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EMC Test Report

Application for FCC Grant of Equipment Authorization
Canada Certification

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

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-4 and 2845B-5
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ACCREDITED
Testing Cert #0214.26

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

VALIDATING SIGNATORIES

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REVISION HISTORY

Rev#	Date	Comments	Modified By
-	March 14, 2019	First release	
1	April 5, 2019	The report has been revised to show the location of the band edge at 2400 MHz (graticlues) on all the plots missing this information.	

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SCOPE

An electromagnetic emissions test has been performed on the Aruba, a Hewlett Packard Enterprise company models 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 C

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

ANSI C63.10-2013
FCC DTS Measurement Guidance KDB558074

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-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 C

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

The test results recorded herein are based on a single type test of Aruba, a Hewlett Packard Enterprise company models 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

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz) (BLE)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 247 5.2	Digital Modulation	Systems uses GFSK modulation	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 247 5.2 (1)	6dB Bandwidth	0.692 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 247 5.4 (4)	Output Power (multipoint systems)	8.1 dBm (0.0065 Watts) EIRP = 0.020 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	-1.5 dBm/10 kHz	8dBm/3kHz	Complies
15.247(d)	RSS 247 5.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(d) / 15.209	RSS 247 5.5	Radiated Spurious Emissions 30MHz – 25 GHz	54.0 dBuV/m @ 2484.8 MHz (0.0dB)	Refer to the limits section (p23) for restricted bands, all others < -20dBc	Complies
Note 1: EIRP calculated using antenna gains of 5.0 dBi for the highest EIRP system.					

DIGITAL TRANSMISSION SYSTEMS (2400 – 2483.5MHz) (Zigbee)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 247 5.2	Digital Modulation	Systems uses O-QPSK modulation	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 247 5.2 (1)	6dB Bandwidth	1.140 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 247 5.4 (4)	Output Power (multipoint systems)	7.5 dBm (0.0056 Watts) EIRP = 0.018 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	-1.6 dBm/10 kHz	8dBm/3kHz	Complies
15.247(d)	RSS 247 5.5	Antenna Port Spurious Emissions 30MHz – 25 GHz	All spurious emissions < -20dBc	< -20dBc	Complies
15.247(d) / 15.209	RSS 247 5.5	Radiated Spurious Emissions 30MHz – 25 GHz	52.5 dBuV/m @ 2389.6 MHz (-1.5dB)	Refer to the limits section (p23) for restricted bands, all others < -20dBc	Complies
Note 1: EIRP calculated using antenna gains of 5.0 dBi () for the highest EIRP system.					

DIGITAL TRANSMISSION SYSTEMS (2400 –2483.5 MHz) (Wi-Fi)

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.247(a)	RSS 247 5.2	Digital Modulation	Systems uses OFDM / DSSS techniques	System must utilize a digital transmission technology	Complies
15.247 (a) (2)	RSS 247 5.2 (1)	6dB Bandwidth	11b: 8.08 MHz 11g: 16.3 MHz 11n20: 17.3 MHz 11ax20: 18.8 MHz 11n40: 35.5 MHz 11ax40: 37.3 MHz	>500kHz	Complies
15.247 (b) (3)	RSS 247 5.4 (4)	Output Power (multipoint systems)	11b: 26.4 dBm 11g: 26.7 dBm 11ax20: 26.8 dBm 11ax40: 23.5 dBm (0.474 Watts) EIRP = 0.751 W Note 1	1Watt, EIRP limited to 4 Watts.	Complies
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	11b: 3.8 dBm/3kHz 11g: -2.7 dBm/3kHz n20: -0.8 dBm/3kHz ax20: -1.3 dBm/3kHz n40: -5.5 dBm/3kHz ax40: -7.0 dBm/3kHz	Maximum permitted is 8dBm/3kHz	Complies
15.247(d)	RSS 247 5.5	Antenna Port Spurious Emissions –30MHz – 40 GHz	All spurious emissions < -20dBc or -30dBc as appropriate	< -20dBc < -30dBc Note 2	Complies
15.247(d) / 15.209	RSS 247 5.5	Radiated Spurious Emissions 30MHz – 40 GHz	53.6 dBµV/m @ 2483.5 MHz (-0.4 dB)	Refer to the limits section (p23) for restricted bands, all others < -20dBc <-30dBc Note 2	Complies

Note 1: EIRP calculated using antenna gain of 2 dBi for the highest EIRP system. Power is reduced when higher gain antennas are employed so EIRP does not change.
Note 2: Limits of -20dBc for OFDM modes and -30dBc for 802.11b were used mode as the power was measured using peak techniques for OFDM modulations and using average technique for DSSS.

GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS

FCC Rule Part	RSS Rule part	Description		Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector		Either integral or unique external connector	Unique or integral antenna required	Complies
15.407 (b) (6)	RSS-Gen Table 4	AC Conducted Emissions (AC Power)		39.3 dBµV @ 0.422 MHz (-8.1 dB)	Refer to page 22	Complies
		AC Conducted Emissions (POE)		38.4 dBµV @ 0.458 MHz (-8.3 dB)		
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		(User Manual page 9)	Statement for products with detachable antenna	Complies
-	RSS-Gen 8.4	User Manual		(User Manual page 9)	Statement for all products	Complies
-	RSP-100 RSS-Gen 6.7	Occupied Bandwidth	BLE	1.053 MHz	Information only	N/A
			ZigBee	2.228 MHz		
			WiFi	11b: 13.3 MHz 11g: 18.0 MHz 11ax20: 19.4 MHz 11ax40: 38.3 MHz		

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 16, 18, 19, 22, 23, 25, 26, and 31, November 1, 2, 5, 6, 14, and 15, December 3, 27, 28 and 31, 2018. The EUT consisted of the following component(s):

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.

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	US0027	2845B-4	41039 Boyce Road Fremont, CA 94538-2435
Chamber 5	US0027	2845B-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.

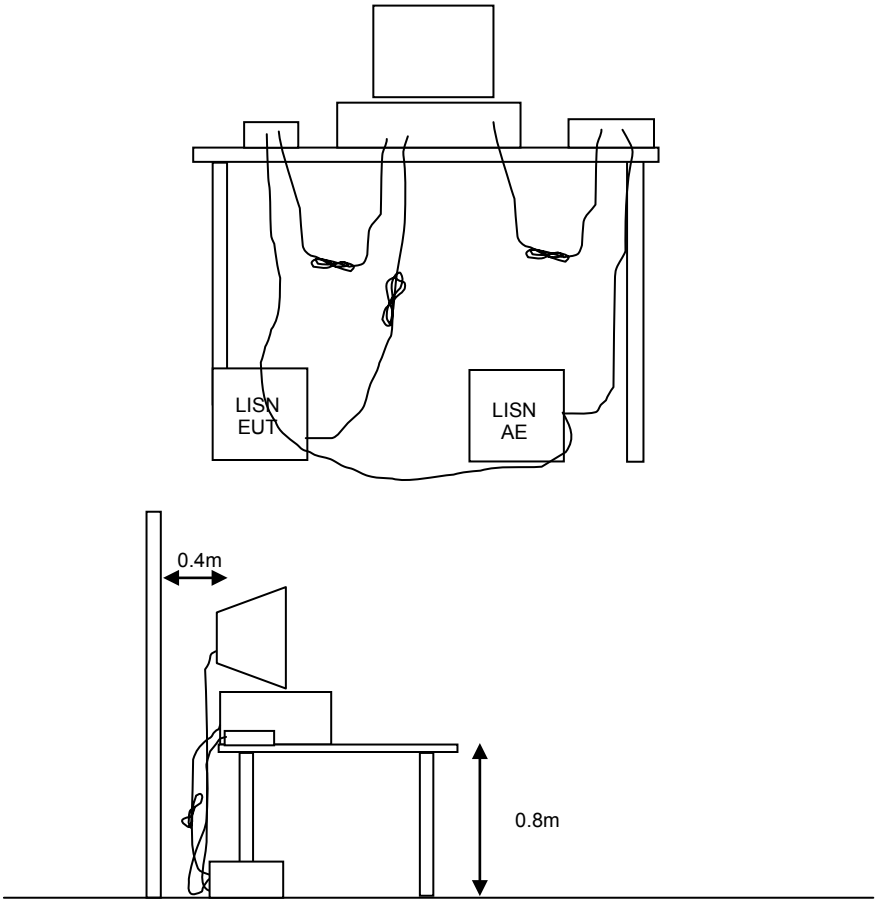


Figure 1 Typical Conducted Emissions Test Configuration

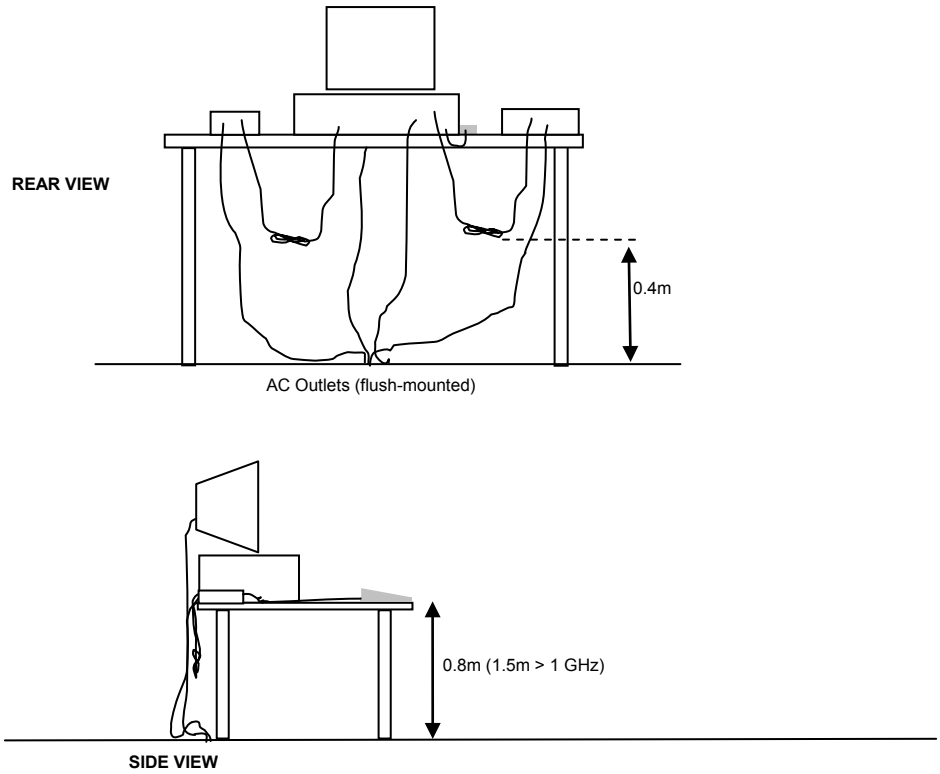
RADIATED EMISSIONS

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.

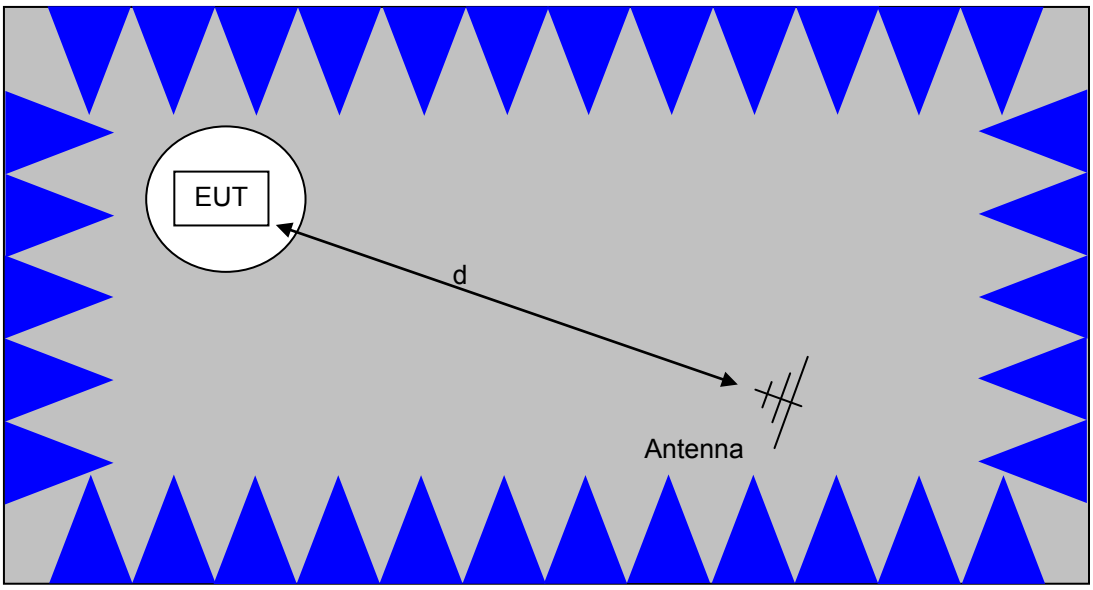
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

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.

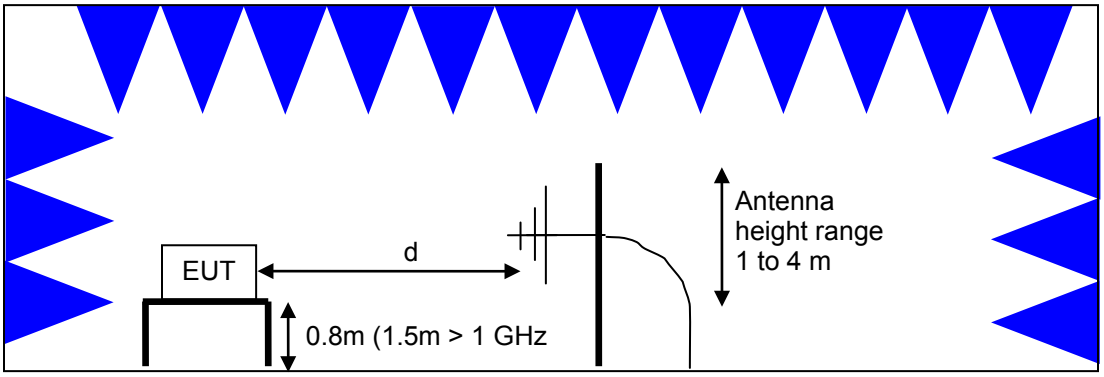


Typical Test Configuration for Radiated Field Strength Measurements



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.

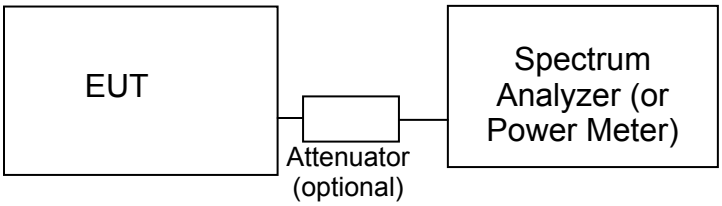
Floor-standing equipment is placed on the floor with insulating supports between the unit and the ground plane.



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

OUTPUT POWER LIMITS – DIGITAL TRANSMISSION SYSTEMS

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

Operating Frequency (MHz)	Output Power	Power Spectral Density
902 – 928	1 Watt (30 dBm)	8 dBm/3kHz
2400 – 2483.5	1 Watt (30 dBm)	8 dBm/3kHz
5725 – 5850	1 Watt (30 dBm)	8 dBm/3kHz

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

TRANSMIT MODE SPURIOUS RADIATED EMISSIONS LIMITS – FHSS and DTS SYSTEMS

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

[1] The restricted bands are detailed in FCC 15.205 and RSS-Gen Table 7

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, 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
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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
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
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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
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
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, 30-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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
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
EMCO	Antenna, Horn, 1-18 GHz	3115	1242	4/11/2017	4/19/2019
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	2239	8/17/2018	8/17/2019
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
Radiated Emissions, 1000-40,000 MHz, 02-Nov-18					
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
Rohde & Schwarz	Pulse Limiter	ESH3 Z2	1398	1/8/2018	1/8/2019
Sunol Sciences	Biconilog, 30-3000 MHz	JB3	1657	8/1/2018	8/1/2020
Micro-Tronics	Band Reject Filter, 5470-5725 MHz 12GHz	BRC50704-02	1681	3/23/2018	3/23/2019
Micro-Tronics	Band Reject Filter, 5725-5875 MHz 12GHz	BRC50705-02	1728	3/23/2018	3/23/2019
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB 7	1756	7/7/2018	7/7/2019
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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radio Antenna Port (Power and Spurious Emissions), 02-Nov-18					
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
Antenna port measurements, 05-Nov-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	4/4/2018	4/4/2019
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
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
Antenna port measurements, 06-Nov-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
National Technical Systems	NTS Capture Analyzer Software (rev 3.8)	N/A	0		N/A
Rohde & Schwarz	Power Meter, Dual Channel	NRVD	1071	4/4/2018	4/4/2019
Agilent Technologies	PSA, Spectrum Analyzer, (installed options, 111, 115, 123, 1DS, B7J, HYX,	E4446A	2139	7/27/2018	7/27/2019
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), 06-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

Manufacturer	Description	Model	Asset #	Calibrated	Cal Due
Radiated Spurious Emissions, 1000 - 6,500 MHz, 14-Nov-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	9482	10/13/2018	10/13/2019
Radiated Spurious Emissions, 1000 - 6,500 MHz, 15-Nov-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	9482	10/13/2018	10/13/2019
Radiated Emissions, Band edge, 04, 03-Dec-18					
National Technical Systems	NTS EMI Software (rev 2.10)	N/A	0		N/A
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	10/8/2018	10/8/2020
Rohde & Schwarz	EMI Test Receiver, 20 Hz-40 GHz	ESI 40	2493	3/22/2018	3/22/2019
Radiated Emissions, 26, 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
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
Radiated Emissions, 1000 - 6,000 MHz, 28,31-Dec-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	9482	10/13/2018	10/13/2019

Appendix B Test Data

TL077654-RA-FCC Pages 33 – 330

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: 1/31/2019

EMC Test Data

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 15.247 (DTS) 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.

Date of Test: 11/5/2018
Test Engineer: Deniz Demirci
Test Location: FT Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: POE

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 21 °C
Rel. Humidity: 38 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	8	-	Output Power	15.247(b)	Pass	8.1 dBm
2	8	-	Power spectral Density (PSD)	15.247(d)	Pass	-1.5 dBm/10 kHz
3	8	-	Minimum 6 dB Bandwidth	15.247(a)	Pass	0.692 MHz
3	8	-	99% Bandwidth	RSS GEN	-	1.053 MHz
4	8	-	Spurious emissions	15.247(b)	Pass	< 20 dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9V019
Driver: P2 WNC 0.4.4

EMC Test Data

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: Output Power

Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W	Output Power (dBm) [3]	Output Power mW
8	2402	7.9	6.2	5.0	Pass	12.9	0.019		
8	2440	8.0	6.3	5.0	Pass	13.0	0.020		
8	2480	8.1	6.5	5.0	Pass	13.1	0.020		

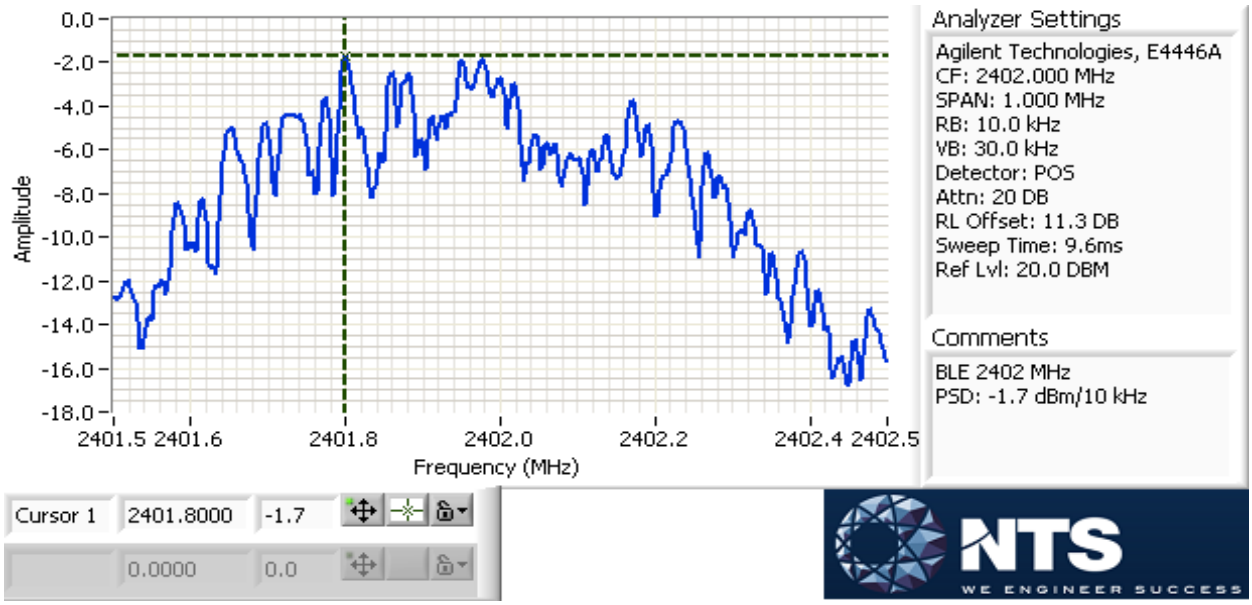
Note 1:	Output power measured using a peak power meter, spurious limit is -20 dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.

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

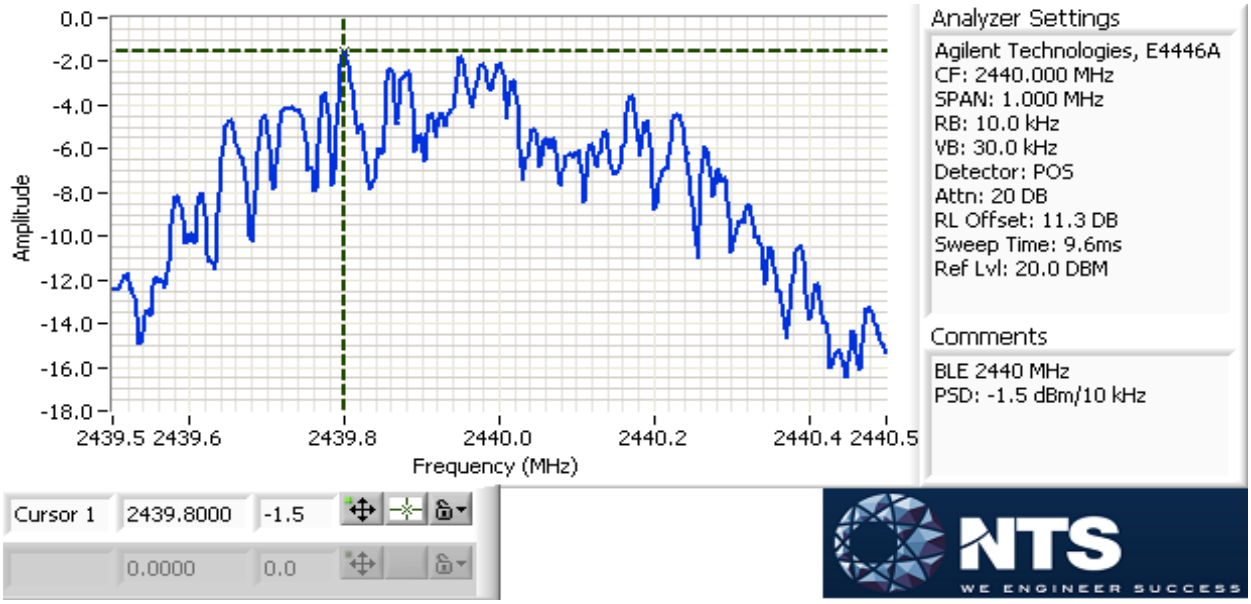
Run #2: Power spectral Density

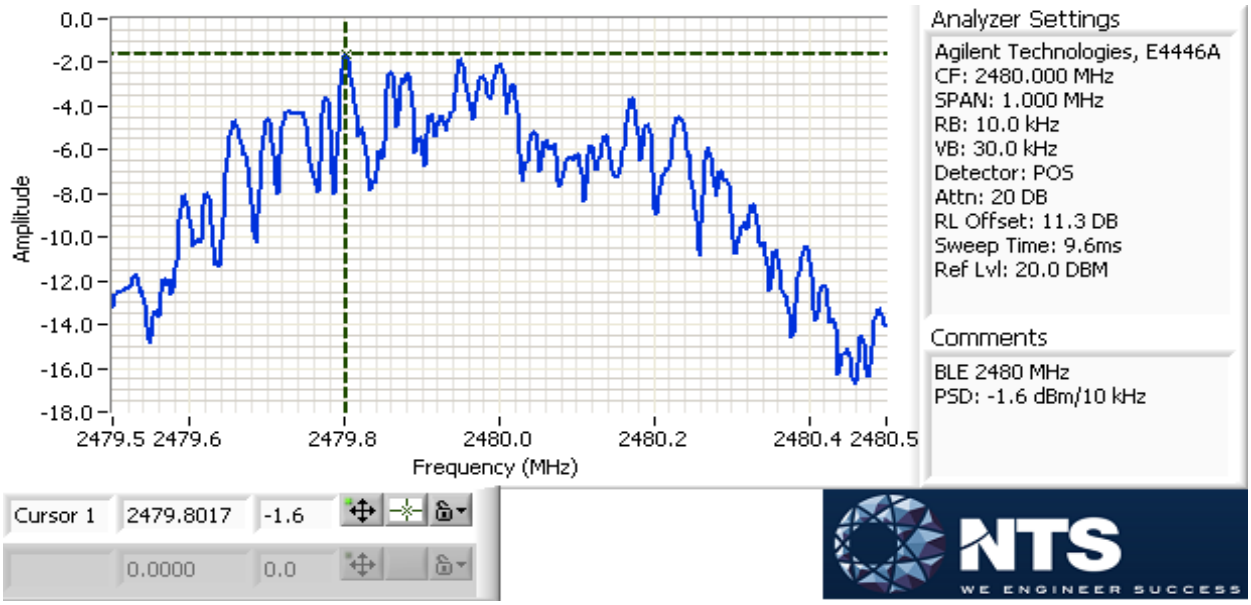
Power Setting	Frequency (MHz)	PSD (dBm/10 kHz) Note 1	Limit dBm/3 kHz	Result
8	2402	-1.7	8.0	Pass
8	2440	-1.5	8.0	Pass
8	2480	-1.6	8.0	Pass

Note 1:	Test performed per method PKSPD, in KDB 558074. Power spectral density measured using: 3kHz ≤ RBW ≤ 100kHz, VBW=3*RBW, peak detector, span = 1.5*DTS BW, auto sweep time, max hold.



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



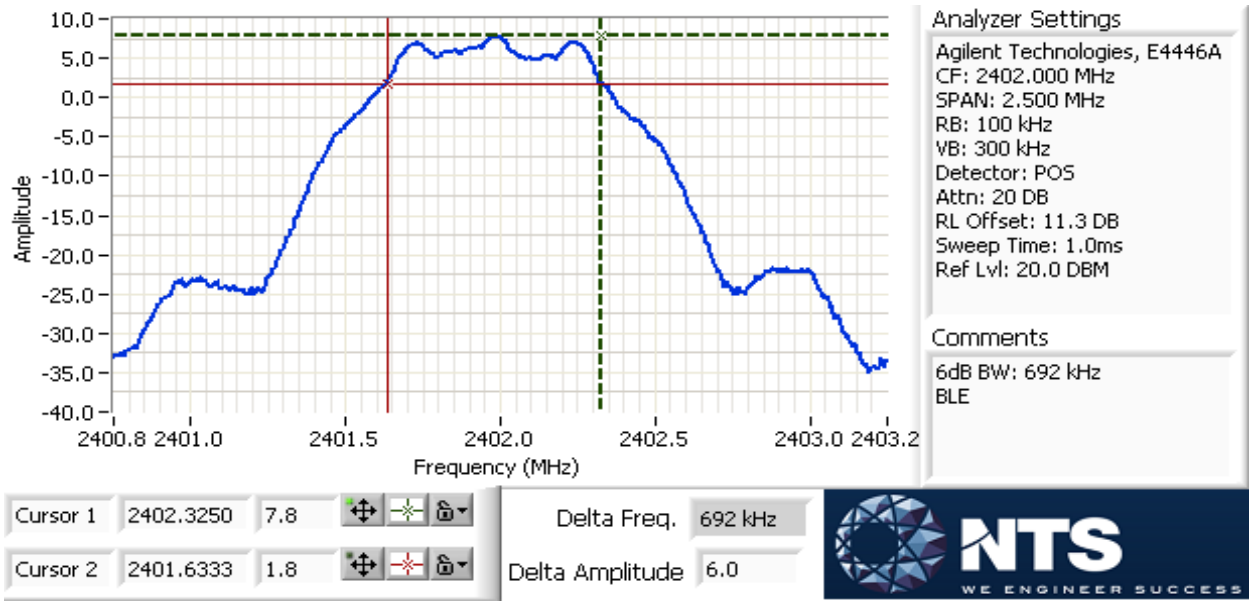


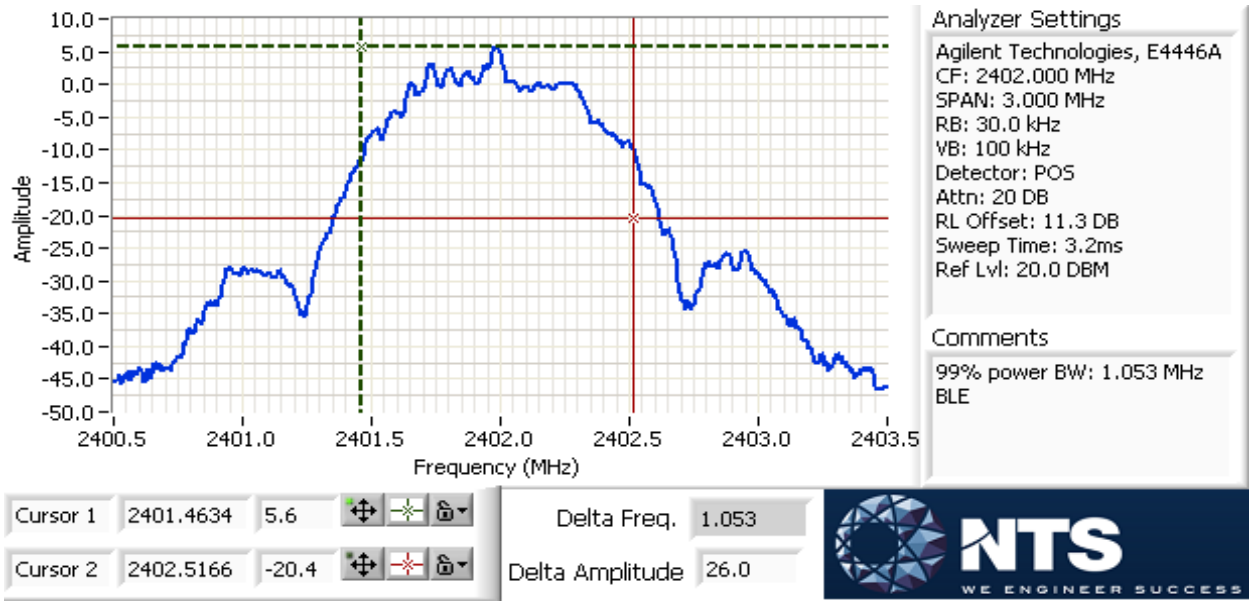
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #3: Signal Bandwidth

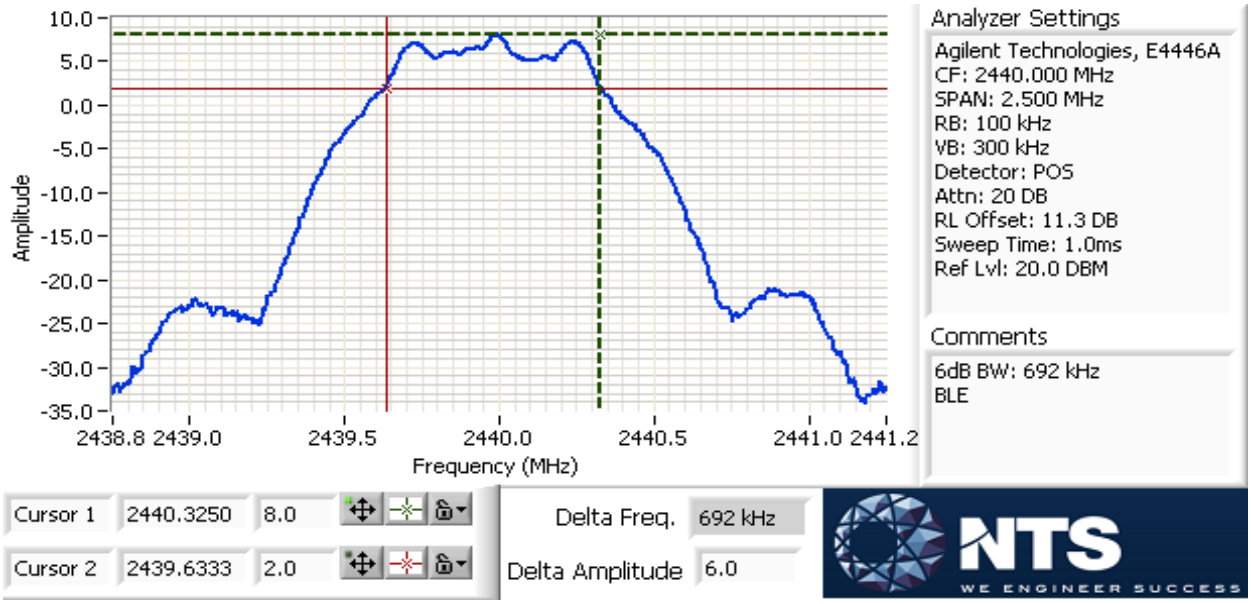
Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6 dB	99%	6 dB	99%
8	2402	0.692	1.053	0.1	0.03
8	2440	0.692	1.053	0.1	0.03
8	2480	0.692	1.053	0.1	0.03

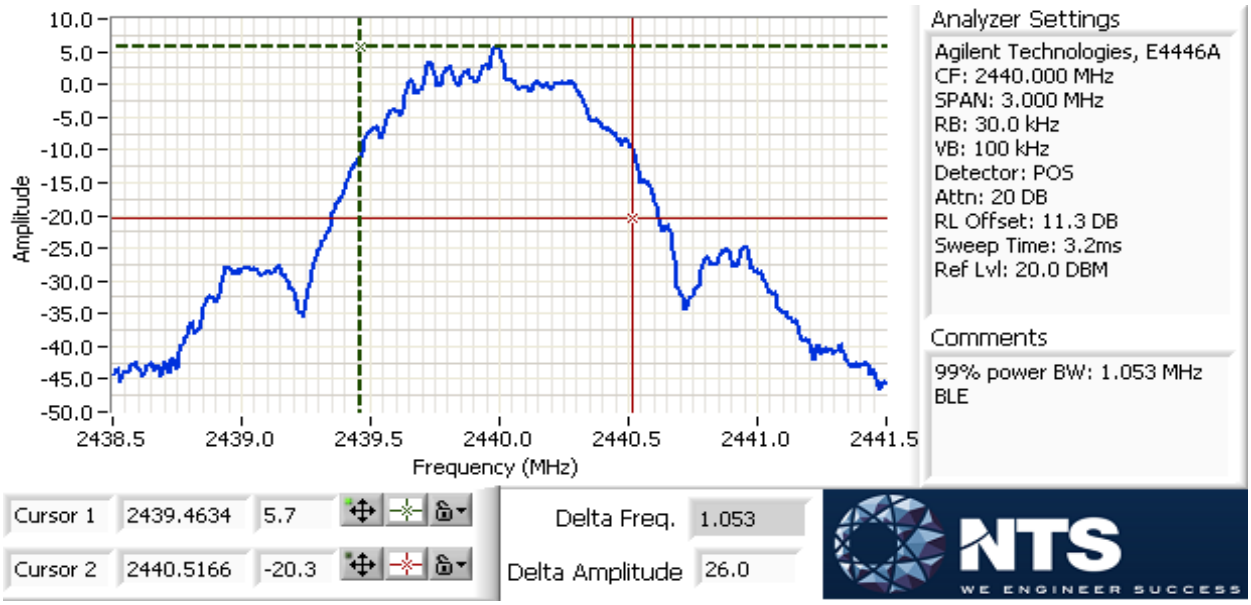
Note 1:	DTS BW: RBW=100 kHz, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time, Span 2-5 times measured BW. 99% BW: RBW=1-5% of 99%BW, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time. Span 1.5-5 times OBW.


Amplitude
Frequency (MHz)
Analyzer Settings
Agilent Technologies, E4446A
CF: 2402.000 MHz
SPAN: 2.500 MHz
RB: 100 kHz
VB: 300 kHz
Detector: POS
Attn: 20 DB
RL Offset: 11.3 DB
Sweep Time: 1.0ms
Ref Lvl: 20.0 DBM
Comments
6dB BW: 692 kHz
BLE
Cursor 1 2402.3250 7.8
Cursor 2 2401.6333 1.8
Delta Freq. 692 kHz
Delta Amplitude 6.0
NTS
WE ENGINEER SUCCESS

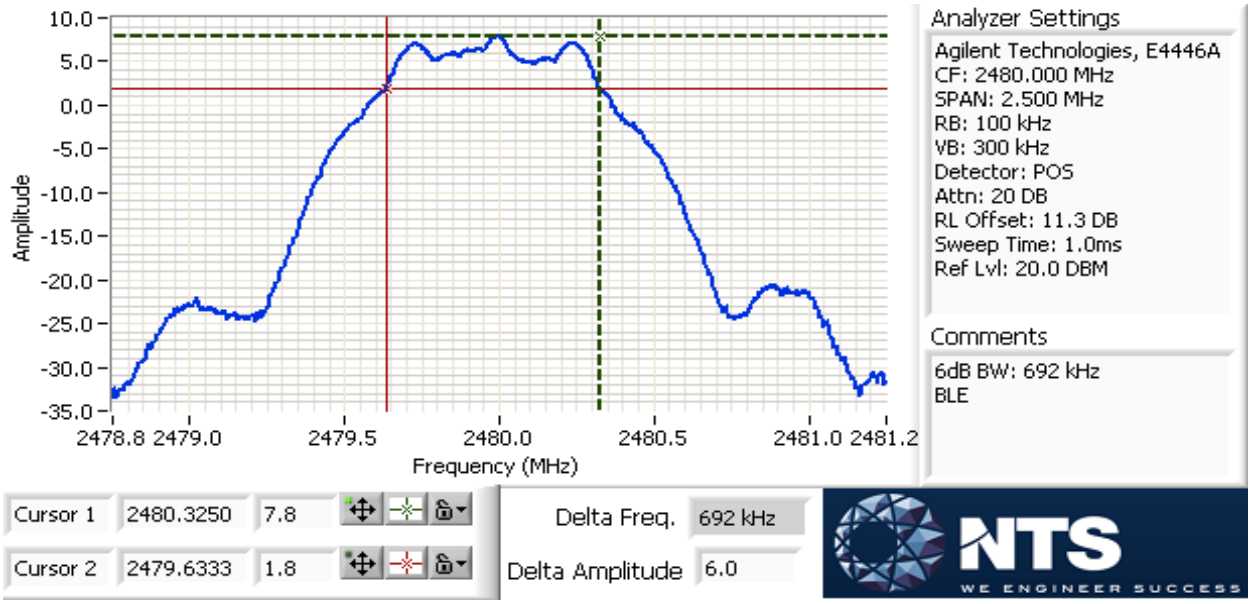

Amplitude
Frequency (MHz)
Analyzer Settings
Agilent Technologies, E4446A
CF: 2402.000 MHz
SPAN: 3.000 MHz
RB: 30.0 kHz
VB: 100 kHz
Detector: POS
Attn: 20 DB
RL Offset: 11.3 DB
Sweep Time: 3.2ms
Ref Lvl: 20.0 DBM
Comments
99% power BW: 1.053 MHz
BLE
Cursor 1 2401.4634 5.6
Cursor 2 2402.5166 -20.4
Delta Freq. 1.053
Delta Amplitude 26.0
NTS
WE ENGINEER SUCCESS

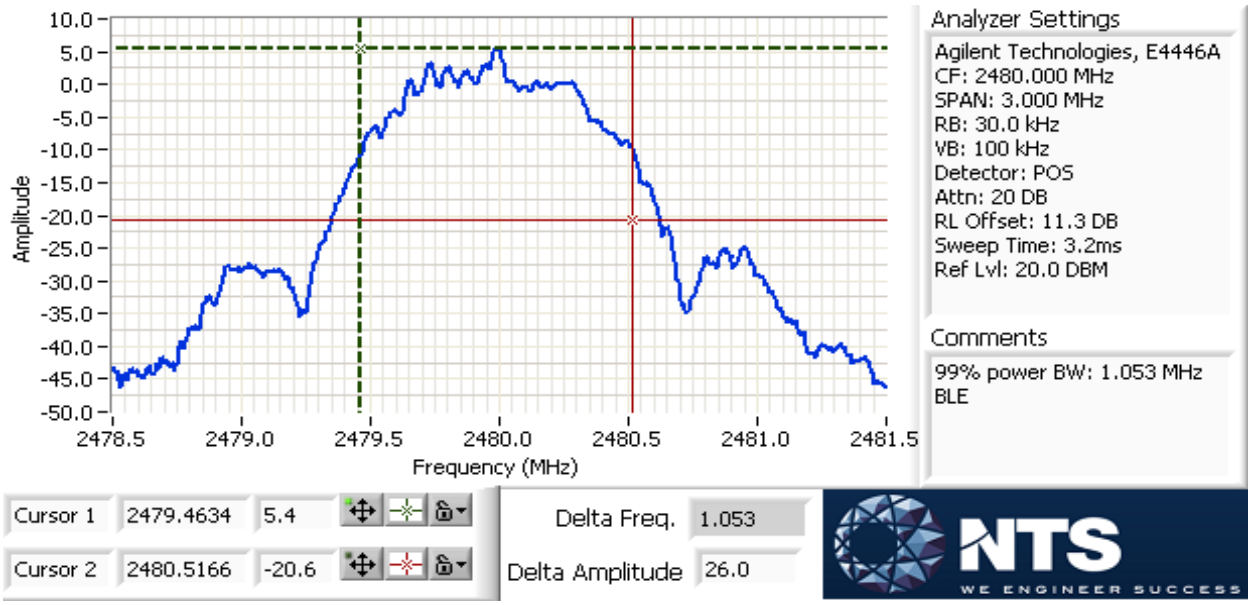
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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





EMC Test Data

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

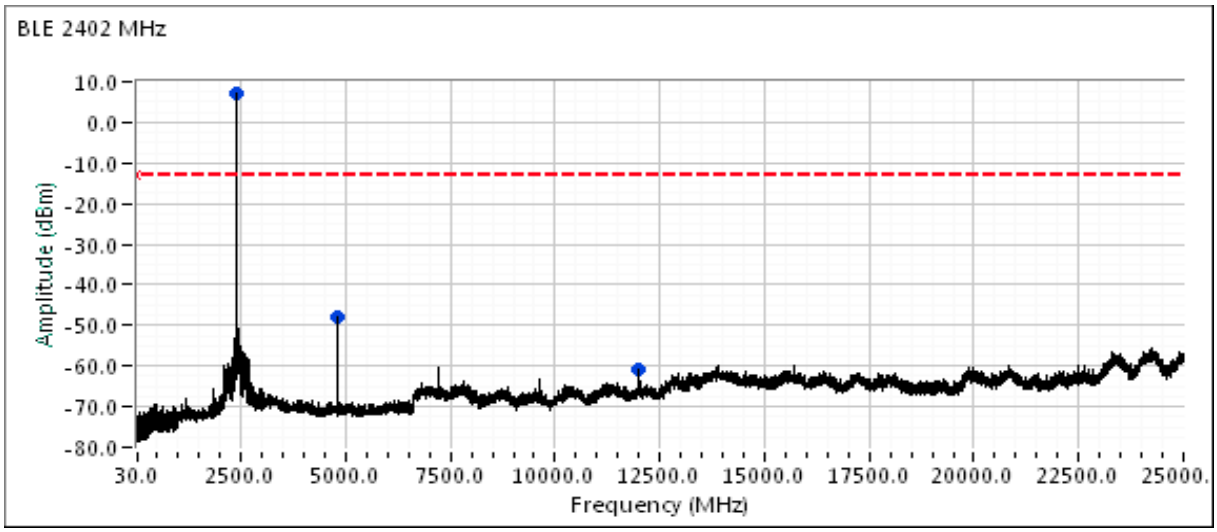
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Power Setting	Mode	Limit	Result
2402	8	BLE	-20 dBc	Pass
2440	8	BLE	-20 dBc	Pass
2480	8	BLE	-20 dBc	Pass

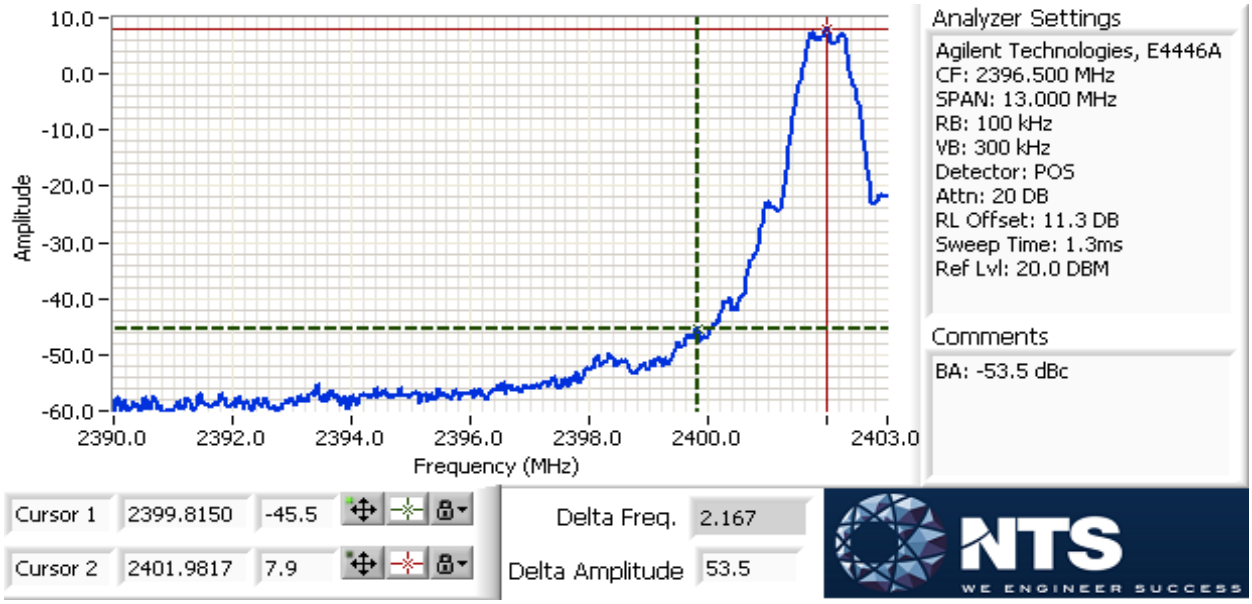
RBW = 100 kHz and VBW = 300 kHz for all plots.

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2401.970	7.2	RF Port	-	-	Peak	-	-	Fundamental
4803.970	-47.7	RF Port	-	-	Peak	-	-	BLE 2402 MHz - Restricted bands.
12009.970	-60.9	RF Port	-	-	Peak	-	-	BLE 2402 MHz - Restricted bands.
2440.080	7.3	RF Port	-	-	Peak	-	-	Fundamental
4880.090	-49.2	RF Port	-	-	Peak	-	-	BLE 2440 MHz - Restricted bands.
7320.010	-59.1	RF Port	-	-	Peak	-	-	BLE 2440 MHz - Restricted bands.
2479.990	8.0	RF Port	-	-	Peak	-	-	Fundamental
4959.920	-51.5	RF Port	-	-	Peak	-	-	BLE 2480 MHz - Restricted bands.
7440.020	-60.0	RF Port	-	-	Peak	-	-	BLE 2480 MHz - Restricted bands.

Plots for low channel

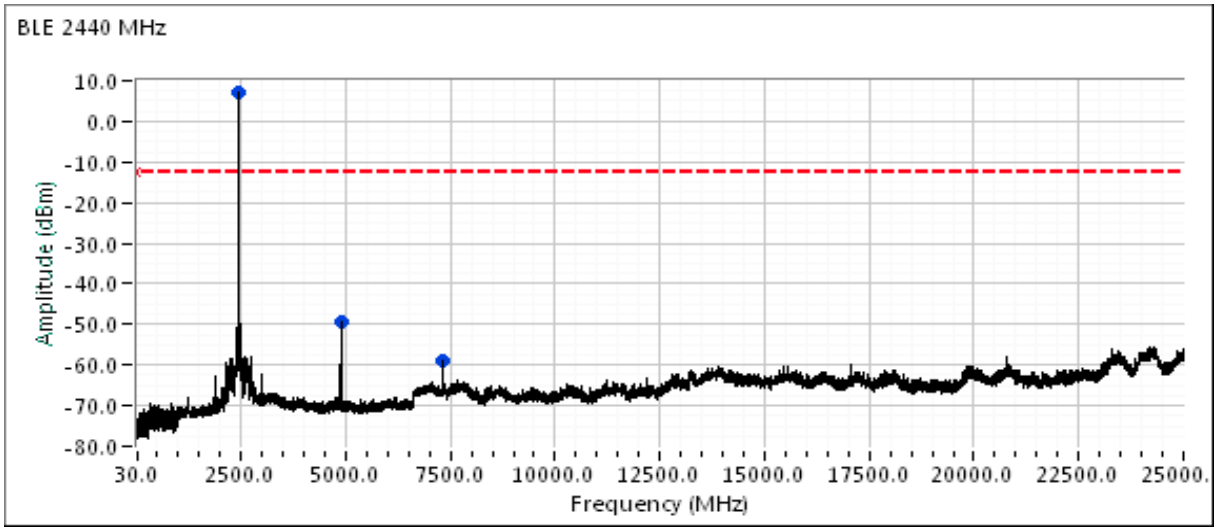


Additional plot showing compliance with -20 dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

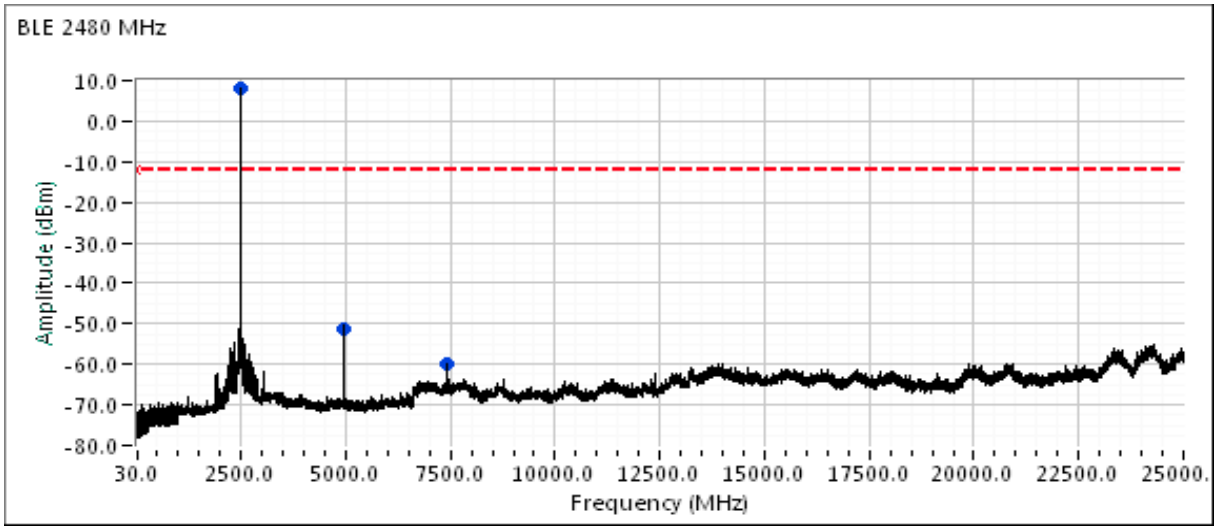


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Plots for center channel



Plots for high channel



EMC Test Data

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 15.247 (DTS) 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.

Date of Test: 11/6/2018
Test Engineer: Deniz Demirci
Test Location: FT Lab #4B

Config. Used: 1
Config Change: None
EUT Voltage: POE

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator. All measurements were made on a single chain.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 22 °C
Rel. Humidity: 39 %

Summary of Results

Run #	Pwr setting	Avg Pwr	Test Performed	Limit	Pass / Fail	Result / Margin
1	-	-	Output Power	15.247(b)	Pass	7.5 dBm
2	-	-	Power spectral Density (PSD)	15.247(d)	Pass	-1.6 dBm/10 kHz
3	-	-	Minimum 6 dB Bandwidth	15.247(a)	Pass	1.140 MHz
3	-	-	99% Bandwidth	RSS GEN	-	2.228 MHz
4	-	-	Spurious emissions	15.247(b)	Pass	< 20 dBc

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9W01F
Driver: P2 WNC 0.4.4

EMC Test Data

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: Output Power
Main

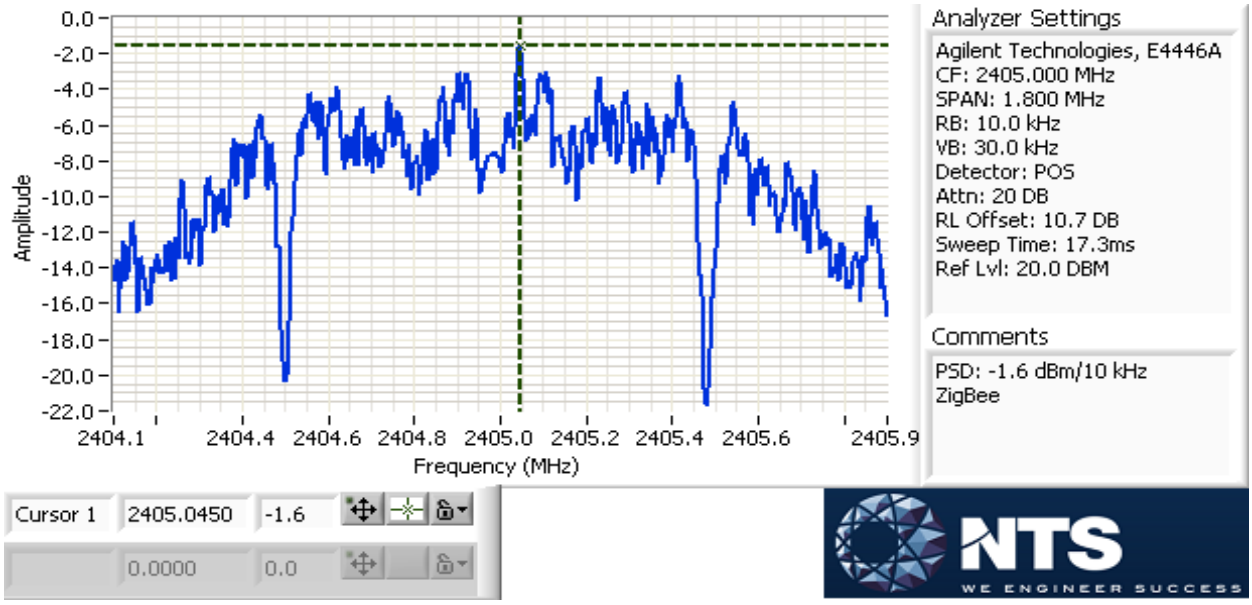
Power Setting[2]	Frequency (MHz)	Output Power (dBm) [1]	Output Power mW	Antenna Gain (dBi)	Result	EIRP dBm	EIRP W	Output Power (dBm) [3]	Output Power mW
8	2405	7.4	5.5	5.0	Pass	12.4	0.017		
8	2440	7.5	5.6	5.0	Pass	12.5	0.018		
3	2480	3.8	2.4	5.0	Pass	8.8	0.008		

Note 1:	Output power measured using a peak power meter, spurious limit is -20 dBc.
Note 2:	Power setting - the software power setting used during testing, included for reference only.

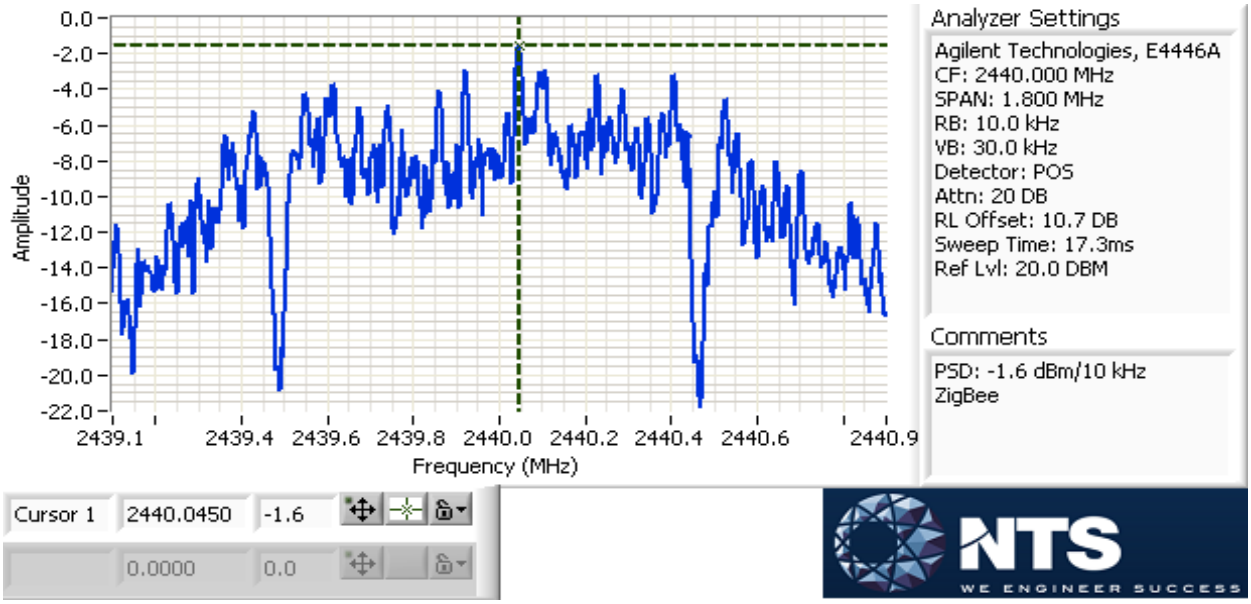
Run #2: Power spectral Density

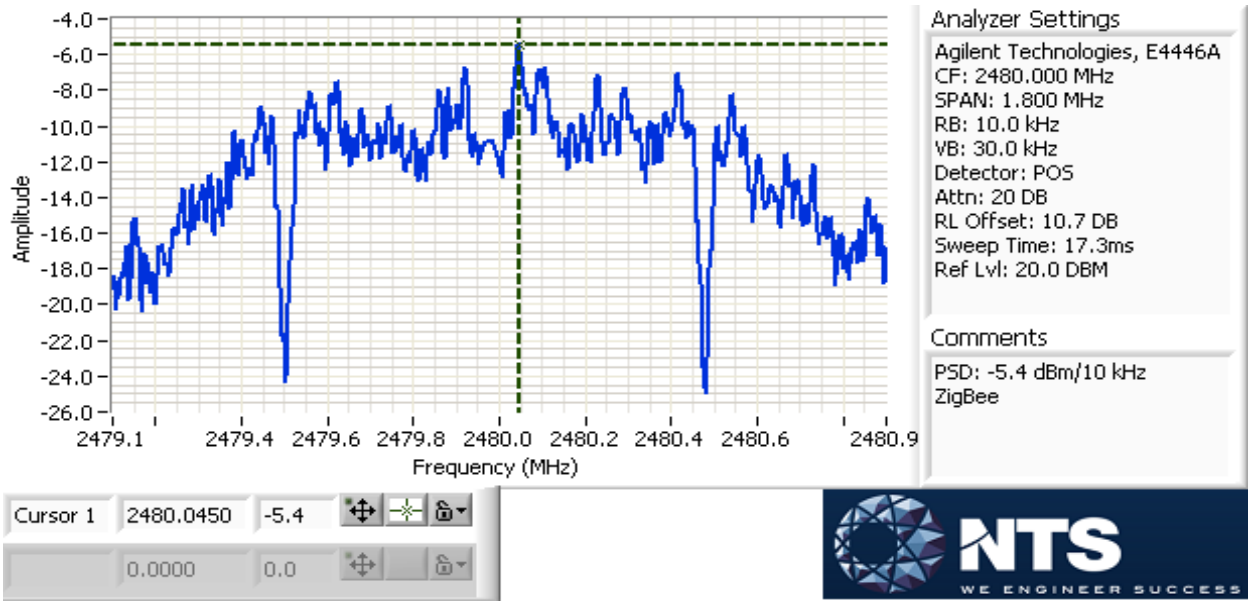
Power Setting	Frequency (MHz)	PSD (dBm/10 kHz) Note 1	Limit dBm/3 kHz	Result
8	2405	-1.6	8.0	Pass
8	2440	-1.6	8.0	Pass
3	2480	-5.4	8.0	Pass

Note 1:	Test performed per method PKSPD, in KDB 558074. Power spectral density measured using: 3 kHz ≤ RBW ≤ 100 kHz, VBW=3*RBW, peak detector, span = 1.5*DTS BW, auto sweep time, max hold.



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





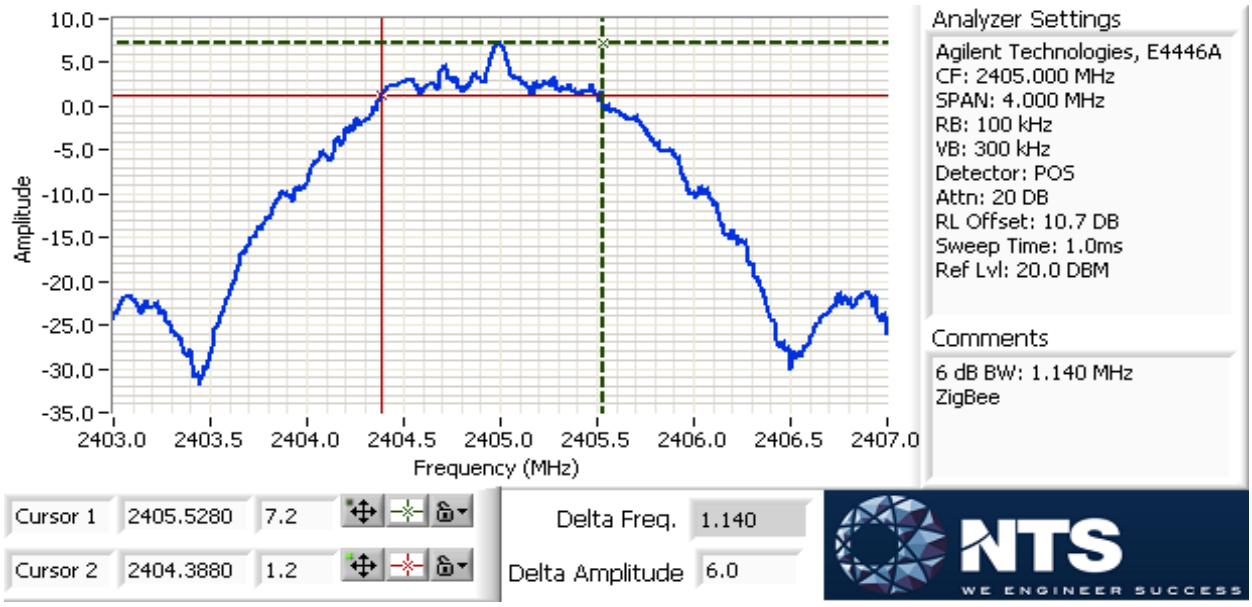
EMC Test Data

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

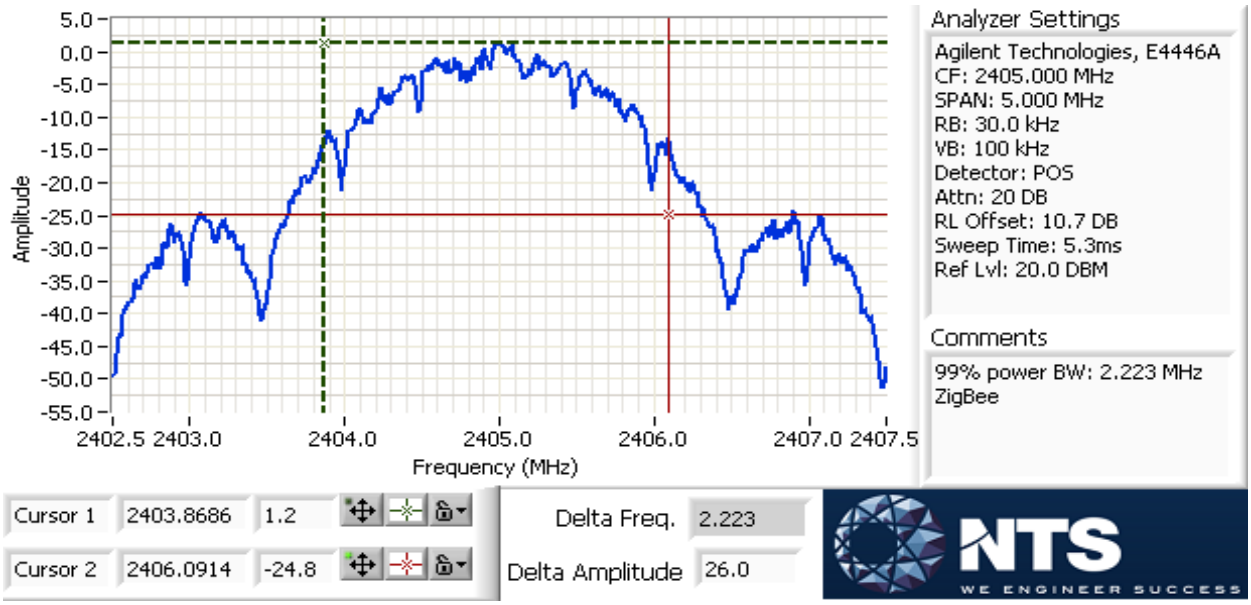
Run #3: Signal Bandwidth

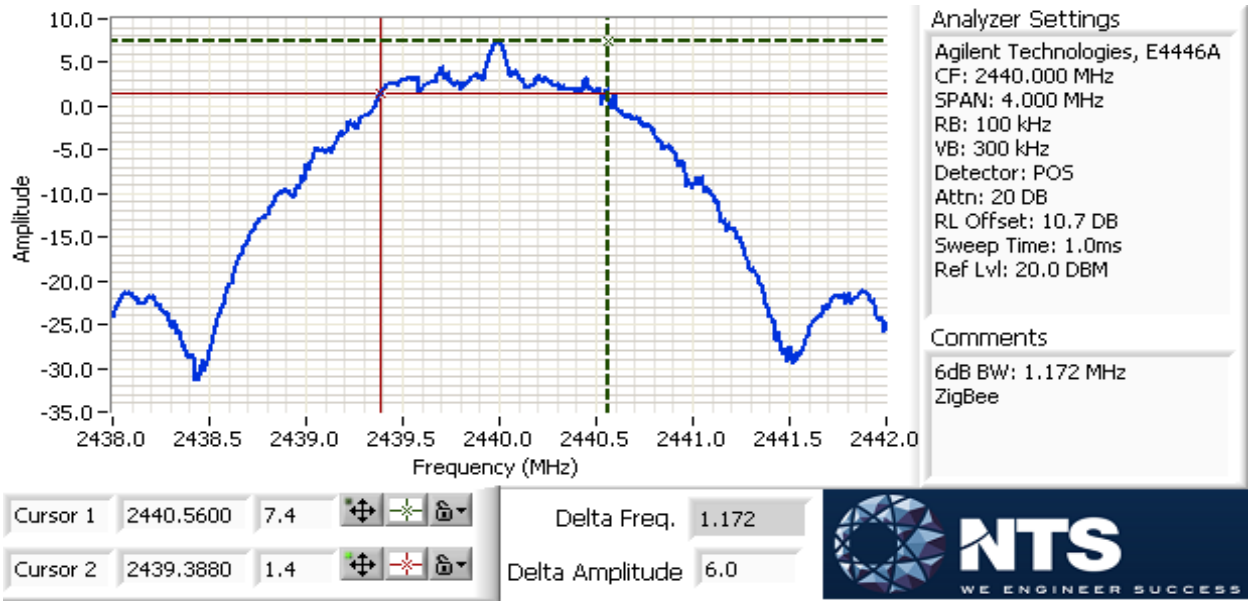
Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6 dB	99%	6 dB	99%
8	2405	1.140	2.223	0.10	0.03
8	2440	1.172	2.228	0.10	0.03
3	2480	1.112	2.223	0.10	0.03

Note 1:	DTS BW: RBW=100 kHz, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time, Span 2-5 times measured BW. 99% BW: RBW=1-5% of 99%BW, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time. Span 1.5-5 times OBW.

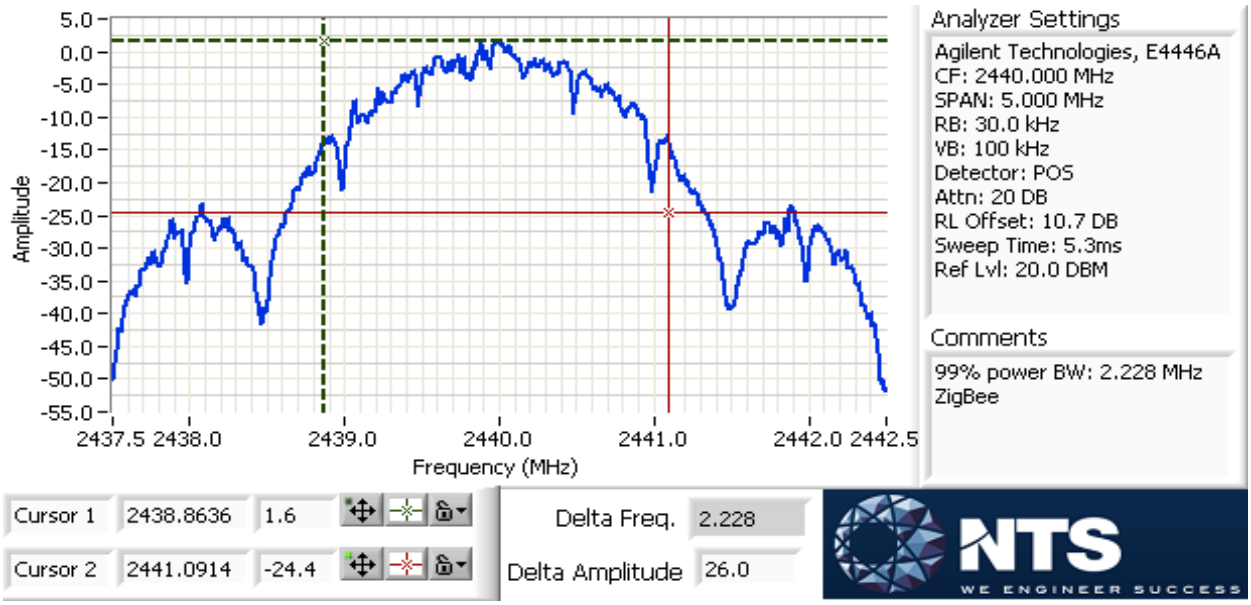


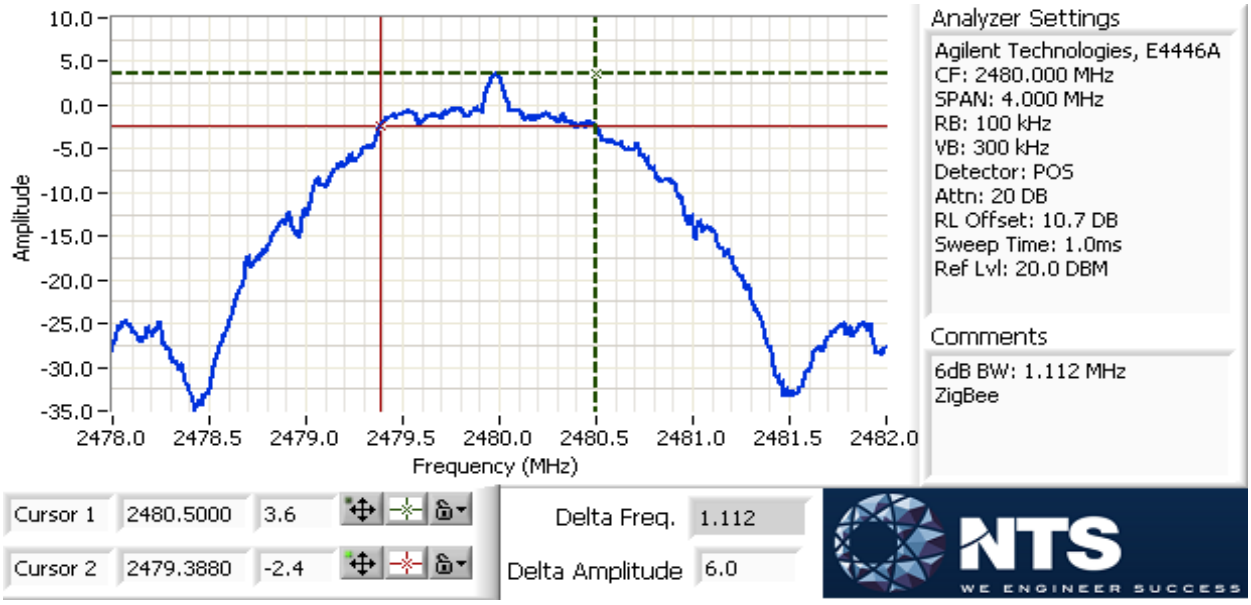
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



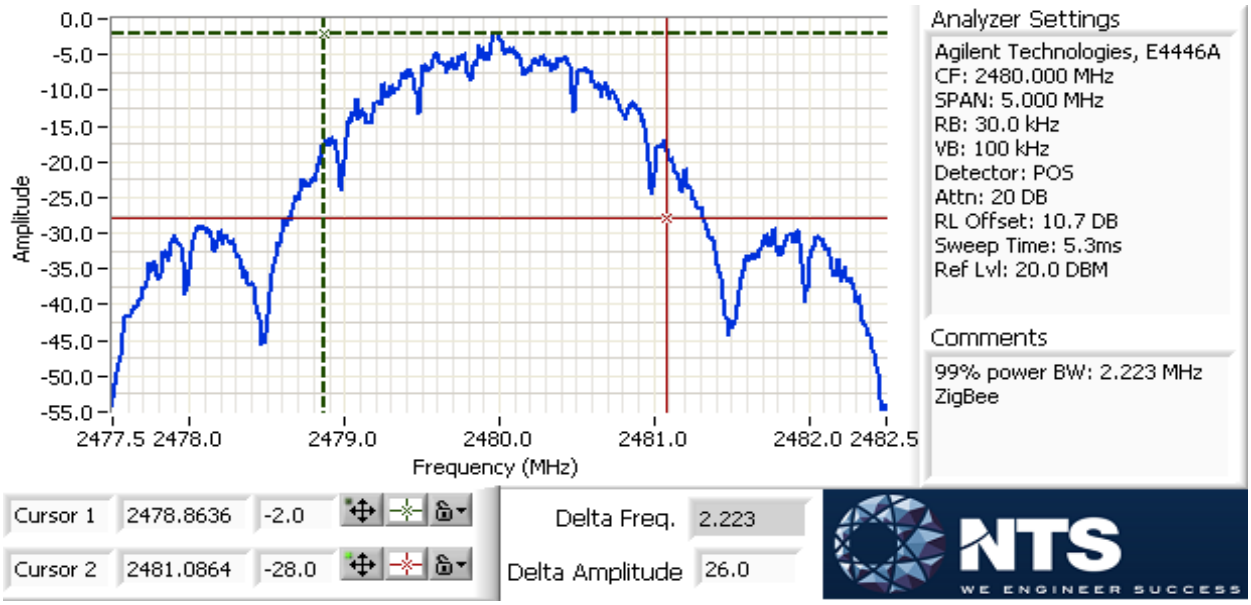


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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



EMC Test Data

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

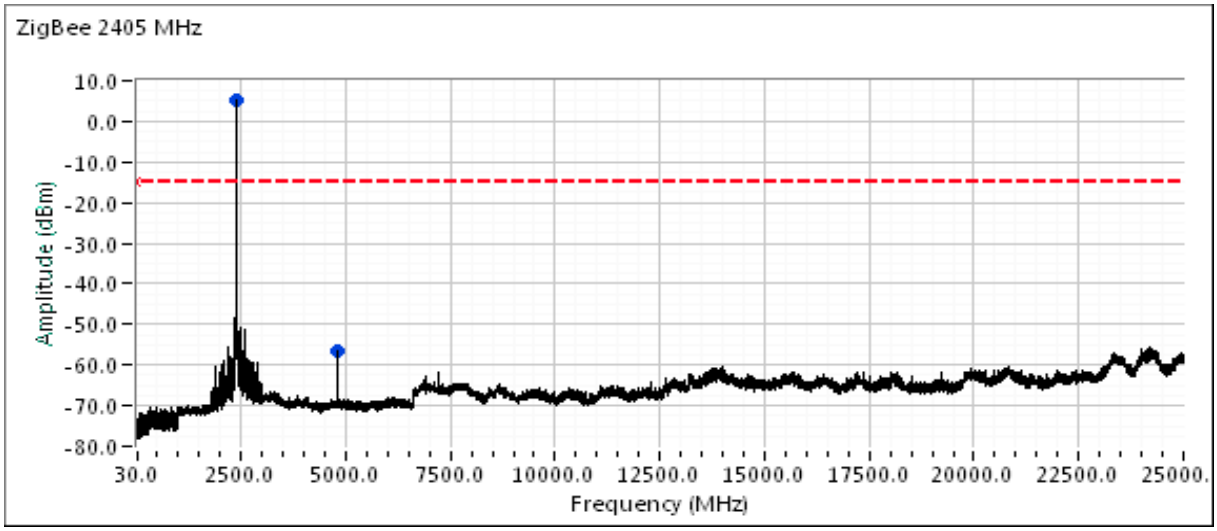
Run #4: Out of Band Spurious Emissions

Frequency (MHz)	Power Setting	Mode	Limit	Result
2405	8	ZigBee	-20 dBc	Pass
2440	8	ZigBee	-20 dBc	Pass
2480	8	ZigBee	-20 dBc	Pass

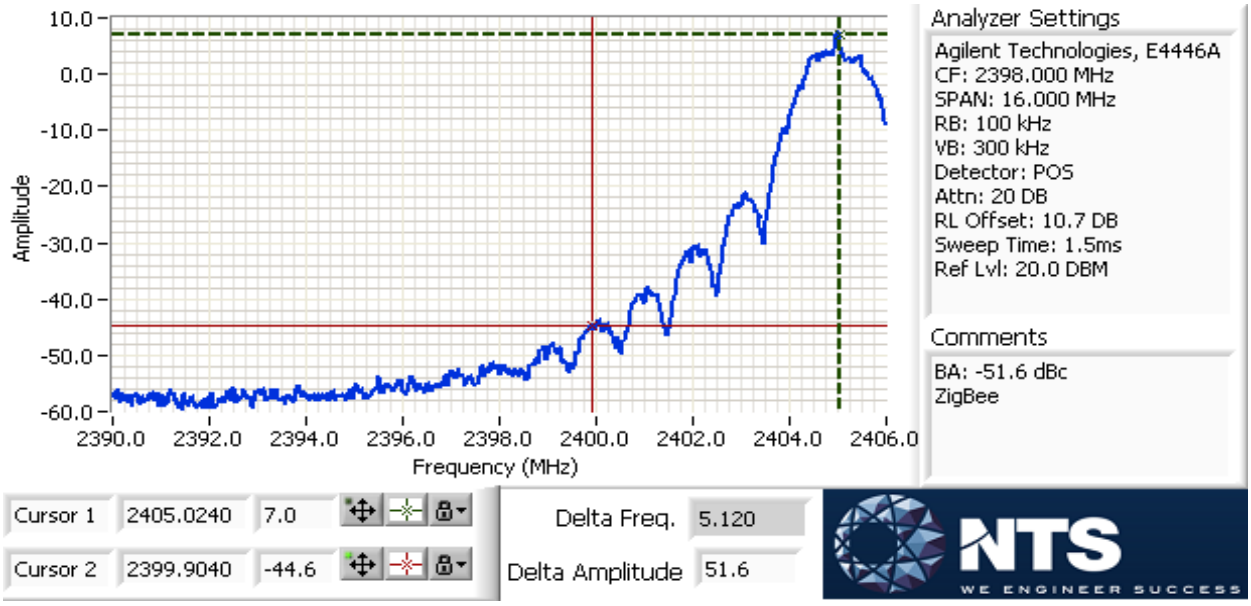
RBW = 100 kHz and VBW = 300 kHz for all plots.

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2404.470	6.9	RF Port	-	-	Peak			Fundamental
4810.270	-56.5	RF Port	-	-	Peak			ZigBee 2405 MHz - Restricted bands
2439.980	7.0	RF Port	-	-	Peak			Fundamental
4880.290	-60.6	RF Port	-	-	Peak			ZigBee 2440 MHz - Restricted bands
2479.970	7.1	RF Port	-	-	Peak			Fundamental
4960.320	-60.6	RF Port	-	-	Peak			ZigBee 2480 MHz - Restricted bands

Plots for low channel

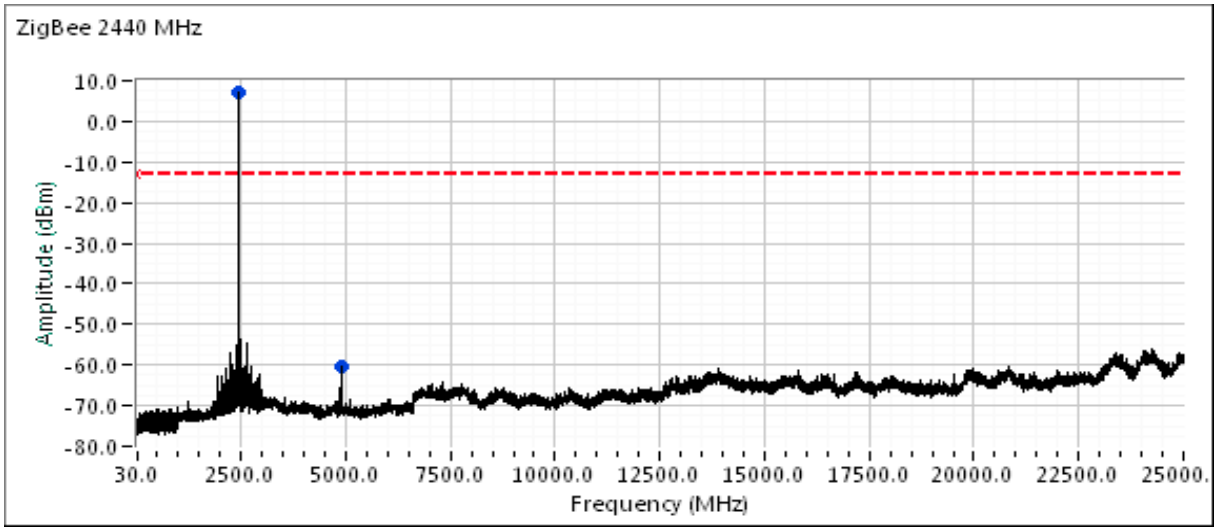


Additional plot showing compliance with -20 dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.

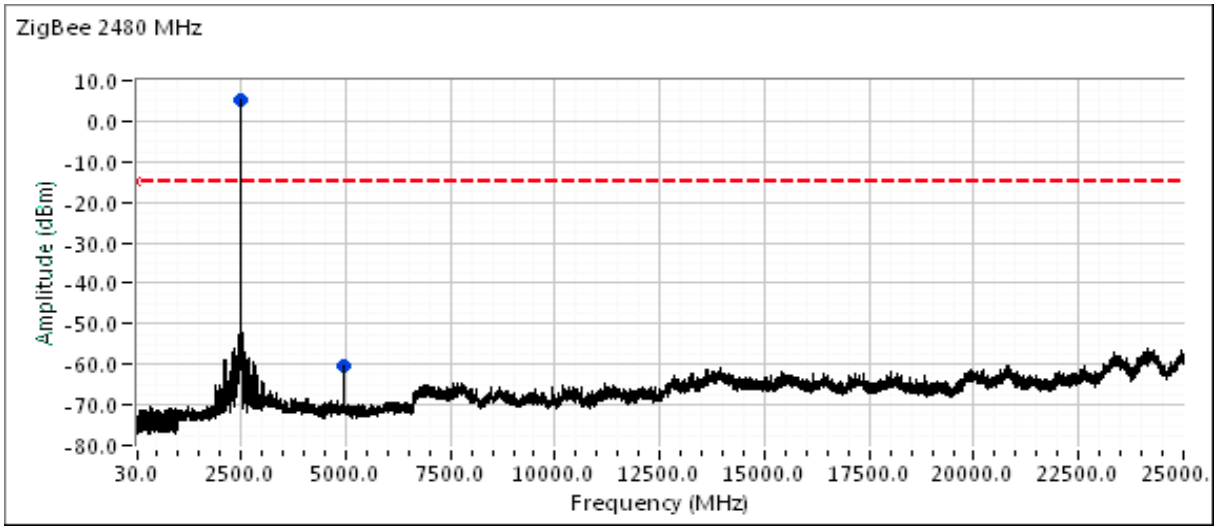


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Plots for center channel



Plots for high channel



EMC Test Data

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 15.247 (DTS) Antenna Port Measurements
MIMO and Smart Antenna Systems
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.

Date of Test: 11/2/2018
Test Engineer: Rafael Varelas / Roy Zheng
Test Location: FT Lab #4b

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

General Test Configuration

The EUT was connected to the spectrum analyzer or power meter via a suitable attenuator.

All measurements have been corrected to allow for the external attenuators used.

Ambient Conditions:

Temperature: 23.8 °C
Rel. Humidity: 41 %

Summary of Results

Run #	Pwr setting		Test Performed	Limit	Pass / Fail	Result / Margin
1	See below		Output Power	15.247(b)	Pass	11b: 26.4 dBm 11g: 26.7 dBm 11ax20: 26.8 dBm 11ax40: 23.5 dBm
2	See below		Power spectral Density (PSD)	15.247(d)	Pass	11b: 3.8 dBm/3kHz 11g: -2.7 dBm/3kHz n20: -0.8 dBm/3kHz ax20: -1.3 dBm/3kHz n40: -5.5 dBm/3kHz ax40: -7.0 dBm/3kHz

EMC Test Data

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 #	Pwr setting		Test Performed	Limit	Pass / Fail	Result / Margin
3	20		Minimum 6dB Bandwidth	15.247(a)	Pass	11b: 8.08 MHz 11g: 16.3 MHz 11n20: 17.3 MHz 11ax20: 18.8 MHz 11n40: 35.5 MHz 11ax40: 37.3 MHz
3	20		99% Bandwidth	RSS GEN	Pass	11b: 13.3 MHz 11g: 18.0 MHz 11ax20: 19.4 MHz 11ax40: 38.3 MHz
4	20		Spurious emissions	15.247(b)	Pass	>20dBc

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 558074

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495
11g	6 Mb/s	0.92	Yes	1.432	0.3	0.7	698
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185

Sample Notes

Sample S/N: CNG6K9V00M
Driver: P2 WNC 0.4.4

EMC Test Data

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

Antenna Gain Information

Freq	Antenna Gain (dBi) / Chain				BF	MultiChain Legacy	CDD	Sectorized / Xpol	Dir G (PWR)	Dir G (PSD)
	1	2	3	4						
2450	2.0	2.0	2.0	2.0	X	X	X	X	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

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; Dir G (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, v01r02.

EMC Test Data

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: Output Power

Operating Mode: 802.11b
Directional Gain (dBi): 2.0

Max EIRP (mW): 698.13

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	0	20	20.5	112.2	440.5	26.4	0.440	30.0	Pass	
	1		20.5	113.2						
	2		20.3	107.9						
	3		20.3	107.2						
2437	0	20	20.4	109.6	427.6	26.3		30.0	Pass	
	1		20.4	110.7						
	2		20.2	105.0						
	3		20.1	102.3						
2462	0	20	20.2	105.7	409.0	26.1		30.0	Pass	
	1		20.1	103.3						
	2		20.0	100.0						
	3		20.0	100.0						

Operating Mode: 802.11g
Directional Gain (dBi): 2.0

Max EIRP (mW): 740.41

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	0	14	15.1	32.4	134.8	21.3	0.467	30.0	Pass	
	1		15.3	33.9						
	2		15.3	33.9						
	3		15.4	34.7						
2437	0	20	20.8	119.4	467.2	26.7		30.0	Pass	
	1		20.8	120.5						
	2		20.5	113.0						
	3		20.6	114.3						
2462	0	14	15.2	33.1	130.9	21.2		30.0	Pass	
	1		15.2	33.1						
	2		15.1	32.4						
	3		15.1	32.4						

EMC Test Data

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

Operating Mode: 802.11ax20
Directional Gain (dBi): 2.0
Max EIRP (mW): 750.95

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2412	0	16	16.5	44.7	191.7	22.8	0.474	30.0	Pass	
	1		17.1	51.3						
	2		16.9	49.0						
	3		16.7	46.8						
2437	0	20	20.6	115.3	473.8	26.8		30.0	Pass	
	1		20.8	119.4						
	2		20.8	119.4						
	3		20.8	119.7						
2462	0	15	15.7	37.2	147.9	21.7		30.0	Pass	
	1		15.9	38.9						
	2		15.4	34.7						
	3		15.7	37.2						

Operating Mode: 802.11ax40
Directional Gain (dBi): 2.0
Max EIRP (mW): 352.6749

Frequency (MHz)	Chain	Software Setting[2]	Power[1] dBm	Power[1] mW	Total mW	Total dBm	Max Power (W)	Limit dBm	Result	Power (dBm)[3]
2422	0	13.5	13.7	23.4	103.1	20.1	0.223	30.0	Pass	
	1		14.3	26.9						
	2		14.5	28.2						
	3		13.9	24.5						
2437	0	16.5	17.2	52.5	222.5	23.5		30.0	Pass	
	1		17.6	57.5						
	2		17.6	57.5						
	3		17.4	55.0						
2452	0	14	14.5	28.2	121.6	20.9		30.0	Pass	
	1		14.9	30.9						
	2		15.1	32.4						
	3		14.8	30.2						

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

Note 1:	Output power measured using a peak power meter for 802.11g, 802.11ax20 and 802.11ax40 modes, spurious limit is -20dBc.
Note 1:	Constant Duty Cycle < 98%. Output power measured using a spectrum analyzer with RBW= 1-5% of OBW and ≤ 1 MHz, VB≥3* RBW, Span ≥ 1.5 of OBW, RMS detector, auto sweep time, power averaging on, and power integration over the OBW, trace average 100 traces (option AVGSA-2 in ANSI C63.10). Measurement corrected by Pwr Cor Factor. Spurious limit for 802.11b mode therefore is -30dBc (802.11b mode only).
Note 2:	Power setting - the software power setting used during testing, included for reference only.
Note 3:	Power measured using average power meter (non-gated) and is included for reference only if performed.

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: Power spectral Density

n20 and n40 modes also tested as PSD is different for n/ac and ax modes

Mode: 11b

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
20	2412	-2.9	-1.7	-2.1	-2.2	3.8	8.0	Pass
20	2437	-3.1	-2.7	-3.4	-2.6	3.1	8.0	Pass
20	2462	-2.8	-1.3	-3.5	-2.8	3.5	8.0	Pass

Mode: 11g

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
15	2412	-11.9	-13.3	-11.7	-12.0	-6.2	8.0	Pass
20	2437	-8.5	-7.7	-9.7	-9.3	-2.7	8.0	Pass
14	2462	-14.8	-13.5	-14.3	-14.6	-8.3	8.0	Pass

Mode: n20

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
16	2412	-10.4	-10.4	-9.3	-10.6	-4.1	8.0	Pass
20	2437	-7.3	-6.7	-5.9	-7.5	-0.8	8.0	Pass
15	2462	-10.7	-10.0	-11.5	-11.0	-4.7	8.0	Pass

Mode: ax20

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
16	2412	-11.7	-11.0	-11.8	-11.2	-5.4	8.0	Pass
20	2437	-8.0	-7.0	-6.6	-8.0	-1.3	8.0	Pass
15	2462	-12.0	-12.7	-12.5	-11.5	-6.1	8.0	Pass

EMC Test Data

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

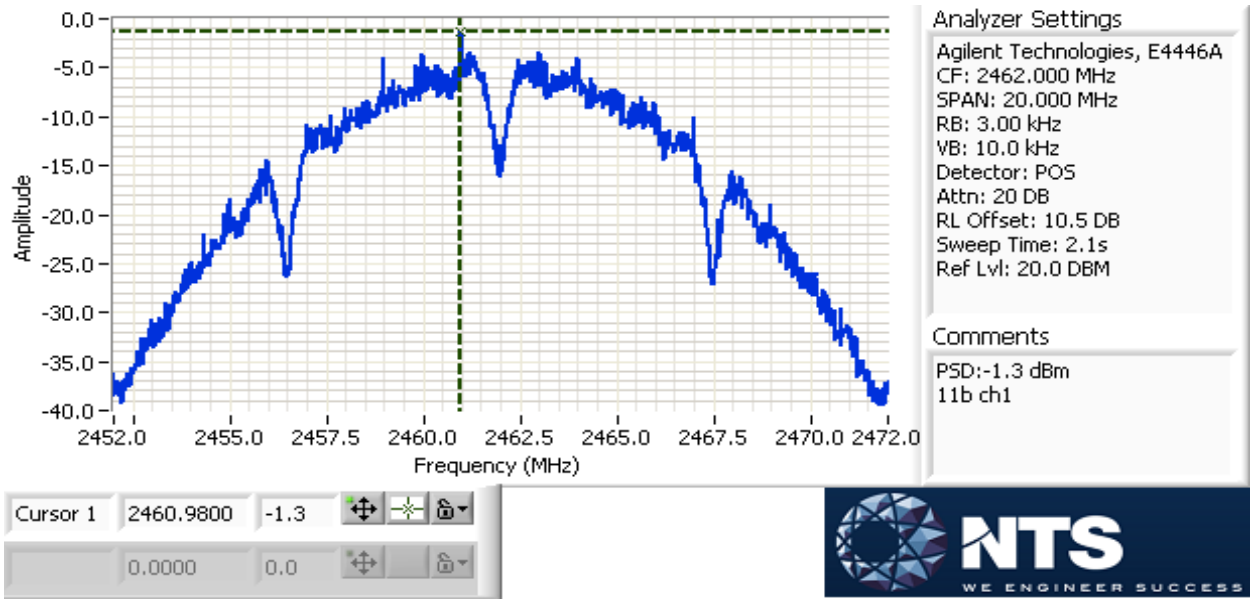
Mode: n40

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
13.5	2422	-15.1	-15.0	-15.5	-14.5	-9.0	8.0	Pass
16.5	2437	-12.0	-11.3	-11.3	-11.7	-5.5	8.0	Pass
14	2452	-14.5	-14.7	-13.7	-14.9	-8.4	8.0	Pass

Mode: ax40

Power Setting	Frequency (MHz)	PSD (dBm/3kHz) Note 1					Limit dBm/3kHz	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
13.5	2422	-15.5	-14.8	-15.1	-16.7	-9.4	8.0	Pass
16.5	2437	-12.8	-13.2	-12.4	-13.7	-7.0	8.0	Pass
14	2452	-16.7	-15.4	-15.8	-16.7	-10.1	8.0	Pass

Note 1:	Test performed per method PKSPD, in KDB 558074. Power spectral density measured using: 3kHz ≤ RBW ≤ 100kHz, VBW=3*RBW, peak detector, span = 1.5*DTS BW, auto sweep time, max hold.



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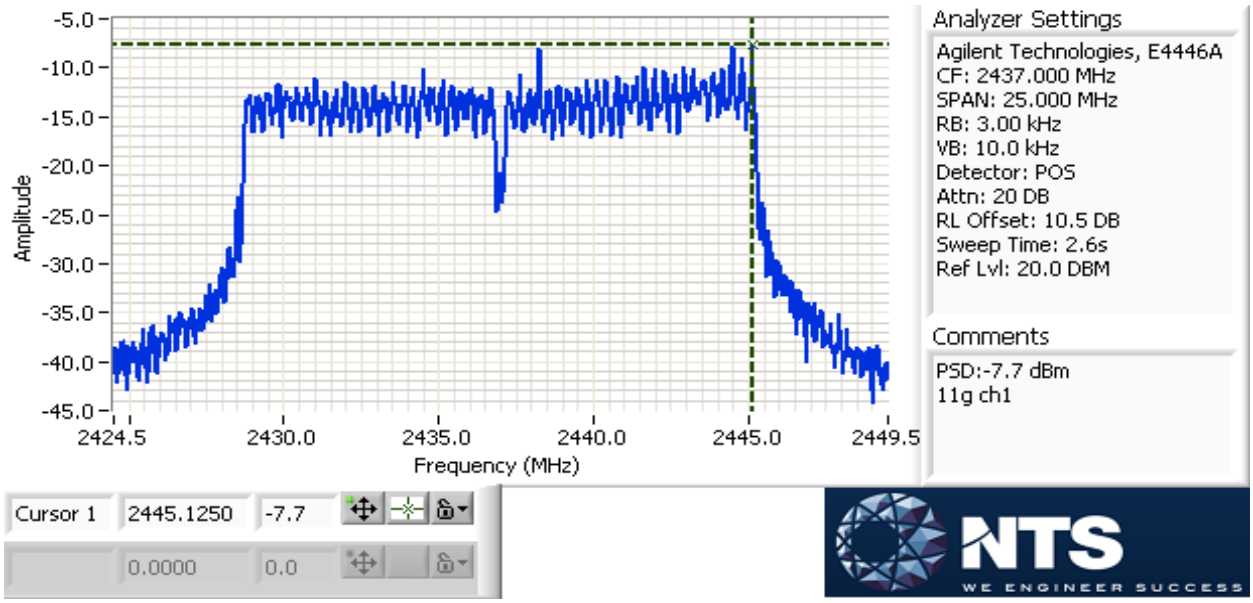
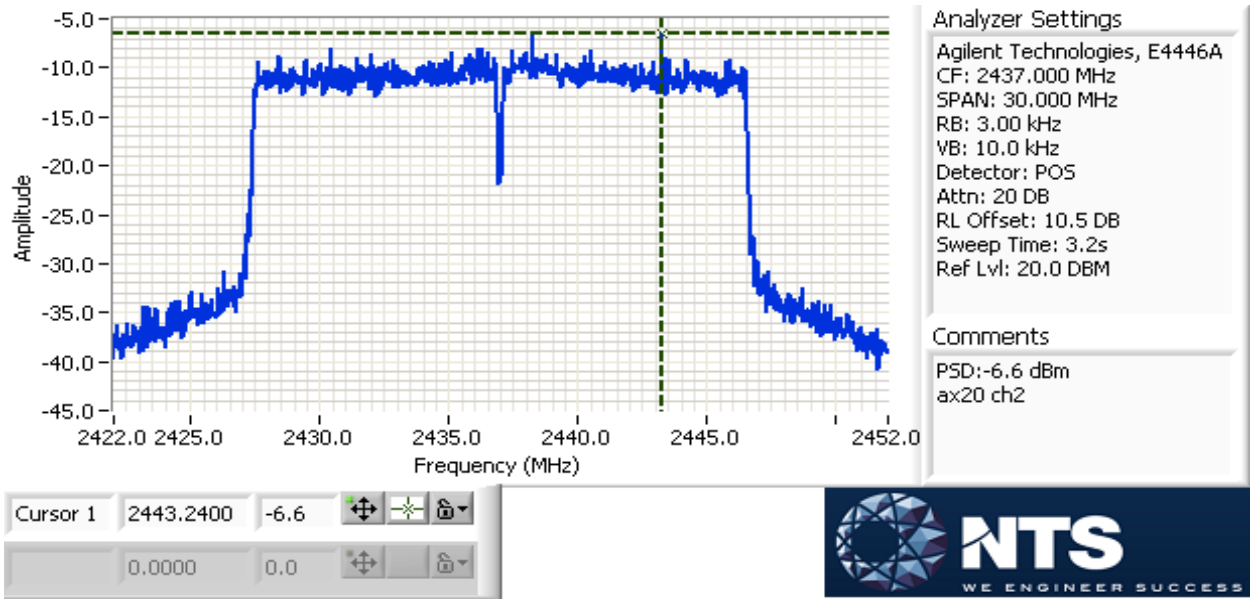
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
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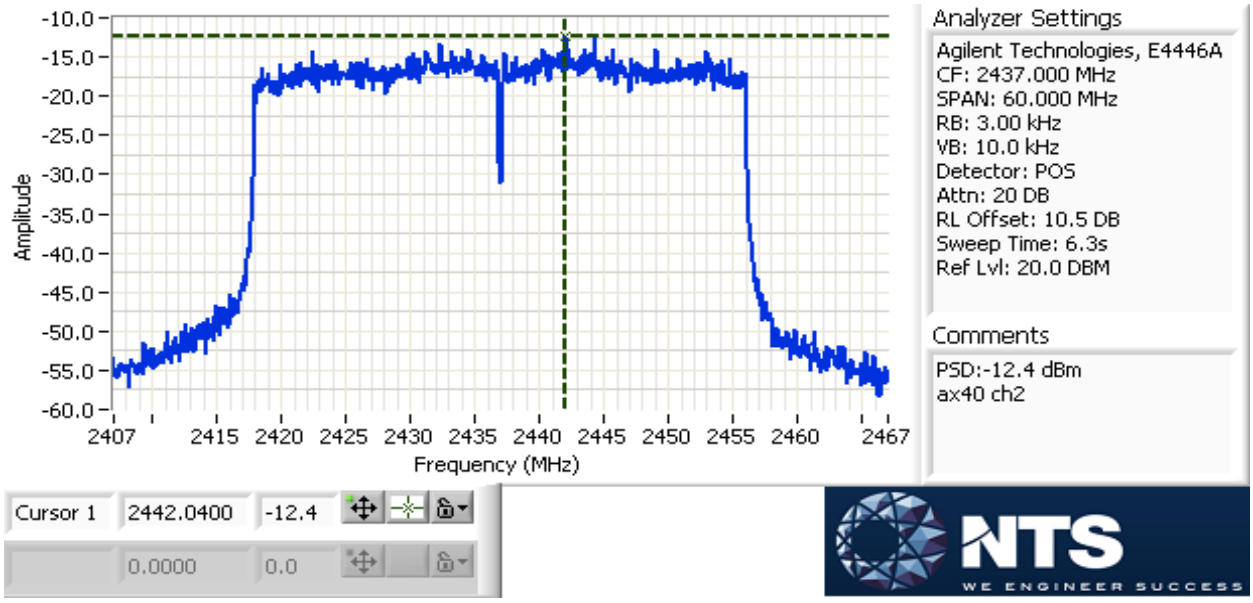
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



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 #3: Signal Bandwidth

Mode: 11b

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2412	8.00	13.228	0.1	0.3
20	2437	8.08	13.178	0.1	0.3
20	2462	8.00	13.278	0.1	0.3

Mode: 11g

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2412	16.1	17.637	0.1	0.36
20	2437	16.3	17.504	0.1	0.36
20	2462	16.3	18.037	0.1	0.36

Mode: n20

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2412	17.1	18.037	0.1	0.39
20	2437	17.3	18.236	0.1	0.39
20	2462	17.3	18.436	0.1	0.39

Mode: ax20

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2412	18.5	19.235	0.1	0.39
20	2437	18.8	19.235	0.1	0.39
20	2462	18.7	19.368	0.1	0.39

EMC Test Data

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

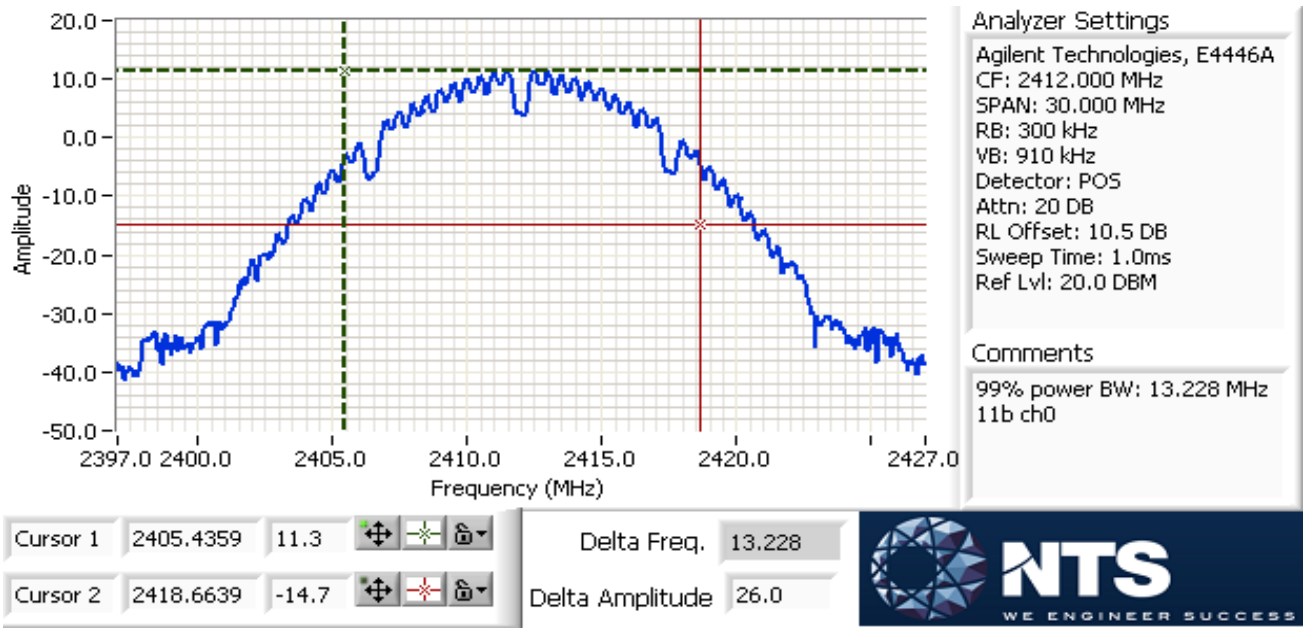
Mode: n40

Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2422	35.2	36.872	0.1	1
20	2437	35.5	36.872	0.1	1
20	2452	35.7	37.138	0.1	1

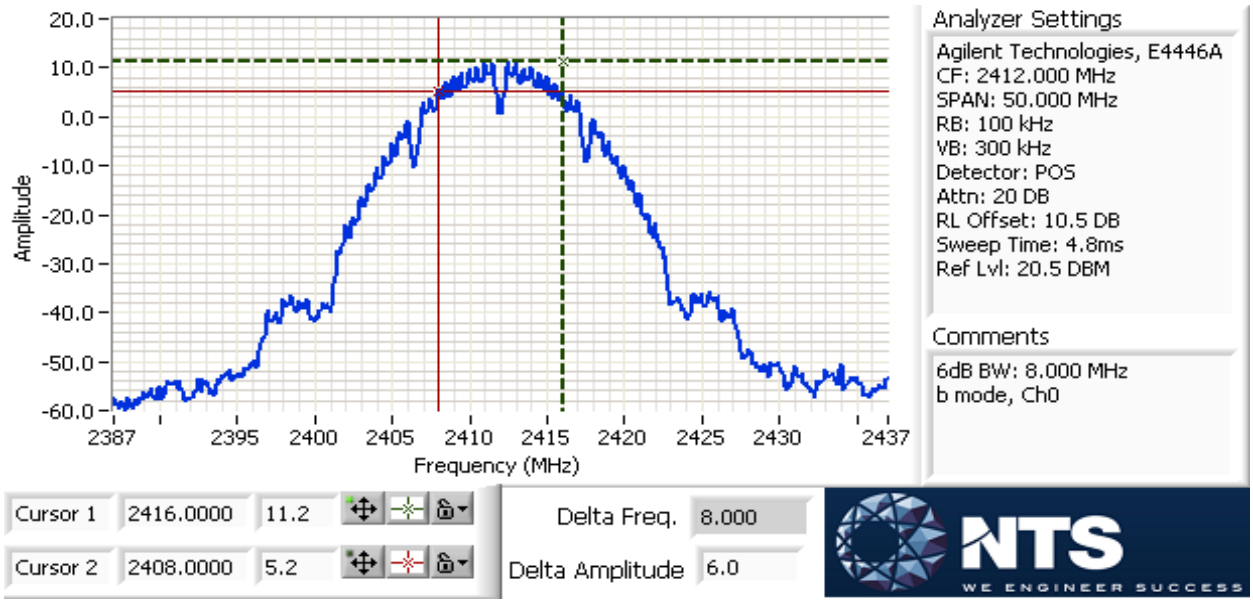
Mode: ax40

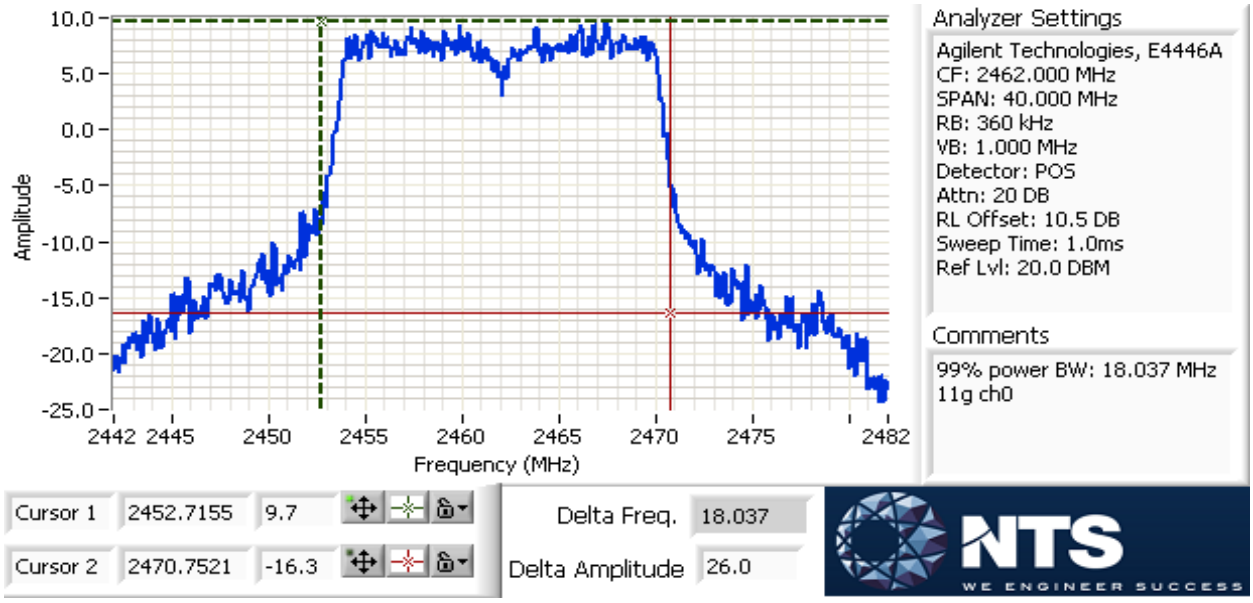
Power Setting	Frequency (MHz)	Bandwidth (MHz)		RBW Setting (MHz)	
		6dB	99%	6dB	99%
20	2422	37.3	38.336	0.1	1
20	2437	36.7	38.336	0.1	1
20	2452	36.7	38.336	0.1	1

Note 1:	DTS BW: RBW=100kHz, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time, Span 2-5 times measured BW. 99% BW: RBW=1-5% of 99%BW, VBW ≥ 3*RBW, peak detector, max hold, auto sweep time. Span 1.5-5 times OBW.
Note 2:	Measurements performed on chain 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





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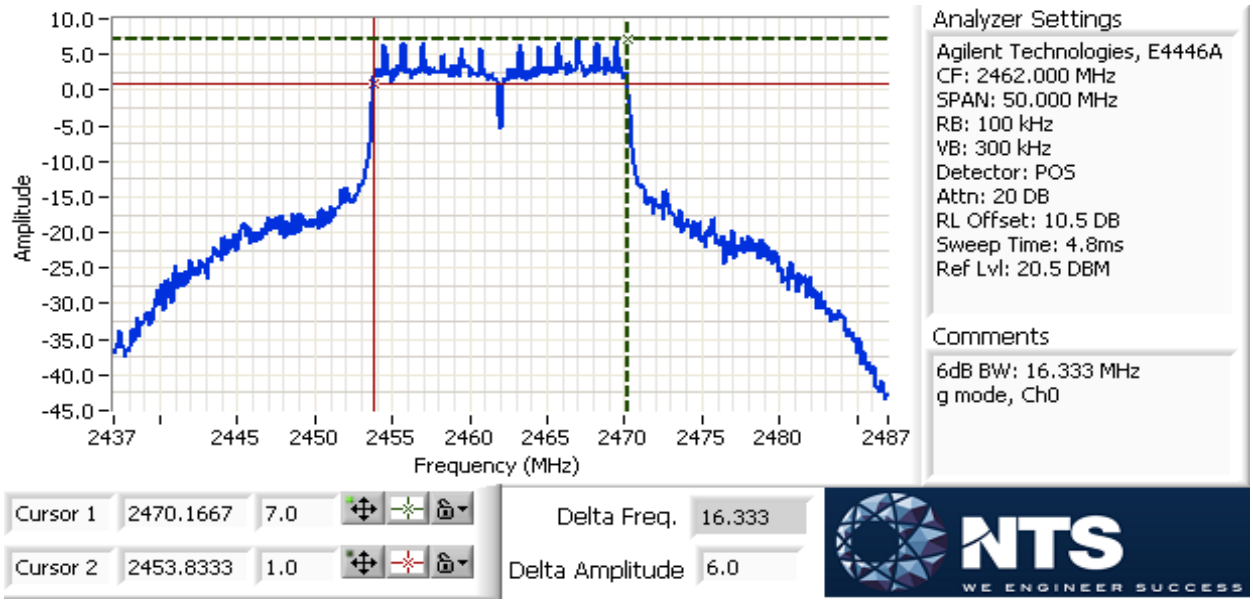
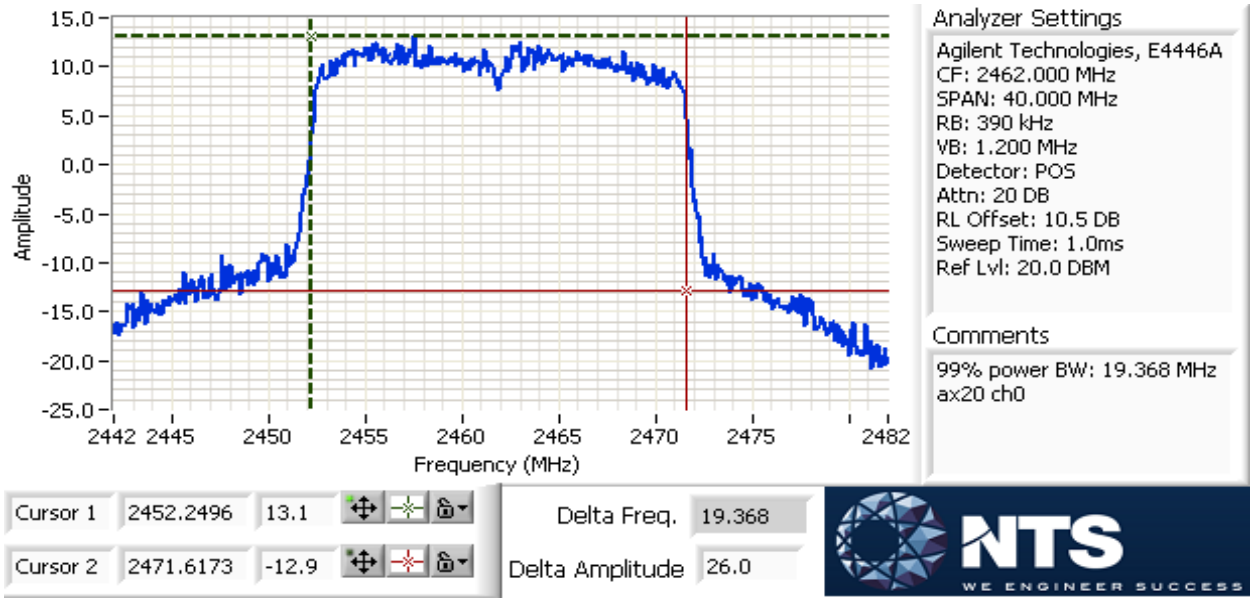
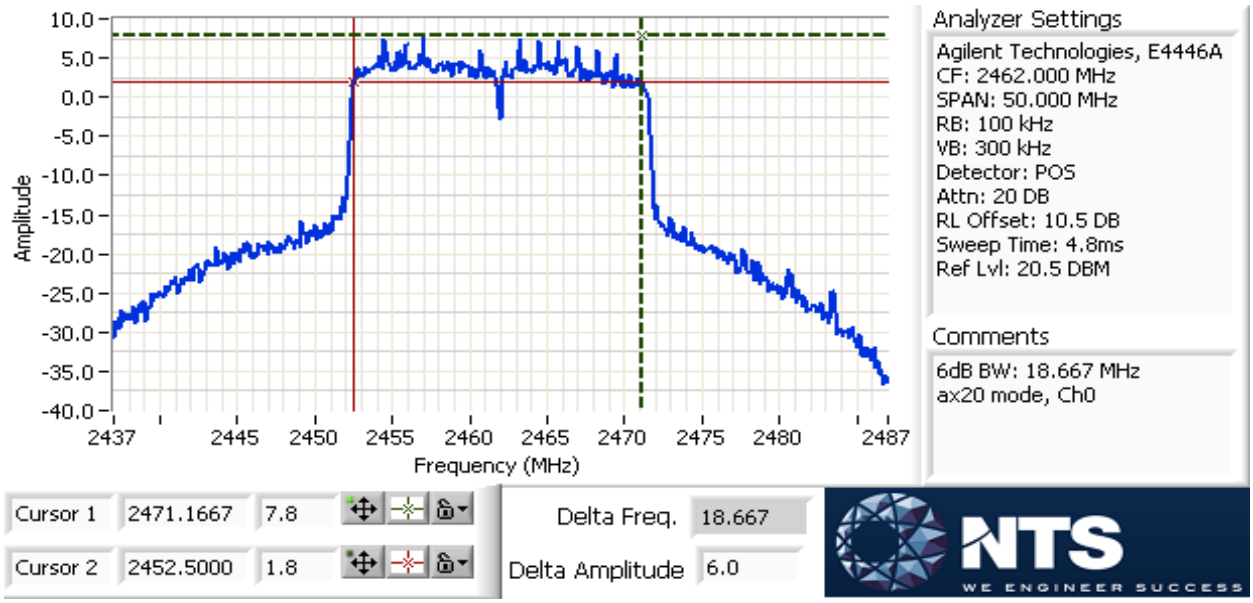
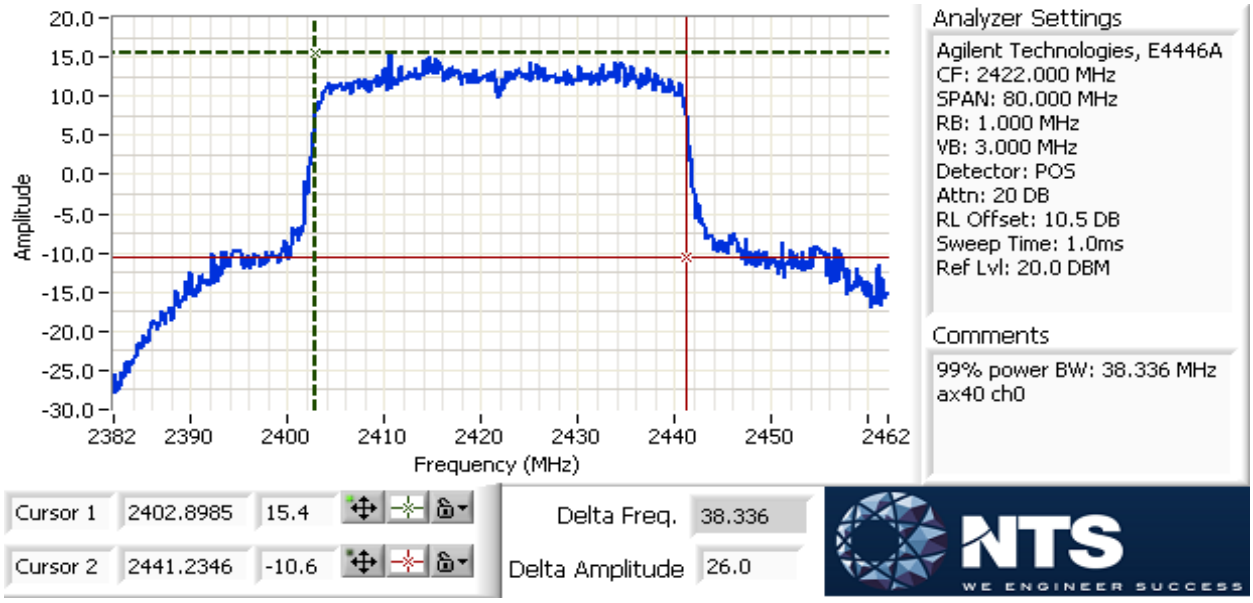
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





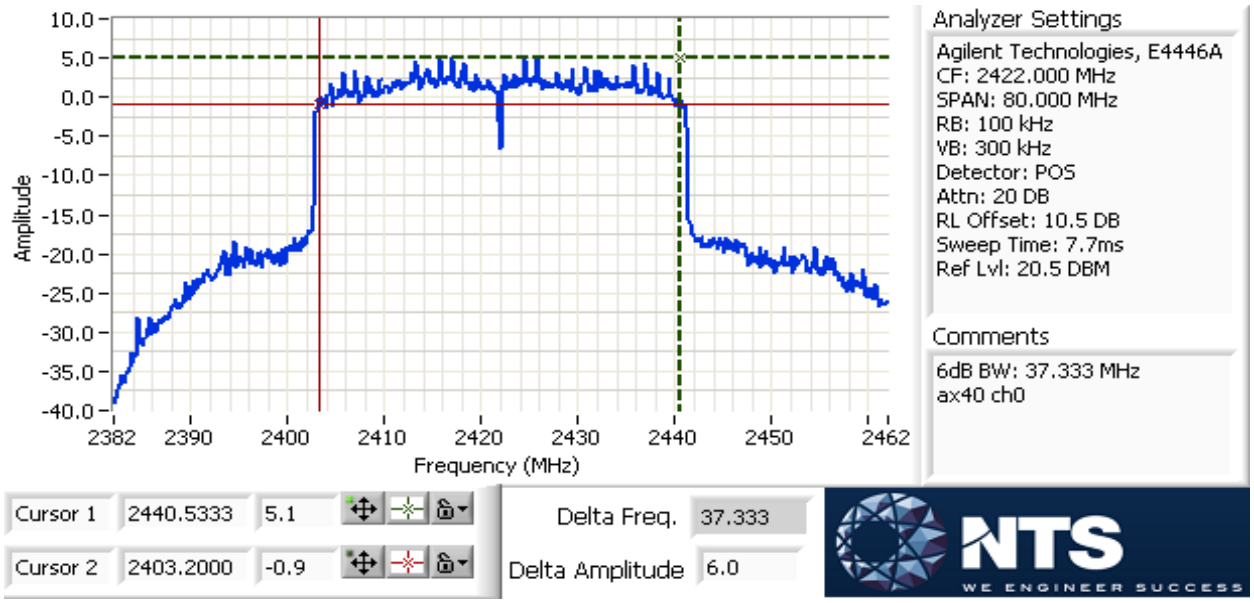
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





EMC Test Data

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



EMC Test Data

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 #4a: Out of Band Spurious Emissions

Power Setting Per Chain				Mode	Frequency (MHz)	Limit	Result
#0	#1	#2	#3				
20	20	20	20	b	2412	-30dBc	Pass
20	20	20	20	b	2437	-30dBc	Pass
20	20	20	20	b	2462	-30dBc	Pass
20	20	20	20	g	2412	-20dBc	Pass
20	20	20	20	g	2437	-20dBc	Pass
20	20	20	20	g	2462	-20dBc	Pass
20	20	20	20	n20	2412	-20dBc	Pass
20	20	20	20	n20	2437	-20dBc	Pass
20	20	20	20	n20	2462	-20dBc	Pass
20	20	20	20	ax20	2412	-20dBc	Pass
20	20	20	20	ax20	2437	-20dBc	Pass
20	20	20	20	ax20	2462	-20dBc	Pass
20	20	20	20	n40	2422	-20dBc	Pass
20	20	20	20	n40	2437	-20dBc	Pass
20	20	20	20	n40	2452	-20dBc	Pass
20	20	20	20	ax40	2422	-20dBc	Pass
20	20	20	20	ax40	2437	-20dBc	Pass
20	20	20	20	ax40	2452	-20dBc	Pass

Note 1: Measured on each chain individually

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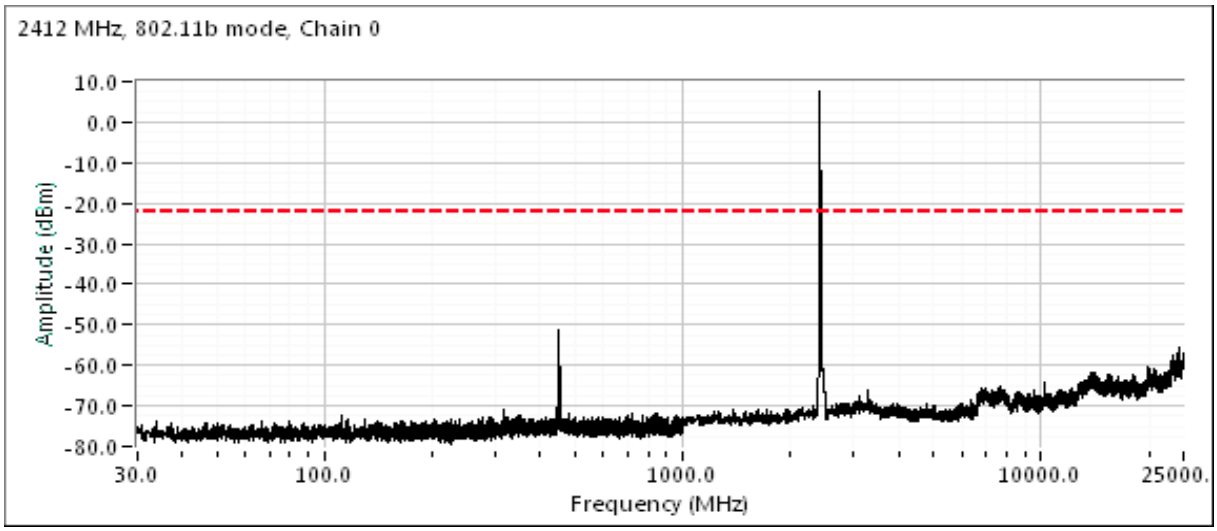
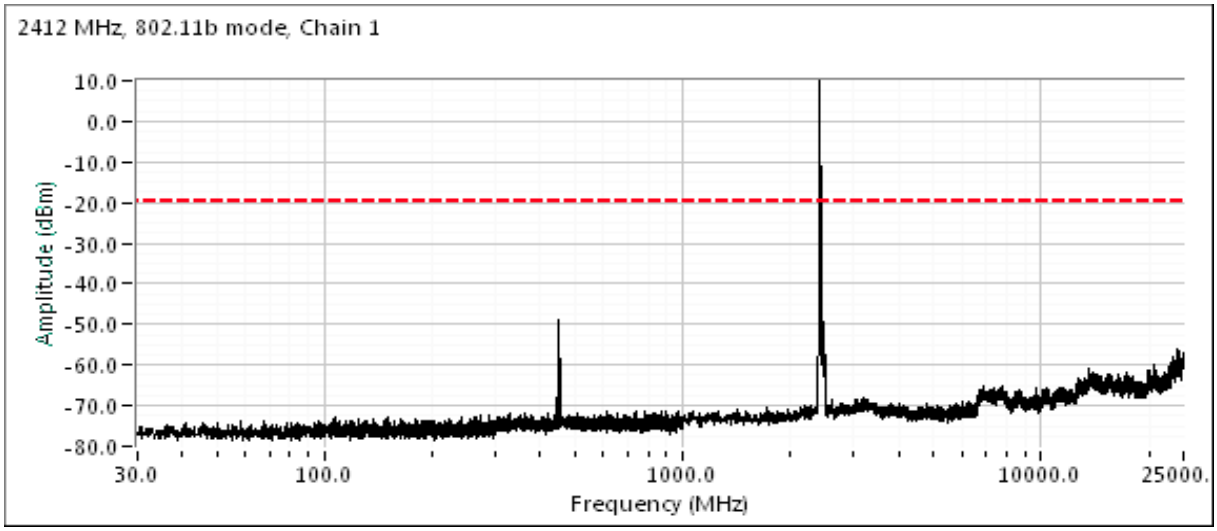
Standard:	FCC §15.247 & 15.407	Class:	N/A

Plots for low channel





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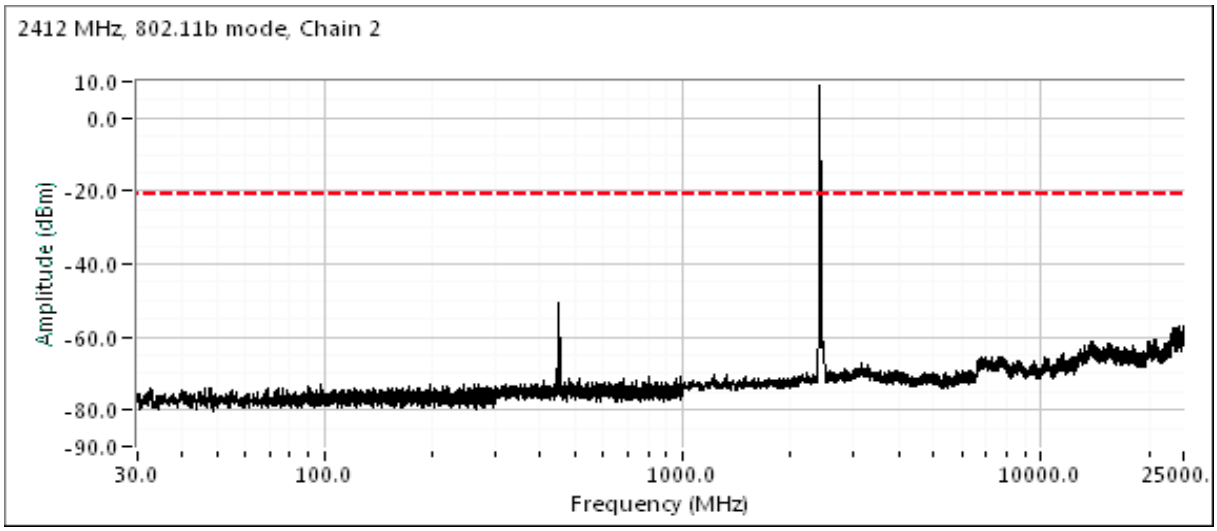
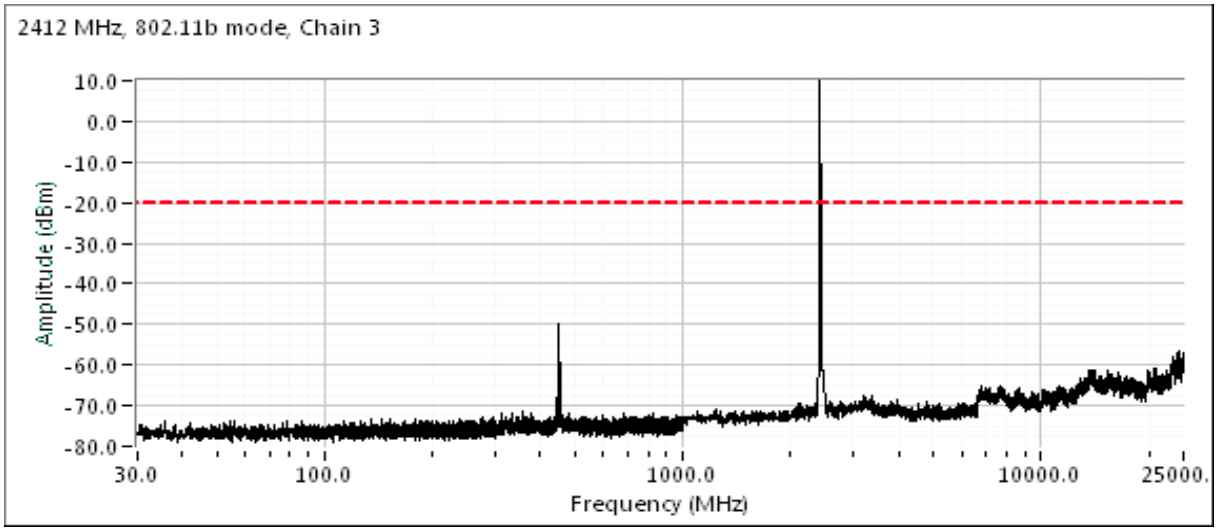
Standard:	FCC §15.247 & 15.407	Class:	N/A





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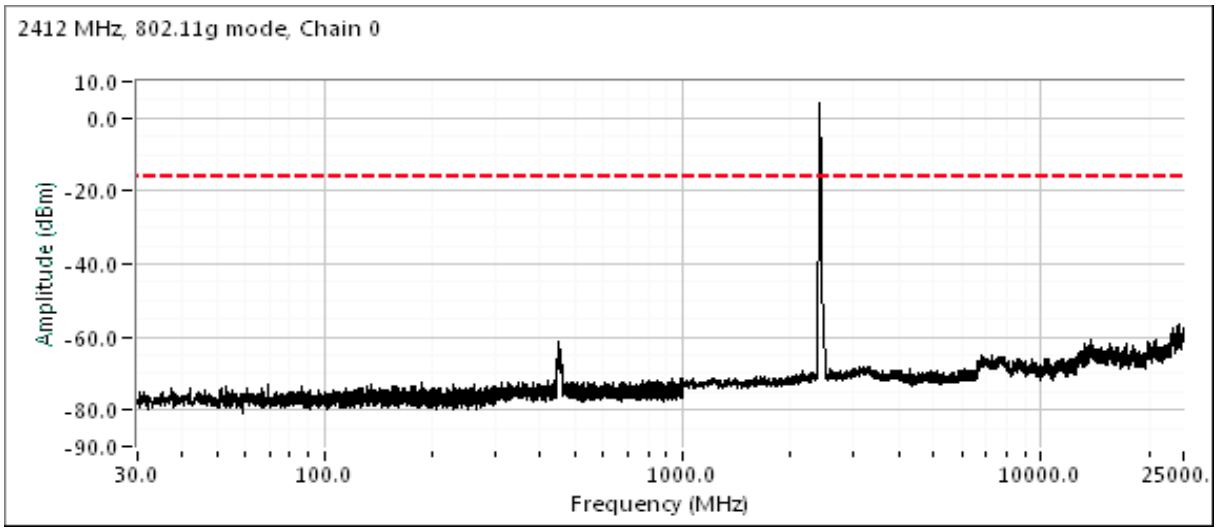
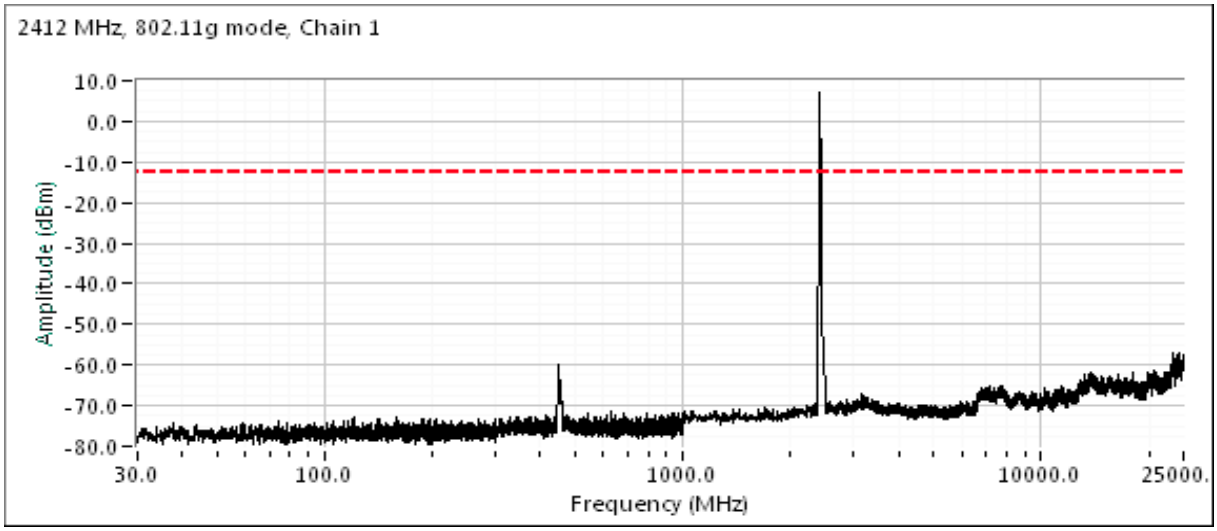
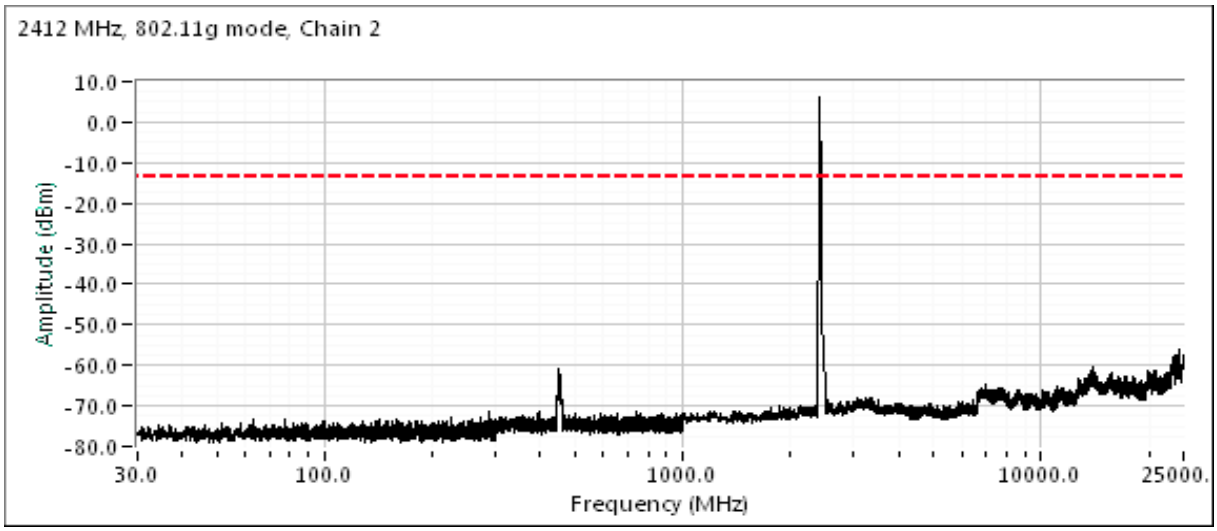
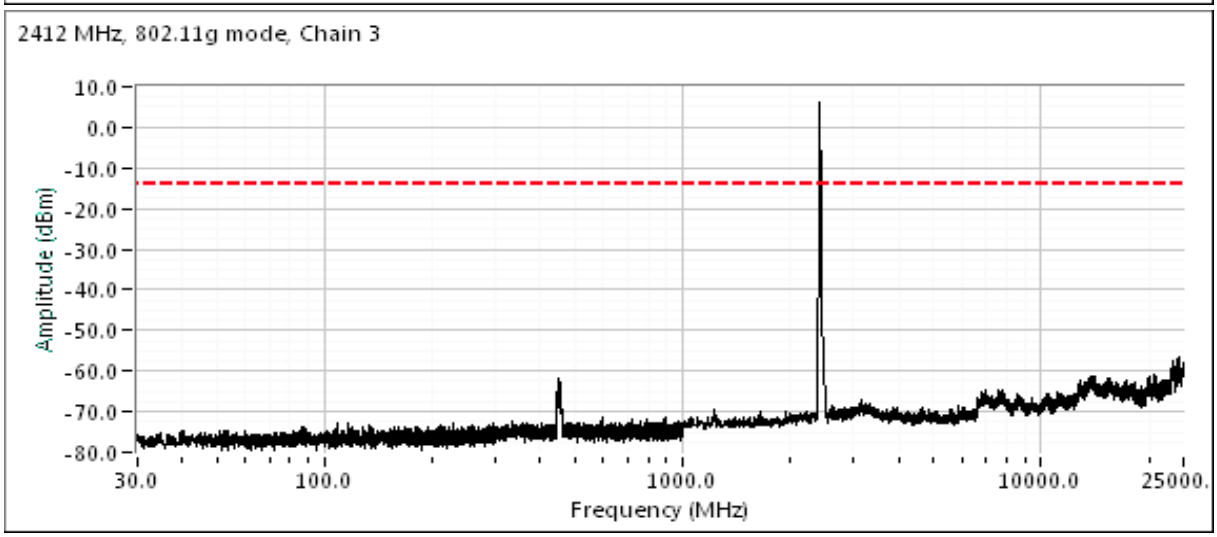
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

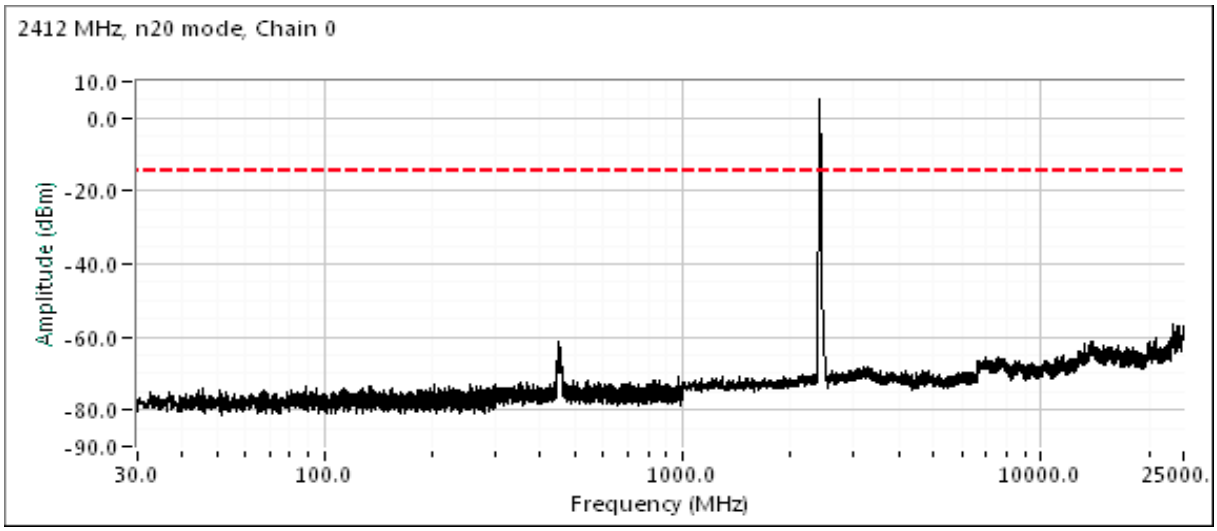


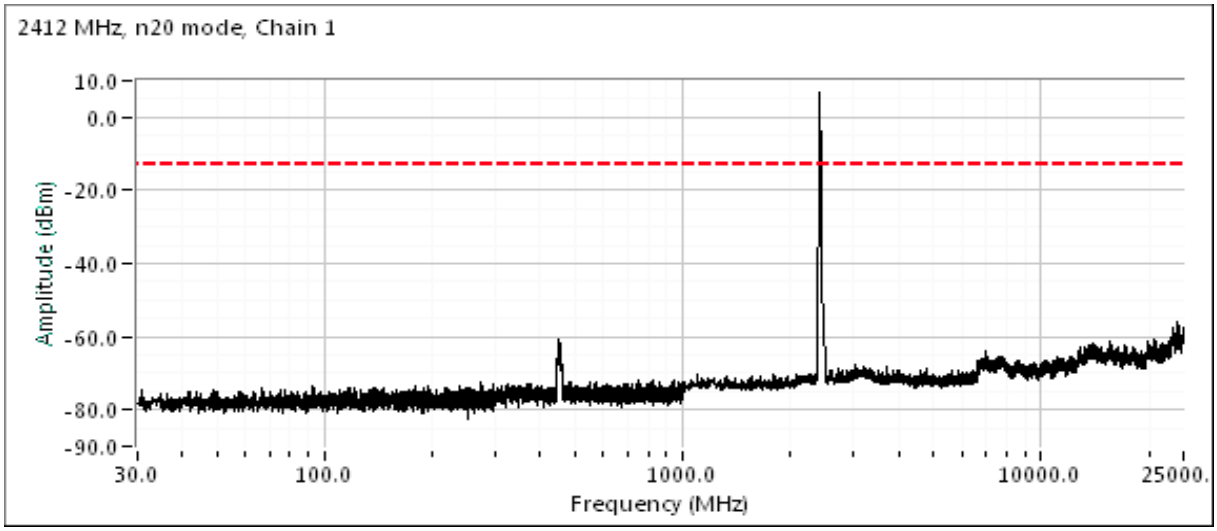



2412 MHz, 802.11g mode, Chain 2
Amplitude (dBm)
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
30.0
100.0
1000.0
10000.0
25000.
Frequency (MHz)


2412 MHz, 802.11g mode, Chain 3
Amplitude (dBm)
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
30.0
100.0
1000.0
10000.0
25000.
Frequency (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





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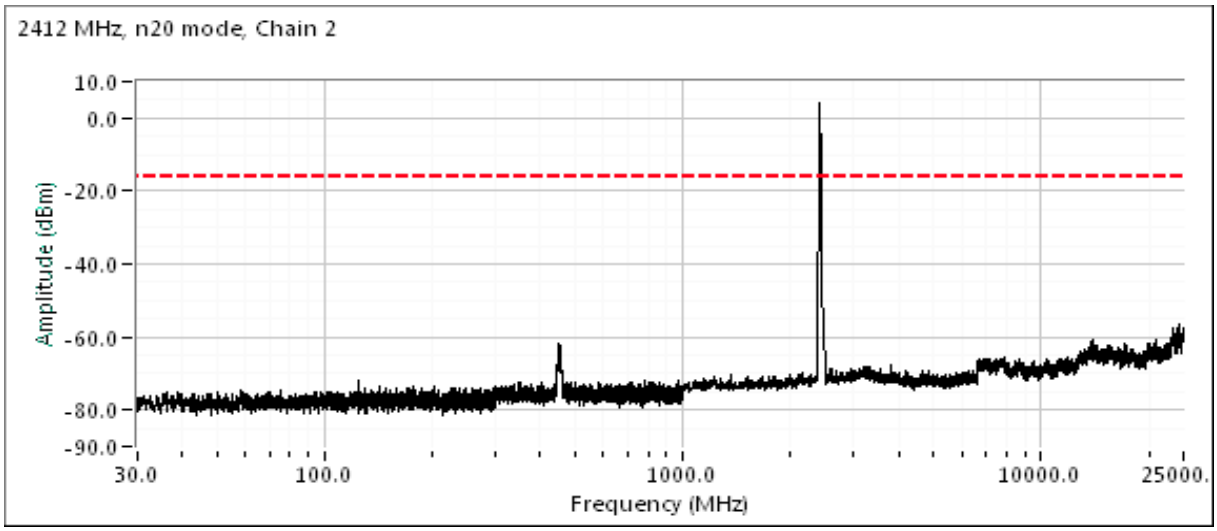
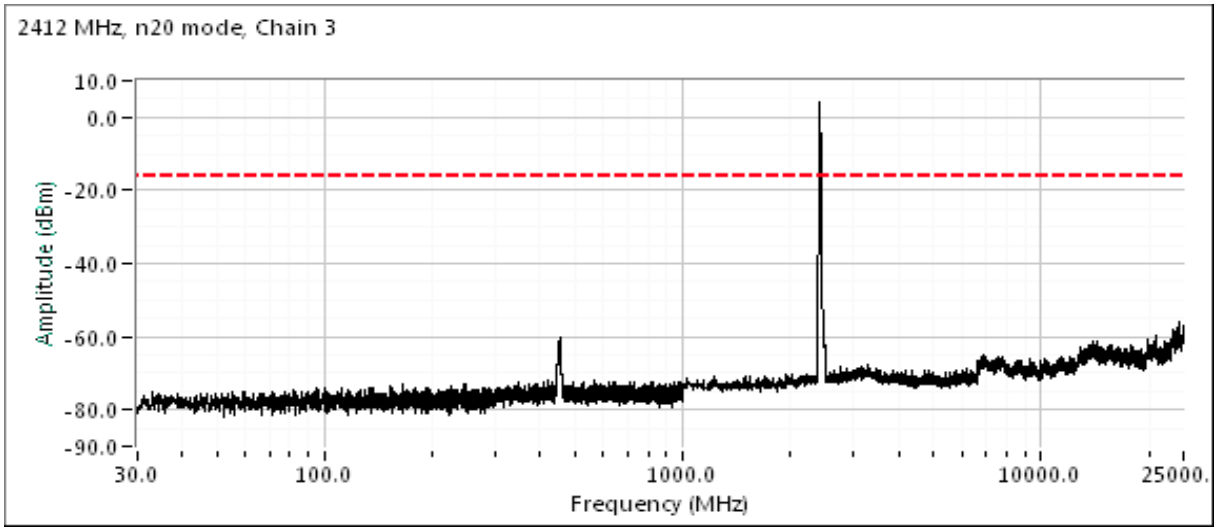
Standard:	FCC §15.247 & 15.407	Class:	N/A





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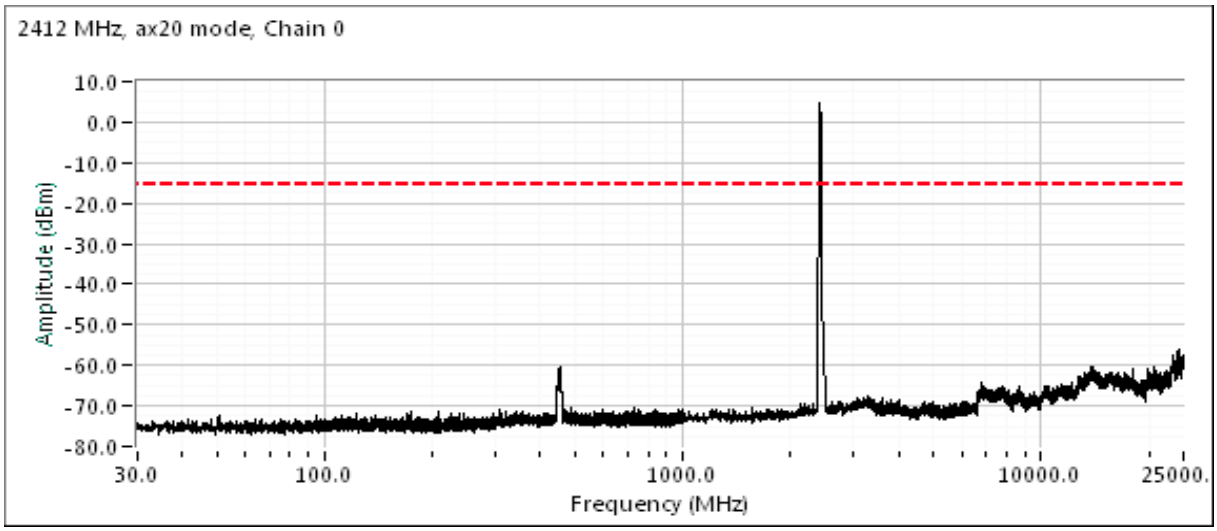

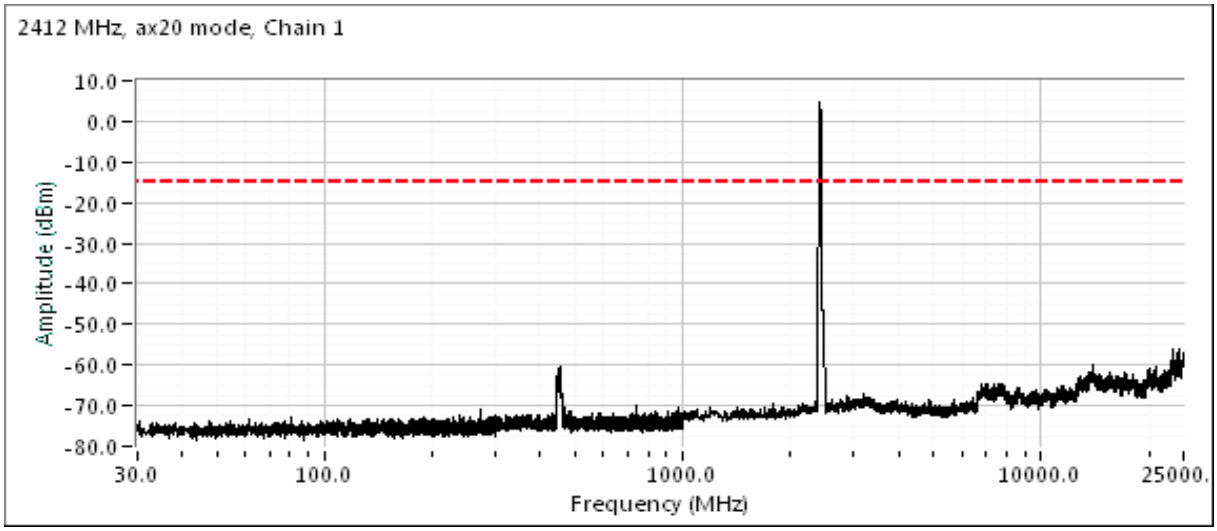

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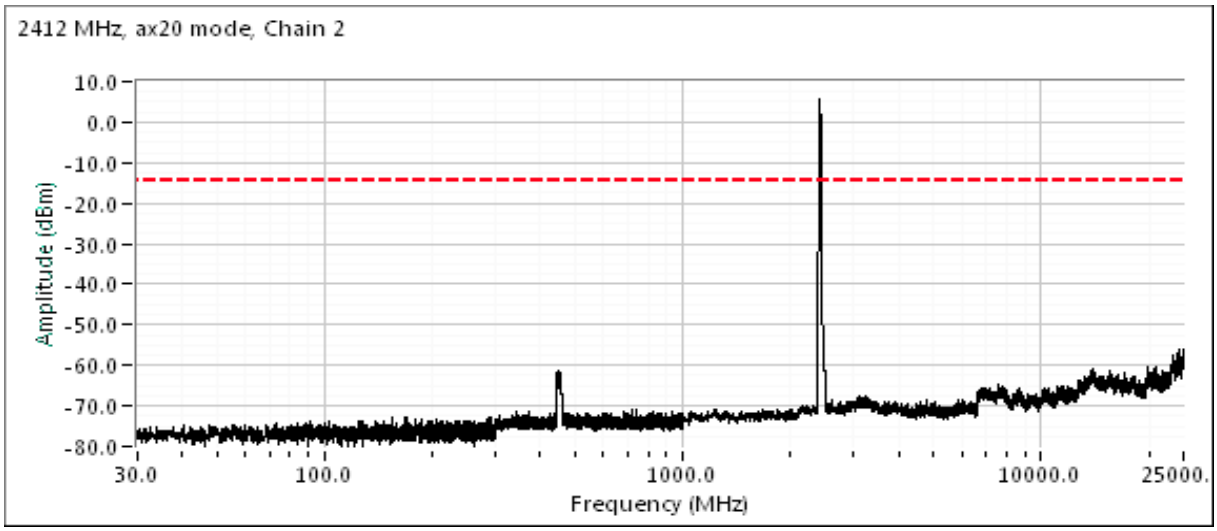

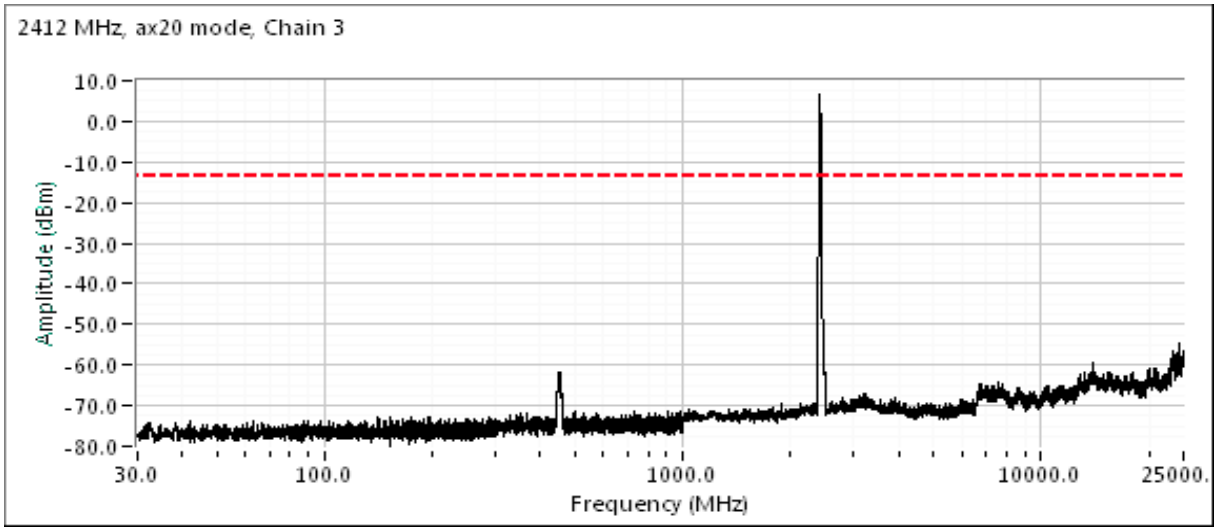

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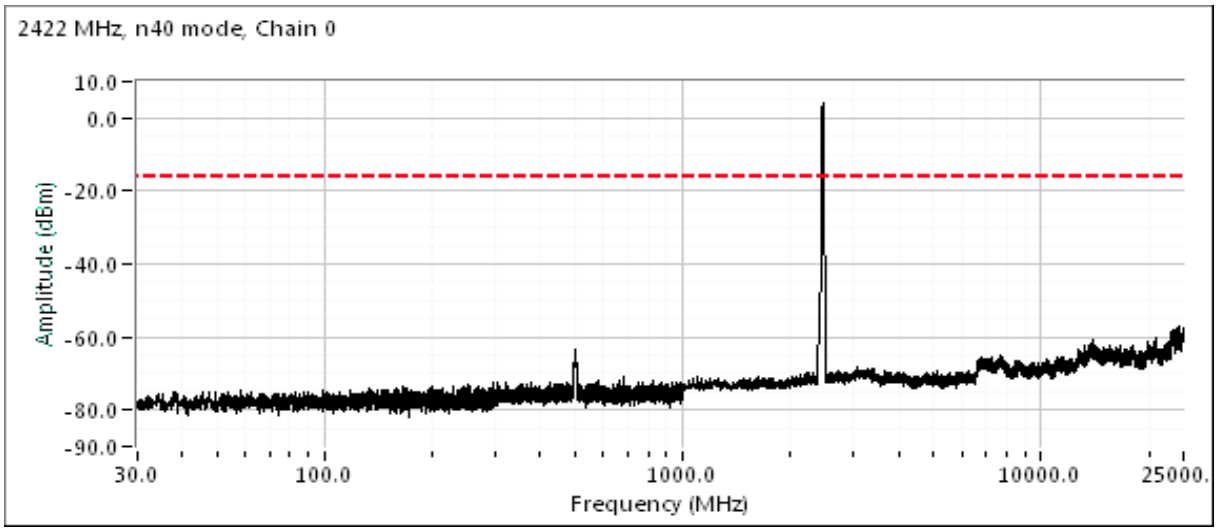
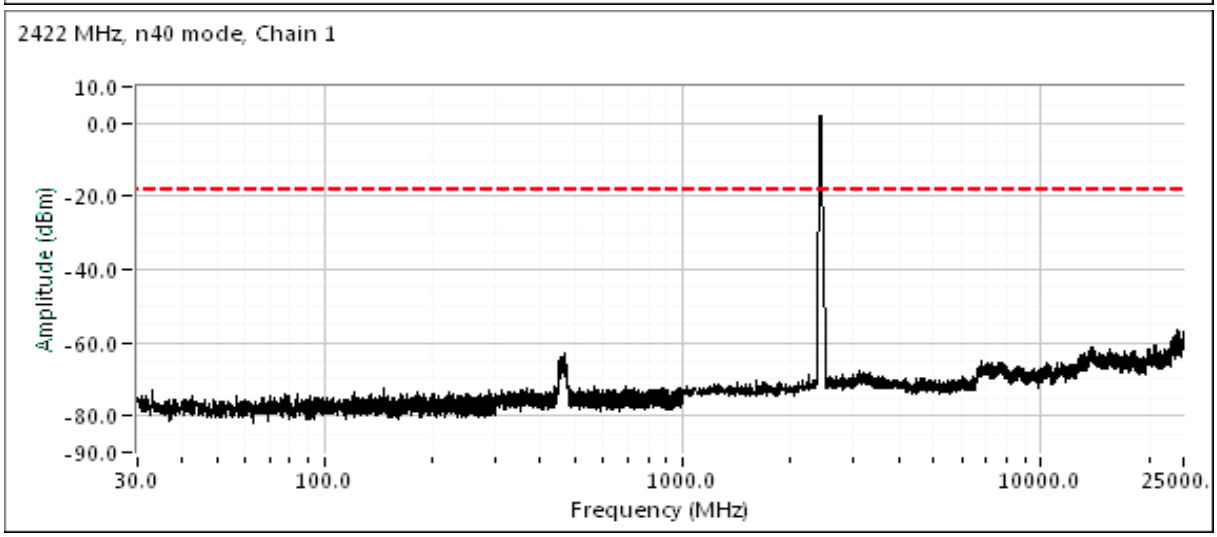
Standard:	FCC §15.247 & 15.407	Class:	N/A





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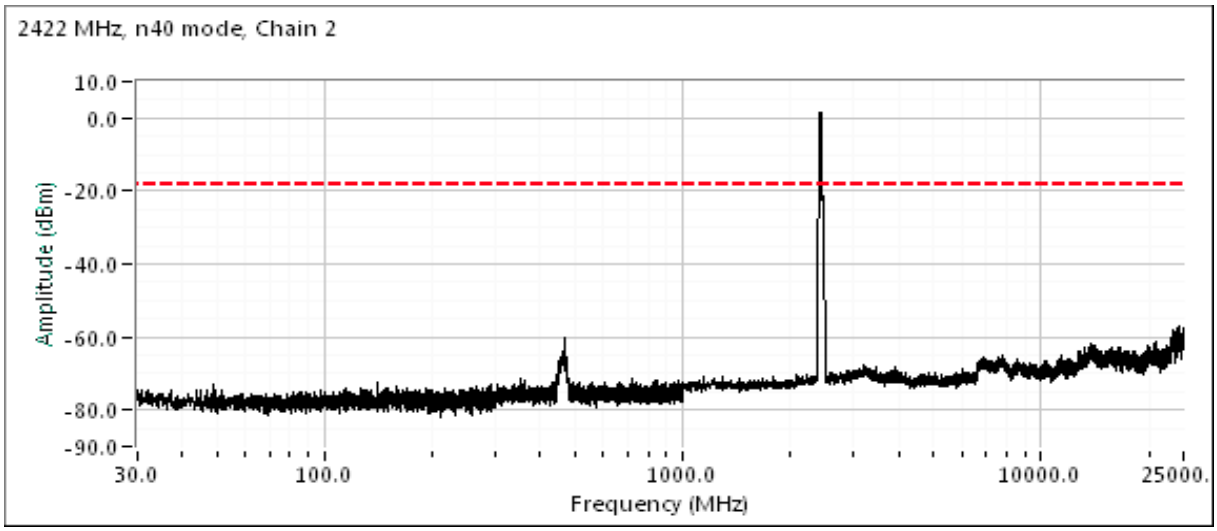
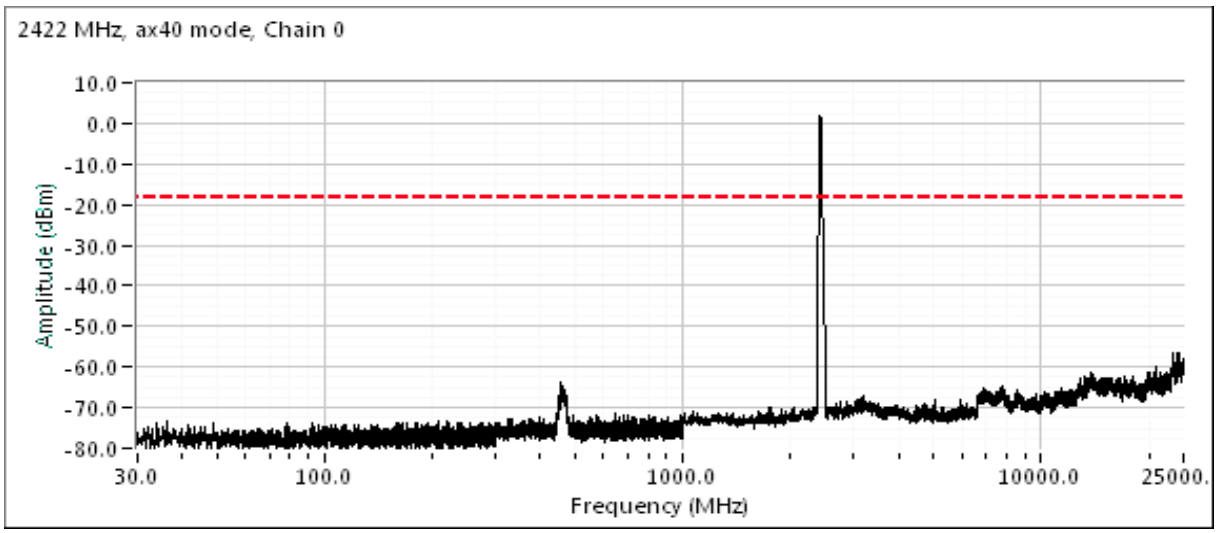
Standard:	FCC §15.247 & 15.407	Class:	N/A





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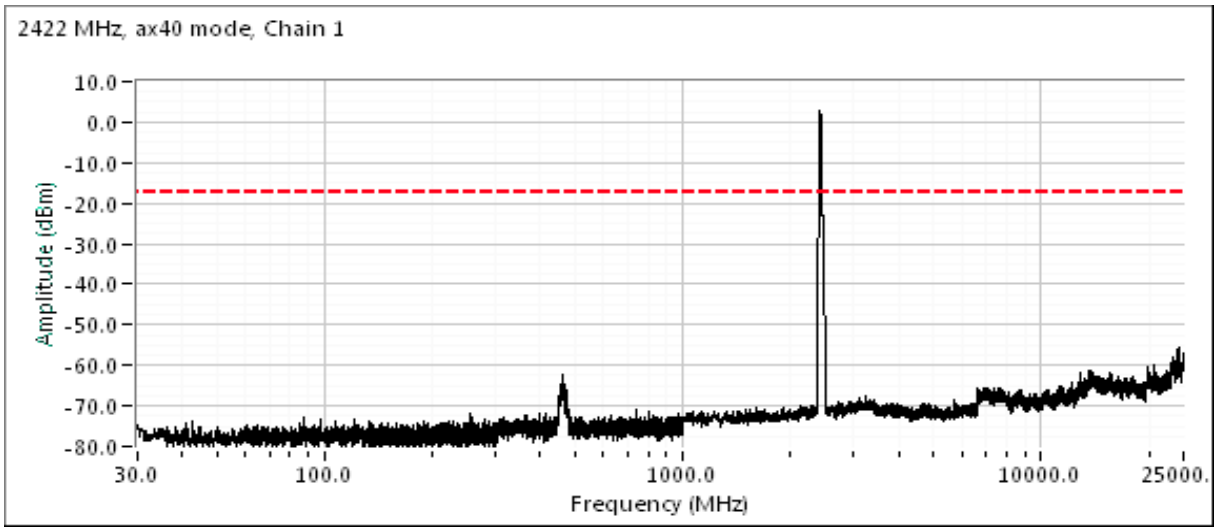

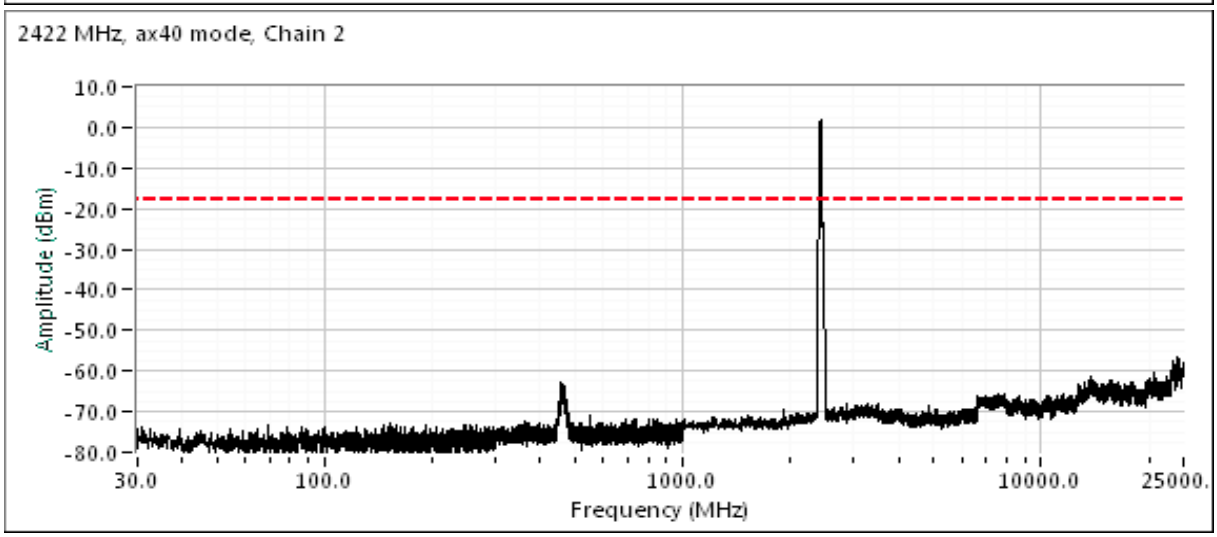

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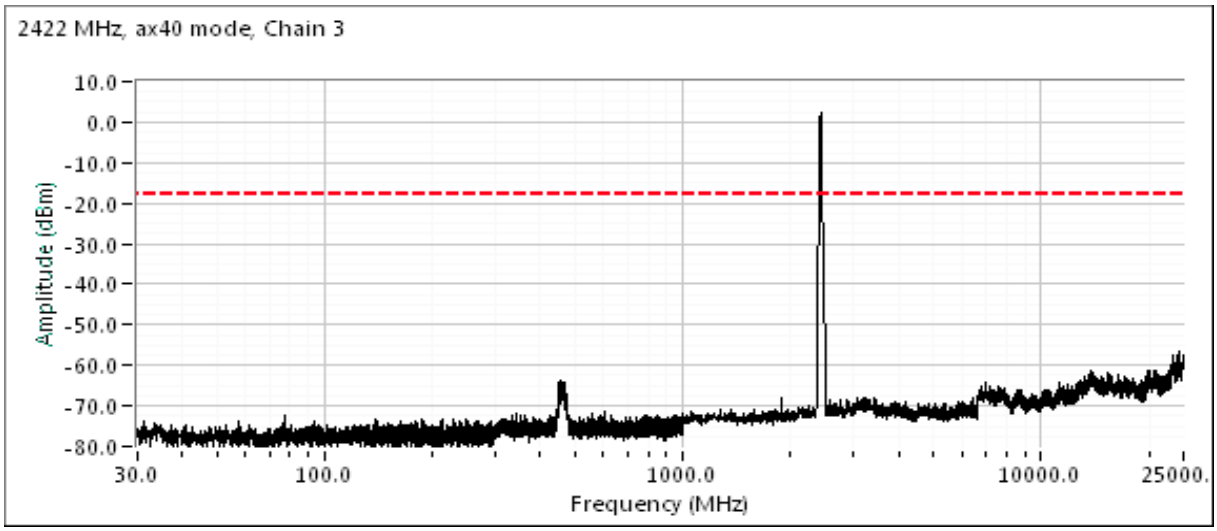

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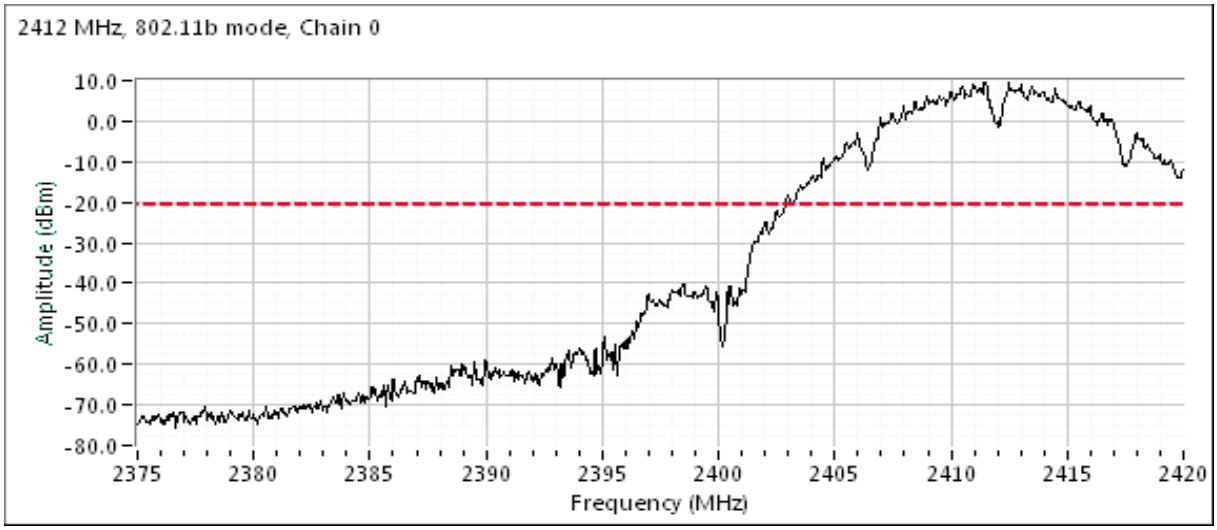
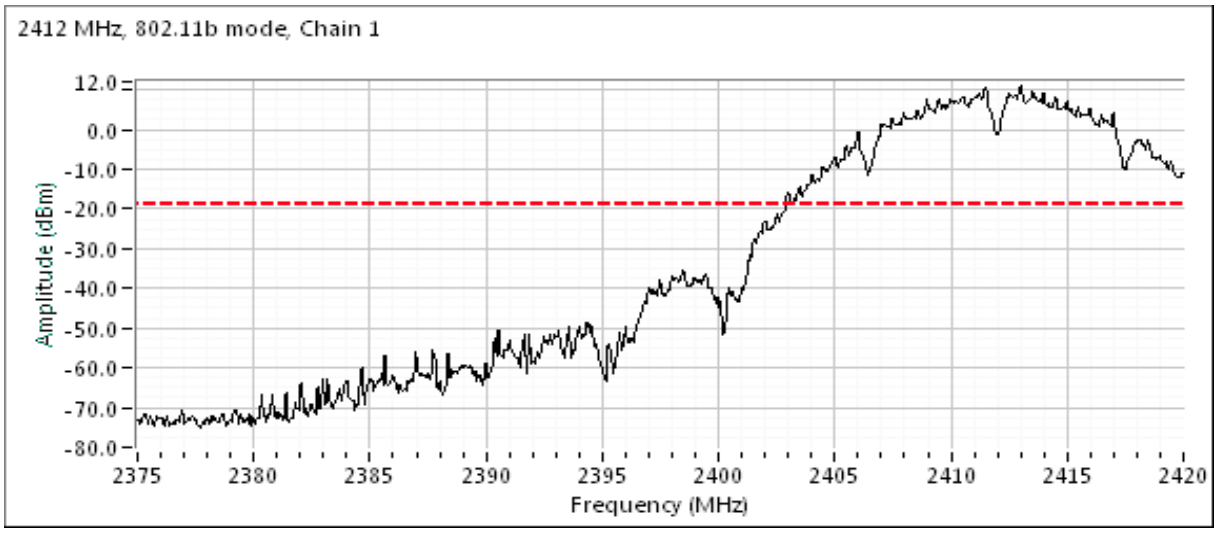
Standard:	FCC §15.247 & 15.407	Class:	N/A

Additional plot showing compliance with -30dBc or -20dBc limit from 2390 MHz to 2400 MHz. Radiated measurements used to show compliance with the limits in the restricted band below 2390 MHz.





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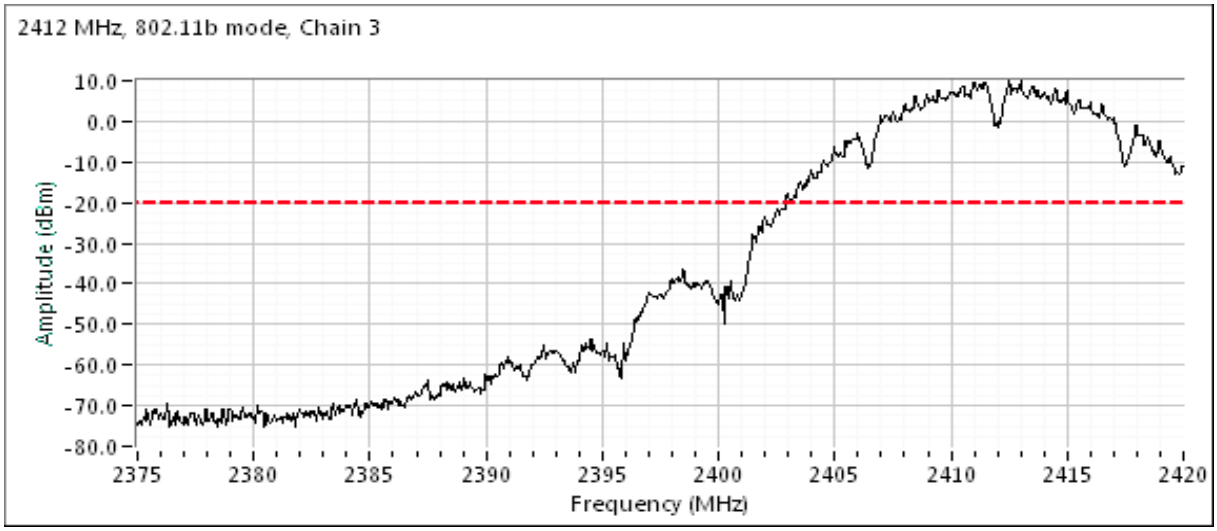

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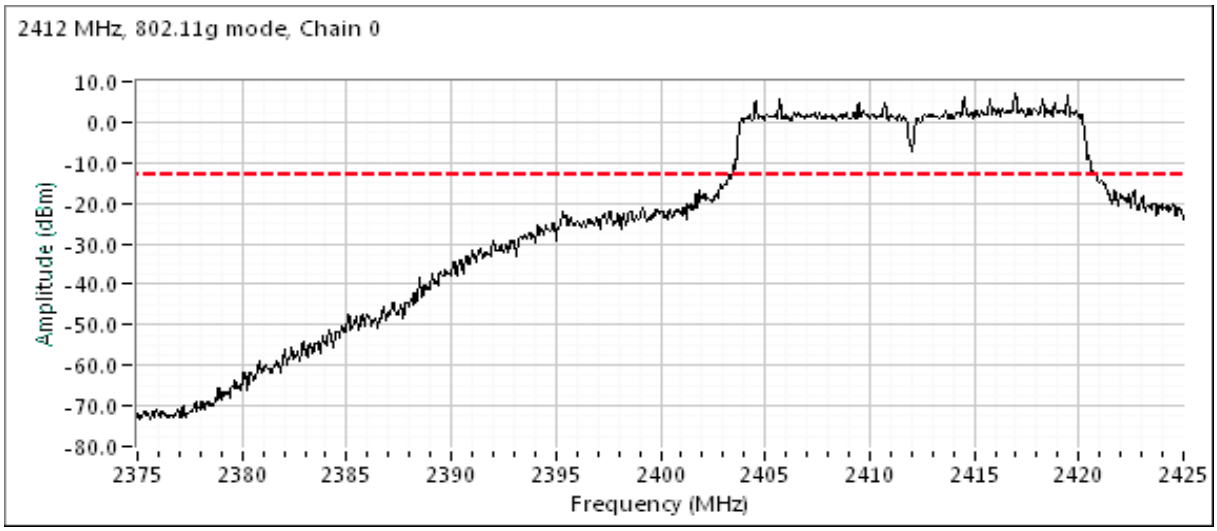

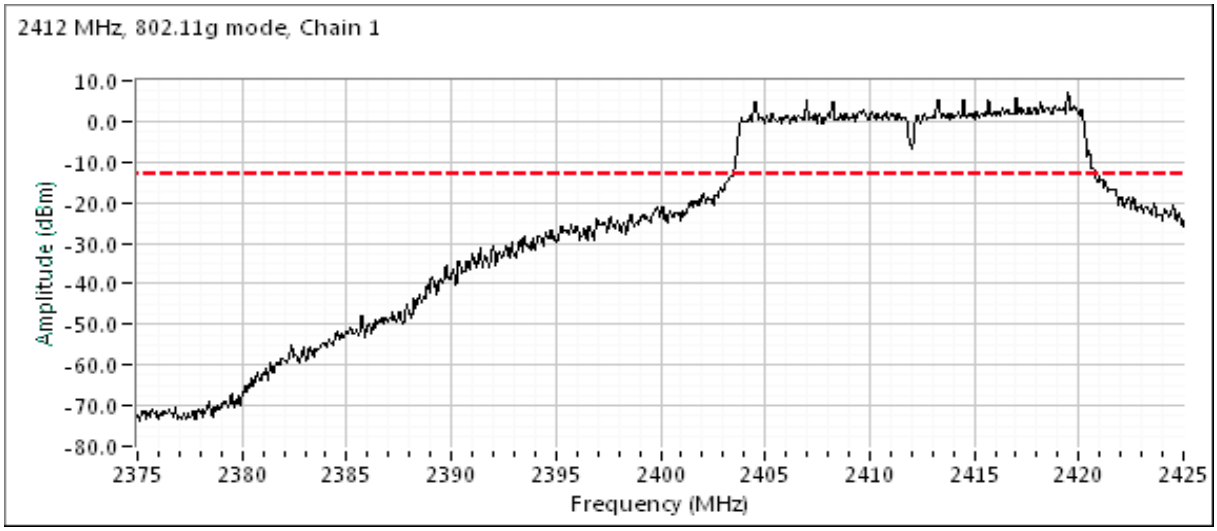

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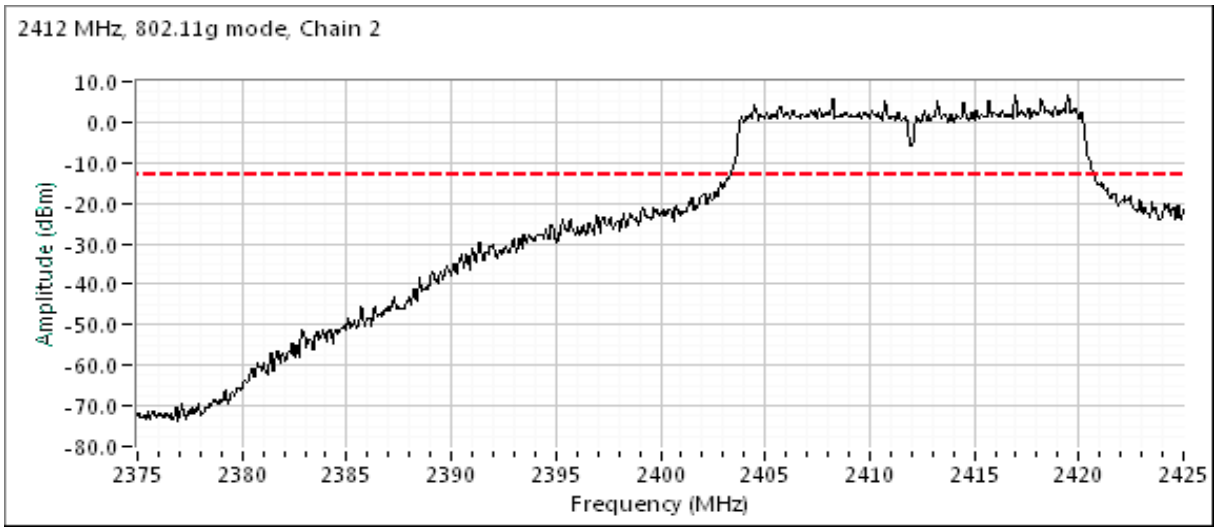

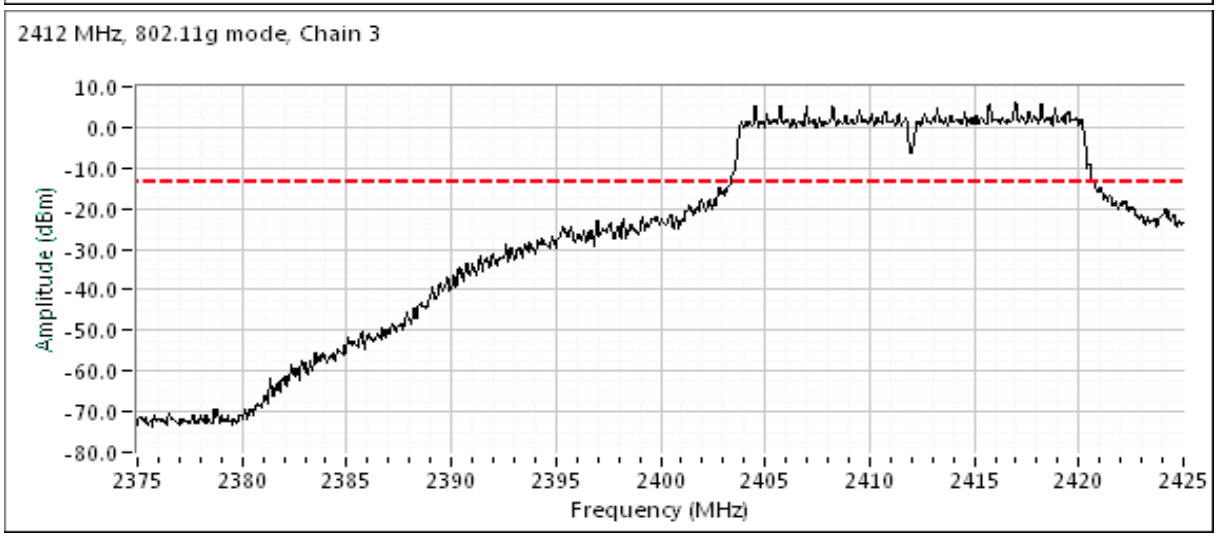

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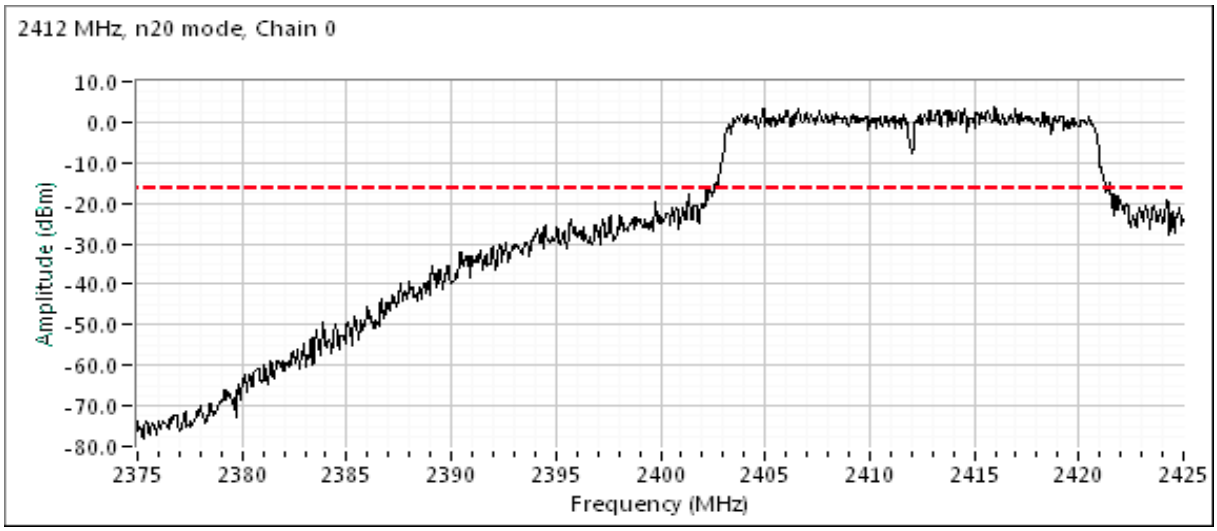

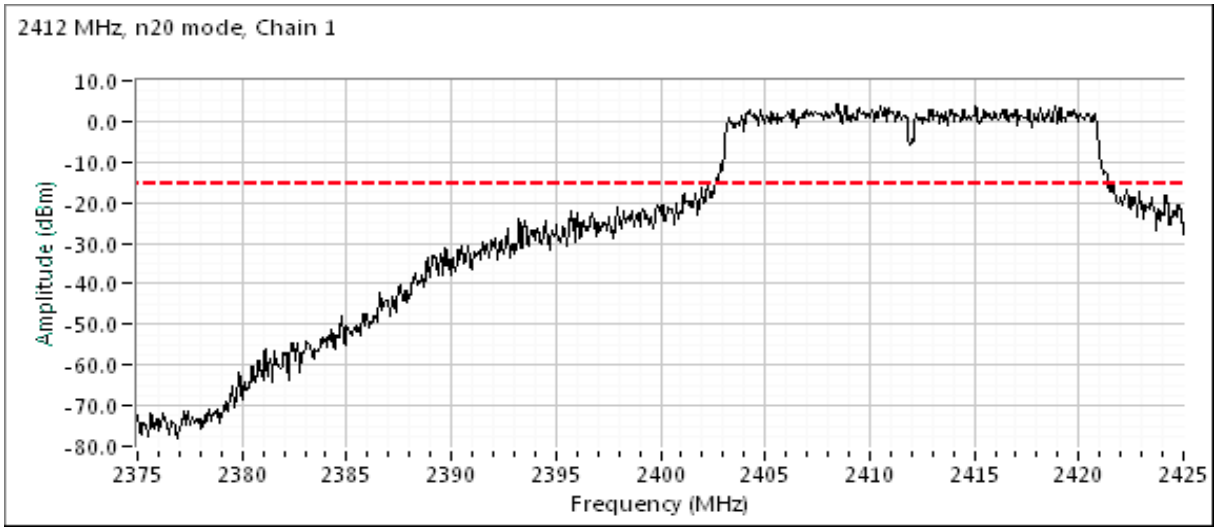

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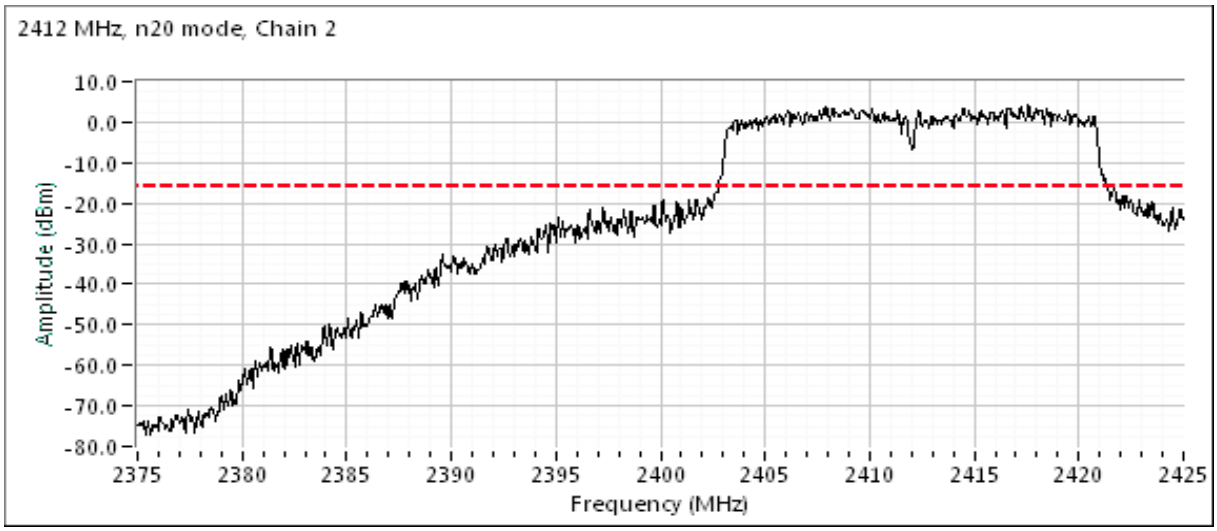
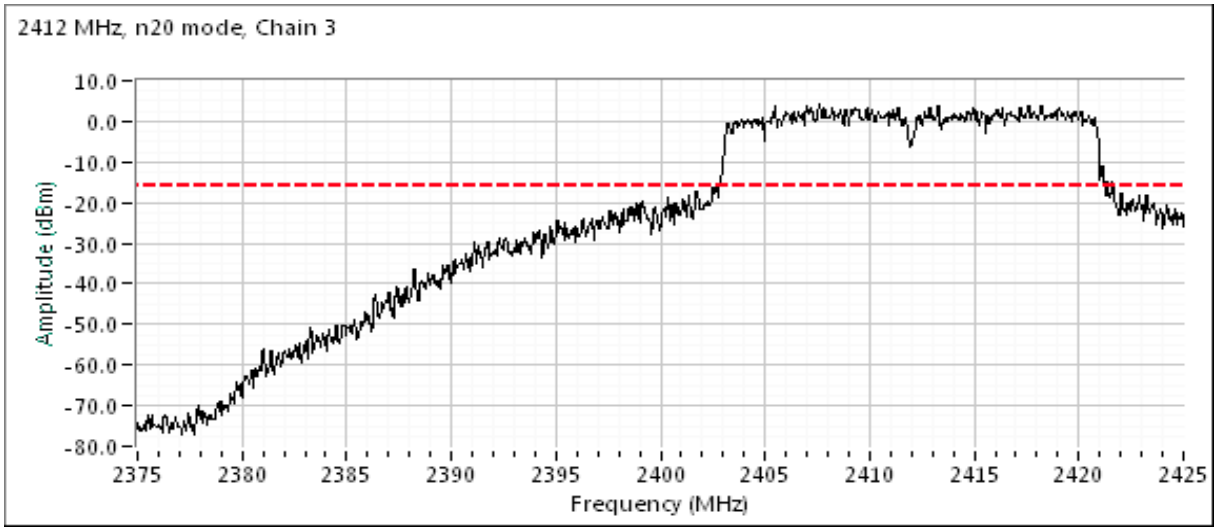
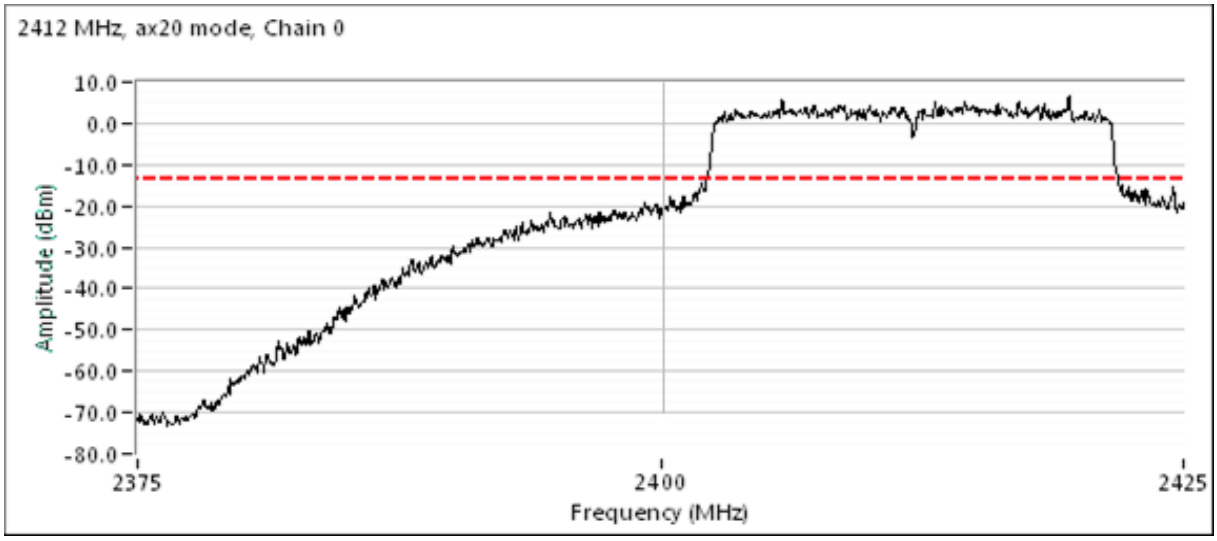
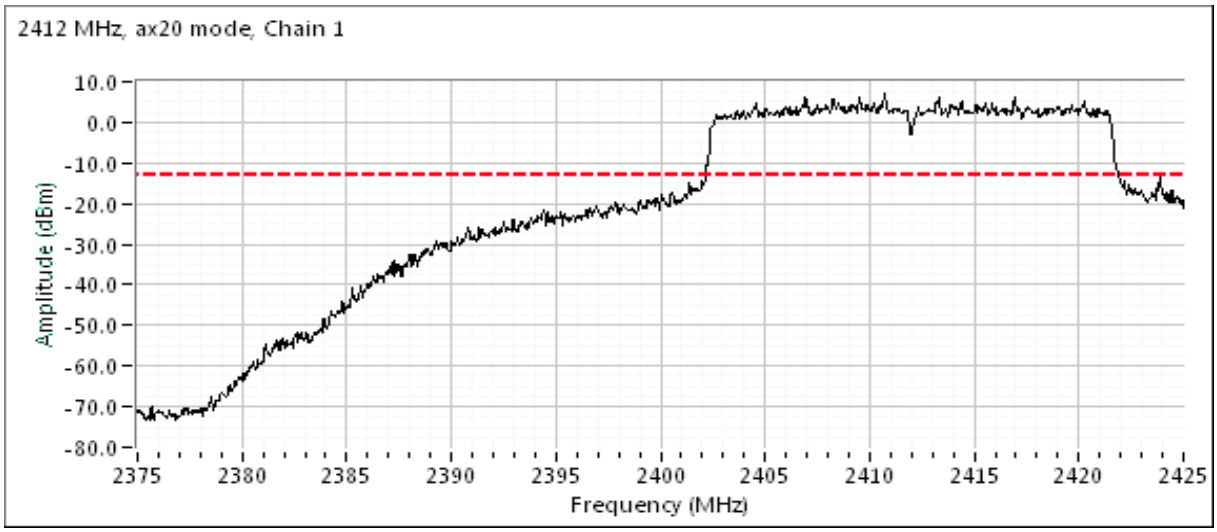
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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





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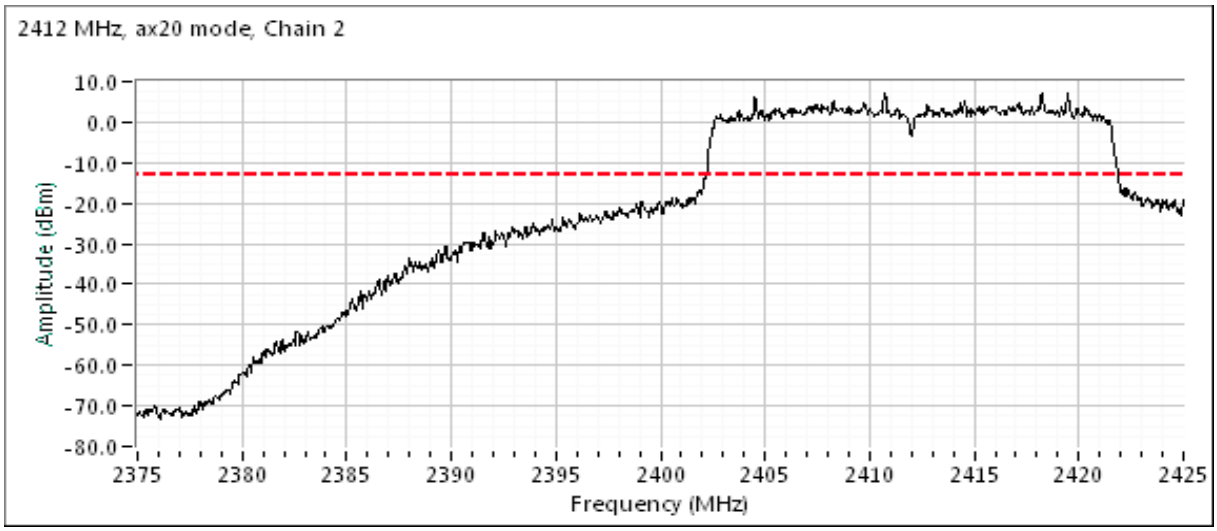
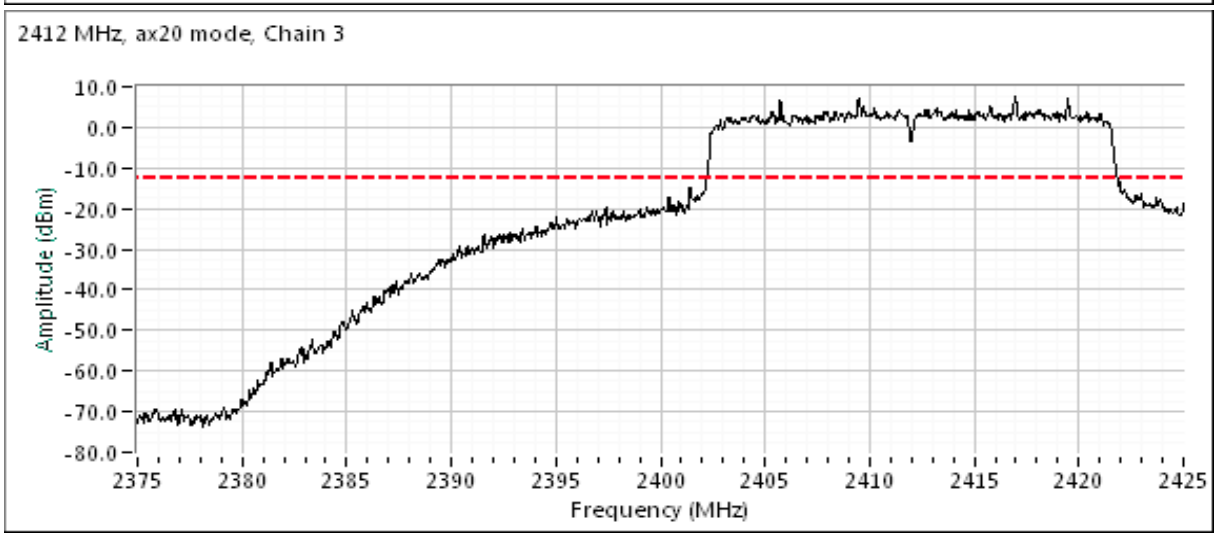
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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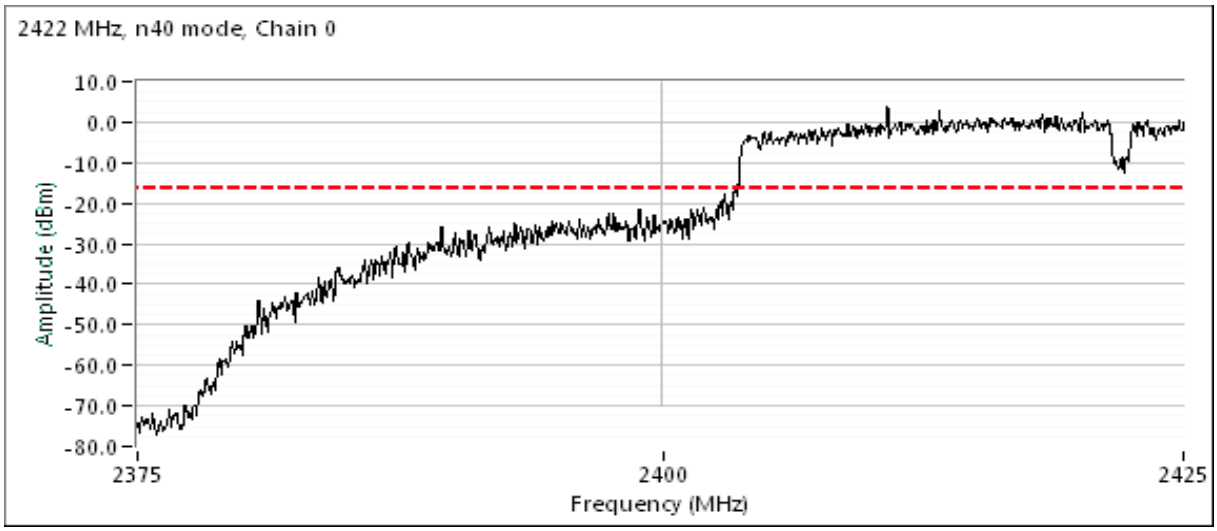
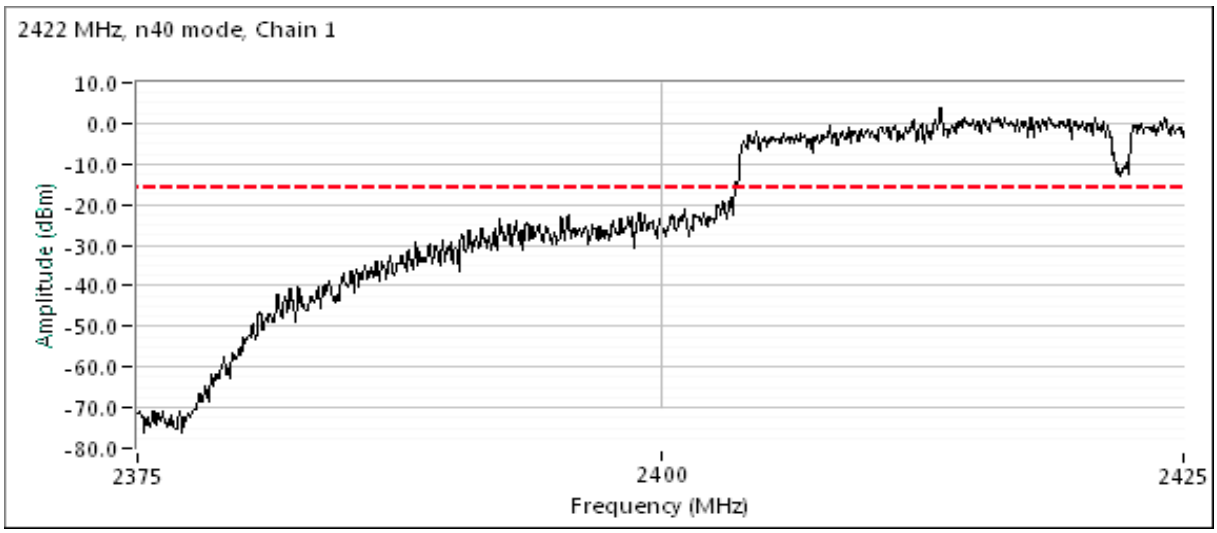
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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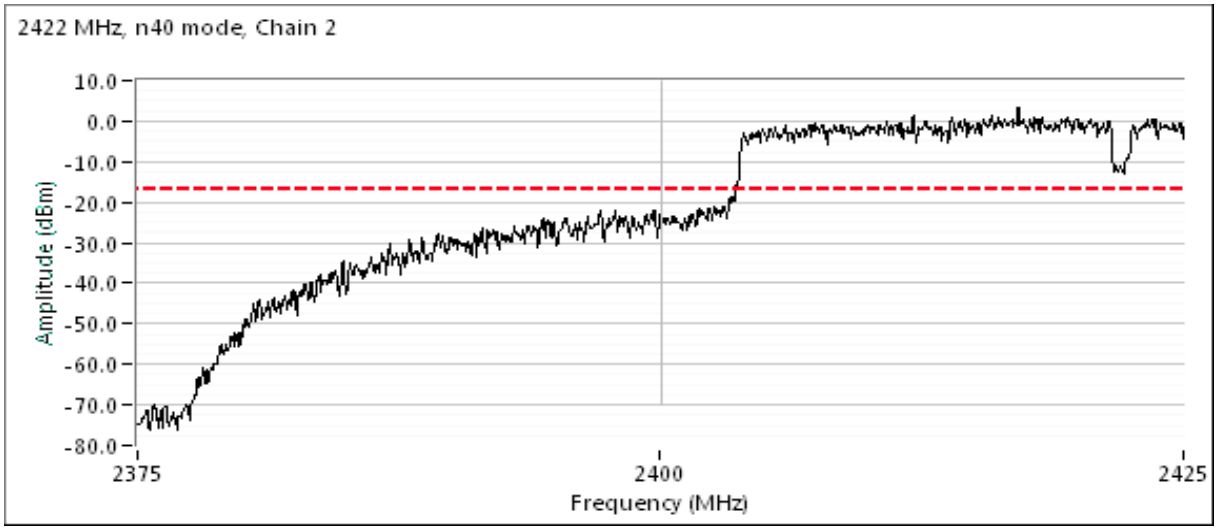

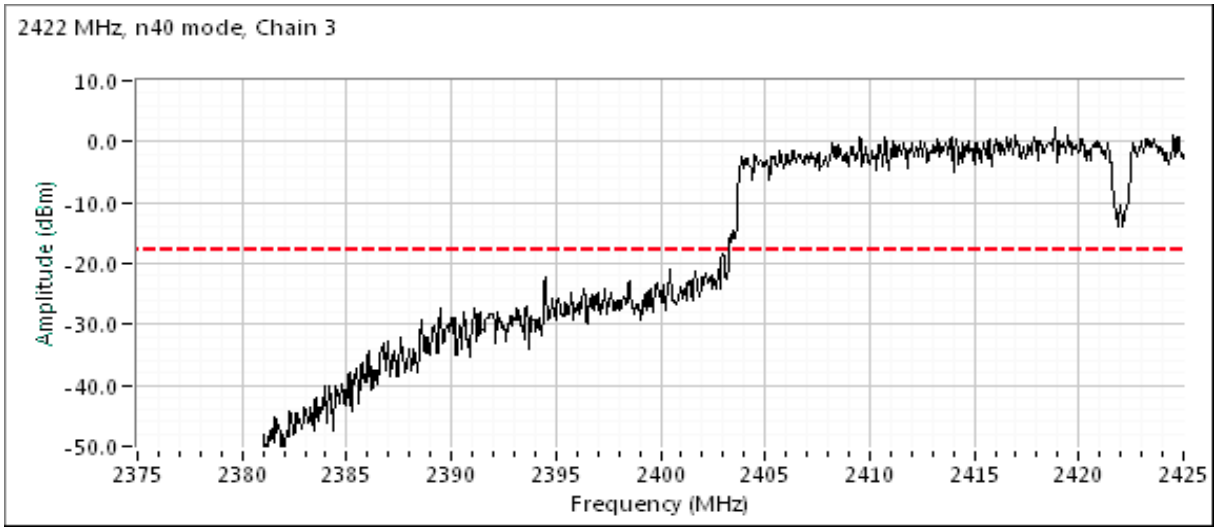

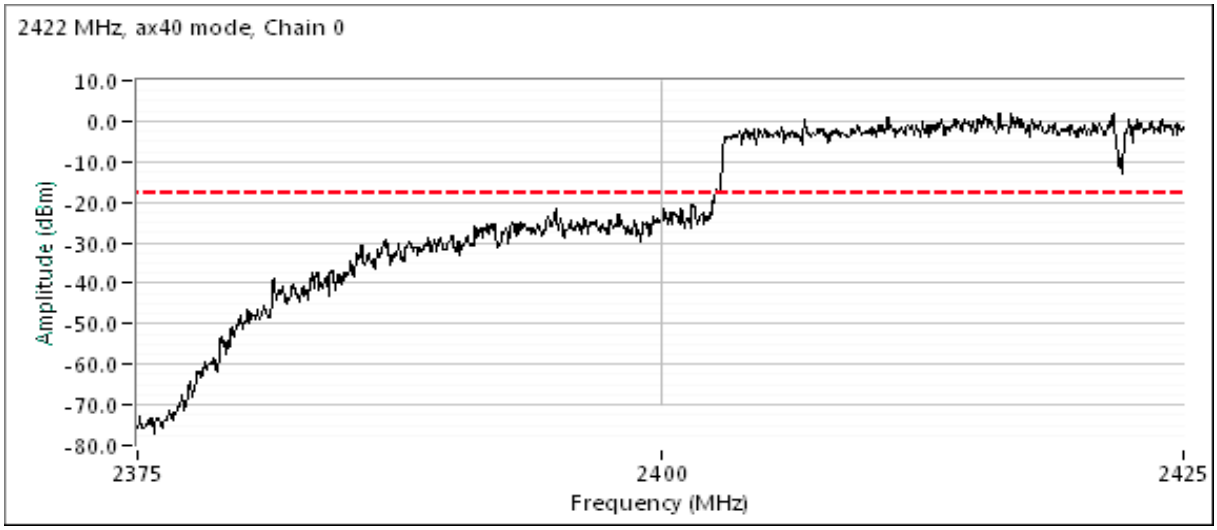
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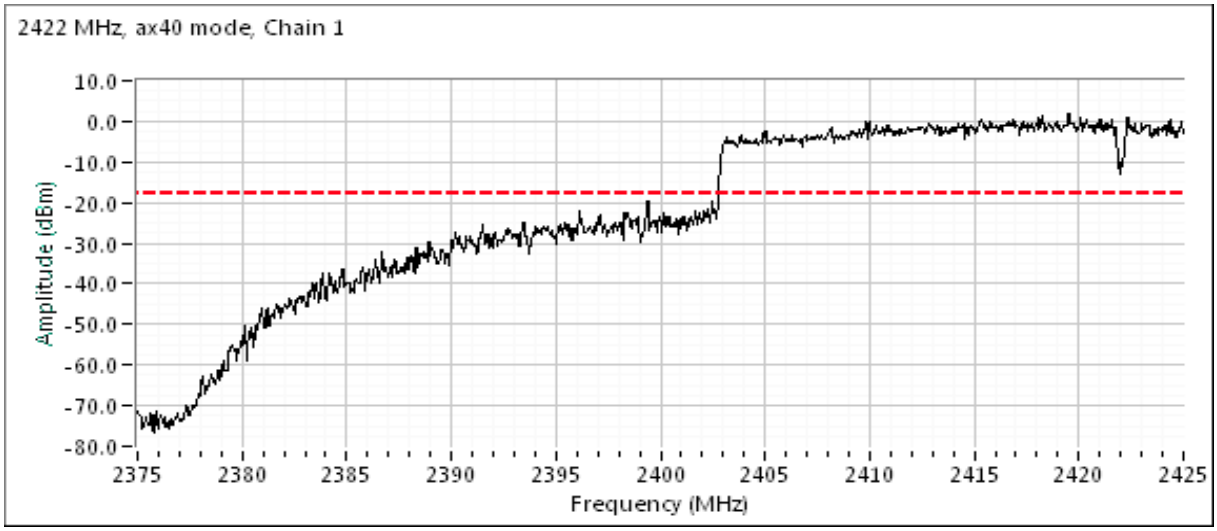
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Amplitude (dBm)
2375
2400
2425
Frequency (MHz)


2422 MHz, ax40 mode, Chain 1
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Amplitude (dBm)
2375
2380
2385
2390
2395
2400
2405
2410
2415
2420
2425
Frequency (MHz)

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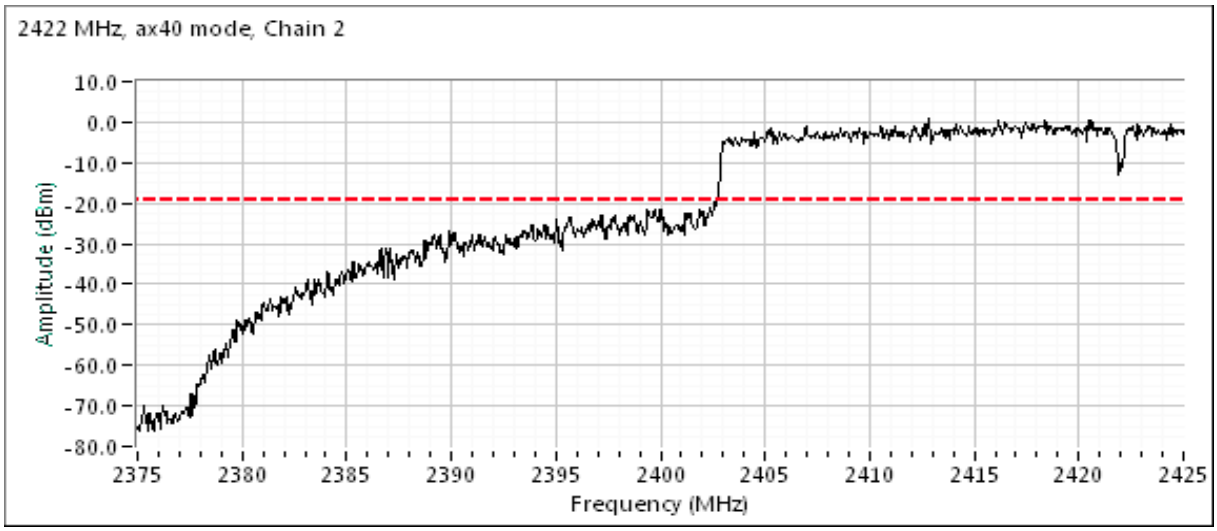
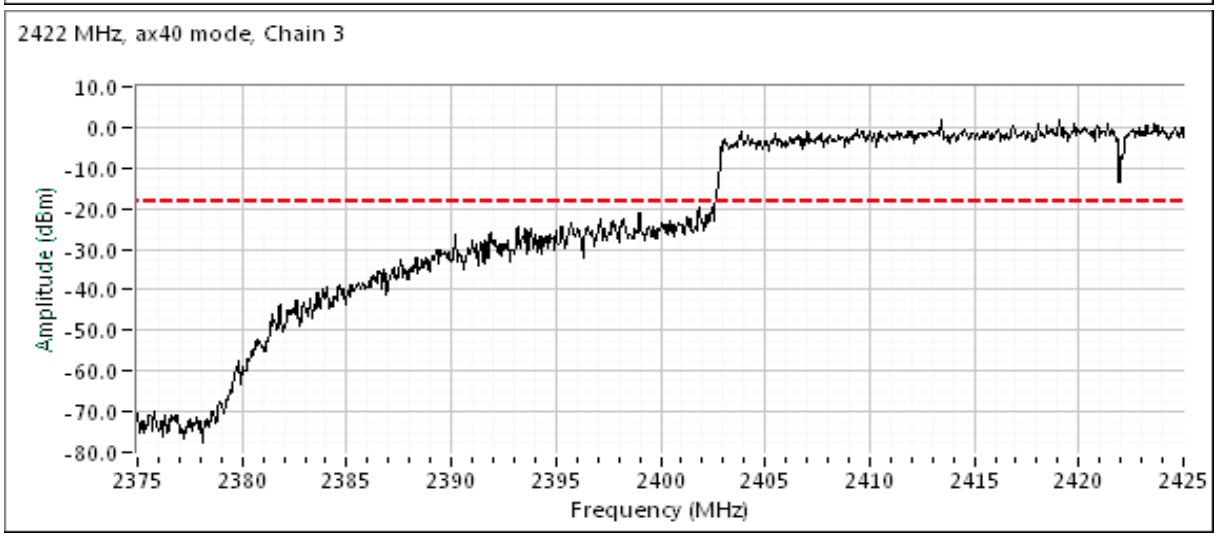
Standard:	FCC §15.247 & 15.407	Class:	N/A





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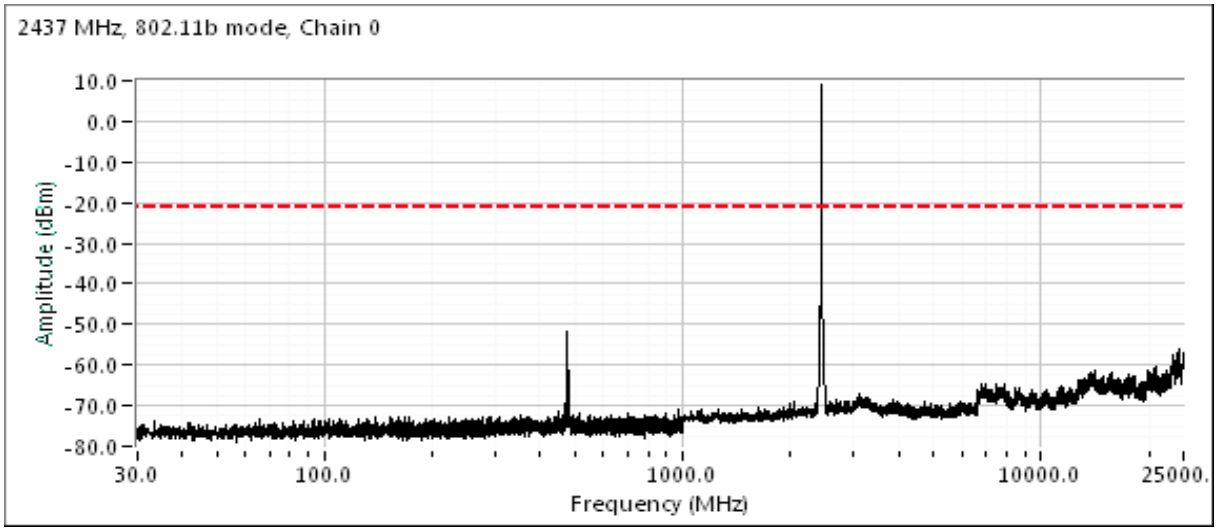
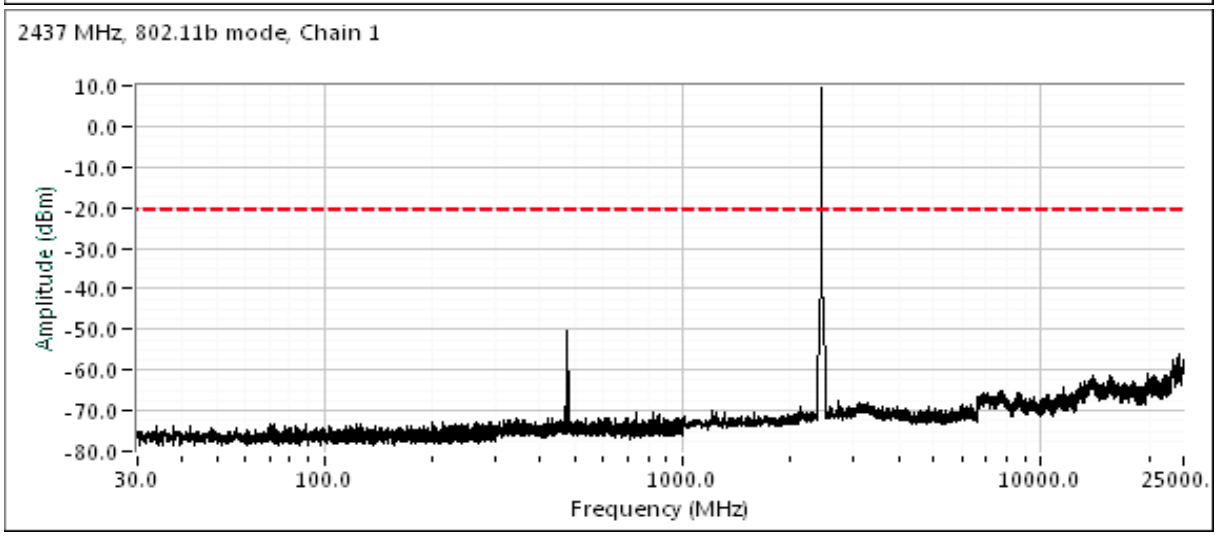
Standard:	FCC §15.247 & 15.407	Class:	N/A

Plots for center channel





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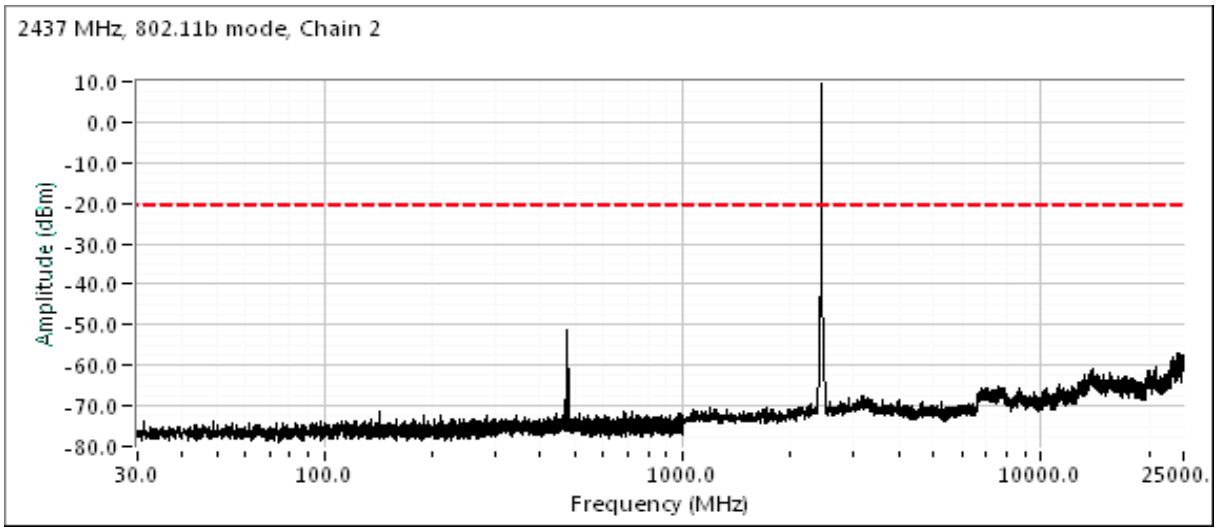

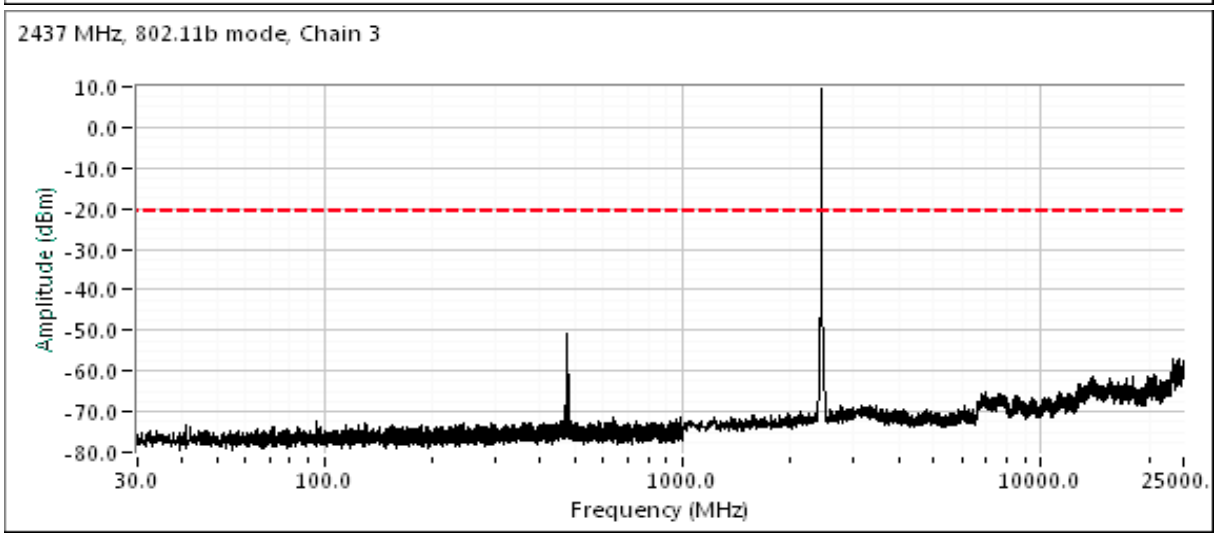

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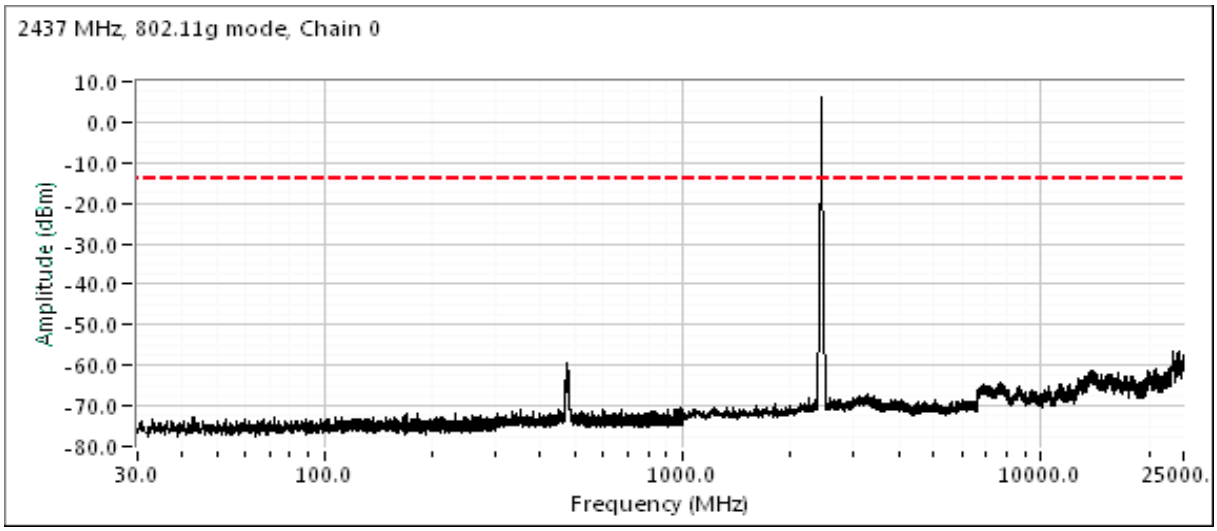

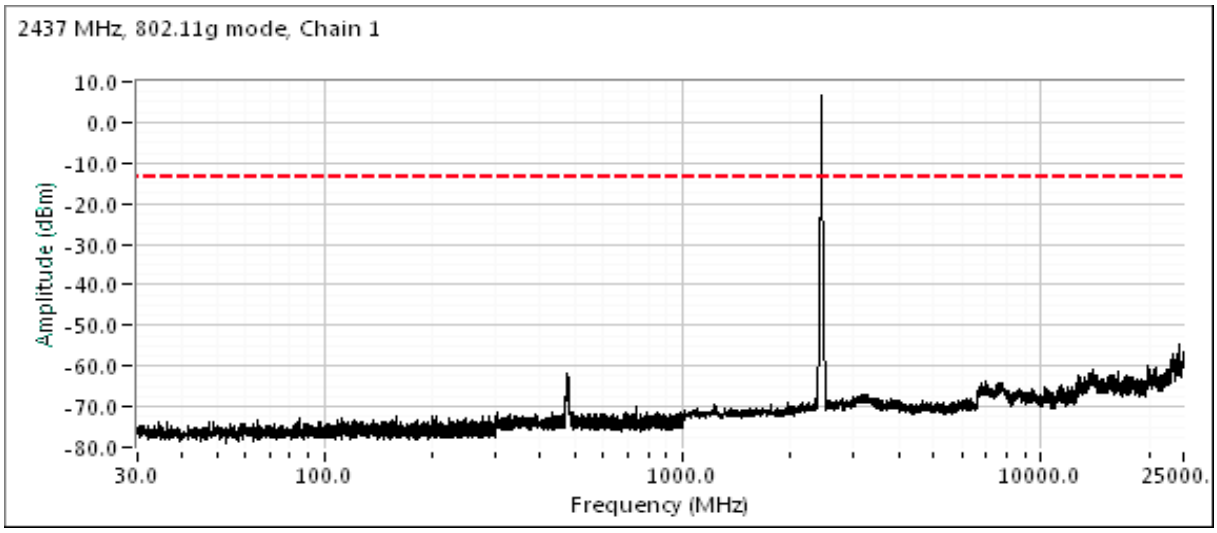

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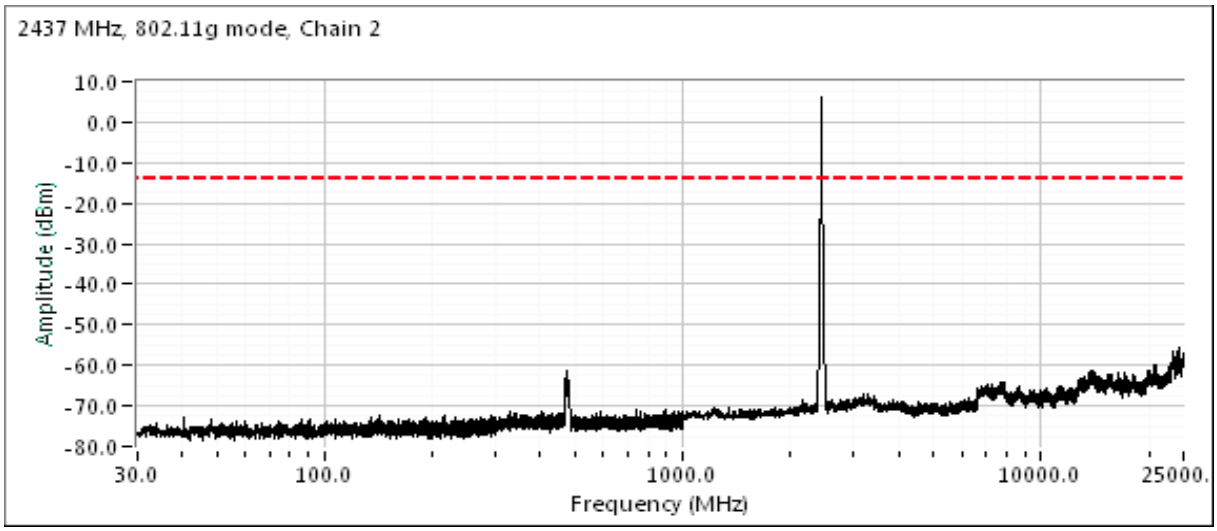

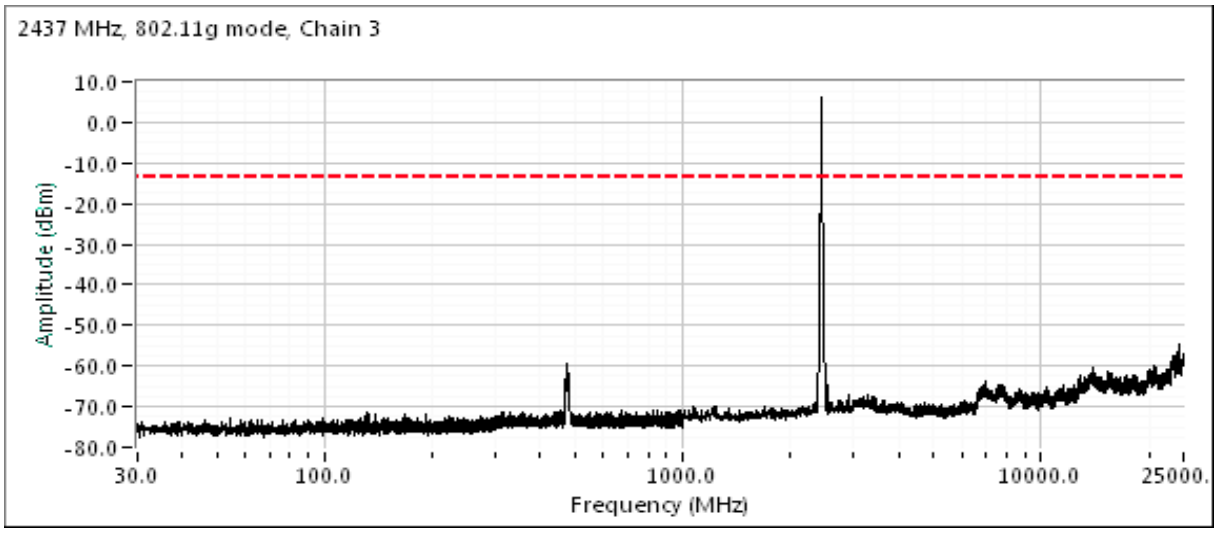

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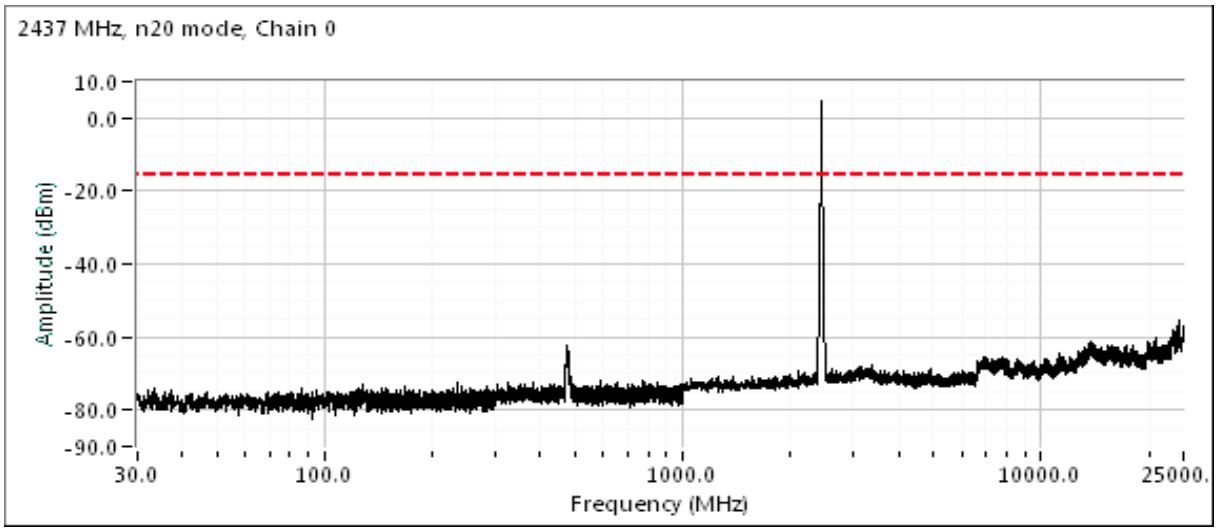

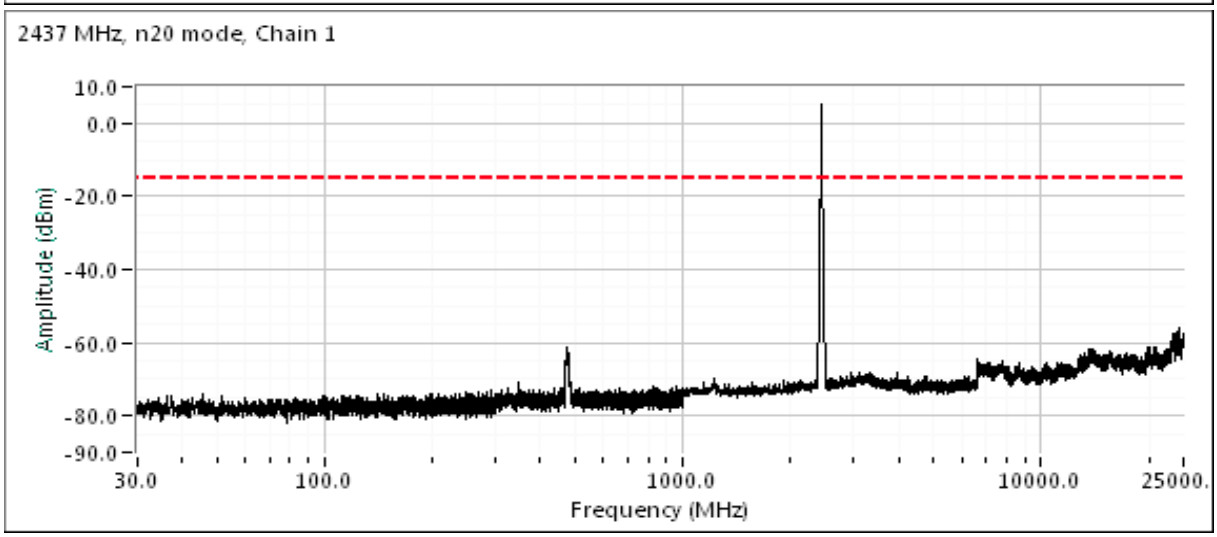

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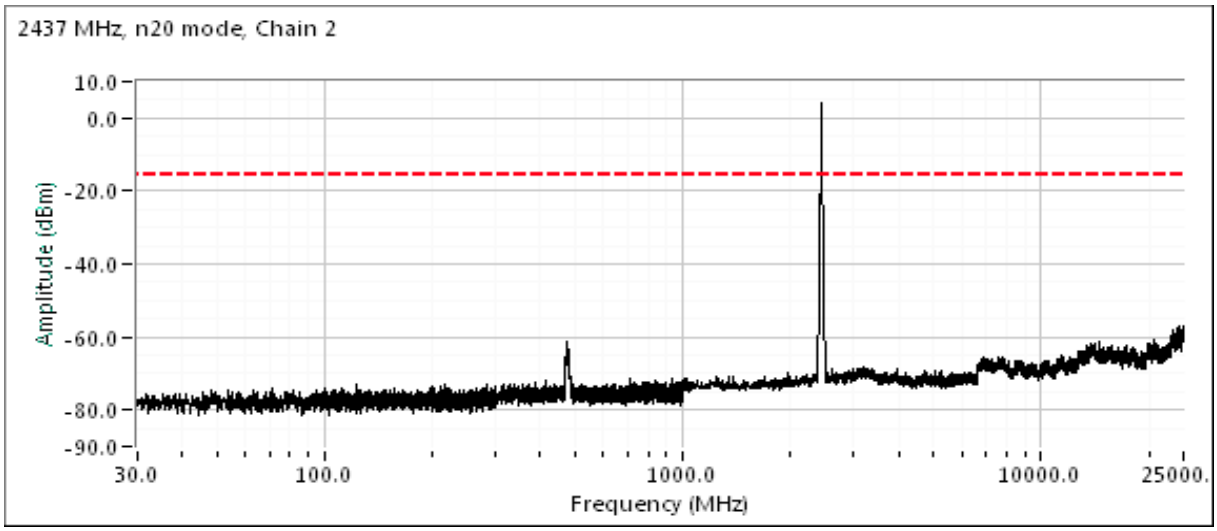

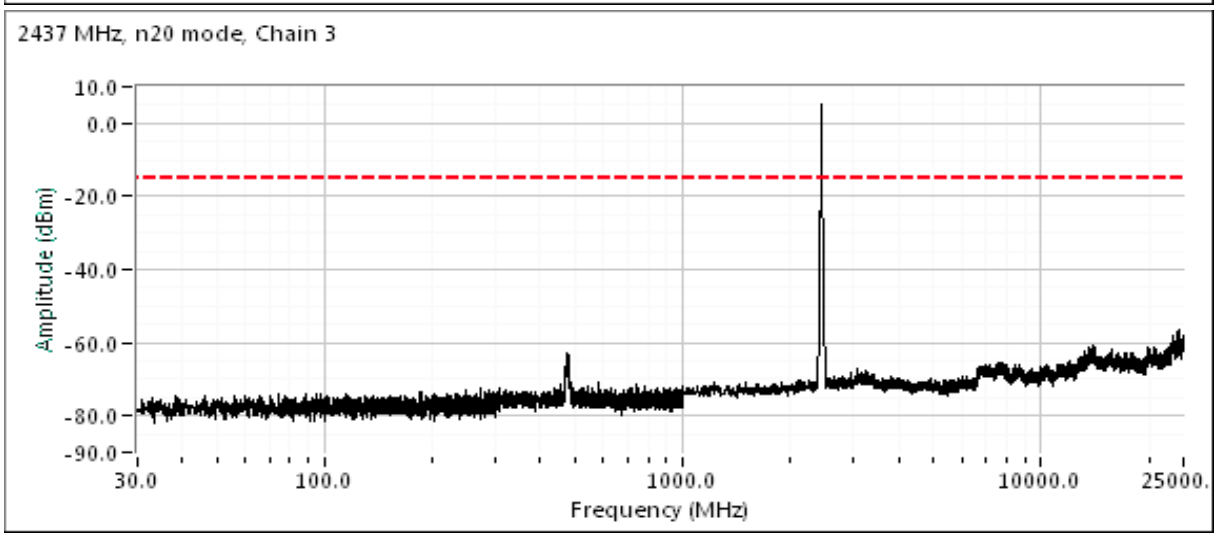

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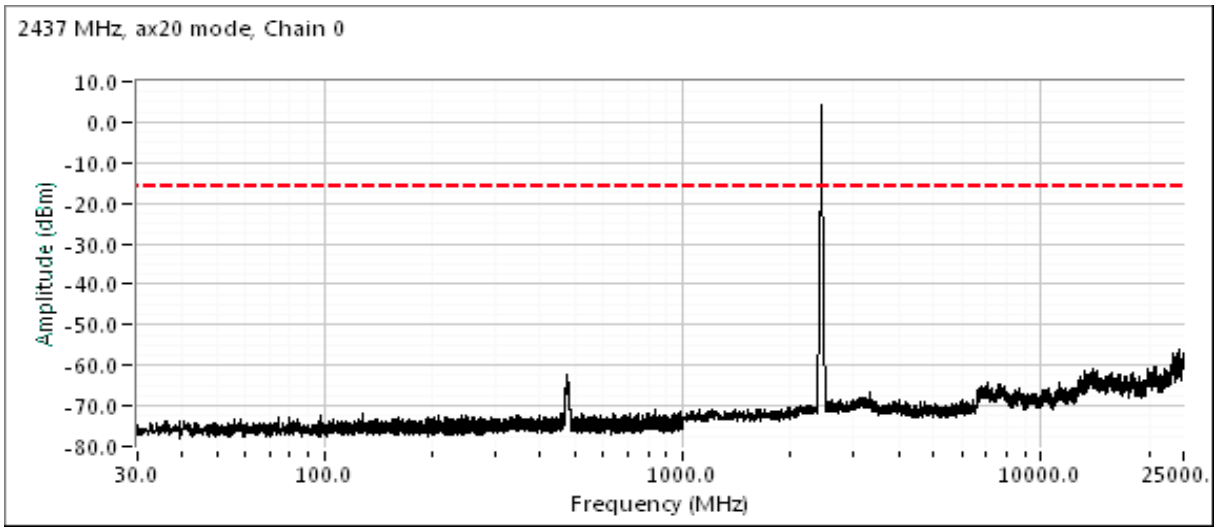

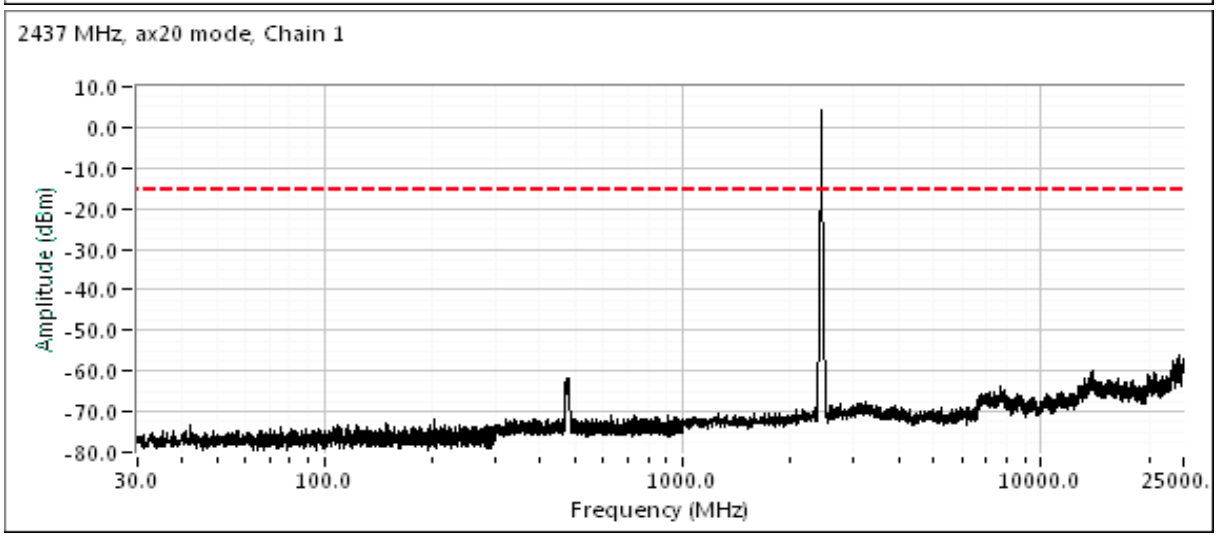

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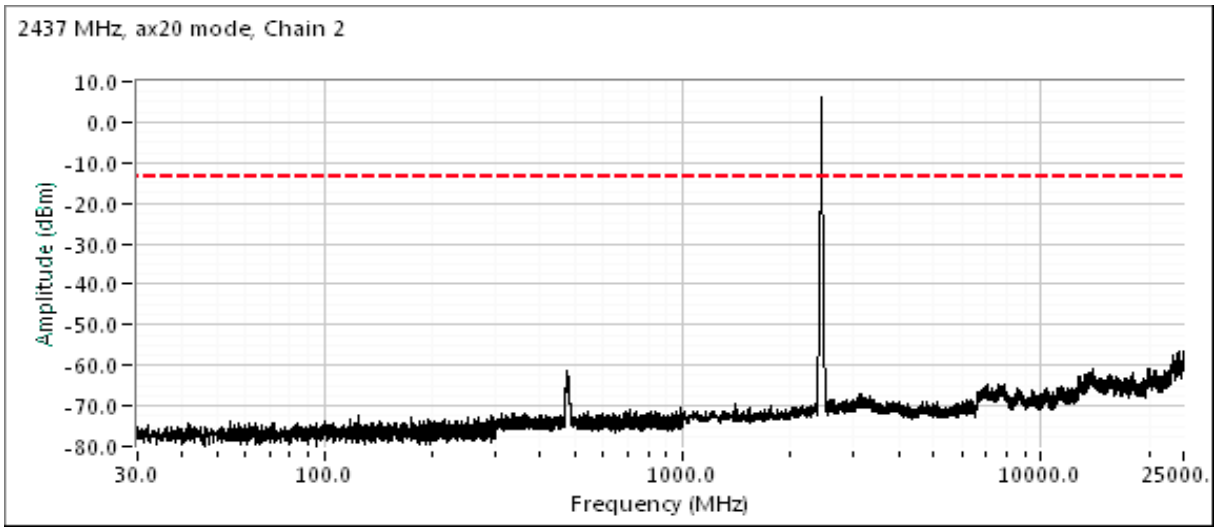

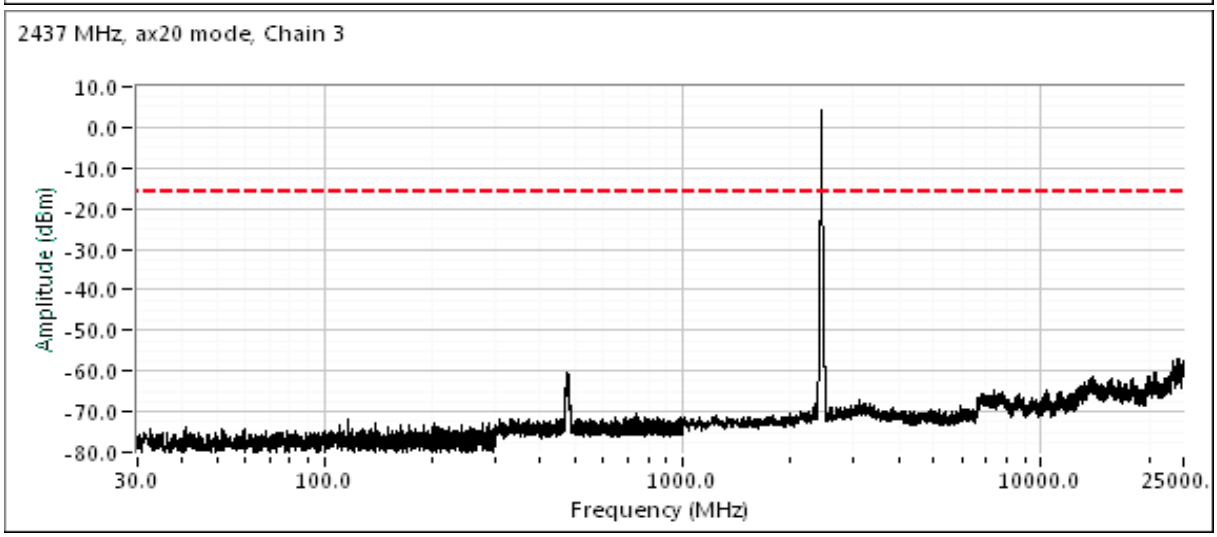

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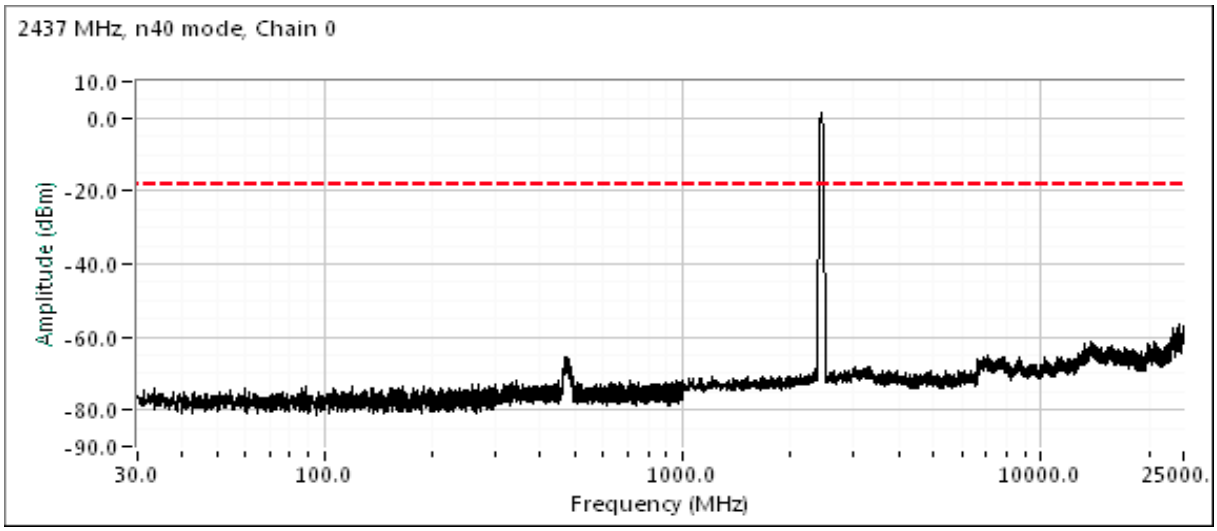

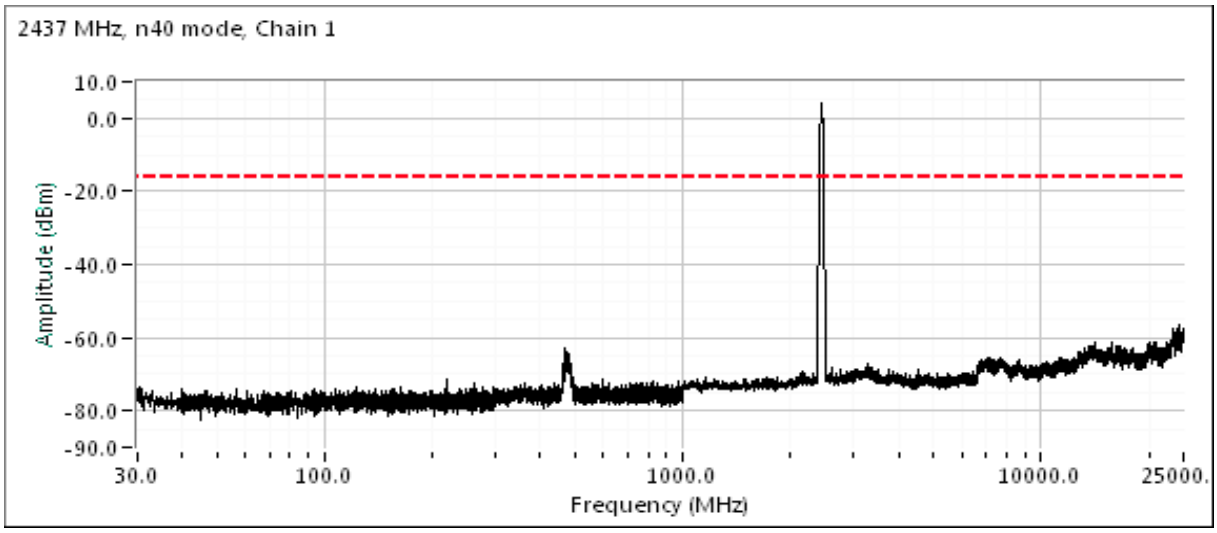

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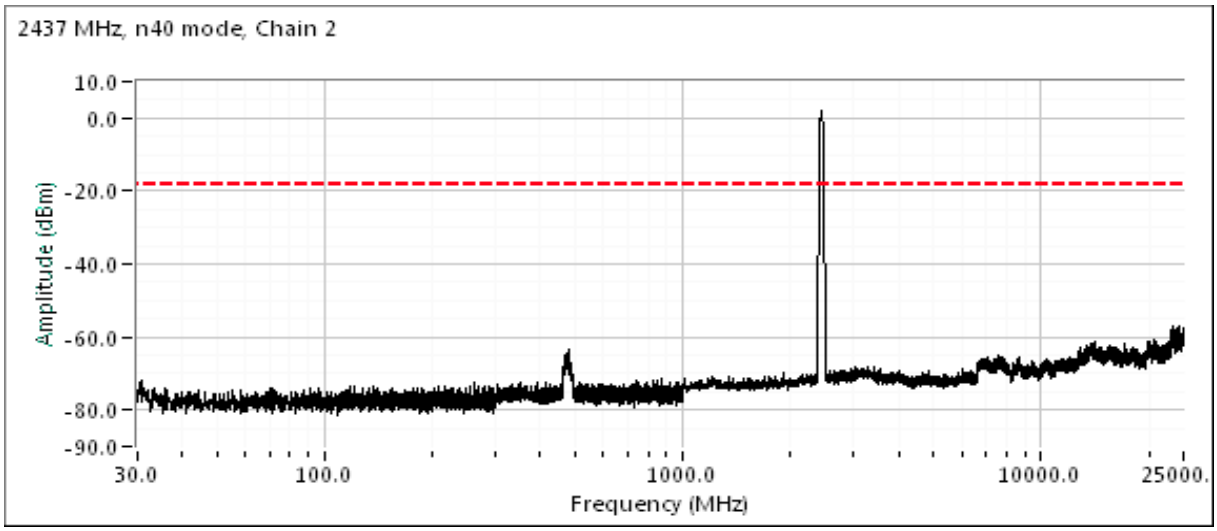

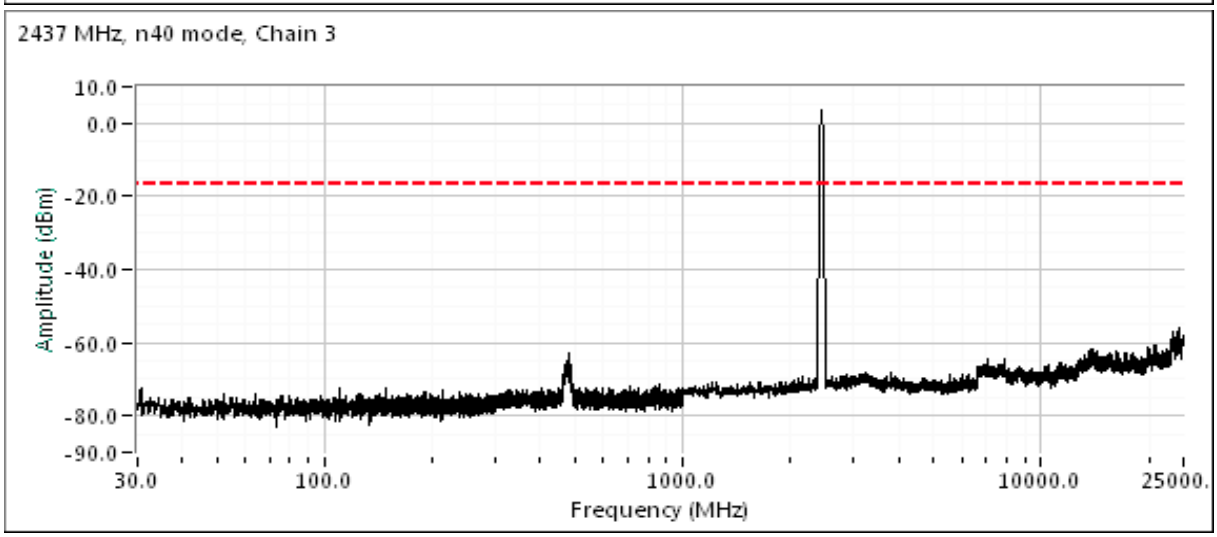

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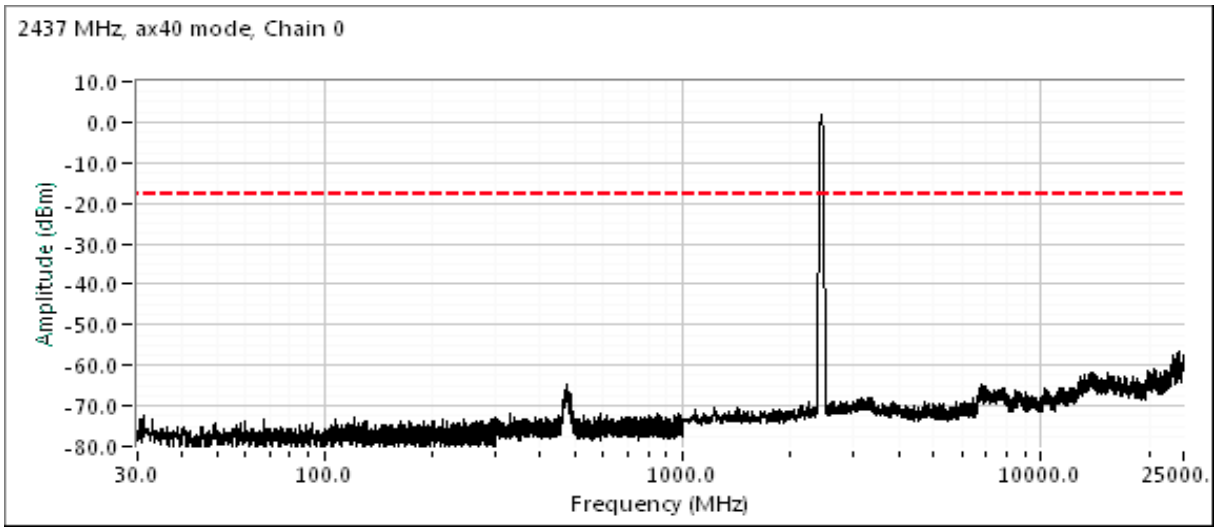

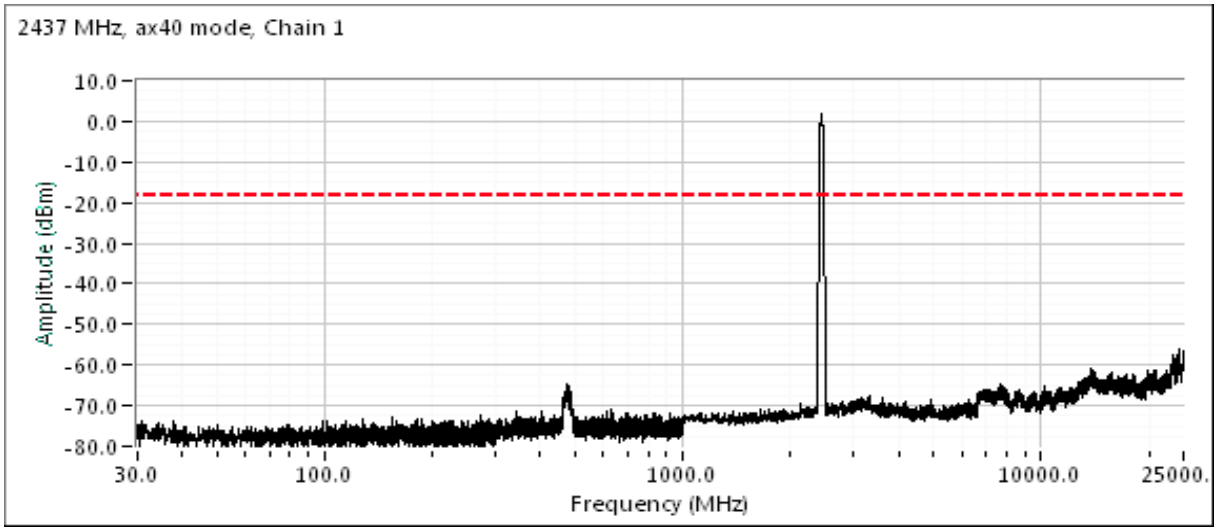

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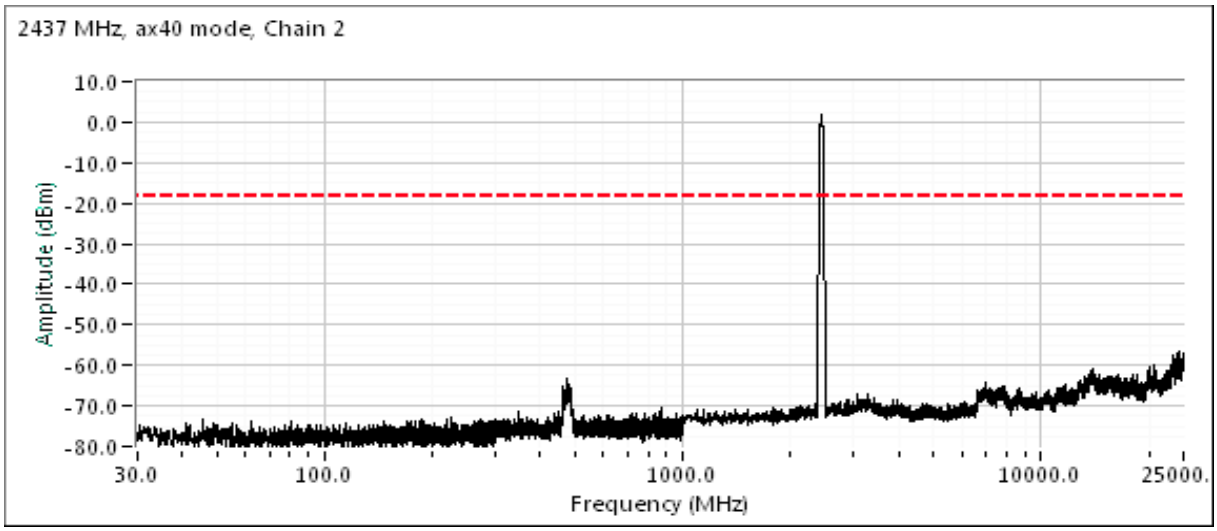

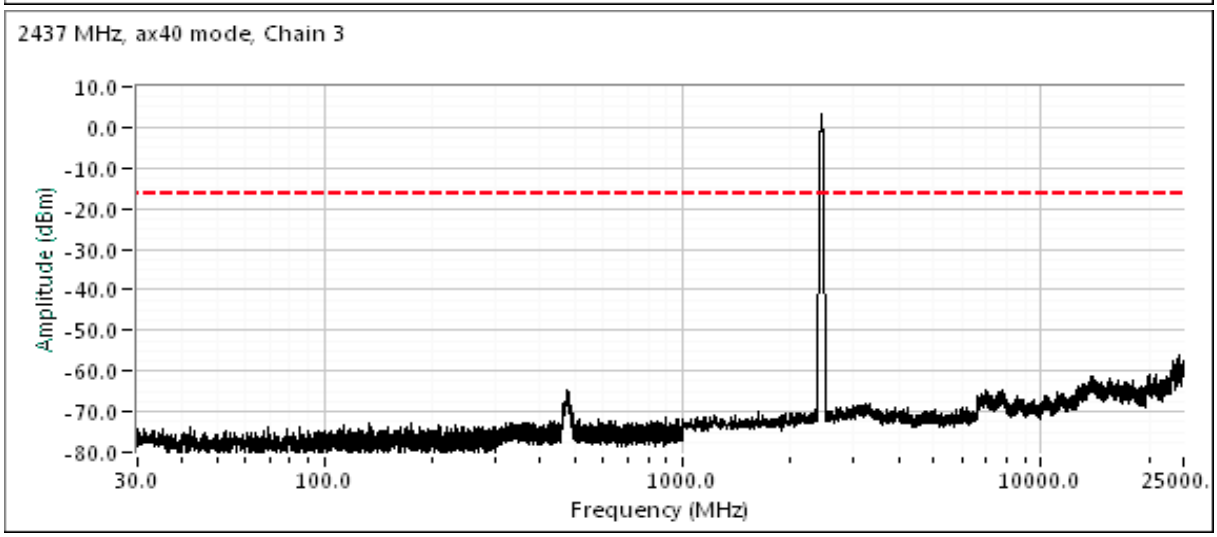

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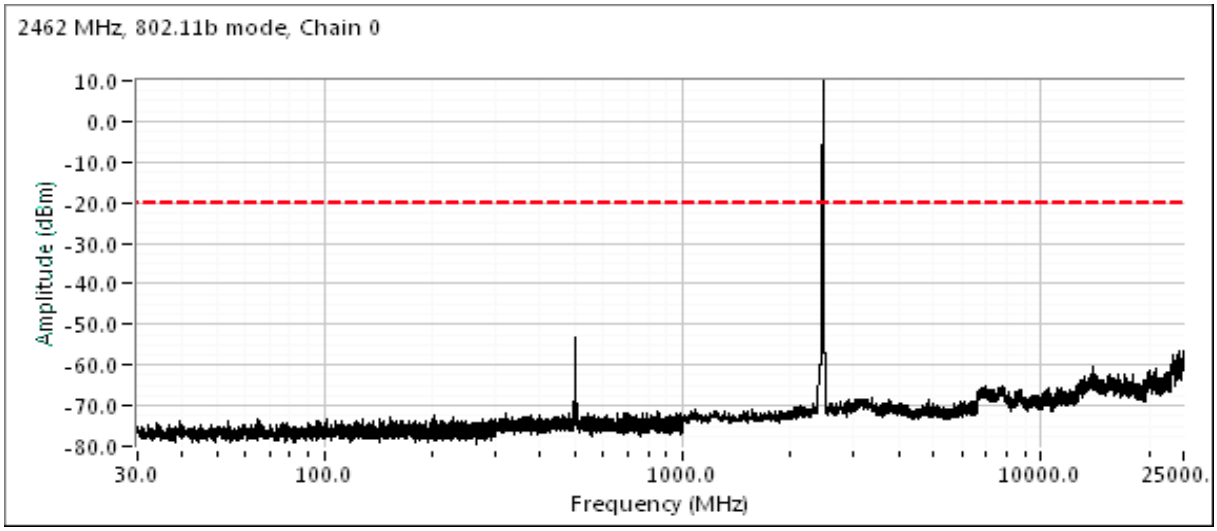
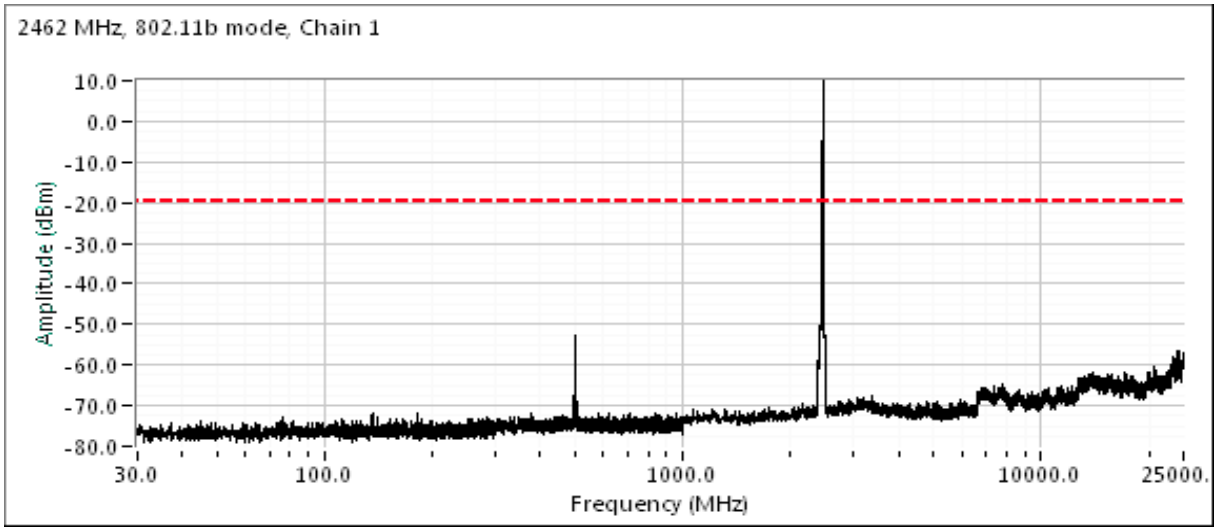
Plots for high channel





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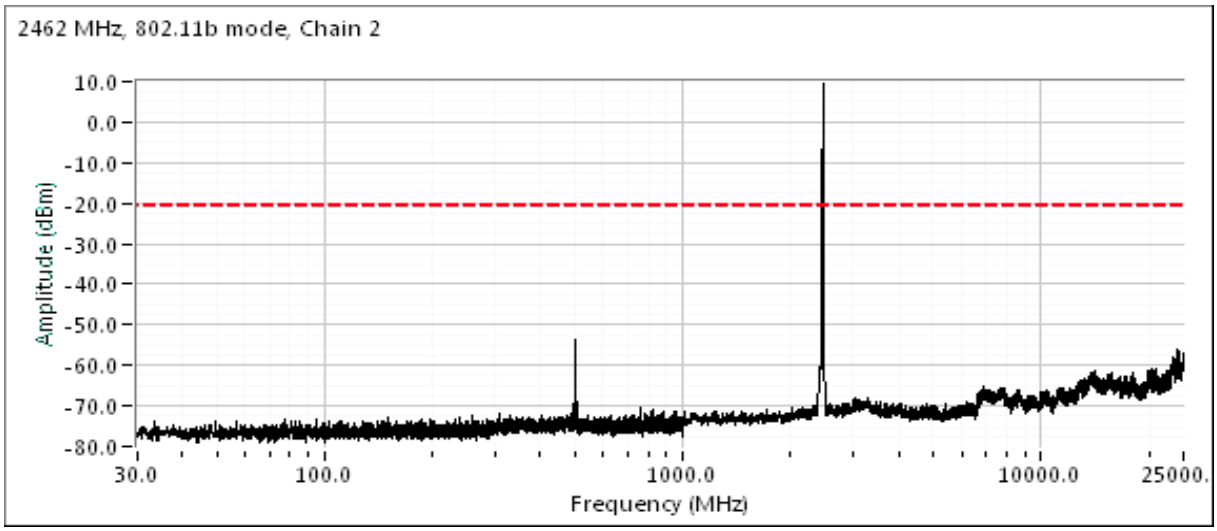

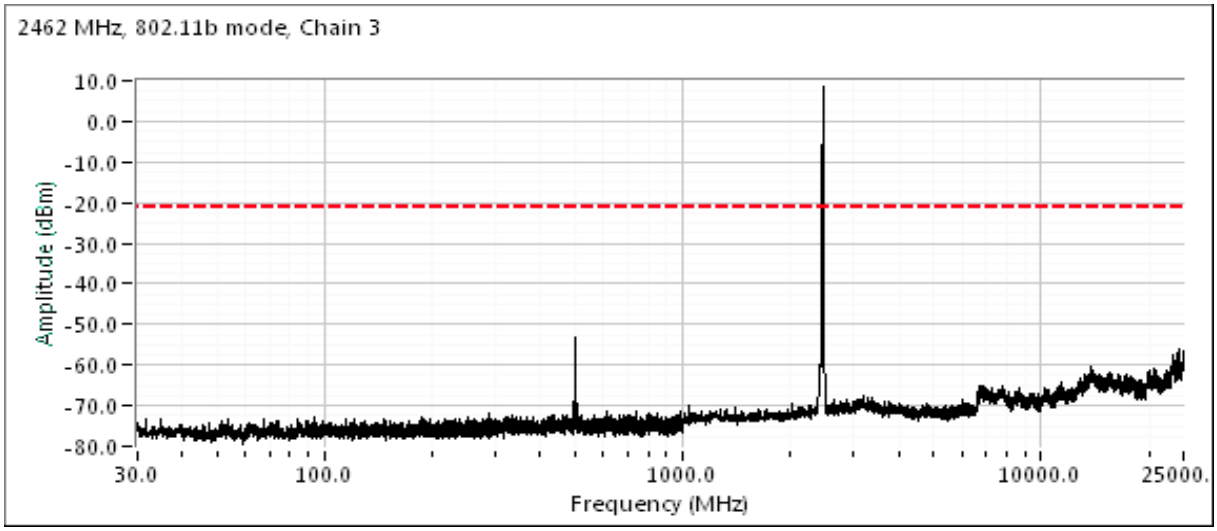

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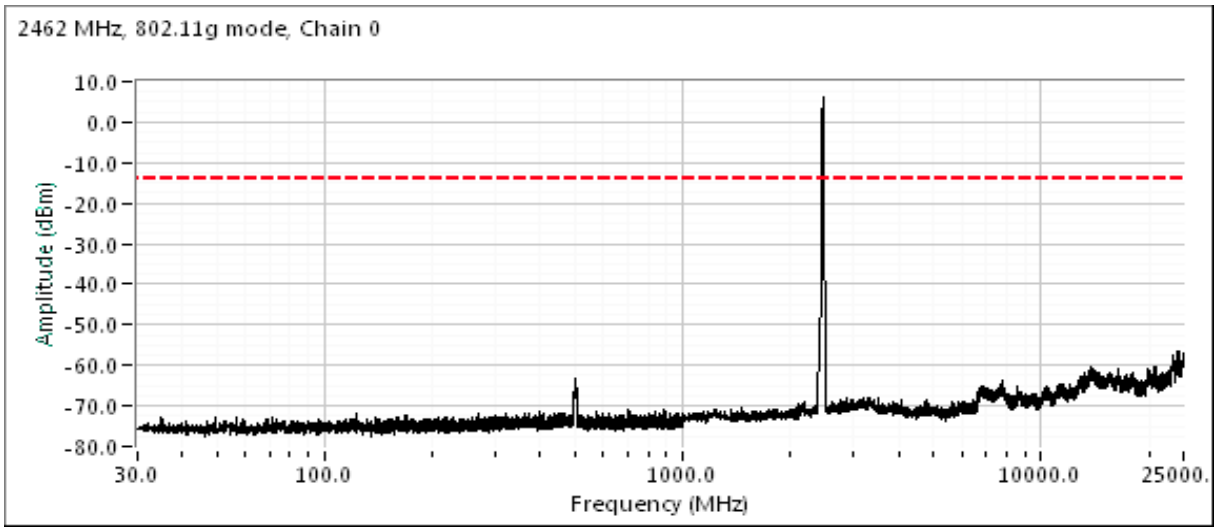
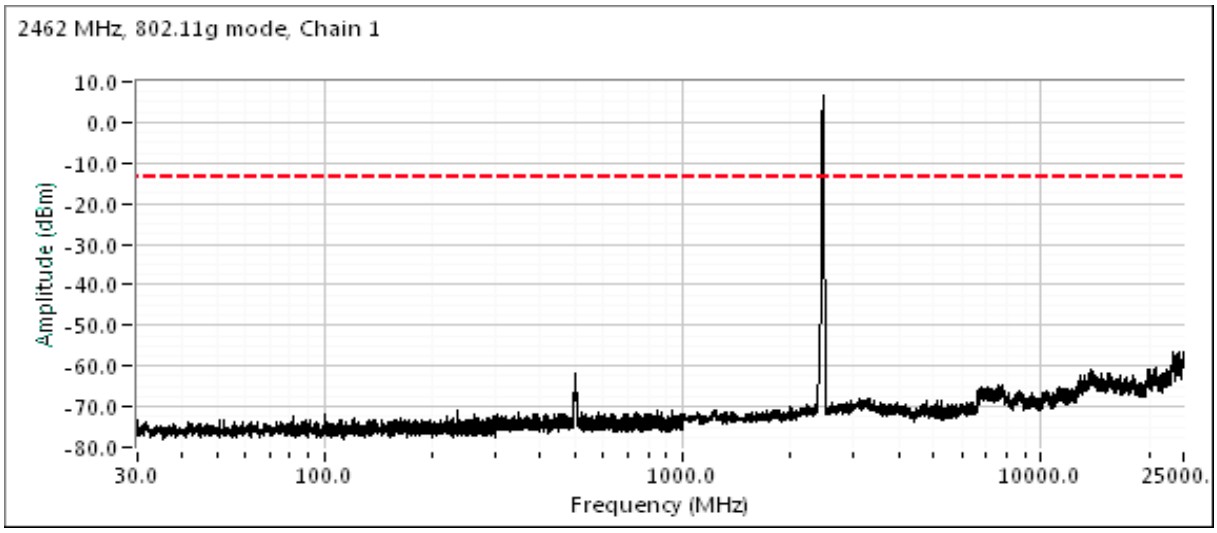
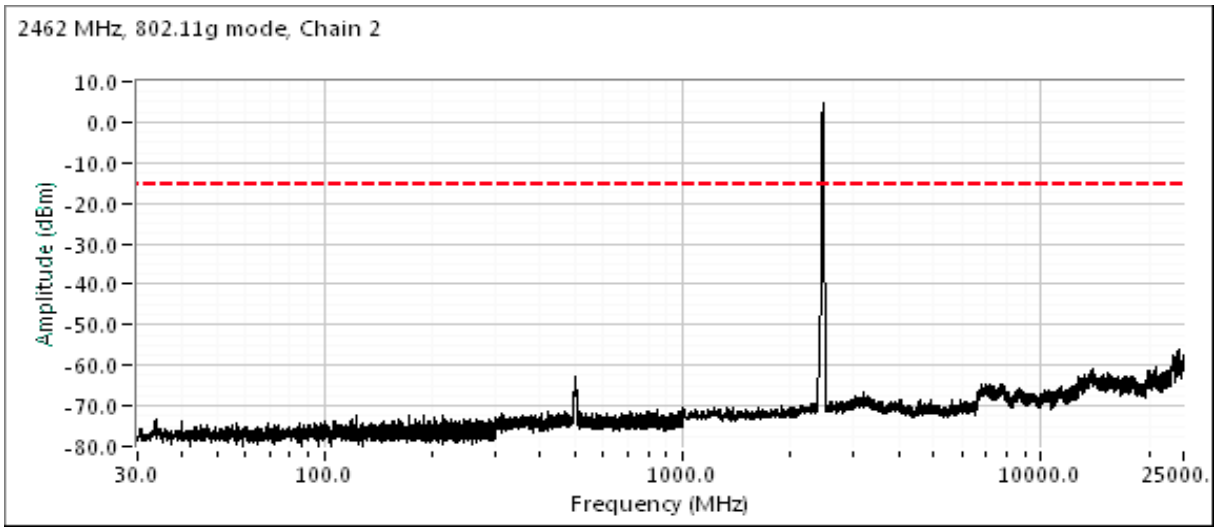
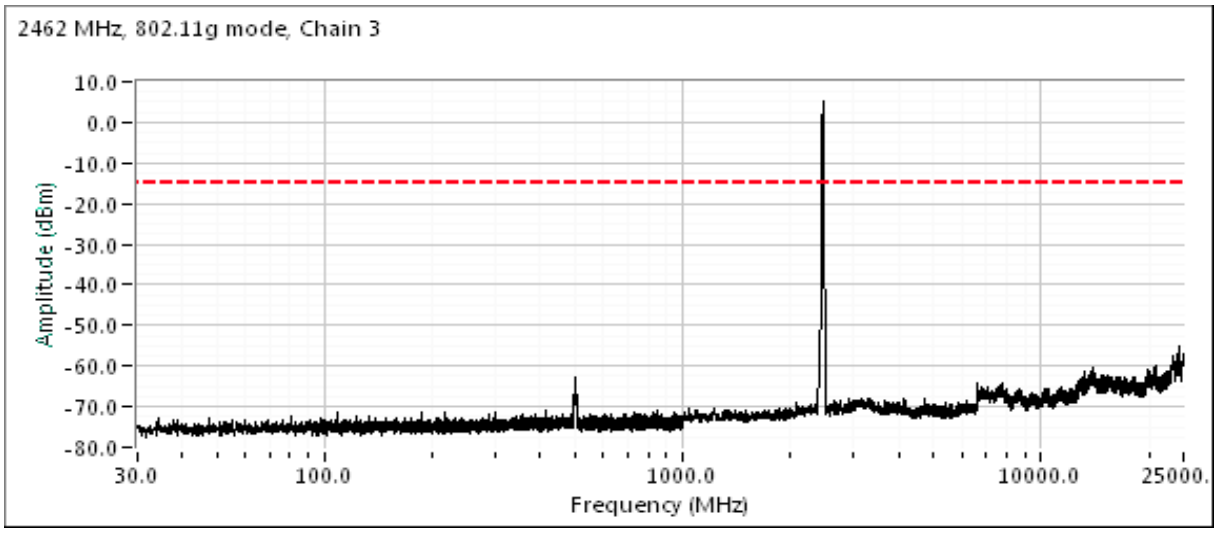
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



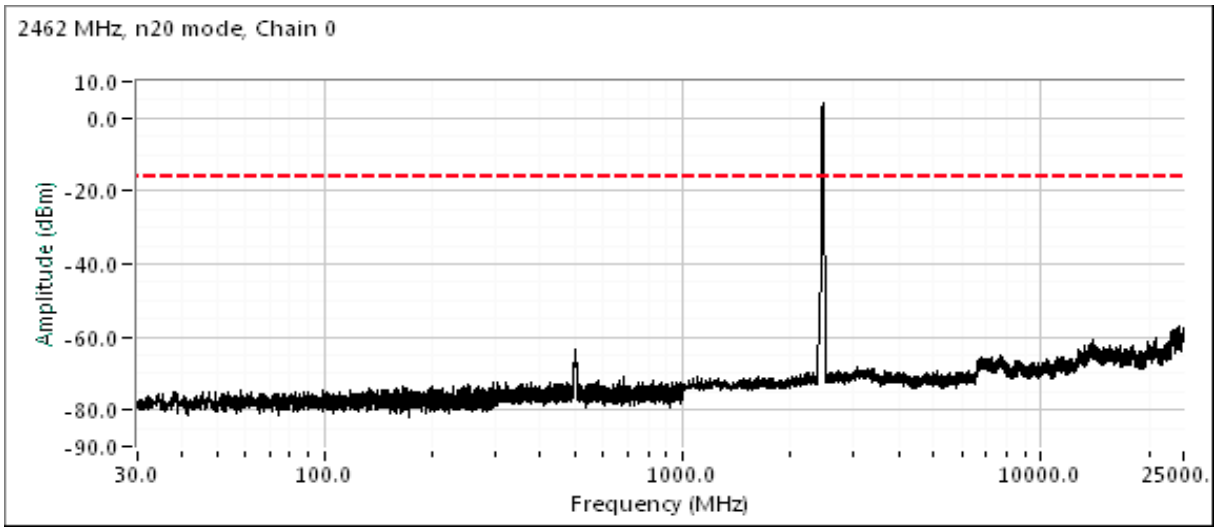


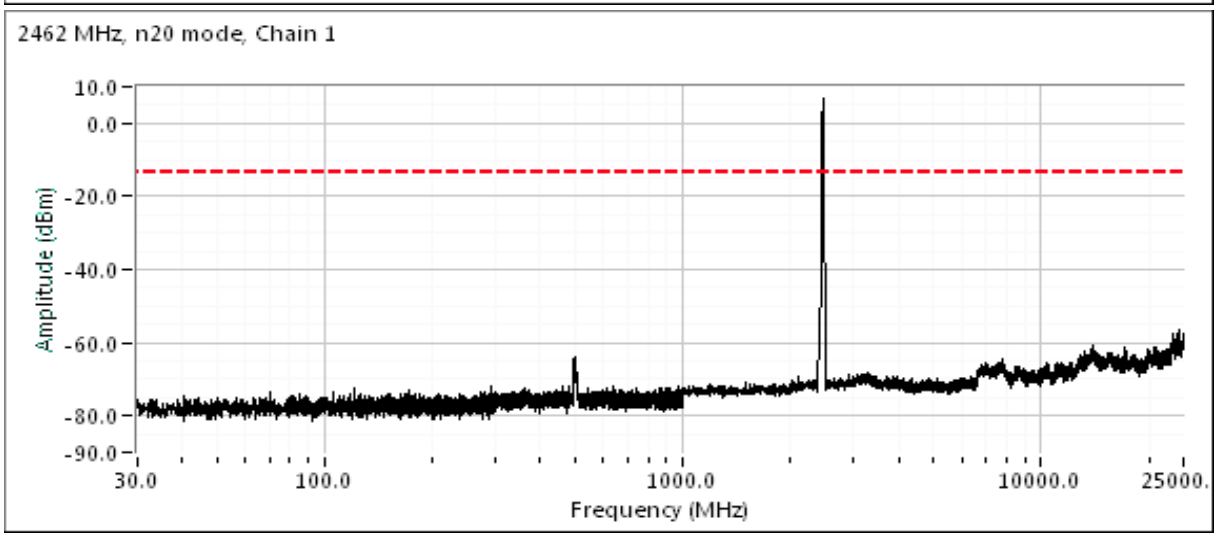
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



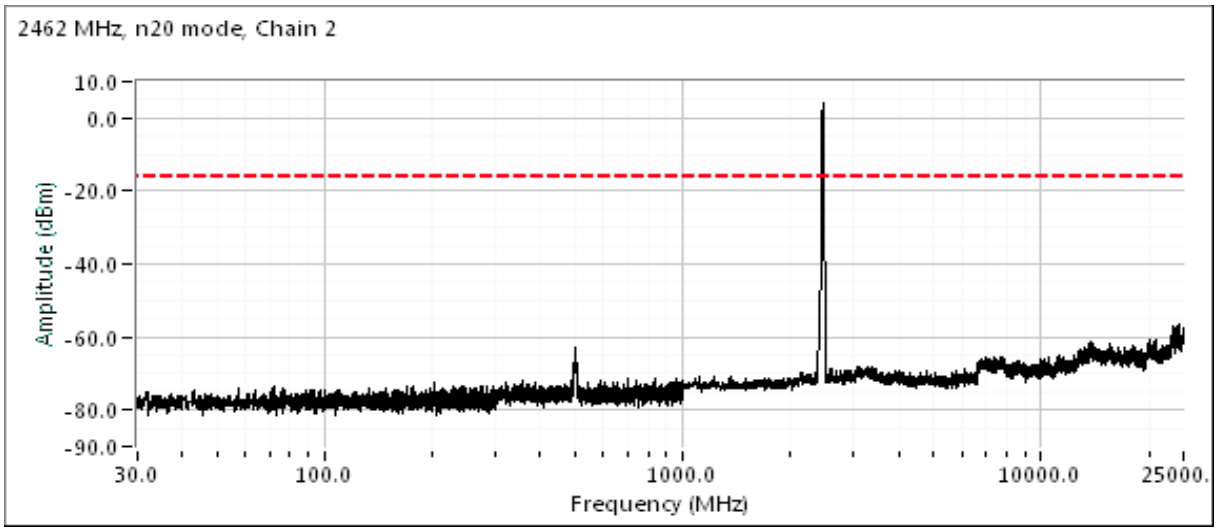


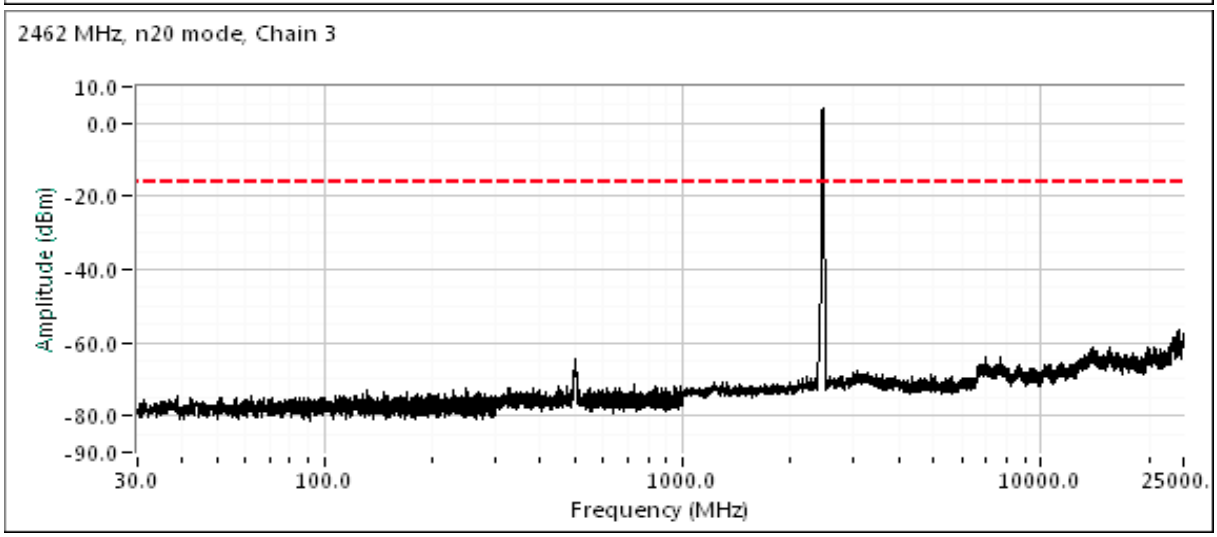
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



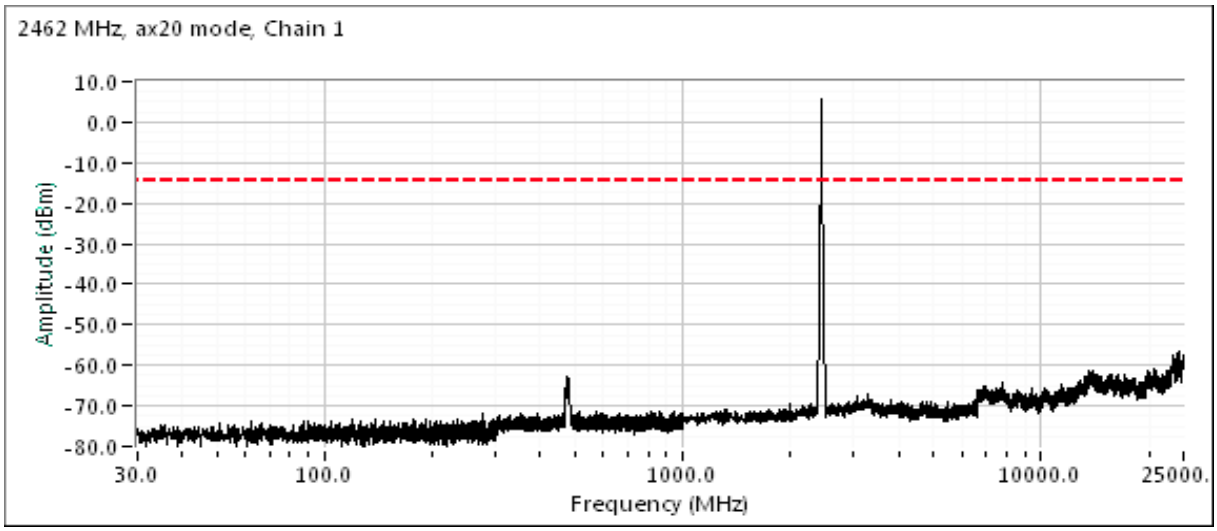


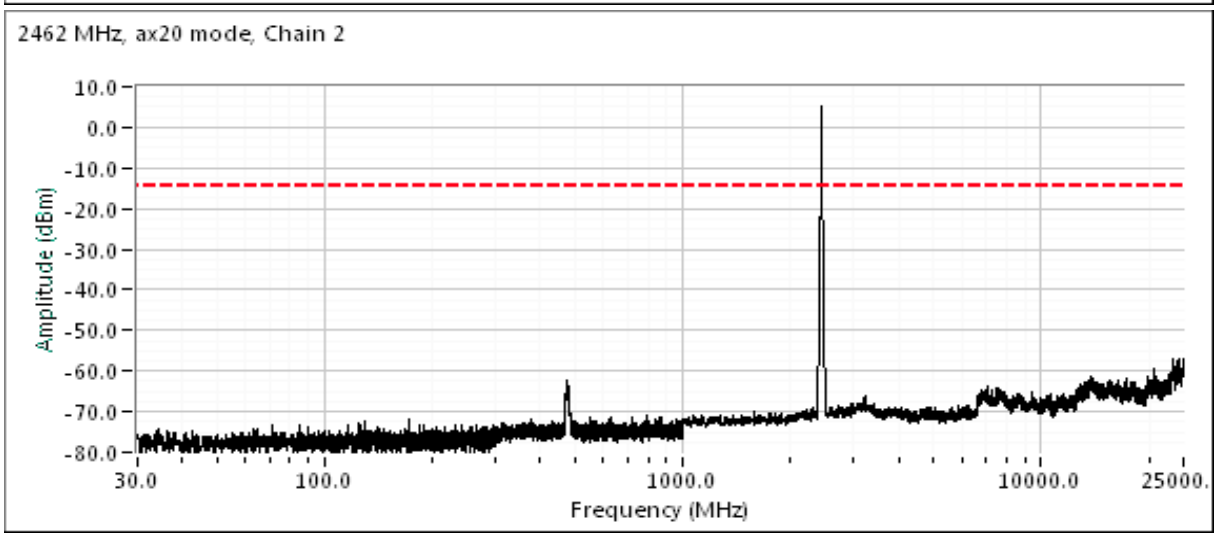
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



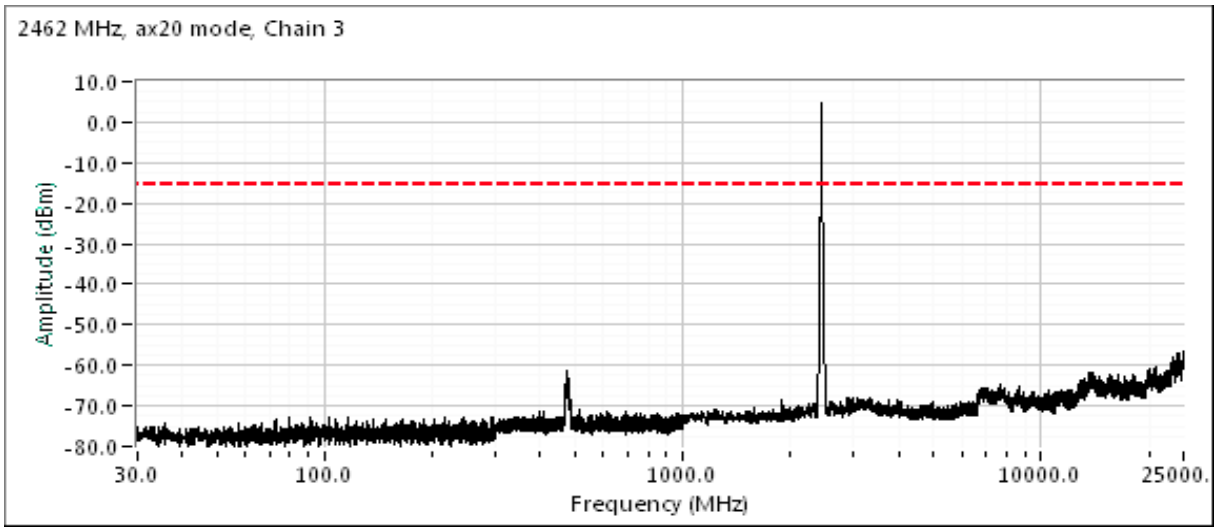


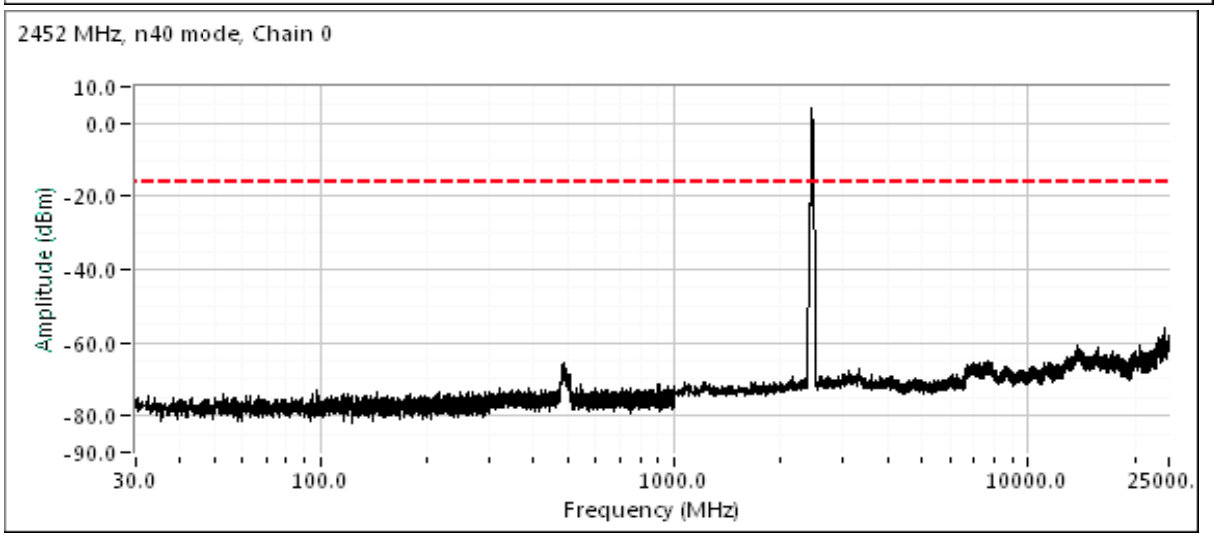
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



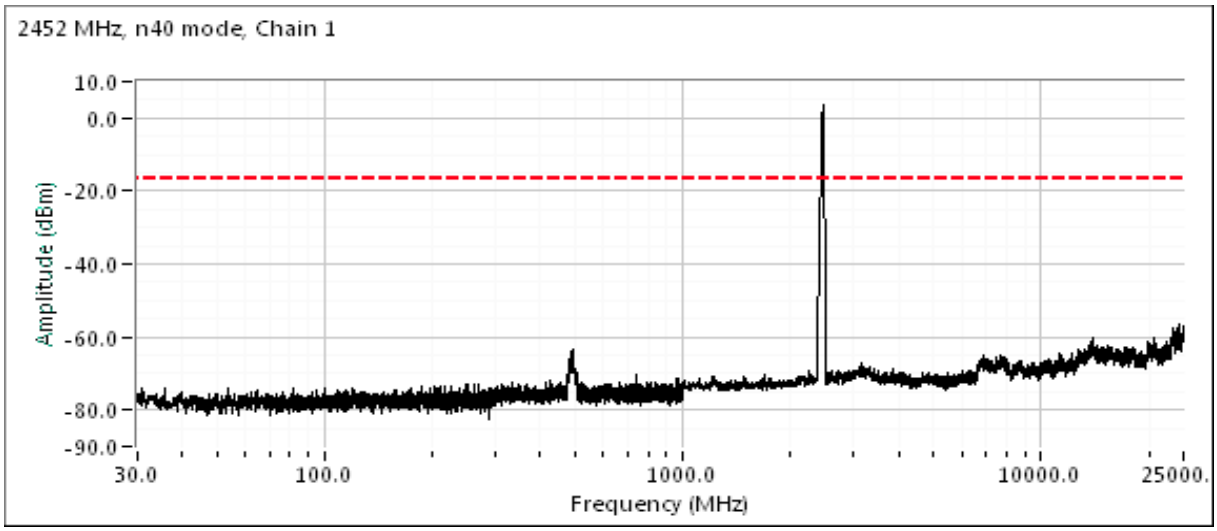


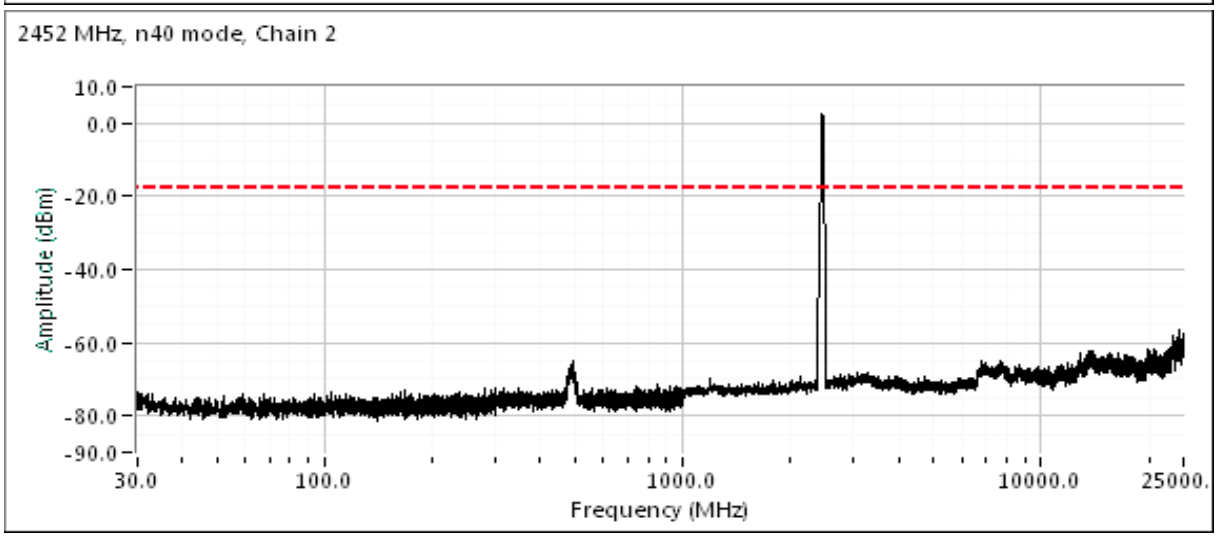
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



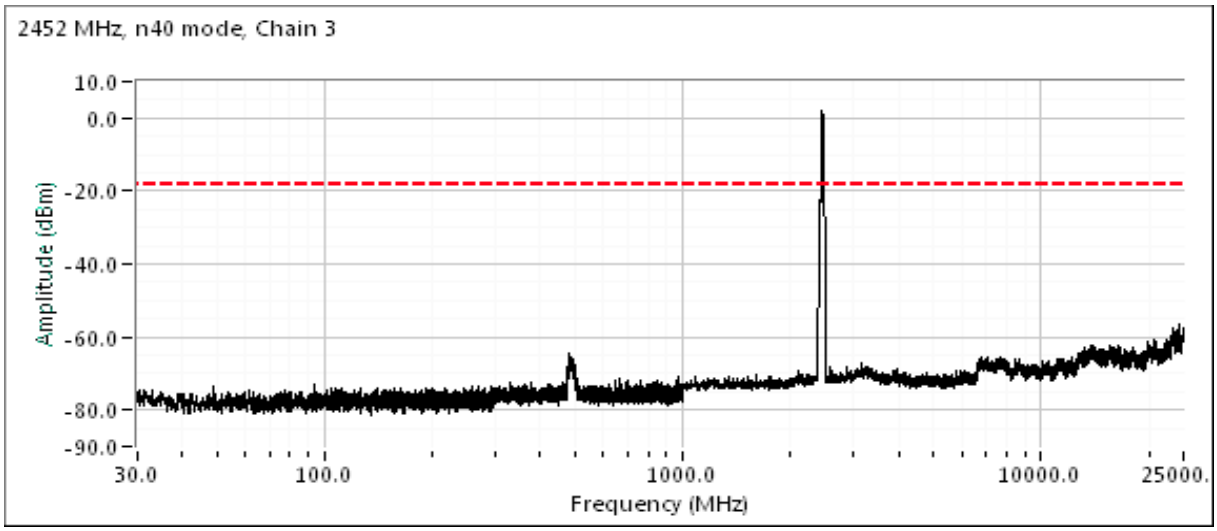


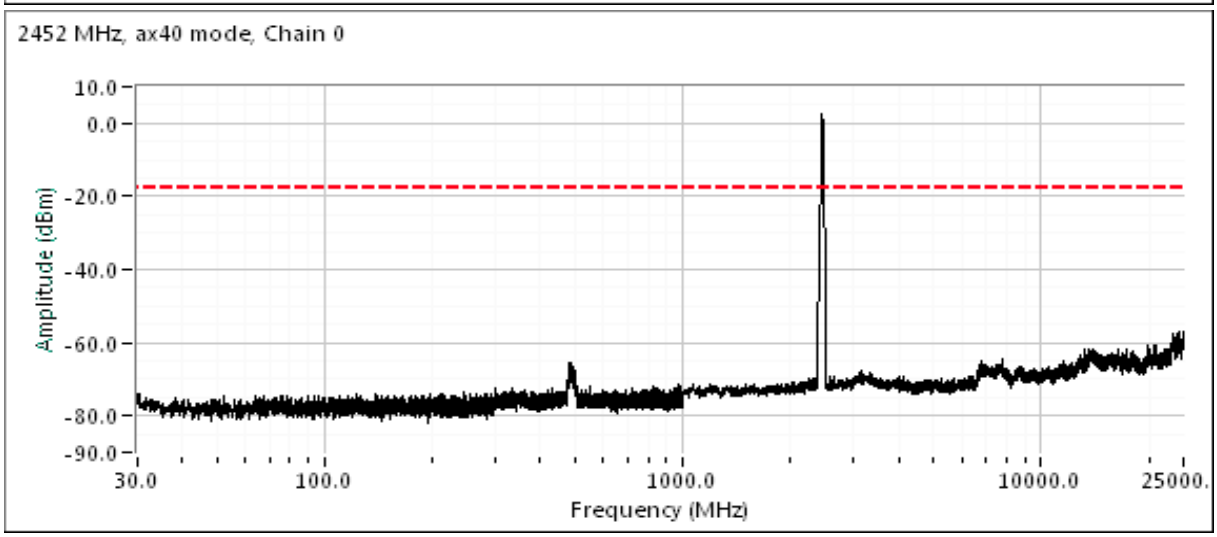
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



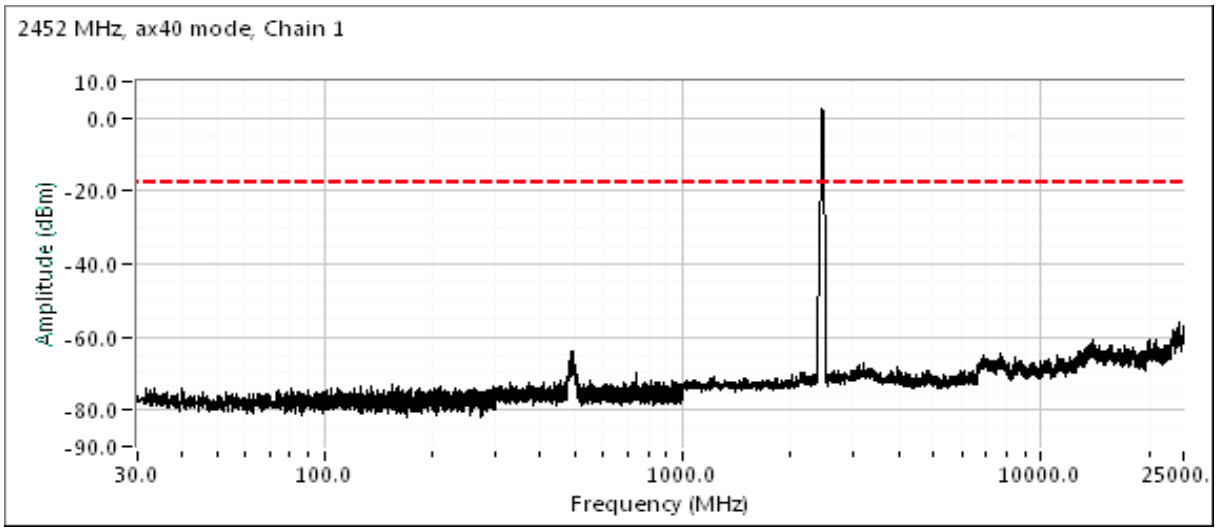


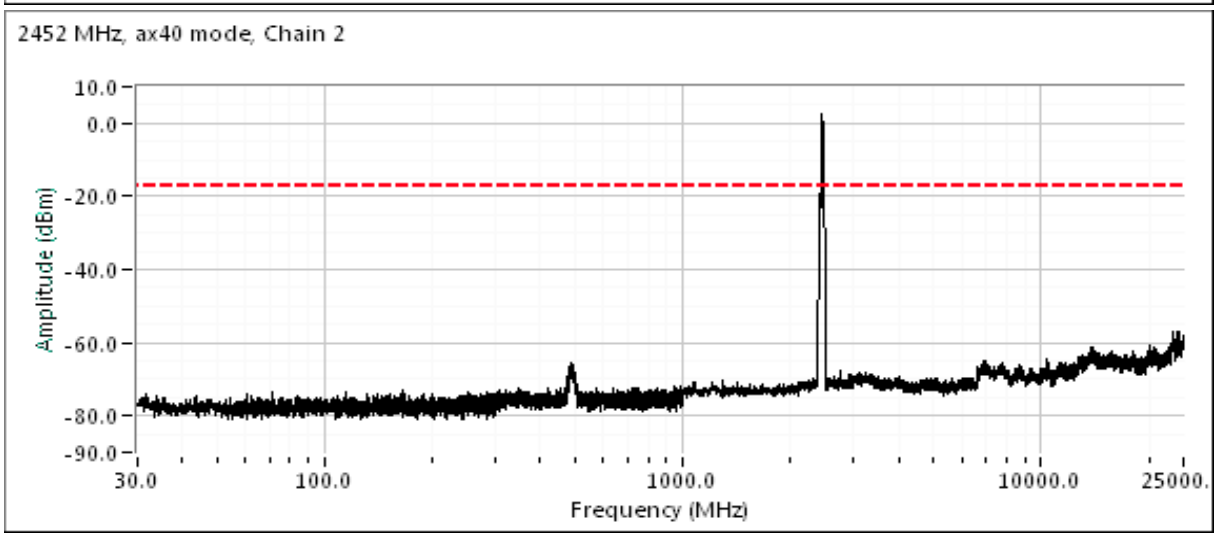
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A



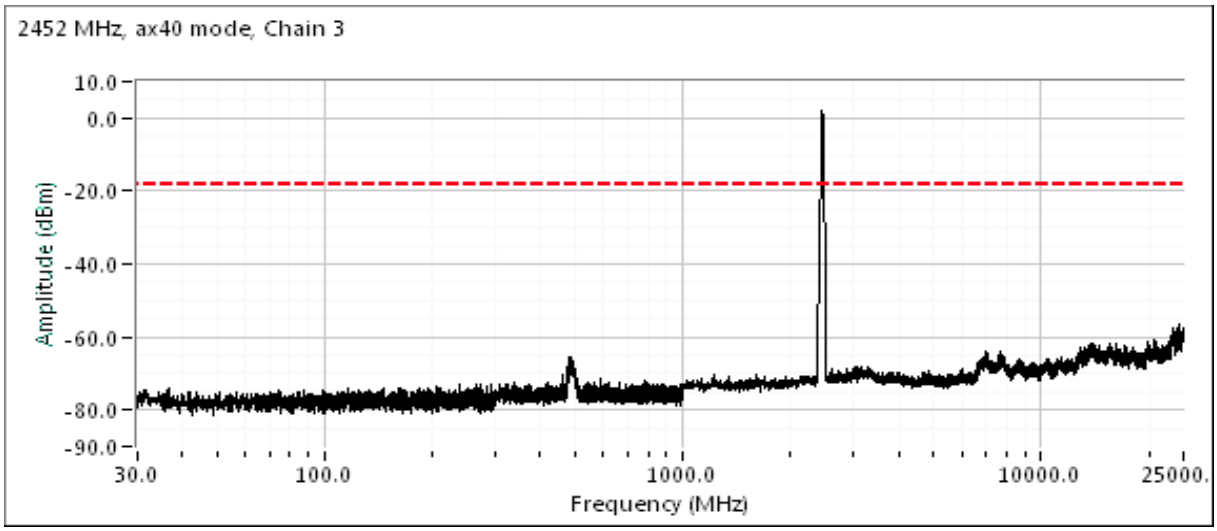


Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A





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

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform engineering evaluation 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: 19 °C
Rel. Humidity: 43 %

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

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 21 - 2448MHz	20 8	Various	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	Refer to data below
	b & BLE	11 - 2462MHz 39 - 2480MHz	20 8	Various	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	Refer to data below

Modifications Made During Testing

No modifications were made to the EUT during testing other than to adjust output power

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9V019
Driver: P2 WNC 0.4.4
Antenna: 4 external 2dBi for Wi-Fi and one integral for BLE or 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

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495	2 kHz

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor

EMC Test Data

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: Radiated Bandedge Measurements

Date of Test: Config. Used: ???
Test Engineer: Config Change: ???
Test Location: EUT Voltage:

Channel: 1 & 21 Mode: b BLE
Tx Chain: 4 Data Rate: 1 Mb/s

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Wi-Fi set to 9, BLE set to 8								
2485.030	53.1	H	54.0	-0.9	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 10.5, BLE set to 7								
2485.010	53.1	H	54.0	-0.9	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 11, BLE set to 6								
2485.030	53.3	H	54.0	-0.7	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 12.5, BLE set to 5								
2485.030	53.2	H	54.0	-0.8	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 13.5, BLE set to 4								
2485.030	53.2	H	54.0	-0.8	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 15, BLE set to 3								
2485.030	53.1	H	54.0	-0.9	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 17.5, BLE set to 2								
2485.030	53.3	H	54.0	-0.7	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 13.5, BLE set to 0								
2485.030	53.3	H	54.0	-0.7	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -4								
2485.030	52.8	H	54.0	-1.2	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -12								
2485.030	42.3	H	54.0	-11.7	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -20								
2484.700	38.4	H	54.0	-15.6	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -40								
2484.700	38.5	H	54.0	-15.5	Avg	296	2.5	Note 4; RB 1 MHz; VB: 2 kHz

EMC Test Data

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: 11 & 39 Mode: b BLE
Tx Chain: 4 Data Rate: 1 Mb/s

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Wi-Fi set to 8.5, BLE set to 8								
2499.240	53.5	H	54.0	-0.5	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 9.5, BLE set to 7								
2498.530	53.1	H	54.0	-0.9	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 10, BLE set to 6								
2498.530	53.4	H	54.0	-0.6	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 11.5, BLE set to 5								
2499.740	53.2	H	54.0	-0.8	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 12.5, BLE set to 4								
2498.530	53.2	H	54.0	-0.8	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 14, BLE set to 3								
2499.740	53.0	H	54.0	-1.0	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 16.5, BLE set to 2								
2499.740	53.1	H	54.0	-0.9	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 14, BLE set to 0								
2499.740	53.2	H	54.0	-0.8	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -4								
2498.530	52.0	H	54.0	-2.0	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -12								
2499.740	46.3	H	54.0	-7.7	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -20								
2498.200	45.8	H	54.0	-8.2	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -40								
2499.740	45.7	H	54.0	-8.3	Avg	293	2.5	Note 4; RB 1 MHz; VB: 2 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

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

Objective: The objective of this test session is to perform engineering evaluation 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 °C
Rel. Humidity: 44 %

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

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 21 - 2448MHz	20 8	Various	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	Refer to data below
	b & BLE	11 - 2462MHz 34 - 2474MHz	20 8	Various	Restricted Band Edge (2483.5 MHz)	FCC Part 15.209 / 15.247(c)	Refer to data below

Modifications Made During Testing

No modifications were made to the EUT during testing other than to adjust output power

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9W00R
Driver: P2 WNC 0.4.4
Antenna: 4 Integral for Wi-Fi and one integral for BLE or 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

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)	
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495	2 kHz

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor

EMC Test Data

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: Radiated Bandedge Measurements

Date of Test: 12/3/2018 Config. Used: 1
Test Engineer: Deniz Demirci Config Change: None
Test Location: FT Ch #7 EUT Voltage: POE
Channel: 1 & 21 Mode: b BLE
Tx Chain: 4 Data Rate: 1 Mb/s

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Wi-Fi set to 9, BLE set to 8								
2485.700	53.0	H	54.0	-1.0	Avg	24	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to 2								
2484.780	53.3	H	54.0	-0.7	Avg	24	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 19, BLE set to 0								
2485.700	53.0	H	54.0	-1.0	Avg	24	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 11.5, BLE set to 7								
2485.700	53.2	H	54.0	-0.8	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 13, BLE set to 6								
2485.700	52.9	H	54.0	-1.1	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 15, BLE set to 5								
2485.700	53.2	H	54.0	-0.8	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 16, BLE set to 4								
2485.700	53.3	H	54.0	-0.7	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 17, BLE set to 3								
2485.700	53.3	H	54.0	-0.7	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -4								
2485.700	48.5	H	54.0	-5.5	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -12								
2485.700	39.2	H	54.0	-14.8	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -20								
2483.520	37.0	H	54.0	-17.0	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -40								
2483.700	37.1	H	54.0	-16.9	Avg	25	2.5	Note 4; RB 1 MHz; VB: 2 kHz

EMC Test Data

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: 11 & 34 Mode: b BLE
Tx Chain: 4 Data Rate: 1 Mb/s

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
Wi-Fi set to 12, BLE set to 8								
2484.780	53.1	H	54.0	-0.9	Avg	298	2.2	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 13, BLE set to 7								
2486.310	53.3	H	54.0	-0.7	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 14, BLE set to 6								
2486.310	53.0	H	54.0	-1.0	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 16, BLE set to 5								
2486.310	53.3	H	54.0	-0.7	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 17, BLE set to 4								
2486.310	53.2	H	54.0	-0.8	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 18, BLE set to 3								
2486.310	53.1	H	54.0	-0.9	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to 2								
2486.310	52.8	H	54.0	-1.2	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 18.5, BLE set to 0								
2486.310	53.0	H	54.0	-1.0	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -4								
2486.310	46.4	H	54.0	-7.6	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -12								
2483.510	41.7	H	54.0	-12.3	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -20								
2483.550	41.6	H	54.0	-12.4	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 kHz
Wi-Fi set to 20, BLE set to -40								
2483.500	41.4	H	54.0	-12.6	Avg	304	2.4	Note 4; RB 1 MHz; VB: 2 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

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 39-45 %

EMC Test Data

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 - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 37 - 2402MHz	20 8	12 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.7 dBµV/m @ 2390.0 MHz (-0.3 dB)
	b & BLE	1 - 2412MHz 21 - 2448MHz	20 8	8.5 8	Restricted Band Edge (2483.5 MHz)		54.0 dBµV/m @ 2485.8 MHz (0.0 dB)
	b & BLE	1 - 2412MHz 39 - 2480MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		48.2 dBµV/m @ 2483.5 MHz (-5.8 dB)
	b & BLE	11 - 2462MHz 34 - 2474MHz	20 8	10.5 8	Restricted Band Edge (2483.5 MHz)		54.0 dBµV/m @ 2484.8 MHz (0.0 dB)
	b & BLE	11 - 2462MHz 38 - 2426MHz	20 8	12.5 8	Restricted Band Edge (2390 MHz)		53.8 dBµV/m @ 2389.6 MHz (-0.2 dB)
	b & BLE	11 - 2462MHz 39 - 2480 MHz	20 8	11.5 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2497.1 MHz (-0.3 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
2	g & BLE	1 - 2412MHz 37 - 2402MHz	16.5 8	12 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.4 dBµV/m @ 2389.1 MHz (-0.6 dB)
	g & BLE	1 - 2412MHz 21 - 2448MHz	16.5 8	11.5 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2491.2 MHz (-0.3 dB)
	g & BLE	1 - 2412MHz 39 - 2480MHz	16.5 8	16.5 8	Restricted Band Edge (2483.5 MHz)		45.5 dBµV/m @ 2483.6 MHz (-8.5 dB)
	g & BLE	11 - 2462MHz 34 - 2474MHz	16 8	11 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2493.5 MHz (-0.3 dB)
	g & BLE	11 - 2462MHz 38 - 2426MHz	16 8	12 8	Restricted Band Edge (2390 MHz)		53.8 dBµV/m @ 2386.9 MHz (-0.2 dB)
	g & BLE	11 - 2462MHz 39 - 2480 MHz	16 8	11.5 8	Restricted Band Edge (2483.5 MHz)		53.5 dBµV/m @ 2494.1 MHz (-0.5 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
3	ax20 & BLE	1 - 2412MHz 37 - 2402MHz	16.5 8	11 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.6 dBµV/m @ 2388.4 MHz (-0.4 dB)
	ax20 & BLE	1 - 2412MHz 21 - 2448MHz	16.5 8	14 8	Restricted Band Edge (2483.5 MHz)		53.4 dBµV/m @ 2486.8 MHz (-0.6 dB)
	ax20 & BLE	1 - 2412MHz 39 - 2480MHz	16.5 8	16.5 8	Restricted Band Edge (2483.5 MHz)		45.3 dBµV/m @ 2483.6 MHz (-8.7 dB)
	ax20 & BLE	11 - 2462MHz 34 - 2474MHz	16.5 8	12 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2483.6 MHz (-0.4 dB)
	ax20 & BLE	11 - 2462MHz 38 - 2426MHz	16.5 8	12 8	Restricted Band Edge (2390 MHz)		53.7 dBµV/m @ 2386.4 MHz (-0.3 dB)
	ax20 & BLE	11 - 2462MHz 39 - 2480 MHz	16.5 8	12 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2494.1 MHz (-0.3 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

4	ax40 & BLE	3 - 2422MHz 37 - 2402MHz	16 8	13 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.5 dBµV/m @ 2378.2 MHz (-0.5 dB)
	ax40 & BLE	3 - 2422MHz 24 - 2454MHz	16 8	14 8	Restricted Band Edge (2483.5 MHz)		53.8 dBµV/m @ 2483.5 MHz (-0.2 dB)
	ax40 & BLE	3 - 2422MHz 39 - 2480MHz	16 8	16 8	Restricted Band Edge (2483.5 MHz)		45.2 dBµV/m @ 2483.5 MHz (-8.8 dB)
	ax40 & BLE	9 - 2452MHz 8 - 2420MHz	15.5 8	14 8	Restricted Band Edge (2390 MHz)		53.6 dBµV/m @ 2384.5 MHz (-0.4 dB)
	ax40 & BLE	9 - 2452MHz 31 - 2468MHz	15.5 8	15 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2500.0 MHz (-0.3 dB)
	ax40 & BLE	9 - 2452MHz 39 - 2480MHz	15.5 8	15.5 8	Restricted Band Edge (2483.5 MHz)		51.9 dBµV/m @ 2486.4 MHz (-2.1 dB)
Measurements on worst-case based on Simultaneous operation in BLE mode							
5	b & ZigBee	1 - 2412MHz 11 - 2405MHz	20 8	20 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.2 dBµV/m @ 2389.6 MHz (-1.8 dB)
	b & ZigBee	11 - 2462MHz 26 - 2480 MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		69.2 dBµV/m @ 2496.1 MHz (-4.8 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	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

Sample Notes

Sample S/N: WiFi+BLE: CNG6K9W00R WiFi+Zigbee: CNG6K9V00C
Driver: P2 WNC 0.4.4
Antenna: Integral 4x4 and BLE/ZigBee

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

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
11g	6 Mb/s	0.92	Yes	1.432	0.3	0.7	698
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 8:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.
Note 9:	-20 dB correction factor was used for ZigBee as 10% operational duty cycle

EMC Test Data

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: Radiated Bandedge Measurements

Date of Test: 11/14/118
Test Engineer: John Caizzi
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	53.7	H	54.0	-0.3	Avg	296	2.33	VB 2 kHz, note 4
2389.920	61.9	H	74.0	-12.1	PK	296	2.33	POS; RB 1 MHz; VB: 3 MHz
2389.560	48.9	V	54.0	-5.1	Avg	158	2.08	VB 2 kHz, note 4
2389.880	57.9	V	74.0	-16.1	PK	158	2.08	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2485.800	54.0	H	54.0	0.0	Avg	302	2.40	VB 2 kHz, note 4
2484.570	61.2	H	74.0	-12.8	PK	302	2.40	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.510	48.2	H	54.0	-5.8	Avg	297	2.42	VB 2 kHz, note 4
2483.580	58.4	H	74.0	-15.6	PK	297	2.42	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.780	54.0	H	54.0	0.0	Avg	297	2.43	VB 2 kHz, note 4
2484.670	61.4	H	74.0	-12.6	PK	297	2.43	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.560	53.8	H	54.0	-0.2	Avg	295	2.30	VB 2 kHz, note 4
2389.610	61.8	H	74.0	-12.2	PK	295	2.30	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2497.070	53.7	H	54.0	-0.3	Avg	294	2.18	VB 2 kHz, note 4
2499.450	61.5	H	74.0	-12.5	PK	294	2.18	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/14/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #

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

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.120	53.4	H	54.0	-0.6	Avg	293	2.10	VB 1 kHz, note 4
2389.200	64.4	H	74.0	-9.6	PK	293	2.10	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2491.200	53.7	H	54.0	-0.3	Avg	290	2.43	VB 1 kHz, note 4
2491.710	65.1	H	74.0	-8.9	PK	290	2.43	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.570	45.5	H	54.0	-8.5	Avg	291	2.43	VB 1 kHz, note 4
2483.500	57.4	H	74.0	-16.6	PK	291	2.43	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2493.540	53.7	H	54.0	-0.3	Avg	297	2.40	VB 1 kHz, note 4
2492.990	64.7	H	74.0	-9.3	PK	297	2.40	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.930	53.8	H	54.0	-0.2	Avg	293	2.10	VB 1 kHz, note 4
2387.150	64.9	H	74.0	-9.1	PK	293	2.10	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2494.090	53.5	H	54.0	-0.5	Avg	294	2.38	VB 1 kHz, note 4
2495.290	64.8	H	74.0	-9.2	PK	294	2.38	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/14/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #

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

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.420	53.6	H	54.0	-0.4	Avg	295	2.33	VB 200 Hz, note 4
2388.240	68.2	H	74.0	-5.8	PK	295	2.33	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2486.820	53.4	H	54.0	-0.6	Avg	293	2.38	VB 200 Hz, note 4
2486.630	68.3	H	74.0	-5.7	PK	293	2.38	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.630	45.3	H	54.0	-8.7	Avg	295	2.41	VB 200 Hz, note 4
2483.550	58.9	H	74.0	-15.1	PK	295	2.41	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.610	53.6	H	54.0	-0.4	Avg	293	2.42	VB 200 Hz, note 4
2484.080	69.2	H	74.0	-4.8	PK	293	2.42	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.390	53.7	H	54.0	-0.3	Avg	293	2.10	VB 200 Hz, note 4
2385.350	67.8	H	74.0	-6.2	PK	293	2.10	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2494.090	53.7	H	54.0	-0.3	Avg	294	2.38	VB 200 Hz, note 4
2493.530	68.2	H	74.0	-5.8	PK	294	2.38	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

Date of Test: 11/14/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #

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

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2382MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2378.210	53.5	H	54.0	-0.5	Avg	292	2.36	VB 200 Hz, note 4
2378.710	68.2	H	74.0	-5.8	PK	292	2.36	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 24
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.8	H	54.0	-0.2	Avg	295	2.45	VB 200 Hz, note 4
2483.730	69.2	H	74.0	-4.8	PK	295	2.45	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2538MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.540	45.2	H	54.0	-8.8	Avg	290	2.45	VB 200 Hz, note 4
2484.020	58.1	H	74.0	-15.9	PK	290	2.45	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: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 8
Intermod: 2388MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2384.470	53.6	H	54.0	-0.4	Avg	291	2.32	VB 200 Hz, note 4
2382.830	67.4	H	74.0	-6.6	PK	291	2.32	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 31
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2499.970	53.7	H	54.0	-0.3	Avg	300	2.21	VB 200 Hz, note 4
2499.700	68.1	H	74.0	-5.9	PK	300	2.21	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2508MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2486.420	51.9	H	54.0	-2.1	Avg	18	1.00	VB 200 Hz, note 4
2486.440	72.2	H	74.0	-1.8	PK	18	1.00	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

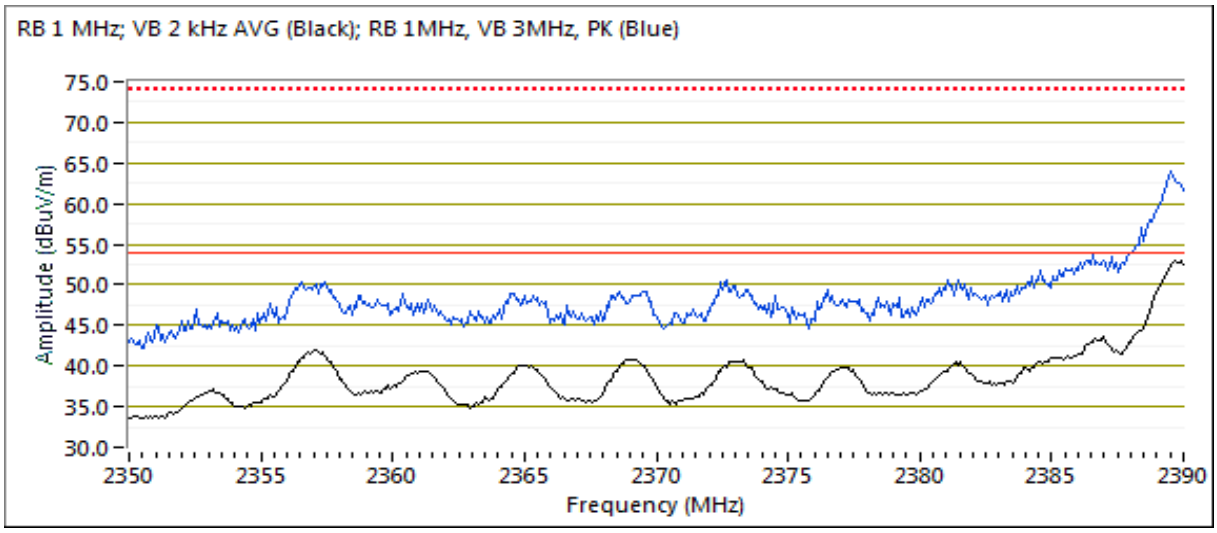
Date of Test: 12/31/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 11
Intermod: 2398MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.560	52.2	H	54.0	-1.8	VAVG	147	1.3	Note 4; RB 1 MHz; VB: 2 kHz
2389.670	64.4	H	74.0	-9.6	PK	147	1.3	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

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: 12/31/2018
Test Engineer: Roy Zheng
Test Location: Fremont Chamber #5

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

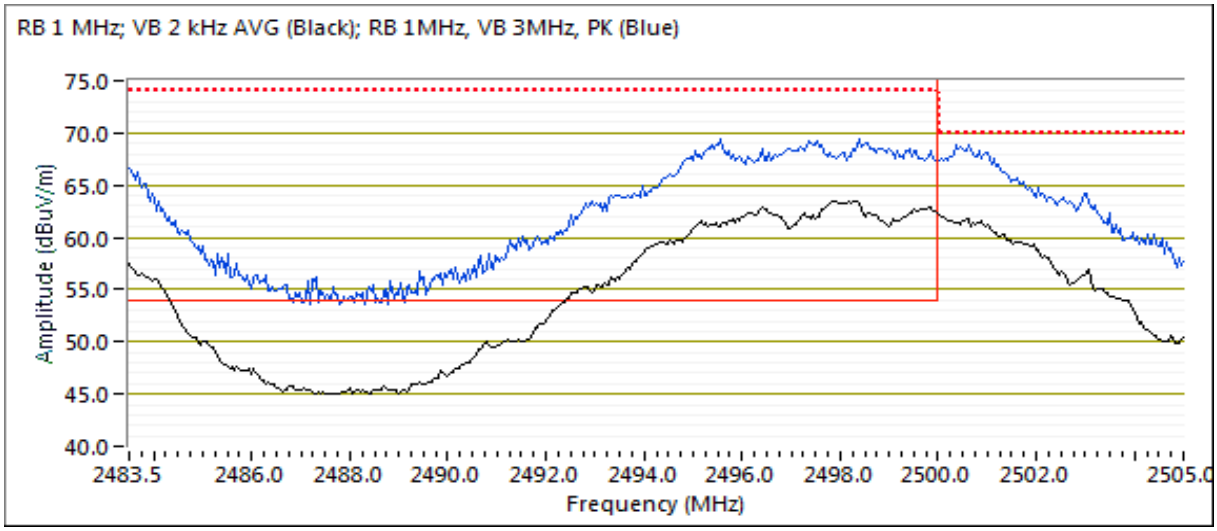
Channel: 11 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 26
Intermod: 2498MHz

Fundamental Field Strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2460.250	109.4	H	-	-	PK	300	1.8	RB 100 kHz; VB: 100 kHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2496.600	34.9	H	54.0	-19.1	VAVG	144	2.1	Note 9; RB 1 MHz; VB: 2 kHz
2496.060	69.2	H	74.0	-4.8	PK	144	2.1	POS; RB 1 MHz; VB: 3 MHz
2500.460	58.8	V	79.4	-20.6	PK	55	2.3	RB 100 kHz; VB: 100 kHz



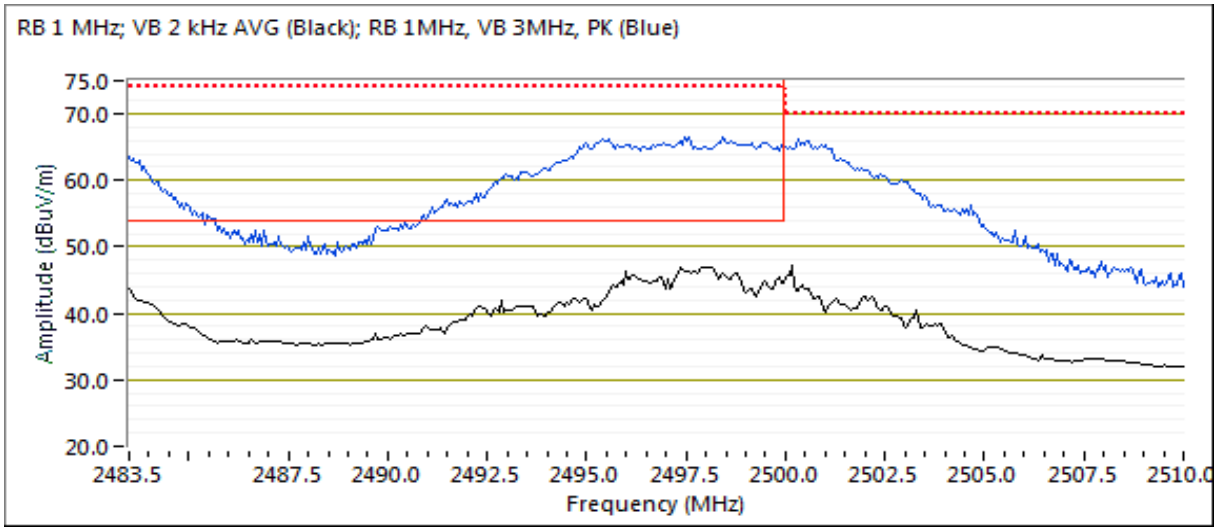
EMC Test Data

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: 11 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 26
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2497.980	50.9	H	54.0	-3.1	Vavg	228	2.3	POS Vavg:100; RB 1 MHz; VB: 2 kHz
2496.450	66.1	H	74.0	-7.9	PK	228	2.3	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 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 39-45 %

EMC Test Data

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 - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 37 - 2402MHz	20 8	11.5 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.7 dBµV/m @ 2389.8 MHz (-0.3 dB)
	b & BLE	1 - 2412MHz 21 - 2448MHz	20 8	10.5 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2485.8 MHz (-0.4 dB)
	b & BLE	1 - 2412MHz 39 - 2480MHz	20 8	10.5 8	Restricted Band Edge (2483.5 MHz)		50.6 dBµV/m @ 2483.5 MHz (-3.4 dB)
	b & BLE	11 - 2462MHz 38 - 2426MHz	20 8	8.5 8	Restricted Band Edge (2390 MHz)		53.7 dBµV/m @ 2487.7 MHz (-0.3 dB)
	b & BLE	11 - 2462MHz 34 - 2474MHz	20 8	9.0 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2388.8 MHz (-0.4 dB)
	b & BLE	11 - 2462MHz 39 - 2480 MHz	20 8	8.5 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2499.7 MHz (-0.3 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
2	g & BLE	1 - 2412MHz 37 - 2402MHz	15 8	13 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.3 dBµV/m @ 2387.6 MHz (-0.7 dB)
	g & BLE	1 - 2412MHz 21 - 2448MHz	15 8	8.5 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2491.0 MHz (-0.4 dB)
	g & BLE	1 - 2412MHz 39 - 2480MHz	15 8	15 8	Restricted Band Edge (2483.5 MHz)		72.0 dBµV/m @ 2484.2 MHz (-2.0 dB)
	g & BLE	11 - 2462MHz 38 - 2426MHz	15.5 8	9.5 8	Restricted Band Edge (2390 MHz)		53.8 dBµV/m @ 2483.7 MHz (-0.2 dB)
	g & BLE	11 - 2462MHz 34 - 2474MHz	15.5 8	10.5 8	Restricted Band Edge (2483.5 MHz)		53.4 dBµV/m @ 2386.1 MHz (-0.6 dB)
	g & BLE	11 - 2462MHz 39 - 2480 MHz	15.5 8	6.5 8	Restricted Band Edge (2483.5 MHz)		53.3 dBµV/m @ 2492.5 MHz (-0.7 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
3	ax20 & BLE	1 - 2412MHz 37 - 2402MHz	16 8	13 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.3 dBµV/m @ 2386.8 MHz (-0.7 dB)
	ax20 & BLE	1 - 2412MHz 21 - 2448MHz	16 8	15 8	Restricted Band Edge (2483.5 MHz)		53.2 dBµV/m @ 2483.5 MHz (-0.8 dB)
	ax20 & BLE	1 - 2412MHz 39 - 2480MHz	16 8	16 8	Restricted Band Edge (2483.5 MHz)		46.0 dBµV/m @ 2483.5 MHz (-8.0 dB)
	ax20 & BLE	11 - 2462MHz 38 - 2426MHz	15.5 8	15.5 8	Restricted Band Edge (2390 MHz)		49.5 dBµV/m @ 2386.1 MHz (-4.5 dB)
	ax20 & BLE	11 - 2462MHz 34 - 2474MHz	15.5 8	8.5 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2493.5 MHz (-0.4 dB)
	ax20 & BLE	11 - 2462MHz 39 - 2480 MHz	15.5 8	15.5 8	Restricted Band Edge (2483.5 MHz)		53.2 dBµV/m @ 2488.9 MHz (-0.8 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

4	ax40 & BLE	3 - 2422MHz 37 - 2402MHz	14 8	14 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.0 dBµV/m @ 2377.3 MHz (-2.0 dB)
	ax40 & BLE	3 - 2422MHz 24 - 2454MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		53.2 dBµV/m @ 2483.5 MHz (-0.8 dB)
	ax40 & BLE	3 - 2422MHz 39 - 2480MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		44.0 dBµV/m @ 2483.6 MHz (-10.0 dB)
	ax40 & BLE	9 - 2452MHz 8 - 2420MHz	14 8	14 8	Restricted Band Edge (2390 MHz)		51.6 dBµV/m @ 2383.4 MHz (-2.4 dB)
	ax40 & BLE	9 - 2452MHz 31 - 2468MHz	14 8	12 8	Restricted Band Edge (2483.5 MHz)		53.1 dBµV/m @ 2498.7 MHz (-0.9 dB)
	ax40 & BLE	9 - 2452MHz 39 - 2480MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		51.8 dBµV/m @ 2500.0 MHz (-2.2 dB)
Measurements on worst-case based on Simultaneous operation in BLE mode							
5	b & ZigBee	1 - 2412MHz 11 - 2405MHz	20 8	20 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.5 dBµV/m @ 2389.6 MHz (-1.5 dB)
	b & ZigBee	11 - 2462MHz 26 - 2480 MHz	20 8	20 6	Restricted Band Edge (2483.5 MHz)		73.4 dBµV/m @ 2496.7 MHz (-0.6 dB)

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	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

Sample Notes

Sample S/N: CNG6K9V019
Driver: P2 WNC 0.4.4
Antenna: AP-ANT-20 Wi-Fi, Integral BLE/ZigBee

Procedure Comments:

Measurements performed in accordance with FCC KDB 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

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
11g	6 Mb/s	0.92	Yes	1.432	0.3	0.7	698
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 8:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.
Note 9:	-20 dB correction factor was used for ZigBee as 10% operational duty cycle

EMC Test Data

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: Radiated Bandedge Measurements

Date of Test: 11/14/2018
Test Engineer: Deniz Demirci
Test Location: Fremont Chamber #

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

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.820	53.7	V	54.0	-0.3	AVG	6	1.0	VB 2 kHz, note 4
2389.530	58.7	V	74.0	-15.3	PK	6	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2485.800	53.6	V	54.0	-0.4	AVG	6	1.0	VB 2 kHz, note 4
2484.580	59.6	V	74.0	-14.4	PK	6	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.520	50.6	V	54.0	-3.4	AVG	6	1.0	VB 2 kHz, note 4
2483.580	59.6	V	74.0	-14.4	PK	6	1.0	POS; RB 1 MHz; VB: 3 MHz
2548.680	63.3	V	100.0	-36.7	PK	6	1.0	POS; RB 100 kHz; VB: 300 kHz
2548.620	68.1	V	70.0	-1.9	PK	6	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2487.650	53.7	V	54.0	-0.3	AVG	30	1.0	VB 2 kHz, note 4
2486.460	59.6	V	74.0	-14.4	PK	30	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2388.800	53.6	V	54.0	-0.4	AVG	34	1.0	VB 2 kHz, note 4
2389.280	58.5	V	74.0	-15.5	PK	34	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2499.650	53.7	V	54.0	-0.3	AVG	34	1.0	VB 2 kHz, note 4
2498.320	59.2	V	74.0	-14.8	PK	34	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/14/2018
Test Engineer: Deniz Demirci
Test Location: Fremont Chamber #

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

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2387.560	53.3	H	54.0	-0.7	AVG	301	2.1	VB 1 kHz, note 4
2386.380	63.9	H	74.0	-10.1	PK	301	2.1	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2491.020	53.6	H	54.0	-0.4	AVG	303	2.4	VB 1 kHz, note 4
2491.140	62.9	H	74.0	-11.1	PK	303	2.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.220	72.0	H	74.0	-2.0	PK	36	1.6	POS; RB 1 MHz; VB: 3 MHz
2483.500	48.2	H	54.0	-5.8	AVG	36	1.6	VB 1 kHz, note 4

EMC Test Data

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: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.700	53.8	H	54.0	-0.2	AVG	300	2.4	VB 1 kHz, note 4
2483.600	66.2	H	74.0	-7.8	PK	300	2.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.090	53.4	H	54.0	-0.6	AVG	312	2.4	VB 1 kHz, note 4
2385.660	63.3	H	74.0	-10.7	PK	312	2.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2492.530	53.3	H	54.0	-0.7	AVG	300	2.4	VB 1 kHz, note 4
2493.060	63.7	H	74.0	-10.3	PK	300	2.4	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/14/2018
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.830	53.3	H	54.0	-0.7	Avg	30	1.0	VB: 200 Hz, note 4
2389.800	68.3	H	74.0	-5.7	PK	30	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.2	H	54.0	-0.8	Avg	301	2.4	VB: 200 Hz, note 4
2484.530	67.6	H	74.0	-6.4	PK	301	2.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	46.0	H	54.0	-8.0	Avg	298	2.4	VB: 200 Hz, note 4
2485.420	60.4	H	74.0	-13.6	PK	298	2.4	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2493.450	53.6	H	54.0	-0.4	Avg	296	1.0	VB: 200 Hz, note 4
2494.680	67.4	H	74.0	-6.6	PK	296	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2386.050	49.5	H	54.0	-4.5	Avg	30	1.1	VB: 200 Hz, note 4
2388.800	65.5	H	74.0	-8.5	PK	30	1.1	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2488.920	53.2	H	54.0	-0.8	Avg	305	2.2	VB: 200 Hz, note 4
2499.670	69.1	H	74.0	-4.9	PK	305	2.2	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

Date of Test: 11/14/2018
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #

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

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2382MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2377.330	52.0	H	54.0	-2.0	Avg	43	1.6	VB: 200 Hz, note 4
2377.330	66.0	H	74.0	-8.0	PK	43	1.6	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 24
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.2	H	54.0	-0.8	Avg	293	2.4	VB: 200 Hz, note 4
2484.280	69.0	H	74.0	-5.0	PK	293	2.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2538MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.590	44.0	H	54.0	-10.0	Avg	32	1.0	VB: 200 Hz, note 4
2483.540	58.4	H	74.0	-15.6	PK	32	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 8
Intermod: 2388MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2383.350	51.6	H	54.0	-2.4	Avg	42	1.0	VB: 200 Hz, note 4
2383.590	64.8	H	74.0	-9.2	PK	42	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 31
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2498.650	53.1	H	54.0	-0.9	Avg	291	1.0	VB: 200 Hz, note 4
2498.230	67.9	H	74.0	-6.1	PK	291	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2508MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2500.000	51.8	H	54.0	-2.2	Avg	300	2.2	VB: 200 Hz, note 4
2486.280	69.1	H	74.0	-4.9	PK	300	2.2	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

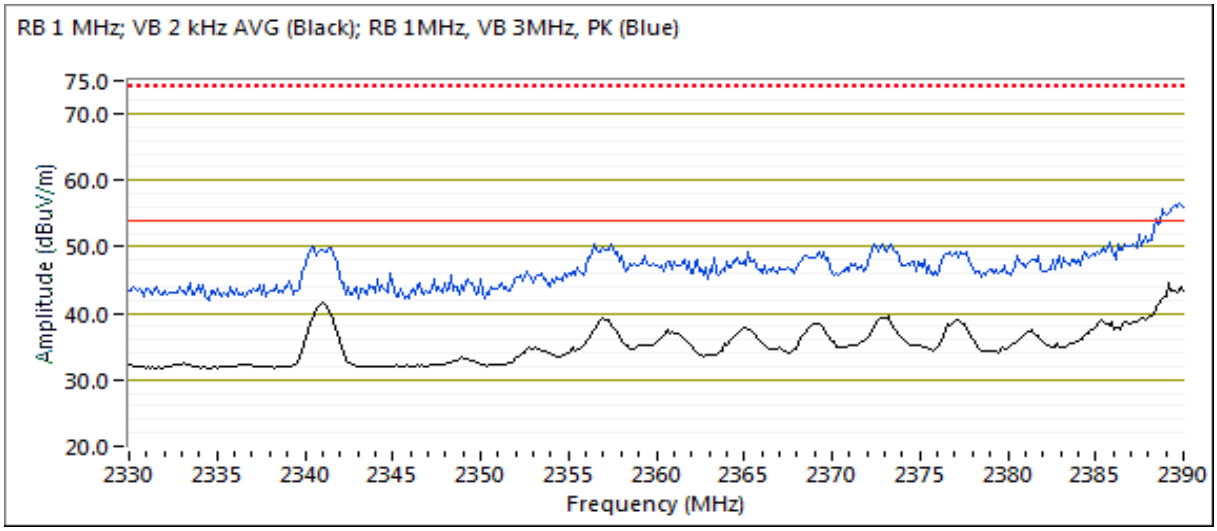
Date of Test: 12/28/2018
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 11
Intermod: 2398MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.560	52.5	H	54.0	-1.5	Vavg	248	1.0	POS Vavg:100; RB 1 MHz; VB: 2 kHz
2389.560	57.4	H	74.0	-16.6	PK	248	1.0	POS; RB 1 MHz; VB: 3 MHz
2389.560	51.1	V	54.0	-2.9	Vavg	199	1.1	POS Vavg:100; RB 1 MHz; VB: 2 kHz
2389.550	55.6	V	74.0	-18.4	PK	199	1.1	POS; RB 1 MHz; VB: 3 MHz



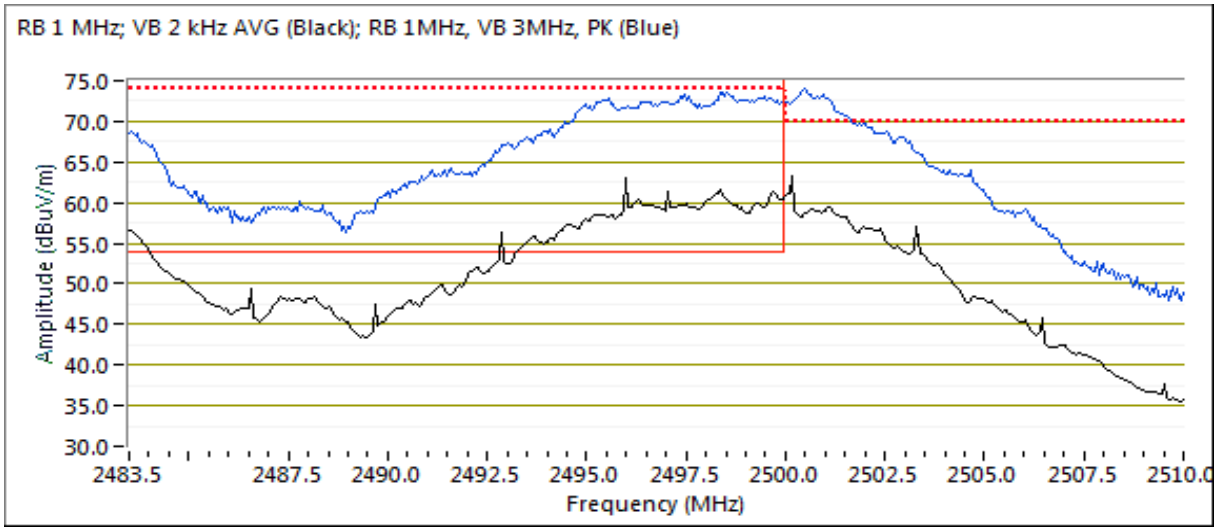
EMC Test Data

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: 11 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 26
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2496.660	51.2	H	54.0	-2.8	Avg	135	1.7	RB 1 MHz; VB: 2 kHz; Notes 4, 9
2497.490	73.4	H	74.0	-0.6	PK	135	1.7	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

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

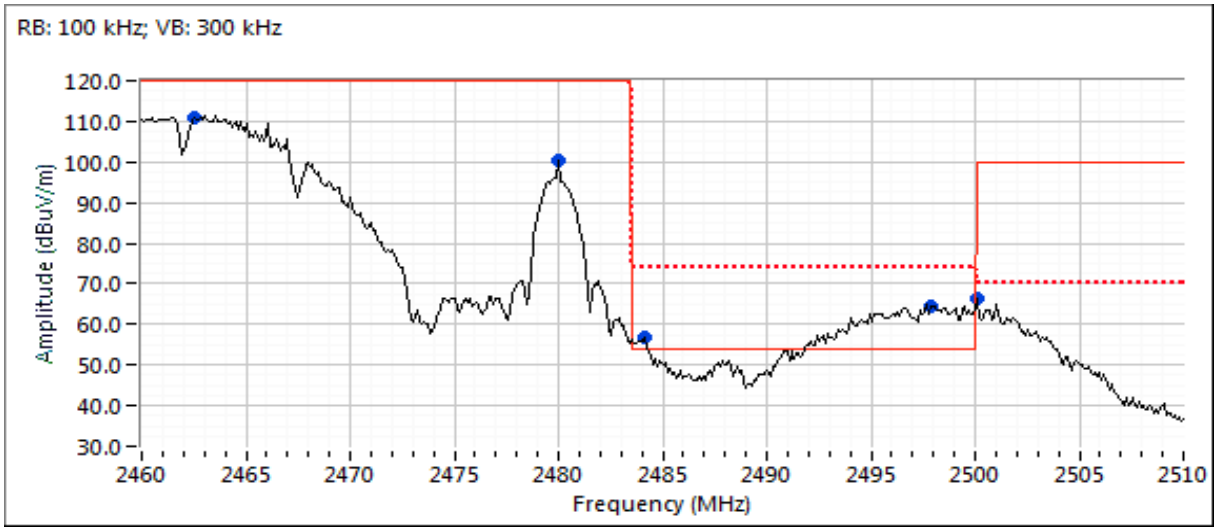
Date of Test: 12/31/2018
Test Engineer: Roy Zheng, Deniz Demirci
Test Location: Fremont Chamber #5

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

Channel: 11 Mode: b Mode: ZigBee
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 26
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2462.510	110.9	H	-	-	Peak	152	2.0	802.11b carrier RB: 100 kHz
2480.040	100.2	H	-	-	Peak	141	1.2	ZigBee carrier RB: 100 kHz
2500.080	66.6	H	80.9	-14.3	Peak	148	1.2	RB: 100 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

RSS-247 and FCC 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 39-45 %

EMC Test Data

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 - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 37 - 2402MHz	20 8	20 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	52.8 dBµV/m @ 2389.6 MHz (-1.2 dB)
		1 - 2412MHz 21 - 2448MHz		13.5 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2485.8 MHz (-0.3 dB)
		1 - 2412MHz 39 - 2480MHz		20 8	Restricted Band Edge (2483.5 MHz)		46.4 dBµV/m @ 2483.6 MHz (-7.6 dB)
		11 - 2462MHz 34 - 2474MHz		20 8	Restricted Band Edge (2483.5 MHz)		53.9 dBµV/m @ 2486.8 MHz (-0.1 dB)
		11 - 2462MHz 38 - 2426MHz		20 8	Restricted Band Edge (2390 MHz)		49.8 dBµV/m @ 2389.6 MHz (-4.2 dB)
		11 - 2462MHz 39 - 2480 MHz		20 8	Restricted Band Edge (2483.5 MHz)		53.7 dBµV/m @ 2498.8 MHz (-0.3 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
2	g & BLE	1 - 2412MHz 37 - 2402MHz	15 8	15 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	47.9 dBµV/m @ 2390.0 MHz (-6.1 dB)
		1 - 2412MHz 21 - 2448MHz		15 8	Restricted Band Edge (2483.5 MHz)		49.4 dBµV/m @ 2484.8 MHz (-4.6 dB)
		1 - 2412MHz 39 - 2480MHz		15 8	Restricted Band Edge (2483.5 MHz)		45.1 dBµV/m @ 2483.5 MHz (-8.9 dB)
		11 - 2462MHz 34 - 2474MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		46.9 dBµV/m @ 2483.6 MHz (-7.1 dB)
		11 - 2462MHz 38 - 2426MHz		14 8	Restricted Band Edge (2390 MHz)		49.2 dBµV/m @ 2384.0 MHz (-4.8 dB)
		11 - 2462MHz 39 - 2480 MHz		14 8	Restricted Band Edge (2483.5 MHz)		51.9 dBµV/m @ 2491.1 MHz (-2.1 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
3	ax20 & BLE	1 - 2412MHz 37 - 2402MHz	16 8	16 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	48.3 dBµV/m @ 2389.8 MHz (-5.7 dB)
		1 - 2412MHz 21 - 2448MHz		16 8	Restricted Band Edge (2483.5 MHz)		49.1 dBµV/m @ 2483.7 MHz (-4.9 dB)
		1 - 2412MHz 39 - 2480MHz		16 8	Restricted Band Edge (2483.5 MHz)		44.6 dBµV/m @ 2483.5 MHz (-9.4 dB)
		11 - 2462MHz 34 - 2474MHz	15 8	15 8	Restricted Band Edge (2483.5 MHz)		49.9 dBµV/m @ 2491.2 MHz (-4.1 dB)
		11 - 2462MHz 38 - 2426MHz		15 8	Restricted Band Edge (2390 MHz)		45.1 dBµV/m @ 2381.6 MHz (-8.9 dB)
		11 - 2462MHz 39 - 2480 MHz		15 8	Restricted Band Edge (2483.5 MHz)		46.5 dBµV/m @ 2500.0 MHz (-7.5 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

4	ax40 & BLE	3 - 2422MHz 37 - 2402MHz	14.58	14.58	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	46.9 dBµV/m @ 2370.0 MHz (-7.1 dB)
		3 - 2422MHz 24 - 2454MHz		14.58	Restricted Band Edge (2483.5 MHz)		47.0 dBµV/m @ 2486.0 MHz (-7.0 dB)
		3 - 2422MHz 39 - 2480MHz		14.58	Restricted Band Edge (2483.5 MHz)		44.6 dBµV/m @ 2483.5 MHz (-9.4 dB)
		9 - 2452MHz 8 - 2420MHz		14.58	Restricted Band Edge (2390 MHz)		46.7 dBµV/m @ 2375.7 MHz (-7.3 dB)
		9 - 2452MHz 31 - 2468MHz		14.58	Restricted Band Edge (2483.5 MHz)		47.2 dBµV/m @ 2489.3 MHz (-6.8 dB)
		9 - 2452MHz 39 - 2480MHz		14.58	Restricted Band Edge (2483.5 MHz)		47.2 dBµV/m @ 2495.1 MHz (-6.8 dB)

Note: No intermodulation products were observed with BLE therefore ZigBee testing is not required with this antenna.

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9V019
Driver: P2 WNC 0.4.4
Antenna: AP-ANT-19 Wi-Fi, Integral BLE/ZigBee

EMC Test Data

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 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
BLE	1 Mb/s	0.72	Yes	0.586	1.4	2.9	1706
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495
11g	6 Mb/s	0.92	Yes	1.432	0.3	0.7	698
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 8:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	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: Radiated Bandedge Measurements

Date of Test: 11/15/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #

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

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.560	52.8	V	54.0	-1.2	Avg	198	1.00	VB 2 kHz, note 4
2389.750	60.8	V	74.0	-13.2	PK	198	1.00	POS; RB 1 MHz; VB: 3 MHz
2389.560	52.1	H	54.0	-1.9	Avg	210	1.22	VB 2 kHz, note 4
2389.780	60.2	H	74.0	-13.8	PK	210	1.22	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2486.110	53.8	V	54.0	-0.2	Avg	176	1.21	VB 2 kHz, note 4, setting = 17.5
2484.320	62.8	V	74.0	-11.2	PK	176	1.21	POS; RB 1 MHz; VB: 3 MHz
2485.800	53.7	H	54.0	-0.3	Avg	114	1.32	VB 2 kHz, note 4
2484.680	61.1	H	74.0	-12.9	PK	114	1.32	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.590	46.4	H	54.0	-7.6	Avg	113	2.26	VB 2 kHz, note 4
2484.070	57.3	H	74.0	-16.7	PK	113	2.26	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2486.820	53.9	H	54.0	-0.1	Avg	124	1.90	VB 2 kHz, note 4
2486.300	61.3	H	74.0	-12.7	PK	124	1.90	POS; RB 1 MHz; VB: 3 MHz
2483.510	52.1	V	54.0	-1.9	Avg	161	1.34	VB 2 kHz, note 4
2483.700	60.9	V	74.0	-13.1	PK	161	1.34	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.560	49.8	H	54.0	-4.2	Avg	138	2.18	VB 2 kHz, note 4
2389.740	59.1	H	74.0	-14.9	PK	138	2.18	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2498.790	53.7	H	54.0	-0.3	Avg	129	1.88	VB 2 kHz, note 4
2498.340	61.3	H	74.0	-12.7	PK	129	1.88	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/15/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	47.9	H	54.0	-6.1	Avg	112	2.19	VB 1 kHz, note 4
2389.720	59.9	H	74.0	-14.1	PK	112	2.19	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.780	49.4	H	54.0	-4.6	Avg	128	1.96	VB 1 kHz, note 4
2483.630	61.7	H	74.0	-12.3	PK	128	1.96	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.520	45.1	H	54.0	-8.9	Avg	122	1.93	VB 1 kHz, note 4
2483.810	57.4	H	74.0	-16.6	PK	122	1.93	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.550	46.9	H	54.0	-7.1	Avg	122	2.10	VB 1 kHz, note 4
2483.780	59.9	H	74.0	-14.1	PK	122	2.10	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2384.010	49.2	H	54.0	-4.8	Avg	122	2.25	VB 1 kHz, note 4
2383.390	60.8	H	74.0	-13.2	PK	122	2.25	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2491.070	51.9	H	54.0	-2.1	Avg	124	2.08	VB 1 kHz, note 4
2491.690	62.4	H	74.0	-11.6	PK	124	2.08	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/15/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.840	48.3	H	54.0	-5.7	Avg	121	2.19	VB 200 Hz, note 4
2389.330	62.1	H	74.0	-11.9	PK	121	2.19	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.670	49.1	H	54.0	-4.9	Avg	129	1.93	VB 200 Hz, note 4
2483.720	63.5	H	74.0	-10.5	PK	129	1.93	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.540	44.6	H	54.0	-9.4	Avg	128	2.11	VB 200 Hz, note 4
2483.660	58.8	H	74.0	-15.2	PK	128	2.11	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2491.200	49.9	H	54.0	-4.1	Avg	128	2.05	VB 200 Hz, note 4
2491.290	64.0	H	74.0	-10.0	PK	128	2.05	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2381.620	45.1	H	54.0	-8.9	Avg	127	2.22	VB 200 Hz, note 4
2380.500	58.3	H	74.0	-15.7	PK	127	2.22	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2499.970	46.5	H	54.0	-7.5	Avg	129	1.70	VB 200 Hz, note 4
2499.850	60.5	H	74.0	-13.5	PK	129	1.70	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

Date of Test: 11/15/2018
Test Engineer: John Caizzi
Test Location: Fremont Chamber #5

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

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2382MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2369.950	46.9	H	54.0	-7.1	Avg	125	2.22	VB 200 Hz, note 4
2366.250	58.4	H	74.0	-15.6	PK	125	2.22	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 24
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2486.030	47.0	H	54.0	-7.0	Avg	129	1.85	VB 200 Hz, note 4
2485.280	59.3	H	74.0	-14.7	PK	129	1.85	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2538MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	44.6	H	54.0	-9.4	Avg	127	1.83	VB 200 Hz, note 4
2483.600	58.5	H	74.0	-15.5	PK	127	1.83	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 8
Intermod: 2388MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2375.690	46.7	H	54.0	-7.3	Avg	120	2.22	VB 200 Hz, note 4
2372.200	59.5	H	74.0	-14.5	PK	120	2.22	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 31
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2489.280	47.2	H	54.0	-6.8	Avg	126	1.88	VB 200 Hz, note 4
2489.620	61.1	H	74.0	-12.9	PK	126	1.88	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2508MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2495.070	47.2	H	54.0	-6.8	Avg	128	1.76	VB 300 Hz, note 4
2494.990	60.8	H	74.0	-13.2	PK	128	1.76	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 15.247 (DTS) Radiated Spurious Emissions

Test Specific Details

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

General Test Configuration

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: 39-45 %

EMC Test Data

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 - Device Operating in the 2400-2483.5 MHz Band

Run #	Mode	Channel	Target Power	Power Setting	Test Performed	Limit	Result / Margin
1	b & BLE	1 - 2412MHz 37 - 2402MHz	20 8	20 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	49.5 dBµV/m @ 2389.8 MHz (-4.5 dB)
	b & BLE	1 - 2412MHz 21 - 2448MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		53.6 dBµV/m @ 2485.0 MHz (-0.4 dB)
	b & BLE	1 - 2412MHz 39 - 2480MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		46.2 dBµV/m @ 2483.8 MHz (-7.8 dB)
	b & BLE	11 - 2462MHz 38 - 2426MHz	20 8	20 8	Restricted Band Edge (2390 MHz)		51.2 dBµV/m @ 2483.5 MHz (-2.8 dB)
	b & BLE	11 - 2462MHz 34 - 2474MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		51.9 dBµV/m @ 2483.5 MHz (-2.1 dB)
	b & BLE	11 - 2462MHz 39 - 2480 MHz	20 8	20 8	Restricted Band Edge (2483.5 MHz)		51.6 dBµV/m @ 2483.5 MHz (-2.4 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
2	g & BLE	1 - 2412MHz 37 - 2402MHz	17 8	14.0 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	74.0 dBµV/m @ 2390.0 MHz (0.0 dB)
	g & BLE	1 - 2412MHz 21 - 2448MHz	17 8	14.0 8	Restricted Band Edge (2483.5 MHz)		74.0 dBµV/m @ 2389.9 MHz (0.0 dB)
	g & BLE	1 - 2412MHz 39 - 2480MHz	17 8	14.0 8	Restricted Band Edge (2483.5 MHz)		73.9 dBµV/m @ 2389.9 MHz (-0.1 dB)
	g & BLE	11 - 2462MHz 38 - 2426MHz	14 8	14 8	Restricted Band Edge (2390 MHz)		74.0 dBµV/m @ 2483.5 MHz (0.0 dB)
	g & BLE	11 - 2462MHz 34 - 2474MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		73.9 dBµV/m @ 2483.9 MHz (-0.1 dB)
	g & BLE	11 - 2462MHz 39 - 2480 MHz	14 8	14 8	Restricted Band Edge (2483.5 MHz)		74.0 dBµV/m @ 2483.6 MHz (0.0 dB)

EMC Test Data

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 Power	Power Setting	Test Performed	Limit	Result / Margin
3	ax20 & BLE	1 - 2412MHz 37 - 2402MHz	16 8	16 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	53.9 dBµV/m @ 2390.0 MHz (-0.1 dB)
	ax20 & BLE	1 - 2412MHz 21 - 2448MHz	16 8	16 8	Restricted Band Edge (2483.5 MHz)		46.6 dBµV/m @ 2492.3 MHz (-7.4 dB)
	ax20 & BLE	1 - 2412MHz 39 - 2480MHz	16 8	16 8	Restricted Band Edge (2483.5 MHz)		44.0 dBµV/m @ 2483.5 MHz (-10.0 dB)
	ax20 & BLE	11 - 2462MHz 38 - 2426MHz	15.5 8	15.5 8	Restricted Band Edge (2390 MHz)		44.5 dBµV/m @ 2381.7 MHz (-9.5 dB)
	ax20 & BLE	11 - 2462MHz 34 - 2474MHz	15.5 8	15.5 8	Restricted Band Edge (2483.5 MHz)		52.7 dBµV/m @ 2483.6 MHz (-1.3 dB)
	ax20 & BLE	11 - 2462MHz 39 - 2480 MHz	15.5 8	15.5 8	Restricted Band Edge (2483.5 MHz)		53.1 dBµV/m @ 2483.5 MHz (-0.9 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

4	ax40 & BLE	3 - 2422MHz 37 - 2402MHz	13.5 8	13.5 8	Restricted Band Edge (2390 MHz)	FCC Part 15.209 / 15.247(c)	49.8 dBµV/m @ 2390.0 MHz (-4.2 dB)
	ax40 & BLE	3 - 2422MHz 24 - 2454MHz	13.5 8	13.5 8	Restricted Band Edge (2483.5 MHz)		44.5 dBµV/m @ 2485.9 MHz (-9.5 dB)
	ax40 & BLE	3 - 2422MHz 39 - 2480MHz	13.5 8	13.5 8	Restricted Band Edge (2483.5 MHz)		44.6 dBµV/m @ 2483.7 MHz (-9.4 dB)
	ax40 & BLE	9 - 2452MHz 8 - 2420MHz	15 8	15 8	Restricted Band Edge (2390 MHz)		45.3 dBµV/m @ 2375.9 MHz (-8.7 dB)
	ax40 & BLE	9 - 2452MHz 31 - 2468MHz	15 8	14.5 8	Restricted Band Edge (2483.5 MHz)		52.0 dBµV/m @ 2484.9 MHz (-2.0 dB)
	ax40 & BLE	9 - 2452MHz 39 - 2480MHz	15 8	14.5 8	Restricted Band Edge (2483.5 MHz)		52.3 dBµV/m @ 2484.8 MHz (-1.7 dB)

Note: No intermodulation products were observed with BLE therefore ZigBee testing is not required with this antenna.

Modifications Made During Testing

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

Sample Notes

Sample S/N: CNG6K9V019
Driver: P2 WNC 0.4.4
Antenna: AP-ANT-48 Wi-Fi (S/N 105463). Integral BLE/ZigBee.

EMC Test Data

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 558074
Peak measurements performed with: RBW=1MHz, VBW=3MHz, peak detector, max hold, auto sweep time
Unless otherwise stated/noted, emission has a duty cycle ≥ 98% and was measured using RBW=1MHz, VBW=10Hz, peak detector, linear average mode, auto sweep time, max hold.

Mode	Data Rate	Duty Cycle (x)	Constant DC?	T (ms)	Pwr Cor Factor*	Lin Volt Cor Factor**	Min VBW for FS (Hz)
BLE	1 Mb/s	0.72	Yes	0.586	1.4	2.9	1706
11b	1 Mb/s	0.78	Yes	0.669	1.1	2.1	1495
11g	6 Mb/s	0.92	Yes	1.432	0.3	0.7	698
ax20	MCS0	0.96	Yes	5.485	0.2	0.3	182
ax40	MCS0	0.96	Yes	5.401	0.2	0.4	185

Measurement Specific Notes:

Note 4:	Emission has constant duty cycle < 98%, average measurement performed: RBW=1MHz, VBW>1/T but not less than 10Hz, peak detector, linear averaging, auto sweep, trace average 100 traces, measurement corrected by Linear voltage correction factor
Note 8:	Plots of the average and peak bandedge do not account for any duty cycle correction. Refer to the tabular results for final measurements.

EMC Test Data

Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	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: Radiated Bandedge Measurements

Date of Test: 11/15/2018
Test Engineer: Deniz Demirci
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.820	49.5	H	54.0	-4.5	AVG	112	2.2	VB 2 kHz, note 4
2389.770	56.0	H	74.0	-18.0	PK	112	2.2	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.990	53.6	H	54.0	-0.4	AVG	108	1.6	VB 2 kHz, note 4
2484.520	59.6	H	74.0	-14.4	PK	108	1.6	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.760	46.2	H	54.0	-7.8	AVG	160	1.8	VB 2 kHz, note 4
2483.850	57.1	H	74.0	-16.9	PK	160	1.8	POS; RB 1 MHz; VB: 3 MHz
2547.990	45.7	H	-	-	PK	160	1.8	POS; RB 100 kHz; VB: 300 kHz
2547.470	52.5	H	-	-	PK	160	1.8	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	51.2	H	54.0	-2.8	AVG	150	1.6	VB 2 kHz, note 4
2483.750	58.9	H	74.0	-15.1	PK	150	1.6	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.510	51.9	H	54.0	-2.1	AVG	161	1.4	VB 2 kHz, note 4
2483.520	59.8	H	74.0	-14.2	PK	161	1.4	POS; RB 1 MHz; VB: 3 MHz
2389.820	39.3	H	54.0	-14.7	AVG	168	1.4	VB 2 kHz, note 4
2389.580	49.8	H	74.0	-24.2	PK	168	1.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: b Mode: BLE
Tx Chain: 4 Data Rate: 1 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	51.6	H	54.0	-2.4	AVG	168	1.5	VB 2 kHz, note 4
2483.610	60.2	H	74.0	-13.8	PK	168	1.5	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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

Date of Test: 11/15/2018
Test Engineer: Deniz Demirci
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.970	74.0	V	74.0	0.0	PK	165	1.6	POS; RB 1 MHz; VB: 3 MHz
2389.820	50.6	V	54.0	-3.4	AVG	165	1.6	VB 1 kHz, note 4

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.920	74.0	V	74.0	0.0	PK	160	1.6	POS; RB 1 MHz; VB: 3 MHz
2389.820	50.6	V	54.0	-3.4	AVG	160	1.6	VB 1 kHz, note 4

Channel: 1 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2389.920	73.9	V	74.0	-0.1	PK	164	1.7	POS; RB 1 MHz; VB: 3 MHz
2389.820	50.6	V	54.0	-3.4	AVG	164	1.7	VB 1 kHz, note 4

EMC Test Data

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: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.500	74.0	H	74.0	0.0	PK	156	1.4	POS; RB 1 MHz; VB: 3 MHz
2483.700	50.5	H	54.0	-3.5	AVG	156	1.4	VB 1 kHz, note 4

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.910	73.9	H	74.0	-0.1	PK	156	1.4	POS; RB 1 MHz; VB: 3 MHz
2483.700	50.5	H	54.0	-3.5	AVG	156	1.4	VB 1 kHz, note 4

Channel: 11 Mode: g Mode: BLE
Tx Chain: 4 Data Rate: 6 Mb/s Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.590	74.0	H	74.0	0.0	PK	148	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.700	50.5	H	54.0	-3.5	AVG	148	1.0	VB 1 kHz, note 4

EMC Test Data

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

Date of Test: 11/15/2018
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #5

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

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2392MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	53.9	V	54.0	-0.1	Avg	167	1.2	VB: 200 Hz, note 4
2389.940	68.8	V	74.0	-5.2	PK	167	1.2	POS; RB 1 MHz; VB: 3 MHz
2389.720	52.7	H	54.0	-1.3	Avg	176	1.0	VB: 200 Hz, note 4
2389.380	68.2	H	74.0	-5.8	PK	176	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 21
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2492.260	46.6	H	54.0	-7.4	Avg	124	1.3	VB: 200 Hz, note 4
2492.260	59.5	H	74.0	-14.5	PK	124	1.3	POS; RB 1 MHz; VB: 3 MHz
2483.760	45.2	V	54.0	-8.8	Avg	197	1.0	VB: 200 Hz, note 4
2483.800	57.0	V	74.0	-17.0	PK	197	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 1 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2548MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	44.0	V	54.0	-10.0	Avg	208	1.0	VB: 200 Hz, note 4
2483.680	56.5	V	74.0	-17.5	PK	208	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.830	43.2	H	54.0	-10.8	Avg	227	1.0	VB: 200 Hz, note 4
2485.020	56.5	H	74.0	-17.5	PK	227	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 34
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.550	52.7	H	54.0	-1.3	Avg	170	1.0	VB: 200 Hz, note 4
2483.930	69.4	H	74.0	-4.6	PK	170	1.0	POS; RB 1 MHz; VB: 3 MHz
2483.980	52.1	V	54.0	-1.9	Avg	188	2.2	VB: 200 Hz, note 4
2484.010	67.7	V	74.0	-6.3	PK	188	2.2	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 38
Intermod: 2390MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2381.740	44.5	H	54.0	-9.5	Avg	125	2.2	VB: 200 Hz, note 4
2385.110	56.6	H	74.0	-17.4	PK	125	2.2	POS; RB 1 MHz; VB: 3 MHz
2381.660	40.1	V	54.0	-13.9	Avg	199	1.0	VB: 200 Hz, note 4
2381.420	51.6	V	74.0	-22.4	PK	199	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 11 Mode: ax20 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2498MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.530	53.1	H	54.0	-0.9	Avg	163	1.0	VB: 200 Hz, note 4
2484.680	69.0	H	74.0	-5.0	PK	163	1.0	POS; RB 1 MHz; VB: 3 MHz
2484.930	52.0	V	54.0	-2.0	Avg	189	1.6	VB: 200 Hz, note 4
2483.620	68.8	V	74.0	-5.2	PK	189	1.6	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 Bandedge Measurements

Date of Test: 11/15/2018
Test Engineer: Rafael Varelas
Test Location: Fremont Chamber #5

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

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 37
Intermod: 2382MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2390.000	49.8	H	54.0	-4.2	Avg	155	1.9	VB: 200 Hz, note 4
2389.890	63.9	H	74.0	-10.1	PK	155	1.9	POS; RB 1 MHz; VB: 3 MHz
2389.800	49.2	V	54.0	-4.8	Avg	173	1.0	VB: 200 Hz, note 4
2389.640	64.2	V	74.0	-9.8	PK	173	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 24
Intermod: 2486MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2485.880	44.5	V	54.0	-9.5	Avg	185	1.0	VB: 200 Hz, note 4
2484.530	55.7	V	74.0	-18.3	PK	185	1.0	POS; RB 1 MHz; VB: 3 MHz
2485.810	44.3	H	54.0	-9.7	Avg	239	1.4	VB: 200 Hz, note 4
2493.350	55.9	H	74.0	-18.1	PK	239	1.4	POS; RB 1 MHz; VB: 3 MHz

Channel: 3 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2538MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2483.700	44.6	H	54.0	-9.4	Avg	130	1.5	VB: 200 Hz, note 4
2484.590	57.3	H	74.0	-16.7	PK	130	1.5	POS; RB 1 MHz; VB: 3 MHz
2483.600	43.8	V	54.0	-10.2	Avg	193	1.0	VB: 200 Hz, note 4
2486.080	55.9	V	74.0	-18.1	PK	193	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 8
Intermod: 2388MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2375.890	45.3	H	54.0	-8.7	Avg	240	1.7	VB: 200 Hz, note 4
2377.330	56.8	H	74.0	-17.2	PK	240	1.7	POS; RB 1 MHz; VB: 3 MHz
2388.080	41.7	V	54.0	-12.3	Avg	209	1.1	VB: 200 Hz, note 4
2376.770	52.6	V	74.0	-21.4	PK	209	1.1	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 31
Intermod: 2484MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.920	52.0	H	54.0	-2.0	Avg	194	2.0	VB: 200 Hz, note 4
2484.980	72.0	H	74.0	-2.0	PK	194	2.0	POS; RB 1 MHz; VB: 3 MHz
2483.500	50.9	V	54.0	-3.1	Avg	169	1.0	VB: 200 Hz, note 4
2484.550	70.0	V	74.0	-4.0	PK	169	1.0	POS; RB 1 MHz; VB: 3 MHz

Channel: 9 Mode: ax40 Mode: BLE
Tx Chain: 4 Data Rate: MCS0 Channel.: 39
Intermod: 2508MHz

Band Edge Signal Field Strength - Direct measurement of field strength

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2484.760	52.3	H	54.0	-1.7	Avg	191	2.0	VB: 200 Hz, note 4
2484.560	72.1	H	74.0	-1.9	PK	191	2.0	POS; RB 1 MHz; VB: 3 MHz
2483.770	51.3	V	54.0	-2.7	Avg	170	1.0	VB: 200 Hz, note 4
2483.810	70.8	V	74.0	-3.2	PK	170	1.0	POS; RB 1 MHz; VB: 3 MHz

EMC Test Data

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 "center" channel in all five OFDM modes to determine the worst case mode.							
1	a / g, BLE	6, 40 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.4 dBµV/m @ 20795.3 MHz (-10.6 dB)
	ax20, BLE	6, 40 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	41.9 dBµV/m @ 4879.91 MHz (-12.1 dB)
	ax40, BLE	6, 38 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	46.8 dBµV/m @ 20769.33 MHz (-7.2 dB)
	ax80 / b	6 & 42	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.9 dBµV/m @ 9747.87 MHz (-9.1 dB)

EMC Test Data

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 worst case mode above with BLE or ZigBee also active.							
2	ax40 / b, ZigBee	6, 46 Wi-Fi 11 - ZB	20 / 20 / 8	20 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	50.0 dBµV/m @ 9747.9 MHz (-4.0 dB)
	ax40 / b, BLE	6, 46 Wi-Fi 37 - BLE	20 / 20 / 8	20 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	38.1 dBµV/m @ 4803.8 MHz (-15.9 dB)
40MHz - use if worse case from 1 & 2 but must do highest 20 MHz channel also							
3	ax40, BLE	3, 38 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	51.7 dBµV/m @ 20930.08 MHz (-2.3 dB)
	ax20, BLE	11, 48 Wi-Fi 39 - BLE	20	19.5	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.8 dBµV/m @ 20978.09 MHz (-9.2 dB)
Scans on "center" channel in all four OFDM modes to determine the worst case mode.. No ac160 mode in this band.							
8	a / g, BLE	6, 157 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	53.4 dBµV/m @ 17356.8 MHz (-1.9 dB)
	ax20, BLE	6, 157 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	62.2 dBµV/m @ 17362.4 MHz (-6.1 dB)
	ax40, BLE	6, 159 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	66.3 dBµV/m @ 17375.5 MHz (-2.0 dB)
	ac80 / b, BLE	6, 155 Wi-Fi 17 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	58.6 dBµV/m @ 17333.5 MHz (-9.7 dB)
Measurements on low and high channels in worst-case OFDM mode.							
9	ax40	3, 151 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	66.1 dBµV/m @ 17272.5 MHz (-2.2 dB)
	ax20	11, 165 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	59.0 dBµV/m @ 23305.4 MHz (-9.3 dB)

EMC Test Data

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
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.

EMC Test Data

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
Limits from 15.209 instead of 15.407(b)(1-3) acceptable until January 1, 2019 per FCC KDB 789033 D01
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
11ac80+80	MCS0	96.5%	Yes	5.4	0.2	0.3	184

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.

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.

EMC Test Data

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

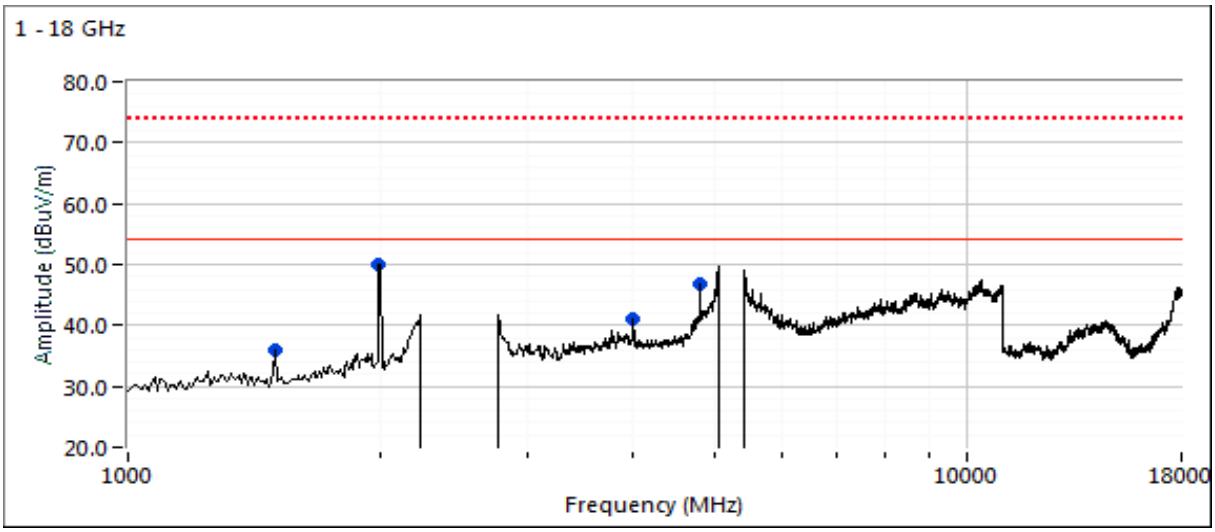
Run #1, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5150-5250 MHz Band

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

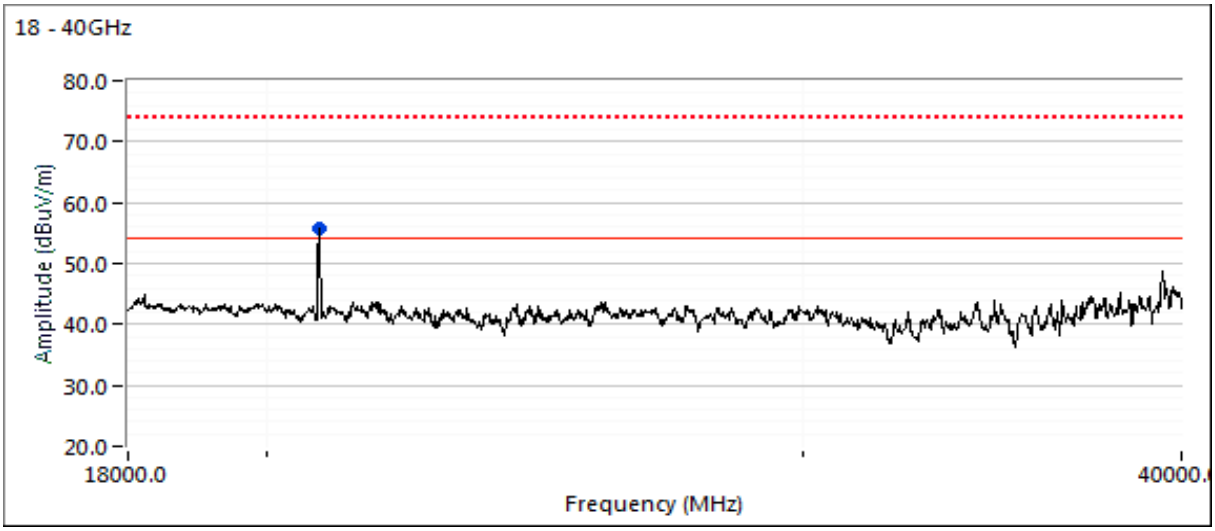
Run #1a: Center Channel

Channel: 40 Wi-Fi, 2412 MHz, 37 - BLE Mode: 11a/g + BLE Pwr setting 20
Tx Chain: 4 Tx Data Rate: 6 Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	36.0	V	60.0	-24.0	Peak	38	1.0	Note 5
2000.030	47.1	H	60.0	-12.9	VAVG	145	1.0	Note 5
2000.000	51.3	H	80.0	-28.7	PK	145	1.0	Note 5
3999.990	37.4	V	54.0	-16.6	VAVG	211	1.3	RB 1 MHz;VB 1 kHz; Note 3
3999.510	47.2	V	74.0	-26.8	PK	211	1.3	RB 1 MHz;VB 3 MHz;Peak
4804.130	42.9	H	54.0	-11.1	VAVG	219	1.3	RB 1 MHz;VB 1 kHz; Note 3
4804.370	51.9	H	74.0	-22.1	PK	219	1.3	RB 1 MHz;VB 3 MHz;Peak
20795.330	43.4	V	54.0	-10.6	VAVG	192	1.3	RB 1 MHz;VB 1 kHz;Note 3
20780.000	43.4	V	74.0	-30.6	PK	192	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).

EMC Test Data

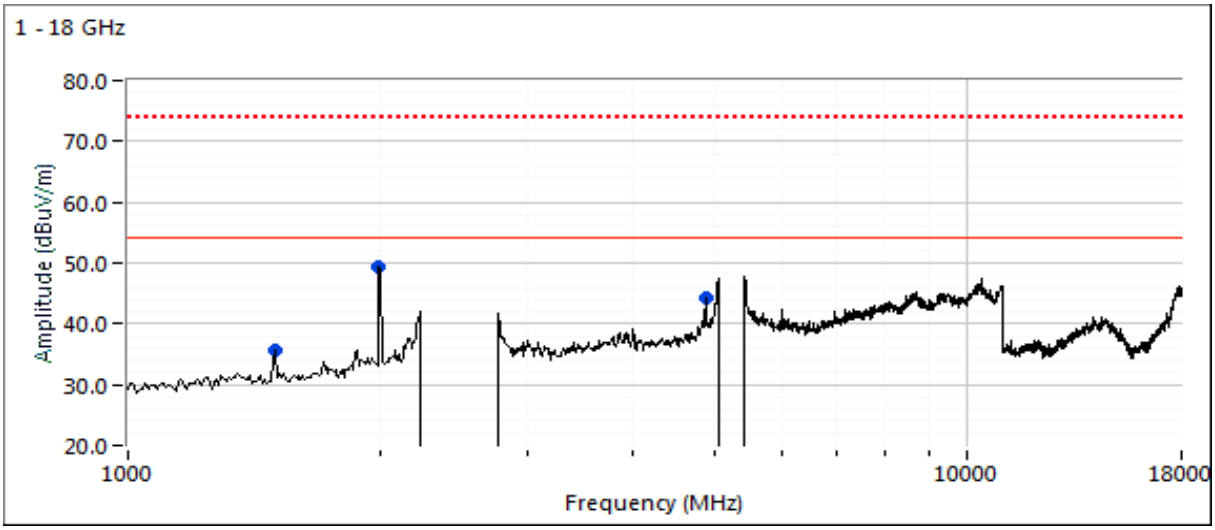
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1b: Center Channel

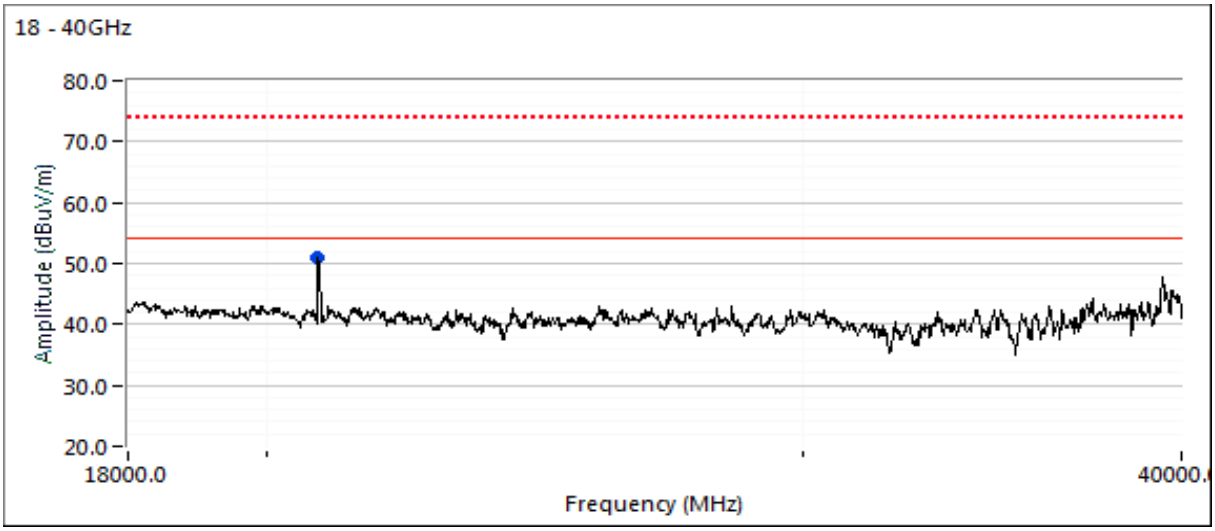
Channel: 6 & 40 Wi-Fi, 17 - BLE Mode: 11ax20

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	35.5	V	60.0	-24.5	Peak	44	1.0	Note 5
2000.030	50.0	V	60.0	-10.0	VAVG	56	1.6	Note 5
2000.010	51.0	V	80.0	-29.0	PK	56	1.6	Note 5
4879.910	41.9	H	54.0	-12.1	VAVG	233	1.0	RB 1 MHz;VB 300 Hz;Note 3
4880.580	52.5	H	74.0	-21.5	PK	233	1.0	RB 1 MHz;VB 3 MHz;Peak
5999.980	41.5	V	54.0	-12.5	VAVG	173	1.0	RB 1 MHz;VB 300 Hz;Note 3
6000.190	50.0	V	74.0	-24.0	PK	173	1.0	RB 1 MHz;VB 3 MHz;Peak
20800.020	40.0	V	54.0	-14.0	VAVG	179	1.3	RB 1 MHz;VB 300 Hz;Note 3
20800.020	58.2	V	74.0	-15.8	PK	179	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).

EMC Test Data

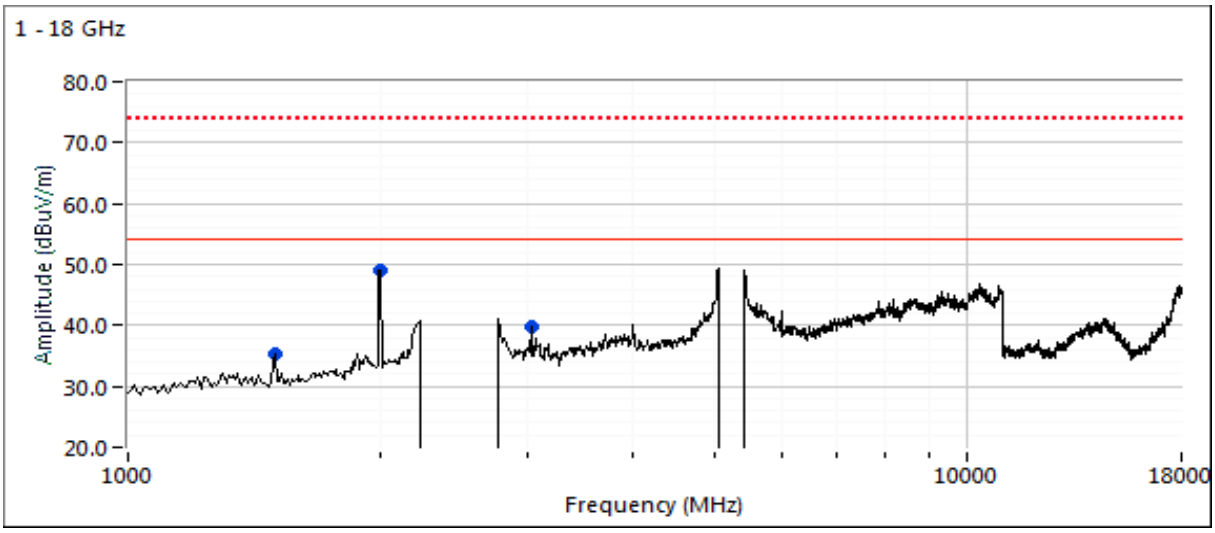
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1c: Center Channel

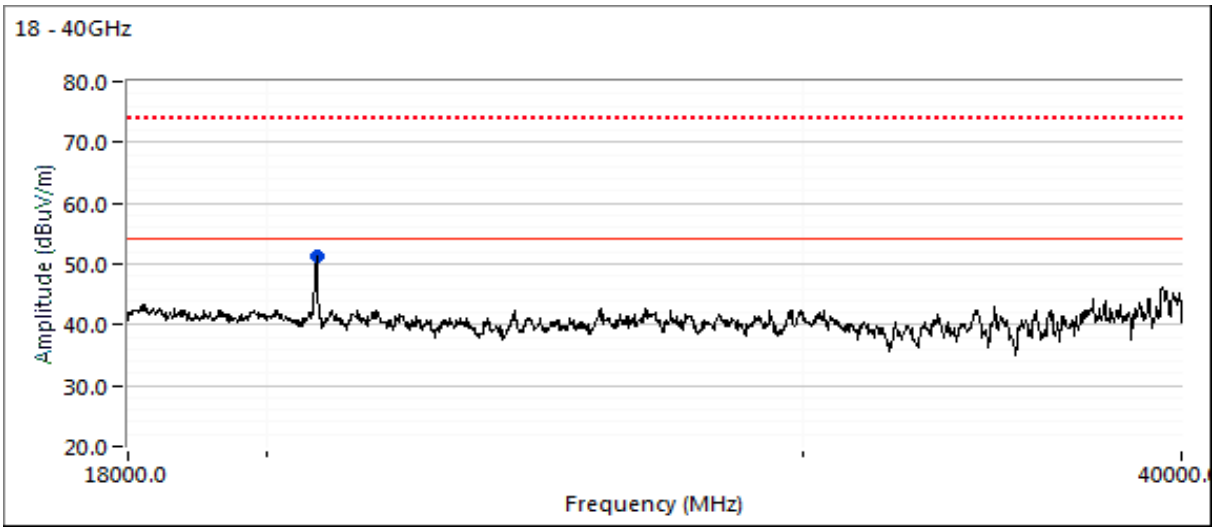
Channel: 6 & 38 Wi-Fi, 39 - BLE Mode: 11ax40

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	
1500.000	35.4	V	60.0	-24.6	Peak	352	1.9	Note 5
2000.000	49.1	V	60.0	-10.9	Peak	67	1.6	Note 5
3023.950	37.7	H	54.0	-16.3	VAVG	120	1.5	RB 1 MHz;VB 300 Hz;Note 3
3023.980	47.2	H	74.0	-26.8	PK	120	1.5	RB 1 MHz;VB 3 MHz;Peak
20769.330	46.8	V	54.0	-7.2	VAVG	190	1.7	RB 1 MHz;VB 300 Hz;Note 3
20750.500	66.0	V	74.0	-8.0	PK	190	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).

EMC Test Data

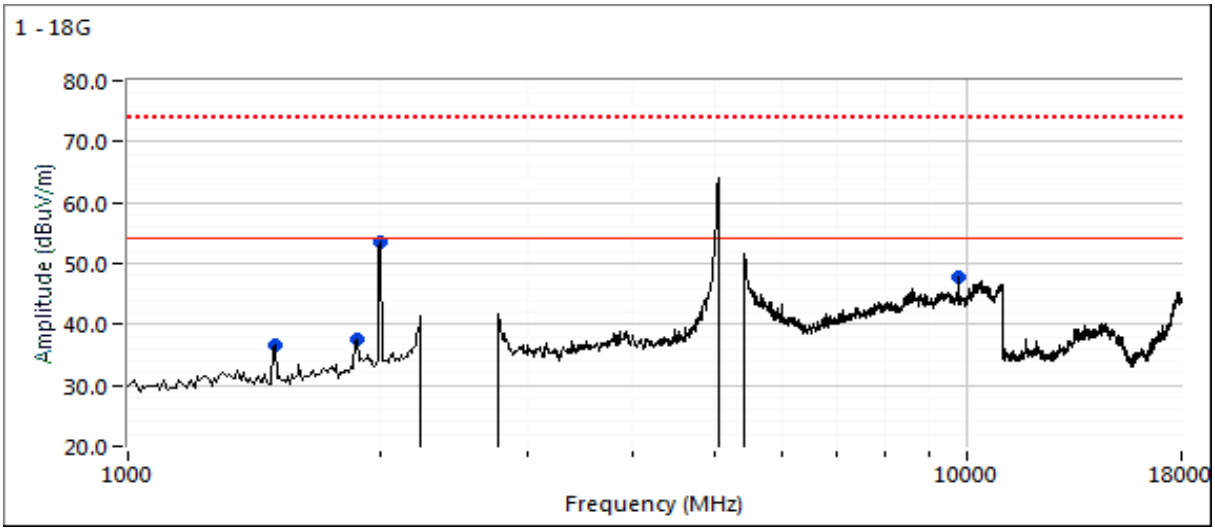
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1d: Center Channel

Channel: 6 & 42 Wi-Fi Mode: ac80 / b

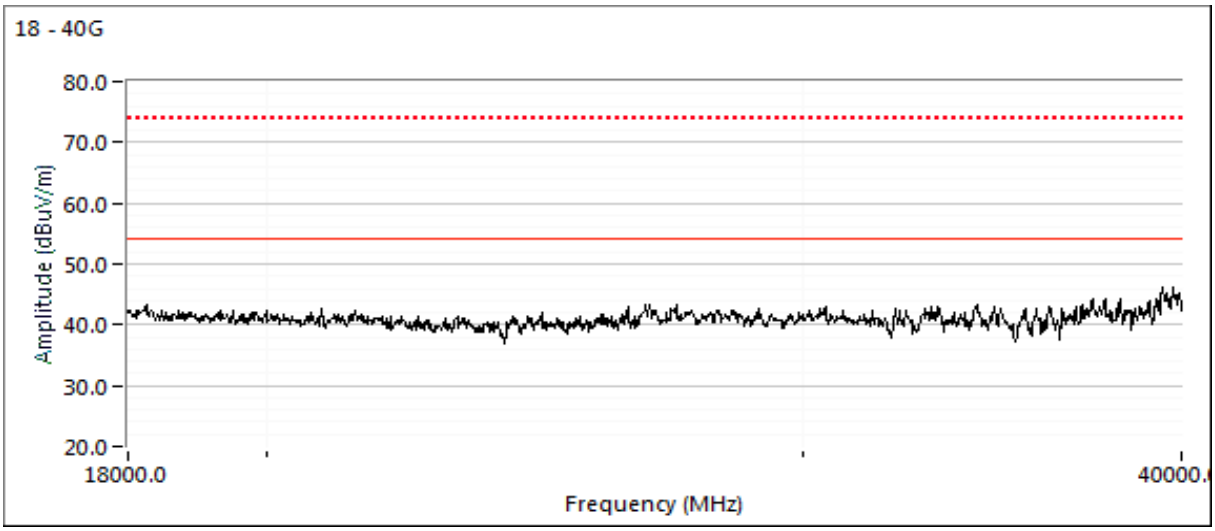
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	36.5	H	60.0	-23.5	Peak	139	1.3	Note 5
1875.000	37.4	H	60.0	-22.6	Peak	210	1.0	Note 5
2000.000	53.4	V	60.0	-6.6	Peak	83	1.0	Note 5
9747.870	44.9	V	54.0	-9.1	VAVG	173	1.0	RB 1 MHz;VB 300 Hz;Note 3
9747.860	55.1	V	74.0	-18.9	PK	173	1.0	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

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

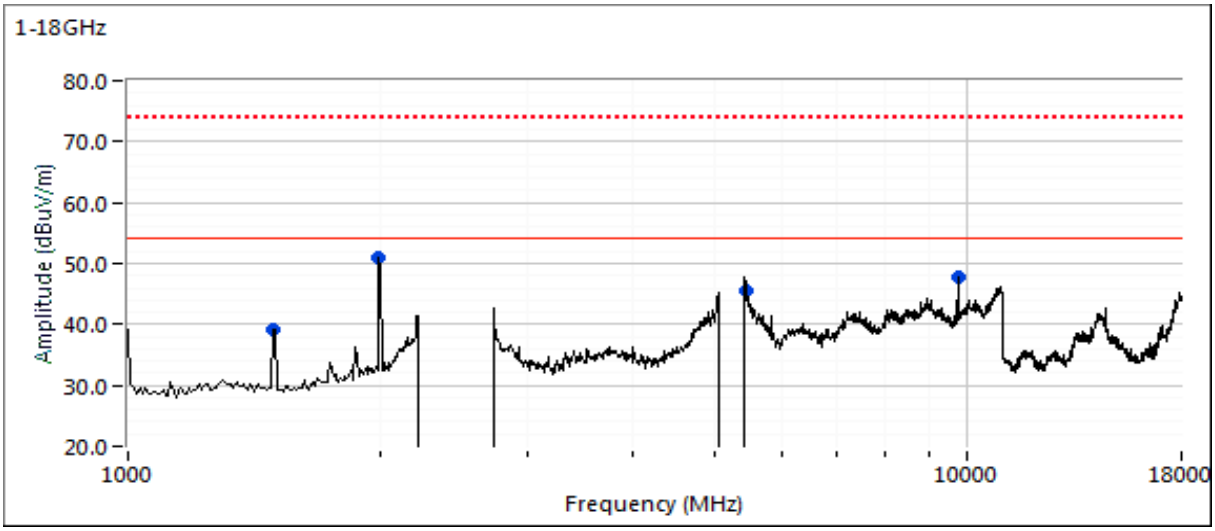
Run #2, Radiated Spurious Emissions, 1,000 - 40,000 MHz.

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 #2a: Center Channel

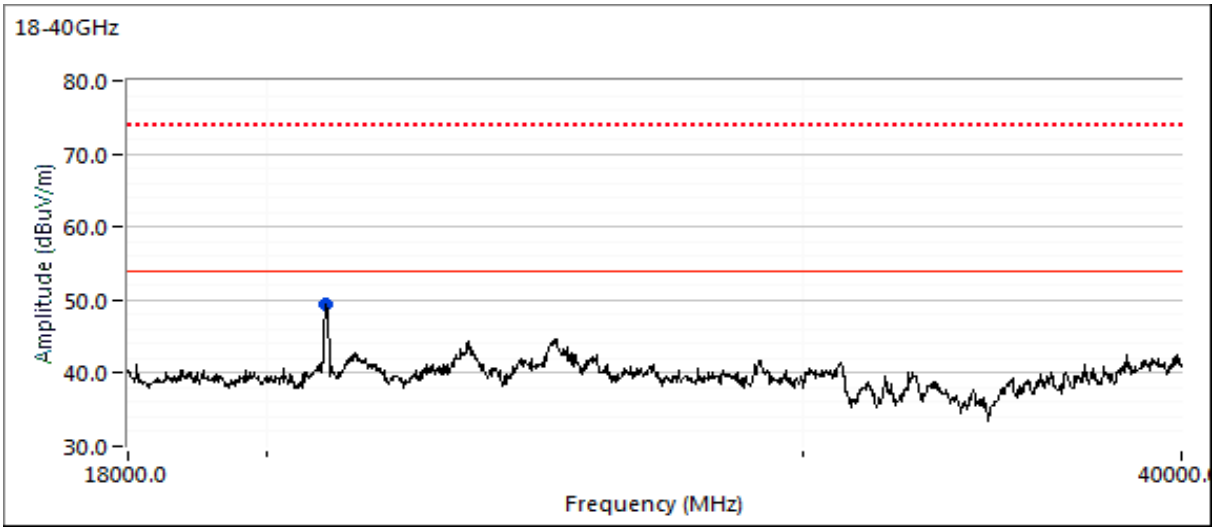
Channel: 6, 46 Wi-Fi, 11 - ZigBee — Mode: ax40, b
Tx Chain: 4 — Data Rate: MCS0, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.000	39.2	V	60.0	-20.8	Peak	50	1.0	Note 5
2000.000	51.0	H	60.0	-9.0	Peak	224	1.9	Note 5
9747.910	50.0	H	54.0	-4.0	Vavg	194	1.0	Note 4;VB 3 kHz;Peak VAVG 100
9747.920	53.8	H	74.0	-20.2	PK	194	1.0	RB 1 MHz;VB 3 MHz;Peak
5464.040	40.6	V	54.0	-13.4	Vavg	236	1.6	Note 4;VB 300 Hz;Peak VAVG 100
5461.430	52.2	V	74.0	-21.8	PK	236	1.6	RB 1 MHz;VB 3 MHz;Peak
20916.210	46.7	V	54.0	-7.3	Vavg	219	1.7	Note 4;VB 300 Hz;Peak VAVG 100
20916.610	61.7	V	74.0	-12.3	PK	219	1.7	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

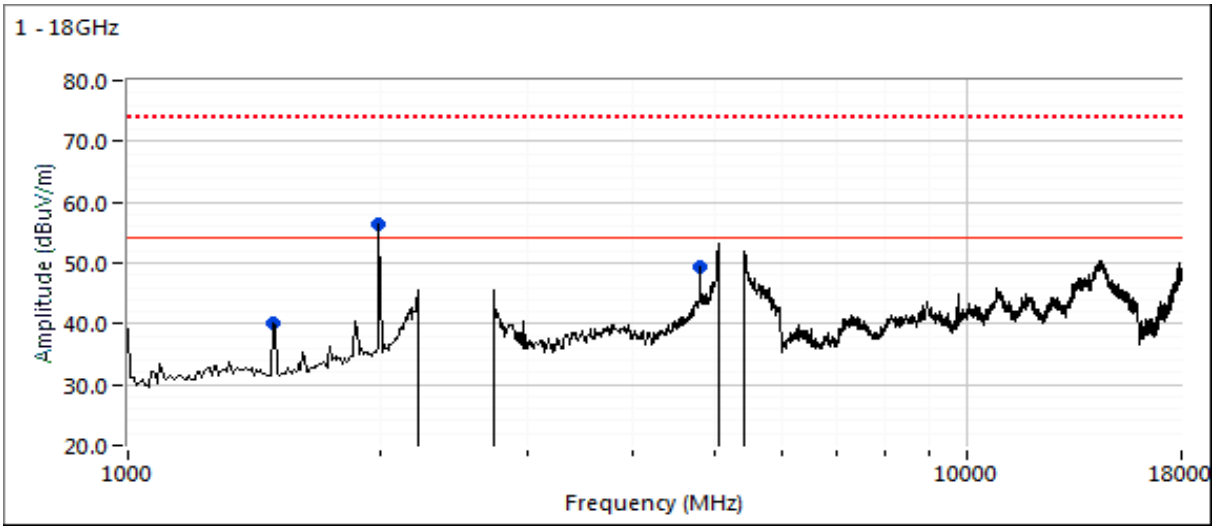
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #2d: Center Channel

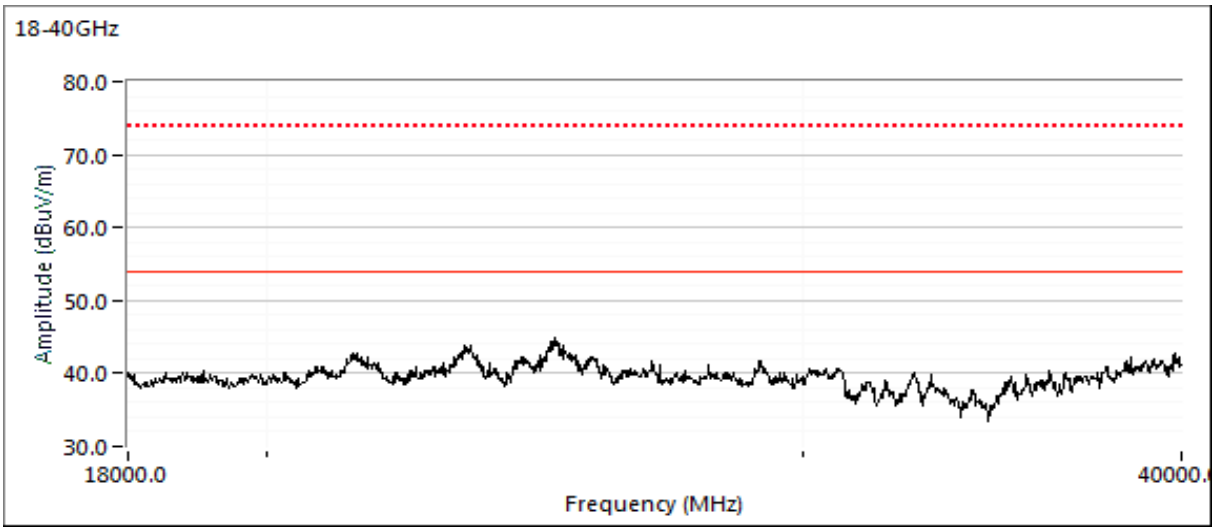
Channel: 6, 46 Wi-Fi, 37 - BLE Mode: ax40, b

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	40.1	H	60.0	-19.9	Peak	222	1.9	Note 5
2000.000	56.5	H	60.0	-3.5	Peak	72	1.6	Note 5
4803.780	38.1	H	54.0	-15.9	VAVG	138	1.0	Note 4;VB 300 Hz;Peak VAVG 100
4803.830	49.1	H	74.0	-24.9	PK	138	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).

EMC Test Data

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

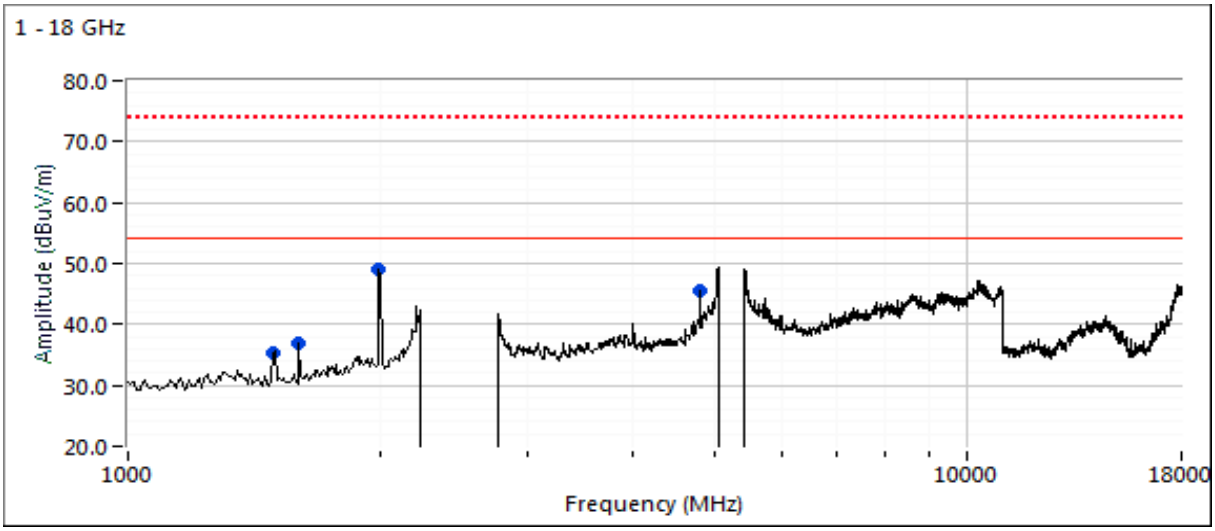
Run #3: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Runs #1 and 2

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

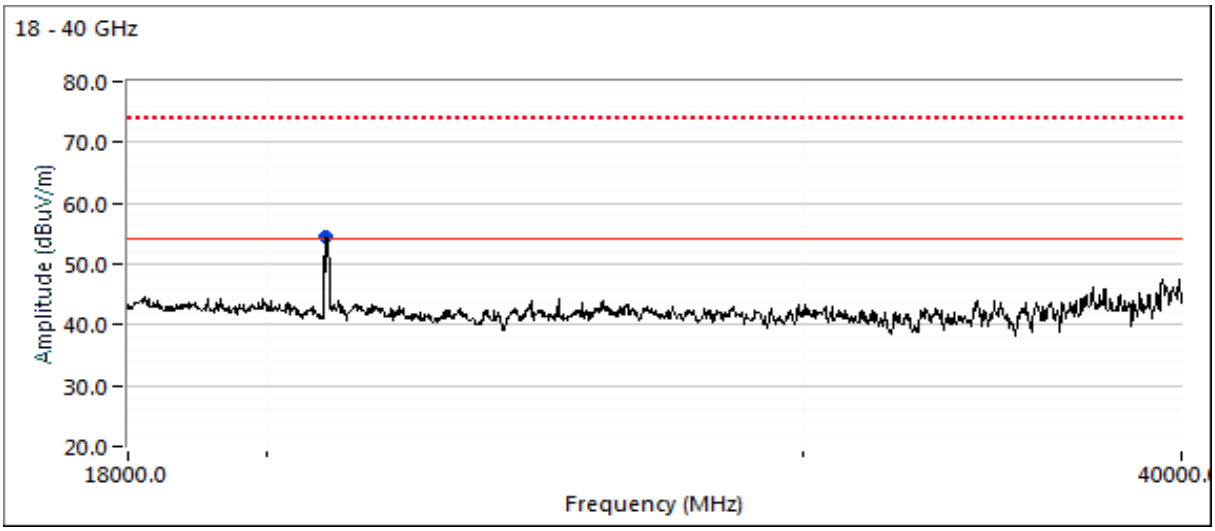
Run #3a: Low Channel

Channel: 3 & 38 Wi-Fi, 37 - BLE Mode: ax40 + BLE Pwr setting 20
Tx Chain: 4 Tx 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	35.3	H	60.0	-24.7	Peak	135	1.0	Note 5
1600.000	36.9	V	60.0	-23.1	Peak	184	2.2	Note 5
2000.070	50.6	H	60.0	-9.4	Peak	198	1.7	Note 5
4799.880	36.1	H	54.0	-17.9	VAVG	210	1.7	RB 1 MHz;VB 300 Hz;Note 3
4799.810	48.3	H	74.0	-25.7	PK	210	1.7	RB 1 MHz;VB 3 MHz;Peak
20930.080	51.7	V	54.0	-2.3	VAVG	193	1.8	RB 1 MHz;VB 300 Hz;Note 3
20929.420	68.2	V	74.0	-5.8	PK	193	1.8	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).

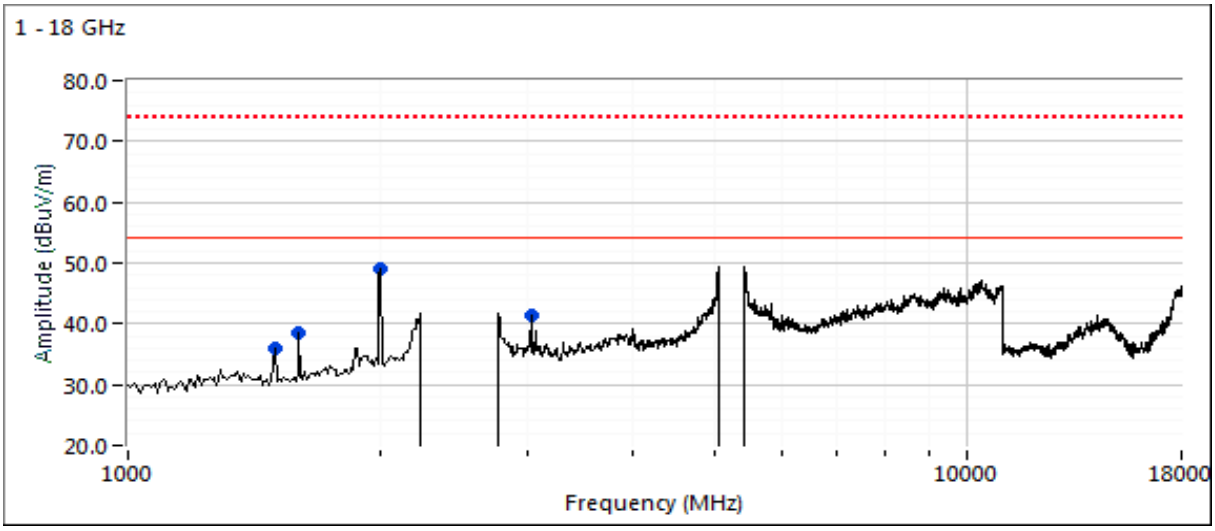
EMC Test Data

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

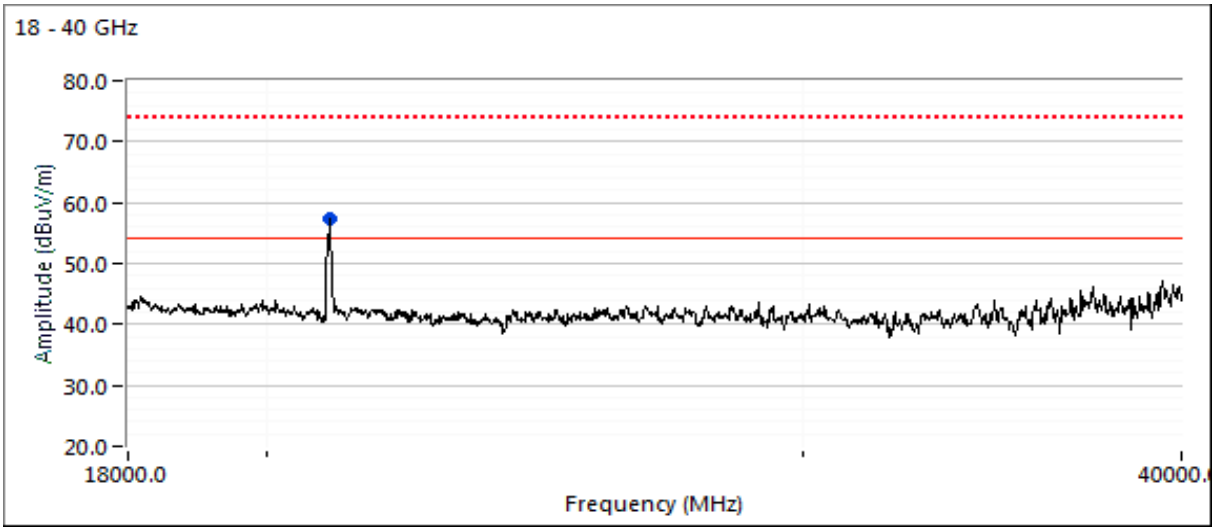
Run #3b: High Channel

Channel: 11 & 48 Wi-Fi, 39 - BLE Mode: ax20 + BLE Pwr setting 20
Tx Chain: 4 Tx 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	35.9	V	60.0	-24.1	Peak	43	1.3	Note 5
1600.000	38.4	V	60.0	-21.6	Peak	207	1.3	Note 5
3025.000	41.4	H	60.0	-18.6	Peak	94	1.6	Note 5
2000.070	51.1	H	60.0	-8.9	Peak	144	1.0	Note 5
3023.920	35.0	H	54.0	-19.0	VAVG	210	1.0	RB 1 MHz;VB 300 Hz;Note 3
3023.570	46.9	H	74.0	-27.1	PK	210	1.0	RB 1 MHz;VB 3 MHz;Peak
20976.96	44.8	V	54	-9.2	VAVG	189	1.33	RB 1 MHz;VB 300 Hz;Note 3
20978.09	61.1	V	74	-12.9	PK	189	1.33	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).

EMC Test Data

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

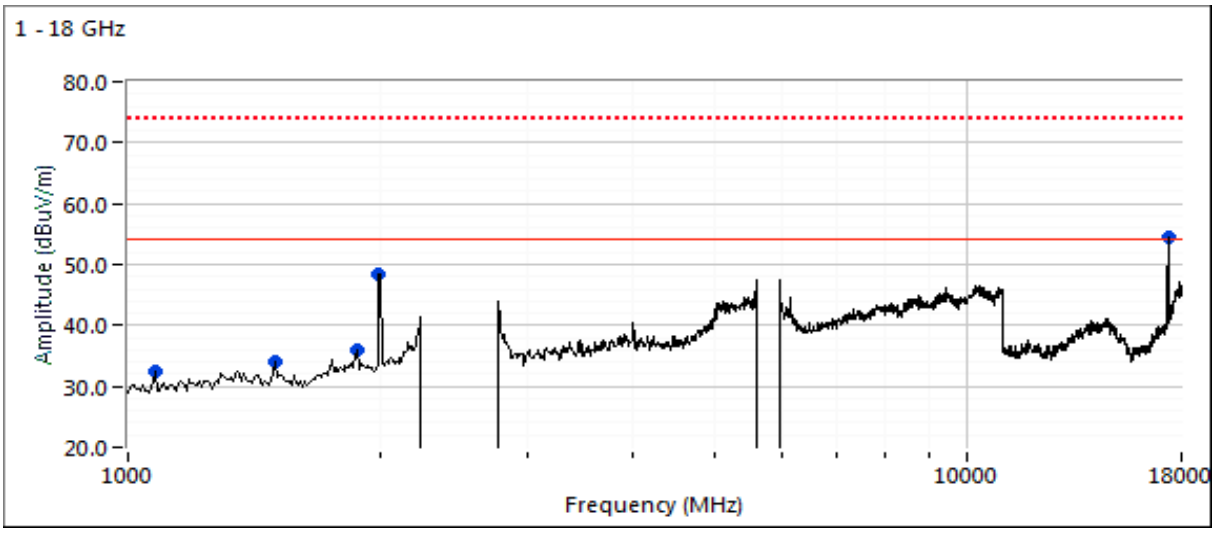
Run #8, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5725-5850 MHz Band

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

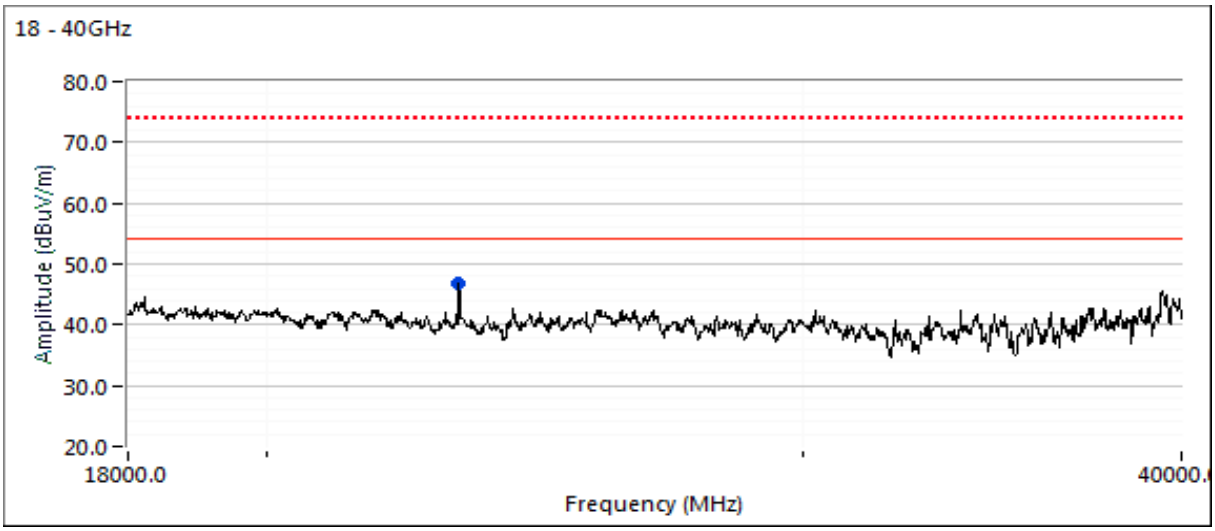
Run #8a: Center Channel

Channel: 6 & 157 Wi-Fi, 37 - 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	
1075.000	32.4	H	60.0	-27.6	Peak	188	1.3	Note 5
1500.000	33.9	V	60.0	-26.1	Peak	16	1.3	Note 5
1875.000	35.9	V	60.0	-24.1	Peak	98	1.6	Note 5
2000.000	48.5	V	60.0	-11.5	Peak	177	1.0	Note 5
17356.800	66.4	H	68.3	-1.9	PK	198	1.3	RB 1 MHz;VB 3 MHz;Peak
23146.270	53.4	V	68.3	-14.9	PK	159	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).

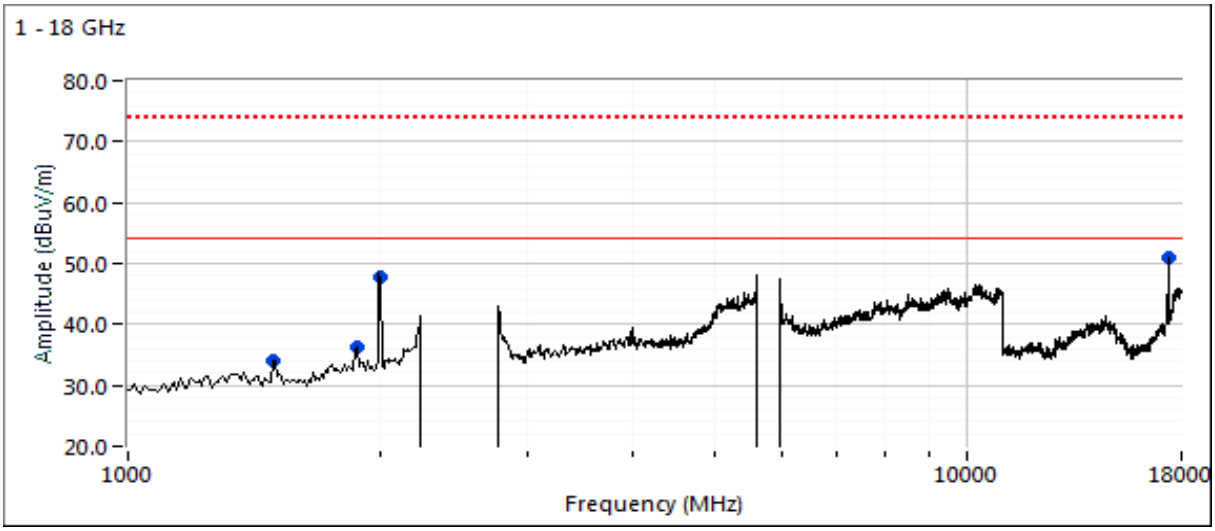
EMC Test Data

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

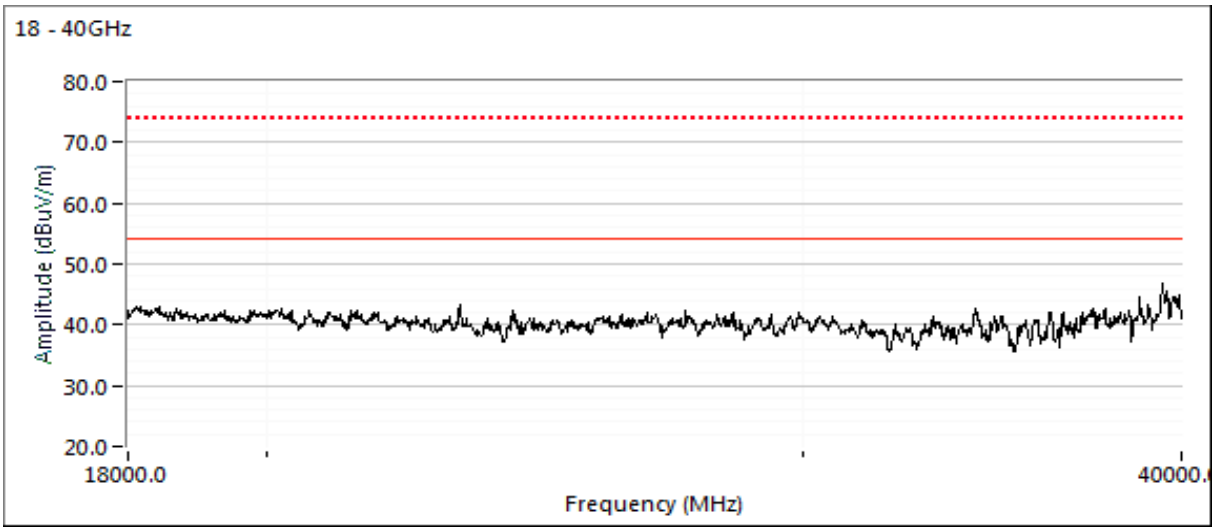
Run #8b: Center Channel

Channel: 6 & 157 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	33.9	V	60.0	-26.1	Peak	354	1.9	Note 5
1875.000	36.4	V	60.0	-23.6	Peak	105	1.6	Note 5
2000.000	47.9	H	60.0	-12.1	Peak	160	2.2	Note 5
9501.210	40.1	V	54.0	-13.9	VAVG	192	1.9	RB 1 MHz;VB 300 Hz;Note 3
9498.660	54.0	V	74.0	-20.0	PK	192	1.9	RB 1 MHz;VB 3 MHz;Peak
17362.400	62.2	H	68.3	-6.1	PK	192	1.8	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).

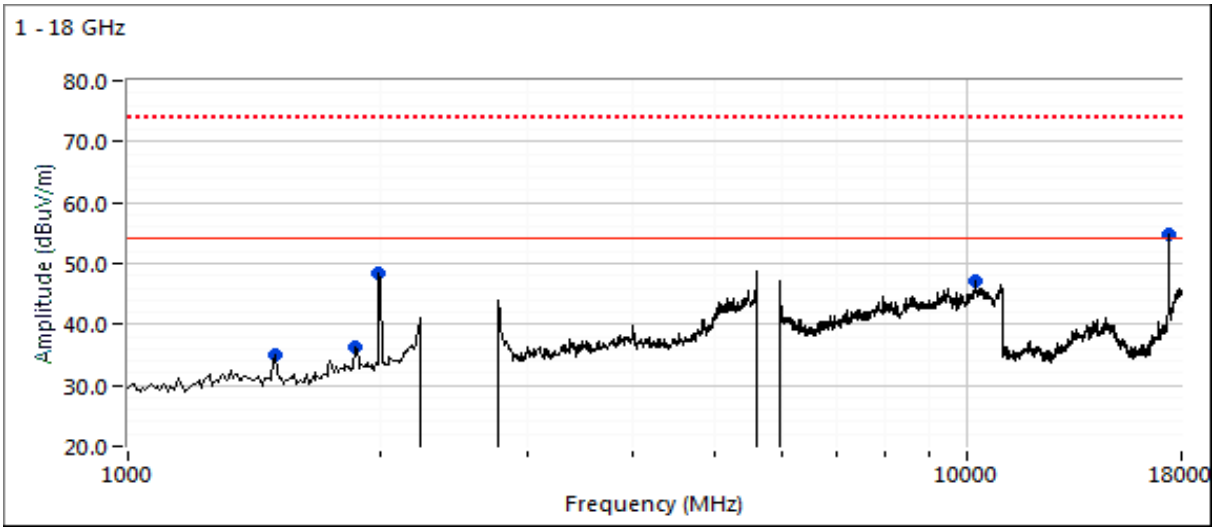
EMC Test Data

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

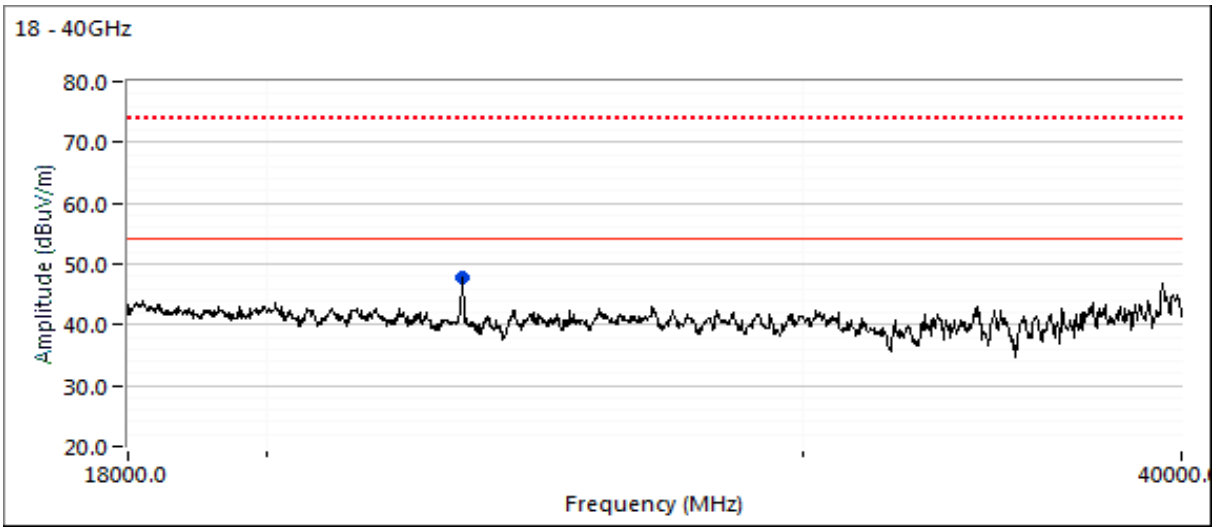
Run #8c: Center Channel

Channel: 6 & 159 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	
1500.000	35.1	H	60.0	-24.9	Peak	138	1.0	Note 5
1875.000	36.3	H	60.0	-23.7	Peak	109	1.0	Note 5
2000.000	48.3	H	60.0	-11.7	Peak	172	1.9	Note 5
10242.230	54.6	V	68.3	-13.7	PK	36	1.6	RB 1 MHz;VB 3 MHz;Peak
17375.500	66.3	V	68.3	-2.0	PK	189	1.7	RB 1 MHz;VB 3 MHz;Peak
23168.530	52.2	V	68.3	-16.1	PK	204	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).

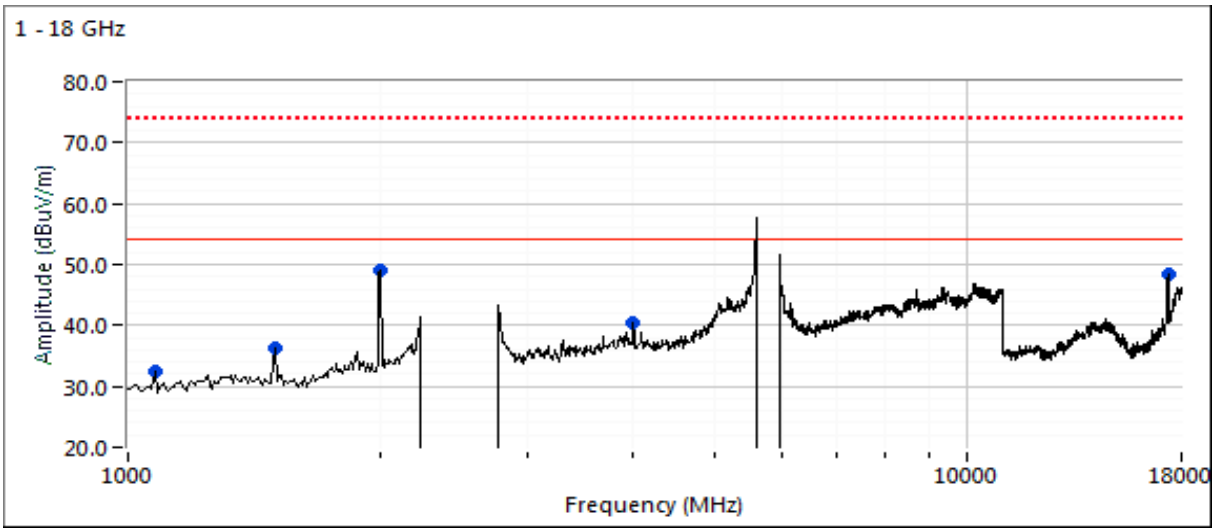
EMC Test Data

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

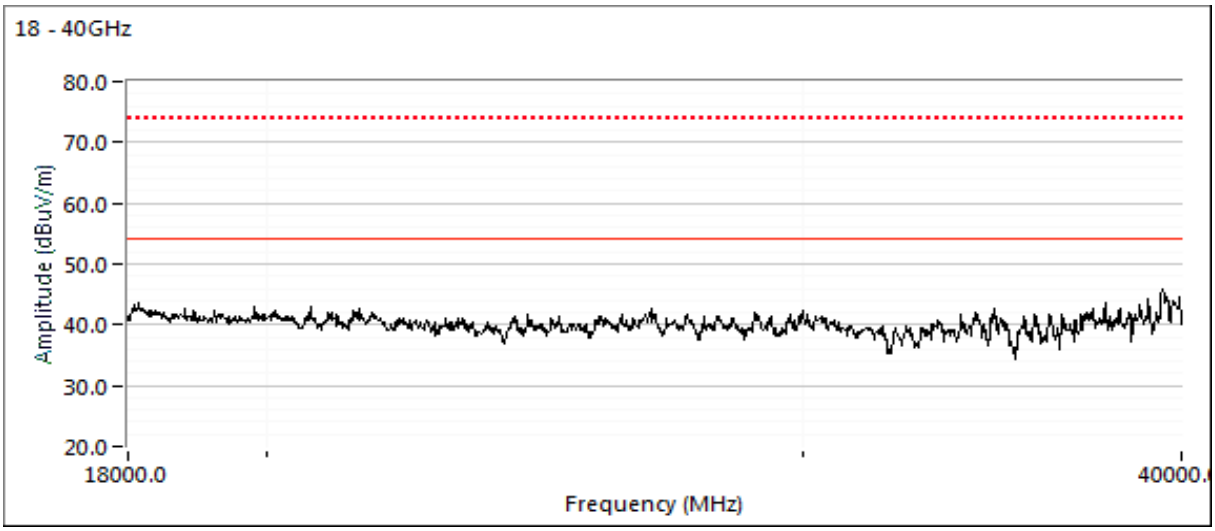
Run #8d: Center Channel

Channel: 6 & 155 Wi-Fi, 17 - BLE Mode: ac80 / b
Tx Chain: 4 (5GHz), 4 (2.4 GHz) 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	32.4	H	60.0	-27.6	Peak	176	1.0	Note 5
1500.000	36.4	H	60.0	-23.6	Peak	103	2.2	Note 5
1999.990	49.0	H	60.0	-11.0	VAVG	170	2.2	Note 5
1999.870	51.3	H	80.0	-28.7	PK	170	2.2	Note 5
4000.020	37.8	V	54.0	-16.2	VAVG	208	1.3	RB 1 MHz;VB 300 Hz;Note 3
3999.900	47.7	V	74.0	-26.3	PK	208	1.3	RB 1 MHz;VB 3 MHz;Peak
17333.500	58.6	V	68.3	-9.7	PK	180	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).

EMC Test Data

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

Date of Test: 10/26/2018 8:00
Test Engineer: Roy Zheng / R. Varelas
Test Location: Chamber #5

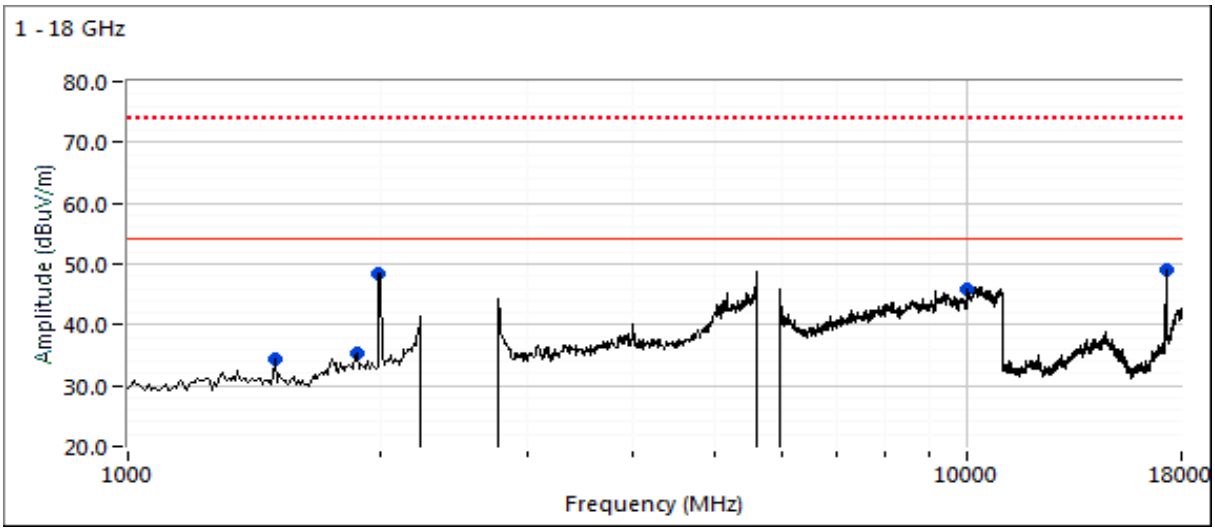
Config. Used: integral
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Run #9a: Low Channel

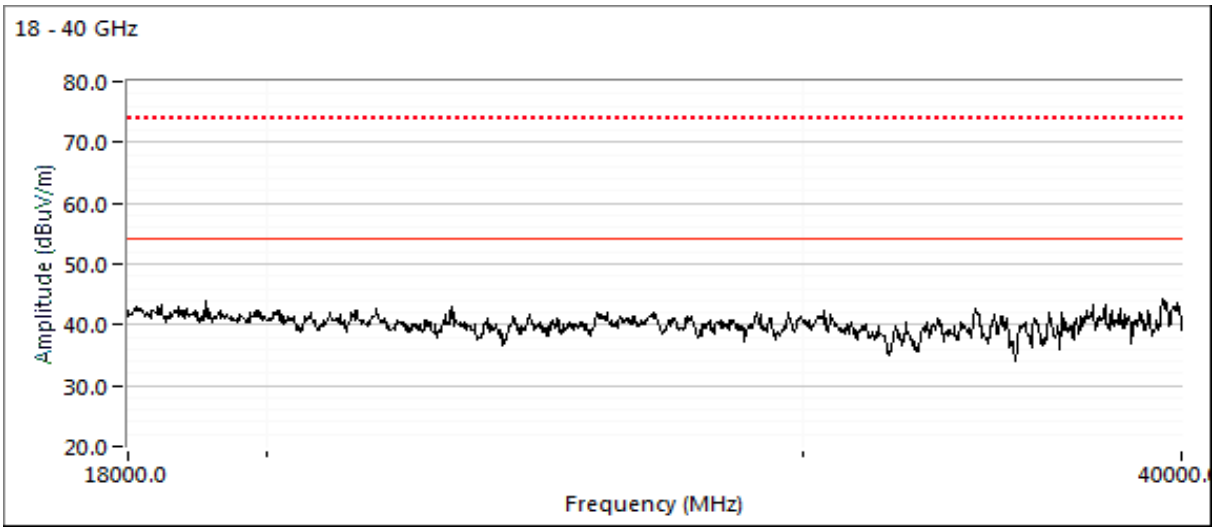
Channel: 3 & 151 Wi-Fi, 37 - BLE
Tx Chain: 4

Mode: ax40
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	348	1.9	Note 5
1875.000	35.2	V	60.0	-24.8	Peak	99	1.3	Note 5
1999.950	48.5	H	60.0	-11.5	VAVG	167	2.3	Note 5
1999.920	51.5	H	80.0	-28.5	PK	167	2.3	Note 5
9990.940	41.1	V	54.0	-12.9	VAVG	167	2.3	RB 1 MHz;VB 300 Hz;Note 3
9990.240	53.4	V	74.0	-20.6	PK	167	2.3	RB 1 MHz;VB 3 MHz;Peak
17272.500	66.1	V	68.3	-2.2	PK	193	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).

EMC Test Data

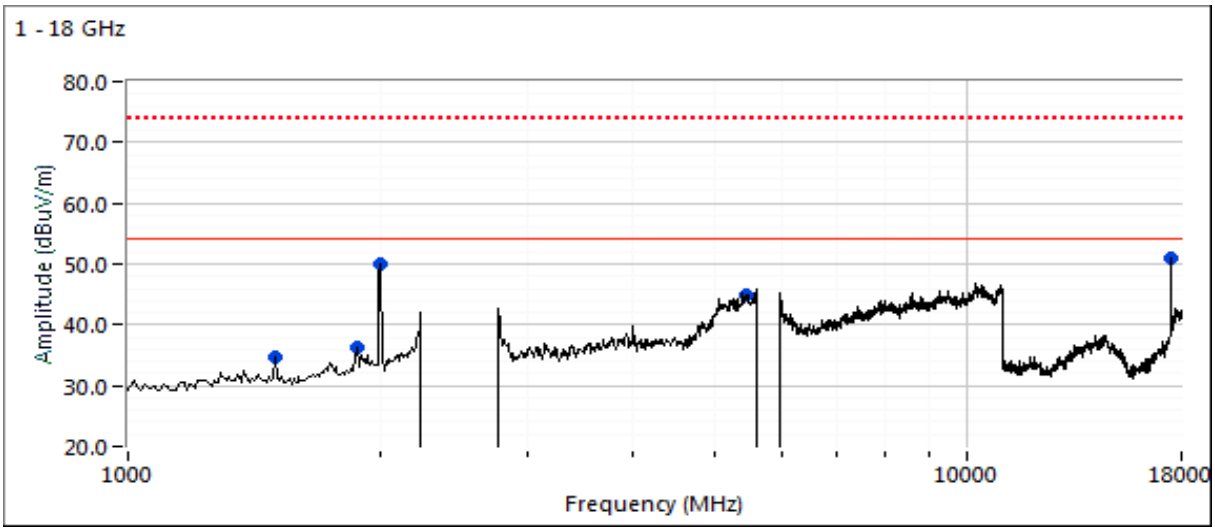
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #9b: High Channel

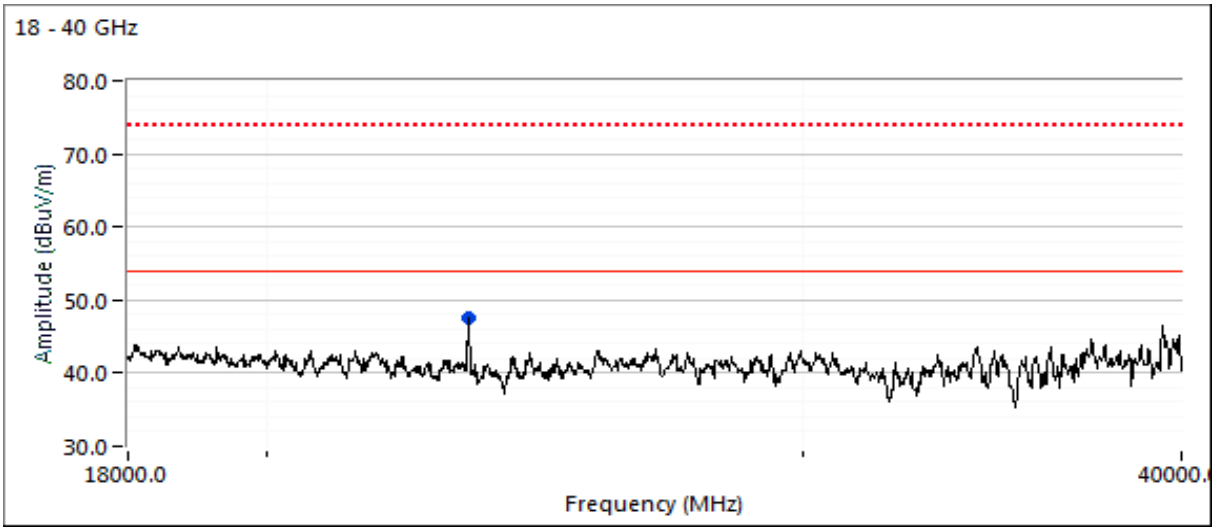
Channel: 11 & 165 Wi-Fi, 39 - BLE
Tx Chain: 4

Mode: ax20
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	
23305.410	59.0	H	68.3	-9.3	PK	218	1.0	RB 1 MHz;VB 3 MHz;Peak
5479.630	41.3	H	54.0	-12.7	Vavg	102	2.0	RB 1 MHz;VB 300 Hz;Note 3
5482.130	53.5	H	74.0	-20.5	PK	102	2.0	RB 1 MHz;VB 3 MHz;Peak
17470.780	58.6	H	68.3	-9.7	PK	188	1.3	RB 1 MHz;VB 3 MHz;Peak
1500.000	34.8	V	60.0	-25.2	Peak	360	1.9	Note 5
1875.000	36.2	H	60.0	-23.8	Peak	112	1.0	Note 5
2000.000	48.8	H	60.0	-11.2	Peak	170	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).

EMC Test Data

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
Test Engineer: Roy Zheng / R. Varelas
Test Location: Chamber #5

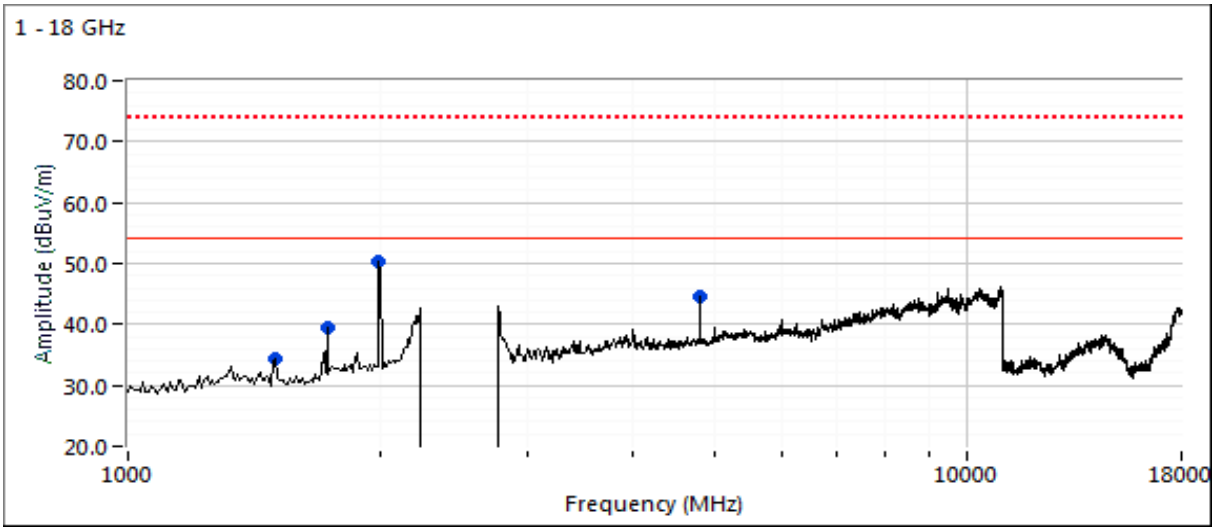
Config. Used: integral
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Run #10a: Low Channel

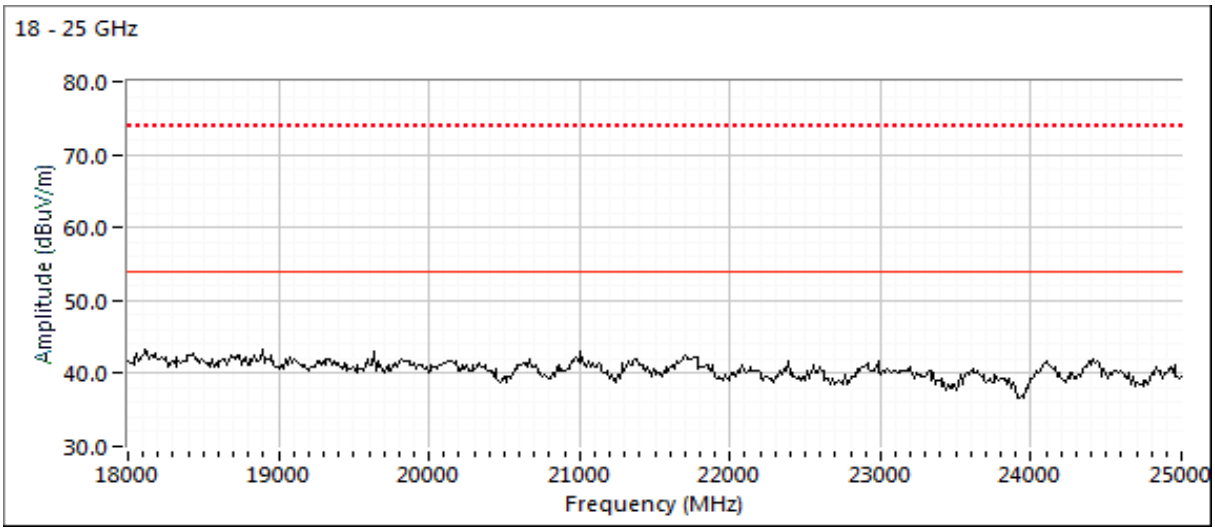
Channel: 37 (2402 MHz)
Tx Chain: BLE

Mode: 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.

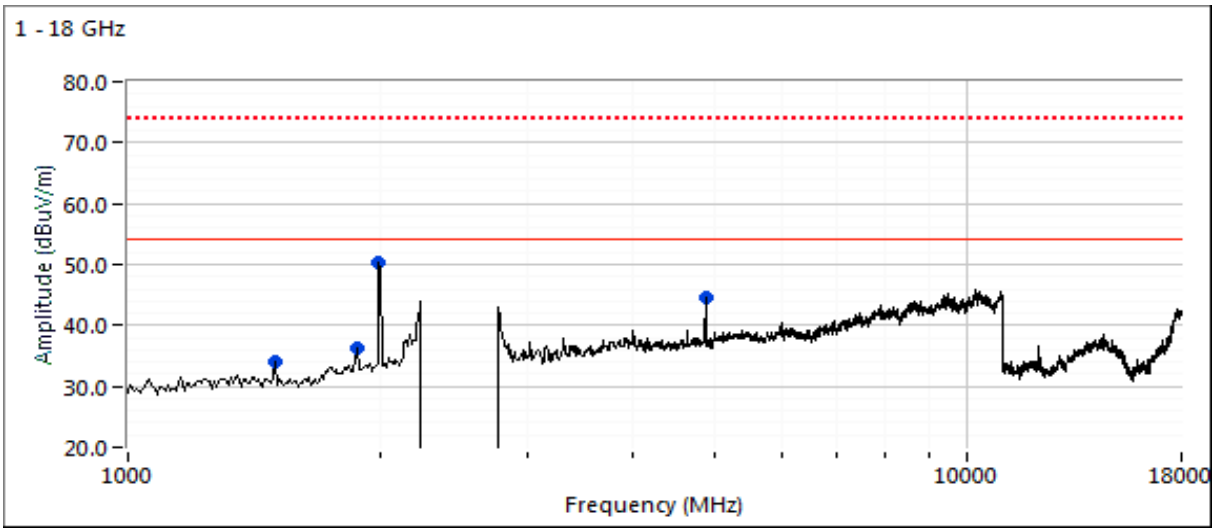
EMC Test Data

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

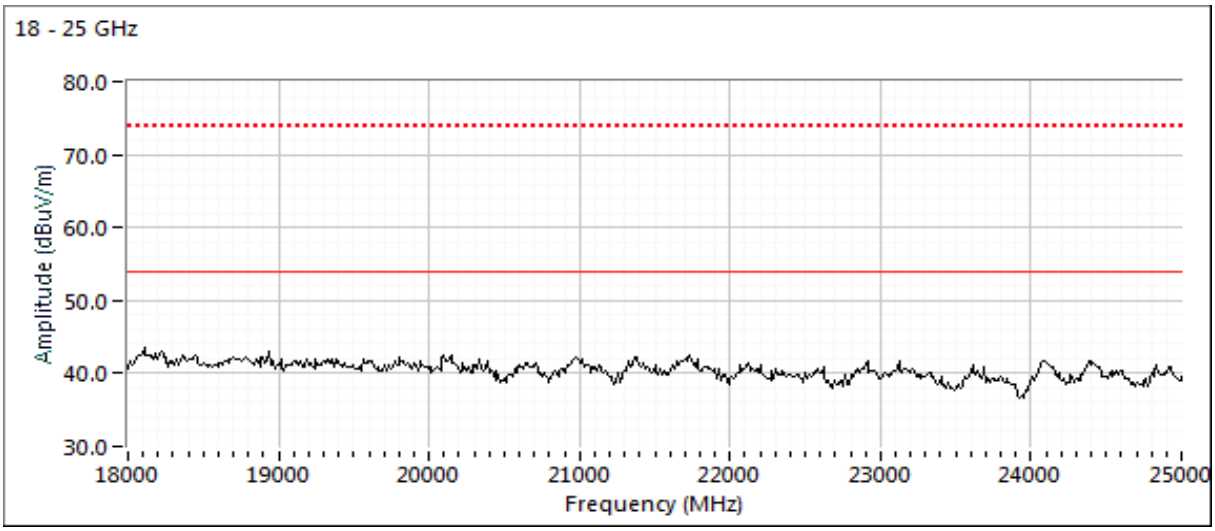
Run #10b: Middle Channel

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.

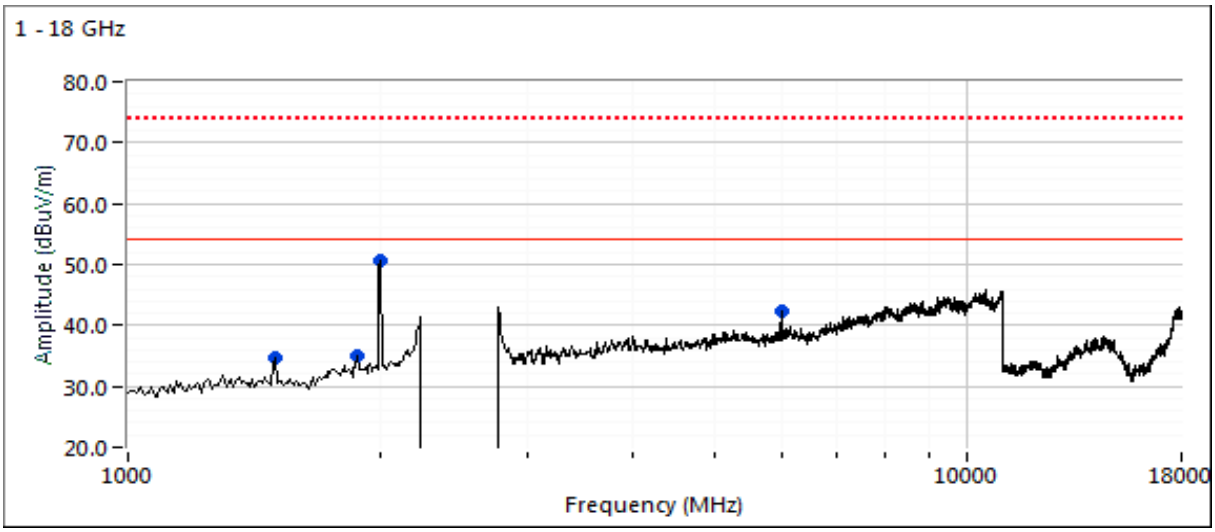
EMC Test Data

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

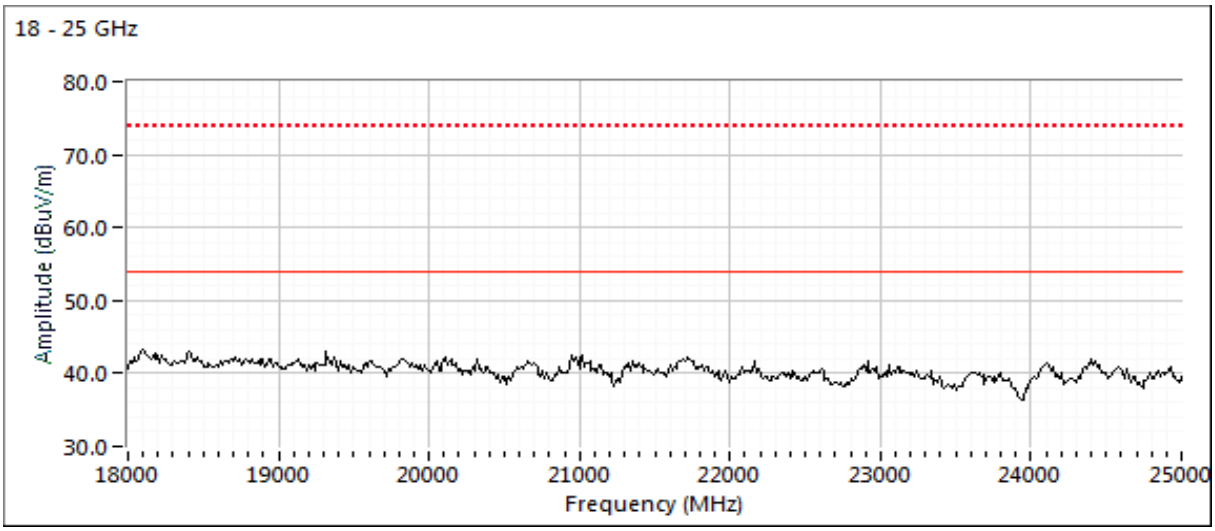
Run #10c: High Channel

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.

EMC Test Data

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

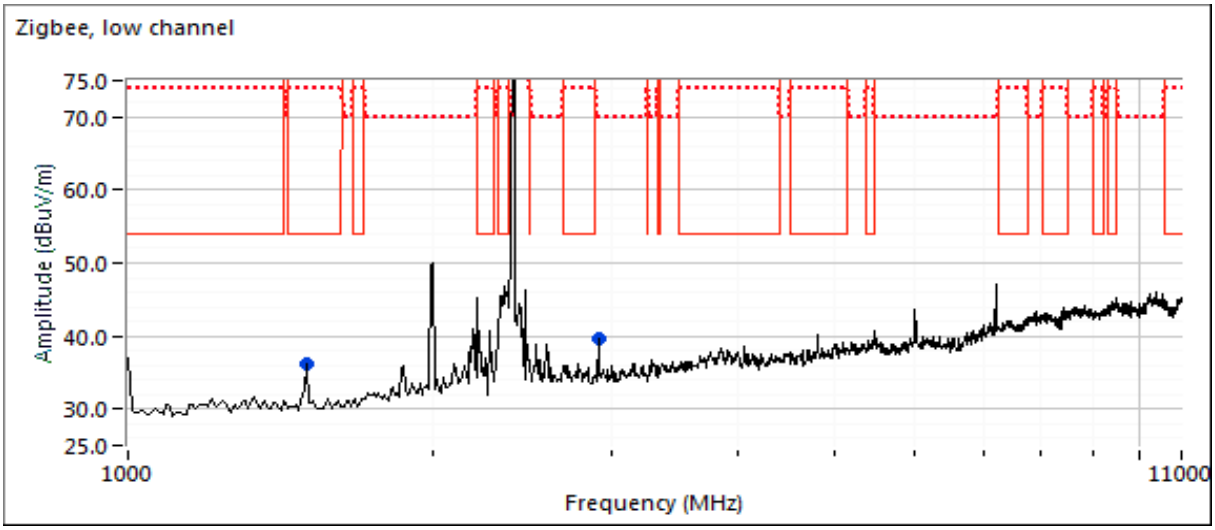
Run #11a: Low Channel

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



EMC Test Data

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

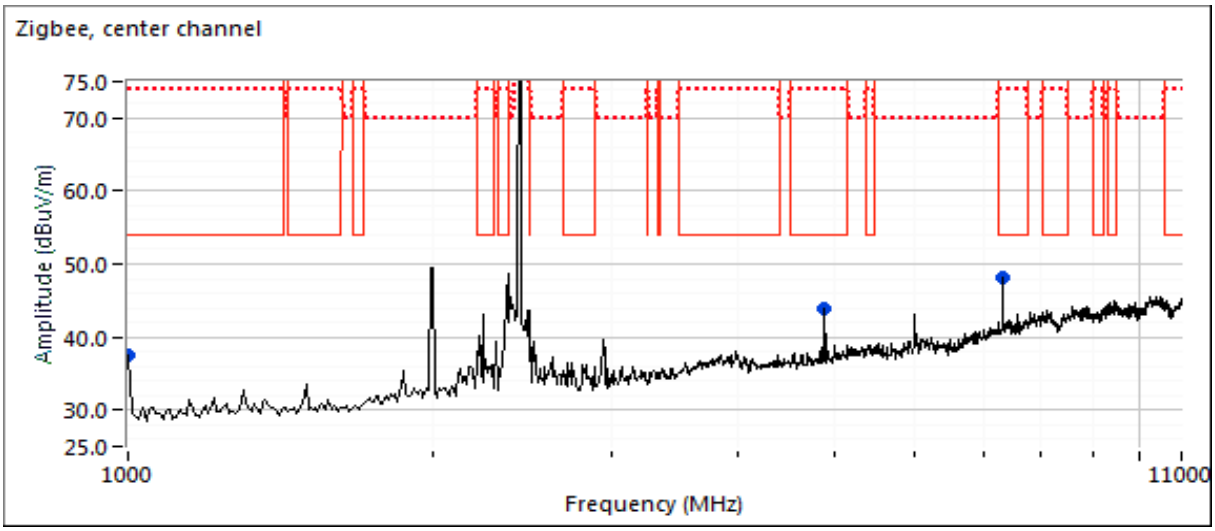
Run #11b: Middle Channel

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



EMC Test Data

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

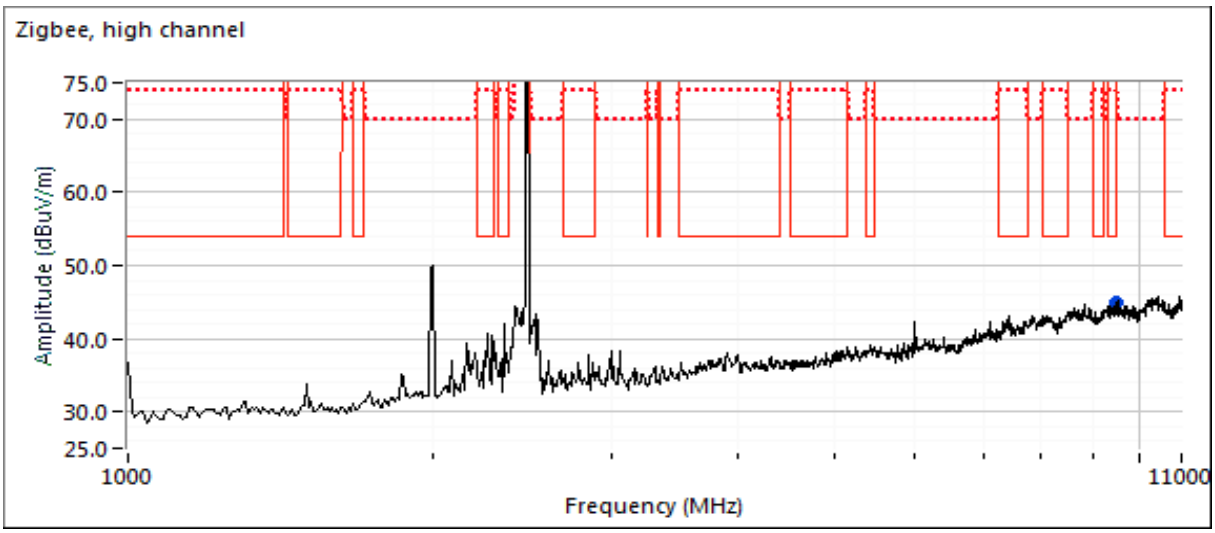
Run #11c: High Channel

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



EMC Test Data

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 "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).							
1	a / g BLE	6 & 40 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	52.4 dBµV/m @ 17947.7 MHz (-1.6 dB)
	ax20, BLE	6 & 40 Wi-Fi 17 - BLE	20	19	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	52.9 dBµV/m @ 5759.5 MHz (-15.4 dB)
	ax40, BLE	6 & 38 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	51.1 dBµV/m @ 5052.3 MHz (-2.9 dB)
	ax80 / b	6 & 42 Wi-Fi	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.0 dBµV/m @ 4800.0 MHz (-9.0 dB)
Scans on worst case mode above with ZigBee also active.							
2	a / b, ZigBee	6, 40 Wi-Fi 11 - ZB	20 / 20 / 8	20 / 20 / 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.0 dBµV/m @ 20795.5 MHz (-9.0 dB)

EMC Test Data

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

Measurements on low and high channels in worst-case OFDM mode.							
3	a/g, BLE	1 & 36 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.9 dBµV/m @ 5035.8 MHz (-8.1 dB)
	a/g, BLE	11 & 48 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.9 dBµV/m @ 5043.4 MHz (-6.1 dB)
Scans on "center" channel in all four OFDM modes to determine the worst case mode. (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band). No ac160 mode in this band.							
8	a / g, BLE	6 & 157 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.7 dBµV/m @ 4800.0 MHz (-9.3 dB)
	ax20, BLE	6 & 157 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.7 dBµV/m @ 5390.3 MHz (-10.3 dB)
	ax40, BLE	6 & 159 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.4 dBµV/m @ 4800.0 MHz (-8.6 dB)
	ac80 / b, BLE	6 & 155 Wi-Fi 37 - BLE	20	19.5 5GHz	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	66.2 dBµV/m @ 5981.78 MHz (-2.1 dB)
Measurements on low and high channels in worst-case OFDM mode.							
9	ac80 / b, BLE	1 & 149 Wi-Fi 37 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	61.9 dBµV/m @ 5494.4 MHz (-6.4 dB)
	ac80 / b, BLE	11 & 165 Wi-Fi 39 - BLE	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.7 dBµV/m @ 9847.9 MHz (-6.3 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.

EMC Test Data

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
Limits from 15.209 instead of 15.407(b)(1-3) acceptable until January 1, 2019 per FCC KDB 789033 D01
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
11ac80+80	MCS0	0.96	Yes	5.4	0.2	0.3	184

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.

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.

EMC Test Data

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

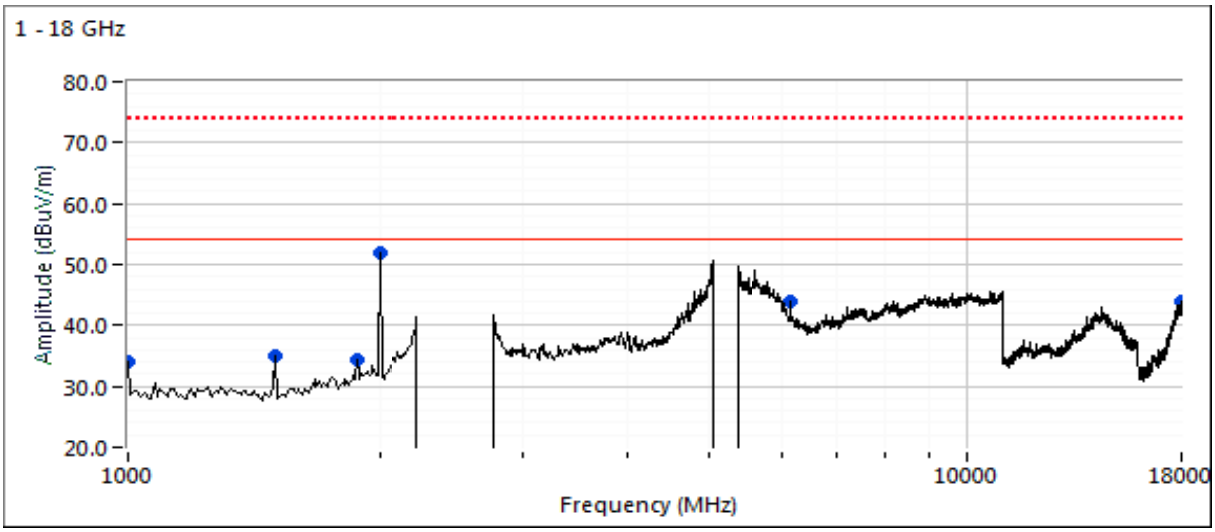
Date of Test: 10/16/2018 0:00
Test Engineer: Roy Zheng / R. Varelas
Test Location: Chamber #5

Config. Used: Ant 19
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Run #1a: Center Channel

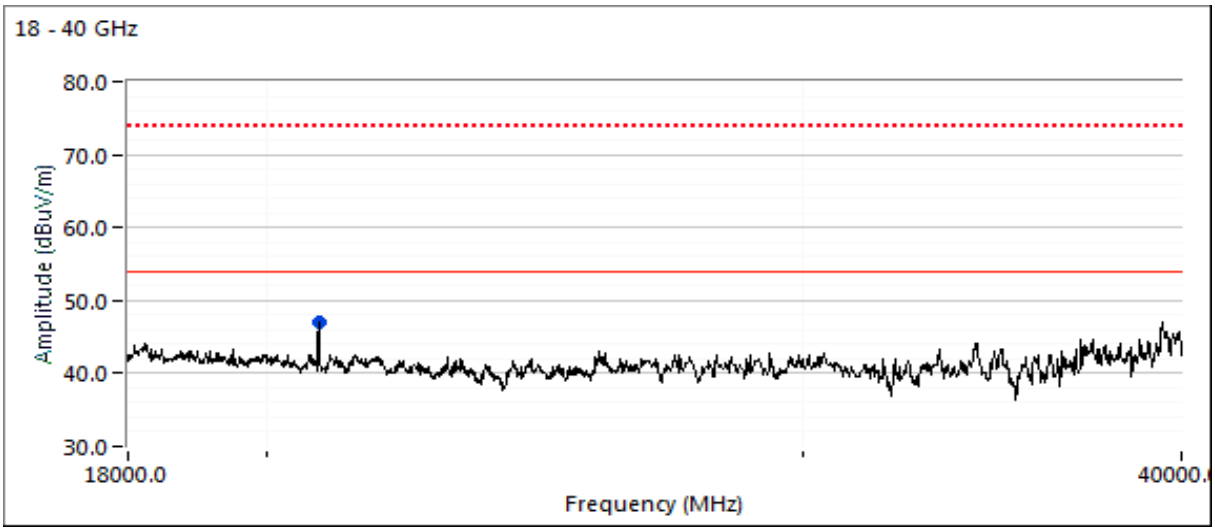
Channel: 6 & 40 Wi-Fi, 37 - BLE
Mode: 11a/g + BLE
Pwr setting 20
Tx Chain: 4 Tx
Data Rate: 6 Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1000.000	34.0	V	60.0	-26.0	Peak	56	1.9	Note 5
1500.060	34.9	V	60.0	-25.1	Peak	56	1.0	Note 5
1875.030	34.5	V	60.0	-25.5	Peak	360	1.9	Note 5
2000.040	52.3	V	60.0	-7.7	Peak	283	1.0	Note 5
6144.130	48.7	V	68.3	-19.6	PK	351	1.8	RB 1 MHz;VB 3 MHz;Peak
17947.740	52.4	H	54.0	-1.6	VAVG	237	2.0	RB 1 MHz;VB 1 kHz; Note 3
17948.980	64.5	H	74.0	-9.5	PK	237	2.0	RB 1 MHz;VB 3 MHz;Peak
20795.030	42.0	V	54.0	-12.0	VAVG	151	1.3	RB 1 MHz;VB 1 kHz; Note 3
20795.350	60.1	V	74.0	-13.9	PK	151	1.3	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

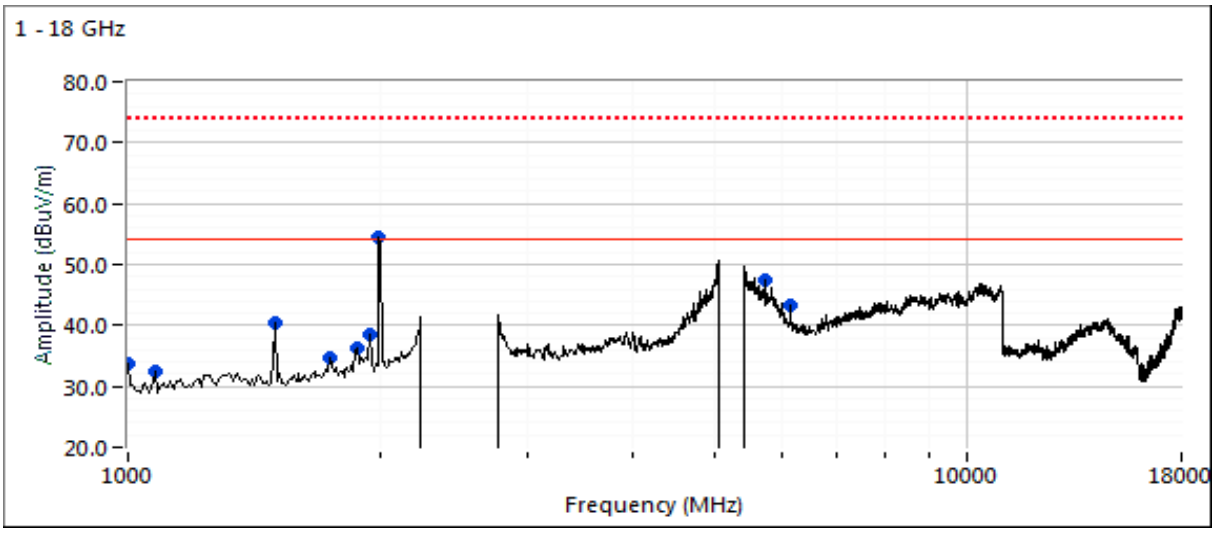
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1b: Center Channel

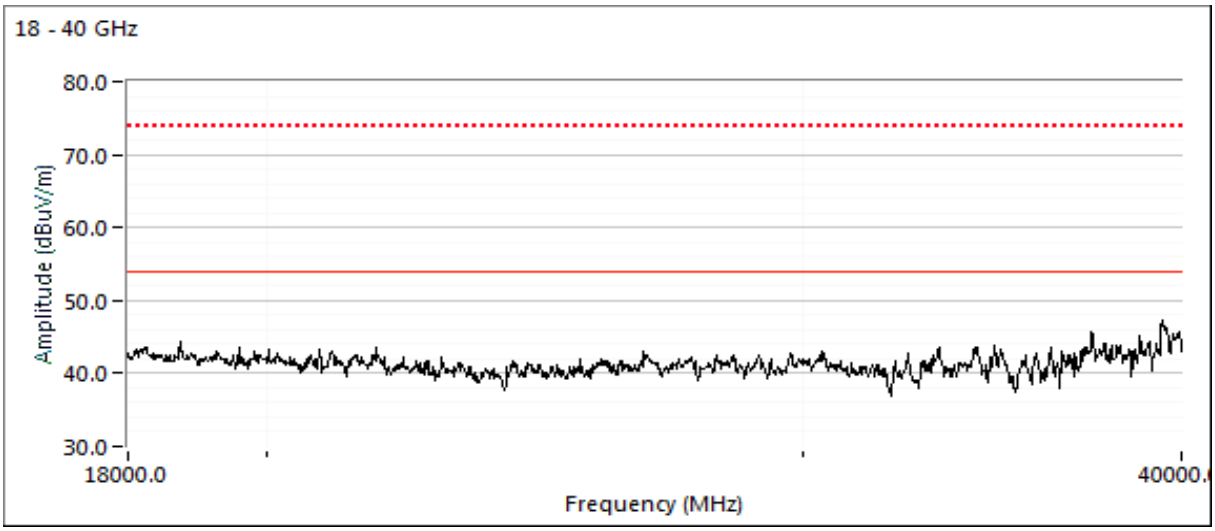
Channel: 6 & 40 Wi-Fi, 17 - BLE Mode: 11ax20

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	
1005.350	33.8	H	60.0	-26.2	Peak	22	2.5	Note 5
1073.920	32.4	V	60.0	-27.6	Peak	182	1.0	Note 5
1740.890	34.6	V	60.0	-25.4	Peak	46	1.9	Note 5
1878.800	36.4	V	60.0	-23.6	Peak	92	1.6	Note 5
1936.820	38.6	V	60.0	-21.4	Peak	195	1.0	Note 5
2000.130	55.7	V	60.0	-4.3	PK	21	1.4	Note 5
1500.090	41.6	V	60.0	-18.4	PK	17	1.4	Note 5
5759.510	52.9	V	68.3	-15.4	PK	54	1.4	RB 1 MHz;VB 3 MHz;Peak
6143.830	49.9	V	68.3	-18.4	PK	50	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).

EMC Test Data

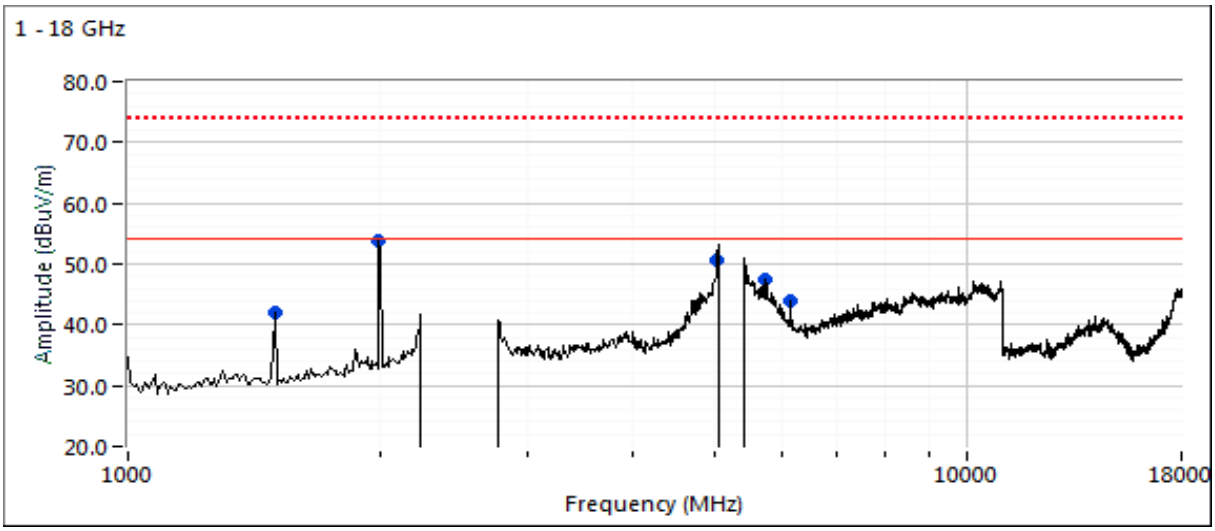
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1c: Center Channel

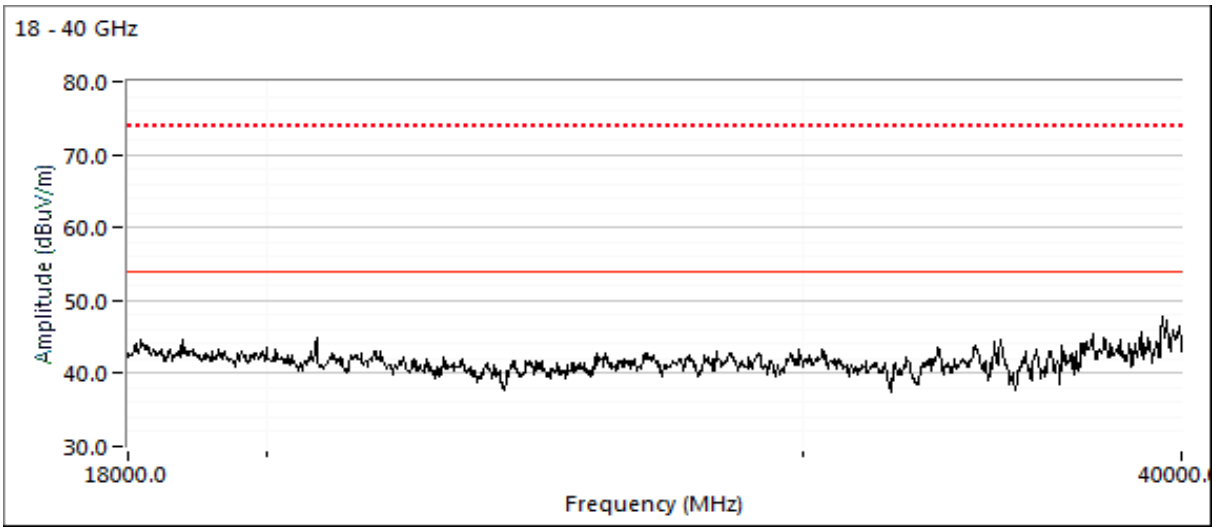
Channel: 6 & 38 Wi-Fi, 39 - BLE Mode: 11ax40

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	
5052.300	51.1	V	54.0	-2.9	VAVG	206	1.5	RB 1 MHz;VB 300Hz; Note 3
5052.350	66.7	V	74.0	-7.3	PK	206	1.5	RB 1 MHz;VB 3 MHz;Peak
5760.070	55.7	V	68.3	-12.6	PK	176	1.6	RB 1 MHz;VB 3 MHz;Peak
6144.030	51.1	V	68.3	-17.2	PK	139	1.6	RB 1 MHz;VB 3 MHz;Peak
2000.030	49.1	V	54.0	-4.9	VAVG	97	1.0	RB 1 MHz;VB 300Hz; Note 3
1999.950	51.7	V	74.0	-22.3	PK	97	1.0	RB 1 MHz;VB 3 MHz;Peak
1499.980	37.6	V	54.0	-16.4	VAVG	56	1.9	RB 1 MHz;VB 300Hz; Note 3
1499.890	43.8	V	74.0	-30.2	PK	56	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).

EMC Test Data

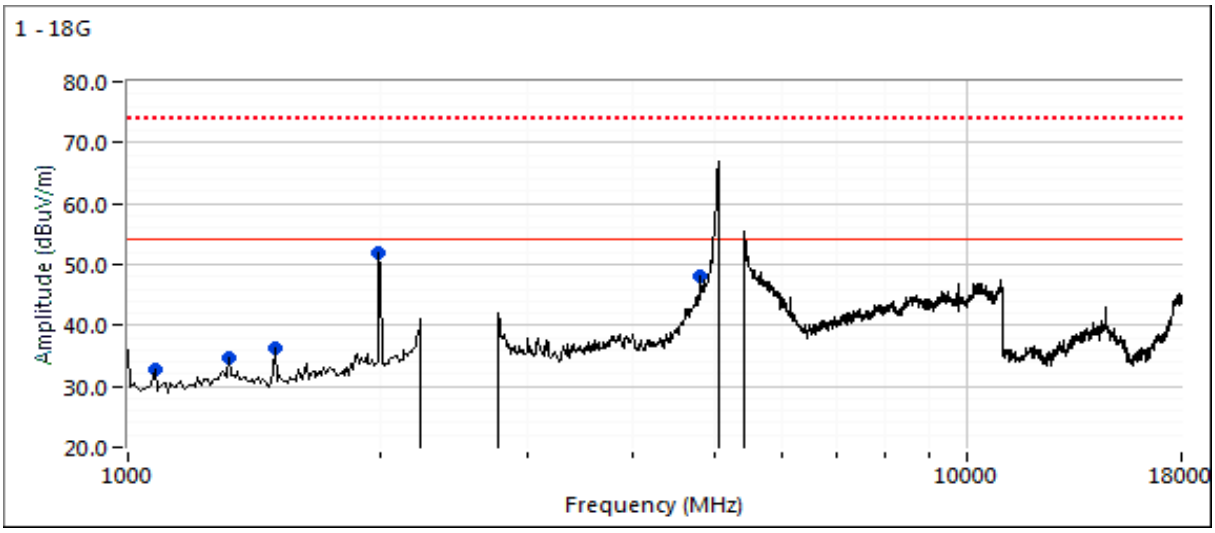
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #1d: Center Channel

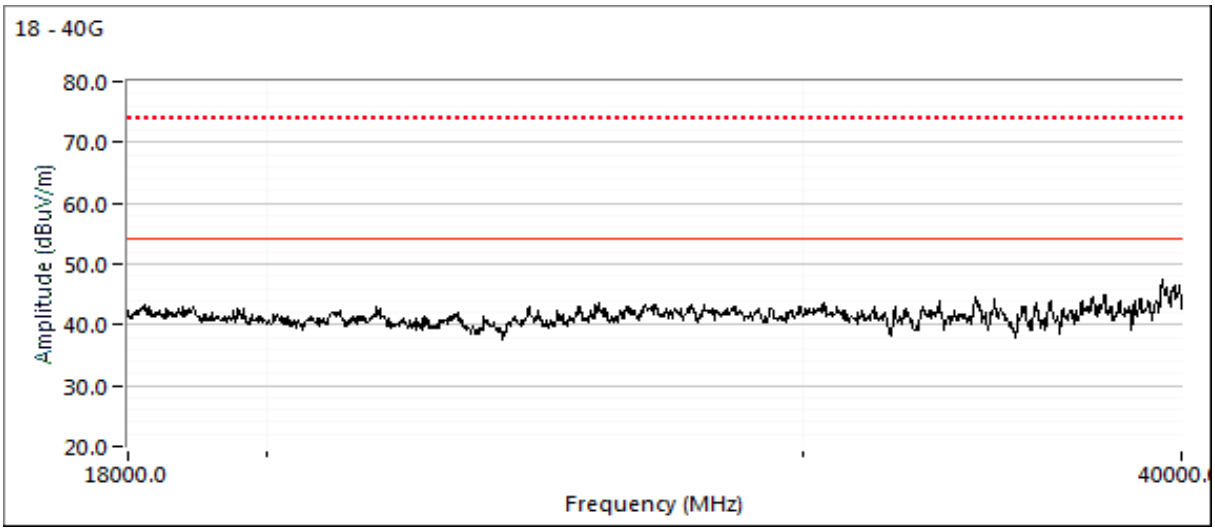
Channel: 6 & 42 Wi-Fi Mode: ax80 / b

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	
1075.000	32.9	V	60.0	-27.1	Peak	276	1.0	Note 5
1316.670	34.8	H	60.0	-25.2	Peak	237	1.0	Note 5
1500.000	36.4	V	60.0	-23.6	Peak	58	1.0	Note 5
2000.000	51.9	V	60.0	-8.1	Peak	45	1.0	Note 5
4799.960	45.0	V	54.0	-9.0	VAVG	338	1.8	RB 1 MHz;VB 300 Hz;Note 3
4800.440	56.0	V	74.0	-18.0	PK	338	1.8	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).

EMC Test Data

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
Test Engineer: Roy Zheng / R. Varelas
Test Location: Chamber #5

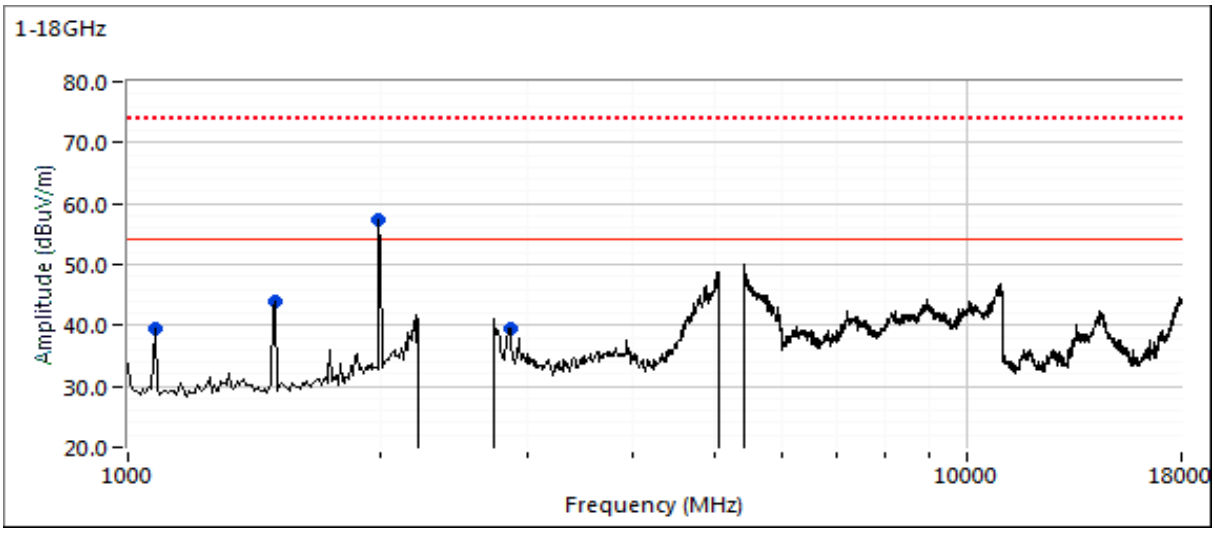
Config. Used: Ant 19
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Run #2a: Center Channel

Channel: 6, 40 Wi-Fi, 11 - ZigBee
Tx Chain: 4

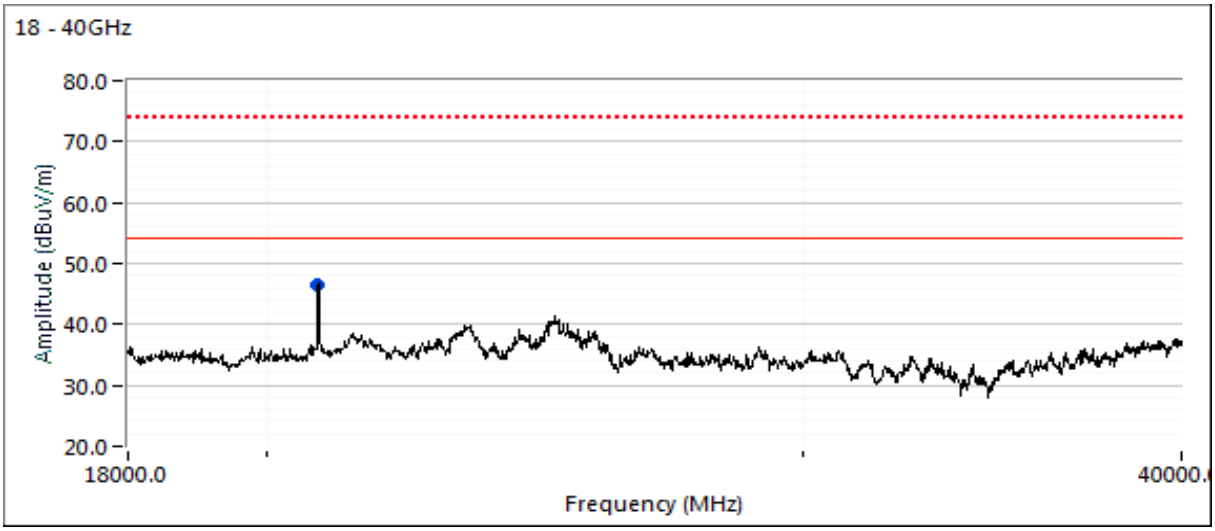
Mode: a, b
Data Rate: MCS0, 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1075.000	39.5	H	60.0	-20.5	Peak	154	2.2	Note 5
1500.000	43.9	V	60.0	-16.1	Peak	126	1.6	Note 5
2000.000	57.5	V	60.0	-2.5	Peak	62	1.0	Note 5
2850.000	39.4	H	54.0	-14.6	Peak	219	1.0	Peak reqading vs. average limit
20795.530	45.0	V	54.0	-9.0	VAVG	141	1.8	RB 1 MHz;VB 1 kHz;Note 4
20795.850	52.5	V	74.0	-21.5	PK	141	1.8	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

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

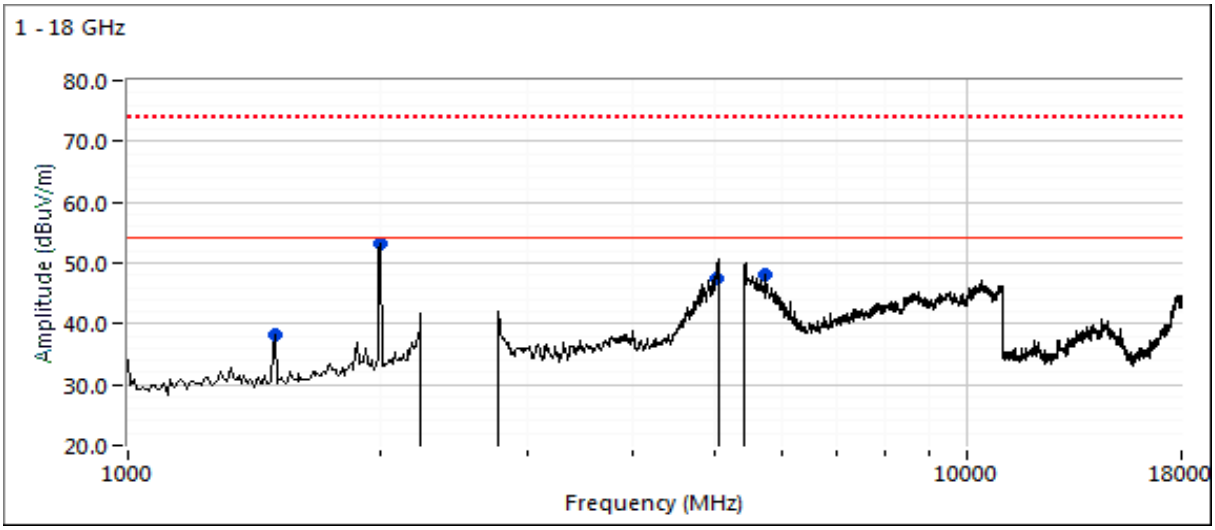
Run #3: Radiated Spurious Emissions, 1,000 - 40000 MHz. Operating Mode: Worse case from Runs #1 and 2

Date of Test: 10/16/2018 20:00 — Config. Used: Ant 19
Test Engineer: Rafael Varelas — Config Change: none
Test Location: Chamber #5 — EUT Voltage: PoE & 120V/60Hz

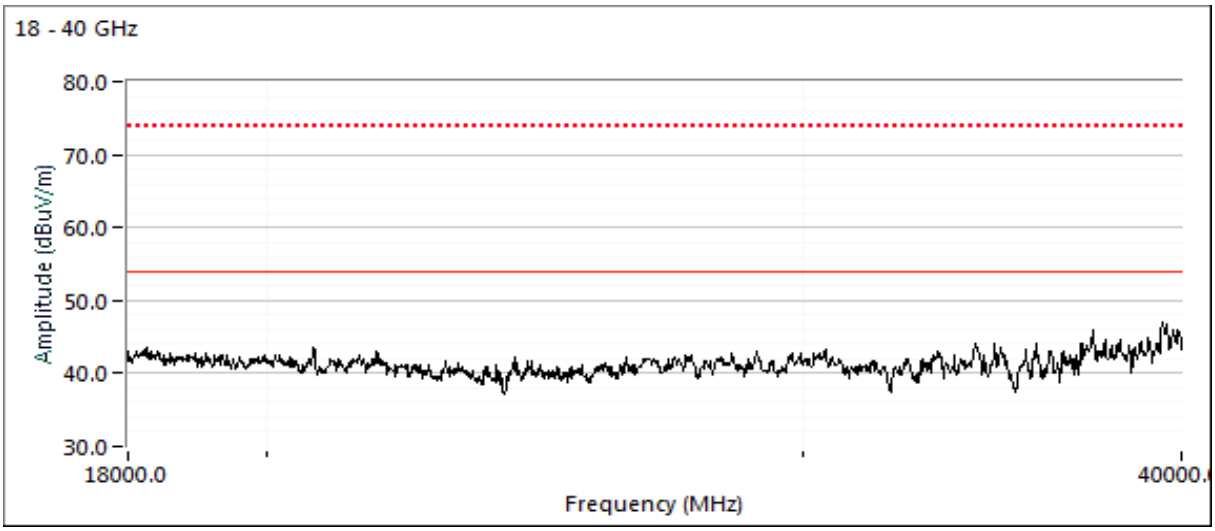
Run #3a: Low Channel

Channel: 1 & 36 Wi-Fi, 37 - 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	
1499.970	36.9	V	60.0	-23.1	VAVG	70	2.0	Note 5
1499.910	43.1	V	80.0	-36.9	PK	70	2.0	Note 5
2000.040	52.7	V	60.0	-7.3	VAVG	13	1.3	Note 5
2000.060	56.8	V	80.0	-23.2	PK	13	1.3	Note 5
5760.190	56.2	V	68.3	-12.1	PK	210	1.6	RB 1 MHz;VB 3 MHz;Peak
5035.830	45.9	V	54.0	-8.1	VAVG	212	1.5	RB 1 MHz;VB 300 Hz; Note 3
5035.820	58.2	V	74.0	-15.8	PK	212	1.5	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).

EMC Test Data

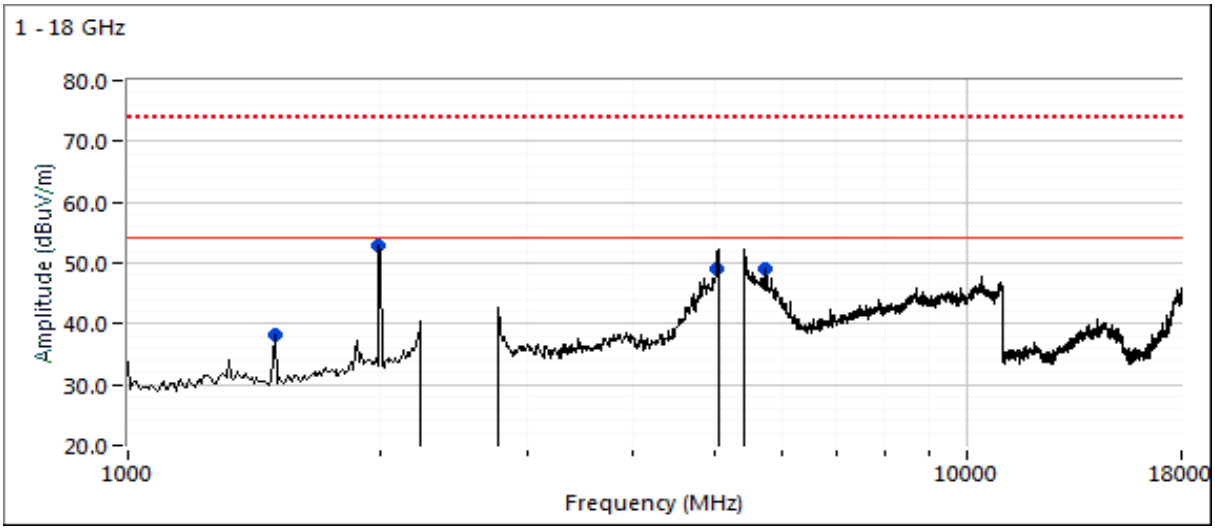
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #3b: High Channel

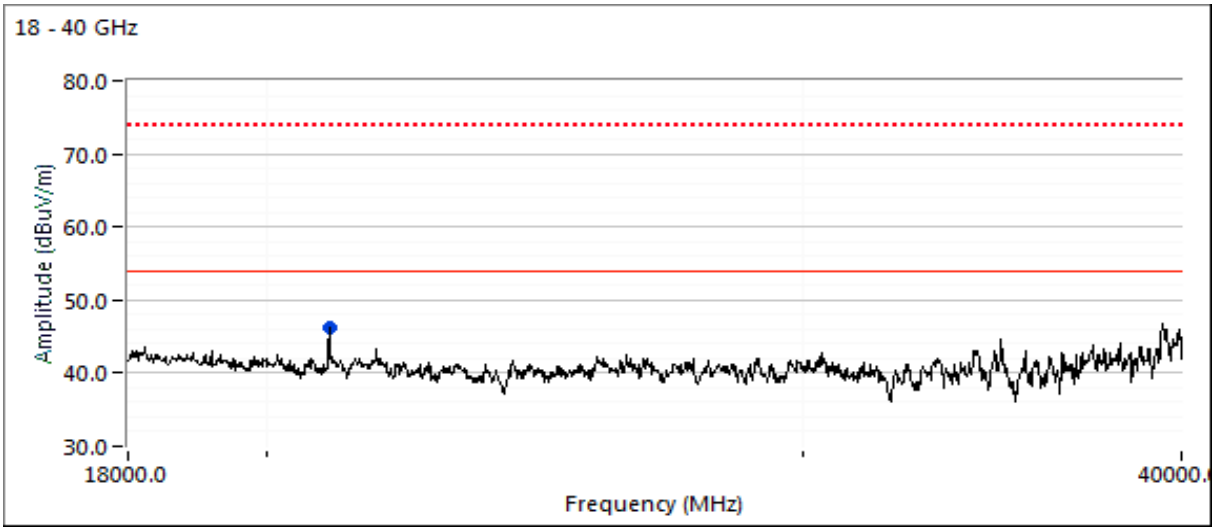
Channel: 11 & 48 Wi-Fi, 39 - BLE Mode: a/g

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	
2000.070	52.6	V	60.0	-7.4	VAVG	18	1.3	Note 5
2000.070	54.5	V	80.0	-25.5	PK	18	1.3	Note 5
1500.000	36.7	V	60.0	-23.3	VAVG	74	2.0	Note 5
1499.790	43.2	V	80.0	-36.8	PK	74	2.0	Note 5
5043.360	47.9	V	54.0	-6.1	VAVG	215	1.4	RB 1 MHz;VB 300 Hz; Note 3
5045.060	61.7	V	74.0	-12.3	PK	215	1.4	RB 1 MHz;VB 3 MHz;Peak
5760.240	56.0	V	68.3	-12.3	PK	326	1.6	RB 1 MHz;VB 3 MHz;Peak
20961.030	40.5	V	54.0	-13.5	VAVG	176	1.2	RB 1 MHz;VB 300 Hz; Note 3
20962.760	61.3	V	74.0	-12.7	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).

EMC Test Data

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 #8, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5725-5850 MHz Band

Date of Test: 10/18/2018 0:00
Test Engineer: Rafael Varelas
Test Location: Chamber #4

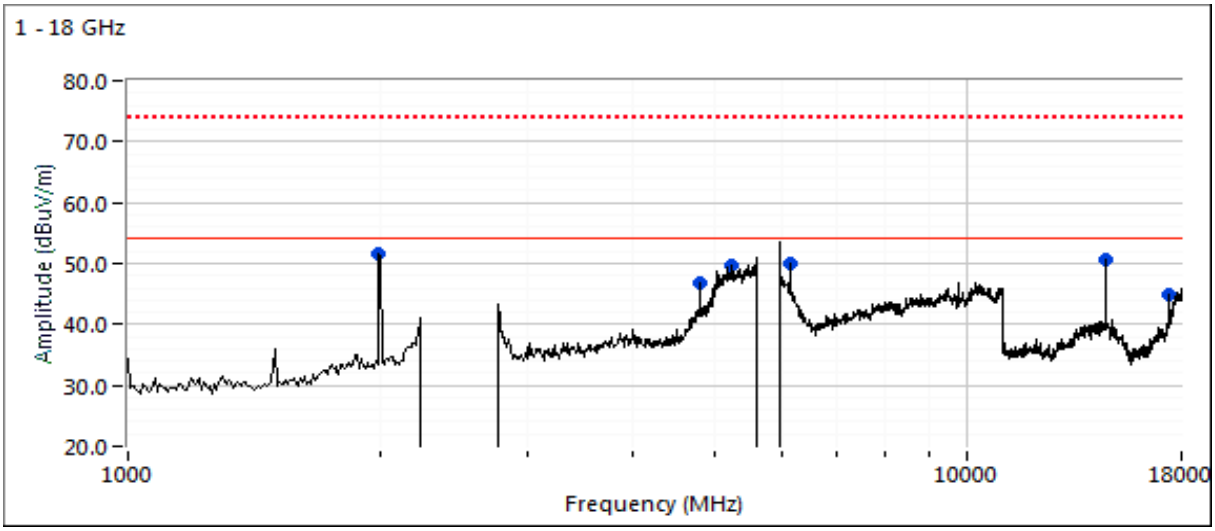
Config. Used: Ant 19
Config Change: none
EUT Voltage: PoE & 120V/60Hz

Run #8a: Center Channel

Channel: 6 & 157 Wi-Fi, 37 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

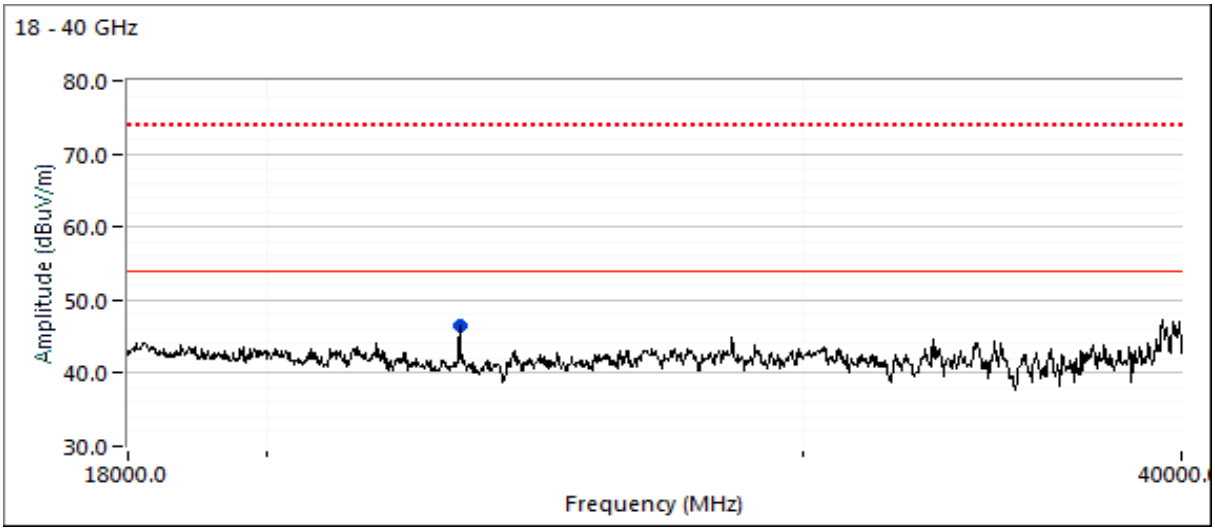
Mode: a, g
Data Rate: 6Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
14621.950	50.6	V	54.0	-3.4	VAVG	122	1.2	RB 1 MHz;VB 1 kHz;Note 3
14622.000	55.8	V	74.0	-18.2	PK	122	1.2	RB 1 MHz;VB 3 MHz;Peak
17362.440	56.7	V	68.3	-11.6	PK	199	1.5	RB 1 MHz;VB 3 MHz;Peak
4800.020	44.7	V	54.0	-9.3	VAVG	15	1.7	RB 1 MHz;VB 1 kHz;Note 3
4799.960	52.4	V	74.0	-21.6	PK	15	1.7	RB 1 MHz;VB 3 MHz;Peak
2000.070	50.8	V	60.0	-9.2	Avg	169	1.5	Note 5
2000.010	52.5	V	80.0	-27.5	PK	169	1.5	Note 5
6144.170	54.7	V	68.3	-13.6	PK	192	1.6	RB 1 MHz;VB 3 MHz;Peak
5250.370	57.5	V	68.3	-10.8	PK	312	1.7	RB 1 MHz;VB 3 MHz;Peak
23135.490	57.3	H	68.3	-11.0	PK	230	1.0	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

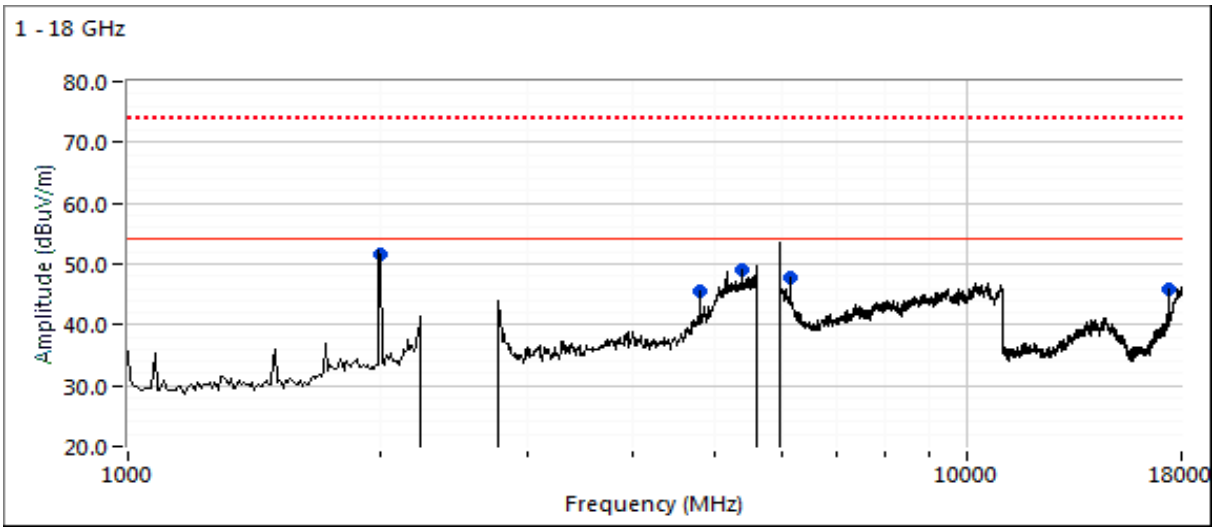
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #8b: Center Channel

Channel: 6 & 157 Wi-Fi, 17 - BLE Mode: 11ax20

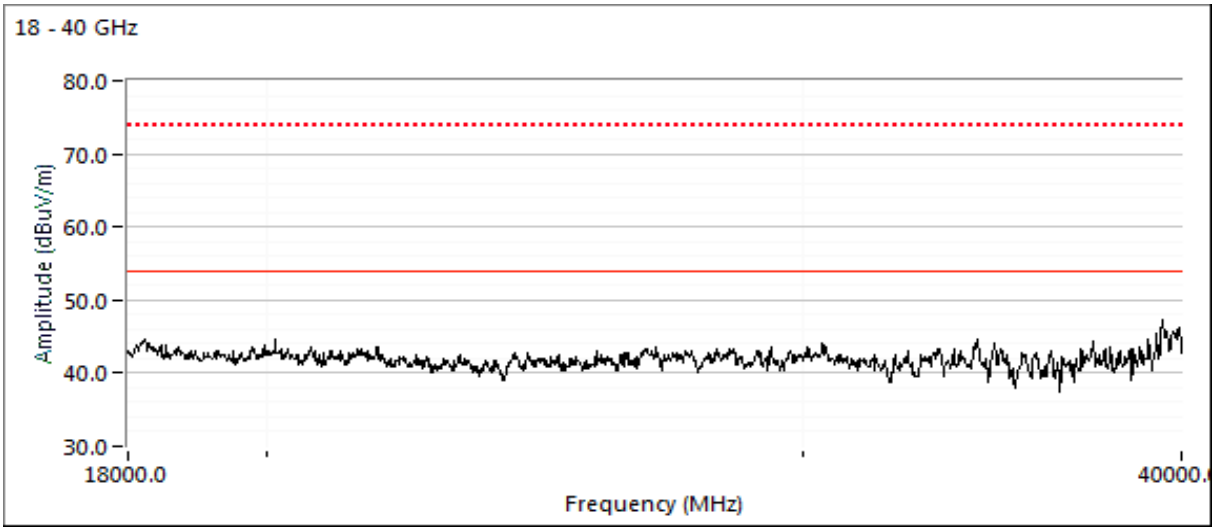
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
17358.330	45.8	H	68.3	-22.5	Peak	215	1.3	RB 1 MHz;VB 3 MHz;Peak
2000.040	51.1	V	60.0	-8.9	Avg	0	1.0	Note 5
2000.030	55.0	V	80.0	-25.0	PK	0	1.0	Note 5
4786.670	37.5	V	54.0	-16.5	VAVG	135	1.7	RB 1 MHz;VB 300 Hz;Note 3
4787.030	50.4	V	74.0	-23.6	PK	135	1.7	RB 1 MHz;VB 3 MHz;Peak
6143.850	53.7	V	68.3	-14.6	PK	192	1.6	RB 1 MHz;VB 3 MHz;Peak
5390.280	43.7	V	54.0	-10.3	VAVG	319	1.7	RB 1 MHz;VB 300 Hz;Note 3
5390.910	56.1	V	74.0	-17.9	PK	319	1.7	RB 1 MHz;VB 3 MHz;Peak



EMC Test Data

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).

EMC Test Data

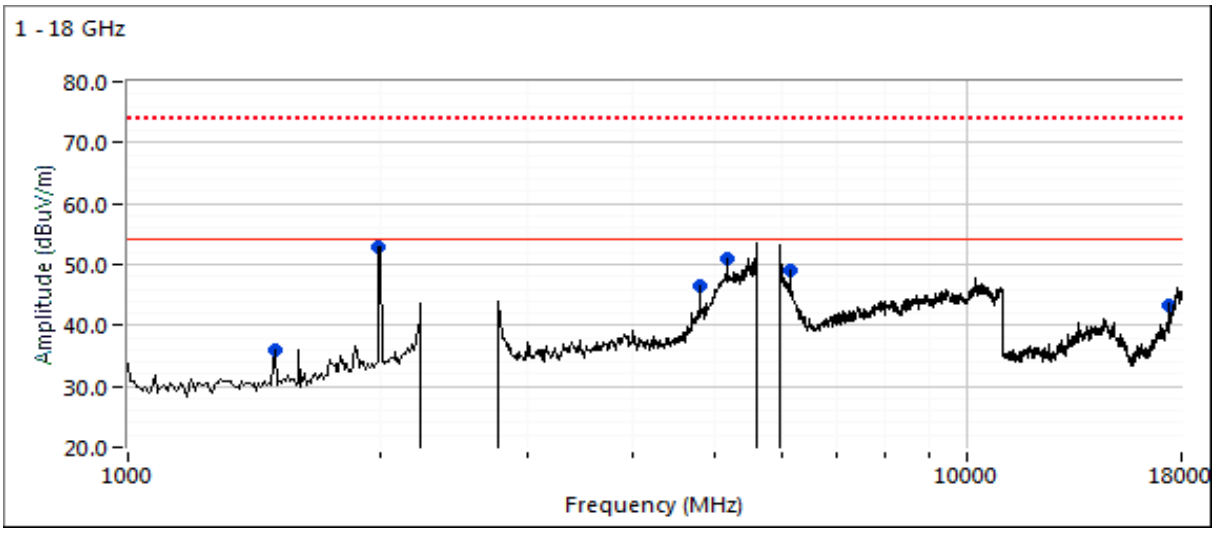
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #8c: Center Channel

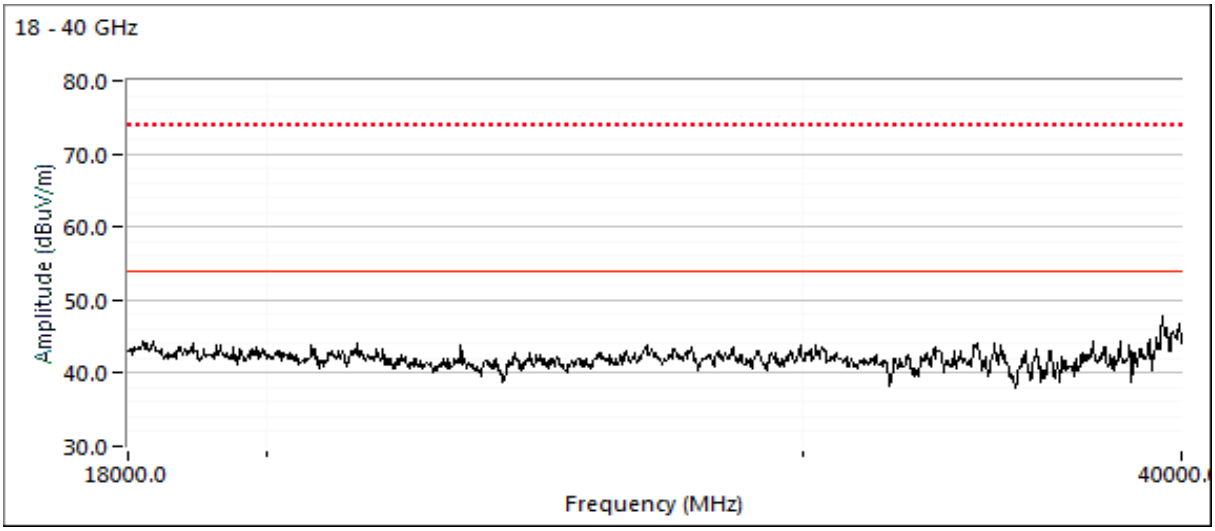
Channel: 6 & 159 Wi-Fi, 39 - BLE Mode: 11ax40

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	35.9	V	60.0	-24.1	Peak	23	1.9	Note 5
17370.000	43.4	V	68.3	-24.9	Peak	187	1.6	RB 1 MHz;VB 3 MHz;Peak
2000.050	52.1	H	60.0	-7.9	Avg	193	1.8	Note 5
2000.000	54.0	H	80.0	-26.0	PK	193	1.8	Note 5
5184.090	57.7	V	68.3	-10.6	PK	161	1.6	RB 1 MHz;VB 3 MHz;Peak
6133.670	55.9	V	68.3	-12.4	PK	203	1.5	RB 1 MHz;VB 3 MHz;Peak
4800.030	45.4	V	54.0	-8.6	VAVG	153	1.7	RB 1 MHz;VB 300 Hz;Peak VAVG 100
4799.790	54.3	V	74.0	-19.7	PK	153	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).

EMC Test Data

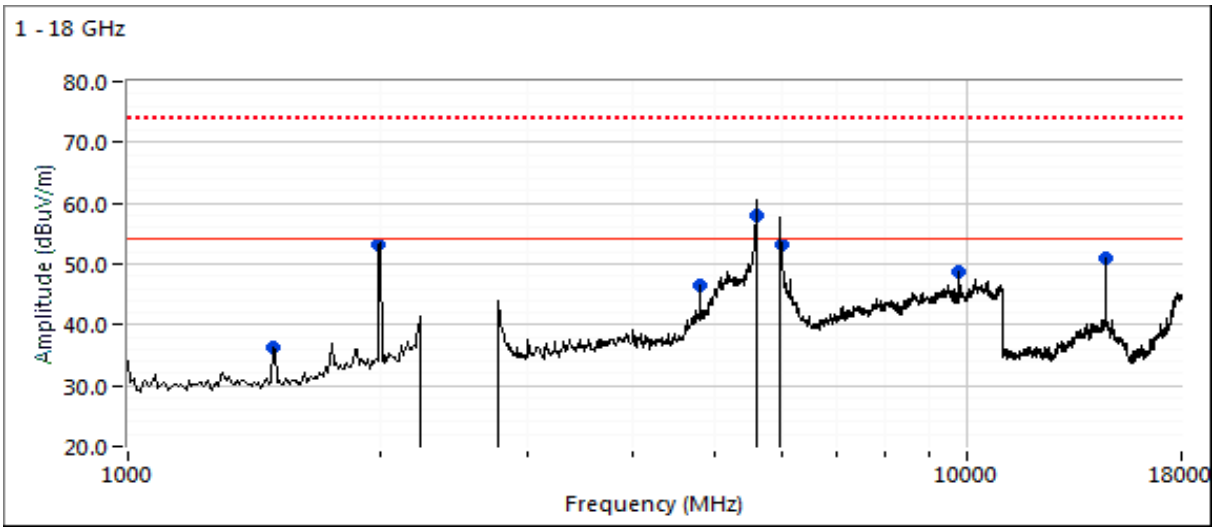
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #8d: Center Channel

Channel: 6 & 155 Wi-Fi, 17 - BLE Mode: ac80 / b

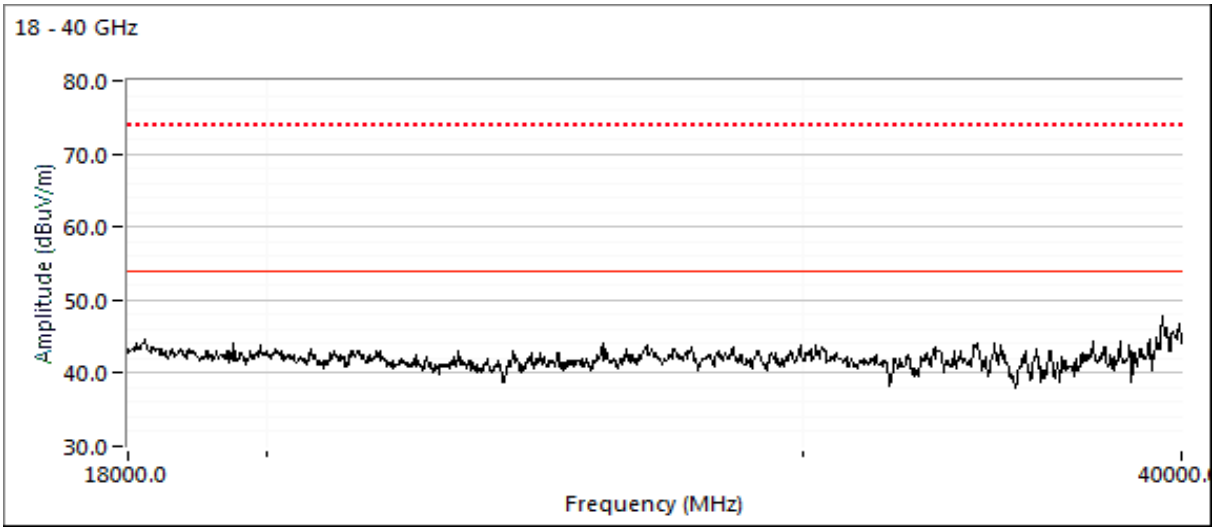
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.070	36.2	V	60.0	-23.8	Peak	28	1.3	Note 5
4800.060	44.0	V	54.0	-10.0	VAVG	11	1.8	RB 1 MHz;VB 300 Hz;Note 3
4799.730	52.3	V	74.0	-21.7	PK	11	1.8	RB 1 MHz;VB 3 MHz;Peak
2000.070	50.8	V	60.0	-9.2	Avg	62	1.1	Note 5
2000.050	52.8	V	80.0	-27.2	PK	62	1.1	Note 5
9741.660	40.8	V	54.0	-13.2	VAVG	183	1.0	RB 1 MHz;VB 300 Hz;Note 3
9741.820	53.0	V	74.0	-21.0	PK	183	1.0	RB 1 MHz;VB 3 MHz;Peak
5981.780	66.2	V	68.3	-2.1	PK	144	1.6	RB 1 MHz;VB 3 MHz;Peak
14621.960	49.7	V	54.0	-4.3	VAVG	117	1.2	RB 1 MHz;VB 300 Hz;Note 3
14621.830	55.7	V	74.0	-18.3	PK	117	1.2	RB 1 MHz;VB 3 MHz;Peak
5600.400	61.5	V	68.3	-6.8	PK	360	2.3	POS; RB 1 MHz; VB: 3 MHz



EMC Test Data

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).

EMC Test Data

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

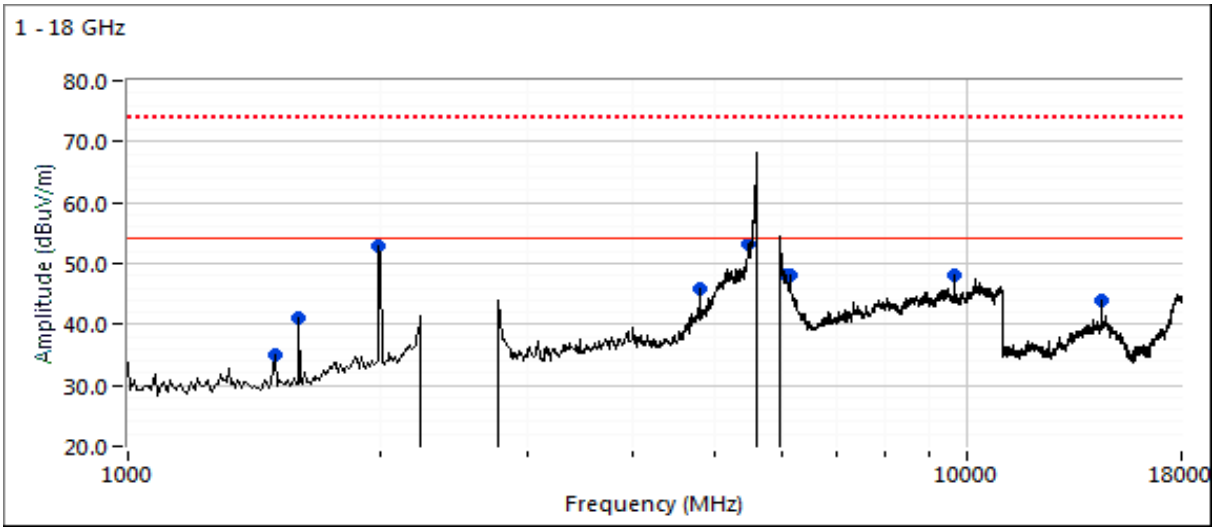
Date of Test: 10/16/2018 Config. Used: Ant 19
Test Engineer: Roy Zheng / R. Varelas Config Change: none
Test Location: Chamber #5 EUT Voltage: PoE & 120V/60Hz

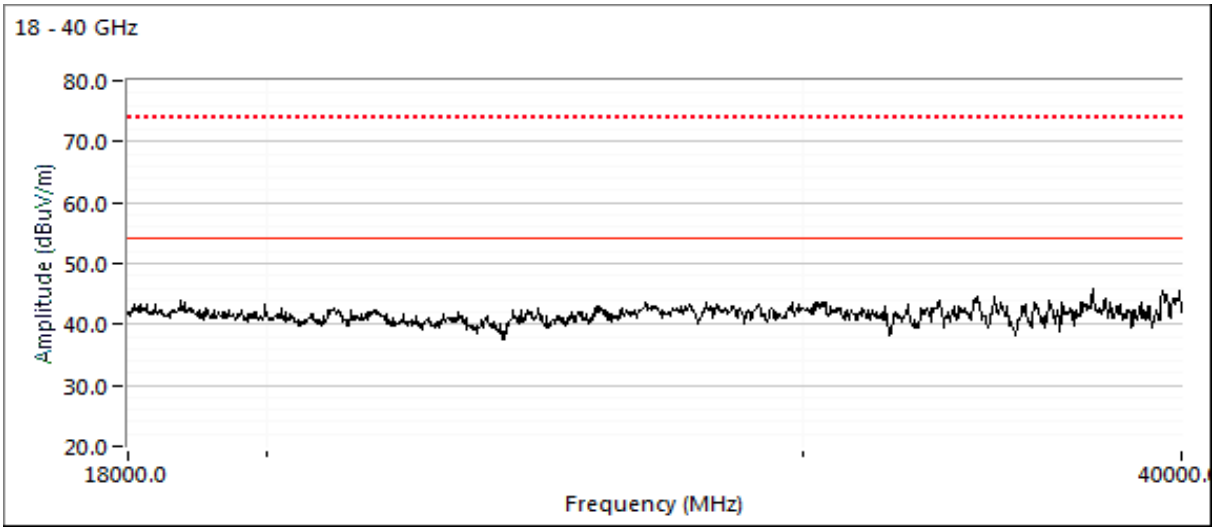
Run #9a: Low Channel

Channel: 1 & 149 Wi-Fi, 37 - 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	35.1	V	60.0	-24.9	Peak	147	2.4	Note 5
1600.000	41.1	V	60.0	-18.9	Peak	62	2.5	Note 5
2000.080	53.3	V	60.0	-6.7	Avg	360	1.0	Note 5
2000.040	54.5	V	80.0	-25.5	PK	360	1.0	Note 5
4800.000	44.4	V	54.0	-9.6	VAVG	163	1.6	RB 1 MHz;VB 300 Hz;Note 3
4799.700	52.3	V	74.0	-21.7	PK	163	1.6	RB 1 MHz;VB 3 MHz;Peak
5494.430	61.9	V	68.3	-6.4	PK	18	1.9	RB 1 MHz;VB 3 MHz;Peak
6098.880	55.6	V	68.3	-12.7	PK	31	1.7	RB 1 MHz;VB 3 MHz;Peak
6149.200	54.5	V	68.3	-13.8	PK	31	1.7	RB 1 MHz;VB 3 MHz;Peak
9647.910	44.0	V	54.0	-10.0	VAVG	140	1.7	RB 1 MHz;VB 300 Hz;Note 3
9647.950	55.0	V	74.0	-19.0	PK	140	1.7	RB 1 MHz;VB 3 MHz;Peak
14471.890	42.0	V	54.0	-12.0	VAVG	131	1.0	RB 1 MHz;VB 300 Hz;Note 3
14471.780	51.8	V	74.0	-22.2	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





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

EMC Test Data

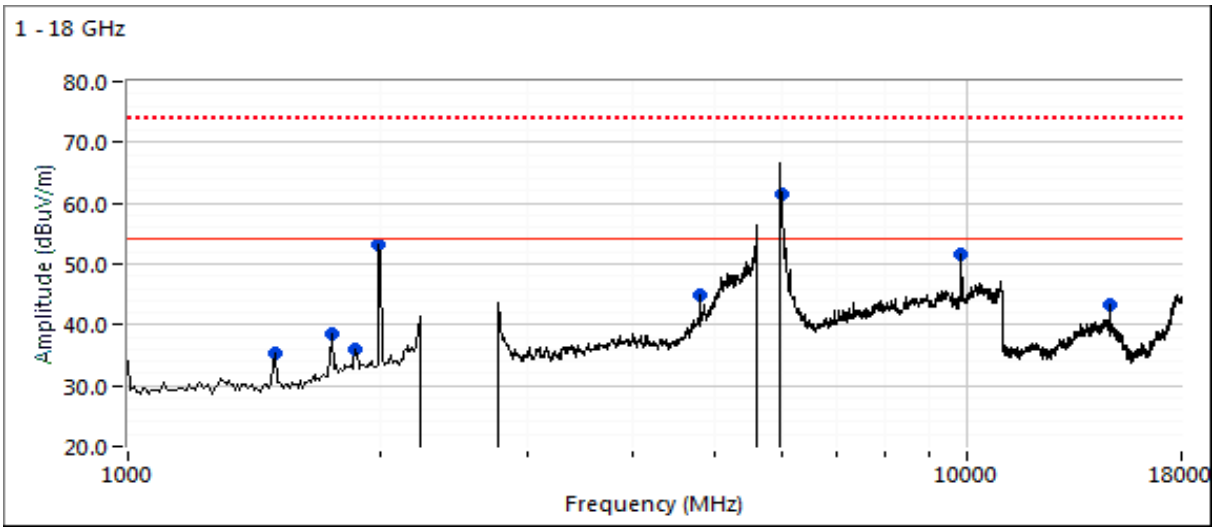
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Run #9b: High Channel

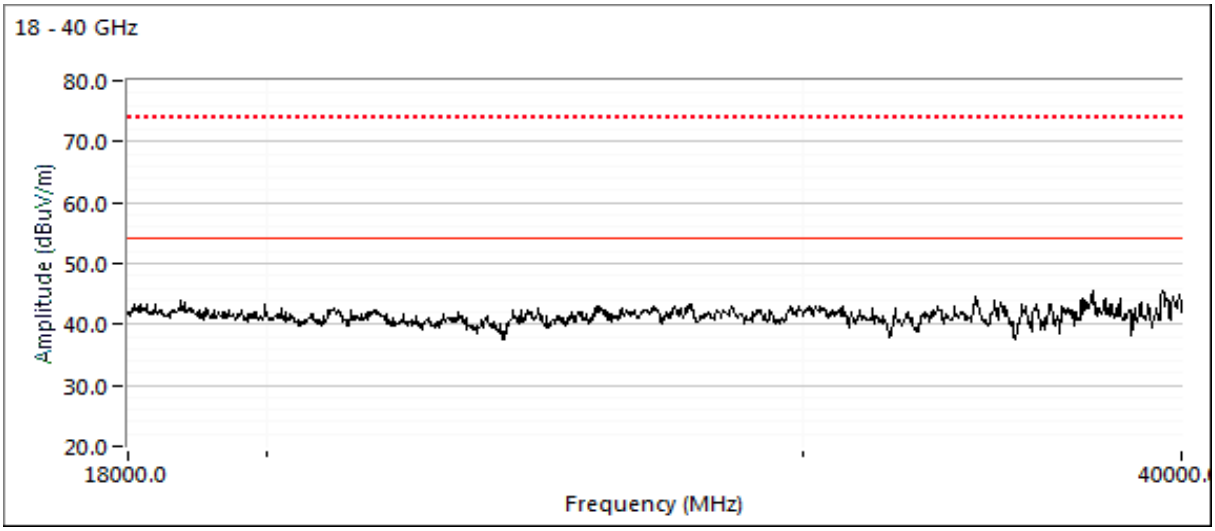
Channel: 11 & 165 Wi-Fi, 39 - BLE Mode: ac80 / b

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	35.4	V	60.0	-24.6	Peak	205	2.5	Note 5
1750.000	38.5	H	60.0	-21.5	Peak	6	1.3	Note 5
1866.670	35.8	V	60.0	-24.2	Peak	324	1.0	Note 5
2000.010	51.9	V	60.0	-8.1	Avg	360	1.0	Note 5
2000.070	55.3	V	80.0	-24.7	PK	360	1.0	Note 5
4799.940	40.1	V	54.0	-13.9	VAVG	24	2.3	RB 1 MHz;VB 300 Hz;Note 3
4799.990	49.5	V	74.0	-24.5	PK	24	2.3	RB 1 MHz;VB 3 MHz;Peak
9847.950	47.7	V	54.0	-6.3	VAVG	188	1.5	RB 1 MHz;VB 300 Hz;Note 3
9848.200	56.0	V	74.0	-18.0	PK	188	1.5	RB 1 MHz;VB 3 MHz;Peak
14771.530	50.7	H	68.3	-17.6	PK	279	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).

EMC Test Data

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 "center" channel in all five OFDM modes to determine the worst case mode (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band).							
1	g & a BLE	6 & 40 37	20 & 20 8	20 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.2 dBµV/m @ 5446.43 MHz (-6.8 dB)
	ax20 BLE	6 & 40 17	20 & 20 8	20 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.6 dBµV/m @ 5045.39 MHz (-8.4 dB)
	ax40 BLE	6 & 38 39	20 & 20 8	20 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.0 dBµV/m @ 5479.8 MHz (-10.0 dB)
	b ax80	6 42	20 8	20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	39.5 dBµV/m @ 14624.9MHz (-14.5dB)
	b ax80+80	6 50	20 20	16 20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.4 dBµV/m @ 14621.8MHz (-11.6dB)

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

Scans on worst case mode above with BLE or ZigBee also active.							
2	g & a Zigbee	6 & 40 11	20 & 20 8	20 & 20 8	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.1 dBµV/m @ 1075.0 MHz (-11.9 dB)
	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.
Measurements on low and high channels in worst-case OFDM mode.							
3	ax20 BLE	1 & 36 37	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	35.8 dBµV/m @ 5000.0 MHz (-18.2 dB)
	ax20 BLE	11 & 48 39	20 6	20 6	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	44.7 dBµV/m @ 4800.0 MHz (-9.3 dB)
Scans on "lowest" and "center" channel in all five OFDM modes to determine the worst case mode. (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band). ac160 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 (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band). ac160 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)

EMC Test Data

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

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)
Scans on "center" channel in all four OFDM modes to determine the worst case mode. (8x8 in 5 GHz bands and 4x4 in 2.4 GHz band). No ac160 mode in this band.							
8	g & a BLE	6 & 157 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	40.6 dBµV/m @ 4800.0 MHz (-13.4 dB)
	ax20 BLE	6 & 157 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	42.3 dBµV/m @ 5035.9 MHz (-11.7 dB)
	ax40 BLE	6 & 159 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	43.6 dBµV/m @ 4800.0 MHz (-10.4 dB)
	b & ac80 BLE	6 & 155 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	54.8 dBµV/m @ 9748.0 MHz (-13.5 dB)
Measurements on low and high channels in worst-case OFDM mode.							
9	ax40 BLE	3 & 151 37	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	47.1 dBµV/m @ 5574.3 MHz (-6.9 dB)
	ax20 BLE	11 & 165 39	20	20	Radiated Emissions, 1 - 40 GHz	FCC 15.209/ 15.247 / 15 E	45.0 dBµV/m @ 5446.4 MHz (-9.0 dB)

EMC Test Data

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
Limits from 15.209 instead of 15.407(b)(1-3) acceptable until January 1, 2019 per FCC KDB 789033 D01
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.

EMC Test Data

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

Date of Test: 10/19/18 — Config. Used: Panel antenna
Test Engineer: Roy Zheng / R. Varelas — Config Change: none
Test Location: Chamber #4 — EUT Voltage: PoE & 120V/60Hz

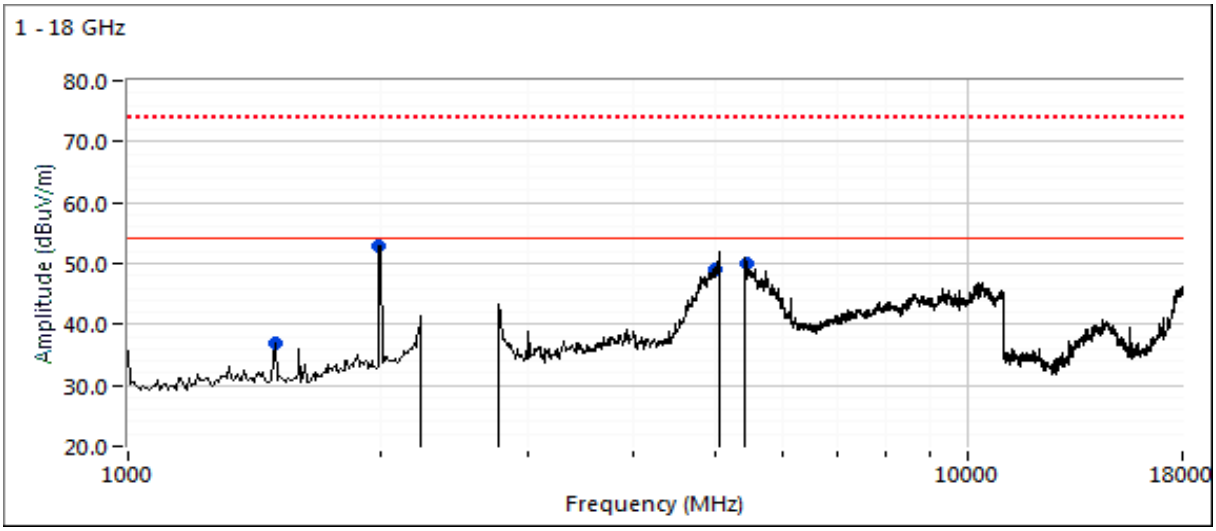
Run #1a: Center Channel

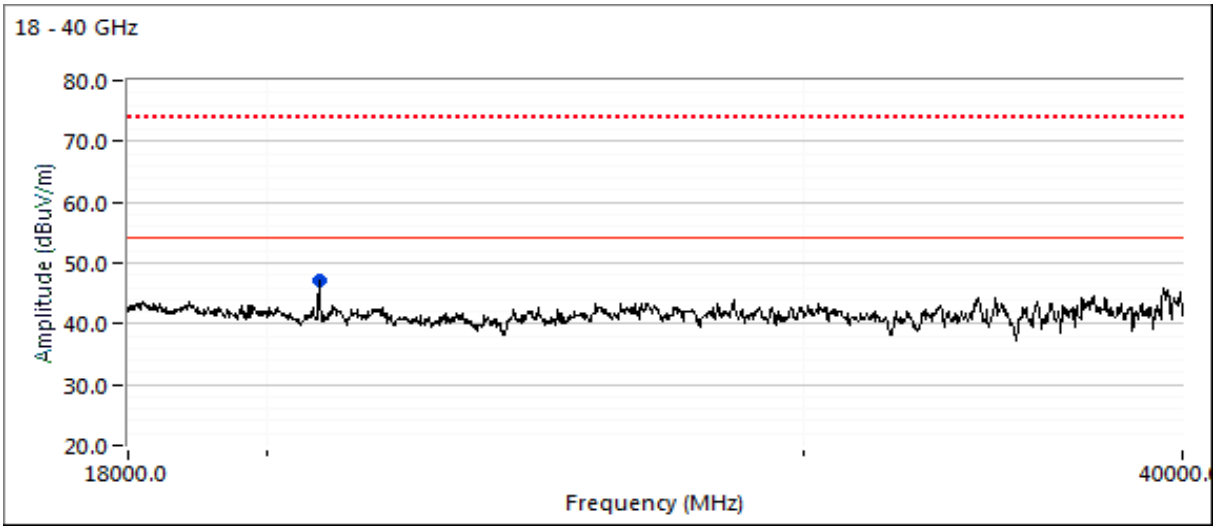
Channel: 6 &40 Wi-Fi, 2480 MHz BLE — Mode: g & a — Pwr setting 20
Tx Chain: 4 Tx — Data Rate: 6 Mbps

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.190	36.9	H	60.0	-23.1	Peak	33	1.3	Note 5
2000.020	53.0	H	60.0	-7.0	Peak	308	1.9	Note 5
5446.430	47.2	V	54.0	-6.8	VAVG	171	1.6	RB 1 MHz;VB 1 kHz;Note 3
5446.190	59.6	V	74.0	-14.4	PK	171	1.6	RB 1 MHz;VB 3 MHz;Peak
5020.730	46.8	V	54.0	-7.2	VAVG	176	1.5	RB 1 MHz;VB 1 kHz;Note 3
5019.980	58.8	V	74.0	-15.2	PK	176	1.5	RB 1 MHz;VB 3 MHz;Peak
20795.570	44.3	H	54.0	-9.7	VAVG	217	1.4	RB 1 MHz;VB 1 kHz;Note 3
20795.380	62.3	H	74.0	-11.7	PK	217	1.4	RB 1 MHz;VB 3 MHz;Peak

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

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





EMC Test Data

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 #1b: Center Channel

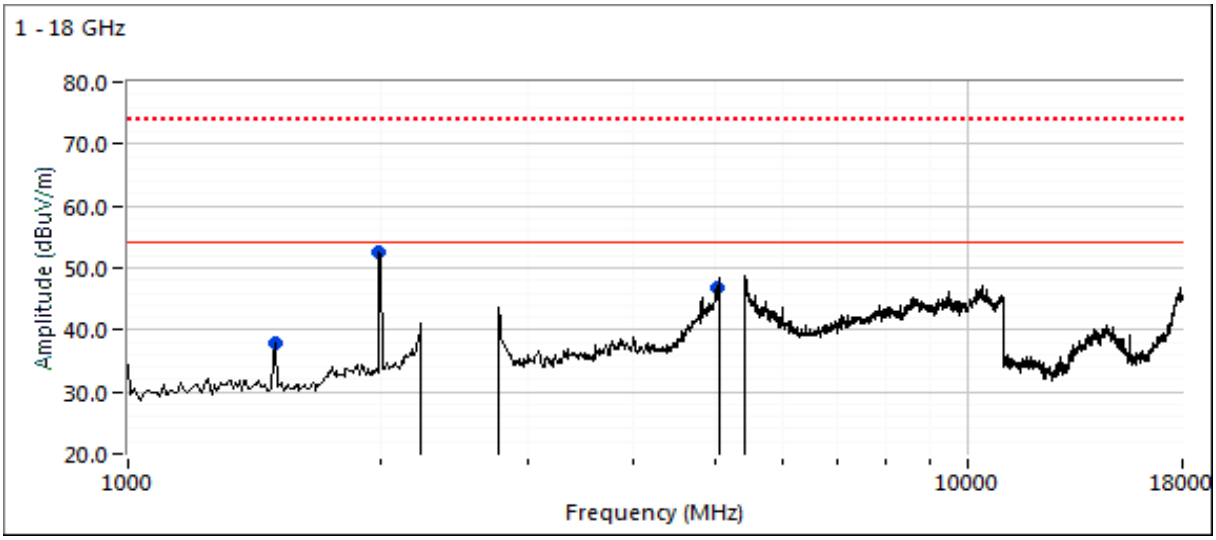
Channel: 6 & 40 Wi-Fi, 17 - BLE Mode: ax20

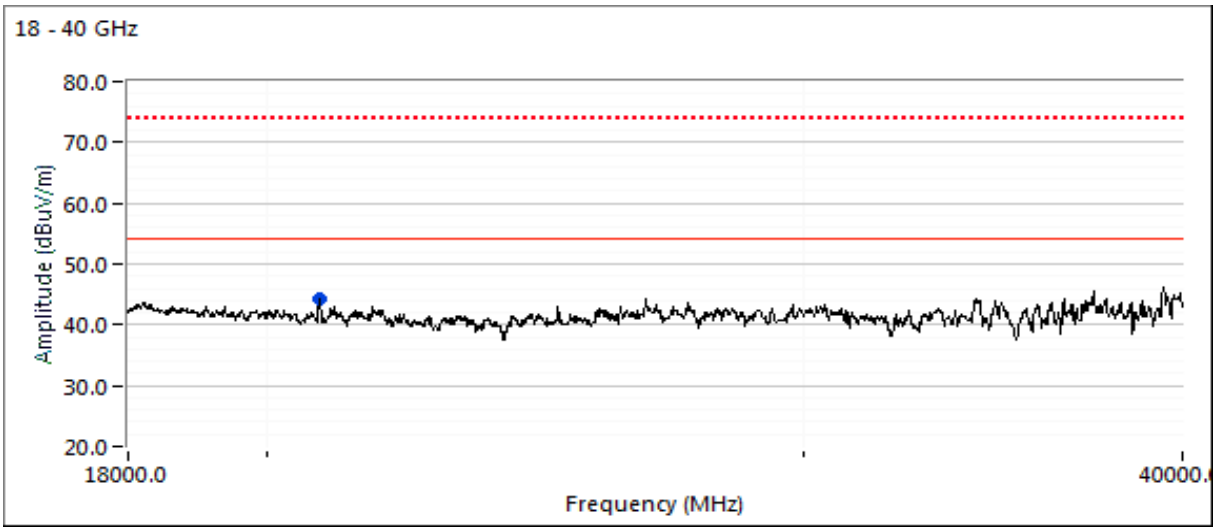
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.100	38.0	H	60.0	-22.0	Peak	166	1.3	Note 5
2000.020	52.4	V	60.0	-7.6	Peak	344	1.6	Note 5
5045.390	45.6	V	54.0	-8.4	VAVG	173	1.6	RB 1 MHz;VB 300 Hz;Note 3
5044.740	58.2	V	74.0	-15.8	PK	173	1.6	RB 1 MHz;VB 3 MHz;Peak
20797.420	40.0	H	54.0	-14.0	VAVG	215	1.5	RB 1 MHz;VB 300 Hz;Note 3
20796.680	60.7	H	74.0	-13.3	PK	215	1.5	RB 1 MHz;VB 3 MHz;Peak

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

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





EMC Test Data

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 #1c: Center Channel

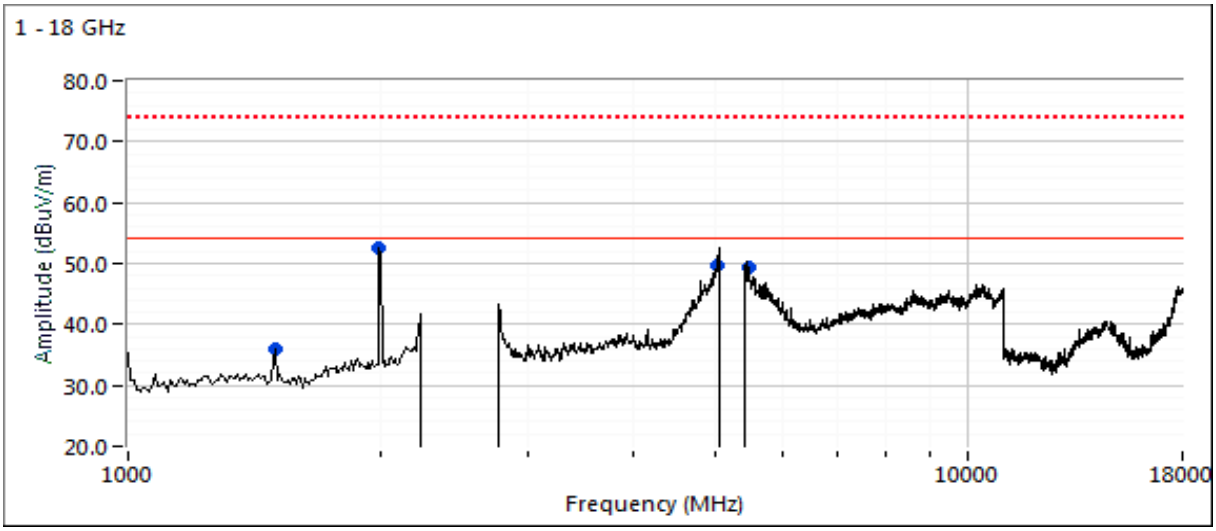
Channel: 6 & 38 Wi-Fi, 39 - BLE Mode: ax40

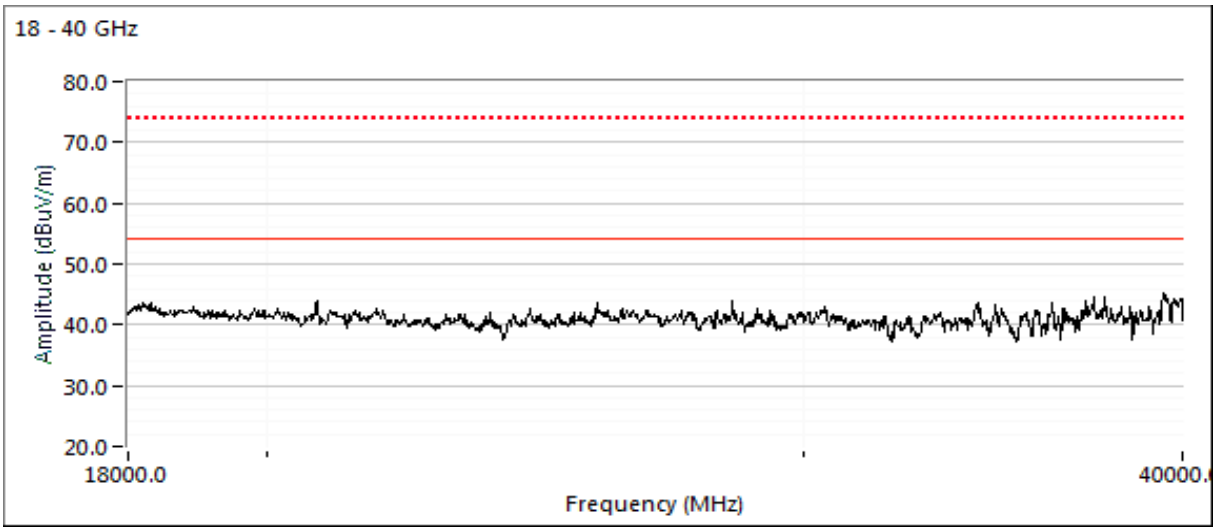
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1500.100	35.9	V	60.0	-24.1	Peak	210	1.0	Note 5
2000.020	52.7	H	60.0	-7.3	Peak	313	1.9	Note 5
5043.570	43.2	H	54.0	-10.8	VAVG	175	1.3	RB 1 MHz;VB 300 Hz;Note 3
5042.840	61.5	H	74.0	-12.5	PK	175	1.3	RB 1 MHz;VB 3 MHz;Peak
5479.780	44.0	V	54.0	-10.0	VAVG	171	1.4	RB 1 MHz;VB 300 Hz;Note 3
5481.660	56.9	V	74.0	-17.1	PK	171	1.4	RB 1 MHz;VB 3 MHz;Peak

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

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 #1d: Center Channel

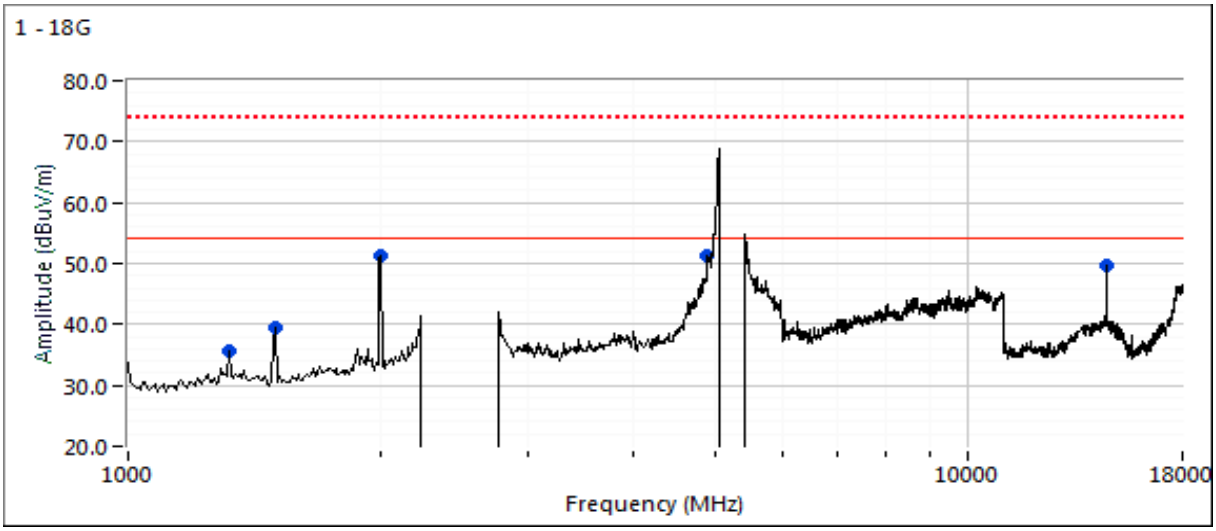
Channel: 6 & 42 Wi-Fi Mode: b & ac80

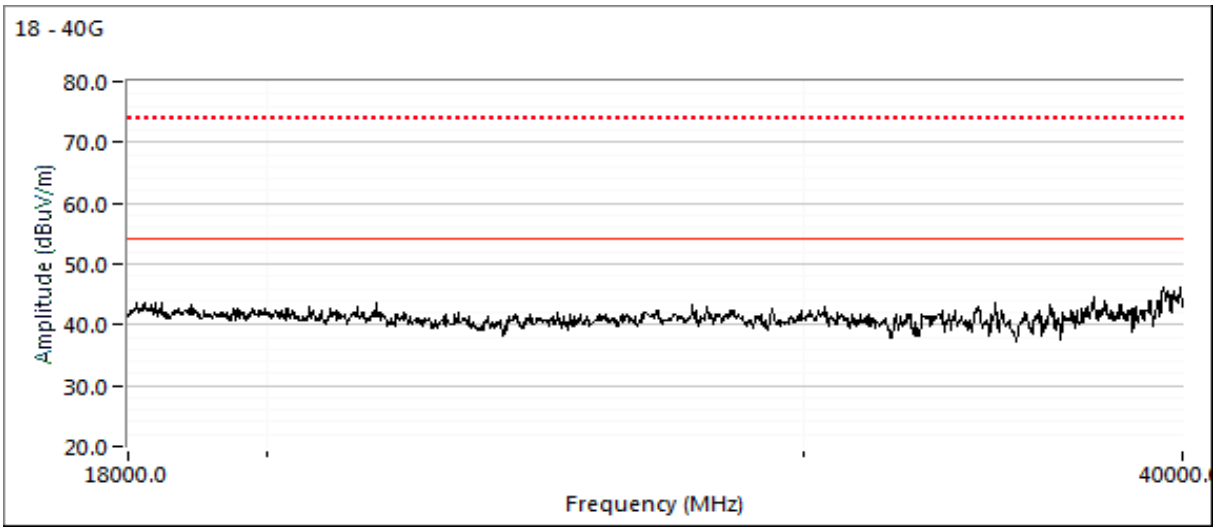
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 1Mbps & MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
1316.670	35.5	H	60.0	-24.5	Peak	33	1.3	Note 5
1500.000	39.4	V	60.0	-20.6	Peak	54	1.0	Note 5
2000.000	51.2	H	60.0	-8.8	Peak	78	1.3	Note 5
4908.100	47.5	V	54.0	-6.5	VAVG	163	1.7	RB 1 MHz;VB 300 Hz;Note 3
4907.700	60.4	V	74.0	-13.6	PK	163	1.7	RB 1 MHz;VB 3 MHz;Peak
14624.900	39.5	V	54.0	-14.5	VAVG	163	1.8	RB 1 MHz;VB 300 Hz;Note 3
14626.100	50.9	V	74.0	-23.1	PK	163	1.8	RB 1 MHz;VB 3 MHz;Peak

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

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





EMC Test Data

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 #1e: Center Channel

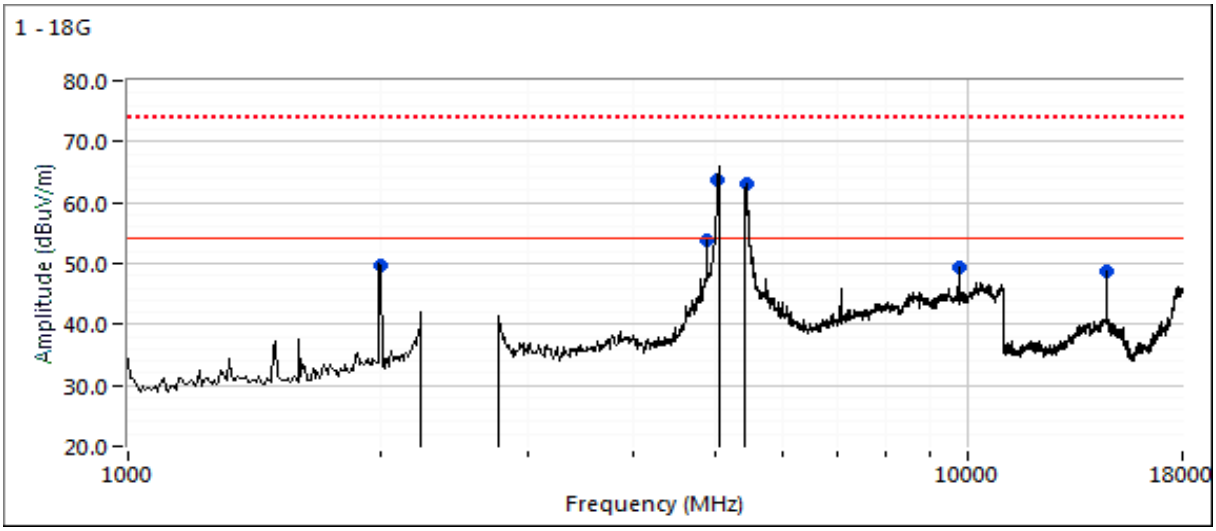
Channel: 6 & 50 Wi-Fi Mode: b & ac80+80

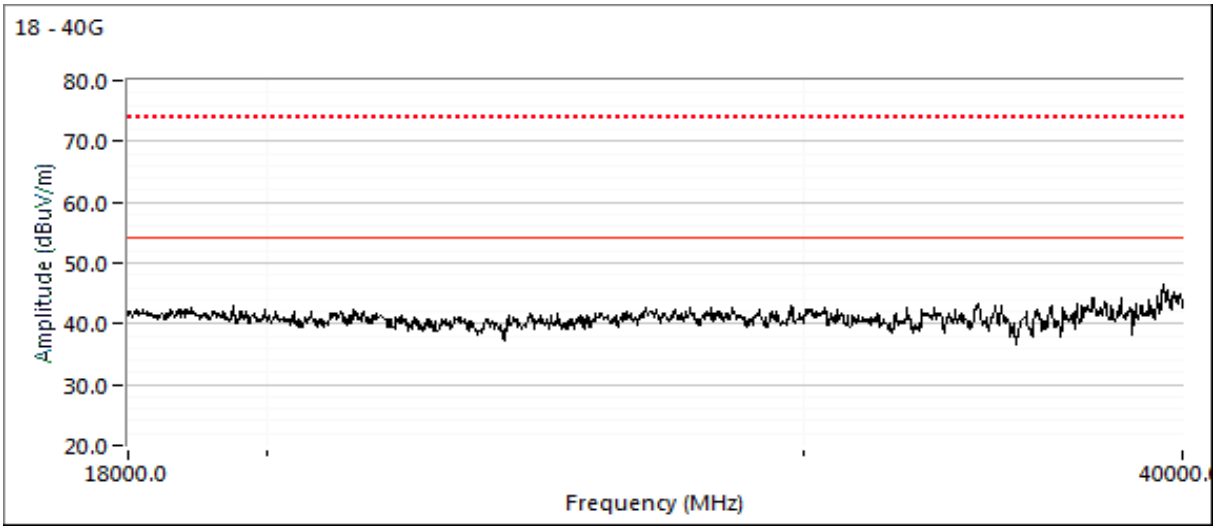
Tx Chain: 4 Data Rate: 1Mbps & MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
14621.790	42.4	V	54.0	-11.6	VAVG	162	1.9	RB 1 MHz;VB 300 Hz;Note 3
14621.990	52.4	V	74.0	-21.6	PK	162	1.9	RB 1 MHz;VB 3 MHz;Peak
5050.000	53.0	H	-	-	PK	162	2.1	Done during BE measurment
5437.570	57.7	V	-	-	PK	169	1.1	Done during BE measurment

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





EMC Test Data

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
Test Engineer: Roy Zheng / R. Varelas
Test Location: Chamber #5

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

Run #2a: Center Channel

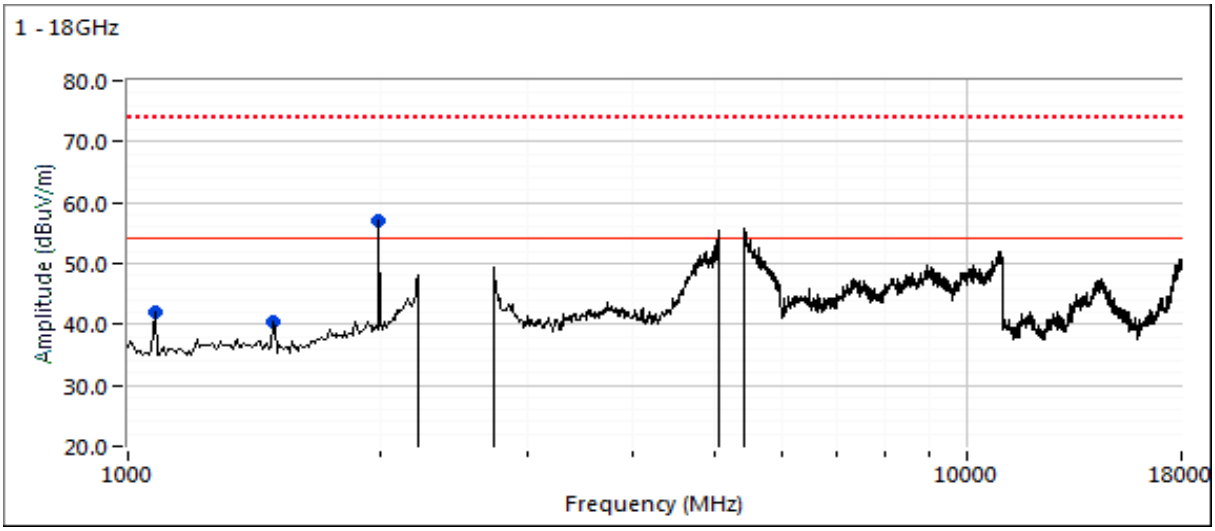
Channel: 6, 40 Wi-Fi, 11 - ZigBee
Tx Chain: 4

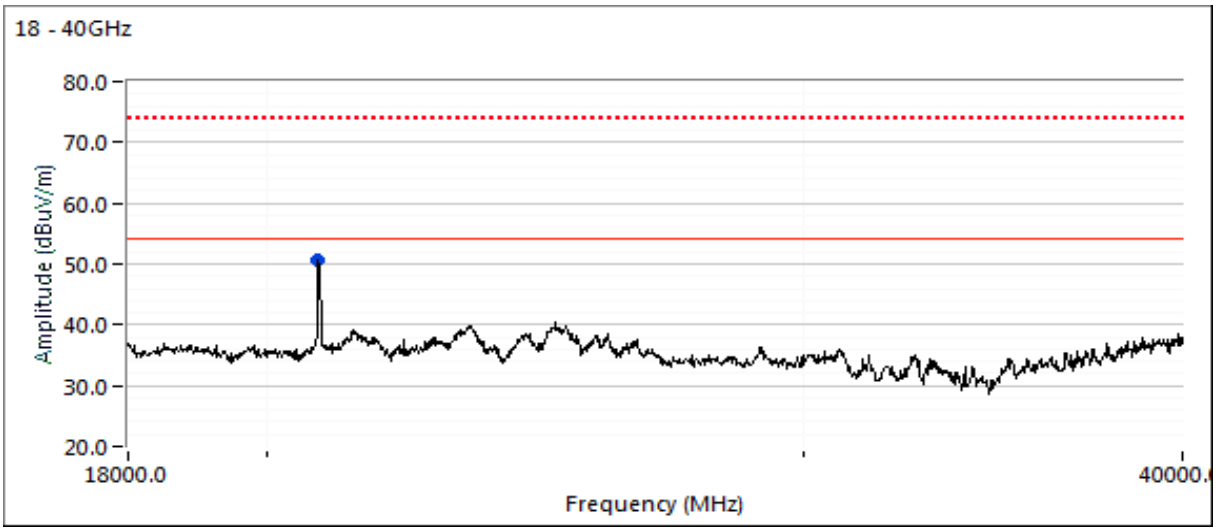
Mode: g & a
Data Rate: 6Mbps

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	H	60.0	-3.1	Peak	87	1.6	Note 5
1500.000	40.5	H	60.0	-19.5	Peak	141	1.0	Note 5
1075.000	42.1	H	60.0	-17.9	Peak	265	2.2	Note 5
20797.270	34.1	V	54.0	-19.9	VAVG	138	1.2	RB 1 MHz;VB 1 kHz;Note 4
20797.500	53.2	V	74.0	-20.8	PK	138	1.2	RB 1 MHz;VB 3 MHz;Peak

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

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





EMC Test Data

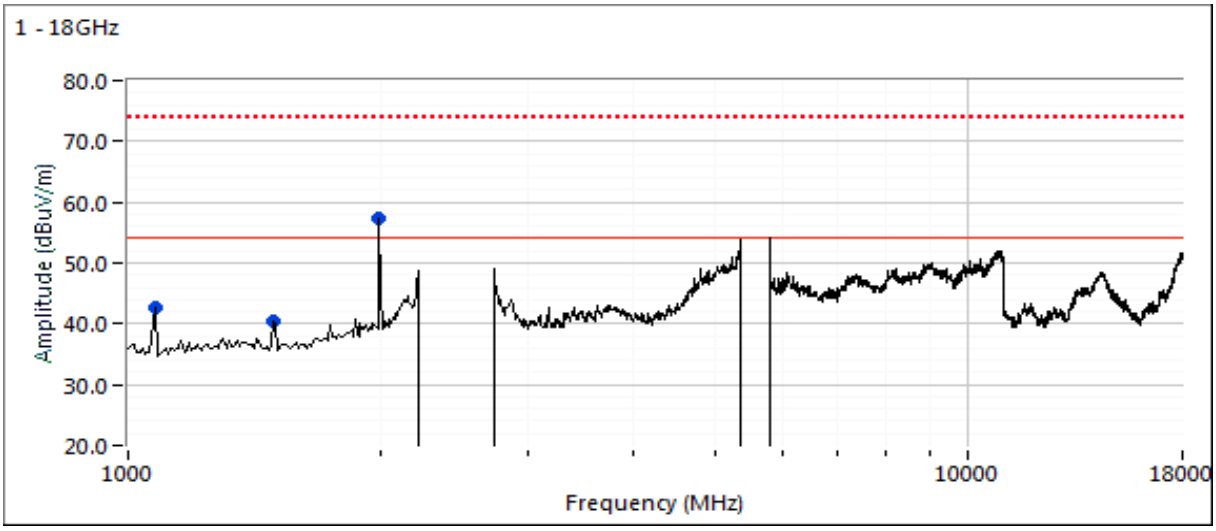
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

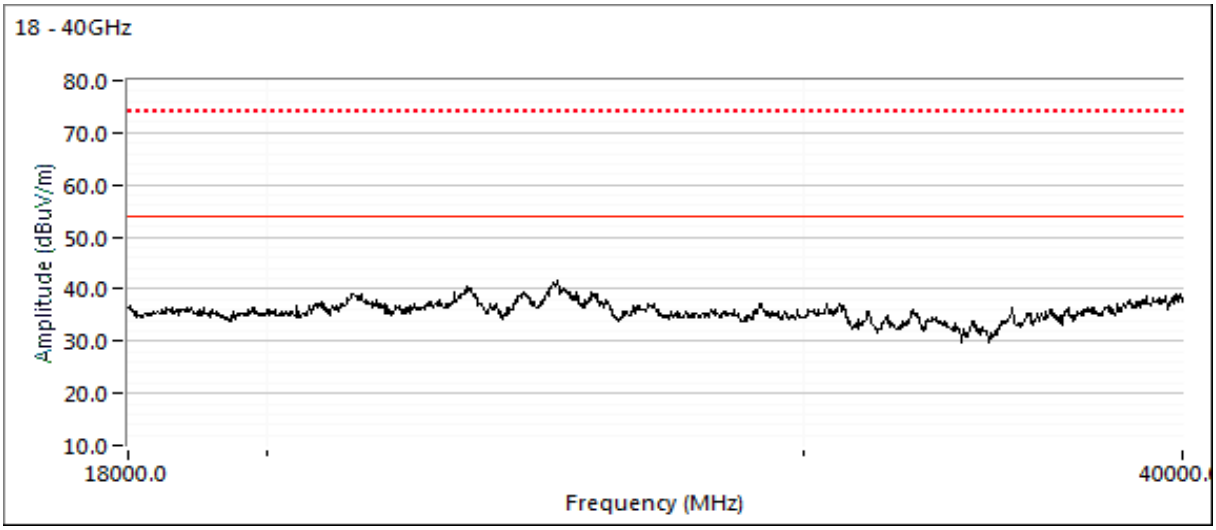
Run #2b: Center Channel

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





EMC Test Data

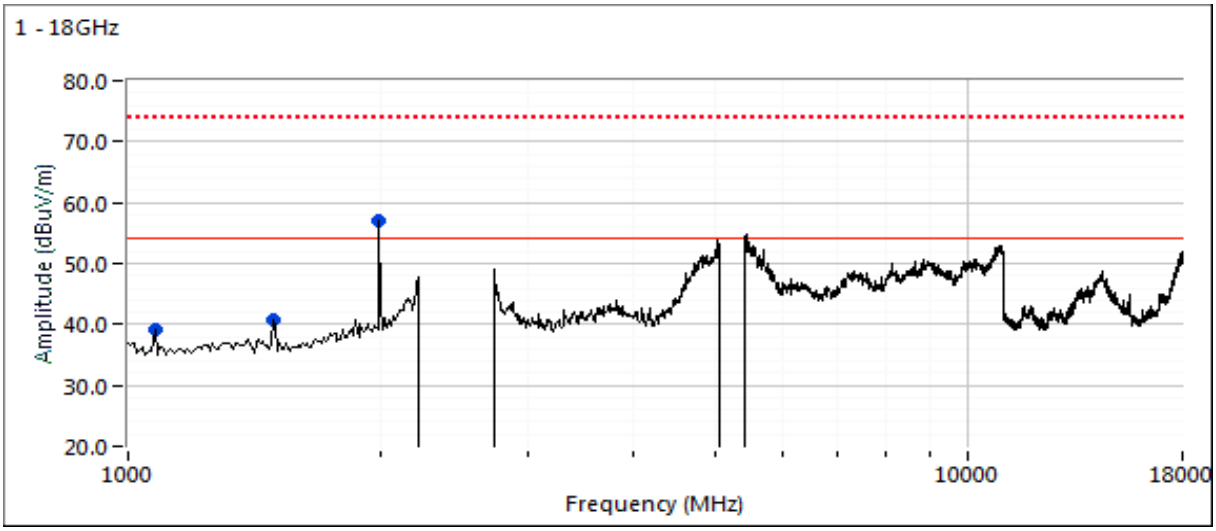
Client:	Aruba, a Hewlett Packard Enterprise company	Job Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Coordinator:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

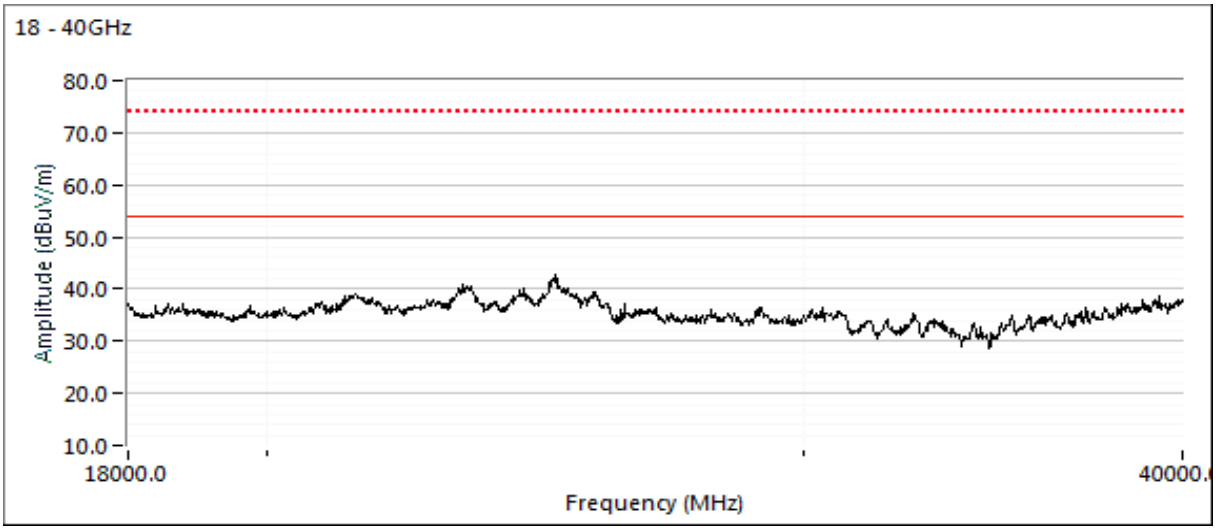
Run #2c: Center Channel

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





EMC Test Data

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

Date of Test: 10/22/2018
Test Engineer: Roy Zheng
Test Location: Chamber #4

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

Run #3a: Low Channel

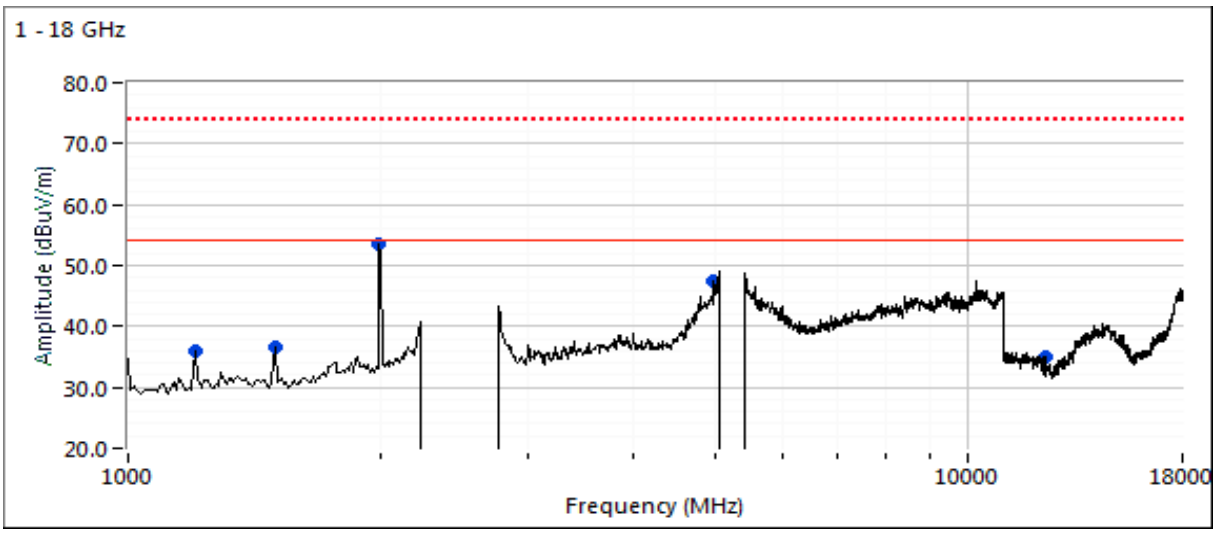
Channel: 1 & 36 Wi-Fi, 37 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

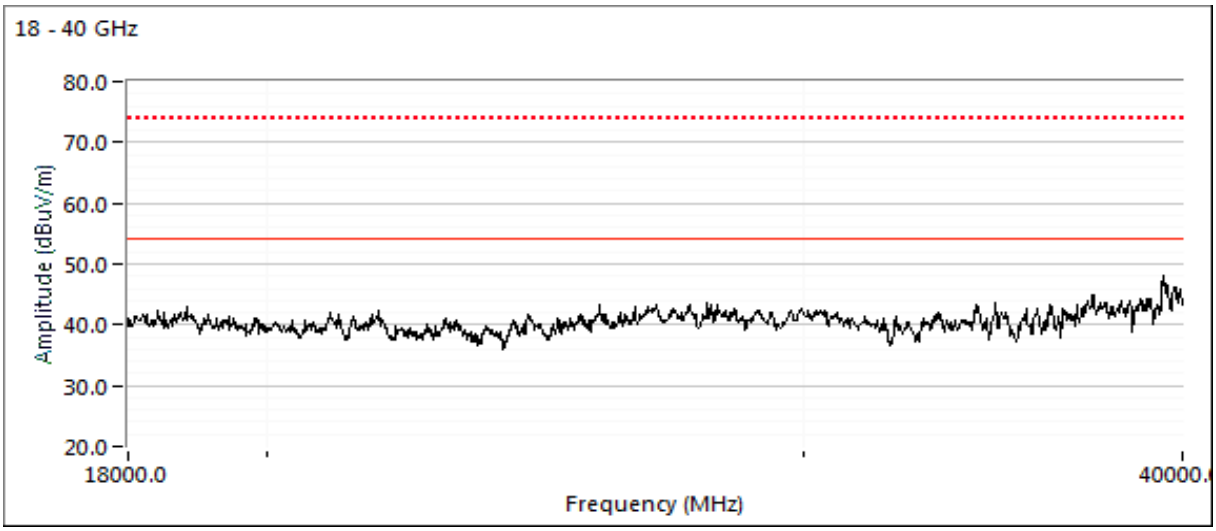
Mode: ax20
Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4999.950	35.8	H	54.0	-18.2	VAVG	313	1.0	RB 1 MHz;VB 300 Hz;Note 3
5000.100	47.3	H	74.0	-26.7	PK	313	1.0	RB 1 MHz;VB 3 MHz;Peak
1200.000	36.0	V	60.0	-24.0	Peak	125	1.0	Note 5
1500.000	36.5	H	60.0	-23.5	Peak	36	1.3	Note 5
2000.000	53.5	V	60.0	-6.5	Peak	351	1.6	Note 5
12341.670	35.1	V	54.0	-18.9	Peak	50	1.6	Noise Floor

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





EMC Test Data

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 #3b: High Channel

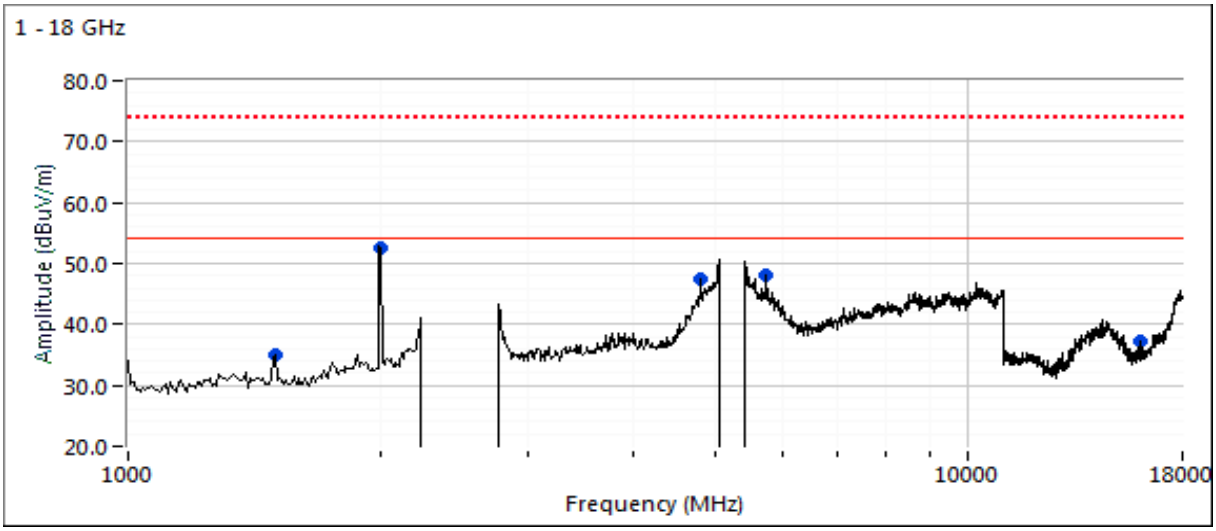
Channel: 11 & 48 Wi-Fi, 39 - BLE Mode: ax20

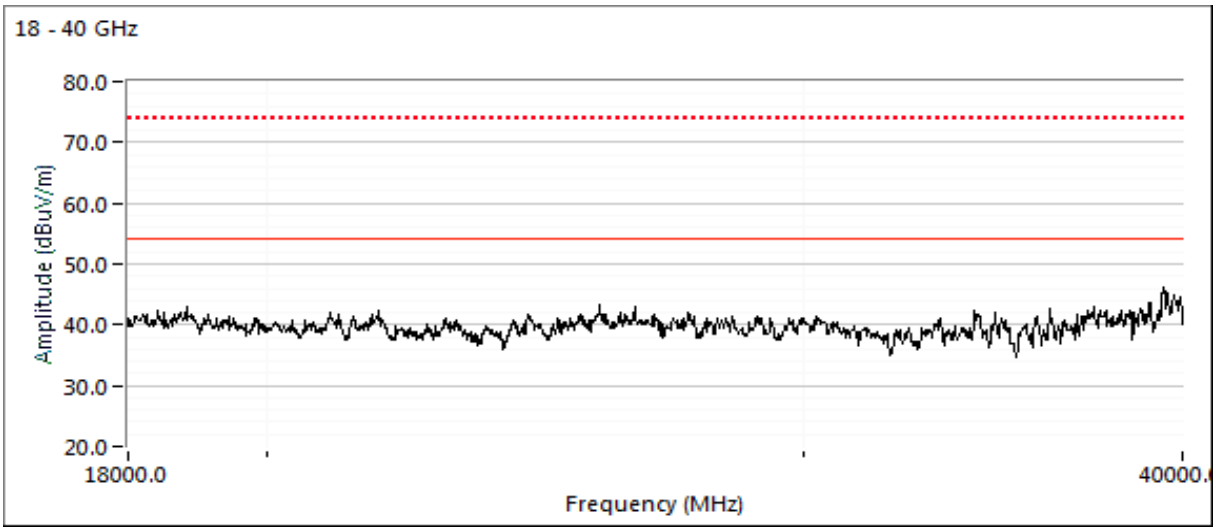
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4800.000	44.7	V	54.0	-9.3	VAVG	158	1.5	RB 1 MHz;VB 300 Hz;Note 3
4799.620	54.9	V	74.0	-19.1	PK	158	1.5	RB 1 MHz;VB 3 MHz;Peak
5759.960	43.8	H	54.0	-10.2	VAVG	163	1.4	RB 1 MHz;VB 300 Hz;Note 3
5759.870	54.7	H	74.0	-19.3	PK	163	1.4	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.0	H	60.0	-25.0	Peak	29	1.3	Note 5
2000.000	52.6	V	60.0	-7.4	Peak	352	1.9	Note 5
15993.330	37.3	V	54.0	-16.7	Peak	60	1.0	Noise floor

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





EMC Test Data

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
Test Engineer: Roy Zheng / R. Varelas
Test Location: FT Chamber #4

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

Run #4a: Center Channel

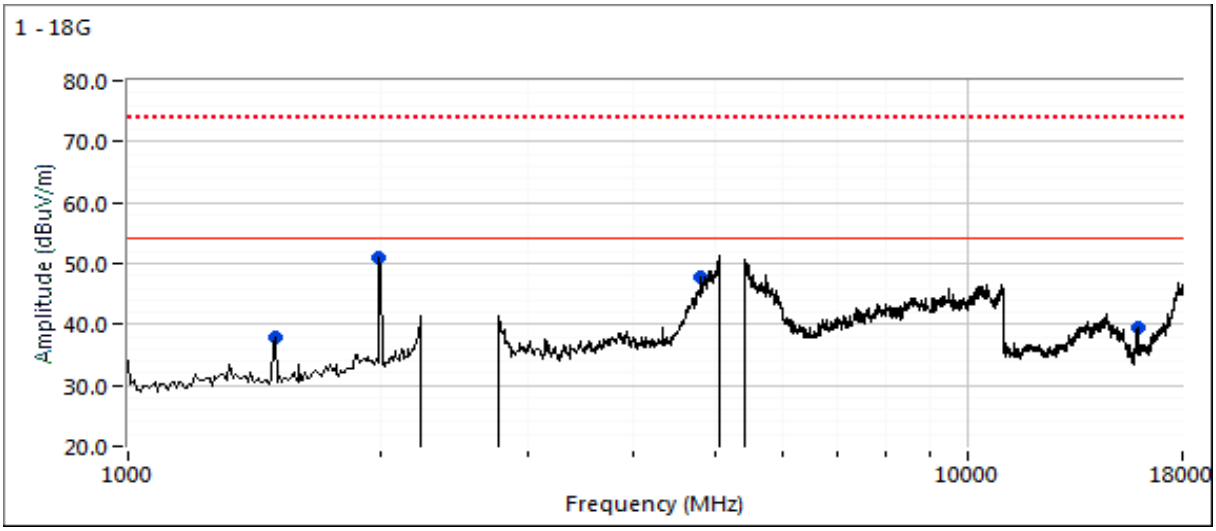
Channel: 1 & 60 Wi-Fi, 17 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

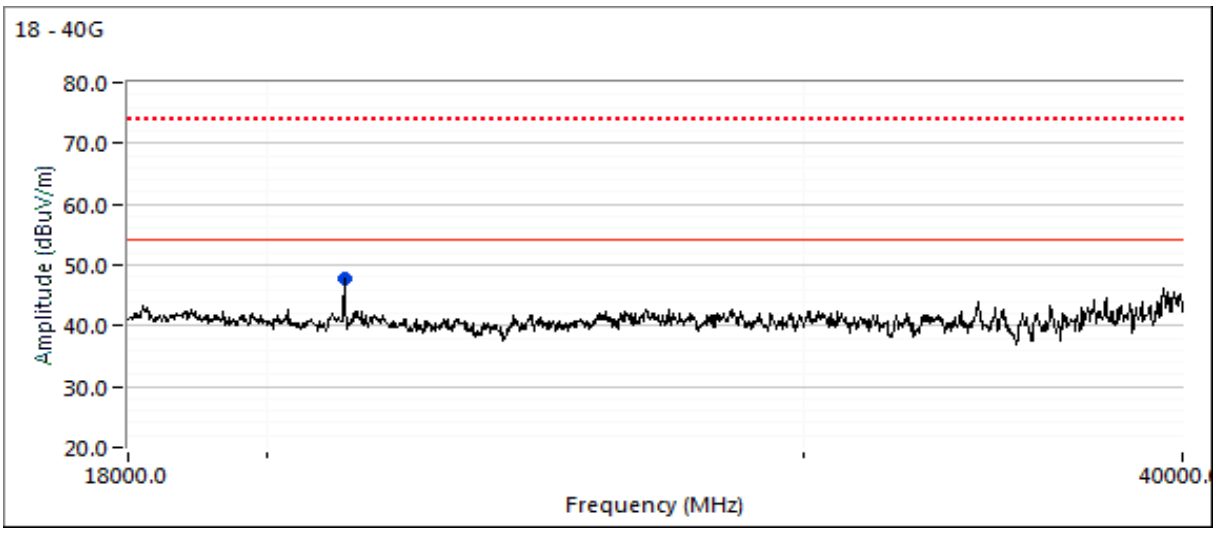
Mode: g & a
Data Rate: 6Mb/s

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





EMC Test Data

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

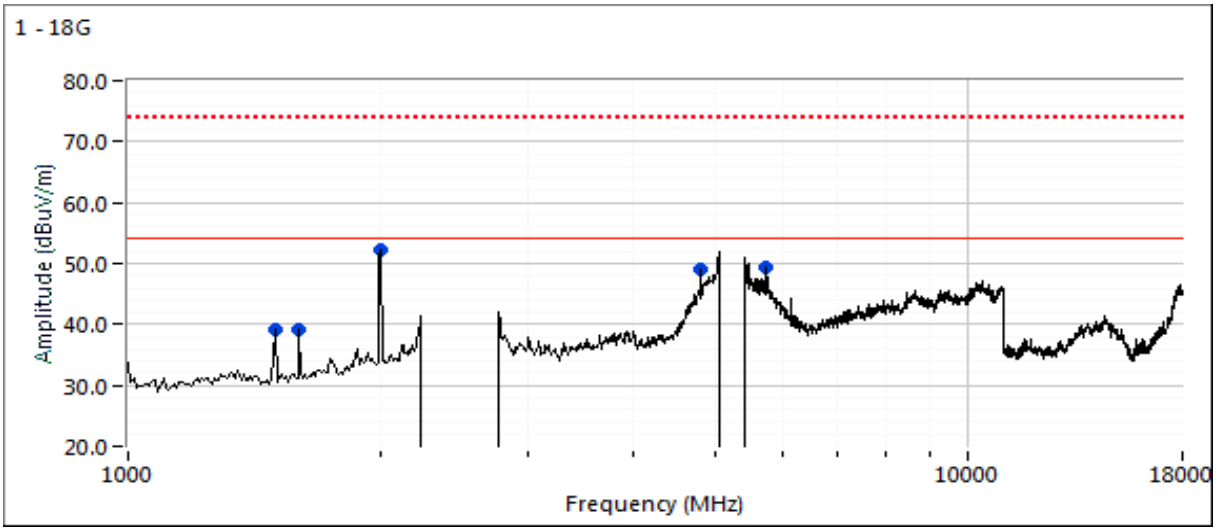
Channel: 1 & 60 Wi-Fi Mode: 11ax20

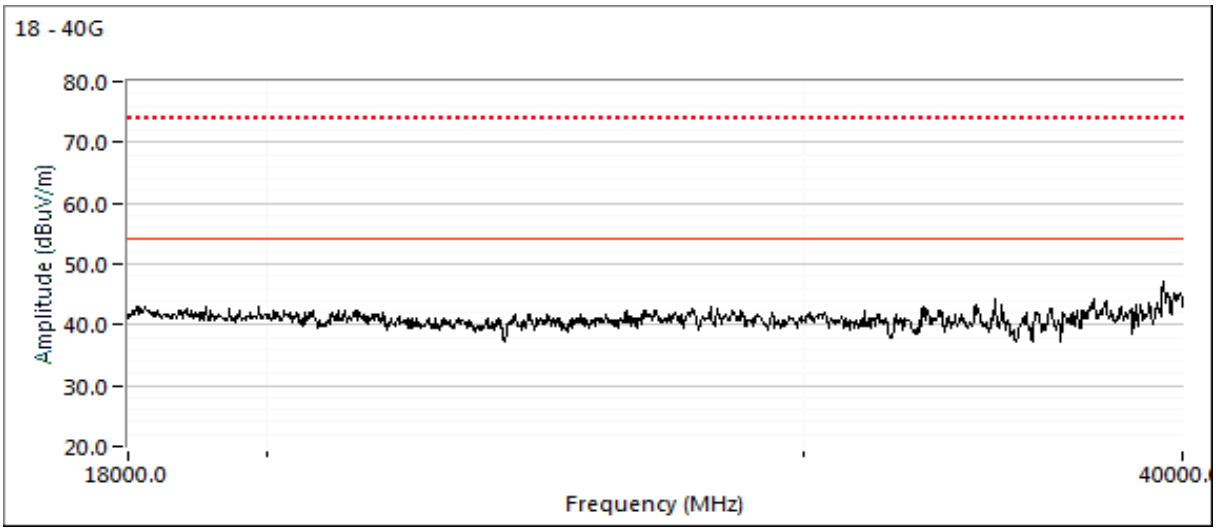
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

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

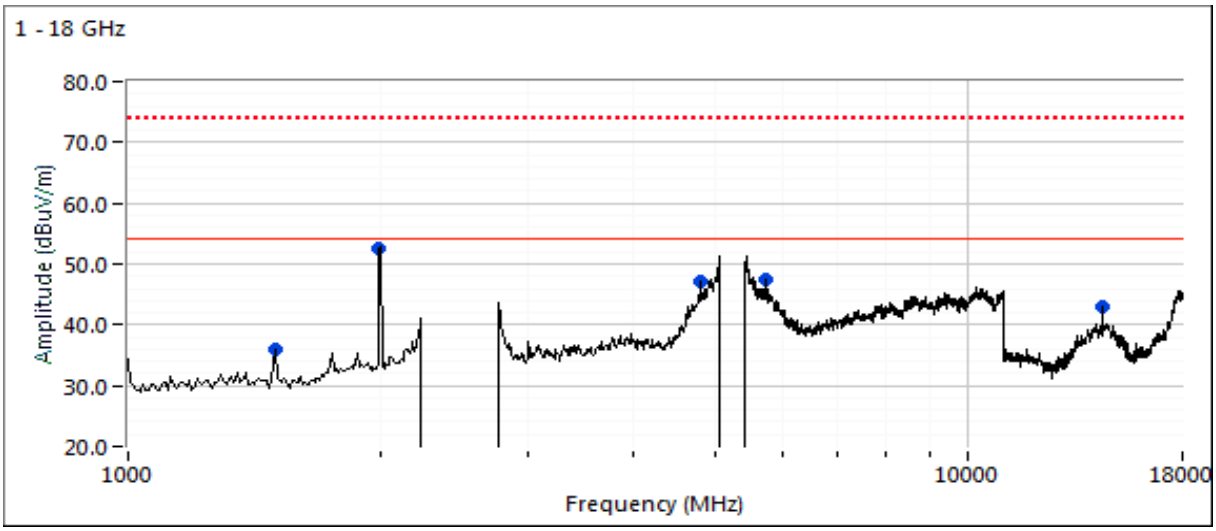
Channel: 1 & 54 Wi-Fi, 17 - BLE Mode: ax40

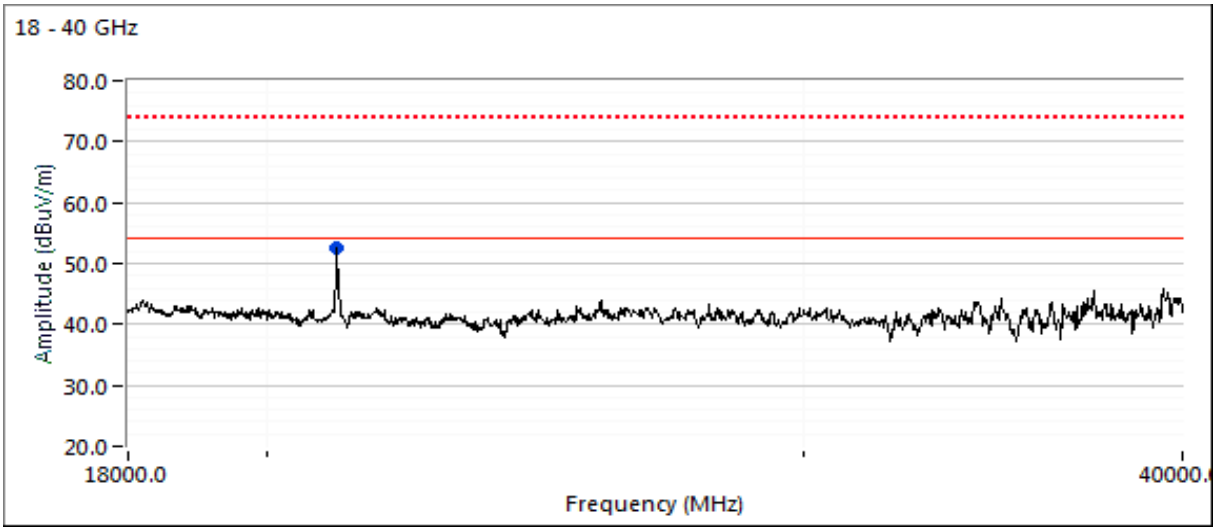
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

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





EMC Test Data

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

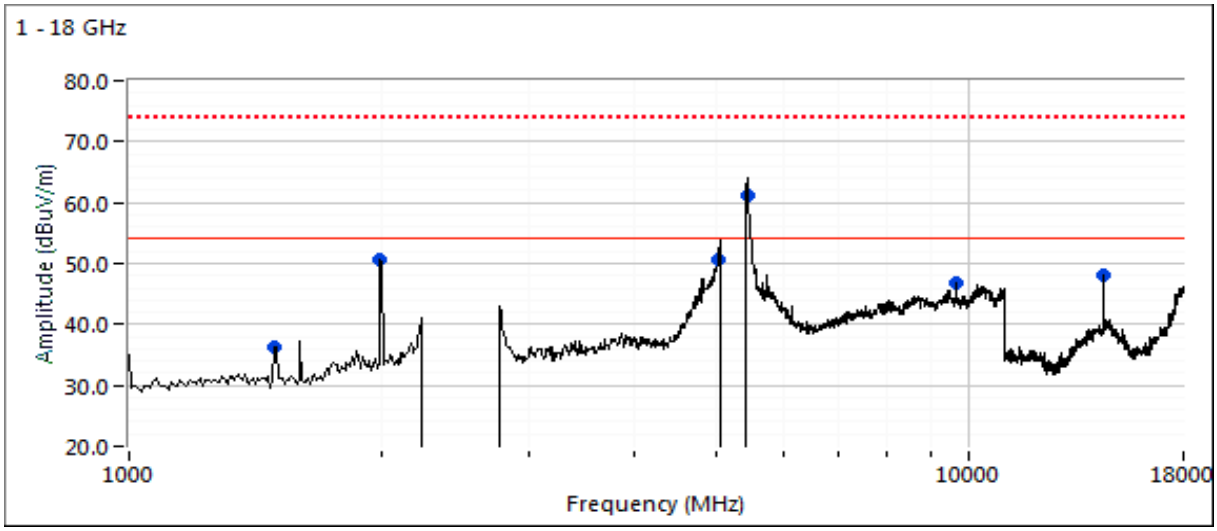
Channel: 1 & 58 Wi-Fi, 17 - BLE Mode: b & ac80

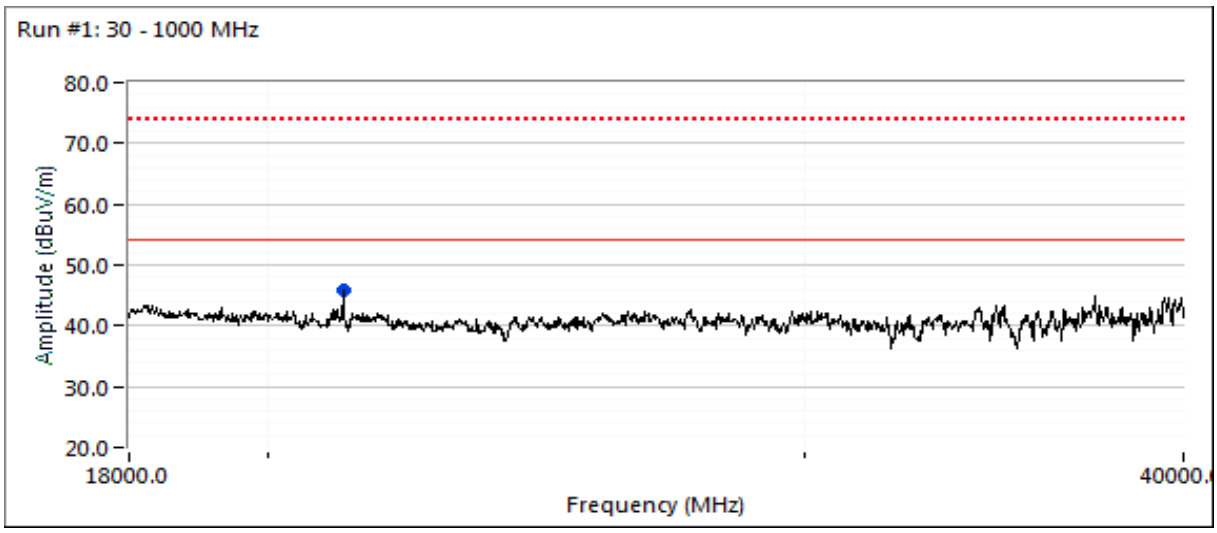
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: 1Mbps & MCS0

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





EMC Test Data

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
Test Engineer: Roy Zheng
Test Location: Chamber #4

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

Run #5a: Low Channel

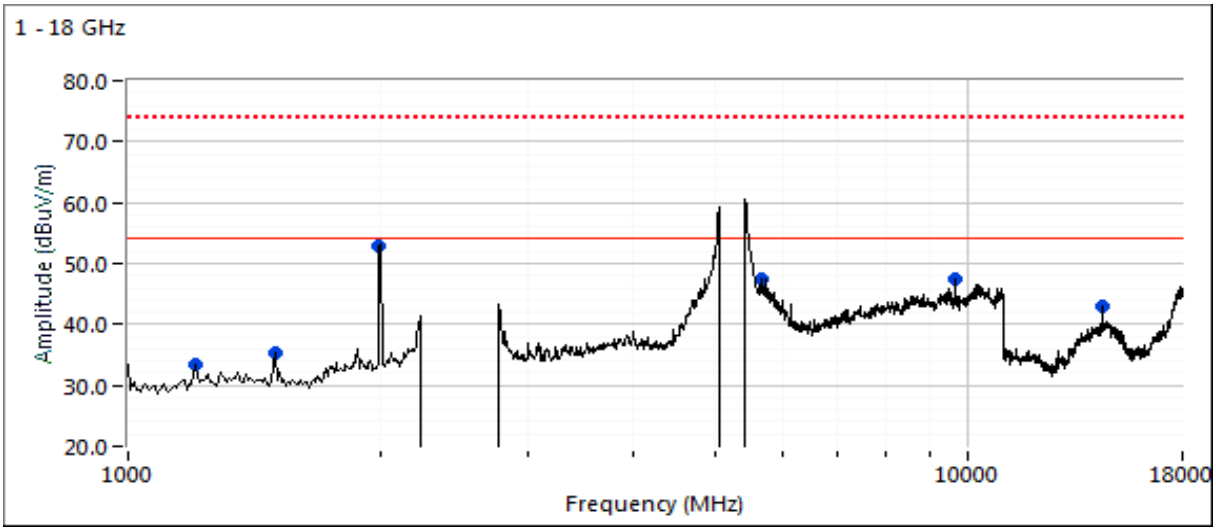
Channel: 1 & 52 Wi-Fi, 37 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

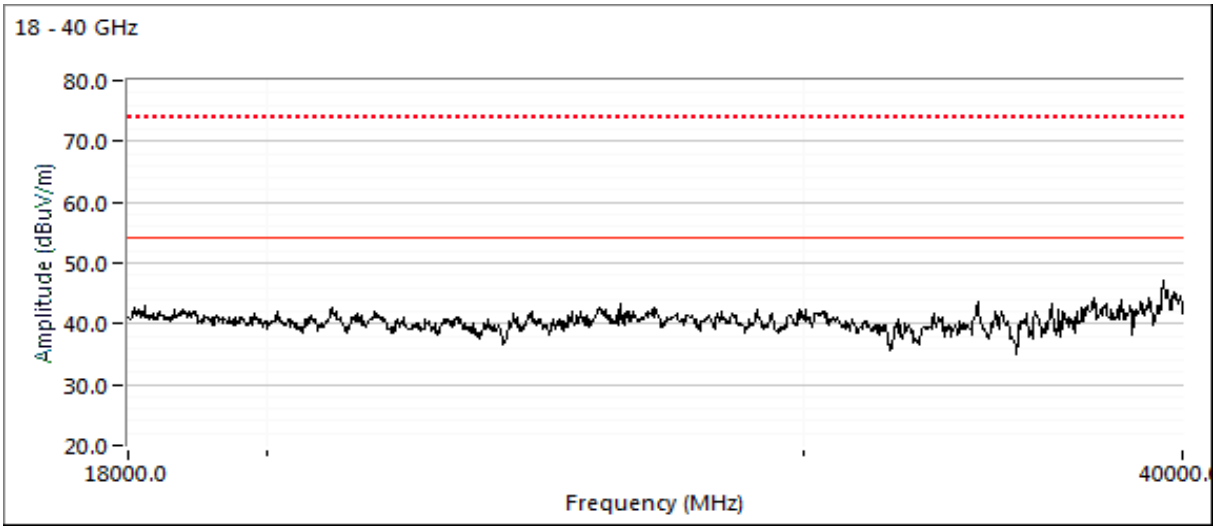
Mode: ac80/b
Data Rate: MCS0

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





EMC Test Data

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

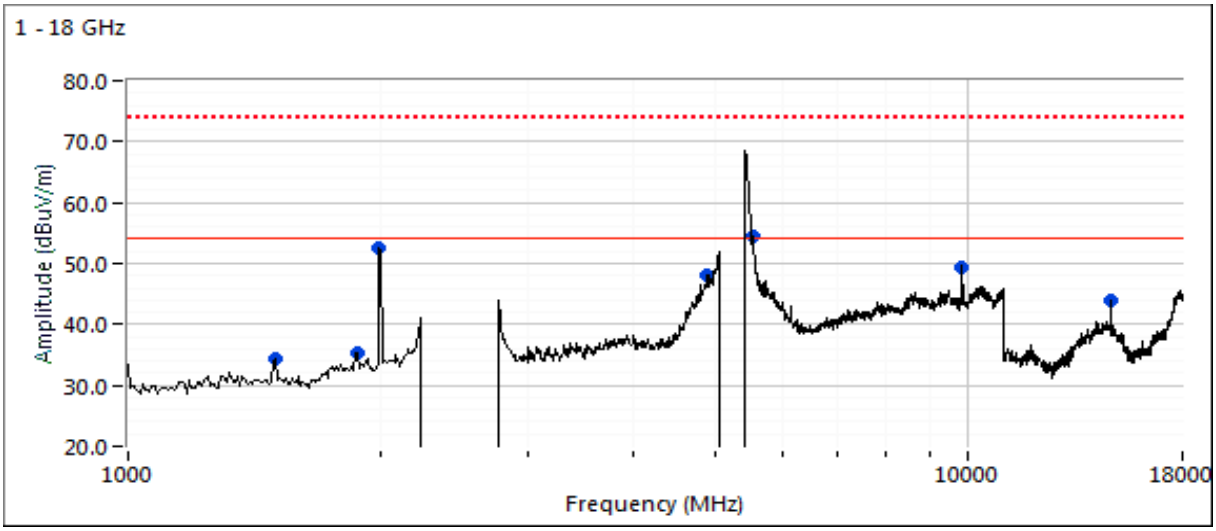
Channel: 11 & 64 Wi-Fi, 39 - BLE Mode: ac80/b

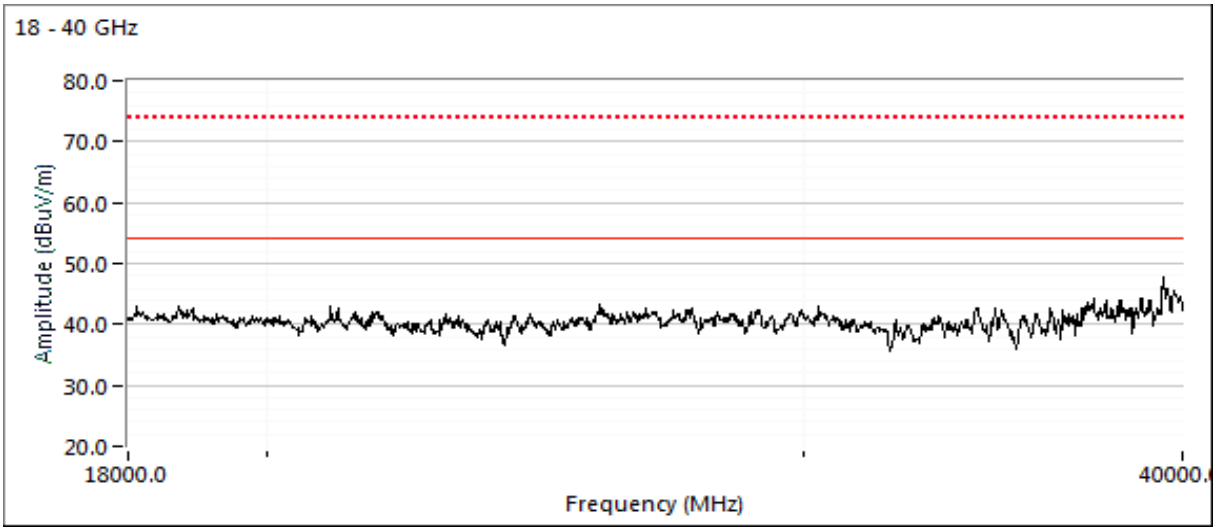
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

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





EMC Test Data

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
Test Engineer: Roy Zheng / R. Varelas
Test Location: FT Chamber #4

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

Run #6a: Center Channel

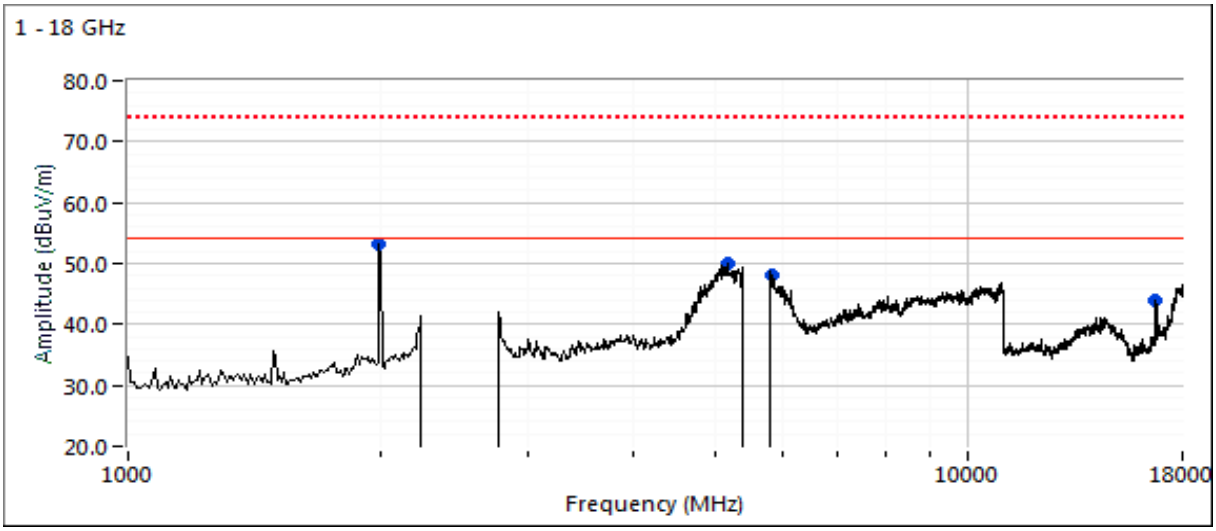
Channel: 11 & 116 Wi-Fi, 39 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

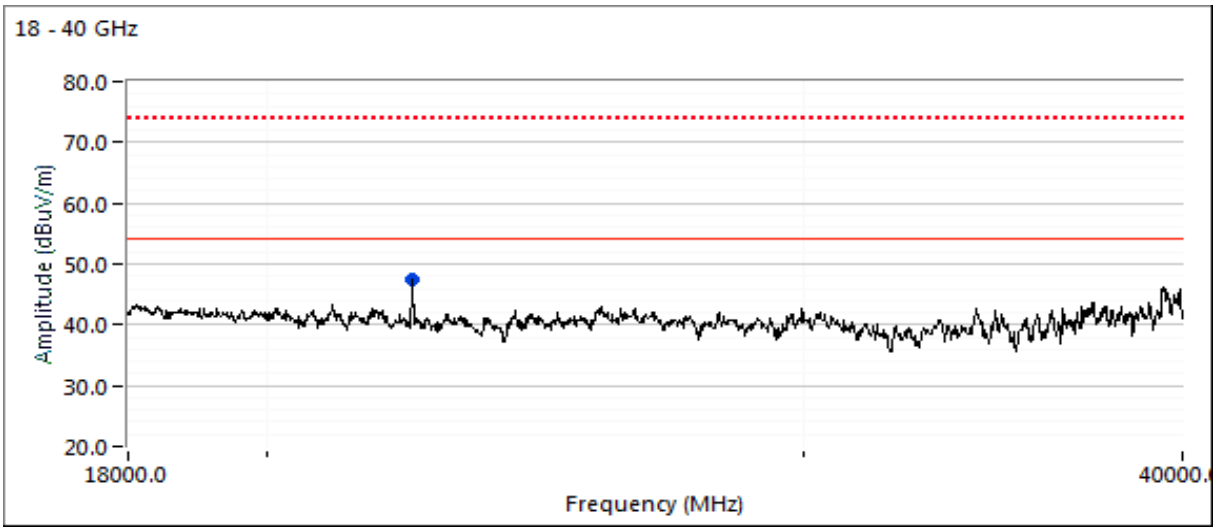
Mode: g & a
Data Rate: 6Mb/s

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





EMC Test Data

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

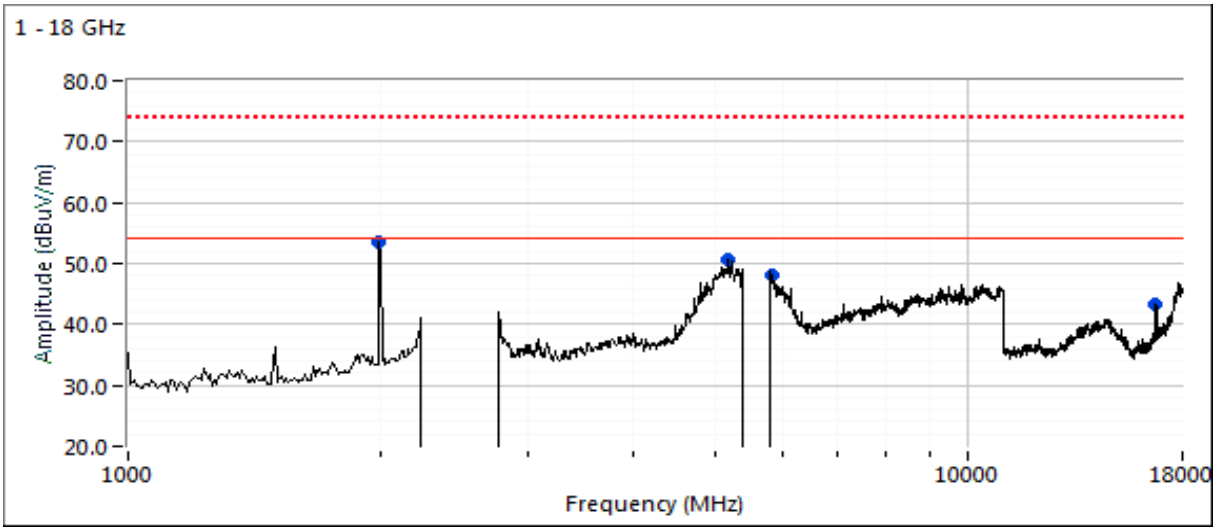
Channel: 11 & 116 Wi-Fi, 39 - BLE Mode: ax20

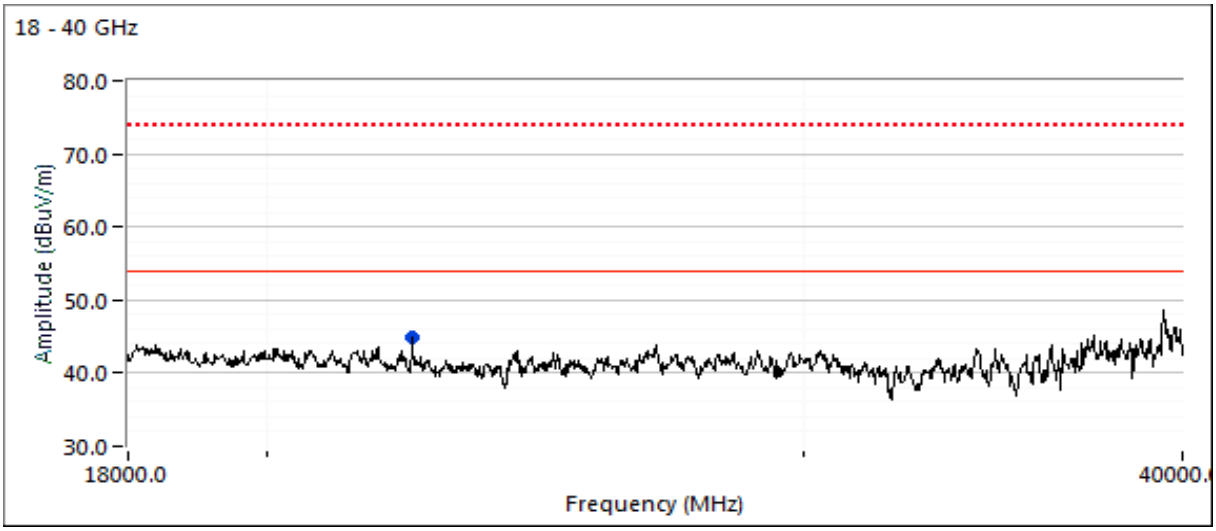
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

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





EMC Test Data

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

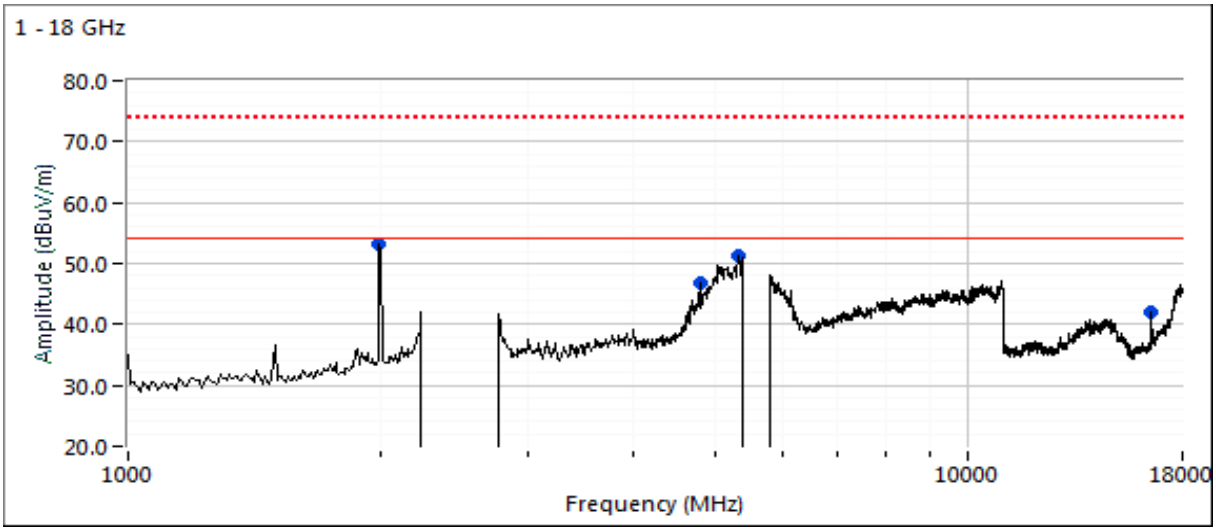
Channel: 9 & 110 Wi-Fi, 39 - BLE Mode: ax40

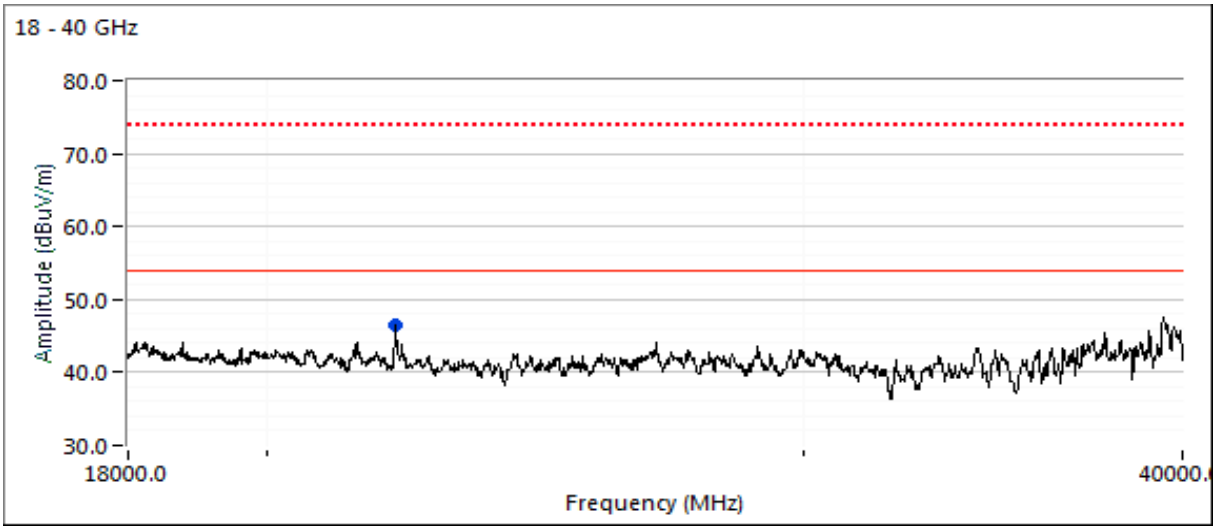
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

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





EMC Test Data

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

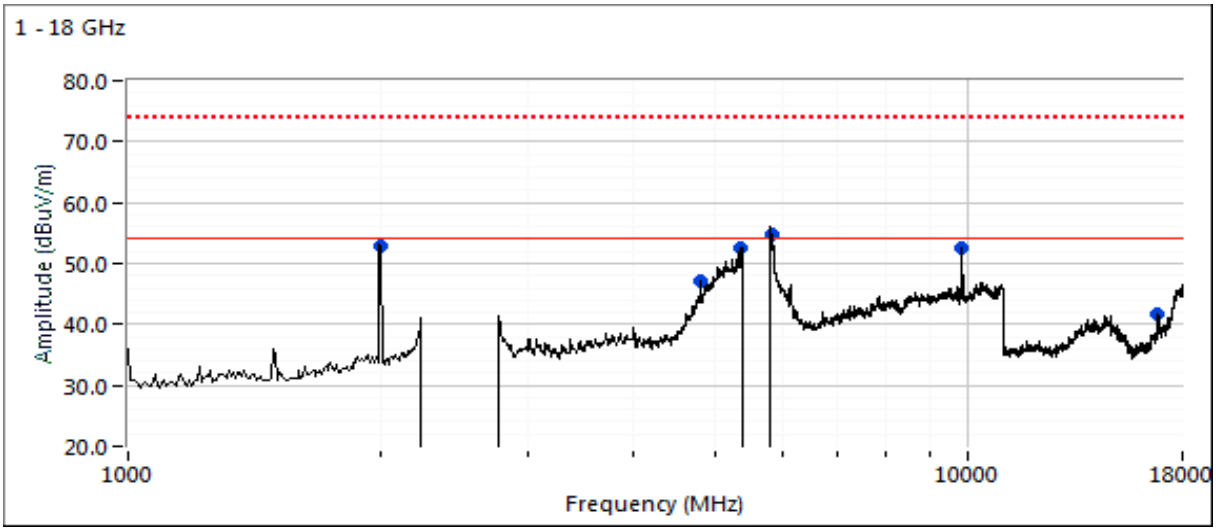
Channel: 11 & 122 Wi-Fi, 39 - BLE Mode: ac80 / b Note: Channel 122 not used in Canada

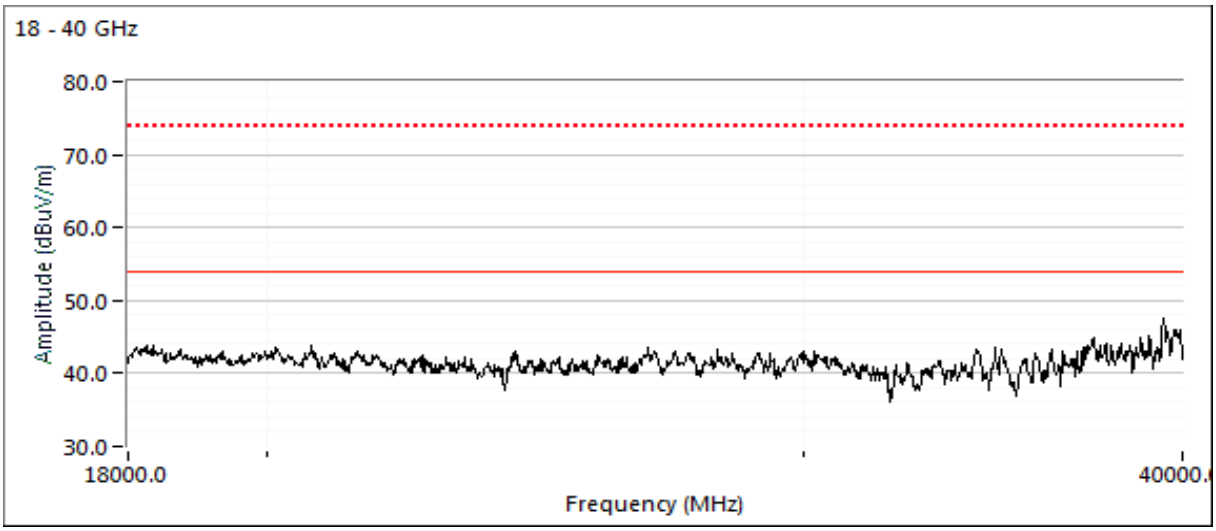
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0 / 1Mb/s

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





EMC Test Data

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
Test Engineer: Roy Zheng
Test Location: FT Chamber #5

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

Run #7a: Low Channel

Channel: 3 & 102 Wi-Fi, 37 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

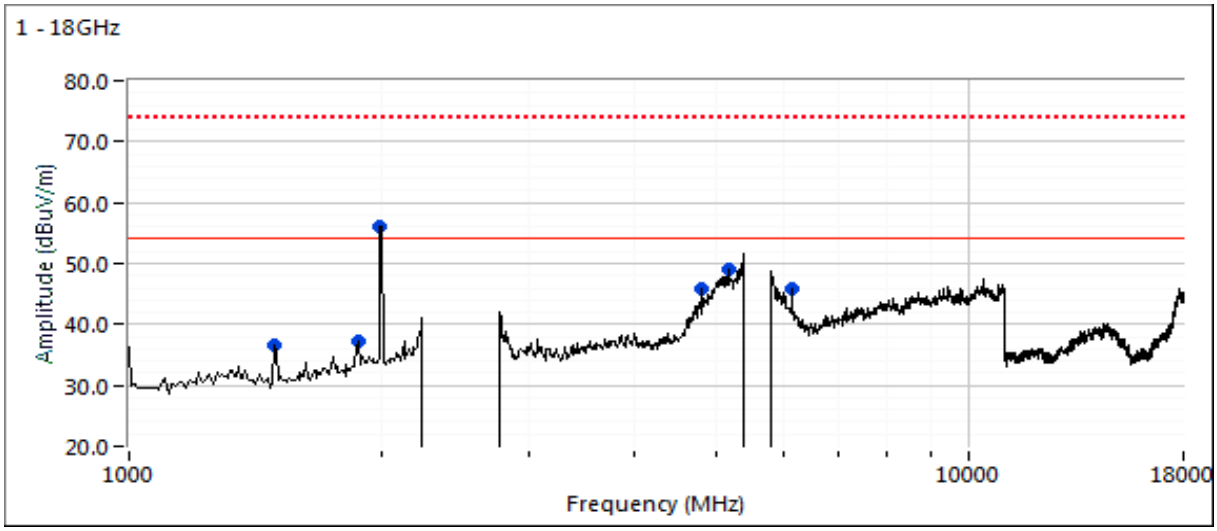
Mode: ac40
Data Rate: MCS 0

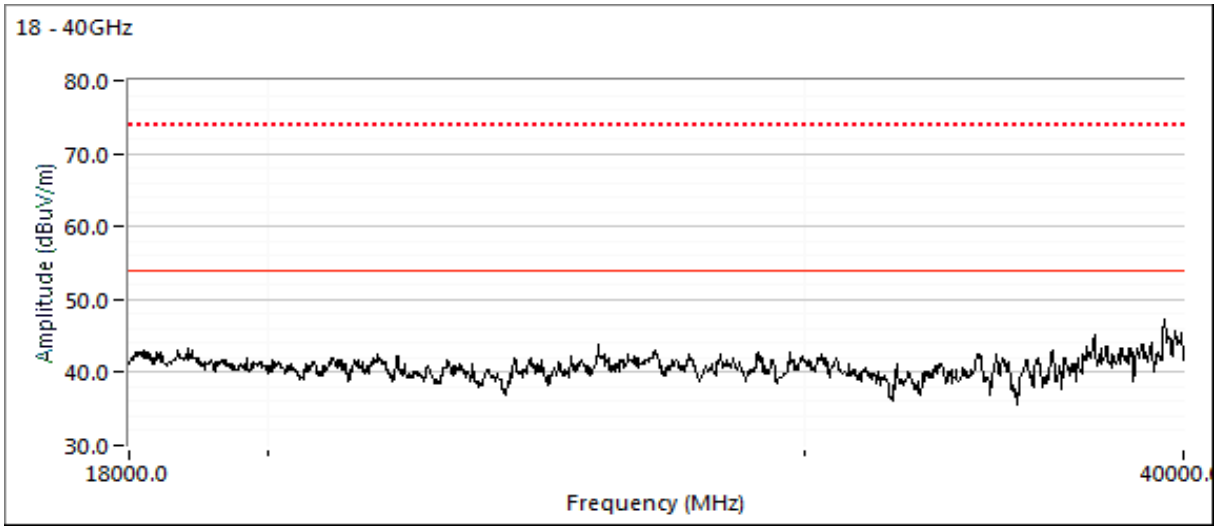
Note: Channel 122 not used in Canada

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





EMC Test Data

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

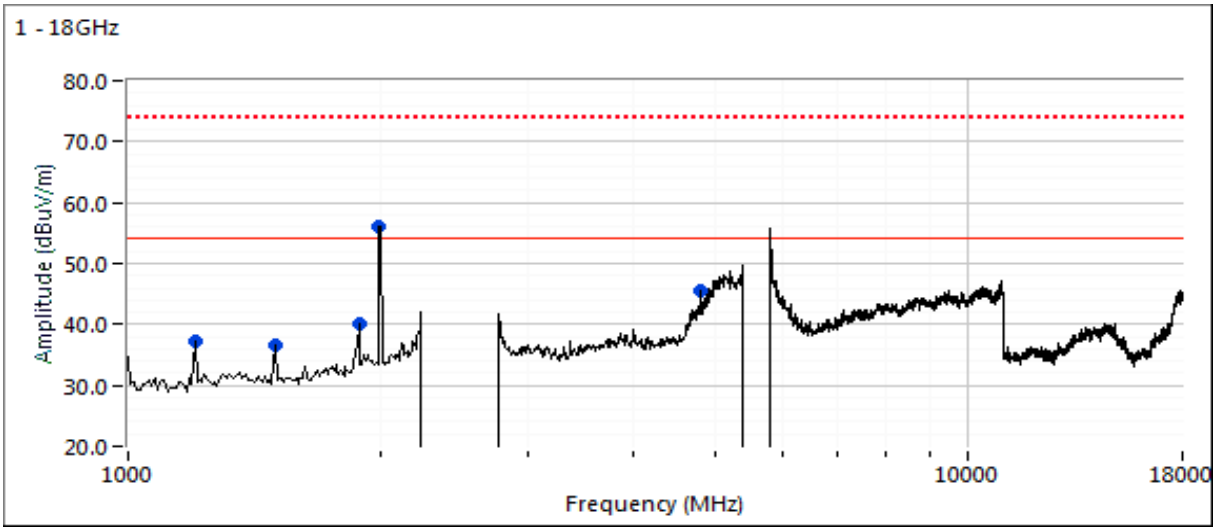
Channel: 9 & 142 Wi-Fi, 39 - BLE Mode: ac40 Note: Channel 122 not used in Canada

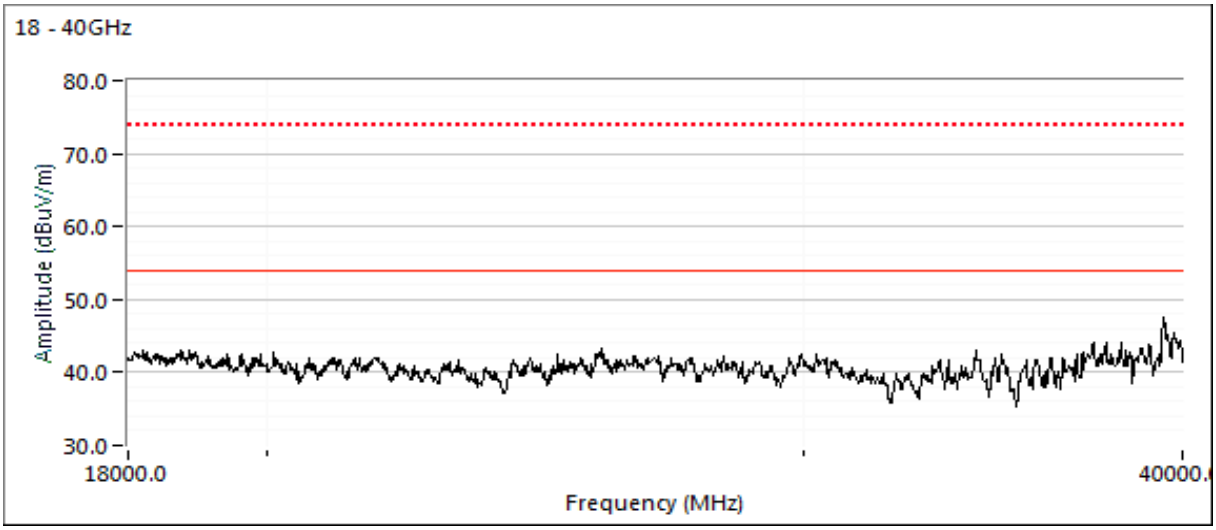
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS 0

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





EMC Test Data

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 #8, Radiated Spurious Emissions, 1,000 - 40,000 MHz. Operation in the 5725-5850 MHz Band

Date of Test: 10/23/2018 0:00
Test Engineer: Roy Zheng
Test Location: FT Chamber #5

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

Run #8a: Center Channel

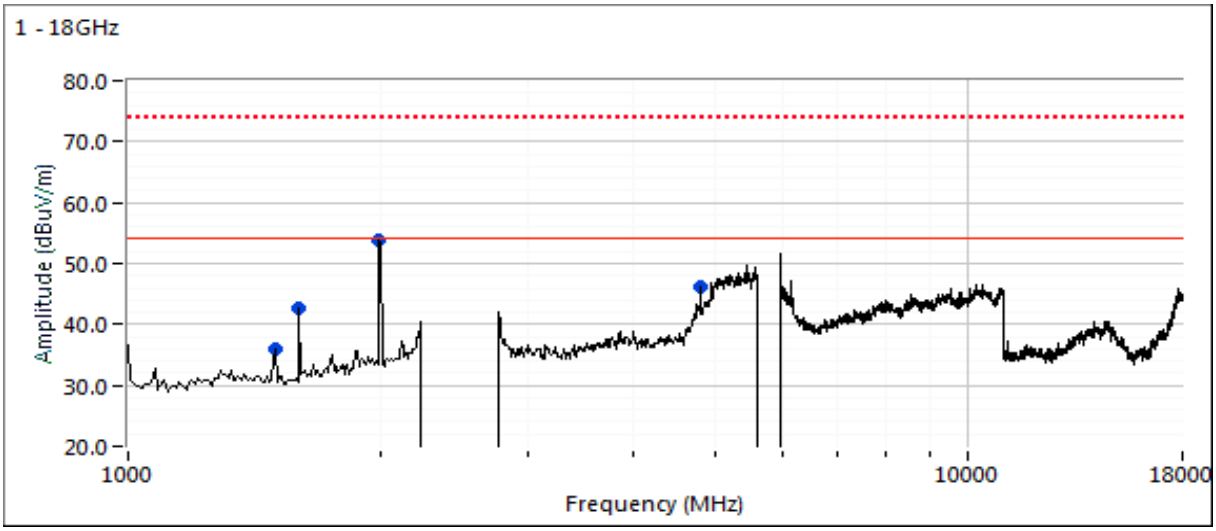
Channel: 6 & 157 Wi-Fi, 37 - BLE
Tx Chain: 8 (5GHz), 4 (2.4 GHz)

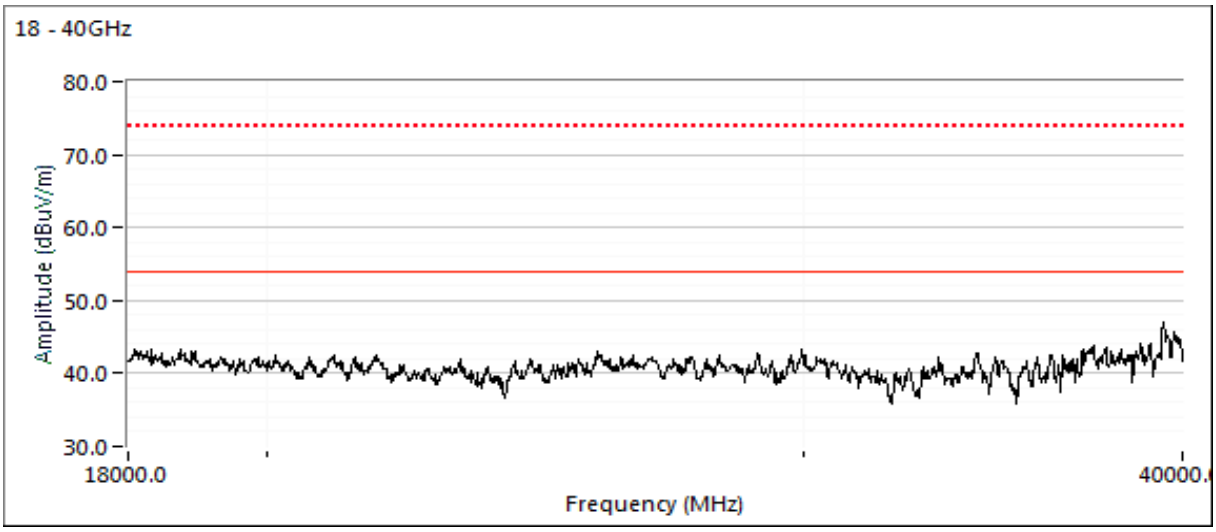
Mode: g & a
Data Rate: 6Mb/s

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4799.980	40.6	V	54.0	-13.4	VAVG	134	2.5	RB 1 MHz;VB 300 Hz;Note 3
4799.710	49.4	V	74.0	-24.6	PK	134	2.5	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.8	V	60.0	-24.2	Peak	148	1.0	Note 5
1600.000	42.6	H	60.0	-17.4	Peak	122	1.6	Note 5
2000.000	53.8	V	60.0	-6.2	Peak	158	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





EMC Test Data

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 #8b: Center Channel

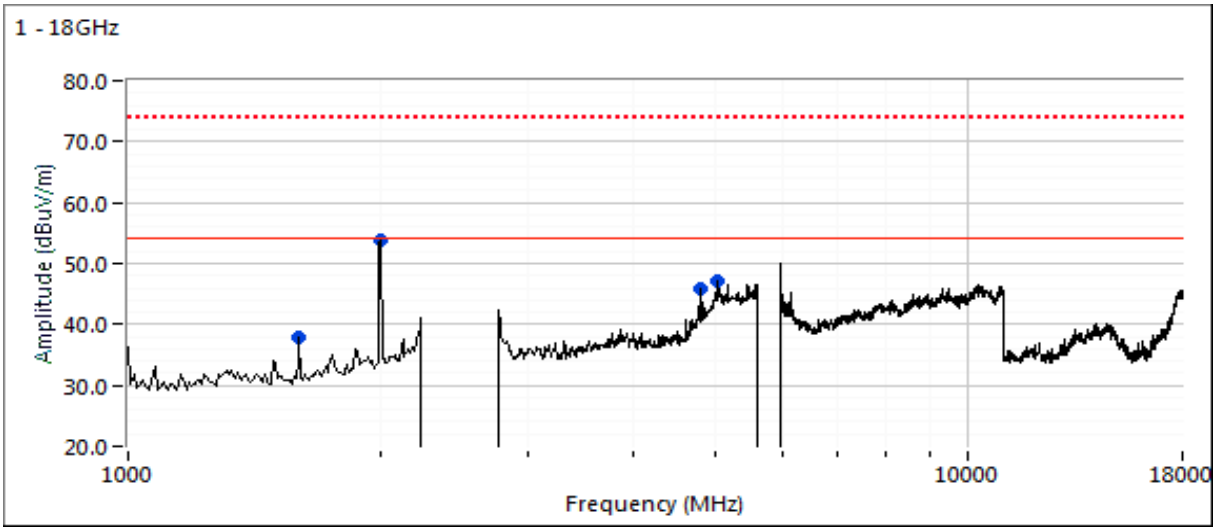
Channel: 6 & 157 Wi-Fi, 17 - BLE Mode: ax20

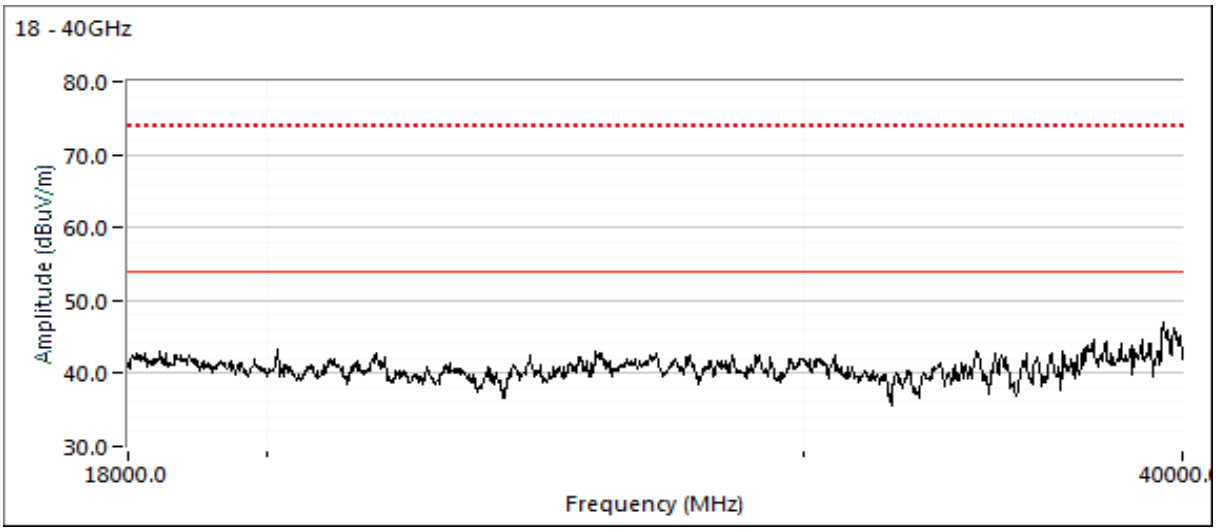
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5035.900	42.3	H	54.0	-11.7	VAVG	164	1.5	RB 1 MHz;VB 300 Hz;Note 3
5026.400	53.9	H	74.0	-20.1	PK	164	1.5	RB 1 MHz;VB 3 MHz;Peak
4799.960	41.7	V	54.0	-12.3	VAVG	132	1.9	RB 1 MHz;VB 300 Hz;Note 3
4800.350	50.8	V	74.0	-23.2	PK	132	1.9	RB 1 MHz;VB 3 MHz;Peak
1600.000	38.0	H	60.0	-22.0	Peak	201	1.6	Note 5
2000.000	53.9	V	60.0	-6.1	Peak	244	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





EMC Test Data

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 #8c: Center Channel

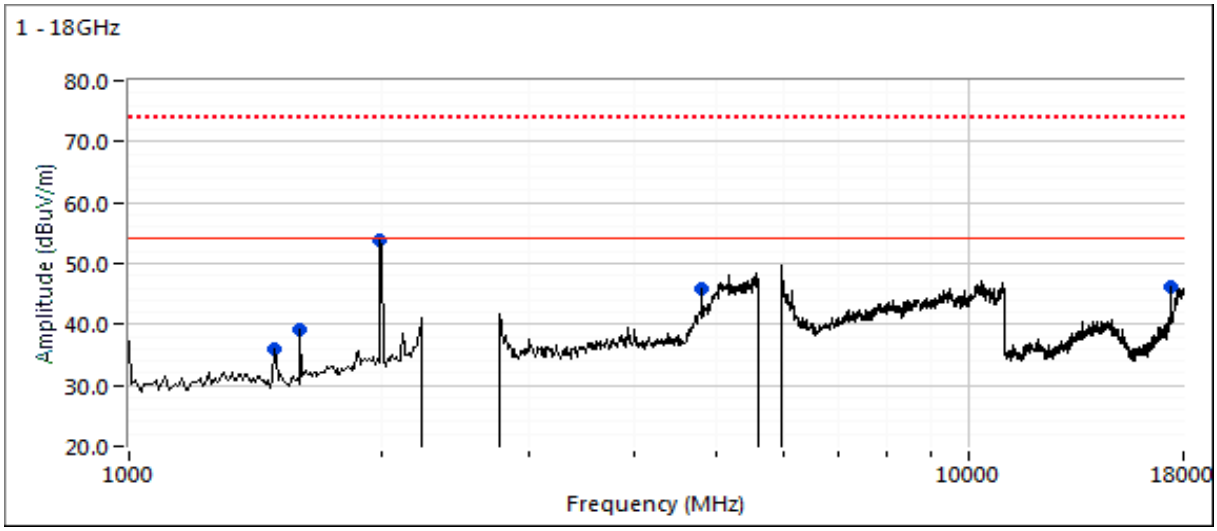
Channel: 6 & 159 Wi-Fi, 39 - BLE Mode: 11ax40

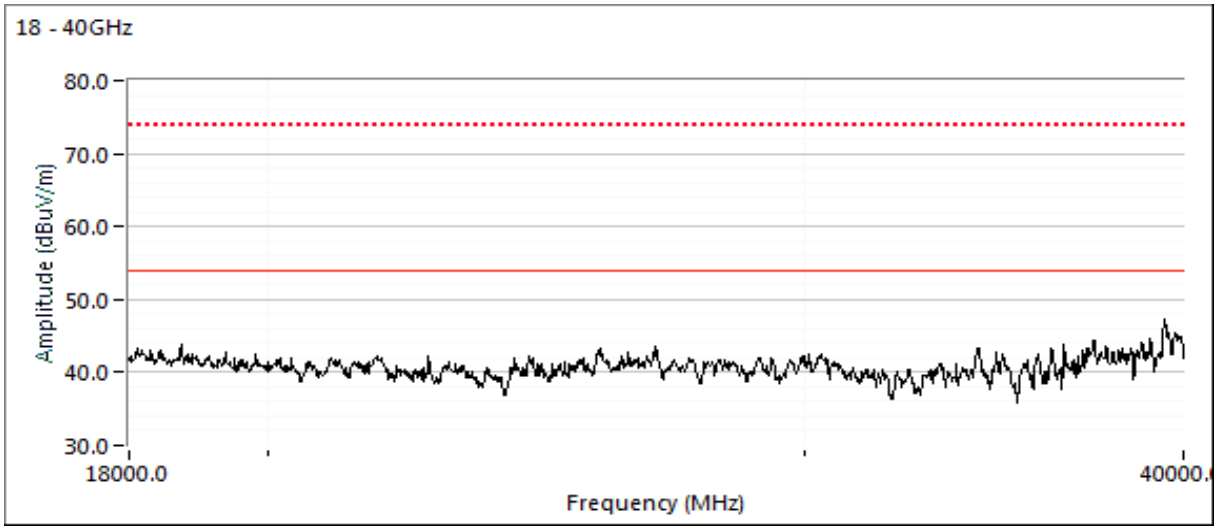
Tx Chain: 8 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
4799.940	43.6	V	54.0	-10.4	VAVG	151	1.4	RB 1 MHz;VB 300 Hz;Note 3
4800.100	52.9	V	74.0	-21.1	PK	151	1.4	RB 1 MHz;VB 3 MHz;Peak
17397.330	54.1	V	68.3	-14.2	PK	204	1.3	RB 1 MHz;VB 3 MHz;Peak
1500.000	35.9	V	60.0	-24.1	Peak	48	1.3	Note 5
1600.000	39.1	H	60.0	-20.9	Peak	164	1.6	Note 5
2000.000	53.8	V	60.0	-6.2	Peak	79	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





EMC Test Data

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 #8d: Center Channel

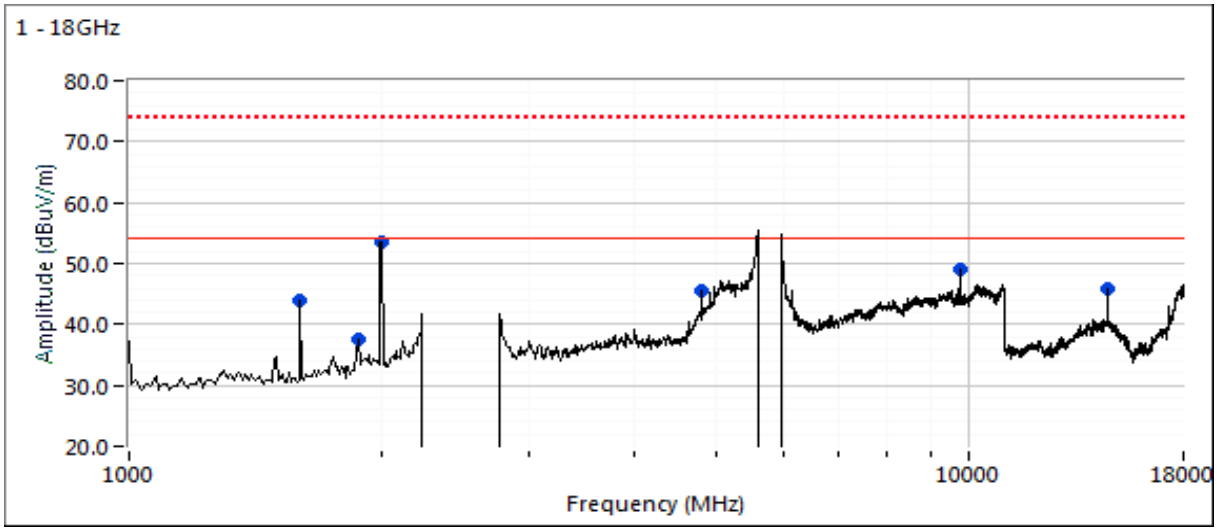
Channel: 6 & 155 Wi-Fi, 17 - BLE Mode: b & ac80

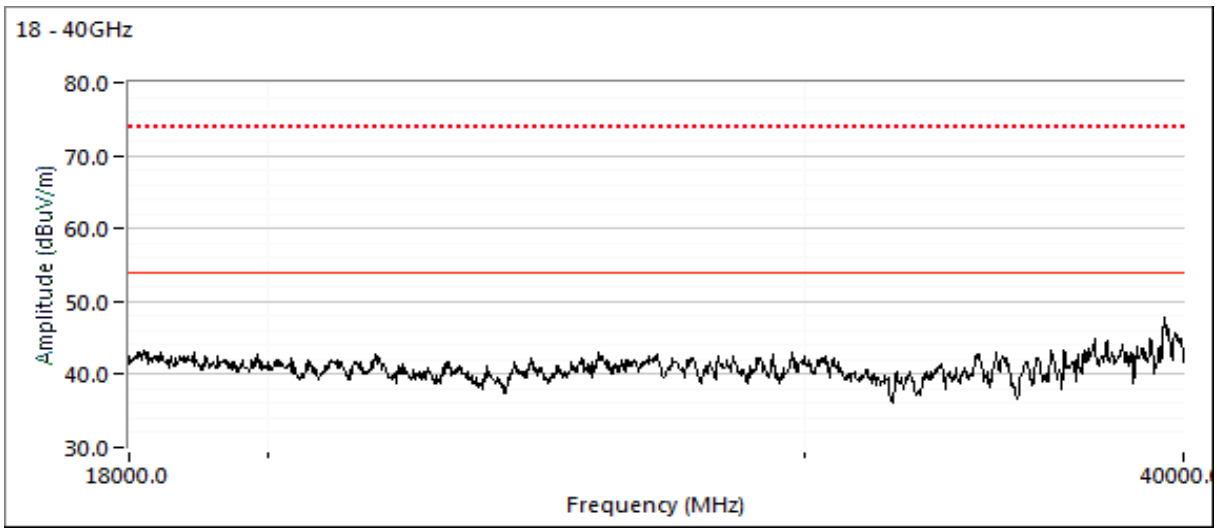
Tx Chain: 8 (5GHz), 4 (2.4 GHz) Data Rate: 1Mbps & MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
9748.030	45.2	V	54.0	-8.8	VAVG	189	2.2	RB 1 MHz;VB 300 Hz;Note 3
9747.970	54.8	V	74.0	-19.2	PK	189	2.2	RB 1 MHz;VB 3 MHz;Peak
4800.030	38.0	V	54.0	-16.0	VAVG	191	2.5	RB 1 MHz;VB 300 Hz;Note 3
4798.500	39.4	V	74.0	-34.6	PK	191	2.5	RB 1 MHz;VB 3 MHz;Peak
14619.280	41.2	V	68.3	-27.1	PK	226	1.1	RB 1 MHz;VB 3 MHz;Peak
1600.000	44.0	H	60.0	-16.0	Peak	36	1.3	Note 5
1875.000	37.5	V	60.0	-22.5	Peak	57	1.6	Note 5
2000.000	53.5	V	60.0	-6.5	Peak	250	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





EMC Test Data

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

Date of Test: 10/23/2018 0:00
Test Engineer: Rafael Varelas
Test Location: FT Chamber #5

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

Run #9a: Low Channel

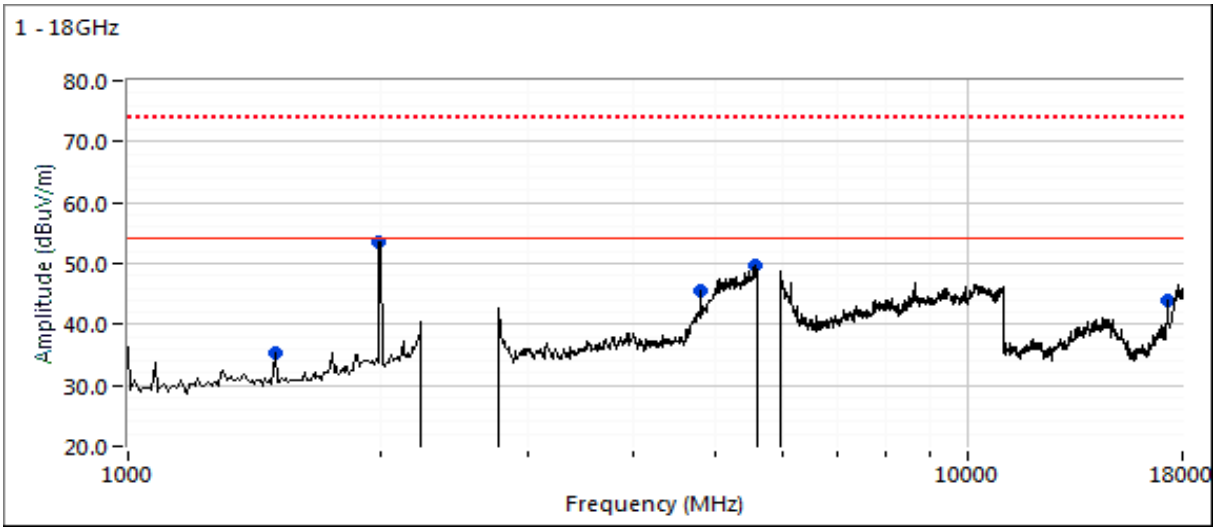
Channel: 3 & 151 Wi-Fi, 37 - BLE
Tx Chain: 4 (5GHz), 4 (2.4 GHz)

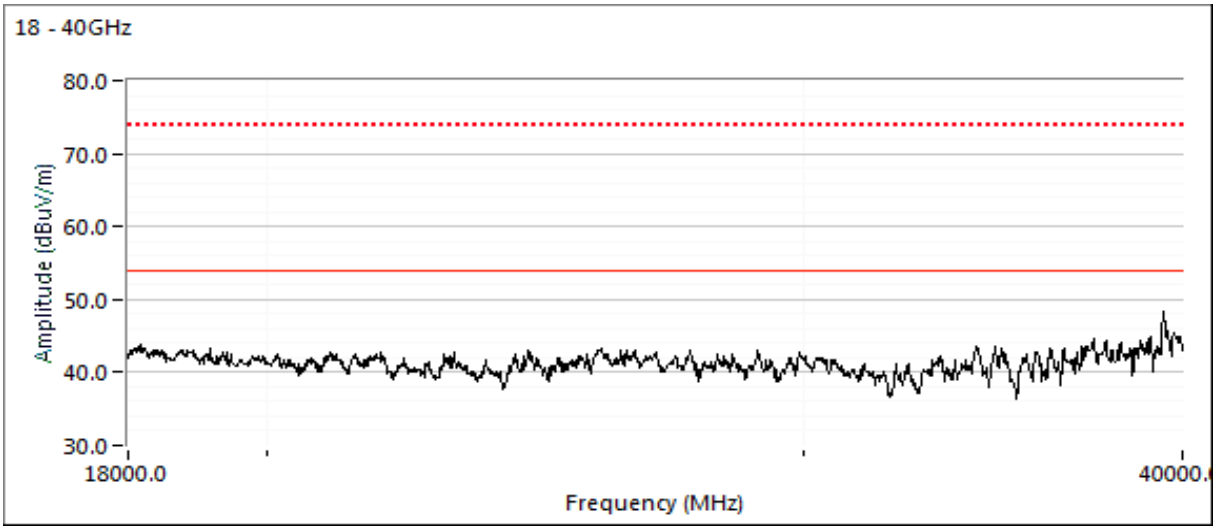
Mode: ax40
Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5574.360	59.9	V	68.3	-8.4	PK	167	1.7	RB 1 MHz;VB 3 MHz;Peak
4794.710	39.0	V	54.0	-15.0	VAVG	151	1.5	RB 1 MHz;VB 300 Hz; Note 3
4796.150	51.1	V	74.0	-22.9	PK	151	1.5	RB 1 MHz;VB 3 MHz;Peak
1500.080	35.4	V	60.0	-24.6	Peak	31	1.0	Note 5
2000.000	53.6	H	60.0	-6.4	Peak	139	1.9	Note 5
17265.000	43.9	V	68.3	-24.4	Peak	92	1.3	RB 1 MHz;VB 3 MHz;Peak

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

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





EMC Test Data

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 #9b: High Channel

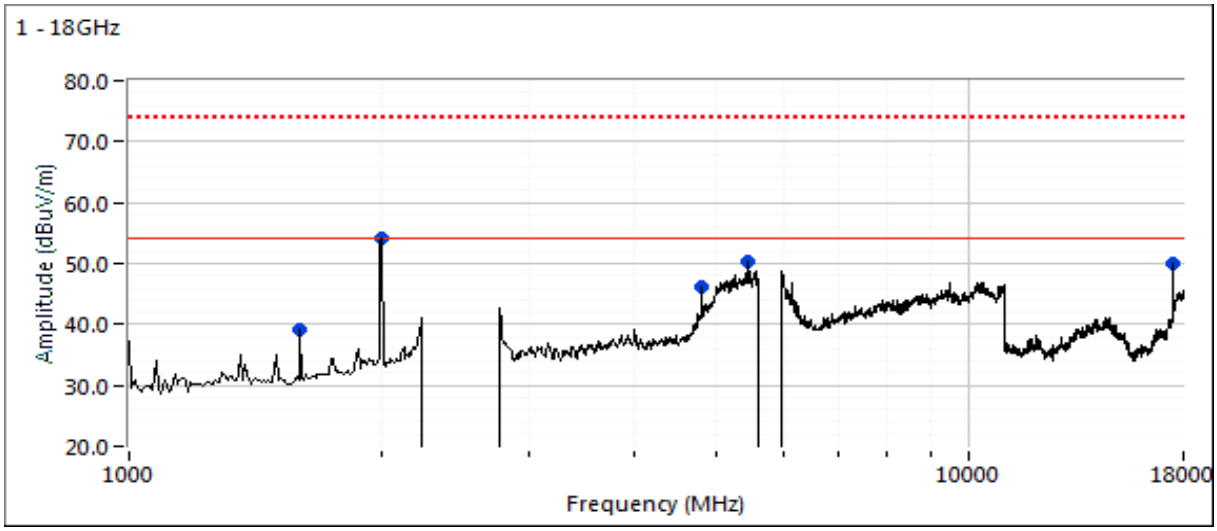
Channel: 11 & 157 Wi-Fi, 39 - BLE Mode: ax20

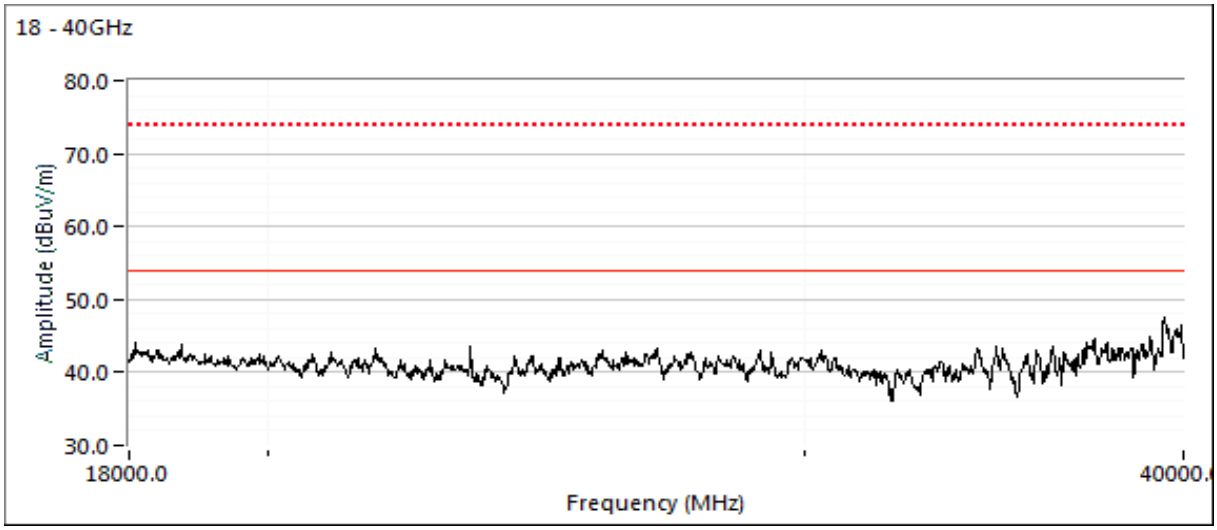
Tx Chain: 4 (5GHz), 4 (2.4 GHz) Data Rate: MCS0

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5446.430	45.0	V	54.0	-9.0	VAVG	161	1.6	RB 1 MHz;VB 300 Hz; Note 3
5449.150	57.8	V	74.0	-16.2	PK	161	1.6	RB 1 MHz;VB 3 MHz;Peak
4799.980	44.4	H	54.0	-9.6	VAVG	163	2.0	RB 1 MHz;VB 300 Hz; Note 3
4800.210	53.1	H	74.0	-20.9	PK	163	2.0	RB 1 MHz;VB 3 MHz;Peak
17475.680	52.9	V	68.3	-15.4	PK	99	1.0	RB 1 MHz;VB 3 MHz;Peak
1602.500	39.3	V	60.0	-20.7	Peak	316	1.0	Note 5
2000.000	54.2	H	60.0	-5.8	Peak	139	1.9	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





EMC Test Data

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 & 120V/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.

EMC Test Data

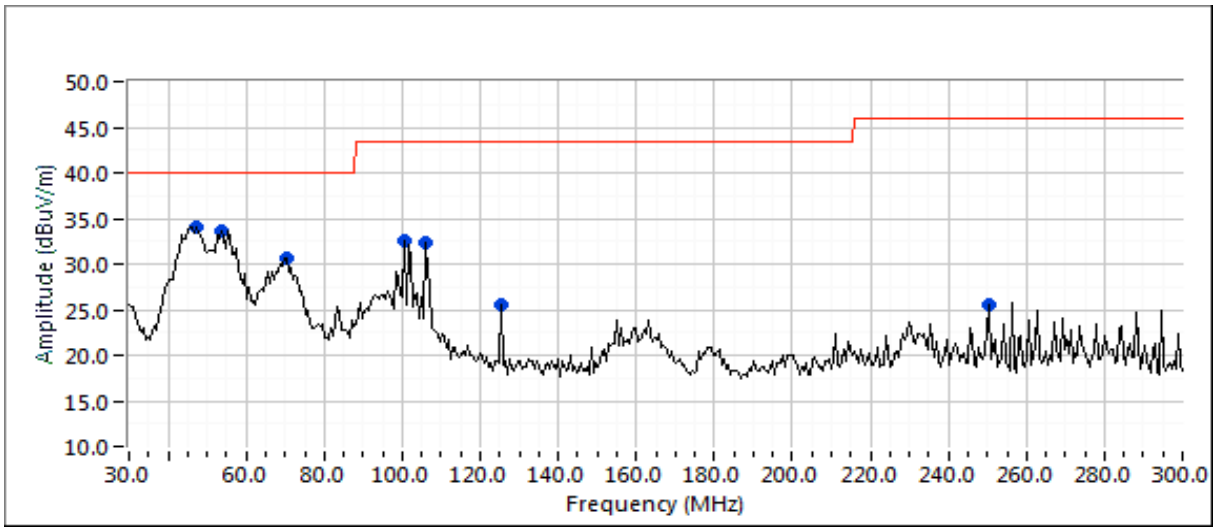
Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

Sample Notes

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

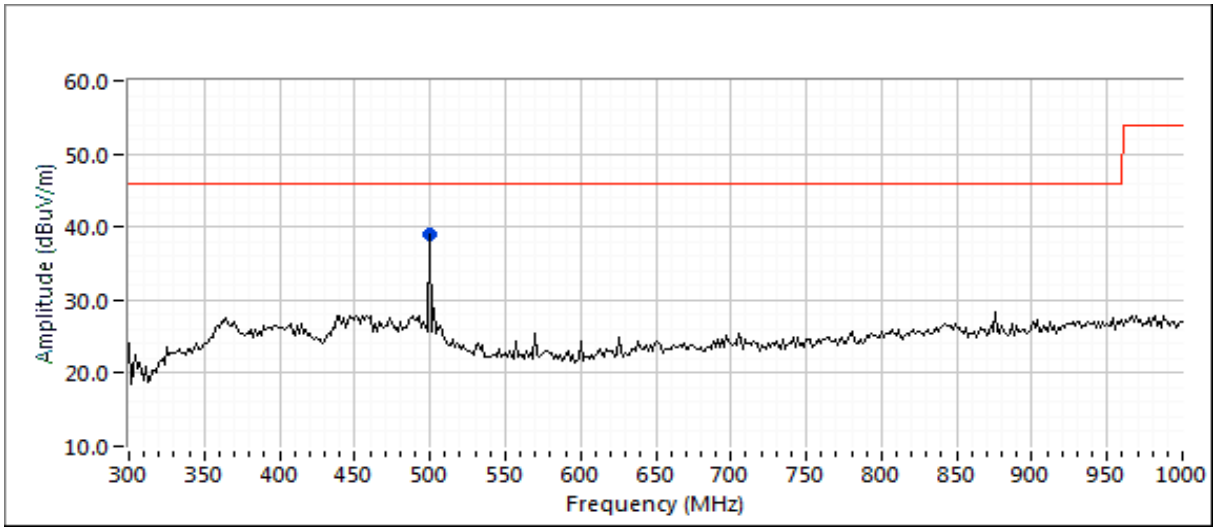
Test Parameters for Preliminary Scan(s)			
Frequency Range (MHz)	Prescan Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

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



EMC Test Data

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

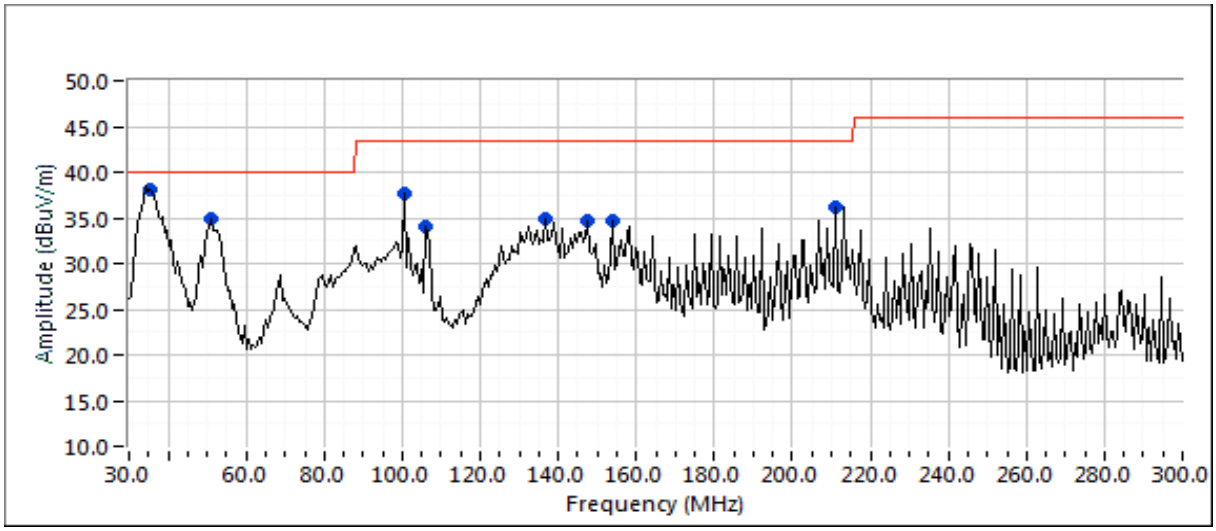
Test Parameters for Maximized Reading(s)			
Frequency Range (MHz)	Test Distance (meters)	Limit Distance (meters)	Extrapolation Factor (dB, applied to data)
30 - 1000	3	3	0.0

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)

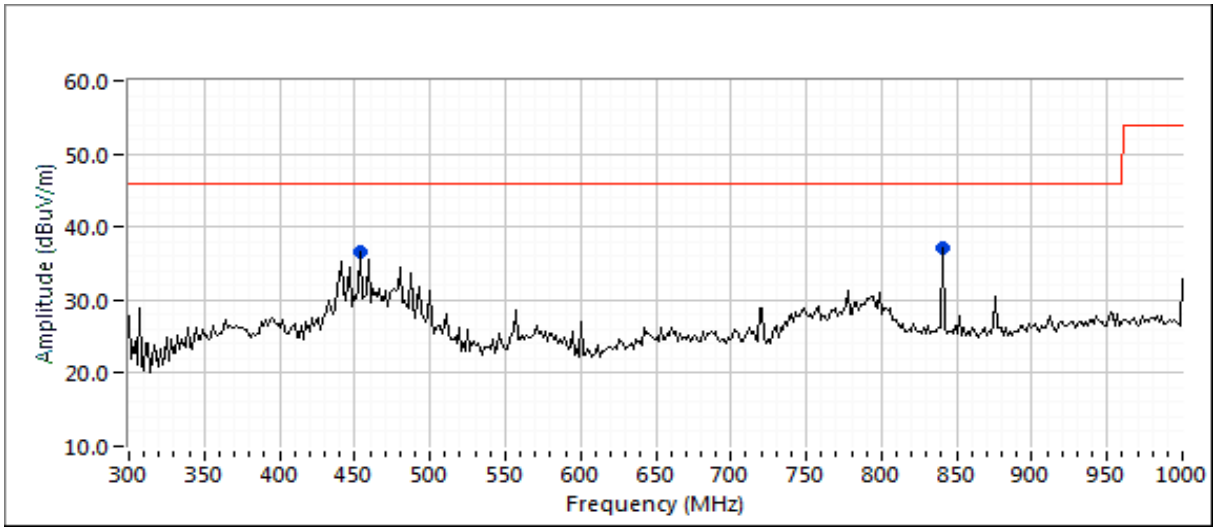
Run #3: Preliminary Radiated Emissions, 30 - 1000 MHz

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



EMC Test Data

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

EMC Test Data

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)

EMC Test Data

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

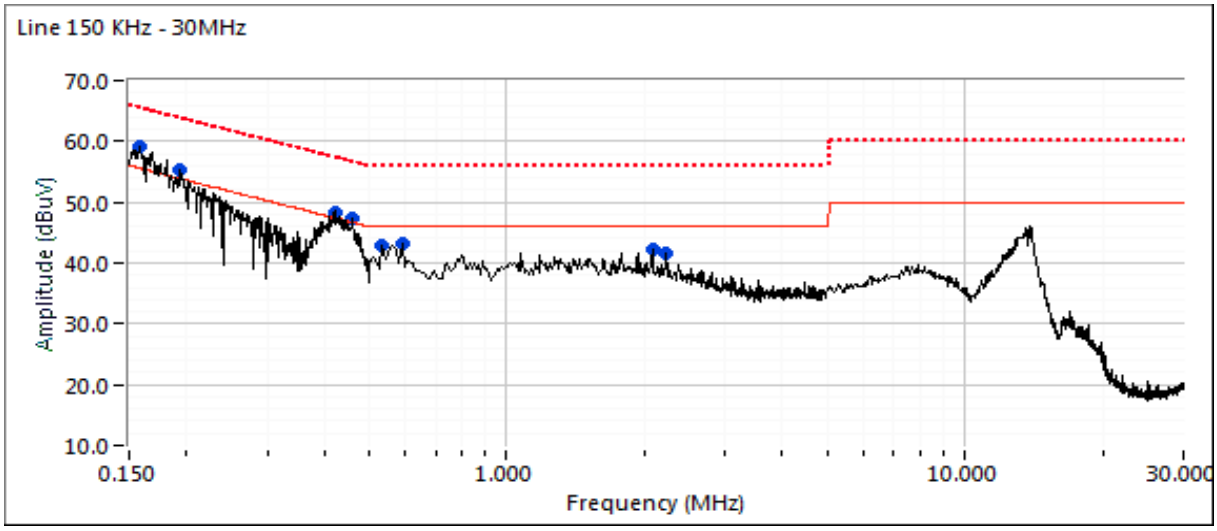
No modifications were made to the EUT during testing

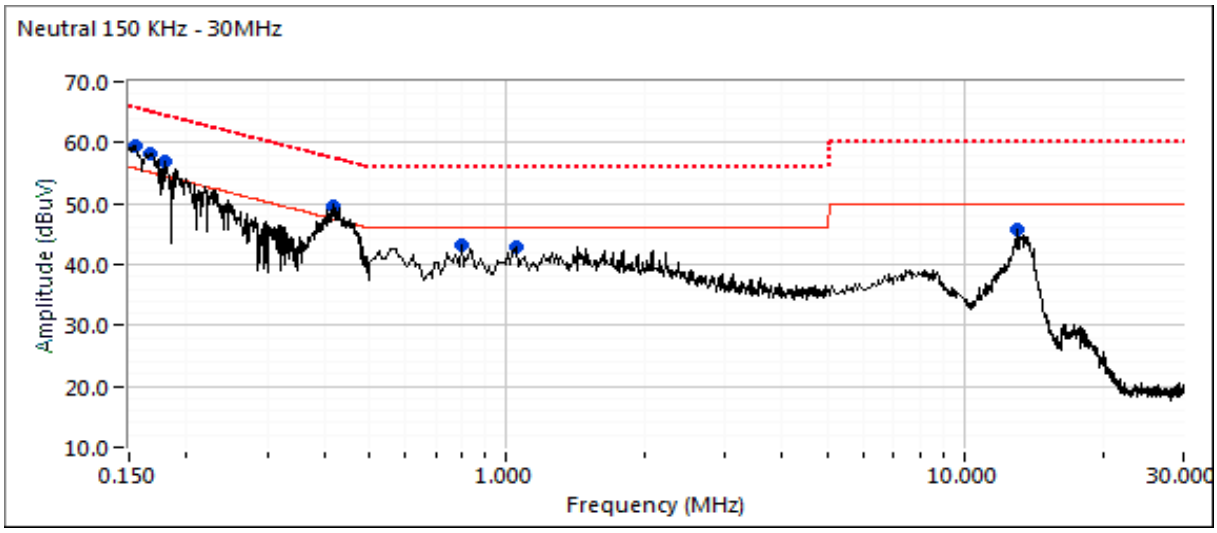
Deviations From The Standard

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





EMC Test Data

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	

EMC Test Data

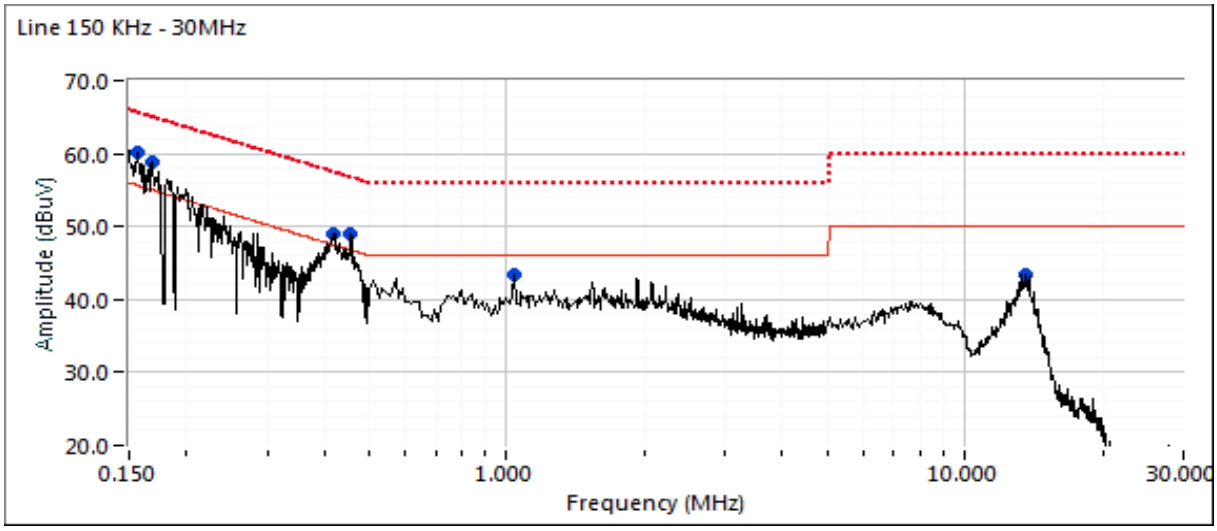
Client:	Aruba, a Hewlett Packard Enterprise company	PR Number:	PR077654
Model:	APIN0534 and APIN0535	T-Log Number:	TL077654-RA-FCC
		Project Manager:	Christine Krebill
Contact:	Mark Hill	Project Engineer:	David Bare
Standard:	FCC §15.247 & 15.407	Class:	N/A

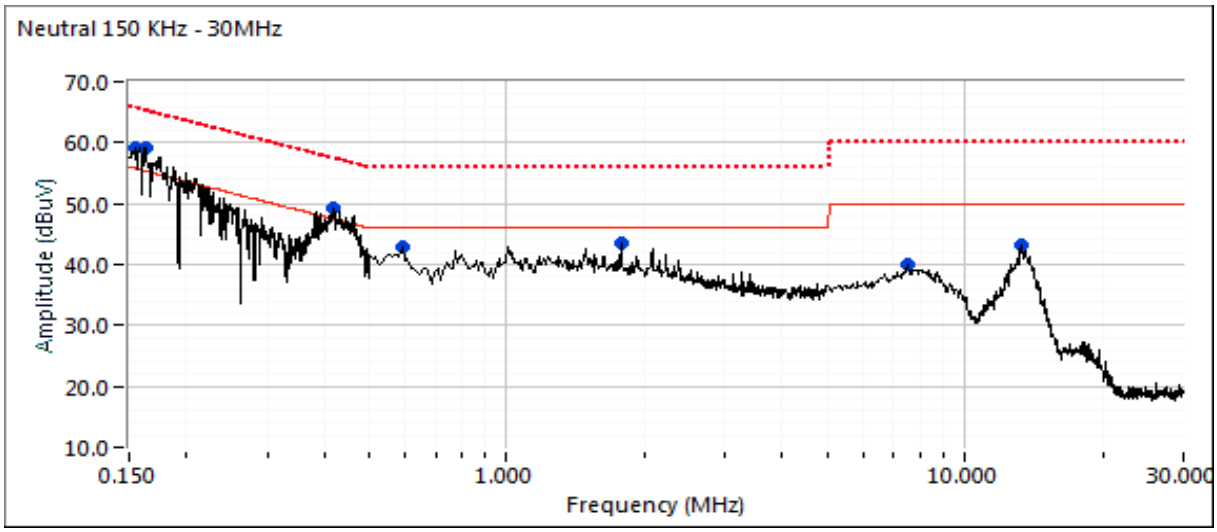
Final quasi-peak and average readings

Frequency MHz	Level dBμV	AC Line	FCC §15.207 Limit	Margin	Detector QP/Ave	Comments
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





EMC Test Data

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 MHz	Level dBμV	AC Line	FCC §15.207 Limit	Margin	Detector QP/Ave	Comments
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	

EMC Test Data

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 MHz	Level dBμV	AC Line	FCC §15.207 Limit	Margin	Detector QP/Ave	Comments
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

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