



*EMC Test Report  
Application for Grant of Equipment Authorization  
Class II Permissive Change/Reassessment  
pursuant to  
Industry Canada RSS-Gen Issue 2 / RSS 210 Issue 7  
FCC Part 15, Subpart E*

*Model: WLAN AP 8120*

IC CERTIFICATION #: 3794G-AP8120  
FCC ID: X7CAP8120

APPLICANT: Avaya  
4655 Great America Parkway  
Santa Clara, CA 95051

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

IC SITE REGISTRATION #: 2845B-5

REPORT DATE: July 8, 2010

FINAL TEST DATES: February 7, April 8, May 5, 7 and 9, 2010

AUTHORIZED SIGNATORY:

A handwritten signature in blue ink, appearing to read "Mark E. Hill", written over a horizontal line.

Mark E. Hill  
Staff Engineer  
Elliott Laboratories



Testing Cert #2016-01

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**REVISION HISTORY**

Rev#	Date	Comments	Modified By
	July 8, 2010	First release	

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## SCOPE

An electromagnetic emissions test has been performed on the Avaya model WLAN AP 8120, pursuant to the following rules:

Industry Canada RSS-Gen Issue 2  
RSS 210 Issue 7 "Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment"  
FCC Part 15, Subpart E requirements for UNII Devices (using FCC DA 02-2138, August 30, 2002)

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

ANSI C63.4:2003  
FCC UNII test procedure 2002-08 DA-02-2138, August 2002

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant Industry Canada performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

## OBJECTIVE

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

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

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

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

manufactured.

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

#### **STATEMENT OF COMPLIANCE**

The tested sample of Avaya model WLAN AP 8120 complied with the requirements of the following regulations:

RSS 210 Issue 7 “Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment”  
FCC Part 15, Subpart E requirements for UNII Devices

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

The test results recorded herein are based on a single type test of Avaya model WLAN AP 8120 and therefore apply only to the tested sample. The sample was selected and prepared by Vipin Naik of Avaya.

#### **DEVIATIONS FROM THE STANDARDS**

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

**TEST RESULTS SUMMARY****UNII / LELAN DEVICES****Operation in the 5.25 – 5.35 GHz Band**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a)(2)		26dB Bandwidth	802.11a: 36.0 MHz n20: 26.5 MHz n40: 41.3 MHz	N/A – limits output power if < 20MHz	N/A
15.407(a)(2)	A9.2(2)	Output Power	802.11a: 17.4 dBm n20: 18.1 dBm n40: 18.9 dBm (0.078 W)	24 dBm / 250mW (eirp < 30dBm)	Complies
15.407(a)(2)	-	Power Spectral Density	802.11a: 6.8 dBm/MHz	9.5 dBm/MHz	Complies
-	A9.2(2) / A9.5 (2)	Power Spectral Density	n20: 9.3 dBm/MHz n40: 6.1 dBm/MHz	10.6 dBm / MHz <sup>1</sup>	Complies
-	A9.5 (2)	Peak Spectral Density	9.3 dBm/MHz	Shall not exceed the average value by more than 3dB	Complies
15.407(b)(5) / 15.209	A9.3	Spurious Emissions below 1GHz	No emissions observed	Refer to standard	Complies
15.407(b)(2)	A9.3	Spurious Emissions above 1GHz	53.8dB $\mu$ V/m @ 5350.1MHz (-0.2dB)	Refer to standard	Complies
15.407(a)(6)	-	Peak Excursion Ratio	12.7 dB	< 13dB	Complies

**Operation in the 5.47 – 5.725 GHz Band**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.407(a)(2)		26dB Bandwidth	802.11a: 38.0 MHz n20: 26.6 MHz n40: 41.1 MHz	Limits output power if < 20MHz	N/A
15.407(a)(2)	A9.2(2)	Output Power	802.11a: 16.9 dBm n20: 18.2 dBm n40: 19.6 dBm (0.068 W)	24 dBm / 250mW (eirp < 30dBm)	Complies
15.407(a)(2)		Power Spectral Density	802.11a: 6.6 dBm/MHz	9.5 dBm/MHz	Complies
	A9.2(2) / A9.5 (2)	Power Spectral Density	n20: 9.2 dBm/MHz n40: 7.5 dBm/MHz	10.6 dBm / MHz <sup>2</sup>	Complies
KDB 443999	A9	Non-operation in 5600 – 5650 MHz sub band	Device cannot operate in the 5600 – 5650 MHz band –refer to Operational Description		Complies
15.407(b)(5) / 15.209	A9.3	Spurious Emissions below 1GHz	No emissions observed	Refer to standard	Complies
15.407(b)(2)	A9.3	Spurious Emissions above 1GHz	53.9dB $\mu$ V/m @ 11000.4MHz (-0.1dB)	Refer to standard	Complies
15.407(a)(6)	-	Peak Excursion Ratio	12.7 dB	< 13dB	Complies

<sup>1</sup> Reduced from 11dBm because highest value exceeded the average value by more than 3dB<sup>2</sup> Reduced from 11dBm because highest value exceeded the average value by more than 3dB

**Requirements for all U-NII/LELAN bands**

FCC Rule Part	RSS Rule Part	Description	Measured Value / Comments	Limit / Requirement	Result
15.407	A9.5a	Modulation	Digital Modulation is used	Digital modulation is required	Complies
	A9.5 (3)	Channel Selection	Spurious emissions tested at outermost channels in each band	Device was tested on the top, bottom and center channels in each band	N/A
15			Measurements on three channels in each band		Complies
15.407 (c)	A9.5(4)	Operation in the absence of information to transmit	Operation is discontinued in the absence of information	Device shall automatically discontinue operation in the absence of information to transmit	Complies
15.407 (g)	A9.5 (5)	Frequency Stability	Frequency stability is better than 10ppm	Refer to standard	Complies
15.407 (h1)	A9.4	Transmit Power Control	TPC is not required as the device operates at below 500mW eirp	The U-NII device shall have the capability to operate with a mean EIRP value lower than 24dBm (250mW)	Complies
15.407 (h2)	A9.4	Dynamic frequency Selection (device with radar detection)	Refer to separate test report, reference R78347	Threshold -64dBm (eirp > 200mW) Channel Availability Check > 60s Channel closing transmission time < 260ms Channel move time < 10s Non occupancy period > 30minutes	Complies
	A9.9g	User Manual information	Refer to Exhibit 6 for details		Complies

**GENERAL REQUIREMENTS APPLICABLE TO ALL BANDS**

FCC Rule Part	RSS Rule part	Description	Measured Value / Comments	Limit / Requirement	Result (margin)
15.203	-	RF Connector	Has not changed from original filing		
15.109	RSS GEN 7.2.3 Table 1	Receiver spurious emissions	42.1dB $\mu$ V/m @ 2200.1MHz (-11.9dB)	Refer to standard	Complies
15.207	RSS GEN Table 2	AC Conducted Emissions	Has not changed from original filing		
15.247 (b) (5) 15.407 (f)	RSS 102	RF Exposure Requirements	Refer to MPE calculations in Exhibit 11, RSS 102 declaration and User Manual statements.	Refer to OET 65, FCC Part 1 and RSS 102	Complies
-	RSP 100 RSS GEN 7.1.5	User Manual	Has not changed from original filing		
-	RSP 100 RSS GEN 7.1.5	User Manual	Has not changed from original filing		
-	RSP 100 RSS GEN 4.4.1	99% Bandwidth	802.11a: 17.5 MHz n20: 18.6 MHz n40: 36.8 MHz	Information only	N/A

**MEASUREMENT UNCERTAINTIES**

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with UKAS document LAB 34.

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



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

The Avaya model WLAN AP 8120 is a 802.11abgn wireless router/access point that is designed to wireless connectivity for enterprise network systems. The EUT can be table-top or wall mounted in normal operation. During testing, the EUT was treated as table-top, and rotated thru different orientation to simulate wall mounting, as noted. The EUT is powered via a POE connection.

The sample was received on February 7, 2010 and tested on February 7, April 8, May 5, 7 and 9, 2010. The EUT consisted of the following component(s):

Company	Model	Description	Serial Number	FCC ID
Avaya	AP8120	802.11abgn AP	Prototype	

**OTHER EUT DETAILS**

The following EUT details should be noted: The EUT contains 2 abgn radio modules. One module is used for 2.4GHz operation and one module is used for 5GHz operation. Simultaneous transmission is possible, but never in the same band at the same time. The device supports 2x3 MIMO operation.

**ANTENNA SYSTEM**

The EUT uses 6 custom antennas mounted on one assembly. The antenna is integral to the device.

**ENCLOSURE**

The EUT outer enclosure is primarily constructed of plastic. It measures approximately 23.5 cm wide by 15 cm deep by 5.5 cm high. The plastic outer enclosure covers a full metalized inner enclosure.

**MODIFICATIONS**

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

**SUPPORT EQUIPMENT**

The following equipment was used as support equipment for testing:

Company	Model	Description	Serial Number	FCC ID
Dell	Inspiron 1501	Laptop	-	-
-	-	USB to Serial Adapter	-	-

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

Company	Model	Description	Serial Number	FCC ID
PowerDsine	PowerDsine 9001G	POE Injector	D094565000005 8BA00	-

*EUT INTERFACE PORTS*

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

Port	Connected To	Description	Cable(s)	
			Shielded or Unshielded	Length(m)
POE	POE Injector	CAT-5	Unshielded	5.0
Serial Port	USB-to-Serial Adatppter to Laptop	CAT-5 to Serial	Unshielded	6.0

*EUT OPERATION*

During testing, the EUT was configured to transmit continuously on the noted channel. Data rate was set to 6Mbps for 802.11a. For MIMO mode testing, please refer to the actual data for the MCS setting.

**TEST SITE****GENERAL INFORMATION**

Final test measurements were taken at the test sites listed below. Pursuant to section 2.948 of the FCC's Rules and section 3.3 of RSP-100, construction, calibration, and equipment data has been filed with the Commission and with industry Canada.

Site	Registration Numbers		Location
	FCC	Canada	
Chamber 3	769238	2845B-3	41039 Boyce Road Fremont, CA 94538-2435
Chamber 4	211948	2845B-4	
Chamber 5	211948	2845B-5	

ANSI C63.4:2003 recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement. The test site(s) contain separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent requirements of ANSI C63.4:2003.

**RADIATED EMISSIONS CONSIDERATIONS**

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment or in a semi-anechoic chamber. The test sites are maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4:2003 guidelines and meet the Normalized Site Attenuation (NSA) requirements of ANSI C63.4:2003.

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## **MEASUREMENT INSTRUMENTATION**

### **RECEIVER SYSTEM**

An EMI receiver as specified in CISPR 16-1-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements. If the repetition frequency of the signal being measured is below 20Hz, peak measurements are made in lieu of Quasi-Peak measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz, unless the signal is pulsed in which case the average (or video) bandwidth of the measuring instrument is reduced to onset of pulse desensitization and then increased.

### **INSTRUMENT CONTROL COMPUTER**

The receivers utilize either a Rohde & Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

### **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 C63.4:2003 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

### *INSTRUMENT CALIBRATION*

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

## **TEST PROCEDURES**

### **EUT AND CABLE PLACEMENT**

The regulations require that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4:2003, and the worst-case orientation is used for final measurements.

### **CONDUCTED EMISSIONS**

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

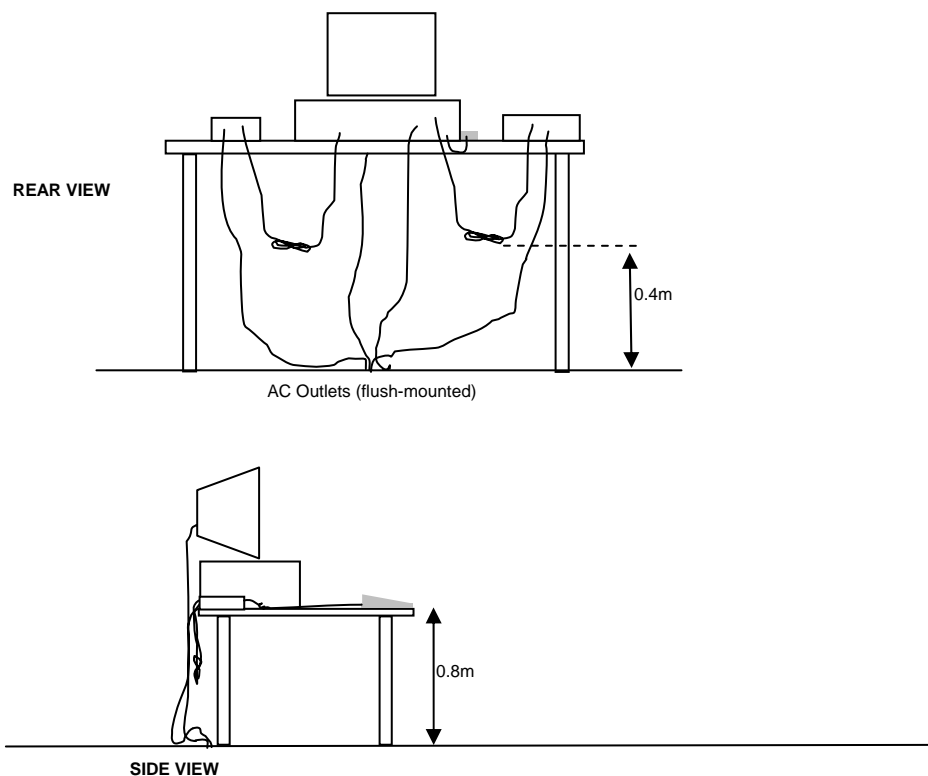
**RADIATED EMISSIONS**

A preliminary scan of the radiated emissions is performed in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed, one scan for each antenna polarization (horizontal and vertical; loop parallel and perpendicular to the EUT). During the preliminary scans, the EUT is rotated through 360°, the antenna height is varied (for measurements above 30 MHz) and cable positions are varied to determine the highest emission relative to the limit. Preliminary scans may be performed in a fully anechoic chamber for the purposes of identifying the frequencies of the highest emissions from the EUT.

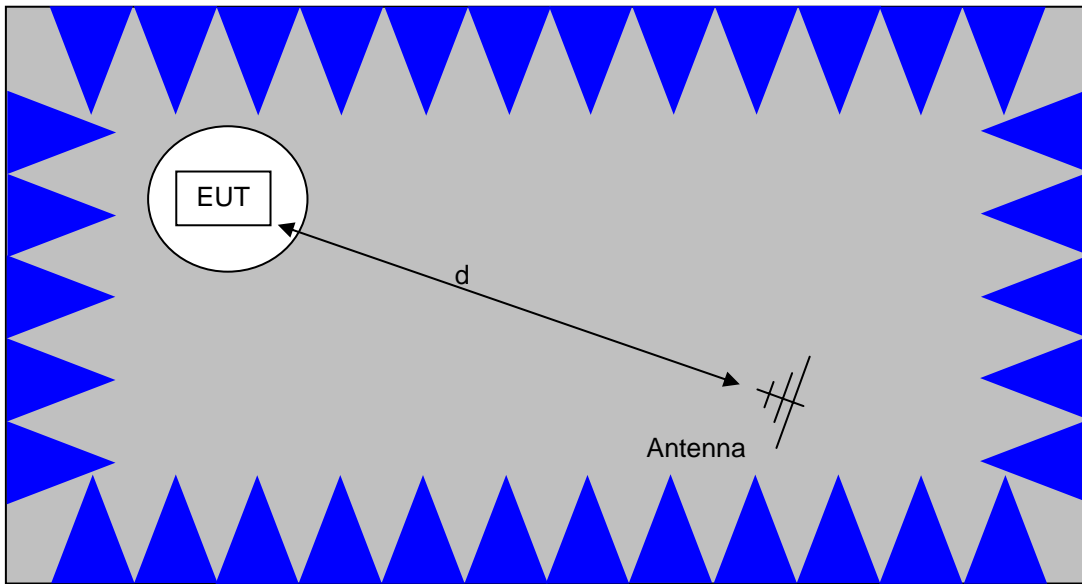
A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth, which results in the highest emission is then maintained while varying the antenna height from one to four meters (for measurements above 30 MHz, measurements below 30 MHz are made with the loop antenna at a fixed height of 1m). The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain.

When testing above 18 GHz, the receive antenna is located at 1 meter from the EUT and the antenna height is restricted to a maximum of 2.5 meters.

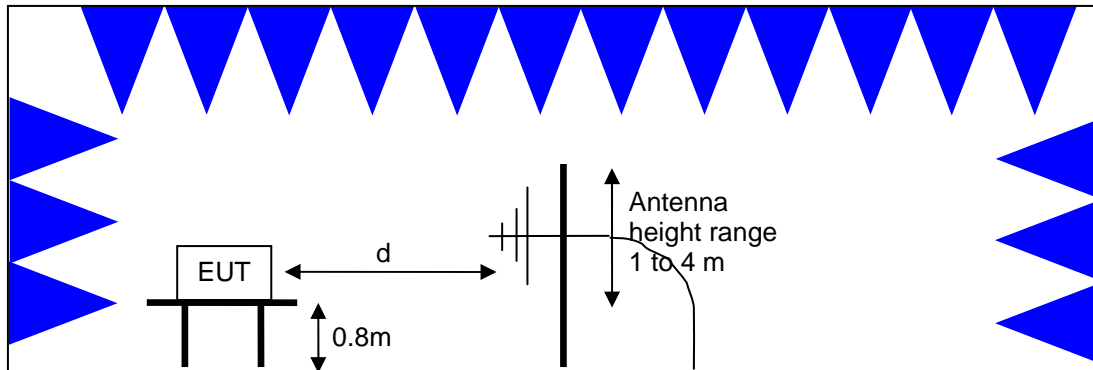


Typical Test Configuration for Radiated Field Strength Measurements



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

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

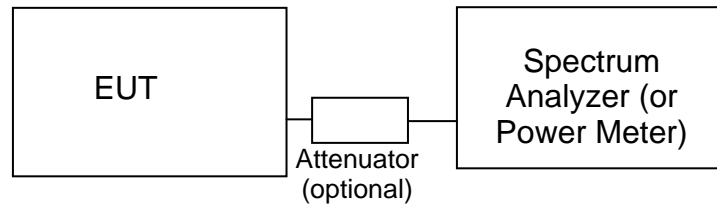


Test Configuration for Radiated Field Strength Measurements  
Semi-Anechoic Chamber, Plan and Side Views



**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 Elliott'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 and/or 26dB signal bandwidth is measured in using the bandwidths recommended by ANSI C63.4. When required, the 99% bandwidth is measured using the methods detailed in RSS GEN.

**SPECIFICATION LIMITS AND SAMPLE CALCULATIONS**

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

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

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

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

**GENERAL TRANSMITTER RADIATED EMISSIONS SPECIFICATION LIMITS**

The table below shows the limits for the spurious emissions from transmitters that fall in restricted bands<sup>3</sup> (with the exception of transmitters operating under FCC Part 15 Subpart D and RSS 210 Annex 9), the limits for all emissions from a low power device operating under the general rules of RSS 310 (tables 3 and 4), RSS 210 (table 2) and FCC Part 15 Subpart C section 15.209.

Frequency Range (MHz)	Limit (uV/m)	Limit (dBuV/m @ 3m)
0.009-0.490	2400/F <sub>KHz</sub> @ 300m	67.6-20*log <sub>10</sub> (F <sub>KHz</sub> ) @ 300m
0.490-1.705	24000/F <sub>KHz</sub> @ 30m	87.6-20*log <sub>10</sub> (F <sub>KHz</sub> ) @ 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

**FCC 15.407 (a) OUTPUT POWER LIMITS**

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
5150 – 5250	50mW (17 dBm)	4 dBm/MHz
5250 – 5350	250 mW (24 dBm)	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm)	17 dBm/MHz

For system using antennas with gains exceeding 6dBi, the output power and power spectral density limits are reduced by 1dB for every dB the antenna gain exceeds 6dBi. Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

The peak excursion envelope is limited to 13dB.

<sup>3</sup> The restricted bands are detailed in FCC 15.203, RSS 210 Table 1 and RSS 310 Table 2

**OUTPUT POWER LIMITS –LELAN DEVICES**

The table below shows the limits for output power and output power density defined by RSS 210. Where the signal bandwidth is less than 20 MHz the maximum output power is reduced to the power spectral density limit plus 10 times the log of the bandwidth (in MHz).

Operating Frequency (MHz)	Output Power	Power Spectral Density
5150 – 5250	200mW (23 dBm) eirp	10 dBm/MHz eirp
5250 – 5350	250 mW (24 dBm) <sup>4</sup> 1W (30dBm) eirp	11 dBm/MHz
5470 – 5725	250 mW (24 dBm) <sup>5</sup> 1W (30dBm) eirp	11 dBm/MHz
5725 – 5825	1 Watts (30 dBm) 4W eirp	17 dBm/MHz

In addition, the power spectral density limit shall be reduced by 1dB for every dB the highest power spectral density exceeds the “average” power spectral density ) by more than 3dB. The “average” power spectral density is determined by dividing the output power by  $10\log(\text{EBW})$  where EBW is the 99% power bandwidth.

Fixed point-to-point applications using the 5725 – 5825 MHz band may use antennas with gains of up to 23dBi without this limitation. If the gain exceeds 23dBi then the output power limit of 1 Watt is reduced by 1dB for every dB the gain exceeds 23dBi.

**SPURIOUS EMISSIONS LIMITS –UNII and LELAN DEVICES**

The spurious emissions limits for signals below 1GHz are the FCC/RSS-GEN general limits. For emissions above 1GHz, signals in restricted bands are subject to the FCC/RSS GEN general limits. All other signals have a limit of  $-27\text{dBm/MHz}$ , which is a field strength of  $68.3\text{dBuV/m/MHz}$  at a distance of 3m. This is an average limit so the peak value of the emission may not exceed  $-7\text{dBm/MHz}$  ( $68.3\text{dBuV/m/MHz}$  at a distance of 3m). For devices operating in the 5725-5850Mhz bands under the LELAN/UNII rules, the limit within 10Mhz of the allocated band is increased to  $-17\text{dBm/MHz}$ .

**SAMPLE CALCULATIONS - CONDUCTED EMISSIONS**

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

$$R_r - S = M$$

where:

$R_r$  = Receiver Reading in dBuV

$S$  = Specification Limit in dBuV

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

<sup>4</sup> If EIRP exceeds 500mW the device must employ TPC

<sup>5</sup> If EIRP exceeds 500mW the device must employ TPC

---

**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:

$$F_d = 20 * \text{LOG}_{10} (D_m/D_s)$$

where:

$$F_d = \text{Distance Factor in dB}$$

$$D_m = \text{Measurement Distance in meters}$$

$$D_s = \text{Specification Distance in meters}$$

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:

$$F_d = 40 * \text{LOG}_{10} (D_m/D_s)$$

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:

$$R_r = \text{Receiver Reading in dBuV/m}$$

$$F_d = \text{Distance Factor in dB}$$

$$R_c = \text{Corrected Reading in dBuV/m}$$

$$L_s = \text{Specification Limit in dBuV/m}$$

$$M = \text{Margin in dB Relative to Spec}$$

#### *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****Radio Spurious Emissions, 07-Feb-10**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	6/22/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	9/25/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

**Radio Spurious Emissions, 16-Feb-10**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Rohde & Schwarz	EMI Test Receiver, 20 Hz-7 GHz	ESIB7	1756	3/10/2010

**Radiated Emissions, 1000 - 18000 MHz, 17-Feb-10**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, FT (SA40) Blue	8564E (84125C)	1393	4/10/2010
Micro-Tronics	Band Reject Filter, 5725-5875 MHz	BRC50705-02	1728	2/1/2011
Micro-Tronics	Band Reject Filter, 5150-5350 MHz	BRC50703-02	1729	9/25/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

**Radio (Spurious Emissions), 06-Apr-10**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	6/3/2010
EMCO	Antenna, Horn, 1-18GHz	3115	868	6/10/2010
Hewlett Packard	SpecAn 30 Hz -40 GHz, SV (SA40) Red	8564E (84125C)	1148	4/12/2010
Hewlett Packard	High Pass filter, 8.2 GHz (Blu System)	P/N 84300-80039 (84125C)	1392	6/22/2010
Micro-Tronics	Band Reject Filter, 5470-5725 MHz	BRC50704-02	1730	9/25/2010

**Radio Rx Spurious Emissions, 09-Apr-10**

<u>Manufacturer</u>	<u>Description</u>	<u>Model</u>	<u>Asset #</u>	<u>Cal Due</u>
EMCO	Antenna, Horn, 1-18 GHz (SA40-Blu)	3115	1386	9/2/2010
Hewlett Packard	SpecAn 9 kHz - 40 GHz, (SA40) Purple	8564E (84125C)	1771	9/30/2010
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	1780	9/17/2010

## *Appendix B Test Data*

T78133 91 Pages





## EMC Test Data

Client:	Avaya	Job Number:	J78065
Model:	AP 8120	T-Log Number:	T78133
		Account Manager:	Dean Eriksen
Contact:	Vipin Naik		-
Emissions Standard(s):	FCC 15.E	Class:	B
Immunity Standard(s):	-	Environment:	-

# EMC Test Data

For The

## Avaya

Model

AP 8120

Date of Last Test: 6/9/2010

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

## RSS 210 and FCC 15.407 (UNII) Radiated Spurious Emissions

### Test Specific Details

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

Date of Test: 2/7/2010	Config. Used: 1
Test Engineer: Suhaila Khushzad	Config Change: None
Test Location: Chamber # 5	EUT Voltage: POE

### General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

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

**Ambient Conditions:**                      Temperature:                      20 °C  
    Rel. Humidity:                      45 %

### Summary of Results

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin
1	802.11a Chain A	5250-5350 Low(2560M)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.8dBµV/m @ 5420.0MHz (-2.2dB)
		5250-5350 Center(5300)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	40.7dBµV/m @ 15900.9MHz (-13.3dB)
			-	-	Restricted Band Edge at 5350 MHz	15.209	45.5dBµV/m @ 5380.2MHz (-8.5dB)
		5250-5350 High(5320M)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.1dBµV/m @ 5440.1MHz (-6.9dB)
			-	-	Restricted Band Edge at 5350 MHz	15.209	53.8dBµV/m @ 5350.1MHz (-0.2dB)
		2	802.11a Chain A	5470-5725 Low(5500M)	-	-	Restricted Band Edge at 5460 MHz
-	-				Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.9dBµV/m @ 11000.4MHz (-0.1dB)
5470-5725 Center(5580)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.3dBµV/m @ 11159.0MHz (-0.7dB)
5470-5725 High(5700M)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	46.6dBµV/m @ 1457.6MHz (-7.4dB)

Note 802.11 nHT20 is worst case for band edges at 5460-5470 MHz and at 5725 MHz - see runs 3 and 4.

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Summary of Results**

Run #	Mode	Channel	Power Setting	Measured Power	Test Performed	Limit	Result / Margin		
3	802.11n HT20	5250-5350 Low(5260M)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	51.7dBµV/m @ 5420.2MHz (-2.3dB)		
		5250-5350 Center(5300)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	48.8dBµV/m @ 5452.6MHz (-5.2dB)		
			-	-	Restricted Band Edge at 5350 MHz	15.209	45.9dBµV/m @ 5380.2MHz (-8.1dB)		
		5250-5350 High(5320M)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	40.6dBµV/m @ 10641.6MHz (-13.4dB)		
			-	-	Restricted Band Edge at 5350 MHz	15.209	53.5dBµV/m @ 5351.7MHz (-0.5dB)		
		4	802.11n HT20	5470-5725 Low(5500M)	-	-	Restricted Band Edge at 5460 MHz	15.209	53.9dBµV/m @ 5460.0MHz (-0.1dB)
-	-				Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.7dBµV/m @ 10999.6MHz (-0.3dB)		
5470-5725 Center(5580)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.7dBµV/m @ 11159.5MHz (-0.3dB)		
5470-5725 High(5700)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	46.1dBµV/m @ 11400.5MHz (-7.9dB)		
	-			-	Restricted Band Edge at 5725 MHz	FCC 15.209 / 15 E	62.8dBµV/m @ 5725.1MHz (-5.5dB)		
5	802.11n HT40			5250-5350 Low(5270)	-	-	Restricted Band Edge at 5350 MHz	15.209	50.9dBµV/m @ 5430.4MHz (-3.1dB)
		-	-		Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	52.9dBµV/m @ 5430.1MHz (-1.1dB)		
		5250-5350 High(5310)	-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	47.9dBµV/m @ 5456.9MHz (-6.1dB)		
			-	-	Restricted Band Edge at 5350 MHz	15.209	50.6dBµV/m @ 5352.5MHz (-3.4dB)		
		6	802.11n HT40	5470-5725 Low(5510)	-	-	Restricted Band Edge at 5460 MHz	15.209	53.5dBµV/m @ 5459.5MHz (-0.5dB)
					-	-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.2dBµV/m @ 11019.8MHz (-0.8dB)
5470-5725 Center(5550)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	53.4dBµV/m @ 11106.7MHz (-0.6dB)		
5470-5725 High(5670)	-			-	Radiated Emissions, 1 - 40 GHz	FCC 15.209 / 15 E	43.0dBµV/m @ 2494.2MHz (-11.0dB)		
	-	-	Restricted Band Edge at 5725 MHz	FCC 15.209 / 15 E	59.4dBµV/m @ 5725.2MHz (-9.0dB)				

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Modifications Made During Testing**

No modifications were made to the EUT during testing

**Deviations From The Standard**

No deviations were made from the requirements of the standard.

Note: Preliminary testing showed no radio related emissions below 1 GHz and above 18 GHz.

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #1, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5250-5350 MHz Band, 802.11a**

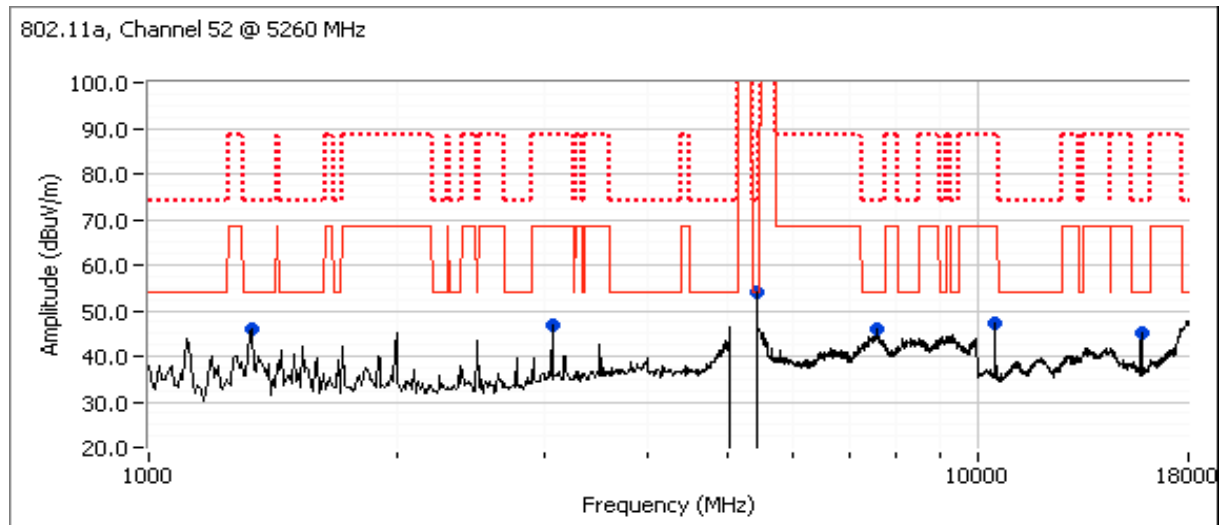
Date of Test: 2/7/2010

Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

**Run #1a: Low Channel 52 @ 5260 MHz**

Orientation: Up Right(Main Antenna)



**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
5419.980	51.8	H	54.0	-2.2	AVG	158	1.0	RB 1 MHz; VB: 10 Hz
5423.980	60.2	H	74.0	-13.8	PK	158	1.0	RB 1 MHz; VB: 1 MHz
1328.060	35.5	V	54.0	-18.5	AVG	146	1.0	RB 1 MHz; VB: 10 Hz
1331.720	47.6	V	74.0	-26.4	PK	146	1.0	RB 1 MHz; VB: 1 MHz
3077.050	45.5	H	68.3	-22.8	AVG	196	0.9	RB 1 MHz; VB: 10 Hz
3077.250	48.0	H	88.3	-40.3	PK	196	0.9	RB 1 MHz; VB: 1 MHz
7570.850	37.7	H	54.0	-16.3	AVG	0	1.2	RB 1 MHz; VB: 10 Hz
7567.520	49.4	H	74.0	-24.6	PK	0	1.2	RB 1 MHz; VB: 1 MHz
10519.190	41.5	V	68.3	-26.8	AVG	207	0.0	RB 1 MHz; VB: 10 Hz
10517.930	56.6	V	88.3	-31.7	PK	207	0.0	RB 1 MHz; VB: 1 MHz
15778.680	40.6	H	54.0	-13.4	AVG	187	1.0	RB 1 MHz; VB: 10 Hz
15784.610	52.3	H	74.0	-21.7	PK	187	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #1b: Center Channel 60 @ 5300 MHz**

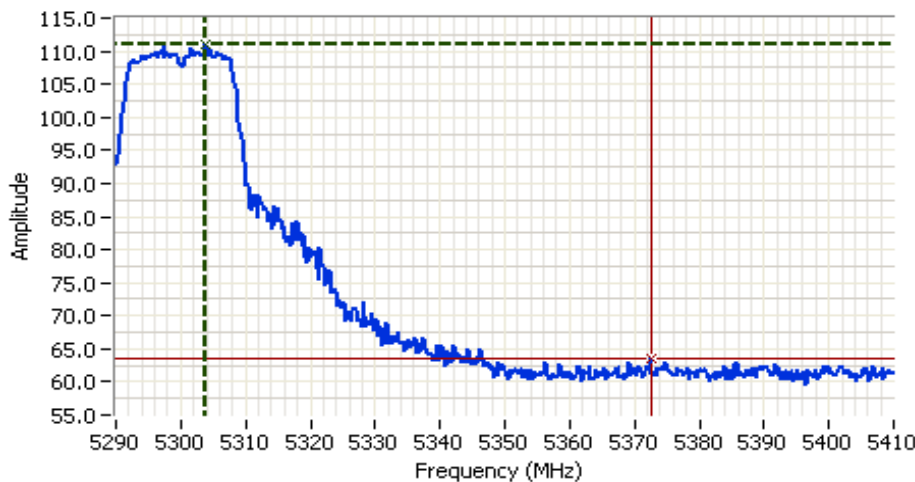
Orientation: Up Right(Main Antenna)

**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5296.974	99.6	H	-	-	Avg	158	1.0	RB = VB = 1MHz
5303.948	110.9	H	-	-	Pk	158	1.0	RB = 1MHz, VB = 10Hz
5296.974	99.8	V	-	-	Avg	148	1.1	RB = VB = 100kHz
5297.214	111.2	V	-	-	Pk	148	1.1	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5380.180	45.5	H	54.0	-8.5	Avg	158	1.0	
5372.485	63.6	H	74.0	-10.4	Pk	158	1.0	
5350.120	44.4	V	54.0	-9.6	Avg	148	1.1	
5365.752	63.0	V	74.0	-11.0	Pk	148	1.1	



**Analyzer Settings**  
 Rohde&Schwarz,ESI  
 CF: 5350.000 MHz  
 SPAN: 120.000 MHz  
 RB: 1.000 MHz  
 VB: 1.000 MHz  
 Detector: POS  
 Attn: 10 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 111.6 DBUW

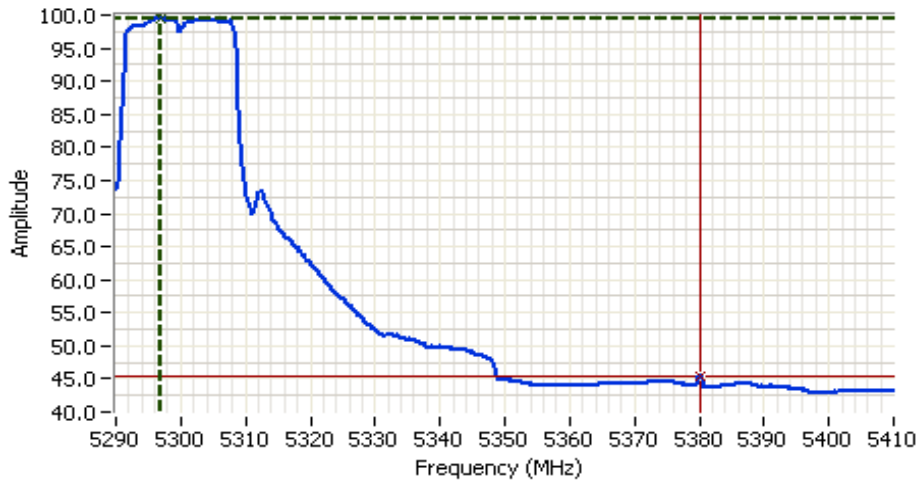
**Comments**  
 BE @ 5350 MHz  
 PK-H

Cursor 1	5303.9478	110.89	
Cursor 2	5372.4849	63.61	

Delta Freq. 68.537  
 Delta Amplitude 47.28



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI  
 CF: 5350.000 MHz  
 SPAN: 120.000 MHz  
 RB: 1.000 MHz  
 VB: 10 Hz  
 Detector: POS  
 Attn: 0 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 30.0s  
 Ref Lvl: 111.6 DBUV

**Comments**

BE @ 5350 MHz  
 Avg-H

Cursor 1	5296.9741	99.56	+	-	+	-	+	-	Delta Freq.	83.206
Cursor 2	5380.1802	45.53	+	-	+	-	+	-	Delta Amplitude	54.03

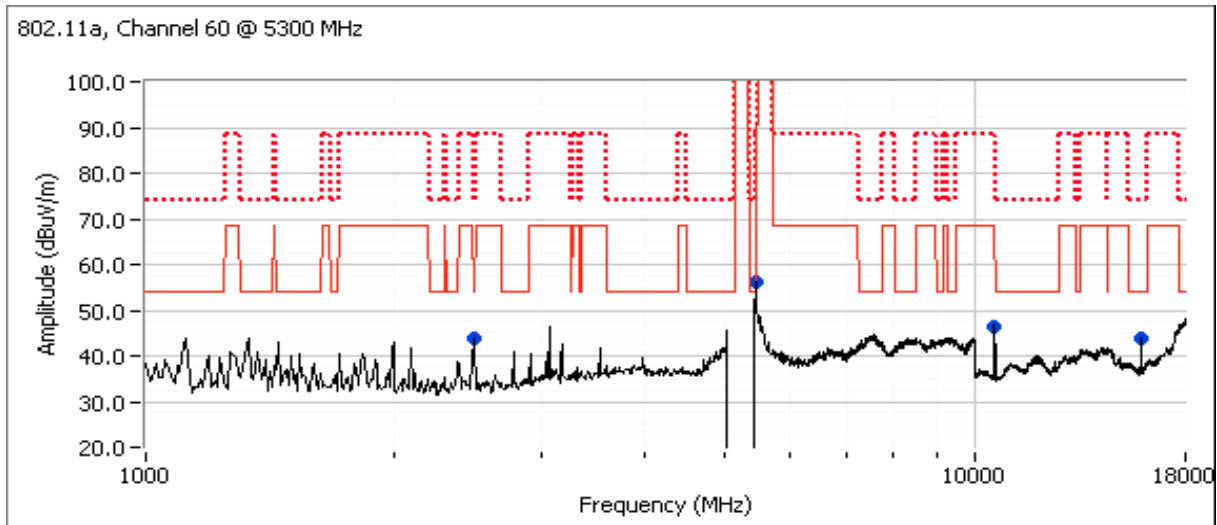


**Spurious Radiated Emissions:**

Frequency MHz	Level dBμV/m	Pol v/h	15.209 / 15E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
15900.940	40.7	H	54.0	-13.3	AVG	190	1.0	RB 1 MHz; VB: 10 Hz
15907.610	53.2	H	74.0	-20.8	PK	190	1.0	RB 1 MHz; VB: 1 MHz
10599.730	40.2	V	54.0	-13.8	AVG	189	1.0	RB 1 MHz; VB: 10 Hz
10603.130	53.0	V	74.0	-21.0	PK	189	1.0	RB 1 MHz; VB: 1 MHz
5460.030	54.3	H	68.3	-14.0	AVG	164	1.0	RB 1 MHz; VB: 10 Hz
5460.030	60.3	H	88.3	-28.0	PK	164	1.0	RB 1 MHz; VB: 1 MHz
2496.360	35.5	V	54.0	-18.5	AVG	181	1.0	RB 1 MHz; VB: 10 Hz
2499.230	51.7	V	74.0	-22.3	PK	181	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #1c: High Channel 64 @ 5320 MHz**

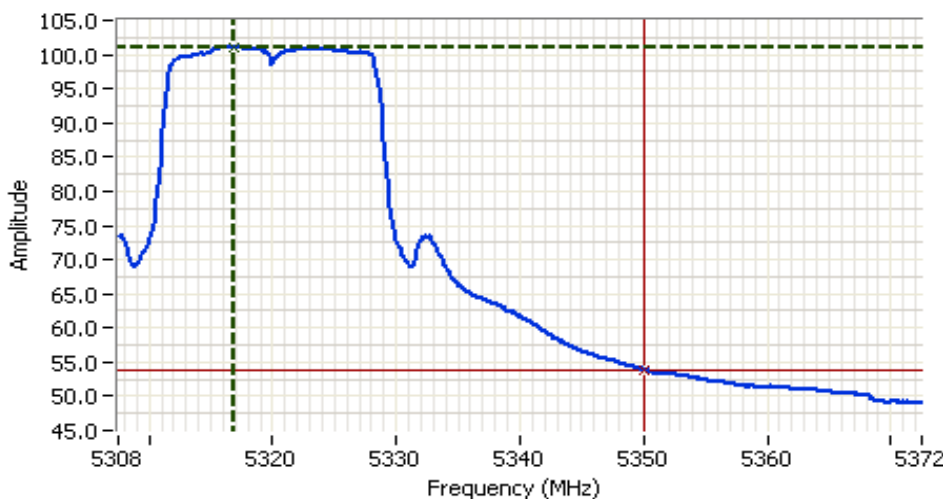
Orientation: Up Right(Main Antenna)

**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5316.870	101.1	H	-	-	Avg	167	1.0	RB = VB = 1MHz
5315.700	112.0	H	-	-	Pk	167	1.0	RB = 1MHz, VB = 10Hz
5317.399	100.1	V	-	-	Avg	187	1.2	RB = VB = 100kHz
5315.000	113.9	V	-	-	Pk	187	1.2	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5350.090	53.8	H	54.0	-0.2	Avg	167	1.0	
5355.170	70.7	H	74.0	-3.3	Pk	167	1.0	
5350.090	52.3	V	54.0	-1.7	Avg	187	1.2	
5353.480	69.8	V	74.0	-4.2	Pk	187	1.2	



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 16.5s  
 Ref Lvl: 121.60DBUV

---

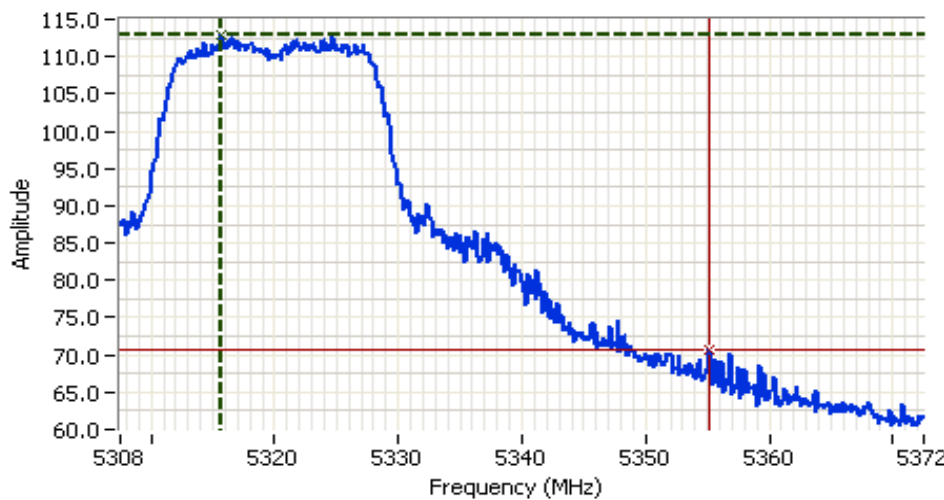
**Comments**

BE @ 5350 MHz  
 Avg-H

Cursor 1	5316.8789	101.13	+	-	+	-	Delta Freq.	33.216
Cursor 2	5350.0952	53.84	+	-	+	-	Delta Amplitude	47.29



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

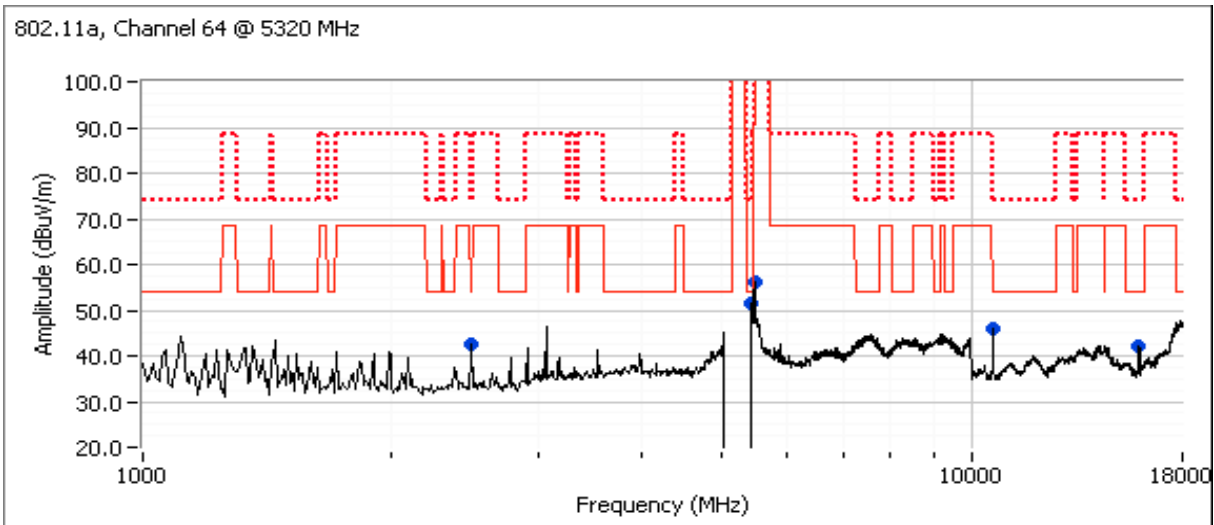


**Analyzer Settings**  
 Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 5.0ms  
 Ref Lvl: 121.60DBUV

**Comments**  
 BE @ 5350 MHz  
 Peak-H

Cursor 1	5315.7065	112.7%		Delta Freq.	39.469	
Cursor 2	5355.1753	70.69		Delta Amplitude	42.10	

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5440.060	47.1	H	54.0	-6.9	AVG	165	1.0	RB 1 MHz; VB: 10 Hz
5442.800	57.4	H	74.0	-16.6	PK	165	1.0	RB 1 MHz; VB: 1 MHz
2496.270	33.1	V	54.0	-20.9	AVG	172	1.0	RB 1 MHz; VB: 10 Hz
2495.730	48.1	V	74.0	-25.9	PK	172	1.0	RB 1 MHz; VB: 1 MHz
5480.030	54.8	H	68.0	-13.2	AVG	164	1.0	RB 1 MHz; VB: 10 Hz
5480.030	61.5	H	88.0	-26.5	PK	164	1.0	RB 1 MHz; VB: 1 MHz
10639.720	36.0	V	54.0	-18.0	AVG	201	1.0	RB 1 MHz; VB: 10 Hz
10639.120	49.0	V	74.0	-25.0	PK	201	1.0	RB 1 MHz; VB: 1 MHz
15961.080	37.1	V	54.0	-16.9	AVG	178	1.0	RB 1 MHz; VB: 10 Hz
15957.680	49.4	V	74.0	-24.6	PK	178	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

Run #2, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5470-5725 MHz Band, Legacy A

Run #2a: Low Channel 100 @ 5500 MHz

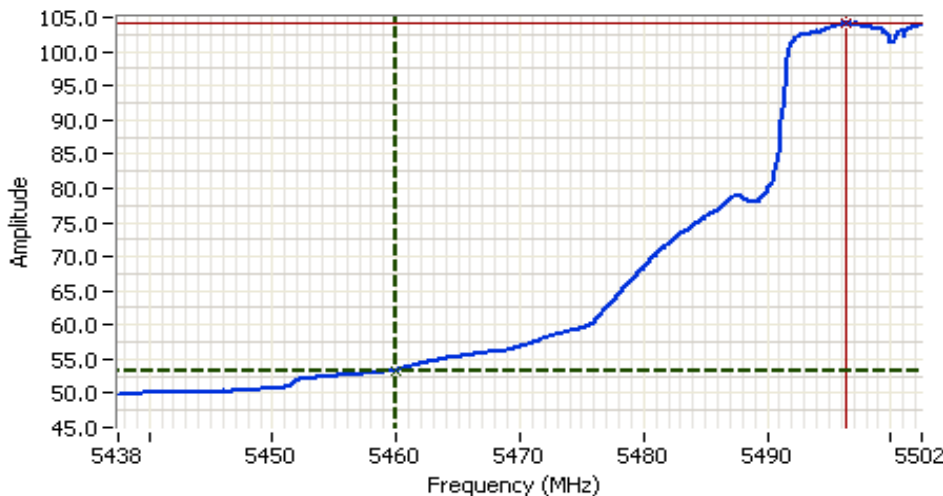
Orientation: Up Right(Main Antenna)

Fundamental Signal Field Strength

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5496.300	104.0	H	-	-	Avg	192	1.1	RB = VB = 1MHz
5495.850	116.0	H	-	-	Pk	192	1.1	RB = 1MHz, VB = 10Hz
5496.630	102.0	V	-	-	Avg	128	1.1	RB = VB = 100kHz
5496.760	115.0	V	-	-	Pk	128	1.1	RB = VB = 1MHz

5350-5460 MHz Restricted Band Edge Signal Radiated Field Strength

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5460.000	53.4	H	54.0	-0.6	Avg	192	1.1	
5459.380	69.8	H	74.0	-4.2	PK	192	1.1	
5460.000	52.5	H	54.0	-1.5	Avg	128	1.1	
5459.250	66.7	H	74.0	-7.3	PK	128	1.1	



**Analyzer Settings**

Rohde&Schwarz,ESI 7  
 CF: 5470.000 MHz  
 SPAN:65.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 40.20  
 Sweep Time 16.5s  
 Ref Lvl:122.20DBUV

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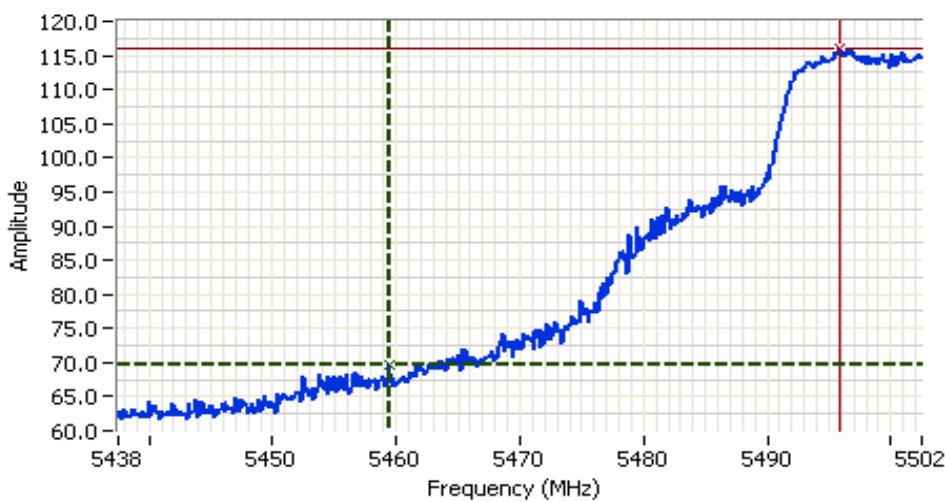
**Comments**

BE @ 5460 MHz  
 Avg-H

Cursor 1	5460.0352	53.36	+	-	+	-	Delta Freq.	36.343
Cursor 2	5496.3779	104.12	+	-	+	-	Delta Amplitude	50.75



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5470.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 40.20  
 Sweep Time 5.0ms  
 Ref Lvl: 122.20DBUV

**Comments**

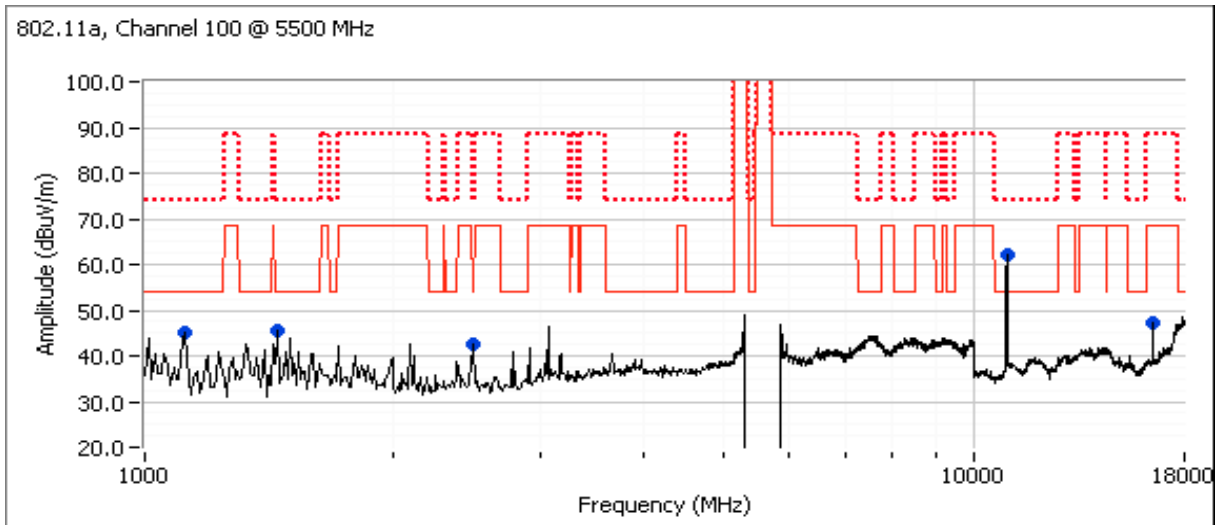
BE @ 5460 MHz  
 Peak-H

Cursor 1	5459.3838	69.80	
Cursor 2	5495.8569	116.00	

Delta Freq.	36.473
Delta Amplitude	46.23



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



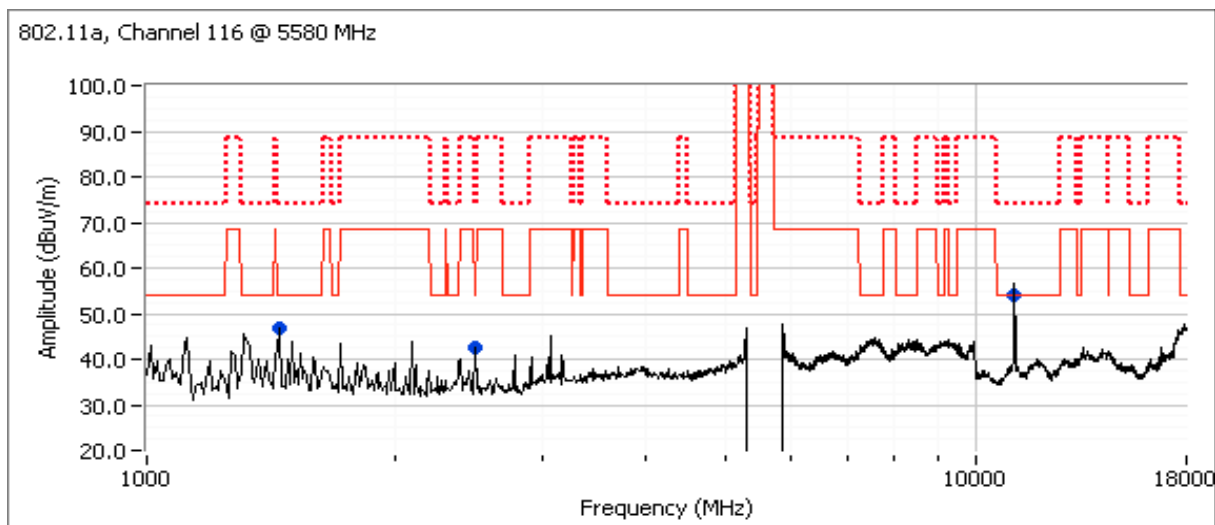
**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBuV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
11000.390	53.9	V	54.0	-0.1	AVG	132	1.0	RB 1 MHz; VB: 10 Hz
11006.520	65.5	V	74.0	-8.5	PK	132	1.0	RB 1 MHz; VB: 1 MHz
1125.070	39.0	V	54.0	-15.0	AVG	181	1.0	RB 1 MHz; VB: 10 Hz
1124.940	45.8	V	74.0	-28.2	PK	181	1.0	RB 1 MHz; VB: 1 MHz
1457.610	47.2	V	54.0	-6.8	AVG	138	1.0	RB 1 MHz; VB: 10 Hz
1457.540	48.2	V	74.0	-25.8	PK	138	1.0	RB 1 MHz; VB: 1 MHz
2496.080	35.0	V	54.0	-19.0	AVG	81	1.0	RB 1 MHz; VB: 10 Hz
2499.280	50.8	V	74.0	-23.2	PK	81	1.0	RB 1 MHz; VB: 1 MHz
16505.540	47.4	H	68.3	-20.9	Peak	188	1.0	Peak vs Avg limit

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

Run #2b: Center Channel 116 @ 5580 MHz  
Orientation: Up Right(Main Antenna)



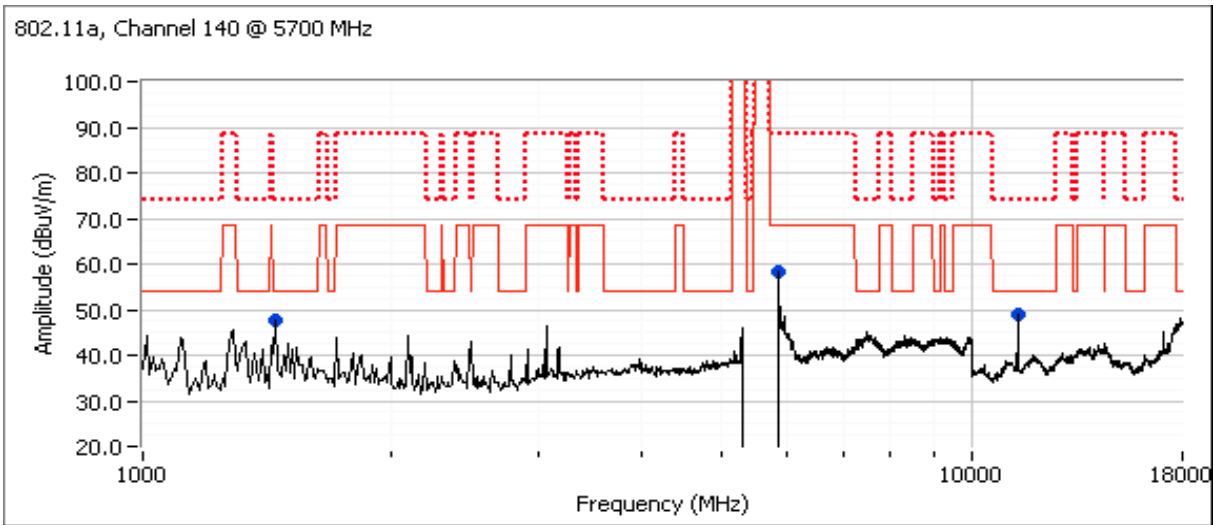
**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11159.030	53.3	H	54.0	-0.7	AVG	212	1.0	RB 1 MHz; VB: 10 Hz
11160.170	65.5	H	74.0	-8.5	PK	212	1.0	RB 1 MHz; VB: 1 MHz
2496.560	34.9	V	54.0	-19.1	AVG	124	1.0	RB 1 MHz; VB: 10 Hz
2496.820	50.6	V	74.0	-23.4	PK	124	1.0	RB 1 MHz; VB: 1 MHz
1457.610	46.8	V	54.0	-7.2	AVG	139	1.0	RB 1 MHz; VB: 10 Hz
1457.540	49.1	V	74.0	-24.9	PK	139	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (-68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

Run #2c: High Channel 140 @ 5700 MHz  
Orientation: Up Right(Main Antenna)



**Spurious Radiated Emissions:**

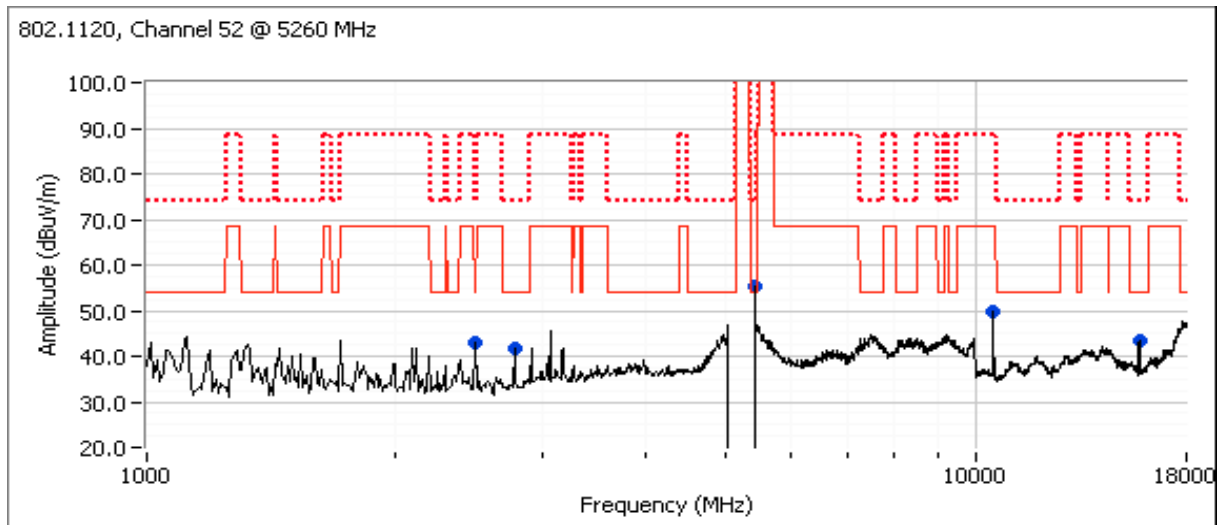
Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
1457.610	46.6	V	54.0	-7.4	AVG	110	1.0	RB 1 MHz; VB: 10 Hz
1457.540	48.8	V	74.0	-25.2	PK	110	1.0	RB 1 MHz; VB: 1 MHz
11400.180	42.6	H	54.0	-11.4	AVG	195	1.0	RB 1 MHz; VB: 10 Hz
11399.910	53.6	H	74.0	-20.4	PK	195	1.0	RB 1 MHz; VB: 1 MHz
5860.040	53.8	H	68.3	-14.5	AVG	192	1.0	RB 1 MHz; VB: 10 Hz
5860.170	61.6	H	88.3	-26.7	PK	192	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (-68dBuV/m).



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

Run #3, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5250-5350 MHz Band, 802.11n HT20  
 Run #3a: Low Channel 52 @ 5260 MHz  
 Orientation: Up Right(Main Antenna)



**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5420.150	51.7	V	54.0	-2.3	AVG	135	1.0	RB 1 MHz; VB: 10 Hz
5428.290	60.4	V	74.0	-13.6	PK	135	1.0	RB 1 MHz; VB: 1 MHz
2782.610	42.4	V	54.0	-11.6	AVG	138	1.0	RB 1 MHz; VB: 10 Hz
2782.610	45.8	V	74.0	-28.2	PK	138	1.0	RB 1 MHz; VB: 1 MHz
2517.900	35.0	V	68.3	-33.3	AVG	80	1.0	RB 1 MHz; VB: 10 Hz
2499.430	50.5	V	74.0	-23.5	PK	80	1.0	RB 1 MHz; VB: 1 MHz
10518.780	39.5	V	68.3	-28.8	AVG	140	1.0	RB 1 MHz; VB: 10 Hz
10511.380	52.7	V	88.3	-35.6	PK	140	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

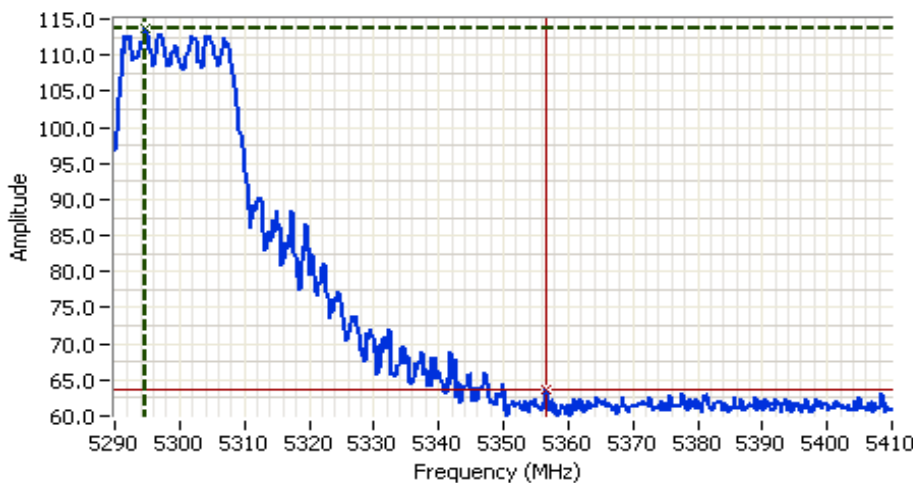
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #3b: Center Channel (5300 MHz)  
Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5297.214	99.1	H	-	-	Avg	192	1.0	RB = VB = 1MHz
5307.315	110.4	H	-	-	Pk	192	1.0	RB = 1MHz, VB = 10Hz
5297.214	102.9	V	-	-	Avg	206	1.4	RB = VB = 100kHz
5294.810	113.7	V	-	-	Pk	206	1.4	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5380.180	45.9	V	54.0	-8.1	Avg	206	1.4	
5356.613	63.7	V	74.0	-10.3	Pk	206	1.4	
5380.180	45.4	H	54.0	-8.6	Avg	192	1.0	
5375.130	63.2	H	74.0	-10.8	Pk	192	1.0	



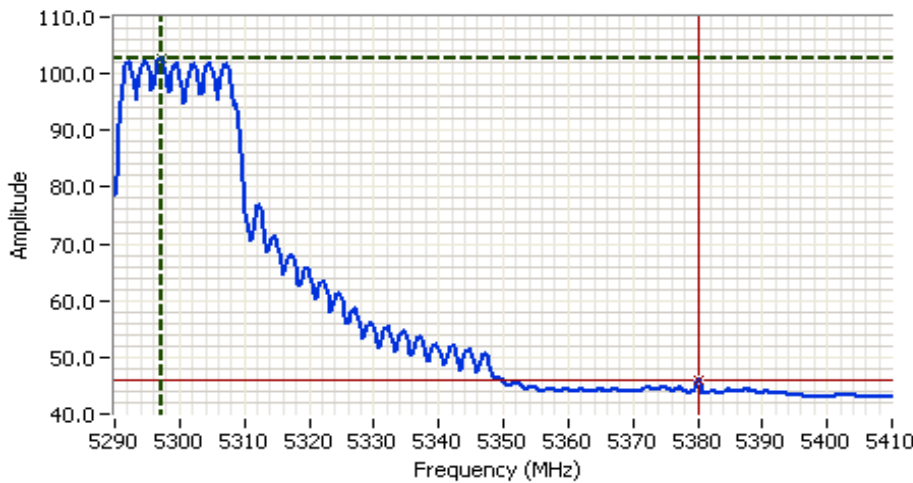
**Analyzer Settings**  
 Rohde&Schwarz, ESI  
 CF: 5350.000 MHz  
 SPAN: 120.000 MHz  
 RB: 1.000 MHz  
 VB: 1.000 MHz  
 Detector: POS  
 Attn: 10 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 111.6 DBUW

**Comments**  
 BE @ 5350 MHz  
 PK-V

Cursor 1	5294.8096	113.67	Delta Freq.	61.804
Cursor 2	5356.6133	63.73	Delta Amplitude	49.94



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI  
 CF: 5350.000 MHz  
 SPAN: 120.000 MHz  
 RB: 1.000 MHz  
 VB: 10 Hz  
 Detector: POS  
 Attn: 0 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 30.0s  
 Ref Lvl: 111.6 DBUV

**Comments**

BE @ 5350 MHz  
 Avg-V

Cursor 1	5297.2144	102.86	Delta Freq.	82.966
Cursor 2	5380.1802	45.89	Delta Amplitude	56.98

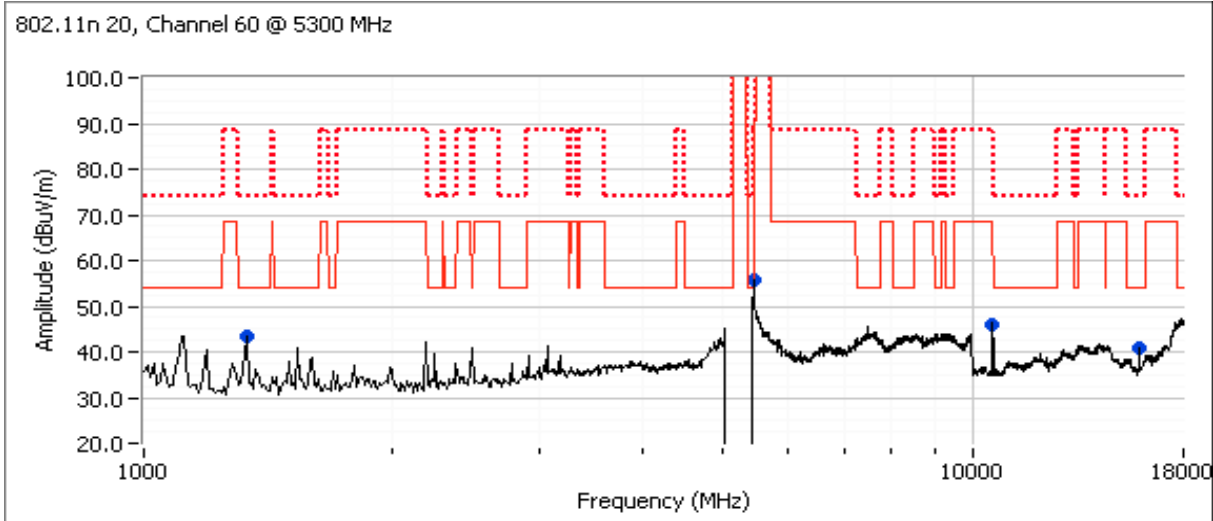


**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5452.600	48.8	H	54.0	-5.2	AVG	197	1.0	RB 1 MHz; VB: 10 Hz
5452.520	58.4	H	74.0	-15.6	PK	197	1.0	RB 1 MHz; VB: 1 MHz
10602.240	41.3	V	54.0	-12.7	AVG	202	1.0	RB 1 MHz; VB: 10 Hz
10602.370	55.6	V	74.0	-18.4	PK	202	1.0	RB 1 MHz; VB: 1 MHz
15906.670	41.0	H	54.0	-13.0	Peak	230	1.0	peak reading vs avg limit
1345.930	26.6	H	54.0	-27.4	AVG	61	1.0	RB 1 MHz; VB: 10 Hz
1346.090	37.0	H	74.0	-37.0	PK	61	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



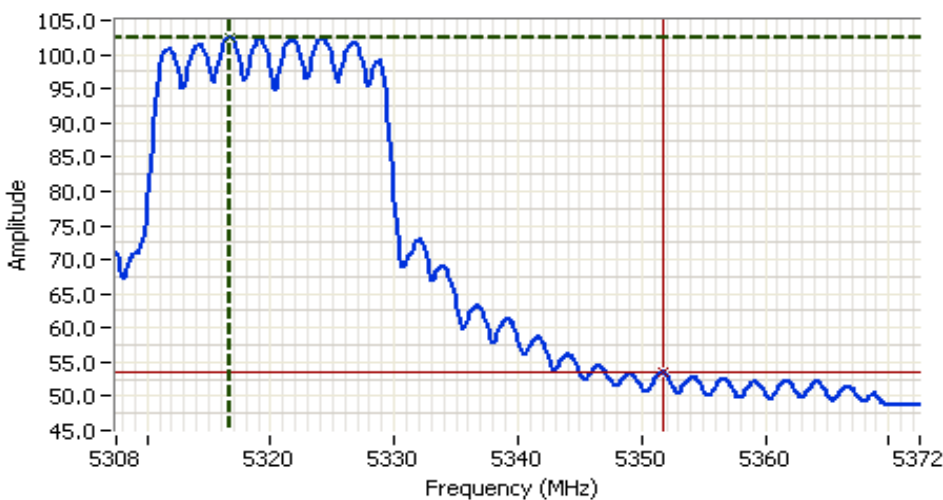
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #3c: High Channel 64 @ 5320 MHz**  
**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5315.750	99.6	H	-	-	Avg	170	1.1	RB = VB = 1MHz
5315.570	111.7	H	-	-	Pk	170	1.1	RB = 1MHz, VB = 10Hz
5316.610	102.5	V	-	-	Avg	161	1.3	RB = VB = 100kHz
5316.480	113.4	V	-	-	Pk	161	1.3	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5351.650	53.5	V	54.0	-0.5	Avg	161	1.3	
5351.910	71.2	V	74.0	-2.8	Pk	161	1.3	
5353.350	51.4	H	54.0	-2.7	Avg	170	1.1	
5350.740	68.9	H	74.0	-5.1	Pk	170	1.1	



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 16.5s  
 Ref Lvl: 121.60DBUV

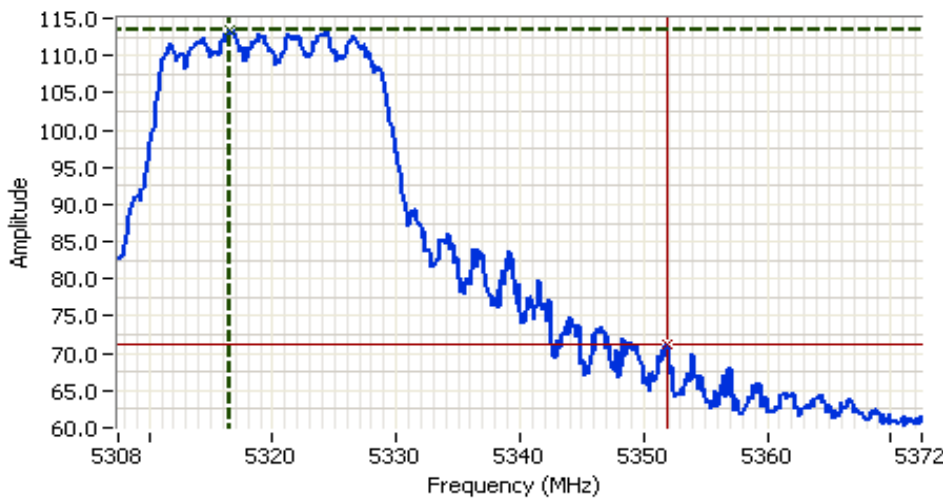
**Comments**

BE @ 5350 MHz  
 Avg-V

Cursor 1	5316.6182	102.56		Delta Freq.	35.040
Cursor 2	5351.6582	53.50		Delta Amplitude	49.07



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 5.0ms  
 Ref Lvl: 121.60DBUV

**Comments**

BE @ 5350 MHz  
 Peak-V

Cursor 1	5316.4878	113.43	
Cursor 2	5351.9189	71.19	

Delta Freq.	35.431
Delta Amplitude	42.25



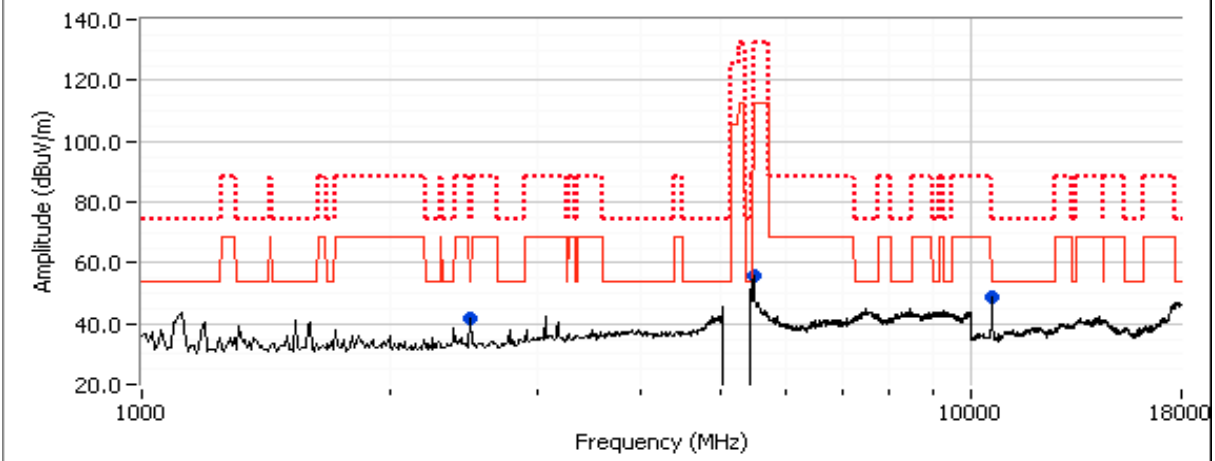
**Spurious Radiated Emissions:**

Frequency MHz	Level dBuV/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
10641.620	40.6	V	54.0	-13.4	AVG	199	1.0	RB 1 MHz; VB: 10 Hz
10638.920	53.5	V	74.0	-20.5	PK	199	1.0	RB 1 MHz; VB: 1 MHz
5472.620	51.2	V	112.3	-61.1	AVG	188	1.7	RB 1 MHz; VB: 10 Hz
5473.120	61.8	V	132.3	-70.5	PK	188	1.7	RB 1 MHz; VB: 1 MHz
2496.460	35.0	V	54.0	-19.0	AVG	131	1.0	RB 1 MHz; VB: 10 Hz
2499.100	51.2	V	74.0	-22.8	PK	131	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n 20, Channel 64 @ 5320 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #4, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5470-5725 MHz Band, 802.11n HT20**

Date of Test: 2/16/2010

Test Engineer: Suhaila Khushzad

Test Location: Chamber #4

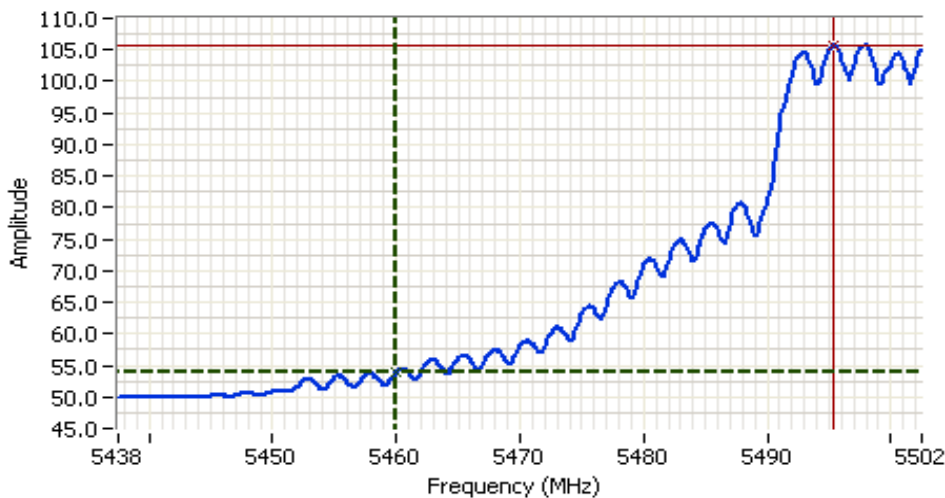
**Run #4a: Low Channel 100 @ 5500 MHz**

**Fundamental Signal Field Strength**

Frequency	Level	Pol	15.209 / 15.247		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5496.630	104.0	H	-	-	Avg	193	1.8	RB = VB = 1MHz
5496.370	115.4	H	-	-	Pk	193	1.8	RB = 1MHz, VB = 10Hz
5495.330	105.8	V	-	-	Avg	183	1.6	RB = VB = 100kHz
5495.590	116.3	V	-	-	Pk	183	1.6	RB = VB = 1MHz

**5350-5460 MHz Restricted Band Edge Signal Radiated Field Strength**

Frequency	Level	Pol	FCC 15.209		Detector	Azimuth	Height	Comments
MHz	dB $\mu$ V/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5460.000	53.9	V	54.0	-0.1	Avg	183	1.6	
5457.560	71.0	V	74.0	-3.0	PK	183	1.6	
5459.120	53.6	H	54.0	-0.4	Avg	193	1.8	
5459.380	69.6	H	74.0	-4.4	PK	193	1.8	



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5470.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 40.20  
 Sweep Time 16.5s  
 Ref Lvl: 122.20DBUV

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**Comments**

BE @ 5460 MHz  
 Avg-V

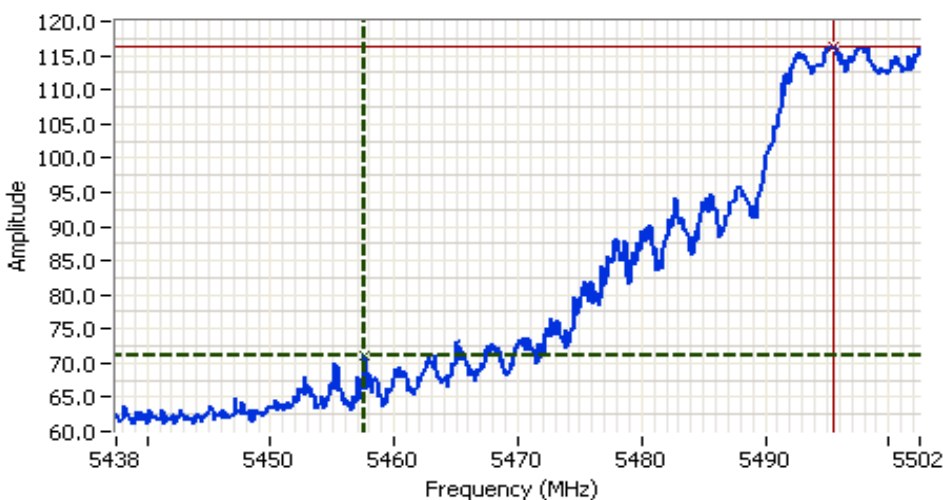
Cursor 1	5460.0352	53.86	
Cursor 2	5495.3354	105.76	

Delta Freq. 35.300  
 Delta Amplitude 51.92





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5470.000 MHz  
 SPAN: 65.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 40.20  
 Sweep Time 5.0ms  
 Ref Lvl: 122.20DBUV

---

**Comments**

BE @ 5460 MHz  
 Peak-V

Cursor 1	5457.5601	71.01	+	-	+	-	Delta Freq.	38.036
Cursor 2	5495.5962	116.27	+	-	+	-	Delta Amplitude	45.26

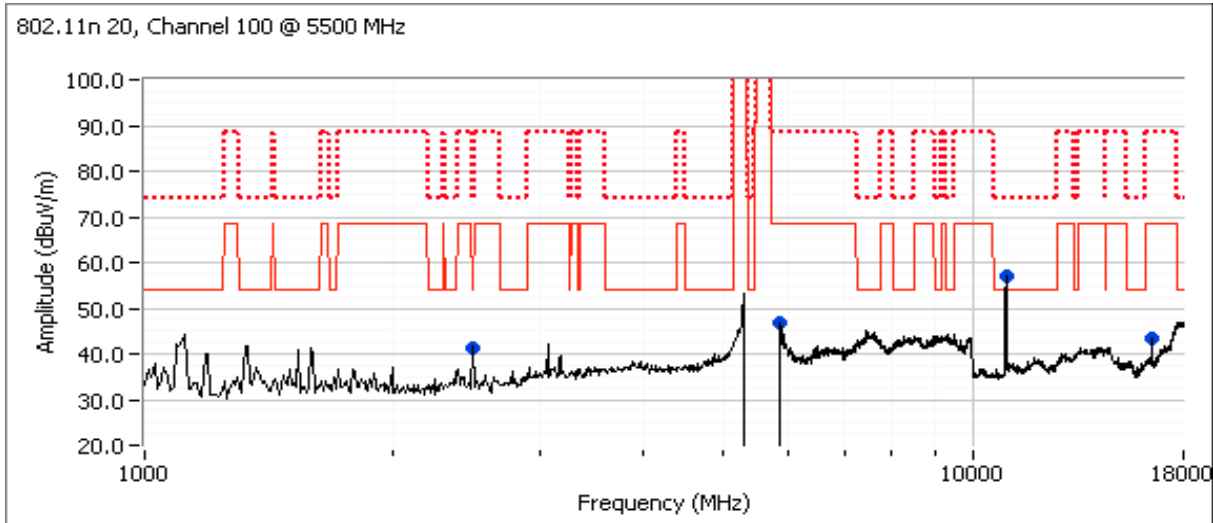


**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
10999.570	53.7	V	54.0	-0.3	AVG	143	1.0	RB 1 MHz; VB: 10 Hz
10999.480	66.6	V	74.0	-7.4	PK	143	1.0	RB 1 MHz; VB: 1 MHz
2496.560	35.1	V	54.0	-18.9	AVG	130	1.0	RB 1 MHz; VB: 10 Hz
2497.550	51.2	V	74.0	-22.8	PK	130	1.0	RB 1 MHz; VB: 1 MHz
5848.990	42.6	H	68.3	-25.7	AVG	216	1.0	RB 1 MHz; VB: 10 Hz
5851.250	54.3	H	88.3	-34.0	PK	216	1.0	RB 1 MHz; VB: 1 MHz
16506.670	43.3	V	68.3	-25.0	Peak	181	1.0	peak reading vs avg limit

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (-68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #4b: Center Channel @ 5580 MHz**

Date of Test: 4/5/2010

Test Engineer: Rafael Varelas

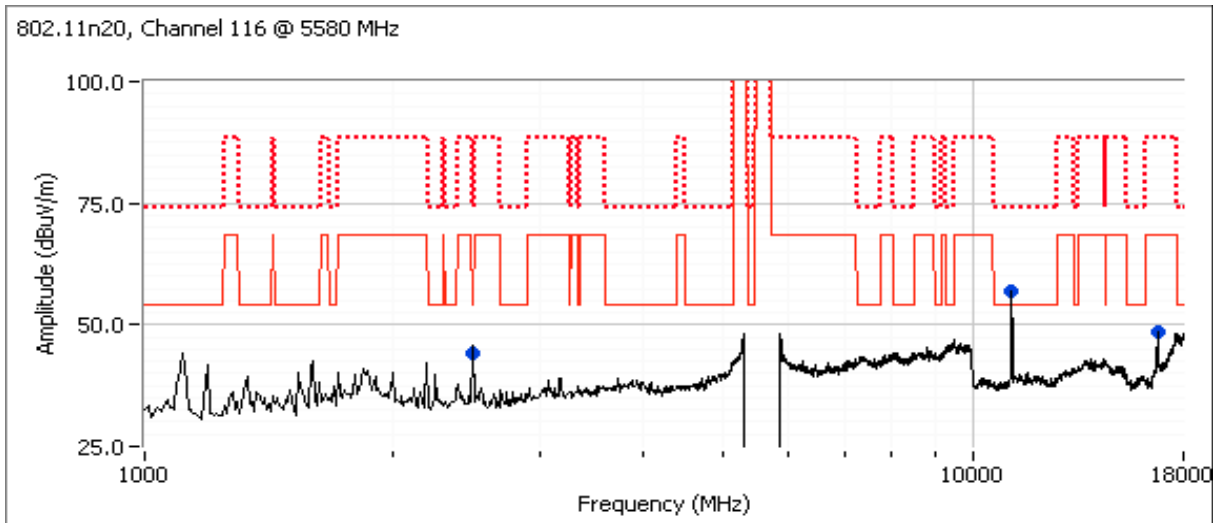
Test Location: Chamber #4

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11159.450	53.7	V	54.0	-0.3	AVG	172	1.0	RB 1 MHz; VB: 10 Hz
11156.520	64.4	V	74.0	-9.6	PK	172	1.0	RB 1 MHz; VB: 1 MHz
2497.110	38.9	V	54.0	-15.1	AVG	74	1.2	RB 1 MHz; VB: 10 Hz
2497.130	53.5	V	74.0	-20.5	PK	74	1.2	RB 1 MHz; VB: 1 MHz
16746.670	48.7	H	68.3	-19.6	Peak	200	1.0	

Note 1:

For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dB $\mu$ V/m).



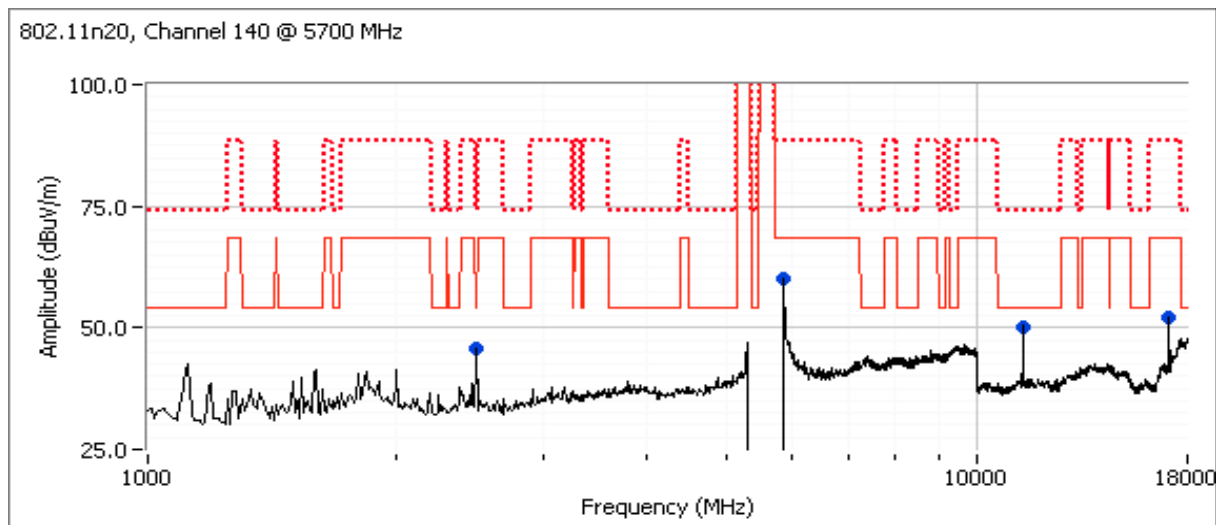
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

### Run #4c: High Channel @ 5700 MHz

#### Spurious Radiated Emissions:

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11400.470	46.1	V	54.0	-7.9	AVG	211	1.0	RB 1 MHz; VB: 10 Hz
11400.470	58.9	V	74.0	-15.1	PK	211	1.0	RB 1 MHz; VB: 1 MHz
2496.740	39.1	V	54.0	-14.9	AVG	170	1.0	RB 1 MHz; VB: 10 Hz
2496.870	54.0	V	74.0	-20.0	PK	170	1.0	RB 1 MHz; VB: 1 MHz
5860.100	58.5	V	68.3	-9.8	AVG	150	1.1	RB 1 MHz; VB: 10 Hz
5865.160	67.5	V	88.3	-20.8	PK	150	1.1	RB 1 MHz; VB: 1 MHz
17093.330	52.0	V	68.3	-16.3	Peak	178	1.0	peak reading vs avg limit

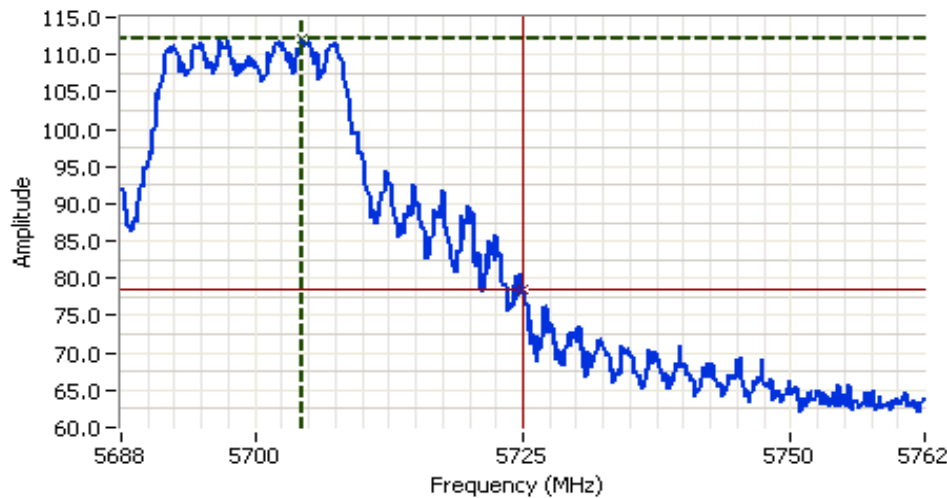
Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (-68dBuV/m).



#### 5725 MHz Band Edge Radiated Field Strength

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15 E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5725.075	62.8	V	68.3	-5.5	AVG	161	1.1	
5725.075	78.6	V	88.3	-9.7	PK	161	1.1	
5725.075	62.6	H	68.3	-5.7	AVG	204	1.0	
5725.075	77.8	H	88.3	-10.5	PK	204	1.0	

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**  
 Rohde&Schwarz, ESI 7  
 CF: 5725.000 MHz  
 SPAN: 75.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 41.10  
 Sweep Time 5.0ms  
 Ref Lvl: 123.10DBUV

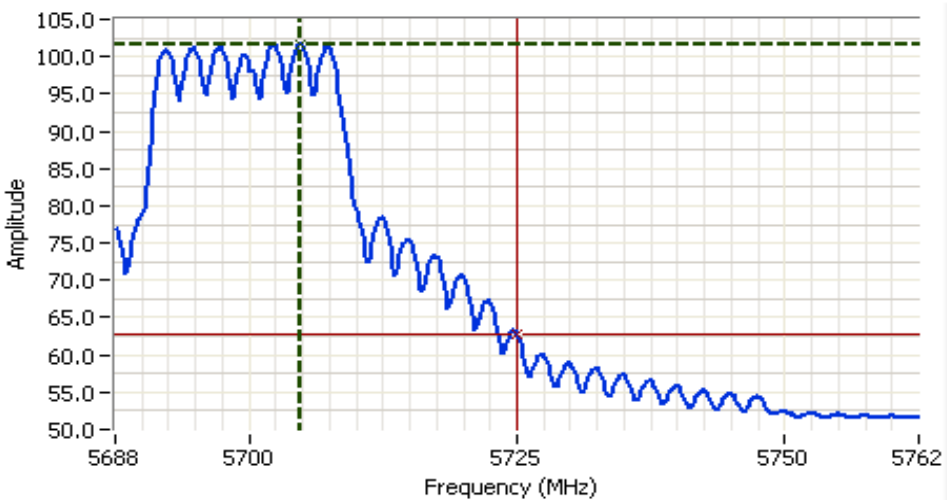
**Comments**  
 BE @ 5725 MHz  
 PK/Vertical

Cursor 1 5704.3335 112.00 

Cursor 2 5725.0752 78.61 


Delta Freq. 20.742


Delta Amplitude 33.42



**Analyzer Settings**  
 Rohde&Schwarz, ESI 7  
 CF: 5725.000 MHz  
 SPAN: 75.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 41.10  
 Sweep Time 19.0s  
 Ref Lvl: 123.10DBUV

**Comments**  
 BE @ 5725 MHz  
 Avg/Vertical

Cursor 1 5704.7847 101.72 

Cursor 2 5725.0752 62.82 

Delta Freq. 20.291

Delta Amplitude 38.90



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #5, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5250-5350 MHz Band, 802.11n HT40**

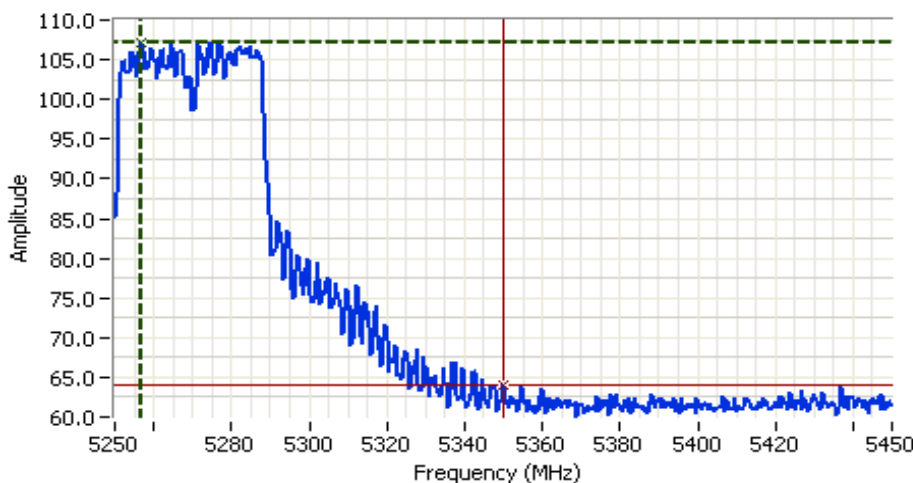
Date of Test: 4/5/2010  
 Test Engineer: Rafael Varelas  
 Test Location: FT Chamber #4

**Run #5a: Low Channel (5270 MHz)  
 Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5256.814	107.2	H	-	-	Pk	190	1.1	RB = VB = 1MHz
5274.449	95.7	H	-	-	Avg	190	1.1	RB = 1MHz, VB = 10Hz
5276.854	111.1	V	-	-	Pk	152	1.2	RB = VB = 100kHz
5274.449	99.7	V	-	-	Avg	152	1.2	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5430.361	50.9	H	54.0	-3.1	Avg	190	1.1	
5350.200	64.0	H	74.0	-10.0	Pk	190	1.1	
5350.200	50.0	V	54.0	-4.0	Avg	152	1.2	
5350.200	65.0	V	74.0	-9.0	Pk	152	1.2	



**Analyzer Settings**

Rohde&Schwarz, ESI  
 CF: 5350.000 MHz  
 SPAN: 200.000 MHz  
 RB: 1.000 MHz  
 VB: 1.000 MHz  
 Detector: POS  
 Attn: 10 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 111.6 DBU

**Comments**

BE @ 5350 MHz  
 PK-H

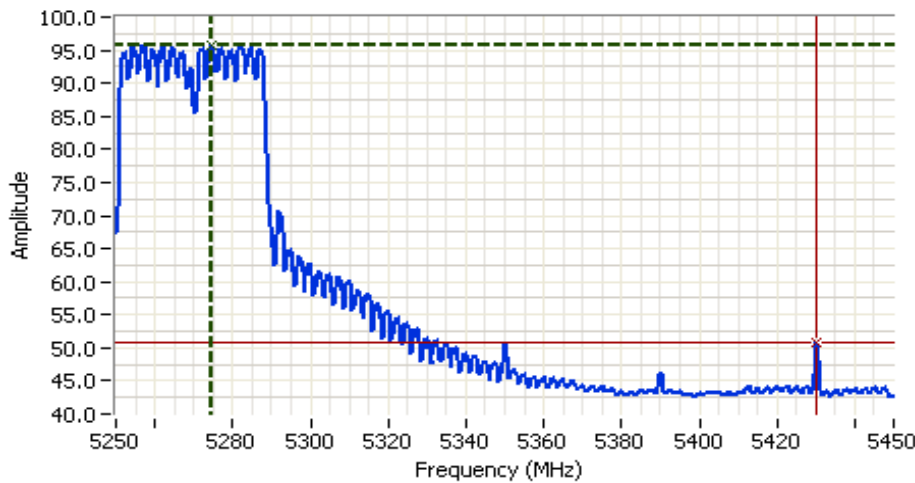
Cursor 1	5256.8135	107.19	↕	✖	🔒
Cursor 2	5350.2002	64.04	↕	✖	🔒

Delta Freq. 93.387

Delta Amplitude 43.15



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**  
 Rohde&Schwarz,ESI  
 CF: 5350.000 MHz  
 SPAN: 200.000 MHz  
 RB: 1.000 MHz  
 VB: 10 Hz  
 Detector: POS  
 Attn: 0 DB  
 RL Offset: 39.6 DB  
 Sweep Time: 50.0s  
 Ref Lvl: 111.6 DBUW

**Comments**  
 BE @ 5350 MHz  
 Avg-H

Cursor 1	5274.4487	95.71	+	-	+	-	Delta Freq.	155.912
Cursor 2	5430.3608	50.93	+	-	+	-	Delta Amplitude	44.78



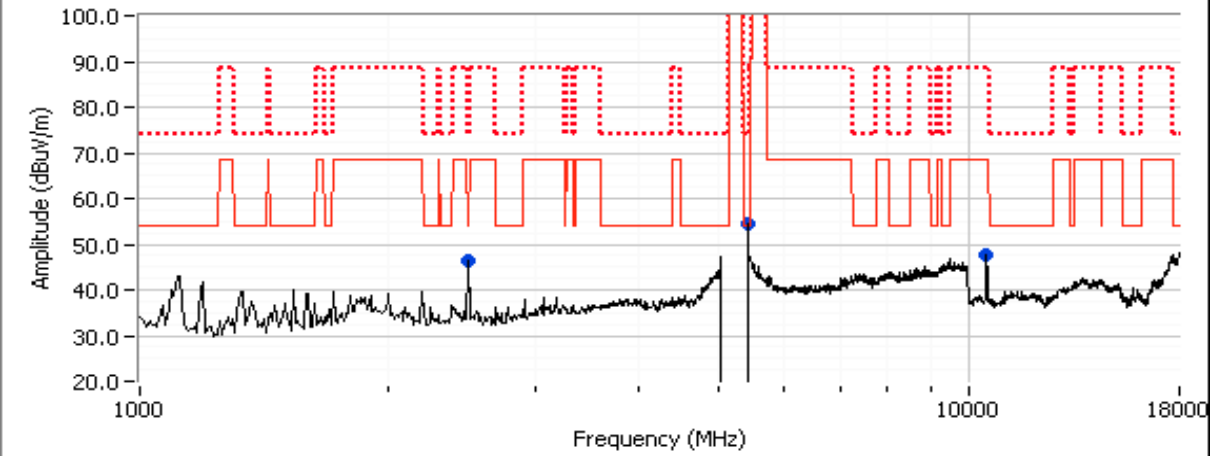
**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
5430.130	52.9	H	54.0	-1.1	AVG	199	1.1	RB 1 MHz; VB: 10 Hz
5430.040	59.0	H	74.0	-15.0	PK	199	1.1	RB 1 MHz; VB: 1 MHz
2497.030	40.1	V	54.0	-13.9	AVG	175	1.1	RB 1 MHz; VB: 10 Hz
2499.220	55.5	V	74.0	-18.5	PK	175	1.1	RB 1 MHz; VB: 1 MHz
10533.330	47.5	V	68.3	-20.8	Peak	152	1.0	peak reading vs avg limit

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (-68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

802.11n40, Channel 54 @ 5270 MHz





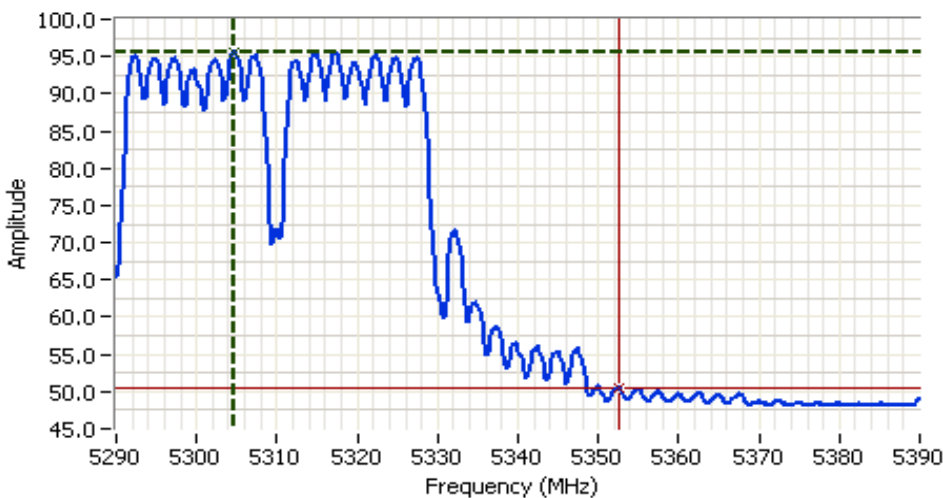
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #5b: High Channel 62 @ 5310 MHz**  
**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5315.650	93.9	H	-	-	Pk	170	1.0	RB = VB = 1MHz
5326.470	107.9	H	-	-	Avg	170	1.0	RB = 1MHz, VB = 10Hz
5304.620	95.6	V	-	-	Pk	191	1.6	RB = VB = 100kHz
5319.250	107.9	V	-	-	Pk	191	1.6	RB = VB = 1MHz

**5350 MHz Band Edge Signal Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5352.520	50.6	V	54.0	-3.4	Avg	191	1.6	
5354.520	67.4	V	74.0	-6.6	Pk	191	1.6	
5353.320	50.1	H	54.0	-3.9	Avg	170	1.0	
5350.720	68.4	H	74.0	-5.6	Pk	170	1.0	



**Analyzer Settings**  
 Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 100.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 25.0s  
 Ref Lvl: 121.60DBUV

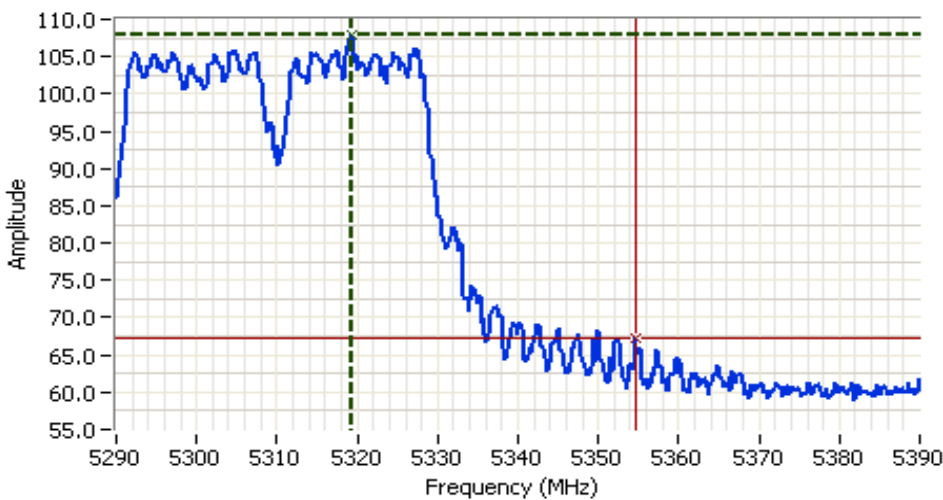
**Comments**  
 BE @ 5350 MHz  
 Avg-V

Cursor 1	5304.6294	95.62	
Cursor 2	5352.5249	50.59	

Delta Freq. 47.896  
 Delta Amplitude 45.03



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5340.000 MHz  
 SPAN: 100.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 39.60  
 Sweep Time 5.0ms  
 Ref Lvl: 121.60DBUV

---

**Comments**

BE @ 5350 MHz  
 Peak-V

Cursor 1	5319.2583	107.91	
Cursor 2	5354.5293	67.38	

Delta Freq. 35.271  
 Delta Amplitude 40.53



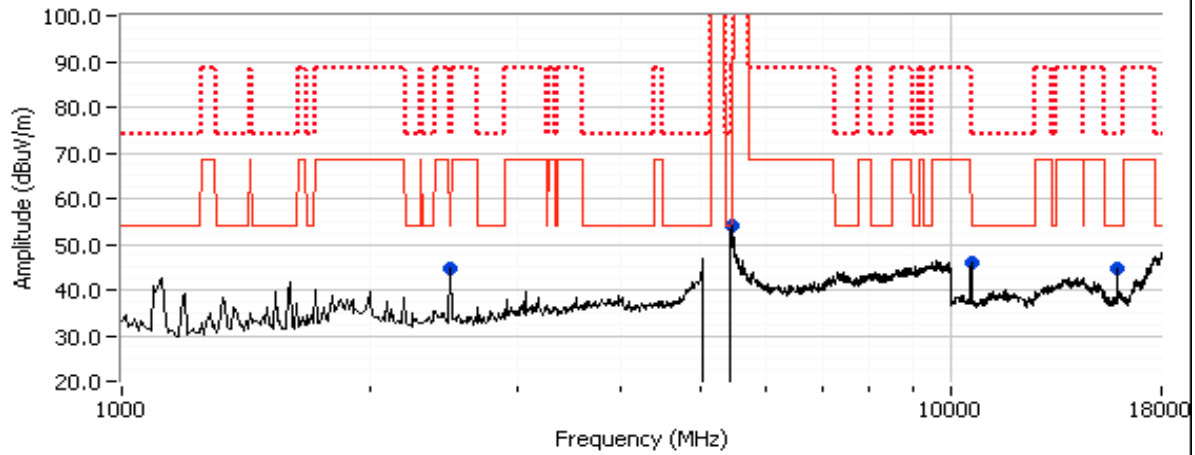
**Spurious Radiated Emissions:**

Frequency MHz	Level dBμV/m	Pol v/h	15.209 / 15E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5456.910	47.9	V	54.0	-6.1	AVG	164	1.2	RB 1 MHz; VB: 10 Hz
5454.890	58.6	V	74.0	-15.4	PK	164	1.2	RB 1 MHz; VB: 1 MHz
2497.050	38.4	V	54.0	-15.6	AVG	176	1.0	RB 1 MHz; VB: 10 Hz
2498.120	53.7	V	74.0	-20.3	PK	176	1.0	RB 1 MHz; VB: 1 MHz
15929.360	38.0	V	54.0	-16.0	AVG	174	1.0	RB 1 MHz; VB: 10 Hz
15934.400	49.4	V	74.0	-24.6	PK	174	1.0	RB 1 MHz; VB: 1 MHz
10621.990	39.6	V	54.0	-14.4	AVG	198	1.0	RB 1 MHz; VB: 10 Hz
10617.090	53.1	V	74.0	-20.9	PK	198	1.0	RB 1 MHz; VB: 1 MHz

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

802.11n40, Channel 62 @ 5310 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #6, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5470-5725 MHz Band, 802.11n HT40**

Date of Test: 4/6/2010

Test Engineer: Rafael Varelas

Test Location: FT Chamber #4

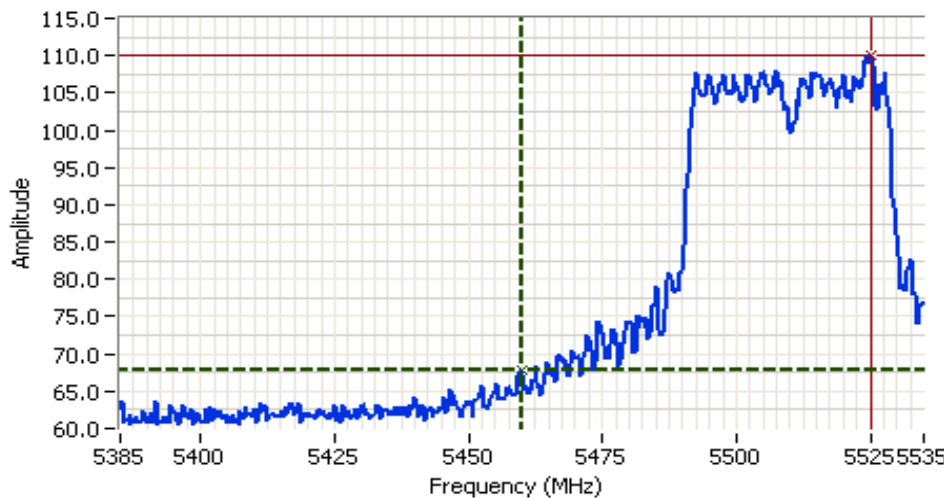
**Run #6a: Low Channel @ 5510 MHz**

**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5518.467	109.8	V	-	-	Pk	168	1.0	RB = VB = 1MHz
5504.339	96.5	V	-	-	Avg	168	1.0	RB = 1MHz, VB = 10Hz
5525.080	110.0	H	-	-	Pk	210	1.0	RB = VB = 1MHz
5505.241	97.1	H	-	-	Avg	210	1.0	RB = 1MHz, VB = 10Hz

**5350-5460 MHz Restricted Band Edge Signal Radiated Field Strength** CF 41.1

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	FCC 15.209		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5459.549	53.5	V	54.0	-0.5	AVG	168	1.0	
5459.850	67.2	V	74.0	-6.8	PK	168	1.0	
5459.850	53.5	H	54.0	-0.5	AVG	210	1.0	
5459.850	67.9	H	74.0	-6.1	PK	210	1.0	



**Analyzer Settings**

- Rohde&Schwarz, ESI 7
- CF: 5460.000 MHz
- SPAN: 150.000 MHz
- RB 1.000 MHz
- VB 1.000 MHz
- Detector POS
- Att 10
- RL Offset 41.10
- Sweep Time 5.0ms
- Ref Lvl: 123.10DBUV

**Comments**

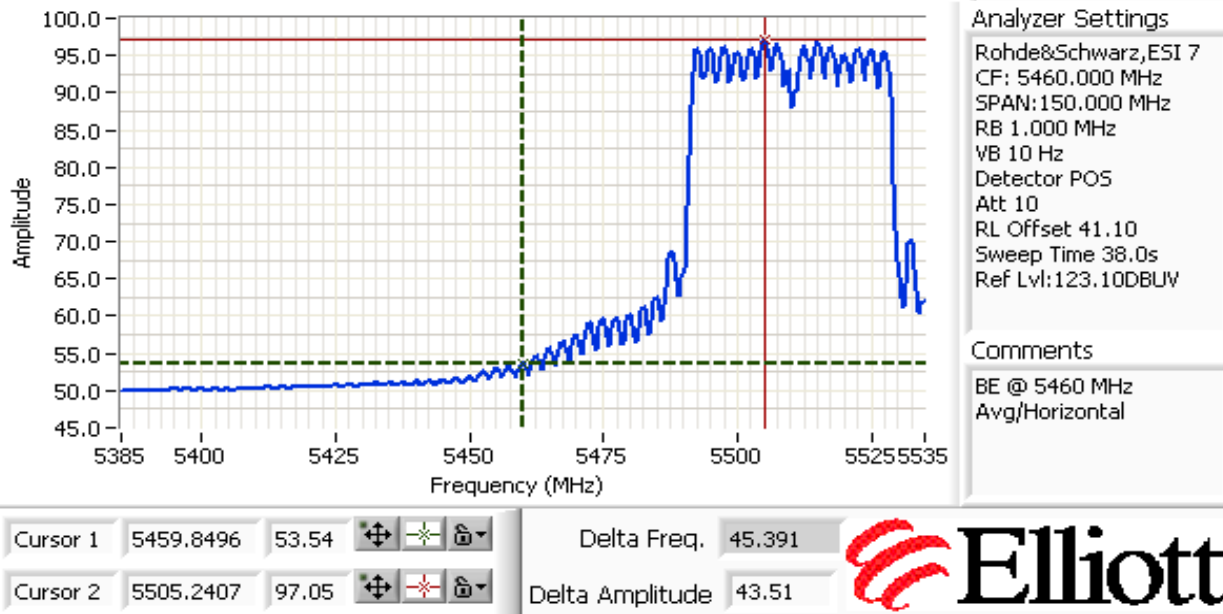
BE @ 5460 MHz  
PK/Horizontal

Cursor 1	5459.8496	67.90	
Cursor 2	5525.0801	110.00	

Delta Freq. 65.230  
Delta Amplitude 42.12



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



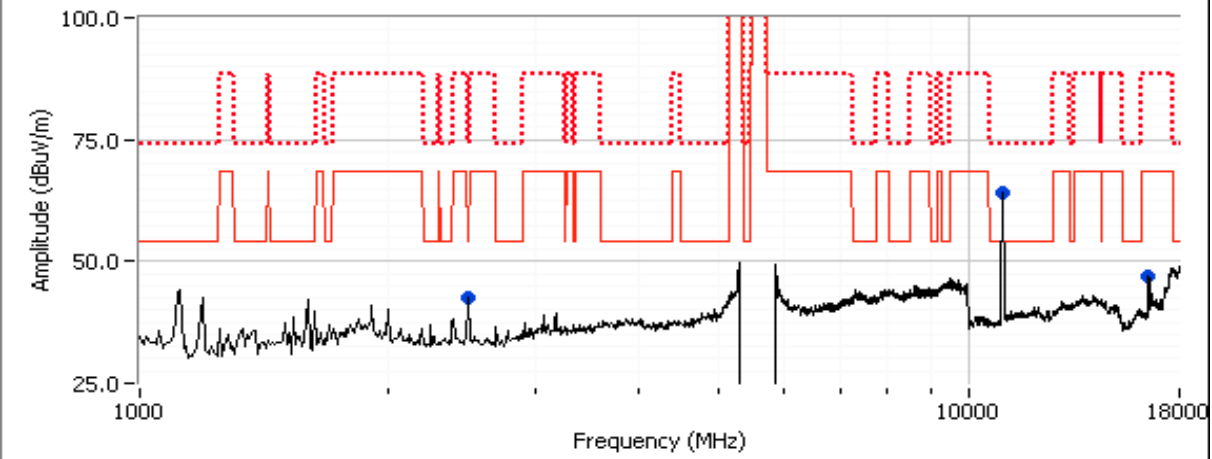
**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
11019.790	53.2	V	54.0	-0.8	AVG	149	1.0	MHz; VB: 10 Hz
11020.290	65.1	V	74.0	-8.9	PK	149	1.0	MHz; VB: 1 MHz
2494.170	42.5	V	54.0	-11.5	Peak	138	1.0	
16533.330	46.8	H	68.3	-21.5	Peak	181	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the average limit was set to -27dBm/MHz (-68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n40, Channel 102 @ 5510 MHz



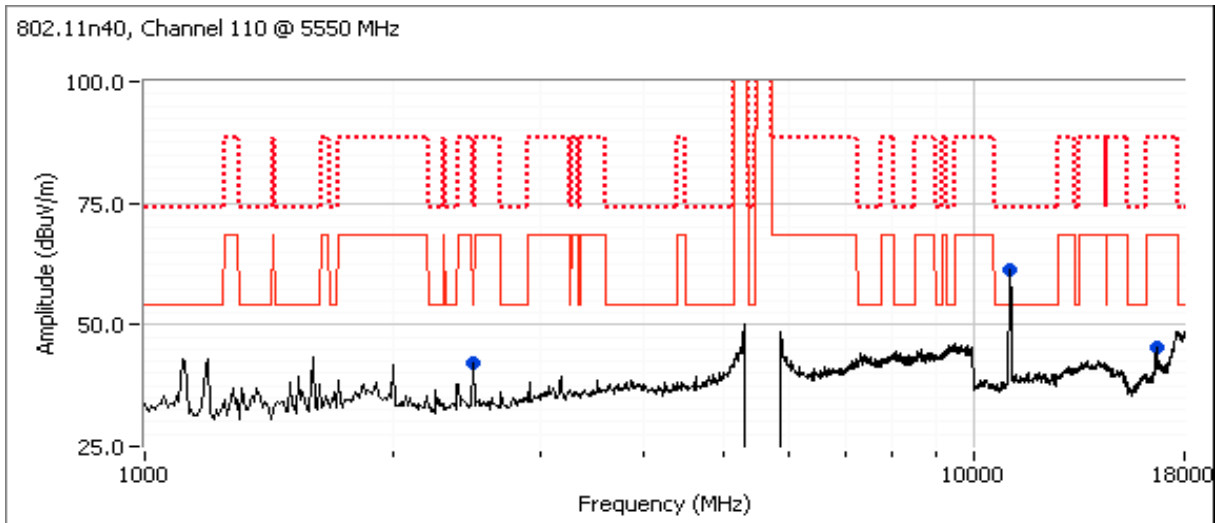
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #6b: Center Channel @ 5550 MHz**

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15E		Detector PK/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
11106.670	53.4	H	54.0	-0.6	AVG	227	1.0	RB 1 MHz; VB: 10 Hz
11107.130	65.5	H	74.0	-8.5	PK	227	1.0	RB 1 MHz; VB: 1 MHz
2494.170	42.0	V	54.0	-12.0	Peak	130	1.0	
16666.670	45.5	H	68.3	-22.8	Peak	142	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dB $\mu$ V/m).



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

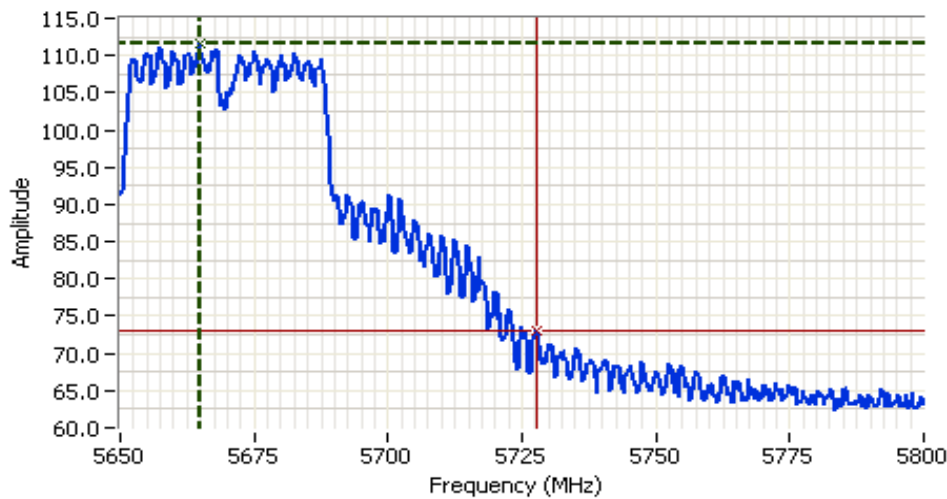
**Run #6c: High Channel @ 5670 MHz**

**Fundamental Signal Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15.209 / 15.247		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5664.730	111.5	H	-	-	Pk	203	1.1	
5665.030	100.0	H	-	-	Avg	203	1.1	
5675.251	110.2	V	-	-	Pk	161	1.3	
5664.429	97.9	V	-	-	Avg	161	1.3	

**5725 MHz Band Edge Radiated Field Strength**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	15 E		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
5725.150	59.4	H	68.3	-9.0	Avg	203	1.1	
5727.856	73.1	H	88.3	-15.2	Pk	203	1.1	
5726.954	73.5	V	88.3	-14.8	Pk	161	1.3	
5725.150	58.1	V	68.3	-10.2	Avg	161	1.3	



**Analyzer Settings**

Rohde&Schwarz, ESI 7  
 CF: 5725.000 MHz  
 SPAN: 150.000 MHz  
 RB 1.000 MHz  
 VB 1.000 MHz  
 Detector POS  
 Att 10  
 RL Offset 41.10  
 Sweep Time 5.0ms  
 Ref Lvl: 123.10DBUV

**Comments**

BE @ 5725 MHz  
 PK/Horizontal

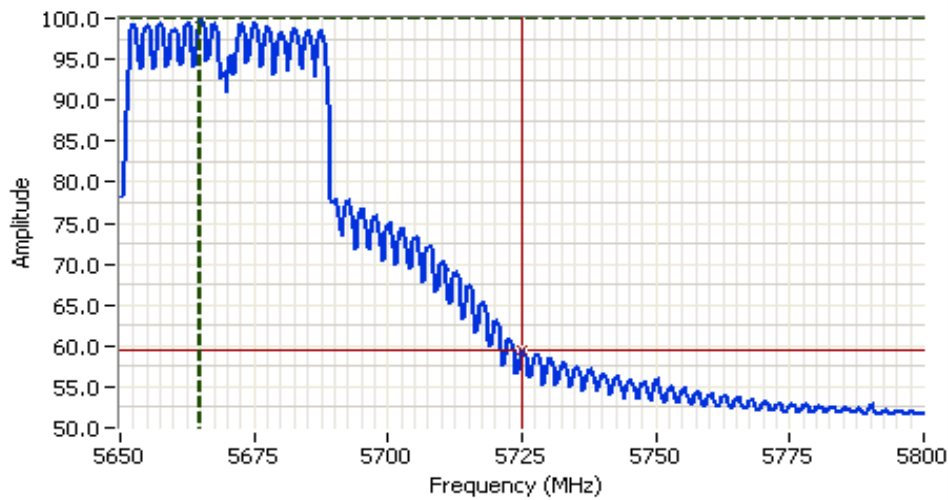
Cursor 1	5664.7295	111.51	
Cursor 2	5727.8555	73.12	

Delta Freq. 63.126  
 Delta Amplitude 38.39





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**  
 Rohde&Schwarz, ESI 7  
 CF: 5725.000 MHz  
 SPAN: 150.000 MHz  
 RB 1.000 MHz  
 VB 10 Hz  
 Detector POS  
 Att 10  
 RL Offset 41.10  
 Sweep Time 38.0s  
 Ref Lvl: 123.10DBUV

**Comments**  
 BE @ 5725 MHz  
 Avg/Horizontal

Cursor 1	5665.0303	99.95	
Cursor 2	5725.1504	59.44	

Delta Freq. 60.120  
 Delta Amplitude 40.51

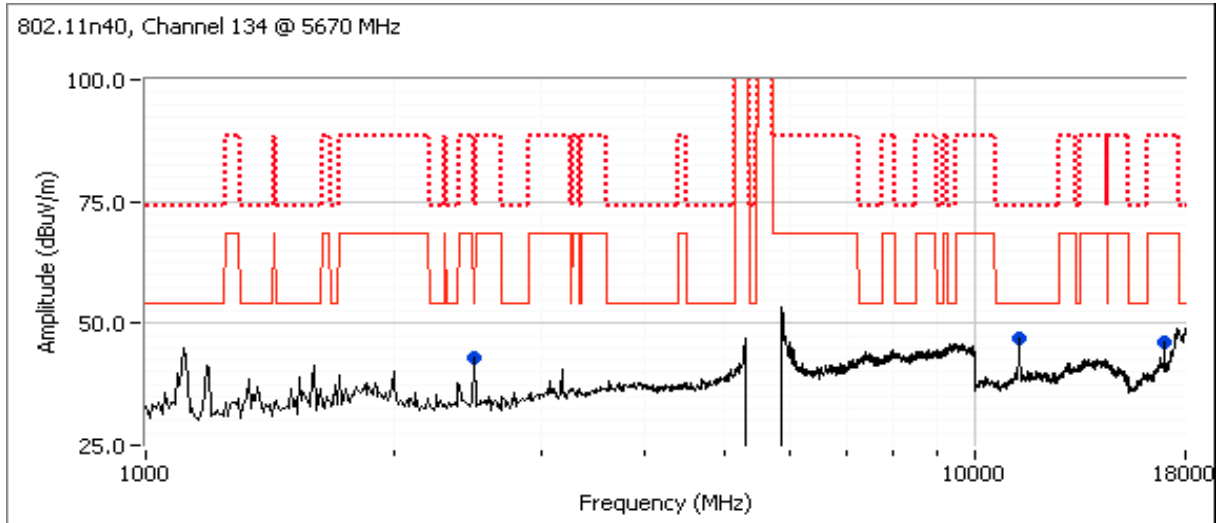


**Spurious Radiated Emissions:**

Frequency	Level	Pol	15.209 / 15E		Detector	Azimuth	Height	Comments
MHz	dBμV/m	v/h	Limit	Margin	PK/QP/Avg	degrees	meters	
2494.170	43.0	V	54.0	-11.0	Peak	132	1.0	peak reading vs avg limit
11340.100	41.3	V	54.0	-12.7	AVG	223	1.0	RB 1 MHz; VB: 10 Hz
11342.830	52.7	V	74.0	-21.3	PK	223	1.0	RB 1 MHz; VB: 1 MHz
17016.530	46.2	H	68.3	-22.1	Peak	226	1.0	

Note 1: For emissions in restricted bands, the limit of 15.209 was used. For all other emissions, the **average** limit was set to -27dBm/MHz (~68dBuV/m).

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #1, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5250-5350 MHz Band, Legacy A Mode**

Date of Test: 4/8/2010

Test Engineer: Rafael Varelas

Test Location: FT Chamber #4

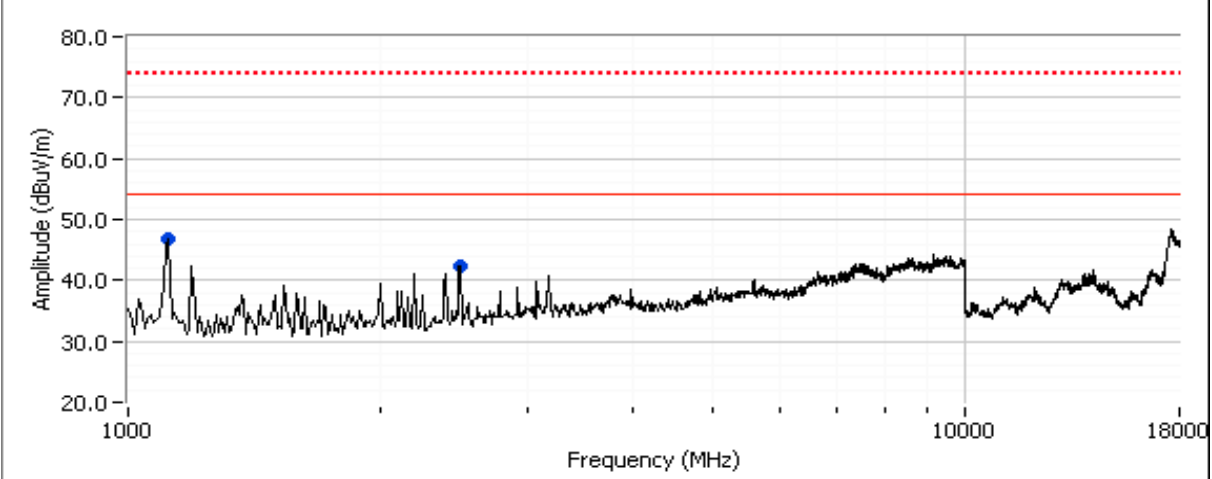
Run #1: Center Channel 60 @ 5300 MHz

Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1118.100	41.5	V	54.0	-12.5	AVG	81	1.0	RB 1 MHz; VB: 10 Hz
1116.910	54.6	V	74.0	-19.4	PK	81	1.0	RB 1 MHz; VB: 1 MHz
2496.560	35.2	V	54.0	-18.8	AVG	185	1.1	RB 1 MHz; VB: 10 Hz
2498.960	51.3	V	74.0	-22.7	PK	185	1.1	RB 1 MHz; VB: 1 MHz

Rx Mode, Center Channel 60 @ 5300 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #2, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5470-5725 MHz Band, Legacy A Mode**

Date of Test: 4/8/2010

Test Engineer: Rafael Varelas

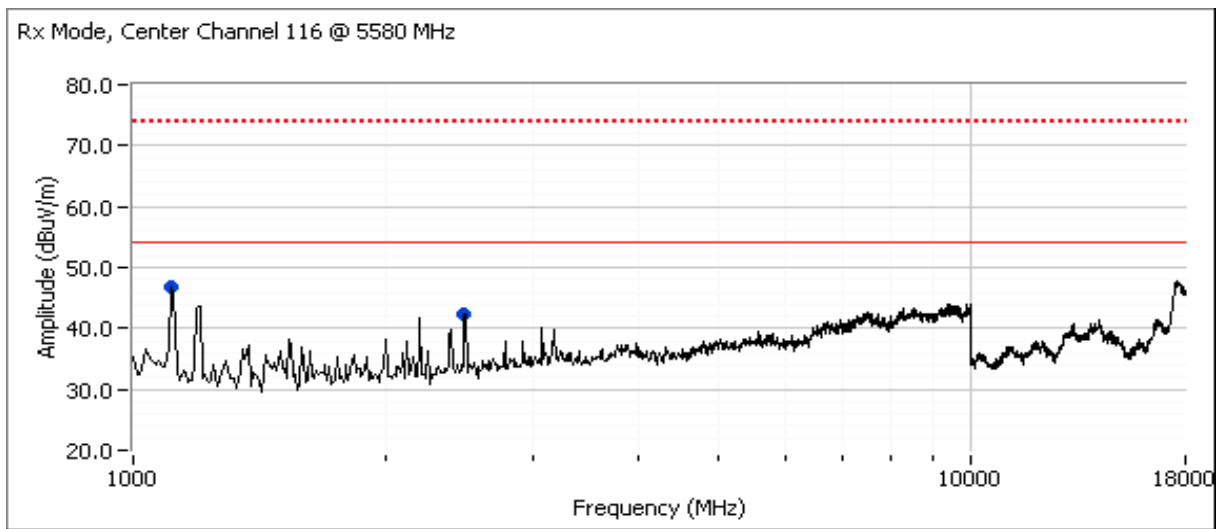
Test Location: FT Chamber #4

Run #2: Center Channel 116 @ 5580 MHz

Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1117.580	41.3	V	54.0	-12.7	AVG	81	1.0	RB 1 MHz; VB: 10 Hz
1117.300	54.3	V	74.0	-19.7	PK	81	1.0	RB 1 MHz; VB: 1 MHz
2496.590	34.3	V	54.0	-19.7	AVG	131	1.5	RB 1 MHz; VB: 10 Hz
2499.020	50.4	V	74.0	-23.6	PK	131	1.5	RB 1 MHz; VB: 1 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #3, Radiated Spurious Emissions, 30 - 40,000 MH. Operation in the 5250-5350 MHz Band, HT20 Mode**

Date of Test: 4/8/2010

Test Engineer: Rafael Varelas

Test Location: FT Chamber #4

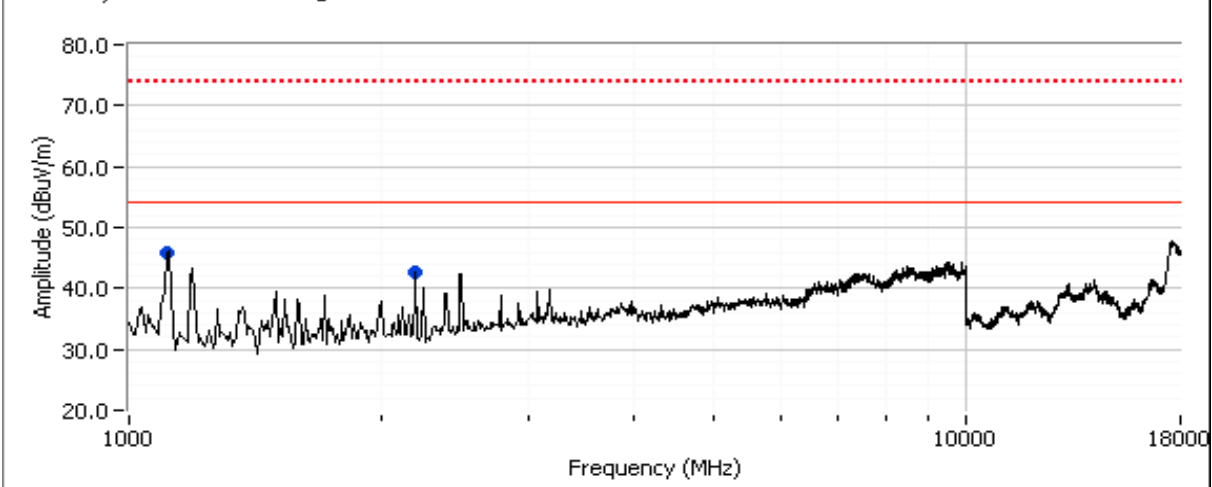
Run #3: Center Channel 60 @ 5300 MHz

Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
2200.060	42.1	V	54.0	-11.9	AVG	166	1.0	RB 1 MHz; VB: 10 Hz
2200.040	45.5	V	74.0	-28.5	PK	166	1.0	RB 1 MHz; VB: 1 MHz
1117.910	40.7	V	54.0	-13.3	AVG	81	1.0	RB 1 MHz; VB: 10 Hz
1118.220	55.4	V	74.0	-18.6	PK	81	1.0	RB 1 MHz; VB: 1 MHz

Rx Mode, Center Channel 60 @ 5300 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #4, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5470-5725 MHz Band, HT20 Mode**

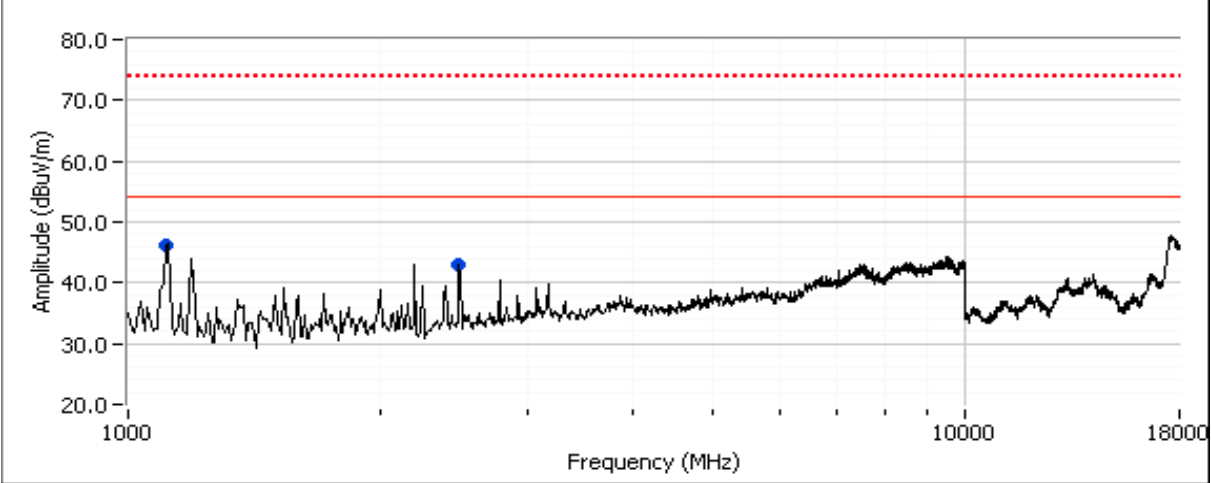
Date of Test: 4/8/2010  
 Test Engineer: Rafael Varelas  
 Test Location: FT Chamber #4

Run #4: Center Channel 116 @ 5580 MHz  
 Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1117.870	40.4	V	54.0	-13.6	AVG	82	1.0	RB 1 MHz; VB: 10 Hz
1119.130	55.4	V	74.0	-18.6	PK	82	1.0	RB 1 MHz; VB: 1 MHz
2497.240	34.0	V	54.0	-20.0	AVG	136	1.2	RB 1 MHz; VB: 10 Hz
2498.960	49.9	V	74.0	-24.1	PK	136	1.2	RB 1 MHz; VB: 1 MHz

Rx Mode, Center Channel 116 @ 5580 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #5, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5250-5350 MHz Band, HT40 Mode**

Date of Test: 4/8/2010

Test Engineer: Rafael Varelas

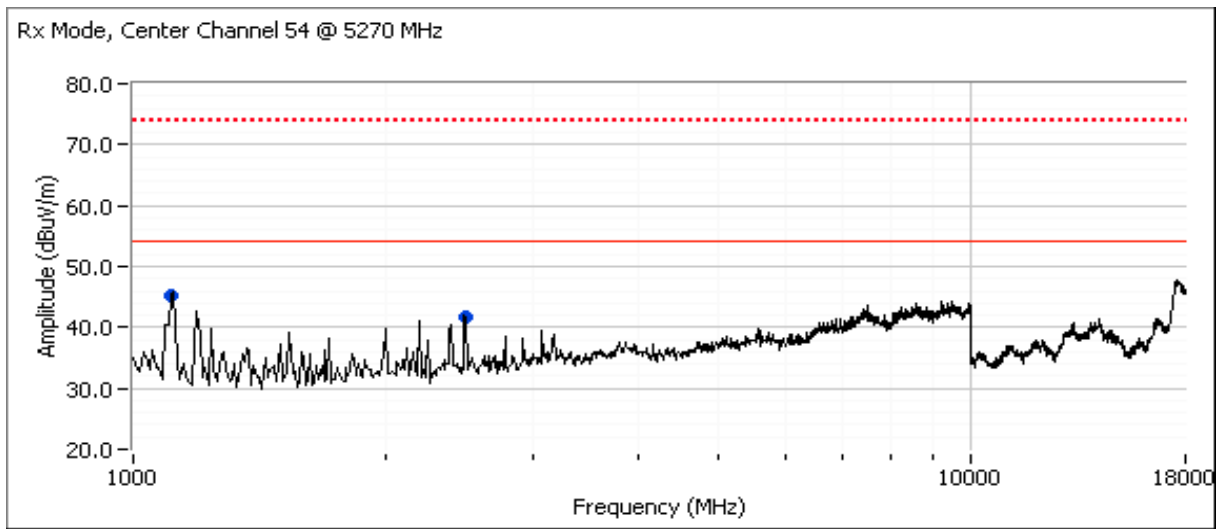
Test Location: FT Chamber #4

Run #5: Center Channel 54 @ 5270 MHz

Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1100.030	38.5	V	54.0	-15.5	AVG	75	1.0	RB 1 MHz; VB: 10 Hz
1099.710	44.7	V	74.0	-29.3	PK	75	1.0	RB 1 MHz; VB: 1 MHz
2496.870	33.8	V	54.0	-20.2	AVG	127	1.5	RB 1 MHz; VB: 10 Hz
2497.150	49.7	V	74.0	-24.3	PK	127	1.5	RB 1 MHz; VB: 1 MHz





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #6, Radiated Spurious Emissions, 30 - 40,000 MHz. Operation in the 5470-5725 MHz Band, HT40 Mode**

Date of Test: 4/8/2010

Test Engineer: Rafael Varelas

Test Location: FT Chamber #4

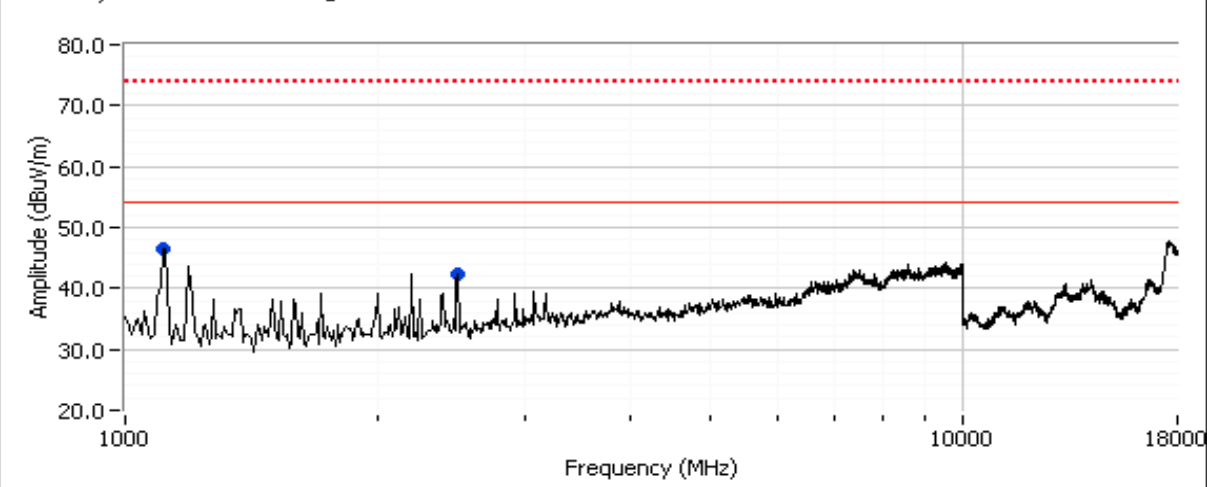
Run #6: Center Channel 110 @ 5550 MHz

Orientation: Upright

**Spurious Radiated Emissions:**

Frequency MHz	Level dB $\mu$ V/m	Pol v/h	RSS-GEN		Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
			Limit	Margin				
1100.050	39.8	V	54.0	-14.2	AVG	77	1.0	RB 1 MHz; VB: 10 Hz
1099.980	45.7	V	74.0	-28.3	PK	77	1.0	RB 1 MHz; VB: 1 MHz
2497.940	31.5	V	54.0	-22.5	AVG	102	1.2	RB 1 MHz; VB: 10 Hz
2499.190	46.6	V	74.0	-27.4	PK	102	1.2	RB 1 MHz; VB: 1 MHz

Rx Mode, Center Channel 110 @ 5550 MHz



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**RSS-210 (LELAN) and FCC 15.407(UNII)  
Antenna Port Measurements  
Power, PSD, Peak Excursion, 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: 5/5/2010	Config. Used: 1
Test Engineer: Rafael Varelas	Config Change: None
Test Location: FT Chamber #5	EUT Voltage: POE

**General Test Configuration**

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

**Ambient Conditions:**                      Temperature:            19.4 °C  
    Rel. Humidity:            39 %

**Summary of Results**

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	17.4 dBm (0.055 W)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	16.9 dBm (0.049 W)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	6.8 dBm/MHz
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	6.6 dBm/MHz
1	26dB Bandwidth	15.407	-	36.0 MHz
1	99% Bandwidth	RSS 210	-	17.5 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	11.9 dB
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

**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: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**Run #1: Bandwidth, Output Power and Power spectral Density**  
Port: Main (Txant 0)

Antenna Gain (dBi): **4.53**

Frequency (MHz)	Software Setting	Bandwidth		Output Power <sup>1</sup> dBm		Power (Watts)	PSD <sup>2</sup> dBm/MHz			Result
		26dB	99% <sup>4</sup>	Measured	Limit		Measured	FCC Limit	RSS Limit <sup>3</sup>	
5260	-	36.0	17.5	17.3	24.0	0.054	6.8	11.0	11.0	Pass
5300	-	43.9	17.5	17.4	24.0	0.055	6.6	11.0	11.0	Pass
5320	-	38.3	17.4	16.1	24.0	0.041	5.5	11.0	11.0	Pass

Antenna Gain (dBi): **5.55**

Frequency (MHz)	Software Setting	Bandwidth		Output Power <sup>1</sup> dBm		Power (Watts)	PSD <sup>2</sup> dBm/MHz			Result
		26dB	99% <sup>4</sup>	Measured	Limit		Measured	FCC Limit	RSS Limit <sup>3</sup>	
5500	-	42.0	17.4	16.4	24.0	0.044	5.9	11.0	11.0	Pass
5580	-	38.0	17.4	16.5	24.0	0.045	5.9	11.0	11.0	Pass
5700	-	42.9	17.4	16.9	24.0	0.049	6.6	11.0	11.0	Pass

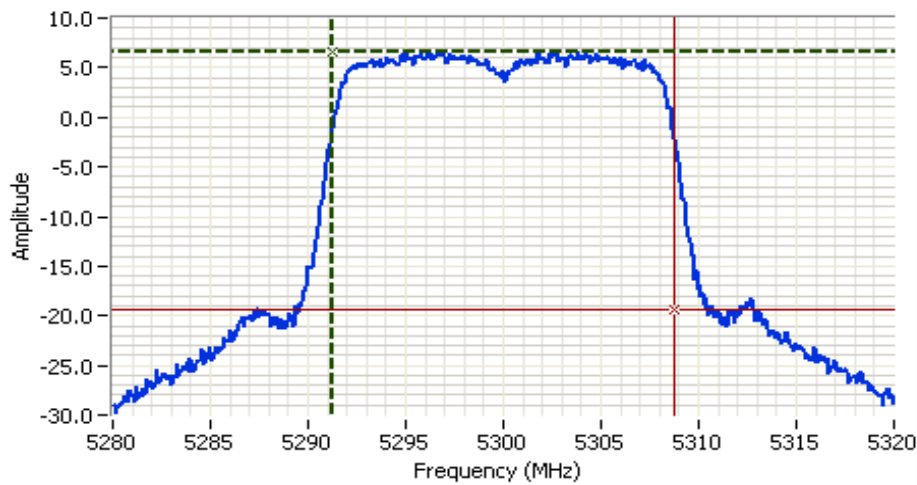
Note 1: RBW=1MHz, VB=3 MHz, sample detector, power averaging on (**transmitted signal was not continuous** but the analyzer was configured with a **gated sweep** such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz

Note 2: Measured using the same analyzer settings used for output power.

Note 3: For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.

Note 4: 99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI  
 CF: 5300.000 MHz  
 SPAN: 40.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: SAMPLE  
 Attn: 20 DB  
 RL Offset: 11.0 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 10.0 DBM  
 Vavg: 100

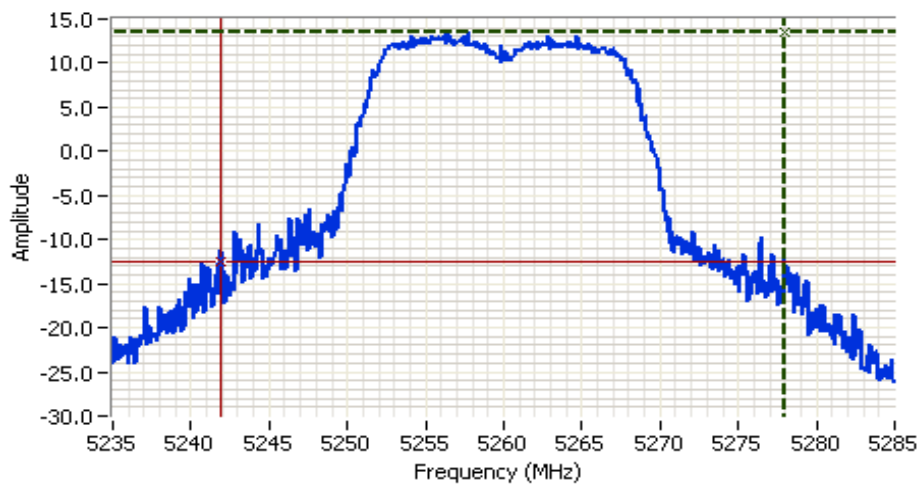
**Comments**

99% BW: 17.520 MHz  
 Power: 17.36dBm

Cursor 1	5291.2000	6.57	
Cursor 2	5308.7200	-19.43	

Delta Freq. 17.520

Delta Amplitude 26.00



**Analyzer Settings**

HP8564E  
 CF: 5260.000 MHz  
 SPAN: 50.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: POS  
 Attn: 20 DB  
 RL Offset: 11.0 DB  
 Sweep Time: 50.0ms  
 Ref Lvl: 16.0 DBM

**Comments**

26dB BW: 36.000 MHz

Cursor 1	5277.9167	13.50	
Cursor 2	5241.9167	-12.50	

Delta Freq. 36.000

Delta Amplitude 26.00



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #2: Peak Excursion Measurement**

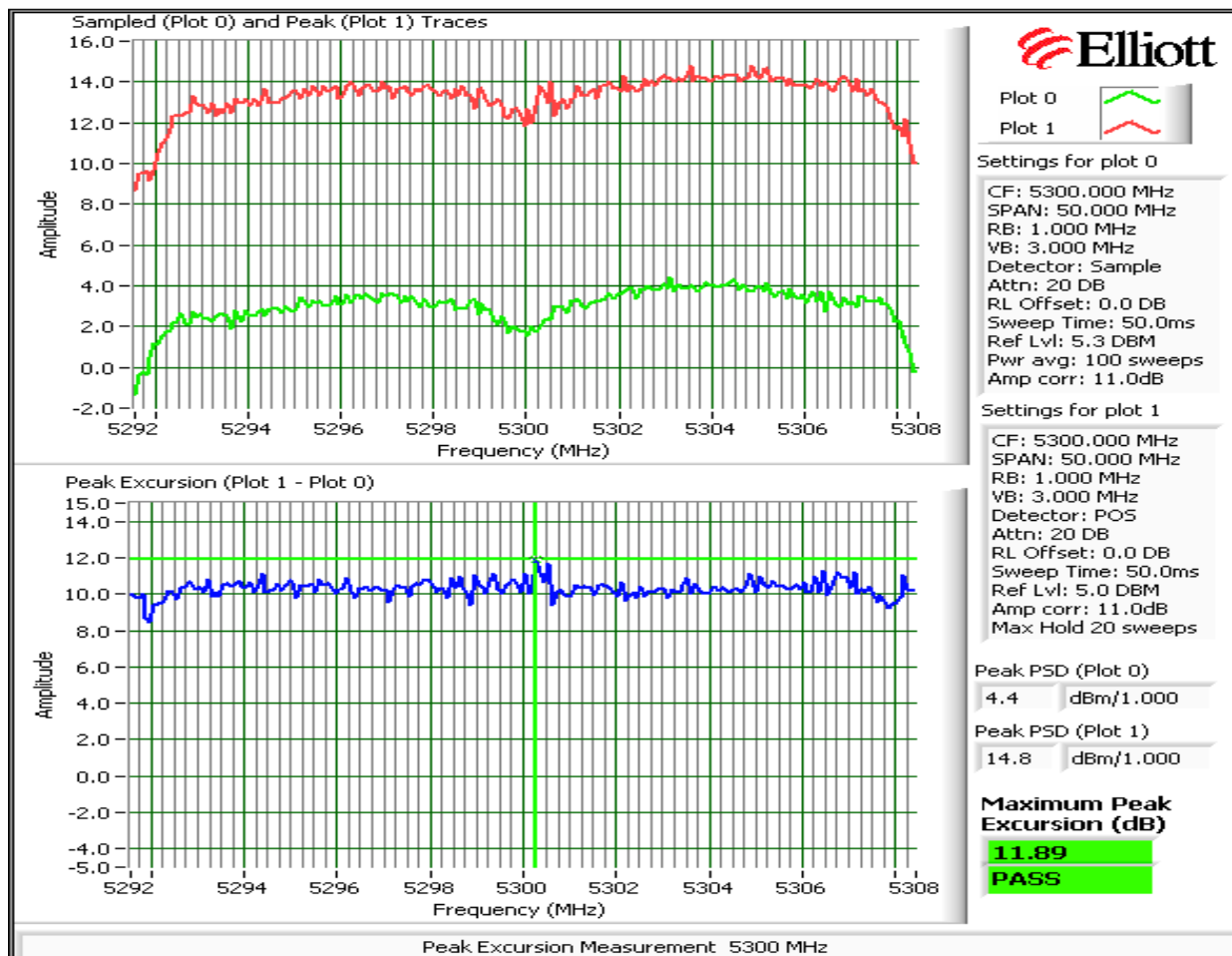
Device meets the requirement for the peak excursion

Freq (MHz)	Peak Excursion(dB) Value	Limit	Freq (MHz)	Peak Excursion(dB) Value	Limit	Freq (MHz)	Peak Excursion(dB) Value	Limit
5180		13.0	5260	11.2	13.0	5500	11.6	13.0
5200		13.0	5300	11.9	13.0	5580	11.0	13.0
5240		13.0	5320	10.1	13.0	5700	11.2	13.0

**Plots Showing Peak Excursion**

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

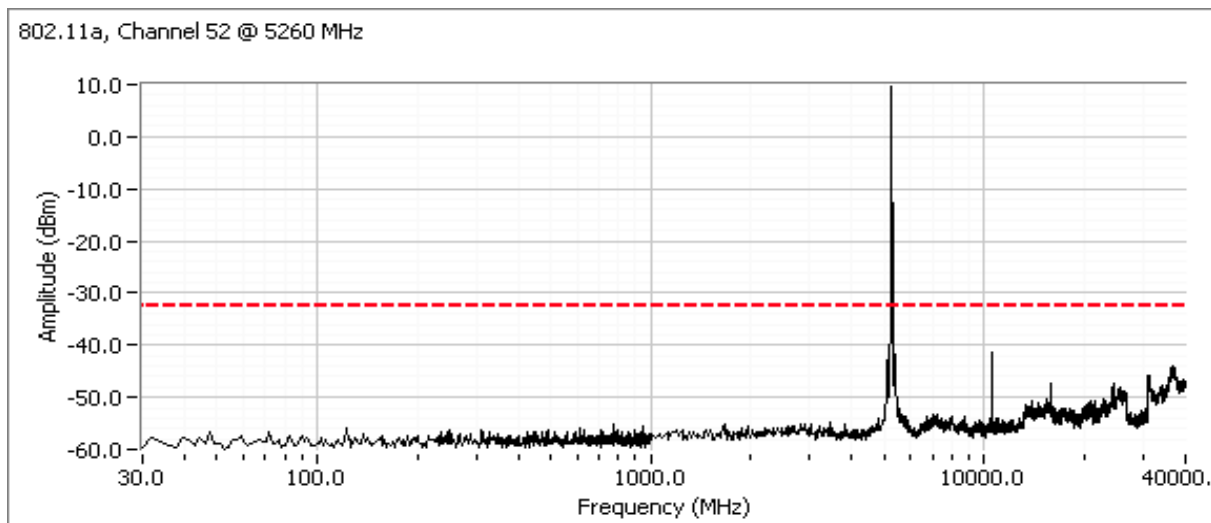
**Run #3: Out Of Band Spurious Emissions - Antenna Conducted**

Maximum Antenna Gain: 5.5 dBi **Worse case gain for both bands**  
 Spurious Limit: -27.0 dBm/MHz eirp  
 Limit Used On Plots <sup>Note 1</sup>: -32.5 dBm/MHz **Average Limit (RB=1MHz, VB=10Hz)**  
 -12.5 dBm/MHz **Peak Limit (RB=VB=1MHz)**

- Note 1: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
- Note 2: All spurious signals below 1GHz are measured during digital device radiated emissions test.
- Note 4: If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
- Note 5: Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

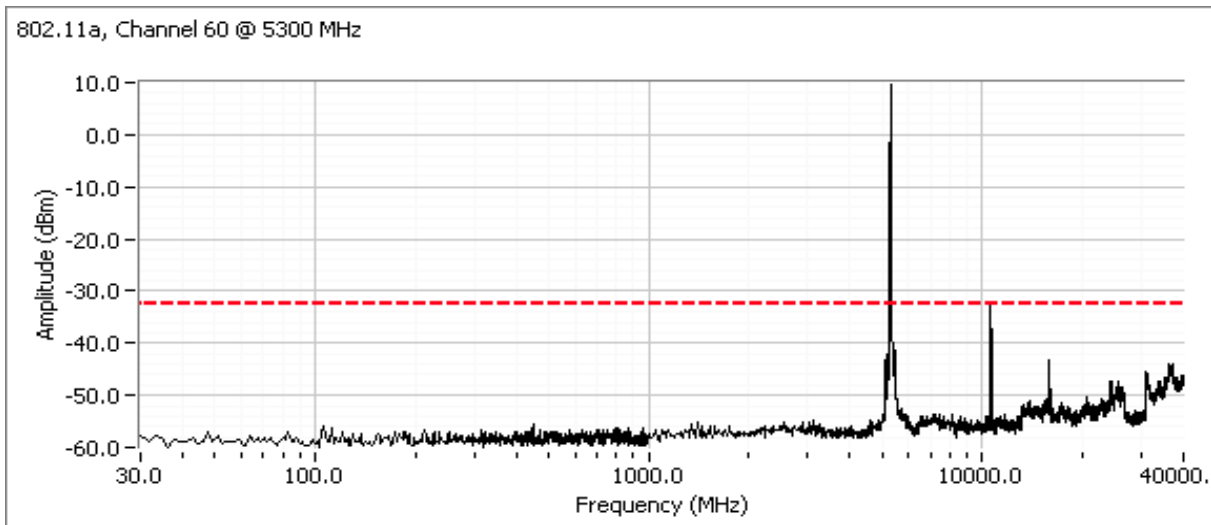
Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

Low channel, 5250 - 5350 MHz Band



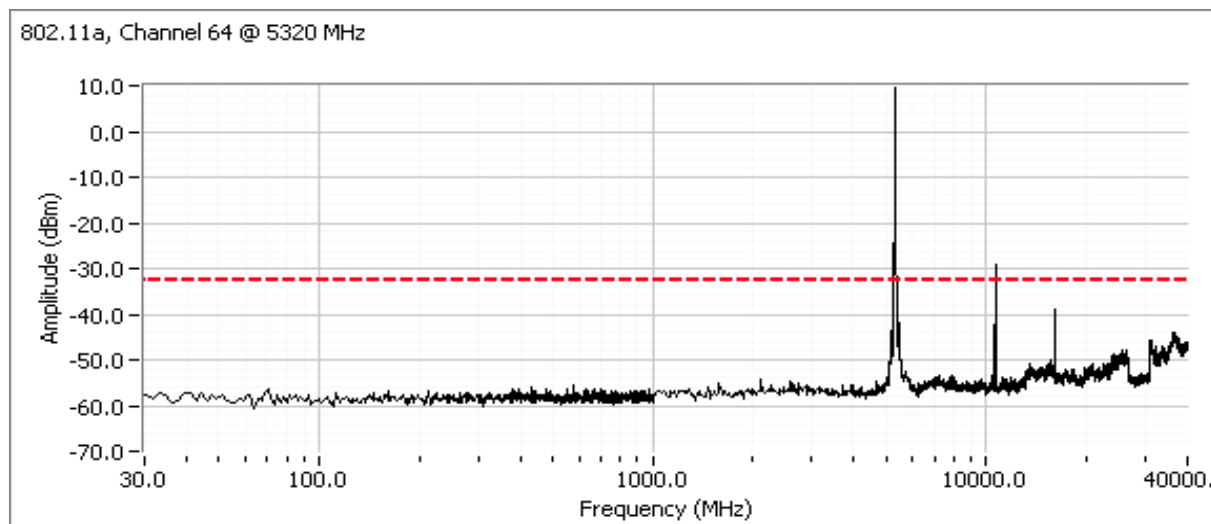
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

### Center channel, 5250 - 5350 MHz Band



### High channel, 5250 - 5350 MHz Band

Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.



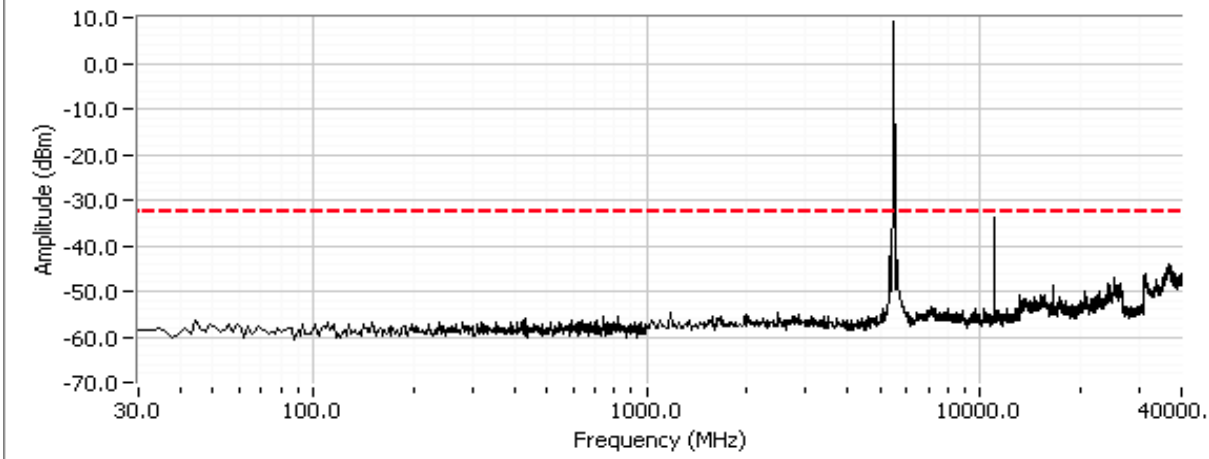
Note: The spur above the limit has already been measured and is in compliance with the radiated emissions limit.

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

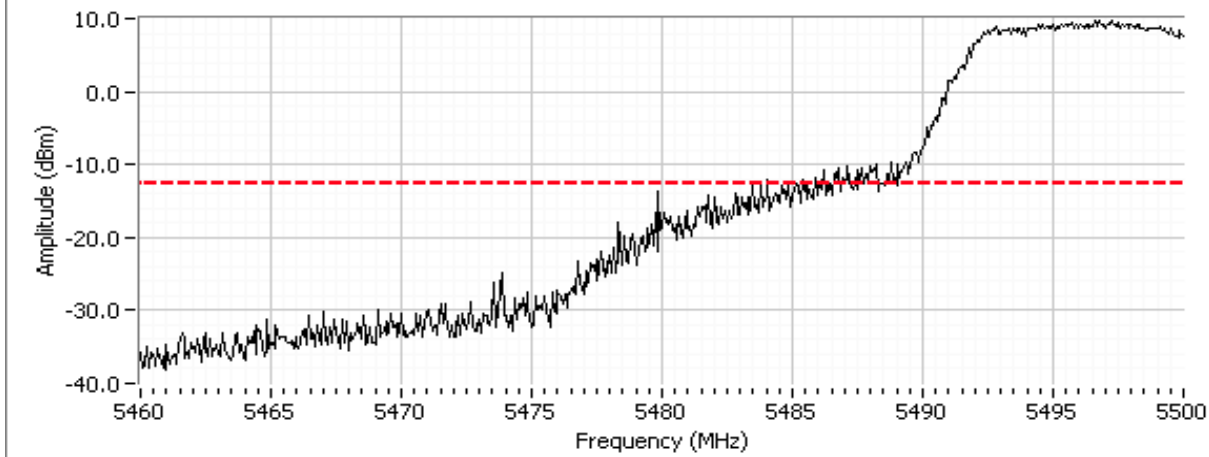
### Low channel, 5470 - 5725 MHz Band

Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.

802.11a, Channel 100 @ 5500 MHz

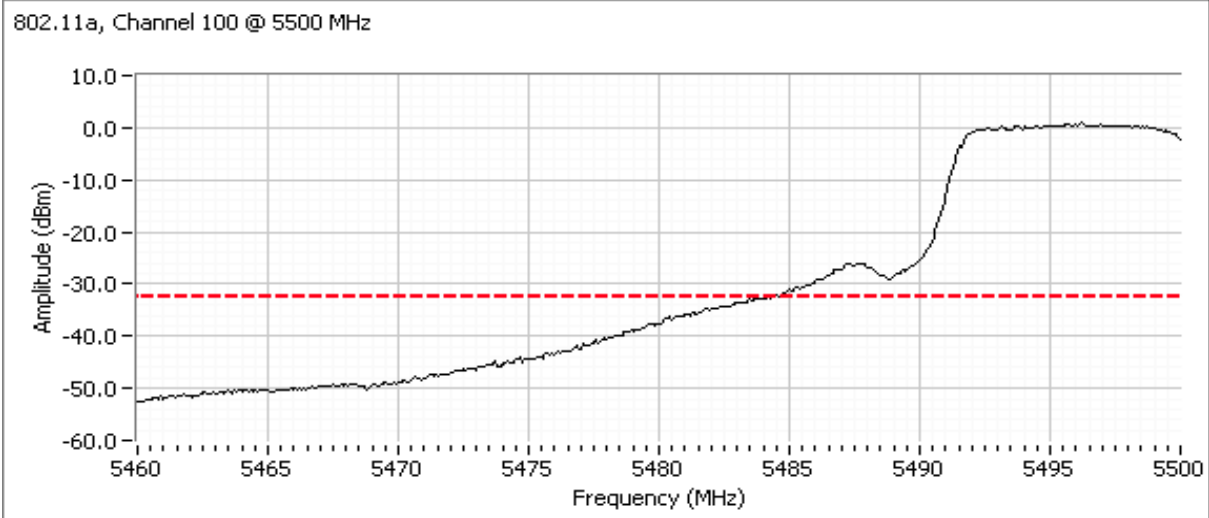


802.11a, Channel 100 @ 5500 MHz

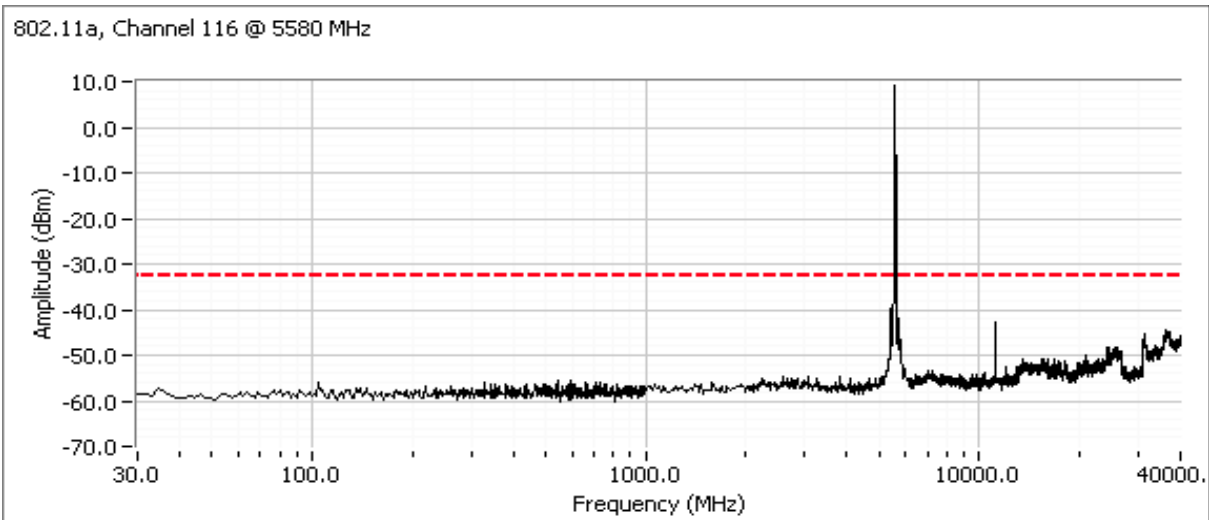




Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



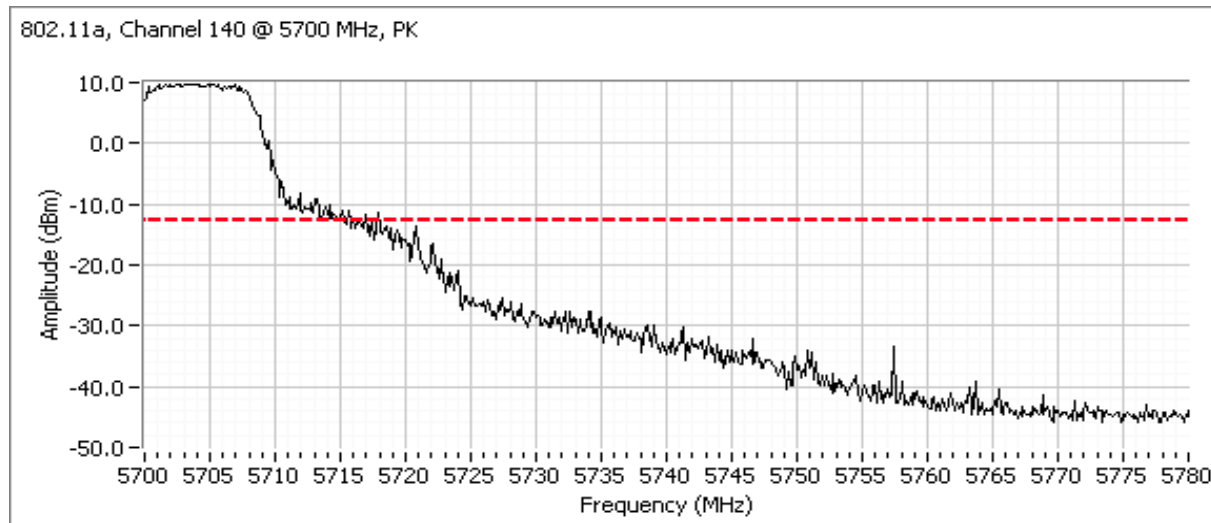
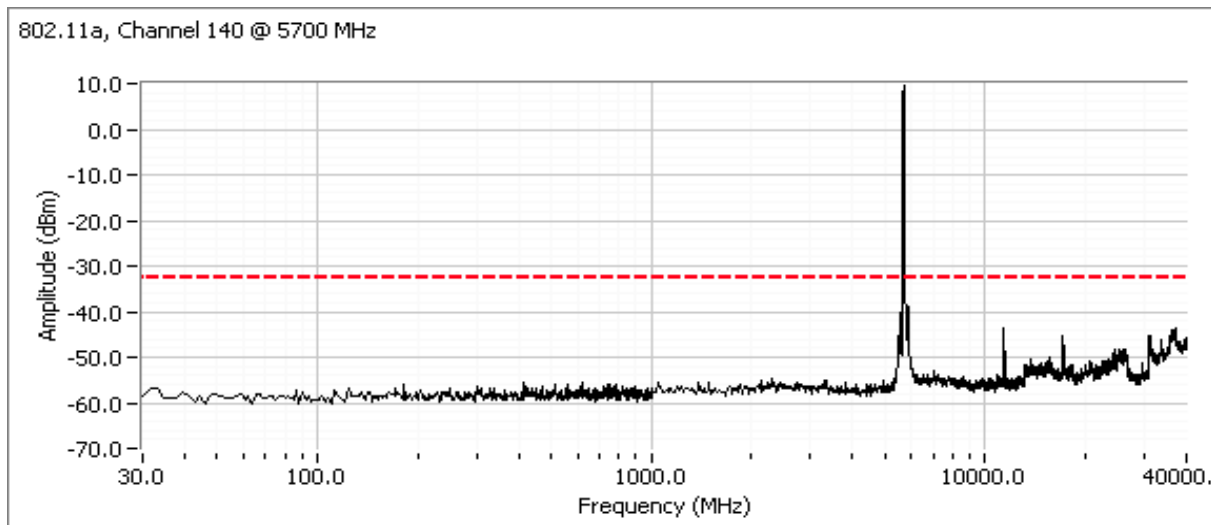
Center channel, 5470 - 5725 MHz Band (20Mhz channel use 5580 MHz, 40MHz channel use 5550 MHz)



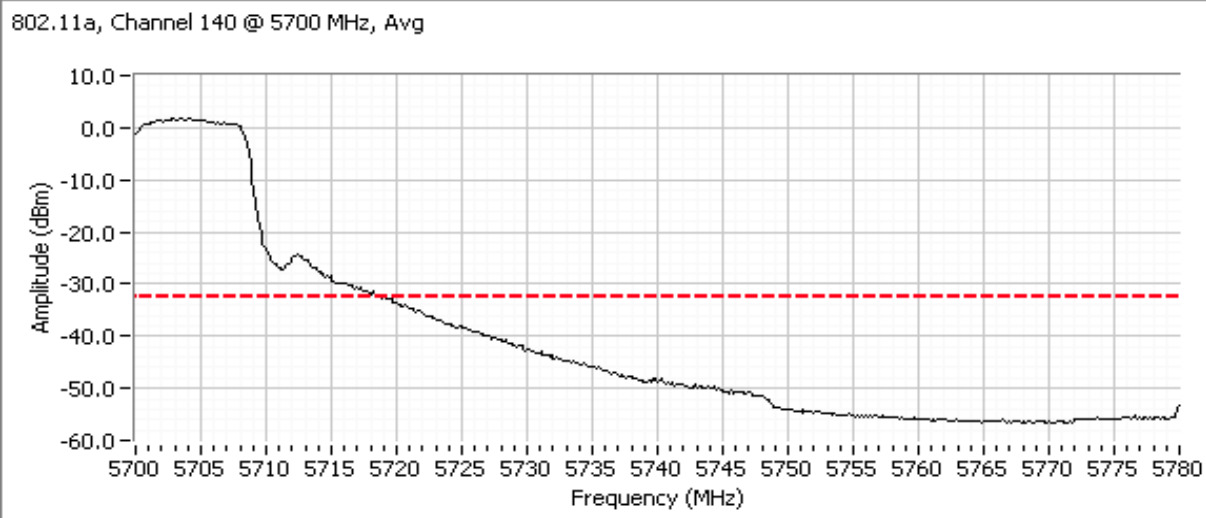
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

### High channel, 5470 - 5725 MHz Band

Includes a plot from 5700 - 5780 MHz showing compliance with the -27dBm/MHz eirp limit immediately above the allocated band (5725 MHz).



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

**RSS-210 (LELAN) and FCC 15.407(UNII)  
Antenna Port Measurements  
Power, PSD, Peak Excursion, 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: 5/7 & 5/9/2010  
Test Engineer: Rafael Varelas  
Test Location: FT Chamber #5

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

**General Test Configuration**

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

**Ambient Conditions:** Temperature: 18.9 °C  
Rel. Humidity: 37 %

**Summary of Results**

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
1	Power, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	18.1 dBm (0.064 W)
1	Power, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	18.2 dBm (0.066 W)
1	PSD, 5250 - 5350MHz	15.407(a) (1), (2)	Pass	9.3 dBm/MHz
1	PSD, 5470 - 5725MHz	15.407(a) (1), (2)	Pass	9.2 dBm/MHz
1	26dB Bandwidth	15.407	-	26.5 MHz
1	99% Bandwidth	RSS 210	-	18.6 MHz
2	Peak Excursion Envelope	15.407(a) (6)	Pass	12.7 dB
3	Antenna Conducted - Out of Band Spurious	15.407(b)	Pass	All emissions below the -27dBm/MHz limit

**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: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #1: Bandwidth, Output Power and Power spectral Density**

**MIMO Device**

	Chain 1	Chain 2	Chain 3	Coherent	Effective <sup>5</sup>
Antenna Gain (dBi):	4.53	4.53		Yes	7.5

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power <sup>1</sup> dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5260	-	30.3	15.3	14.8		64.1	18.1	22.4	0.064	PASS
5300	-	30.0	15.2	14.8		63.3	18.0	22.4		PASS
5320	-	26.5	14.4	13.8		51.5	17.1	22.4		PASS

Frequency (MHz)	99% <sup>4</sup> BW	Total Power	PSD <sup>2</sup> dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5260	18.5	18.1	6.9	5.3		8.3	9.2	9.5	10.2	PASS
5300	18.4	18.0	7.1	5.3		8.5	9.3	9.5	10.1	PASS
5320	18.4	17.1	5.7	3.6		6.0	7.8	9.5	10.7	PASS

	Chain 1	Chain 2	Chain 3	Coherent	Effective <sup>5</sup>
Antenna Gain (dBi):	5.55	5.55		Yes	8.6

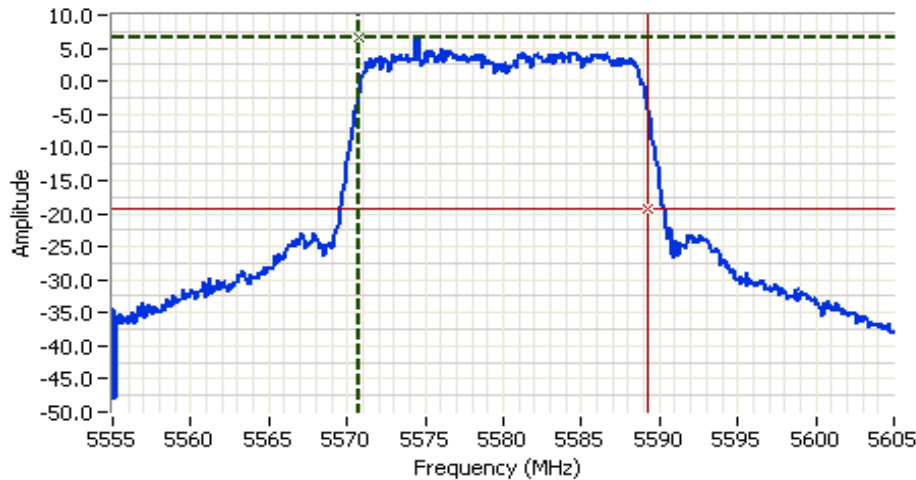
Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power <sup>1</sup> dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5500	-	26.6	14.6	14.1		54.5	17.4	22.4	0.066	PASS
5580	-	33.8	15.4	14.9		65.6	18.2	22.4		PASS
5700	-	30.8	15.4	14.9		65.6	18.2	22.4		PASS

Frequency (MHz)	99% <sup>4</sup> BW	Total Power	PSD <sup>2</sup> dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5500	18.5	17.4	5.7	4.0		6.2	7.9	9.5	10.8	PASS
5580	18.6	18.2	6.7	4.9		7.8	8.9	9.5	10.6	PASS
5700	18.6	18.2	6.8	5.5		8.3	9.2	9.5	10.3	PASS

Client:	Avaya	Job Number:	J78065
Model:	AP 8120	T-Log Number:	T78133
Contact:	Vipin Naik	Account Manager:	Dean Eriksen
Standard:	FCC 15.E	Class:	N/A

Note 1:	RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the analyzer was configured with a <b>gated sweep</b> such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



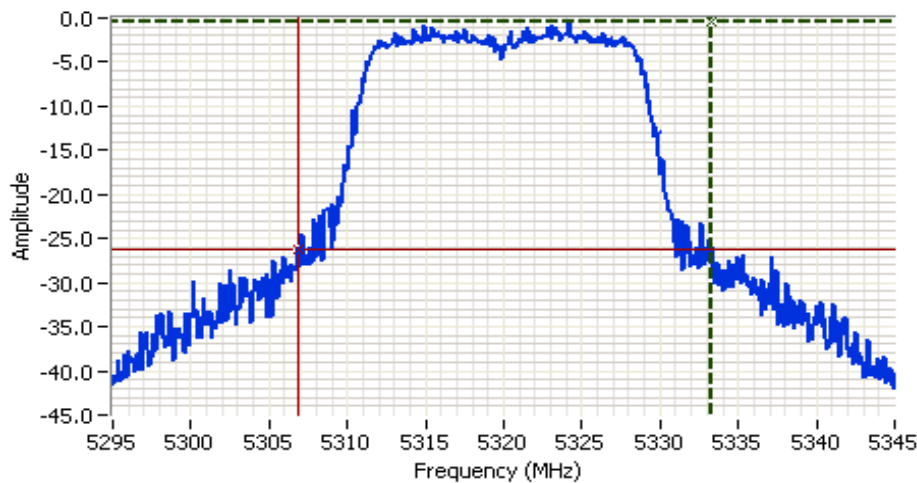
**Analyzer Settings**  
 Rohde&Schwarz,ESI  
 CF: 5580.000 MHz  
 SPAN: 50.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: SAMPLE  
 Attn: 10 DB  
 RL Offset: 11.0 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 11.0 DBM  
 Vavg: 100

**Comments**  
 99% BW: 18.500 MHz  
 Power: 15.40dBm

Chain 1

Cursor 1	5570.7000	6.71	
Cursor 2	5589.2000	-19.29	

Delta Freq. 18.500  
 Delta Amplitude 26.00



**Analyzer Settings**  
 HP8564E,EMICF: 5320.000 MHz  
 SPAN: 50.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: POS  
 Attn: 10 DB  
 RL Offset: 0.0 DB  
 Sweep Time: 50.0ms  
 Ref Lvl: -2.0 DBM

**Comments**  
 26dB BW: 26.500 MHz

Chain 1

Cursor 1	5333.3333	-0.33	
Cursor 2	5306.8333	-26.33	

Delta Freq. 26.500  
 Delta Amplitude 26.00



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
	Account Manager: Dean Eriksen
Contact: Vipin Naik	
Standard: FCC 15.E	Class: N/A

### Run #2: Peak Excursion Measurement

Device meets the requirement for the peak excursion

Freq		Peak Excursion(dB)		Freq		Peak Excursion(dB)		
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
5180		13.0	5260	12.7	13.0	5500	12.4	13.0
5200		13.0	5300	12.0	13.0	5580	12.7	13.0
5240		13.0	5320	12.0	13.0	5700	12.3	13.0

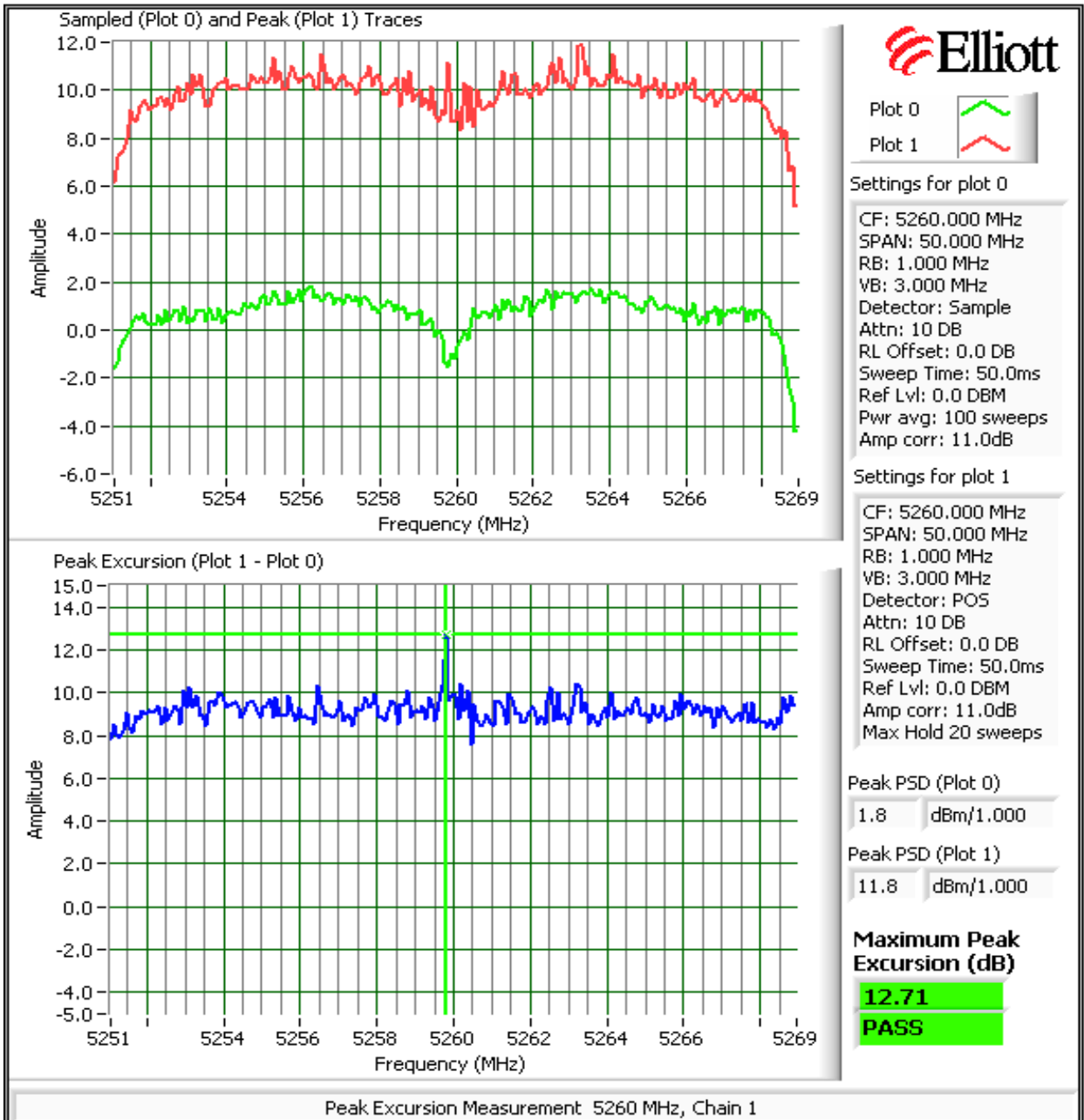
#### Plots Showing Peak Excursion

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #3: Out Of Band Spurious Emissions - Antenna Conducted**

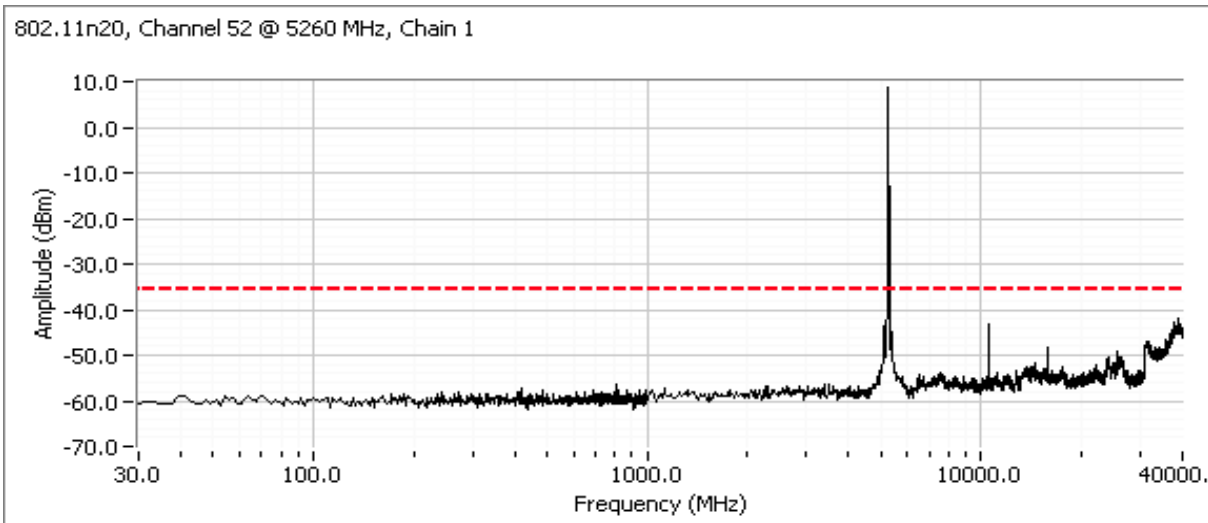
**MIMO Devices:** Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained for each chain individually and the limit was adjusted to account for all chains transmitting simultaneously

Number of transmit chains: 2  
 Maximum Antenna Gain: 5.6 dBi **Worse case gain for both bands**  
 Spurious Limit: -27.0 dBm/MHz eirp  
 Adjustment for 2 chains: -3.0 dB adjustment for multiple chains.  
 Limit Used On Plots <sup>Note 1</sup>: -35.6 dBm/MHz Average Limit (RB=1MHz, VB=10Hz)  
 -15.6 dBm/MHz Peak Limit (RB=VB=1MHz)

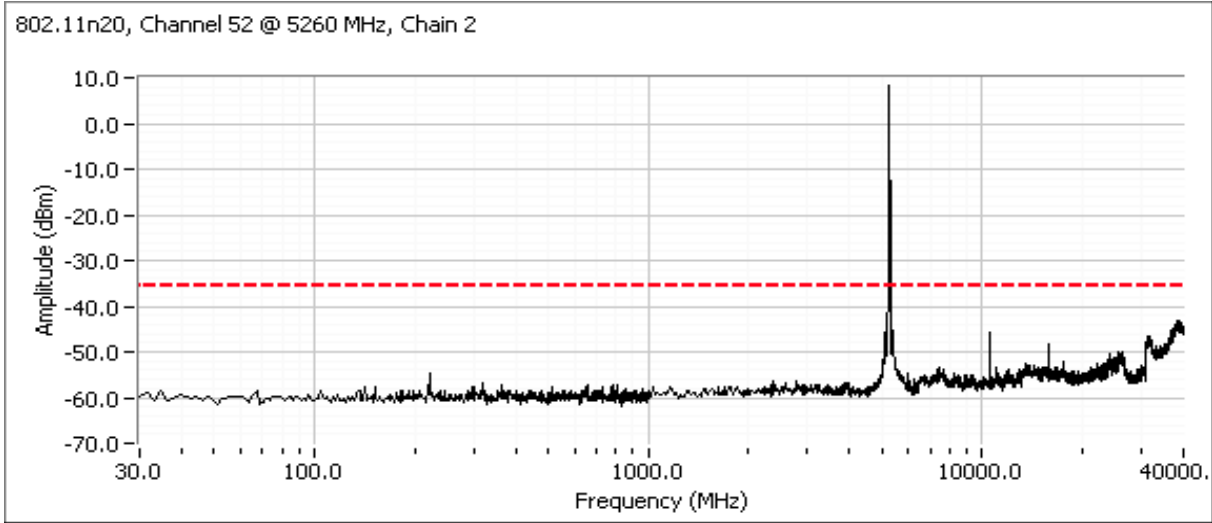
- Note 1: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
- Note 2: All spurious signals below 1GHz are measured during digital device radiated emissions test.
- Note 3: Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
- Note 4: If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
- Note 5: Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

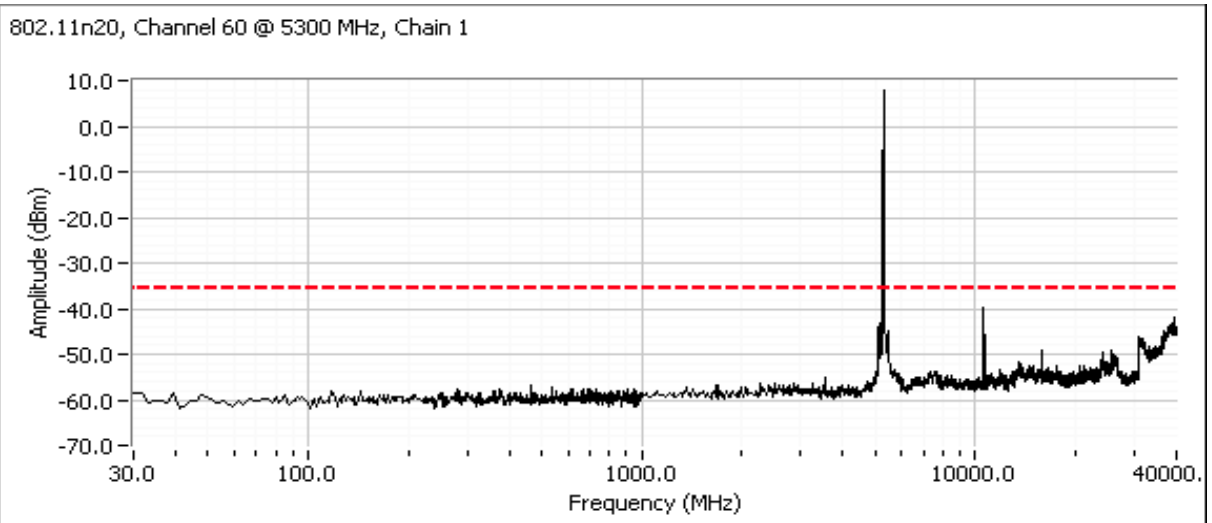
**Low channel, 5250 - 5350 MHz Band**



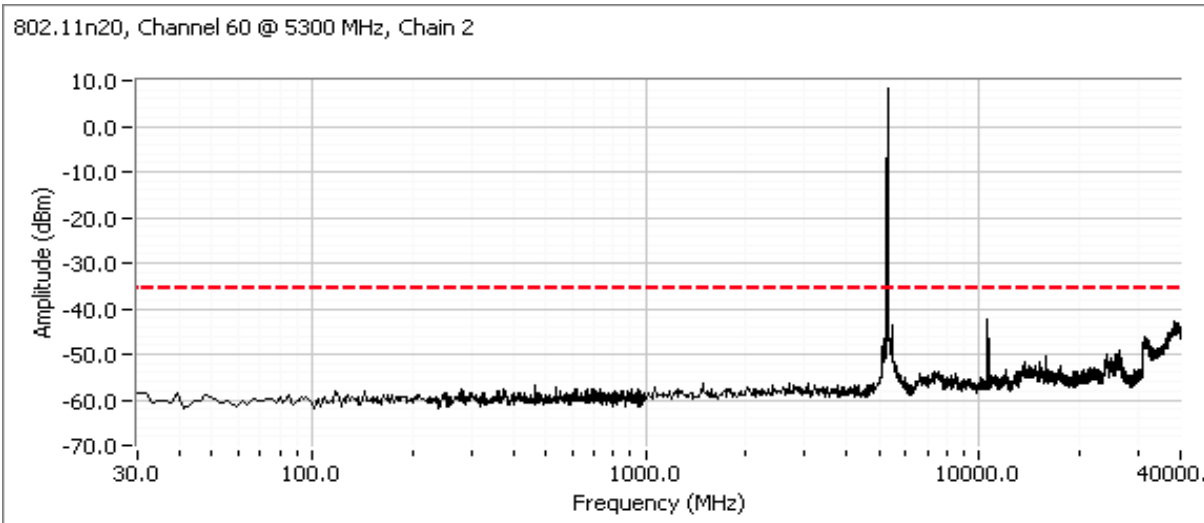
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Center channel, 5250 - 5350 MHz Band

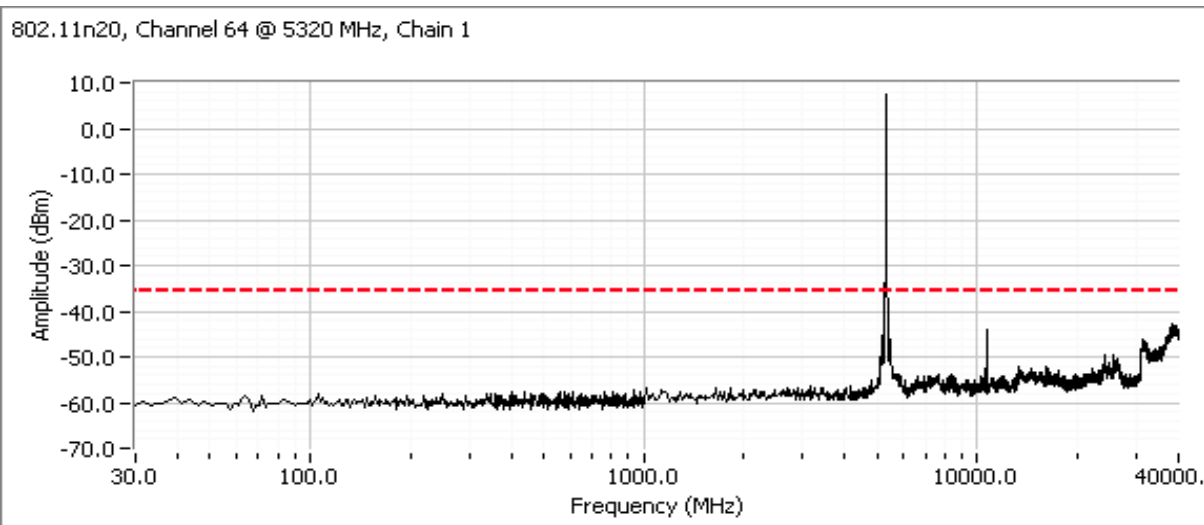


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



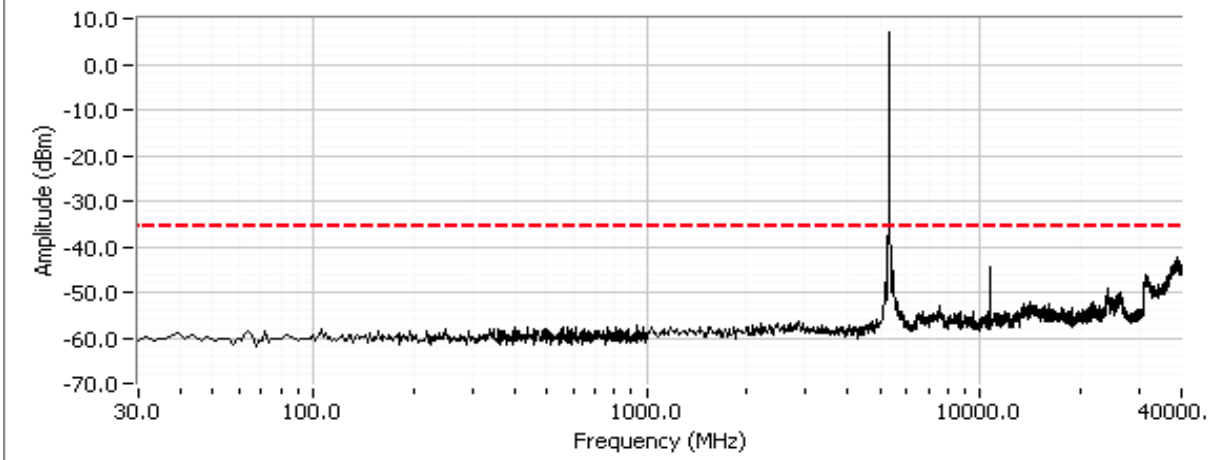
**High channel, 5250 - 5350 MHz Band**

Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

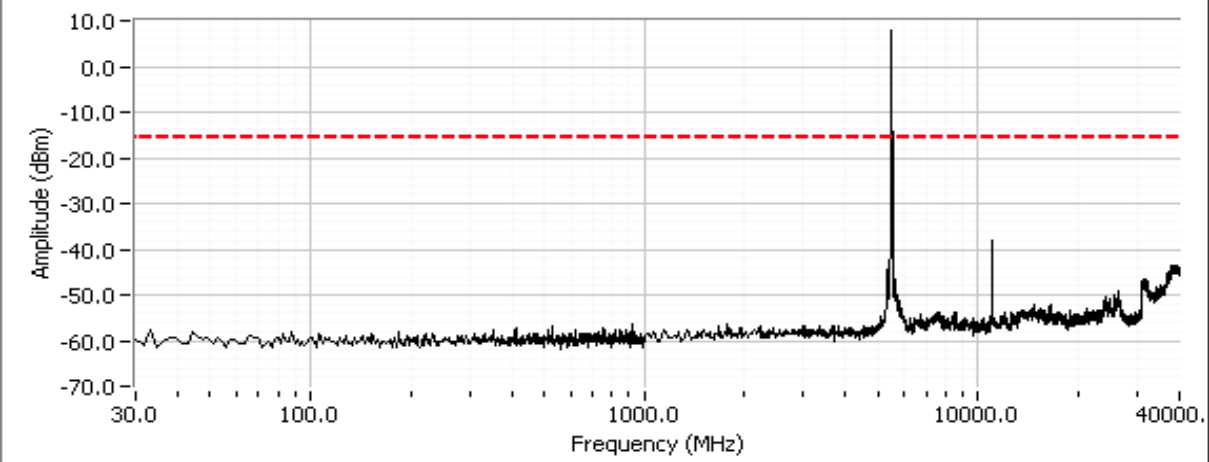
802.11n20, Channel 64 @ 5320 MHz, Chain 2



**Low channel, 5470 - 5725 MHz Band**

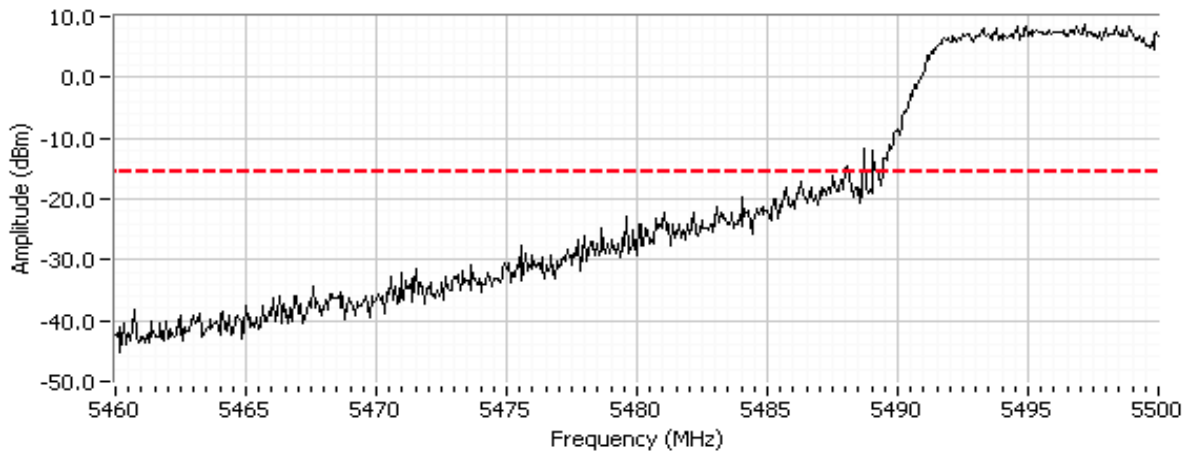
Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.

802.11n20, Channel 100 @ 5500 MHz, Chain 1

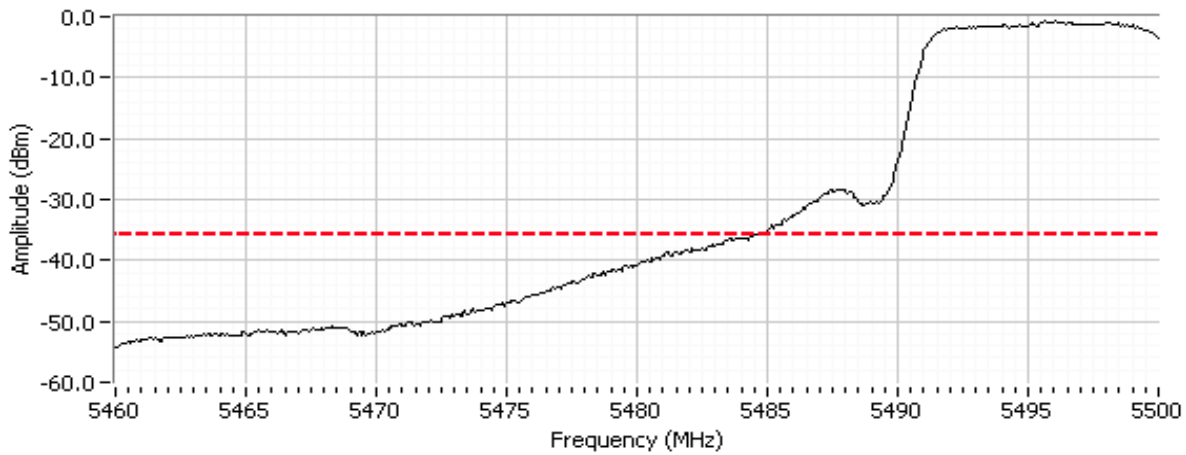


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 100 @ 5500 MHz, Chain 1, PK

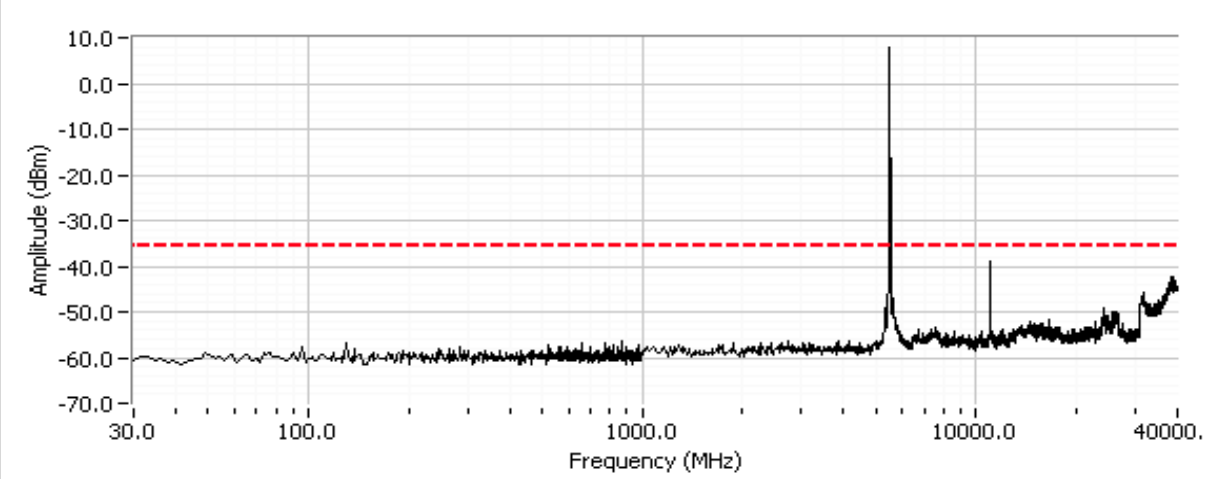


802.11n20, Channel 100 @ 5500 MHz, Chain 1, Avg

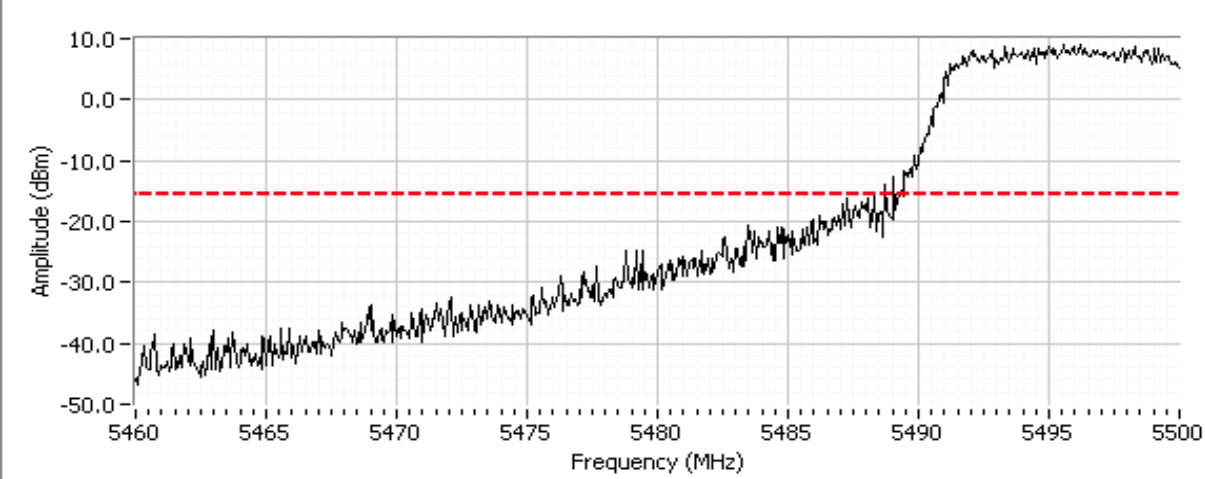


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 100 @ 5500 MHz, Chain 2

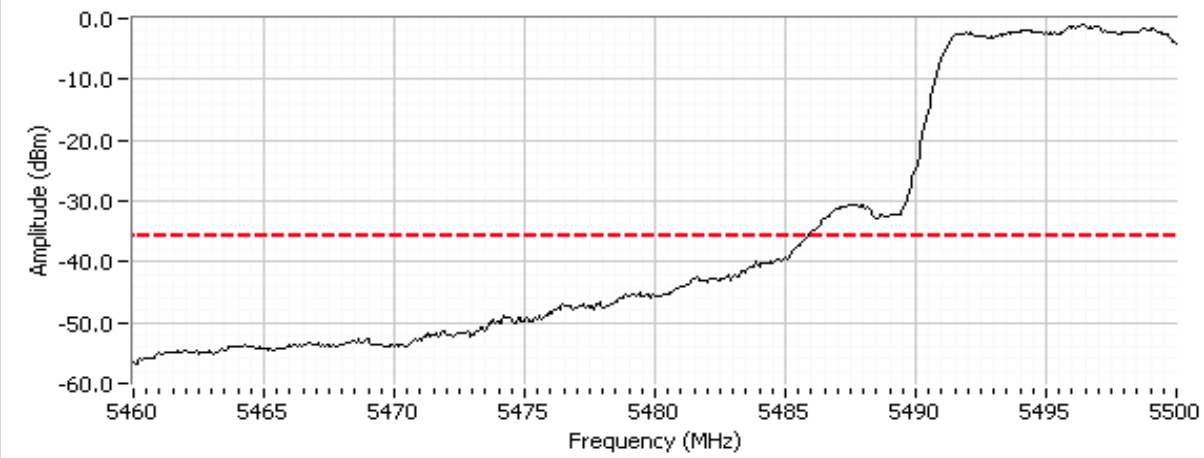


802.11n20, Channel 100 @ 5500 MHz, Chain 2, PK



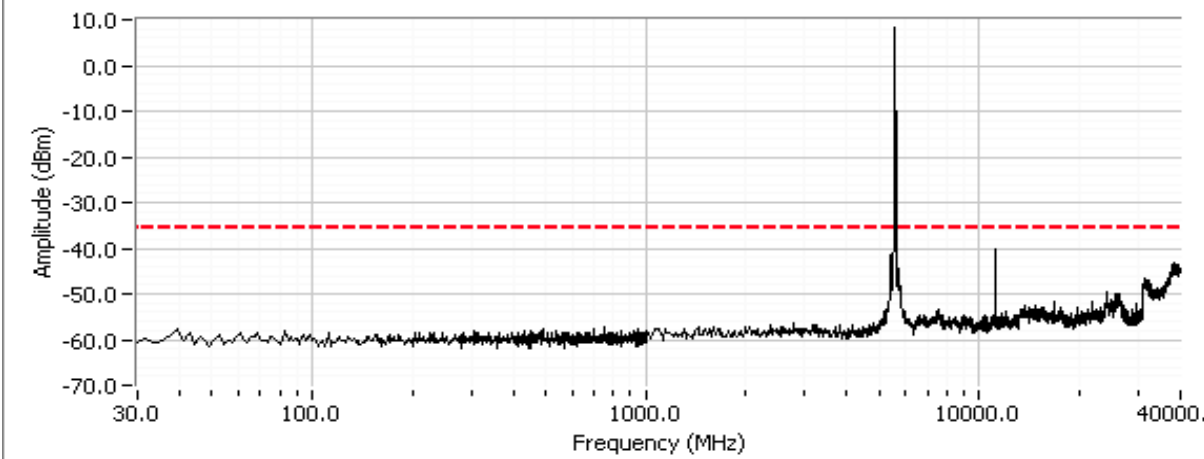
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 100 @ 5500 MHz, Chain 2, Avg



Center channel, 5470 - 5725 MHz Band (20MHz channel use 5580 MHz, 40MHz channel use 5550 MHz)

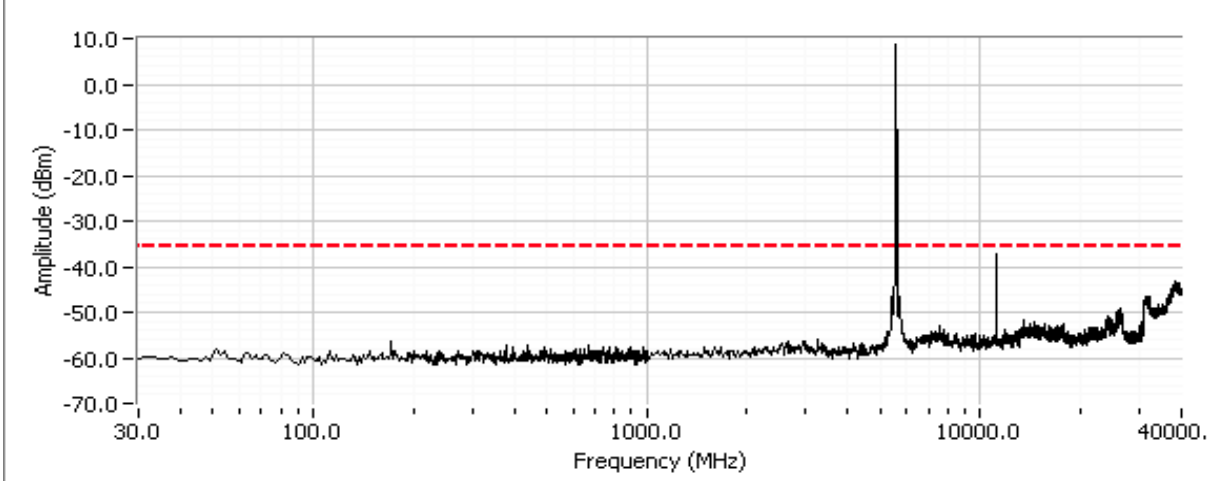
802.11n20, Channel 116 @ 5580 MHz, Chain 1





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

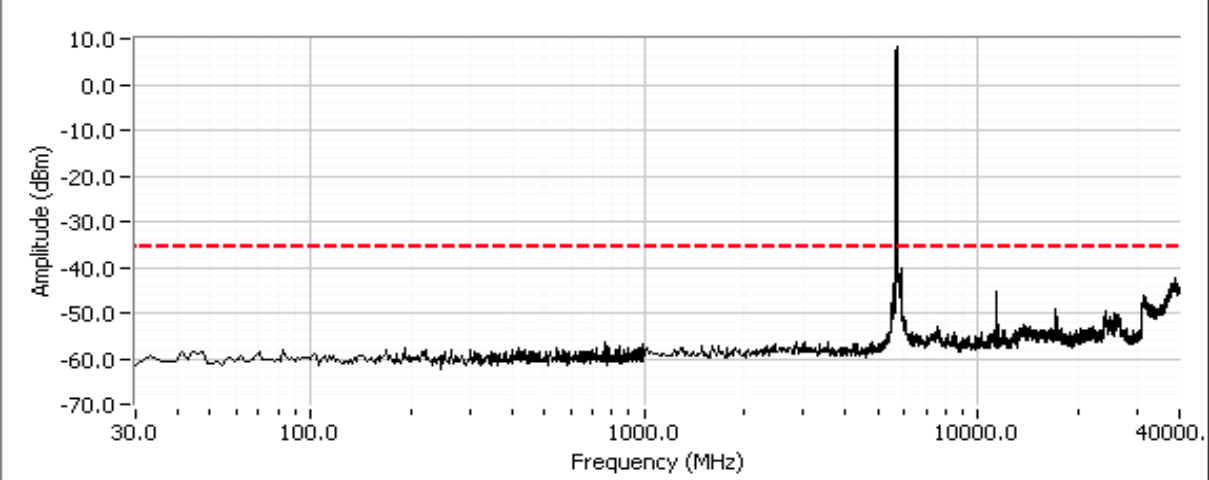
802.11n20, Channel 116 @ 5580 MHz, Chain 2



**High channel, 5470 - 5725 MHz Band**

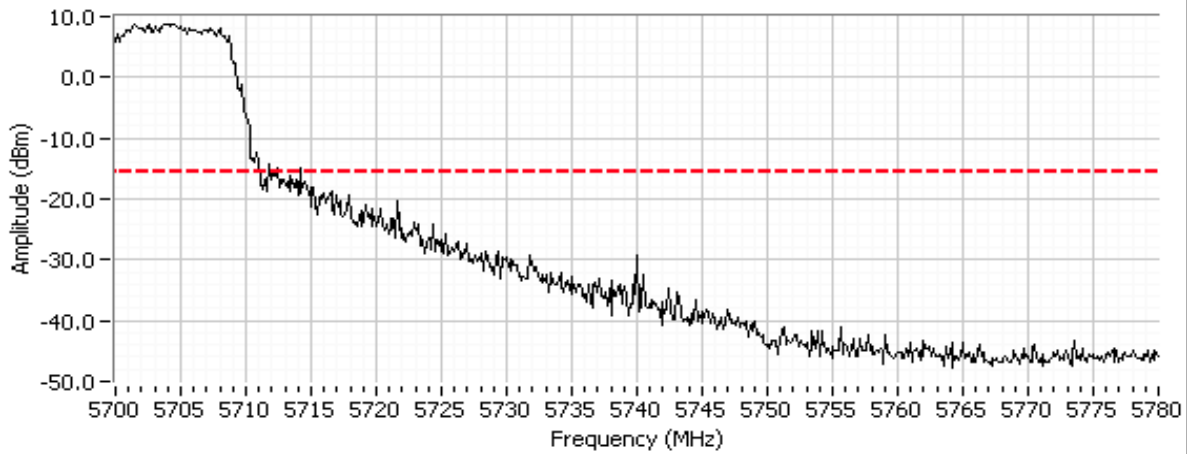
Includes a plot from 5700 - 5780 MHz showing compliance with the -27dBm/MHz eirp limit immediately above the allocated band (5725 MHz).

802.11n20, Channel 140 @ 5700 MHz, Chain 1

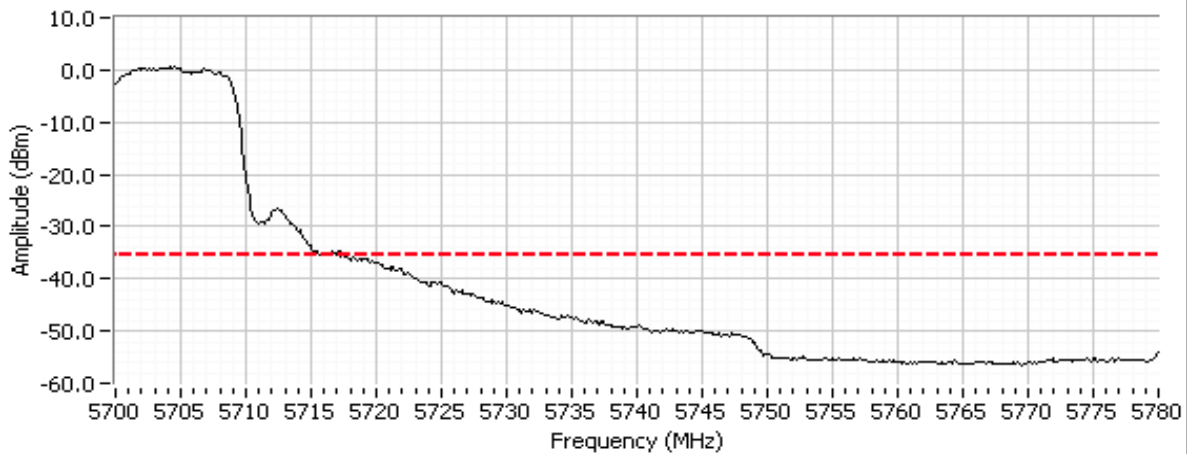


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 140 @ 5700 MHz, Chain 1, PK

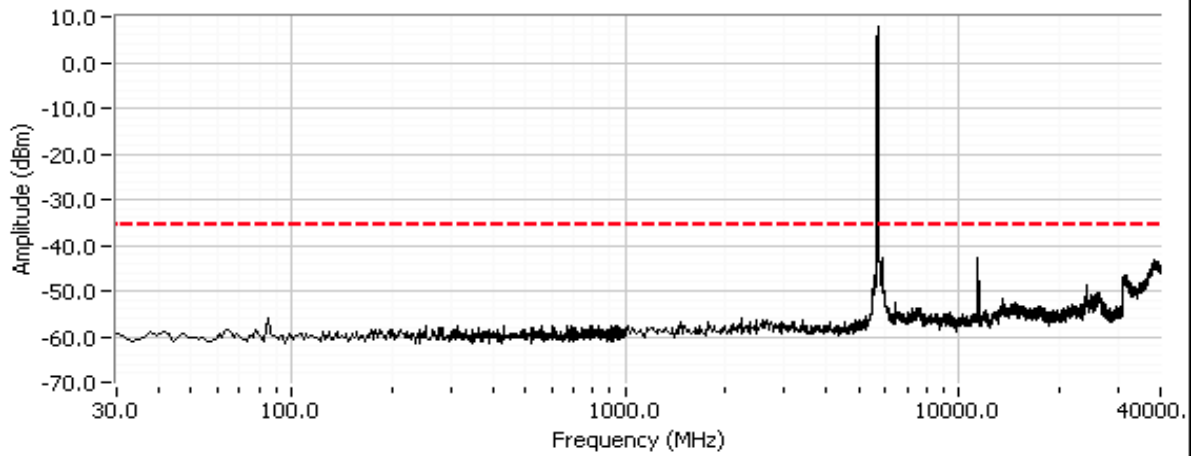


802.11n20, Channel 140 @ 5700 MHz, Chain 1, Avg

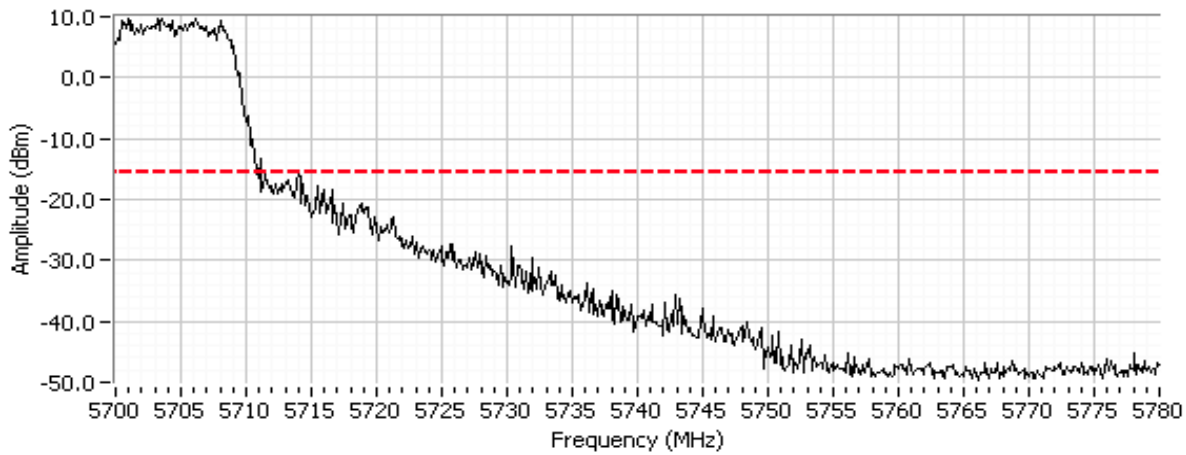


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 140 @ 5700 MHz, Chain 2

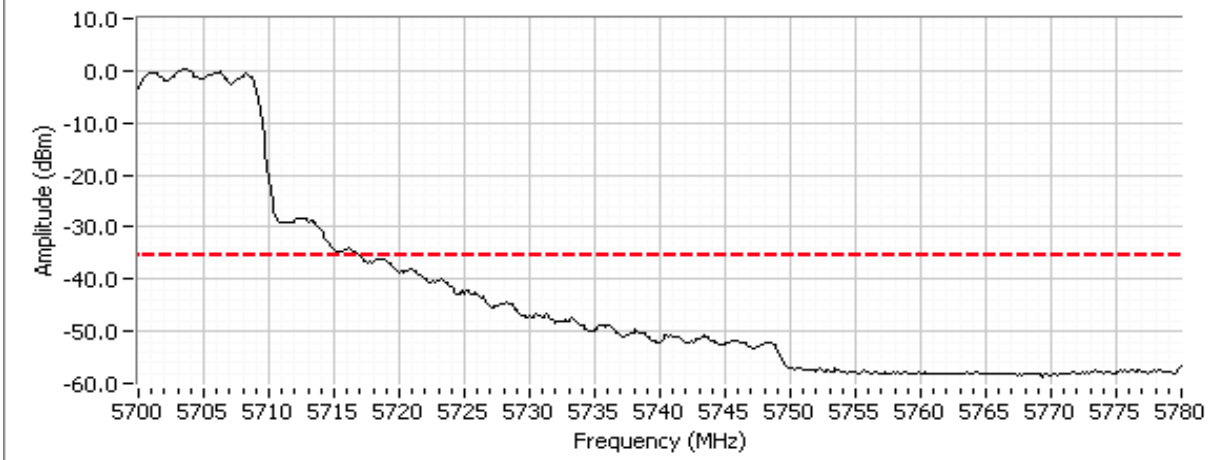


802.11n20, Channel 140 @ 5700 MHz, Chain 2, PK



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n20, Channel 140 @ 5700 MHz, Chain 2, Avg





Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

### Run #1: Bandwidth, Output Power and Power spectral Density

#### MIMO Device

	Chain 1	Chain 2	Chain 3	Coherent	Effective <sup>5</sup>
Antenna Gain (dBi):	4.53	4.53		Yes	7.5

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power <sup>1</sup> dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5270	-	61.3	16.0	15.9		78.4	18.9	22.4	0.078	PASS
5310	-	41.3	10.6	10.8		23.5	13.7	22.4		PASS

Frequency (MHz)	99% <sup>4</sup> BW	Total Power	PSD <sup>2</sup> dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5270	36.6	18.9	3.2	3.0		4.1	6.1	9.5	11.0	PASS
5310	36.6	13.7	-1.5	-1.7		1.4	1.4	9.5	10.6	PASS

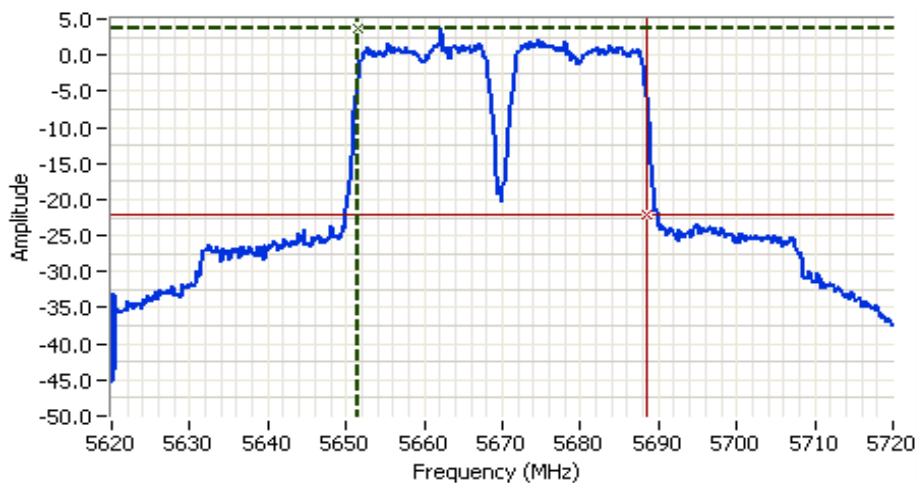
	Chain 1	Chain 2	Chain 3	Coherent	Effective <sup>5</sup>
Antenna Gain (dBi):	5.55	5.55		Yes	8.6

Frequency (MHz)	Software Setting	26dB BW (MHz)	Measured Output Power <sup>1</sup> dBm			Total		Limit (dBm)	Max Power (W)	Pass or Fail
			Chain 1	Chain 2	Chain 3	mW	dBm			
5510	-	41.1	12.5	12.6		36.0	15.6	22.4	0.068	PASS
5550	-	51.3	14.8	15.0		61.8	17.9	22.4		PASS
5670	-	72.5	15.2	15.4		67.8	18.3	22.4		PASS

Frequency (MHz)	99% <sup>4</sup> BW	Total Power	PSD <sup>2</sup> dBm/MHz			Total PSD		Limit		Pass or Fail
			Chain 1	Chain 2	Chain 3	mW/MHz	dBm/MHz	FCC	RSS 210 <sup>3</sup>	
5510	36.6	15.6	-0.5	-1.2		1.7	2.2	9.5	11.0	PASS
5550	36.8	17.9	1.4	2.4		3.1	4.9	9.5	11.0	PASS
5670	37.0	18.3	3.8	5.0		5.6	7.5	9.5	9.2	PASS

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

Note 1:	RBW=1MHz, VB=3 MHz, sample detector, power averaging on (transmitted signal was not continuous but the analyzer was configured with a gated sweep such that the analyzer was only sweeping when the device was transmitting) and power integration over 50 MHz
Note 2:	Measured using the same analyzer settings used for output power.
Note 3:	For RSS-210 the limit for the 5150 - 5250 MHz band accounts for the antenna gain as the maximum eirp allowed is 10dBm/MHz. The limits are also corrected for instances where the highest measured value of the PSD exceeds the average PSD (calculated from the measured power divided by the measured 99% bandwidth) by more than 3dB by the amount that the measured value exceeds the average by more than 3dB.
Note 4:	99% Bandwidth measured in accordance with RSS GEN - RB > 1% of span and VB >=3xRB
Note 5:	For MIMO systems the total output power and total PSD are calculated from the sum of the powers of the individual chains (in linear terms). The antenna gain used to determine the EIRP and limits for PSD/Output power depends on the operating mode of the MIMO device. If the signals on the non-coherent between the transmit chains then the gain used to determine the limits is the highest gain of the individual chains and the EIRP is the sum of the products of gain and power on each chain. If the signals are coherent then the effective antenna gain is the sum (in linear terms) of the gains for each chain and the EIRP is the product of the effective gain and total power.



**Analyzer Settings**

Rohde&Schwarz,ESI  
 CF: 5670.000 MHz  
 SPAN: 100.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: SAMPLE  
 Attn: 10 DB  
 RL Offset: 12.8 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 12.8 DBM  
 Vavg: 100

**Comments**

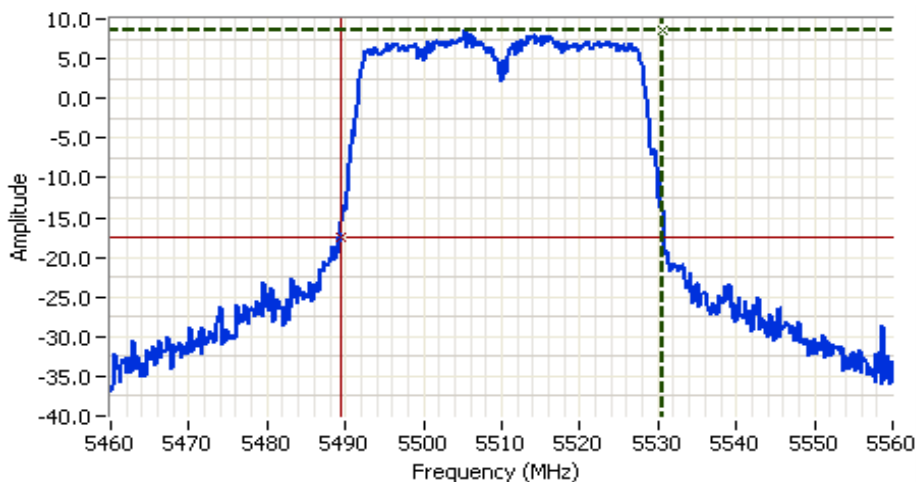
99% BW: 37 MHz  
 Power over span: 15.4dBm

Chain 2

Cursor 1	5651.4000	3.81	+	-	↔
Cursor 2	5688.4000	-22.19	+	-	↔

Delta Freq. 37.000  
 Delta Amplitude 26.00

Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**Analyzer Settings**

Rohde&Schwarz, ESI  
 CF: 5510.000 MHz  
 SPAN: 100.000 MHz  
 RB: 1.000 MHz  
 VB: 3.000 MHz  
 Detector: POS  
 Attn: 20 DB  
 RL Offset: 11.0 DB  
 Sweep Time: 5.0ms  
 Ref Lvl: 14.0 DBM

**Comments**

26dB BW: 41.082 MHz

Chain 1

Cursor 1	5530.5411	8.59	
Cursor 2	5489.4589	-17.41	

Delta Freq. 41.082

Delta Amplitude 26.00



**Run #2: Peak Excursion Measurement**

Device meets the requirement for the peak excursion

Freq		Peak Excursion(dB)		Freq		Peak Excursion(dB)		
(MHz)	Value	Limit	(MHz)	Value	Limit	(MHz)	Value	Limit
			5270	12.6	13.0	5510	11.4	13.0
			5310	12.8	13.0	5550	12.4	13.0
						5670	12.7	13.0

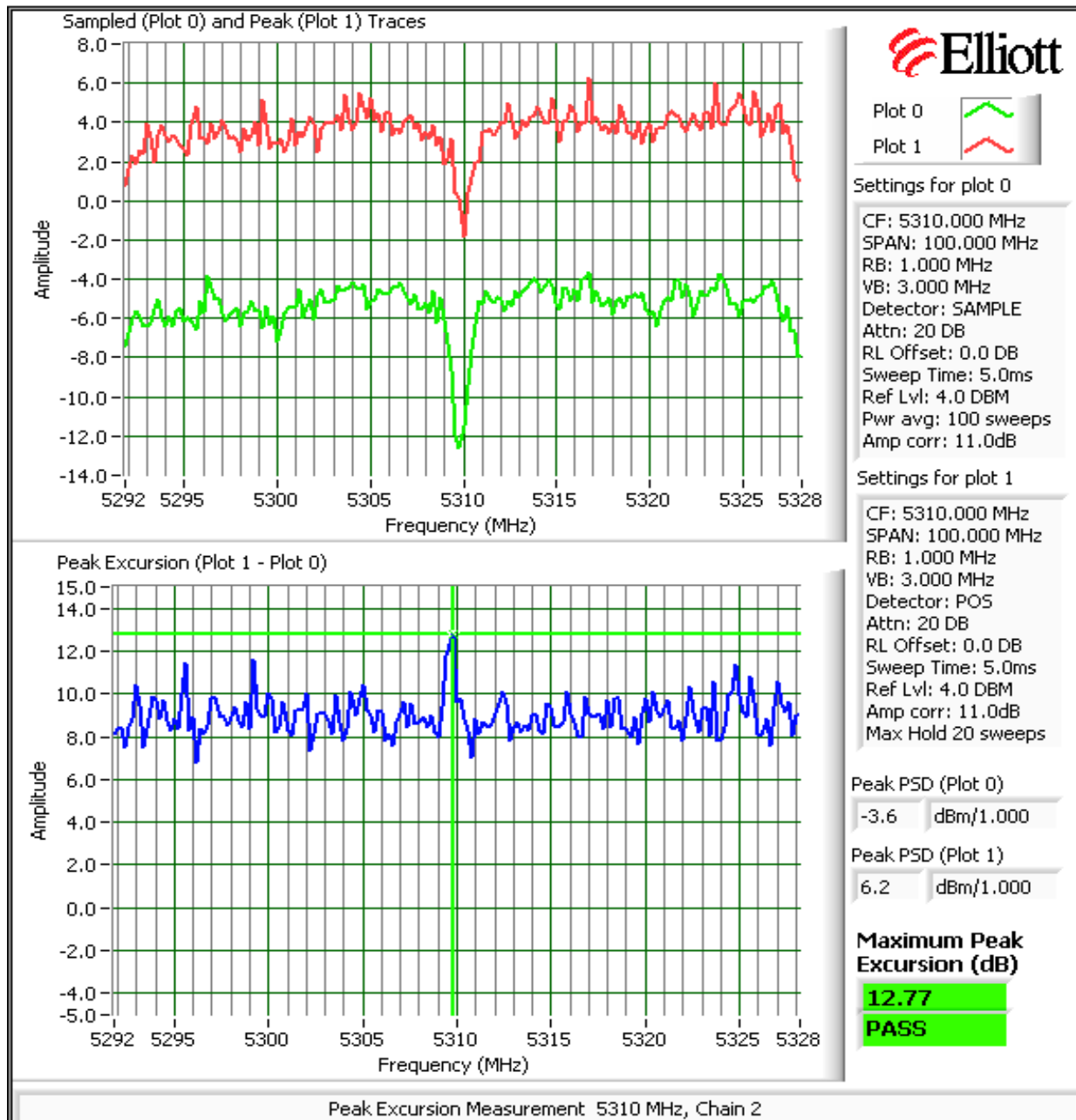
**Plots Showing Peak Excursion**

Trace A: RBW = 1MHz, VBW = 3MHz, Peak hold

Trace B: Same settings as used for power/PSD measurements (RBW = 1 MHz, VBW = 3MHz, Integrated average power)



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

**Run #3: Out Of Band Spurious Emissions - Antenna Conducted**

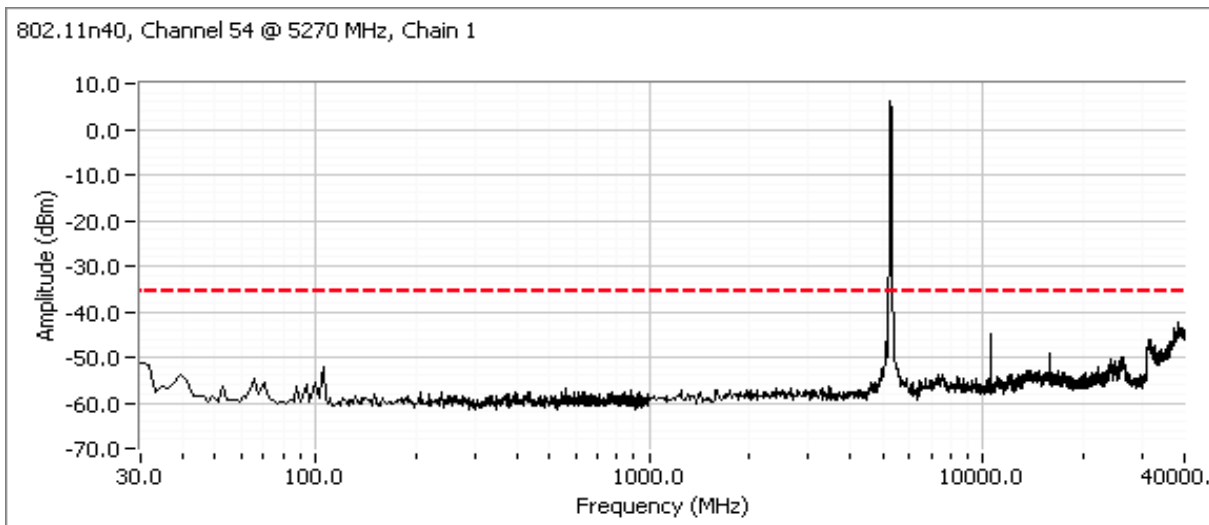
**MIMO Devices:** Antenna gain used is the effective gain calculated in the power section of this data sheet. The plots were obtained for each chain individually and the limit was adjusted to account for all chains transmitting simultaneously

Number of transmit chains: 2  
 Maximum Antenna Gain: 5.6 dBi **Worse case gain for both bands**  
 Spurious Limit: -27.0 dBm/MHz eirp  
 Adjustment for 2 chains: -3.0 dB adjustment for multiple chains.  
 Limit Used On Plots <sup>Note 1</sup>: -35.6 dBm/MHz Average Limit (RB=1MHz, VB=10Hz)  
 -15.6 dBm/MHz Peak Limit (RB=VB=1MHz)

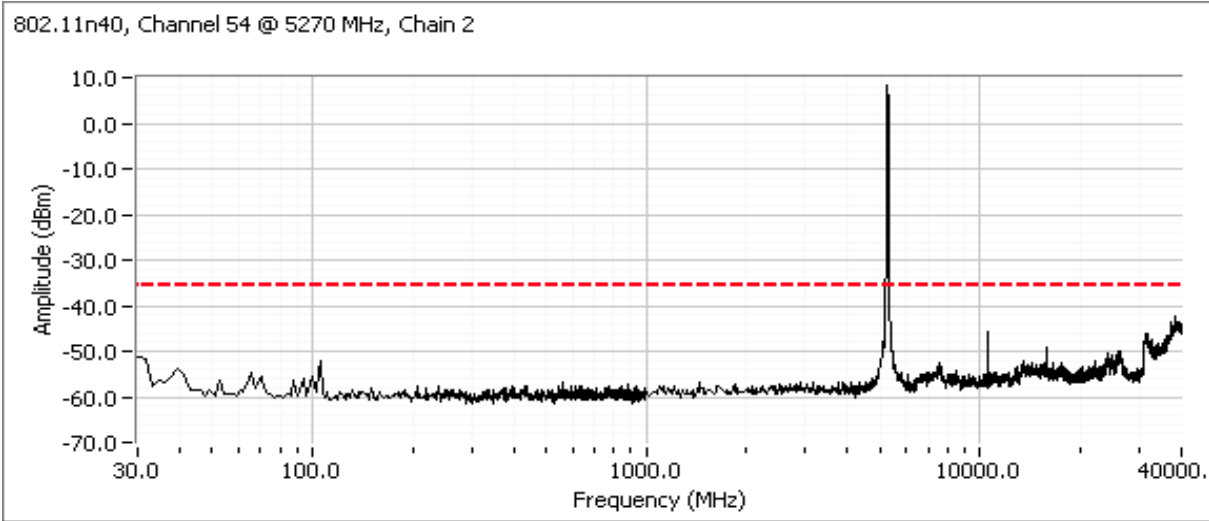
- Note 1: The -27dBm/MHz limit is an eirp limit. The limit for antenna port conducted measurements is adjusted to take into consideration the maximum antenna gain (limit = -27dBm - antenna gain). Radiated field strength measurements for signals more than 50MHz from the bands and that are close to the limit are made to determine compliance as the antenna gain is not known at these frequencies.
- Note 2: All spurious signals below 1GHz are measured during digital device radiated emissions test.
- Note 3: Signals within 10MHz of the 5.725 or 5.825 Band edge are subject to a limit of -17dBm EIRP
- Note 4: If the device is for outdoor use then the -27dBm eirp limit also applies in the 5150 - 5250 MHz band.
- Note 5: Signals that fall in the restricted bands of 15.205 are subject to the limit of 15.209.

Plots Showing Out-Of-Band Emissions (RBW=VBW=1MHz)

**Low channel, 5250 - 5350 MHz Band**

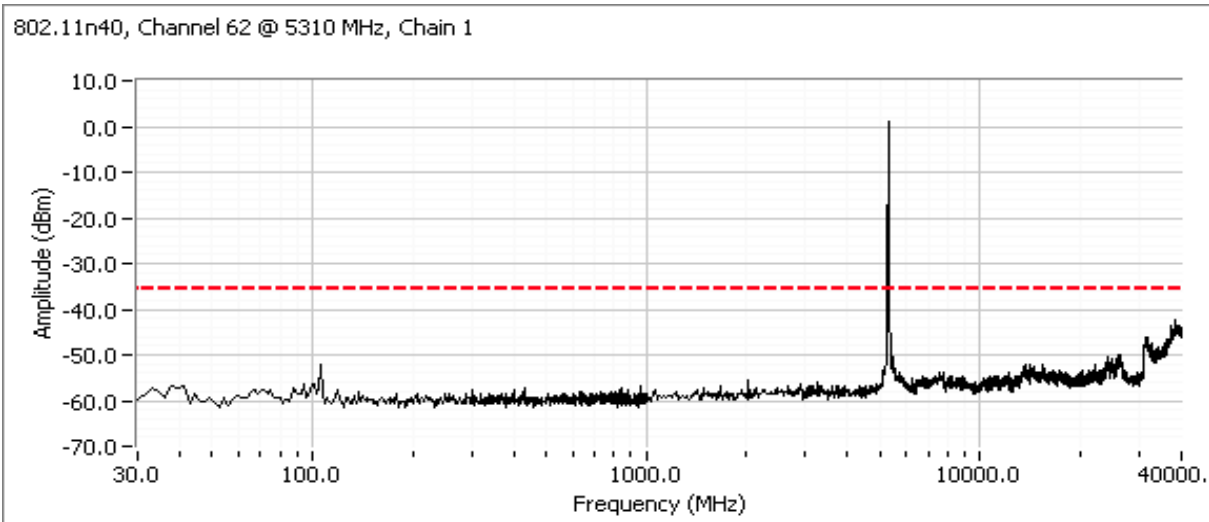


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

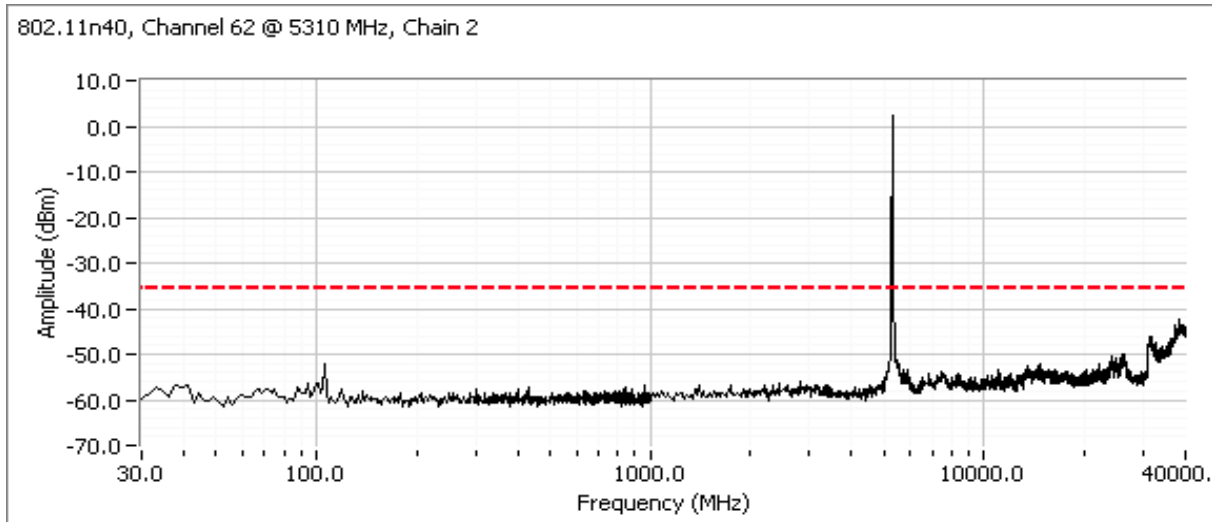


### High channel, 5250 - 5350 MHz Band

Compliance with the radiated limits for the restricted band immediately above 5350MHz is demonstrated through the radiated emissions tests.

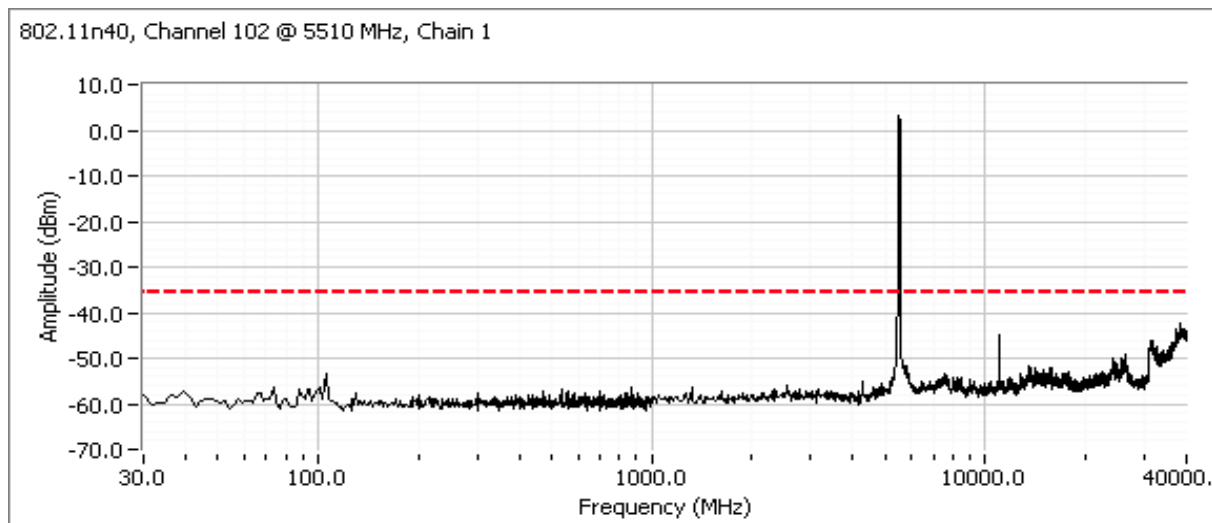


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



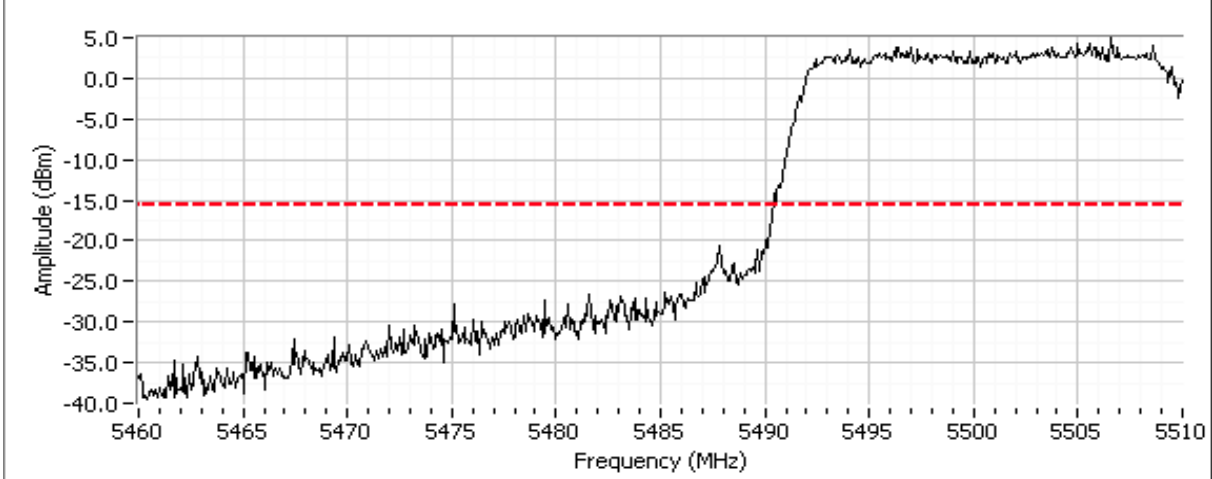
Low channel, 5470 - 5725 MHz Band

Includes a plot from 5460 - 5500 MHz showing compliance with the limit immediately below the allocated band from 5460-5470 MHz. Compliance with the radiated limits for the restricted band below 5460 MHz is demonstrated through the radiated emissions tests.

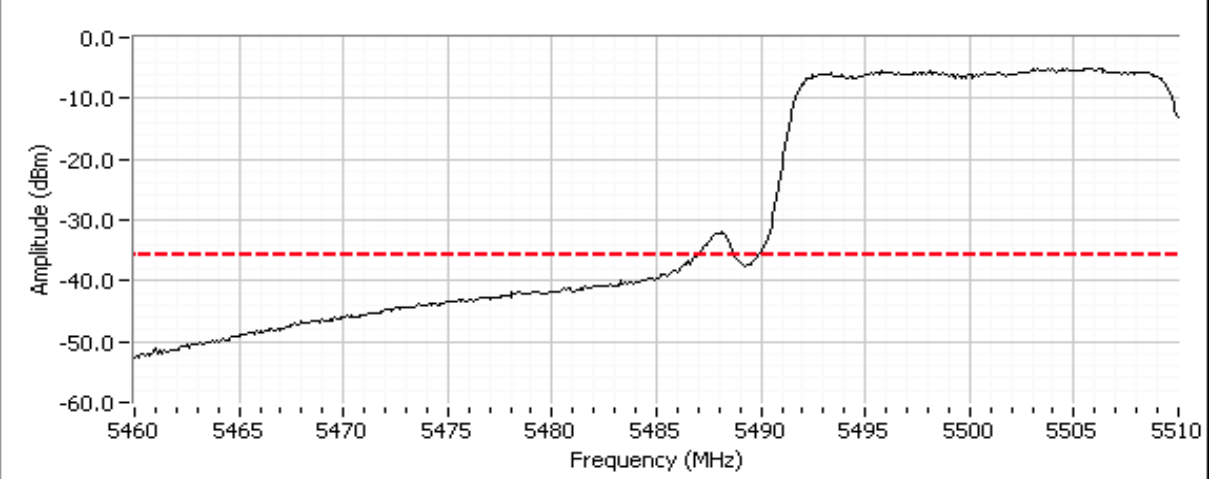


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

802.11n40, Channel 102 @ 5510 MHz, Chain 1, PK

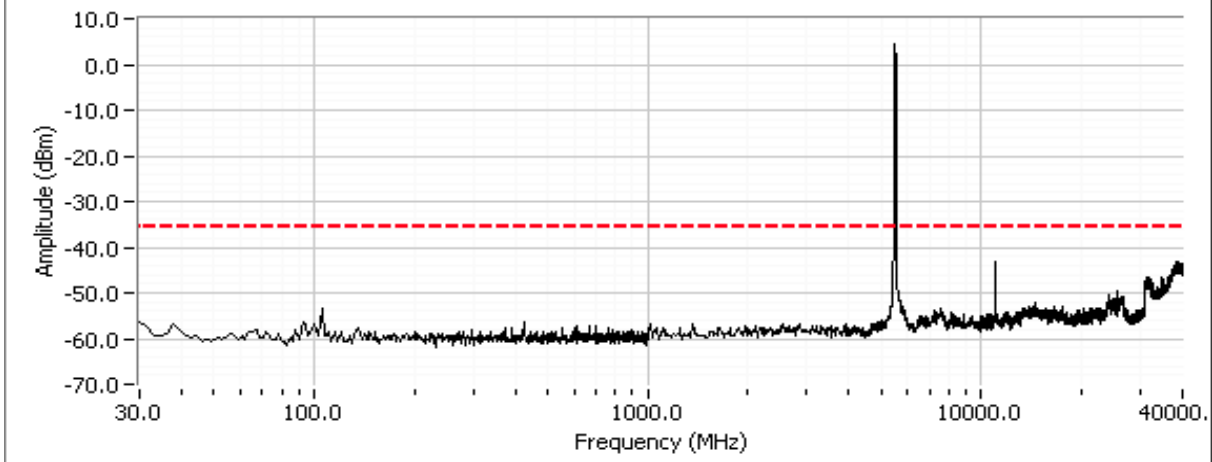


802.11n40, Channel 102 @ 5510 MHz, Chain 1, Avg

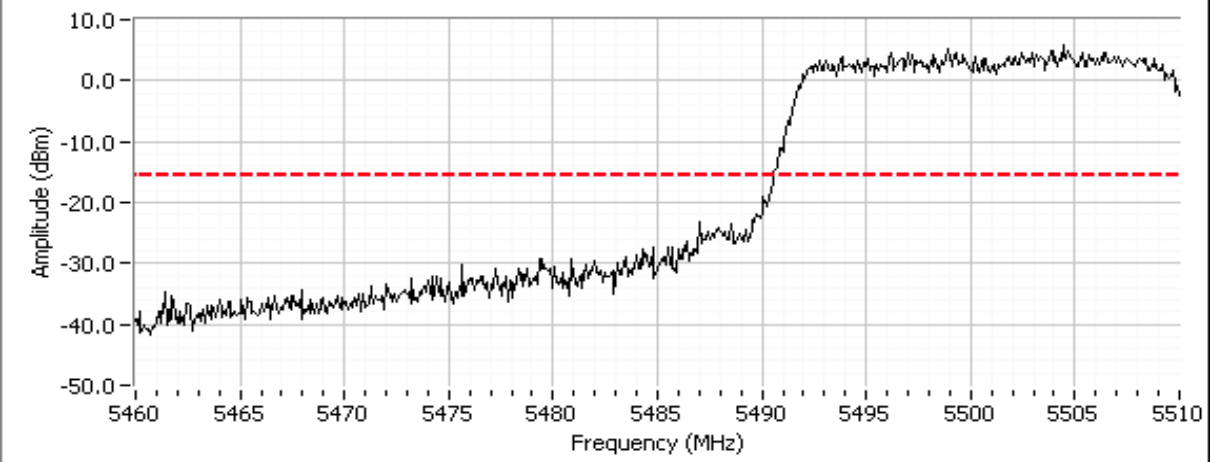


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

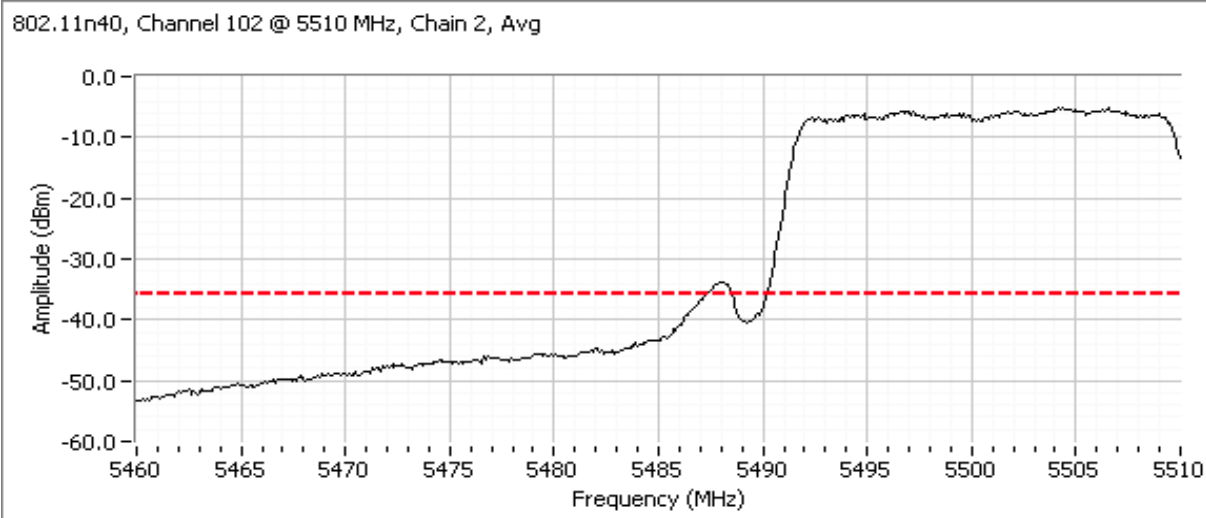
802.11n40, Channel 102 @ 5510 MHz, Chain 2



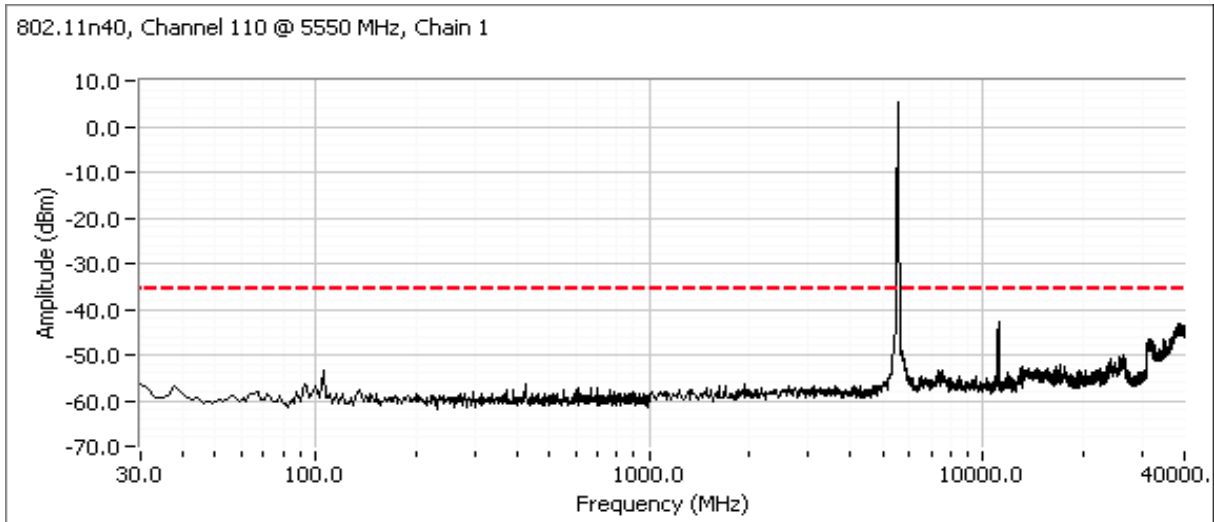
802.11n40, Channel 102 @ 5510 MHz, Chain 2, PK



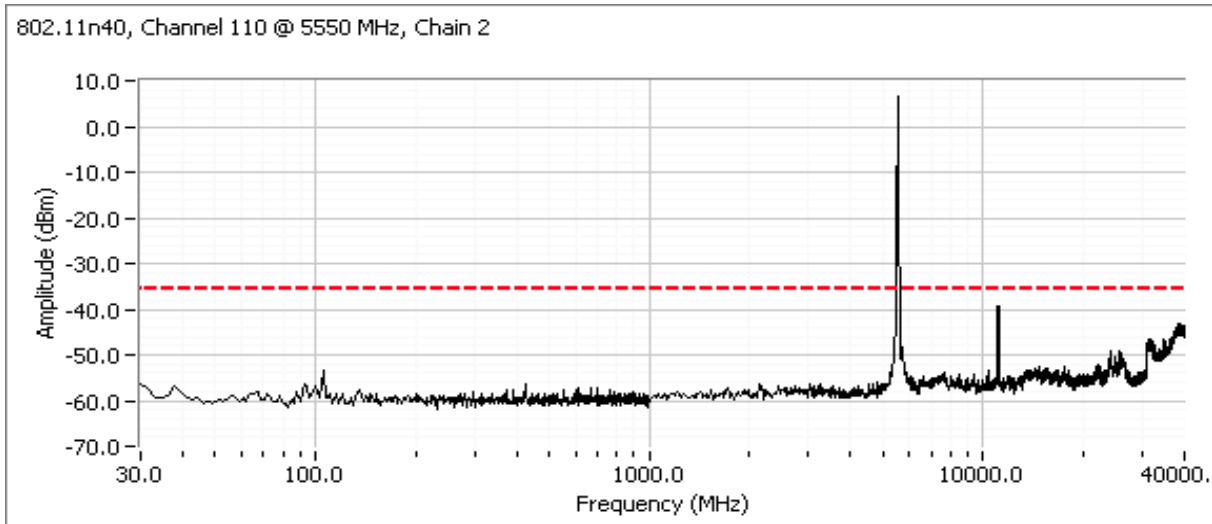
Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Center channel, 5470 - 5725 MHz Band (20Mhz channel use 5580 MHz, 40MHz channel use 5550 MHz)

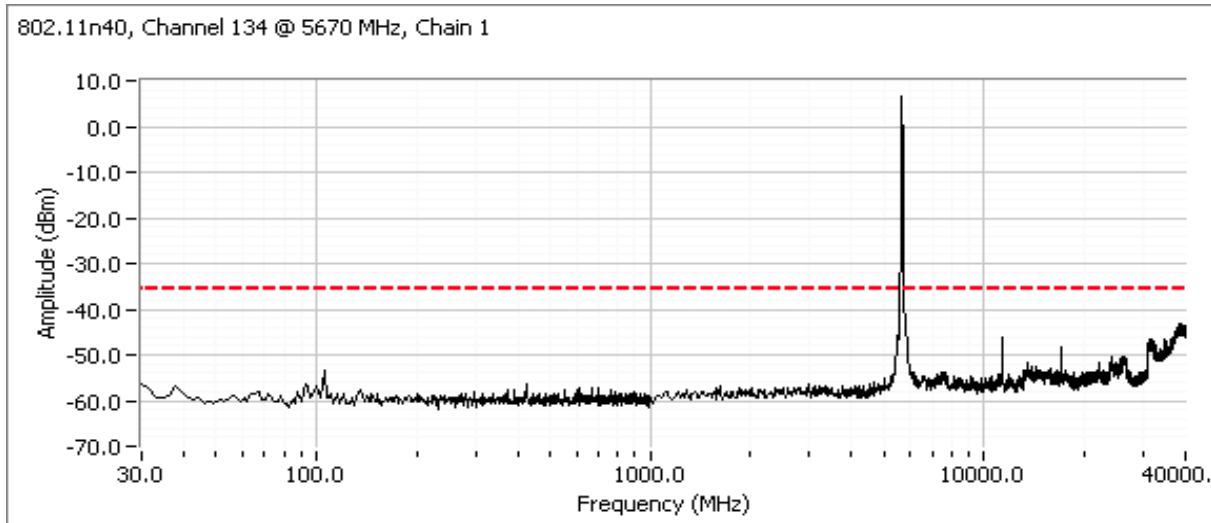


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



**High channel, 5470 - 5725 MHz Band**

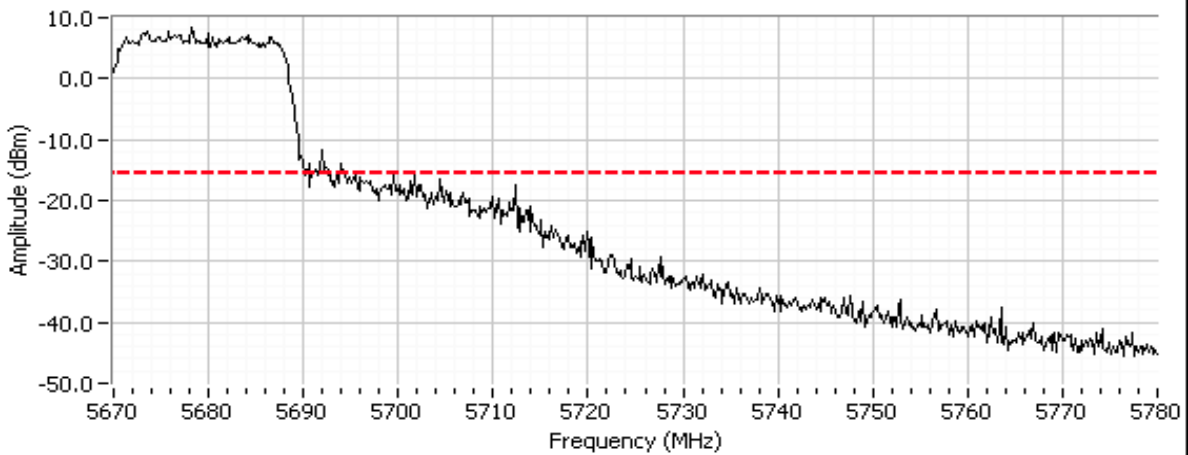
Includes a plot from 5700 - 5780 MHz showing compliance with the -27dBm/MHz eirp limit immediately above the allocated band (5725 MHz).



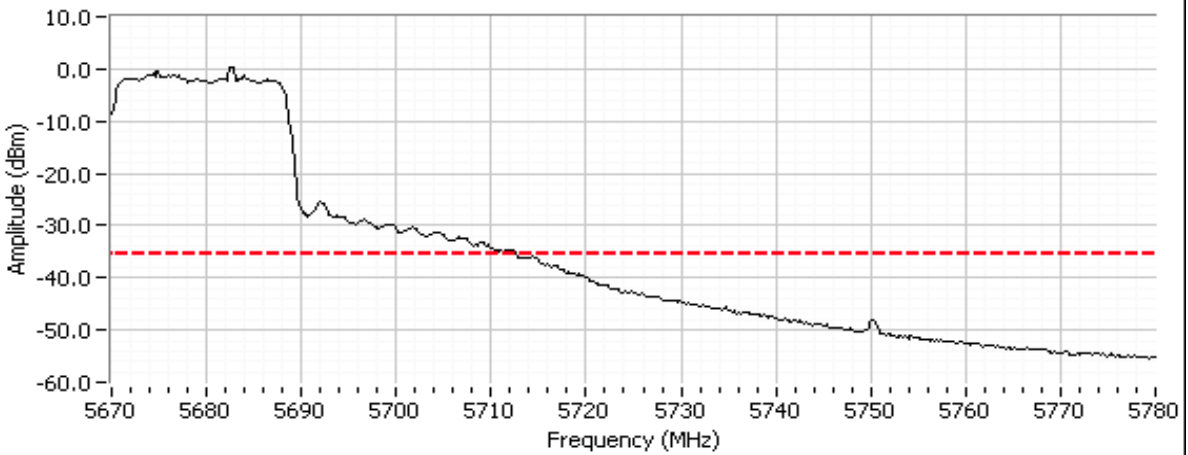


Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

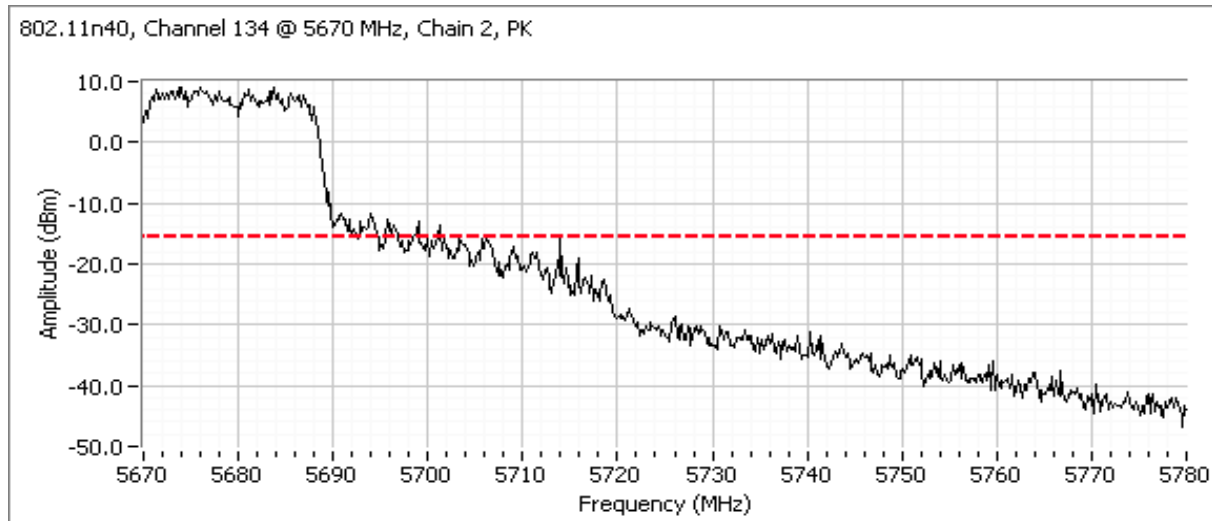
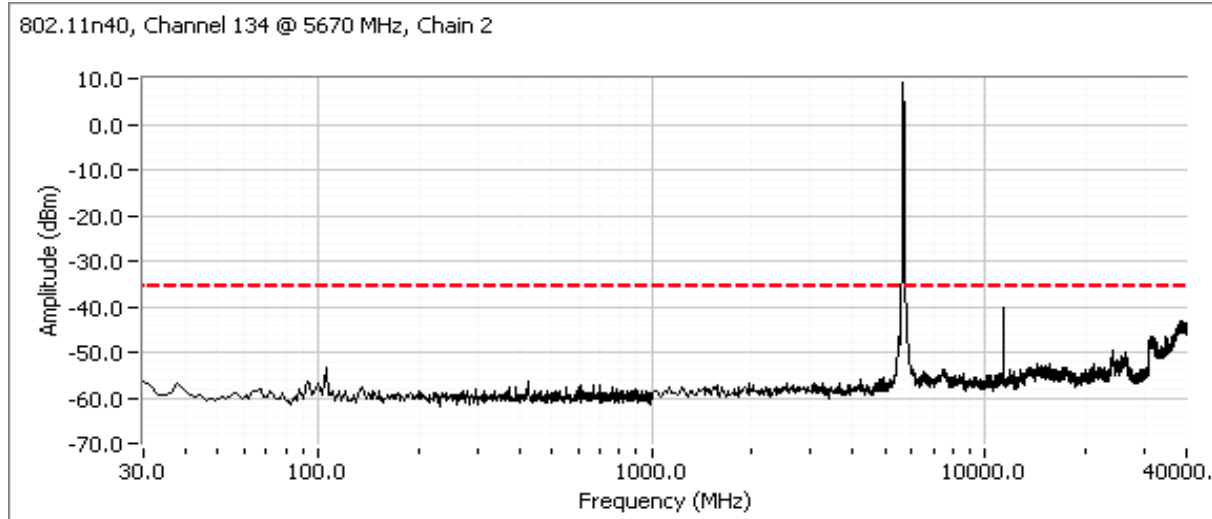
802.11n40, Channel 134 @ 5670 MHz, Chain 1, PK



802.11n40, Channel 134 @ 5670 MHz, Chain 1, Avg



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A



Client: Avaya	Job Number: J78065
Model: AP 8120	T-Log Number: T78133
Contact: Vipin Naik	Account Manager: Dean Eriksen
Standard: FCC 15.E	Class: N/A

