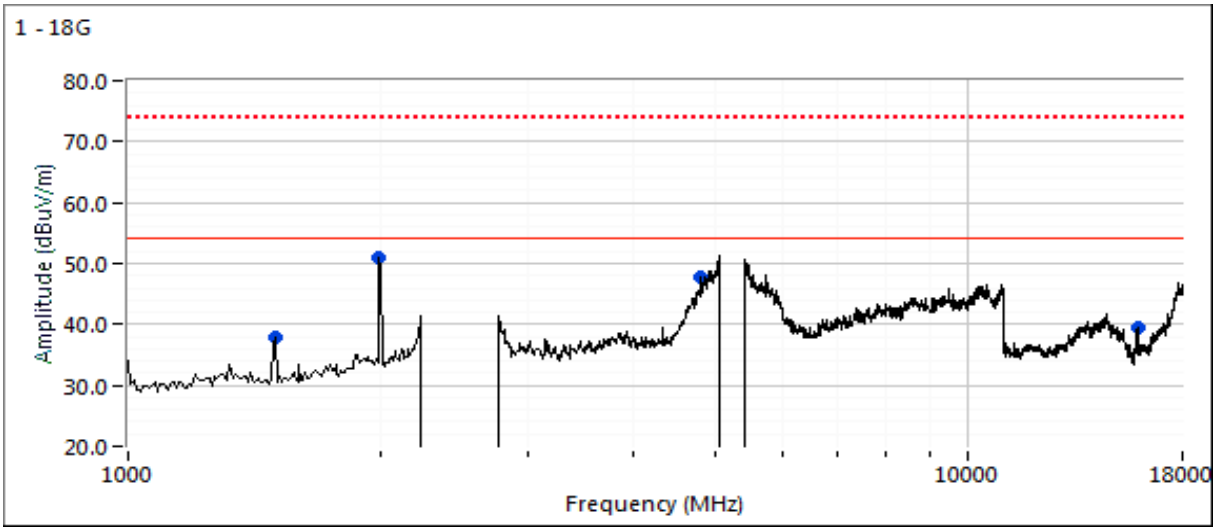
Run #4a: Center Channel

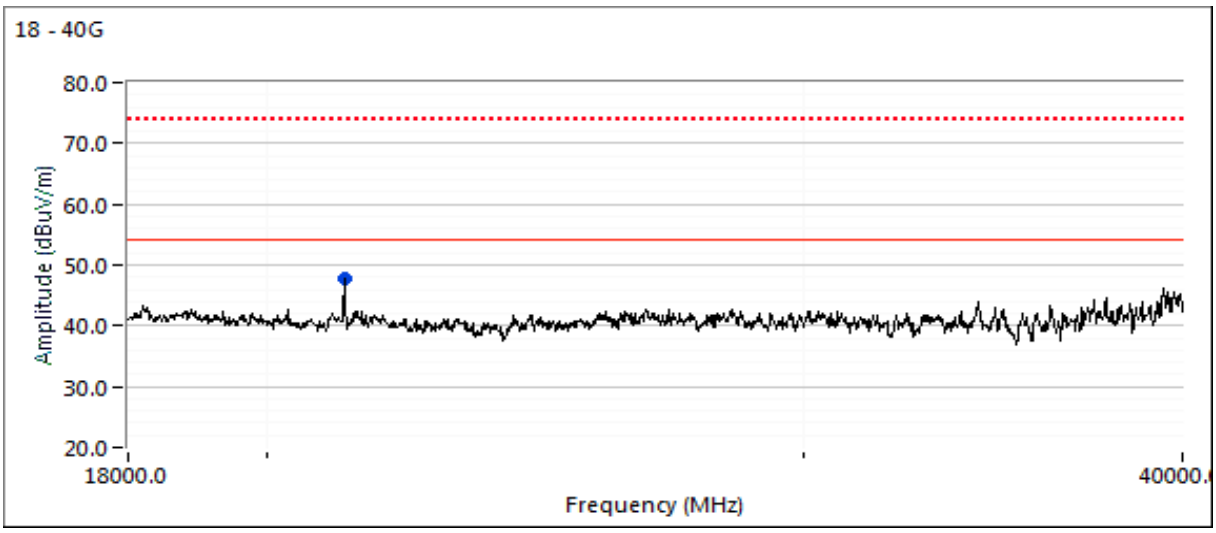
Channel: 1 & 60 Wi-Fi, 17 - BLE Mode: g & a
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4800.100	45.0	H	54.0	-9.0	VAVG	172	2.1	RB 1 MHz;VB 1 kHz;Note 3
4799.800	54.9	H	74.0	-19.1	PK	172	2.1	RB 1 MHz;VB 3 MHz;Peak
21194.640	44.8	V	54.0	-9.2	VAVG	159	1.0	RB 1 MHz;VB 1 kHz;Note 3
21195.510	62.5	V	74.0	-11.5	PK	159	1.0	RB 1 MHz;VB 3 MHz;Peak
1500.000	37.9	V	54.0	-16.1	Peak	63	1.6	Note 5
2000.000	50.9	V	54.0	-3.1	Peak	63	1.6	Note 5
15911.670	39.6	H	54.0	-14.4	Peak	218	1.3	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4b: Center Channel

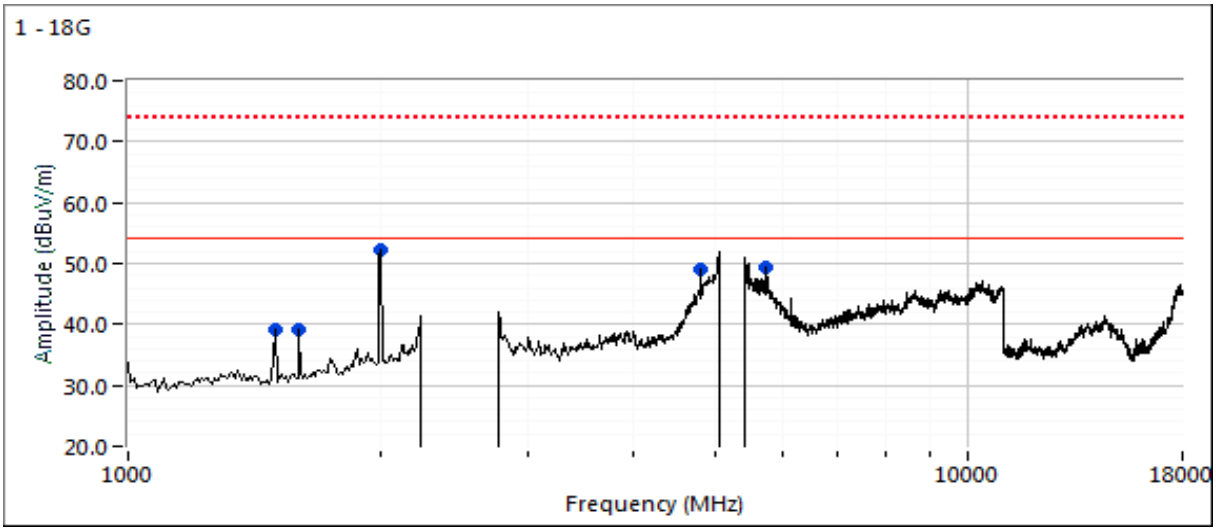
Channel: 1 & 60 Wi-Fi Mode: 11ax20

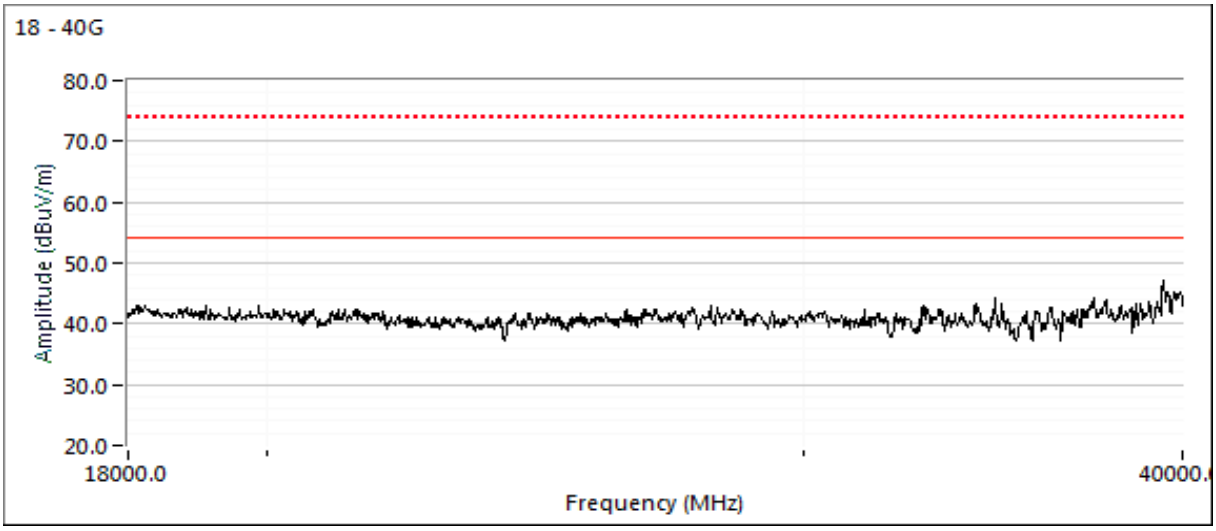
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4800.020	46.1	V	54.0	-7.9	VAVG	158	1.6	RB 1 MHz;VB 300 Hz;Note 3
4799.830	56.3	V	74.0	-17.7	PK	158	1.6	RB 1 MHz;VB 3 MHz;Peak
5758.100	57.0	V	68.3	-11.3	PK	160	1.6	RB 1 MHz;VB 3 MHz;Peak
1500.000	39.0	V	60.0	-21.0	Peak	38	1.0	Note 5
1600.000	39.2	H	60.0	-20.8	Peak	17	1.6	Note 5
2000.000	52.2	H	60.0	-7.8	Peak	71	1.3	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4c: Center Channel

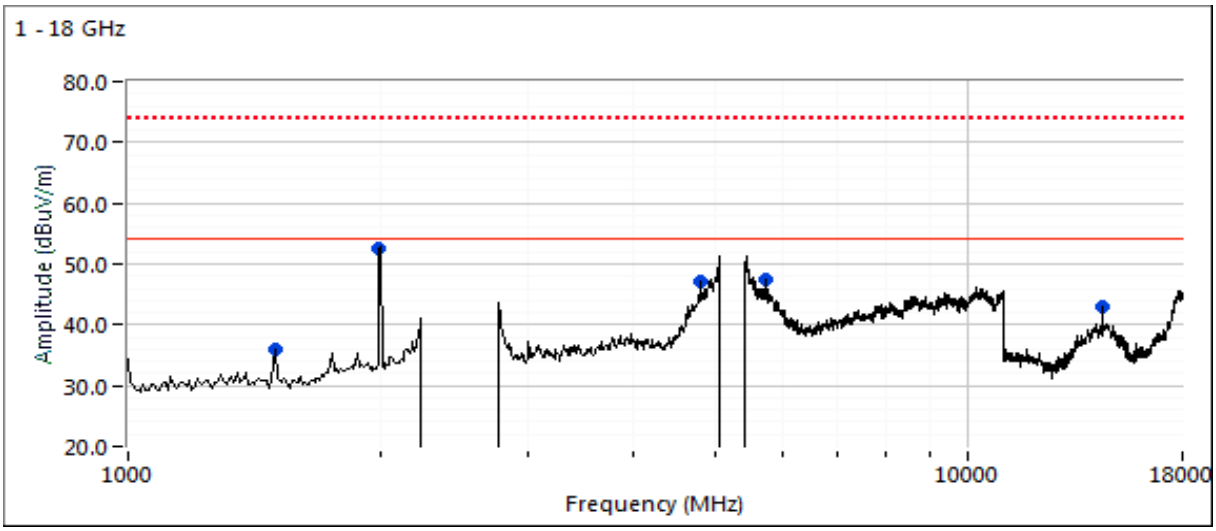
Channel: 1 & 54 Wi-Fi, 17 - BLE Mode: ax40

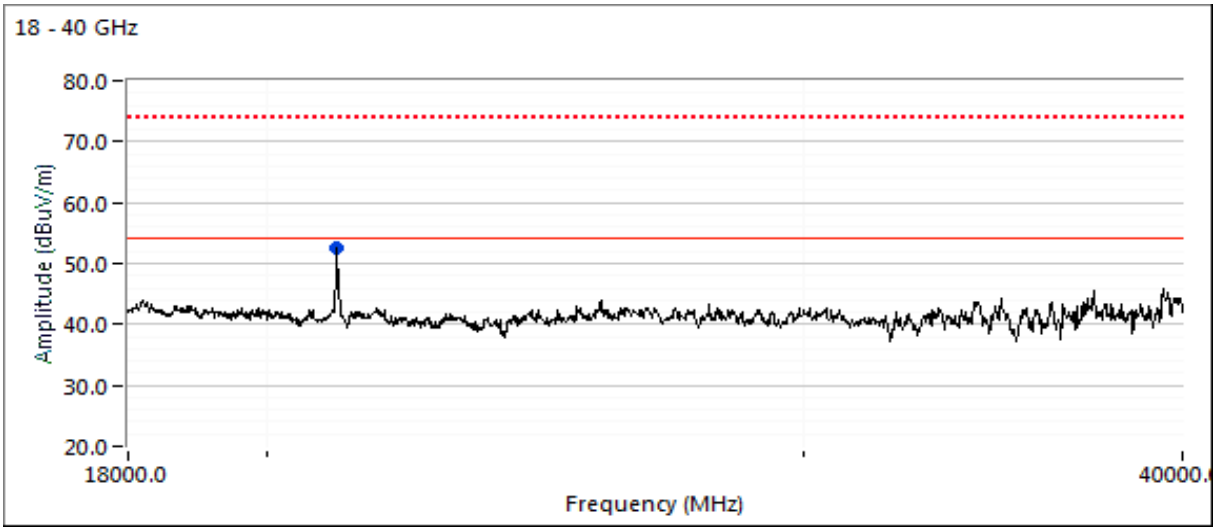
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4799.940	43.8	H	54.0	-10.2	VAVG	179	1.9	RB 1 MHz;VB 300 Hz;Note 3
4800.250	55.1	H	74.0	-18.9	PK	179	1.9	RB 1 MHz;VB 3 MHz;Peak
5760.260	56.1	V	68.3	-12.2	PK	177	1.6	RB 1 MHz;VB 3 MHz;Peak
21057.750	56.7	V	68.3	-11.6	PK	212	1.4	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.9	H	60.0	-24.1	Peak	31	1.3	Note 5
2000.070	53.2	V	60.0	-6.8	PK	356	1.6	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4d: Center Channel

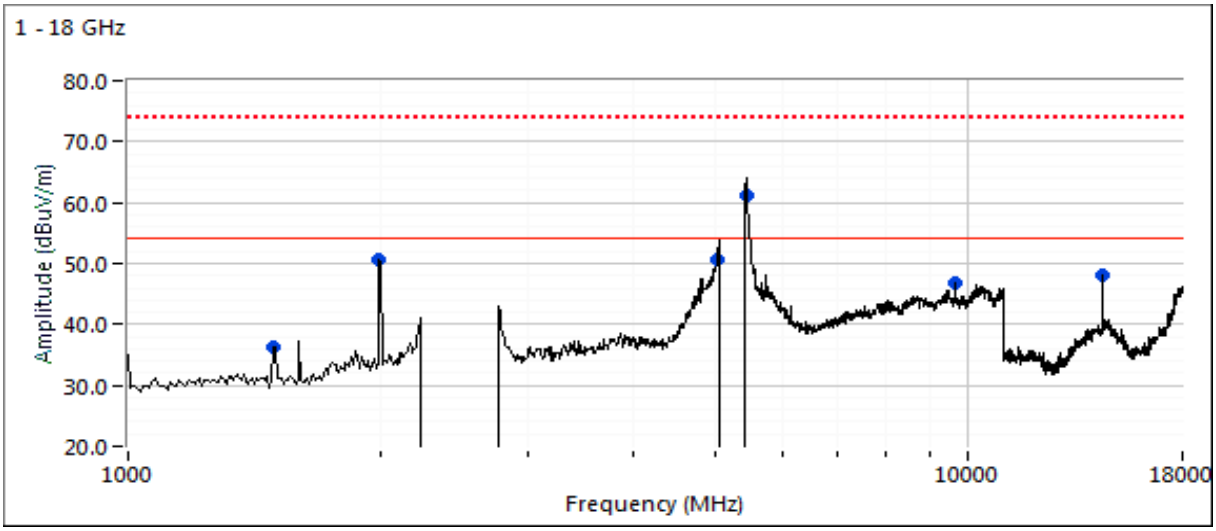
Channel: 1 & 58 Wi-Fi, 17 - BLE Mode: b & ac80

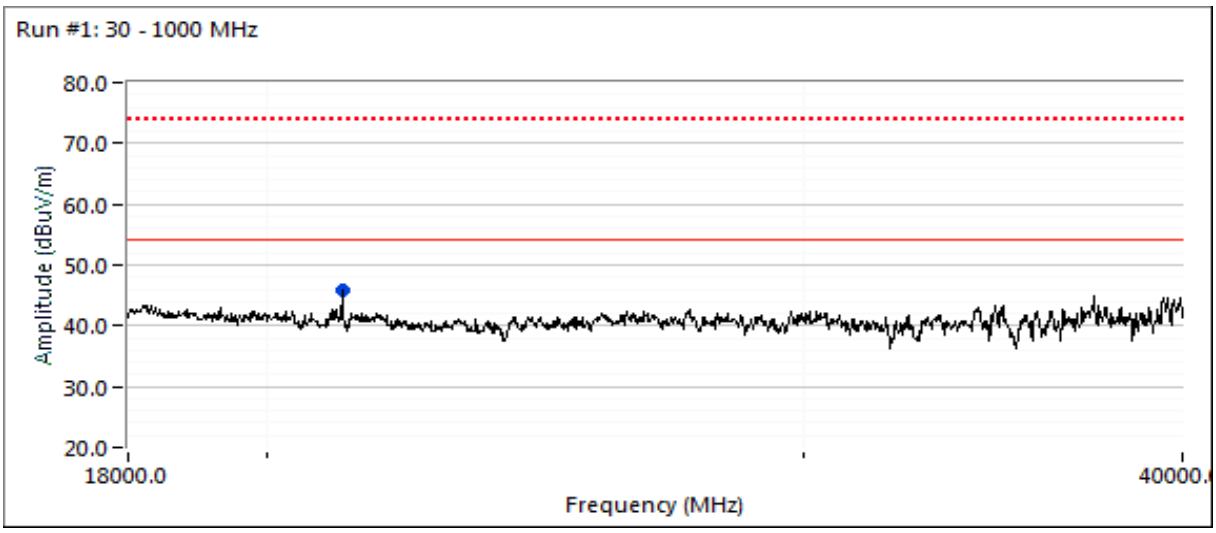
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 1Mbps & MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5437.620	52.6	H	54.0	-1.4	VAVG	184	1.2	RB 1 MHz;VB 300 Hz;Note 3
5438.310	69.0	H	74.0	-5.0	PK	184	1.2	RB 1 MHz;VB 3 MHz;Peak
9645.340	53.2	H	68.3	-15.1	PK	100	1.0	RB 1 MHz;VB 3 MHz;Peak
5052.800	51.4	H	54.0	-2.6	VAVG	165	1.5	RB 1 MHz;VB 300 Hz;Note 3
5054.230	65.8	H	74.0	-8.2	PK	165	1.5	RB 1 MHz;VB 3 MHz;Peak
14471.970	44.1	V	54.0	-9.9	VAVG	102	1.4	RB 1 MHz;VB 300 Hz;Note 3
14471.890	52.3	V	74.0	-21.7	PK	102	1.4	RB 1 MHz;VB 3 MHz;Peak
21146.500	42.1	V	54.0	-11.9	VAVG	157	1.6	RB 1 MHz;VB 300 Hz;Note 3
21166.300	57.8	V	74.0	-16.2	PK	157	1.6	RB 1 MHz;VB 3 MHz;Peak
1500.110	36.3	H	54.0	-17.7	Peak	339	1.0	Note 5
2000.020	50.7	H	60.0	-9.3	Peak	357	1.6	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/19/2018 Config. Used: Panel antenna
Test Engineer: Roy Zheng Config Change: none
Test Location: Chamber #4 EUT Voltage: PoE & 120V/60Hz

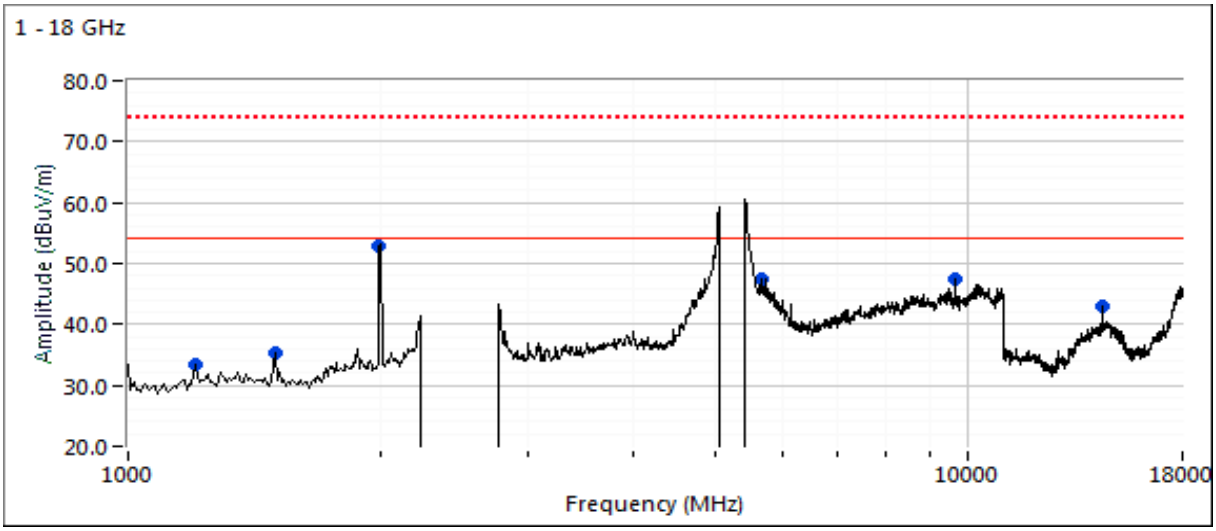
Run #5a: Low Channel

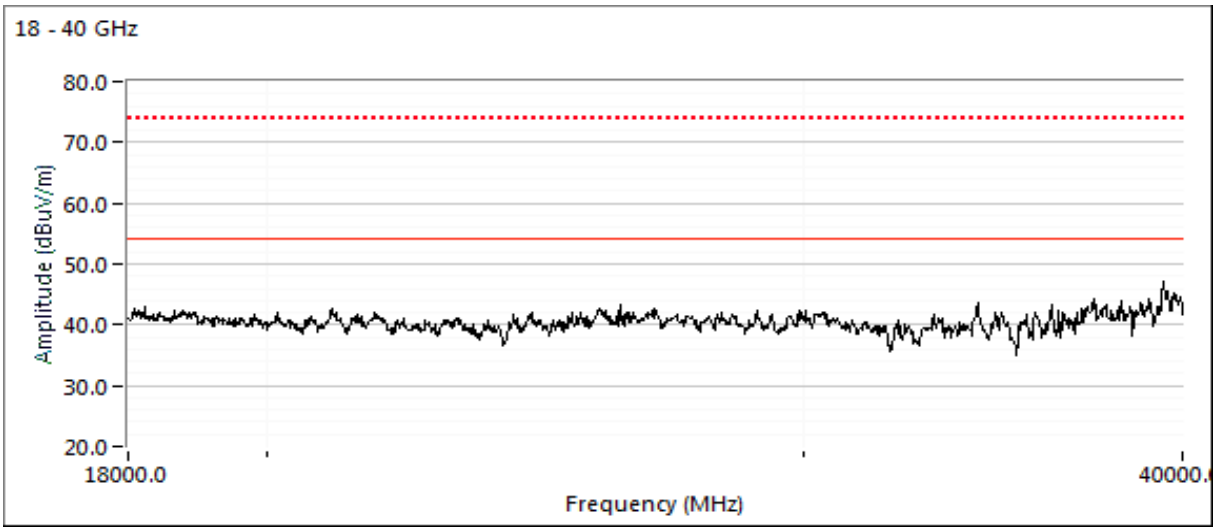
Channel: 1 & 52 Wi-Fi, 37 - BLE Mode: ac80/b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
14471.820	41.4	V	54.0	-12.6	VAVG	137	1.0	RB 1 MHz;VB 300 Hz;Note 3
14472.170	51.2	V	74.0	-22.8	PK	137	1.0	RB 1 MHz;VB 3 MHz;Peak
5691.670	47.5	H	68.3	-20.8	PK	185	1.9	RB 1 MHz;VB 3 MHz;Peak
9647.950	43.3	V	54.0	-10.7	VAVG	156	1.7	RB 1 MHz;VB 300 Hz;Note 3
9647.830	53.9	V	74.0	-20.1	PK	156	1.7	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.4	H	60.0	-24.6	Peak	30	1.3	Note 5
1200.000	33.5	H	60.0	-26.5	Peak	312	1.0	Note 5
2000.100	52.0	V	60.0	-8.0	PK	307	1.0	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #5b: High Channel

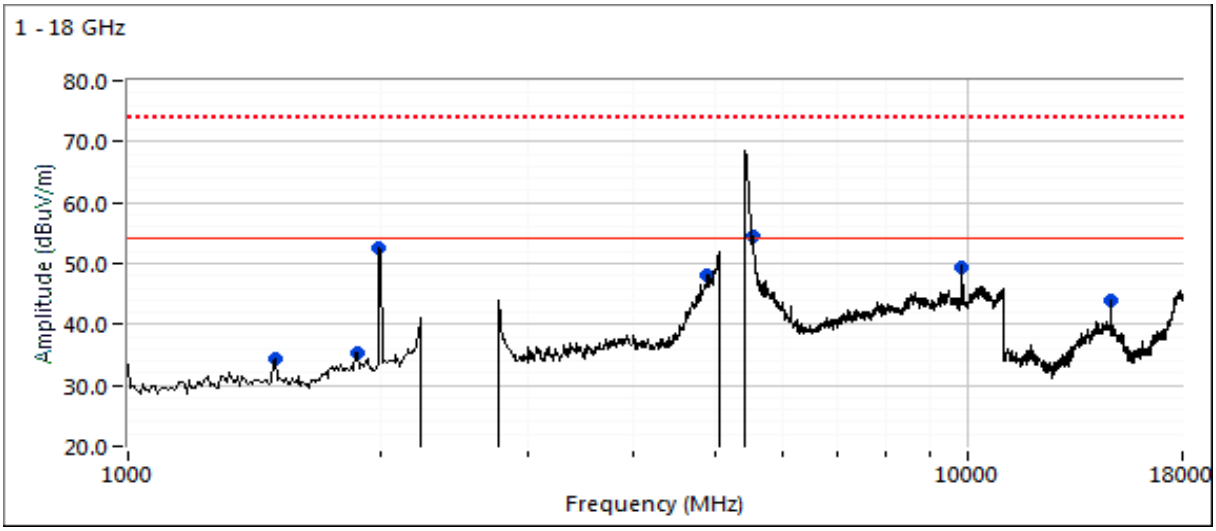
Channel: 11 & 64 Wi-Fi, 39 - BLE Mode: ac80/b

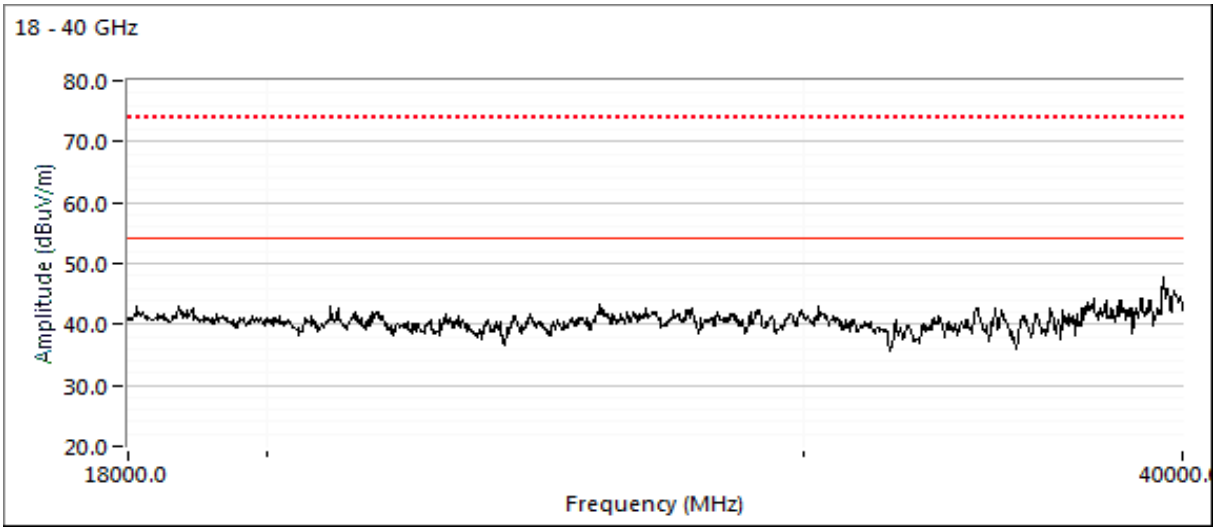
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4899.140	44.1	H	54.0	-9.9	VAVG	171	1.5	RB 1 MHz;VB 300 Hz;Note 3
4899.150	56.7	H	74.0	-17.3	PK	171	1.5	RB 1 MHz;VB 3 MHz;Peak
9847.850	46.7	H	54.0	-7.3	VAVG	160	1.4	RB 1 MHz;VB 300 Hz;Note 3
9847.860	55.1	H	74.0	-18.9	PK	160	1.4	RB 1 MHz;VB 3 MHz;Peak
14771.820	43.0	V	54.0	-11.0	VAVG	139	2.1	RB 1 MHz;VB 300 Hz;Note 3
14771.860	51.8	V	74.0	-22.2	PK	139	2.1	RB 1 MHz;VB 3 MHz;Peak
1500.000	34.5	H	60.0	-25.5	Peak	142	1.9	Note 5
1875.000	35.4	V	60.0	-24.6	Peak	92	1.9	Note 5
2000.000	52.1	V	60.0	-7.9	PK	308	1.0	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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

Date of Test: 10/22/2018 0:00 Config. Used: Panel antenna
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: FT Chamber #4 EUT Voltage: PoE & 120V/60Hz

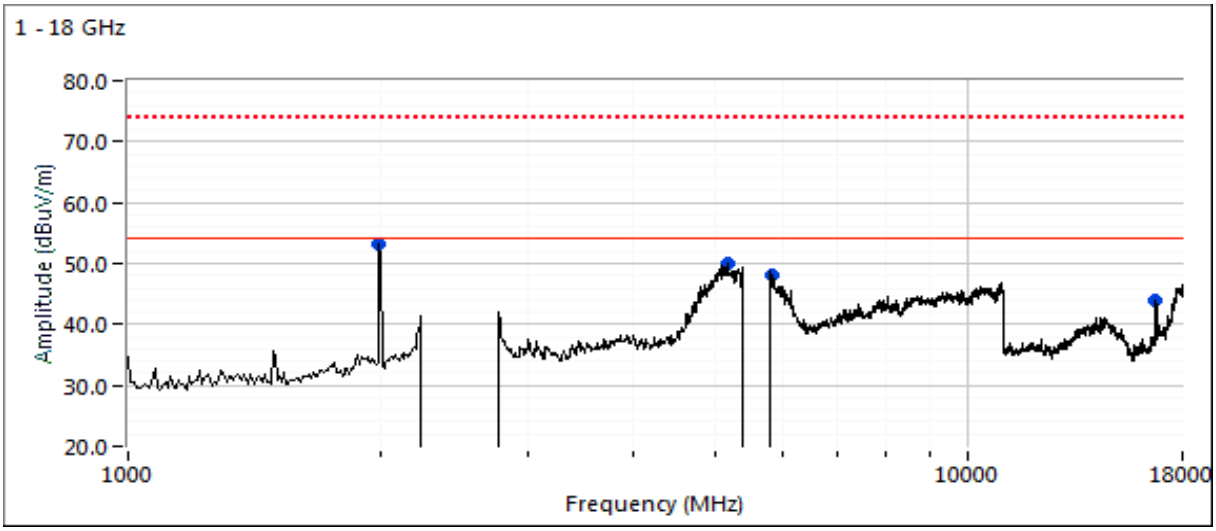
Run #6a: Center Channel

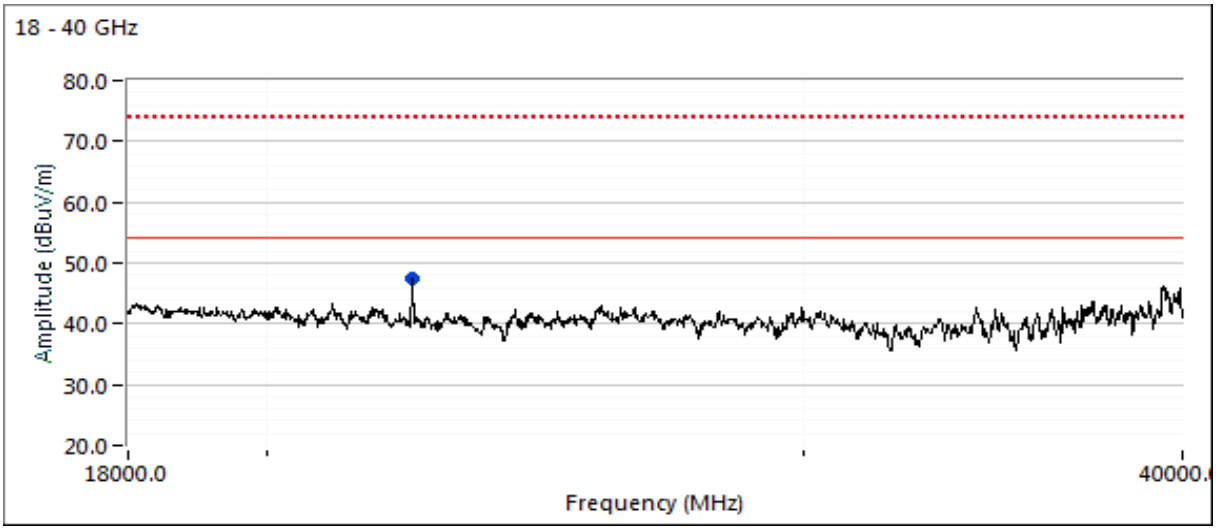
Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: g & a
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 6Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5169.020	58.0	V	68.3	-10.3	PK	179	1.5	RB 1 MHz;VB 3 MHz;Peak
16736.700	53.7	V	68.3	-14.6	PK	197	1.9	RB 1 MHz;VB 3 MHz;Peak
5827.280	56.0	V	68.0	-12.0	PK	177	1.3	RB 1 MHz;VB 3 MHz;Peak
22320.580	43.0	H	54.0	-11.0	VAVG	147	1.7	RB 1 MHz;VB 1 kHz;Note 3
22322.250	59.2	H	74.0	-14.8	PK	147	1.7	RB 1 MHz;VB 3 MHz;Peak
2000.000	53.3	V	60.0	-6.7	Peak	340	1.6	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6b: Center Channel

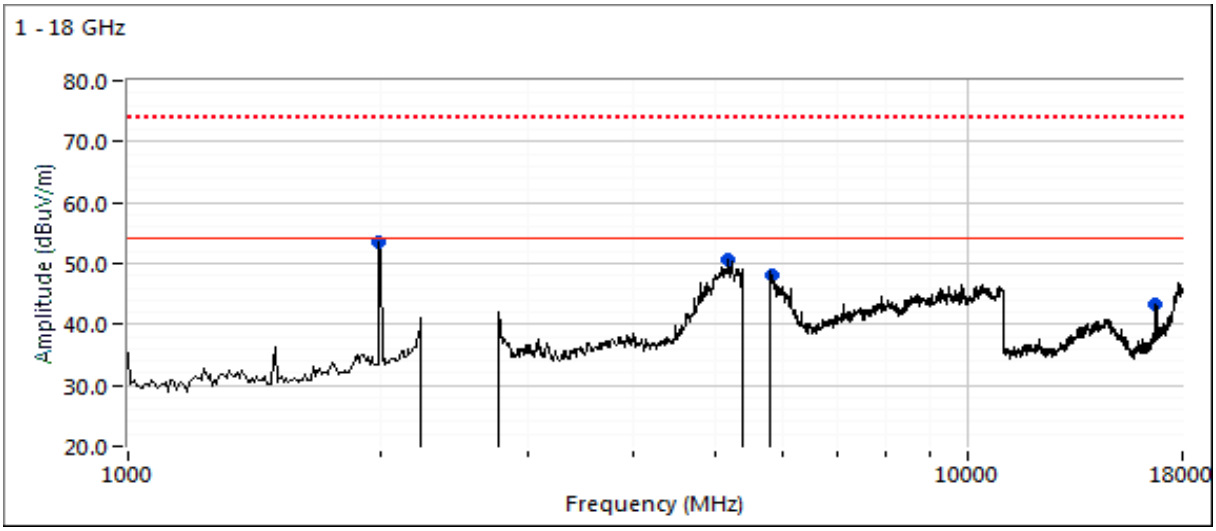
Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: ax20

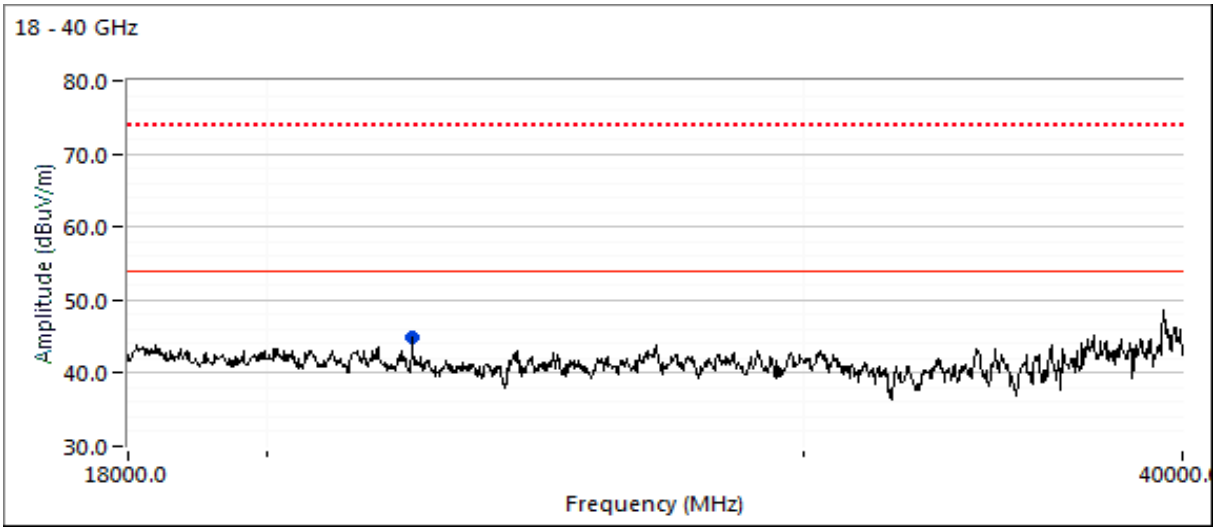
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5200.140	58.6	V	68.3	-9.7	PK	170	1.8	RB 1 MHz;VB 3 MHz;Peak
5829.100	56.3	H	68.3	-12.0	PK	180	1.7	RB 1 MHz;VB 3 MHz;Peak
22319.670	40.0	H	54.0	-14.0	VAVG	109	2.1	RB 1 MHz;VB 300 Hz;Note 3
22322.130	59.7	H	74.0	-14.3	PK	109	2.1	RB 1 MHz;VB 3 MHz;Peak
2000.000	53.5	V	60.0	-6.5	Peak	346	1.6	Note 5
16740.000	43.2	V	54.0	-10.8	Peak	144	1.3	Peak reading vs average limit

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6c: Center Channel

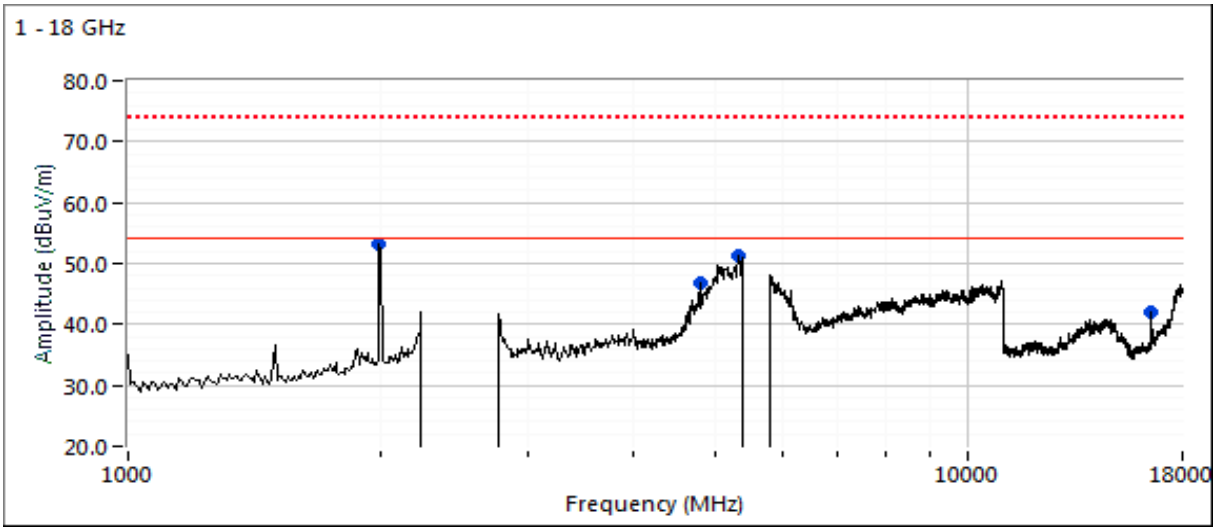
Channel: 9 & 110 Wi-Fi, 39 - BLE Mode: ax40

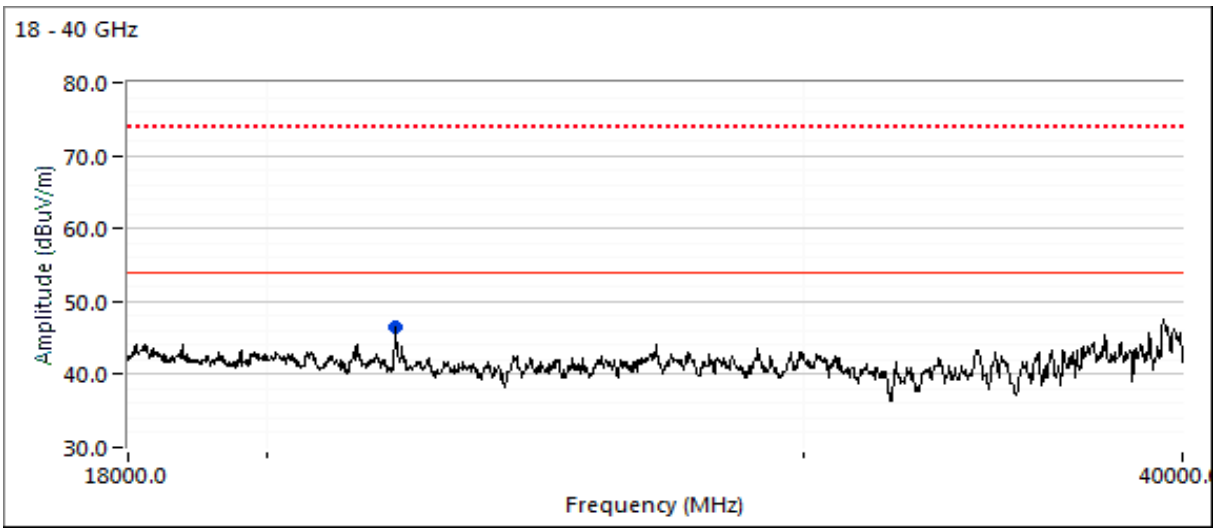
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5348.170	48.1	V	54.0	-5.9	VAVG	172	1.5	RB 1 MHz;VB 300 Hz;Note 3
5347.660	61.9	V	74.0	-12.1	PK	172	1.5	RB 1 MHz;VB 3 MHz;Peak
4805.410	40.6	V	54.0	-13.4	VAVG	172	1.6	RB 1 MHz;VB 300 Hz;Note 3
4803.400	53.1	V	74.0	-20.9	PK	172	1.6	RB 1 MHz;VB 3 MHz;Peak
22038.620	43.1	V	54.0	-10.9	VAVG	198	1.0	RB 1 MHz;VB 300 Hz;Note 3
22038.050	58.4	V	74.0	-15.6	PK	198	1.0	RB 1 MHz;VB 3 MHz;Peak
16530.000	42.1	H	54.0	-11.9	Peak	112	1.9	Peak reading vs average limit
2000.130	54.1	V	60.0	-5.9	PK	342	1.6	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #6d: Center Channel

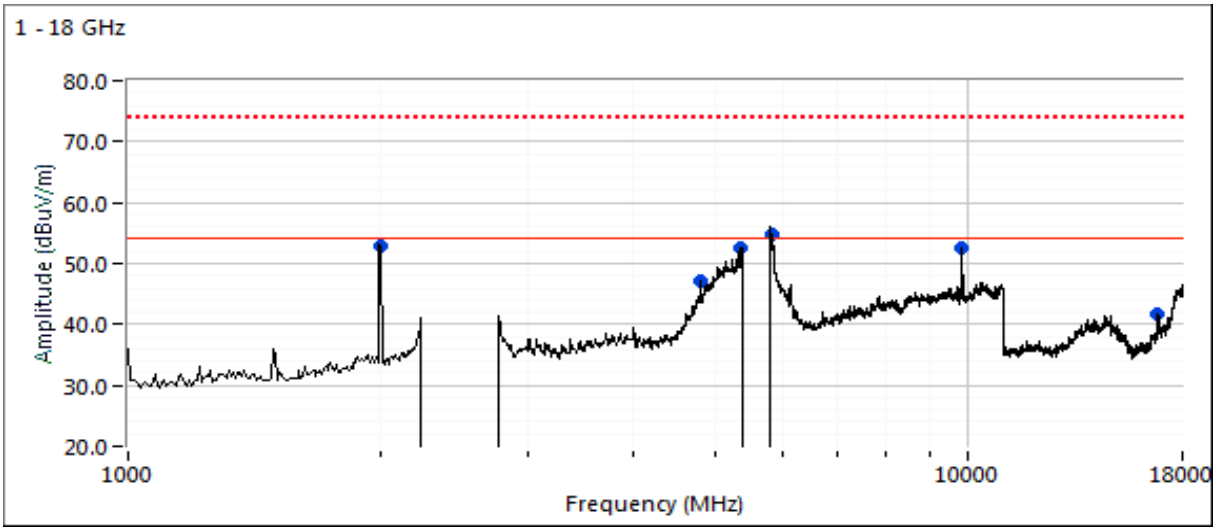
Channel: 11 & 122 Wi-Fi, 39 - BLE Mode: ac80 / b Note: Channel 122 not used in Canada

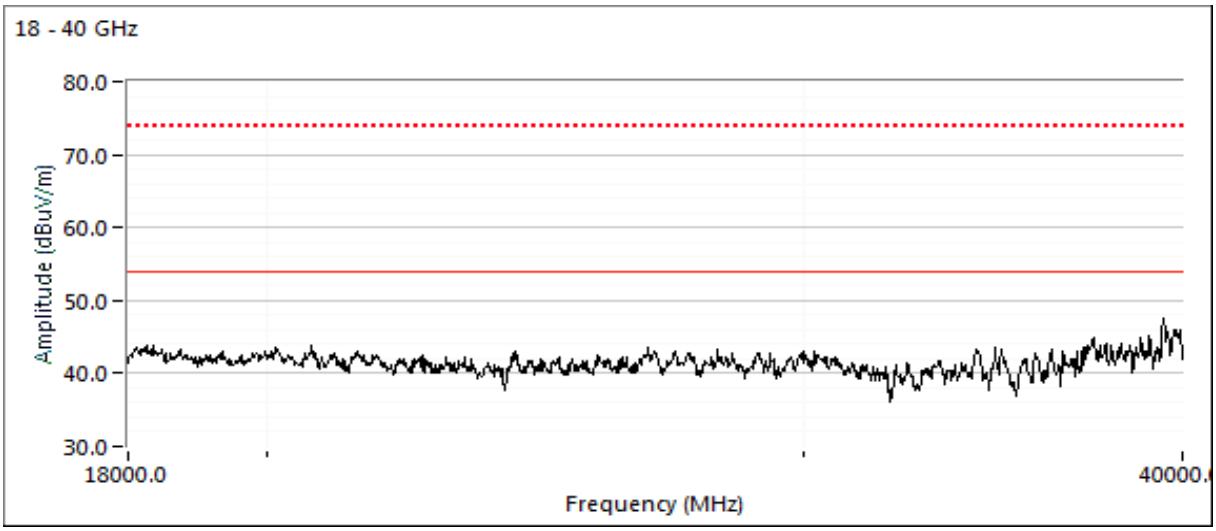
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5371.850	49.6	V	54.0	-4.4	VAVG	180	1.3	RB 1 MHz;VB 300 Hz;Note 3
5371.150	64.7	V	74.0	-9.3	PK	180	1.3	RB 1 MHz;VB 3 MHz;Peak
4806.640	40.8	H	54.0	-13.2	VAVG	181	1.7	RB 1 MHz;VB 300 Hz;Note 3
4805.480	53.1	H	74.0	-20.9	PK	181	1.7	RB 1 MHz;VB 3 MHz;Peak
9847.960	49.1	V	54.0	-4.9	VAVG	159	1.1	RB 1 MHz;VB 300 Hz;Note 3
9848.000	56.7	V	74.0	-17.3	PK	159	1.1	RB 1 MHz;VB 3 MHz;Peak
2000.000	53.0	V	60.0	-7.0	Peak	352	1.9	Note 5
16810.000	41.6	V	54.0	-12.4	Peak	139	1.3	Peak reading vs average limit

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #7: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Runs #7 and 8

Date of Test: 10/23/2018 0:00 Config. Used: Panel antenna
Test Engineer: Roy Zheng Config Change: none
Test Location: FT Chamber #5 EUT Voltage: PoE & 120V/60Hz

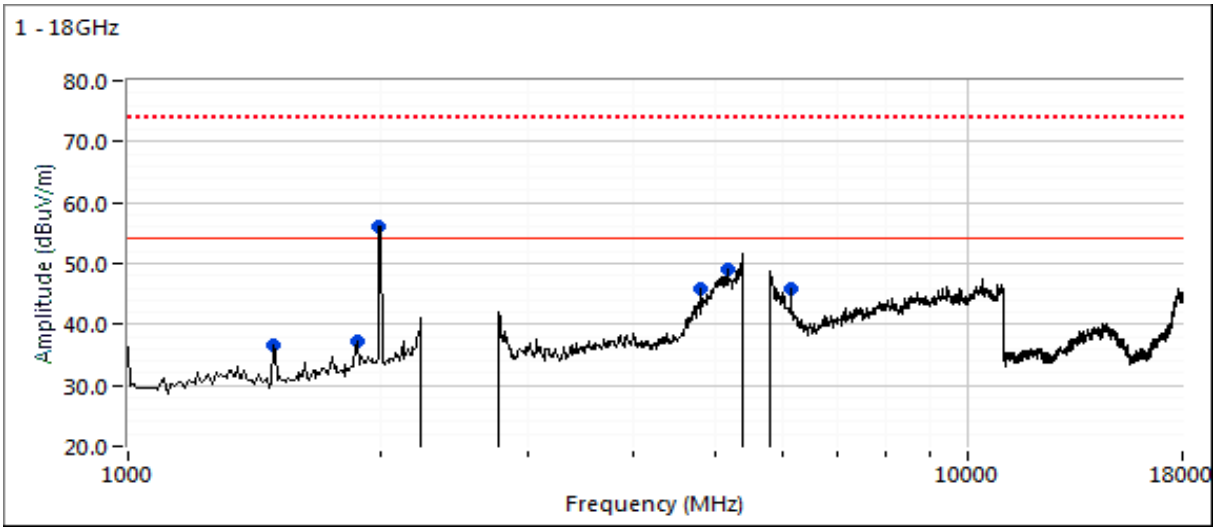
Run #7a: Low Channel

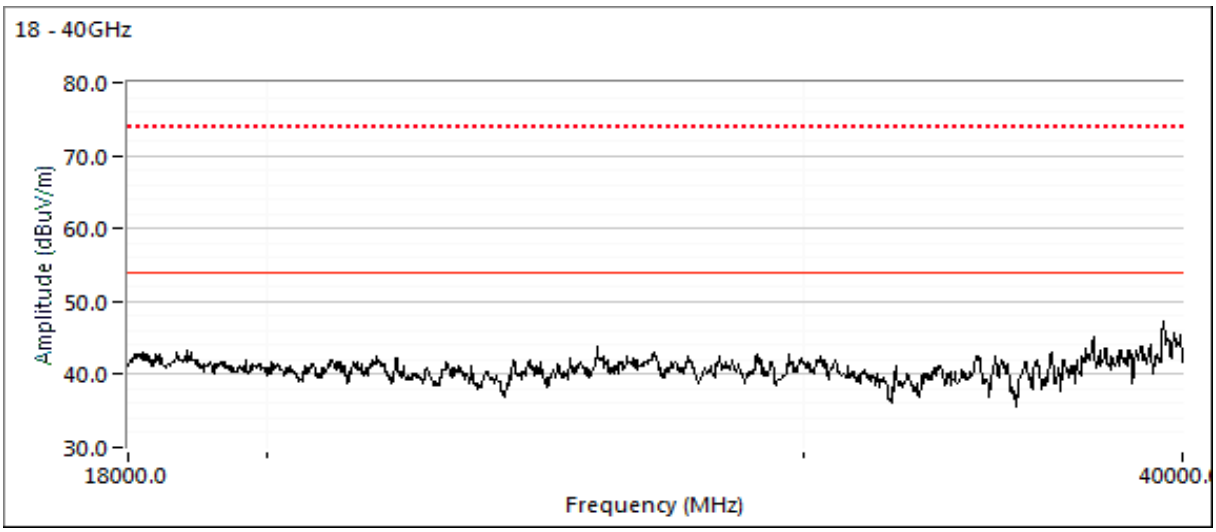
Channel: 3 & 102 Wi-Fi, 37 - BLE Mode: ac40
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS 0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5183.380	59.4	V	68.3	-8.9	PK	163	2.0	RB 1 MHz;VB 3 MHz;Peak
4799.960	43.1	V	54.0	-10.9	VAVG	147	2.0	RB 1 MHz;VB 300 Hz;Note 3
4800.080	53.1	V	74.0	-20.9	PK	147	2.0	RB 1 MHz;VB 3 MHz;Peak
6144.360	53.6	V	68.3	-14.7	PK	160	1.6	RB 1 MHz;VB 3 MHz;Peak
1500.000	36.5	V	60.0	-23.5	Peak	286	1.0	Note 5
2000.000	56.2	V	60.0	-3.8	Peak	66	1.3	Note 5
1875.000	37.1	V	60.0	-22.9	Peak	81	1.6	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #7b: High Channel

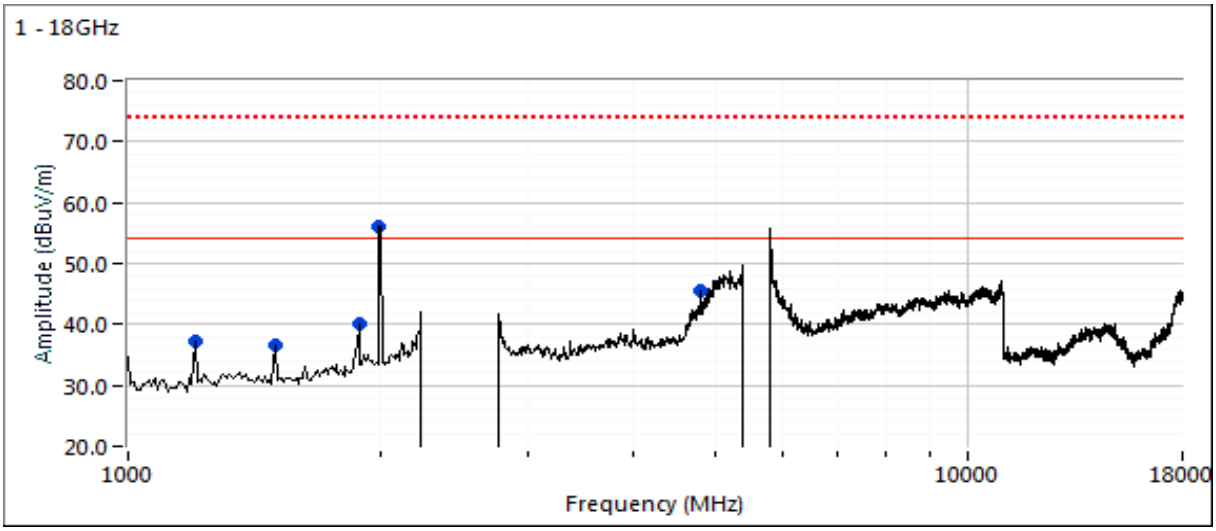
Channel: 9 & 142 Wi-Fi, 39 - BLE Mode: ac40

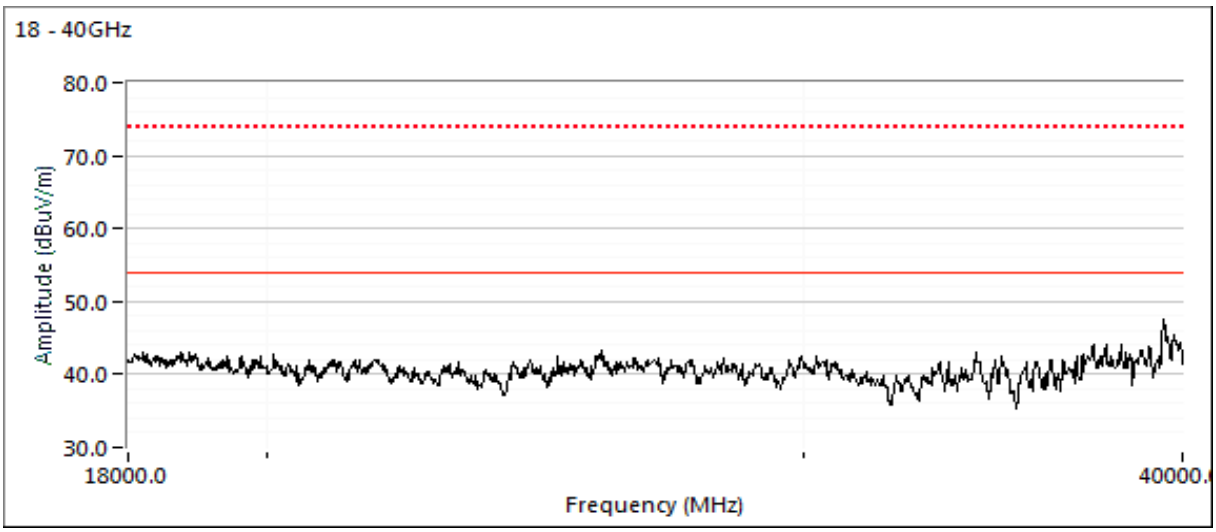
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS 0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4849.120	38.2	H	54.0	-15.8	VAVG	143	1.5	RB 1 MHz;VB 300 Hz;Note 3
4745.000	39.6	H	74.0	-34.4	PK	143	1.5	RB 1 MHz;VB 3 MHz;Peak
1200.000	37.1	V	60.0	-22.9	Peak	61	1.0	Note 5
1500.000	36.6	H	60.0	-23.4	Peak	39	1.0	Note 5
1883.330	40.2	V	60.0	-19.8	Peak	298	1.3	Note 5
2000.000	56.2	V	60.0	-3.8	Peak	65	1.3	Note 5

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).

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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: 10/31/2018
Test Engineer: Rafael Varelas
Test Location: FT Chamber #4

Config. Used: Integral and AP-ANT-19
Config Change: None
EUT Voltage: PoE & 110V/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 when possible passed through a ferrite clamp upon exiting the chamber.

Radiated emissions tests above 1 GHz to FCC Part 15 were performed with floor absorbers in place in accordance with the test methods of ANSI C63.4 and CISPR 16-1-4.

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

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

Ambient Conditions:

Temperature: 22.4 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Test Performed	Limit	Result	Margin
2	Radiated Emissions 30 - 1000 MHz, Maximized	15.209	Pass	32.8 dBµV/m @ 53.84 MHz (-7.2 dB)
4	Radiated Emissions 30 - 1000 MHz, Maximized	15.209	Pass	34.2 dBµV/m @ 34.13 MHz (-5.8 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.

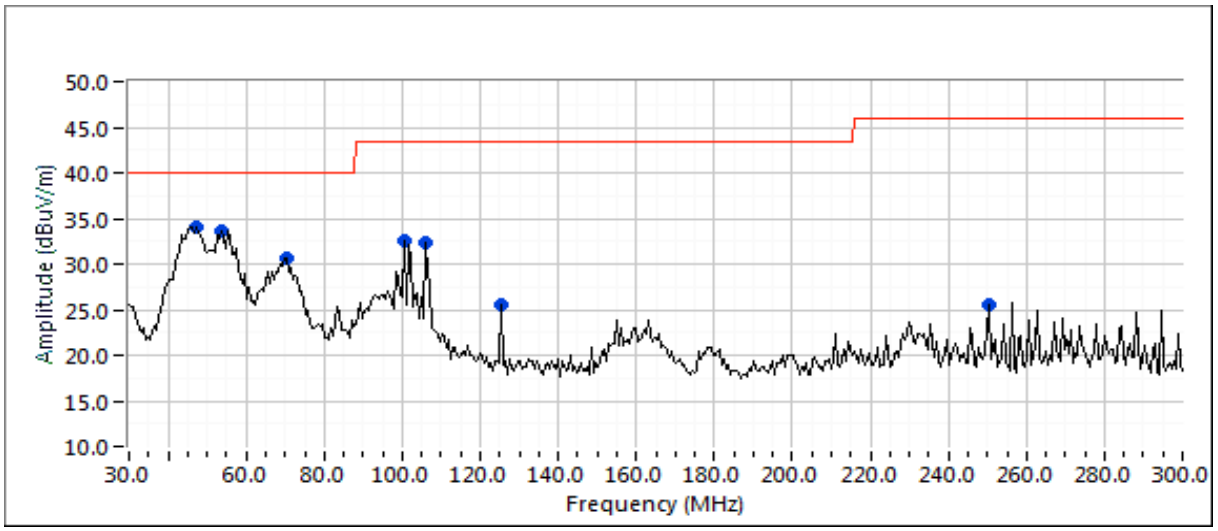
Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Sample Notes

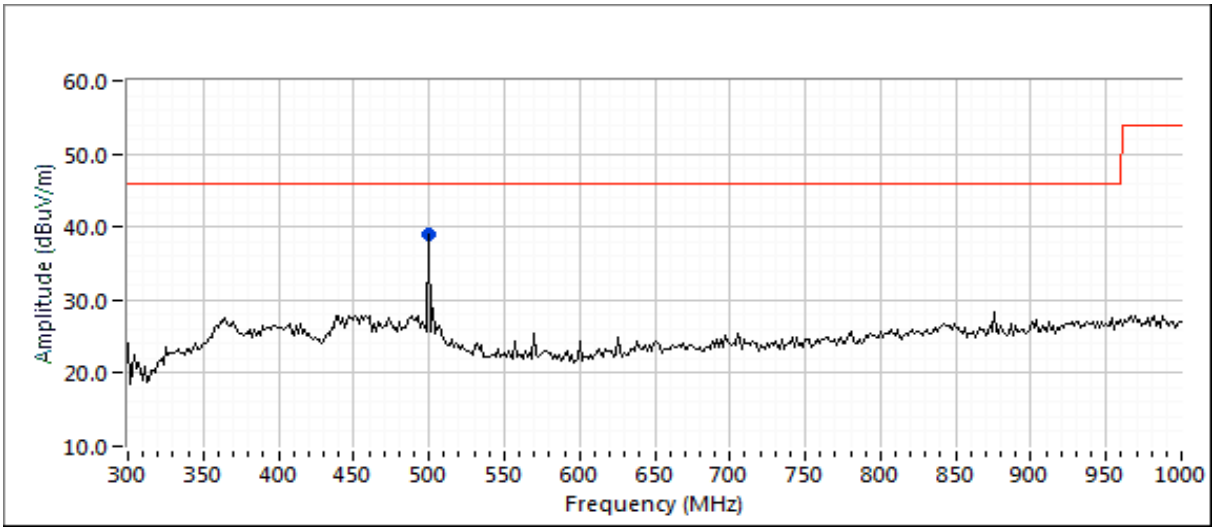
Sample S/N: CNG6K9V019 & CNG6K9W00R
Driver: P2 WNC 0.4.4
Antenna: Integral and AP-ANT-19

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

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



Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
46.940	34.1	V	40.0	-5.9	Peak	196	1.0	
53.842	33.7	V	40.0	-6.3	Peak	94	1.0	
71.842	30.6	V	40.0	-9.4	Peak	57	1.0	
100.269	32.5	V	43.5	-11.0	Peak	309	1.0	
105.688	32.3	V	43.5	-11.2	Peak	279	1.5	
124.999	25.6	V	43.5	-17.9	Peak	46	1.0	
250.004	25.6	V	46.0	-20.4	Peak	264	1.5	
499.993	38.9	V	46.0	-7.1	Peak	235	2.0	

Note 1:	Integral Antennas. EUT configured for operation on Channels 1 (b mode) & 100 (a mode) Wi-Fi, 37 - BLE

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2: Maximized Readings From Run #1

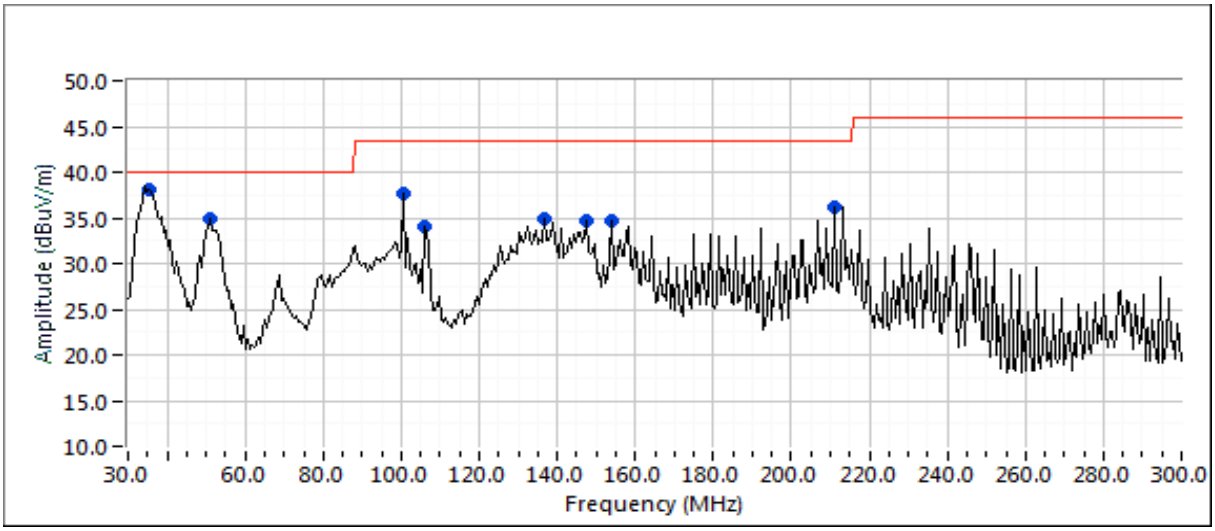
Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

Maximized quasi-peak readings (includes manipulation of EUT interface cables)

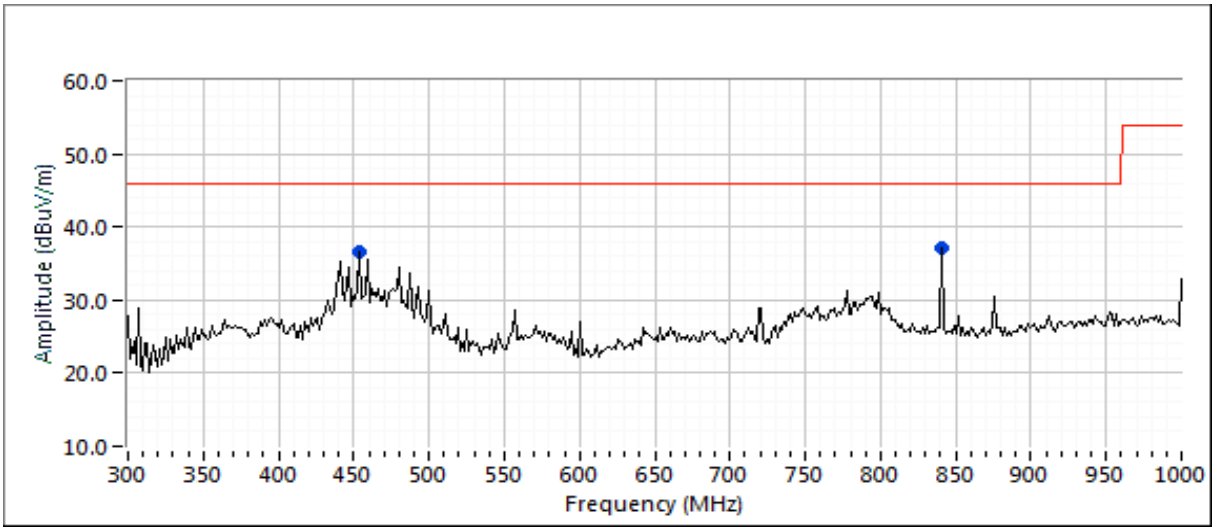
Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
53.842	32.8	V	40.0	-7.2	QP	95	1.0	QP (1.00s)
46.940	29.5	V	40.0	-10.5	QP	196	1.0	QP (1.00s)
71.842	28.0	V	40.0	-12.0	QP	57	1.0	QP (1.00s)
105.688	31.2	V	43.5	-12.3	QP	289	1.0	QP (1.00s)
100.269	30.9	V	43.5	-12.6	QP	319	1.0	QP (1.00s)
499.993	30.5	V	46.0	-15.5	QP	207	1.0	QP (1.00s)

Run #3: Preliminary Radiated Emissions, 30 - 1000 MHz

Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0



Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



Preliminary peak readings captured during pre-scan

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
34.127	38.1	V	40.0	-1.9	Peak	8	1.0	
50.962	34.8	V	40.0	-5.2	Peak	210	1.0	
100.299	37.7	V	43.5	-5.8	Peak	125	1.0	
105.665	34.1	V	43.5	-9.4	Peak	254	1.0	
136.536	34.9	V	43.5	-8.6	Peak	183	1.0	
147.207	34.7	V	43.5	-8.8	Peak	104	1.0	
153.601	34.6	H	43.5	-8.9	Peak	228	2.5	
211.206	36.2	V	43.5	-7.3	Peak	42	1.0	
454.417	36.7	V	46.0	-9.3	Peak	58	1.0	
841.936	37.1	V	46.0	-8.9	Peak	150	1.0	

Note 1:	AP-ANT-19 Wi-Fi Antenna, Integral BLE Antenna. EUT configured for operation on Channels 11 (g mode) & 116 Wi-Fi (ax20), 39 - BLE

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #4: Maximized Readings From Run #3

Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

Maximized quasi-peak readings (includes manipulation of EUT interface cables)

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
34.127	34.2	V	40.0	-5.8	QP	8	1.0	QP (1.00s)
211.206	36.3	V	43.5	-7.2	QP	42	1.0	QP (1.00s)
100.299	33.5	V	43.5	-10.0	QP	104	1.0	QP (1.00s)
153.601	33.3	H	43.5	-10.2	QP	228	1.8	QP (1.00s)
136.536	32.7	V	43.5	-10.8	QP	183	1.0	QP (1.00s)
50.962	28.9	V	40.0	-11.1	QP	209	1.0	QP (1.00s)
454.417	33.8	V	46.0	-12.2	QP	64	1.0	QP (1.00s)
147.207	30.3	V	43.5	-13.2	QP	104	1.0	QP (1.00s)
105.665	30.3	V	43.5	-13.2	QP	253	1.8	QP (1.00s)
841.936	22.0	V	46.0	-24.0	QP	142	1.0	QP (1.00s)

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

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: 11/1/2018
Test Engineer: Roy Zheng
Test Location: FT Chamber #4

Config. Used: ANT-19
Config Change: None
EUT Voltage: PoE & 120V/60Hz

General Test Configuration

The EUT and POE adapter were located on a table inside the semi-anechoic chamber, 40 cm from a vertical coupling plane and 80cm from the LISN. Remote support equipment was located outside of the semi-anechoic chamber. Any cables running to remote support equipment where routed through metal conduit and when possible passed through a ferrite clamp upon exiting the chamber.

Ambient Conditions:

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

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1	CE, AC Power,120V/60Hz	FCC §15.207 "Class B"	Pass	39.3 dBµV @ 0.422 MHz (-8.1 dB)
2	CE, POE	FCC §15.207 "Class B"	Pass	38.4 dBµV @ 0.458 MHz (-8.3 dB)

Modifications Made During Testing

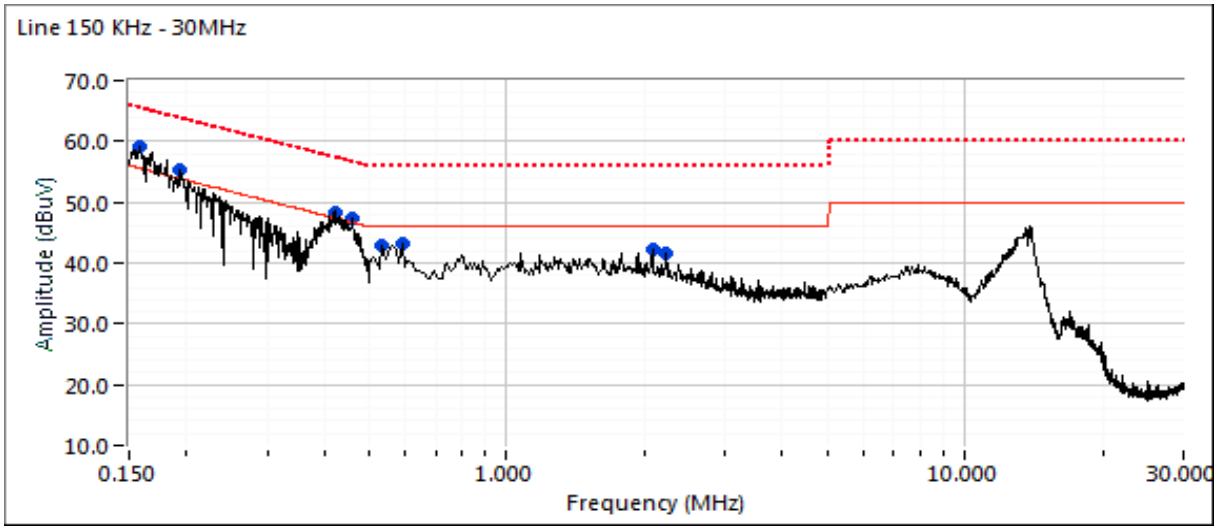
No modifications were made to the EUT during testing

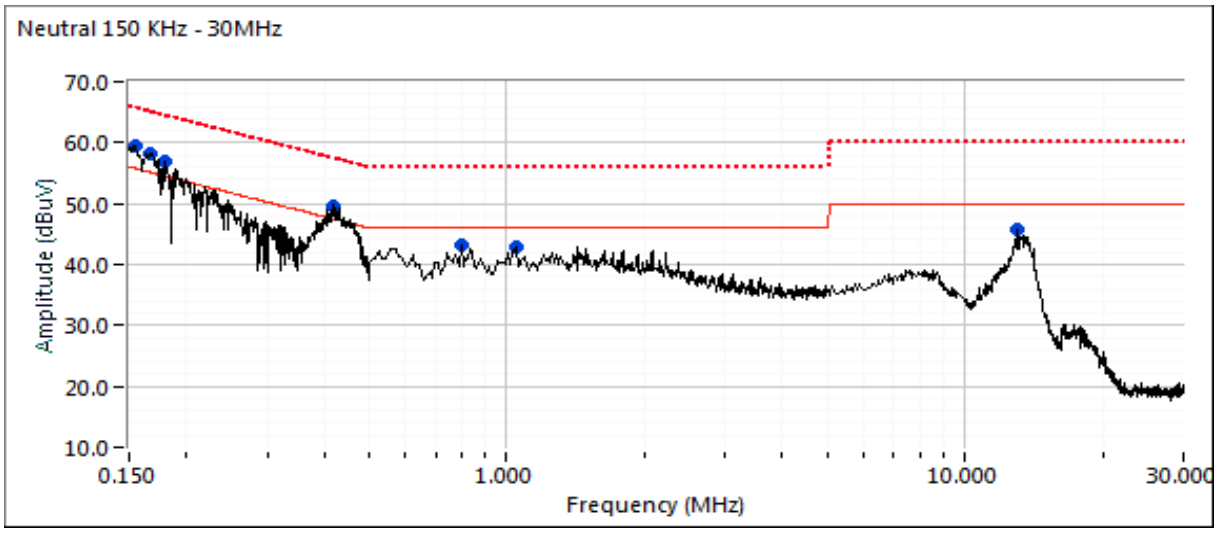
Deviations From The Standard

No deviations were made from the requirements of the standard.

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1: AC Power Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

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

Frequency MHz	Level dBµV	AC Line	FCC §15.207 Limit	Margin	Detector QP/Ave	Comments
0.156	59.4	Neutral	55.7	3.7	Peak	
0.158	59.2	Line	55.5	3.7	Peak	
0.166	58.2	Neutral	55.1	3.1	Peak	
0.179	56.8	Neutral	54.5	2.3	Peak	
0.419	49.7	Neutral	47.5	2.2	Peak	
0.194	55.4	Line	53.9	1.5	Peak	
0.422	48.4	Line	47.4	1.0	Peak	
0.460	47.2	Line	46.7	0.5	Peak	
0.806	43.2	Neutral	46.0	-2.8	Peak	
0.590	43.1	Line	46.0	-2.9	Peak	
0.536	43.0	Line	46.0	-3.0	Peak	
1.046	42.9	Neutral	46.0	-3.1	Peak	
2.078	42.2	Line	46.0	-3.8	Peak	
13.818	46.2	Line	50.0	-3.8	Peak	
13.918	46.0	Line	50.0	-4.0	Peak	
2.222	41.6	Line	46.0	-4.4	Peak	
13.062	45.6	Neutral	50.0	-4.4	Peak	

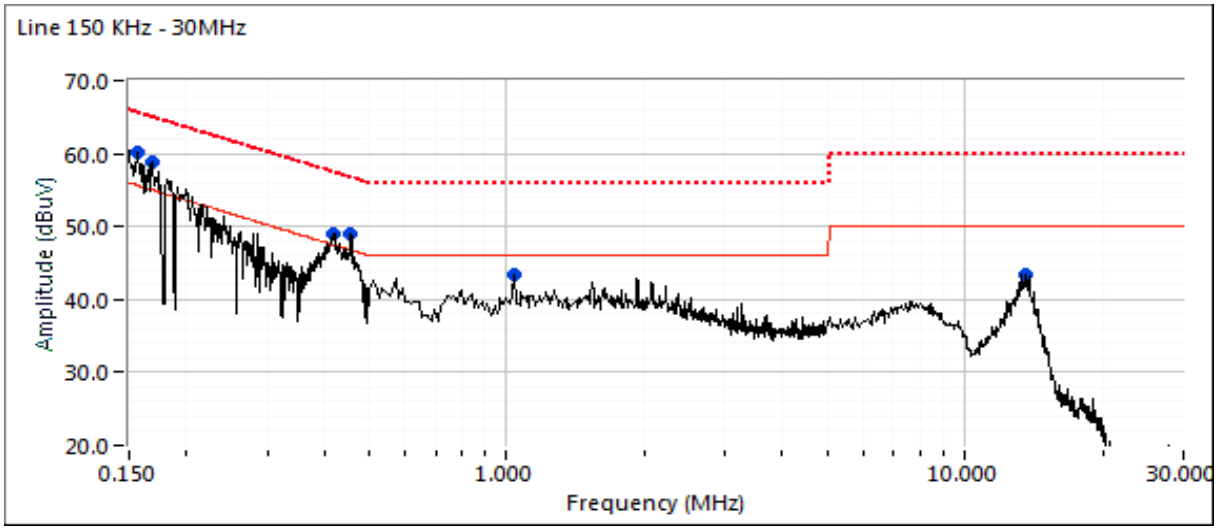
Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

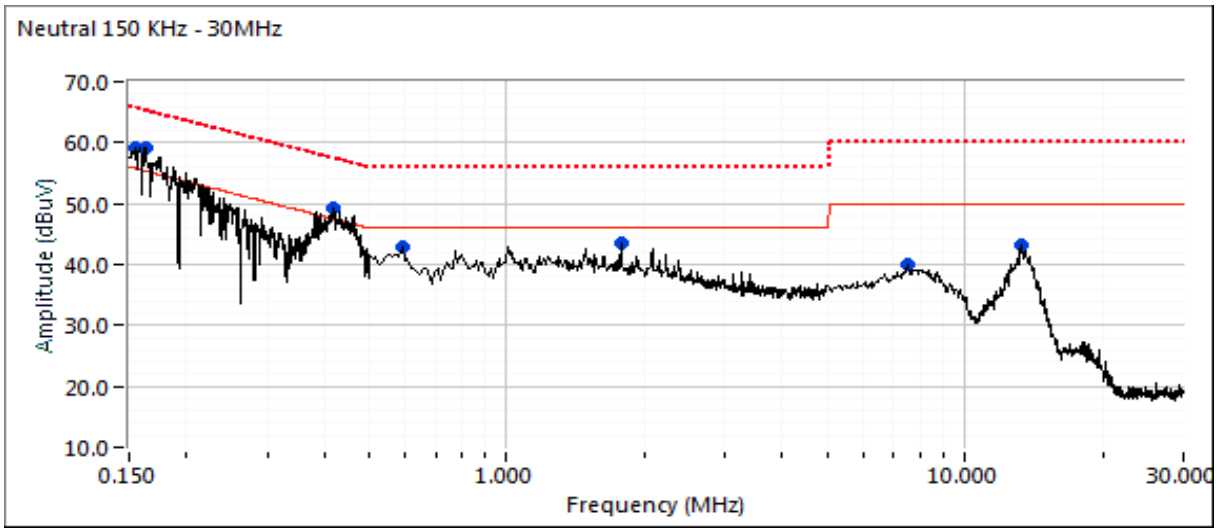
Final quasi-peak and average readings

Frequency	Level	AC	FCC §15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.419	39.4	Neutral	47.5	-8.1	AVG	AVG (0.10s)
0.422	39.3	Line	47.4	-8.1	AVG	AVG (0.10s)
0.460	37.9	Line	46.7	-8.8	AVG	AVG (0.10s)
0.419	45.6	Neutral	57.5	-11.9	QP	QP (1.00s)
2.078	33.7	Line	46.0	-12.3	AVG	AVG (0.10s)
0.422	45.0	Line	57.4	-12.4	QP	QP (1.00s)
0.158	52.2	Line	65.5	-13.3	QP	QP (1.00s)
0.460	43.4	Line	56.7	-13.3	QP	QP (1.00s)
2.222	32.6	Line	46.0	-13.4	AVG	AVG (0.10s)
0.156	52.1	Neutral	65.7	-13.6	QP	QP (1.00s)
0.166	50.8	Neutral	65.1	-14.3	QP	QP (1.00s)
0.590	31.3	Line	46.0	-14.7	AVG	AVG (0.10s)
0.806	31.2	Neutral	46.0	-14.8	AVG	AVG (0.10s)
1.046	31.0	Neutral	46.0	-15.0	AVG	AVG (0.10s)
0.179	49.0	Neutral	64.5	-15.5	QP	QP (1.00s)
0.194	48.3	Line	63.9	-15.6	QP	QP (1.00s)
0.536	28.6	Line	46.0	-17.4	AVG	AVG (0.10s)
2.078	38.6	Line	56.0	-17.4	QP	QP (1.00s)
2.222	37.9	Line	56.0	-18.1	QP	QP (1.00s)
0.590	37.6	Line	56.0	-18.4	QP	QP (1.00s)
0.806	37.2	Neutral	56.0	-18.8	QP	QP (1.00s)
1.046	37.0	Neutral	56.0	-19.0	QP	QP (1.00s)
0.536	36.2	Line	56.0	-19.8	QP	QP (1.00s)
13.918	28.8	Line	50.0	-21.2	AVG	AVG (0.10s)
13.818	28.5	Line	50.0	-21.5	AVG	AVG (0.10s)
13.818	38.5	Line	60.0	-21.5	QP	QP (1.00s)
13.918	37.9	Line	60.0	-22.1	QP	QP (1.00s)
13.062	26.7	Neutral	50.0	-23.3	AVG	AVG (0.10s)
13.062	36.7	Neutral	60.0	-23.3	QP	QP (1.00s)
0.158	29.1	Line	55.5	-26.4	AVG	AVG (0.10s)
0.166	28.7	Neutral	55.1	-26.4	AVG	AVG (0.10s)
0.156	29.2	Neutral	55.7	-26.5	AVG	AVG (0.10s)
0.179	27.1	Neutral	54.5	-27.4	AVG	AVG (0.10s)
0.194	24.4	Line	53.9	-29.5	AVG	AVG (0.10s)

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2: POE Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz





Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2: POE Port Conducted Emissions, 0.15 - 30MHz, 120V/60Hz

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

Frequency	Level	AC	FCC §15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.157	60.1	Line	55.6	4.5	Peak	
0.163	59.1	Neutral	55.3	3.8	Peak	
0.168	58.8	Line	55.0	3.8	Peak	
0.155	59.2	Neutral	55.7	3.5	Peak	
0.458	48.9	Line	46.7	2.2	Peak	
0.419	49.3	Neutral	47.5	1.8	Peak	
0.418	49.0	Line	47.5	1.5	Peak	
1.038	43.5	Line	46.0	-2.5	Peak	
1.781	43.4	Neutral	46.0	-2.6	Peak	
0.590	42.8	Neutral	46.0	-3.2	Peak	
13.598	43.4	Line	50.0	-6.6	Peak	
13.267	43.2	Neutral	50.0	-6.8	Peak	
7.505	40.0	Neutral	50.0	-10.0	Peak	

Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Final quasi-peak and average readings

Frequency	Level	AC	FCC §15.207		Detector	Comments
MHz	dBµV	Line	Limit	Margin	QP/Ave	
0.419	39.2	Neutral	47.5	-8.3	AVG	AVG (0.10s)
0.458	38.4	Line	46.7	-8.3	AVG	AVG (0.10s)
0.418	39.1	Line	47.5	-8.4	AVG	AVG (0.10s)
1.781	33.6	Neutral	46.0	-12.4	AVG	AVG (0.10s)
0.418	45.0	Line	57.5	-12.5	QP	QP (1.00s)
0.419	44.9	Neutral	57.5	-12.6	QP	QP (1.00s)
0.458	43.8	Line	56.7	-12.9	QP	QP (1.00s)
0.163	51.4	Neutral	65.3	-13.9	QP	QP (1.00s)
0.155	51.6	Neutral	65.7	-14.1	QP	QP (1.00s)
0.157	51.5	Line	65.6	-14.1	QP	QP (1.00s)
0.590	31.9	Neutral	46.0	-14.1	AVG	AVG (0.10s)
1.038	31.9	Line	46.0	-14.1	AVG	AVG (0.10s)
0.168	49.5	Line	65.0	-15.5	QP	QP (1.00s)
1.781	39.1	Neutral	56.0	-16.9	QP	QP (1.00s)
1.038	38.2	Line	56.0	-17.8	QP	QP (1.00s)
0.590	37.8	Neutral	56.0	-18.2	QP	QP (1.00s)
7.505	27.7	Neutral	50.0	-22.3	AVG	AVG (0.10s)
13.598	26.6	Line	50.0	-23.4	AVG	AVG (0.10s)
13.598	36.1	Line	60.0	-23.9	QP	QP (1.00s)
13.267	25.4	Neutral	50.0	-24.6	AVG	AVG (0.10s)
13.267	35.0	Neutral	60.0	-25.0	QP	QP (1.00s)
7.505	33.6	Neutral	60.0	-26.4	QP	QP (1.00s)
0.155	29.2	Neutral	55.7	-26.5	AVG	AVG (0.10s)
0.163	28.8	Neutral	55.3	-26.5	AVG	AVG (0.10s)
0.157	28.6	Line	55.6	-27.0	AVG	AVG (0.10s)
0.168	28.0	Line	55.0	-27.0	AVG	AVG (0.10s)

End of Report

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